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April 5, 2019

British Columbia Utilities Commission Suite 410, 900 Howe Street Vancouver, BC V6Z 2N3

Attention: Mr. Patrick Wruck, Commission Secretary and Manager, Regulatory Support

Dear Mr. Wruck:

Re: FortisBC Energy Inc. (FEI)

Project No. 1598988

Application for a Certificate of Public Convenience and Necessity for the Inland Gas Upgrade Project (the Application)

Evidentiary Update and Errata dated April 5, 2019

This Evidentiary Update and Errata addresses updates or corrections to the Application that FEI identified in the process of responding to the first round of information requests (IRs). The only change to the IGU Project as a result of the updates and corrections is that the estimated capital cost of the IGU Project has been reduced to \$360.193 million from \$362.904 million<sup>1</sup>. The revised total Project Cost, including the capital costs and application and preliminary stage development costs, is \$361.184 million.

This Evidentiary Update and Errata includes the following items:

- 1. Update to the alternative evaluation for the Salmon Arm 3 Lateral to reflect the feasibility of the PRS alternative;
- 2. Errata to the financial analyses to reflect the correct allocation of "land rights" costs;
- 3. Errata to the financial analyses for laterals with the PLR alternative to include the debit of retirement costs in the opening balance of accumulated depreciation;
- 4. Errata to reflect the correct number of restrictive elbows/bends that were included in Stantec's Base Estimate;

<sup>&</sup>lt;sup>1</sup> Cost estimate in as-spent dollars, including Allowance for Funds Used During construction (AFUDC) and cost of removal.



- 5. Errata to reflect the correct the number of industrial customers for Cariboo Pulp Lateral 168, BC Forest Products Lateral 168, and Elkview Lateral 168 in Appendix A;
- 6. Errata to Appendix I to correct errors in tables; and
- 7. Errata to correct typographical errors and make clarifying edits to Appendices J-1 Stantec FEED Report and J-3 PRS Basis of Estimate (Errata).

Each of these seven items listed above are discussed in more detail below.

# 1. Update to the alternative evaluations for the Salmon Arm 3 Lateral to reflect the feasibility of the PRS alternative

In response to BCUC IR 1.14.3, FEI identified that the PRS alternative was inadvertently overlooked as a feasible alternative for the Salmon Arm 3 Lateral 168 and thus was not considered during the alternative selection process. In this Evidentiary Update, FEI updated its alternatives evaluation of the Salmon Arm 3 Lateral to include PRS as a feasible alternative. Table 1 below shows the updated alternatives evaluation.

PLR continues to have the highest overall score as well as the lowest PV of incremental revenue requirements over a 66-year analysis period. The inclusion of the PRS alternative did not change the selection of PLR as the preferred alternative for the Salmon Arm 3 Lateral.

The updated comparison of overall financial analysis and scoring of the ILI, PLR, and PRS alternatives for each of the three criteria, originally provided on page 24 of Appendix A of the Application, is shown in the tables below.

	ILI	PLR	PRS
AACE Estimate Class	Class 3	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	7,136	4,290	5,007
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,893	-	1,463
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	705	-	20
PV of Incremental Revenue Requirement - 66 years (\$000s)	10,493	4,191	6,589
Levelized Rate Impact - 66 years (%)	0.08%	0.03%	0.05%

	ILI	PLR	PRS
Integrity and Asset Management Capabilities	4.8	4.7	2.9
Project Execution & Lifecycle Operation	2.8	3.3	4.3
Financial	1.0	5.0	2.0
Overall Score	3.1	4.5	2.8



FEI has updated the following parts of the Application to reflect the inclusion of the PRS alternative as a feasible alternative for the Salmon Arm 3 Lateral:

- Section 4;
- Appendix A;
- Appendix I;
- Confidential Appendix J-1 Stantec FEED Report and Confidential Appendix J-3 PRS Basis of Estimate; and
- Confidential Appendix N-2 Individual Financial Schedules for Salmon Arm 3 Lateral to include PRS alternative.

Additionally, FEI noted that Confidential Appendix J-3 and J-4 of the Application were inadvertently interchanged. FEI has corrected the order of Confidential Appendices J-3 and J-4 in this Evidentiary Update and Errata. No changes have been made to the content of Confidential Appendix J-4.

# 2. Errata to the financial analyses to reflect the correct allocation of "land rights" costs

In response to BCUC Confidential IR 1.2.5, FEI identified that some components of the land rights costs for a number of laterals were incorrectly allocated. The land agent fees, project management consultant fees, and administrator consultant fees for acquiring the new Right of Ways (ROWs) for laterals with PLR or ILI were estimated on a per region basis and should have been allocated among the laterals within the same region. Inadvertently, these fees were not divided amongst the laterals within the same region in the financial analyses provided in Confidential Appendix N-1 and N-2 of the Application. Instead, some laterals were allocated the full cost of the aforementioned fees for the entire region, while some laterals were allocated none of the associated cost. FEI also clarifies that part of the allocation errors in the original land rights costs were due to accounting for the aforementioned fees separately between ILI and PLR in the financial analyses, which resulted in some of the fees being double counted. As mentioned above, these fees should have been allocated based on the region where each lateral is located, and regardless of whether the alternative is ILI or PLR (e.g., there will be one land agent for multiple laterals within the same region regardless of alternatives).

FEI has corrected the allocation of land rights costs in this Errata consistent with its response to BCUC Confidential IR 1.2.5. The correction resulted in a reduction to the estimated capital cost of the Project from \$362.904 million to \$360.193 million. The reduction in the estimated capital cost is primarily due to correcting the double counting of land agent fees to all laterals within the same region. These revisions did not change the alternative evaluation for each lateral nor did they change the selection of the preferred alternative. Please refer to FEI's response to BCUC Confidential IR 1.2.5 for the correct land rights costs for all laterals with ILI or PLR as the preferred alternative.

As part of this Errata, FEI has updated the following parts of the Application:



- Sections 1, 4, 5, and 6;
- Appendix A, to include the updated financial analyses;
- Appendix I, to include the updated financial scores;
- Confidential Appendix N-1 Aggregated Financial Schedules and N-2 Individual Financial Schedules; and
- Confidential Appendix J-1 Stantec FEED Report.

### 3. Errata to the financial analyses for laterals with the PLR alternative to include the debit of retirement costs in the opening balance of accumulated depreciation

In the response to BCUC IR 1.21.2, FEI identified that the Financial Analyses submitted for PLR in Confidential Appendices N-1 and N-2 of the Application included the retirement cost as a credit to the opening balance of the Plant; however, the debit of the same amount in the retirement to the opening balance of accumulated depreciation was inadvertently omitted. FEI has corrected the opening balance of accumulated depreciation for the financial analyses of all PLR alternatives in Confidential Appendix N-1 and N-2 to include the debit of the retirement costs with this Errata. FEI notes this update does not change the estimated capital cost of the IGU Project and did not change the selection of the preferred alternatives for any of the laterals.

In addition to updating Confidential Appendix N-1 and N-2, FEI updated the following parts of the Application for this errata:

- Section 1, 4, 5, and 6;
- Appendix A, to include the updated financial analyses of laterals with a PLR alternative; and
- Appendix I, to include the updated financial scores.

# 4. Errata to reflect the correct number of restrictive elbows/bends that were included in Stantec's Base Estimate

In response to CEC Confidential IR 1.9.1.1, FEI identified a typographical error in the number of restrictive elbows/bends noted in Section 5.3.4.3, page 69, of the Application. The Stantec cost estimate for the ILI component of the IGU Project was developed with the correct assumption of 180 restrictive elbows/bends. FEI has corrected Section 5.3.4.3 of the Application with this Errata.

### 5. Errata to reflect the correct number of industrial customers for Cariboo Pulp Lateral 168, BC Forest Products Lateral 168, and Elkview Lateral 168 in Appendix A

In response to CEC IR 1.31.1, FEI identified a typographical error in in the number of industrial customers identified for the Cariboo Pulp Lateral 168 in Section 1.1.11 of



Appendix A. FEI has since identified two similar typographical errors for the BC Forest Products Lateral 168 described in Section 1.1.3 and the Elkview Lateral 168 described in Section 1.1.23 of Appendix A where the number of industrial customers was incorrectly shown as being "n/a". With this Errata, the number of industrial customers has been updated to "1" in the tables included in Sections 1.1.3, 1.1.11 and 1.1.23 of Appendix A.

### 6. Errata to Appendix I to correct errors in tables

In response to CEC IR 1.32.2, FEI identified an error in the table under tab "2. Definitions" of Appendix I. The PV of incremental revenue requirement analysis for the IGU Project was determined based on a 66-year analysis period, not a 50-year analysis period. All financial analyses included in Confidential Appendix N-1 and N-2 were based on a 66-year analysis period. FEI has corrected the table under tab "2. Definitions" of Appendix I with this Errata.

While preparing this errata FEI also noted three errors in the table under tab "6. Summary (Financial)" in Appendix I. The errors are:

- The financial score for Mackenzie Loop 168 PLR alternative should have been 1 instead of 2;
- The financial score for Coldstream lateral 219 PLR alternative should have been 2 instead of 3; and
- The financial score for Kelowna 1 Loop 219 PLR alternative should have been 2 instead of 3.

FEI updated Appendix I and Confidential Appendix J-1 Stantec FEED Report, Appendix C.1 Alternative Evaluation Summaries for these errata. These errata were accounted for in, did not change, the alternative evaluation for the laterals and did not change the selection of the preferred alternative.

Lastly, FEI noted that Project Execution and Lifecycle pages were inadvertently cut off during the compilation of the PDF for Appendix I. As such, FEI has re-filed the entire Appendix I as part of this errata.

# 7. Errata to correct typographical errors and make clarifying edits to Appendices J-1 Stantec FEED Report and J-3 PRS Basis of Estimate for clarity

When making changes to Appendices J-1 Stantec FEED Reports and J-3 PRS Basis of Estimate to address items 1, 2 and 6 above, Stantec took the opportunity to make editorial changes to address typographical errors and improve clarity. For ease of review, the revisions Stantec made to their FEED Report and the PRS Basis of Estimate have been identified in red and by triangle margin markers.

Attached are black-lined and clean versions (where appropriate) of the following parts of the Application.

April 5, 2019 British Columbia Utilities Commission FEI Inland Gas Upgrades Project CPCN Application Evidentiary Update and Errata dated April 5, 2019 Page 6



Description	Revised Pages
Application	Pages 1, 2, 8, 9, 27, 28, 39, 43, 44, 45, 47, 66, 67, 69, 83, 84, 85, 86, 87, 88.
Appendix A – Detailed Description of 29 Laterals	All pages. (Blacklined and Clean versions provided)
Appendix I – Detailed Evaluation of Alternatives	All pages.
Appendix J-1 – Stantec FEED Report Documents CONFIDENTIAL	All pages.
Appendix J-3 – Stantec PRS Basis of Estimate CONFIDENTIAL	All pages.
Appendix N-1 – Aggregated Financial Schedules CONFIDENTIAL	All pages.
Appendix N-2 – Individual Financial Schedules CONFIDENTIAL	All pages.

If further information is required, please contact the undersigned.

Sincerely,

### FORTISBC ENERGY INC.

### Original signed:

**Doug Slater** 

Attachments

cc (email only): Registered Parties

FORTISBC ENERGY INC. INLAND GAS UPGRADES CPCN APPLICATION

## 🥳 FORTIS BC<sup>~</sup>

### 1 1. APPLICATION

### 2 1.1 APPROVALS SOUGHT

FortisBC Energy Inc. (the Company or FEI), applies to the British Columbia Utilities Commission (BCUC) for a Certificate of Public Convenience and Necessity (CPCN) for its Inland Gas Upgrades Project (IGU Project or Project) (the Application) pursuant to sections 45 and 46 of the *Utilities Commission Act* (the Act). The IGU Project will implement the most cost-effective integrity management solutions to mitigate the potential for rupture failure on 29 laterals in the interior region of BC as described in the Application, at an estimated capital cost of \$<u>360.193</u>

9 million<sup>1</sup> and over a six-year Project period between 2019 and 2024.

FEI is also seeking approval of a deferral account, entitled the "IGU Application and Preliminary Stage Development Costs Deferral Account", pursuant to section 59 to 61 of the Act. This new deferral account is required to capture the costs of preparing the Application and the costs of preliminary stage development of the IGU Project. The net-of-tax balance of the total application and preliminary stage development cost is \$0.991 million. The total Project Cost, including the capital costs as well as the application and preliminary stage development costs, is \$361.184 million.

A draft Procedural Order and draft Final Order are included in Appendix T-1 and T-2respectively.

### 19 1.1.1 CPCN for IGU Project

The IGU Project is needed to mitigate the potential for rupture failure due to corrosion on 29 20 21 transmission pipeline laterals on FEI's system that were constructed between 1957 and 1998, have a nominal pipe size (NPS) 6 or greater, operate as transmission<sup>2</sup> pipelines and are not 22 23 capable of being in-line inspected (referred to in this Application as the 29 Transmission Laterals). FEI owns and operates approximately 3 thousand kilometres of transmission pressure 24 25 (TP) pipelines in the province of British Columbia. The 29 Transmission Laterals collectively 26 make up approximately 410 kilometres of pipe length. Because the 29 Transmission Laterals 27 operate at transmission operating stress levels, there is a potential that corrosion in these 28 pipelines, if left undetected, could result in rupture. FEI's current method of integrity verification 29 for these laterals, Modified External Corrosion Direct Assessment (ECDA), will not detect active 30 corrosion under circumstances found on FEI's system and therefore it is not an acceptable 31 solution over the long term. As such, FEI is proposing alternate integrity management solutions 32 that will mitigate the potential for rupture due to corrosion on the 29 Transmission Laterals.

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<sup>&</sup>lt;sup>1</sup> Cost estimate in as-spent dollars, including Allowance for Funds Used During Construction (AFUDC) and cost of removal.

<sup>&</sup>lt;sup>2</sup> Transmission pipelines operate as transmission operating stress levels of 30% or more of of the specified minimum yield strength (SMYS) of the pipe.

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1 The IGU Project will construct assets or retrofit existing assets to implement cost-effective 2 integrity management solutions for each lateral. Specifically, the IGU Project will:

- Retrofit 11 laterals to provide in-line-inspection<sup>3</sup> (ILI) capability (which mitigates approximately 310 kilometres of pipe length);
- Construct pressure regulating stations on 14 laterals to reduce the maximum operating
   pressure and resulting operating stress to below 30 percent of the specified minimum
   yield strength (SMYS) of the pipe (which mitigates approximately 90 kilometres of pipe
   length); and
- Replace 4 laterals with new pipe designed to operate at a stress below 30 percent of the
   SMYS of the pipe (which mitigates approximately 9 kilometres of pipe length).
- 12 A detailed description of the 29 Transmission Laterals is provided in Appendix A of the 13 Application.

Based on the Project construction schedule and an estimated total Project cost of \$361.184 million<sup>4</sup>, the total delivery rate impact of the Project is estimated to be <u>4.3</u> percent over six years from 2020 to 2025. Since the Project will be completed in phases over six years, there will be a delivery rate impact annually for the portion of the Project that is completed each year. The average rate impact is approximately <u>0.7</u> percent per year or \$0.029 per GJ annually from 2020 to 2025. For a typical FEI residential customer consuming an average of 90 GJ per year,

this equates an approximate average increase of \$2.61 annually over the six years from 2020 to
2025.

FEI submits that the IGU Project is in the public interest and requests that the BCUC grant a CPCN for its construction and operation.

# 1.1.2 IGU Application and Preliminary Stage Development Costs Deferral Account

26 FEI is also seeking approval of a deferral account, entitled the "IGU Application and Preliminary 27 Stage Development Costs Deferral Account", to capture the regulatory costs of this Application 28 and the costs expended for the purpose of evaluating the feasibility of and preliminary 29 development of the Project. The Application costs include expenses for legal review, BCUC 30 costs and BCUC approved intervener costs, and forecast costs to support the hearing process. 31 The preliminary stage development costs include expenses incurred by FEI internally as well as 32 third-party consultants for assessing the feasibility of the Project, developing and evaluating 33 preliminary design and alternatives. The IGU Application and Preliminary Stage Development 34 costs will be recorded in a non-rate base deferral account on a net-of-tax basis attracting a

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<sup>&</sup>lt;sup>3</sup> In-line inspection involves the insertion of a data collection device (commonly referred to as an ILI tool or pig) inside an operating pipeline to obtain indirect measurement of imperfections (e.g. metal loss, dents, and mechanical damage) that may adversely affect its integrity.

<sup>&</sup>lt;sup>4</sup> Cost estimate in as-spent dollars, including Allowance for Funds Used During Construction (AFUDC) and cost of removal.

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### 1 **1.2.4 Project Costs and Rate Impact**

2 The Total Cost of the Project (as-spent dollars) is \$361.184 million, which includes \$360.193

- 3 million of Project capital budget (as-spent dollars) and \$0.991 million of Project Deferral related
- 4 to the Application and Preliminary Stage Development Costs. The total delivery rate impact of
- 5 the Project is <u>4.3</u> percent or \$<u>0.174</u> per GJ over 6 years from 2020 to 2025.

6 The following table summarizes the total forecast capital and deferred costs for the Project.

### Table 1-2: Summary of Forecast Capital Budget and Deferred Costs (\$millions)

	2018 \$	As-Spent \$	AFUDC	Tax Offset	TOTAL
Type of Preferred Option					
In-line Inspection (ILI) - 11 Laterals	240.227	257.065	10.864	-	267.929
Pipeline Replacement (PLR) - 4 Laterals	26.948	28.855	1.252	-	30.107
Pressure Regulating Station (PRS) - 14 Laterals	53.388	58.635	3.197	-	61.831
Total Addition to Plant - Total 29 Laterals	320.563	344.555	15.313	-	359.868
Abandonment/Demolition Cost	0.290	0.311	0.014	-	0.325
Subtotal - Project Capital Budget	320.853	344.866	15.327	-	360.193
IGU Project Application Cost	0.390	0.390	0.008	(0.105)	0.293
IGU Project Preliminary Stage Development Cost	0.931	0.931	0.019	(0.251)	0.698
Subtotal - Project Deferral Cost	1.321	1.321	0.027	(0.357)	0.991
TOTAL Project Cost	322.174	346.187	15.354	(0.357)	361.184

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	Type of Preferred Option
	In-line Inspection (ILI) - 11 Laterals
	Pipeline Replacement (PLR) - 4 Lateral
	Pressure Regulating Station (PRS) - 14
	Total Addition to Plant - Total 29 Laterals
	Abandonment/Demolition Cost
	Subtotal - Project Capital Budget
	IGU Project Application Cost
	IGU Project Preliminary Stage Developme
	Subtotal - Project Deferral Cost
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9 The Project is planned to be completed in phases over six years from 2019 to 2024. The table 10 below summarizes the associated amount of the total Project capital costs that will be

11 completed in each year over the duration of the Project. Refer to the Section 5.4 of the

12 Application for more detail related to the Project's construction and operating schedule.

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### Table 1-3: Amount of Project Capital Complete and in-service from 2019-2024 (\$ millions)

		Project complete and in-service each year, 2019-2024 (\$ millions) (To be transfer to Rate Base January 1 of each following year)							
		2019	2020	2021	2022	2023	2024	TOTAL	
Ir	n-line Inspection (ILI) - 11 Laterals	-	49.626	76.884	66.351	52.003	23.123	267.987	
Ρ	Pipeline Replacement (PLR) - 4 Laterals	-	-	10.957	17.750	1.668	-	30,375	
Ρ	Pressure Regulating Station (PRS) - 14 Laterals	-	-	-	14.979	20.859	25.993	61.831	
C	Overall Project Capital Budget In-Service		49.626	87.841	<i>99.079</i>	74.530	49.117	360.193	
14 🖸	Overall Project % In-Service	0%	14%	24%	28%	21%	14%	100%	

In-line Inspection (ILI) - 11 Laterals Pipeline Replacement (PLR) - 4 Laterals Pressure Regulating Station (PRS) - 14 Laterals *Overall Project Capital Budget In-Service* **Deleted:** Overall Project % In-Service

As the Project is planned to be completed and placed into in-service in phases, there will be an annual delivery rate impact. The estimated annual revenue requirement of the Project and the resulting annual delivery rate impacts from 2020 to 2025, when compared to the currently approved 2018 delivery rates, are shown in the table below. The amount of the Project capital cost to be placed in-service each year as shown in Table 1-4 above will be transferred to rate base on January 1 of each following year; therefore, the delivery rate impact will occur in the following year of each in-service year.

SECTION 1: APPLICATION

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### Table 1-4: Percent Rate Impact annually from 2020 to 2025

		2020	2021	2022	2023	2024	202		
	Annual Revenue Requirement, Incremental to 2018 Approved, Non-Bypass (\$ millions)	(0.156)	2.823	9.828	19.189	28.298	34.1		Annual Revenue Requirement, Incremental to 2018 Ar
	% Increase to 2018 Approved Revenue Requirement, Non-Bypass (G-196-17)	(0.02%)	0.36%	1.24%	2.41%	3.56%	4.3		% Increase to 2018 Approved Revenue Requirement, No
2	Incremental % Rate Impact (Year-over-Year)	(0.02%)	0.37%	0.88%	1.16%	1.12%	0.7		
- 1								Deleted	Incremental % Rate Impact (Year-over-Year)

The Project will result in a delivery rate impact of <u>4.3</u> percent, when compared to currently approved 2018 delivery rates, over six years from 2020 to 2025. Since the Project will be completed in phases, the average delivery rate impact per year for the duration of the Project is approximately <u>0.7</u> percent or \$0.029 per GJ annually. For a typical FEI residential customer consuming 90 GJ per year, this would equate to approximately an average increase of \$<u>2.61</u>

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8	per ۱	year	over	the	SIX	years.

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### 9 1.2.5 Environmental and Archaeological Evaluation

An Environmental overview assessment (EOA) and an archaeological overview assessment
 (AOA) were completed to identify areas of environmental and archaeological sensitivities,
 potential Project interactions, the need for further investigations prior to construction, and
 associated permitting requirements.

Based on the EOA, the environmental risk of the Project is low and any potential environmental
 impacts from the Project can be mitigated through the application of standard environmental
 protection and mitigation measures.

17 The AOA concluded that the majority of the expected Project footprint is considered to have low 18 archaeological potential due to the amount of previous disturbance. An Archaeological Impact 19 Assessments (AIA) has been recommended for ground disturbance activities in areas identified 20 as moderate or high potential through the AOA process.

FEI will complete AIAs where soil-disturbing activities are expected to take place in areas identified as moderate or high archaeological potential in the AOA. The environmental and archaeological requirements for the Project will continue to be refined and lateral-specific plans will be developed during the detailed design phase. Project works will adhere to best practices and environmental permits will be obtained where appropriate.

### 26 1.2.6 Consultation and Engagement

Consultation, engagement and communication with the public, local government, Indigenous
 communities and other stakeholders was a critical component in the development of FEI's IGU
 Project.

30 FEI has sent out notifications to potentially directly affected customers and stakeholders through

31 letters, bill inserts and advertisements. FEI has also held numerous one-on-one meetings with

government authorities and responded to requests for further information. To date, no significantconcerns have been raised with regard to the Project.

SECTION 1: APPLICATION

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FORTISBC ENERGY INC. INLAND GAS UPGRADES APPLICATION



### 1 4. DESCRIPTION AND EVALUATION OF ALTERNATIVES

### 2 **4.1** *INTRODUCTION*

FEI analysed 7 alternative integrity management solutions that could meet the Project's
 objective to mitigate the potential for rupture failure due to corrosion on the 29 Transmission
 Laterals.

6 These are:

- 7 1. Status Quo: Modified External Corrosion Direct Assessment (Modified ECDA);
- 8 2. Pipeline exposure and re-coat (PLE);
- 9 3. Hydrostatic testing program (HSTP);
- 10 4. Pressure regulating station (PRS);
- 11 5. In-line inspection (ILI);
- 12 6. Pipeline replacement (PLR); and
- 13 7. Robotic Inspection (ROB).

FEI evaluated the alternatives using a weighted scoring system based on three criteria: (1) Integrity and Asset Management Capability; (2) Project Execution and Lifecycle Operation; and (3) Financial. The alternative with the highest evaluated score was selected, except in cases where the scoring system produced similar results or where the highest scoring alternative was not the lowest cost, in which case FEI used subject matter experts to validate the scores and select a preferred alternative.

21 The status quo alternative was rejected because it does not meet the Project's objective of 22 mitigating the potential for rupture failure due to corrosion. FEI rejected ROB as it is not 23 considered proven and commercialized at this time. FEI also rejected the PLE and HSTP 24 alternatives as not feasible due to a combination of lack of integrity management benefits, 25 higher cost, and the disruption of service to customers. For some laterals, PRS was rejected in 26 favour of other alternatives due to capacity limitations of some systems. In some cases, PLR 27 was rejected in favor of other alternatives when the laterals were longer than 4.0 kilometres due 28 to higher cost.

29 The results of the analysis of the remaining three feasible alternatives are summarized as 30 follows:

PRS Chosen Where Viable: Where PRS was viable, it was chosen as the preferred alternative for all laterals except for <u>two</u> because it met the objective of the Project at the lowest cost and rate impact, and with limited ground disturbance and public impacts.
 The installation of a PRS was not viable for some laterals due to capacity limitations, which would cause the PRS to impact existing firm customers or interruptible customer

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SECTION 4: ALTERNATIVES EVALUATION





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- operations or prevent new additions of new customers to the lateral. In the <u>two cases</u>
   where PRS was viable but not selected as the preferred alternative, PLR was chosen
   because it had a higher overall score, was financially comparable <u>or more cost effective</u>
   and offered better integrity and asset management capability benefits.
- ILI More Cost Effective for Longer Laterals: Where PRS was not viable, ILI was
   selected for longer laterals due to a lower cost and rate impact, and better proactive
   asset management capability. For the longer laterals, PLR had a much higher capital
   Project cost and resulted in a higher rate impact when compared to ILI for the same
   lateral.
- PLR for Shorter Laterals: For the shorter laterals, PLR was selected as the preferred alternative for all cases except for one because it met the objective of the Project at the lowest cost and rate impact. For the case where PLR was not selected, PRS was selected because it has a lower capital cost and resulted in minimal ground disturbance.

The remainder of this section describes FEI's alternatives analysis in more detail including a description of each of the alternatives, the evaluation criteria and methodology, the screening process, and the alternatives analysis for each of the 29 Transmission Laterals.

### 18 4.2 ALTERNATIVES DESCRIPTION

FEI considered seven alternatives for evaluation that are available to pipeline operators to mitigate the potential for rupture due to corrosion and that have been applied with varying frequency by Canadian pipeline operators. These are:

- 22 1. Status Quo: Modified External Corrosion Direct Assessment (Modified ECDA);
- 23 2. Pipeline exposure and re-coat (PLE);
- 24 3. Hydrostatic testing program (HSTP);
- 25 4. Pressure regulating station (PRS);
- 26 5. In-line inspection (ILI);

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- 27 6. Pipeline replacement (PLR); and
- 28 7. Robotic Inspection (ROB).

### 29 4.2.1 Status Quo: Modified ECDA Alternative

This alternative involves continued use of Modified ECDA to mitigate the potential for failure due
 to corrosion. ECDA is a process for managing external corrosion, published as standard
 ANSI/NACE SP0502-2010 "Standard Practice Pipeline External Corrosion Direct Assessment
 Methodology" (Appendix G).<sup>18</sup>

SECTION 4: ALTERNATIVES EVALUATION

<sup>&</sup>lt;sup>18</sup> Available online at: <u>https://www.nace.org/uploadedFiles/Corrosion\_Central/Industries/SP050208PHMSA.pdf.</u>

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1 Status Quo was screened out on a technical basis and was not considered further in the 2 evaluation process.

### 3 4.4.2 Robotic Inspection (ROB) Screened Out Based on Readiness

4 At this time, FEI does not consider robotic ILI tools to be proven and commercialized. The 5 technology is not available for pipe sizes of NPS 6 (168mm) and FEI is only aware of a single 6 vendor providing this service for larger pipe sizes. As described in Section 4.2.7, the batteries 7 require recharging approximately every 450 metres. The required excavations at each recharge 8 point each and every time the robotic tool is run is not desirable from a lifecycle operation 9 perspective in terms of impact to the environment, Indigenous communities, and stakeholders.

As a result, the ROB alternative was screened out as not feasible and was not consideredfurther in the evaluation process.

# 4.4.3 Pressure Regulating Station (PRS) Screened Out for Some Laterals Based on Capacity Limitations

PRS was not viable for some laterals due to capacity limitations of some systems. By reducing the operating pressure of the pipeline, the capacity available to customers will change. Laterals where a PRS would impact existing firm customers or interruptible customer operations or prevent new additions of new customers to the lateral were not considered candidates for the PRS alternative. Below in Table 4-5 are the 29 Transmission Laterals and their PRS feasibility.

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### Table 4-5: Feasibility of PRS for the 29 Transmission Laterals

Line/Loop Full Name	PRS Feasibility
Mackenzie Lateral 168	Not Feasible
Mackenzie Loop 168	Not Feasible
BC Forest Products Lateral 168	Feasible
Prince George 3 Lateral 219	Feasible
Northwood Pulp Lateral 168	Feasible
Northwood Pulp Loop 219	Feasible
Prince George 1 Lateral 168	Not Feasible
Prince George Pulp Lateral 168	Feasible
Husky Oil Lateral 168	Feasible
Prince George 2 Lateral 219	Feasible
Cariboo Pulp Lateral 168	Feasible
Williams Lake Loop 1 and 2 168	Feasible
Kamloops 1 Lateral/Loop 168	Not Feasible
Salmon Arm Loop 168	Not Feasible
Salmon Arm 3 Lateral 168	Feasible

SECTION 4: ALTERNATIVES EVALUATION

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Initially, high level cost estimates were used to screen out technically feasible alternatives that 1 2 were cost prohibitive and therefore considered to be not financially feasible<sup>25</sup>. Based on the 3 high level cost estimates for the PLE alternative as shown below in Table 4-7, it is clear that the

4 cost of the PLE alternative is either higher or comparable to other alternatives that were able to

5 provide better integrity and asset management capabilities. FEI therefore did not pursue the

6 PLE alternative further in the evaluation process.

### Table 4-7: High Level Cost Comparison of PLE to Other Alternatives (2018\$)

Lateral	ILI (\$ millions)	PLR (\$ millions)	PRS (\$ millions)	PLE (\$ millions)
BC Forest Products Lateral 168	6.7	<u>2.6</u>	3.7	4.2
Cariboo Pulp Lateral 168	5.1	<u>4.0</u>	3.4	6.1
Kamloops Lateral/Loop 168	11.2	<u>_11.6</u>	N/A*	26.5
Salmon Arm 3 Lateral 168	5.1	<u>3.0</u>	<u>3.5</u>	4.6

8 \*PRS was not feasible for this lateral and as a result, no cost estimate was developed.

9 High level cost estimates were completed for HSTP for the five laterals for which it was a 10 technically feasible alternative, as shown below in Table 4-8. The hydrostatic tests would be 11 repeated every five to ten years, and in this case, the HSTP costs assumed a test frequency of 12 every seven years over a 66-year period. As shown below, the HSTP alternative was cost 13 prohibitive when compared to other alternatives that were either equal or superior in their 14 technical performance. The cost of LNG supplementation for the industrial customers is cost 15 prohibitive even for the BC Forest Products and Elkview Laterals which are two shorter single 16 feed, un-looped laterals. As a result, FEI did not pursue the HSTP alternative further in the

17 evaluation process.

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### Table 4-8: High Level Cost Comparison of HSTP to Other Alternatives (2018\$)

Lateral	ILI (\$ millions)	PLR (\$ millions)	PRS (\$ millions)	HSTP (\$ millions)		
BC Forest Products Lateral 168	6.7	<u>2.6</u>	3.7	36.0		Deleted: 3.3
Elkview Lateral 168	5.5	4.5	3.5	27.3	]	
Cranbrook Lateral 168	<u>9.8</u>	79.8	N/A*	20.0		Deleted: 10.6
Cranbrook Loop 219	<u>9.2</u>	79.8	N/A*	51.5		Deleted: 9.1
Cranbrook Kimberley Loop 219	<u>4.9</u>	15.7	N/A*	10.1		Deleted: 4.8

19 \*PRS was not feasible for these laterals and as a result, no cost estimate was developed.

20 The PLR alternative for some of the longer laterals was also considered to be cost prohibitive 21 when compared to the other technically feasible alternatives and was therefore not considered 22 to be financially feasible and was not considered further in the evaluation process for these 23

longer laterals. The high level cost estimates are shown below in Table 4-9.

SECTION 4: DESCRIPTION AND EVALUATION OF ALTERNATIVES

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<sup>&</sup>lt;sup>25</sup> For the alternatives that are not technically feasible, no cost estimate is provided.

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### Table 4-9: High Level Cost Comparisons of PLR to Other Alternatives for Longer Laterals (2018\$)

Lateral	ILI (\$ millions)	PRS (\$ millions)	PLR (\$ millions)	
Mackenzie Lateral 168	<u>26.8</u>	N/A*	71.7	Deleted: 27.6
Mackenzie Loop 168	<u>_15.6</u>	N/A*	35.6	 Deleted: 15.4
Prince George 3 Lateral 219	8.2	1.2	20.9	
Northwood Pulp Lateral 168	8.5	1.2	23.4	
Northwood Pulp Loop 219	8.0	1.2	22.8	
Prince George 1 Lateral 168	<u>8.3</u>	N/A*	18.4	Deleted: 8.2
Prince George 2 Lateral 219	8.6	3.5	27.1	
Williams Lake Loop 1 168	3.8	1.7	13.2	
Williams Lake Loop 2 168	5.4	1.7	9.8	
Salmon Arm Loop 168	<u>_18.9</u>	N/A*	105.4	 Deleted: 19.7
Coldstream Loop 168	8.3	3.4	14.7	
Kelowna 1 Loop 219	8.3	4.0	8.2	
Celgar Lateral 168	6.7	3.5	22.6	
Castlegar Nelson 168	36.0	5.3	109.6	
Trail Lateral 168	12.3	3.6	20.7	
Fording Lateral 219/168	<u>64.4</u>	N/A*	186.8	Deleted: 64.0
Cranbrook Lateral 168	<u>9.8</u>	N/A*	79.8	 Deleted: 10.6
Cranbrook Loop 219	<u>9.2</u>	N/A*	79.8	 Deleted: 9.1
Cranbrook Kimberley Loop 219	<u>4.9</u>	N/A*	15.7	 Deleted: 4.8
Cranbrook Kimberley Loop 273	<u>5.5</u>	N/A*	27.6	 Deleted: 5.3
Kimberley Lateral 168	<u>_13.4</u>	N/A*	48.3	Deleted: 13.2
Skookumchuck Lateral 219	<u>4.9</u>	N/A*	84.3	Deleted: 4.7

2 \*PRS was not technically feasible for these laterals and as a result, no cost estimate was developed.

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4 For the ILI, PLR and PRS alternatives that were both financially and technically feasible, AACE

5 Class 3 estimates were developed to compare alternatives for each lateral.<sup>26</sup>

### 6 4.4.6 Summary of Technical and High Level Financial Screening

The Status Quo - Modified ECDA alternative were screened out on a technical basis because it did not achieve the Project objective to mitigate the potential for rupture due to corrosion. The Robotics alternative was also screened out on a technical basis because it is not proven technology nor commercialized. The PRS alternative was also screened out on a technical basis for the laterals where there are capacity limitations. Modified ECDA, Robotics and PRS

SECTION 4: DESCRIPTION AND EVALUATION OF ALTERNATIVES

<sup>3</sup> 

<sup>&</sup>lt;sup>26</sup> FEI developed the cost estimates for alternatives to a Class 3 level to allow for a more accurate comparison of costs.



for some laterals were not considered to be technically feasible and therefore, were not
 considered further in the evaluation process.

Both the PLE and some of the HSTP alternatives were considered to be technically acceptable but were screened out on a financial basis because they were considered to be cost prohibitive when compared to the other technically superior alternatives. The PLR alternative for some of the longer laterals was also screened out on a financial basis because it was cost prohibitive when compared to the other technically feasible alternatives. PLE, HSTP, and PLR for some of the longer laterals were not considered to be financially feasible and therefore, were not considered further in the evaluation process.

10 The ILI, PLR and PRS were evaluated to be technically superior to the other alternatives with ILI 11 providing the highest technical rating for each alternative<sup>27</sup>. These alternatives also presented 12 the most cost effective solutions. AACE Class 3 estimates were developed to compare the

13 remaining alternatives for each lateral.

### 14 4.5 ANALYSIS OF THREE REMAINING FEASIBLE ALTERNATIVES

FEI evaluated each of the remaining three feasible alternatives (PRS, ILI and PLR) for each lateral using the evaluation methodology described above. The following sections outline the findings of the alternative evaluation process.

### 18 4.5.1 Selection of PRS Where Viable

For the laterals for which PRS was viable, PRS was chosen as the preferred alternative in all cases except for <u>two</u> because of the ability of this alternative to meet the objectives of the Project at the lowest cost, with the added benefit of limited ground disturbance and community impacts. PRS was generally the lowest cost alternative. For Project Execution and Lifecycle Operation, PRS scored from 4.3 to 4.6, compared to 2.8 to 3.7 for ILI and PLR. As a result, PRS was selected as the preferred alternative for all of the laterals where PRS was viable except for one.

26 In the two cases where PRS was viable but not selected as the preferred alternative, PLR was

chosen as PLR had a higher overall score, was financially comparable<u>or more cost effective</u> to PRS, with better integrity and asset management capability benefits. FEI's internal subject matter experts also recommended PLR over PRS in this case, in alignment with the overall scoring.

### 31 4.5.2 ILI More Cost Effective for Longer Pipelines

Where PRS was not feasible, ILI and PLR were compared to determine the best solution. For most laterals, ILI and PLR both scored comparably under the technical criteria of preventing rupture and leaks; however, ILI has an advantage of providing better proactive asset management capability. The ILI and PLR alternatives also had comparable Project execution

SECTION 4: DESCRIPTION AND EVALUATION OF ALTERNATIVES

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<sup>&</sup>lt;sup>27</sup> Detailed technical scores for ILI, PRS and PLR are provided in Appendix I.



1 2 Table 4-10: Preferred Alternative for Each Lateral and Present Value of Incremental Revenue Requirement over 66-years of Analysis Period

		ILI	PLR	PRS	
	Length	Present Value	Present Value	Present Value	Preferred
Lateral	(kilometres)	(\$ millions)	(\$ millions)	(\$ millions)	Alternatives
Mackenzie Lateral 168	28.7	44.7	-	-	ILI
Mackenzie Loop 168	14.2	25.2	-	-	ILI
BC Forest Products Lateral 168	0.5	12.6	3.5	7.0	PLR
Prince George 3 Lateral 219	5.3	14.3	-	2.2	PRS
Northwood Pulp Lateral 168	6.0	15.4	-	2.2	PRS
Northwood Pulp Loop 219	5.8	14.1	-	2.2	PRS
Prince George #1 Ltl 168	4.7	14.4	-	-	ILI
Prince George Pulp Lateral 168	1.0	14.3	7.7	3.6	PRS
Husky Oil Lateral 168	1.1	16.4	5.6	3.6	PRS
Prince George #2 Lateral 219	8.7	15.8	-	6.3	PRS
Cariboo Pulp Lateral 168	1.3	10.5	5.5	6.5	PLR
Williams Lake Loop 168	5.9	15.7	-	6.0	PRS
Kamloops 1 Lateral & Loop 168	6.6	32.1	15.8	-	PLR
Salmon Arm Loop 168	44.9	32.6	-	-	ILI
Salmon Arm 3 Lateral	0.9	10.5	4.2	6.6	PLR
Coldstream Lat 219	1.8	13.2	9.3	5.9	PRS
Coldstream Loop 168	3.8	14.2	-	6.0	PRS
Kelowna 1 Loop 219	2.1	14.0	-	6.9	PRS
Celgar Lateral 168	5.8	11.7	-	5.9	PRS
Castlegar Nelson 168	37.4	54.2	-	9.0	PRS
Trail Lateral 168	4.2	19.0	-	5.9	PRS
Fording Lateral 219/168	79.7	102.8	-	-	ILI
Elkview Lateral 168	1.6	10.1	5.9	5.9	PRS
Cranbrook Lateral 168	34.0	21.2	-	-	ILI
Cranbrook Loop 219	34.0	20.8	-	-	ILI
Cranbrook Kimberley Loop 219	4.0	9.4	-	-	ILI
Cranbrook Kimberley Loop 273	9.4	10.9	-	-	ILI
Kimberly Lateral 168	20.6	23.5	-	-	ILI
Skookumchuck Lateral 219	35.9	14.0	-	-	ILI

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Lateral	Lengti (kilometi
Mackenzie Lateral 168	(haroniet
Mackenzie Loop 168	
BC Forest Products Lateral 168	
Prince George 3 Lateral 219	
Northwood Pulp Lateral 168	
Northwood Pulp Loop 219	
Prince George #1 Ltl 168	
Prince George Pulp Lateral 168	
Husky Oil Lateral 168	
Prince George #2 Lateral 219	
Cariboo Pulp Lateral 168	
Williams Lake Loop 168	
Kamloops 1 Lateral & Loop 168	
Salmon Arm Loop 168	
Salmon Arm 3 Lateral	
Coldstream Lat 219	
Coldstream Loop 168	
Kelowna 1 Loop 219	
Celgar Lateral 168	
Castlegar Nelson 168	
Trail Lateral 168	
Fording Lateral 219/168	
Elkview Lateral 168	
Cranbrook Lateral 168	
Cranbrook Loop 219	
Cranbrook Kimberley Loop 219	
Cranbrook Kimberley Loop 273	
Kimberly Lateral 168	
Skookumchuck Lateral 219	

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The Elkview Lateral has comparable net present values for the PLR and PRS alternatives. However, due to higher capital costs and the larger construction impact associated with a PLR installation in an industrial environment as compared to the PRS, the PRS alternative was selected.

9 The detailed evaluation of the 29 Transmission Laterals can be found in Appendix I.

### 10 4.6 CONCLUSION

In summary, the preferred alternatives for each lateral will allow FEI to achieve its main objective of mitigating the potential for failure by rupture due to corrosion. In each case, FEI has analyzed and compared the feasible alternatives and recommended the most cost effective

14 alternative taking into account relevant factors.

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1	0	Roads;
2	0	Utilities and foreign pipelines;
3	0	Watercourse;
4	0	Trenchless crossings;
5	0	Induction bends;
6	0	Launcher and receiver barrels; and
7	0	Valves.

### 8 5.3.2 Project Cost Estimate Details

The Project capital cost estimate is forecasted to be \$320.853 million in 2018 dollars or 9 \$360.193 million in as-spent dollars (including AFUDC of \$15.327 million)<sup>28</sup>. It includes 10 contingency of 17 percent as well as a management reserve of 11 percent that FEI plans to hold 11 based on the current understanding of the Project's risk profile and to account for possible 12 scope changes or unknown future events which cannot be anticipated and which were not 13 quantified in the risk register. The capital cost estimate with the management reserve 14 15 approximates a P70 confidence level and will form the Project capital budget<sup>29</sup>. Table 5-11 16 presents a summary of the Project capital budget.

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<sup>28</sup> Of the total \$360.193 million including contingency and management reserve, \$344.866 million of capital and \$15.313 million of AFUDC is charged to Gas Plant in Service; \$0.311 million abandonment/demolition costs plus \$0.014 million of AFUDC is charged to Net Salvage Deferral Account. The total AFUDC charged to Gas Plant in Service and to Net Salvage Deferral Account is \$15.327 million.

<sup>29</sup> The contingency of 17 percent of the total base capital plus the management reserve of 11 percent of the total base capital equals to the 28 percent to achieve the P70 confidence level as discussed in Section 5.3.4.3.

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SECTION 5: PROJECT DESCRIPTION

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 Table 5-11: Summary Project Capital Budget (\$ millions)<sup>30</sup>

 2018 \$ As-Spent \$

	2010 \$	As-spent ş
Construction		
Materal & Unit Price Items	49.140	52.853
Construction - Direct and Indirect	136.768	146.999
Removal/Abandonment	0.226	0.243
Property and Right of Way	12.067	12.962
Contingency - Construction	33.694	36.220
Subtotal - Construction	231.895	249.277
Engineering and Development	14.845	15.715
FEI Project Management	38.368	41.403
Contingency	8.465	9.129
Management Reserve	27.279	29.343
Subtotal (incl. Construction)	320.853	344.866
AFUDC	-	15.327
TOTAL Project Capital Budget	320.853	360.193

# ConstructionMateral & Unit Price ItemsConstruction - Direct and IndirectRemoval/AbandonmentProperty and Right of WayContingency - ConstructionSubtotal - ConstructionSubtotal - ConstructionEngineering and DevelopmentFEI Project ManagementContingencyManagement ReserveSubtotal (incl. Construction)AFUDCDeleted:

### 3 5.3.2.1 Escalation

4 All cost estimates, including material supply and construction contracts, were developed based 5 on 2018 market prices. An inflation escalation rate of 2.0 percent per annum is used based on

6 the current forecast of BC CPI (July 2018) for both the as-spent capital cost estimates and the

7 60-year financial analysis.

### 8 5.3.2.2 GST and PST

9 The cost estimate excludes GST but includes 7 percent PST on materials. FEI, as a GST
10 registrant, is entitled to recover the GST it pays on its taxable purchases. As such, the tax does
11 not represent a net cost to FEI.

### 12 5.3.3 Cost Estimate Validation

13 Cost estimate quality assurance and validation were completed as follows:

- Internal Stantec reviews that included peer reviews, document quality checks, and
   independent review;
- Validation reviews involving both Stantec and FEI team members throughout the
   estimate development process to confirm that the estimate assumptions were valid;
- External independent review to verify that the estimate criteria and requirements were
   met and a documented, reasonable estimate was developed; and

SECTION 5: PROJECT DESCRIPTION

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<sup>&</sup>lt;sup>30</sup> Excludes Project deferral costs discussed in Section 6.3.3. Including the Project deferral cost, the total Project Cost is estimated to \$361.184 million in as-spent dollars.

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The risk likelihood and consequence scales used for the Project are based on the 5 by 5 risk assessment matrix recommended in AACE 62R-11 which is illustrated in Figure 5-2.

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### Figure 5-2: Risk Assessment Matrix



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### 6 5.3.4.2 Risk Register, Qualitative Assessment and Action Plan

7 The risk identification process identified a number of risks which were tabulated in the risk 8 register included in Appendix A to Stantec's Risk Report (Confidential Appendix L-1). The risk 9 response actions to deal with the identified risks were also recorded in the risk register. Once 10 the risks were identified, a qualitative analysis was completed to prioritize or rank the risks so 11 that the Project team could focus on risk response actions and recommendations. Through this 12 qualitative process, a likelihood and consequence rating was assigned to each identified risk 13 using the risk assessment matrix noted above.

### 14 5.3.4.3 Quantitative Risk Analysis and Contingency

Following the completion of the risk register a quantitative analysis using Monte Carlo Simulation was completed by Stantec to determine a distribution of possible cost outcomes associated with the existing scope of the Project at different levels of confidence. The Stantec analysis derived a risk adjusted P50 cost of \$279 million representing a contingency of approximately 14.4%. Please refer to Confidential Appendix N-1 for further details on Stantec's methodology and results.

21 The Stantec cost estimate for the ILI component of the Project was developed assuming 22 approximately <u>180</u> restrictive bends. The number of restrictive bends was determined by 23 selecting a representative sample for some laterals and conducting above ground surveys 24 (using line locating tools) and some sub-surface surveys. The surveys identified locations that 25 were either an obstruction or not. Due to the limited capability of the investigations to quantify 26 the most likely quantity of restrictive bends, FEI engaged Bramcon, an engineering and project 27 management company, to undertake a simulation to assist in establishing the most likely 28 number of bends.

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### 1 6. PROJECT COSTS, ACCOUNTING TREATMENT AND RATE 2 IMPACT

### 3 6.1 INTRODUCTION

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The total cost estimate of the IGU Project is \$<u>361.184</u> million (as-spent) which includes \$<u>360.193</u> million (as-spent) of capital costs that forms the Project capital budget and \$0.991 million (as-spent) of Project deferral costs. This section provides a breakdown of the Project cost by lateral, summarizes financial analysis and details the accounting treatment and rate impact. Also sets out below, FEI is requesting approval of deferral treatment of the Application and Preliminary Stage Development Costs for the Project.

### 10 6.2 SUMMARY OF PROJECT COSTS AND INCREMENTAL COST OF SERVICE

11 Table 6-1 summarizes the estimated total Project cost including the Project capital budget and the Project deferral cost in 2018 and as-spent dollars. The Project capital budget in 2018 12 13 dollars includes PST on the materials, contingency and management reserve. The Project 14 capital budget in as-spent dollars is based on an annual inflation forecast of two percent as discussed in Section 5.3.2.1 of the Application and the construction schedule in Section 5.4 of 15 the Application. As discussed in Section 5.3.2 of the Application, the total Project capital budget 16 17 estimate includes a contingency of 17 percent and a management reserve of 11 percent which together will provide a total Project capital budget that approximates a P70 confidence level. 18

### Table 6-1: Total Project Cost: Summary of Forecast Capital and Deferred Costs (\$millions)

	2018 \$	As-Spent \$	AFUDC	Tax Offset	TOTAL
Type of Preferred Option					
In-line Inspection (ILI) - 11 Laterals	240.227	257.065	10.864	-	267.929
Pipeline Replacement (PLR) - 4 Laterals	26.948	28.855	1.252	-	30.107
Pressure Regulating Station (PRS) - 14 Laterals	53.388	58.635	3.197	-	61.831
Total Addition to Plant - Total 29 Laterals	320.563	344.555	15.313	-	359.868
Abandonment/Demolition Cost	0.290	0.311	0.014	-	0.325
Subtotal - Project Capital Budget	320.853	344.866	15.327	-	360.193
IGU Project Application Cost	0.390	0.390	0.008	(0.105)	0.293
IGU Project Preliminary Stage Development Cost	0.931	0.931	0.019	(0.251)	0.698
Subtotal - Project Deferral Cost	1.321	1.321	0.027	(0.357)	0.991
TOTAL Project Cost	322.174	346.187	15.354	(0.357)	361.184

21 The Project consists of construction to enable ILI for 11 laterals, PLR for four laterals, and PRS 22 for 14 laterals. Table 6-2 below provides the breakdown of the Project capital costs (excluding 23 Project deferral costs) by the 29 Transmission Laterals. 

 Type of Preferred Option

 In-line Inspection (ILI) - 11 Laterals

 Pipeline Replacement (PLR) - 4 Lateral

 Pressure Regulating Station (PRS) - 14

 Total Addition to Plant - Total 29 Laterals

 Abandonment/Demolition Cost

 Subtotal - Project Capital Budget

 IGU Project Application Cost

 IGU Project Preliminary Stage Developme

 Subtotal - Project Deferral Cost

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SECTION 6: PROJECT COSTS, ACCOUNTING TREATMENT AND RATE IMPACT

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Ref Lateral	2018 \$	As-Spent \$
In-line Inspection (ILI) - 11 Laterals		
1 Mackenzie Lateral 168	35.048	38.024
2 Mackenzie Loop 168	20.291	22.700
7 Prince George #1 Lateral 168	10.793	12.241
14 Salmon Arm Loop 168	25.332	29.241
22.1 Fording Lateral 219	49.544	55.207
22.2 Fording Lateral 168	34.847	39.010
24 Cranbrook Lateral 168	13.373	14.554
25 Cranbrook Loop 219	12.661	13.806
26 Cranbrook Kimberley Loop 219	6.391	7.032
27 Cranbrook Kimberley Loop 273	7.250	8.156
28 Kimberly Lateral 168	17.616	19.839
29 Skookumchuck Lateral 219	7.133	8.177
Subtotal - ILI	240.278	267.987
Pipeline Replacement (PLR) - 4 Laterals		
3 BC Forest Products Lateral 168	3.277	3.612
11 Cariboo Pulp Lateral 168	5.076	5.595
13 Kamloops 1 Lateral & Loop 168	14.941	16.877
15 Salmon Arm 3 Lateral	3.892	4.290
Subtotal - PLR	27.187	30.375
Pressure Regulating Station (PRS) - 14 Laterals		
4 Prince George 3 Lateral 219	1.547	1.753
5 Northwood Pulp Lateral 168	1.553	1.760
6 Northwood Pulp Loop 219	1.551	1.758
8 Prince George Pulp Lateral 168	2.596	2.938
9 Husky Oil Lateral 168	2.597	2.939
10 Prince George #2 Lateral 219	4.555	5.157
12 Williams Lake Loop 168	4.387	5.066
16 Coldstream Lat 219	4.358	5.029
17 Coldstream Loop 168	4.420	5.102
18 Kelowna 1 Loop 219	5.105	5.891
19 Celgar Lateral 168	4.564	5.376
20 Castlegar Nelson 168	7.051	8.343
21 Trail Lateral 168	4.585	5.399
23 Elkview Lateral 168	4.520	5.319
Subtotal - PRS	53.388	61.831
TOTAL Project Capital Budget	320.853	360.193

	Ref Lateral
	In-line Inspection (ILI) - 11 Laterals
	1 Mackenzie Lateral 168
	2 Mackenzie Loop 168
	7 Prince George #1 Lateral 168
	14 Salmon Arm Loop 168
	22.1 Fording Lateral 219
	22.2 Fording Lateral 168
	24 Cranbrook Lateral 168
	25 Cranbrook Loop 219
	26 Cranbrook Kimberley Loop 219
	27 Cranbrook Kimberley Loop 273
	28 Kimberly Lateral 168
	29 Skookumchuck Lateral 219
	Subtotal - ILI
	Pipeline Replacement (PLR) - 4 Laterals
	3 BC Forest Products Lateral 168
	11 Cariboo Pulp Lateral 168
	13 Kamloops 1 Lateral & Loop 168
	15 Salmon Arm 3 Lateral
	Subtotal - PLR
	Pressure Regulating Station (PRS) - 14 La
	4 Prince George 3 Lateral 219
	5 Northwood Pulp Lateral 168
	6 Northwood Pulp Loop 219
	8 Prince George Pulp Lateral 168
	9 Husky Oil Lateral 168
	10 Prince George #2 Lateral 219
	12 Williams Lake Loop 168
	16 Coldstream Lat 219
	17 Coldstream Loop 168
	18 Kelowna 1 Loop 219
	19 Celgar Lateral 168
	20 Castlegar Nelson 168
	21 Trail Lateral 168
	23 Elkview Lateral 168
	Subtotal - PRS
Deleted:	TOTAL Project Capital Budget

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As discussed in Section 5 of the Application, the cost estimate for each lateral was developed in accordance to AACE 18R-97 Class 3 specifications as required by the CPCN Guidelines.

SECTION 6: PROJECT COSTS, ACCOUNTING TREATMENT AND RATE IMPACT





Table 6-3 presents the financial evaluation of the Project over a 66-year period (60 years post-Project and 6 prior years during the Project)<sup>38</sup>. The present value of the net cash flow of the

2

3 Project represent (0.85%) of the present value of the incremental revenue requirement over 66 years<sup>39</sup>. Details of the financial evaluation of the Project as well as of each individual lateral can

4 5 be found in the Financial Schedules as included in Confidential Appendices N-1 and N-2.

### 6

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Table 6-3: Financial Analysis of the Project

	IU	PLR	PRS	TOTAL
Number of Laterals per Type of Preferred Option	11	4	14	29
Total Charged to Gas Plant in Service (\$ millions)	267.929	30.107	61.831	359.868
Abandonment / Demolition Costs (\$ millions)	0.058	0.268	-	0.325
Total Project Deferral Cost	0.376	0.137	0.478	0.991
Total Project Cost (\$ millions)	268.363	30.511	62.310	361.184
Rate Impact in 2025, when all assets enter Rate Base (%)	3.30%	0.29%	0.71%	4.30%
Levelized Delivery Rate Impact 66 years (%)	2.32%	0.21%	0.52%	3.05%
evelized Delivery Rate Impact 66 years (\$/GJ)	0.094	0.009	0.021	0.123
PV of Incremental Revenue Requirement 66 years (\$ million)	319.497	29.042	71.615	420.154
Net Cash Flow NPV 66 years (\$ million)	(1.63)	(0.46)	(1.48)	(3.58)

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Number of Laterals per Type of Preferred Op
Total Charged to Gas Plant in Service (\$ mil
Abandonment / Demolition Costs (\$ millio
Total Project Deferral Cost
Total Project Cost (\$ millions)
Rate Impact in 2025, when all assets enter Ra
Levelized Delivery Rate Impact 66 years (%)
Levelized Delivery Rate Impact 66 years (\$/G
PV of Incremental Revenue Requirement 66
Net Cash Flow NPV 66 years (\$ million)

### 6.3 **ACCOUNTING TREATMENT** 8

### 9 6.3.1 Treatment of Capital Costs

Consistent with FEI's treatment of CPCNs, the capital costs of the Project (i.e. the costs 10 included in the subtotal "Project Capital Budget" in Table 6-1 above) will be held in Work in 11 Progress, attracting AFUDC<sup>40</sup>. Construction of the Project is scheduled to be completed in 12 multiple phases and the specific assets with construction work completed in each phase will be 13 14 placed in service when they are commissioned and ready to be used. FEI will transfer the associated capital costs of the specific assets that have been placed in service to the 15 16 appropriate plant asset accounts and include in FEI's rate base on January 1 of the following 17 year. Depreciation of the assets included in FEI's rate base will begin at the start of the year.

18 Table 6-4 below summarizes the estimated amount of Project capital costs associated with the 19 specific assets that will be completed and placed in service in each phase of the Project from

SECTION 6: PROJECT COSTS, ACCOUNTING TREATMENT AND RATE IMPACT

<sup>&</sup>lt;sup>38</sup> The 60-year post-project analysis period was chosen based on the currently approved depreciation rate of Transmission Main pipeline at 1.47% (or 68 years) since the majority of the capital expenditure, especially for ILI and PLR, are tracked under the Transmission Main pipeline asset. For simplicity, the analysis period for postproject is rounded down to 60 years considering it still covers approximately 90 percent of the depreciation life of a Transmission Main pipeline. The 6 prior years is based on the construction schedule of the Project from 2019 to 2024.

<sup>&</sup>lt;sup>39</sup> The minor variance from zero is expected and is primarily due to small difference between the assets' lives and the 66-year analysis period used, and some timing differences in earnings, taxes, and depreciation. The near zero variance indicates the financial analysis used to evaluate the Project was completed appropriately as FEI is only recovering the allowable earnings and the cost of service over the life of the assets.

<sup>&</sup>lt;sup>40</sup> FEI's 2018 AFUDC rate is 5.61%, which is equal to the after-tax weighted average cost of capital.





1 2019 to 2024<sup>41</sup>. The same amount of Project capital costs that are placed in service in each year will be transferred to the opening balance of FEI's plant-in-service on January 1 of the following year. The amount and timing of the transfer to the plant asset account for each year is also identified in Confidential Appendix N-1, Financial Schedule 7 for the overall Project as well as Confidential Appendix N-2, Financial Schedule 7 (Preferred Option) of each individual lateral. The subsequent sections will discuss the regulatory accounting treatment of the abandonment/demolition costs and the Project deferral costs.

### 8 Table 6-4: Percentage of Project Complete and In-Service during Project Years (2019 to 2024)<sup>42</sup>

			and in-serv to Rate Bas				
	2019	2020	2021	2022	2023	2024	TOTAL
In-line Inspection (ILI) - 11 Laterals	-	49.626	76.884	66.351	52.003	23.123	267.987
Pipeline Replacement (PLR) - 4 Laterals	-	-	10.957	17.750	1.668	-	30.375
Pressure Regulating Station (PRS) - 14 Laterals	-	-	-	14.979	20.859	25.993	61.831
Overall Project Capital Budget In-Service		49.626	87.841	99.079	74.530	49.117	360.193
Overall Project % In-Service	0%	14%	24%	28%	21%	14%	100%

In-line Inspection (ILI) - 11 Laterals Pipeline Replacement (PLR) - 4 Laterals Pressure Regulating Station (PRS) - 14 Laterals *Overall Project Capital Budget In-Service* Deleted: Overall Project % In-Service

### 10 6.3.2 Net Salvage

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11 Abandonment/demolition costs related to the existing laterals will be charged to FEI's existing 12 Net Salvage Deferral Account in accordance with the approved treatment of these costs as approved in Order G-44-12. The abandonment/demolition costs for the Project overall are 13 14 forecast to be \$0.290 million (2018 dollars) or, in as-spent dollars, \$0.325 million (including 15 AFUDC of \$0.014 million). These costs are identified in Confidential Appendix N-1, Financial 16 Schedule 9 for the overall Project. For abandonment/demolition costs associated with the 17 construction work of each individual lateral, please refer to Financial Schedule 9 of each 18 individual lateral in Confidential Appendix N-2.

### 19 6.3.3 Application and Preliminary Stage Development Costs

FEI is seeking BCUC approval under Sections 59-61 of the Act for deferral treatment of the 20 21 Application and Preliminary Stage Development costs. The Application costs include expenses for legal review, consultant costs, BCUC costs and BCUC-approved intervener costs and are 22 based on a written hearing process. The Preliminary Stage Development costs are related to 23 24 expenses incurred by FEI internally and also for engaging third-party consultants for feasibility evaluation, preliminary development and assessment of the potential design and alternatives as 25 26 required to complete this CPCN Application. FEI is seeking approval to record these costs in a 27 new non-rate base deferral account, the IGU Application and Preliminary Stage Development

<sup>&</sup>lt;sup>41</sup> The amount of Project capital cost as well as the percentage in each year estimated to complete and in service is not the same as the construction schedule as discussed in Section 5.4 of the Application. The percentage of work estimated to complete is based on the nature of the specific work in each year that is complete and can be placed in-service.

<sup>&</sup>lt;sup>42</sup> The percentages are not additive in rows. The percentage for each type of construction as well as the overall project are calculated based on the total capital costs of each construction type. E.g. 9 percent of ILI work to be in service in 2020 is not equivalent to the 9 percent of all construction work in 2020 that includes PLR and PRS.





Costs Deferral Account, attracting FEI's weighted average cost of capital until it enters rate
 base. FEI proposes to transfer the balance in the deferral account to rate base on January 1,

3 2020 and commence amortization over a three-year period.

Table 6-5 below shows the December 31, 2019 net-of-tax balance for the Application cost and
the Preliminary Stage Development cost are forecast to be \$0.293 million and \$0.698 million,
respectively.

7 8

9

# Table 6-5: Forecast Deferred Regulatory Application Costs and Preliminary Stage Project Development Costs (\$ millions)

Particulars	A Application	s-Spent (\$ millions Preliminary Stage Development	) TOTAL
Costs	0.390	0.931	1.321
WACC Return	0.008	0.019	0.027
Total Before Tax Offset	0.398	0.950	1.348
Tax Offset	(0.105)	(0.251)	(0.357)
Total	0.293	0.698	0.991
Annual Amortization for 3 years	(0.098)	(0.233)	(0.330)

### 10 6.4 RATE IMPACT

As discussed in Section 6.3.1, FEI will complete the Project in multiple phases between 2019 and 2024. Combined with the amortization of the deferral costs beginning in 2020 as discussed in Section 6.3.3, the impact to customer delivery rates will occur incrementally in each year from 2020 to 2025<sup>43</sup>. Table 6-6 shows the annual delivery rate impact in percentage compared to the 2018 approved non-bypass revenue requirement (Commission Order G-196-17) and the incremental annual delivery rate impact in percentage (year-over-year) from 2020 to 2025.

17

Table 6-6: Summary of Rate Impact for the Inland Gas Upgrades Project

	2020	2021	2022	2023	2024	2025
Annual Revenue Requirement, Incremental to 2018 Approved, Non-Bypass (\$ millions)	(0.156)	2.823	9.828	19.189	28.298	34.172
% Increase to 2018 Approved Revenue Requirement, Non-Bypass (G-196-17)	(0.02%)	0.36%	1.24%	2.41%	3.56%	4.30%
Incremental % Rate Impact (Year-over-Year)	(0.02%)	0.37%	0.88%	1.16%	1.12%	0.71%
Average Annual % Delivery Rate Impact (6 years, 2020-2025)	0.70%					
Average Annual Delivery Rate Impact (6 years, 2020-2025), \$/GJ	0.029					
Cumulative % Delivery Rate Impact (6 years, 2020-2025)	4.30%					
Cumulative Delivery Rate Impact (6 years, 2020-2025), \$/GJ	0.174					

19 The Project will result an estimated delivery rate impact of <u>4.3</u> percent in 2025 when all 20 construction is completed and all assets are placed in service in 2024. The average annual 21 delivery rate impact over the six Project years is estimated to be <u>0.7</u> percent annually or

SECTION 6: PROJECT COSTS, ACCOUNTING TREATMENT AND RATE IMPACT



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<sup>&</sup>lt;sup>43</sup> There is no rate impact in 2019, as discussed in Section 6.3.1, the specific assets complete and in-service will be transferred to rate base on January 1 of the following year. Therefore, the first year of delivery rate impact due to the Project is 2020 as a result of the amortization of the deferral costs, which is entirely offset by the Capital Cost Allowance in the Income Tax expense in 2020.

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\$0.029 per GJ annually. For a typical FEI residential customer consuming 90 GJ per year, this
 would equate to an approximate average increase of \$2.61 per year over the six years, or

3 cumulatively \$<u>15.66</u> over the six years.

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SECTION 6: PROJECT COSTS, ACCOUNTING TREATMENT AND RATE IMPACT

# Appendix A-1 DETAILED DESCRIPTION OF TWENTY NINE LATERALS

# **EVIDENTIARY UPDATE APRIL 5, 2019**

BLACKLINED



### 1 1.1 DETAILED DESCRIPTION OF TWENTY-NINE LATERALS

2 This appendix FEI provides a detailed overview of all 29 laterals as well as the alternatives 3 evaluation of each lateral.

### 4 1.1.1 Mackenzie Lateral 168 (MAC LTL 168)

5 The Mackenzie Lateral 168 starts off of the Enbridge mainline near John Hart Highway and 6 heads north to the town of Mackenzie, home to approximately 3500 residents. It operates

together as a single system with the Mackenzie Loop 168 (described below in Section 1.1.2).
 This lateral has two water crossings – the Mischinsinlika Creek and Williston Lake. There are

- 9 two large industrial customers being supplied from this lateral including Mackenzie Pulp Mill and
- 10 Conifex Sawmill.

Length of Pipe	line (kilometres)	28.6
Outside Diame	ter(s) (millimetres)	168, 88
Year of Constr	uction	1966
Right of way w	idth (metres)	10
Number of	Residential	1,672
Customers	Commercial	139
	Industrial	6
Important Factors in Execution and Lifecycle Operation		Operational Complexity:         • Overhead BC Hydro power lines at ILI Receiver assembly site         Property:         • Acquisition of ROW         Indigenous Community Consultation:         • Blueberry River First Nation         • West Moberly First Nation         • Halfway River First Nation         • Doig River First Nation         • MacLeod Lake Indian Band         Environmental:         • Wetlands         • Mischinsinlika Creek crossing         • Registered contaminated sites         • Raptor nests nearby
		<ul> <li>Amphibian breeding habitat</li> <li>Archaeological:</li> <li>Moderate to high archaeological potential</li> </ul>

11



1 FEI recommends ILI as the preferred alternative for the Mackenzie Lateral 168 since all other 2 alternatives were previously screened out as discussed in Section 4.4.4 and 4.4.5 of the 3 Application: PLE was not feasible due to complex project execution as a result of the need to 4 excavate the entire length of the lateral; HSTP was not feasible as there is no practical means 5 to support downstream customers when the lateral is shut down for the work; PRS was 6 screened out as it is not feasible due to capacity limitations; and PLR was screened out as it is 7 cost prohibitive at a high level estimate compared to other feasible alternatives.

Cost prohibitive at a high level estimate compared to other reasible alternatives.

8 The financial analysis of ILI for the Mackenzie Lateral 168 is shown in the table below.

	IU
AACE Estimate Class	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	38,024
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	2,266
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	2,754
PV of Incremental Revenue Requirement - 66 years (\$000s)	44,750
Levelized Delivery Rate Impact - 66 years (%)	0.32%

	AACE Estimate Class
	Total Project Capital Costs, As-Spent, inc
	AFUDC & Removal (\$000s)
	PV of Post-Project Incremental Sustainn
	Capital - 66 years (\$000s)
	PV of Post-Project Incremental Sustainn
	O&M - 66 years (\$000s)
	PV of Incremental Revenue Requiremen
	66 years (\$000s)
ed:	Levelized Delivery Rate Impact - 66 year

9

With ILI at this lateral, there will be a Launcher assembly and a Control Valve assembly at the start of the lateral and a Receiver assembly just east of Old Airport Road. In order to have a continuous in-line inspection from the start of the lateral to the end, another 168 millimetre crossing is planned to be installed at the Mischinsinlika Creek. Without this additional crossing, FEI would require another launcher and receiver assembly since the current crossing is 219 millimetres and would not be compatible with the 168 millimetre ILI tool.

### 16 **1.1.2 Mackenzie Loop 168 (MAC LOP 168)**

Similar to the Mackenzie Lateral 168, the Mackenzie Loop 168 starts off at the Enbridge Tap near John Hart Highway and completely loops the Mackenzie Lateral 168 to the start of the

19 Mischinsinlika Creek crossing. The Mackenzie Loop then continues to loop the Mackenzie

20 Lateral after the Mischinsinlika Creek crossing for another 2 kilometres where it terminates. The

21 Mackenzie Lateral 168 and the Mackenzie Loop 168 operate together as a single system.

Length of Pipeline (kilometres)		14.2
Outside Diameter(s) (millimetres)		168, 219
Year of Construction		1972
ROW Width (r	netres)	10
Number of	Residential	1,672
Customers	Commercial	139

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Industrial	6
Important Factors in Execution and	Property:
Lifecycle Operation	Acquisition of ROW
	Indigenous Community Consultation:
	Blueberry River First Nation
	<ul> <li>West Moberly First Nation</li> </ul>
	Halfway River First Nation
	Doig River First Nation
	MacLeod Lake Indian Band
	Environmental:
	<ul> <li>Wetlands and creek crossings</li> </ul>
	<ul> <li>Registered contaminated sites</li> </ul>
	<ul> <li>Raptor nests nearby</li> </ul>
	Amphibian breeding habitat
	Archaeological:
	Moderate to high archaeological potential

1 FEI recommends ILI as the preferred alternative for the Mackenzie Loop 168 since all other

2 alternatives were previously screened out as discussed in Section 4.4.4 and 4.4.5 of the

3 Application: PLE was not feasible due to complex project execution as a result of the need to 4 excavate the entire length of the lateral; HSTP was not feasible as there is no practical means

5 to support downstream customers when the lateral is shut down for the work; PRS was

6 screened out as it is not feasible due to capacity limitations; and PLR was screened out as it is

7 cost prohibitive at a high level estimate compared to other feasible alternatives. The financial

8 analysis of ILI for Mackenzie Loop 168 is shown in the table below.

	ILI
AACE Estimate Class	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	22,700
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,418
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	1,168
PV of Incremental Revenue Requirement - 66 years (\$000s)	25,188
Levelized Rate Impact - 66 years (%)	0.18%



9

- 10 With ILI at this lateral, there will be a 168 millimetre launcher assembly at the start of the loop
- and a 168 millimetre receiver assembly where the Mischinsinlika Creek crossing begins. There
- will also be a 219 millimetre launcher assembly at the start of the Creek crossing, and a 219
- 13 millimetre receiver assembly 2 kilometres downstream of the creek. In addition, approximately



1 160 metres of the Mackenzie Loop immediately downstream of the crossing will have to be 2 upgraded from a pipe size of 168 millimetres to 219 millimetres.

### 3 1.1.3 BC Forest Products Lateral 168 (BCF LTL 168)

4 The BC Forest Products lateral is a short lateral that branches off of the Mackenzie Lateral just

5 West of Coquiwaldy Road feeding Mackenzie Pulp Mill Corporation. The Mackenzie Lateral

- 6 168, the Mackenzie Loop 168 and the BC Forest Products Lateral 168 operate together as a
- 7 single system.

Length of Pipeline (kilometres)		0.5		
Outside Diameter(s) (millimetres)		168		
Year of Constru	uction	1970		
ROW Width (m	etres)	N/A		
Number of	Residential	N/A		
Customers	Commercial	N/A		
	Industrial	<u>1</u> ,		
		<ul> <li>Operational Complexity: <ul> <li>Canadian National Railway crossing</li> <li>Cannot take line out of service</li> </ul> </li> <li>Property: <ul> <li>Currently no ROW, and will be requiring 18m ROW for the pipeline replacement</li> </ul> </li> <li>Indigenous Community Consultation: <ul> <li>West Moberly First Nations</li> <li>Halfway River First Nations</li> <li>Doig River First Nations</li> <li>MacLeod Lake Indian Band</li> </ul> </li> <li>Environmental:</li> </ul>		

8 The financial comparison between the remaining alternatives of ILI, PLR and PRS for the BC

9 Forest Products Lateral 168 is shown in the table below. PLE and HSTP were screened out as

discussed in Section 4.4.4 and 4.4.5 of the Application. PRS is a feasible alternative for this lateral; after regulating the operating pressure of the lateral to 29.9 percent SMYS, there is still

substantial capacity in the pipeline to meet customer demands. Due to the fact that this is a

relatively short lateral at approximately 0.5 kilometres, PLR is less expensive than ILI and PRS.
 Additionally, PLR has a smaller rate impact than ILI and PRS, with a lower total PV of

15 incremental revenue requirement and levelized rate impact.

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### APPENDIX A

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DETAILED DESCRIPTION OF TWENTY-NINE LATERALS

	IU	PLR	PRS
AACE Estimate Class	Class 3	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	9,242	3,612	5,317
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,903	-	1,527
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	675	-	20
PV of Incremental Revenue Requirement - 66 years (\$000s)	12,598	3,536	6,955
Levelized Rate Impact - 66 years (%)	0.09%	0.03%	0.05%



2 The table below shows the scoring of each alternative for each of the three criteria, and the 3 overall weighted score:

	ILI	PLR	PRS
Integrity and Asset Management Capabilities	4.8	4.7	2.9
Project Execution & Lifecycle Operation	3.8	4.2	4.0
Financial	1.0	5.0	2.0
Overal Score	3.3	4.7	2.8

5 FEI recommends PLR as the preferred alternative for BC Forest Products Lateral. With the 6 PLR alternative, the entire pipeline will be replaced.

### 7 1.1.4 Northwood Pulp Lateral 168

8 The Northwood Pulp Lateral begins at the Enbridge tap just north of the Fraser River near the 9 Fraser-Fort George and Prince George boundary. This lateral is looped by Northwood Pulp 10 Loop 168 (described in Section 1.1.5) for most of the lateral, and the two lines join to feed 11 Prince George 3 Lateral (described in Section 1.1.6). Because of this configuration, the three 12 pipelines were treated as a single system when evaluating alternatives. The Northwood Pulp 13 Lateral continues south past the start of the Prince George 3 Lateral and supplies the 14 Northwood Pulp Mill.

Length of Pip	eline (kilometres)	6.0	
Outside Diam	eter(s) (millimetres)	168	
Year of Const	ruction	1965	
ROW Width (	netres)	15	
Number of	Residential	17,716	
Customers	Commercial	1,834	
	Industrial	52	
Important Fac Lifecycle Ope	ant Factors in Execution and     Operational Complexity:       cle Operation        • Assets will need to be installed on elements		

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APPENDIX A
DETAILED DESCRIPTION OF TWENTY-NINE LATERALS



<ul> <li>platforms due to sites having flooded in the past</li> <li>Existing tap has no odourization for about 600 meters</li> <li>Cannot be taken out of service</li> <li>Road crossings</li> <li>Rail ROW</li> </ul>
Property:
<ul> <li>Obtaining ROW on Enbridge property</li> </ul>
One property owned by Canfor on last 400m
Indigenous Community Consultation:
<ul> <li>Nak'azdli Whut'en'</li> </ul>
Nazko First Nation
Carrier Chilcotin Tribal council
Lheidli – T'enneh Band
Environmental:
Water crossings
<ul> <li>Fraser River critical habitat for fish species at risk</li> </ul>
Registered contaminated sites
Archaeological:
<ul> <li>High risk archaeology, no known site but proximity to water and reserve increases risk</li> </ul>

1 The financial comparison between the remaining alternatives of ILI and PRS for the Northwood

2 Pulp Lateral 168 is shown in the table below. PLE, HSTP and PLR were screened out as

discussed in Section 4.4.4 and 4.4.5 of the Application. PRS is a feasible alternative for this
 lateral; after regulating the operating pressure of the lateral to 29.9 percent SMYS, there is still

substantial capacity in the pipeline to meet customer demands. PRS has the lowest project

6 capital cost, and the lowest total PV of incremental revenue requirement and levelized rate

7 impact when compared to ILI.

	IU	PRS
AACE Estimate Class	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	12,174	1,760
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,902	481
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	1,088	6
PV of Incremental Revenue Requirement - 66 years (\$000s)	15,379	2,201
Levelized Rate Impact - 66 years (%)	0.11%	0.02%

8

9 The table below shows the scoring of ILI and PRS for each of the three criteria, and the overall10 weighted score:



	ILI	PRS
Integrity and Asset Management Capabilities	4.8	2.9
Project Execution & Lifecycle Operation	3.3	4.3
Financial	1.0	5.0
Overal Score	3.2	3.9

FEI recommends PRS as the preferred alternative for the Northwood Pulp Lateral 168.
 Because Northwood Pulp Lateral feeds the Northwood Pulp Loop and Prince George 3, all three

4 lines can be served by one PRS.

1

### 5 1.1.5 Northwood Pulp Loop 219

6 The Northwood Pulp Loop starts at the same point as the Northwood Pulp Lateral, and

continues to the Prince George 3 Lateral, effectively bypassing the Northwood Pulp mill to boost
the capacity of the supply feeding Prince George.

Length of Pipe	line (kilometres)	5.8		
Outside Diame	ter(s) (millimetres)	219		
Year of Constr	uction	1995		
ROW Width (m	etres)	15		
Number of	Residential	17,716		
Customers	Commercial	1,834		
	Industrial	52		
Important Fact Lifecycle Oper	ors in Execution and ation	<ul> <li>Operational Complexity:</li> <li>Swampy areas due and sites have flooded in the past</li> <li>Assets will need to be installed on elevated platforms</li> <li>Existing tap has no odourization for about 600 meters</li> <li>Cannot be taken out of service</li> <li>Road crossings</li> <li>Rail ROW</li> </ul> Property: <ul> <li>Obtaining ROW on Enbridge property</li> <li>One property owned by Canfor on last 400m</li> </ul> Indigenous Community Consultation: <ul> <li>Nak'azdli Whut'en'</li> <li>Nazko First Nation</li> <li>Carrier Chilcotin Tribal council</li> <li>Lheidli – T'enneh Band</li> </ul> Environmental: <ul> <li>Water crossings</li> <li>Fraser River critical habitat for fish species at risk</li> </ul>		



Registered contaminated sites ٠

Archaeological:

High risk archaeology, no known site but proximity to water and reserve increases risk

The financial comparison between the remaining alternatives of ILI and PRS for the Northwood 1 Pulp Loop 219 is shown in the table below. PLE, HSTP and PLR were screened out as 2

discussed in Section 4.4.4 and 4.4.5 of the Application. PRS is a feasible alternative for this 3

lateral; after regulating the operating pressure of the lateral to 29.9 percent SMYS, there is still 4

5 substantial capacity in the pipeline to meet customer demands. PRS is also the alternative with

the lowest project capital cost. Additionally, PRS has the lowest impact to FEI's ratepayers in 6

7 terms of the total PV of incremental revenue requirement and levelized rate impact over a 66-

8 year analysis period when compared to ILI.

	ILI	PRS
AACE Estimate Class	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	11,470	1,758
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,311	481
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	1,061	6
PV of Incremental Revenue Requirement - 66 years (\$000s)	14,056	2,198
Levelized Rate Impact - 66 years (%)	0.10%	0.02%

9

12

10 The table below shows the scoring of ILI and PRS for each of the three criteria, and the overall

11 weighted score:

	ILI	PRS
Integrity and Asset Management Capabilities	4.8	2.9
Project Execution & Lifecycle Operation	3.4	4.3
Financial	1.0	5.0
Overal Score	3.2	3.9

As described in the Northwood Pulp Lateral description, PRS was chosen as the preferred 13 alternative, and given that the Northwood Pulp Lateral 168, the Northwood Pulp Loop 168 and 14 15 the Prince George 3 Lateral 219 are all treated as one system, PRS was selected as the 16 preferred alternative for the Northwood Pulp Loop.

### 1.1.6 Prince George 3 Lateral 219 17

The Prince George 3 Lateral branches off of the Northwood Pulp Lateral, and begins just west 18 of the intersection of Beaver Forest Road and Industrial Access Road to the North of Northwood 19





Pulp Mill. This lateral heads southwest and ends on Noranda Road near McMillian Creek. At

2 Noranda Road is the start of an intermediate pressure pipeline which spans from the North end

of Prince George to the South end where it connects to the Prince George 2 Lateral. Together,
 these two laterals support the entire City of Prince George, home to approximately 74,000

4 these two laterals support the entire 5 residents, and 31,000 FEI customers.

1

Length of Pipeline (kilometres)		5.3		
Outside Diameter(s) (millimetres)		219		
Year of Construction		1970		
ROW Width (metres)		6		
Number of Customers	Residential	17,716		
	Commercial	1,834		
	Industrial	52		
Important Fact Lifecycle Oper	ors in Execution and ation	Operational Complexity:         • Swampy areas due and sites have flooded in the past         • Assets will need to be installed on elevated platforms         • Cannot take line out of service         Property:         • Narrow ROW         • ROW in road along Old Summit Lake Road for 450m         • Parallels BC Hydro ROW         • Private and Crown land         Indigenous Community Consultation:         • Nak'azdli Whut'en'         • Nazko First Nation         • Carrier Chilcotin Tribal council         • Lheidli – T'enneh Band         Environmental:         • McMillan Creek and other small creek crossings         • Registered contaminated sites         Archaeological:         • Moderate to high archaeological potential with three areas confirmed high archaeological potential		

- 6 The financial comparison between ILI and PRS for the Prince George 3 Lateral 219 is shown in
- 7 the table below. PLE, HSTP and PLR were screened out as discussed in Section 4.4.4 and
- 8 4.4.5 of the Application. PRS is a feasible alternative for this lateral; after regulating the
- 9 operating pressure of the lateral to 29.9 percent SMYS, there is still substantial capacity in the


1 pipeline to meet customer demands. PRS has the lowest project capital cost, and the lowest

2 total PV of incremental revenue requirement and levelized rate impact.

	ILI	PRS
AACE Estimate Class	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	11,785	1,753
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,305	479
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	1,031	6
PV of Incremental Revenue Requirement - 66 years (\$000s)	14,315	2,191
Levelized Rate Impact - 66 years (%)	0.10%	0.02%

6

4 The table below shows the scoring of ILI and PRS for each of the three criteria, and the overall 5 weighted score:

	ILI	PRS
Integrity and Asset Management Capabilities	4.8	2.9
Project Execution & Lifecycle Operation	3.5	4.6
Financial	1.0	5.0
Overal Score	3.2	4.0

As described in the Northwood Pulp Lateral and Loop descriptions, PRS was recommended as
the preferred alternative for the system. Since the Prince George 3 Lateral is supplied by
Northwood Pulp Lateral and Loop, FEI recommends PRS as the preferred alternative for this
lateral. In addition, PRS has an added benefit of lower potential impacts to surrounding
Indigenous communities compared to ILI.

# 12 **1.1.7 Prince George 1 Lateral 168**

13 The Prince George 1 Lateral taps off of Enbridge south of the Graves Road and Shelley Road

14 intersection. The lateral continues west and ends near Pickering Road where it connects to the

Prince George Pulp Lateral (described in Section 1.1.8) and subsequently Husky Oil Lateral
 (described in Section 1.1.9). Together, the laterals supply gas to 1229 customers, with several

17 significant industrial customers.

Length of Pipe	line (kilometres)	4.7
Outside Diame	eter(s) (millimetres)	168
Year of Constr	uction	1957
ROW Width (m	etres)	18
Number of	Residential	1,171

<sup>3</sup> 



Customers	Commercial	50
	Industrial	8
Important Fac	tors in Execution and	Operational Complexity:
Lifecycle Operation		Stopping off and welding fittings at a higher pressure to maintain customer gas requirements
		Property:
		Obtaining ROW on Enbridge property
		Indigenous Community Consultation: • Nak'azdli Whut'en' • Nazko First Nation • Carrier Chilcotin Tribal council • Lheidli – T'enneh Band
		<ul> <li>Environmental:</li> <li>Creek crossings</li> <li>Potential for occurrence of a plant species at risk</li> <li>Registered contaminated sites</li> </ul>
		Archaeological: • Moderate to high archaeological potential

FEI recommends ILI as the preferred alternative for the Prince George 1 Lateral 168 since all 1

2 other alternatives were previously screened out as discussed in Section 4.4.4 and 4.4.5 of the

3 Application: PLE was not feasible due to complex project execution as a result of the need to

4 excavate the entire length of the lateral; HSTP was not feasible as there is no practical means

5 to support downstream customers when the lateral is shut down for the work; PRS was

6 screened out as it is not feasible due to capacity limitations; and PLR was screened out as it is

- 7 cost prohibitive at a high level estimate compared to other feasible alternatives. The financial 8
- analysis of ILI for the Prince George 1 Lateral 168 is shown in the table below.

9

	ILI
AACE Estimate Class	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	12,241
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,873
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	601
PV of Incremental Revenue Requirement - 66 years (\$000s)	14,401
Levelized Rate Impact - 66 years (%)	0.10%





1 With ILI for this lateral, a launcher assembly and a control valve assembly will be installed at the 2 start of the Prince George 1 Lateral, and a receiver assembly where the Prince George 1

3 Lateral terminates and the Prince George Pulp Lateral starts.

### 4 1.1.8 Prince George Pulp Lateral 168

The Prince George Pulp Lateral continues where the Prince George 1 Lateral (described in
Section 1.1.7) terminates. This lateral crosses the Fraser River and feeds Canfor Pulp mill.
This lateral also connects directly to the Husky Oil Lateral (described in Section 1.1.9).

8 Consideration was given to treating Prince George 1 Lateral, Prince George Pulp Lateral and

9 Husky Oil Lateral. However, since PRS was not feasible on Prince George 1 Lateral, it was not

10 evaluated as a system. Prince George Pulp Lateral and Husky Oil Lateral however, were

11 evaluated as a system.

Length of Pipe	line (kilometres)	1.0
Outside Diameter(s) (millimetres)		168
Year of Constr	uction	1964
ROW Width (m	etres)	0*
Number of	Residential	1,171
Customers	Commercial	50
	Industrial	8
Important Fact Lifecycle Oper	ors in Execution and ation	Operational Complexity:         • Fraser River crossing         • Steep slope at the start of the lateral to the river crossing         • Stopping off and welding fittings at a higher pressure to maintain customer gas requirements         • CN Bridge crossing         Property:         • No existing R/W in place         • Works within rail corridor Limited space on the Canfor Pulp mill where the lateral ends         Indigenous Community Consultation:         • Nak'azdli Whut'en'         • Nazko First Nation         • Carrier Chilcotin Tribal council         • Lheidli – T'enneh Band         Environmental:         • Fraser River crossing         • Mature forested riparian area associated with the Fraser River.         • Potential for occurrence of a plant species at risk

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Archae	ological:
•	Moderate to high archaeological potential

1 \* No existing ROW, lateral is located within railway corridor and FEI has a License to Operate

2 The financial comparison between the remaining alternatives of ILI, PLR, and PRS for the 3 Prince George Pulp Lateral 168 is shown in the table below. PLE and HSTP were screened out 4 as discussed in Section 4.4.4 and 4.4.5 of the Application. PRS is a feasible alternative for this 5 lateral; after regulating the operating pressure of the lateral to 29.9 percent SMYS, there is still 6 substantial capacity in the pipeline to meet customer demands. Because Prince George Pulp 7 Lateral and Husky Oil Lateral are treated as a system, the PRS is shared between the two,

8 resulting in a lower project capital cost, lower PV of incremental revenue requirement, and lower

9 rate impact than the other alternatives.

	ILI	PLR	PRS
AACE Estimate Class	Class 3	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	11,664	8,384	2,938
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,836	-	769
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	680	-	9
PV of Incremental Revenue Requirement - 66 years (\$000s)	14,331	7,727	3,600
Levelized Rate Impact - 66 years (%)	0.10%	0.06%	0.03%

	AACE Estimate Class
	Total Project Capital Costs, As-Spent, ind
	AFUDC & Removal (\$000s)
	PV of Post-Project Incremental Sustainn
	Capital - 66 years (\$000s)
	PV of Post-Project Incremental Sustainn
	O&M - 66 years (\$000s)
	PV of Incremental Revenue Requiremer
	66 years (\$000s)
Deleted:	Levelized Rate Impact - 66 years (%)

11 The table below shows the scoring of each alternative for each of the three criteria, and the 12 overall weighted score:

	ILI	PLR	PRS
Integrity and Asset Management Capabilities	4.8	4.7	2.9
Project Execution & Lifecycle Operation	3.5	3.3	3.8
Financial	1.0	1.0	5.0
Overal Score	3.2	3.1	3.8

FEI recommends PRS as the preferred alternative for Prince George Pulp lateral, and
subsequently Husky Oil Lateral. One PRS will be installed at the start of the Prince George
Pulp Lateral and will be able to serve Husky Oil Lateral as well.

# 17 **1.1.9 Husky Oil Lateral 168**

- 18 The Husky Oil Lateral continues from Canfor Pulp where the Prince George Pulp Lateral ends, and continues north where it runs parallel to Prince George Pulpmill Road. This lateral supplies
- 20 gas for significant industrial customers including Husky Oil and FMC.



Length of Pipe	line (kilometres)	1.1
Outside Diame	ter(s) (millimetres)	168
Year of Constru	uction	1967
ROW Width (m	etres)	0*
Number of	Residential	1,171
Customers	Commercial	50
	Industrial	8
Important Facto Lifecycle Opera	ors in Execution and ation	<ul> <li>Operational Complexity: <ul> <li>BC Railway crossing</li> <li>Stopping off and welding fittings at a higher pressure to maintain customer gas requirements</li> <li>Pipeline in road allowance runs between buried NPS 42 water pipeline on south side and Husky facility on north side</li> </ul> </li> <li>Property: <ul> <li>ROW required at the end of the lateral</li> <li>Limited land at end of NPS 6 lateral</li> <li>Existing pipe within road allowance</li> </ul> </li> <li>Indigenous Community Consultation: <ul> <li>Nak'azdli Whut'en'</li> <li>Nazko First Nation</li> <li>Carrier Chilcotin Tribal council</li> <li>Lheidli – T'enneh Band</li> </ul> </li> <li>Environmental: <ul> <li>Registered contaminated site</li> <li>1 osprey nest nearby</li> <li>Potential for occurrence of a plant species at risk</li> </ul> </li> </ul>

1 \* Pipe located in road allowance so no ROW exists for this lateral

2 The financial comparison between the remaining alternatives of ILI, PLR, and PRS for the Husky Oil Lateral 168 is shown in the table below. PLE and HSTP were screened out as 3 4 discussed in Section 4.4.4 and 4.4.5 of the Application. PRS is a feasible alternative for this 5 lateral; after regulating the operating pressure of the lateral to 29.9 percent SMYS, there is still 6 substantial capacity in the pipeline to meet customer demands. Because the PRS is shared 7 between Prince George Pulp Lateral and Husky Oil Lateral, it has the lowest project capital cost, 8 and the lowest total PV of incremental revenue requirement and levelized rate impact when 9 compared to other alternatives.

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	ILI	PLR	PRS
AACE Estimate Class	Class 3	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	14,440	5,956	2,939
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,252	-	770
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	682	-	9
PV of Incremental Revenue Requirement - 66 years (\$000s)	16,392	5,601	3,601
Levelized Rate Impact - 66 years (%)	0.12%	0.04%	0.03%



2 The table below shows the scoring of each alternative for each of the three criteria, and the 3 overall weighted score:

	ILI	PLR	PRS
Integrity and Asset Management Capabilities	4.8	4.7	2.9
Project Execution & Lifecycle Operation	3.5	3.3	3.8
Financial	1.0	2.0	5.0
Overal Score	3.2	3.5	3.8

5 FEI recommends PRS as the preferred alternative based on financial scoring and the evaluation

6 of Prince George Pulp lateral and Husky Oil lateral as a single system. The PRS option is

achievable with one PRS at the start of Prince George Pulp lateral to serve Husky Oil Lateral aswell since the two laterals are connected sequentially.

# 9 1.1.10 Prince George 2 Lateral 219

10 The Prince George 2 Lateral begins near the intersection of Evasko Road and Johnson Road

and heads west until it ends at Highway 97 and Terminal Boulevard. A Gate Station at Highway and Terminal Boulevard feeds the intermediate pressure pipeline that connects with the

13 supply from Noranda Gate Station supplied from the Prince George 3 Lateral. As described

14 previously, these two laterals are critical for supplying gas to the city of Prince George.

Length of Pip	eline (kilometres)	8.6	
Outside Diam	eter(s) (millimetres)	219	
Year of Const	ruction	1965	
ROW Width (I	netres)	6	
Number of Residential		17,217	
Customers Commercial		1,596	
	Industrial 44		
Important Fac Lifecycle Ope	tors in Execution and ration	Operational Complexity:     Cannot take offline	

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<ul> <li>Road crossing</li> <li>ROW in road allowance with high traffic near PG Airport</li> </ul>
Property:
All private land
Indigenous Community Consultation:
Nak'azdli Whut'en'
Nazko First Nation
Carrier Chilcotin Tribal council
Lheidli – T'enneh Band
Environmental:
Stream crossings
Archaeological:
<ul> <li>Moderate to high archaeological potential with three areas confirmed high archaeological potential</li> </ul>

1 The financial comparison between the remaining alternatives of ILI and PRS for the Prince

2 George 2 Lateral 219 is shown in the table below. PLE, HSTP and PLR were screened out as

3 discussed in Section 4.4.4 and 4.4.5 of the Application. PRS is a feasible alternative for this

4 lateral; after regulating the operating pressure of the lateral to 29.9 percent SMYS, there is still

5 substantial capacity in the pipeline to meet customer demands. PRS has the lowest project

6 capital cost, the lowest total PV of incremental revenue requirement, and lowest levelized rate

7 impact.

	ILI	PRS
AACE Estimate Class	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	12,384	5,157
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,922	1,365
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	1,283	18
PV of Incremental Revenue Requirement - 66 years (\$000s)	15,839	6,342
Levelized Rate Impact - 66 years (%)	0.11%	0.05%

9 The table below shows the scoring of ILI and PRS for each of the three criteria, and the overall

10 weighted score:

8



	ILI	PRS
Integrity and Asset Management Capabilities	4.8	2.9
Project Execution & Lifecycle Operation	3.7	4.3
Financial	1.0	5.0
Overal Score	3.3	3.9

FEI recommends PRS as the preferred alternative for the Prince George 2 Lateral 168. With
 this alternative, the PRS would be installed at the start of the lateral near the Enbridge tap.

## 4 1.1.11 Cariboo Pulp Lateral 168

1

5 The Cariboo Pulp Lateral begins near the North end of North Star Road in Quesnel and 6 continues west to feed Cariboo Pulp & Paper, the sole customer served by the lateral.

Length of Pipe	eline (kilometres)	1.3	
Outside Diame	eter(s) (millimetres)	168	
Year of Constr	ruction	1972	
ROW Width (m	netres)	10	
Number of	Residential	N/A	
Customers	Commercial	N/A	
	Industrial	<u>1,</u>	Deleted: N/A
Important Fact Lifecycle Oper	tors in Execution and ration	Property: • Additional ROW required Indigenous Community Consultation: • Tsihlqot'in National Government • Carrier Chilcotin Tribal Council • Lhtako Dene Nation • Lhoosk'uz Dene Nation • Ulkatcho First Nation Environmental: • Registered contaminated site • Occurrence of a plant species at risk Archaeological: • Moderate to high archaeological potential	

7 The financial comparison between the remaining alternatives of ILI, PLR, and PRS for the

8 Cariboo Pulp Lateral 168 is shown in the table below. PLE and HSTP were screened out as 9 discussed in Section 4.4.4 and 4.4.5 of the Application. PRS is a feasible alternative for this

10 lateral; after regulating the operating pressure of the lateral to 29.9 percent SMYS, there is still

11 substantial capacity in the pipeline to meet customer demands. Although PLR has a higher

12 capital cost compared to PRS, PLR has similar rate impacts as PRS primarily due to the

13 additional sustainment capital and O&M costs required for the PRS in the future.

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	ILI	PLR	PRS
AACE Estimate Class	Class 3	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	7,119	5,595	4,888
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,915	-	1,443
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	711	-	20
PV of Incremental Revenue Requirement - 66 years (\$000s)	10,507	5,521	6,487
Levelized Rate Impact - 66 years (%)	0.08%	0.04%	0.05%

AACE Estimate Class Total Project Capital Costs, As-Spent, inc AFUDC & Removal (\$000s) PV of Post-Project Incremental Sustainn Capital - 66 years (\$000s) PV of Post-Project Incremental Sustainn O&M - 66 years (\$000s) PV of Incremental Revenue Requirement 66 years (\$000s) Levelized Rate Impact - 66 years (%)

2 The table below shows the scoring of ILI, PLR, and PRS for each of the three criteria, and the 3 overall weighted score:

	ш	PLR	PRS
Integrity and Asset Management Capabilities	4.8	4.7	2.9
Project Execution & Lifecycle Operation	3.3	3.3	4.3
Financial	2.0	5.0	4.0
Overal Score	3.5	4.5	3.5



5 FEI recommends PLR as the preferred alternative for the Cariboo Pulp lateral as this alternative 6 has the highest overall score. PLR is lower in terms of total PV of incremental revenue

7 requirements over the 66-year analysis period.

PRS scored lower than PLR since the technical performance is not as high due to the fact that PRS would still be managing a vintage pipe. Since PLR is not the least expensive alternative, subject matter experts were called upon to provide input on alternatives for this lateral and concluded PLR will offer better technical superiority over PRS since it will be a new pipeline with modern coating while the PRS alternative will still be maintain a vintage pipeline, therefore, PLR was selected as the preferred alternative.

## 14 1.1.12 Williams Lake Loop 1/Loop 2 168

15 The Williams Lake Loop begins south of Lund Road approximately 1 kilometre east of Minton

16 Lake, where it ties into the Williams Lake Lateral 114. The loop heads towards the Williams

17 Lake Airport and continues along Jacobson Road and ends just north of Kemp Road where the

18 114 lateral continues toward the City of Williams Lake, home to approximately 11,000 residents.

Length of Pipeline (kilometres)	Williams Lake Loop 1	Williams Lake Loop 2
Length of Pipeline (kilometres)	3.4	2.5
Outside Diameter(s) (millimetres)	168	168
Year of Construction	1993	1998
ROW Width (metres)	6	6

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Number of	Residential	5,998		
Customers	Commercial	813		
	Industrial	15		
Important Fact Lifecycle Oper	ors in Execution and ation	Operational Complexity:         Several road crossings         Crosses airport runway         Property:         All land in Agricultural Land Reserve         Indigenous Community Consultation:         Xats'ull First Nation         Northern Secwepemc Tribal Council         Canim Lake Band         Neskonlith Indian Band         Tsihlqot'in National Government         Williams Lake Indian Band         Environmental:         Stream and wetland crossings         Registered contaminated site         Old Growth Management Areas         Archaeological:         Moderate to high archaeological potential		

1 The financial comparison between the remaining alternatives of ILI and PRS for the Williams 2 Lake Loop 168 is shown in the table below. PLE, HSTP and PLR were screened out as 3 discussed in Section 4.4.4 and 4.4.5 of the Application. PRS is a feasible alternative for this 4 lateral; after regulating the operating pressure of the lateral to 29.9 percent SMYS, there is still 5 substantial capacity in the pipeline to meet customer demands. PRS has the lowest project 6 capital cost, lowest total PV of incremental revenue requirement, and lowest levelized rate

7 impact.

	ILI	PRS
AACE Estimate Class	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	13,391	5,066
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,833	1,343
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	1,025	18
PV of Incremental Revenue Requirement - 66 years (\$000s)	15,692	5,951
Levelized Rate Impact - 66 years (%)	0.11%	0.04%

8



The table below shows the scoring of ILI and PRS for each of the three criteria, and the overall
 weighted score:

	ILI	PRS
Integrity and Asset Management Capabilities	4.8	2.9
Project Execution & Lifecycle Operation	3.5	4.3
Financial	1.0	5.0
Overal Score	3.2	3.9

3

4 FEI recommends PRS as the preferred alternative for the Williams Lake Loop 168. With this 5 alternative, the PRS would be installed on the Williams Lake 114 Lateral to simultaneously

6 reduce the operating pressure of both the Williams Lake lateral and loop.

7 ILI was not selected due to the significantly higher rate impact as a result of higher incremental 8 cost for the required assemblies. There are also potential difficulties in land acquisition in the

9 Agricultural Land Reserve for ILI.

# 10 1.1.13 Kamloops Lateral/Loop 168

11 The Kamloops Lateral and Loop begin near Hillside Drive and copperhead Drive in the Dufferin

neighbourhood, where it heads north to feed the Kamloops Gate Station which supplies the Cityof Kamloops, home to approximately 90,000 residents. A significant industrial customer on this

14 lateral is the Domtar Pulp Mill.

Length of Pipeline (kilometres)		Kamloops 1 Lateral 168	Kamloops 1 Loop 168
Length of Pipeline (kilometres)		3.6	3.1
Outside Diameter(s) (millimetres)		168	168
Year of Construction		1965	1979
ROW Width (n	netres)	6-12	6-12
Number of Residential		15,391	
Customers	Commercial	1,588	
	Industrial	36	
Important Fac	tors in Execution and ration	Operational Complexity: Difficult terrain with Property: Park Use Permit re Indigenous Community Co Adams Lake Indiau Ashcroft Indian Ba Little Shuswap Lak Bonaparte Indian F Whispering Pines/ Neskonlith Indian Ba	equired nsultation: n Band nd ke Indian Band Band Clinton Band Band

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<ul> <li>Esh-kn-am Cultural Resources</li> </ul>		
<ul> <li>Boothroyd Indian Band</li> </ul>		
<ul> <li>Spuzzum First Nation</li> </ul>		
<ul> <li>Skuppah Indian Band</li> </ul>		
<ul> <li>Nlaka'pamux Nation Tribal Council</li> </ul>		
<ul> <li>Nicola Tribal Association</li> </ul>		
<ul> <li>Lower Nicola Indian Band</li> </ul>		
Lytton First Nation		
Siska Indian Band		
<ul> <li>Cook's Ferry Indian Band</li> </ul>		
<ul> <li>Coldwater Indian Band</li> </ul>		
<ul> <li>Oregon Jack Creek Indian Band</li> </ul>		
Skeetchestn Indian Band		
Tk'emlups Band		
Stk'emlupsemc te Secwepemc Nation (SSN)		
Environmental:		
<ul> <li>Critical habitat for woodpecker, toad and snake</li> </ul>		
Occurrences of species at risk		
<ul> <li>Pipeline runs through municipal Kenna Cartwright Park</li> </ul>		
Archaeological:		
<ul> <li>Assessment required within park boundary</li> </ul>		
Heritage site nearby		
<ul> <li>Three areas of high archaeological potential confirmed</li> </ul>		

1 The financial comparison between the remaining alternatives of ILI and PLR for the Kamloops 1

2 Lateral & Loop 168 is shown in the table below. PLE, HSTP and PRS were screened out as

3 discussed in Section 4.4.4 and 4.4.5 of the Application. Between ILI and PLR, PLR has a lower

4 project capital cost and lower total PV of incremental revenue requirement and levelized rate

5 impact.

6

	IU	PLR
AACE Estimate Class	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	29,222	16,877
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,921	-
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	1,120	-
PV of Incremental Revenue Requirement - 66 years (\$000s)	32,104	15,795
Levelized Rate Impact - 66 years (%)	0.23%	0.11%



7 The table below shows the scoring of ILI and PLR for each of the three criteria, and the overall8 weighted score:

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	ILI	PLR
Integrity and Asset Management Capabilities	4.8	4.7
Project Execution & Lifecycle Operation	3.5	3.6
Financial	1.0	5.0
Overal Score	3.2	4.6

2 FEI recommends PLR as the preferred alternative for the Kamloops 1 Lateral and Loop 168.

## 3 1.1.14 Salmon Arm Loop 168

4 The Salmon Arm Loop 168 begins on the Savona-Nelson Mainline of the FEI Interior 5 Transmission System just east of St Annes Road in the township of Spallumcheen, where it 6 heads north towards Armstrong along Otter Lake Road. From Armstrong, the loop continues 7 along Vernon Sicamous Highway to Enderby and from Enderby towards Salmon Arm where the 8 loop ends. The loop is also critical to serving the communities north of Salmon Arm, as far as 9 Sorrento. The populations of Spallumcheen, Armstrong, Enderby, and Salmon Arm total more 10 than 31,000 combined.

Length of Pipeline (kilometres)		44.9		
Outside Diameter(s) (millimetres)		168		
Year of Construction		1976-1987		
ROW Width (m	etres)	3-9		
Number of	Residential	11,830		
Customers	Commercial	1,136		
	Industrial	24		
Important Fact	ors in Execution and	Operational Complexity:		
Lifecycle Opera	ation	Crosses Vernon Sicamous Highway		
		<ul> <li>Property: <ul> <li>Potential trespass issue in Splats'in First Nation reserve</li> <li>Private property</li> <li>Log barn property (ROW encroachment)</li> <li>First Nations land tenure (28.2 permit)</li> </ul> </li> <li>Indigenous Community Consultation: <ul> <li>Neskonlith Indian Band</li> <li>Okanagan Nation Alliance</li> <li>Penticton Indian Band</li> <li>Lower Similkameen Indian Band</li> <li>Okanagan Indian Band</li> <li>Adams Lake Indian Band</li> <li>Little Shuswap Lake Indian Band</li> <li>Splats'in First Nation</li> </ul> </li> </ul>		

Integrity and Asset Management Capabi Project Execution & Lifecycle Operation Financial Deleted: Overal Score

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<ul> <li>Environmental:</li> <li>Critical habitat for great basin spadefoot</li> <li>Osprey and hawk nests nearby</li> <li>Great blue heron rookery</li> <li>Species at risk occurrences</li> <li>Amphibian breeding habitats</li> <li>Registered contaminated site</li> </ul>
Archaeological:
<ul> <li>Moderate to high archaeological potential with two areas of high archaeological potential confirmed</li> </ul>

1 FEI recommends ILI as the preferred alternative for the Salmon Arm Loop 168 since all other

2 alternatives were previously screened out as discussed in Section 4.4.4 and 4.4.5 of the

3 Application: PLE was not feasible due to complex project execution as a result of the need to

4 excavate the entire length of the lateral; HSTP was not feasible as there is no practical means

5 to support downstream customers when the lateral is shut down for the work; PRS was

6 screened out as it is not feasible due to capacity limitations; and PLR was screened out as it is

cost prohibitive at a high level estimate compared to other feasible alternatives. The financialanalysis of ILI for the Salmon Arm Loop 168 is shown in the table below.

	ILI
AACE Estimate Class	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	29,241
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	2,247
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	3,592
PV of Incremental Revenue Requirement - 66 years (\$000s)	32,564

AACE Estimate ClassTotal Project Capital Costs, As-Spent, intAFUDC & Removal (\$000s)PV of Post-Project Incremental SustainnCapital - 66 years (\$000s)PV of Post-Project Incremental SustainnO&M - 66 years (\$000s)PV of Incremental Revenue Requirement66 years (\$000s)PU evelized Rate Impact - 66 years (%)

9

10 With ILI for this lateral, there will be a launcher and a control valve assembly at the start of the

11 loop, and a receiver assembly at the Salmon Arm Gate Station where the loop terminates.

Levelized Rate Impact - 66 years (%)

# 12 1.1.15 Salmon Arm 3 Lateral 168

13 The Salmon Arm 3 Lateral starts off of the Salmon Arm 114 Lateral just East of Shaw Road in

14 Salmon Arm at the Canoe Creek golf course. From there it heads north and ends near the Auto

15 Road SE and 6 Street SE intersection.

Length of Pipeline (kilometres)	0.8
Outside Diameter(s) (millimetres)	168
Year of Construction	1981
ROW Width (metres)	9

PAGE 23

0.24%



Number of	Residential	3,426		
Customers	Commercial	261		
	Industrial	9		
Industrial Important Factors in Execution and Lifecycle Operation		Property: Crosses Canoe Creek golf course Indigenous Community Consultation: Neskonlith Indian Band Okanagan Nation Alliance Penticton Indian Band Upper Nicola Indian Band Lower Similkameen Indian Band Okanagan Indian Band Adams Lake Indian Band Little Shuswap Lake Indian Band Splats'in First Nation		
		Archaeological: • One area of high archaeological potential confirmed		

1 The financial comparison between the remaining alternatives of ILI, PLR and PRS for the

2 Salmon Arm 3 Lateral 168 is shown in the table below. PLE and HSTP were screened out as

3 discussed in Section 4.4.4 and 4.4.5 of the Application. As this is a relatively short pipeline,

4 PLR has a lower project capital cost, lower PV of incremental revenue requirement and

5 levelized rate impact when compared to ILI and PRS.

	ILI	PLR	PRS
AACE Estimate Class	Class 3	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	7,136	4,290	5,007
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,893	-	1,463
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	705	-	20
PV of Incremental Revenue Requirement - 66 years (\$000s)	10,493	4,191	6,589
Levelized Rate Impact - 66 years (%)	0.08%	0.03%	0.05%

AACE Estimate Class Total Project Capital Costs, As-Spent, inc AFUDC & Removal (\$000s) PV of Post-Project Incremental Sustainn Capital - 66 years (\$000s) PV of Post-Project Incremental Sustainn O&M - 66 years (\$000s) PV of Incremental Revenue Requiremer 66 years (\$000s)

Deleted: Levelized Rate Impact - 66 years (%)

7 The table below shows the scoring of each ILI, PLR, and PRS, for each of the three criteria, and

8 the overall weighted score:

6

Deleted: and PLR

Deleted: and

Deleted: and PRS

Deleted:

### APPENDIX A

1

DETAILED DESCRIPTION OF TWENTY-NINE LATERALS

	ILI	PLR	PRS
Integrity and Asset Management Capabilities	4.8	4.7	2.9
Project Execution & Lifecycle Operation	2.8	3.3	4.3
Financial	1.0	5.0	2.0
Overal Score	3.1	4.5	2.8

FEI recommends PLR as the preferred alternative for the Salmon Arm 3 Lateral because it is
 the alternative with the highest overall score. PLR has the lowest project capital cost, lowest

4 total PV of incremental revenue requirement, and lowest levelized rate impact. Because of 5 where the lateral is located relative to the Canoe Creek golf course, PLR will have less impact

6 both during and post-construction than ILI<u>and PRS</u>.

PRS involves the construction of a permanent above ground facility adjacent to the Canoe
 Creek Golf Course club house.

## 9 1.1.16 Coldstream Loop 168

10 The Coldstream Loop 168 starts about 400 metres east of Apollo Road in Vernon on the 11 Savona-Penticton Mainline of the FEI Interior Transmission System, and heads directly east to

where it joins the start of the Coldstream Lateral 219 (described in Section 1.1.17). Because

13 the loop and lateral are connected, the two are treated as a single system in the evaluation of

14 alternatives.

Length of Pipeline (kilometres) 3.8		3.8	
Outside Diameter(s) (millimetres)		168	
Year of Constr	uction	1989	
ROW Width (m	etres)	9	
Number of	Residential	13,357	
Customers	Commercial	1,017	
	Industrial	48	
Industrial Important Factors in Execution and Lifecycle Operation		<ul> <li>48</li> <li>Operational Complexity: <ul> <li>Unexploded ordnances along ROW</li> <li>Crosses highway 97 and Okanagan college campus</li> </ul> </li> <li>Property: <ul> <li>Crosses Vernon Golf and Country Club course</li> </ul> </li> <li>Indigenous Community Consultation: <ul> <li>Neskonlith Indian Band</li> <li>Penticton Indian Band</li> <li>Upper Nicola Indian Band</li> <li>Okanagan Nation Alliance</li> <li>Okanagan Indian Band</li> </ul> </li> </ul>	

Integrity and Asset Management Capabi Project Execution & Lifecycle Operation Financial Deleted: Overal Score

Deleted:



APPENDIX A
DETAILED DESCRIPTION OF TWENTY-NINE LATERALS



<ul> <li>Environmental:</li> <li>Critical habitat for great basin spadefoot and two species of snake</li> <li>Stream crossings</li> <li>Species at risk occurrences</li> <li>Registered contaminated site</li> </ul>
<ul> <li>Archaeological:</li> <li>Moderate to high archaeological potential with six areas of high archaeological potential confirmed</li> </ul>

1 The financial comparison between the remaining alternatives of ILI and PRS for the Coldstream

2 Loop 168 is shown in the table below. PLE, HSTP and PLR were screened out as discussed in

3 Section 4.4.4 and 4.4.5 of the Application. PRS is a feasible alternative for this lateral; after

- 4 regulating the operating pressure of the lateral to 29.9 percent SMYS, there is still substantial
- capacity in the pipeline to meet customer demands. PRS has the lowest project capital cost,
   lowest PV of incremental revenue requirement, and lowest levelized rate impact.

	ILI	PRS
AACE Estimate Class	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	12,077	5,102
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,791	1,348
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	847	18
PV of Incremental Revenue Requirement - 66 years (\$000s)	14,241	6,019
Levelized Rate Impact - 66 years (%)	0.10%	0.04%

8 The table below shows the scoring of ILI and PRS for each of the three criteria, and the overall9 weighted score:

	ILI	PRS
Integrity and Asset Management Capabilities	4.8	2.9
Project Execution & Lifecycle Operation	3.2	4.3
Financial	1.0	5.0
Overal Score	3.1	3.9

FEI recommends PRS as the preferred alternative for the Coldstream Loop 168. PRS is the alternative with the highest overall score for the Coldstream Loop 168 and the Coldstream

13 Lateral 219 thus PRS is the preferred alternative for both lines. With this alternative, the PRS

14 would be installed at the start of the Coldstream Loop 168.

7

10



ILI was screened out due to higher rate impact as a result of the length of the loop and greater complexity due to the road crossing and unexploded ordinances which lead to lower project

3 execution scores.

1

2

## 4 1.1.17 Coldstream Lateral 219

The Coldstream Lateral 219 starts off on Reservoir Road in Vernon and heads north on the
West side of the Vernon Golf and Country Club. The lateral ends off just south of Polson Drive
and 14 Avenue. From here, an intermediate pressure pipeline travels along Highway 6
eastbound where it supplies Coldstream. The District of Coldstream is home to approximately

9 10,000 residents.

Length of Pipe	eline (kilometres)	1.8		
Outside Diameter(s) (millimetres) Year of Construction ROW Width (metres)		219, 114 1998		
		Number of	Residential	13,357
Customers	Commercial	1,017		
	Industrial	48		
Industrial Important Factors in Execution and Lifecycle Operation		Operational Complexity:         • Creek crossing         Property:         • Crosses Vernon Golf and Country Club course         • Access required for FLNRO tree farm         Indigenous Community Consultation:         • Neskonlith Indian Band         • Penticton Indian Band         • Upper Nicola Indian Band         • Okanagan Nation Alliance         • Okanagan Indian Band         • Lower Similkameen Indian Band         • Splats'in First Nation		
		<ul> <li>Critical habitat for great basin spadefoot and two species of snake</li> <li>Stream crossings including a creek which leads to Kalamalka Lake</li> <li>Species at risk occurrences</li> <li>Registered contaminated site</li> </ul> Archaeological: <ul> <li>Moderate to high archaeological potential with six areas of high archaeological potential confirmed</li> </ul>		

11

14



The financial comparison between the remaining alternatives of ILI, PLR, and PRS for the 1 2 Coldstream Lateral 219 is shown in the table below. PLE and HSTP were screened out as 3 discussed in Section 4.4.4 and 4.4.5 of the Application. PRS is a viable alternative for this 4 lateral; after regulating the operating pressure of the lateral to 29.9 percent SMYS, there is still 5 substantial capacity in the pipeline to meet customer demands. AACE Class 3 estimates were 6 developed for all three alternatives as the project capital costs were relatively close to each 7 other. At a lateral length of approximately 1.8 kilometres, all three alternatives are relatively 8 comparable financially with PRS having the lowest PV of incremental revenue requirement and 9 levelized rate impact. PLR has the highest project capital cost, but has lower rate impact than

10 ILI due to the fact that ILI requires future capital and O&M expenditures for ILI re-inspection.

	ILI	PLR	PRS
AACE Estimate Class	Class 3	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	11,123	10,514	5,029
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,765	-	1,333
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	688	-	18
PV of Incremental Revenue Requirement - 66 years (\$000s)	13,159	9,334	5,933
Levelized Rate Impact - 66 years (%)	0.10%	0.07%	0.04%

AACE Estimate Class
Total Project Capital Costs, As-Spent, inc
AFUDC & Removal (\$000s)
PV of Post-Project Incremental Sustainn
Capital - 66 years (\$000s)
PV of Post-Project Incremental Sustainn
0&M - 66 years (\$000s)
PV of Incremental Revenue Requiremer
66 years (\$000s)
Levelized Rate Impact - 66 years (%)

Integrity and Asset Management Capabi Project Execution & Lifecycle Operation

Financial

Deleted:

**Overal Score** 

12 The table below shows the scoring of ILI, PLR, and PRS for each of the three criteria, and the 13 overall weighted score:

	ILI	PLR	PRS
Integrity and Asset Management Capabilities	4.8	4.7	2.9
Project Execution & Lifecycle Operation	3.3	3.2	4.3
Financial	1.0	2.0	5.0
Overal Score	3.2	3.4	3.9

15 Based on the scoring and the treatment of Coldstream Lateral and Loop as one system, FEI recommends PRS as the preferred alternative for the Coldstream Lateral 219. The PRS will be 16 17 installed at the start of Coldstream Lateral 114 since this lateral supplies the Coldstream Lateral 18 219. Even though Coldstream Lateral 114 is not part of the 29 laterals in this project, it would 19 be prudent to install the PRS at the start of the 114 Lateral because there will be little or no 20 additional costs to apply pressure reduction to Coldstream Lateral 114. This would also be 21 beneficial because it would reduce the Coldstream 114 lateral below 30 percent SMYS as well, 22 preventing rupture potential of that section of pipe. The smaller footprint of the PRS compared 23 to ILI and PLR is desirable due to environmental concerns.

ILI and PLR were both screened out by the financial analysis due to the length of the lateral andcomplexity including stream crossing and environmental risks.



# 1 **1.1.18 Kelowna 1 Loop 219**

4

2 The Kelowna 1 Loop begins on the corner of the Wal-Mart parking lot at the intersection of 3 Enterprise Way and Banks Road. From there, the loop heads west until it ends at Alphonse

Enterprise Way and Banks Road. From there, the loop heads west until it ends at Alphonse Road. The City of Kelowna is home to approximately 128,000 residents.

Length of Pipel	line (kilometres)	2.1	
Outside Diame	ter(s) (millimetres)	219	
Year of Construction 1976		1976	
ROW Width (m	etres)	15	
Number of	Residential	29,999	
Customers	Commercial	3,235	
	Industrial	48	
Important Factor Lifecycle Opera	ors in Execution and ation	Operational Complexity: • Road crossing	
		<ul> <li>Property: <ul> <li>High land value</li> <li>Walmart parking lot</li> </ul> </li> <li>Indigenous Community Consultation: <ul> <li>Esh-kn-am Cultural Resources Management Services</li> <li>Nooaitch Indian Band</li> <li>Okanagan Nation Alliance</li> <li>Penticton Indian Band</li> <li>Upper Nicola Indian Band</li> <li>Lower Similkameen Indian Band</li> <li>Okanagan Indian Band</li> </ul> </li> <li>Environmental: <ul> <li>Riparian areas</li> <li>Species at risk occurrences</li> <li>At risk plant communities</li> <li>Mill Creek fish bearing stream</li> <li>Meadowbrook community garden</li> <li>Registered contaminated site</li> </ul> </li> </ul>	

5 The financial comparison between the remaining alternatives of ILI and PRS for the Kelowna 1

6  $\$  Loop 219 is shown in the table below. PLE, HSTP and PLR were screened out as discussed in

7 Section 4.4.4 and 4.4.5 of the Application. PRS is a feasible alternative for this lateral; after 8 regulating the operating pressure of the lateral to 29.9 percent SMYS, there is still substantial

capacity in the pipeline to meet customer demands. PRS has the lowest project capital cost,

10 lowest PV of incremental revenue requirement, and lowest levelized rate impact.

# **FORTIS** BC<sup>\*</sup>

APPENDIX A DETAILED DESCRIPTION OF TWENTY-NINE LATERALS

	ILI	PRS
AACE Estimate Class	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	12,008	5,891
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,769	1,348
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	692	18
PV of Incremental Revenue Requirement - 66 years (\$000s)	13,969	6,902
Levelized Rate Impact - 66 years (%)	0.10%	0.05%

1

4

2 The table below shows the scoring of ILI and PRS for each of the three criteria, and the overall3 weighted score:

	ILI	PRS
Integrity and Asset Management Capabilities	4.8	2.9
Project Execution & Lifecycle Operation	2.8	4.3
Financial	1.0	5.0
Overal Score	3.1	3.9

5 FEI recommends PRS as the preferred alternative for the Kelowna 1 Loop 219. Since Kelowna 6 1 Loop 219 is connected to Kelowna 1 Lateral 114, the PRS will affect both lines and as a

7 result, will need to regulate the pressure in both of the lines.

8 ILI was not suitable for this location due to the high profile location. It would be difficult to install
9 and operate a launcher and control valve assembly in the Walmart parking lot, resulting in the
10 low score for Project Execution and Lifecycle Operation.

# 11 **1.1.19 Celgar Lateral 168**

12 The Celgar Lateral 168 begins west of Columbia Ave and 11st in the City of Castlegar, home to

approximately 8000 residents. From here the lateral heads West right up to serve the Zellstoff
 Celgar Pulp Mill.

Length of Pip	eline (kilometres)	5.8
Outside Diam	eter(s) (millimetres)	168
Year of Const	truction	1960
ROW Width (I	metres)	12-18
Number of	Residential	N/A
Customers	Commercial	N/A
	Industrial	2
Important Fac	ctors in Execution and	Operational Complexity:



Lifecycle Operation	Very steep terrain
	Adjacent to BC Hydro ROW
	Property:
	Private and crown land
	Indigenous Community Consultation:
	Adam Lake
	<ul> <li>Neskonlith Indian Band</li> </ul>
	<ul> <li>Penticton Indian Band</li> </ul>
	Upper Nicola Indian Band
	Okanagan Nation Alliance
	<ul> <li>Lower Similkameen Indian Band</li> </ul>
	Okanagan Indian Band
	<ul> <li>Splats'in First Nation</li> </ul>
	Osoyoos Indian Band
	Shuswap Indian Band
	Environmental:
	Stream crossings
	<ul> <li>An area of old forest</li> </ul>
	<ul> <li>Species at risk occurrences</li> </ul>
	<ul> <li>Wildlife habitat area 8-373 for Grizzly bear</li> </ul>
	Ungulate winter range 4-001
	Archaeological:
	Moderate to high archaeological potential

The financial comparison between the remaining alternatives of ILI and PRS for the Celgar
 Lateral 168 is shown in the table below. PLE, HSTP and PLR were screened out as discussed
 in Section 4.4.4 and 4.4.5 of the Application. PRS is a feasible alternative for this lateral; after

4 regulating the operating pressure of the lateral to 29.9 percent SMYS, there is still substantial

5 capacity in the pipeline to meet customer demands. PRS has the lowest project capital cost,

6 lowest PV of incremental revenue requirement and lowest levelized rate impact.

	IU	PRS
AACE Estimate Class	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	10,176	5,376
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,220	1,278
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	988	18
PV of Incremental Revenue Requirement - 66 years (\$000s)	11,731	5,898
Levelized Rate Impact - 66 years (%)	0.09%	0.04%

7

8 The table below shows the scoring of ILI and PRS for each of the three criteria, and the overall9 weighted score:



	ILI	PRS
Integrity and Asset Management Capabilities	4.8	2.9
Project Execution & Lifecycle Operation	3.5	4.0
Financial	2.0	5.0
Overal Score	3.6	3.8

2 FEI recommends PRS as the preferred alternative for Celgar lateral 168. The PRS would be

3 located downstream of the Celgar take off so the pressure regulation does not affect the

4 Castlegar Nelson lateral.

1

## 5 1.1.20 Castlegar Nelson 168

6 The Castlegar Nelson 168 begins just north of Columbia Ave and 11st in the City of Castlegar,

7 home to approximately 8,000 residents. This lateral continues north all the way to the City of 8 Nelson home to 11,000 residents

8 Nelson, home to 11,000 residents.

Length of Pipe	line (kilometres)	37.4	
Outside Diame	ter(s) (millimetres)	168	
Year of Constr	Year of Construction 1957		
ROW Width (m	etres)	12-18	
Number of	Residential	9,657	
Customers	Commercial	10	
	Industrial	61	
Important Fact Lifecycle Opera	ors in Execution and ation	Operational Complexity: • Highway crossing	
		Property:         • Private and crown land         • Need to verify municipal land         • New HDD for river crossing         • Very sloped terrain         Indigenous Community Consultation:         • Adam Lake         • Neskonlith Indian Band         • Penticton Indian Band         • Upper Nicola Indian Band         • Okanagan Nation Alliance         • Lower Similkameen Indian Band         • Okanagan Indian Band         • Splats'in First Nation         • Osoyoos Indian Band         Environmental:         • Brilliant river crossing         • Shoreacres river crossing         • Stream and wetland crossings	





<ul> <li>Fish species at risk</li> <li>Critical habitat for caribou and woodpecker</li> <li>Areas of old forest</li> <li>Species at risk occurrences</li> <li>Wildlife habitat area 8-373 for Grizzly bear</li> <li>Ungulate winter range 4-001</li> <li>Registered contaminated sites</li> </ul>
<ul> <li>Archaeological:</li> <li>Large archaeological sites near Brilliant Dam</li> <li>Archaeological sites near Kootenay River and Slocan River intersect</li> <li>Registered arch sites on Zuckerberg Island</li> <li>Moderate to high archaeological potential</li> </ul>

The financial comparison between the remaining alternatives of ILI and PRS for the Castlegar 1

2 Nelson 168 is shown in the table below. PLE, HSTP and PLR were screened out as discussed

3 in Section 4.4.4 and 4.4.5 of the Application. PRS is a feasible alternative for this lateral; after

4 regulating the operating pressure of the lateral to 29.9 percent SMYS, there is still substantial 5 capacity in the pipeline to meet customer demands. PRS has the lowest project capital cost,

6

lowest PV of incremental revenue requirement and lowest levelized rate impact.

	ILI	PRS
AACE Estimate Class	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	53,656	8,343
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	2,162	1,805
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	3,799	18
PV of Incremental Revenue Requirement - 66 years (\$000s)	54,183	8,986
Levelized Rate Impact - 66 years (%)	0.39%	0.07%

10

The table below shows the scoring of ILI and PRS for each of the three criteria, and the overall 8

9 weighted score:

	ILI	PRS
Integrity and Asset Management Capabilities	4.8	2.9
Project Execution & Lifecycle Operation	3.2	4.0
Financial	1.0	5.0
Overal Score	3.2	3.8

11 FEI recommends PRS as the preferred alternative for the Castlegar Nelson 168. With this

12 alternative, there will be a PRS downstream of the Celgar lateral so that the pressure regulation

13 of Castlegar Nelson 168 does not affect the Celgar lateral. In addition, a span of 400 m of 219

<sup>7</sup> 





millimetre pipe will be replaced with 168 millimetre pipe so that the entire Castlegar Nelsonlateral will be operating below 30 percent SMYS.

3 ILI was not recommended for this lateral due to the challenging terrain as well as the 4 significantly higher incremental cost, which resulted in an overall lower score for these 5 alternatives.

# 6 1.1.21 Trail Lateral 168

7 The Trail Lateral 168 starts about 1.6 kilometres west of Rivervale. This lateral travels south

8 along Aldridge Ave and heads west, ending just north of Bingay Road. This lateral serves Teck

9 Trail Operations, Teck Cominco, the City of Trail and the village of Warfield. Trail is home to 10 approximately 7800 residents and Warfield home to 1800 residents.

Length of Pipel	ine (kilometres)	4.2
Outside Diameter(s) (millimetres)		168
Year of Construction		1957
ROW Width (m	etres)	9-12
Number of	Residential	3,205
Customers	Commercial	310
	Industrial	7
Important Factors in Execution and Lifecycle Operation		Operational Complexity: • Highway ROW road allowance
		<ul> <li>Property: <ul> <li>Teck/Cominco property, have had challenges with permission to work on property in the past</li> </ul> </li> <li>Indigenous Community Consultation: <ul> <li>Penticton Indian Band</li> <li>Upper Nicola Indian Band</li> <li>Okanagan Nation Alliance</li> <li>Lower Similkameen Indian Band</li> <li>Okanagan Indian Band</li> <li>Splats'in First Nation</li> <li>Osoyoos Indian Band</li> <li>Shuswap Indian Band</li> <li>Akisqnuk First Nation</li> <li>Lower Kootenay Band</li> <li>Aq'am Community Government</li> <li>Tobacco Plains Indian Band</li> <li>Ktunaxa Nation Council</li> </ul> </li> <li>Environmental: <ul> <li>Stream and wetland crossings</li> <li>Wildlife habitat areas 8-373 for Grizzly bear</li> <li>Ungulate winter range 4-001</li> <li>Registered contaminated site</li> </ul> </li> </ul>



### Archaeological:

- One archaeological site identified
- Moderate to high archaeological potential
- \* Akisqnuk First Nation, Lower Kootenay Band, St. Mary's Indian Band, Tobacco Plains Indian
   Band are collectively notified through Ktunaxa Nation Council.
- 3 The financial comparison between the remaining alternatives of ILI and PRS for the Trail Lateral
- 4 168 is shown in the table below. PLE, HSTP and PLR were screened out as discussed in
- 5 Section 4.4.4 and 4.4.5 of the Application. PRS is a feasible alternative for this lateral; after
- regulating the operating pressure of the lateral to 29.9 percent SMYS, there is still substantial
   capacity in the pipeline to meet customer demands. PRS has the lowest project capital cost,
- 8 lowest PV of incremental revenue requirement and lowest levelized rate impact.

	ILI	PRS
AACE Estimate Class	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	18,212	5,399
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,740	1,281
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	845	18
PV of Incremental Revenue Requirement - 66 years (\$000s)	19,043	5,915
Levelized Rate Impact - 66 years (%)	0.14%	0.04%

9

12

10 The table below shows the scoring of ILI and PRS for each of the three criteria, and the overall 11 weighted score:

	IU	PRS
Integrity and Asset Management Capabilities	4.8	2.9
Project Execution & Lifecycle Operation	3.1	3.8
Financial	1.0	5.0
Overal Score	3.1	3.8

FEI recommends PRS as the preferred alternative for the Trail Lateral 168 and will be installedat the Trail lateral tap.

15 ILI was not recommended for this lateral due to the incremental cost and challenging16 construction terrain, which resulted in the lower overall scores for these alternatives.



# 1 **1.1.22 Fording Lateral 219/168**

2 The Fording Lateral begins east of Corbin Road and south of the Crowsnest Highway in

3 Sparwood, home to approximately 3,500 residents. The lateral traverses north and heads

4 through Elkford and ends at the Fording River Coal mine. The municipality of Elkford is home to

5 approximately 2,500 residents. This lateral is significant because of downstream laterals and 6 several large mining customers throughout including Elkview Coal, Line Creek Mine, Fording

7 Greenhills Mine and Fording River Coal.

Outside Diamete				
	er(s) (millimetres)	219/168		
Year of Construction		1971		
ROW Width (me	tres)	10-15		
Number of	Residential	3,932		
Customers	Commercial	379		
	Industrial	15		
Important Facto Lifecycle Operat	rs in Execution and tion	<ul> <li>Operational Complexity: <ul> <li>Steep terrain, pipe in valley bottom</li> <li>Area known for washouts</li> <li>Access issues between Sparwood and Line Creek Lateral</li> <li>Lateral goes through edge of tailings pond</li> <li>Highway and railway crossings</li> </ul> </li> <li>Property: <ul> <li>Teck property, historically challenging to work on</li> </ul> </li> <li>Indigenous Community Consultation: <ul> <li>Shuswap Indian Band</li> <li>Ktunaxa Nation Council*</li> </ul> </li> <li>Environmental: <ul> <li>Conservation area between Sparwood and Line Creek lateral</li> <li>Ungulate winter range 4-006</li> <li>Proximity to rivers and river crossings</li> <li>Stream and wetland crossings</li> <li>Species at risk occurrences, including 4 plant species at risk</li> <li>Osprey nest nearby</li> <li>Registered contaminated sites</li> </ul> </li> <li>Archaeological: <ul> <li>Archaeological sites nearby</li> <li>Area heavily disturbed by mining, may be hard to determine archaeology</li> </ul> </li> </ul>		

9 Band are collectively notified through Ktunaxa Nation Council.

8



1 FEI recommends ILI as the preferred alternative for the Fording Lateral 168/219 since all other 2 alternatives were previously screened out as discussed in Section 4.4.4 and 4.4.5 of the 3 Application: PLE was not feasible due to complex project execution as a result of the need to 4 excavate the entire length of the lateral; HSTP was not feasible as there is no practical means 5 to support downstream customers when the lateral is shut down for the work; PRS was 6 screened out as it is not feasible due to capacity limitations; and PLR was screened out as it is 7 cost prohibitive at a high level estimate compared to other feasible alternatives. The financial

8 analysis of ILI for the Fording Lateral 168/219 is shown in the table below.

	ILI
AACE Estimate Class	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	94,217
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	4,485
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	6,178
PV of Incremental Revenue Requirement - 66 years (\$000s)	102,818
Levelized Rate Impact - 66 years (%)	0.75%

## AACE Estimate Class Total Project Capital Costs, As-Spent, inc AFUDC & Removal (\$000s) PV of Post-Project Incremental Sustainn Capital - 66 years (\$000s) PV of Post-Project Incremental Sustainn O&M - 66 years (\$000s) PV of Incremental Revenue Requiremental 66 years (\$000s) Deleted: Levelized Rate Impact - 66 years (%)

9

10 ILI at this lateral will require a 219 millimetre control valve assembly and a 219 millimetre 11 launcher assembly at the start of the Fording 219 Lateral. At the site where the Fording lateral 12 reduces down to 168 millimetres in outer diameter at the 49 kilometre post (KP), there will be a 13 219 millimetre receiver assembly and a 168 millimetre launcher assembly. Lastly, there will be 14 a 168 millimetre receiver assembly at the Fording River Coal Mine Station where the lateral 15 terminates.

## 16 1.1.23 Elkview Lateral 168

17 The Elkview Lateral branches off of the Fording Lateral right at the intersection of Michel Creek

18 Road and Industrial 2 Road. From there, the lateral heads north and ends at 1.6 kilometres

19 where it serves Elkview Coal Mine.

Length of Pipeline (kilometres)		1.6	
Outside Diameter(s) (millimetres)		168	
Year of Construction		1970	
ROW Width (metres)		9-12	
Number of Customers	Residential	N/A	
	Commercial	N/A	
	Industrial	1	
Important Factors in Execution and		Operational Complexity:	
Lifecycle Operation		<ul> <li>Next to active coal mine plant</li> </ul>	

Deleted: N/A





Property: • Teck property Indigenous Community Consultation: • Shuswap Indian Band • Ktunaxa Nation Council* Environmental: • American badger occurrences
Ungulate winter range 4-006     One stream crossing
Osprey nest
Archaeological:
Pipeline crosses archaeological site
<ul> <li>Moderate to high archaeological potential</li> </ul>

\* Akisqnuk First Nation, Lower Kootenay Band, St. Mary's Indian Band, Tobacco Plains Indian
 Band are collectively notified through Ktunaxa Nation Council.

3 The financial comparison between the remaining alternatives of ILI, PLR and PRS for the 4 Elkview Lateral 168 is shown in the table below. PLE and HSTP were screened out as

5 discussed in Section 4.4.4 and 4.4.5 of the Application. PRS is a feasible alternative for this

6 lateral; after regulating the operating pressure of the lateral to 29.9 percent SMYS, there is still

7 substantial capacity in the pipeline to meet customer demands. PRS has the lowest project

8 capital cost but is slightly more expensive than PLR in terms of PV of incremental revenue

9 requirement and levelized rate impact due to the requirement of future sustainment capital and

10	O&M	for	PRS.

	ILI	PLR	PRS
AACE Estimate Class	Class 3	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	8,213	6,588	5,319
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,722	-	1,314
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	659	-	18
PV of Incremental Revenue Requirement - 66 years (\$000s)	10,072	5,850	5,877
Levelized Rate Impact - 66 years (%)	0.07%	0.04%	0.04%



12 The table below shows the scoring of ILI, PLR, and PRS for each of the three criteria, and the

13 overall weighted score:

11

# **FORTIS** BC<sup>\*\*</sup>

APPENDIX A DETAILED DESCRIPTION OF TWENTY-NINE LATERALS

	ILI	PLR	PRS
Integrity and Asset Management Capabilities	4.8	4.7	2.9
Project Execution & Lifecycle Operation	3.5	3.3	3.8
Financial	2.0	5.0	5.0
Overal Score	3.6	4.5	3.8

2 FEI recommends PRS as the preferred alternative for the Elkview Lateral 168 and will be 3 installed at the Elkview lateral tap.

4 Despite PLR having a higher overall score, the incremental capital cost is significant and 5 because PRS is feasible for this lateral, PLR is not recommended.

6 ILI is also not recommended for this lateral due to the incremental cost and challenging 7 construction terrain, which resulted in the lower overall scores for these alternatives.

## 8 1.1.24 Cranbrook Lateral 168

1

9 The Cranbrook Lateral 168 begins near Gold Creek Road and Cavern Creek Road. The lateral 10 follows Gold Creek Road to Cranbrook where it ends at 13 Street S and 26 Avenue S. 11 Cranbrook is home to approximately 20,000 residents and makes up the largest urban centre in 12 the Regional District of East Kootenay. The Cranbrook Kimberley system involves 6 different 13 laterals (Cranbrook Loop 219 described in Section 1.1.25, Cranbrook Kimberley Loop 273 described in Section 1.1.26, Cranbrook Kimberley Loop 219 described in Section 1.1.27, 14 15 Kimberley Lateral described in Section 1.1.28, and Skookumchuck Lateral described in Section 16 1.1.29) and, because they are all interconnected, they have been treated as one system and the 17 evaluation of alternatives for all these laterals was done together. For clarity, the system

18 diagram can be seen in the figure below.



\_\_\_\_\_

1

2

3

APPENDIX A

DETAILED DESCRIPTION OF TWENTY-NINE LATERALS







Length of Pipeline (kilometres)		34.0		
Outside Diameter(s) (millimetres) Year of Construction		168		
		1990		
ROW Width (r	netres)	10		
Number of	Residential	12,986		
Customers	Commercial	1,187		
	Industrial	21		
Important Fac	tors in Execution and	Operational Complexity:		
Lifecycle Operation		Many bends to replace if ILI is chosen Indigenous Community Consultation:		
		<ul><li>Shuswap Indian Band</li><li>Ktunaxa Nation Council*</li></ul>		
		<ul> <li>Environmental:</li> <li>Stream and wetland crossings</li> <li>Proximity to sensitive riparian areas</li> <li>Species at risk occurrences</li> <li>Wildlife habitat areas 4-180 for Grizzly bear</li> <li>Ungulate winter range 4-006</li> </ul>		
		<ul> <li>Archaeological:</li> <li>Archaeological sites near the end of the lateral</li> <li>Valley bottom has high potential archaeology</li> </ul>		

\* Akisqnuk First Nation, Lower Kootenay Band, St. Mary's Indian Band, Tobacco Plains Indian
 Band are collectively notified through Ktunaxa Nation Council.

3 FEI recommends ILI as the preferred alternative for the Cranbrook Lateral 168 since all other

4 alternatives were previously screened out as discussed in Section 4.4.4 and 4.4.5 of the

5 Application: PLE was not feasible due to complex project execution as a result of the need to

6 excavate the entire length of the lateral; HSTP was not feasible as there is no practical means

7 to support downstream customers when the lateral is shut down for the work; PRS was

8 screened out as it is not feasible due to capacity limitations; and PLR was screened out as it is

9 cost prohibitive at a high level estimate compared to other feasible alternatives.

10 The financial analysis of ILI for the Cranbrook Lateral 168 is shown in the table below.

	ILI
AACE Estimate Class	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	14,554
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	2,408
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	2,696
PV of Incremental Revenue Requirement - 66 years (\$000s)	21,151
Levelized Rate Impact - 66 years (%)	0.15%

AACE Estimate Class Total Project Capital Costs, As-Spent, inc

FORTIS BC<sup>®</sup>

AFUDC & Removal (\$000s) PV of Post-Project Incremental Sustainn Capital - 66 years (\$000s) PV of Post-Project Incremental Sustainn O&M - 66 years (\$000s) PV of Incremental Revenue Requiremental 66 years (\$000s) Deleted: Levelized Rate Impact - 66 years (%)

1

With ILI at this lateral, there will be a launcher and a control valve assembly at the start of the
Cranbrook lateral, and a receiver assembly at the Cranbrook Gate Station where the lateral
terminates.

# 5 **1.1.25 Cranbrook Loop 219**

6 The Cranbrook Loop 219 parallels the Cranbrook Lateral 168 from start to finish. It also begins

7 near Gold Creek Road and Cavern Creek Road. The loop follows Gold Creek Road all the way

8 to Cranbrook where it ends at 13 Street S and 26 Avenue S.

Length of Pipeline (kilometres)		34.0		
Outside Diameter(s) (millimetres)		219		
Year of Const	ruction	1968		
ROW Width (I	netres)	10		
Number of	Residential	12,986		
Customers	Commercial	1,187		
	Industrial	21		
Important Factors in Execution and Lifecycle Operation		<ul> <li>Many bends to replace if ILI is chosen</li> <li>Indigenous Community Consultation:         <ul> <li>Shuswap Indian Band</li> <li>Ktunaxa Nation Council*</li> </ul> </li> <li>Environmental:         <ul> <li>Stream and wetland crossings</li> <li>Proximity to sensitive riparian areas</li> <li>Species at risk occurrences</li> <li>Wildlife habitat areas 4-180 for Grizzly bear</li> <li>Ungulate winter range 4-006</li> <li>Archaeological:</li> </ul> </li> </ul>		
		<ul> <li>Archaeological sites near the end of the lateral</li> <li>Valley bottom has high potential archaeology</li> </ul>		





\* Akisqnuk First Na`tion, Lower Kootenay Band, St. Mary's Indian Band, Tobacco Plains Indian
 Band are collectively notified through Ktunaxa Nation Council.

3 FEI recommends ILI as the preferred alternative for the Cranbrook Loop 219 since all other 4 alternatives were previously screened out as discussed in Section 4.4.4 and 4.4.5 of the 5 Application: PLE was not feasible due to complex project execution as a result of the need to 6 excavate the entire length of the lateral; HSTP was not feasible as there is no practical means 7 to support downstream customers when the lateral is shut down for the work; PRS was 8 screened out as it is not feasible due to capacity limitations; and PLR was screened out as it is 9 cost prohibitive at a high level estimate compared to other feasible alternatives. The financial 10 analysis of ILI for the Cranbrook Loop 219 is shown in the table below.

	ILI
AACE Estimate Class	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	13,806
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,715
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	3,861
PV of Incremental Revenue Requirement - 66 years (\$000s)	20,752
Levelized Rate Impact - 66 years (%)	0.15%

	AACE Estimate Class
	Total Project Capital Costs, As-Spent, inc
	AFUDC & Removal (\$000s)
	PV of Post-Project Incremental Sustainn
	Capital - 66 years (\$000s)
	PV of Post-Project Incremental Sustainn
	O&M - 66 years (\$000s)
	PV of Incremental Revenue Requiremer
	66 years (\$000s)
Deleted:	Levelized Rate Impact - 66 years (%)

11

12 With ILI at this lateral, there will be a launcher and a shared control valve assembly with the 13 lateral at the start of the Cranbrook loop, and a receiver assembly at the Cranbrook Gate

14 Station where the loop terminates.

## 15 **1.1.26 Cranbrook Kimberley Loop 273**

The Cranbrook Kimberley Loop 273 begins where the Cranbrook Lateral 168 and Cranbrook
 Loop 219 end. This segment continues north to where the Cranbrook Kimberley Loop 219

18 begins.

Length of Pipeline (kilometres)		9.4
Outside Diameter(s) (millimetres)		273
Year of Construction		1992
ROW Width (metres)		9-18
Number of Customers	Residential	4,291
	Commercial	280
	Industrial	4
Important Factors in Execution and Lifecycle Operation		Property: <ul> <li>Private properties</li> </ul>





:	ROW width at tie in is 8m Crosses through Mission Hill golf course
5	enous Community Consultation:
	Shuswap Indian Band
•	Ktunaxa Nation Council*
Envir	onmental:
•	Stream and wetland crossings
•	Proximity to sensitive riparian areas
•	Species at risk occurrences
•	Critical Habitat polygon for caribou
•	Ungulate winter range 4-006
•	Registered contaminated site
Archa	aeological:
•	
•	Three known archaeological sites on Mission Hills
	golf course

\* Akisqnuk First Nation, Lower Kootenay Band, St. Mary's Indian Band, Tobacco Plains Indian
 Band are collectively notified through Ktunaxa Nation Council.

3 FEI recommends ILI as the preferred alternative for the Cranbrook Kimberley 273 since all other

4 alternatives were previously screened out as discussed in Section 4.4.4 and 4.4.5 of the

5 Application: PLE was not feasible due to complex project execution as a result of the need to

excavate the entire length of the lateral; HSTP was not feasible as there is no practical means
 to support downstream customers when the lateral is shut down for the work; PRS was

screened out as it is not feasible due to capacity limitations; and PLR was screened out as it is

9 cost prohibitive at a high level estimate compared to other feasible alternatives. The financial

analysis of ILI for the Cranbrook Kimberley Loop 273 is shown in the table below.

	ILI
AACE Estimate Class	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	8,156
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,357
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	1,031
PV of Incremental Revenue Requirement - 66 years (\$000s)	10,942
Levelized Rate Impact - 66 years (%)	0.08%



11

With ILI at this lateral, there will be a launcher assembly at the start of the loop at CranbrookGate Station and a receiver assembly at McPhee Station where the loop terminates.



## 1 1.1.27 Cranbrook Kimberley Loop 219

- 2 The Cranbrook Kimberley Loop 219 begins where the Cranbrook Lateral 168 and Cranbrook
- 3 Loop 219 end. This segment starts where the Cranbrook Loop 273 ends in McPhee Station and
- 4 loops the initial 4 kilometres section of the Kimberley Lateral 168 where it ends at 6 Mile Road
- 5 Station.

Length of Pipeline (kilometres)		4.0
Outside Diameter(s) (millimetres)		219
Year of Construction		1992
ROW Width (metres)		12
Number of	Residential	4,291
Customers	Commercial	280
	Industrial	4
Lifecycle Oper	ors in Execution and ation	Indigenous Community Consultation: <ul> <li>Shuswap Indian Band</li> <li>Ktunaxa Nation Council*</li> </ul> <li>Environmental: <ul> <li>Stream crossings</li> <li>Heron Rookery</li> <li>Species at risk occurrences</li> <li>Critical habitat polygon for caribou</li> <li>Ungulate winter range 4-006</li> </ul> </li> <li>Archaeological: <ul> <li>Moderate to high archaeological potential</li> </ul></li>

<sup>6</sup> \* Akisqnuk First Nation, Lower Kootenay Band, St. Mary's Indian Band, Tobacco Plains Indian
<sup>7</sup> Band are collectively notified through Ktunaxa Nation Council.

8 FEI recommends ILI as the preferred alternative for the Cranbrook Kimberley Loop 219 since all 9 other alternatives were previously screened out as discussed in Section 4.4.4 and 4.4.5 of the 10 Application: PLE was not feasible due to complex project execution as a result of the need to 11 excavate the entire length of the lateral; HSTP was not feasible as there is no practical means

12 to support downstream customers when the lateral is shut down for the work; PRS was 13 screened out as it is not feasible due to capacity limitations; and PLR was screened out as it is

cost prohibitive at a high level estimate compared to other feasible alternatives. The financial

15 analysis for the Cranbrook Kimberley Loop 219 is shown in the table below.
	ILI
AACE Estimate Class	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	7,032
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,334
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	491
PV of Incremental Revenue Requirement - 66 years (\$000s)	9,387
Levelized Rate Impact - 66 years (%)	0.07%

*F*ORTIS BC<sup>\*</sup>

	AACE Estimate Class	
	Total Project Capital Costs, As-Spent, inc	
	AFUDC & Removal (\$000s)	
	PV of Post-Project Incremental Sustainn	
	Capital - 66 years (\$000s)	
	PV of Post-Project Incremental Sustainn	
	O&M - 66 years (\$000s)	
	PV of Incremental Revenue Requiremer	
	66 years (\$000s)	
Deleted:	Levelized Rate Impact - 66 years (%)	

1

With ILI at this lateral, there will be a launcher assembly at the start of the loop at the McPheeStation and a receiver assembly at Six Mile Road Station where the loop terminates.

## 4 1.1.28 Kimberley Lateral 168

5 The Kimberley Lateral 168 begins at the same site where the Cranbrook Kimberley Loop 273

6 ends and the Cranbrook Kimberley Loop 219 begins. The Kimberley Lateral 168 follows the

7 Northstar Rails to Trails road through Wycliffe and continues north where the 168 millimetre

- 8 section ends in Ta Ta Creek. The lateral reduces to 114 millimetre and continues into the City
- 9 of Kimberley, home to approximately 4500 residents.

Length of Pipeline (kilometres) 20.6		
Outside Diameter(s) (millimetres) 168		168
Year of Construction		1962
ROW Width (metres) 10		10
Number of	Residential	4,291
Customers	Commercial	280
	Industrial	4
Important Factors in Execution and Lifecycle Operation		Operational Complexity: Crosses St Mary River Road and highway crossings Property: Private properties ROW width down to 10m in one section Indigenous Community Consultation: Shuswap Indian Band Ktunaxa Nation Council* Environmental: Steam crossings Critical habitat polygons for caribou and

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<ul><li>woodpecker</li><li>St Mary River crossing</li><li>Species at risk occurrences</li><li>Registered contaminated sites</li></ul>
Archaeological: • Moderate to high archaeological potential

\* Akisqnuk First Nation, Lower Kootenay Band, St. Mary's Indian Band, Tobacco Plains Indian
 Band are collectively notified through Ktunaxa Nation Council.

FEI recommends ILI as the preferred alternative for the Kimberley Lateral 168 since all other alternatives were previously screened out as discussed in Section 4.4.4 and 4.4.5 of the Application: PLE was not feasible due to complex project execution as a result of the need to excavate the entire length of the lateral; HSTP was not feasible as there is no practical means to support downstream customers when the lateral is shut down for the work; PRS was screened out as it is not feasible due to capacity limitations; and PLR was screened out as it is cost prohibitive at a high level estimate compared to other feasible alternatives. The financial analysis for the Kimberly Lateral 168 is shown in the table below.

10 analysis for the Kimberly Lateral 168 is shown in the table below.

	ILI
AACE Estimate Class	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	19,839
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,452
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	2,558
PV of Incremental Revenue Requirement - 66 years (\$000s)	23,542
Levelized Rate Impact - 66 years (%)	0.17%

12 With ILI at this lateral, there will be a launcher assembly at the McPhee Station and a receiver 13 assembly at Ta Ta Creek where the 168 millimetre section of Kimberley Lateral terminates and

assembly at Ta Ta Creek where the 168 millim
 reduces to 114 millimetres in outer diameter.

### 15 **1.1.29 Skookumchuck Lateral 219**

16 The Skookumchuck Lateral begins just north of Mission Wycliffe Road and Mellor Road in

17 Cranbrook. The Skookumchuck lateral heads north along Highway 95A and Highway 95 until it

18 reaches Skookumchuck Pulp mill.

11

Length of Pipeline (kilometres)	35.9
Outside Diameter(s) (millimetres)	219
Year of Construction	1968

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	AACE Estimate Class
	Total Project Capital Costs, As-Spent, inc
	AFUDC & Removal (\$000s)
	PV of Post-Project Incremental Sustainn
	Capital - 66 years (\$000s)
	PV of Post-Project Incremental Sustainn
	O&M - 66 years (\$000s)
	PV of Incremental Revenue Requiremer
	66 years (\$000s)
d:	Levelized Rate Impact - 66 years (%)

Delete



ROW Width (metres)		12
Number of	Residential	75
Customers	Commercial	1
	Industrial	1
Important Fac Lifecycle Ope	tors in Execution and ration	Operational Complexity:         • Railway crossing         • Creek crossings         Property:         • Crown and private properties         • ROW width down to 10m in one section         Indigenous Community Consultation:         • Shuswap Indian Band         • Ktunaxa Nation Council*         Environmental:         • Stream and wetland crossings         • Critical habitat polygons for caribou and woodpecker         • Species at risk occurrences         • Wildlife Habitat Area 4-117 for antelope brush/ bluebunch wheatgrass plant community         • Wildlife Habitat Area 4-089 and 4-091 for American Badger         • Wildlife Habitat Area 4-068 for Long-billed Curlew         • Ungulate Winter Ranges 4-008 and 4-006         • Important Bird Area Skookumchuck Prairie         • Registered contaminated site
		<ul> <li>Archaeological:</li> <li>Archaeological site near TaTa Creek</li> </ul>
		<ul> <li>Archaeological site hear faith Creek</li> <li>Moderate to high archaeological potential</li> </ul>

\* Akisqnuk First Nation, Lower Kootenay Band, St. Mary's Indian Band, Tobacco Plains Indian
 Band are collectively notified through Ktunaxa Nation Council.

3 FEI recommends ILI as the preferred alternative for the Skookumchuck Lateral 219 since all 4 other alternatives were previously screened out as discussed in Section 4.4.4 and 4.4.5 of the 5 Application: PLE was not feasible due to complex project execution as a result of the need to 6 excavate the entire length of the lateral; HSTP was not feasible as there is no practical means 7 to support downstream customers when the lateral is shut down for the work; PRS was 8 screened out as it is not feasible due to capacity limitations; and PLR was screened out as it is cost prohibitive at a high level estimate compared to other feasible alternatives. The financial 9 10 analysis of ILI for the Skookumchuck Lateral 219 is shown in the table below.

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1

	ш
AACE Estimate Class	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	8,177
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,646
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	3,825
PV of Incremental Revenue Requirement - 66 years (\$000s)	14,001
Levelized Rate Impact - 66 years (%)	0.10%

2 With ILI at this lateral, there will be a launcher assembly at the start of the Skookumchuck lateral

where it ties into the Kimberley lateral, and a receiver assembly at the Skookumchuck Pulp Millstation at the end of the lateral.

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# Appendix A-2 DETAILED DESCRIPTION OF TWENTY NINE LATERALS

# **EVIDENTIARY UPDATE APRIL 5, 2019**

CLEAN



## 1 **1.1** DETAILED DESCRIPTION OF TWENTY-NINE LATERALS

2 This appendix FEI provides a detailed overview of all 29 laterals as well as the alternatives 3 evaluation of each lateral.

## 4 1.1.1 Mackenzie Lateral 168 (MAC LTL 168)

5 The Mackenzie Lateral 168 starts off of the Enbridge mainline near John Hart Highway and 6 heads north to the town of Mackenzie, home to approximately 3500 residents. It operates 7 together as a single system with the Mackenzie Loop 168 (described below in Section 1.1.2).

8 This lateral has two water crossings – the Mischinsinlika Creek and Williston Lake. There are

- 9 two large industrial customers being supplied from this lateral including Mackenzie Pulp Mill and
- 10 Conifex Sawmill.

Length of Pipeline (kilometres) 28		28.6
Outside Diameter(s) (millimetres) 16		168, 88
Year of Construction		1966
Right of way wi	dth (metres)	10
Number of	Residential	1,672
Customers	Commercial	139
	Industrial	6
Important Facto Lifecycle Opera	ors in Execution and ation	<ul> <li>Operational Complexity: <ul> <li>Overhead BC Hydro power lines at ILI Receiver assembly site</li> </ul> </li> <li>Property: <ul> <li>Acquisition of ROW</li> </ul> </li> <li>Indigenous Community Consultation: <ul> <li>Blueberry River First Nation</li> <li>West Moberly First Nation</li> <li>Halfway River First Nation</li> <li>Doig River First Nation</li> <li>MacLeod Lake Indian Band</li> </ul> </li> <li>Environmental: <ul> <li>Wetlands</li> <li>Mischinsinlika Creek crossing</li> <li>Registered contaminated sites</li> <li>Raptor nests nearby</li> <li>Amphibian breeding habitat</li> </ul> </li> <li>Archaeological: <ul> <li>Moderate to high archaeological potential</li> </ul> </li> </ul>



- 1 FEI recommends ILI as the preferred alternative for the Mackenzie Lateral 168 since all other
- 2 alternatives were previously screened out as discussed in Section 4.4.4 and 4.4.5 of the
- 3 Application: PLE was not feasible due to complex project execution as a result of the need to
- 4 excavate the entire length of the lateral; HSTP was not feasible as there is no practical means
- 5 to support downstream customers when the lateral is shut down for the work; PRS was
- 6 screened out as it is not feasible due to capacity limitations; and PLR was screened out as it is
- 7 cost prohibitive at a high level estimate compared to other feasible alternatives.
- 8 The financial analysis of ILI for the Mackenzie Lateral 168 is shown in the table below.

	ILI
AACE Estimate Class	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	38,024
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	2,266
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	2,754
PV of Incremental Revenue Requirement - 66 years (\$000s)	44,750
Levelized Delivery Rate Impact - 66 years (%)	0.32%

With ILI at this lateral, there will be a Launcher assembly and a Control Valve assembly at the start of the lateral and a Receiver assembly just east of Old Airport Road. In order to have a continuous in-line inspection from the start of the lateral to the end, another 168 millimetre crossing is planned to be installed at the Mischinsinlika Creek. Without this additional crossing, FEI would require another launcher and receiver assembly since the current crossing is 219 millimetres and would not be compatible with the 168 millimetre ILI tool.

## 16 **1.1.2 Mackenzie Loop 168 (MAC LOP 168)**

Similar to the Mackenzie Lateral 168, the Mackenzie Loop 168 starts off at the Enbridge Tap
near John Hart Highway and completely loops the Mackenzie Lateral 168 to the start of the
Mischinsinlika Creek crossing. The Mackenzie Loop then continues to loop the Mackenzie
Lateral after the Mischinsinlika Creek crossing for another 2 kilometres where it terminates. The
Mackenzie Lateral 168 and the Mackenzie Loop 168 operate together as a single system.

Length of Pipeline (kilometres)		14.2
Outside Diameter(s) (millimetres)		168, 219
Year of Construction		1972
ROW Width (metres)		10
Number of	Residential	1,672
Customers	Commercial	139



Industrial	6
Important Factors in Execution and Lifecycle Operation	Property: • Acquisition of ROW
	Indigenous Community Consultation: <ul> <li>Blueberry River First Nation</li> <li>West Moberly First Nation</li> <li>Halfway River First Nation</li> <li>Doig River First Nation</li> </ul>
	<ul> <li>MacLeod Lake Indian Band</li> <li>Environmental: <ul> <li>Wetlands and creek crossings</li> <li>Registered contaminated sites</li> <li>Raptor nests nearby</li> <li>Amphibian breeding habitat</li> </ul> </li> </ul>
	<ul><li>Archaeological:</li><li>Moderate to high archaeological potential</li></ul>

1 FEI recommends ILI as the preferred alternative for the Mackenzie Loop 168 since all other 2 alternatives were previously screened out as discussed in Section 4.4.4 and 4.4.5 of the 3 Application: PLE was not feasible due to complex project execution as a result of the need to 4 excavate the entire length of the lateral; HSTP was not feasible as there is no practical means 5 to support downstream customers when the lateral is shut down for the work; PRS was 6 screened out as it is not feasible due to capacity limitations; and PLR was screened out as it is 7 cost prohibitive at a high level estimate compared to other feasible alternatives. The financial 8 analysis of ILI for Mackenzie Loop 168 is shown in the table below.

	IU
AACE Estimate Class	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	22,700
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,418
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	1,168
PV of Incremental Revenue Requirement - 66 years (\$000s)	25,188
Levelized Rate Impact - 66 years (%)	0.18%

9

10 With ILI at this lateral, there will be a 168 millimetre launcher assembly at the start of the loop

11 and a 168 millimetre receiver assembly where the Mischinsinlika Creek crossing begins. There

12 will also be a 219 millimetre launcher assembly at the start of the Creek crossing, and a 219

13 millimetre receiver assembly 2 kilometres downstream of the creek. In addition, approximately



1 160 metres of the Mackenzie Loop immediately downstream of the crossing will have to be 2 upgraded from a pipe size of 168 millimetres to 219 millimetres.

# 3 1.1.3 BC Forest Products Lateral 168 (BCF LTL 168)

4 The BC Forest Products lateral is a short lateral that branches off of the Mackenzie Lateral just

5 West of Coquiwaldy Road feeding Mackenzie Pulp Mill Corporation. The Mackenzie Lateral

6 168, the Mackenzie Loop 168 and the BC Forest Products Lateral 168 operate together as a

7 single system.

Length of Pipe	line (kilometres)	0.5	
	eter(s) (millimetres)	168	
Year of Constr	uction	1970	
ROW Width (m	etres)	N/A	
Number of	Residential	N/A	
Customers	Commercial	N/A	
	Industrial	1	
Important Fact Lifecycle Oper	ors in Execution and ation	<ul> <li>Operational Complexity: <ul> <li>Canadian National Railway crossing</li> <li>Cannot take line out of service</li> </ul> </li> <li>Property: <ul> <li>Currently no ROW, and will be requiring 18m ROW for the pipeline replacement</li> </ul> </li> <li>Indigenous Community Consultation: <ul> <li>West Moberly First Nations</li> <li>Halfway River First Nations</li> <li>Doig River First Nations</li> <li>MacLeod Lake Indian Band</li> </ul> </li> <li>Environmental: <ul> <li>Registered contaminated sites</li> </ul> </li> </ul>	

The financial comparison between the remaining alternatives of ILI, PLR and PRS for the BC 8 9 Forest Products Lateral 168 is shown in the table below. PLE and HSTP were screened out as discussed in Section 4.4.4 and 4.4.5 of the Application. PRS is a feasible alternative for this 10 11 lateral; after regulating the operating pressure of the lateral to 29.9 percent SMYS, there is still substantial capacity in the pipeline to meet customer demands. Due to the fact that this is a 12 13 relatively short lateral at approximately 0.5 kilometres, PLR is less expensive than ILI and PRS. 14 Additionally, PLR has a smaller rate impact than ILI and PRS, with a lower total PV of 15 incremental revenue requirement and levelized rate impact.



	ILI	PLR	PRS
AACE Estimate Class	Class 3	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	9,242	3,612	5,317
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,903	-	1,527
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	675	-	20
PV of Incremental Revenue Requirement - 66 years (\$000s)	12,598	3,536	6,955
Levelized Rate Impact - 66 years (%)	0.09%	0.03%	0.05%

4

2 The table below shows the scoring of each alternative for each of the three criteria, and the

3 overall weighted score:

	ILI	PLR	PRS
Integrity and Asset Management Capabilities	4.8	4.7	2.9
Project Execution & Lifecycle Operation	3.8	4.2	4.0
Financial	1.0	5.0	2.0
Overal Score	3.3	4.7	2.8

5 FEI recommends PLR as the preferred alternative for BC Forest Products Lateral. With the

6 PLR alternative, the entire pipeline will be replaced.

## 7 1.1.4 Northwood Pulp Lateral 168

8 The Northwood Pulp Lateral begins at the Enbridge tap just north of the Fraser River near the 9 Fraser-Fort George and Prince George boundary. This lateral is looped by Northwood Pulp 10 Loop 168 (described in Section 1.1.5) for most of the lateral, and the two lines join to feed 11 Prince George 3 Lateral (described in Section 1.1.6). Because of this configuration, the three 12 pipelines were treated as a single system when evaluating alternatives. The Northwood Pulp 13 Lateral continues south past the start of the Prince George 3 Lateral and supplies the

14 Northwood Pulp Mill.

Length of Pip	eline (kilometres)	6.0	
Outside Diam	eter(s) (millimetres)	168	
Year of Const	truction	1965	
ROW Width (	metres)	15	
Number of	Residential	17,716	
Customers	Commercial	1,834	
	Industrial	52	
Important Fac Lifecycle Ope	ctors in Execution and eration	<ul><li>Operational Complexity:</li><li>Assets will need to be installed on elevated</li></ul>	



<ul> <li>platforms due to sites having flooded in the past</li> <li>Existing tap has no odourization for about 600 meters</li> <li>Cannot be taken out of service</li> <li>Road crossings</li> <li>Rail ROW</li> </ul> Property: <ul> <li>Obtaining ROW on Enbridge property</li> <li>One property owned by Canfor on last 400m</li> </ul> Indigenous Community Consultation: <ul> <li>Nak'azdli Whut'en'</li> <li>Nazko First Nation</li> </ul>
<ul> <li>Carrier Chilcotin Tribal council</li> <li>Lheidli – T'enneh Band</li> </ul>
Environmental:
Water crossings
<ul> <li>Fraser River critical habitat for fish species at risk</li> <li>Registered contaminated sites</li> </ul>
Archaeological:
<ul> <li>High risk archaeology, no known site but proximity to water and reserve increases risk</li> </ul>

The financial comparison between the remaining alternatives of ILI and PRS for the Northwood Pulp Lateral 168 is shown in the table below. PLE, HSTP and PLR were screened out as discussed in Section 4.4.4 and 4.4.5 of the Application. PRS is a feasible alternative for this lateral; after regulating the operating pressure of the lateral to 29.9 percent SMYS, there is still substantial capacity in the pipeline to meet customer demands. PRS has the lowest project capital cost, and the lowest total PV of incremental revenue requirement and levelized rate

7 impact when compared to ILI.

	ILI	PRS
AACE Estimate Class	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	12,174	1,760
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,902	481
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	1,088	6
PV of Incremental Revenue Requirement - 66 years (\$000s)	15,379	2,201
Levelized Rate Impact - 66 years (%)	0.11%	0.02%

8

9 The table below shows the scoring of ILI and PRS for each of the three criteria, and the overall

## 10 weighted score:



	ILI	PRS
Integrity and Asset Management Capabilities	4.8	2.9
Project Execution & Lifecycle Operation	3.3	4.3
Financial	1.0	5.0
Overal Score	3.2	3.9

2 FEI recommends PRS as the preferred alternative for the Northwood Pulp Lateral 168.

3 Because Northwood Pulp Lateral feeds the Northwood Pulp Loop and Prince George 3, all three

4 lines can be served by one PRS.

## 5 1.1.5 Northwood Pulp Loop 219

6 The Northwood Pulp Loop starts at the same point as the Northwood Pulp Lateral, and

7 continues to the Prince George 3 Lateral, effectively bypassing the Northwood Pulp mill to boost

8 the capacity of the supply feeding Prince George.

Length of Pipel	line (kilometres)	5.8	
Outside Diame	ter(s) (millimetres)	219	
Year of Constru	uction	1995	
ROW Width (m	etres)	15	
Number of	Residential	17,716	
Customers	Commercial	1,834	
	Industrial	52	
Important Facto Lifecycle Opera	ors in Execution and ation	<ul> <li>Operational Complexity:</li> <li>Swampy areas due and sites have flooded in the past</li> <li>Assets will need to be installed on elevated platforms</li> <li>Existing tap has no odourization for about 600 meters</li> <li>Cannot be taken out of service</li> <li>Road crossings</li> <li>Rail ROW</li> </ul> Property: <ul> <li>Obtaining ROW on Enbridge property</li> <li>One property owned by Canfor on last 400m</li> </ul> Indigenous Community Consultation: <ul> <li>Nak'azdli Whut'en'</li> <li>Nazko First Nation</li> <li>Carrier Chilcotin Tribal council</li> <li>Lheidli – T'enneh Band</li> </ul> Environmental: <ul> <li>Water crossings</li> <li>Fraser River critical habitat for fish species at risk</li> </ul>	



Registered contaminated sites
<ul> <li>Archaeological:</li> <li>High risk archaeology, no known site but proximity to water and reserve increases risk</li> </ul>

- 1 The financial comparison between the remaining alternatives of ILI and PRS for the Northwood
- 2 Pulp Loop 219 is shown in the table below. PLE, HSTP and PLR were screened out as
- 3 discussed in Section 4.4.4 and 4.4.5 of the Application. PRS is a feasible alternative for this
- 4 lateral; after regulating the operating pressure of the lateral to 29.9 percent SMYS, there is still
- 5 substantial capacity in the pipeline to meet customer demands. PRS is also the alternative with
- 6 the lowest project capital cost. Additionally, PRS has the lowest impact to FEI's ratepayers in
- 7 terms of the total PV of incremental revenue requirement and levelized rate impact over a 66-
- 8 year analysis period when compared to ILI.

	ILI	PRS
AACE Estimate Class	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	11,470	1,758
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,311	481
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	1,061	6
PV of Incremental Revenue Requirement - 66 years (\$000s)	14,056	2,198
Levelized Rate Impact - 66 years (%)	0.10%	0.02%

- 9
- 10 The table below shows the scoring of ILI and PRS for each of the three criteria, and the overall
- 11 weighted score:

	IU	PRS
Integrity and Asset Management Capabilities	4.8	2.9
Project Execution & Lifecycle Operation	3.4	4.3
Financial	1.0	5.0
Overal Score	3.2	3.9

As described in the Northwood Pulp Lateral description, PRS was chosen as the preferred alternative, and given that the Northwood Pulp Lateral 168, the Northwood Pulp Loop 168 and the Prince George 3 Lateral 219 are all treated as one system, PRS was selected as the preferred alternative for the Northwood Pulp Loop.

## 17 **1.1.6 Prince George 3 Lateral 219**

18 The Prince George 3 Lateral branches off of the Northwood Pulp Lateral, and begins just west 19 of the intersection of Beaver Forest Road and Industrial Access Road to the North of Northwood



- 1 Pulp Mill. This lateral heads southwest and ends on Noranda Road near McMillian Creek. At
- 2 Noranda Road is the start of an intermediate pressure pipeline which spans from the North end
- 3 of Prince George to the South end where it connects to the Prince George 2 Lateral. Together,
- 4 these two laterals support the entire City of Prince George, home to approximately 74,000
- 5 residents, and 31,000 FEI customers.

Length of Pipel	line (kilometres)	5.3	
Outside Diame	ter(s) (millimetres)	219	
Year of Constru	uction	1970	
ROW Width (m	etres)	6	
Number of	Residential	17,716	
Customers	Commercial	1,834	
	Industrial	52	
Important Facto Lifecycle Opera	ors in Execution and ation	<ul> <li>Operational Complexity:</li> <li>Swampy areas due and sites have flooded in the past</li> <li>Assets will need to be installed on elevated platforms</li> <li>Cannot take line out of service</li> </ul>	
		<ul> <li>Narrow ROW</li> <li>ROW in road along Old Summit Lake Road for 450m</li> <li>Parallels BC Hydro ROW</li> <li>Private and Crown land</li> </ul>	
		Indigenous Community Consultation: <ul> <li>Nak'azdli Whut'en'</li> <li>Nazko First Nation</li> <li>Carrier Chilcotin Tribal council</li> <li>Lheidli – T'enneh Band</li> </ul> Environmental:	
		<ul> <li>McMillan Creek and other small creek crossings</li> <li>Registered contaminated sites</li> <li>Archaeological:         <ul> <li>Moderate to high archaeological potential with three areas confirmed high archaeological potential</li> </ul> </li> </ul>	

- 6 The financial comparison between ILI and PRS for the Prince George 3 Lateral 219 is shown in
- 7 the table below. PLE, HSTP and PLR were screened out as discussed in Section 4.4.4 and
- 8 4.4.5 of the Application. PRS is a feasible alternative for this lateral; after regulating the
- 9 operating pressure of the lateral to 29.9 percent SMYS, there is still substantial capacity in the



- 1 pipeline to meet customer demands. PRS has the lowest project capital cost, and the lowest
- 2 total PV of incremental revenue requirement and levelized rate impact.

	IU	PRS
AACE Estimate Class	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	11,785	1,753
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,305	479
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	1,031	6
PV of Incremental Revenue Requirement - 66 years (\$000s)	14,315	2,191
Levelized Rate Impact - 66 years (%)	0.10%	0.02%

4 The table below shows the scoring of ILI and PRS for each of the three criteria, and the overall

5 weighted score:

	ILI	PRS
Integrity and Asset Management Capabilities	4.8	2.9
Project Execution & Lifecycle Operation	3.5	4.6
Financial	1.0	5.0
Overal Score	3.2	4.0

6

As described in the Northwood Pulp Lateral and Loop descriptions, PRS was recommended as
the preferred alternative for the system. Since the Prince George 3 Lateral is supplied by
Northwood Pulp Lateral and Loop, FEI recommends PRS as the preferred alternative for this
lateral. In addition, PRS has an added benefit of lower potential impacts to surrounding
Indigenous communities compared to ILI.

## 12 **1.1.7 Prince George 1 Lateral 168**

The Prince George 1 Lateral taps off of Enbridge south of the Graves Road and Shelley Road intersection. The lateral continues west and ends near Pickering Road where it connects to the Prince George Pulp Lateral (described in Section 1.1.8) and subsequently Husky Oil Lateral (described in Section 1.1.9). Together, the laterals supply gas to 1229 customers, with several significant industrial customers.

Length of Pipe	line (kilometres)	4.7
Outside Diame	ter(s) (millimetres)	168
Year of Constru	uction	1957
ROW Width (m	etres)	18
Number of	Residential	1,171



Customers	Commercial	50
	Industrial	8
Important Factors in Execution and Lifecycle Operation		Operational Complexity: • Stopping off and welding fittings at a higher
		Property: • Obtaining ROW on Enbridge property Indigenous Community Consultation: • Nak'azdli Whut'en' • Nazko First Nation • Carrier Chilcotin Tribal council • Lheidli – T'enneh Band
		<ul> <li>Environmental:</li> <li>Creek crossings</li> <li>Potential for occurrence of a plant species at risk</li> <li>Registered contaminated sites</li> </ul> Archaeological: <ul> <li>Moderate to high archaeological potential</li> </ul>

1 FEI recommends ILI as the preferred alternative for the Prince George 1 Lateral 168 since all

other alternatives were previously screened out as discussed in Section 4.4.4 and 4.4.5 of the Application: PLE was not feasible due to complex project execution as a result of the need to excavate the entire length of the lateral; HSTP was not feasible as there is no practical means to support downstream customers when the lateral is shut down for the work; PRS was screened out as it is not feasible due to capacity limitations; and PLR was screened out as it is

7 cost prohibitive at a high level estimate compared to other feasible alternatives. The financial

8 analysis of ILI for the Prince George 1 Lateral 168 is shown in the table below.

	ILI
AACE Estimate Class	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	12,241
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,873
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	601
PV of Incremental Revenue Requirement - 66 years (\$000s)	14,401
Levelized Rate Impact - 66 years (%)	0.10%



1 With ILI for this lateral, a launcher assembly and a control valve assembly will be installed at the

- 2 start of the Prince George 1 Lateral, and a receiver assembly where the Prince George 1
- 3 Lateral terminates and the Prince George Pulp Lateral starts.

## 4 **1.1.8 Prince George Pulp Lateral 168**

5 The Prince George Pulp Lateral continues where the Prince George 1 Lateral (described in 6 Section 1.1.7) terminates. This lateral crosses the Fraser River and feeds Canfor Pulp mill. 7 This lateral also connects directly to the Husky Oil Lateral (described in Section 1.1.9). 8 Consideration was given to treating Prince George 1 Lateral, Prince George Pulp Lateral and 9 Husky Oil Lateral. However, since PRS was not feasible on Prince George 1 Lateral, it was not 10 evaluated as a system. Prince George Pulp Lateral and Husky Oil Lateral however, were 11 evaluated as a system.

Length of Pipe	line (kilometres)	1.0
Outside Diame	ter(s) (millimetres)	168
Year of Constru	uction	1964
ROW Width (m	etres)	0*
Number of	Residential	1,171
Customers	Commercial	50
	Industrial	8
Important Facto Lifecycle Opera	ors in Execution and ation	<ul> <li>Operational Complexity: <ul> <li>Fraser River crossing</li> <li>Steep slope at the start of the lateral to the river crossing</li> <li>Stopping off and welding fittings at a higher pressure to maintain customer gas requirements</li> <li>CN Bridge crossing</li> </ul> </li> <li>Property: <ul> <li>No existing R/W in place</li> <li>Works within rail corridor Limited space on the Canfor Pulp mill where the lateral ends</li> </ul> </li> <li>Indigenous Community Consultation: <ul> <li>Nak'azdli Whut'en'</li> <li>Nazko First Nation</li> <li>Carrier Chilcotin Tribal council</li> <li>Lheidli – T'enneh Band</li> </ul> </li> <li>Environmental: <ul> <li>Fraser River crossing</li> <li>Mature forested riparian area associated with the Fraser River.</li> <li>Potential for occurrence of a plant species at risk</li> <li>Registered contaminated sites</li> </ul> </li> </ul>



## Archaeological:

• Moderate to high archaeological potential

1

\* No existing ROW, lateral is located within railway corridor and FEI has a License to Operate

The financial comparison between the remaining alternatives of ILI, PLR, and PRS for the Prince George Pulp Lateral 168 is shown in the table below. PLE and HSTP were screened out as discussed in Section 4.4.4 and 4.4.5 of the Application. PRS is a feasible alternative for this lateral; after regulating the operating pressure of the lateral to 29.9 percent SMYS, there is still substantial capacity in the pipeline to meet customer demands. Because Prince George Pulp Lateral and Husky Oil Lateral are treated as a system, the PRS is shared between the two, resulting in a lower project capital cost, lower PV of incremental revenue requirement, and lower

9 rate impact than the other alternatives.

	IU	PLR	PRS
AACE Estimate Class	Class 3	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	11,664	8,384	2,938
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,836	-	769
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	680	-	9
PV of Incremental Revenue Requirement - 66 years (\$000s)	14,331	7,727	3,600
Levelized Rate Impact - 66 years (%)	0.10%	0.06%	0.03%

10

11 The table below shows the scoring of each alternative for each of the three criteria, and the

12 overall weighted score:

	ILI	PLR	PRS
Integrity and Asset Management Capabilities	4.8	4.7	2.9
Project Execution & Lifecycle Operation	3.5	3.3	3.8
Financial	1.0	1.0	5.0
Overal Score	3.2	3.1	3.8

13

FEI recommends PRS as the preferred alternative for Prince George Pulp lateral, and
subsequently Husky Oil Lateral. One PRS will be installed at the start of the Prince George
Pulp Lateral and will be able to serve Husky Oil Lateral as well.

## 17 **1.1.9 Husky Oil Lateral 168**

18 The Husky Oil Lateral continues from Canfor Pulp where the Prince George Pulp Lateral ends,

and continues north where it runs parallel to Prince George Pulpmill Road. This lateral supplies

20 gas for significant industrial customers including Husky Oil and FMC.



Length of Pipe	line (kilometres)	1.1
Outside Diame	ter(s) (millimetres)	168
Year of Constr	uction	1967
ROW Width (m	etres)	0*
Number of	Residential	1,171
Customers	Commercial	50
	Industrial	8
Important Fact Lifecycle Opera	ors in Execution and ation	<ul> <li>Operational Complexity: <ul> <li>BC Railway crossing</li> <li>Stopping off and welding fittings at a higher pressure to maintain customer gas requirements</li> <li>Pipeline in road allowance runs between buried NPS 42 water pipeline on south side and Husky facility on north side</li> </ul> </li> <li>Property: <ul> <li>ROW required at the end of the lateral</li> <li>Limited land at end of NPS 6 lateral</li> <li>Existing pipe within road allowance</li> </ul> </li> <li>Indigenous Community Consultation: <ul> <li>Nak'azdli Whut'en'</li> <li>Nazko First Nation</li> <li>Carrier Chilcotin Tribal council</li> <li>Lheidli – T'enneh Band</li> </ul> </li> <li>Environmental: <ul> <li>Registered contaminated site</li> <li>1 osprey nest nearby</li> <li>Potential for occurrence of a plant species at risk</li> </ul> </li> </ul>

1 \* Pipe located in road allowance so no ROW exists for this lateral

2 The financial comparison between the remaining alternatives of ILI, PLR, and PRS for the 3 Husky Oil Lateral 168 is shown in the table below. PLE and HSTP were screened out as 4 discussed in Section 4.4.4 and 4.4.5 of the Application. PRS is a feasible alternative for this 5 lateral; after regulating the operating pressure of the lateral to 29.9 percent SMYS, there is still 6 substantial capacity in the pipeline to meet customer demands. Because the PRS is shared 7 between Prince George Pulp Lateral and Husky Oil Lateral, it has the lowest project capital cost, and the lowest total PV of incremental revenue requirement and levelized rate impact when 8 9 compared to other alternatives.



	ILI	PLR	PRS
AACE Estimate Class	Class 3	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	14,440	5,956	2,939
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,252	-	770
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	682	-	9
PV of Incremental Revenue Requirement - 66 years (\$000s)	16,392	5,601	3,601
Levelized Rate Impact - 66 years (%)	0.12%	0.04%	0.03%

2 The table below shows the scoring of each alternative for each of the three criteria, and the

3 overall weighted score:

	ILI	PLR	PRS
Integrity and Asset Management Capabilities	4.8	4.7	2.9
Project Execution & Lifecycle Operation	3.5	3.3	3.8
Financial	1.0	2.0	5.0
Overal Score	3.2	3.5	3.8

4

5 FEI recommends PRS as the preferred alternative based on financial scoring and the evaluation

6 of Prince George Pulp lateral and Husky Oil lateral as a single system. The PRS option is

7 achievable with one PRS at the start of Prince George Pulp lateral to serve Husky Oil Lateral as

8 well since the two laterals are connected sequentially.

## 9 **1.1.10 Prince George 2 Lateral 219**

10 The Prince George 2 Lateral begins near the intersection of Evasko Road and Johnson Road 11 and heads west until it ends at Highway 97 and Terminal Boulevard. A Gate Station at Highway

12 97 and Terminal Boulevard feeds the intermediate pressure pipeline that connects with the

13 supply from Noranda Gate Station supplied from the Prince George 3 Lateral. As described

14 previously, these two laterals are critical for supplying gas to the city of Prince George.

Length of Pip	eline (kilometres)	8.6
Outside Diam	eter(s) (millimetres)	219
Year of Const	ruction	1965
ROW Width (r	netres)	6
Number of	Residential	17,217
Customers	Commercial	1,596
Industrial		44
Important Factors in Execution and		Operational Complexity:
Lifecycle Operation  • Cannot take offline		Cannot take offline



<ul> <li>Road crossing</li> <li>ROW in road allowance with high traffic near PG Airport</li> </ul>		
Property:		
All private land		
Indigenous Community Consultation:		
Nak'azdli Whut'en'		
Nazko First Nation		
Carrier Chilcotin Tribal council		
Lheidli – T'enneh Band		
Environmental:		
Stream crossings		
Archaeological:		
<ul> <li>Moderate to high archaeological potential with three areas confirmed high archaeological potential</li> </ul>		

1 The financial comparison between the remaining alternatives of ILI and PRS for the Prince

2 George 2 Lateral 219 is shown in the table below. PLE, HSTP and PLR were screened out as

3 discussed in Section 4.4.4 and 4.4.5 of the Application. PRS is a feasible alternative for this

4 lateral; after regulating the operating pressure of the lateral to 29.9 percent SMYS, there is still

5 substantial capacity in the pipeline to meet customer demands. PRS has the lowest project

6 capital cost, the lowest total PV of incremental revenue requirement, and lowest levelized rate

7 impact.

	IU	PRS
AACE Estimate Class	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	12,384	5,157
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,922	1,365
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	1,283	18
PV of Incremental Revenue Requirement - 66 years (\$000s)	15,839	6,342
Levelized Rate Impact - 66 years (%)	0.11%	0.05%

8

9 The table below shows the scoring of ILI and PRS for each of the three criteria, and the overall



	ILI	PRS
Integrity and Asset Management Capabilities	4.8	2.9
Project Execution & Lifecycle Operation	3.7	4.3
Financial	1.0	5.0
Overal Score	3.3	3.9

2 FEI recommends PRS as the preferred alternative for the Prince George 2 Lateral 168. With

3 this alternative, the PRS would be installed at the start of the lateral near the Enbridge tap.

## 4 1.1.11 Cariboo Pulp Lateral 168

5 The Cariboo Pulp Lateral begins near the North end of North Star Road in Quesnel and 6 continues west to feed Cariboo Pulp & Paper, the sole customer served by the lateral.

Length of Pipe	line (kilometres)	1.3
	ter(s) (millimetres)	168
Year of Constru		1972
ROW Width (m	etres)	10
Number of	Residential	N/A
Customers	Commercial	N/A
	Industrial	1
Important Facto Lifecycle Opera	ors in Execution and ation	<ul> <li>Property: <ul> <li>Additional ROW required</li> </ul> </li> <li>Indigenous Community Consultation: <ul> <li>Tsihlqot'in National Government</li> <li>Carrier Chilcotin Tribal Council</li> <li>Lhtako Dene Nation</li> <li>Lhoosk'uz Dene Nation</li> <li>Ulkatcho First Nation</li> </ul> </li> <li>Environmental: <ul> <li>Registered contaminated site</li> <li>Occurrence of a plant species at risk</li> </ul> </li> <li>Archaeological: <ul> <li>Moderate to high archaeological potential</li> </ul> </li> </ul>

7 The financial comparison between the remaining alternatives of ILI, PLR, and PRS for the 8 Cariboo Pulp Lateral 168 is shown in the table below. PLE and HSTP were screened out as 9 discussed in Section 4.4.4 and 4.4.5 of the Application. PRS is a feasible alternative for this 10 lateral; after regulating the operating pressure of the lateral to 29.9 percent SMYS, there is still 11 substantial capacity in the pipeline to meet customer demands. Although PLR has a higher 12 capital cost compared to PRS, PLR has similar rate impacts as PRS primarily due to the 13 additional sustainment capital and O&M costs required for the PRS in the future.



	ILI	PLR	PRS
AACE Estimate Class	Class 3	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	7,119	5,595	4,888
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,915	-	1,443
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	711	-	20
PV of Incremental Revenue Requirement - 66 years (\$000s)	10,507	5,521	6,487
Levelized Rate Impact - 66 years (%)	0.08%	0.04%	0.05%

4

2 The table below shows the scoring of ILI, PLR, and PRS for each of the three criteria, and the

3 overall weighted score:

	ILI	PLR	PRS
Integrity and Asset Management Capabilities	4.8	4.7	2.9
Project Execution & Lifecycle Operation	3.3	3.3	4.3
Financial	2.0	5.0	4.0
Overal Score	3.5	4.5	3.5

5 FEI recommends PLR as the preferred alternative for the Cariboo Pulp lateral as this alternative

6 has the highest overall score. PLR is lower in terms of total PV of incremental revenue 7 requirements over the 66-year analysis period.

8 PRS scored lower than PLR since the technical performance is not as high due to the fact that 9 PRS would still be managing a vintage pipe. Since PLR is not the least expensive alternative, 10 subject matter experts were called upon to provide input on alternatives for this lateral and 11 concluded PLR will offer better technical superiority over PRS since it will be a new pipeline with 12 modern coating while the PRS alternative will still be maintain a vintage pipeline, therefore, PLR 13 was selected as the preferred alternative.

## 14 **1.1.12 Williams Lake Loop 1/Loop 2 168**

The Williams Lake Loop begins south of Lund Road approximately 1 kilometre east of MintonLake, where it ties into the Williams Lake Lateral 114. The loop heads towards the Williams

- 17 Lake Airport and continues along Jacobson Road and ends just north of Kemp Road where the
- 18 114 lateral continues toward the City of Williams Lake, home to approximately 11,000 residents.

Length of Pipeline (kilometres)	Williams Lake Loop 1	Williams Lake Loop 2
Length of Pipeline (kilometres)	3.4	2.5
Outside Diameter(s) (millimetres)	168	168
Year of Construction	1993	1998
ROW Width (metres)	6	6



Number of	Residential	5,998
Customers	Commercial	813
	Industrial	15
Important Fac Lifecycle Oper	tors in Execution and ration	Operational Complexity: • Several road crossings • Crosses airport runway Property: • All land in Agricultural Land Reserve Indigenous Community Consultation: • Xats'ull First Nation • Northern Secwepemc Tribal Council • Canim Lake Band • Neskonlith Indian Band • Tsihlqot'in National Government • Williams Lake Indian Band
		Environmental: <ul> <li>Stream and wetland crossings</li> <li>Registered contaminated site</li> </ul>
		<ul> <li>Old Growth Management Areas</li> <li>Archaeological: <ul> <li>Moderate to high archaeological potential</li> </ul> </li> </ul>

The financial comparison between the remaining alternatives of ILI and PRS for the Williams Lake Loop 168 is shown in the table below. PLE, HSTP and PLR were screened out as discussed in Section 4.4.4 and 4.4.5 of the Application. PRS is a feasible alternative for this lateral; after regulating the operating pressure of the lateral to 29.9 percent SMYS, there is still substantial capacity in the pipeline to meet customer demands. PRS has the lowest project

6 capital cost, lowest total PV of incremental revenue requirement, and lowest levelized rate7 impact.

	ILI	PRS
AACE Estimate Class	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	13,391	5,066
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,833	1,343
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	1,025	18
PV of Incremental Revenue Requirement - 66 years (\$000s)	15,692	5,951
Levelized Rate Impact - 66 years (%)	0.11%	0.04%

- 1 The table below shows the scoring of ILI and PRS for each of the three criteria, and the overall
- 2 weighted score:

	ILI	PRS
Integrity and Asset Management Capabilities	4.8	2.9
Project Execution & Lifecycle Operation	3.5	4.3
Financial	1.0	5.0
Overal Score	3.2	3.9

FEI recommends PRS as the preferred alternative for the Williams Lake Loop 168. With this
alternative, the PRS would be installed on the Williams Lake 114 Lateral to simultaneously
reduce the operating pressure of both the Williams Lake lateral and loop.

7 ILI was not selected due to the significantly higher rate impact as a result of higher incremental

8 cost for the required assemblies. There are also potential difficulties in land acquisition in the

9 Agricultural Land Reserve for ILI.

## 10 **1.1.13 Kamloops Lateral/Loop 168**

11 The Kamloops Lateral and Loop begin near Hillside Drive and copperhead Drive in the Dufferin

12 neighbourhood, where it heads north to feed the Kamloops Gate Station which supplies the City

13 of Kamloops, home to approximately 90,000 residents. A significant industrial customer on this

14 lateral is the Domtar Pulp Mill.

Length of Pipe	line (kilometres)	Kamloops 1 Lateral 168	Kamloops 1 Loop 168
Length of Pipeline (kilometres)		3.6	3.1
Outside Diame	ter(s) (millimetres)	168	168
Year of Construction		1965	1979
ROW Width (m	etres)	6-12	6-12
Number of	Residential	15,391	
Customers	Commercial	1,588	
	Industrial	36	
Important Fact Lifecycle Oper	ors in Execution and ation	Operational Complexity: Difficult terrain with Property: Park Use Permit re Indigenous Community Con Adams Lake Indiar Ashcroft Indian Bar Little Shuswap Lak Bonaparte Indian E Whispering Pines/ Neskonlith Indian Bar	quired nsultation: Band nd e Indian Band Band Clinton Band Band



I
<ul> <li>Esh-kn-am Cultural Resources</li> </ul>
<ul> <li>Boothroyd Indian Band</li> </ul>
<ul> <li>Spuzzum First Nation</li> </ul>
<ul> <li>Skuppah Indian Band</li> </ul>
<ul> <li>Nlaka'pamux Nation Tribal Council</li> </ul>
Nicola Tribal Association
Lower Nicola Indian Band
Lytton First Nation
Siska Indian Band
Cook's Ferry Indian Band
Coldwater Indian Band
Oregon Jack Creek Indian Band
Skeetchestn Indian Band
Tk'emlups Band
<ul> <li>Stk'emlupsemc te Secwepemc Nation (SSN)</li> </ul>
Environmental:
Critical habitat for woodpecker, toad and snake
Occurrences of species at risk
Pipeline runs through municipal Kenna
Cartwright Park
, , , , , , , , , , , , , , , , , , ,
Archaeological:
<ul> <li>Assessment required within park boundary</li> </ul>
Heritage site nearby
• Three areas of high archaeological potential
confirmed

1 The financial comparison between the remaining alternatives of ILI and PLR for the Kamloops 1

2 Lateral & Loop 168 is shown in the table below. PLE, HSTP and PRS were screened out as

3 discussed in Section 4.4.4 and 4.4.5 of the Application. Between ILI and PLR, PLR has a lower

4 project capital cost and lower total PV of incremental revenue requirement and levelized rate5 impact.

	ILI	PLR
AACE Estimate Class	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	29,222	16,877
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,921	-
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	1,120	-
PV of Incremental Revenue Requirement - 66 years (\$000s)	32,104	15,795
Levelized Rate Impact - 66 years (%)	0.23%	0.11%

6

7 The table below shows the scoring of ILI and PLR for each of the three criteria, and the overall

## 8 weighted score:



	ILI	PLR
Integrity and Asset Management Capabilities	4.8	4.7
Project Execution & Lifecycle Operation	3.5	3.6
Financial	1.0	5.0
Overal Score	3.2	4.6

- 1
- 2 FEI recommends PLR as the preferred alternative for the Kamloops 1 Lateral and Loop 168.

## 3 **1.1.14 Salmon Arm Loop 168**

4 The Salmon Arm Loop 168 begins on the Savona-Nelson Mainline of the FEI Interior 5 Transmission System just east of St Annes Road in the township of Spallumcheen, where it 6 heads north towards Armstrong along Otter Lake Road. From Armstrong, the loop continues 7 along Vernon Sicamous Highway to Enderby and from Enderby towards Salmon Arm where the 8 loop ends. The loop is also critical to serving the communities north of Salmon Arm, as far as 9 Sorrento. The populations of Spallumcheen, Armstrong, Enderby, and Salmon Arm total more 10 than 31,000 combined.

Length of Pipeline (kilometres)		44.9		
Outside Diameter(s) (millimetres) Year of Construction		168		
		1976-1987		
ROW Width (n	netres)	3-9		
Number of	Residential	11,830		
Customers	Commercial	1,136		
	Industrial	24		
Important Factors in Execution and Lifecycle Operation		Operational Complexity: • Crosses Vernon Sicamous Highway		
		<ul> <li>Property:</li> <li>Potential trespass issue in Splats'in First Nation reserve</li> <li>Private property</li> <li>Log barn property (ROW encroachment)</li> <li>First Nations land tenure (28.2 permit)</li> </ul> Indigenous Community Consultation: <ul> <li>Neskonlith Indian Band</li> <li>Okanagan Nation Alliance</li> <li>Penticton Indian Band</li> <li>Upper Nicola Indian Band</li> <li>Lower Similkameen Indian Band</li> <li>Okanagan Indian Band</li> <li>Adams Lake Indian Band</li> <li>Little Shuswap Lake Indian Band</li> <li>Splats'in First Nation</li> </ul>		
		Environmental:		



<ul> <li>Critical habitat for great basin spadefoot</li> <li>Osprey and hawk nests nearby</li> <li>Great blue heron rookery</li> <li>Species at risk occurrences</li> <li>Amphibian breeding habitats</li> </ul>
<ul> <li>Registered contaminated site</li> <li>Archaeological:</li> <li>Moderate to high archaeological potential with two areas of high archaeological potential confirmed</li> </ul>

- 1 FEI recommends ILI as the preferred alternative for the Salmon Arm Loop 168 since all other
- 2 alternatives were previously screened out as discussed in Section 4.4.4 and 4.4.5 of the
- 3 Application: PLE was not feasible due to complex project execution as a result of the need to
- 4 excavate the entire length of the lateral; HSTP was not feasible as there is no practical means
- 5 to support downstream customers when the lateral is shut down for the work; PRS was
- 6 screened out as it is not feasible due to capacity limitations; and PLR was screened out as it is
- 7 cost prohibitive at a high level estimate compared to other feasible alternatives. The financial
- 8 analysis of ILI for the Salmon Arm Loop 168 is shown in the table below.

	ILI
AACE Estimate Class	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	29,241
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	2,247
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	3,592
PV of Incremental Revenue Requirement - 66 years (\$000s)	
Levelized Rate Impact - 66 years (%)	0.24%

10 With ILI for this lateral, there will be a launcher and a control valve assembly at the start of the

11 loop, and a receiver assembly at the Salmon Arm Gate Station where the loop terminates.

## 12 **1.1.15 Salmon Arm 3 Lateral 168**

- 13 The Salmon Arm 3 Lateral starts off of the Salmon Arm 114 Lateral just East of Shaw Road in
- 14 Salmon Arm at the Canoe Creek golf course. From there it heads north and ends near the Auto
- 15 Road SE and 6 Street SE intersection.

Length of Pipeline (kilometres)		0.8
Outside Diameter(s) (millimetres)		168
Year of Construction		1981
ROW Width (metres)		9
Number of	Residential	3,426



Customers	Commercial	261
	Industrial	9
Important Fact Lifecycle Oper	ors in Execution and	<ul> <li>9</li> <li>Property: <ul> <li>Crosses Canoe Creek golf course</li> </ul> </li> <li>Indigenous Community Consultation: <ul> <li>Neskonlith Indian Band</li> <li>Okanagan Nation Alliance</li> <li>Penticton Indian Band</li> <li>Upper Nicola Indian Band</li> <li>Lower Similkameen Indian Band</li> <li>Okanagan Indian Band</li> <li>Adams Lake Indian Band</li> <li>Little Shuswap Lake Indian Band</li> <li>Splats'in First Nation</li> </ul> </li> <li>Archaeological: <ul> <li>One area of high archaeological potential</li> </ul> </li> </ul>
		<ul> <li>Adams Lake Indian Band</li> <li>Little Shuswap Lake Indian Band</li> <li>Splats'in First Nation</li> </ul> Archaeological:

1 The financial comparison between the remaining alternatives of ILI, PLR and PRS for the

2 Salmon Arm 3 Lateral 168 is shown in the table below. PLE and HSTP were screened out as

3 discussed in Section 4.4.4 and 4.4.5 of the Application. As this is a relatively short pipeline,

4 PLR has a lower project capital cost, lower PV of incremental revenue requirement and

5 levelized rate impact when compared to ILI and PRS.

	ILI	PLR	PRS
AACE Estimate Class	Class 3	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	7,136	4,290	5,007
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,893	-	1,463
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	705	-	20
PV of Incremental Revenue Requirement - 66 years (\$000s)	10,493	4,191	6,589
Levelized Rate Impact - 66 years (%)	0.08%	0.03%	0.05%

6

9

7 The table below shows the scoring of each ILI, PLR, and PRS for each of the three criteria, and

8 the overall weighted score:

	ILI	PLR	PRS
Integrity and Asset Management Capabilities	4.8	4.7	2.9
Project Execution & Lifecycle Operation	2.8	3.3	4.3
Financial	1.0	5.0	2.0
Overal Score	3.1	4.5	2.8



1 FEI recommends PLR as the preferred alternative for the Salmon Arm 3 Lateral because it is

- 2 the alternative with the highest overall score. PLR has the lowest project capital cost, lowest
- 3 total PV of incremental revenue requirement, and lowest levelized rate impact. Because of
- 4 where the lateral is located relative to the Canoe Creek golf course, PLR will have less impact
- 5 both during and post-construction than ILI and PRS.
- 6 PRS involves the construction of a permanent above ground facility adjacent to the Canoe
- 7 Creek Golf Course club house.

## 8 1.1.16 Coldstream Loop 168

9 The Coldstream Loop 168 starts about 400 metres east of Apollo Road in Vernon on the

- 10 Savona-Penticton Mainline of the FEI Interior Transmission System, and heads directly east to
- 11 where it joins the start of the Coldstream Lateral 219 (described in Section 1.1.17). Because
- 12 the loop and lateral are connected, the two are treated as a single system in the evaluation of
- 13 alternatives.

Length of Pipe	line (kilometres)	3.8		
Outside Diame	ter(s) (millimetres)	168		
Year of Construction		1989		
ROW Width (m	etres)	9		
Number of	Residential	13,357		
Customers	Commercial	1,017		
	Industrial	48		
Lifecycle Opera	ors in Execution and ation	<ul> <li>Operational Complexity: <ul> <li>Unexploded ordnances along ROW</li> <li>Crosses highway 97 and Okanagan college campus</li> </ul> </li> <li>Property: <ul> <li>Crosses Vernon Golf and Country Club course</li> </ul> </li> <li>Indigenous Community Consultation: <ul> <li>Neskonlith Indian Band</li> <li>Penticton Indian Band</li> <li>Upper Nicola Indian Band</li> <li>Okanagan Nation Alliance</li> <li>Okanagan Indian Band</li> <li>Lower Similkameen Indian Band</li> <li>Splats'in First Nation</li> <li>Environmental: <ul> <li>Critical habitat for great basin spadefoot and two species of snake</li> <li>Stream crossings</li> <li>Species at risk occurrences</li> <li>Registered contaminated site</li> </ul> </li> </ul></li></ul>		



Archaeological:
<ul> <li>Moderate to high archaeological potential with six areas of high archaeological potential confirmed</li> </ul>

- 1 The financial comparison between the remaining alternatives of ILI and PRS for the Coldstream
- 2 Loop 168 is shown in the table below. PLE, HSTP and PLR were screened out as discussed in
- 3 Section 4.4.4 and 4.4.5 of the Application. PRS is a feasible alternative for this lateral; after
- 4 regulating the operating pressure of the lateral to 29.9 percent SMYS, there is still substantial
- 5 capacity in the pipeline to meet customer demands. PRS has the lowest project capital cost,
- 6 lowest PV of incremental revenue requirement, and lowest levelized rate impact.

	ILI	PRS
AACE Estimate Class	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	12,077	5,102
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,791	1,348
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	847	18
PV of Incremental Revenue Requirement - 66 years (\$000s)	14,241	6,019
Levelized Rate Impact - 66 years (%)	0.10%	0.04%

8 The table below shows the scoring of ILI and PRS for each of the three criteria, and the overall

9 weighted score:

	ILI	PRS
Integrity and Asset Management Capabilities	4.8	2.9
Project Execution & Lifecycle Operation	3.2	4.3
Financial	1.0	5.0
Overal Score	3.1	3.9

10

FEI recommends PRS as the preferred alternative for the Coldstream Loop 168. PRS is the alternative with the highest overall score for the Coldstream Loop 168 and the Coldstream Lateral 219 thus PRS is the preferred alternative for both lines. With this alternative, the PRS would be installed at the start of the Coldstream Loop 168.

15 ILI was screened out due to higher rate impact as a result of the length of the loop and greater
 16 complexity due to the road crossing and unexploded ordinances which lead to lower project
 17 execution scores.



## 1 1.1.17 Coldstream Lateral 219

- 2 The Coldstream Lateral 219 starts off on Reservoir Road in Vernon and heads north on the
- 3 West side of the Vernon Golf and Country Club. The lateral ends off just south of Polson Drive
- 4 and 14 Avenue. From here, an intermediate pressure pipeline travels along Highway 6
- 5 eastbound where it supplies Coldstream. The District of Coldstream is home to approximately
- 6 10,000 residents.

Length of Pipe	eline (kilometres)	1.8
Outside Diame	eter(s) (millimetres)	219, 114
Year of Consti	ruction	1998
ROW Width (m	netres)	15
Number of	Residential	13,357
Customers	Commercial	1,017
	Industrial	48
Important Fac Lifecycle Oper	tors in Execution and ration	Operational Complexity: • Creek crossing
		<ul> <li>Property:</li> <li>Crosses Vernon Golf and Country Club course</li> <li>Access required for FLNRO tree farm</li> </ul>
		<ul> <li>Indigenous Community Consultation:</li> <li>Neskonlith Indian Band</li> <li>Penticton Indian Band</li> <li>Upper Nicola Indian Band</li> <li>Okanagan Nation Alliance</li> <li>Okanagan Indian Band</li> <li>Lower Similkameen Indian Band</li> <li>Splats'in First Nation</li> </ul>
		<ul> <li>Environmental:</li> <li>Critical habitat for great basin spadefoot and two species of snake</li> <li>Stream crossings including a creek which leads to Kalamalka Lake</li> <li>Species at risk occurrences</li> <li>Registered contaminated site</li> </ul>
		<ul> <li>Archaeological:</li> <li>Moderate to high archaeological potential with six areas of high archaeological potential confirmed</li> </ul>

7 The financial comparison between the remaining alternatives of ILI, PLR, and PRS for the

8 Coldstream Lateral 219 is shown in the table below. PLE and HSTP were screened out as

9 discussed in Section 4.4.4 and 4.4.5 of the Application. PRS is a viable alternative for this

10 lateral; after regulating the operating pressure of the lateral to 29.9 percent SMYS, there is still

11 substantial capacity in the pipeline to meet customer demands. AACE Class 3 estimates were



- 1 developed for all three alternatives as the project capital costs were relatively close to each
- 2 other. At a lateral length of approximately 1.8 kilometres, all three alternatives are relatively
- 3 comparable financially with PRS having the lowest PV of incremental revenue requirement and
- 4 levelized rate impact. PLR has the highest project capital cost, but has lower rate impact than
- 5 ILI due to the fact that ILI requires future capital and O&M expenditures for ILI re-inspection.

	ILI	PLR	PRS
AACE Estimate Class	Class 3	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	11,123	10,514	5,029
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,765	-	1,333
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	688	-	18
PV of Incremental Revenue Requirement - 66 years (\$000s)	13,159	9,334	5,933
Levelized Rate Impact - 66 years (%)	0.10%	0.07%	0.04%

9

7 The table below shows the scoring of ILI, PLR, and PRS for each of the three criteria, and the

8 overall weighted score:

	ILI	PLR	PRS
Integrity and Asset Management Capabilities	4.8	4.7	2.9
Project Execution & Lifecycle Operation	3.3	3.2	4.3
Financial	1.0	2.0	5.0
Overal Score	3.2	3.4	3.9

10 Based on the scoring and the treatment of Coldstream Lateral and Loop as one system, FEI 11 recommends PRS as the preferred alternative for the Coldstream Lateral 219. The PRS will be 12 installed at the start of Coldstream Lateral 114 since this lateral supplies the Coldstream Lateral 13 219. Even though Coldstream Lateral 114 is not part of the 29 laterals in this project, it would 14 be prudent to install the PRS at the start of the 114 Lateral because there will be little or no 15 additional costs to apply pressure reduction to Coldstream Lateral 114. This would also be 16 beneficial because it would reduce the Coldstream 114 lateral below 30 percent SMYS as well. 17 preventing rupture potential of that section of pipe. The smaller footprint of the PRS compared 18 to ILI and PLR is desirable due to environmental concerns.

19 ILI and PLR were both screened out by the financial analysis due to the length of the lateral and20 complexity including stream crossing and environmental risks.



## 1 **1.1.18 Kelowna 1 Loop 219**

- 2 The Kelowna 1 Loop begins on the corner of the Wal-Mart parking lot at the intersection of
- 3 Enterprise Way and Banks Road. From there, the loop heads west until it ends at Alphonse 4 Boad. The City of Kelewine is home to approximately 128,000 residents.
- 4 Road. The City of Kelowna is home to approximately 128,000 residents.

Length of Pipe	line (kilometres)	2.1	
Outside Diame	ter(s) (millimetres)	219	
Year of Constru	uction	1976	
ROW Width (m	etres)	15	
Number of	Residential	29,999	
Customers	Commercial	3,235	
	Industrial	48	
Important Factors in Execution and Lifecycle Operation		Operational Complexity: • Road crossing	
Important Factors in Execution and		<ul> <li>Property: <ul> <li>High land value</li> <li>Walmart parking lot</li> </ul> </li> <li>Indigenous Community Consultation: <ul> <li>Esh-kn-am Cultural Resources Management Services</li> <li>Nooaitch Indian Band</li> <li>Okanagan Nation Alliance</li> <li>Penticton Indian Band</li> <li>Upper Nicola Indian Band</li> <li>Lower Similkameen Indian Band</li> <li>Dkanagan Indian Band</li> </ul> </li> <li>Environmental: <ul> <li>Riparian areas</li> <li>Species at risk occurrences</li> <li>At risk plant communities</li> <li>Mill Creek fish bearing stream</li> <li>Meadowbrook community garden</li> <li>Registered contaminated site</li> </ul> </li> <li>Archaeological: <ul> <li>Moderate to high archaeological potential</li> </ul> </li> </ul>	

- 5 The financial comparison between the remaining alternatives of ILI and PRS for the Kelowna 1
- 6 Loop 219 is shown in the table below. PLE, HSTP and PLR were screened out as discussed in
- 7 Section 4.4.4 and 4.4.5 of the Application. PRS is a feasible alternative for this lateral; after
- 8 regulating the operating pressure of the lateral to 29.9 percent SMYS, there is still substantial
- 9 capacity in the pipeline to meet customer demands. PRS has the lowest project capital cost,
- 10 lowest PV of incremental revenue requirement, and lowest levelized rate impact.



	ILI	PRS
AACE Estimate Class	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	12,008	5,891
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,769	1,348
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	692	18
PV of Incremental Revenue Requirement - 66 years (\$000s)	13,969	6,902
Levelized Rate Impact - 66 years (%)	0.10%	0.05%

2 The table below shows the scoring of ILI and PRS for each of the three criteria, and the overall

3 weighted score:

	ILI	PRS
Integrity and Asset Management Capabilities	4.8	2.9
Project Execution & Lifecycle Operation	2.8	4.3
Financial	1.0	5.0
Overal Score	3.1	3.9

4

5 FEI recommends PRS as the preferred alternative for the Kelowna 1 Loop 219. Since Kelowna

1 Loop 219 is connected to Kelowna 1 Lateral 114, the PRS will affect both lines and as a
 result, will need to regulate the pressure in both of the lines.

8 ILI was not suitable for this location due to the high profile location. It would be difficult to install

9 and operate a launcher and control valve assembly in the Walmart parking lot, resulting in the

10 low score for Project Execution and Lifecycle Operation.

## 11 **1.1.19 Celgar Lateral 168**

12 The Celgar Lateral 168 begins west of Columbia Ave and 11st in the City of Castlegar, home to

13 approximately 8000 residents. From here the lateral heads West right up to serve the Zellstoff

14 Celgar Pulp Mill.

Length of Pip	eline (kilometres)	5.8
Outside Diameter(s) (millimetres)		168
Year of Const	truction	1960
ROW Width (I	metres)	12-18
Number of	Residential	N/A
Customers	Commercial	N/A
	Industrial	2
Important Fac	ctors in Execution and	Operational Complexity:



Lifecycle Operation	<ul> <li>Very steep terrain</li> <li>Adjacent to BC Hydro ROW</li> <li>Property: <ul> <li>Private and crown land</li> </ul> </li> </ul>
	Indigenous Community Consultation: Adam Lake Neskonlith Indian Band Penticton Indian Band Upper Nicola Indian Band Okanagan Nation Alliance Lower Similkameen Indian Band Okanagan Indian Band Splats'in First Nation Osoyoos Indian Band Shuswap Indian Band Environmental: Stream crossings An area of old forest Species at risk occurrences Wildlife habitat area 8-373 for Grizzly bear Ungulate winter range 4-001
	Archaeological: Moderate to high archaeological potential

1 The financial comparison between the remaining alternatives of ILI and PRS for the Celgar

2 Lateral 168 is shown in the table below. PLE, HSTP and PLR were screened out as discussed

3 in Section 4.4.4 and 4.4.5 of the Application. PRS is a feasible alternative for this lateral; after

4 regulating the operating pressure of the lateral to 29.9 percent SMYS, there is still substantial

5 capacity in the pipeline to meet customer demands. PRS has the lowest project capital cost,

6 lowest PV of incremental revenue requirement and lowest levelized rate impact.

	ILI	PRS
AACE Estimate Class	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	10,176	5,376
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,220	1,278
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	988	18
PV of Incremental Revenue Requirement - 66 years (\$000s)	11,731	5,898
Levelized Rate Impact - 66 years (%)	0.09%	0.04%

7

8 The table below shows the scoring of ILI and PRS for each of the three criteria, and the overall

## 9 weighted score:


	ILI	PRS
Integrity and Asset Management Capabilities	4.8	2.9
Project Execution & Lifecycle Operation	3.5	4.0
Financial	2.0	5.0
Overal Score	3.6	3.8

2 FEI recommends PRS as the preferred alternative for Celgar lateral 168. The PRS would be

3 located downstream of the Celgar take off so the pressure regulation does not affect the

4 Castlegar Nelson lateral.

#### 1.1.20 Castlegar Nelson 168 5

- 6 The Castlegar Nelson 168 begins just north of Columbia Ave and 11st in the City of Castlegar,
- 7 home to approximately 8,000 residents. This lateral continues north all the way to the City of
- 8 Nelson, home to 11,000 residents.

Length of Pipe	line (kilometres)	37.4
Outside Diameter(s) (millimetres) 168		168
Year of Constru	uction	1957
ROW Width (m	etres)	12-18
Number of	Residential	9,657
Customers	Commercial	10
	Industrial	61
•	ors in Execution and ation	Operational Complexity: • Highway crossing
Lifecycle Operation		Property: Private and crown land Need to verify municipal land New HDD for river crossing Very sloped terrain Indigenous Community Consultation: Adam Lake Neskonlith Indian Band Penticton Indian Band Upper Nicola Indian Band Okanagan Nation Alliance Lower Similkameen Indian Band Okanagan Indian Band Splats'in First Nation Sosyoos Indian Band Shuswap Indian Band Environmental: Brilliant river crossing Stream and wetland crossings



<ul> <li>Fish species at risk</li> <li>Critical habitat for caribou and woodpecker</li> <li>Areas of old forest</li> <li>Species at risk occurrences</li> <li>Wildlife habitat area 8-373 for Grizzly bear</li> <li>Ungulate winter range 4-001</li> <li>Registered contaminated sites</li> </ul>
<ul> <li>Archaeological:</li> <li>Large archaeological sites near Brilliant Dam</li> <li>Archaeological sites near Kootenay River and Slocan River intersect</li> <li>Registered arch sites on Zuckerberg Island</li> <li>Moderate to high archaeological potential</li> </ul>

- 1 The financial comparison between the remaining alternatives of ILI and PRS for the Castlegar
- 2 Nelson 168 is shown in the table below. PLE, HSTP and PLR were screened out as discussed
- 3 in Section 4.4.4 and 4.4.5 of the Application. PRS is a feasible alternative for this lateral; after
- 4 regulating the operating pressure of the lateral to 29.9 percent SMYS, there is still substantial
- 5 capacity in the pipeline to meet customer demands. PRS has the lowest project capital cost,
- 6 lowest PV of incremental revenue requirement and lowest levelized rate impact.

	IU	PRS
AACE Estimate Class	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	53,656	8,343
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	2,162	1,805
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	3,799	18
PV of Incremental Revenue Requirement - 66 years (\$000s)	54,183	8,986
Levelized Rate Impact - 66 years (%)	0.39%	0.07%

- 8 The table below shows the scoring of ILI and PRS for each of the three criteria, and the overall
- 9 weighted score:

	ILI	PRS
Integrity and Asset Management Capabilities	4.8	2.9
Project Execution & Lifecycle Operation	3.2	4.0
Financial	1.0	5.0
Overal Score	3.2	3.8

10

FEI recommends PRS as the preferred alternative for the Castlegar Nelson 168. With this
alternative, there will be a PRS downstream of the Celgar lateral so that the pressure regulation
of Castlegar Nelson 168 does not affect the Celgar lateral. In addition, a span of 400 m of 219



millimetre pipe will be replaced with 168 millimetre pipe so that the entire Castlegar Nelsonlateral will be operating below 30 percent SMYS.

3 ILI was not recommended for this lateral due to the challenging terrain as well as the 4 significantly higher incremental cost, which resulted in an overall lower score for these 5 alternatives.

### 6 1.1.21 Trail Lateral 168

7 The Trail Lateral 168 starts about 1.6 kilometres west of Rivervale. This lateral travels south

8 along Aldridge Ave and heads west, ending just north of Bingay Road. This lateral serves Teck

9 Trail Operations, Teck Cominco, the City of Trail and the village of Warfield. Trail is home to

10 approximately 7800 residents and Warfield home to 1800 residents.

Length of Pipe	line (kilometres)	4.2
Outside Diameter(s) (millimetres) 168		168
Year of Constr	uction	1957
ROW Width (m	etres)	9-12
Number of	Residential	3,205
Customers	Commercial	310
	Industrial	7
Important Fact Lifecycle Oper	ors in Execution and ation	<ul> <li>Operational Complexity: <ul> <li>Highway ROW road allowance</li> </ul> </li> <li>Property: <ul> <li>Teck/Cominco property, have had challenges with permission to work on property in the past</li> </ul> </li> <li>Indigenous Community Consultation: <ul> <li>Penticton Indian Band</li> <li>Upper Nicola Indian Band</li> <li>Okanagan Nation Alliance</li> <li>Lower Similkameen Indian Band</li> <li>Okanagan Indian Band</li> <li>Splats'in First Nation</li> <li>Osoyoos Indian Band</li> <li>Akisqnuk First Nation</li> <li>Lower Kootenay Band</li> <li>Aq'am Community Government</li> <li>Tobacco Plains Indian Band</li> </ul> </li> </ul>
		<ul> <li>Environmental:</li> <li>Stream and wetland crossings</li> <li>Wildlife habitat areas 8-373 for Grizzly bear</li> <li>Ungulate winter range 4-001</li> <li>Registered contaminated site</li> </ul>



Archaeological:

- One archaeological site identified
- Moderate to high archaeological potential
- \* Akisqnuk First Nation, Lower Kootenay Band, St. Mary's Indian Band, Tobacco Plains Indian
   Band are collectively notified through Ktunaxa Nation Council.

The financial comparison between the remaining alternatives of ILI and PRS for the Trail Lateral https://www.initation.com/alternatives/stream of the table below. PLE, HSTP and PLR were screened out as discussed in Section 4.4.4 and 4.4.5 of the Application. PRS is a feasible alternative for this lateral; after regulating the operating pressure of the lateral to 29.9 percent SMYS, there is still substantial capacity in the pipeline to meet customer demands. PRS has the lowest project capital cost,

8 lowest PV of incremental revenue requirement and lowest levelized rate impact.

	ILI	PRS
AACE Estimate Class	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	18,212	5,399
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,740	1,281
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	845	18
PV of Incremental Revenue Requirement - 66 years (\$000s)	19,043	5,915
Levelized Rate Impact - 66 years (%)	0.14%	0.04%

9

10 The table below shows the scoring of ILI and PRS for each of the three criteria, and the overall

### 11 weighted score:

	ILI	PRS
Integrity and Asset Management Capabilities	4.8	2.9
Project Execution & Lifecycle Operation	3.1	3.8
Financial	1.0	5.0
Overal Score	3.1	3.8

12

FEI recommends PRS as the preferred alternative for the Trail Lateral 168 and will be installedat the Trail lateral tap.

15 ILI was not recommended for this lateral due to the incremental cost and challenging16 construction terrain, which resulted in the lower overall scores for these alternatives.



#### 1 1.1.22 Fording Lateral 219/168

2 The Fording Lateral begins east of Corbin Road and south of the Crowsnest Highway in

3 Sparwood, home to approximately 3,500 residents. The lateral traverses north and heads

through Elkford and ends at the Fording River Coal mine. The municipality of Elkford is home to 4

5 approximately 2,500 residents. This lateral is significant because of downstream laterals and

6 several large mining customers throughout including Elkview Coal, Line Creek Mine, Fording

7 Greenhills Mine and Fording River Coal.

Length of Pipe	line (kilometres)	79.6
Outside Diameter(s) (millimetres)		219/168
Year of Construction		1971
ROW Width (metres)		10-15
Number of	Residential	3,932
Customers	Commercial	379
	Industrial	15
Important Factor	ors in Execution and ation	Operational Complexity:         • Steep terrain, pipe in valley bottom         • Area known for washouts         • Access issues between Sparwood and Line Creek Lateral         • Lateral goes through edge of tailings pond         • Highway and railway crossings         Property:         • Teck property, historically challenging to work on         Indigenous Community Consultation:         • Shuswap Indian Band         • Ktunaxa Nation Council*         Environmental:         • Conservation area between Sparwood and Line Creek lateral         • Ungulate winter range 4-006         • Proximity to rivers and river crossings         • Stream and wetland crossings         • Species at risk occurrences, including 4 plant species at risk         • Osprey nest nearby         • Registered contaminated sites         Archaeological:         • Archaeological sites nearby         • Area heavily disturbed by mining, may be hard to determine archaeology

8

\* Akisqnuk First Nation, Lower Kootenay Band, St. Mary's Indian Band, Tobacco Plains Indian 9 Band are collectively notified through Ktunaxa Nation Council.



1 FEI recommends ILI as the preferred alternative for the Fording Lateral 168/219 since all other

- 2 alternatives were previously screened out as discussed in Section 4.4.4 and 4.4.5 of the
- 3 Application: PLE was not feasible due to complex project execution as a result of the need to
- excavate the entire length of the lateral; HSTP was not feasible as there is no practical means
   to support downstream customers when the lateral is shut down for the work; PRS was

6 screened out as it is not feasible due to capacity limitations; and PLR was screened out as it is

- 7 cost prohibitive at a high level estimate compared to other feasible alternatives. The financial
- 8 analysis of ILI for the Fording Lateral 168/219 is shown in the table below.

	IU
AACE Estimate Class	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	94,217
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	4,485
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	6,178
PV of Incremental Revenue Requirement - 66 years (\$000s)	102,818
Levelized Rate Impact - 66 years (%)	0.75%

9

10 ILI at this lateral will require a 219 millimetre control valve assembly and a 219 millimetre 11 launcher assembly at the start of the Fording 219 Lateral. At the site where the Fording lateral 12 reduces down to 168 millimetres in outer diameter at the 49 kilometre post (KP), there will be a 13 219 millimetre receiver assembly and a 168 millimetre launcher assembly. Lastly, there will be 14 a 168 millimetre receiver assembly at the Fording River Coal Mine Station where the lateral 15 terminates.

### 16 **1.1.23 Elkview Lateral 168**

17 The Elkview Lateral branches off of the Fording Lateral right at the intersection of Michel Creek

18 Road and Industrial 2 Road. From there, the lateral heads north and ends at 1.6 kilometres

19 where it serves Elkview Coal Mine.

Length of Pip	eline (kilometres)	1.6
Outside Diameter(s) (millimetres)		168
Year of Construction		1970
ROW Width (r	netres)	9-12
Number of	Residential	N/A
Customers	Commercial	N/A
	Industrial	1
Important Factors in Execution and		Operational Complexity:
Lifecycle Operation		Next to active coal mine plant



Property: • Teck property
<ul> <li>Indigenous Community Consultation:</li> <li>Shuswap Indian Band</li> <li>Ktunaxa Nation Council*</li> </ul>
<ul> <li>Environmental:</li> <li>American badger occurrences</li> <li>Ungulate winter range 4-006</li> <li>One stream crossing</li> <li>Osprey nest</li> </ul>
<ul> <li>Archaeological:</li> <li>Pipeline crosses archaeological site</li> <li>Moderate to high archaeological potential</li> </ul>

\* Akisqnuk First Nation, Lower Kootenay Band, St. Mary's Indian Band, Tobacco Plains Indian
Band are collectively notified through Ktunaxa Nation Council.

3 The financial comparison between the remaining alternatives of ILI, PLR and PRS for the 4 Elkview Lateral 168 is shown in the table below. PLE and HSTP were screened out as discussed in Section 4.4.4 and 4.4.5 of the Application. PRS is a feasible alternative for this 5 6 lateral; after regulating the operating pressure of the lateral to 29.9 percent SMYS, there is still 7 substantial capacity in the pipeline to meet customer demands. PRS has the lowest project 8 capital cost but is slightly more expensive than PLR in terms of PV of incremental revenue 9 requirement and levelized rate impact due to the requirement of future sustainment capital and 10 O&M for PRS.

	ILI	PLR	PRS
AACE Estimate Class	Class 3	Class 3	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	8,213	6,588	5,319
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,722	-	1,314
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	659	-	18
PV of Incremental Revenue Requirement - 66 years (\$000s)	10,072	5,850	5,877
Levelized Rate Impact - 66 years (%)	0.07%	0.04%	0.04%

11

12 The table below shows the scoring of ILI, PLR, and PRS for each of the three criteria, and the 13 overall weighted score:



	ILI	PLR	PRS
Integrity and Asset Management Capabilities	4.8	4.7	2.9
Project Execution & Lifecycle Operation	3.5	3.3	3.8
Financial	2.0	5.0	5.0
Overal Score	3.6	4.5	3.8

2 FEI recommends PRS as the preferred alternative for the Elkview Lateral 168 and will be 3 installed at the Elkview lateral tap.

4 Despite PLR having a higher overall score, the incremental capital cost is significant and 5 because PRS is feasible for this lateral, PLR is not recommended.

6 ILI is also not recommended for this lateral due to the incremental cost and challenging7 construction terrain, which resulted in the lower overall scores for these alternatives.

### 8 1.1.24 Cranbrook Lateral 168

1

9 The Cranbrook Lateral 168 begins near Gold Creek Road and Cavern Creek Road. The lateral follows Gold Creek Road to Cranbrook where it ends at 13 Street S and 26 Avenue S. 10 11 Cranbrook is home to approximately 20,000 residents and makes up the largest urban centre in 12 the Regional District of East Kootenay. The Cranbrook Kimberley system involves 6 different 13 laterals (Cranbrook Loop 219 described in Section 1.1.25, Cranbrook Kimberley Loop 273 described in Section 1.1.26, Cranbrook Kimberley Loop 219 described in Section 1.1.27, 14 15 Kimberley Lateral described in Section 1.1.28, and Skookumchuck Lateral described in Section 16 1.1.29) and, because they are all interconnected, they have been treated as one system and the 17 evaluation of alternatives for all these laterals was done together. For clarity, the system 18 diagram can be seen in the figure below.



### **Overview of Cranbrook Kimberley System**



3



Length of Pipe	eline (kilometres)	34.0	
Outside Diam	eter(s) (millimetres)	168	
Year of Const	ruction	1990	
ROW Width (r	netres)	10	
Number of	Residential	12,986	
Customers	Commercial	1,187	
	Industrial	21	
Important Fac Lifecycle Ope	tors in Execution and ration	<ul> <li>Operational Complexity:</li> <li>Many bends to replace if ILI is chosen</li> <li>Indigenous Community Consultation:</li> <li>Shuswap Indian Band</li> <li>Ktunaxa Nation Council*</li> </ul>	
		<ul> <li>Environmental:</li> <li>Stream and wetland crossings</li> <li>Proximity to sensitive riparian areas</li> <li>Species at risk occurrences</li> <li>Wildlife habitat areas 4-180 for Grizzly bear</li> <li>Ungulate winter range 4-006</li> </ul> Archaeological:	
		<ul> <li>Archaeological sites near the end of the lateral</li> <li>Valley bottom has high potential archaeology</li> </ul>	

\* Akisqnuk First Nation, Lower Kootenay Band, St. Mary's Indian Band, Tobacco Plains Indian
 Band are collectively notified through Ktunaxa Nation Council.

3 FEI recommends ILI as the preferred alternative for the Cranbrook Lateral 168 since all other

4 alternatives were previously screened out as discussed in Section 4.4.4 and 4.4.5 of the

5 Application: PLE was not feasible due to complex project execution as a result of the need to

6 excavate the entire length of the lateral; HSTP was not feasible as there is no practical means

7 to support downstream customers when the lateral is shut down for the work; PRS was

8 screened out as it is not feasible due to capacity limitations; and PLR was screened out as it is

9 cost prohibitive at a high level estimate compared to other feasible alternatives.

10 The financial analysis of ILI for the Cranbrook Lateral 168 is shown in the table below.



	ILI
AACE Estimate Class	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	14,554
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	2,408
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	2,696
PV of Incremental Revenue Requirement - 66 years (\$000s)	21,151
Levelized Rate Impact - 66 years (%)	0.15%

2 With ILI at this lateral, there will be a launcher and a control valve assembly at the start of the

3 Cranbrook lateral, and a receiver assembly at the Cranbrook Gate Station where the lateral 4 terminates.

### 1.1.25 Cranbrook Loop 219 5

6 The Cranbrook Loop 219 parallels the Cranbrook Lateral 168 from start to finish. It also begins

7 near Gold Creek Road and Cavern Creek Road. The loop follows Gold Creek Road all the way

to Cranbrook where it ends at 13 Street S and 26 Avenue S. 8

Length of Pipe	line (kilometres)	34.0
Outside Diame	ter(s) (millimetres)	219
Year of Constru	uction	1968
ROW Width (m	etres)	10
Number of Residential		12,986
Customers	Commercial	1,187
	Industrial	21
Important Facto Lifecycle Opera	ors in Execution and ation	<ul> <li>Operational Complexity: <ul> <li>Many bends to replace if ILI is chosen</li> </ul> </li> <li>Indigenous Community Consultation: <ul> <li>Shuswap Indian Band</li> <li>Ktunaxa Nation Council*</li> </ul> </li> <li>Environmental: <ul> <li>Stream and wetland crossings</li> <li>Proximity to sensitive riparian areas</li> <li>Species at risk occurrences</li> <li>Wildlife habitat areas 4-180 for Grizzly bear</li> <li>Ungulate winter range 4-006</li> </ul> </li> <li>Archaeological: <ul> <li>Archaeological sites near the end of the lateral</li> <li>Valley bottom has high potential archaeology</li> </ul> </li> </ul>



\* Akisqnuk First Na`tion, Lower Kootenay Band, St. Mary's Indian Band, Tobacco Plains Indian
 Band are collectively notified through Ktunaxa Nation Council.

3 FEI recommends ILI as the preferred alternative for the Cranbrook Loop 219 since all other 4 alternatives were previously screened out as discussed in Section 4.4.4 and 4.4.5 of the 5 Application: PLE was not feasible due to complex project execution as a result of the need to excavate the entire length of the lateral; HSTP was not feasible as there is no practical means 6 7 to support downstream customers when the lateral is shut down for the work; PRS was 8 screened out as it is not feasible due to capacity limitations; and PLR was screened out as it is 9 cost prohibitive at a high level estimate compared to other feasible alternatives. The financial 10 analysis of ILI for the Cranbrook Loop 219 is shown in the table below.

	ILI
AACE Estimate Class	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	13,806
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,715
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	3,861
PV of Incremental Revenue Requirement - 66 years (\$000s)	20,752
Levelized Rate Impact - 66 years (%)	0.15%

11

12 With ILI at this lateral, there will be a launcher and a shared control valve assembly with the 13 lateral at the start of the Cranbrook loop, and a receiver assembly at the Cranbrook Gate 14 Station where the loop terminates.

# 15 **1.1.26 Cranbrook Kimberley Loop 273**

16 The Cranbrook Kimberley Loop 273 begins where the Cranbrook Lateral 168 and Cranbrook

17 Loop 219 end. This segment continues north to where the Cranbrook Kimberley Loop 219

18 begins.

Length of Pip	eline (kilometres)	9.4	
Outside Diam	eter(s) (millimetres)	273	
Year of Const	ruction	1992	
ROW Width (r	netres)	9-18	
Number of	Residential	4,291	
Customers	Commercial	280	
	Industrial	4	
Important Factors in Execution and       Property:         Lifecycle Operation       • Private properties         • ROW width at tie in is 8m		Private properties	



Crosses through Mission Hill golf course
<ul><li>Indigenous Community Consultation:</li><li>Shuswap Indian Band</li><li>Ktunaxa Nation Council*</li></ul>
<ul> <li>Environmental:</li> <li>Stream and wetland crossings</li> <li>Proximity to sensitive riparian areas</li> <li>Species at risk occurrences</li> <li>Critical Habitat polygon for caribou</li> <li>Ungulate winter range 4-006</li> <li>Registered contaminated site</li> </ul>
<ul> <li>Archaeological:</li> <li>Many archaeological sites</li> <li>Three known archaeological sites on Mission Hills golf course</li> </ul>

\* Akisqnuk First Nation, Lower Kootenay Band, St. Mary's Indian Band, Tobacco Plains Indian
 Band are collectively notified through Ktunaxa Nation Council.

3 FEI recommends ILI as the preferred alternative for the Cranbrook Kimberley 273 since all other 4 alternatives were previously screened out as discussed in Section 4.4.4 and 4.4.5 of the 5 Application: PLE was not feasible due to complex project execution as a result of the need to 6 excavate the entire length of the lateral; HSTP was not feasible as there is no practical means 7 to support downstream customers when the lateral is shut down for the work; PRS was 8 screened out as it is not feasible due to capacity limitations; and PLR was screened out as it is 9 cost prohibitive at a high level estimate compared to other feasible alternatives. The financial 10 analysis of ILI for the Cranbrook Kimberley Loop 273 is shown in the table below.

	ILI
AACE Estimate Class	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	8,156
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,357
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	1,031
PV of Incremental Revenue Requirement - 66 years (\$000s)	10,942
Levelized Rate Impact - 66 years (%)	0.08%

11

12 With ILI at this lateral, there will be a launcher assembly at the start of the loop at Cranbrook

13 Gate Station and a receiver assembly at McPhee Station where the loop terminates.



## 1 1.1.27 Cranbrook Kimberley Loop 219

- 2 The Cranbrook Kimberley Loop 219 begins where the Cranbrook Lateral 168 and Cranbrook
- 3 Loop 219 end. This segment starts where the Cranbrook Loop 273 ends in McPhee Station and
- 4 loops the initial 4 kilometres section of the Kimberley Lateral 168 where it ends at 6 Mile Road
- 5 Station.

Length of Pipe	eline (kilometres)	4.0	
Outside Diame	eter(s) (millimetres)	es) 219	
Year of Constr	ruction	1992	
ROW Width (m	netres)	12	
Number of	Residential	4,291	
Customers	Commercial	280	
	Industrial	4	
Important Fact Lifecycle Oper	tors in Execution and ration	Indigenous Community Consultation: <ul> <li>Shuswap Indian Band</li> <li>Ktunaxa Nation Council*</li> </ul> <li>Environmental: <ul> <li>Stream crossings</li> <li>Heron Rookery</li> <li>Species at risk occurrences</li> <li>Critical habitat polygon for caribou</li> <li>Ungulate winter range 4-006</li> </ul> </li> <li>Archaeological: <ul> <li>Moderate to high archaeological potential</li> </ul> </li>	

\* Akisqnuk First Nation, Lower Kootenay Band, St. Mary's Indian Band, Tobacco Plains Indian
Band are collectively notified through Ktunaxa Nation Council.

8 FEI recommends ILI as the preferred alternative for the Cranbrook Kimberley Loop 219 since all 9 other alternatives were previously screened out as discussed in Section 4.4.4 and 4.4.5 of the 10 Application: PLE was not feasible due to complex project execution as a result of the need to 11 excavate the entire length of the lateral; HSTP was not feasible as there is no practical means 12 to support downstream customers when the lateral is shut down for the work; PRS was 13 screened out as it is not feasible due to capacity limitations; and PLR was screened out as it is 14 cost prohibitive at a high level estimate compared to other feasible alternatives. The financial 15 analysis for the Cranbrook Kimberley Loop 219 is shown in the table below.



	ILI
AACE Estimate Class	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	7,032
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,334
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	491
PV of Incremental Revenue Requirement - 66 years (\$000s)	9,387
Levelized Rate Impact - 66 years (%)	0.07%

2 With ILI at this lateral, there will be a launcher assembly at the start of the loop at the McPhee

3 Station and a receiver assembly at Six Mile Road Station where the loop terminates.

### 4 1.1.28 Kimberley Lateral 168

5 The Kimberley Lateral 168 begins at the same site where the Cranbrook Kimberley Loop 273 6 ends and the Cranbrook Kimberley Loop 219 begins. The Kimberley Lateral 168 follows the 7 Northstar Rails to Trails road through Wycliffe and continues north where the 168 millimetre 8 section ends in Ta Ta Creek. The lateral reduces to 114 millimetre and continues into the City

9 of Kimberley, home to approximately 4500 residents.

Length of Pip	eline (kilometres)	20.6	
Outside Diam	eter(s) (millimetres)	168	
Year of Const	ruction	1962	
ROW Width (r	netres)	10	
Number of Residential		4,291	
Customers	Commercial	280	
	Industrial	4	
Lifecycle Ope	tors in Execution and ration	<ul> <li>Operational Complexity: <ul> <li>Crosses St Mary River</li> <li>Road and highway crossings</li> </ul> </li> <li>Property: <ul> <li>Private properties</li> <li>ROW width down to 10m in one section</li> </ul> </li> <li>Indigenous Community Consultation: <ul> <li>Shuswap Indian Band</li> <li>Ktunaxa Nation Council*</li> </ul> </li> </ul>	
		Environmental: Steam crossings Critical habitat polygons for caribou and	



<ul> <li>woodpecker</li> <li>St Mary River crossing</li> <li>Species at risk occurrences</li> <li>Registered contaminated sites</li> </ul>
<ul><li>Archaeological:</li><li>Moderate to high archaeological potential</li></ul>

- \* Akisqnuk First Nation, Lower Kootenay Band, St. Mary's Indian Band, Tobacco Plains Indian
   Band are collectively notified through Ktunaxa Nation Council.
- FEI recommends ILI as the preferred alternative for the Kimberley Lateral 168 since all other alternatives were previously screened out as discussed in Section 4.4.4 and 4.4.5 of the Application: PLE was not feasible due to complex project execution as a result of the need to excavate the entire length of the lateral; HSTP was not feasible as there is no practical means
- 7 to support downstream customers when the lateral is shut down for the work; PRS was
- 8 screened out as it is not feasible due to capacity limitations; and PLR was screened out as it is
- 9 cost prohibitive at a high level estimate compared to other feasible alternatives. The financial
- 10 analysis for the Kimberly Lateral 168 is shown in the table below.

	ILI
AACE Estimate Class	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	19,839
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,452
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	2,558
PV of Incremental Revenue Requirement - 66 years (\$000s)	23,542
Levelized Rate Impact - 66 years (%)	0.17%

- 12 With ILI at this lateral, there will be a launcher assembly at the McPhee Station and a receiver
- 13 assembly at Ta Ta Creek where the 168 millimetre section of Kimberley Lateral terminates and
- 14 reduces to 114 millimetres in outer diameter.

## 15 **1.1.29 Skookumchuck Lateral 219**

- 16 The Skookumchuck Lateral begins just north of Mission Wycliffe Road and Mellor Road in
- 17 Cranbrook. The Skookumchuck lateral heads north along Highway 95A and Highway 95 until it
- 18 reaches Skookumchuck Pulp mill.

Length of Pipeline (kilometres)	35.9
Outside Diameter(s) (millimetres)	219
Year of Construction	1968





ROW Width (metres)		12
Number of	Residential	75
Customers	Commercial	1
	Industrial	1
Important Fact Lifecycle Opera	ors in Execution and ation	<ul> <li>Operational Complexity: <ul> <li>Railway crossing</li> <li>Creek crossings</li> </ul> </li> <li>Property: <ul> <li>Crown and private properties</li> <li>ROW width down to 10m in one section</li> </ul> </li> <li>Indigenous Community Consultation: <ul> <li>Shuswap Indian Band</li> <li>Ktunaxa Nation Council*</li> </ul> </li> <li>Environmental: <ul> <li>Stream and wetland crossings</li> <li>Critical habitat polygons for caribou and woodpecker</li> <li>Species at risk occurrences</li> <li>Wildlife Habitat Area 4-117 for antelope brush bluebunch wheatgrass plant community</li> <li>Wildlife Habitat Areas 4-089 and 4-091 fo American Badger</li> <li>Wildlife Habitat Area 4-068 for Long-billed Curlew</li> <li>Ungulate Winter Ranges 4-008 and 4-006</li> <li>Important Bird Area Skookumchuck Prairie</li> <li>Registered contaminated site</li> </ul> </li> <li>Archaeological: <ul> <li>Archaeological site near TaTa Creek</li> <li>Moderate to high archaeological potential</li> </ul> </li> </ul>

**APPENDIX A** 

1 \* Akisgnuk First Nation, Lower Kootenay Band, St. Mary's Indian Band, Tobacco Plains Indian 2 Band are collectively notified through Ktunaxa Nation Council.

3 FEI recommends ILI as the preferred alternative for the Skookumchuck Lateral 219 since all 4 other alternatives were previously screened out as discussed in Section 4.4.4 and 4.4.5 of the 5 Application: PLE was not feasible due to complex project execution as a result of the need to 6 excavate the entire length of the lateral; HSTP was not feasible as there is no practical means 7 to support downstream customers when the lateral is shut down for the work; PRS was 8 screened out as it is not feasible due to capacity limitations; and PLR was screened out as it is 9 cost prohibitive at a high level estimate compared to other feasible alternatives. The financial 10 analysis of ILI for the Skookumchuck Lateral 219 is shown in the table below.



	ILI
AACE Estimate Class	Class 3
Total Project Capital Costs, As-Spent, incl. AFUDC & Removal (\$000s)	8,177
PV of Post-Project Incremental Sustainment Capital - 66 years (\$000s)	1,646
PV of Post-Project Incremental Sustainment O&M - 66 years (\$000s)	3,825
PV of Incremental Revenue Requirement - 66 years (\$000s)	14,001
Levelized Rate Impact - 66 years (%)	0.10%

- 2 With ILI at this lateral, there will be a launcher assembly at the start of the Skookumchuck lateral
- 3 where it ties into the Kimberley lateral, and a receiver assembly at the Skookumchuck Pulp Mill
- 4 station at the end of the lateral.

# Appendix I DETAILED EVALUTATION OF ALTERNATIVES

**EVIDENTIARY UPDATE AND ERRATA, APRIL 5, 2019** 

Overal Weightings	Weight
Project Execution & Lifecycle Operation	20%
Technical	45%
Financial	35%

Project Execution & Lifecycle Operation	Weight
Environmental	15%
Lands & ROW	15%
Consultation and Engagement Complexity	15%
Operational Complexity	25%
System Capacity & Customer Impacts	20%
Project Execution Certainty	10%

Technical	Weight
Prevention of Ruptures	45%
Prevention of Leaks	10%
Proactive Asset Management	25%
Technical Certainty	20%

Financial	Weight
Net Present Value (50 year) of Capital, O&M, and Retirement Cost	100%
Rate Impact	0%
Retirement of Under-Depreciated Asset	0%

Alternative Evaluation Criteria – Definitions						
Technical						
Prevention of ruptures	Prevent ruptures due to corrosion and existing mechanical damage, with a high degree of confidence					
Prevention of leaks	Prevent small leaks due to corrosion and existing mechanical damage, with a high degree of confidence					
Proactive asset management	<ul> <li>Ability to make proactive repair/replace decisions based on asset condition over the lifecycle of the asset (allows for the identification and scheduling of corrective work with reasonable planning horizons)</li> <li>Alignment with industry practice</li> <li>Future opportunities (e.g. crack detection)</li> </ul>					
	Other benefits: ground movement, centreline mapping, validation of records (e.g. W.T.), ability to project corrosion growth					
Technical uncertainty	Risk of not achieving technical Project Evaluation Criteria long-term, and reverting to another alternative					
Project Execution &						
Environmental	<ul> <li>Regulatory and permitting (e.g. MOE, DFO, Environment and Climate Change Canada, OGC, MFLNRO, etc.)</li> <li>Existence of management areas (e.g. species at risk, protected areas)</li> <li>Potential for contaminated sites</li> <li>Waste development and disposal</li> <li>Archaeological considerations</li> <li>Soils and geology</li> <li>Vegetation impacts</li> <li>Timing restrictions</li> <li>Potential for changes in regulation changes, increases in regulatory restrictions over the 50-year planning horizon</li> <li>Watercourse impacts</li> </ul>					
Lands & ROW	<ul> <li>Land rights acquisition and lifecycle management complexity (e.g. absent property owners, potential for expropriation, existence of ALR, potential for changes to expectations/requirements)</li> <li>Encroachment removal issues</li> <li>Property activity impact (e.g. access, business impacts, agricultural impact, etc.)</li> <li>Existing ROW suitability and restrictions/allowances</li> <li>Bridge/rail crossing existence and annual rent payments</li> <li>First Nations land tenures</li> </ul>					
Consultation and Engagement Complexity	<ul> <li>Communities (municipalities, regional districts)</li> <li>First Nations</li> <li>Stakeholders (MoTI, BC Hydro, other utilities, business associations, major industrial customers, etc.)</li> <li>Risk of increased expectations for consultation and engagement</li> <li>Increased expectation for community benefit/investment and First Nations capacity funding</li> </ul>					
Operational Complexity	<ul> <li>Operating phase of lifecycle only</li> <li>Internal/external resources</li> <li>Equipment &amp; tools needs</li> <li>Safety hazard exposure</li> <li>Gas control / pressure control</li> <li>Operational windows to execute work</li> </ul>					
System Capacity & Customer Impacts	<ul> <li>Sufficient capacity to execute alternative</li> <li>Potential of the alternative to limit future capacity growth, including interruptible customers</li> <li>Ability to provide unimpeded gas supply to customers (or to enable unimpeded gas usage by customers)</li> <li>Impacts to major industrial customers</li> </ul>					
Project Execution Certainty	<ul> <li>Constructability</li> <li>Regulatory permitting</li> <li>Timeline / schedule</li> <li>Budget certainty</li> <li>Scope certainty</li> <li>Construction/internal resources</li> </ul>					
Financial						
Net Present Value (66 year) of Capital, O&M, and Retirement Cost	<ul> <li>Note: if values listed below are subject to change, all forumulas in Column Q of Sheet No. 10 must be modified (with all filters cleared prior to copying and pasting)</li> <li>Score 5 = Alternative with the Lowest Net Present Value (66 year) and Alternatives within 5% of the Lowest NPV Alternative</li> <li>Score 4 = Alternative is 5% to 20% more expensive than the Lowest NPV Alternative</li> <li>Score 3 = Alternative is 20% to 50% more expensive than the Lowest NPV Alternative</li> <li>Score 2 = Alternative is 5% to 100% more expensive than the Lowest NPV Alternative</li> <li>Score 1 = Alternative is over 100% more expensive than the Lowest NPV Alternative</li> </ul>					

5 = Good 4 = Above Average 3 = Average 2 = Below Average 1 = Poor 0 = Not Acceptable / Not Feasible

	Total (100%)										
Laterals	Line Length (m)	ILI Program: Pressure/Flow	ILI Program - Robotic:	Pipeline Replacement:	100% Inspection, Repair & Re-coat + Direct	Pressure Regulating	Hydrostatic Testing Program:	Status Quo: Modified Direct	1st Alternative	2nd Alternative	
1. MAC LTL 168	28678	4.6	2.7	3.1	2.3	1.8	1.4	1.3	ILI Program: Pressure/Flow Control + In-Line Inspection + Digs	Pipeline Replacement: Replacement (<30% SMYS) + Modified Direct Assessment	
2. MAC LOP 168	14248	4.6	2.7	3.1	2.3	1.8	1.4	1.3	ILI Program: Pressure/Flow Control + In-Line Inspection + Digs	Pipeline Replacement: Replacement (<30% SMYS) + Modified Direct Assessment	
	455								Pipeline Replacement: Replacement (<30% SMYS) +	ILI Program: Pressure/Flow Control + In-Line	
3. BCF LTL 168		3.3	2.7	4.7	2.4	2.8	1.6	1.4	Modified Direct Assessment Pressure Regulating Station: Regulating the	Inspection + Digs ILI Program: Pressure/Flow Control + In-Line	
4. PG3 LTL 219	5345	3.2	2.7	3.1	2.2	4.0	1.4	1.3	Maximum Operating Pressure Below 30% SMYS	Inspection + Digs	
	5989.0								Pressure Regulating Station: Regulating the	ILI Program: Pressure/Flow Control + In-Line	
5. NWP LTL 168	556510	3.2	2.6	3.0	2.2	3.9	1.4	1.4	Maximum Operating Pressure Below 30% SMYS	Inspection + Digs	
6. NWP LOP 219	5823	3.2	2.6	3.0	2.2	3.9	1.6	1.4	Pressure Regulating Station: Regulating the Maximum Operating Pressure Below 30% SMYS	ILI Program: Pressure/Flow Control + In-Line Inspection + Digs	
0.1001 201 215	474.2	5.2	2.0	5.0	2.2	5.5	1.0	1.4	ILI Program: Pressure/Flow Control + In-Line	Pipeline Replacement: Replacement (<30% SMYS) +	
7. PG1 LTL 168*	4713	4.6	2.7	3.5	2.3	1.8	1.4	1.3	Inspection + Digs	Modified Direct Assessment	
	1010								Pressure Regulating Station: Regulating the	ILI Program: Pressure/Flow Control + In-Line	
8. PGP LTL 168*		3.2	2.7	3.1	2.3	3.8	1.4	1.3	Maximum Operating Pressure Below 30% SMYS Pressure Regulating Station: Regulating the	Inspection + Digs Pipeline Replacement: Replacement (<30% SMYS) +	
9. HUS LTL 168*	1114	3.2	2.7	3.5	2.3	3.8	1.4	1.3	Maximum Operating Pressure Below 30% SMYS	Modified Direct Assessment	
	8650								Pressure Regulating Station: Regulating the	ILI Program: Pressure/Flow Control + In-Line	
10. PG2 219 168	8050	3.3	2.7	3.1	2.3	3.9	1.4	1.4	Maximum Operating Pressure Below 30% SMYS	Inspection + Digs	
11. CAR LTL 168	1331	3.5	2.6	4.5	2.3	3.5	1.4	1.3	Pipeline Replacement: Replacement (<30% SMYS) +	Pressure Regulating Station: Regulating the Maximum Operating Pressure Below 30% SMYS	
11. CAR LTL 106		5.5	2.0	4.5	2.5	3.5	1.4	1.5	Modified Direct Assessment Pressure Regulating Station: Regulating the	ILI Program: Pressure/Flow Control + In-Line	
12. WIL LP1/LP2 168	3384/2515	3.2	2.7	3.1	2.3	3.9	1.6	1.4	Maximum Operating Pressure Below 30% SMYS	Inspection + Digs	
									Pipeline Replacement: Replacement (<30% SMYS) +	ILI Program: Pressure/Flow Control + In-Line	
13.1. KA1 LTL 168	3570	3.2	2.7	4.6	2.3	1.8	1.4	1.3	Modified Direct Assessment	Inspection + Digs	
13.2. KA1 LOP 168	3051	3.2	2.7	4.6	2.3	1.8	1.4	1.3	Pipeline Replacement: Replacement (<30% SMYS) + Modified Direct Assessment	ILI Program: Pressure/Flow Control + In-Line Inspection + Digs	
13.2. KAI LOF 108	3031	5.2	2.7	4.0	2.5	1.0	1.4	1.5	ILI Program: Pressure/Flow Control + In-Line	Pipeline Replacement: Replacement (<30% SMYS) +	
14. SAL LOP 168	44939	4.6	2.6	3.1	2.2	1.9	1.4	1.4	Inspection + Digs	Modified Direct Assessment	
									Pipeline Replacement: Replacement (<30% SMYS) +	ILI Program: Pressure/Flow Control + In-Line	
15. SA3 LTL 168	853	3.1	2.6	4.5	2.2	2.8	1.4	1.4	Modified Direct Assessment Pressure Regulating Station: Regulating the	Inspection + Digs Pipeline Replacement: Replacement (<30% SMYS) +	
16. COL LTL 219	1822	3.2	2.6	3.4	2.2	3.9	1.4	1.4	Maximum Operating Pressure Below 30% SMYS	Modified Direct Assessment	
									Pressure Regulating Station: Regulating the	ILI Program: Pressure/Flow Control + In-Line	
17. COL LOP 168	3772	3.1	2.6	3.0	2.2	3.9	1.6	1.3	Maximum Operating Pressure Below 30% SMYS	Inspection + Digs	
40 454 100 240	24.00	24	25	2.4	24	2.0		12	Pressure Regulating Station: Regulating the	Pipeline Replacement: Replacement (<30% SMYS) +	
18. KE1 LOP 219	2109	3.1	2.5	3.4	2.1	3.9	1.4	1.3	Maximum Operating Pressure Below 30% SMYS Pressure Regulating Station: Regulating the	Modified Direct Assessment ILI Program: Pressure/Flow Control + In-Line	
19. CEL LTL 168	5783	3.6	2.7	3.1	2.3	3.8	1.4	1.3	Maximum Operating Pressure Below 30% SMYS	Inspection + Digs	
									Pressure Regulating Station: Regulating the	ILI Program: Pressure/Flow Control + In-Line	
20. CAS NEL 168	37366	3.2	2.6	3.1	2.2	3.8	1.4	1.3	Maximum Operating Pressure Below 30% SMYS	Inspection + Digs	
21. TRA LTL 168	4239	3.1	2.6	3.1	2.2	3.8	1.4	1.3	Pressure Regulating Station: Regulating the Maximum Operating Pressure Below 30% SMYS	Pipeline Replacement: Replacement (<30% SMYS) + Modified Direct Assessment	
21. HALLEIDD	4233	5.1	2.0	5.1	2.2	5.0	1.4	1.5	ILI Program: Pressure/Flow Control + In-Line	Pipeline Replacement: Replacement (<30% SMYS) +	
22. FRD LTL 219	34547/45112	4.6	2.6	3.0	2.2	1.8	1.4	1.3	Inspection + Digs	Modified Direct Assessment	
									Pipeline Replacement: Replacement (<30% SMYS) +	Pressure Regulating Station: Regulating the	
23. ELK LTL 168	1565	3.6	2.7	4.5	2.3	3.8	1.4	1.3	Modified Direct Assessment	Maximum Operating Pressure Below 30% SMYS	
24. CRK LTL 168	34028	4.6	2.6	3.1	2.2	1.9	1.6	1.4	ILI Program: Pressure/Flow Control + In-Line Inspection + Digs	Pipeline Replacement: Replacement (<30% SMYS) + Modified Direct Assessment	
24. 61. 212 100	51020	110	2.0	5.1		1.5	1.0		ILI Program: Pressure/Flow Control + In-Line	Pipeline Replacement: Replacement (<30% SMYS) +	
25. CRK LOP 219	34030	4.6	2.6	3.1	2.2	1.9	1.6	1.4	Inspection + Digs	Modified Direct Assessment	
									ILI Program: Pressure/Flow Control + In-Line	Pipeline Replacement: Replacement (<30% SMYS) +	
26. CRK LP2 219	4007	4.6	2.6	3.1	2.2	1.9	1.6	1.4	Inspection + Digs	Modified Direct Assessment	
27. CRK LOP 273	0400	4.5	26	3.0	2.2	1.0	1.4	10	ILI Program: Pressure/Flow Control + In-Line	Pipeline Replacement: Replacement (<30% SMYS) + Modified Direct Assessment	
27. URN LUP 2/3	9409	4.6	2.6	3.0	۷.۷	1.9	1.4	1.3	Inspection + Digs ILI Program: Pressure/Flow Control + In-Line	Modified Direct Assessment Pipeline Replacement: Replacement (<30% SMYS) +	
28. KBY LTL 168	20573	4.6	2.6	3.1	2.2	1.9	1.4	1.4	Inspection + Digs	Modified Direct Assessment	
									ILI Program: Pressure/Flow Control + In-Line	Pipeline Replacement: Replacement (<30% SMYS) +	
29. SSK LTL 219	35931	4.6	2.6	3.0	2.2	1.9	1.4	1.3	Inspection + Digs	Modified Direct Assessment	

	Project Execution & Lifecycle Operation									
Laterals	ILI Program: Pressure/Flow Control + In-Line Inspection + Digs	ontrol + In-Line Inspection + Pressure/Flow Control + In-Line (		100% Inspection, Repair & Re- coat + Direct Assessment Program: Pressure Control + Direct Examination + Recoating + Direct Assessment (ECDA only)	Hydrostatic Testing Program: Pressure Control + Hydrostatic Testing	Status Quo: Modified Direct Assessment with no Pressure Control	Pressure Regulating Station: Regulating the Maximum Operating Pressure Below 30% SMYS2			
1. MAC LTL 168	3.45	3.5	3.3	2.5	0.8	2.7	2.8			
2. MAC LOP 168	3.45	3.5	3.3	2.5	0.8	2.7	2.8			
3. BCF LTL 168	3.75	3.65	4.2	3.1	1.8	3.15	3.95			
4. PG3 LTL 219	3.45	3.5	3.3	2.35	0.8	2.7	4.6			
5. NWP LTL 168	3.3	3.35	3	2.35	0.8	2.95	4.3			
6. NWP LOP 219	3.4	3.35	3	2.35	1.8	2.95	4.3			
7. PG1 LTL 168*	3.45	3.5	3.3	2.5	0.8	2.7	2.8			
8. PGP LTL 168*	3.45	3.5	3.3	2.5	0.8	2.7	3.8			
9. HUS LTL 168*	3.45	3.5	3.3	2.5	0.8	2.7	3.8			
10. PG2 219 168	3.7	3.5	3.3	2.5	0.8	2.95	4.3			
11. CAR LTL 168	3.3	3.35	3.3	2.65	0.8	2.8	4.3			
12. WIL LP1/LP2 168	3.45	3.5	3.3	2.5	1.8	3.2	4.3			
13.1. KA1 LTL 168	3.45	3.5	3.6	2.5	0.8	2.55	2.8			
13.2. KA1 LOP 168	3.45	3.5	3.6	2.5	0.8	2.55	2.8			
14. SAL LOP 168	3.4	3.35	3.15	2.35	0.8	2.95	3.3			
15. SA3 LTL 168	2.75	3.35	3.3	2.35	0.8	2.95	4.3			
16. COL LTL 219	3.3	3.35	3.15	2.35	0.8	2.95	4.3			
17. COL LOP 168	3.15	3.05	3	2.35	1.8	2.8	4.3			
18. KE1 LOP 219	2.75	2.65	3.15	1.85	0.8	2.55	4.3			
19. CEL LTL 168	3.45	3.5	3.3	2.5	0.8	2.7	3.95			
20. CAS NEL 168	3.2	3.25	3.3	2.25	0.8	2.7	3.95			
21. TRA LTL 168	3.05	3.1	3.45	2.35	0.8	2.4	3.8			
22. FRD LTL 219	3.3	3.35	3	2.35	0.8	2.55	2.8			
23. ELK LTL 168	3.45	3.5	3.3	2.5	0.8	2.7	3.8			
24. CRK LTL 168	3.4	3.35	3.15	2.35	1.8	2.95	3.3			
25. CRK LOP 219	3.4	3.35	3.15	2.35	1.8	2.95	3.3			
26. CRK LP2 219	3.4	3.35	3.15	2.35	1.8	3.2	3.3			
27. CRK LOP 273	3.4	3.2	3	2.35	0.8	2.8	3.3			
28. KBY LTL 168	3.4	3.35	3.15	2.35	0.8	2.95	3.3			
29. SSK LTL 219	3.25	3.2	3	2.35	0.8	2.8	3.3			

				Technical			
Laterals	ILI Program: Pressure/Flow Control + In-Line Inspection + Digs	ILI Program - Robotic: Pressure/Flow Control + In-Line Inspection + Digs	Replacement: Replacement (<30% SMYS) + Modified Direct Assessment	100% Inspection, Repair & Re-coat + Direct Assessment Program: Pressure Control + Direct Examination + Recoating + Direct Assessment (ECDA only)	Hydrostatic Testing Program: Pressure Control + Hydrostatic Testing	Status Quo: Modified Direct Assessment with no Pressure Control	Pressure Regulating Station: Regulating the Maximum Operating Pressure Below 30% SMYS
1. MAC LTL 168	4.8	4.4	4.7	4.0	2.9	1.8	2.9
2. MAC LOP 168	4.8	4.4	4.7	4.0	2.9	1.8	2.9
3. BCF LTL 168	4.8	4.4	4.7	4.0	2.9	1.8	2.9
4. PG3 LTL 219	4.8	4.4	4.7	4.0	2.9	1.8	2.9
5. NWP LTL 168	4.8	4.4	4.7	4.0	2.9	1.8	2.9
6. NWP LOP 219	4.8	4.4	4.7	4.0	2.9	1.8	2.9
7. PG1 LTL 168*	4.8	4.4	4.7	4.0	2.9	1.8	2.9
8. PGP LTL 168*	4.8	4.4	4.7	4.0	2.9	1.8	2.9
9. HUS LTL 168*	4.8	4.4	4.7	4.0	2.9	1.8	2.9
10. PG2 219 168	4.8	4.4	4.7	4.0	2.9	1.8	2.9
11. CAR LTL 168	4.8	4.4	4.7	4.0	2.9	1.8	2.9
12. WIL LP1/LP2 168	4.8	4.4	4.7	4.0	2.9	1.8	2.9
13.1. KA1 LTL 168	4.8	4.4	4.7	4.0	2.9	1.8	2.9
13.2. KA1 LOP 168	4.8	4.4	4.7	4.0	2.9	1.8	2.9
14. SAL LOP 168	4.8	4.4	4.7	4.0	2.9	1.8	2.9
15. SA3 LTL 168	4.8	4.4	4.7	4.0	2.9	1.8	2.9
16. COL LTL 219	4.8	4.4	4.7	4.0	2.9	1.8	2.9
17. COL LOP 168	4.8	4.4	4.7	4.0	2.9	1.8	2.9
18. KE1 LOP 219	4.8	4.4	4.7	4.0	2.9	1.8	2.9
19. CEL LTL 168	4.8	4.4	4.7	4.0	2.9	1.8	2.9
20. CAS NEL 168	4.8	4.4	4.7	4.0	2.9	1.8	2.9
21. TRA LTL 168	4.8	4.4	4.7	4.0	2.9	1.8	2.9
22. FRD LTL 219	4.8	4.4	4.7	4.0	2.9	1.8	2.9
23. ELK LTL 168	4.8	4.4	4.7	4.0	2.9	1.8	2.9
24. CRK LTL 168	4.8	4.4	4.7	4.0	2.9	1.8	2.9
25. CRK LOP 219	4.8	4.4	4.7	4.0	2.9	1.8	2.9
26. CRK LP2 219	4.8	4.4	4.7	4.0	2.9	1.8	2.9
27. CRK LOP 273	4.8	4.4	4.7	4.0	2.9	1.8	2.9
28. KBY LTL 168	4.8	4.4	4.7	4.0	2.9	1.8	2.9
29. SSK LTL 219	4.8	4.4	4.7	4.0	2.9	1.8	2.9

				Financial			
Laterals	ILI Program: Pressure/Flow Control + In-Line Inspection + Digs	ILI Program - Robotic: Pressure/Flow Control + In-Line Inspection + Digs	Pipeline Replacement: Replacement (<30% SMYS) + Modified Direct Assessment	100% Inspection, Repair & Re- coat + Direct Assessment Program: Pressure Control + Direct Examination + Recoating + Direct Assessment (ECDA only)	Hydrostatic Testing Program: Pressure Control + Hydrostatic Testing	Status Quo: Modified Direct Assessment with no Pressure Control	Pressure Regulating Station: Regulating the Maximum Operating Pressure Below 30% SMYS
1. MAC LTL 168	5	0	1	0	0		0
2. MAC LOP 168	5	0	1	0	0		0
3. BCF LTL 168	1	0	5	0	0		2
4. PG3 LTL 219	1	0	1	0	0		5
5. NWP LTL 168	1	0	1	0	0		5
6. NWP LOP 219	1	0	1	0	0		5
7. PG1 LTL 168*	5	0	2	0	0		0
8. PGP LTL 168*	1	0	1	0	0		5
9. HUS LTL 168*	1	0	2	0	0		5
10. PG2 219 168	1	0	1	0	0		5
11. CAR LTL 168	2	0	5	0	0		4
12. WIL LP1/LP2 168	1	0	1	0	0		5
13.1. KA1 LTL 168	1	0	5	0	0		0
13.2. KA1 LOP 168	1	0	5	0	0		0
14. SAL LOP 168	5	0	1	0	0		0
15. SA3 LTL 168	1	0	5	0	0		2
16. COL LTL 219	1	0	2	0	0		5
17. COL LOP 168	1	0	1	0	0		5
18. KE1 LOP 219	1	0	2	0	0		5
19. CEL LTL 168	2	0	1	0	0		5
20. CAS NEL 168	1	0	1	0	0		5
21. TRA LTL 168	1	0	1	0	0		5
22. FRD LTL 219	5	0	1	0	0		0
23. ELK LTL 168	2	0	5	0	0		5
24. CRK LTL 168	5	0	1	0	0		0
25. CRK LOP 219	5	0	1	0	0		0
26. CRK LP2 219	5	0	1	0	0		0
27. CRK LOP 273	5	0	1	0	0		0
28. KBY LTL 168	5	0	1	0	0		0
29. SSK LTL 219	5	0	1	0	0		0

	Project Execution & Lifecycle O		
Lateral	Category	Alternative Evaluation Criteria	Scores
1. MAC LTL 168	Environmental	ILI Program:	3
1. MAC LTL 168	Environmental	ILI Program - Robotic:	3
1. MAC LTL 168	Environmental	Replacement: Replacement	2
1. MAC LTL 168	Environmental	100% Inspection, Repair &	2
1. MAC LTL 168	Environmental	Pressure Regulating	4
1. MAC LTL 168	Environmental	Hydrostatic Testing	1
1. MAC LTL 168	Environmental	Status Quo: Modified	3
1. MAC LTL 168	Lands & ROW	ILI Program:	3
1. MAC LTL 168	Lands & ROW	ILI Program - Robotic:	3
1. MAC LTL 168	Lands & ROW	Replacement: Replacement	1
1. MAC LTL 168	Lands & ROW	100% Inspection, Repair &	2
1. MAC LTL 168	Lands & ROW	Pressure Regulating	4
1. MAC LTL 168	Lands & ROW	Hydrostatic Testing	1
1. MAC LTL 168	Lands & ROW	Status Quo: Modified	4
1. MAC LTL 168	Consultation and Engagement Complexity		3
1. MAC LTL 168	Consultation and Engagement Complexity Consultation and Engagement Complexity	ILI Program: ILI Program - Robotic:	4
1. MAC LTL 168	Consultation and Engagement Complexity	Replacement: Replacement	2
1. MAC LTL 168	Consultation and Engagement Complexity	100% Inspection, Repair &	1
1. MAC LTL 168	Consultation and Engagement Complexity	Pressure Regulating	3
1. MAC LTL 168	Consultation and Engagement Complexity	Hydrostatic Testing	1
1. MAC LTL 168	Consultation and Engagement Complexity	Status Quo: Modified	2
1. MAC LTL 168	Operational Complexity	ILI Program:	4
1. MAC LTL 168	Operational Complexity	ILI Program - Robotic:	4
1. MAC LTL 168	Operational Complexity	Replacement: Replacement	5
1. MAC LTL 168	Operational Complexity	100% Inspection, Repair &	3
1. MAC LTL 168 1. MAC LTL 168	Operational Complexity Operational Complexity	Pressure Regulating Hydrostatic Testing	3
		infurostatic resting	
1. MAC LTL 168	Operational Complexity	Status Quo: Modified	1
1. MAC LTL 168	System Capacity & Customer Impacts	ILI Program:	4
1. MAC LTL 168	System Capacity & Customer Impacts	ILI Program - Robotic:	4
1. MAC LTL 168	System Capacity & Customer Impacts	Replacement: Replacement	5
1. MAC LTL 168	System Capacity & Customer Impacts	100% Inspection, Repair &	4
1. MAC LTL 168	System Capacity & Customer Impacts	Pressure Regulating	0
1. MAC LTL 168	System Capacity & Customer Impacts	Hydrostatic Testing	0
1. MAC LTL 168	System Capacity & Customer Impacts	Status Quo: Modified	3
1. MAC LTL 168	Project Execution Certainty	ILI Program:	3
1. MAC LTL 168	Project Execution Certainty	ILI Program - Robotic:	2
1. MAC LTL 168	Project Execution Certainty	Replacement: Replacement	3
1. MAC LTL 168	Project Execution Certainty	100% Inspection, Repair &	2
1. MAC LTL 168	Project Execution Certainty	Pressure Regulating	4
1. MAC LTL 168	Project Execution Certainty	Hydrostatic Testing	1
1. MAC LTL 168	Project Execution Certainty	Status Quo: Modified	5
2. MAC LOP 168	Environmental	ILI Program:	3
2. MAC LOP 168	Environmental	ILI Program - Robotic:	3
2. MAC LOP 168	Environmental	Replacement: Replacement	2
2. MAC LOP 168	Environmental	100% Inspection, Repair &	2
2. MAC LOP 168	Environmental	Pressure Regulating	4
2. MAC LOP 168	Environmental	Hydrostatic Testing	1
2. MAC LOP 168	Environmental	Status Quo: Modified	3
2. MAC LOP 168	Lands & ROW	ILI Program:	3
2. MAC LOP 168	Lands & ROW	ILI Program - Robotic:	3
2. MAC LOP 168	Lands & ROW	Replacement: Replacement	1
2. MAC LOP 168	Lands & ROW	100% Inspection, Repair &	2
2. MAC LOP 168	Lands & ROW	Pressure Regulating	4
2. MAC LOP 168	Lands & ROW	Hydrostatic Testing	1
2. MAC LOP 168	Lands & ROW	Status Quo: Modified	4
2. MAC LOP 168	Consultation and Engagement Complexity	ILI Program:	3
2. MAC LOP 168	Consultation and Engagement Complexity	ILI Program - Robotic:	4
2. MAC LOP 168	Consultation and Engagement Complexity	Replacement: Replacement	2
2. MAC LOP 168	Consultation and Engagement Complexity	100% Inspection, Repair &	1
2. MAC LOP 168 2. MAC LOP 168	Consultation and Engagement Complexity Consultation and Engagement Complexity	Pressure Regulating	3
2. WINC LUP 106	consultation and Engagement Complexity	Hydrostatic Testing	1
2. MAC LOP 168	Consultation and Engagement Complexity	Status Quo: Modified	2
2. MAC LOP 168	Operational Complexity	ILI Program:	4

Status Quo: Modified 1

ILI Program - Robotic: 4

Replacement: Replacement 5

Status Quo: Modified 3

5

3

3

1

4

4

0

0

Replacement: Replacement

100% Inspection, Repair &

Pressure Regulating

Hydrostatic Testing

ILI Program:

100% Inspection, Repair &

Hydrostatic Testing

Pressure Regulating

2. MAC LOP 168 Operational Complexity

2. MAC LOP 168 Operational Complexity

Operational Complexity

Operational Complexity

Operational Complexity

2. MAC LOP 168 System Capacity & Customer Impacts

2. MAC LOP 168 System Capacity & Customer Impacts

2. MAC LOP 168

	Technical		
Lateral	Category	Alternative Evaluation Criteria	Scores
1. MAC LTL 168	Prevention of ruptures	ILI Program:	5
1. MAC LTL 168 1. MAC LTL 168	Prevention of ruptures Prevention of ruptures	ILI Program - Robotic: Replacement:	5
1. MAC LTL 168	Prevention of ruptures	100% Inspection, Repair	5
1. MAC LTL 168	Prevention of ruptures	Pressure Regulating	5
1. MAC LTL 168	Prevention of ruptures	Hydrostatic Testing	5
1. MAC LTL 168	Prevention of ruptures	Status Quo: Modified	2
1. MAC LTL 168 1. MAC LTL 168	Prevention of leaks with significant consequences	ILI Program:	5
1. MAC LTL 168	Prevention of leaks with significant consequences Prevention of leaks with significant consequences	ILI Program - Robotic: Replacement:	4
1. MAC LTL 168	Prevention of leaks with significant consequences	100% Inspection, Repair	4
1. MAC LTL 168	Prevention of leaks with significant consequences	Pressure Regulating	0
1. MAC LTL 168	Prevention of leaks with significant consequences	Hydrostatic Testing	0
1. MAC LTL 168	Prevention of leaks with significant consequences	Status Quo: Modified	2
1. MAC LTL 168	Proactive asset management	ILI Program:	5
1. MAC LTL 168	Proactive asset management	ILI Program - Robotic:	4
1. MAC LTL 168 1. MAC LTL 168	Proactive asset management Proactive asset management	Replacement:	4
1. MAC LTL 168	Proactive asset management	100% Inspection, Repair Pressure Regulating	0
1. MAC LTL 168	Proactive asset management	Hydrostatic Testing	0
			-
1. MAC LTL 168 1. MAC LTL 168	Proactive asset management Technical certainty	Status Quo: Modified	1
1. MAC LTL 168	Technical certainty	ILI Program: ILI Program - Robotic:	4
1. MAC LTL 168	Technical certainty	Replacement:	5
1. MAC LTL 168	Technical certainty	100% Inspection, Repair	4
1. MAC LTL 168	Technical certainty	Pressure Regulating	3
1. MAC LTL 168	Technical certainty	Hydrostatic Testing	3
1. MAC LTL 168	Technical certainty	Status Quo: Modified	2
2. MAC LOP 168	Prevention of ruptures	ILI Program:	5
2. MAC LOP 168	Prevention of ruptures	ILI Program - Robotic:	5
2. MAC LOP 168 2. MAC LOP 168	Prevention of ruptures	Replacement:	5
2. MAC LOP 168 2. MAC LOP 168	Prevention of ruptures Prevention of ruptures	100% Inspection, Repair	5
2. MAC LOP 168	Prevention of ruptures	Pressure Regulating Hydrostatic Testing	5
2. MAC LOP 168	Prevention of ruptures	Status Quo: Modified	2
2. MAC LOP 168	Prevention of leaks with significant consequences	ILI Program:	5
2. MAC LOP 168	Prevention of leaks with significant consequences	ILI Program - Robotic:	5
2. MAC LOP 168	Prevention of leaks with significant consequences	Replacement:	4
2. MAC LOP 168	Prevention of leaks with significant consequences	100% Inspection, Repair	4
2. MAC LOP 168 2. MAC LOP 168	Prevention of leaks with significant consequences Prevention of leaks with significant consequences	Pressure Regulating Hydrostatic Testing	0
2.1000 201 200	revention on calo with spinicant consequences	-injurostatie resting	•
2. MAC LOP 168	Prevention of leaks with significant consequences	Status Quo: Modified	2
2. MAC LOP 168 2. MAC LOP 168	Proactive asset management	ILI Program:	5
2. MAC LOP 168 2. MAC LOP 168	Proactive asset management Proactive asset management	ILI Program - Robotic: Replacement:	4
2. MAC LOP 108	Proactive asset management	100% Inspection, Repair	2
2. MAC LOP 168	Proactive asset management	Pressure Regulating	0
2. MAC LOP 168	Proactive asset management	Hydrostatic Testing	0
2. MAC LOP 168	Proactive asset management	Status Quo: Modified	1
2. MAC LOP 168	Technical certainty	ILI Program:	4
2. MAC LOP 168	Technical certainty	ILI Program - Robotic:	3
2. MAC LOP 168	Technical certainty	Replacement:	5
2. MAC LOP 168 2. MAC LOP 168	Technical certainty Technical certainty	100% Inspection, Repair Pressure Regulating	4
2. MAC LOP 168 2. MAC LOP 168	Technical certainty Technical certainty	Hydrostatic Testing	3
2. MAC LOP 168	Technical certainty	Charles 6	2
2. MAC LOP 168 3. BCF LTL 168	Prevention of ruptures	Status Quo: Modified ILI Program:	2
3. BCF LTL 168	Prevention of ruptures	ILI Program - Robotic:	5
3. BCF LTL 168	Prevention of ruptures	Replacement:	5
3. BCF LTL 168	Prevention of ruptures	100% Inspection, Repair	5
3. BCF LTL 168 3. BCF LTL 168	Prevention of ruptures Prevention of ruptures	Pressure Regulating Hydrostatic Testing	5
3. BCF LTL 168	Prevention of ruptures	Status Quo: Modified	2
3. BCF LTL 168 3. BCF LTL 168	Prevention of leaks with significant consequences Prevention of leaks with significant consequences	ILI Program: ILI Program - Robotic:	5
3. BCF LTL 168	Prevention of leaks with significant consequences	Replacement:	4
3. BCF LTL 168	Prevention of leaks with significant consequences	100% Inspection, Repair	4
3. BCF LTL 168	Prevention of leaks with significant consequences	Pressure Regulating	0
3. BCF LTL 168	Prevention of leaks with significant consequences	Hydrostatic Testing	0
3. BCF LTL 168	Prevention of leaks with significant consequences	Status Quo: Modified	2
3. BCF LTL 168 3. BCF LTL 168	Proactive asset management	ILI Program:	5
3. BCF LTL 168 3. BCF LTL 168	Proactive asset management Proactive asset management	ILI Program - Robotic: Replacement:	4
3. BCF LTL 168 3. BCF LTL 168	Proactive asset management Proactive asset management	100% Inspection, Repair	4
3. BCF LTL 168	Proactive asset management	Pressure Regulating	0
3. BCF LTL 168	Proactive asset management	Hydrostatic Testing	0
3. BCF LTL 168	Proactive asset management	Status Quo: Modified	1

	Financial		
Lateral	Category	Alternative Evaluation Criteria	Scores
1. MAC LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program:	5
1. MAC LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program - Robotic:	0
1. MAC LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Replacement:	1
1. MAC LTL 168 1. MAC LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost	100% Inspection, Repair	0
1. MAC LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Pressure Regulating Hydrostatic Testing	0
1. WAC LTC 108	Net Fresent Value (50 year) of Capital, Owin, and Nethement Cost	invariostatic resting	0
1. MAC LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Status Quo: Modified	
1. MAC LTL 168	Rate impact	ILI Program:	0
1. MAC LTL 168	Rate impact	ILI Program - Robotic:	0
1. MAC LTL 168	Rate impact	Replacement:	0
1. MAC LTL 168	Rate impact	100% Inspection, Repair	0
1. MAC LTL 168 1. MAC LTL 168	Rate impact Rate impact	Pressure Regulating Hydrostatic Testing	0
1. WAC LTC 108	Rate inpact	Hydrostatic resting	0
1. MAC LTL 168	Rate impact	Status Quo: Modified	0
1. MAC LTL 168	Retirement of under-depreciated asset	ILI Program:	0
1. MAC LTL 168	Retirement of under-depreciated asset	ILI Program - Robotic:	0
1. MAC LTL 168	Retirement of under-depreciated asset	Replacement:	0
1. MAC LTL 168	Retirement of under-depreciated asset	100% Inspection, Repair	0
1. MAC LTL 168	Retirement of under-depreciated asset	Pressure Regulating	0
1. MAC LTL 168	Retirement of under-depreciated asset	Hydrostatic Testing	0
1. MAC LTL 168	Retirement of under-depreciated asset	Status Quo: Modified	0
2. MAC LOP 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program:	5
2. MAC LOP 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program - Robotic:	0
2. MAC LOP 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Replacement:	1
2. MAC LOP 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	100% Inspection, Repair	0
2. MAC LOP 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Pressure Regulating	0
2. MAC LOP 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Hydrostatic Testing	0
2. MAC LOP 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Status Quo: Modified	
2. MAC LOP 168	Rate impact	ILI Program:	0
2. MAC LOP 168	Rate impact	ILI Program - Robotic:	0
2. MAC LOP 168	Rate impact	Replacement:	0
2. MAC LOP 168	Rate impact	100% Inspection, Repair	0
2. MAC LOP 168	Rate impact	Pressure Regulating	0
2. MAC LOP 168	Rate impact	Hydrostatic Testing	0
2. MAC LOP 168	Data impact		0
2. MAC LOP 168 2. MAC LOP 168	Rate impact	Status Quo: Modified	0
2. MAC LOP 168	Retirement of under-depreciated asset Retirement of under-depreciated asset	ILI Program: ILI Program - Robotic:	0
2. MAC LOP 168	Retirement of under-depreciated asset	Replacement:	0
2. MAC LOP 168	Retirement of under-depreciated asset	100% Inspection, Repair	0
2. MAC LOP 168	Retirement of under-depreciated asset	Pressure Regulating	0
2. MAC LOP 168	Retirement of under-depreciated asset	Hydrostatic Testing	0
2. MAC LOP 168 3. BCE LTL 168	Retirement of under-depreciated asset	Status Quo: Modified	0
3. BCF LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program:	0
3. BCF LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program - Robotic: Replacement:	5
3. BCF LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	100% Inspection, Repair	0
3. BCF LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Pressure Regulating	2
3. BCF LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Hydrostatic Testing	0
3. BCF LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Status Quo: Modified	
3. BCF LTL 168	Rate impact	ILI Program:	0
3. BCF LTL 168 3. BCF LTL 168	Rate impact Rate impact	ILI Program - Robotic:	0
3. BCF LTL 168	Rate impact	Replacement: 100% Inspection, Repair	0
3. BCF LTL 168	Rate impact	Pressure Regulating	0
3. BCF LTL 168	Rate impact	Hydrostatic Testing	0
3. BCF LTL 168	Rate impact	Status Quo: Modified	0
3. BCF LTL 168	Retirement of under-depreciated asset	ILI Program:	0
3. BCF LTL 168 3. BCF LTL 168	Retirement of under-depreciated asset	ILI Program - Robotic:	0
3. BCF LTL 168 3. BCF LTL 168	Retirement of under-depreciated asset Retirement of under-depreciated asset	Replacement: 100% Inspection Repair	0
3. BCF LTL 168 3. BCF LTL 168	Retirement of under-depreciated asset Retirement of under-depreciated asset	100% Inspection, Repair	0
3. BCF LTL 168	Retirement of under-depreciated asset	Pressure Regulating Hydrostatic Testing	0
		inforestatio resting	-
3. BCF LTL 168	Retirement of under-depreciated asset	Status Quo: Modified	0
4. PG3 LTL 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program:	1
4. PG3 LTL 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program - Robotic:	0
4. PG3 LTL 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Replacement:	1
4. PG3 LTL 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	100% Inspection, Repair	0
4. PG3 LTL 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Pressure Regulating	5
4. PG3 LTL 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Hydrostatic Testing	0
4. PG3 LTL 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Status Quo: Modified	
4. PG3 LTL 219 4. PG3 LTL 219	Rate impact	ILI Program:	0
4. PG3 LTL 219	Rate impact	ILI Program - Robotic:	0
4. PG3 LTL 219	Rate impact	Replacement:	0
4. PG3 LTL 219	Rate impact	100% Inspection, Repair	0
4. PG3 LTL 219	Rate impact	Pressure Regulating	0
4. PG3 LTL 219	Rate impact	Hydrostatic Testing	0
4. PG3 LTL 219	Rate impact	Status Quo: Modified	0

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Lateral	Category	Alternative Evaluation Criteria	Score
2. MAC LOP 168	Project Execution Certainty	ILI Program:	3
2. MAC LOP 168	Project Execution Certainty	ILI Program - Robotic:	2
2. MAC LOP 168	Project Execution Certainty	Replacement: Replacement	3
2. MAC LOP 168	Project Execution Certainty	100% Inspection, Repair &	2
2. MAC LOP 168	Project Execution Certainty	Pressure Regulating	4
2. MAC LOP 168	Project Execution Certainty	Hydrostatic Testing	1
2. MAC LOP 168	Project Execution Certainty	Status Quo: Modified	5
3. BCF LTL 168	Environmental	ILI Program:	4
3. BCF LTL 168	Environmental	ILI Program - Robotic:	4
3. BCF LTL 168	Environmental	Replacement: Replacement	4
3. BCF LTL 168	Environmental	100% Inspection, Repair &	4
3. BCF LTL 168	Environmental	Pressure Regulating	4
3. BCF LTL 168	Environmental	Hydrostatic Testing	1
3. BCF LTL 168	Environmental	Status Quo: Modified	4
3. BCF LTL 168	Lands & ROW	ILI Program:	3
3. BCF LTL 168	Lands & ROW	ILI Program - Robotic:	3
3. BCF LTL 168	Lands & ROW	Replacement: Replacement	3
3. BCF LTL 168	Lands & ROW	100% Inspection, Repair &	2
3. BCF LTL 168	Lands & ROW	Pressure Regulating	4
3. BCF LTL 168	Lands & ROW	Hydrostatic Testing	1
3. BCF LTL 168	Lands & ROW	Status Quo: Modified	4
3. BCF LTL 168	Consultation and Engagement Complexity	ILI Program:	4
3. BCF LTL 168	Consultation and Engagement Complexity	ILI Program - Robotic:	4
3. BCF LTL 168	Consultation and Engagement Complexity	Replacement: Replacement	4
3. BCF LTL 168	Consultation and Engagement Complexity	100% Inspection, Repair &	3
3. BCF LTL 168	Consultation and Engagement Complexity	Pressure Regulating	4
3. BCF LTL 168	Consultation and Engagement Complexity	Hydrostatic Testing	1
3. BCF LTL 168	Consultation and Engagement Complexity	Status Quo: Modified	4
3. BCF LTL 168	Operational Complexity	ILI Program:	4
3. BCF LTL 168			4
3. BCF LTL 168	Operational Complexity	ILI Program - Robotic:	4
	Operational Complexity	Replacement: Replacement	3
3. BCF LTL 168	Operational Complexity	100% Inspection, Repair &	÷
3. BCF LTL 168	Operational Complexity	Pressure Regulating	3
3. BCF LTL 168	Operational Complexity	Hydrostatic Testing	1
3. BCF LTL 168	Operational Complexity	Status Quo: Modified	1
3. BCF LTL 168	System Capacity & Customer Impacts	ILI Program:	4
3. BCF LTL 168	System Capacity & Customer Impacts	ILI Program - Robotic:	4
3. BCF LTL 168	System Capacity & Customer Impacts	Replacement: Replacement	5
3. BCF LTL 168	System Capacity & Customer Impacts	100% Inspection, Repair &	4
3. BCF LTL 168	System Capacity & Customer Impacts	Pressure Regulating	5
3. BCF LTL 168	System Capacity & Customer Impacts	Hydrostatic Testing	5
3. BCF LTL 168	System Capacity & Customer Impacts	Status Quo: Modified	3
3. BCF LTL 168	Project Execution Certainty	ILI Program:	3
3. BCF LTL 168	Project Execution Certainty	ILI Program - Robotic:	2
3. BCF LTL 168	Project Execution Certainty	Replacement: Replacement	3
3. BCF LTL 168	Project Execution Certainty	100% Inspection, Repair &	2
3. BCF LTL 168	Project Execution Certainty	Pressure Regulating	4
3. BCF LTL 168	Project Execution Certainty	Hydrostatic Testing	1
3. BCF LTL 168	Project Execution Certainty	Status Quo: Modified	5
4. PG3 LTL 219	Environmental	ILI Program:	4
4. PG3 LTL 219	Environmental	ILI Program - Robotic:	4
4. PG3 LTL 219	Environmental	Replacement: Replacement	3
4. PG3 LTL 219	Environmental	100% Inspection, Repair &	2
4. PG3 LTL 219	Environmental	Pressure Regulating	5
4. PG3 LTL 219	Environmental	Hydrostatic Testing	1
4. PG3 LTL 219	Environmental	Status Quo: Modified	3
4. PG3 LTL 219	Lands & ROW	ILI Program:	3
4. PG3 LTL 219	Lands & ROW	ILI Program - Robotic:	3
4. PG3 LTL 219	Lands & ROW	Replacement: Replacement	1
4. PG3 LTL 219	Lands & ROW	100% Inspection, Repair &	1
4. PG3 LTL 219	Lands & ROW	Pressure Regulating	5
4. PG3 LTL 219	Lands & ROW	Hydrostatic Testing	1
4. PG3 LTL 219	Lands & ROW	Status Quo: Modified	4
4. PG3 LTL 219	Consultation and Engagement Complexity	ILI Program:	2
4. PG3 LTL 219	Consultation and Engagement Complexity	ILI Program - Robotic:	3
4. PG3 LTL 219	Consultation and Engagement Complexity	Replacement: Replacement	1
4. PG3 LTL 219	Consultation and Engagement Complexity	100% Inspection, Repair &	1
4. PG3 LTL 219	Consultation and Engagement Complexity	Pressure Regulating	4
4. PG3 LTL 219	Consultation and Engagement Complexity	Hydrostatic Testing	1
1 000 15 000			
4. PG3 LTL 219	Consultation and Engagement Complexity	Status Quo: Modified	2
	Operational Complexity	ILI Program:	
4. PG3 LTL 219	Operational Complexity	ILI Program - Robotic:	4
4. PG3 LTL 219			5
4. PG3 LTL 219 4. PG3 LTL 219	Operational Complexity	Replacement: Replacement	
4. PG3 LTL 219 4. PG3 LTL 219 4. PG3 LTL 219	Operational Complexity Operational Complexity	100% Inspection, Repair &	3
4. PG3 LTL 219 4. PG3 LTL 219 4. PG3 LTL 219 4. PG3 LTL 219 4. PG3 LTL 219	Operational Complexity Operational Complexity Operational Complexity	100% Inspection, Repair & Pressure Regulating	3
4. PG3 LTL 219 4. PG3 LTL 219 4. PG3 LTL 219	Operational Complexity Operational Complexity	100% Inspection, Repair &	3

Lateral         Category         Metro Torico         Score           3. 67 UL 18.0         Technical cartariny         IL Program. Schoolt, 4           3. 167 UL 18.0         Technical cartariny         IL Program. Schoolt, 4           3. 167 UL 18.0         Technical cartariny         ID Schoolt, 15.00           3. 167 UL 18.0         Technical cartariny         Pressure Reculation, 3           3. 167 UL 18.0         Technical cartariny         Pressure Reculation, 3           3. 167 UL 18.0         Technical cartariny         Status Carc. Modified, 2           4. 433 UL 219         Presention of registres         ID Schoolt, 15.00           4. 433 UL 219         Presention of registres         ID Schoolt, 15.00           4. 433 UL 219         Presention of registres         Status Carc. Modified, 2           4. 433 UL 219         Presention of registres         Status Carc. Modified, 2           4. 433 UL 219         Presention of registres         Status Carc. Modified, 2           4. 433 UL 219         Presention of registres         ID Program. Schoolt, 3           4. 433 UL 219         Presention of registres         ID Program. Schoolt, 4           4. 433 UL 219         Presention of registres         ID Program. Schoolt, 4           4. 433 UL 219         Presention of registres         ID Program. Schoolt,				
B. 6FUI. 168         Technical corrainty         IJP Program. Fobotic.         5           B. 6FUI. 168         Technical corrainty         Technical corrainty         Pressure Reculation.         5           B. 6FUI. 168         Technical corrainty         Pressure Reculation.         5           B. 6FUI. 168         Technical corrainty         Pressure Reculation.         5           B. 6FUI. 168         Technical corrainty         Status Que. Modified.         7           B. 6FUI. 168         Technical corrainty         Status Que. Modified.         7           B. 6FUI. 168         Technical corrainty         Status Que. Modified.         7           A. 703.111.219         Prevention of registres         High Program.         8         6           A. 703.111.219         Prevention of registres         Status Que. Modified.         2         4         7 <th>3 BCELTL 168</th> <th>Category</th> <th>Alternative Evaluation Criteria</th> <th>Score</th>	3 BCELTL 168	Category	Alternative Evaluation Criteria	Score
3. BCF U1: 160     Technical certainty     Baglacement.     5       3. BCF U1: 160     Technical certainty     Forsure Resculation.     5       3. BCF U1: 160     Technical certainty     Pressure Resculation.     5       3. BCF U1: 160     Technical certainty     Pressure Resculation.     7       3. BCF U1: 160     Technical certainty     Pressure Resculation.     7       3. BCF U1: 160     Technical certainty     Baglacement.     5       4. ASSI U1: 210     Presention of regures     Baglacement.     5       4. ASSI U1: 210     Presention of regures     Baglacement.     5       4. ASSI U1: 210     Presention of regures     Baglacement.     5       4. ASSI U1: 210     Presention of regures     Baglacement.     5       4. ASSI U1: 210     Presention of regures     Baglacement.     1       4. ASSI U1: 210     Presention of regures     Baglacement.     1       4. ASSI U1: 210     Presention of stack with significant consequences     Baglacement.     1       4. ASSI U1: 210     Presention of stack with significant consequences     Baglacement.     4       4. ASSI U1: 210     Presention of stack with significant consequences     Baglacement.     4       4. ASSI U1: 210     Presention of stack with significant consequences     Baglacement.     4   <		Technical certainty	ILI Program:	4
1.8 CFU 11.80.         Technical corrainty         Pressure Regulation,         3           3.8 CFU 11.80.         Technical corrainty         Pressure Regulation,         3           3.8 CFU 11.80.         Technical corrainty         Status Quo: Modified,         2           3.8 CFU 11.80.         Technical corrainty         Status Quo: Modified,         2           4.8 CFU 11.80.         Technical corrainty         Status Quo: Modified,         2           4.8 CFU 11.80.         Technical corrainty         Status Quo: Modified,         2           4.8 CFU 11.80.         Technical corrainty         Status Quo: Modified,         2           4.8 CFU 11.80.         Technical corrainty         Status Quo: Modified,         2           4.8 CFU 11.80.         Prevention of regivers         Pressure Regulation,         5           4.8 CFU 11.80.         Prevention of relax with significant consequences         1LP Orgarm.         5           4.9 CFU 11.80.         Prevention of relax with significant consequences         1LP Orgarm.         6           4.9 CFU 11.80.         Prevention of relax with significant consequences         1LP Orgarm.         6           4.9 CFU 11.80.         Prevention of relax with significant consequences         1LP Orgarm.         6           4.9 CFU 11.80.         Prevention of	3. BCF LTL 168	Technical certainty	ILI Program - Robotic:	3
3. BCF UL 168       Technical certainty       Pressure Regulating       3         3. BCF UL 168       Technical certainty       Status Que: Modified       7         4. R03 LT 219       Prevention of ruptures       III Program.       5         4. R03 LT 219       Prevention of ruptures       III Program.       5         4. R03 LT 219       Prevention of ruptures       Pressure Regulating       5         4. R03 LT 219       Prevention of ruptures       Pressure Regulating       5         4. R03 LT 219       Prevention of ruptures       Pressure Regulating       5         4. R03 LT 219       Prevention of ruptures       Pressure Regulating       5         4. R03 LT 219       Prevention of ruptures       Pressure Regulating       6         4. R03 LT 219       Prevention of rubtures       Pressure Regulating       6         4. R03 LT 219       Prevention of rubts with significant consequences       III Program.       75         4. R03 LT 219       Prevention of rubts with significant consequences       III Program.       76         4. R03 LT 219       Prevention of rubts with significant consequences       III Program.       76         4. R03 LT 219       Prevention of rubts with significant consequences       IIII Program.       76         4. R03 LT 219 <td>3. BCF LTL 168</td> <td>Technical certainty</td> <td></td> <td>5</td>	3. BCF LTL 168	Technical certainty		5
3. BCF UL 168       Technical certainty       Pressure Regulating       3         3. BCF UL 168       Technical certainty       Status Que: Modified       7         4. R03 LT 219       Prevention of ruptures       III Program.       5         4. R03 LT 219       Prevention of ruptures       III Program.       5         4. R03 LT 219       Prevention of ruptures       Pressure Regulating       5         4. R03 LT 219       Prevention of ruptures       Pressure Regulating       5         4. R03 LT 219       Prevention of ruptures       Pressure Regulating       5         4. R03 LT 219       Prevention of ruptures       Pressure Regulating       5         4. R03 LT 219       Prevention of ruptures       Pressure Regulating       6         4. R03 LT 219       Prevention of rubtures       Pressure Regulating       6         4. R03 LT 219       Prevention of rubts with significant consequences       III Program.       75         4. R03 LT 219       Prevention of rubts with significant consequences       III Program.       76         4. R03 LT 219       Prevention of rubts with significant consequences       III Program.       76         4. R03 LT 219       Prevention of rubts with significant consequences       IIII Program.       76         4. R03 LT 219 <td>3. BCF LTL 168</td> <td>Technical certainty</td> <td>100% Inspection, Repair</td> <td>4</td>	3. BCF LTL 168	Technical certainty	100% Inspection, Repair	4
3. BCF 11. 168       Technical certainty       Setus Quo: Modified       2         4. RG31TL29       Prevention of raptures       III Program. Robotic.       5         4. RG31TL29       Prevention of raptures       III Program. Robotic.       5         4. RG31TL29       Prevention of raptures       III Program. Robotic.       5         4. RG31TL29       Prevention of raptures       III Program. Robotic.       5         4. RG31TL29       Prevention of raptures       III Program. Robotic.       5         4. RG31TL29       Prevention of raptures       III Program. Robotic.       5         4. RG31TL29       Prevention of leaks with significant consequences       III Program. Robotic.       5         4. RG31TL29       Prevention of leaks with significant consequences       Pressure Robutin.       9         4. RG31TL29       Prevention of leaks with significant consequences       Pressure Robutin.       9         4. RG31TL29       Prevention of leaks with significant consequences       Pressure Robutin.       9         4. RG31TL29       Prevention of leaks with significant consequences       Pressure Robutin.       9         4. RG31TL29       Prevention of leaks with significant consequences       Pressure Robutin.       9         4. RG31TL29       Prevention of leaks with significant consequences	3. BCF LTL 168	Technical certainty	Pressure Regulating	3
BCF IT: Beam Section         Free-Net of reputers         Status Constraints         A (R3 11, 210         Prevention of Instave this significant consequences         Replacement:         4         A (R3 11, 210         Prevention of Instave this significant consequences         Status Constraints         I I Program         4         A (R3 11, 210         Prevention of Instave this significant consequences         Status Constraints         I I Program         4         A (R3 11, 210         Prevention of Instave this significant consequences         Status Constraints         I I Program         A (R3 11, 210         Prevention of Instave this significant consequences         Status Constraints         I I Program         A (R3 11, 210         Prevention of Instave this signinficant consequences         Status Constinstatis			Hydrostatic Testing	3
4. F63 11:229     Prevention of ruptures     Beplacement:     5       4. F63 11:229     Prevention of ruptures     Beplacement:     5       4. F63 11:229     Prevention of ruptures     Pressure Regulating:     5       4. F63 11:229     Prevention of ruptures     Pressure Regulating:     5       4. F63 11:229     Prevention of ruptures     Hydrostati Creating:     5       4. F63 11:229     Prevention of ruptures     Hydrostati Creating:     5       4. F63 11:229     Prevention of ruptures     Beplacement:     4       4. F63 11:229     Prevention of eaks with significant consequences     Ruptacement:     4       4. F63 11:229     Prevention of leaks with significant consequences     Hydrostati Creating:     0       4. F63 11:229     Prevention of leaks with significant consequences     Hydrostati Creating:     0       4. F63 11:229     Prevention of leaks with significant consequences     Hydrostati Creating:     0       4. F63 11:229     Prevention of leaks with significant consequences     Hydrostati Creating:     0       4. F63 11:229     Prevention of leaks with significant consequences     Hydrostati Creating:     0       4. F63 11:229     Prevention of leaks with significant consequences     Hydrostati Creating:     0       4. F63 11:229     Prevention of leaks with significant consequences     Hydro			injurostatie resting.	
4. R311.219       Prevention of ruptures       Bit Drogram. Robotic.       5         4. R311.219       Prevention of ruptures       100% inspection, Repair       5         4. R311.219       Prevention of ruptures       Hydrostatic Testing       5         4. R311.219       Prevention of ruptures       Hydrostatic Testing       5         4. R311.219       Prevention of ruptures       Hydrostatic Testing       5         4. R311.219       Prevention of lasks with significant consequences       Hydrostatic Testing       6         4. R311.219       Prevention of lasks with significant consequences       Hydrostatic Testing       0         4. R311.219       Prevention of lasks with significant consequences       Hydrostatic Testing       0         4. R311.210       Preactworts and swith significant consequences       Hydrostatic Testing       0         4. R311.210       Preactworts and maragement       Hydrostatic Testing       0         4. R311.210       Practworts and maragement       Hydrostatic Testing       0         4. R311.210       Practworts and maragement       Hydrostatic Testing       0         4. R311.210       Practworts and maragement       Hydrostatic Testing       1         4. R311.210       Practworts and maragement       Hydrostatic Testing       1				
A. R311.239       Prevention of ruptures       Replacement:       5         4. R311.239       Prevention of ruptures       Pressure Regulating       5         4. R311.239       Prevention of ruptures       Pressure Regulating       5         4. R311.239       Prevention of ruptures       LIProgram:       5         4. R311.239       Prevention of ruptures       LIProgram:       5         4. R311.239       Prevention of ruptures       LIProgram:       5         4. R311.239       Prevention of leaks with signfant consequences       Ruptures       6         4. R311.239       Prevention of leaks with signfant consequences       Pressure Regulating       0         4. R311.239       Prevention of leaks with signfant consequences       Hydrostatic Testing       0         4. R311.239       Prevention of leaks with signfant consequences       Hydrostatic Testing       0         4. R311.239       Precetive asset maragement       LIProgram:       4         4. R311.239       Pracetive asset maragement       Replacement:       4         4. R311.239       Pracetive asset maragement       Pressure Regulating       3         4. R311.239       Pracetive asset maragement       LIProgram:       4         4. R311.239       Pracetive asset maragement		Prevention of ruptures		
4 F631T229       Prevention of roptores       Pressure Regulating       5         4 F631T239       Prevention of roptores       Pressure Regulating       5         4 F631T239       Prevention of roptores       Barboratic Testing       5         4 F631T239       Prevention of roptores       Barboratic Testing       2         4 F631T239       Prevention of leaks with significant consequences       ILI Program:       5         4 F631T239       Prevention of leaks with significant consequences       Barboratic Testing       0         4 F631T239       Prevention of leaks with significant consequences       Hydrostatic Testing       0         4 F631T239       Prevention of leaks with significant consequences       Hydrostatic Testing       0         4 F631T239       Prevention of leaks with significant consequences       Hydrostatic Testing       0         4 F631T239       Prevention of leaks with significant consequences       Hydrostatic Testing       0         4 F631T239       Proactive asset management       IUP corgam:       5       0         4 F631T239       Proactive asset management       Hydrostatic Testing       0         4 F631T239       Proactive asset management       Hydrostatic Testing       3         4 F631T239       Proactive asset management       Hydrostatic Testing	4. PG3 LTL 219		ILI Program - Robotic:	
4. FG31TL 239       Prevention of ruptures.       Prevaluation of ruptures.       Hydrostatic Testing.       5         4. FG31TL 239       Prevention of ruptures.       Status Guo: Modified.       7         4. FG31TL 239       Prevention of ruptures.       Status Guo: Modified.       7         4. FG31TL 239       Prevention of ruptures.       Baba Status Guo: Modified.       7         4. FG31TL 239       Prevention of leaks with significant consequences.       Replacement:       4         4. FG31TL 239       Prevention of leaks with significant consequences.       Hydrostatic Testing.       0         4. FG31TL 239       Prevention of leaks with significant consequences.       Hydrostatic Testing.       0         4. FG31TL 239       Prevention of leaks with significant consequences.       Hydrostatic Testing.       0         4. FG31TL 239       Prevention of leaks with significant consequences.       Hydrostatic Testing.       0         4. FG31TL 239       Prevention of leaks with significant consequences.       Hydrostatic Testing.       0         4. FG31TL 239       Prevention of masker maragement.       Hydrostatic Testing.       0         4. FG31TL 239       Preactive asset maragement.       Hydrostatic Testing.       4         4. FG31TL 239       Preactive asset maragement.       Hydrostatic Testing.       3				
4. R631L219       Prevention of ruptures       Hdrostatic Testing       5         4. R631L219       Prevention of ruptures       Hdrostatic Testing       5         4. R631L219       Prevention of ruptures       HLProgram:       5         4. R631L219       Prevention of leaks with significant consequences       HLProgram:       4         4. R631L219       Prevention of leaks with significant consequences       Hgrbacement:       4         4. R631L219       Prevention of leaks with significant consequences       Hdrostatic Testing       0         4. R631L219       Prevention of leaks with significant consequences       Hdrostatic Testing       0         4. R631L219       Prevention of leaks with significant consequences       Hdrostatic Testing       0         4. R631L219       Procevite asst maragement       HLProgram:       5         4. R631L219       Procevite asst maragement       HLProgram:       4         4. R631L219       Proactive asst maragement       Hdrostatic Testing       0         4. R631L219       Proactive asst maragement       Hdrostatic Testing       4         4. R631L219       Proactive asst maragement       Hdrostatic Testing       3         4. R631L219       Technical certainty       HLProgram:       4         4. R631L219       <	4. PG3 LTL 219	Prevention of ruptures	100% Inspection, Repair	5
A FG3 LT. 219         Prevention of leaks with significant consequences         LL Program: LL Program: A FG3 LT. 219         Status Quo: Modified 2           4, FG3 LT. 219         Prevention of leaks with significant consequences         Beplacement; Beplacement; 4         4           4, FG3 LT. 219         Prevention of leaks with significant consequences         Pressure Regulating 0         0           4, FG3 LT. 219         Prevention of leaks with significant consequences         Pressure Regulating 0         0           4, FG3 LT. 219         Prevention of leaks with significant consequences         Status Quo: Modified 1         0           4, FG3 LT. 219         Prevention of leaks with significant consequences         Status Quo: Modified 1         0           4, FG3 LT. 219         Protective asset management         Beplacement; 4         4         1           4, FG3 LT. 219         Proactive asset management         Pressure Regulating, 0         0           4, FG3 LT. 219         Proactive asset management         Hydrostatic Testing, 0         0           4, FG3 LT. 219         Proactive asset management         Hydrostatic Testing, 0         1           4, FG3 LT. 219         Technical certainty         Ll Program. Robotic; 1         3           4, FG3 LT. 219         Technical certainty         Ll Program. Robotic; 1         3           4	4. PG3 LTL 219	Prevention of ruptures		5
4. P6311.219       Prevention of leaks with significant consequences       III. Program. Robotic.         4. P6311.219       Prevention of leaks with significant consequences       Bealsementi:       4         4. P6311.219       Prevention of leaks with significant consequences       III. Program.       5         4. P6311.219       Prevention of leaks with significant consequences       III. Program.       5         4. P6311.219       Prevention of leaks with significant consequences       III. Program.       5         4. P6311.219       Proactive asset management       III. Program.       5         4. P6311.219       Proactive asset management       III. Program.       6.         4. P6311.219       Technical certainty       III. Program.       6.         4. P6311.219	4. PG3 LTL 219	Prevention of ruptures	Hydrostatic Testing	5
4. P6311.219       Prevention of leaks with significant consequences       III. Program. Robotic.         4. P6311.219       Prevention of leaks with significant consequences       Bealsementi:       4         4. P6311.219       Prevention of leaks with significant consequences       III. Program.       5         4. P6311.219       Prevention of leaks with significant consequences       III. Program.       5         4. P6311.219       Prevention of leaks with significant consequences       III. Program.       5         4. P6311.219       Proactive asset management       III. Program.       5         4. P6311.219       Proactive asset management       III. Program.       6.         4. P6311.219       Technical certainty       III. Program.       6.         4. P6311.219	4 PG3 ITI 219	Prevention of runtures	Status Quo: Modified	2
4. PG3 117. 219       Prevention of leaks with significant consequences       Biolacement:       4         4. PG3 117. 219       Prevention of leaks with significant consequences       Biolacement:       4         4. PG3 117. 219       Prevention of leaks with significant consequences       Prevention of leaks with significant co			III Drogram	
4. Hos 11, 219       Prevention of leaks with significant consequences       Bealacement:       4         4. Hos 11, 219       Prevention of leaks with significant consequences       IDX Inspection, Regart       4         4. Hos 11, 219       Prevention of leaks with significant consequences       IL Program.       6         4. Hos 11, 219       Procention of leaks with significant consequences       IL Program.       6         4. Hos 11, 219       Proactive asset management       IL Program.       6         4. Hos 11, 219       Proactive asset management       IDX Inspection, Regart       6         4. Hos 111, 219       Proactive asset management       IDX Inspection, Regart       6         4. Hos 111, 219       Proactive asset management       IDX Inspection, Regart       6         4. Hos 111, 219       Proactive asset management       IDX Inspection, Regart       4         4. Hos 111, 219       Proactive asset management       IDX Inspection, Regart       4         4. Hos 111, 219       Proactive asset management       IDX Inspection, Regart       4         4. Hos 111, 219       Technical certainty       IDY Program.       6       100X Inspection, Regart       4         4. Hos 111, 219       Technical certainty       IDX Program.       100X Inspection, Regart       3		Prevention of leaks with significant consequences	ILI Program.	
4. PG3 LT 219       Prevention of leaks with significant consequences       100% inspection, Repair       4         4. PG3 LT 219       Prevention of leaks with significant consequences       Hydrostatic Testing       0         4. PG3 LT 219       Prevention of leaks with significant consequences       Hit Program.       5         4. PG3 LT 219       Prevention of leaks with significant consequences       Hit Program.       5         4. PG3 LT 219       Proctice asset management       Hit Program.       For Software Sof				
4. PG3 LTL 219     Prevention of leaks with significant consequences     Pressure Regulating     0       4. PG3 LTL 219     Prevention of leaks with significant consequences     Hydrostatic Testing     0       4. PG3 LTL 219     Procetive asset management     ILI Program.     5       4. PG3 LTL 219     Procetive asset management     ILI Program.     6       4. PG3 LTL 219     Procetive asset management     ILI Program.     00       4. PG3 LTL 219     Procetive asset management     Pressure Regulating.     0       4. PG3 LTL 219     Procetive asset management     Hydrostatic Testing.     0       4. PG3 LTL 219     Procetive asset management     Hydrostatic Testing.     0       4. PG3 LTL 219     Procetive asset management     Hydrostatic Testing.     0       4. PG3 LTL 219     Technical certainty     ILI Program.     100       4. PG3 LTL 219     Technical certainty     ILI Program.     100       4. PG3 LTL 219     Technical certainty     IDOX Inspection, Repair     4       4. PG3 LTL 219     Technical certainty     IDOX Inspection, Repair     5       5. NWD LTL 168     Prevention of nptures     ILI Program.     5       6. NWD LTL 168     Prevention of nptures     ILI Program.     5       7. NWD LTL 168     Prevention of nptures     Status Quo: Modified		Prevention of leaks with significant consequences		
4. PG3 UT 219       Prevention of leaks with significant consequences       Hydrostatic Testing       0         4. PG3 UT 219       Prevention of leaks with significant consequences       Status Que: Modified       2         4. PG3 UT 219       Proactive asset management       ILl Program.       5         4. R53 UT 219       Proactive asset management       Replacement:       4         4. R53 UT 219       Proactive asset management       Pressure Regulating.       0         4. R53 UT 219       Proactive asset management       Hydrostatic Testing.       0         4. R53 UT 219       Proactive asset management       Hydrostatic Testing.       0         4. R53 UT 219       Proactive asset management       Hydrostatic Testing.       0         4. R53 UT 219       Technical certainty       ILl Program. Robotic.       3         4. R53 UT 219       Technical certainty       Replacement:       5         4. R53 UT 219       Technical certainty       Hydrostatic Testing       3         4. R53 UT 219       Technical certainty       Status Que: Modified       2         5. NWP UT 168       Prevention of ruptures       ILl Program.       5         6. NWP UT 168       Prevention of ruptures       ILl Program.       5         7. NWP UT 168       Prevention of r		Prevention of leaks with significant consequences	100% Inspection, Repair	
4, PG3 LT. 219     Prevention of leaks with significant consequences     Hydrostatic Testing     O       4, PG3 LT. 219     Prevention of leaks with significant consequences     Status Quo: Modified     2       4, PG3 LT. 219     Proactice asset management     LLP Program.     2       4, PG3 LT. 219     Proactice asset management     LLP Program.     8       4, PG3 LT. 219     Proactice asset management     Beplacement:     4       4, PG3 LT. 219     Proactice asset management     Prostice asset management     9       4, PG3 LT. 219     Proactice asset management     Status Quo: Modified     1       4, PG3 LT. 219     Proactice asset management     Status Quo: Modified     1       4, PG3 LT. 219     Technical certainty     LLP Program.     6       4, PG3 LT. 219     Technical certainty     Bobs Presume Regulating     3       4, PG3 LT. 219     Technical certainty     Presume Regulating     3       4, PG3 LT. 219     Technical certainty     Presume Regulating     3       4, PG3 LT. 219     Technical certainty     Bobs Presention of nptures     LLP Program.     5       5, NWP LT. 168     Prevention of nptures     LLP Program.     100X Imspection. Regality       5, NWP LT. 168     Prevention of nptures     LLP Program.     100X Imspection. Regality       5, NWP LT. 16	4. PG3 LTL 219	Prevention of leaks with significant consequences	Pressure Regulating	0
4. FG3 L1, 219       Proctive asset management       ILI Program. Robotic:         4. FG3 L1, 219       Proctive asset management       ILI Program. Robotic:         4. FG3 L1, 219       Proctive asset management       IDOS Inspection, Ropair         4. FG3 L1, 219       Proctive asset management       IDOS Inspection, Ropair         4. FG3 L1, 219       Proctive asset management       Hydrostatic Testing         4. FG3 L1, 219       Proscible asset management       Hydrostatic Testing         4. FG3 L1, 219       Technical certainty       ILI Program. FGB DioLic:         4. FG3 L1, 219       Technical certainty       ILI Program. FGB DioLic:         4. FG3 L1, 219       Technical certainty       ILI Program. FGB DioLic:         4. FG3 L1, 219       Technical certainty       ILI Program. FGB DioLic:         5. FGT Technical certainty       Status Quo: Modified       Technical certainty         4. FG3 L1, 219       Technical certainty       Status Quo: Modified       Technical certainty         5. NWD L1 FGB       Prevention of ruptures       ILI Program. FG DioLic:       S         5. NWD L1 FGB       Prevention of ruptures       IDOX Inspection, Repair       S         5. NWD L1 FGB       Prevention of ruptures       Status Quo: Modified       2         5. NWD L1 FGB       Prevention of rup	4. PG3 LTL 219	Prevention of leaks with significant consequences	Hydrostatic Testing	0
4. FG3 L1, 219       Proctive asset management       ILI Program. Robotic:         4. FG3 L1, 219       Proctive asset management       ILI Program. Robotic:         4. FG3 L1, 219       Proctive asset management       IDOS Inspection, Ropair         4. FG3 L1, 219       Proctive asset management       IDOS Inspection, Ropair         4. FG3 L1, 219       Proctive asset management       Hydrostatic Testing         4. FG3 L1, 219       Proscible asset management       Hydrostatic Testing         4. FG3 L1, 219       Technical certainty       ILI Program. FGB DioLic:         4. FG3 L1, 219       Technical certainty       ILI Program. FGB DioLic:         4. FG3 L1, 219       Technical certainty       ILI Program. FGB DioLic:         4. FG3 L1, 219       Technical certainty       ILI Program. FGB DioLic:         5. FGT Technical certainty       Status Quo: Modified       Technical certainty         4. FG3 L1, 219       Technical certainty       Status Quo: Modified       Technical certainty         5. NWD L1 FGB       Prevention of ruptures       ILI Program. FG DioLic:       S         5. NWD L1 FGB       Prevention of ruptures       IDOX Inspection, Repair       S         5. NWD L1 FGB       Prevention of ruptures       Status Quo: Modified       2         5. NWD L1 FGB       Prevention of rup	4. PG3 [TI 219	Prevention of leaks with significant consequences	Status Quo: Modified	2
4. PG31T.219       Proctive asset management       IU Program6boltic.         4. PG31T.219       Proactive asset management       100% Inspection, Repair         4. PG31T.219       Proactive asset management       100% Inspection, Repair         4. PG31T.219       Proactive asset management       Pressure Regulating,         4. PG31T.219       Proactive asset management       Pressure Regulating,         4. PG31T.219       Proactive asset management       Status Que: Modified,         4. PG31T.219       Technical certainty       IU Program6boltic.         4. PG31T.219       Technical certainty       Bealscement:         5. APG31T.219       Technical certainty       Broestical certainty         4. PG31T.219       Technical certainty       Status Que: Modified,         3. PG31T.219       Technical certainty       Status Que: Modified,         4. PG31T.219       Technical certainty       Status Que: Modified,         5. NWP ITL168       Prevention of ruptures       IU Program6boltic:       5         5. NWP ITL168       Prevention of ruptures       Pressure Regulating,       5         5. NWP ITL168       Prevention of ruptures       Status Que: Modified,       2         5. NWP ITL168       Prevention of ruptures       Status Que: Modified,       2		Proactive asset management	III Program	
4, PG3 11, 219       Proscibe asset management       Replacement;       A         4, PG3 11, 219       Proactive asset management       Pressure Regulating,       0         4, PG3 11, 219       Proactive asset management       Pressure Regulating,       0         4, PG3 11, 219       Proactive asset management       Hydrostatic Testing,       0         4, PG3 11, 219       Technical certainty       III Program:       4         4, PG3 11, 219       Technical certainty       III Program:       6         4, PG3 11, 219       Technical certainty       III Program:       6         4, PG3 11, 219       Technical certainty       Pressure Regulating,       3         4, PG3 11, 219       Technical certainty       Pressure Regulating,       3         4, PG3 11, 219       Technical certainty       Pressure Regulating,       3         4, PG3 11, 219       Technical certainty       Status Quo: Modified,       2         5, NWP I1, 168       Prevention of ruptures       III Program.       5         5, NWP I1, 168       Prevention of ruptures       IQOX Inspection, Repair       5         5, NWP I1, 168       Prevention of ruptures       Status Quo: Modified,       7         5, NWP I1, 168       Prevention of ruptures       Status Quo: Modified,		Proactive accet management	ILI Program:	
4, PG3 112 219       Proactive asset management       100% Inspection, Repair       0         4, PG3 112 219       Proactive asset management       Pressure Regulating, 0       0         4, PG3 112 219       Proactive asset management       Status Quo: Modified, 1       0         4, PG3 112 219       Proactive asset management       Status Quo: Modified, 1       1         4, PG3 112 219       Technical certainty       ILI Program.       4         4, PG3 112 219       Technical certainty       ILI Program.       5         4, PG3 112 219       Technical certainty       IDOS Inspection, Repair       3         4, PG3 112 219       Technical certainty       Presence Regulating, 3       3         4, PG3 112 219       Technical certainty       Status Quo: Modified, 2       2         5, NWP 11.168       Prevention of ruptures       ILI Program.       5         6, NWP 11.168       Prevention of ruptures       Pressure Regulating, 5       5         5, NWP 11.168       Prevention of ruptures       Pressure Regulating, 5       5         5, NWP 11.168       Prevention of ruptures       Status Quo: Modified, 2       2         5, NWP 11.168       Prevention of ruptures       Status Quo: Modified, 2       2         5, NWP 11.168       Prevention of ruptures <td></td> <td>noactive asset management</td> <td>ILI Program - Robotic:</td> <td></td>		noactive asset management	ILI Program - Robotic:	
4. AG 31 TL 219     Proactive asset management     Pressure Regulating Hydrostatic Testing     0       4. AG 31 TL 219     Proactive asset management     Hydrostatic Testing     0       4. AG 31 TL 219     Proactive asset management     Status Quo: Modified     1       4. AG 31 TL 219     Technical certainty     ILI Program.     4       4. AG 31 TL 219     Technical certainty     ILI Program.     4       4. AG 31 TL 219     Technical certainty     Replacement:     5       4. AG 31 TL 219     Technical certainty     Pressure Regulating     3       4. AG 31 TL 219     Technical certainty     Pressure Regulating     3       4. AG 31 TL 219     Technical certainty     Status Quo: Modified     2       5. NWP II 168     Prevention of ruptures     ILI Program.     5       5. NWP II 168     Prevention of ruptures     Beakcement:     5       5. NWP II 168     Prevention of ruptures     Breakcement:     5       5. NWP II 168     Prevention of ruptures     Breakcement:     5       5. NWP II 168     Prevention of ruptures     Status Quo: Modified     2       5. NWP II 168     Prevention of ruptures     Status Quo: Modified     2       5. NWP II 168     Prevention of ruptures     Status Quo: Modified     2       5. NWP II 168 <td< td=""><td></td><td>Proactive asset management</td><td></td><td></td></td<>		Proactive asset management		
4. FG3 LT 219     Proctive asset management     Hydrostatic Testing     0       4. FG3 LT 219     Proctive asset management     Status Quo: Modified     1       4. FG3 LT 219     Technical certainty     LLI Program.     4       4. FG3 LT 219     Technical certainty     LLI Program.     5       4. FG3 LT 219     Technical certainty     Beplacement:     5       4. FG3 LT 219     Technical certainty     Brobusce Regulating,     3       4. FG3 LT 219     Technical certainty     Prostner Regulating,     3       4. FG3 LT 219     Technical certainty     Hydrostatic Testing,     3       4. FG3 LT 219     Technical certainty     Status Quo: Modified,     2       5. NWP LT 168     Prevention of ruptures     LLI Program.     5       5. NWP LT 168     Prevention of ruptures     DOX Impection, Repair     5       5. NWP LT 168     Prevention of ruptures     Pressure Regulating,     5       5. NWP LT 168     Prevention of ruptures     Status Quo: Modified,     2       5. NWP LT 168     Prevention of ruptures     Status Quo: Modified,     2       5. NWP LT 168     Prevention of ruptures     Status Quo: Modified,     2       5. NWP LT 168     Prevention of leaks with significant consequences     Status Quo: Modified,     2       5. NWP LT 16		Proactive asset management		
4, PG31T. 219     Proceive asset management     Hydrostatic Testing       4, PG31T. 219     Proceive asset management     Status Quo: Modified       4, PG31T. 219     Proceive asset management     Status Quo: Modified       4, PG31T. 219     Technical certainty     ILI Program.       4, PG31T. 219     Technical certainty     ILI Program.       4, PG31T. 219     Technical certainty     Brobectic:       4, PG31T. 219     Technical certainty     Brobectic:       4, PG31T. 219     Technical certainty     Pressure Regulating       3, PG31T. 219     Technical certainty     Status Quo: Modified       4, PG31T. 219     Technical certainty     Status Quo: Modified       5, NWP UTL168     Prevention of ruptures     ILI Program.       6, NWP UTL168     Prevention of ruptures     D005 Inspection, Regalf       5, NWP UTL168     Prevention of ruptures     Pressure Regulating,       5, NWP UTL168     Prevention of ruptures     Status Quo: Modified       2, NWP UTL168     Prevention of ruptures     Status Quo: Modified       5, NWP UTL168     Prevention of ruptures     Status Quo: Modified       5, NWP UTL168     Prevention of ruptures     Status Quo: Modified       5, NWP UTL168     Prevention of ruptures     Status Quo: Modified       6, NWP UTL168     Prevention of leaks with significant cons				
4. P63117.219       Technical certainty       ILI Program.       4. Ar3117.219         4. P63117.219       Technical certainty       Bealsementi:       5         4. P63117.219       Technical certainty       Bealsementi:       3         4. P63117.219       Technical certainty       IDOS Impection. Regulating:       3         4. P63117.219       Technical certainty       Pressue Regulating:       3         4. P63117.219       Technical certainty       Status Quo: Modified:       2         5. NWP II.168       Prevention of ruptures       ILI Program.       5         5. NWP II.168       Prevention of ruptures       Beakcement:       5         5. NWP II.168       Prevention of ruptures       Book II.168       Prevention of ruptures       Beakcement:       5         5. NWP II.168       Prevention of ruptures       Beakcement:       5       5       So WD II.168       Prevention of ruptures       Status Quo: Modified:       2         5. NWP II.168       Prevention of ruptures       Status Quo: Modified:       2       5       Status Quo: Modified:       2         5. NWP II.168       Prevention of leaks with significant consequences       Bu Program. Robotic:       5       5       NWP II.168       Prevention of leaks with significant consequences       Bu Program. Rob	4. PG3 LTL 219		Hydrostatic Testing	0
4. P63117.219       Technical certainty       ILI Program.       4. Ar3117.219         4. P63117.219       Technical certainty       Bealsementi:       5         4. P63117.219       Technical certainty       Bealsementi:       3         4. P63117.219       Technical certainty       IDOS Impection. Regulating:       3         4. P63117.219       Technical certainty       Pressue Regulating:       3         4. P63117.219       Technical certainty       Status Quo: Modified:       2         5. NWP II.168       Prevention of ruptures       ILI Program.       5         5. NWP II.168       Prevention of ruptures       Beakcement:       5         5. NWP II.168       Prevention of ruptures       Book II.168       Prevention of ruptures       Beakcement:       5         5. NWP II.168       Prevention of ruptures       Beakcement:       5       5       So WD II.168       Prevention of ruptures       Status Quo: Modified:       2         5. NWP II.168       Prevention of ruptures       Status Quo: Modified:       2       5       Status Quo: Modified:       2         5. NWP II.168       Prevention of leaks with significant consequences       Bu Program. Robotic:       5       5       NWP II.168       Prevention of leaks with significant consequences       Bu Program. Rob	4. PG3 LTL 219	Proactive asset management	Status Quo: Modified	1
4. PG3 LT 239       Technical certainty       Beplacement:       5         4. PG3 LT 239       Technical certainty       Beplacement:       5         4. PG3 LT 239       Technical certainty       Beplacement:       3         4. PG3 LT 239       Technical certainty       Pressure Regulating:       3         4. PG3 LT 239       Technical certainty       Pressure Regulating:       3         4. PG3 LT 239       Technical certainty       Status Quo: Modified:       2         5. NWP UTL 168       Prevention of ruptures       ILP Program:       5         5. NWP UTL 168       Prevention of ruptures       1D05 Inspection. Regal:       5         5. NWP UTL 168       Prevention of ruptures       Pressure Regulating:       5         5. NWP UTL 168       Prevention of ruptures       Status Quo: Modified:       2         5. NWP UTL 168       Prevention of ruptures       Status Quo: Modified:       2         5. NWP UTL 168       Prevention of ruptures       Status Quo: Modified:       2         5. NWP UTL 168       Prevention of ruptures       Status Quo: Modified:       2         5. NWP UTL 168       Prevention of ruptures       Status Quo: Modified:       2         5. NWP UTL 168       Prevention of ruptures       Status Quo: Modified:       <				
4. PG311.219       Technical certainty       Beplacement:       5         4. PG311.219       Technical certainty       IDOS Inspection. Repair       4         4. PG311.219       Technical certainty       Pressure Regulating       3         4. PG311.219       Technical certainty       Pressure Regulating       3         4. PG311.219       Technical certainty       Status Quo: Modified       2         5. NWP 11.168       Prevention of ruptures       ILl Program.       5         5. NWP 11.168       Prevention of ruptures       IOOX Inspection. Repair       5         5. NWP 11.168       Prevention of ruptures       IOX Inspection. Repair       5         5. NWP 11.168       Prevention of ruptures       Status Quo: Modified       2         5. NWP 11.168       Prevention of ruptures       Status Quo: Modified       2         5. NWP 11.168       Prevention of lask with significant consequences       ILl Program Robotic:       5         5. NWP 11.168       Prevention of leask with significant consequences       Bealacement:       4         5. NWP 11.168       Prevention of leask with significant consequences       Bealacement:       4         5. NWP 11.168       Prevention of leask with significant consequences       Hudrostatic Testing       0         5. NWP			III Program - Pobotic:	
4. P6317.219       Technical certainty       100% Inspection, Repair       3         4. P6317.219       Technical certainty       Pressure Regulating       3         4. P6317.219       Technical certainty       Status Cluo: Modified       2         4. P6317.219       Technical certainty       Status Cluo: Modified       2         5. NWP 11.168       Prevention of ruptures       ILI Program.       2         5. NWP 11.168       Prevention of ruptures       100% Inspection, Repair       5         5. NWP 11.168       Prevention of ruptures       100% Inspection, Repair       5         5. NWP 11.168       Prevention of ruptures       100% Inspection, Repair       5         5. NWP 11.168       Prevention of ruptures       Status Quo: Modified       2         5. NWP 11.168       Prevention of ruptures       Status Quo: Modified       2         5. NWP 11.168       Prevention of leaks with significant consequences       ILI Program.       5         5. NWP 11.168       Prevention of leaks with significant consequences       ILI Program.       100% Inspection, Repair       4         5. NWP 11.168       Prevention of leaks with significant consequences       ILI Program.       100% Inspection, Repair       2         5. NWP 11.168       Prevention of leaks with significant consequences				
4. PG317.219       Technical certainty       Pressure Regulating       3         4. PG317.219       Technical certainty       Hydrostatic Testing       3         4. PG317.219       Technical certainty       Status Que: Modified       2         5. NWP UTL 168       Prevention of ruptures       III Program Robotic:       5         5. NWP UTL 168       Prevention of ruptures       III Program Robotic:       5         5. NWP UTL 168       Prevention of ruptures       Replacement:       5         5. NWP UTL 168       Prevention of ruptures       Status Que: Modified       2         5. NWP UTL 168       Prevention of ruptures       Status Que: Modified       5       Status Que: Modified       5         5. NWP UTL 168       Prevention of leaks with significant consequences       III Program Robotic:       5         5. NWP UTL 168       Prevention of leaks with significant consequences       Bootic:       4         5. NWP UTL 168       Prevention of leaks with significant consequences       Bootic:       4         5. NWP UTL 168       Prevention of leaks with significant consequences       Breaksement:       4         5. NWP UTL 168       Prevention of leaks with significant conse				
4. FG3 LT 219     Technical certainty     Status Quo: Modified     3       4. FG3 LT 219     Technical certainty     Status Quo: Modified     2       5. NWP LTL SR     Prevention of ruptures     ILL Program.     2       5. NWP LTL SR     Prevention of ruptures     ILL Program.     5       5. NWP LTL SR     Prevention of ruptures     1005 Inspection. Repair     5       5. NWP LTL SR     Prevention of ruptures     1005 Inspection. Repair     5       5. NWP LTL SR     Prevention of ruptures     1005 Inspection. Repair     5       5. NWP LTL SR     Prevention of ruptures     Status Quo: Modified     2       5. NWP LTL SR     Prevention of ruptures     Status Quo: Modified     2       5. NWP LTL SR     Prevention of ruptures     Status Quo: Modified     2       5. NWP LTL SR     Prevention of ruptures     Status Quo: Modified     2       5. NWP LTL SR     Prevention of ruptures     Status Quo: Modified     2       5. NWP LTL SR     Prevention of leaks with significant consequences     ILP program.     5000 Ntrapection. Repair       6. NWP LTL SR     Prevention of leaks with significant consequences     Hydrostatic Testing     0       5. NWP LTL SR     Prevention of leaks with significant consequences     Hydrostatic Testing     0       5. NWP LTL SR     Prevention of le			100% Inspection, Repair	
A PG3 LT 219     Technical certainty     Status Quo: Modified     Z     MWP LT L58     Prevention of ruptures     LUP orgram: 5     Si WWP LT L58     Prevention of ruptures     Englacement:     So WWP LT L58     Prevention of ruptures     So WWP LT L58     Prevention of leaks wth significant consequences     LUP orgram: - BobDit:     So WWP LT L58     Prevention of leaks wth significant consequences     LUP orgram: - BobDit:     So WWP LT L58     Prevention of leaks wth significant consequences     So WWP LT L58     Prevention of leaks wth significant consequences     So WWP LT L58     Prevention of leaks wth significant consequences     So WWP LT L58     Prevention of leaks wth significant consequences     So WWP LT L58     Prevention of leaks wth significant consequences     So WWP LT L58     Prevention of leaks wth significant consequences     So WWP LT L58     Prevention of leaks wth significant consequences     So WWP LT L58     Prevention of leaks wth significant consequences     So WWP LT L58     Prevention of leaks wth significant consequences     So WWP LT L58     Prevention of leaks wth significant consequences     So WWP LT L58     Prevention of leaks wth significant consequences     Status Quo: Modified     So WWP LT L58     Procetice asset management     UP Orgram: - Englacement:     So WWP LT L58     Proactice asset management     So WWP LT L58     Proactice asset management     So WWP LT L58     Proactice asset management     So WWP LT L58     Produce asset management     So WWP LT L58     Produce asset management     So WWP LT L58     Produce asset management     So WWP				
S. WW 11.168         Prevention of ruptures         ILL Program: Replacement:         S           S. WW 11.168         Prevention of ruptures         Replacement:         S           S. WW 11.168         Prevention of ruptures         Replacement:         S           S. WW 11.168         Prevention of ruptures         Replacement:         S           S. WW 11.168         Prevention of ruptures         Prevention of ruptures         Hurrostatic Testing,           S. WW 11.168         Prevention of ruptures         Hurrostatic Testing,         S           S. WW 11.168         Prevention of ruptures         Hurrostatic Testing,         S           S. WW 11.168         Prevention of leaks with significant consequences         Hurogram. Robotic:         S           S. WW 11.168         Prevention of leaks with significant consequences         Hurogram. Robotic:         S           S. WW 11.168         Prevention of leaks with significant consequences         Hurogram. Robotic:         S           S. WW 11.168         Prevention of leaks with significant consequences         Hurogram. Robotic:         4           S. WW 11.168         Prevention of leaks with significant consequences         Status Quo: Modified         2           S. WW 11.168         Proactive asset management         Hu Program. Robotic:         4	4. PG3 LTL 219	Technical certainty	Hydrostatic Testing	3
5. NW D11.168         Prevention of ruptures         ILI Program. Robotic:         5           5. NW D11.168         Prevention of ruptures         Replacement:         5           5. NW D11.168         Prevention of ruptures         Beplacement:         5           5. NW D11.168         Prevention of ruptures         100% Inspection, Repair         5           5. NW D11.168         Prevention of ruptures         100% Inspection, Repair         5           5. NW D11.168         Prevention of ruptures         Status Quo: Modified         2           5. NW D11.168         Prevention of leaks with significant consequences         ILI Program.         5           5. NW D11.168         Prevention of leaks with significant consequences         ILI Program. Robotic:         5           5. NW D11.168         Prevention of leaks with significant consequences         ILI Program.         6           5. NW D11.168         Prevention of leaks with significant consequences         IDO% Inspection, Repair         6           5. NW D11.168         Prevention of leaks with significant consequences         Status Quo: Modified         2           5. NW D11.168         Prevention of leaks with significant consequences         Status Quo: Modified         2           5. NW D11.168         Proctive asset management         ILI Program.         4 <td>4. PG3 LTL 219</td> <td>Technical certainty</td> <td>Status Quo: Modified</td> <td>2</td>	4. PG3 LTL 219	Technical certainty	Status Quo: Modified	2
S. NWP LTL ISB         Prevention of ruptures         III Program - Robotic:         5           S. NWP LTL ISB         Prevention of ruptures         100% Inspection, Ropair         5           S. NWP LTL ISB         Prevention of ruptures         100% Inspection, Ropair         5           S. NWP LTL ISB         Prevention of ruptures         Pressure Regulating         5           S. NWP LTL ISB         Prevention of ruptures         Pressure Regulating         5           S. NWP LTL ISB         Prevention of ruptures         Status Quo: Modified         2           S. NWP LTL ISB         Prevention of ruptures         III Program. Robotic:         5           S. NWP LTL ISB         Prevention of ruptures         III Program. Robotic:         5           S. NWP LTL ISB         Prevention of ruptures         III Program. Robotic:         5           S. NWP LTL ISB         Prevention of leask with significant consequences         IQOX Inspection, Repair         4           S. NWP LTL ISB         Prevention of leask with significant consequences         IVERVISIT: SET Regulating         0           S. NWP LTL ISB         Prevention of leask with significant consequences         IVERVISIT: SET Regulating         2           S. NWP LTL ISB         Proctice asset management         IVERVISIT: SET Regulating         2	5. NWP LTL 168		ILI Program:	5
S. NW II.168         Prevention of ruptures         Replacement:         S           S. NW II.168         Prevention of ruptures         100% Inspection, Repair         5           S. NW II.168         Prevention of ruptures         Pressure Regulating,         5           S. NW II.168         Prevention of ruptures         Base Status Court Mediate         5           S. NW II.168         Prevention of ruptures         Status Quo: Modified,         2           S. NW II.168         Prevention of leaks with significant consequences         III Program. Robotic:         5           S. NW II.168         Prevention of leaks with significant consequences         III Program. Robotic:         4           S. NW II.168         Prevention of leaks with significant consequences         III Program. Robotic:         5           S. NW II.168         Prevention of leaks with significant consequences         Status Quo: Modified,         0           S. NW II.168         Prevention of leaks with significant consequences         Status Quo: Modified,         2           S. NW II.168         Proactive asset management         III Program.         4           S. NW II.168         Proactive asset management         Hydro			III Program - Robotic:	5
5. NWP 11:168         Prevention of ruptures         100% Inspection, Repart           5. NWP 11:168         Prevention of ruptures         Hydrostatic Testing,         5           5. NWP 11:168         Prevention of ruptures         Hydrostatic Testing,         5           5. NWP 11:168         Prevention of ruptures         Status Quo: Modified,         2           5. NWP 11:168         Prevention of leaks with significant consequences.         ILI Program.         6           5. NWP 11:168         Prevention of leaks with significant consequences.         Balacement:         4           6. NWP 11:168         Prevention of leaks with significant consequences.         100% Inspection, Repair         4           6. NWP 11:168         Prevention of leaks with significant consequences.         Hydrostatic Testing,         0           5. NWP 11:168         Prevention of leaks with significant consequences.         Status Quo: Modified,         2           5. NWP 11:168         Prevention of leaks with significant consequences.         Status Quo: Modified,         2           5. NWP 11:168         Prevention of leaks with significant consequences.         Status Quo: Modified,         2           5. NWP 11:168         Proctive asset management.         ILP orgram.         100X Inspection, Repair         2           5. NWP 11:168         Proctive asset managem				
5. NWP UT.158         Pressure Regulating         5.           5. NWP UT.158         Prevention of ruptures         Hydrostatic Testing         5           5. NWP UT.158         Prevention of ruptures         Status Quo: Modified         2           5. NWP UT.158         Prevention of ruptures         Status Quo: Modified         2           5. NWP UT.158         Prevention of leaks with significant consequences         IUP Program. Robotic:         5           5. NWP UT.158         Prevention of leaks with significant consequences         Bobis Impection, Repair         4           5. NWP UT.168         Prevention of leaks with significant consequences         Status Quo: Modified,         0           5. NWP UT.168         Prevention of leaks with significant consequences         Status Quo: Modified,         0           5. NWP UT.168         Proctice asset management         IUP Program.         5           5. NWP UT.168         Proctice asset management         Beplacement:         4           5. NWP UT.168         Technical certainty         IUP Program.         0           5. NWP UT.168         Technical certainty         IUP Program.		Prevention of raptales		
5. NWP III.168         Prevention of ruptures         Hydrostatic Testing         5           5. NWP III.168         Prevention of ruptures         Status Quo: Modified, 2         5           5. NWP III.168         Prevention of leaks with significant consequences.         ILI Program.         5           5. NWP III.168         Prevention of leaks with significant consequences.         Bud Program. Robotic:         5           5. NWP III.168         Prevention of leaks with significant consequences.         100% Inspection, Ropair         4           5. NWP III.168         Prevention of leaks with significant consequences.         Hydrostatic Testing.         0           5. NWP III.168         Prevention of leaks with significant consequences.         Hydrostatic Testing.         0           5. NWP III.168         Prevention of leaks with significant consequences.         Status Quo: Modified.         2           5. NWP III.168         Prevention of leaks with significant consequences.         Status Quo: Modified.         2           5. NWP III.168         Proctice asset management         ILI Program.         100X Inspection, Ropair         2           5. NWP III.168         Proctice asset management         Hydrostatic Testing.         0         5           5. NWP III.168         Proctice asset management         Hydrostatic Testing.         0         5				
S. NWP ITL 168         Prevention of ruptures         Status Quo: Modified         2           S. NWP ITL 168         Prevention of leaks with significant consequences         ILI Program.         5           S. NWP ITL 168         Prevention of leaks with significant consequences         ILI Program.         6           S. NWP ITL 168         Prevention of leaks with significant consequences         100% inspection, Repair         4           S. NWP ITL 168         Prevention of leaks with significant consequences         100% inspection, Repair         4           S. NWP ITL 168         Prevention of leaks with significant consequences         Prevention of leaks with significant consequences         100% inspection, Repair         0           S. NWP ITL 168         Prevention of leaks with significant consequences         Status Quo: Modified         0           S. NWP ITL 168         Proactive asset management         ILI Program.         5         5           S. NWP ITL 168         Proactive asset management         100% inspection, Repair         0           S. NWP ITL 168         Proactive asset management         100% inspection, Repair         4           S. NWP ITL 168         Proactive asset management         100% inspection, Repair         4           S. NWP ITL 168         Technical certainty         ILI Program.         14 <td< td=""><td></td><td>Prevention of ruptures Prevention of ruptures</td><td></td><td></td></td<>		Prevention of ruptures Prevention of ruptures		
S. NWP 111.68 Prevention of leaks with significant consequences     ILI Program. b 5     S. NWP 111.68 Prevention of leaks with significant consequences     ILI Program. BobDit:     S. NWP 111.68 Prevention of leaks with significant consequences     S. NWP 111.68 Prevention of leaks with significant consequences     S. NWP 11.168 Prevention of leaks with significant consequences     S. NWP 11.168 Prevention of leaks with significant consequences     S. NWP 11.168 Prevention of leaks with significant consequences     S. NWP 11.168 Prevention of leaks with significant consequences     S. NWP 11.168 Prevention of leaks with significant consequences     S. NWP 11.168 Prevention of leaks with significant consequences     S. NWP 11.168 Prevention of leaks with significant consequences     S. NWP 11.168 Protective asset management     UL Program. SobDit:     S. NWP 11.168 Protective asset management     S. NWP 11.168 Technical certainty     S. NWP 11.168 Technical certainty     NWP 11.168 Technical certainty     S. NWP 11.				
S. NWP UT.158         Prevention of leaks with significant consequences         IJL Program - Robotic:         5           S. NWP UT.158         Prevention of leaks with significant consequences         100% Inspection, Repair         4           S. NWP UT.158         Prevention of leaks with significant consequences         100% Inspection, Repair         0           S. NWP UT.158         Prevention of leaks with significant consequences         Hydrostatic Testing,         0           S. NWP UT.158         Prevention of leaks with significant consequences         Status Que: Modified,         2           S. NWP UT.168         Proactive asset management         III Program.         5           S. NWP UT.168         Proactive asset management         100% Inspection, Repair         2           S. NWP UT.168         Proactive asset management         100% Inspection, Repair         2           S. NWP UT.168         Proactive asset management         Pressure Regulating,         0           S. NWP UT.168         Proactive asset management         Hydrostatic Testing,         0           S. NWP UT.168         Proactive asset management         Status Que: Modified,         1           S. NWP UT.168         Technical certainty         III Program: Robotic:,         3           S. NWP UT.168         Technical certainty         IIIP Program: Robotic:, </td <td></td> <td></td> <td></td> <td></td>				
S. NWP 111.168     Prevention of leads with significant consequences     DOX's inspection, Repair     4       S. NWP 111.168     Prevention of leads with significant consequences     100% inspection, Repair     4       S. NWP 111.168     Prevention of leads with significant consequences     Pressure Regulating, 0     0       S. NWP 111.168     Prevention of leads with significant consequences     Pressure Regulating, 0     0       S. NWP 11.168     Prevention of leads with significant consequences     Status Quo: Modified, 2     0       S. NWP 11.168     Prevention of leads with significant consequences     Status Quo: Modified, 2     0       S. NWP 11.168     Prevention of leads with significant consequences     Status Quo: Modified, 2     0       S. NWP 11.168     Proactive asset management     Beglatement; 4     4       S. NWP 11.168     Proactive asset management     Pressure Regulating, 0       S. NWP 11.168     Proactive asset management     Hydrostatic Testing, 0       S. NWP 11.168     Technical certainty     ILI Program; 4       S. NWP 11.168     Technical certainty     ILI Program; 4       S. NWP 11.168     Technical certainty     ILI Program; 4       S. NWP 11.168     Technical certainty     ILI Program; 6       S. NWP 11.168     Technical certainty     ILI Program; 6       S. NWP 11.168     Technical certainty			ILI Program:	
S. NWP LTL ISB         Prevention of leaks with significant consequences         100% Inspection, Repair         0           S. NWP LTL ISB         Prevention of leaks with significant consequences         Prevention of leaks with significant consequences         Hydrostatic Testing         0           S. NWP LTL ISB         Prevention of leaks with significant consequences         Hydrostatic Testing         0           S. NWP LTL ISB         Prevention of leaks with significant consequences         Status Quo: Modified         2           S. NWP LTL ISB         Procetive asset management         ILl Program.         5           S. NWP LTL ISB         Procetive asset management         IDOX Inspection, Repair         2           S. NWP LTL ISB         Procetive asset management         IDOX Inspection, Repair         2           S. NWP LTL ISB         Procetive asset management         Pressure Regulating         0           S. NWP LTL ISB         Procetive asset management         Hydrostatic Testing         0           S. NWP LTL ISB         Prodicive asset management         Status Quo: Modified         1           S. NWP LTL ISB         Technical certainty         ILl Program.         4           S. NWP LTL ISB         Technical certainty         Replacement;         3           S. NWP LTL ISB         Technical certainty         Repl		Prevention of leaks with significant consequences		
S. NWP III.168         Prevention of leaks with significant consequences         Pressure Regulating.         0           S. NWP III.168         Prevention of leaks with significant consequences         Hydrostatic Testing.         0           S. NWP III.168         Proactive asset management         ILI Program.         5           S. NWP III.168         Proactive asset management         ILI Program.         5           S. NWP III.168         Proactive asset management         ILI Program.         6           S. NWP III.168         Proactive asset management         ILI Program.         6           S. NWP III.168         Proactive asset management         100% inspection, Repair         0           S. NWP III.168         Proactive asset management         100% inspection, Repair         0           S. NWP III.168         Proactive asset management         Status Quo: Modified         0           S. NWP III.168         Technical certainty         ILI Program.         4           S. NWP III.168         Technical certainty         Beplacement:         5           S. NWP III.168         Technical certainty         Pressure Regulating,         3           S. NWP III.168         Technical certainty         Pressure Regulating,         3           S. NWP III.168         Technical certainty         Pr		Prevention of leaks with significant consequences	Replacement:	
S. NWP 111.168         Prevention of leaks with significant consequences         Hydrostatic Testing         0           S. NWP 111.168         Proactive asset management         ILI Program.         5           S. NWP 111.168         Proactive asset management         ILI Program.         5           S. NWP 111.168         Proactive asset management         ILI Program.         5           S. NWP 111.168         Proactive asset management         ILI Program.         5           S. NWP 111.168         Proactive asset management         100X Inspection, Repair         2           S. NWP 11.168         Proactive asset management         100X Inspection, Repair         2           S. NWP 11.168         Proactive asset management         100X Inspection, Repair         0           S. NWP 11.168         Proactive asset management         Status Quo: Modified         1           S. NWP 11.168         Technical certainty         ILI Program:         4           S. NWP 11.168         Technical certainty         ILI Program:         3           S. NWP 11.168         Technical certainty         Pressure Regulating         3           S. NWP 11.168         Technical certainty         Pressure Regulating         3           S. NWP 11.168         Technical certainty         Hydrostatic Testing		Prevention of leaks with significant consequences	100% Inspection, Repair	
5. NWP II.168         Prevention of leaks with significant consequences         Hydrostatic Testing         O           5. NWP II.168         Prevention of leaks with significant consequences         Status Que: Modified         2           5. NWP II.168         Proactive asset management         ILI Program.         5           5. NWP II.168         Proactive asset management         ILI Program.         4           5. NWP II.168         Proactive asset management         Biglacement:         4           5. NWP II.168         Proactive asset management         DOS inspection, Repair         2           5. NWP II.168         Proactive asset management         Pressure Regulating,         0           5. NWP II.168         Proactive asset management         Hydrostatic Testing,         0           5. NWP II.168         Technical certainty         ILI Program.         4           5. NWP II.168         Technical certainty         Replacement:         5           5. NWP II.168         Technical certainty         Replacement:         6           5. NWP II.168         Technical certainty         Pressure Regulating,         3           5. NWP II.168         Technical certainty         Pressure Regulating,         3           5. NWP II.168         Technical certainty         Hydrostatic Testing,	5. NWP LTL 168	Prevention of leaks with significant consequences	Pressure Regulating	0
S. NW D11.168         Proactive asset management         ILI Program: 6           S. NW D11.168         Proactive asset management         ILP orgam: 6           S. NW D11.168         Proactive asset management         100% Inspection, Repair           S. NW D11.168         Proactive asset management         100% Inspection, Repair           S. NW D11.168         Proactive asset management         100% Inspection, Repair           S. NW D11.168         Proactive asset management         Hydrostatic Testing         0           S. NW D11.168         Proactive asset management         Hydrostatic Testing         0           S. NW D11.168         Technical certainty         ILP Program: 64         1           S. NW D11.168         Technical certainty         ILP Program: 68 palation         5           S. NW D11.168         Technical certainty         Replacement: 5         5           S. NW D11.168         Technical certainty         Pressure Regulating, 3         5           S. NW D11.168         Technical certainty         Pressure Regulating, 3         5           S. NW D11.168         Technical certainty         Status Quo: Modified         2           S. NW D11.168         Technical certainty         Status Quo: Modified         2           S. NW D12.19         Prevention of ruptures	5. NWP LTL 168	Prevention of leaks with significant consequences	Hydrostatic Testing	0
S. NW D11.168         Proactive asset management         ILI Program: 6           S. NW D11.168         Proactive asset management         ILP orgam: 6           S. NW D11.168         Proactive asset management         100% Inspection, Repair           S. NW D11.168         Proactive asset management         100% Inspection, Repair           S. NW D11.168         Proactive asset management         100% Inspection, Repair           S. NW D11.168         Proactive asset management         Hydrostatic Testing         0           S. NW D11.168         Proactive asset management         Hydrostatic Testing         0           S. NW D11.168         Technical certainty         ILP Program: 64         1           S. NW D11.168         Technical certainty         ILP Program: 68 palation         5           S. NW D11.168         Technical certainty         Replacement: 5         5           S. NW D11.168         Technical certainty         Pressure Regulating, 3         5           S. NW D11.168         Technical certainty         Pressure Regulating, 3         5           S. NW D11.168         Technical certainty         Status Quo: Modified         2           S. NW D11.168         Technical certainty         Status Quo: Modified         2           S. NW D12.19         Prevention of ruptures	5. NWP   TI 168	Prevention of leaks with significant consequences	Status Ovo: Modified	2
S. NWP LTL ISB         Proactive asset management         III Program. Bolotic.         4           S. NWP LTL ISB         Proactive asset management         Bealacement:         4           S. NWP LTL ISB         Proactive asset management         100% Inspection, Repair         2           S. NWP LTL ISB         Proactive asset management         100% Inspection, Repair         2           S. NWP LTL ISB         Proactive asset management         Pressure Regulating.         0           S. NWP LTL ISB         Proactive asset management         Hydrostatic Testing.         0           S. NWP LTL ISB         Proactive asset management         Status Quo: Modified         1           S. NWP LTL ISB         Technical certainty         III Program. Robotic.         3           S. NWP LTL ISB         Technical certainty         Replacement:         5           S. NWP LTL ISB         Technical certainty         Replacement:         3           S. NWP LTL ISB         Technical certainty         Pressure Regulating         3           S. NWP LTL ISB         Technical certainty         Pressure Regulating         3           S. NWP LTL ISB         Technical certainty         Hydrostatic Testing         3           S. NWP LTL ISB         Technical certainty         Status Quo: Modified         2				
5. NWP UTL 168         Proactive asset management         Reglacement:         100% Inspection, Repair         2           5. NWP UTL 168         Proactive asset management         100% Inspection, Repair         2           5. NWP UTL 168         Proactive asset management         Pressure Regulating         0           5. NWP UTL 168         Proactive asset management         Hydrostatic Testing         0           5. NWP UTL 168         Proactive asset management         Hydrostatic Testing         0           5. NWP UTL 168         Technical certainty         Hu Program:         44           5. NWP UTL 168         Technical certainty         Beplacement:         3           5. NWP UTL 168         Technical certainty         Beplacement:         3           5. NWP UTL 168         Technical certainty         Beplacement:         3           5. NWP UTL 168         Technical certainty         Pressure Regulating         3           5. NWP UTL 168         Technical certainty         Pressure Regulating         3           6. NWP LOP 219         Prevention of ruptures         HU Program:         5           6. NWP LOP 219         Prevention of ruptures         Reglacement:         5           6. NWP LOP 219         Prevention of ruptures         HU Program:         5 <td></td> <td></td> <td></td> <td></td>				
5. NWP II:168         Proactive asset management         100% Inspection, Repair         0           5. NWP II:168         Proactive asset management         Pressure Regulating         0           5. NWP II:168         Proactive asset management         Hydrostatic Testing         0           5. NWP II:168         Proactive asset management         Status Quo: Modified         1           5. NWP II:168         Technical certainty         III Program.         4           5. NWP II:168         Technical certainty         III Program.         6.00tit.           5. NWP II:168         Technical certainty         BD/S inspection. Repair         4           5. NWP II:168         Technical certainty         DD/S inspection. Repair         4           5. NWP II:168         Technical certainty         Pressure Regulating         3           5. NWP II:168         Technical certainty         Pressure Regulating         3           5. NWP II:168         Technical certainty         Status Quo: Modified         2           6. NWP IDP 219         Prevention of ruptures         III Program.         5           6. NWP IDP 219         Prevention of ruptures         Replacement:         5           6. NWP IDP 219         Prevention of ruptures         III Program.         5		rioacuve asset management		
5. NWP III.168         Proactive asset management         Pressure Regulating         0           5. NWP III.168         Proactive asset management         Hydrostatic Testing         0           5. NWP III.168         Proactive asset management         Status Quo: Modified         1           5. NWP III.168         Technical certainty         ILI Program:         4           5. NWP III.168         Technical certainty         ILI Program:         6           5. NWP III.168         Technical certainty         Replacement:         3           5. NWP III.168         Technical certainty         100% Inspection, Repair         4           5. NWP III.168         Technical certainty         100% Inspection, Repair         3           5. NWP III.168         Technical certainty         Status Quo: Modified         2           6. NWP 102 130         Prevention of ruptures         ILI Program:         5           6. NWP 102 131         Prevention of ruptures         Replacement:         5           6. NWP 102 130         Prevention of ruptures         Replacement:         5           6. NWP 102 131         Prevention of ruptures         Replacement:         5           6. NWP 102 130         Prevention of ruptures         Prevention of ruptures         5           6. NWP		Produce asset management		
S. NWP ITL IS8         Proactive asset management         Hydrostatic Testing         0           5. NWP ITL IS8         Proactive asset management         Status Que: Modified         1           5. NWP ITL IS8         Technical certainty         ILI Program.         4           5. NWP ITL IS8         Technical certainty         ILI Program.         4           5. NWP ITL IS8         Technical certainty         ILI Program.         40           5. NWP ITL IS8         Technical certainty         ILI Program.         40           5. NWP ITL IS8         Technical certainty         Replacement:         5           5. NWP ITL IS8         Technical certainty         Pressure Regulating         3           5. NWP ITL IS8         Technical certainty         Pressure Regulating         3           5. NWP ITL IS8         Technical certainty         Status Quo: Modified         2           6. NWP IDP 130         Prevention of ruptures         ILI Program.         5           6. NWP IDP 219         Prevention of ruptures         Prosection Repair S         5           6. NWP IDP 219         Prevention of ruptures         ILI Program.         5           6. NWP IDP 219         Prevention of ruptures         Hydrostatic Testing         5           6. NWP IDP 219				
S. WWP 11.168     Technical certainty     Tutporgram.ce     Tutporg			Pressure Regulating Hydrostatic Testing	
S. NWP UT. 168         Technical certainty         ILI Program: Program - Robotic:         3           S. NWP UT. 168         Technical certainty         Replacement:         5           S. NWP UT. 168         Technical certainty         100% Inspection, Repair         4           S. NWP UT. 168         Technical certainty         100% Inspection, Repair         4           S. NWP UT. 168         Technical certainty         Pressure Regulating         3           S. NWP UT. 168         Technical certainty         Status Quo: Modified         2           G. NWP UD. 291         Prevention of ruptures         ILI Program:         5           G. NWP UD. 219         Prevention of ruptures         Replacement:         5           G. NWP UD. 219         Prevention of ruptures         100% Inspection, Repair         5           G. NWP UD. 219         Prevention of ruptures         Pressure Regulating, 5         5           G. NWP LOP 219         Prevention of ruptures         Pressure Regulating, 5         5           G. NWP LOP 219         Prevention of ruptures         Status Quo: Modified, 2         2           G. NWP LOP 219         Prevention of leaks with significant consequences         ILI Program - Robotic:         5           G. NWP LOP 219         Prevention of leaks with significant consequences	J. 19997 LIL 100	nouse asset management	injurosiduc resung	U
S. NWP UT. 168         Technical certainty         ILI Program: Program - Robotic:         3           S. NWP UT. 168         Technical certainty         Replacement:         5           S. NWP UT. 168         Technical certainty         100% Inspection, Repair         4           S. NWP UT. 168         Technical certainty         100% Inspection, Repair         4           S. NWP UT. 168         Technical certainty         Pressure Regulating         3           S. NWP UT. 168         Technical certainty         Status Quo: Modified         2           G. NWP UD. 291         Prevention of ruptures         ILI Program:         5           G. NWP UD. 219         Prevention of ruptures         Replacement:         5           G. NWP UD. 219         Prevention of ruptures         100% Inspection, Repair         5           G. NWP UD. 219         Prevention of ruptures         Pressure Regulating, 5         5           G. NWP LOP 219         Prevention of ruptures         Pressure Regulating, 5         5           G. NWP LOP 219         Prevention of ruptures         Status Quo: Modified, 2         2           G. NWP LOP 219         Prevention of leaks with significant consequences         ILI Program - Robotic:         5           G. NWP LOP 219         Prevention of leaks with significant consequences		Proactive asset management		
S. NWP LTL 168         Technical certainty         IJL Program -: Robotic:         3           S. NWP LTL 168         Technical certainty         Replacement:         5           S. NWP LTL 168         Technical certainty         100% Inspection, Repair         4           S. NWP LTL 168         Technical certainty         Pressure Regulating,         3           S. NWP LTL 168         Technical certainty         Hydrostatic Testing,         3           S. NWP LTL 168         Technical certainty         Status Quo: Modified,         2           G. NWP LDP 219         Prevention of ruptures         ILL Program: Robotic:,         5           G. NWP LDP 219         Prevention of ruptures         Replacement;         5           G. NWP LDP 219         Prevention of ruptures         Replacement;         5           G. NWP LDP 219         Prevention of ruptures         Hydrosettin Testing,         5           G. NWP LDP 219         Prevention of ruptures         Hydrosettin Testing,         5           G. NWP LDP 219         Prevention of ruptures         ILl Program.: 60bbit;         5           G. NWP LDP 219         Prevention of fleaks with significant consequences         ILl Program.: 6         5           G. NWP LDP 219         Prevention of fleaks with significant consequences         Replacem		Technical certainty		
S. NWP II.168         Technical certainty         Replacement;         S.           S. NWP II.168         Technical certainty         100% Inspection, Repair         4           S. NWP II.168         Technical certainty         Pressure Regulating,         3           S. NWP II.168         Technical certainty         Hydrosetin, Repair         4           S. NWP II.168         Technical certainty         Hydrosetin, Repair         4           S. NWP II.168         Technical certainty         Status Quo: Modified,         2           S. NWP II.168         Technical certainty         Status Quo: Modified,         2           S. NWP II.168         Technical certainty         Status Quo: Modified,         2           S. NWP II.168         Technical certainty         Status Quo: Modified,         2           S. NWP II.02         Prevention of ruptures         III.Program. Robotics,         5           S. NWP ID2 129         Prevention of ruptures         Presention of ruptures         Northold Status Quo: Modified,         2           S. NWP ID2 129         Prevention of leaks with significant consequences         III.Program.         5           S. NWP ID2 129         Prevention of leaks with significant consequences         III.Program.         4           S. NWP ID2 129         Prevention of leaks			ILI Program - Robotic:	
S. NWP LTL ISB         Technical certainty         100% Inspection, Repair         4           S. NWP LTL ISB         Technical certainty         Pressure Begulating,         3           S. NWP LTL ISB         Technical certainty         Hydrostatic Testing,         3           S. NWP LTL ISB         Technical certainty         Hydrostatic Testing,         3           S. NWP LTL ISB         Technical certainty         Status Quo: Modified,         2           6. NWP LDP 219         Prevention of ruptures         LLP rogram. Robotic:         5           6. NWP LDP 219         Prevention of ruptures         LDP rogram. Robotic:         5           6. NWP LDP 219         Prevention of ruptures         100% Inspection, Repair         5           6. NWP LDP 219         Prevention of ruptures         Pressure Regulating,         5           6. NWP LDP 219         Prevention of ruptures         Status Quo: Modified,         2           6. NWP LDP 219         Prevention of ruptures         Status Quo: Modified,         2           6. NWP LDP 219         Prevention of leaks with significant consequences         LL Program.         5           6. NWP LDP 219         Prevention of leaks with significant consequences         Replacement;         4           6. NWP LDP 219         Prevention of leaks with significant			Replacement:	
S. NWP LIT LISE         Technical certainty         Pressure Regulating,         3           S. NWP LIT LISE         Technical certainty         Hydrostatic Testing,         3           S. NWP LIT LISE         Technical certainty         Status Que: Modified,         2           S. NWP LIT LISE         Technical certainty         Status Que: Modified,         2           S. NWP LID 213         Prevention of rugtures         III Program.         5           S. NWP LID 213         Prevention of rugtures         Replacement;         5           S. NWP LID 219         Prevention of rugtures         Replacement;         5           S. NWP LID 219         Prevention of rugtures         Pressure Regulating;         5           S. NWP LID 219         Prevention of rugtures         Pressure Regulating;         5           S. NWP LID 219         Prevention of rugtures         Pressure Regulating;         5           S. NWP LID 219         Prevention of rugtures         Status Que: Modified,         2           S. NWP LID 219         Prevention of rugtures         III Program.         5           S. NWP LID 219         Prevention of rugtures         III Program.         5           S. NWP LID 219         Prevention of rugtures         III Program.         6           S. N		Technical certainty		4
5. NWP ID: 168         Technical certainty         Hydrostatic Testing         A           5. NWP ID: 168         Technical certainty         Status Quo: Modified         2           6. NWP ID: 219         Prevention of ruptures         ILI Program:         5           6. NWP ID: 219         Prevention of ruptures         ILI Program:         5           6. NWP ID: 219         Prevention of ruptures         Replacement;         5           6. NWP ID: 219         Prevention of ruptures         Replacement;         5           6. NWP ID: 219         Prevention of ruptures         Negociton, Repair         5           6. NWP ID: 219         Prevention of ruptures         Pressure Regulating         5           6. NWP ID: 219         Prevention of ruptures         Hydrostatic Testing         5           6. NWP ID: 219         Prevention of ruptures         Status Quo: Modified         2           6. NWP ID: 219         Prevention of ruptures         ILl Program:         5           6. NWP ID: 219         Prevention of leaks with significant consequences         ILl Program: Robotic:         5           6. NWP ID: 219         Prevention of leaks with significant consequences         Replacement;         4           6. NWP ID: 219         Prevention of leaks with significant consequences         ID0X	5. NWP LTL 168	Technical certainty	Pressure Regulating	3
6. NWP LOP 219         Prevention of ruptures         ILI Program:         5           6. NWP LOP 219         Prevention of ruptures         Replacement:         5           6. NWP LOP 219         Prevention of ruptures         Beplacement:         5           6. NWP LOP 219         Prevention of ruptures         100% Inspection, Repair         5           6. NWP LOP 219         Prevention of ruptures         Pressure Regulating         5           6. NWP LOP 219         Prevention of ruptures         Hydrostatic Testing         5           6. NWP LOP 219         Prevention of leaks with significant consequences         ILI Program:         5           6. NWP LOP 219         Prevention of leaks with significant consequences         ILI Program:         5           6. NWP LOP 219         Prevention of leaks with significant consequences         ILI Program:         5           6. NWP LOP 219         Prevention of leaks with significant consequences         Replacement:         4           6. NWP LOP 219         Prevention of leaks with significant consequences         Replacement:         4           6. NWP LOP 219         Prevention of leaks with significant consequences         Replacement:         4           6. NWP LOP 219         Prevention of leaks with significant consequences         Replacement:         4	5. NWP LTL 168	Technical certainty		3
6. NWP LOP 219         Prevention of ruptures         ILI Program:         5           6. NWP LOP 219         Prevention of ruptures         Replacement:         5           6. NWP LOP 219         Prevention of ruptures         Replacement:         5           6. NWP LOP 219         Prevention of ruptures         100% Inspection, Repair         5           6. NWP LOP 219         Prevention of ruptures         Pressure Regulating         5           6. NWP LOP 219         Prevention of ruptures         Hydrostatic Testing         5           6. NWP LOP 219         Prevention of ruptures         Status Quo: Modified         2           6. NWP LOP 219         Prevention of leaks with significant consequences         ILI Program:         5           6. NWP LOP 219         Prevention of leaks with significant consequences         ILI Program:         5           6. NWP LOP 219         Prevention of leaks with significant consequences         Replacement:         4           6. NWP LOP 219         Prevention of leaks with significant consequences         Replacement:         4           6. NWP LOP 219         Prevention of leaks with significant consequences         Replacement:         4           6. NWP LOP 219         Prevention of leaks with significant consequences         Replacement:         4           6. NWP L	5 NWP ITI 169	Technical certainty	Status Quo: Modified	2
E. NWP LOP 219 Prevention of ruptures     E. NWP LOP 219 Prevention of leaks with significant consequences     ILI Program. Robotic:     E. NWP LOP 219 Prevention of leaks with significant consequences     Replacement:     4     E. NWP LOP 219 Prevention of leaks with significant consequences     Replacement;     4     E. NWP LOP 219 Prevention of leaks with significant consequences     Replacement;     4     E. NWP LOP 219 Prevention of leaks with significant consequences     Replacement;     4     E. NWP LOP 219 Prevention of leaks with significant consequences     Replacement;     4     E. NWP LOP 219 Prevention of leaks with significant consequences     Replacement;     4     E. NWP LOP 219 Prevention of leaks with significant consequences     Replacement;     4     E. NWP LOP 219     Prevention of leaks with significant consequences     Replacement;     4     E. NWP LOP 219     Prevention of leaks with significant consequences     Replacement;     4     E. NWP LOP 219     Revention of leaks with significant consequences     Replacement;     E. NWP LOP 219     Revention of leaks with significant consequences     Replacement;     E. NWP LOP 219     Revention of leaks with significant consequences     Revention of leaks with signi	6. NWP LOP 219		ILI Program:	~
6. NWP LOP 219         Prevention of ruptures         Replacement:         5           6. NWP LOP 219         Prevention of ruptures         100% Inspection, Repair         5           6. NWP LOP 219         Prevention of ruptures         Pressure Regulating         5           6. NWP LOP 219         Prevention of ruptures         Hydrostatic Testing         5           6. NWP LOP 219         Prevention of ruptures         LIPOgram.         5           6. NWP LOP 219         Prevention of leaks with significant consequences         LIPOgram.         5           6. NWP LOP 219         Prevention of leaks with significant consequences         LIPOgram.         5           6. NWP LOP 219         Prevention of leaks with significant consequences         LIPOgram.         5           6. NWP LOP 219         Prevention of leaks with significant consequences         Replacement:         4           6. NWP LOP 219         Prevention of leaks with significant consequences         LIPOgram.         6           6. NWP LOP 219         Prevention of leaks with significant consequences         LIPOgram.         6           6. NWP LOP 219         Prevention of leaks with significant consequences         Prevention of			ILI Program - Robotic	
E. NWP LOP 219 Prevention of ruptures     E. NWP LOP 219 Presention of ruptures     For the second sec			Benjacoment	
6. NWP LOP 219 Prevention of ruptures     7 Prossure Regulating     7      6. NWP LOP 219 Prevention of ruptures     7      6. NWP LOP 219 Prevention of ruptures     7      6. NWP LOP 219 Prevention of leaks with significant consequences     10 Program.     7      7	6. NWP LOP 219			
6. NWP LOP 219         Prevention of ruptures         Hydrostatic Testing         5           6. NWP LOP 219         Prevention of ruptures         Status Quo: Modified         2           6. NWP LOP 219         Prevention of ruptures         Status Quo: Modified         2           6. NWP LOP 219         Prevention of leaks with significant consequences         ILI Program: 65         6           6. NWP LOP 219         Prevention of leaks with significant consequences         Replacement: 4         6           6. NWP LOP 219         Prevention of leaks with significant consequences         100% Inspection. Repair 4         4           6. NWP LOP 219         Prevention of leaks with significant consequences         Presention of leaks with significant consequences         100% Inspection. Repair 4           6. NWP LOP 219         Prevention of leaks with significant consequences         Presention of leaks with significant consequences         Prevention of leaks with significant consequences           6. NWP LOP 219         Prevention of leaks with significant consequences         Present Regulating, 0         0           6. NWP LOP 219         Prevention of leaks with significant consequences         Present Regulating, 0         0	6. NWP LOP 219	Prevention of ruptures	Pressure Regulating	5
E. NWP LOP 219 Prevention of leaks with significant consequences     ILI Program. 55     6. NWP LOP 219 Prevention of leaks with significant consequences     ILI Program. Robotic:     5     6. NWP LOP 219 Prevention of leaks with significant consequences     102% Inspection, Repair     4     6. NWP LOP 219 Prevention of leaks with significant consequences     Preve	6. NWP LOP 219 6. NWP LOP 219 6. NWP LOP 219			5
E. NWP LOP 219 Prevention of leaks with significant consequences     ILI Program. 55     6. NWP LOP 219 Prevention of leaks with significant consequences     ILI Program. Robotic:     5     6. NWP LOP 219 Prevention of leaks with significant consequences     102% Inspection, Repair     4     6. NWP LOP 219 Prevention of leaks with significant consequences     Preve	6. NWP LOP 219 6. NWP LOP 219 6. NWP LOP 219	Prevention of ruptures	Hydrostatic resulig	
6. NWP LOP 219 Prevention of leaks with significant consequences LUP Organn - Robotic: 5     6. NWP LOP 219 Prevention of leaks with significant consequences Replacement: 4     6. NWP LOP 219 Prevention of leaks with significant consequences LOWS Inspection, Repair 4     6. NWP LOP 219 Prevention of leaks with significant consequences Pressure Regulating 0     6. NWP LOP 219 Prevention of leaks with significant consequences With consequences Pressure Regulating 0	6. NWP LOP 219 6. NWP LOP 219 6. NWP LOP 219 6. NWP LOP 219 6. NWP LOP 219			2
MWP LOP 219 Prevention of leaks with significant consequences <u>Replacement</u> ; 4     6. NWP LOP 219 Prevention of leaks with significant consequences <u>100% inspection, Repair</u> 4     6. NWP LOP 219 Prevention of leaks with significant consequences <u>Pressure Regulating</u> 0     6. NWP LOP 219 Prevention of leaks with significant consequences <u>Pressure Regulating</u> 0	6. NWP LOP 219 6. NWP LOP 219 6. NWP LOP 219 6. NWP LOP 219 6. NWP LOP 219	Prevention of ruptures	Status Quo: Modified	
MWP LOP 219 Prevention of leaks with significant consequences 100% Inspection, Repair 4     MWP LOP 219 Prevention of leaks with significant consequences Pressure Regulating 0     MWP LOP 219 Prevention of leaks with significant consequences Hydrostatic Testing 0	6. NWP LOP 219 6. NWP LOP 219	Prevention of ruptures Prevention of leaks with significant consequences	Status Quo: Modified ILI Program:	5
6. NWP LOP 219 Prevention of leaks with significant consequences Pressure Regulating 0     6. NWP LOP 219 Prevention of leaks with significant consequences Hydrostatic Testing 0	6. NWP LOP 219 6. NWP LOP 219	Prevention of ruptures Prevention of leaks with significant consequences Prevention of leaks with significant consequences	Status Quo: Modified ILI Program: ILI Program - Robotic:	5
6. NWP LOP 219 Prevention of leaks with significant consequences Hydrostatic Testing 0	6. NWP LOP 219 6. NWP LOP 219	Prevention of ruptures Prevention of leaks with significant consequences Prevention of leaks with significant consequences Prevention of leaks with significant consequences	Status Quo: Modified ILI Program: ILI Program - Robotic: <u>Replacement:</u>	5 5 4
	6. NWP LOP 219 6. NWP LOP 219	Prevention of ruptures Prevention of leaks with significant consequences Prevention of leaks with significant consequences Prevention of leaks with significant consequences Prevention of leaks with significant consequences	Status Quo: Modified ILI Program: ILI Program - Robotic: Replacement: 100% Inspection, Repair	5 5 4 4
	6. NWP LOP 219 6. NWP LOP 219	Prevention of ruptures Prevention of leaks with significant consequences Prevention of leaks with significant consequences Prevention of leaks with significant consequences Prevention of leaks with significant consequences	Status Quo: Modified <u>ILI Program:</u> ILI Program - Robotic: Replacement: 100% Inspection, Repair Pressure Regulating	5 5 4 4 0
	6. NWP LOP 219 6. NWP LOP 219	Prevention of ruptures Prevention of leaks with significant consequences Prevention of leaks with significant consequences Prevention of leaks with significant consequences Prevention of leaks with significant consequences	Status Quo: Modified <u>ILI Program:</u> ILI Program - Robotic: Replacement: 100% Inspection, Repair Pressure Regulating	5 5 4 4 0

	Financial	
Lateral	Category	Alternative Evaluation Criteria
4. PG3 LTL 219	Retirement of under-depreciated asset	ILI Program:
4. PG3 LTL 219	Retirement of under-depreciated asset	ILI Program - Robotic:
4. PG3 LTL 219		
4. PG3 LTL 219	Retirement of under-depreciated asset	Replacement:
	Retirement of under-depreciated asset	100% Inspection, Repair
4. PG3 LTL 219	Retirement of under-depreciated asset	Pressure Regulating
4. PG3 LTL 219	Retirement of under-depreciated asset	Hydrostatic Testing
4. PG3 LTL 219	Retirement of under-depreciated asset	Status Quo: Modified
5. NWP LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program:
5. NWP LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program - Robotic:
5. NWP LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Replacement:
5. NWP LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	100% Inspection, Repair
5. NWP LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Pressure Regulating
5. NWP LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Hydrostatic Testing
5. NWP LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Status Quo: Modified
5. NWP LTL 168	Rate impact	ILI Program:
5. NWP LTL 168	Rate impact	ILI Program - Robotic:
5. NWP LTL 168	Rate impact	
5. NWP LTL 168 5. NWP LTL 168	Rate impact	Replacement:
5. NWP LTL 168 5. NWP LTL 168	Rate impact	100% Inspection, Repair
		Pressure Regulating
5. NWP LTL 168	Rate impact	Hydrostatic Testing
5. NWP LTL 168	Rate impact	Status Quo: Modified
5. NWP LTL 168	Retirement of under-depreciated asset	ILI Program:
5. NWP LTL 168	Retirement of under-depreciated asset	ILI Program - Robotic:
5. NWP LTL 168	Retirement of under-depreciated asset	Replacement:
5. NWP LTL 168	Retirement of under-depreciated asset	100% Inspection, Repair
5. NWP LTL 168	Retirement of under-depreciated asset	Pressure Regulating
5. NWP LTL 168	Retirement of under-depreciated asset	Hydrostatic Testing
5. NWP LTL 168	Retirement of under-depreciated asset	Status Quo: Modified
6. NWP LOP 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program:
6. NWP LOP 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program - Robotic:
6. NWP LOP 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Plogram - Robotic.
6. NWP LOP 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Replacement:
6. NWP LOP 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	100% Inspection, Repair
	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Pressure Regulating
6. NWP LOP 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Hydrostatic Testing
6. NWP LOP 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Status Quo: Modified
6. NWP LOP 219	Rate impact	ILI Program:
6. NWP LOP 219	Rate impact	ILI Program - Robotic:
6. NWP LOP 219	Rate impact	Replacement:
6. NWP LOP 219	Rate impact	100% Inspection, Repair
6. NWP LOP 219	Rate impact	Pressure Regulating
6. NWP LOP 219	Rate impact	Hydrostatic Testing
6. NWP LOP 219	Rate impact	Status Quo: Modified
6. NWP LOP 219	Retirement of under-depreciated asset	ILI Program:
6. NWP LOP 219	Retirement of under-depreciated asset	ILI Program - Robotic:
6. NWP LOP 219	Retirement of under-depreciated asset	Replacement:
6. NWP LOP 219	Retirement of under-depreciated asset	100% Inspection, Repair
	Patirement of under depresisted seest	Dressure Degulating
6. NWP LOP 219	Retirement of under-depreciated asset	Pressure Regulating
	Retirement of under-depreciated asset Retirement of under-depreciated asset	Pressure Regulating Hydrostatic Testing
6. NWP LOP 219 6. NWP LOP 219	Retirement of under-depreciated asset	Pressure Regulating Hydrostatic Testing
6. NWP LOP 219 6. NWP LOP 219 6. NWP LOP 219	Retirement of under-depreciated asset Retirement of under-depreciated asset	Pressure Regulating Hydrostatic Testing Status Quo: Modified
6. NWP LOP 219 6. NWP LOP 219 6. NWP LOP 219 7. PG1 LTL 168*	Retirement of under-depreciated asset Retirement of under-depreciated asset Net Present Value (50 year) of Capital, 0&M, and Retirement Cost	Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program:
6. NWP LOP 219 6. NWP LOP 219 6. NWP LOP 219 7. PG1 LTL 168* 7. PG1 LTL 168*	Retirement of under-depreciated asset Retirement of under-depreciated asset Net Present Value (50 year) of Capital, O&A, and Retirement Cost Net Present Value (50 year) of Capital, O&A, and Retirement Cost	Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: ILI Program - Robotic:
6. NWP LOP 219 6. NWP LOP 219 6. NWP LOP 219 7. PG1 LTL 168* 7. PG1 LTL 168* 7. PG1 LTL 168*	Retirement of under-depreciated asset Retirement of under-depreciated asset Net Present Value (50 year) of Capital, 0&M, and Retirement Cost Net Present Value (50 year) of Capital, 0&M, and Retirement Cost Net Present Value (50 year) of Capital, 0&M, and Retirement Cost	Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: ILI Program - Robotic: Replacement:
6. NWP LOP 219 6. NWP LOP 219 6. NWP LOP 219 7. PG1 LTL 168* 7. PG1 LTL 168* 7. PG1 LTL 168* 7. PG1 LTL 168*	Retirement of under-depreciated asset Retirement of under-depreciated asset Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost	Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: ILI Program. Robotic: Replacement: 100% Inspection, Repair
6. NWP LOP 219 6. NWP LOP 219 7. PG1 LTL 168* 7. PG1 LTL 168* 7. PG1 LTL 168* 7. PG1 LTL 168* 7. PG1 LTL 168*	Retirement of under-depreciated asset Retirement of under-depreciated asset Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: ILI Program - Robotic: Replacement:
6. NWP LOP 219 6. NWP LOP 219 6. NWP LOP 219 7. PG1 LTL 168* 7. PG1 LTL 168* 7. PG1 LTL 168* 7. PG1 LTL 168*	Retirement of under-depreciated asset Retirement of under-depreciated asset Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost	Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: ILI Program. Robotic: Replacement: 100% Inspection, Repair
6. NWP LOP 219 6. NWP LOP 219 7. PG1 LTL 168* 7. PG1 LTL 168* 7. PG1 LTL 168* 7. PG1 LTL 168* 7. PG1 LTL 168*	Retirement of under-depreciated asset Retirement of under-depreciated asset Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: ILI Program - Robotic: Replacement: 100% Inspection, Repair Pressure Regulating
6. NWP LOP 219 6. NWP LOP 219 7. PG1 LTL 168* 7. PG1 LTL 168* 7. PG1 LTL 168* 7. PG1 LTL 168* 7. PG1 LTL 168*	Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Pressure Regulating <u>Hydrostatic Testing</u> <u>Status Quo: Modified</u> ILI Program: <u>Replacement</u> : <u>100%</u> Inspection, Repair <u>Pressure Regulating</u> <u>Hydrostatic Testing</u>
6. NWP LOP 219 6. NWP LOP 219 6. NWP LOP 219 7. PG1 LTL 168* 7. PG1 LTL 168*	Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement Ositue (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Ret Present Value (50 year) Net	Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program - Robotic; Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified
6. NWP LOP 219 6. NWP LOP 219 7. PG1 LTL 168* 7. PG1 LTL 168*	Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement Ositue (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Ret Present Value (50 year) Net	Pressure Regulating Hydrostatic Testing Status Quo: Modified IU Program: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified IU Program:
6. NWP LOP 219 6. NWP LOP 219 7. PGI LTI 168* 7. PGI LTI 168*	Retirement of under-depreciated asset Retirement of under-depreciated asset Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Rate impact	Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program - Robotic: Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: ILI Program - Robotic
6. NWP LOP 219 6. NWP LOP 219 7. PG1 LT1 168* 7. PG1 LT1 168*	Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement of under-depreciated asset Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Rate impact Rate impact	Pressure Regulating Hydrostatic Testing Status Quo: Modified IU Program: 100% inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified IU Program: Robotic: Replacement;
6. NWP LOP 219 6. NWP LOP 219 6. NWP LOP 219 7. PG1 LT 168* 7. PG1 LT 168*	Retirement of under-depreciated asset Retirement of under-depreciated asset Net Present Value (50 year) of Capital, D&M, and Retirement Cost Net Present Value (50 year) of Capital, D&M, and Retirement Cost Net Present Value (50 year) of Capital, D&M, and Retirement Cost Net Present Value (50 year) of Capital, D&M, and Retirement Cost Net Present Value (50 year) of Capital, D&M, and Retirement Cost Net Present Value (50 year) of Capital, D&M, and Retirement Cost Net Present Value (50 year) of Capital, D&M, and Retirement Cost Net Present Value (50 year) of Capital, D&M, and Retirement Cost Net Present Value (50 year) of Capital, D&M, and Retirement Cost Net Present Value (50 year) of Capital, D&M, and Retirement Cost Rate impact Rate impact Rate impact	Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program : Robotic: Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program : Robotic: Replacement: 100% Inspection, Repair
6. NWP LOP 219 6. NWP LOP 219 6. NWP LOP 219 7. PG1 LT1 168* 7. PG1 LT1 168*	Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement of under-depreciated asset Net Present Value (50 year) of Capital, 0&M, and Retirement Cost Net Present Value (50 year) of Capital, 0&M, and Retirement Cost Net Present Value (50 year) of Capital, 0&M, and Retirement Cost Net Present Value (50 year) of Capital, 0&M, and Retirement Cost Net Present Value (50 year) of Capital, 0&M, and Retirement Cost Net Present Value (50 year) of Capital, 0&M, and Retirement Cost Net Present Value (50 year) of Capital, 0&M, and Retirement Cost Net Present Value (50 year) of Capital, 0&M, and Retirement Cost Rate impact Rate impact Rate impact Rate impact	Pressure Regulating Hydrostatic Testing I U Program: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing, Status Quo: Modified IU Program - Robotic; Replacement: 100% Inspection, Repair Pressure Regulating
6. NWP LOP 219 6. NWP LOP 219 6. NWP LOP 219 7. PG1 LT 168* 7. PG1 LT 168*	Retirement of under-depreciated asset Retirement of under-depreciated asset Net Present Value (50 year) of Capital, D&M, and Retirement Cost Net Present Value (50 year) of Capital, D&M, and Retirement Cost Net Present Value (50 year) of Capital, D&M, and Retirement Cost Net Present Value (50 year) of Capital, D&M, and Retirement Cost Net Present Value (50 year) of Capital, D&M, and Retirement Cost Net Present Value (50 year) of Capital, D&M, and Retirement Cost Net Present Value (50 year) of Capital, D&M, and Retirement Cost Net Present Value (50 year) of Capital, D&M, and Retirement Cost Net Present Value (50 year) of Capital, D&M, and Retirement Cost Net Present Value (50 year) of Capital, D&M, and Retirement Cost Rate impact Rate impact Rate impact	Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program : Robotic: Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program : Robotic: Replacement: 100% Inspection, Repair
6. NWP LOP 219 6. NWP LOP 219 6. NWP LOP 219 7. PG1 LT1 168* 7. PG1 LT1 168*	Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Rate impact Rate Rate Rate Rate Rate Rate Rate Rat	Pressure Regulating, Hydrostatic Testing, U Program: U Program: 100% Inspection, Repair Pressure Regulating, Hydrostatic Testing, Status Quo: Modified U Program: Robotic; Replacement: 100% Inspection, Repair Pressure Regulating, Hydrostatic Testing, Hydrostatic Testing,
6. NWP LOP 219 6. NWP LOP 219 7. NGI LTI L62 7. PGI LTI L62 7. PGI LTI L63 7. PGI L73 7. PGI L73 7. PGI L73 7. PGI L73 7. PGI L73 7. PGI L73 7. PGI	Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement view (50 year) of capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Rate impact Rate impact Rate impact Rate impact Rate impact Rate impact	Pressure Regulating Hydrostatic Testing I U Program - Robotic: Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing U Program - Robotic: Replacement: 100% Inspection, Repair Pressure Regulating Pressure Regulating Hydrostatic Testing Status Quo: Modified
6. NWP LOP 219 6. NWP LOP 219 6. NWP LOP 219 7. PGI LTI 168* 7. PGI LTI 168*	Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Rate impact Rate	Pressure Regulating Hydrostatic Testing, Status Quo: Modified ILI Program: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing, Status Quo: Modified ILI Program: Robotic, Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program;
<ol> <li>6. NWP LOP 219</li> <li>6. NWP LOP 219</li> <li>6. NWP LOP 219</li> <li>7. PG1 LT1 568*</li> <li>7. PG1 LT1 1568*</li> </ol>	Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement view (50 year) of capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Ret Present Value (50 year) of Capital, OBM, and Retirement Cost Ret Present Value (50 year) of Capital, OBM, and Retirement Cost Ret Present Value (50 year) of Capital, OBM, and Retirement Cost Ret Present Value (50 year) of Capital, OBM, and Retirement Cost Rate impact Retirement of under-depreciated asset Retirement of under-depreciated asset	Pressure Regulating Hydrostatic Testing I U Program - Robotic: Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing U Program - Robotic: Replacement: 100% Inspection, Repair Pressure Regulating Pressure Regulating Hydrostatic Testing Status Quo: Modified
<ol> <li>6. NWP LOP 219</li> <li>6. NWP LOP 219</li> <li>6. NWP LOP 219</li> <li>7. PGI LTI 168*</li> </ol>	Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement (out (5) year) of Capital, OBM, and Retirement Cost Net Present Value (5) year) of Capital, OBM, and Retirement Cost Net Present Value (5) year) of Capital, OBM, and Retirement Cost Net Present Value (5) year) of Capital, OBM, and Retirement Cost Net Present Value (5) year) of Capital, OBM, and Retirement Cost Net Present Value (5) year) of Capital, OBM, and Retirement Cost Net Present Value (5) year) of Capital, OBM, and Retirement Cost Net Present Value (5) year) of Capital, OBM, and Retirement Cost Net Present Value (5) year) of Capital, OBM, and Retirement Cost Ret impact Rate Rate Rate Rate Rate Rate Rate Rat	Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: Robotic, Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: Robotic, Replacement: UDProgram: Robotic, Replacement:
<ol> <li>6. NWP LOP 219</li> <li>6. NWP LOP 219</li> <li>6. NWP LOP 219</li> <li>7. PGI LTI 168*</li> </ol>	Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement view (50 year) of capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Ret Present Value (50 year) of Capital, OBM, and Retirement Cost Ret Present Value (50 year) of Capital, OBM, and Retirement Cost Ret Present Value (50 year) of Capital, OBM, and Retirement Cost Ret Present Value (50 year) of Capital, OBM, and Retirement Cost Rate impact Retirement of under-depreciated asset Retirement of under-depreciated asset	Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: Robotic, Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: Robotic, Replacement: UDProgram: Robotic, Replacement:
<ol> <li>6. NWP LOP 219</li> <li>6. NWP LOP 219</li> <li>6. NWP LOP 219</li> <li>7. PGI LTI 168*</li> </ol>	Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement (out (5) year) of Capital, OBM, and Retirement Cost Net Present Value (5) year) of Capital, OBM, and Retirement Cost Net Present Value (5) year) of Capital, OBM, and Retirement Cost Net Present Value (5) year) of Capital, OBM, and Retirement Cost Net Present Value (5) year) of Capital, OBM, and Retirement Cost Net Present Value (5) year) of Capital, OBM, and Retirement Cost Net Present Value (5) year) of Capital, OBM, and Retirement Cost Net Present Value (5) year) of Capital, OBM, and Retirement Cost Net Present Value (5) year) of Capital, OBM, and Retirement Cost Ret impact Rate Rate Rate Rate Rate Rate Rate Rat	Pressure Regulating Hydrostatic Testing I Program: I U Program: J Drogram: J Drogram: J Drock Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified I U Program - Robotic; Replacement: J D0% Inspection, Repair Pressure Regulating Hydrostatic Testing Hydrostatic Testing Status Quo: Modified I U Program: I U Program: I U Program:
<ol> <li>6. NWP LOP 219</li> <li>6. NWP LOP 219</li> <li>6. NWP LOP 219</li> <li>7. PGI LTI 168*</li> </ol>	Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement (use (5) wear) of Capital, OBM, and Retirement Cost Net Present Value (5) year) of Capital, OBM, and Retirement Cost Net Present Value (5) year) of Capital, OBM, and Retirement Cost Net Present Value (5) year) of Capital, OBM, and Retirement Cost Net Present Value (5) year) of Capital, OBM, and Retirement Cost Net Present Value (5) year) of Capital, OBM, and Retirement Cost Net Present Value (5) year) of Capital, OBM, and Retirement Cost Net Present Value (5) year) of Capital, OBM, and Retirement Cost Ret Present Value (5) year) of Capital, OBM, and Retirement Cost Ret Present Value (5) year) of Capital, OBM, and Retirement Cost Ret Present Value (5) year) of Capital, OBM, and Retirement Cost Ret Present Value (5) year) of Capital, OBM, and Retirement Cost Ret Present Value (5) year) of Capital, OBM, and Retirement Cost Ret Present Value (5) year) of Capital, OBM, and Retirement Cost Ret Present Value (5) year) of Capital, OBM, and Retirement Cost Ret Present Value (5) year) of Capital, OBM, and Retirement Cost Ret Present Value (5) year) of Capital, OBM, and Retirement Cost Ret Present Value (5) year) of Capital, OBM, and Retirement Cost Retirement Cost Retirement O under-depreciated asset Retirement of under-depreciated asset Retirement Defendent asset Retirement Defendent asset Ret Present	Pressure Regulating,     Hydrostatic Testing,     Status Quo: Modified,     ILI Program:     ILI Program: Reputation,     Pressure Regulating,     Hydrostatic Testing,     Hydrostatic Testing,     Status Quo: Modified,     ILI Program: Reputation,     Replacement,     100% Inspection, Repair     Hydrostatic Testing,     Hydrostatic Testing
6. NWP LOP 219 6. NWP LOP 219 7. PG1 LT 158* 7. PG1 LT 158*	Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement view (50 year) of capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Ret Present Value (50 year) of Capital, OBM, and Retirement Cost Ret Present Value (50 year) of Capital, OBM, and Retirement Cost Ret Reternated Rate impact Rate impact Rate impact Rate impact Retirement of under-depreciated asset Retirement of sect Retirement of asset Retirement of sect Retirement o	Pressure Regulating Hydrostatic Testing I Program: I U Program: J Drogram: J Drogram: J Drogram: Hu Program: Hu Program: Status Quo: Modified J Drogram: Robotic: Replacement: J 00% Inspection, Repair Pressure Regulating Hu Program: Status Quo: Modified I U Program: Status Quo: Modified I U Program: J Drogram: J Drogra
6. NWP LOP 219 6. NWP LOP 219 7. PGI LTI 168* 7. PGI LTI 168*	Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement viue (50 year) of Capital, OBM, and Retirement Cost Net Present viue (50 year) of Capital, OBM, and Retirement Cost Net Present viue (50 year) of Capital, OBM, and Retirement Cost Net Present viue (50 year) of Capital, OBM, and Retirement Cost Net Present viue (50 year) of Capital, OBM, and Retirement Cost Net Present viue (50 year) of Capital, OBM, and Retirement Cost Net Present viue (50 year) of Capital, OBM, and Retirement Cost Net Present viue (50 year) of Capital, OBM, and Retirement Cost Net Present viue (50 year) of Capital, OBM, and Retirement Cost Ret Present viue (50 year) of Capital, OBM, and Retirement Cost Ret Present viue (50 year) of Capital, OBM, and Retirement Cost Ret Present viue (50 year) of Capital, OBM, and Retirement Cost Ret Present viue (50 year) of Capital, OBM, and Retirement Cost Ret Present viue (50 year) of Capital, OBM, and Retirement Cost Ret Present viue (50 year) of Capital, OBM, and Retirement Cost Ret Present Viue (50 year) of Capital, OBM, and Retirement Cost Ret Present Viue (50 year) of Capital, OBM, and Retirement Cost Ret Present Viue (50 year) of Capital, OBM, and Retirement Cost Ret Present Viue (50 year) of Capital, OBM, and Retirement Cost Retirement O under-depreciated asset Retirement O un	Pressure Regulating Hydrostatic Testing I U Program: 1 UProgram: 1 UProgram: 1 Optimestion, Repair Pressure Regulating, Hydrostatic Testing 1 Status Quo: Modified I UProgram. Robotic: Replacement: 100% Inspection, Repair Hydrostatic Testing, Hydrostatic Testing, Hydrostatic Testing, Hydrostatic Testing, Hydrostatic Testing, Hydrostatic Testing, Hydrostatic Testing, 1 UProgram. Robotic; Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing, Hydrostatic Tes
<ol> <li>6. NWP LOP 219</li> <li>6. NWP LOP 219</li> <li>6. NWP LOP 219</li> <li>7. PGI LT 168*</li> </ol>	Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement of under-depreciated asset Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Ret Present Value (50 year) of Capital, OBM, and Retirement Cost Ret Present Value (50 year) of Capital, OBM, and Retirement Cost Ret Present Value (50 year) of Capital, OBM, and Retirement Cost Rate impact Rate impact Rate impact Rate impact Retirement of under-depreciated asset	Pressure Regulating Hydrostatic Testing I U Program: I U Program: I U Program: I U Program: Hydrostatic Testing Hydrostatic Testing Status Quo: Modified I U Program - Robotic: Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified I U Program: Status Quo: Modified I U Program - Robotic, Replacement: 100% Inspection, Repair Pressure Regulating Pressure Regulating Hydrostatic Testing
<ol> <li>6. NWP LOP 219</li> <li>6. NWP LOP 219</li> <li>6. NWP LOP 219</li> <li>7. PG1 LT 168*</li> </ol>	Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement of under-depreciated asset Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Ret Present Value (50 year) of Capital, OBM, and Retirement Cost Ret Present Value (50 year) of Capital, OBM, and Retirement Cost Ret Present Value (50 year) of Capital, OBM, and Retirement Cost Ret Present Value (50 year) of Capital, OBM, and Retirement Cost Ret Present Value (50 year) of Capital, OBM, and Retirement Cost Ret Present Value (50 year) of Capital, OBM, and Retirement Cost Ret Present Value (50 year) of Capital, OBM, and Retirement Cost Ret Present Value (50 year) of Capital, OBM, and Retirement Cost Ret Present Value (50 year) of Capital, OBM, and Retirement Cost Retirement of under-depreciated asset Retirement Outder-depreciated asset Retirement Cost Ret Present Value (50 year) of Capital, OBM, and Retirement Cost	Pressure Regulating, Hydrostatic Testing, U Program: U Program: 100% Inspection, Repair Pressure Regulating, Hydrostatic Testing, Status Que: Modified U Program: Robotic: Replacement: 100% Inspection, Repair Pressure Regulating, Hydrostatic Testing, U Program: Robotic: Replacement: 100% Inspection, Repair U Program: Robotic: Replacement: 100% Inspection, Repair Pressure Regulating, Hydrostatic Testing, Hydrostatic Testing, Hydrostatic Testing, Hydrostatic Testing, Hydrostatic Testing, Hydrostatic Testing, Hydrostatic Testing, Status Que: Modified U Program: Repulating, Hydrostatic Testing, Hydrostatic Testing, Status Que: Modified
<ol> <li>6. NWP LOP 219</li> <li>6. NWP LOP 219</li> <li>6. NWP LOP 219</li> <li>7. PGI LTI 168*</li> <li>8. PGP LTI 168*</li> <li>8. PGP LTI 168*</li> <li>8. PGP LTI 168*</li> </ol>	Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement (use (5) way of Capital, OBM, and Retirement Cost Net Present Value (50 yay of Capital, OBM, and Retirement Cost Net Present Value (50 yay of Capital, OBM, and Retirement Cost Net Present Value (50 yay of Capital, OBM, and Retirement Cost Net Present Value (50 yay of Capital, OBM, and Retirement Cost Net Present Value (50 yay of Capital, OBM, and Retirement Cost Ret Present Value (50 yay of Capital, OBM, and Retirement Cost Ret Present Value (50 yay of Capital, OBM, and Retirement Cost Ret Present Value (50 yay of Capital, OBM, and Retirement Cost Ret Present Value (50 yay of Capital, OBM, and Retirement Cost Rate impact Retirement of under-depreciated asset Reti	Pressure Regulating, Hydrostatic Testing, IU Program: 100% inspection, Repair Pressure Regulating, Hydrostatic Testing, Hydrostatic Testing, U Program: Robotic, Replacement; 100% inspection, Repair Pressure Regulating, Hydrostatic Testing, Status Quo: Modified U Program. Replacement; Status Quo: Modified U Program. Replacement; Status Quo: Modified U Program: Status Quo: Modified U Program: Status Quo: Modified U Program: Status Quo: Modified U Program: Hydrostatic Testing, Status Quo: Modified U Program: Status Quo: Modified U Program: Status Quo: Modified
<ol> <li>6. NWP LOP 219</li> <li>6. NWP LOP 219</li> <li>6. NWP LOP 219</li> <li>7. PGI LTI 168*</li> <li>7. PGI LTI 161</li> <li>7. PGI LTI 161</li> <li>7. PGI LTI 168*</li> <li>7. PGI L</li></ol>	Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement of under-depreciated asset Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Ret Present Value (50 year) of Capital, OBM, and Retirement Cost Ret Present Value (50 year) of Capital, OBM, and Retirement Cost Ret Present Value (50 year) of Capital, OBM, and Retirement Cost Ret Present Value (50 year) of Capital, OBM, and Retirement Cost Ret Present Value (50 year) of Capital, OBM, and Retirement Cost Ret Present Value (50 year) of Capital, OBM, and Retirement Cost Ret Present Value (50 year) of Capital, OBM, and Retirement Cost Retirement of under-depreciated asset Retirement of unde	Pressure Regulating, Hydrostatic Testing, ILI Program: ILI Program: Pressure Regulating, Hydrostatic Testing, Hydrostatic Testing, ILI Program: ILI Program: ILI Program: ILI Program: Hydrostatic Testing, Hydrostatic Tes
<ol> <li>6. NWP LOP 219</li> <li>6. NWP LOP 219</li> <li>6. NWP LOP 219</li> <li>7. PGI LTI 168*</li> <li>8. PGP LTI 168*</li> </ol>	Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement (use (5) way of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Retirement Cost Retirement Cost Rate impact Rate impact Rate impact Rate impact Rate impact Retirement of under-depreciated asset Retirement of un	Pressure Regulating,     Hydrostatic Testing,     Li Program:     Li Program:     Li Program:     Li Program:     Annover Regulating,     Hydrostatic Testing,     Hydrostatic Testing,     Hydrostatic Testing,     Hydrostatic Testing,     Hydrostatic Testing,     Li Program: Regulating,     Hydrostatic Testing,     Status Quo: Modified,     Li Program: Regulating,     Hydrostatic Testing,     Status Quo: Modified,     Li Program:     Li UProgram:     Li UProgra
<ol> <li>6. NWP LOP 219</li> <li>6. NWP LOP 219</li> <li>6. NWP LOP 219</li> <li>7. PGI LTI 168*</li> <li>8. PGP LTI 168*</li> </ol>	Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement view (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Ret Present Value (50 year) of Capital, OBM, and Retirement Cost Ret Present Value (50 year) of Capital, OBM, and Retirement Cost Ret Present Value (50 year) of Capital, OBM, and Retirement Cost Rate impact Rate impact Rate impact Rate impact Retirement of under-depreciated asset Ret Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year	Pressure Regulating     Hydrostatic Testing     Status Quo: Modified     IU Program : Robotic:     Replacement:     100% Inspection, Repair     Pressure Regulating     Hydrostatic Testing     Status Quo: Modified     IU Program : Robotic:     Replacement:     100% Inspection, Repair     Pressure Regulating     Hydrostatic Testing     Status Quo: Modified     IU Program:     IO% Inspection, Repair     Pressure Regulating     Hydrostatic Replacement:     IO% Inspection, Repair     Replacement:     IO% Inspection     Replacement     II Program     II Program     III Program
<ol> <li>6. NWP LOP 219</li> <li>6. NWP LOP 219</li> <li>6. NWP LOP 219</li> <li>7. PGI LTI 168*</li> <li>8. PGP LTI 168*</li> </ol>	Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement (use (5) way of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Retirement Cost Retirement Cost Rate impact Rate impact Rate impact Rate impact Rate impact Retirement of under-depreciated asset Retirement of un	Pressure Regulating,     Hydrostatic Testing,     Li Program:     Li Program:     Li Program:     Li Program:     Annover Regulating,     Hydrostatic Testing,     Hydrostatic Testing,     Hydrostatic Testing,     Hydrostatic Testing,     Hydrostatic Testing,     Li Program: Regulating,     Hydrostatic Testing,     Status Quo: Modified,     Li Program: Regulating,     Hydrostatic Testing,     Status Quo: Modified,     Li Program:     Li UProgram:     Li UProgra

	Project Execution & Lifecycle O		
Lateral	Category	Alternative Evaluation Criteria	Score
4. PG3 LTL 219	System Capacity & Customer Impacts	ILI Program:	4
4. PG3 LTL 219	System Capacity & Customer Impacts	ILI Program - Robotic:	4
4. PG3 LTL 219	System Capacity & Customer Impacts	Replacement: Replacement	5
4. PG3 LTL 219	System Capacity & Customer Impacts	100% Inspection, Repair &	4
4. PG3 LTL 219	System Capacity & Customer Impacts	Pressure Regulating	5
4. PG3 LTL 219	System Capacity & Customer Impacts	Hydrostatic Testing	0
4. PG3 LTL 219 4. PG3 LTL 219	System Capacity & Customer Impacts Project Execution Certainty	Status Quo: Modified	3
		ILI Program:	
4. PG3 LTL 219	Project Execution Certainty	ILI Program - Robotic:	2
4. PG3 LTL 219	Project Execution Certainty	Replacement: Replacement	3
4. PG3 LTL 219	Project Execution Certainty	100% Inspection, Repair &	2
4. PG3 LTL 219	Project Execution Certainty	Pressure Regulating	5
4. PG3 LTL 219	Project Execution Certainty	Hydrostatic Testing	1
4. PG3 LTL 219	Project Execution Certainty	Status Quo: Modified	5
5. NWP I TI 168	Environmental	ILI Program:	3
5. NWP LTL 168	Environmental	ILI Program - Robotic:	3
5. NWP LTL 168			1
	Environmental	Replacement: Replacement	
5. NWP LTL 168	Environmental	100% Inspection, Repair &	1
5. NWP LTL 168	Environmental	Pressure Regulating	4
5. NWP LTL 168	Environmental	Hydrostatic Testing	1
5. NWP LTL 168	Environmental	Status Quo: Modified	3
5. NWP LTL 168	Lands & ROW	Status Quo: Modified ILI Program:	3
5. NWP LTL 168	Lands & ROW		3
		ILI Program - Robotic:	
5. NWP LTL 168	Lands & ROW	Replacement: Replacement	1
5. NWP LTL 168	Lands & ROW	100% Inspection, Repair &	2
5. NWP LTL 168	Lands & ROW	Pressure Regulating	4
5. NWP LTL 168	Lands & ROW	Hydrostatic Testing	1
5. NWP LTL 168	Lands & ROW	Status Quo: Modified	4
5. NWP LTL 168	Consultation and Engagement Complexity	ILI Program:	2
5. NWP LTL 168			3
	Consultation and Engagement Complexity	ILI Program - Robotic:	
5. NWP LTL 168	Consultation and Engagement Complexity	Replacement: Replacement	1
5. NWP LTL 168	Consultation and Engagement Complexity	100% Inspection, Repair &	1
5. NWP LTL 168	Consultation and Engagement Complexity	Pressure Regulating	4
5. NWP LTL 168	Consultation and Engagement Complexity	Hydrostatic Testing	1
5. NWP LTL 168	Consultation and Engagement Complexity	Status Quo: Modified	2
5. NWP LTL 168	Operational Complexity	ILI Program:	4
5. NWP LTL 168	Operational Complexity	ILI Program - Robotic:	4
5. NWP LTL 168			5
	Operational Complexity	Replacement: Replacement	
5. NWP LTL 168	Operational Complexity	100% Inspection, Repair &	3
5. NWP LTL 168 5. NWP LTL 168	Operational Complexity Operational Complexity	Pressure Regulating Hydrostatic Testing	4
5.1111 212 100	operational complexity	inverostatic resting	-
5. NWP LTL 168	Operational Complexity	Status Quo: Modified	2
5. NWP LTL 168	System Capacity & Customer Impacts	ILI Program:	4
5. NWP LTL 168	System Capacity & Customer Impacts	ILI Program - Robotic:	4
5. NWP LTL 168	System Capacity & Customer Impacts	Replacement: Replacement	5
5. NWP LTL 168	System Capacity & Customer Impacts	100% Inspection, Repair &	4
5. NWP LTL 168	System Capacity & Customer Impacts	Pressure Regulating	5
5. NWP LTL 168	System Capacity & Customer Impacts	Hydrostatic Testing	0
5. NWP LTL 168 5. NWP LTL 168	System Capacity & Customer Impacts Project Execution Certainty	Status Quo: Modified	3
5. NWP LTL 168		ILI Program:	2
	Project Execution Certainty	ILI Program - Robotic:	-
5. NWP LTL 168	Project Execution Certainty	Replacement: Replacement	3
5. NWP LTL 168	Project Execution Certainty	100% Inspection, Repair &	2
5. NWP LTL 168 5. NWP LTL 168	Project Execution Certainty Project Execution Certainty	Pressure Regulating	5
5. NWP LTL 168	Project Execution Certainty	Hydrostatic Testing	1
5. NWP LTL 168	Project Execution Certainty	Status Quo: Modified	5
6. NWP LOP 219	Environmental	ILI Program:	3
6. NWP LOP 219	Environmental	ILI Program - Robotic:	3
6. NWP LOP 219	Environmental	Replacement: Replacement	1
6. NWP LOP 219	Environmental	100% Inspection, Repair &	1
6. NWP LOP 219	Environmental	Pressure Regulating	4
6. NWP LOP 219	Environmental	Hydrostatic Testing	4
6. NWP LOP 219	Environmental	Status Quo: Modified	3
6. NWP LOP 219	Lands & ROW	ILI Program:	3
6. NWP LOP 219	Lands & ROW	ILI Program - Robotic:	3
6. NWP LOP 219	Lands & ROW	Replacement: Replacement	1
6. NWP LOP 219	Lands & ROW	100% Inspection, Repair &	2
6. NWP LOP 219	Lands & ROW	Pressure Regulating	4
6. NWP LOP 219	Lands & ROW	Hydrostatic Testing	1
6. NWP LOP 219	Lands & ROW	Status Quo: Modified	4
6. NWP LOP 219	Consultation and Engagement Complexity	ILI Program:	2
6. NWP LOP 219	Consultation and Engagement Complexity	ILI Program - Robotic:	3
6. NWP LOP 219	Consultation and Engagement Complexity	Replacement: Replacement	1
6. NWP LOP 219	Consultation and Engagement Complexity	100% Inspection, Repair &	1
6 NWP LOP 219	Consultation and Engagement Complexity	Pressure Regulating	4
			1
6. NWP LOP 219	Consultation and Engagement Complexity	Hydrostatic Testing	1
	Consultation and Engagement Complexity Consultation and Engagement Complexity	Hydrostatic Testing Status Quo: Modified	2

Lateral	Technical		
Lateral	Category	Alternative Evaluation Criteria	Score
6. NWP LOP 219	Proactive asset management	ILI Program:	5
6. NWP LOP 219	Proactive asset management	ILI Program - Robotic:	4
6. NWP LOP 219	Proactive asset management	Replacement:	4
6. NWP LOP 219	Proactive asset management	100% Inspection, Repair	2
6. NWP LOP 219	Proactive asset management	Pressure Regulating	0
6. NWP LOP 219	Proactive asset management	Hydrostatic Testing	0
6. NWP LOP 219	Proactive asset management	Status Quo: Modified	1
6. NWP LOP 219	Technical certainty	ILI Program:	4
6. NWP LOP 219	Technical certainty	iti Program.	3
6. NWP LOP 219	Technical certainty	ILI Program - Robotic:	5
6. NWP LOP 219	Technical certainty	Replacement:	
		100% Inspection, Repair	
6. NWP LOP 219	Technical certainty	Pressure Regulating	3
6. NWP LOP 219	Technical certainty	Hydrostatic Testing	3
6. NWP LOP 219	Technical certainty	Status Quo: Modified	2
7. PG1 LTL 168*	Prevention of ruptures	ILI Program:	5
7. PG1 LTL 168*	Prevention of ruptures	ILI Program - Robotic:	5
7. PG1 LTL 168*	Prevention of ruptures	Replacement:	5
7. PG1 LTL 168*	Prevention of ruptures	100% Inspection, Repair	5
7. PG1 LTL 168*	Prevention of ruptures	Pressure Regulating	5
7. PG1 LTL 168*	Prevention of ruptures	Hydrostatic Testing	5
7. PG1 LTL 168*	Prevention of ruptures	Status Quo: Medified	2
7. PG1 LTL 168*	Prevention of ruptures Prevention of leaks with significant consequences	Status Quo: Modified	2
7. PG1 LTL 168*	Prevention of leaks with significant concourances	ILI Program: IIII Program - Pobotic:	5
	Prevention of leaks with significant consequences	ILI Program - Robotic:	
7. PG1 LTL 168*	Prevention of leaks with significant consequences	Replacement:	4
7. PG1 LTL 168*	Prevention of leaks with significant consequences	100% Inspection, Repair	
7. PG1 LTL 168* 7. PG1 LTL 168*	Prevention of leaks with significant consequences Prevention of leaks with significant consequences	Pressure Regulating Hydrostatic Testing	0
7.101212100			Ū
7. PG1 LTL 168*	Prevention of leaks with significant consequences	Status Quo: Modified	2
7. PG1 LTL 168*	Proactive asset management	ILI Program:	5
7. PG1 LTL 168*	Proactive asset management	ILI Program - Robotic:	4
7. PG1 LTL 168*	Proactive asset management	Replacement:	4
7. PG1 LTL 168*	Proactive asset management	100% Inspection, Repair	2
7. PG1 LTL 168*	Proactive asset management	Pressure Regulating	0
7. PG1 LTL 168*	Proactive asset management	Hydrostatic Testing	0
7. PG1 LTL 168*	D		1
	Proactive asset management	Status Quo: Modified	
7. PG1 LTL 168*	Technical certainty	ILI Program:	4
7. PG1 LTL 168*	Technical certainty	ILI Program - Robotic:	3
7. PG1 LTL 168*	Technical certainty	Replacement:	5
7. PG1 LTL 168*	Technical certainty	100% Inspection, Repair	4
7. PG1 LTL 168* 7. PG1 LTL 168*	Technical certainty Technical certainty	Pressure Regulating	3
7. PGI LIL 108		Hydrostatic Testing	3
7. PG1 LTL 168*	Technical certainty	Status Quo: Modified	2
8. PGP LTL 168*	Prevention of ruptures	ILI Program:	5
8. PGP LTL 168*	Prevention of ruptures	ILI Program - Robotic:	5
8. PGP LTL 168*	Prevention of ruptures	Replacement:	5
8. PGP   TI 168*	Prevention of ruptures	100% Inspection, Repair	5
8. PGP LTL 168*	Prevention of ruptures	Pressure Regulating	5
8. PGP LTL 168*	Prevention of ruptures	Hydrostatic Testing	5
8. PGP LTL 168*	Prevention of ruptures	Status Quo: Modified	2
8. PGP LTL 168*	Prevention of leaks with significant consequences	ILI Program:	5
	Prevention of leaks with significant consequences	ILI Program - Robotic:	
8. PGP LTL 168*			5
8. PGP LTL 168*	Prevention of leaks with significant consequences	Replacement:	4
8. PGP LTL 168* 8. PGP LTL 168*	Prevention of leaks with significant consequences	Replacement: 100% Inspection, Repair	4
8. PGP LTL 168* 8. PGP LTL 168* 8. PGP LTL 168*	Prevention of leaks with significant consequences Prevention of leaks with significant consequences	Replacement: 100% Inspection, Repair Pressure Regulating	4
8. PGP LTL 168* 8. PGP LTL 168*	Prevention of leaks with significant consequences	Replacement: 100% Inspection, Repair	4
8. PGP LTL 168* 8. PGP LTL 168* 8. PGP LTL 168* 8. PGP LTL 168* 8. PGP LTL 168*	Prevention of leaks with significant consequences Prevention of leaks with significant consequences Prevention of leaks with significant consequences	Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing	4 4 0
8. PGP LTL 168* 8. PGP LTL 168* 8. PGP LTL 168* 8. PGP LTL 168* 8. PGP LTL 168*	Prevention of leaks with significant consequences Prevention of leaks with significant consequences Prevention of leaks with significant consequences Prevention of leaks with significant consequences	Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified	4 4 0 0
8. PGP LTL 168* 8. PGP LTL 168*	Prevention of leaks with significant consequences Prevention of leaks with significant consequences Prevention of leaks with significant consequences Prevention of leaks with significant consequences Protective asset management	Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program:	4 4 0 0 2 5
8. PGP LTL 168* 8. PGP LTL 168*	Prevention of leaks with significant consequences Prevention of leaks with significant consequences Prevention of leaks with significant consequences Provention of leaks with significant consequences Prosective asset management Proactive asset management	Replacement:           100% Inspection, Repair           Pressure Regulating           Hydrostatic Testing           Status Quo: Modified           ILI Program:           LU Program - Robotic:	4 4 0 0 2 5 4
8. PGP LTL 168* 8. PGP LTL 168*	Prevention of leaks with significant consequences Prevention of leaks with significant consequences Prevention of leaks with significant consequences Prevention of leaks with significant consequences Proactive asset management Proactive asset management Proactive asset management	Replacement: 100% inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: ILI Program: Replacement:	4 4 0 0 2 5 4 4
8. PGP LTL 168* 8. PGP LTL 168*	Prevention of leaks with significant consequences Prevention of leaks with significant consequences Prevention of leaks with significant consequences Protective asset management Proactive asset management Proactive asset management Proactive asset management	Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: Robotic: Replacement: Replacement: 100% Inspection, Repair	4 4 0 0 2 5 4 4 4 2
8. PGP LTL 168* 8. PGP LTL 168*	Prevention of leaks with significant consequences Prevention of leaks with significant consequences Prevention of leaks with significant consequences Proactive asset management Proactive asset management Proactive asset management Proactive asset management Proactive asset management Proactive asset management	Replacement: 100% inspection, Repair Pressure Regulating Hydrostatic Testing UP rogram: IU Program: IU Program - Robotic; Replacement: 100% inspection, Repair Pressure Regulating	4 4 0 0 2 5 5 4 4 2 0
8. PGP LTL 168* 8. PGP LTL 168*	Prevention of leaks with significant consequences Prevention of leaks with significant consequences Prevention of leaks with significant consequences Prosective asset management Proactive asset management	Replacement: 100% inspection, Repair Pressure Regulating, Hydrostatic Testing Status Quo: Modified IL Program - Robotic: Replacement: 100% inspection, Repair Pressure Regulating Hydrostatic Testing	4 4 0 0 2 5 5 4 4 4 2 0 0 0
8. PGP LTL 168* 8. PGP LTL 168*	Prevention of leaks with significant consequences Prevention of leaks with significant consequences Prevention of leaks with significant consequences Proactive asset management Proactive asset management	Replacement: 100% inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program - Robottic, Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified	4 4 0 0 2 5 5 4 4 4 2 0 0 0 0 0
8. PGP LT 168* 8. PGP LT 168*	Prevention of leaks with significant consequences Prevention of leaks with significant consequences Prevention of leaks with significant consequences Prosective asset management Proactive asset management	Replacement: 100% inspection, Repair Pressure Regulating, Hydrostatic Testing, Status Quo: Modified ILI Program - Robotic: Replacement: 100% inspection, Repair Pressure Regulating, Hydrostatic Testing Status Quo: Modified ILI Program:	4 4 0 0 2 5 5 4 4 4 2 0 0 0 0 1 1 4
8. PGP LTL 168* 8. PGP LTL 168*	Prevention of leaks with significant consequences Prevention of leaks with significant consequences Prevention of leaks with significant consequences Prevention of leaks with significant consequences Proactive asset management Proactive asset management	Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program - Robotic; Replacement; 100% Inspection, Repair Pressure Regulating Hydrostatic Testing, Status Quo: Modified ILI Program: ILI Program:	4 4 0 0 2 5 4 4 2 0 0 0 1 4 3
8. PGP LTL 168* 8. PGP LTL 168*	Prevention of leaks with significant consequences Prevention of leaks with significant consequences Prevention of leaks with significant consequences Prosective asset management Proactive asset	Replacement:           100% inspection, Repair           Pressure Regulating,           Hydrostatic Testing,           Status Que: Modified           ILI Program: Robotic:           Replacement;           100% inspection, Repair           Pressure Regulating,           Hydrostatic Testing,           Hydrostatic Testing,           Hydrostatic Testing,           Status Que: Modified           ILI Program: Robotic:           Replacement;           UProgram: Robotic;           Replacement;	4 0 0 2 5 4 4 2 0 0 0 1 4 3 5
8. PGP LTL 168* 8. PGP LTL 168*	Prevention of leaks with significant consequences Prevention of leaks with significant consequences Prevention of leaks with significant consequences Proactive asset management Proactive asset m	Replacement: 100% inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified III Program - Robotic: Replacement: 100% inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified III Program: III Program: IIII Program: III Program: IIII Program: IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	4 4 0 0 2 5 5 5 4 4 4 4 2 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0
8. PGP LTL 168* 8. PGP LTL 168*	Prevention of leaks with significant consequences Prevention of leaks with significant consequences Prevention of leaks with significant consequences Proactive asset management Proactive asset m	Replacement: 100% inspection, Repair Pressure Regulating, Hydrostatic Testing, Status Que: Modified III Program: Robotic: Replacement: 100% inspection, Repair Pressure Regulating, Hydrostatic Testing, Status Que: Modified III Program: Robotic: Replacement: 100% inspection, Repair Pressure Regulating Pressure Regulating	4 4 4 0 0 0 5 5 5 4 4 4 2 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
8. PGP LTL 168* 8. PGP LTL 168*	Prevention of leaks with significant consequences Prevention of leaks with significant consequences Prevention of leaks with significant consequences Proactive asset management Proactive asset m	Replacement: 100% inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified III Program - Robotic: Replacement: 100% inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified III Program: III Program: IIII Program: III Program: IIII Program: IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	44440000000000000000000000000000000000
8. PGP LTL 168* 8. PGP LTL 168*	Prevention of leaks with significant consequences Prevention of leaks with significant consequences Prevention of leaks with significant consequences Proactive asset management Proactive asset m	Replacement: 100% inspection, Repair Pressure Regulating, Hydrostatic Testing, Status Quo: Modified III Program - Robotic; Replacement; 100% inspection, Repair Pressure Regulating, Hydrostatic Testing, Status Quo: Modified III Program - Robotic; Replacement; 100% inspection, Repair Pressure Regulating Pressure Regulating Hydrostatic Testing Status Quo: Modified	4 4 4 4 0 0 0 0 2 2 5 5 4 4 4 2 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0
8. PGP LTL 168* 8. PGP LTL 168*	Prevention of leaks with significant consequences Prevention of leaks with significant consequences Prevention of leaks with significant consequences Proactive asset management Proactive asset m	Replacement: 100% inspection, Repair Pressure Regulating, Hydrostatic Testing, Status Quo: Modified III Program - Robotic; Replacement; 100% inspection, Repair Pressure Regulating, Hydrostatic Testing, Status Quo: Modified III Program - Robotic; Replacement; 100% inspection, Repair Pressure Regulating Pressure Regulating Hydrostatic Testing Status Quo: Modified	4 4 4 4 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
8. PGP LTL 168* 8. PGP LTL 168*	Prevention of leaks with significant consequences Prevention of leaks with significant consequences Prevention of leaks with significant consequences Proactive asset management Proactive asset m	Replacement: 100% inspection, Repair Pressure Regulating, Hydrostatic Testing, Status Que: Modified III Program - Robotic: Replacement: 100% inspection, Repair Pressure Regulating, Hydrostatic Testing, Status Que: Modified III Program - Robotic: Replacement: 100% inspection, Repair Pressure Regulating, Pressure Regulating, Hydrostatic Testing,	4 4 4 4 0 0 0 0 2 2 5 5 4 4 4 2 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0
8. PGP LTL 168* 8. PGP LTL 168* 9. PGP LTL 168*	Prevention of leaks with significant consequences Prevention of leaks with significant consequences Provention of leaks with significant consequences Proactive asset management Proactive asset m	Replacement: 100% inspection, Repair Pressure Begulating, Hydrostatic Testing, Status Quo: Modified ILI Program - Robotic: Replacement: 100% inspection, Repair Pressure Regulating, Hydrostatic Testing, UP Program - Robotic: Replacement: 100% inspection, Repair Pressure Regulating Pressure Regulating Hydrostatic Testing, Status Quo: Modified ILI Program: Status Quo: Modified ILI Program:	4 4 4 4 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
8. PGP IT. 168* 8. PGP IT. 168*	Prevention of leaks with significant consequences Prevention of leaks with significant consequences Prevention of leaks with significant consequences Proactive asset management Proactive asset m	Replacement:           100% inspection, Repair           Pressure Regulating           Hydrostatic Testing           Status Que: Modified           ILI Program:           100% inspection, Repair           100% inspection, Repair           100% inspection, Repair           Hydrostatic Testing,           Status Que: Modified           Hydrostatic Testing,           Hydrostatic Testing,           Status Que: Regulating,           Hydrostatic Testing,           Status Que: Robitic;           Replacement;           Hyrogram - Robotic;           Replacement;           Hyrogram - Robotic;           Replacement;	4 4 4 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
8. PGP UTL68* 8. PGP UTL68* 9. PGP UTL68*	Prevention of leaks with significant consequences Prevention of leaks with significant consequences Prevention of leaks with significant consequences Proactive asset management Proac	Replacement: 100% inspection, Repair Pressure Begulating, Hydrostatic Testing, Status Quo: Modified III Program - Robotic: Replacement: 100% inspection, Repair Pressure Regulating, Hydrostatic Testing, UProgram - Robotic: Replacement: 100% inspection, Repair Pressure Regulating Hydrostatic Testing, Status Quo: Modified III Program: Status Quo: Modified III Program: Status Quo: Modified III Program: Status Quo: Modified III Program: Di Program - Robotic: Replacement: 100% inspection, Repair	4 4 4 4 0 0 0 2 2 5 5 5 5 5 5
8. PGP LTL 168* 8. PGP LTL 169* 8. PGP LTL 169* 9. HUS LTL 168* 9. HUS LTL 168*	Prevention of leaks with significant consequences Prevention of leaks with significant consequences Prevention of leaks with significant consequences Proactive asset management Proactive asset m	Replacement:           100% inspection, Repair           Pressure Regulating           Hydrostatic Testing           Hydrostatic Testing           Status Que: Modified           ILI Program:           100% inspection, Repair           Pressure Regulating,           Hydrostatic Testing,           Status Que: Modified           Hydrostatic Testing,           Status Que: Modified           Hyrogram - Robotic;           Replacement;           100% Inspection, Repair           Robotic;           Replacement;           100% Inspection, Repair           Robotic;           Replacement;           100% Inspection, Repair	4 4 4 4 0 0 0 0 2 2 5 5 4 4 4 4 2 0 0 0 0 0 1 1 4 4 3 3 3 3 3 3 3 3 5 5 5 5 5 5 5 5
8. R6P UT.168* 8. R6P UT.168* 9. R05 UT.168* 9. R05 UT.168* 9. R05 UT.168* 9. R05 UT.168* 9. R05 UT.168* 9. R05 UT.168*	Prevention of leaks with significant consequences Prevention of leaks with significant consequences Prevention of leaks with significant consequences Proactive asset management Proactive asset m	Replacement: 100% inspection, Repair Pressure Begulating, Hydrostatic Testing, Status Quo: Modified III Program - Robotic: Replacement: 100% inspection, Repair Pressure Regulating, Hydrostatic Testing, UProgram - Robotic: Replacement: 100% inspection, Repair Pressure Regulating Hydrostatic Testing, Status Quo: Modified III Program: Status Quo: Modified III Program: Status Quo: Modified III Program: Status Quo: Modified III Program: Di Program - Robotic: Replacement: 100% inspection, Repair	4 4 4 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Lateral	Category	Alternative Evaluation Criteria
8. PGP LTL 168*	Rate impact	ILI Program:
8. PGP LTL 168*	Rate impact	ILI Program - Robotic:
8. PGP LTL 168*	Rate impact	Replacement:
8. PGP LTL 168*	Rate impact	100% Inspection, Repair
8. PGP LTL 168*	Rate impact	Pressure Regulating
8. PGP LTL 168*	Rate impact	Hydrostatic Testing
8. PGP LTL 168*	Rate impact	Status Quo: Modified
8. PGP LTL 168*	Retirement of under-depreciated asset	ILI Program:
8. PGP LTL 168*	Retirement of under-depreciated asset	ILI Program - Robotic:
8. PGP LTL 168*	Retirement of under-depreciated asset	Replacement:
8. PGP LTL 168*	Retirement of under-depreciated asset	100% Inspection, Repair
8. PGP LTL 168*	Retirement of under-depreciated asset	Pressure Regulating
8. PGP LTL 168*	Retirement of under-depreciated asset	Hydrostatic Testing
8. PGP LTL 168*	Retirement of under-depreciated asset	Status Quo: Modified
9. HUS LTL 168*	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program:
9. HUS LTL 168*	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program - Robotic:
9. HUS LTL 168*	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Replacement:
9. HUS LTL 168*	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	100% Inspection, Repair
9. HUS LTL 168*	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Pressure Regulating
9. HUS LTL 168*	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Hydrostatic Testing
9. HUS LTL 168*	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Status Quo: Modified
9. HUS LTL 168*	Rate impact	ILI Program:
9. HUS LTL 168*	Rate impact	ILI Program - Robotic:
9. HUS LTL 168*	Rate impact	Replacement:
9. HUS LTL 168*	Rate impact	100% Inspection, Repair
9. HUS LTL 168*	Rate impact	Pressure Regulating
9. HUS LTL 168*	Rate impact	Hydrostatic Testing
0 1005 170 168*	Pote impost	Status Oues Ma 197-1
9. HUS LTL 168* 9. HUS LTL 168*	Rate impact Retirement of under-depreciated asset	Status Quo: Modified ILI Program:
9. HUS LTL 168*	Retirement of under-depreciated asset	ILI Program:
9. HUS LTL 168* 9. HUS LTL 168*	Retirement of under-depreciated asset	ILI Program - Robotic:
9. HUS LTL 168* 9. HUS LTL 168*		Replacement:
9. HUS LTL 168*	Retirement of under-depreciated asset	100% Inspection, Repair
9. HUS LTL 168*	Retirement of under-depreciated asset Retirement of under-depreciated asset	Pressure Regulating Hydrostatic Testing
5. 1105 LTL 108	Retirement of under-depreciated asset	Hydrostatic Testing
9. HUS LTL 168*	Retirement of under-depreciated asset	Status Quo: Modified
10. PG2 219 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program:
10. PG2 219 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program - Robotic:
10. PG2 219 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Replacement:
10. PG2 219 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	100% Inspection, Repair
10. PG2 219 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Pressure Regulating
10. PG2 219 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Hydrostatic Testing
10. PG2 219 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Status Quo: Modified
10. PG2 219 168	Rate impact	ILI Program:
10. PG2 219 168	Rate impact	ILI Program - Robotic:
10. PG2 219 168	Rate impact	Replacement:
10. PG2 219 168	Rate impact	100% Inspection, Repair
10. PG2 219 168	Rate impact	Pressure Regulating
10. PG2 219 168	Rate impact	Hydrostatic Testing
10. PG2 219 168	Rate impact	Status Quo: Modified
10. PG2 219 168	Retirement of under-depreciated asset	ILI Program:
10. PG2 219 168	Retirement of under-depreciated asset	ILI Program - Robotic:
10. PG2 219 168	Retirement of under-depreciated asset	Replacement:
10. PG2 219 168	Retirement of under-depreciated asset	100% Inspection, Repair
10. PG2 219 168	Retirement of under-depreciated asset	Pressure Regulating
10. PG2 219 168	Retirement of under-depreciated asset	Hydrostatic Testing
10.002.250.500	Detirement of under depresident	Shahua Curra Mandidi
10. PG2 219 168 11. CAR LTL 168	Retirement of under-depreciated asset Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Status Quo: Modified
11. CAR LTL 168 11. CAR LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program - Robotic:
11. CAR LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program - Robotic: Replacement:
11. CAR LTL 168 11. CAR LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost	
11. CAR LTL 168 11. CAR LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost	100% Inspection, Repair Pressure Regulating
11. CAR LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Hydrostatic Testing
11. CAR LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Status Quo: Modified
11. CAR LTL 168	Rate impact	ILI Program:
11. CAR LTL 168	Rate impact	ILI Program - Robotic:
11. CAR LTL 168	Rate impact	Replacement:
11. CAR LTL 168	Rate impact	100% Inspection, Repair
11. CAR LTL 168	Rate impact	Pressure Regulating
11. CAR LTL 168	Rate impact	Hydrostatic Testing
11. CAR LTL 168	Rate impact	Status Quo: Modified
11. CAR LTL 168	Retirement of under-depreciated asset	ILI Program:
11. CAR LTL 168	Retirement of under-depreciated asset	ILI Program - Robotic:
11. CAR LTL 168	Retirement of under-depreciated asset	Replacement:
11. CAR LTL 168	Retirement of under-depreciated asset	100% Inspection, Repair
	Retirement of under-depreciated asset	Pressure Regulating
11. CAR LTL 168		
11. CAR LTL 168 11. CAR LTL 168	Retirement of under-depreciated asset	Hydrostatic Testing

Lateral	Project Execution & Lifecycle O		
	Category	Alternative Evaluation Criteria	Score
6. NWP LOP 219	Operational Complexity	ILI Program:	4
6. NWP LOP 219	Operational Complexity	ILI Program - Robotic:	4
6. NWP LOP 219	Operational Complexity	Replacement: Replacement	5
6. NWP LOP 219		100% Inspection, Repair &	3
6. NWP LOP 219 6. NWP LOP 219	Operational Complexity		4
	Operational Complexity	Pressure Regulating	
6. NWP LOP 219	Operational Complexity	Hydrostatic Testing	1
6. NWP LOP 219	Operational Complexity	Status Quo: Modified	2
6. NWP LOP 219	System Capacity & Customer Impacts	ILI Program:	4
6. NWP LOP 219	System Capacity & Customer Impacts	ILI Program - Robotic:	4
6. NWP LOP 219	System Capacity & Customer Impacts	Replacement: Replacement	5
6. NWP LOP 219	System Capacity & Customer Impacts	100% Inspection, Repair &	4
6. NWP LOP 219	System Capacity & Customer Impacts	Pressure Regulating	5
6. NWP LOP 219	System Capacity & Customer Impacts	Hydrostatic Testing	5
6. NWP LOP 219	System Capacity & Customer Impacts	Chattan Ourse Mard/Pard	3
6. NWP LOP 219	Project Execution Certainty	Status Quo: Modified ILI Program:	4
6. NWP LOP 219	Project Execution Certainty Project Execution Certainty	ILI Program - Robotic:	2
6. NWP LOP 219			3
	Project Execution Certainty	Replacement: Replacement	
6. NWP LOP 219	Project Execution Certainty	100% Inspection, Repair &	2
6. NWP LOP 219	Project Execution Certainty	Pressure Regulating	5
6. NWP LOP 219	Project Execution Certainty	Hydrostatic Testing	1
6. NWP LOP 219	Project Execution Certainty	Status Quo: Modified	5
7. PG1 LTL 168*	Environmental	ILI Program:	3
7. PG1 LTL 168*	Environmental	ILI Program - Robotic:	3
7. PG1 LTL 168*	Environmental	Replacement: Replacement	2
7. PG1 LTL 168*	Environmental	100% Inspection, Repair &	2
7. PG1 LTL 168*	Environmental	Pressure Regulating	4
7. PG1 LTL 168*	Environmental	Hydrostatic Testing	4
7. PG1 LTL 168*	Environmental	Status Quo: Modified	3
7. PG1 LTL 168* 7. PG1 LTL 168*	Lands & ROW	ILI Program:	3
	Lands & ROW	ILI Program - Robotic:	
7. PG1 LTL 168*	Lands & ROW	Replacement: Replacement	1
7. PG1 LTL 168*	Lands & ROW	100% Inspection, Repair &	2
7. PG1 LTL 168*	Lands & ROW	Pressure Regulating	4
7. PG1 LTL 168*	Lands & ROW	Hydrostatic Testing	1
7. PG1 LTL 168*	Lands & ROW	Status Quo: Modified	4
7. PG1 LTL 168*	Consultation and Engagement Complexity	ILI Program:	3
7. PG1 LTL 168*	Consultation and Engagement Complexity	ILI Program - Robotic:	4
7. PG1 LTL 168*	Consultation and Engagement Complexity	Replacement: Replacement	2
7. PG1 LTL 168*	Consultation and Engagement Complexity	100% Inspection, Repair &	1
7. PG1 LTL 168*	Consultation and Engagement Complexity	Pressure Regulating	3
7. PG1 LTL 168*	Consultation and Engagement Complexity	Hydrostatic Testing	1
7. PG1 LTL 168* 7. PG1 LTL 168*	Consultation and Engagement Complexity	Status Quo: Modified	2
7. PG1 LTL 168*	Operational Complexity Operational Complexity	ILI Program:	4
		ILI Program - Robotic:	
7. PG1 LTL 168*	Operational Complexity	Replacement: Replacement	5
7. PG1 LTL 168*	Operational Complexity	100% Inspection, Repair &	3
7. PG1 LTL 168* 7. PG1 LTL 168*	Operational Complexity	Pressure Regulating	3
7. PGI LIL 168*	Operational Complexity	Hydrostatic Testing	1
7. PG1 LTL 168*	Operational Complexity	Status Quo: Modified	1
7. PG1 LTL 168*	System Capacity & Customer Impacts	ILI Program:	4
	System Capacity & Customer Impacts	ILI Program - Robotic:	4
7. PG1 LTL 168*	System Capacity & Customer Impacts		
7. PG1 LTL 168* 7. PG1 LTL 168*		Replacement: Replacement	5
	System Capacity & Customer Impacts	Replacement: Replacement 100% Inspection, Repair &	
7. PG1 LTL 168*	System Capacity & Customer Impacts System Capacity & Customer Impacts	100% Inspection, Repair &	5
7. PG1 LTL 168* 7. PG1 LTL 168*	System Capacity & Customer Impacts		5 4
7. PG1 LTL 168* 7. PG1 LTL 168* 7. PG1 LTL 168* 7. PG1 LTL 168* 7. PG1 LTL 168*	System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts	100% Inspection, Repair & Pressure Regulating Hydrostatic Testing	5 4 0
7. PG1 LTL 168* 7. PG1 LTL 168* 7. PG1 LTL 168* 7. PG1 LTL 168* 7. PG1 LTL 168*	System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts	100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified	5 4 0 0 3
7. PG1 LTL 168* 7. PG1 LTL 168*	System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty	100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program:	5 4 0 0 3 3
7. PG1 LTL 168* 7. PG1 LTL 168*	System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Execution Certainty	100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: ILI Program - Robotic:	5 4 0 0 3 3 2
7. PG1 LTL 168* 7. PG1 LTL 168*	System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Execution Certainty	100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: ILI Program - Robotic: Replacement: Replacement	5 4 0 0 3 3 3 2 3
7. PG1 LTL 168* 7. PG1 LTL 168*	System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Execution Certainty Project Execution Certainty	100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: Replacement: Replacement 100% Inspection, Repair &	5 4 0 3 3 2 3 2 3 2
7. PG1 LTL 168* 7. PG1 LTL 168*	System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty	100% Inspection, Repair & Pressure Regulating, Hydrostatic Testing Status Quo: Modified IU Program - Robotic; Replacement: Replacement 100% Inspection, Repair & Pressure Regulating,	5 4 0 0 3 3 3 2 3
7. PG1 LTL 168* 7. PG1 LTL 168*	System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty	100% Inspection, Repair & Pressure Regulating Hydrostatic Testing UP rogram: ILI Program: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing	5 4 0 0 3 3 3 2 3 2 4
7. PG1 LTL 168* 7. PG1 LTL 168*	System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty	100% Inspection, Repair & Pressure Regulating Hydrostatic Testing III Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified	5 4 0 0 3 3 3 2 2 3 2 4 1 5
7. PG1 LTL 168* 7. PG1 LTL 168*	System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Execution Certainty	100% Inspection, Repair & Pressure Regulating Hydrostatic Testing UL Program: UL Program: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified UL Program:	5 4 0 3 3 2 2 3 2 4 1 1 5 3
7. PG1 LTL 168* 7. PG1 LTL 168* 8. PGP LTL 168* 8. PGP LTL 168*	System Capacity & Customer impacts System Capacity & Customer impacts System Capacity & Customer impacts System Capacity & Customer impacts Project Execution Certainty Project Execution Certainty Environmental	100% Inspection, Repair & Pressure Regulating. Hydrostatic Testing. Status Quo: Modified III Program: Rebold: Replacement: Replacement Replacement: Replacement 100% Inspection, Repair Replacement: Replacement III Program: Status Quo: Modified IUP Program: UI Program: Rebolt:	5 4 0 3 3 2 2 3 2 4 1 1 5 3 3 3
2. PG11T.168* 7. PG11T.168* 8. PGP1T.168* 8. PGP1T.168*	System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Execution Certainty Environmental Environmental	100% Inspection, Repair & Pressure Regulating Hydrostatic Testing U Program: Robotic: III Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified III Program: Robotic: Replacement: Replacement: Replacement:	5 4 0 3 3 2 2 3 2 2 4 1 1 5 3 3 2 2
7. PG11T.168* 7. PG11T.168* 8. PG91T.168* 8. PG91T.168* 8. PG91T.168*	System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Environmental Environmental Environmental	100% Inspection, Repair & Pressure Regulating, Hydrostatic Testing, Status Quo: Modified, III Program: Rebold:: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating, Hydrostatic Testing, Status Quo: Modified IU Program: IU Program: Rebolt:: Replacement: Replacement 100% Inspection, Repair &	5 4 0 0 3 3 2 2 3 2 2 4 1 1 5 3 3 2 2 2 2 2
2. PG11TL168* 7. PG11TL168* 8. PG91TL168* 8. PG91TL168* 8. PG91TL168* 8. PG91TL168*	System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Environmental Environmental Environmental Environmental	100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Urbrogram: Robotic: Ill Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Ill Program: Ill Program: Ill Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating	5 4 0 0 3 3 3 2 2 3 3 2 2 4 1 1 1 5 5 3 3 3 2 2 2 2 2 4
7. PG11T.168* 7. PG11T.168* 8. PG91T.168* 8. PG91T.168* 8. PG91T.168*	System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Environmental Environmental Environmental	100% Inspection, Repair & Pressure Regulating, Hydrostatic Testing, Status Quo: Modified, III Program: Rebold:: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating, Hydrostatic Testing, Status Quo: Modified IU Program: IU Program: Rebolt:: Replacement: Replacement 100% Inspection, Repair &	5 4 0 0 3 3 2 2 3 2 2 4 1 1 5 3 3 2 2 2 2 2
7. PG111.168* 7. PG111.168* 8. PG911.168* 8. PG911.168* 8. PG911.168*	System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Execution Certainty Environmental Environmental Environmental Environmental Environmental	100% Inspection, Repair & Pressure Regulating Hydrostatic Testing ILI Program: Robotic: ILI Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing ILI Program: ILI Program: ILI Program: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing	5 4 0 0 3 3 3 2 2 3 3 2 2 4 1 1 1 5 5 3 3 3 2 2 2 2 2 4
2. PG11TL168* 7. PG11TL168* 8. PG91TL168* 8. PG91TL168* 8. PG91TL168* 8. PG91TL168*	System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Environmental Environmental Environmental Environmental	100% Inspection, Repair & Pressure Regulating, Hydrostatic Testing, Liture Quo: Modified III Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating, Hydrostatic Testing, Status Quo: Modified III Program: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating, Hydrostatic Testing, Pressure Regulating, Hydrostatic Testing, Status Quo: Modified	5 4 0 0 0 3 3 3 2 2 2 4 1 1 5 5 3 3 2 2 2 2 4 4 1
2. PG11TL168* 2. PG11TL168* 7. PG11TL168* 8. PGP1TL168* 8. PGP1TL168* 8. PGP1TL168* 8. PGP1TL168* 8. PGP1TL168* 8. PGP1TL168*	System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Environmental Environmental Environmental Environmental Environmental	100% Inspection, Repair & Pressure Regulating. Hydrostatic Testing ILI Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing. ILI Program. ILI Program. Hydrostatic Testing. Status Quo: Modified ILI Program.	5 4 0 0 0 3 3 3 2 2 2 4 1 1 5 5 3 3 2 2 2 4 4 1 1 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
2. PG111.168* 2. PG111.168* 3. PG111.168* 8. PGP11.168* 8. PGP11.168* 8. PGP11.168* 8. PGP11.168* 8. PGP11.168*	System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Environmental	100% Inspection, Repair & Pressure Regulating, Hydrostatic Testing, UL Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating, Hydrostatic Testing, Li Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing, Status Quo: Modified Li Program: Status Quo: Modified Li Program: Robotic: Status Quo: Modified Li Program: Status Quo: Modified Li Program:	5 4 0 0 3 3 3 2 2 4 4 1 1 5 5 3 3 3 2 2 2 2 2 2 2 4 4 1 1 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
2. PG111.168* 2. PG111.168* 3. PG111.168*	System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Environmental En	100% Inspection, Repair & Pressure Regulating. Hydrostatic Testing. IU Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating. Hydrostatic Testing. Status Quo: Modified IU Program: Replacement: Replacement 100% Inspection. Repair & Replacement: Replacement 100% Inspection. Repair & Replacement: Replacement IU Program: UP Pressure Regulating. Hydrostatic Testing.	5 4 0 0 3 3 3 2 2 3 3 2 2 4 4 1 1 5 5 3 3 2 2 2 2 2 2 2 4 4 1 1 3 3 3 3 3 3 3 3 3
2. PG111.168* 2. PG111.168* 7. PG111.168* 7. PG111.168* 7. PG111.168* 7. PG111.168* 7. PG111.168* 7. PG111.168* 7. PG111.168* 7. PG111.168* 7. PG111.168* 8. PG9111.168* 8. PG9111.168* 8. PG9111.168* 8. PG9111.168* 8. PG9111.168* 8. PG9111.168* 8. PG9111.168* 8. PG9111.168* 8. PG9111.168*	System Capacity & Customer impacts System Capacity & Customer impacts System Capacity & Customer impacts System Capacity & Customer impacts Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Environmental	100% Inspection, Repair & Pressure Regulating, Hydrostatic Testing, Hydrostatic Testing, UL Program: Robotic; Replacement: Replacement 100% Inspection, Repair & Pressure Regulating, Hydrostatic Testing, Hydrostatic Testing, UL Program: Robotic; Replacement: Replacement 100% Inspection, Repair & Pressure Regulating, Hydrostatic Testing, Status Quo: Modified UL Program: Status Quo: Modified UL Program: Status Quo: Modified UL Program: UL Program: Robotic; Replacement: Replacement 100% Inspection, Repair &	5 4 0 0 3 3 2 2 4 4 1 1 5 5 3 3 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 3 3 3 3 3 3 3 3 3 3 3 2 2 2 2 4 4 4 10 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0
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2. PG111.168* 2. PG111.168* 7. PG111.168* 7. PG111.168* 7. PG111.168* 7. PG111.168* 7. PG111.168* 7. PG111.168* 7. PG111.168* 7. PG111.168* 7. PG111.168* 8. PG9111.168* 8. PG9111.168* 8. PG9111.168* 8. PG9111.168* 8. PG9111.168* 8. PG9111.168* 8. PG9111.168* 8. PG9111.168* 8. PG9111.168*	System Capacity & Customer impacts System Capacity & Customer impacts System Capacity & Customer impacts System Capacity & Customer impacts Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Environmental	100% Inspection, Repair & Pressure Regulating, Hydrostatic Testing, Hydrostatic Testing, UL Program: Robotic; Replacement: Replacement 100% Inspection, Repair & Pressure Regulating, Hydrostatic Testing, Hydrostatic Testing, UL Program: Robotic; Replacement: Replacement 100% Inspection, Repair & Pressure Regulating, Hydrostatic Testing, Status Quo: Modified UL Program: Status Quo: Modified UL Program: Status Quo: Modified UL Program: UL Program: Robotic; Replacement: Replacement 100% Inspection, Repair &	5         4           0         0           3         3           2         2           4         1           5         3           3         2           2         4           1         1           3         3           3         3           3         3           3         3           3         1           2         2

Lateral			
Lateral	Category	Alternative Evaluation Criteria	Sco
9. HUS LTL 168*	Prevention of leaks with significant consequences	ILI Program:	
9. HUS LTL 168*	Prevention of leaks with significant consequences	ILI Program - Robotic:	
9. HUS LTL 168*	Prevention of leaks with significant consequences	Replacement:	4
9. HUS LTL 168*	Prevention of leaks with significant consequences	100% Inspection, Repair	4
9. HUS LTL 168*	Prevention of leaks with significant consequences	Pressure Regulating	(
9. HUS LTL 168*	Prevention of leaks with significant consequences	Hydrostatic Testing	(
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9. HUS LTL 168*	Prevention of leaks with significant consequences	Status Quo: Modified	2
9. HUS LTL 168*	Proactive asset management	ILI Program:	5
9. HUS LTL 168*	Proactive asset management	ILI Program - Robotic:	4
9. HUS LTL 168*	Proactive asset management	Replacement:	4
9. HUS LTL 168*	Proactive asset management	100% Inspection, Repair	2
9. HUS LTL 168*	Proactive asset management	Pressure Regulating	0
9. HUS LTL 168*	Proactive asset management	Hydrostatic Testing	0
9. HUS LTL 168*	Proactive asset management	Status Quo: Modified	1
9. HUS LTL 168*	Technical certainty	ILI Program:	4
9. HUS LTL 168*	Technical certainty	ILI Program - Robotic:	3
9. HUS LTL 168*	Technical certainty	Replacement:	5
9. HUS LTL 168*	Technical certainty	100% Inspection, Repair	4
9. HUS LTL 168*	Technical certainty	Pressure Regulating	3
9. HUS LTL 168*	Technical certainty	Hydrostatic Testing	3
9. HUS LTL 168*	Technical certainty	Status Quo: Modified	2
10. PG2 219 168	Prevention of ruptures	ILI Program:	5
10. PG2 219 168	Prevention of ruptures	ILI Program - Robotic:	5
10. PG2 219 168	Prevention of ruptures	Replacement:	5
10. PG2 219 168	Prevention of ruptures	100% Inspection, Repair	5
10. PG2 219 168	Prevention of ruptures	Pressure Regulating	5
10. PG2 219 108	Prevention of ruptures	Hydrostatic Testing	5
02 210 100		inverostatic resting	
10. PG2 219 168	Prevention of ruptures	Status Quo: Modified	2
10. PG2 219 108			5
10. PG2 219 108	Prevention of leaks with significant consequences	ILI Program:	5
10. PG2 219 168	Prevention of leaks with significant consequences	ILI Program - Robotic:	
10. PG2 219 168	Prevention of leaks with significant consequences	Replacement:	4
10. PG2 219 168	Prevention of leaks with significant consequences Prevention of leaks with significant consequences	100% Inspection, Repair	4
10. PG2 219 168		Pressure Regulating	0
10. PG2 219 168	Prevention of leaks with significant consequences	Hydrostatic Testing	(
			2
10. PG2 219 168	Prevention of leaks with significant consequences	Status Quo: Modified	
10. PG2 219 168	Proactive asset management	ILI Program:	5
10. PG2 219 168	Proactive asset management	ILI Program - Robotic:	4
10. PG2 219 168	Proactive asset management	Replacement:	4
10. PG2 219 168	Proactive asset management	100% Inspection, Repair	2
10. PG2 219 168	Proactive asset management	Pressure Regulating	(
10. PG2 219 168	Proactive asset management	Hydrostatic Testing	0
10. PG2 219 168	Proactive asset management	Status Quo: Modified	1
10. PG2 219 168	Technical certainty	ILI Program:	4
10. PG2 219 168	Technical certainty	ILI Program - Robotic:	3
	Technical certainty	Replacement:	5
10. PG2 219 168			
10. PG2 219 168	Technical certainty	100% Inspection, Repair	4
10. PG2 219 168 10. PG2 219 168	Technical certainty Technical certainty	Pressure Regulating	4
10. PG2 219 168	Technical certainty	100% Inspection, Repair Pressure Regulating Hydrostatic Testing	4
10. PG2 219 168 10. PG2 219 168 10. PG2 219 168	Technical certainty Technical certainty Technical certainty	Pressure Regulating Hydrostatic Testing	4
10. PG2 219 168 10. PG2 219 168 10. PG2 219 168 10. PG2 219 168	Technical certainty Technical certainty Technical certainty Technical certainty Technical certainty	Pressure Regulating Hydrostatic Testing Status Quo: Modified	4
10. PG2 219 168 10. PG2 219 168 10. PG2 219 168 10. PG2 219 168 10. PG2 219 168 11. CAR LTL 168	Technical certainty Technical certainty Technical certainty Technical certainty Prevention of ruptures	Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program:	4 3 3 2 5
10. PG2 219 168 10. PG2 219 168 10. PG2 219 168 10. PG2 219 168 11. CAR LTL 168 11. CAR LTL 168	Technical certainty Technical certainty Technical certainty Technical certainty Technical certainty Prevention of ruptures Prevention of ruptures	Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: ILI Program - Robotic:	4 3 3 3 2 5 5
10. PG2 219 168 10. PG2 219 168 10. PG2 219 168 10. PG2 219 168 11. CAR LTL 168 11. CAR LTL 168 11. CAR LTL 168	Technical certainty Technical certainty Technical certainty Technical certainty Technical certainty Prevention of ruptures Prevention of ruptures Prevention of ruptures	Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: ILI Program - Robotic: Replacement:	4
10. PG2 219 168 10. PG2 219 168 10. PG2 219 168 10. PG2 219 168 11. CAR LTL 168 11. CAR LTL 168 11. CAR LTL 168 11. CAR LTL 168	Technical certainty Technical certainty Technical certainty Technical certainty Prevention of ruptures Prevention of ruptures Prevention of ruptures Prevention of ruptures	Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: IU Program. Robotic: Replacement: 100% Inspection, Repair	4 3 3 2 5 5 5 5 5 5
10. PG2 219 168 10. PG2 219 168 10. PG2 219 168 10. PG2 219 168 11. CAR LTL 168	Technical certainty Technical certainty Technical certainty Technical certainty Technical certainty Prevention of ruptures	Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: ILI Program - Robotic: Replacement: 100% Inspection, Repair Pressure Regulating	4 3 2 5 5 5 5 5 5 5 5 5
10. PG2 219 168 10. PG2 219 168 10. PG2 219 168 10. PG2 219 168 11. CAR LTL 168 11. CAR LTL 168 11. CAR LTL 168 11. CAR LTL 168	Technical certainty Technical certainty Technical certainty Technical certainty Prevention of ruptures Prevention of ruptures Prevention of ruptures Prevention of ruptures	Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: ILI Program. Replacement: 100% Inspection, Repair	4 3 2 5 5 5 5 5 5 5 5 5
10. PG2 219 168 10. PG2 219 168 10. PG2 219 168 10. PG2 219 168 11. CAR LTL 168	Technical certainty Technical certainty Technical certainty Technical certainty Technical certainty Technical certainty Prevention of ruptures	Pressure Regulating Hydrostatic Testing, Status Quo: Modified III Program: IUI Program - Robotic; Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing	4 3 3 5 5 5 5 5 5 5 5 5
10. PG2 219 168 10. PG2 219 168 10. PG2 219 168 11. CA2 219 168 11. CAR LTL 168	Technical certainty Technical certainty Technical certainty Technical certainty Prevention of ruptures Prevention of ruptures Prevention of ruptures Prevention of ruptures Prevention of ruptures Prevention of ruptures Prevention of ruptures	Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program - Robotic; Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified	4 3 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
10. PG2 219 168 10. PG2 219 168 10. PG2 219 168 10. PG2 219 168 11. CAR LTL 168	Technical certainty Technical certainty Technical certainty Technical certainty Technical certainty Technical certainty Prevention of ruptures Technical certainty Tech	Pressure Regulating Hydrostatic Testing Status Quo: Modified IU Program: IU Program: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified III Program:	4 3 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
10. PG2 219 168 10. PG2 219 168 10. PG2 219 168 10. PG2 219 168 11. CAR LTL 168	Technical certainty Technical certainty Technical certainty Technical certainty Prevention of ruptures Prevention of ruptures	Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program - Robotic: Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: ILI Program:	4 3 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
10. PG2 219 168 10. PG2 219 168 10. PG2 219 168 10. PG2 219 168 11. CAR LTL 168	Technical certainty Technical certainty Technical certainty Technical certainty Technical certainty Prevention of ruptures Prevention of ruptures Prevention of ruptures Prevention of ruptures Prevention of ruptures Prevention of ruptures Prevention of fugures Prevention of fails with significant consequences Prevention of fails with significant consequences	Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: 100% inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: Robotic: Replacement:	4 3 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
10. PG2 219 168 10. PG2 219 168 10. PG2 219 168 11. CAR LTL 168	Technical certainty Technical certainty Technical certainty Technical certainty Prevention of rugtures Prevention of Rugtures	Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program - Robotic: Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: ILI Program - Robotic: Replacement: 100% Inspection, Repair	4 3 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
10. PG2 219 168 10. PG2 219 168 10. PG2 219 168 11. CAR LTL 168	Technical certainty Technical certainty Technical certainty Technical certainty Technical certainty Prevention of ruptures Prevention of ruptures Prevention of ruptures Prevention of ruptures Prevention of ruptures Prevention of ruptures Prevention of fugures Prevention of fasks with significant consequences Prevention of leaks with significant consequences	Pressure Regulating Hydrostatic Testing UP Program: IU Program: Beplacementi: 100% Inspection, Repair Hydrostatic Testing, Status Quo: Modified IU Program: Robotic: Replacement: 100% Inspection, Repair Pressure Regulating	4 3 3 3 2 2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
10. PG2 219 168 10. PG2 219 168 10. PG2 219 168 11. CAR LTL 168	Technical certainty Technical certainty Technical certainty Technical certainty Prevention of rugtures Prevention of Rugtures	Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program - Robotic: Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: ILI Program - Robotic: Replacement: 100% Inspection, Repair	4 3 3 5 5 5 5 5 5 5 5 5
10. PG2 219 168 10. PG2 219 168 10. PG2 219 168 10. PG2 219 168 11. CAR LTL 168	Technical certainty Technical certainty Technical certainty Technical certainty Technical certainty Technical certainty Prevention of ruptures Prevention of ruptures	Pressure Regulating Hydrostatic Testing, UP Program: UP Program: Beplacementi: 100% Inspection, Repair Pressure Regulating, Hydrostatic Testing, UP Program: Robotic: Replacement: 100% Inspection, Repair Pressure Regulating, Hydrostatic Testing,	4 3 3 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
10. PG2 219 168 10. PG2 219 168 10. PG2 219 168 11. CAR LTL 168	Technical certainty Technical certainty Technical certainty Technical certainty Prevention of rugtures Prevention of Rugture these with significant consequences Prevention of Rugtures Prevention of Rugtures these previous of Rugtures Prevention of Rugtures these previous of Rugtures Prevention of Rugtures these previous	Pressure Regulating Hydrostatic Testing I Program - Robotic: Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing I Program - Robotic: Replacement: 100% Inspection, Repair Hydrostatic Testing Status Quo: Modified Status Quo: Modified Status Quo: Modified	4 3 3 3 2 2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
<ol> <li>PG2 219 168</li> <li>CAR LTI 168</li> </ol>	Technical certainty Technical certainty Technical certainty Technical certainty Technical certainty Technical certainty Prevention of ruptures Prevention of eaks with significant consequences Prevention of leaks with significant consequences Prevention of teaks with significant consequences	Pressure Regulating Hydrostatic Testing U Program: U Program: Beplacementi: 100% Inspection. Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified U Program: Robotic: Replacement: 100% Inspection. Repair Pressure Regulating Hydrostatic Testing Hydrostatic Testing Status Quo: Modified U Program:	44 33 55 55 55 55 55 55 55 55 55 55 55 55
10. FG2 219 168 10. FG2 219 168 10. FG2 219 168 10. FG2 219 168 11. CAR LTL 168	Technical certainty Technical certainty Technical certainty Technical certainty Prevention of rugtures Prevention of Rugture these with significant consequences Prevention of Rugtures Prevention of Rugtures these previous of Rugtures Prevention of Rugtures these previous of Rugtures Prevention of Rugtures these previous	Pressure Regulating Hydrostatic Testing I Program - Robotic: Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing I Program - Robotic: Replacement: 100% Inspection, Repair Hydrostatic Testing Status Quo: Modified Status Quo: Modified Status Quo: Modified	44 33 55 55 55 55 55 55 55 55 55 55 55 55
<ol> <li>PG2 219 168</li> <li>CAR LTI 168</li> </ol>	Technical certainty Technical certainty Technical certainty Technical certainty Technical certainty Technical certainty Prevention of ruptures Prevention of leaks with significant consequences Prevention of leaks with significant consequence	Pressure Regulating Hydrostatic Testing I U Program: I U Program: I Development Pressure Regulating Hydrostatic Testing Status Quo: Modified I U Program: Republic Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified U Program: Republic Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified II Program: Robotic: Replacement:	4 3 3 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
10. FG2 219 168 10. FG2 219 168 10. FG2 219 168 10. FG2 219 168 11. CAR LTL 168	Technical certainty Technical certainty Technical certainty Technical certainty Technical certainty Prevention of rugtures Prevention of leaks with significant consequences Prevention of leaks with significant consequences	Pressure Regulating Hydrostatic Testing I U Program: I U Program: I Development Pressure Regulating Hydrostatic Testing Status Quo: Modified I U Program: Republic Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified U Program: Republic Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified II Program: Robotic: Replacement:	4 3 3 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
10. PG2 219 168 10. PG2 219 168 10. PG2 219 168 10. PG2 219 168 11. CAR ITL 168	Technical certainty Technical certainty Technical certainty Technical certainty Technical certainty Technical certainty Prevention of ruptures Prevention of leaks with significant consequences Prevention of leaks with significant consequence	Pressure Regulating Hydrostatic Testing ILI Program : Hu Program : Robotic; Replacement; 100% Inspection, Repair Pressure Regulating Hydrostatic Testing ILI Program : Robotic; Replacement; 100% Inspection, Repair Pressure Regulating Pressure Regulating Status Quo: Modified ILI Program; Status Quo: Modified ILI Program;	
10 PG2 219 168 10 PG2 219 168 10 PG2 219 168 11 CAR LT 168	Technical certainty Prevention of ruptures Prevention of leaks with significant consequences Proactive asset management Proactive asset management	Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: IDP Forgram: Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: Regulating Hydrostatic Testing Status Quo: Modified ILI Program: Regulating Hydrostatic Testing Hydrostatic Testing Hydrostatic Testing Hydrostatic Testing Hydrostatic Testing Hydrostatic Testing Status Quo: Modified ILI Program: Regulating Pressure Regulating Pressure Regulating Pressure Regulating Pressure Regulating	
10. PG2 219 168 10. PG2 219 168 10. PG2 219 168 10. PG2 219 168 11. CAR ITL 168	Technical certainty Technical certainty Technical certainty Technical certainty Technical certainty Technical certainty Prevention of rugtures Prevention of leaks with significant consequences Prevention of leaks with	Pressure Regulating Hydrostatic Testing ILI Program: ILI Program: ILI Program: Robotic: Replacement: 100% Inspection, Repair Hydrostatic Testing Status Quo: Modified ILI Program. Robotic: Replacement: 100% Inspection, Repair Hydrostatic Testing Status Quo: Modified ILI Program: Status Quo: Modified ILI Program: Status Quo: Modified ILI Program: ILI Progr	4 3 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
10 PG2 219 168 10 PG2 219 168 10 PG2 219 168 11 CAR LT 168	Technical certainty Tervention of ruptures Prevention of theaks with significant consequences Prevention of teaks with significant consequences Prevention of leaks with significant consequences Proceeving assert Proactive asset management Proactive asset management Proactive asset management Proactive asset management	Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: Robotic: Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Hydrostatic Testing Construction Regulating Hydrostatic Testing Status Quo: Modified ILI Program - Robotic; Replacement: 100% Inspection, Repair Pressure Regulating Pressure Regulating Hydrostatic Testing Pressure Regulating Pressure Regulating Pressure Regulating Pressure Regulating Pressure Regulating Pressure Regulating Pressure Regulating	
10. FG2 219 168 10. FG2 219 168 10. FG2 219 168 11. CAR IT. 168	Technical certainty Technical certainty Technical certainty Technical certainty Technical certainty Prevention of rugtures Prevention of leaks with significant consequences Prevention of leaks with significant consequences Proceetive asset management Proactive asset management Proactive asset management	Pressure Regulating Hydrostatic Testing III Program: III Program: III Program: Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing III Program: Robotic: Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified III Program. Robotic: Replacement: 100% Inspection, Repair Pressure Regulating Pressure Regulating Pressure Regulating Pressure Regulating Hydrostatic Testing	4 3 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
10. PG2 219 168 10. PG2 219 168 10. PG2 219 168 11. CAR LTL 168	Technical certainty Technical certainty Technical certainty Technical certainty Technical certainty Technical certainty Prevention of ruptures Prevention of leaks with significant consequences Proactive asset management	Pressure Regulating Hydrostatic Testing ILI Program: ILI Program: ILI Program: Pressure Regulating Hydrostatic Testing Status Que: Modified ILI Program: Robotic: Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Hydrostatic Testing Hydrostatic Testing Biologian - Robotic: Replacement: 100% Inspection, Repair ILI Program: Robotic: Replacement: 100% Inspection, Repair Hydrostatic Testing Hydrostatic Testing Hydrostatic Testing Hydrostatic Testing Hydrostatic Testing Hydrostatic Testing Hydrostatic Testing	4 3 3 3 2 2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
10. FG2 219 168 10. FG2 219 168 10. FG2 219 168 11. CAR LTL 168	Technical certainty Tervention of ruptures Prevention of ruptures Prevention of ruptures Prevention of ruptures Prevention of fugures Prevention of facts with significant consequences Prevention of leaks with significant conse	Pressure Regulating, Hydrostatic Testing, IL Program: IL Program: Replacement: 100% Inspection, Repair Pressure Regulating, Hydrostatic Testing, IL Program: Robotic: Replacement: 100% Inspection, Repair Pressure Regulating, Hydrostatic Testing, IL Program: Robotic: Replacement: 100% Inspection, Repair Pressure Regulating, Hydrostatic Testing, IL Program: Robotic: Replacement: 100% Inspection, Repair Pressure Regulating, Hydrostatic Testing, Status Quo: Modified IL Program: Status Quo: Modified IL Program: Status Quo: Modified IL Program:	4 3 3 3 2 2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
10. PG2 219 168 10. PG2 219 168 10. PG2 219 168 11. CAR LTI 168	Technical certainty Technical certainty Technical certainty Technical certainty Prevention of ruptures Prevention of kask with significant consequences Prevention of leaks with significant consequences Proactive asset management Proactive asset mana	Pressure Regulating Hydrostatic Testing ILI Program: ILI Program: ILI Program: Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: ILI Program: Hydrostatic Testing Hydrostatic Testing Hydrostatic Testing Hydrostatic Testing Hydrostatic Testing Hydrostatic Testing Status Quo: Modified ILI Program - Robotic; Replacement; 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Hydrostatic Testing Hydrostatic Testing Status Quo: Modified ILI Program - Robotic; Replacement; Status Quo: Modified ILI Program - Robotic; Status Quo: Modified ILI Program - Robotic; Replacement; ILI Program - Robotic; Replacement; ILI Program - Robotic; Replacement;	44 33 55 55 55 55 55 55 55 55 55 55 55 55
<ol> <li>PG2 219 168</li> <li>CAR LT, 168</li> </ol>	Technical certainty Tervention of ruptures Prevention of ceaks with significant consequences Prevention of ceaks with significant consequences Prevention of leaks with significant c	Pressure Regulating, Hydrostatic Testing, IL Program: IL Program: 100% inspection, Regulating, Hydrostatic Testing, Hydrostatic Testing, IL Program: Robotic: Replacement: 100% inspection, Regulating, Hydrostatic Testing, Hydrostatic Testing, Between Regulating, Hydrostatic Testing, IL Program: Robotic: Replacement: 100% inspection, Regulating, Hydrostatic Testing, Status Quo: Modified IL Program: Robotic; Replacement: 100% inspection, Regulating, Hydrostatic Testing, Status Quo: Modified IL Program: Status Quo: Modified IL Program: Status Quo: Modified IL Program - Robotic; Replacement: 100% inspection, Regulating, Hydrostatic Testing, Status Quo: Modified IL Program - Robotic; Replacement: 100% inspection, Regulating,	4 3 3 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
10. PG2 219 168 10. PG2 219 168 10. PG2 219 168 11. CAR LTI 168	Technical certainty Technical certainty Technical certainty Technical certainty Prevention of ruptures Prevention of leaks with significant consequences Prevention of leaks with significant consequences Proactive asset management Proactive asset manageme	Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: ILI Program: Pressure Regulating Hydrostatic Testing Hydrostatic Testing ILI Program: ILI Program: ILI Program: ILI Program: Regulating Hydrostatic Testing Hydrostatic Testing Hydrostatic Testing Hydrostatic Testing Status Quo: Modified ILI Program - Robotic: Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Hydrostatic Regulating Hydrostatic Regulating	44 33 55 55 55 55 55 55 55 55 55 55 55 55
<ol> <li>PG2 219 168</li> <li>CAR LT, 168</li> </ol>	Technical certainty Tervention of ruptures Prevention of ceaks with significant consequences Prevention of ceaks with significant consequences Prevention of leaks with significant c	Pressure Regulating, Hydrostatic Testing, IL Program: IL Program: 100% inspection, Regulating, Hydrostatic Testing, Hydrostatic Testing, IL Program: Robotic: Replacement: 100% inspection, Regulating, Hydrostatic Testing, Hydrostatic Testing, Status Quo: Modified IL Program: Robotic: Replacement: 100% inspection, Regulating, Hydrostatic Testing, Status Quo: Modified IL Program: Robotic; Replacement: 100% inspection, Regulating, Hydrostatic Testing, Status Quo: Modified IL Program: Status Quo: Modified IL Program: Status Quo: Modified IL Program: Status Quo: Modified IL Program - Robotic; Replacement: 100% inspection, Regulating, Hydrostatic Testing, Status Quo: Modified IL Program - Robotic; Replacement: 100% inspection, Regulating,	4 3 3 3 2 2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5

	Financial		
Lateral	Category	Alternative Evaluation Criteria	Scores
12. WIL LP1/LP2 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program:	1
12. WIL LP1/LP2 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program - Robotic:	0
12. WIL LP1/LP2 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Replacement:	1
12. WIL LP1/LP2 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	100% Inspection, Repair	0
12. WIL LP1/LP2 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Pressure Regulating	5
12. WIL LP1/LP2 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Hydrostatic Testing	0
12. WIL LP1/LP2 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Charles Over Mardliffred	
12. WIL LP1/LP2 168	Rate impact	Status Quo: Modified ILI Program:	0
12. WIL LP1/LP2 168	Rate impact	ILI Program - Robotic:	0
12. WIL LP1/LP2 168	Rate impact	Replacement:	0
12. WIL LP1/LP2 168	Rate impact	100% Inspection, Repair	0
12. WIL LP1/LP2 168	Rate impact	Pressure Regulating	0
12. WIL LP1/LP2 168	Rate impact	Hydrostatic Testing	0
12. WIL LP1/LP2 168	Rate impact	Status Quo: Modified	0
12. WIL LP1/LP2 168	Retirement of under-depreciated asset	ILI Program:	0
12. WIL LP1/LP2 168	Retirement of under-depreciated asset	ILI Program - Robotic:	0
12. WIL LP1/LP2 168	Retirement of under-depreciated asset	Replacement:	0
12. WIL LP1/LP2 168	Retirement of under-depreciated asset	100% Inspection, Repair	0
12. WIL LP1/LP2 168	Retirement of under-depreciated asset	Pressure Regulating	0
12. WIL LP1/LP2 168	Retirement of under-depreciated asset	Hydrostatic Testing	0
12. WIL LP1/LP2 168	Retirement of under-depreciated asset	Status Quo: Modified	0
13.1. KA1 LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program:	1
13.1. KA1 LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program - Robotic:	0
13.1. KA1 LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Replacement:	5
13.1. KA1 LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	100% Inspection, Repair	0
13.1. KA1 LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Pressure Regulating	0
13.1. KA1 LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Hydrostatic Testing	0
13.1. KA1 LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Status Quo: Modified	
13.1. KA1 LTL 168	Rate impact	ILI Program:	0
13.1. KA1 LTL 168	Rate impact	ILI Program - Robotic:	0
13.1. KA1 LTL 168	Rate impact	Replacement:	0
13.1. KA1 LTL 168	Rate impact	100% Inspection, Repair	0
13.1. KA1 LTL 168	Rate impact	Pressure Regulating	0
13.1. KA1 LTL 168	Rate impact	Hydrostatic Testing	0
13.1. KA1 LTL 168	Rate impact	Status Quo: Modified	0
13.1. KA1 LTL 168	Retirement of under-depreciated asset	ILI Program:	0
13.1. KA1 LTL 168	Retirement of under-depreciated asset	ILI Program - Robotic:	0
13.1. KA1 LTL 168	Retirement of under-depreciated asset	Replacement:	0
13.1. KA1 LTL 168	Retirement of under-depreciated asset	100% Inspection, Repair	0
13.1. KA1 LTL 168 13.1. KA1 LTL 168	Retirement of under-depreciated asset	Pressure Regulating	0
15.1. KAI LIL 106	Retirement of under-depreciated asset	Hydrostatic Testing	U
	Retirement of under-depreciated asset		0
13.1 KA1 ITI 168			0
13.1. KA1 LTL 168	Net Present Value (50 year) of Canital O&M and Retirement Cost	Status Quo: Modified	1
13.2. KA1 LOP 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program:	
13.2. KA1 LOP 168 13.2. KA1 LOP 168	Net Present Value (50 γear) of Capital, O&M, and Retirement Cost Net Present Value (50 γear) of Capital, O&M, and Retirement Cost	ILI Program: ILI Program - Robotic:	1 0 5
13.2. KA1 LOP 168 13.2. KA1 LOP 168 13.2. KA1 LOP 168	Net Present Value (50 year) of Capital, 0&M, and Retirement Cost Net Present Value (50 year) of Capital, 0&M, and Retirement Cost Net Present Value (50 year) of Capital, 0&M, and Retirement Cost	ILI Program: ILI Program - Robotic: Replacement:	0
13.2. KA1 LOP 168 13.2. KA1 LOP 168	Net Present Value (50 year) of Capital, 0&M, and Retirement Cost Net Present Value (50 year) of Capital, 0&M, and Retirement Cost Net Present Value (50 year) of Capital, 0&M, and Retirement Cost Net Present Value (50 year) of Capital, 0&M, and Retirement Cost	ILI Program:           ILI Program - Robotic:           Replacement:           100% Inspection, Repair	0
13.2. KA1 LOP 168 13.2. KA1 LOP 168 13.2. KA1 LOP 168 13.2. KA1 LOP 168 13.2. KA1 LOP 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program:           ILI Program - Robotic:           Replacement:           100% Inspection, Repair           Pressure Regulating	0 5 0
13.2. KA1 LOP 168 13.2. KA1 LOP 168	Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost	ILI Program:           ILI Program - Robotic:           Replacement:           100% Inspection, Repair	0 5 0 0
13.2. KA1 LOP 168 13.2. KA1 LOP 168	Net Present Value (50 year) of Capital, 08M, and Retirement Cost Net Present Value (50 year) of Capital, 08M, and Retirement Cost Net Present Value (50 year) of Capital, 08M, and Retirement Cost Net Present Value (50 year) of Capital, 08M, and Retirement Cost Net Present Value (50 year) of Capital, 08M, and Retirement Cost Net Present Value (50 year) of Capital, 08M, and Retirement Cost Net Present Value (50 year) of Capital, 08M, and Retirement Cost	LL Program: LU Program - Robotic: <u>Replacement:</u> 100% Inspection, Repair Pressure Regulating <u>Hydrostatic Testing</u> Status Quo: Modified	0 5 0 0 0
13.2. KA1 LOP 168 13.2. KA1 LOP 168	Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Ret Present Value (50 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Ret Present Value (50 year) of Capital, 0.8M, and Retirement Cost	LL Program: LL Program - Robotic: Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified LL Program:	0 5 0 0 0 0 0
13.2. KA1 LOP 168 13.2. KA1 LOP 168	Net Present Value (50 year) of Capital, 08M, and Retirement Cost Net Present Value (50 year) of Capital, 08M, and Retirement Cost Net Present Value (50 year) of Capital, 08M, and Retirement Cost Net Present Value (50 year) of Capital, 08M, and Retirement Cost Net Present Value (50 year) of Capital, 08M, and Retirement Cost Net Present Value (50 year) of Capital, 08M, and Retirement Cost Net Present Value (50 year) of Capital, 08M, and Retirement Cost Ret Present Value (50 year) of Capital, 08M, and Retirement Cost Ret Present Value (50 year) of Capital, 08M, and Retirement Cost Ret Present Value (50 year) of Capital, 08M, and Retirement Cost Ret Present Value (50 year) of Capital, 08M, and Retirement Cost	LL Program: LU Program - Robotic: <u>Replacement:</u> 100% Inspection, Repair Pressure Regulating <u>Hydrostatic Testing</u> Status Quo: Modified	0 5 0 0 0 0
13.2. KA1 LOP 168 13.2. KA1 LOP 168	Net Present Value (59 year) of Capital, 0.8M, and Retirement Cost Net Present Value (59 year) of Capital, 0.8M, and Retirement Cost Net Present Value (59 year) of Capital, 0.8M, and Retirement Cost Net Present Value (59 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Ret Present Value (50 year) of Capital, 0.8M, and Retirement Cost Ret Present Value (50 year) of Capital, 0.8M, and Retirement Cost Ret Present Value (50 year) of Capital, 0.8M, and Retirement Cost Ret Present Value (50 year) of Capital, 0.8M, and Retirement Cost Ret Present Value (50 year) of Capital, 0.8M, and Retirement Cost Rate impact	LL Program: ILL Program - Robotic: <u>Replacement:</u> 100% Inspection, Repair <u>Pressure Regulating</u> <u>Hydrostatic Testing</u> <u>Status Quo: Modified</u> <u>ILI Program:</u> ILI Program - Robotic: <u>Replacement:</u>	0 5 0 0 0 0
13.2. KA1 LOP 168 13.2. KA1 LOP 168	Net Present Value (50 year) of Capital, 0&M, and Retirement Cost Net Present Value (50 year) of Capital, 0&M, and Retirement Cost Net Present Value (50 year) of Capital, 0&M, and Retirement Cost Net Present Value (50 year) of Capital, 0&M, and Retirement Cost Net Present Value (50 year) of Capital, 0&M, and Retirement Cost Net Present Value (50 year) of Capital, 0&M, and Retirement Cost Ret Present Value (50 year) of Capital, 0&M, and Retirement Cost Ret Present Value (50 year) of Capital, 0&M, and Retirement Cost Rate Impact Rate Impact Rate Impact	ILI Program: ILI Program: - Robotic: <u>Replacement:</u> 100% inspection, Repair Pressure Regulating Hydrostatic Testing Hydrostatic Testing Status Quo: Modified ILI Program: Robotic: Replacement: 100% inspection, Repair	0 5 0 0 0 0 0 0 0 0 0 0
13.2. KA1 LOP 168 13.2. KA1 LOP 168	Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Ret Present Value (50 year) of Capital, 0.8M, and Retirement Cost Ret Present Value (50 year) of Capital, 0.8M, and Retirement Cost Ret Present Value (50 year) of Capital, 0.8M, and Retirement Cost Ret Present Value (50 year) of Capital, 0.8M, and Retirement Cost Ret Present Value (50 year) of Capital, 0.8M, and Retirement Cost Ret Impact Rate Impact Rate Impact	ILI Program: ILI Program: Replacement: 100% inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: Robotic: Replacement: 100% inspection, Repair Pressure Regulating	0 5 0 0 0 0 0 0 0 0 0 0 0 0
13.2. KA1 LOP 168 13.2. KA1 LOP 168	Net Present Value (50 year) of Capital, 0&M, and Retirement Cost Net Present Value (50 year) of Capital, 0&M, and Retirement Cost Net Present Value (50 year) of Capital, 0&M, and Retirement Cost Net Present Value (50 year) of Capital, 0&M, and Retirement Cost Net Present Value (50 year) of Capital, 0&M, and Retirement Cost Net Present Value (50 year) of Capital, 0&M, and Retirement Cost Ret Present Value (50 year) of Capital, 0&M, and Retirement Cost Ret Present Value (50 year) of Capital, 0&M, and Retirement Cost Rate Impact Rate Impact Rate Impact	ILI Program: ILI Program: - Robotic: <u>Replacement:</u> 100% inspection, Repair Pressure Regulating Hydrostatic Testing Hydrostatic Testing Status Quo: Modified ILI Program: Robotic: Replacement: 100% inspection, Repair	0 5 0 0 0 0 0 0 0 0 0 0
13.2. KA1 LOP 168 13.2. KA1 LOP 168	Net Present Value (59 year) of Capital, 0.8M, and Retirement Cost Net Present Value (59 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Ret Present Value (50 year) of Capital, 0.8M, and Retirement Cost Ret Present Value (50 year) of Capital, 0.8M, and Retirement Cost Ret Present Value (50 year) of Capital, 0.8M, and Retirement Cost Rate impact Rate impact Rate impact Rate impact	ILI Program: ILI Program: Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: Robotic: Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing	0 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0
132, KA1 LOP 168 132, KA1 LOP 168 132, KA1 LOP 169 132, KA1 LOP 168 132, KA1 LOP 168	Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Reternesent Value (50 year) of Capital, 0.8M, and Retirement Cost Reternesent Value (50 year) of Capital, 0.8M, and Retirement Cost Reternesent Value (50 year) of Capital, 0.8M, and Retirement Cost Reternesent Value (50 year) of Capital, 0.8M, and Retirement Cost Rate Impact Rate Impact Rate Impact Rate Impact	LL Program: ILI Program: - Robotic: Replacement: 100% Inspection, Repair Pressure Repulating Hydrostatic Testing Status Quo: Modified ILI Program - Robotic: Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified	
132, KA1 LOP 168 132, KA1 LOP 168	Net Present Value (59 year) of Capital, 0.8M, and Retirement Cost Net Present Value (59 year) of Capital, 0.8M, and Retirement Cost Net Present Value (59 year) of Capital, 0.8M, and Retirement Cost Net Present Value (59 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Reterment Value (50 year) of Capital, 0.8M, and Retirement Cost Rate impact Rate impact Rate impact Rate impact Rate impact Rate impact Rate impact Rate impact	ILI Program: ILI Program: Replacement: 100% inspection, Repair Pressure Regulating Hydrostatic Testing ILI Program: Abobitic: Replacement: 100% inspection, Repair Pressure Regulating Hydrostatic Testing Hydrostatic Testing ILI Program:	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
13.2. KA1 LOP 168 13.2. KA1 LOP 168	Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Ret Present Value (50 year) of Capital, 0.8M, and Retirement Cost Ret Present Value (50 year) of Capital, 0.8M, and Retirement Cost Ret Present Value (50 year) of Capital, 0.8M, and Retirement Cost Ret Present Value (50 year) of Capital, 0.8M, and Retirement Cost Rate impact Rate impact Rate impact Rate impact Rate impact Rate impact Rate impact Retirement of under-depreciated asset	UL Program: IU Program: - Robotic: Replacement: 100% Inspection, Repair Pressure Repulating. Hydrostatic Testing UL Program: - Robotic: Replacement: 100% Inspection, Repair Pressure Repulating. Hydrostatic Testing Status Quo: Modified IU Program: - Robotic	0 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
132. KA1 LOP 168 132. KA1 LOP 168 132. KA1 LOP 168 133. KA1 LOP 168 133. KA1 LOP 168 132. KA1 LOP 168	Net Present Value (59 year) of Capital, 0.8M, and Retirement Cost Net Present Value (59 year) of Capital, 0.8M, and Retirement Cost Net Present Value (59 year) of Capital, 0.8M, and Retirement Cost Net Present Value (59 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Net Present Value (50 year) of Capital, 0.8M, and Retirement Cost Retirement Cost Retirement Cost Rate Impact Rate Impact Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement of under-depreciated asset	ILI Program: ILI Program: Replacement: 100% inspection, Repair Pressure Regulating Hydrostatic Testing ILI Program: Robotic: Replacement: 100% inspection, Repair Pressure Regulating Hydrostatic Testing Hydrostatic Testing Status Quo: Modified ILI Program: Robotic: Replacement:	
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13.2. AAI LOP 168 13.2. AAI LOP 168 14.5 AAI LOP 168	Net Present Value (59 very of Capital, O&M, and Retirement Cost Net Present Value (59 very of Capital, O&M, and Retirement Cost Net Present Value (59 very of Capital, O&M, and Retirement Cost Net Present Value (59 very of Capital, O&M, and Retirement Cost Net Present Value (59 very) of Capital, O&M, and Retirement Cost Net Present Value (50 very) of Capital, O&M, and Retirement Cost Reternsent Value (50 very) of Capital, O&M, and Retirement Cost Reternsent Value (50 very) of Capital, O&M, and Retirement Cost Reternsent Value (50 very) of Capital, O&M, and Retirement Cost Rate impact Rate impact Rate impact Rate impact Rate impact Rate impact Reternsent of under-depreciated asset Retirement of under-depreciated asset Retirement of under-depreciated asset Reternsent of a (50 very) of Capital, O&M, and Retirement Cost Net Present Value (50 very) of Capital, O&M, and Retirement Cost Ret Present Value (50 very) of Capital, O&M, and Retirement Cost Ret Present Value (50 very) of Capital, O&M, and Retirement Cost Ret Present Value (50 very) of Capital, O&M, and Retirement Cost Ret Present Value (50 very) of Capital, O&M, and Retirement Cost Ret Present Value (50 very) of Capital, O&M, and Retirement Cost Ret Present Value (50 very) of Capital, O&M, and Retirement Cost Ret Present Value (50 very) of Capital, O&	ILI Program. ILI Program. Replacement: 100% inspection, Repair Pressure Regulating Hydrostatic Testing ILI Program. Robotic: Replacement: 100% inspection, Repair Pressure Regulating Hydrostatic Testing Hydrostatic Testing Status Que: Modified ILI Program. Robotic: Replacement: 100% inspection, Repair Pressure Regulating Hydrostatic Testing Status Que: Modified ILI Program. Robotic: Replacement: 100% inspection, Repair Pressure Regulating Hydrostatic Testing Status Que: Modified ILI Program. Robotic: Replacement: 100% inspection, Repair Pressure Regulating Hydrostatic Testing Status Que: Modified ILI Program. Robotic: Replacement: 100% inspection, Repair	0 5 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Lateral	Project Execution & Lifecycle O		
Lateral	Category	Alternative Evaluation Criteria	Scor
PGP LTL 168*	Consultation and Engagement Complexity	ILI Program:	3
PGP LTL 168*	Consultation and Engagement Complexity	ILI Program - Robotic:	4
PGP LTL 168*	Consultation and Engagement Complexity	Replacement: Replacement	2
PGP LTL 168*	Consultation and Engagement Complexity	100% Inspection, Repair &	1
PGP LTL 168*	Consultation and Engagement Complexity	Pressure Regulating	3
PGP LTL 168*	Consultation and Engagement Complexity	Hydrostatic Testing	1
PGP LTL 168*	Consultation and Engagement Complexity	Status Quo: Modified	2
PGP LTL 168*	Operational Complexity	ILI Program:	4
PGP LTL 168*	Operational Complexity	ILI Program - Robotic:	
PGP LTL 168*	Operational Complexity	Replacement: Replacement	5
PGP LTL 168* PGP LTL 168*	Operational Complexity	100% Inspection, Repair &	3
PGP LTL 168*	Operational Complexity Operational Complexity	Pressure Regulating Hydrostatic Testing	3
PGP LTL 168*	Operational Complexity	Status Quo: Modified	1
PGP LTL 168*	System Capacity & Customer Impacts	ILI Program:	4
PGP LTL 168*	System Capacity & Customer Impacts	ILI Program - Robotic:	4
PGP LTL 168*	System Capacity & Customer Impacts	Replacement: Replacement	5
PGP LTL 168*	System Capacity & Customer Impacts	100% Inspection, Repair &	4
PGP LTL 168*	System Capacity & Customer Impacts	Pressure Regulating	5
PGP LTL 168*	System Capacity & Customer Impacts	Hydrostatic Testing	0
PGP LTL 168*	System Capacity & Customer Impacts	Status Quo: Modified	3
PGP LTL 168*	Project Execution Certainty	ILI Program:	3
PGP LTL 168*	Project Execution Certainty	ILI Program - Robotic:	2
PGP LTL 168*	Project Execution Certainty	Replacement: Replacement	3
PGP LTL 168*	Project Execution Certainty	100% Inspection, Repair &	2
PGP LTL 168*	Project Execution Certainty	Pressure Regulating	4
PGP LTL 168*	Project Execution Certainty	Hydrostatic Testing	1
PGP LTL 168*	Project Execution Certainty	Status Quo: Modified	5
HUS LTL 168*	Environmental	ILI Program:	3
HUS LTL 168*	Environmental	ILI Program - Robotic:	3
HUS LTL 168*	Environmental	Replacement: Replacement	2
HUS LTL 168*	Environmental	100% Inspection, Repair &	2
HUS LTL 168*	Environmental	Pressure Regulating	4
HUS LTL 168*	Environmental	Hydrostatic Testing	1
HUS LTL 168*	Environmental	Status Quo: Modified	3
HUS LTL 168*	Lands & ROW	ILI Program:	3
HUS LTL 168*	Lands & ROW	ILI Program - Robotic:	3
HUS LTL 168*	Lands & ROW	Replacement: Replacement	1
HUS LTL 168*	Lands & ROW	100% Inspection, Repair &	2
HUS LTL 168*	Lands & ROW	Pressure Regulating	4
HUS LTL 168*	Lands & ROW	Hydrostatic Testing	1
HUS LTL 168*	Lands & ROW	Status Quo: Modified	4
HUS LTL 168*	Consultation and Engagement Complexity	ILI Program:	3
HUS LTL 168*	Consultation and Engagement Complexity	ILI Program - Robotic:	4
HUS LTL 168*	Consultation and Engagement Complexity	Replacement: Replacement	2
HUS LTL 168*	Consultation and Engagement Complexity	100% Inspection, Repair &	1
HUS LTL 168*	Consultation and Engagement Complexity	Pressure Regulating	3
HUS LTL 168*	Consultation and Engagement Complexity	Hydrostatic Testing	1
HUS LTL 168*	Consultation and Engagement Complexity	Status Quo: Modified	2
HUS LTL 168*	Operational Complexity	ILI Program:	4
HUS LTL 168*	Operational Complexity	ILI Program - Robotic:	4
HUS LTL 168*	Operational Complexity	Replacement: Replacement	5
HUS LTL 168*	Operational Complexity	100% Inspection, Repair &	3
HUS LTL 168*	Operational Complexity	Pressure Regulating	3
HUS LTL 168*	Operational Complexity	Hydrostatic Testing	1
HUS LTL 168*	Operational Complexity	Status Quo: Modified	1
HUS LTL 168*	System Capacity & Customer Impacts	ILI Program:	4
HUS LTL 168*	System Capacity & Customer Impacts	ILI Program - Robotic:	4
HUS LTL 168*	System Capacity & Customer Impacts	Replacement: Replacement	5
HUS LTL 168*	System Capacity & Customer Impacts	100% Inspection, Repair &	4
HUS LTL 168*	System Capacity & Customer Impacts	Pressure Regulating	5
HUS LTL 168*	System Capacity & Customer Impacts	Hydrostatic Testing	0
HUS LTL 168*	System Capacity & Customer Impacts	Status Quo: Modified	3
HUS LTL 168*	Project Execution Certainty	ILI Program:	3
HUS LTL 168*	Project Execution Certainty	ILI Program - Robotic:	2
HUS LTL 168*	Project Execution Certainty	Replacement: Replacement	3
HUS LTL 168*	Project Execution Certainty	100% Inspection, Repair &	2
HUS LTL 168* HUS LTL 168*	Project Execution Certainty Project Execution Certainty	Pressure Regulating Hydrostatic Testing	4
	Project Execution Certainty Environmental	Status Quo: Modified	5
HUS LTL 168*	constant of the first of the fi	ILI Program:	4
. PG2 219 168	Environmontal		
. PG2 219 168 . PG2 219 168	Environmental Environmental	ILI Program - Robotic:	
. PG2 219 168 . PG2 219 168 . PG2 219 168	Environmental	Replacement: Replacement	3
. PG2 219 168 . PG2 219 168 . PG2 219 168 . PG2 219 168	Environmental Environmental	Replacement: Replacement 100% Inspection, Repair &	3
. PG2 219 168 . PG2 219 168 . PG2 219 168	Environmental	Replacement: Replacement	3

	Technical		
Lateral	Category	Alternative Evaluation Criteria	Scores
12. WILLP1/LP2 168	Prevention of ruptures	ILI Program:	5
12. WIL LP1/LP2 168	Prevention of ruptures	ILI Program - Robotic:	5
12. WIL LP1/LP2 168	Prevention of ruptures	Replacement:	5
12. WIL LP1/LP2 168	Prevention of ruptures	100% Inspection, Repair	5
12. WIL LP1/LP2 168	Prevention of ruptures	Pressure Regulating	5
12. WIL LP1/LP2 168	Prevention of ruptures	Hydrostatic Testing	5
12. WIL LP1/LP2 168	Prevention of ruptures	Status Quo: Modified	2
12. WIL LP1/LP2 168	Prevention of leaks with significant consequences	ILI Program:	5
12. WIL LP1/LP2 168 12. WIL LP1/LP2 168	Prevention of leaks with significant consequences Prevention of leaks with significant consequences	ILI Program - Robotic:	5
12. WIL LP1/LP2 168		Replacement: 100% Inspection, Repair	4
12. WILLP1/LP2 168	Prevention of leaks with significant consequences Prevention of leaks with significant consequences	Pressure Regulating	0
12. WIL LP1/LP2 168	Prevention of leaks with significant consequences	Hydrostatic Testing	0
12. WIL LP1/LP2 168 12. WIL LP1/LP2 168	Prevention of leaks with significant consequences	Status Quo: Modified	2
12. WIL LP1/LP2 168 12. WIL LP1/LP2 168	Proactive asset management	ILI Program:	4
12. WIL LP1/LP2 168	Proactive asset management Proactive asset management	ILI Program - Robotic: Replacement:	4
12. WIL LP1/LP2 168	Proactive asset management Proactive asset management	100% Inspection, Repair	2
12. WIL LP1/LP2 168	Proactive asset management	Pressure Regulating	0
12. WIL LP1/LP2 168	Proactive asset management	Hydrostatic Testing	0
12. WIL LP1/LP2 168	Proactive asset management	Status Quo: Modified	1
12. WIL LP1/LP2 168 12. WIL LP1/LP2 168	Technical certainty Technical certainty	ILI Program:	4
12. WIL LP1/LP2 168 12. WIL LP1/LP2 168	Technical certainty Technical certainty	ILI Program - Robotic: Replacement:	3
12. WIL LP1/LP2 168 12. WIL LP1/LP2 168	Technical certainty Technical certainty	100% Inspection, Repair	4
12. WIL LP1/LP2 168	Technical certainty	Pressure Regulating	3
12. WIL LP1/LP2 168	Technical certainty	Hydrostatic Testing	3
12. WIL LP1/LP2 168	Technical certainty	Status Quo: Modified	2
13.1. KA1 LTL 168	Prevention of ruptures	ILI Program:	5
13.1. KA1 LTL 168	Prevention of ruptures	ILI Program - Robotic:	5
13.1. KA1 LTL 168	Prevention of ruptures	Replacement:	5
13.1. KA1 LTL 168	Prevention of ruptures	100% Inspection, Repair	5
13.1. KA1 LTL 168	Prevention of ruptures	Pressure Regulating	5
13.1. KA1 LTL 168	Prevention of ruptures	Hydrostatic Testing	5
13.1. KA1 LTL 168	Prevention of ruptures	Status Quo: Modified	2
13.1. KA1 LTL 168	Prevention of leaks with significant consequences	ILI Program:	5
13.1. KA1 LTL 168	Prevention of leaks with significant consequences	ILI Program - Robotic:	5
13.1. KA1 LTL 168	Prevention of leaks with significant consequences	Replacement:	4
13.1. KA1 LTL 168 13.1. KA1 LTL 168	Prevention of leaks with significant consequences	100% Inspection, Repair	4
13.1. KA1 LTL 168	Prevention of leaks with significant consequences Prevention of leaks with significant consequences	Pressure Regulating Hydrostatic Testing	0
13.1. KA1 LTL 168	Prevention of leaks with significant consequences	Status Quo: Modified	2
13.1. KA1 LTL 168 13.1. KA1 LTL 168	Proactive asset management Proactive asset management	ILI Program:	5
13.1. KAT LTL 168	Proactive asset management Proactive asset management	ILI Program - Robotic: Replacement:	4
13.1. KA1 LTL 168	Proactive asset management	100% Inspection, Repair	2
13.1. KA1 LTL 168	Proactive asset management	Pressure Regulating	0
13.1. KA1 LTL 168	Proactive asset management	Hydrostatic Testing	0
13.1. KA1 LTL 168	Proactive asset management	Status Quo: Modified	1
13.1. KA1 LTL 168	Technical certainty	ILI Program:	4
13.1. KA1 LTL 168	Technical certainty	ILI Program - Robotic:	3
13.1. KA1 LTL 168	Technical certainty	Replacement:	
			5
13.1. KA1 LTL 168	Technical certainty	100% Inspection, Repair	4
13.1. KA1 LTL 168 13.1. KA1 LTL 168	Technical certainty	Pressure Regulating	4
13.1. KA1 LTL 168			4
13.1. KA1 LTL 168 13.1. KA1 LTL 168	Technical certainty	Pressure Regulating	4
13.1. KA1 LTL 168 13.1. KA1 LTL 168 13.1. KA1 LTL 168 13.1. KA1 LTL 168 13.1. KA1 LTL 168 13.2. KA1 LOP 168	Technical certainty Technical certainty Technical certainty Prevention of ruptures	Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program:	4 3 3 2 5
13.1. KA1 LTL 168 13.1. KA1 LTL 168 13.1. KA1 LTL 168 13.1. KA1 LTL 168 13.2. KA1 LDP 168 13.2. KA1 LOP 168	Technical certainty Technical certainty Technical certainty Technical certainty Prevention of ruptures Prevention of ruptures	Pressure Regulating Hydrostatic Testing Status Quo: Modified	4 3 3 2 5 5
13.1. KA1 LTL 168 13.1. KA1 LTL 168 13.1. KA1 LTL 168 13.1. KA1 LTL 168 13.2. KA1 LTL 168 13.2. KA1 LOP 168 13.2. KA1 LOP 168 13.2. KA1 LOP 168	Technical certainty Technical certainty Technical certainty Prevention of ruptures Prevention of ruptures Prevention of ruptures	Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: ILI Program - Robotic: Replacement:	4 3 2 5 5 5
13.1. KA1 LTL 168 13.1. KA1 LTL 168 13.1. KA1 LTL 168 13.1. KA1 LTL 168 13.2. KA1 LOP 168 13.2. KA1 LOP 168 13.2. KA1 LOP 168 13.2. KA1 LOP 168	Technical certainty Technical certainty Technical certainty Prevention of nuptures Prevention of nuptures Prevention of ruptures Prevention of nuptures Preventi	Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: Replacement: 100% Inspection, Repair	4 3 3 2 5 5 5 5 5
13.1. KA1 LTL 168 13.1. KA1 LTL 168 13.1. KA1 LTL 168 13.1. KA1 LTL 168 13.2. KA1 LTL 168 13.2. KA1 LOP 168 13.2. KA1 LOP 168 13.2. KA1 LOP 168	Technical certainty Technical certainty Technical certainty Prevention of ruptures Prevention of ruptures Prevention of ruptures	Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: ILI Program - Robotic: Replacement:	4 3 2 5 5 5
13.1. KAI LTL 168 13.1. KAI LTL 168 13.1. KAI LTL 168 13.1. KAI LTL 168 13.2. KAI LOP 168	Technical certainty Technical certainty Technical certainty Prevention of ruptures Prevention of ruptures Prevention of ruptures Prevention of ruptures Prevention of ruptures Prevention of ruptures	Pressure Regulating Hydrostatic Testing Status Quo: Modified III Program: - Robotic: Replacement: 100% inspacetion, Repair Pressure Regulating Hydrostatic Testing	4 3 2 5 5 5 5 5 5 5
13.1. KA1 LTL 168 13.1. KA1 LTL 168 13.1. KA1 LTL 168 13.2. KA1 LTL 168 13.2. KA1 LTL 168 13.2. KA1 LCP 168	Technical certainty Technical certainty Technical certainty Prevention of ruptures Preventi	Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program - Robotic: Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified	4 3 3 5 5 5 5 5 5 5 2
13.1. KA1 UTL 168 13.1. KA1 UTL 168 13.1. KA1 UTL 168 13.1. KA1 UTL 168 13.2. KA1 UTL 168 13.2. KA1 UTP 168	Technical certainty Technical certainty Technical certainty Prevention of ruptures Preventi	Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program - Robotic; Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program:	4 3 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
13.1. KA1 LTL 168 13.1. KA1 LTL 168 13.1. KA1 LTL 168 13.2. KA1 LTL 168 13.2. KA1 LTL 168 13.2. KA1 LCP 168	Technical certainty Technical certainty Technical certainty Technical certainty Prevention of ruptures Prevention of selax with significant consequences Prevention of leaks with significant consequences Preve	Pressure Regulating, Hydrostatic Testing, Status Quo: Modified UP Program: HP Program: Not Negection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified UP Program: UP Program: Robotic;	4 3 3 5 5 5 5 5 5 5 2
<ul> <li>13.1. KAI LTL 168</li> <li>13.1. KAI LTL 168</li> <li>13.1. KAI LTL 168</li> <li>13.2. KAI LTL 168</li> <li>13.2. KAI LTL 168</li> <li>13.2. KAI LOP 168</li> </ul>	Technical certainty Technical certainty Technical certainty Technical certainty Prevention of ruptures Prevention of leaks with significant consequences Prevention of leaks with signifi	Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program. Robotic. Replacement: Replacement: Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program. Robotic. Replacement.	4 3 2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
13.1. KA1 UTL 168 13.1. KA1 UTL 168 13.1. KA1 UTL 168 13.2. KA1 UTL 168 13.2. KA1 UP 168	Technical certainty Technical certainty Technical certainty Technical certainty Prevention of ruptures Prevention of leaks with significant consequences Prevention of leaks Prevention o	Pressure Regulating Hydrostatic Testing, Liu Program, Bobotic, Replacementi, 2005 Inspection, Repair Pressure Regulating Hydrostatic Testing, Status Quo: Modified Liu Program, Robotic, Replacement, 1005 Inspection, Repair Pressure Regulating Pressure Regulating Pressure Regulating Pressure Regulating	4 3 3 2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
13.1. KA1 UT. 168 13.1. KA1 UT. 168 13.1. KA1 UT. 168 13.1. KA1 UT. 168 13.2. KA1 LOP 163 13.2. KA1 LOP 163 13.2. KA1 LOP 163 13.2. KA1 LOP 168 13.2. KA1 LOP 168 13.2. KA1 LOP 168 13.2. KA1 LOP 168 13.2. KA1 LOP 168	Technical certainty Technical certainty Technical certainty Technical certainty Prevention of ruptures Prevention of leaks with significant consequences Preventio	Pressure Regulating, Hydrostatic Testing, Status Quo: Modified III Program: III Program: Norgan: Robotic; Replacement; JOX Inspection, Repair Hydrostatic Testing, Status Quo: Modified III Program: Replacement; Replacement; JOX Inspection, Repair	4 3 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
13.1. KA1 UTL 168 13.1. KA1 UTL 168 13.1. KA1 UTL 168 13.2. KA1 UTL 168 13.2. KA1 UP 168	Technical certainty Technical certainty Technical certainty Technical certainty Prevention of ruptures Prevention of leaks with significant consequences Preve	Pressure Regulating Hydrostatic Testing Status Quo: Modified III Program: 100% inspection. Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified III Program: Robotic: Replacement: 100% inspection. Repair Pressure Regulating Hydrostatic Testing.	4 3 3 2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
13.1. KA1 LTL 168 13.1. KA1 LTL 168 13.1. KA1 LTL 168 13.2. KA1 LCP 168	Technical certainty Technical certainty Technical certainty Technical certainty Prevention of ruptures Prevention of leaks with significant consequences Prevention of leaks Prevention o	Pressure Regulating Hydrostatic Testing Status Quo: Modified III Program: Robotic: Replacement: 100% Inspection, Repair Hydrostatic Testing, Betaus Quo: Modified III Program: Bobotic: Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified	4 3 2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
13.1. KA1 UT. 168 13.1. KA1 UT. 168 13.1. KA1 UT. 168 13.1. KA1 UT. 168 13.2. KA1 LOP 168	Technical certainty Technical certainty Technical certainty Prevention of ruptures Prevention of leaks with significant consequences Prevention of leaks with sign	Pressure Regulating Hydrostatic Testing Status Quo: Modified III Program: 100% inspection. Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified III Program: Robotic: Replacement: 100% inspection. Repair Pressure Regulating Hydrostatic Testing.	4 3 2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
13.1. KA1 UT. 168 13.1. KA1 UT. 168 13.1. KA1 UT. 168 13.2. KA1 UP 168	Technical certainty Technical certainty Technical certainty Technical certainty Technical certainty Prevention of nuptures Prevention of leaks with significant consequences Preventi	Pressure Regulating Hydrostalic Testing Status Quo: Modified III Program: Bobolic, Replacement; IIIO inspection, Replating Hydrostatic Testing Status Quo: Modified III Program: Robolic; Replacement; Hydrostatic Testing Pressure Regulating Hydrostatic Testing Hydrostatic Testing Status Quo: Modified III Program: Robolic; Replacement; Bydrostatic Testing Hydrostatic Testing Hydrostatic Testing Bydrostatic Testing Hydrostatic Testing Bydrostatic Testing Hydrostatic Testing Bydrostatic Testing Hydrostatic Testing Hydrostatic Testing Bydrostatic Testing Hydrostatic Testing Bydrostatic Testing Hydrostatic Testing Hydrostatic Testing Bydrostatic Testing Hydrostatic Testing Bydrostatic Testing Hydrostatic	4 3 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
13.1. KA1 UT. 168 13.1. KA1 UT. 168 13.1. KA1 UT. 168 13.1. KA1 UT. 168 13.2. KA1 UD 168	Technical certainty Technical certainty Technical certainty Technical certainty Prevention of ruptures Prevention of leaks with significant consequences Proactive asset management Proactive Prevention of prevention Prev	Pressure Regulating, Hydrostalic Testing, Status Quo: Modified III Program: Robotic: Replacement: 100% Inspection, Repair Hydrostatic Testing, Status Quo: Modified III Program: Robotic: Replacement: 100% Inspection, Repair Status Quo: Modified III Program: Robotic: Replacement: III Program: Robotic: Replacement: III Program: Robotic: Replacement: 100% Inspection, Repair	4 3 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
13.1. KA1 LTL 168 13.1. KA1 LTL 168 13.1. KA1 LTL 168 13.2. KA1 LDP	Technical certainty Technical certainty Technical certainty Technical certainty Technical certainty Prevention of nuptures Prevention of leaks with significant consequences Preventi	Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: Replacement: 100% Inspection, Repair Bressure Regulating Status Quo: Modified ILI Program: Status Quo: Modified ILI Program: Robotic: Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing, Hydrostatic Testing, Hydrostatic Testing, Hydrostatic Testing, Hydrostatic Testing, ILI Program: Robotic: Replacement: ILI Program: Robotic: Replacement: 100% Inspection, Repair Pressure Regulating Pressure Regulating Pressure Regulating	4 3 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
<ol> <li>13.1. KA1 LTL 168</li> <li>13.1. KA1 LTL 168</li> <li>13.1. KA1 LTL 168</li> <li>13.1. KA1 LTL 168</li> <li>13.2. KA1 LOP 168</li> </ol>	Technical certainty Technical certainty Technical certainty Technical certainty Prevention of ruptures Prevention of leaks with significant consequences Proactive asset management Proactive Prevention of prevention Prev	Pressure Regulating, Hydrostalic Testing, Status Quo: Modified III Program: Robotic: Replacement: 100% Inspection, Repair Hydrostatic Testing, Status Quo: Modified III Program: Robotic: Replacement: 100% Inspection, Repair Status Quo: Modified III Program: Robotic: Replacement: III Program: Robotic: Replacement: III Program: Robotic: Replacement: 100% Inspection, Repair	4 3 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5

	Financial		
Lateral		Alternative Evaluation	Scores
Lateral	Category	Criteria	Scores
14. SAL LOP 168	Retirement of under-depreciated asset	ILI Program:	0
14. SAL LOP 168	Retirement of under-depreciated asset	ILI Program - Robotic:	0
14. SAL LOP 168	Retirement of under-depreciated asset	Replacement:	0
14. SAL LOP 168 14. SAL LOP 168	Retirement of under-depreciated asset Retirement of under-depreciated asset	100% Inspection, Repair	0
14. SAL LOP 168	Retirement of under-depreciated asset	Pressure Regulating Hydrostatic Testing	0
14. SAL LOP 168	Retirement of under-depreciated asset	Status Quo: Modified	0
15. SA3 LTL 168 15. SA3 LTL 168	Net Present Value (50 γear) of Capital, O&M, and Retirement Cost Net Present Value (50 γear) of Capital, O&M, and Retirement Cost	ILI Program:	1
15. SA3 LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program - Robotic: Replacement:	5
15. SA3 LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	100% Inspection, Repair	0
15. SA3 LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Pressure Regulating	2
15. SA3 LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Hydrostatic Testing	0
15. SA3 LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Status Quo: Modified	
15. SA3 LTL 168	Rate impact	ILI Program:	0
15. SA3 LTL 168	Rate impact	ILI Program - Robotic:	0
15. SA3 LTL 168	Rate impact	Replacement:	0
15. SA3 LTL 168	Rate impact	100% Inspection, Repair	0
15. SA3 LTL 168 15. SA3 LTL 168	Rate impact	Pressure Regulating Hydrostatic Testing	0
13. 3NJ LIL 106	Rate impact	injurostatic resultg	J
15. SA3 LTL 168	Rate impact	Status Quo: Modified	0
15. SA3 LTL 168	Retirement of under-depreciated asset	ILI Program:	0
15. SA3 LTL 168	Retirement of under-depreciated asset	ILI Program - Robotic:	0
15. SA3 LTL 168 15. SA3 LTL 168	Retirement of under-depreciated asset Retirement of under-depreciated asset	Replacement: 100% Inspection, Repair	0
15. SA3 LTL 168	Retirement of under-depreciated asset	Pressure Regulating	0
15. SA3 LTL 168	Retirement of under-depreciated asset	Hydrostatic Testing	0
15. SA3 LTL 168	Retirement of under-depreciated asset	Status Quo: Modified	0
16. COL LTL 219 16. COL LTL 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program: ILI Program - Robotic:	1
16. COL LTL 219	Net Present Value (50 year) of Capital, O&W, and Retirement Cost	Replacement:	2
16. COL LTL 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	100% Inspection, Repair	0
16. COL LTL 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Pressure Regulating	5
16. COL LTL 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Hydrostatic Testing	0
16. COL LTL 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Status Quo: Modified	
16. COL LTL 219	Rate impact	ILI Program:	0
16. COL LTL 219	Rate impact	ILI Program - Robotic:	0
16. COL LTL 219	Rate impact	Replacement:	0
16. COL LTL 219	Rate impact	100% Inspection, Repair	0
16. COL LTL 219 16. COL LTL 219	Rate impact Rate impact	Pressure Regulating	0
10.000010213	itate inpact	Hydrostatic Testing	0
16. COL LTL 219	Rate impact	Status Quo: Modified	0
16. COL LTL 219	Retirement of under-depreciated asset	ILI Program:	0
16. COL LTL 219 16. COL LTL 219	Retirement of under-depreciated asset	ILI Program - Robotic:	0
16. COL LTL 219	Retirement of under-depreciated asset Retirement of under-depreciated asset	Replacement: 100% Inspection, Repair	0
16. COL LTL 219	Retirement of under-depreciated asset	Pressure Regulating	0
16. COL LTL 219	Retirement of under-depreciated asset	Hydrostatic Testing	0
16. COL LTL 219 17. COL LOP 168	Retirement of under-depreciated asset	Status Quo: Modified	0
17. COL LOP 168 17. COL LOP 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program: ILI Program - Robotic:	1
17. COL LOP 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Replacement:	1
17. COL LOP 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	100% Inspection, Repair	0
17. COL LOP 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Pressure Regulating	5
17. COL LOP 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Hydrostatic Testing	0
17. COL LOP 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Status Quo: Modified	_
17. COL LOP 168	Rate impact	ILI Program:	0
17. COL LOP 168	Rate impact	ILI Program - Robotic:	0
17. COL LOP 168	Rate impact	Replacement:	0
17. COL LOP 168 17. COL LOP 168	Rate impact	100% Inspection, Repair	0
17. COL LOP 168 17. COL LOP 168	Rate impact Rate impact	Pressure Regulating Hydrostatic Testing	0
		inforestatic restillg	
17. COL LOP 168	Rate impact	Status Quo: Modified	0
17. COL LOP 168	Retirement of under-depreciated asset	ILI Program:	0
17. COL LOP 168 17. COL LOP 168	Retirement of under-depreciated asset	ILI Program - Robotic:	0
17. COL LOP 168	Retirement of under-depreciated asset Retirement of under-depreciated asset	Replacement: 100% Inspection, Repair	0
17. COL LOP 168	Retirement of under-depreciated asset	Pressure Regulating	0
17. COL LOP 168	Retirement of under-depreciated asset	Hydrostatic Testing	0
17.001			
17. COL LOP 168 18. KE1 LOP 219	Retirement of under-depreciated asset Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Status Quo: Modified	0
18. KE1 LOP 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program: ILI Program - Robotic:	0
18. KE1 LOP 219	Net Present Value (50 year) of Capital, O&W, and Retirement Cost	Replacement:	2
18. KE1 LOP 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	100% Inspection, Repair	0
18. KE1 LOP 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Pressure Regulating	5
18. KE1 LOP 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Hydrostatic Testing	0
18. KE1 LOP 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Status Quo: Modified	
		quor mounieu	

	Project Execution & Lifecycle Operation			
Lateral	Category	Alternative Evaluation Criteria	Scores	
cateral	Category	Alternative Evaluation Criteria	Juies	
10. PG2 219 168	Lands & ROW	ILI Program:	3	
10. PG2 219 168 10. PG2 219 168	Lands & ROW Lands & ROW	ILI Program - Robotic: Replacement: Replacement	3	
10. PG2 219 168	Lands & ROW	100% Inspection, Repair &	2	
10. PG2 219 168	Lands & ROW	Pressure Regulating	4	
10. PG2 219 168	Lands & ROW	Hydrostatic Testing	1	
10. PG2 219 168	Lands & ROW	Status Quo: Modified	4	
10. PG2 219 168	Consultation and Engagement Complexity	ILI Program:	3	
10. PG2 219 168	Consultation and Engagement Complexity	ILI Program - Robotic:	3	
10. PG2 219 168 10. PG2 219 168	Consultation and Engagement Complexity	Replacement: Replacement 100% Inspection, Repair &	1	
10. PG2 219 168	Consultation and Engagement Complexity Consultation and Engagement Complexity	Pressure Regulating	4	
10. PG2 219 168	Consultation and Engagement Complexity	Hydrostatic Testing	1	
10. PG2 219 168 10. PG2 219 168	Consultation and Engagement Complexity Operational Complexity	Status Quo: Modified ILI Program:	2	
10. PG2 219 168	Operational Complexity	ILI Program - Robotic:	4	
10. PG2 219 168	Operational Complexity	Replacement: Replacement	5	
10. PG2 219 168	Operational Complexity	100% Inspection, Repair &	3	
10. PG2 219 168	Operational Complexity	Pressure Regulating	4	
10. PG2 219 168	Operational Complexity	Hydrostatic Testing	1	
10. PG2 219 168	Operational Complexity	Status Quo: Modified	2	
10. PG2 219 168	System Capacity & Customer Impacts	ILI Program:	4	
10. PG2 219 168 10. PG2 219 168	System Capacity & Customer Impacts	ILI Program - Robotic: Replacement: Replacement	4	
10. PG2 219 168	System Capacity & Customer Impacts System Capacity & Customer Impacts	Replacement: Replacement 100% Inspection, Repair &	5	
10. PG2 219 168	System Capacity & Customer Impacts	Pressure Regulating	5	
10. PG2 219 168	System Capacity & Customer Impacts	Hydrostatic Testing	0	
10. PG2 219 168	Custom Conneito & Customere Importe	Status Quo: Modified	3	
10. PG2 219 168	System Capacity & Customer Impacts Project Execution Certainty	ILI Program:	4	
10. PG2 219 168	Project Execution Certainty	ILI Program - Robotic:	2	
10. PG2 219 168	Project Execution Certainty	Replacement: Replacement	3	
10. PG2 219 168 10. PG2 219 168	Project Execution Certainty Project Execution Certainty	100% Inspection, Repair & Pressure Regulating	2	
10. PG2 219 168	Project Execution Certainty Project Execution Certainty	Hydrostatic Testing	1	
		infunostatie resting		
10. PG2 219 168	Project Execution Certainty	Status Quo: Modified	5	
11. CAR LTL 168 11. CAR LTL 168	Environmental Environmental	ILI Program: ILI Program - Robotic:	3	
11. CAR LTL 168	Environmental	Replacement: Replacement	2	
11. CAR LTL 168	Environmental	100% Inspection, Repair &	2	
11. CAR LTL 168	Environmental	Pressure Regulating	4	
11. CAR LTL 168	Environmental	Hydrostatic Testing	1	
11. CAR LTL 168	Environmental	Status Quo: Modified	2	
11. CAR LTL 168	Lands & ROW	ILI Program:	3	
11. CAR LTL 168 11. CAR LTL 168	Lands & ROW Lands & ROW	ILI Program - Robotic:	3	
11. CAR LTL 168	Lands & ROW Lands & ROW	Replacement: Replacement 100% Inspection, Repair &	2	
11. CAR LTL 168	Lands & ROW	Pressure Regulating	4	
11. CAR LTL 168	Lands & ROW	Hydrostatic Testing	1	
44 040 171 400	1		4	
11. CAR LTL 168 11. CAR LTL 168	Lands & ROW Consultation and Engagement Complexity	Status Quo: Modified ILI Program:	4	
11. CAR LTL 168	Consultation and Engagement Complexity	ILI Program - Robotic:	3	
11. CAR LTL 168	Consultation and Engagement Complexity	Replacement: Replacement	2	
11. CAR LTL 168 11. CAR LTL 168	Consultation and Engagement Complexity Consultation and Engagement Complexity	100% Inspection, Repair & Pressure Regulating	2	
11. CAR LTL 168	Consultation and Engagement Complexity	Hydrostatic Testing	4	
11. CAR LTL 168	Consultation and Engagement Complexity	Status Quo: Modified	2	
11. CAR LTL 168 11. CAR LTL 168	Operational Complexity Operational Complexity	ILI Program: ILI Program - Robotic:	4	
11. CAR LTL 168	Operational Complexity	Replacement: Replacement	4	
11. CAR LTL 168	Operational Complexity	100% Inspection, Repair &	3	
11. CAR LTL 168	Operational Complexity	Pressure Regulating	4	
11. CAR LTL 168	Operational Complexity	Hydrostatic Testing	1	
11. CAR LTL 168	Operational Complexity	Status Quo: Modified	2	
11. CAR LTL 168	System Capacity & Customer Impacts	ILI Program:	4	
11. CAR LTL 168	System Capacity & Customer Impacts	ILI Program - Robotic:	4	
11. CAR LTL 168 11. CAR LTL 168	System Capacity & Customer Impacts System Capacity & Customer Impacts	Replacement: Replacement 100% Inspection, Repair &	5	
11. CAR LTL 168	System Capacity & Customer Impacts	Pressure Regulating	5	
11. CAR LTL 168	System Capacity & Customer Impacts	Hydrostatic Testing	0	
44.040171467			2	
11. CAR LTL 168 11. CAR LTL 168	System Capacity & Customer Impacts Project Execution Certainty	Status Quo: Modified ILI Program:	3	
11. CAR LTL 168	Project Execution Certainty Project Execution Certainty	ILI Program: ILI Program - Robotic:	2	
11. CAR LTL 168	Project Execution Certainty	Replacement: Replacement	3	
11. CAR LTL 168	Project Execution Certainty	100% Inspection, Repair &	2	
11. CAR LTL 168 11. CAR LTL 168	Project Execution Certainty Project Execution Certainty	Pressure Regulating	5	
11. Crin LTL 100	· · · · · · · · · · · · · · · · · · ·	Hydrostatic Testing	-	
11. CAR LTL 168	Project Execution Certainty	Status Quo: Modified	5	

Lateral 13.2. KA1 LOP 168 13.2. KA1 LOP 168 13.2. KA1 LOP 168	Technical		
13.2. KA1 LOP 168 13.2. KA1 LOP 168	Category	Alternative Evaluation	Scores
13.2. KA1 LOP 168	category	Criteria	Scores
	Technical certainty	ILI Program:	4
13.2. KA1 LOP 168	Technical certainty	ILI Program - Robotic:	3
	Technical certainty	Replacement:	5
13.2. KA1 LOP 168	Technical certainty Technical certainty	100% Inspection, Repair Pressure Regulating	4
13.2. KA1 LOP 168	Technical certainty	Hydrostatic Testing	3
13.2. KA1 LOP 168	Technical certainty	Status Quo: Modified	2
14. SAL LOP 168	Prevention of ruptures	ILI Program:	5
14. SAL LOP 168 14. SAL LOP 168	Prevention of ruptures Prevention of ruptures	ILI Program - Robotic:	5
14. SAL LOP 168	Prevention of ruptures	Replacement: 100% Inspection, Repair	5
14. SAL LOP 168	Prevention of ruptures	Pressure Regulating	5
14. SAL LOP 168	Prevention of ruptures	Hydrostatic Testing	5
14. SAL LOP 168	Prevention of ruptures	Status Quo: Modified	2
14. SAL LOP 168	Prevention of leaks with significant consequences	ILI Program:	5
14. SAL LOP 168 14. SAL LOP 168	Prevention of leaks with significant consequences	ILI Program - Robotic:	5
14. SAL LOP 168	Prevention of leaks with significant consequences Prevention of leaks with significant consequences	<u>Replacement:</u> 100% Inspection, Repair	4
14. SAL LOP 168	Prevention of leaks with significant consequences	Pressure Regulating	0
14. SAL LOP 168	Prevention of leaks with significant consequences	Hydrostatic Testing	0
14. SAL LOP 168	Prevention of leaks with significant consequences	Status Quo: Modified	2
14. SAL LOP 168	Proactive asset management	ILI Program:	5
14. SAL LOP 168	Proactive asset management	ILI Program - Robotic:	4
14. SAL LOP 168 14. SAL LOP 168	Proactive asset management Proactive asset management	Replacement:	4
14. SAL LOP 168	Proactive asset management Proactive asset management	100% Inspection, Repair Pressure Regulating	2
14. SAL LOP 168	Proactive asset management	Hydrostatic Testing	0
14. SAL LOP 168	Proactive asset management	Status Quo: Modified	1
14. SAL LOP 168	Technical certainty	ILI Program:	4
14. SAL LOP 168	Technical certainty	ILI Program - Robotic:	3
14. SAL LOP 168 14. SAL LOP 168	Technical certainty Technical certainty	Replacement:	5
14. SAL LOP 168	Technical certainty	100% Inspection, Repair Pressure Regulating	4
14. SAL LOP 168	Technical certainty	Hydrostatic Testing	3
14. 5/12 201 100	recimenter certainty	inverostatic resting	5
14. SAL LOP 168	Technical certainty	Status Quo: Modified	2
15. SA3 LTL 168	Prevention of ruptures	ILI Program:	5
15. SA3 LTL 168	Prevention of ruptures	ILI Program - Robotic:	5
15. SA3 LTL 168	Prevention of ruptures	Replacement:	5
15. SA3 LTL 168 15. SA3 LTL 168	Prevention of ruptures	100% Inspection, Repair	5
15. SA3 LTL 168	Prevention of ruptures Prevention of ruptures	Pressure Regulating Hydrostatic Testing	5
15. 545 ETE 100	revention of ruptures	Inverostatic resting	5
15. SA3 LTL 168	Prevention of ruptures	Status Quo: Modified	2
15. SA3 LTL 168	Prevention of leaks with significant consequences	ILI Program:	5
15. SA3 LTL 168	Prevention of leaks with significant consequences	ILI Program - Robotic:	5
15. SA3 LTL 168	Prevention of leaks with significant consequences	Replacement:	4
15. SA3 LTL 168	Prevention of leaks with significant consequences	100% Inspection, Repair	4
15. SA3 LTL 168 15. SA3 LTL 168	Prevention of leaks with significant consequences	Pressure Regulating	0
15. 5A5 LTL 106	Prevention of leaks with significant consequences	Hydrostatic Testing	0
15. SA3 LTL 168	Prevention of leaks with significant consequences	Status Quo: Modified	2
15. SA3 LTL 168	Proactive asset management	ILI Program:	5
15. SA3 LTL 168	Proactive asset management	ILI Program - Robotic:	4
15. SA3 LTL 168	Proactive asset management	Replacement:	4
15. SA3 LTL 168	Proactive asset management	100% Inspection, Repair	2
15. SA3 LTL 168 15. SA3 LTL 168	Proactive asset management	Pressure Regulating	0
15. SA3 LTL 168	Proactive asset management	Hydrostatic Testing	0
15. SA3 LTL 168	Proactive asset management	Status Quo: Modified	1
15. SA3 LTL 168	Technical certainty	ILI Program:	4
15. SA3 LTL 168	Technical certainty	ILI Program - Robotic:	3
	Technical certainty	Replacement:	5
15. SA3 LTL 168	Technical certainty	100% Inspection, Repair	4
15. SA3 LTL 168	Technical certainty	Pressure Regulating	3
15. SA3 LTL 168 15. SA3 LTL 168	Technical certainty	Hydrostatic Testing	3
15. SA3 LTL 168			
15. SA3 LTL 168 15. SA3 LTL 168 15. SA3 LTL 168	Technical certainty	Status Quo: Modified	2
15. SA3 LTL 168 15. SA3 LTL 168 15. SA3 LTL 168 15. SA3 LTL 168	Technical certainty Prevention of ruptures	Status Quo: Modified	2
15. SA3 LTL 168 15. SA3 LTL 168 15. SA3 LTL 168	Prevention of ruptures Prevention of ruptures	ILI Program:	2 5 5
15. SA3 LTL 168 15. SA3 LTL 168 15. SA3 LTL 168 15. SA3 LTL 168 16. COL LTL 219 16. COL LTL 219 16. COL LTL 219	Prevention of ruptures Prevention of ruptures Prevention of ruptures		5
15. SA3 LTL 168 15. SA3 LTL 168 15. SA3 LTL 168 15. SA3 LTL 168 16. COL LTL 219 16. COL LTL 219 16. COL LTL 219 16. COL LTL 219	Prevention of ruptures Prevention of ruptures Prevention of ruptures Prevention of ruptures	ILI Program: ILI Program - Robotic: Replacement: 100% Inspection, Repair	5 5 5
15. SA3 LTL 168 15. SA3 LTL 168 15. SA3 LTL 168 15. SA3 LTL 168 16. COLLTL 219 16. COLLTL 219 16. COLLTL 219 16. COLLTL 219 16. COLLTL 219	Prevention of ruptures Prevention of ruptures Prevention of ruptures Prevention of ruptures Prevention of ruptures	ILI Program: ILI Program - Robotic: Replacement: 100% Inspection, Repair Pressure Regulating	5 5 5 5
15. SA3 LTL 168 15. SA3 LTL 168 15. SA3 LTL 168 15. SA3 LTL 168 16. COL LTL 219 16. COL LTL 219 16. COL LTL 219 16. COL LTL 219	Prevention of ruptures Prevention of ruptures Prevention of ruptures Prevention of ruptures	ILI Program: ILI Program - Robotic: Replacement: 100% Inspection, Repair	5 5 5
15. SA3 LTL 168 15. SA3 LTL 168 15. SA3 LTL 168 15. SA3 LTL 168 16. COL LTL 219 16. COL LTL 219 16. COL LTL 219 16. COL LTL 219 16. COL LTL 219	Prevention of ruptures	ILI Program: ILI Program - Robotic: Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing	5 5 5 5 5
15. SA3 LTL 168 15. SA3 LTL 168 15. SA3 LTL 168 15. SA3 LTL 168 16. COL LTL 219 16. COL LTL 219	Prevention of ruptures	LL Program Robotic: Replacement: 100% inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified	5 5 5 5 5 2
15. SA3 LTL 168 15. SA3 LTL 168 15. SA3 LTL 168 15. SA3 LTL 168 16. COL LTL 219 16. COL LTL 219	Prevention of ruptures Prevention of ruptures	LL Program: LL Program. Robotic: Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified LL Program:	5 5 5 5 5 2 5
15. SA3 LTL 168 15. SA3 LTL 168 15. SA3 LTL 168 15. SA3 LTL 168 16. COL LTL 219 16. COL LTL 219	Prevention of ruptures Prevention of leaks with significant consequences Prevention o	ILI Program: ILI Program - Robotic: Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program - Robotic: ILI Program - Robotic:	5 5 5 5 5 2 5 5 5
15. SA3 LTL 168 15. SA3 LTL 168 15. SA3 LTL 168 15. SA3 LTL 168 16. COL LTL 219 16. COL LTL 219	Prevention of ruptures Prevention of ruptures	ILI Program: ILI Program - Robotic: Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program - Robotic: Replacement:	5 5 5 5 5 2 5
15. SA3 LTI 168 15. SA3 LTI 161 15. SA3 LTI 168 16. COL LTI 219 16. COL LTI 219	Prevention of ruptures Prevention of ruptures Preven	ILI Program: ILI Program - Robotic: Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program - Robotic: ILI Program - Robotic:	5 5 5 5 5 2 5 5 5 4 4 0
15.543 (T) 168 15.543 (T) 168 15.543 (T) 168 15.543 (T) 168 16.00 (T) 219 16.00 (T) 219	Prevention of ruptures Prevention of leaks with significant consequences Prevention o	ILI Program: ILI Program: Robotic: Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing, Hydrostatic Testing, Status Quo: Modified ILI Program: Robotic: Replacement: 100% Inspection, Repair	5 5 5 5 5 5 5 5 5 4 4 4

Scor	Alternative Evaluation Criteria	Category	Lateral
0	ILI Program:	Rate impact	18. KE1 LOP 219
0	ILI Program - Robotic:	Rate impact	18. KE1 LOP 219
C	Replacement:	Rate impact	18. KE1 LOP 219
(	100% Inspection, Repair	Rate impact	18. KE1 LOP 219
(	Pressure Regulating	Rate impact	18. KE1 LOP 219
(	Hydrostatic Testing	Rate impact	18. KE1 LOP 219
(	Status Quo: Modified	Rate impact	18. KE1 LOP 219
-		Retirement of under-depreciated asset	18. KE1 LOP 219
-	ILI Program:	Retirement of under-depreciated asset	18. KE1 LOP 219
-	ILI Program - Robotic:		18. KE1 LOP 219
	Replacement:	Retirement of under-depreciated asset	
	100% Inspection, Repair	Retirement of under-depreciated asset	18. KE1 LOP 219
	Pressure Regulating	Retirement of under-depreciated asset	18. KE1 LOP 219
	Hydrostatic Testing	Retirement of under-depreciated asset	18. KE1 LOP 219
	Status Quo: Modified	Retirement of under-depreciated asset	18. KE1 LOP 219
	ILI Program:	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	19. CEL LTL 168
	ILI Program - Robotic:	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	19. CEL ITI 168
-		Net Present value (50 year) of capital, Ookiv, and Retirement Cost	
	Replacement:	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	19. CEL LTL 168
	100% Inspection, Repair	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	19. CEL LTL 168
	Pressure Regulating	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	19. CEL LTL 168
	Hydrostatic Testing	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	19. CEL LTL 168
-	Status Quo: Modified	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	19. CEL LTL 168
	ILI Program:	Rate impact	19. CEL LTL 168
-		Rate impact	19. CEL LTL 168
	ILI Program - Robotic:		
	Replacement:	Rate impact	19. CEL LTL 168
	100% Inspection, Repair	Rate impact	19. CEL LTL 168
	Pressure Regulating	Rate impact	19. CEL LTL 168
	Hydrostatic Testing	Rate impact	19. CEL LTL 168
1	Status Quo: Modified	Rate impact	19. CEL LTL 168
-	ILI Program:	Retirement of under-depreciated asset	19. CEL LTL 168
_	ILI Program.		19. CEL LTL 168
	ILI Program - Robotic:	Retirement of under-depreciated asset	
	Replacement:	Retirement of under-depreciated asset	19. CEL LTL 168
	100% Inspection, Repair	Retirement of under-depreciated asset	19. CEL LTL 168
	Pressure Regulating	Retirement of under-depreciated asset	19. CEL LTL 168
	Hydrostatic Testing	Retirement of under-depreciated asset	19. CEL LTL 168
	Status Quo: Modified	Retirement of under-depreciated asset	19. CEL LTL 168
-	ILI Program:	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	20. CAS NEL 168
		Net Present Value (50 year) of Capital, O&M, and Retirement Cost	20. CAS NEL 108
	ILI Program - Robotic:	Net Present Value (50 year) of Capital, O&W, and Retirement Cost	20. CAS NEL 168 20. CAS NEL 168
	Replacement:	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	
	100% Inspection, Repair	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	20. CAS NEL 168
	Pressure Regulating	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	20. CAS NEL 168
	Hydrostatic Testing	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	20. CAS NEL 168
	Status Quo: Modified	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	20. CAS NEL 168
	ILI Program:	Rate impact	20. CAS NEL 168
1	ILI Program - Robotic:	Rate impact	20. CAS NEL 168
			20. CAS NEL 168
	Replacement:	Rate impact	
	100% Inspection, Repair	Rate impact	20. CAS NEL 168
	Pressure Regulating	Rate impact	20. CAS NEL 168
	Hydrostatic Testing	Rate impact	20. CAS NEL 168
			20. CAS NEL 168
	Status Quo: Modified	Rate impact	
	Status Quo: Modified	Rate impact Retirement of under-depreciated asset	
	ILI Program:	Retirement of under-depreciated asset	20. CAS NEL 168
	ILI Program: ILI Program - Robotic:	Retirement of under-depreciated asset Retirement of under-depreciated asset	20. CAS NEL 168 20. CAS NEL 168
	ILI Program: ILI Program - Robotic: Replacement:	Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement of under-depreciated asset	20. CAS NEL 168 20. CAS NEL 168 20. CAS NEL 168
	ILI Program: ILI Program - Robotic: Replacement: 100% Inspection, Repair	Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement of under-depreciated asset	20. CAS NEL 168 20. CAS NEL 168 20. CAS NEL 168 20. CAS NEL 168
	ILI Program: ILI Program - Robotic: Replacement:	Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement of under-depreciated asset	20. CAS NEL 168 20. CAS NEL 168 20. CAS NEL 168 20. CAS NEL 168 20. CAS NEL 168
	ILI Program: ILI Program - Robotic: Replacement: 100% Inspection, Repair	Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement of under-depreciated asset	20. CAS NEL 168 20. CAS NEL 168 20. CAS NEL 168 20. CAS NEL 168 20. CAS NEL 168
	ILI Program: ILI Program - Robotic: <u>Replacement:</u> 100% Inspection, Repair <u>Pressure Regulating</u>	Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement of under-depreciated asset	20. CAS NEL 168 20. CAS NEL 168 20. CAS NEL 168 20. CAS NEL 168 20. CAS NEL 168
	ILI Program: ILI Program - Robotic: Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing	Retirement of under-depreciated asset Retirement of under-depreciated asset	20. CAS NEL 168 20. CAS NEL 168
	ILI Program: Abobtic: Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified	Retirement of under-depreciated asset Retirement of under-depreciated asset	20. CAS NEL 168 20. CAS NEL 168
	ILI Program: ILI Program - Robotic: Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program:	Retirement of under-depreciated asset Retirement of under-depreciated asset Net Present Value (50 year) of Catta, 0.8Mx, and Retirement Cost	20. CAS NEL 168 20. CAS NEL 168 21. TRA LTL 168
	ILI Program: ILI Program - Robotic: <u>Replacement:</u> 100% Inspection, Repair <u>Pressure Regulating</u> Hydrostatic Testing <u>Status Quo: Modified</u> ILI Program: <u>ILI Program - Robotic:</u>	Retirement of under-depreciated asset Retirement of under-depreciated asset Net Present Value (50 year) of Capital, 08M, and Retirement Cost	20. CAS NEL 168 20. CAS NEL 168 21. TRA LTL 168 21. TRA LTL 168
	LI Program: JLI Program - Robotic: <u>Replacement:</u> <u>100% Inspection, Repair</u> <u>Pressure Regulating</u> <u>Hydrostatic Testing</u> <u>Status Quo: Modified</u> <u>ILI Program:</u> <u>ILI Program:</u> <u>ILI Program:</u> <u>Replacement:</u>	Retirement of under-depreciated asset Retirement of under-depreciated asset Reterment of under-depreciated asset Reterment of under-depreciated asset Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost	20. CAS NEL 168 20. CAS NEL 168 21. TRA LTL 168 21. TRA LTL 168 21. TRA LTL 168
	LI Program: ILI Program: Robotic: <u>Replacement:</u> 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: Robotic: Replacement: 100% Inspection, Repair	Retirement of under-depreciated asset Retirement of under-depreciated asset Reterment Value (50 year) of Capital, 0&M, and Retirement Cost Net Present Value (50 year) of Capital, 0&M, and Retirement Cost Net Present Value (50 year) of Capital, 0&M, and Retirement Cost Net Present Value (50 year) of Capital, 0&M, and Retirement Cost Net Present Value (50 year) of Capital, 0&M, and Retirement Cost	20. CAS NEL 168 20. CAS NEL 168 21. TRA LTL 168 21. TRA LTL 168 21. TRA LTL 168
	ILI Program. ILI Program. Robotic: Replacement: 100% inspection. Repair Pressure Regulating. Hydrostatic Testing. Status Quo: Modified. ILI Program. Robotic: Replacement: 100% inspection, Repair Pressure Regulating.	Retirement of under-depreciated asset Retirement of under-depreciated asset Reterment of under-depreciated asset Reterment of under-depreciated asset Net Present Value (5) year) of Capital, D&M, and Retirement Cost Net Present Value (5) year) of Capital, D&M, and Retirement Cost Net Present Value (5) year) of Capital, D&M, and Retirement Cost Net Present Value (5) year) of Capital, D&M, and Retirement Cost Net Present Value (5) year) of Capital, D&M, and Retirement Cost Net Present Value (5) year) of Capital, D&M, and Retirement Cost	20. CAS NEL 168 20. CAS NEL 168 21. TRA LTL 168 21. TRA LTL 168 21. TRA LTL 168 21. TRA LTL 168
	LI Program: ILI Program: Robotic: <u>Replacement:</u> 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: Robotic: Replacement: 100% Inspection, Repair	Retirement of under-depreciated asset Retirement of under-depreciated asset Reterment Value (50 year) of Capital, 0&M, and Retirement Cost Net Present Value (50 year) of Capital, 0&M, and Retirement Cost Net Present Value (50 year) of Capital, 0&M, and Retirement Cost Net Present Value (50 year) of Capital, 0&M, and Retirement Cost Net Present Value (50 year) of Capital, 0&M, and Retirement Cost	20. CAS NEL 168 20. CAS NEL 168 21. TRA LTL 168 21. TRA LTL 168 21. TRA LTL 168 21. TRA LTL 168
	ILI Program. ILI Program. Robotic: Replacement: 100% inspection. Repair Pressure Regulating. Hydrostatic Testing. Status Quo: Modified. ILI Program. Robotic: Replacement: 100% inspection, Repair Pressure Regulating.	Retirement of under-depreciated asset Retirement of under-depreciated asset Reterment of under-depreciated asset Reterment of under-depreciated asset Net Present Value (5) year) of Capital, D&M, and Retirement Cost Net Present Value (5) year) of Capital, D&M, and Retirement Cost Net Present Value (5) year) of Capital, D&M, and Retirement Cost Net Present Value (5) year) of Capital, D&M, and Retirement Cost Net Present Value (5) year) of Capital, D&M, and Retirement Cost Net Present Value (5) year) of Capital, D&M, and Retirement Cost	20. CAS NEL 168 20. CAS NEL 168 21. TRA LTL 168 21. TRA LTL 168 21. TRA LTL 168 21. TRA LTL 168
	ILI Program. ILI Program. Robotic. Replacement: 100% Inspection. Repair Pressure Regulating. Hydrostatic Testing Status Quo: Modified ILI Program. Robotic: Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing	Retirement of under-depreciated asset Retirement of under-depreciated asset Reterment of under-depreciated asset Reterment of under-depreciated asset Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost	20. CAS NEL 168 20. CAS NEL 168 21. TRA LTL 168
	LI Program. ILI Program - Robotic: <u>Replacement</u> : 100% Inspection, Repair <u>Pressure Regulating</u> Hydrostatic Testing <u>Status Quo: Modified</u> LI Program - Robotic: <u>Replacement</u> : 100% Inspection, Repair <u>Pressure Regulating</u> Hydrostatic Testing Status Quo: Modified	Retirement of under-depreciated asset Retirement of under-depreciated asset Reterment of under-depreciated asset Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost	20. CAS NEL 168 20. CAS NEL 168 21. TRA LTL 168
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4	Replacement: Replacement	Consultation and Engagement Complexity	13.1. KA1 LTL 168
4 2 1	Replacement: Replacement 100% Inspection, Repair &	Consultation and Engagement Complexity	13.1. KA1 LTL 168 13.1. KA1 LTL 168
4 2 1 3	Replacement: Replacement 100% Inspection, Repair & Pressure Regulating	Consultation and Engagement Complexity Consultation and Engagement Complexity	13.1. KA1 LTL 168 13.1. KA1 LTL 168 13.1. KA1 LTL 168
4 2 1	Replacement: Replacement 100% Inspection, Repair &	Consultation and Engagement Complexity	13.1. KA1 LTL 168 13.1. KA1 LTL 168
4 2 1 3 1	Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing	Consultation and Engagement Complexity Consultation and Engagement Complexity Consultation and Engagement Complexity	13.1. KA1 LTL 168 13.1. KA1 LTL 168 13.1. KA1 LTL 168 13.1. KA1 LTL 168 13.1. KA1 LTL 168
4 2 1 3 1 2	Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified	Consultation and Engagement Complexity Consultation and Engagement Complexity Consultation and Engagement Complexity Consultation and Engagement Complexity	13.1. KA1 LTL 168 13.1. KA1 LTL 168 13.1. KA1 LTL 168 13.1. KA1 LTL 168 13.1. KA1 LTL 168
4 2 1 3 1 2 4	Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program:	Consultation and Engagement Complexity Consultation and Engagement Complexity Consultation and Engagement Complexity Consultation and Engagement Complexity Operational Complexity	13.1. KA1 LTL 168 13.1. KA1 LTL 168
4 2 1 3 1 2 4 4	Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified III Program: ILI Program - Robotic:	Consultation and Engagement Complexity Consultation and Engagement Complexity Consultation and Engagement Complexity Consultation and Engagement Complexity Operational Complexity Operational Complexity	13.1. KA1 LTL 168 13.1. KA1 LTL 168
4 2 1 3 1 2 4 4 5	Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified IU Program: IU Program - Robotic: Replacement: Replacement	Consultation and Engagement Complexity Consultation and Engagement Complexity Consultation and Engagement Complexity Consultation and Engagement Complexity Operational Complexity Operational Complexity Operational Complexity	13.1. KA1 LTL 168 13.1. KA1 LTL 168
4 2 1 3 1 2 4 4 5 3	Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified III Program: Robolic: Replacement: Replacement 100% Inspection, Repair &	Consultation and Engagement Complexity Consultation and Engagement Complexity Consultation and Engagement Complexity Consultation and Engagement Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity	13.1. KA1 LTL 168 13.1. KA1 LTL 168
4 2 1 3 1 2 4 4 5 3 3 3	Replacement: Replacement 100% inspection, Repair & Pressure Regulating. Hydrostatic Testing. Status Quo: Modified IU Program: IU Program: Replacement 100% inspection, Repair & Pressure Regulating.	Consultation and Engagement Complexity Consultation and Engagement Complexity Consultation and Engagement Complexity Consultation and Engagement Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity	13.1. KA1 LTL 168 13.1. KA1 LTL 168
4 2 1 3 1 2 4 4 5 3	Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified III Program: Robolic: Replacement: Replacement 100% Inspection, Repair &	Consultation and Engagement Complexity Consultation and Engagement Complexity Consultation and Engagement Complexity Consultation and Engagement Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity	13.1. KA1 LTL 168 13.1. KA1 LTL 168
4 2 1 3 1 2 4 4 4 5 3 3 3 1	Replacement: Replacement 100% inspection, Repair & Pressure Regulating. Hydrostatic Testing. Status Que: Modified ILI Program: Robotic: Replacement: Replacement 100% inspection, Repair & Pressure Regulating. Hydrostatic Testing.	Consultation and Engagement Complexity Consultation and Engagement Complexity Consultation and Engagement Complexity Consultation and Engagement Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity	13.1. KA1 LTL 168 13.1. KA1 LTL 168
4 2 1 3 1 2 4 4 5 3 3 1 1	Replacement: Replacement 100% inspection, Repair & Pressure Regulating, Hvdrostatic Testing, Status Quo: Modified IU Program: IU Program - Robotic; Replacement: Replacement: Replacement 100% inspection, Repair & Pressure Regulating, Hvdrostatic Testing, Status Quo: Modified	Consultation and Engagement Complexity Consultation and Engagement Complexity Consultation and Engagement Complexity Consultation and Engagement Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity	13.1. KA1 LTL 168 13.1. KA1 LTL 168
4 2 1 3 1 2 4 4 5 3 3 1 1 1 4	Replacement: Replacement 100% inspection, Repair & Pressure Regulating, Hydrostatic Testing, Status Que: Modified ILI Program - Robotic: Replacement: Replacement 100% inspection, Repair & Pressure Regulating, Hydrostatic Testing, Status Que: Modified ILI Program:	Consultation and Engagement Complexity Consultation and Engagement Complexity Consultation and Engagement Complexity Consultation and Engagement Complexity Operational Complexity	13.1. KA1 LTL 168 13.1. KA1 LTL 168
4 2 1 3 3 1 2 4 4 4 5 3 3 3 1 1 1 1 4 4 4	Replacement: Replacement 100% inspection, Repair & Pressure Regulating, Hydrostatic Testing, Status Que: Modified ILI Program - Robotic: Replacement: Replacement 100% inspection, Repair & Pressure Regulating, Hydrostatic Testing, Status Que: Modified ILI Program:	Consultation and Engagement Complexity Consultation and Engagement Complexity Consultation and Engagement Complexity Consultation and Engagement Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity	13.1. KA1 LTL 168 13.1. KA1 LTL
4 2 1 3 1 2 4 4 5 3 3 1 1 1 4	Replacement: Replacement           100% inspection, Repair & A.           Pressure Regulating,           Hydrostatic Testing,           Status Que: Modified           IU Program:           Hydrostatic Testing,           Replacement: Replatement, Replate,           Pressure Regulating,           Hydrostatic Testing,           Hydrostatic Testing,           Status Que: Modified           IU Program - Robbit:           IU Program - Robbit:           IU Program - Robbit:	Consultation and Engagement Complexity Consultation and Engagement Complexity Consultation and Engagement Complexity Consultation and Engagement Complexity Operational Complexity	13.1. KA1 LTL 168 13.1. KA1 LTL 168
4 2 1 3 3 1 2 4 4 4 5 3 3 3 1 1 1 1 4 4 4	Replacement: Replacement 100% inspection, Repair & Pressure Regulating, Hydrostatic Testing, Status Quo: Modified ILI Program: Robotic., Replacement: Replacement 100% inspection, Repair & Pressure Regulating, Hydrostatic Testing, Status Quo: Modified ILI Program - Robotic, Replacement: Replatement Replacement: Replatement Replacement: Replatement	Consultation and Engagement Complexity Consultation and Engagement Complexity Consultation and Engagement Complexity Consultation and Engagement Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity System Capacity & Customer Impacts System Capacity & Customer Impacts	13.1. KA1 LTL 168 13.1. KA1 LTL
4 2 1 3 1 2 4 4 4 5 5 3 3 3 1 1 1 4 4 5	Replacement: Replacement           100% inspection, Repair & A.           Pressure Regulating,           Hydrostatic Testing,           Status Que: Modified           IU Program:           Hydrostatic Testing,           Replacement: Replatement, Replate,           Pressure Regulating,           Hydrostatic Testing,           Hydrostatic Testing,           Status Que: Modified           IU Program - Robbit:           IU Program - Robbit:           IU Program - Robbit:	Consultation and Engagement Complexity Consultation and Engagement Complexity Consultation and Engagement Complexity Consultation and Engagement Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity System Capacity & Customer Impacts System Capacity & Customer Impacts	13.1. KAI UTI 158 13.1. KAI UTI 168 13.1. KAI UTI 168
4 2 1 3 1 2 4 4 4 5 5 3 3 3 1 1 1 4 4 4 5 5 4	Replacement: Replacement           100% inspection, Repair &           Pressure Regulating,           Hydrostatic Testing,           Status Quo: Modified           III Program:           III Program:           Replacement: Replacement, Replacement, Replacement, Replacement, Replacement, Replacement, Replacement, Ilii Program:           Status Quo: Modified           III Program:           Status Quo: Modified           III Program:           IV Program:	Consultation and Engagement Complexity Consultation and Engagement Complexity Consultation and Engagement Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity Operational Complexity System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts	13.1. KAI UT 168 13.1. KAI UT 168

	Technical		
Lateral	Category	Alternative Evaluation Criteria	Scor
16. COL LTL 219	Proactive asset management	ILI Program:	5
16. COL LTL 219	Proactive asset management	ILI Program - Robotic:	4
16. COL LTL 219	Proactive asset management		4
16. COL LTL 219		Replacement:	
16. COL LTL 219	Proactive asset management	100% Inspection, Repair	2
16. COL LTL 219	Proactive asset management	Pressure Regulating	0
16. COL LIL 219	Proactive asset management	Hydrostatic Testing	U
16. COL LTL 219	Proactive asset management	Status Quo: Modified	1
16. COL LTL 219	Technical certainty	ILI Program:	4
16. COL LTL 219	Technical certainty	ILI Program - Robotic:	3
16. COL LTL 219	Technical certainty	Replacement:	5
16. COL LTL 219	Technical certainty	100% Inspection, Repair	4
16. COL LTL 219	Technical certainty	Pressure Regulating	3
16. COL LTL 219	Technical certainty	Hydrostatic Testing	3
16. COLUTI 219	Technical certainty	Chattan Over Mandlifford	2
		Status Quo: Modified	
17. COL LOP 168	Prevention of ruptures	ILI Program:	5
17. COL LOP 168	Prevention of ruptures	ILI Program - Robotic:	5
17. COL LOP 168	Prevention of ruptures	Replacement:	5
17. COL LOP 168	Prevention of ruptures	100% Inspection, Repair	5
17. COL LOP 168	Prevention of ruptures	Pressure Regulating	5
17. COL LOP 168	Prevention of ruptures	Hydrostatic Testing	5
17. COL LOP 168	Prevention of ruptures	Status Quo: Modified	2
17. COL LOP 168			5
	Prevention of leaks with significant consequences	ILI Program:	5
17. COL LOP 168	Prevention of leaks with significant consequences	ILI Program - Robotic:	
17. COL LOP 168	Prevention of leaks with significant consequences	Replacement:	4
17. COL LOP 168	Prevention of leaks with significant consequences	100% Inspection, Repair	4
17. COL LOP 168	Prevention of leaks with significant consequences	Pressure Regulating	0
17. COL LOP 168	Prevention of leaks with significant consequences	Hydrostatic Testing	0
17. COL LOP 168	Prevention of leaks with significant consequences	Status Quo: Modified	2
17. COL LOP 168	Proactive asset management	ILI Program:	5
17. COL LOP 168	Proactive asset management	ILI Program - Robotic:	4
17. COL LOP 168	Proactive asset management	Replacement:	4
17. COL LOP 168	Proactive asset management		2
17. COL LOP 168		100% Inspection, Repair	0
17. COL LOP 168	Proactive asset management	Pressure Regulating	0
17. COL LOP 168	Proactive asset management	Hydrostatic Testing	0
17. COL LOP 168	Proactive asset management	Status Quo: Modified	1
17. COL LOP 168	Technical certainty	ILI Program:	4
17. COL LOP 168	Technical certainty	ILI Program - Robotic:	3
17. COL LOP 168	Technical certainty	Replacement:	5
17. COL LOP 168	Technical certainty	100% Inspection, Repair	4
17. COL LOP 168	Technical certainty	Pressure Regulating	3
17. COL LOP 168	Technical certainty	Hydrostatic Testing	3
17. COL LOP 168 18. KE1 LOP 219	Technical certainty Prevention of ruptures	Status Quo: Modified ILI Program:	2
18. KE1 LOP 219	Prevention of ruptures	ILI Program - Robotic:	5
18. KE1 LOP 219	Prevention of ruptures		5
		Replacement:	
18. KE1 LOP 219	Prevention of ruptures	100% Inspection, Repair	5
18. KE1 LOP 219 18. KE1 LOP 219	Prevention of ruptures Prevention of ruptures	Pressure Regulating Hydrostatic Testing	5
18. KLI LOF 215	revention of ruptures	inverostatic resting	
18. KE1 LOP 219	Prevention of ruptures	Status Quo: Modified	2
18. KE1 LOP 219	Prevention of leaks with significant consequences	ILI Program:	5
18. KE1 LOP 219	Prevention of leaks with significant consequences	ILI Program - Robotic:	5
18. KE1 LOP 219	Prevention of leaks with significant consequences	Replacement:	4
18. KE1 LOP 219	Prevention of leaks with significant consequences	100% Inspection, Repair	4
18. KE1 LOP 219	Prevention of leaks with significant consequences	Pressure Regulating	0
18. KE1 LOP 219	Prevention of leaks with significant consequences	Hydrostatic Testing	0
	Beneral state of the state of t	Charles 6	
18. KE1 LOP 219 18. KE1 LOP 219	Prevention of leaks with significant consequences Proactive asset management	Status Quo: Modified ILI Program:	2
18. KE1 LOP 219 18. KE1 LOP 219	Proactive asset management Proactive asset management		4
18. KE1 LOP 219 18. KE1 LOP 219		ILI Program - Robotic:	
18. KE1 LOP 219 18. KE1 LOP 219	Proactive asset management	Replacement:	4
	Proactive asset management	100% Inspection, Repair	-
18. KE1 LOP 219 18. KE1 LOP 219	Proactive asset management Proactive asset management	Pressure Regulating Hydrostatic Testing	0
		inverostatic resting	0
18. KE1 LOP 219	Proactive asset management	Status Quo: Modified	1
18. KE1 LOP 219	Technical certainty	ILI Program:	4
18. KE1 LOP 219	Technical certainty	ILI Program - Robotic:	3
18. KE1 LOP 219	Technical certainty	Replacement:	5
18. KE1 LOP 219	Technical certainty	100% Inspection, Repair	4
18. KE1 LOP 219	Technical certainty	Pressure Regulating	3
18. KE1 LOP 219	Technical certainty	Hydrostatic Testing	3
	Technical certainty	Statue Over Medif	2
18 451 100 210	Prevention of ruptures	Status Quo: Modified ILI Program:	2
18. KE1 LOP 219			5
19. CEL LTL 168		III Program - Pohotics	
19. CEL LTL 168 19. CEL LTL 168	Prevention of ruptures	ILI Program - Robotic:	
19. CEL LTL 168 19. CEL LTL 168 19. CEL LTL 168	Prevention of ruptures Prevention of ruptures	Replacement:	5
19. CEL LTL 168 19. CEL LTL 168 19. CEL LTL 168 19. CEL LTL 168	Prevention of ruptures Prevention of ruptures Prevention of ruptures	Replacement: 100% Inspection, Repair	5
19. CEL LTL 168 19. CEL LTL 168 19. CEL LTL 168	Prevention of ruptures Prevention of ruptures	Replacement:	5

	Financial	
Lateral	Category	Alternative Evaluation Criteria
22. FRD LTL 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program:
22. FRD LTL 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program - Robotic:
22. FRD LTL 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Replacement:
22. FRD   TI 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	100% Inspection, Repair
22. FRD   TI 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Pressure Regulating
22. FRD LTL 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Hydrostatic Testing
		infurostatic resting
22. FRD LTL 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Status Quo: Modified
22, FRD LTL 219	Rate impact	ILI Program:
22, FRD LTL 219	Rate impact	ILI Program - Robotic:
22. FRD LTL 219	Rate impact	Replacement:
22. FRD   TI 219	Rate impact	100% Inspection, Repair
22. FRD LTL 219	Rate impact	Pressure Regulating
22. FRD LTL 219	Rate impact	Hydrostatic Testing
22. FRD LTL 219	Rate impact	Status Quo: Modified
22. FRD LTL 219	Retirement of under-depreciated asset	ILI Program:
22. FRD LTL 219	Retirement of under-depreciated asset	ILI Program - Robotic:
22. FRD LTL 219	Retirement of under-depreciated asset	Replacement:
22. FRD LTL 219	Retirement of under-depreciated asset	100% Inspection, Repair
22. FRD LTL 219	Retirement of under-depreciated asset	Pressure Regulating
22. FRD LTL 219	Retirement of under-depreciated asset	Hydrostatic Testing
		¥
22. FRD LTL 219	Retirement of under-depreciated asset	Status Quo: Modified
23. ELK LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program:
23. ELK LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program - Robotic:
23. ELK LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Replacement:
23. ELK LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	100% Inspection, Repair
23. ELK LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Pressure Regulating
23. ELK LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Hydrostatic Testing
23. ELK LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Status Quo: Modified
23. ELK LTL 168	Rate impact	ILI Program:
23. ELK LTL 168	Rate impact	ILI Program - Robotic:
23. ELK LTL 168	Rate impact	Replacement:
23. ELK LTL 168	Rate impact	100% Inspection, Repair
23. ELK LTL 168	Rate impact	Pressure Regulating
23. ELK LTL 168	Rate impact	Hydrostatic Testing
		infurostutie resting
23. ELK LTL 168	Rate impact	Status Quo: Modified
23. ELK LTL 168	Retirement of under-depreciated asset	ILI Program:
23. ELK LTL 168	Retirement of under-depreciated asset	ILI Program - Robotic:
23. ELK LTL 168	Retirement of under-depreciated asset	Replacement:
23. ELK LTL 168	Retirement of under-depreciated asset	100% Inspection, Repair
23. ELK LTL 168	Retirement of under-depreciated asset	Pressure Regulating
23. ELK LTL 168	Retirement of under-depreciated asset	Hydrostatic Testing
		infurostatic resting
23. ELK LTL 168	Retirement of under-depreciated asset	Status Quo: Modified
24. CRK LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program:
24. CRK LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program - Robotic:
24. CRK LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Replacement:
24. CRK LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	100% Inspection, Repair
24. CRK LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Pressure Regulating
24. CRK LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Hydrostatic Testing
24. CIR ETE 100	Net resent value (50 year) of capital, oath, and nethernent cost	infurostatic resting
24. CRK LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Status Quo: Modified
24. CRK LTL 168	Rate impact	ILI Program:
24. CRK LTL 168	Rate impact	ILI Program - Robotic:
24. CRK LTL 168	Rate impact	Replacement:
24. CRK LTL 168	Rate impact	100% Inspection, Repair
24. CRK LTL 168	Rate impact	Pressure Regulating
24. CRK LTL 168	Rate impact	Hydrostatic Testing
10 100		
24. CRK LTL 168	Rate impact	Status Quo: Modified
24. CRK LTL 168	Retirement of under-depreciated asset	ILI Program:
24. CRK LTL 168	Retirement of under-depreciated asset	ILI Program - Robotic:
24. CRK LTL 168	Retirement of under-depreciated asset	Replacement:
CIN EIE 100	Retirement of under-depreciated asset	100% Inspection, Repair
24 CRK   TI 168	Retirement of under-depreciated asset	Pressure Regulating
24. CRK LTL 168		
24. CRK LTL 168		Hudrostatic Testing
	Retirement of under-depreciated asset	Hydrostatic Testing
24. CRK LTL 168 24. CRK LTL 168	Retirement of under-depreciated asset	
24. CRK LTL 168 24. CRK LTL 168 24. CRK LTL 168	Retirement of under-depreciated asset Retirement of under-depreciated asset	Status Quo: Modified
24. CRK LTL 168 24. CRK LTL 168 24. CRK LTL 168 25. CRK LTL 168 25. CRK LOP 219	Retirement of under-depreciated asset Retirement of under-depreciated asset Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Status Quo: Modified ILI Program:
24. CRK LTL 168 24. CRK LTL 168 24. CRK LTL 168 25. CRK LOP 219 25. CRK LOP 219	Retirement of under-depreciated asset Retirement of under-depreciated asset Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Status Quo: Modified ILI Program: ILI Program - Robotic:
24. CRK LTL 168 24. CRK LTL 168 24. CRK LTL 168 25. CRK LOP 219 25. CRK LOP 219 25. CRK LOP 219	Retirement of under-depreciated asset Retirement of under-depreciated asset Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost	<u>Status Quo: Modified</u> <u>ILI Program:</u> <u>ILI Program - Robotic:</u> <u>Replacement:</u>
24. CRK LTL 168 24. CRK LTL 168 24. CRK LTL 168 25. CRK LOP 219 25. CRK LOP 219 25. CRK LOP 219 25. CRK LOP 219	Retirement of under-depreciated asset Retirement of under-depreciated asset Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost	<u>Status Quo: Modified</u> <u>ILI Program:</u> <u>ILI Program - Robotic:</u> <u>Replacement:</u> 100% Inspection, Repair
24. CRK LTL 168 24. CRK LTL 168 24. CRK LTL 168 25. CRK LOP 219 25. CRK LOP 219 25. CRK LOP 219 25. CRK LOP 219 25. CRK LOP 219	Retirement of under-depreciated asset Retirement of under-depreciated asset Net Present Value (59 veg) of Capital, O&M, and Retirement Cost Net Present Value (59 veg) of Capital, O&M, and Retirement Cost Net Present Value (50 veg) of Capital, O&M, and Retirement Cost Net Present Value (50 veg) of Capital, O&M, and Retirement Cost Net Present Value (50 veg) of Capital, O&M, and Retirement Cost	Status Quo: Modified ILI Program: ILI Program - Robotic: Replacement: 100% Inspection, Repair Pressure Regulating
24. CRK LTL 168 24. CRK LTL 168 25. CRK LOP 219 25. CRK LOP 219 25. CRK LOP 219 25. CRK LOP 219 25. CRK LOP 219	Retirement of under-depreciated asset Retirement of under-depreciated asset Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost	<u>Status Quo: Modified</u> <u>ILI Program:</u> <u>ILI Program - Robotic:</u> <u>Replacement:</u> 100% Inspection, Repair
24. CRK LTL 168 24. CRK LTL 168 24. CRK LTL 168 25. CRK LOP 219 25. CRK LOP 219	Retirement of under-depreciated asset Retirement of under-depreciated asset Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Status Quo: Modified ILI Program: ILI Program. Robotic: Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing
24. CRK LTL 168 24. CRK LTL 168 25. CRK LDP 219 25. CRK LOP 219	Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Status Quo: Modified ILI Program: ILI Program: Robotic: Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified
24. CRK LTL 168 24. CRK LTL 168 24. CRK LTL 168 25. CRK LOP 219 25. CRK LOP 219	Retirement of under-depreciated asset Retirement of under-depreciated asset Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Ret Present Value (50 year) of Capital, O&M, and Retirement Cost	Status Quo: Modified IU Program: IU Program - Robotic: Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified IU Program:
24. CRK LTL 168 24. CRK LTL 168 24. CRK LTL 168 25. CRK LOP 219 25. CRK LOP 219	Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement (our Garpet) (applia), OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Ret Present Value (50 year) of Capital, OBM, and Retirement Cost Rate impact	Status Quo: Modified ILI Program : Robotic: Replacement: 100% Inspection. Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program : Robotic Regulating
24. CRK LTL 168 24. CRK LTL 168 24. CRK LTL 168 25. CRK LOP 219 25. CRK LOP 219	Retirement of under-depreciated asset Retirement of under-depreciated asset Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Rate impact Rate impact	Status Quo: Modified ILI Program: Replacement 100% Inspection, Repair Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program - Robotic; Replacement:
24. CRK LTL 168 24. CRK LTL 168 24. CRK LTL 168 25. CRK LOP 219 25. CRK LOP 219	Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement of under-depreciated asset Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Rate impact Rate impact	Status Quo: Modified ILI Program: ILI Program - Robotic- Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing, Status Quo: Modified ILI Program - Robotic- Replacement: 100% Inspection, Repair
24. CRK LTL 168 24. CRK LTL 168 25. CRK LOP 219 25. CRK LOP 219	Retirement of under-depreciated asset Retirement of under-depreciated asset Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Ret Ret (State (State)) Rate (mpact Rate (mpact	Status Quo: Modified           ILI Program:           ILI Program:           100% Inspection, Repair           100% Inspection, Repair           Hydroxtatic Testing,           Hydroxtatic Testing,           Status Quo: Modified,           ILI Program:           HUPogram-Robotic:           Replacement:           J00% Inspection, Repair           J00% Inspection, Repair
24. CRK LTL 168 24. CRK LTL 168 24. CRK LTL 168 25. CRK LOP 219 25. CRK LOP 219	Retirement of under-depreciated asset Retirement of under-depreciated asset Retirement of under-depreciated asset Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Net Present Value (50 year) of Capital, OBM, and Retirement Cost Rate impact Rate impact	Status Quo: Modified ILI Program: ILI Program - Robotic- Replacement: 100% Inspection, Repair Pressure Regulating Hydrostatic Testing, Status Quo: Modified ILI Program - Robotic- Replacement: 100% Inspection, Repair

	Project Execution & Lifecycle Operation			
Lateral	Category	Alternative Evaluation Criteria	Scores	
13.1. KA1 LTL 168	Project Execution Certainty	ILI Program:	3	
13.1. KA1 LTL 168 13.1. KA1 LTL 168	Project Execution Certainty Project Execution Certainty	ILI Program - Robotic: Replacement: Replacement	2	
13.1. KA1 LTL 168	Project Execution Certainty Project Execution Certainty	100% Inspection, Repair &	2	
13.1. KA1 LTL 168	Project Execution Certainty	Pressure Regulating	4	
13.1. KA1 LTL 168	Project Execution Certainty	Hydrostatic Testing	1	
13.1. KA1 LTL 168	Project Execution Certainty	Status Quo: Modified	5	
13.2. KA1 LOP 168	Environmental	ILI Program:	3	
13.2. KA1 LOP 168	Environmental	ILI Program - Robotic:	3	
13.2. KA1 LOP 168	Environmental	Replacement: Replacement	2	
13.2. KA1 LOP 168	Environmental Environmental	100% Inspection, Repair &	2	
13.2. KAI LOP 168 13.2. KAI LOP 168	Environmental	Pressure Regulating Hydrostatic Testing	4	
15.2. 101 201 200	Linioincitai	infurostatic resting.	-	
13.2. KA1 LOP 168	Environmental	Status Quo: Modified	2	
13.2. KA1 LOP 168	Lands & ROW	ILI Program:	3	
13.2. KA1 LOP 168	Lands & ROW	ILI Program - Robotic:	3	
13.2. KA1 LOP 168 13.2. KA1 LOP 168	Lands & ROW Lands & ROW	Replacement: Replacement 100% Inspection, Repair &	3	
13.2. KA1 LOP 168	Lands & ROW	Pressure Regulating	4	
13.2. KA1 LOP 168	Lands & ROW	Hydrostatic Testing	1	
13.2. KA1 LOP 168 13.2. KA1 LOP 168	Lands & ROW	Status Quo: Modified	4	
13.2. KAI LOP 168 13.2. KAI LOP 168	Consultation and Engagement Complexity Consultation and Engagement Complexity	ILI Program: ILI Program - Robotic:	4	
13.2. KAI LOP 168	Consultation and Engagement Complexity	Replacement: Replacement	2	
13.2. KA1 LOP 168	Consultation and Engagement Complexity	100% Inspection, Repair &	1	
13.2. KA1 LOP 168	Consultation and Engagement Complexity	Pressure Regulating	3	
13.2. KA1 LOP 168	Consultation and Engagement Complexity	Hydrostatic Testing	1	
13.2. KA1 LOP 168	Consultation and Engagement Complexity	Status Quo: Modified	2	
13.2. KA1 LOP 168	Operational Complexity	ILI Program:	4	
13.2. KA1 LOP 168	Operational Complexity	ILI Program - Robotic:	4	
13.2. KA1 LOP 168	Operational Complexity	Replacement: Replacement	5	
13.2. KA1 LOP 168 13.2. KA1 LOP 168	Operational Complexity Operational Complexity	100% Inspection, Repair &	3	
13.2. KAI LOP 168 13.2. KAI LOP 168	Operational Complexity Operational Complexity	Pressure Regulating Hydrostatic Testing	3	
		infurostutie resting		
13.2. KA1 LOP 168	Operational Complexity	Status Quo: Modified	1	
13.2. KA1 LOP 168	System Capacity & Customer Impacts	ILI Program:	4	
13.2. KA1 LOP 168 13.2. KA1 LOP 168	System Capacity & Customer Impacts	ILI Program - Robotic:	4	
13.2. KA1 LOP 168	System Capacity & Customer Impacts System Capacity & Customer Impacts	Replacement: Replacement 100% Inspection, Repair &	4	
13.2. KAI LOP 168	System Capacity & Customer Impacts	Pressure Regulating	0	
13.2. KA1 LOP 168	System Capacity & Customer Impacts	Hydrostatic Testing	0	
13.2. KA1 LOP 168	Custom Connector & Customere Investor	Chattan Ourse Mard/Pard	3	
13.2. KAI LOP 168	System Capacity & Customer Impacts Project Execution Certainty	Status Quo: Modified ILI Program:	3	
13.2. KA1 LOP 168	Project Execution Certainty	ILI Program - Robotic:	2	
13.2. KA1 LOP 168	Project Execution Certainty	Replacement: Replacement	3	
13.2. KA1 LOP 168	Project Execution Certainty	100% Inspection, Repair &	2	
13.2. KA1 LOP 168 13.2. KA1 LOP 168	Project Execution Certainty	Pressure Regulating	4	
13.2. KAI LOP 168	Project Execution Certainty	Hydrostatic Testing	1	
13.2. KA1 LOP 168	Project Execution Certainty	Status Quo: Modified	5	
14. SAL LOP 168	Environmental	ILI Program:	3	
14. SAL LOP 168	Environmental	ILI Program - Robotic:	3	
14. SAL LOP 168 14. SAL LOP 168	Environmental Environmental	Replacement: Replacement 100% Inspection, Repair &	2	
14. SAL LOP 168	Environmental	Pressure Regulating	4	
14. SAL LOP 168	Environmental	Hydrostatic Testing	1	
			-	
14. SAL LOP 168	Environmental Lands & ROW	Status Quo: Modified	3	
14. SAL LOP 168 14. SAL LOP 168	Lands & ROW Lands & ROW	ILI Program: ILI Program - Robotic:	3	
14. SAL LOP 168	Lands & ROW	Replacement: Replacement	1	
14. SAL LOP 168	Lands & ROW	100% Inspection, Repair &	2	
14. SAL LOP 168	Lands & ROW	Pressure Regulating	4	
14. SAL LOP 168	Lands & ROW	Hydrostatic Testing	1	
14. SAL LOP 168	Lands & ROW	Status Quo: Modified	4	
14. SAL LOP 168	Consultation and Engagement Complexity	ILI Program:	2	
14. SAL LOP 168	Consultation and Engagement Complexity	ILI Program - Robotic:	3	
14. SAL LOP 168 14. SAL LOP 168	Consultation and Engagement Complexity	Replacement: Replacement	1	
14. SAL LOP 168 14. SAL LOP 168	Consultation and Engagement Complexity Consultation and Engagement Complexity	100% Inspection, Repair & Pressure Regulating	1 4	
14. SAL LOP 168	Consultation and Engagement Complexity Consultation and Engagement Complexity	Hydrostatic Testing	4	
14. SAL LOP 168 14. SAL LOP 168	Consultation and Engagement Complexity Operational Complexity	Status Quo: Modified ILI Program:	2	
14. SAL LOP 168	Operational Complexity	ILI Program - Robotic:	4	
14. SAL LOP 168	Operational Complexity	Replacement: Replacement	5	
14. SAL LOP 168	Operational Complexity	100% Inspection, Repair &	3	
14. SAL LOP 168	Operational Complexity	Pressure Regulating	4	
14. SAL LOP 168	Operational Complexity	Hydrostatic Testing	1	
14. SAL LOP 168	Operational Complexity	Status Quo: Modified	2	

	Technical		
Lateral	Category	Alternative Evaluation Criteria	Scores
19. CEL LTL 168	Prevention of leaks with significant consequences	ILI Program:	5
19. CEL LTL 168	Prevention of leaks with significant consequences	ILI Program - Robotic:	5
19. CEL LTL 168	Prevention of leaks with significant consequences	Replacement:	4
19. CEL LTL 168	Prevention of leaks with significant consequences	100% Inspection, Repair	4
19. CEL LTL 168	Prevention of leaks with significant consequences	Pressure Regulating	0
19. CEL LTL 168	Prevention of leaks with significant consequences	Hydrostatic Testing	0
19. CEL LTL 168	Prevention of leaks with significant consequences	Status Quo: Modified	2
19. CEL LTL 168	Proactive asset management	ILI Program:	5
19. CEL LTL 168	Proactive asset management	ILI Program - Robotic:	4
19. CEL LTL 168	Proactive asset management	Replacement:	4
19. CEL LTL 168	Proactive asset management	100% Inspection, Repair	2
19. CEL LTL 168	Proactive asset management	Pressure Regulating	0
19. CEL LTL 168	Proactive asset management	Hydrostatic Testing	0
19. CEL LTL 168	Proactive asset management	Status Quo: Modified	1
19. CEL LTL 168	Technical certainty	ILI Program:	4
19. CEL LTL 168	Technical certainty	ILI Program - Robotic:	3
19. CEL LTL 168	Technical certainty	Replacement:	5
19. CEL LTL 168	Technical certainty	100% Inspection, Repair	4
19. CEL LTL 168	Technical certainty	Pressure Regulating	3
19. CEL LTL 168	Technical certainty	Hydrostatic Testing	3
40.05		Charles O	
19. CEL LTL 168	Technical certainty	Status Quo: Modified	2
20. CAS NEL 168	Prevention of ruptures	ILI Program:	
20. CAS NEL 168	Prevention of ruptures	ILI Program - Robotic:	5
20. CAS NEL 168	Prevention of ruptures	Replacement:	5
20. CAS NEL 168	Prevention of ruptures	100% Inspection, Repair	5
20. CAS NEL 168	Prevention of ruptures	Pressure Regulating	5
20. CAS NEL 168	Prevention of ruptures	Hydrostatic Testing	5
20. CAS NEL 168	Prevention of ruptures	Status Quo: Modified	2
20. CAS NEL 168 20. CAS NEL 168			5
	Prevention of leaks with significant consequences	ILI Program:	
20. CAS NEL 168	Prevention of leaks with significant consequences	ILI Program - Robotic:	5
20. CAS NEL 168	Prevention of leaks with significant consequences	Replacement:	4
20. CAS NEL 168	Prevention of leaks with significant consequences	100% Inspection, Repair	4
20. CAS NEL 168	Prevention of leaks with significant consequences	Pressure Regulating	0
20. CAS NEL 168	Prevention of leaks with significant consequences	Hydrostatic Testing	0
20. CAS NEL 168			2
	Prevention of leaks with significant consequences	Status Quo: Modified	
20. CAS NEL 168	Proactive asset management	ILI Program:	5
20. CAS NEL 168	Proactive asset management	ILI Program - Robotic:	4
20. CAS NEL 168	Proactive asset management	Replacement:	4
20. CAS NEL 168	Proactive asset management	100% Inspection, Repair	2
20. CAS NEL 168	Proactive asset management	Pressure Regulating	0
20. CAS NEL 168	Proactive asset management	Hydrostatic Testing	0
20 CAC NEL 169	Dreamting areat and an areat	Chattan Oraca Mandiffrad	1
20. CAS NEL 168 20. CAS NEL 168	Proactive asset management	Status Quo: Modified	4
20. CAS NEL 168 20. CAS NEL 168	Technical certainty Technical certainty	ILI Program: ILI Program - Robotic:	4
20. CAS NEL 168 20. CAS NEL 168	Technical certainty		5
		Replacement:	4
20. CAS NEL 168	Technical certainty	100% Inspection, Repair	4
20. CAS NEL 168 20. CAS NEL 168	Technical certainty Technical certainty	Pressure Regulating Hydrostatic Testing	3
20. CAS NEE 108	reclinical certainty	invariostatic resting.	5
20. CAS NEL 168	Technical certainty	Status Quo: Modified	2
21. TRA LTL 168	Prevention of ruptures	ILI Program:	5
21. TRA LTL 168	Prevention of ruptures	ILI Program - Robotic:	5
21. TRA LTL 168	Prevention of ruptures	Replacement:	5
21. TRA LTL 168	Prevention of ruptures	100% Inspection, Repair	5
21. TRA LTL 168	Prevention of ruptures	Pressure Regulating	5
21. TRA LTL 168	Prevention of ruptures	Hydrostatic Testing	5
-			
21. TRA LTL 168	Prevention of ruptures	Status Quo: Modified	2
21. TRA LTL 168	Prevention of leaks with significant consequences	ILI Program:	5
21. TRA LTL 168	Prevention of leaks with significant consequences	ILI Program - Robotic:	5
21. TRA LTL 168	Prevention of leaks with significant consequences	Replacement:	4
21. TRA LTL 168	Prevention of leaks with significant consequences	100% Inspection, Repair	4
21. TRA LTL 168	Prevention of leaks with significant consequences	Pressure Regulating	0
21. TRA LTL 168	Prevention of leaks with significant consequences	Hydrostatic Testing	0
21. TRA LTL 168 21. TRA LTL 168	Prevention of leaks with significant consequences	Status Quo: Modified	2
21. TRA LTL 168 21. TRA LTL 168	Proactive asset management	ILI Program:	5
21. TRA LTL 168 21. TRA LTL 168	Proactive asset management Proactive asset management	ILI Program - Robotic: Replacement:	4
21. TRA LTL 168 21. TRA LTL 168	Proactive asset management Proactive asset management		2
21. TRA LTL 168 21. TRA LTL 168	Proactive asset management Proactive asset management	100% Inspection, Repair Pressure Regulating	0
21. TRA LTL 168 21. TRA LTL 168	Proactive asset management Proactive asset management	Hydrostatic Testing	0
21. 104 111 100	in out and a set management	nyurostatic resting	0
21. TRA LTL 168	Proactive asset management	Status Quo: Modified	1
21. TRA LTL 168	Technical certainty	ILI Program:	4
21. TRA LTL 168	Technical certainty	ILI Program - Robotic:	3
21. TRA LTL 168	Technical certainty	Replacement:	5
21. TRA LTL 168	Technical certainty		4
21. TRA LTL 168 21. TRA LTL 168	Technical certainty Technical certainty	100% Inspection, Repair Pressure Regulating	4
21. TRA LTL 168	Technical certainty	Hydrostatic Testing	3
			5
21. TRA LTL 168	Technical certainty	Status Quo: Modified	2

Lateral 25. CRK LOP 219 25. CRK LOP 219	Financial		
25. CRK LOP 219 25. CRK LOP 219			
25. CRK LOP 219	Category	Alternative Evaluation Criteria	Scores
25. CRK LOP 219	Retirement of under-depreciated asset	ILI Program:	0
	Retirement of under-depreciated asset	ILI Program - Robotic:	0
25. CRK LOP 219	Retirement of under-depreciated asset	Replacement:	0
25. CRK LOP 219	Retirement of under-depreciated asset	100% Inspection, Repair	0
25. CRK LOP 219	Retirement of under-depreciated asset	Pressure Regulating	0
25. CRK LOP 219	Retirement of under-depreciated asset	Hydrostatic Testing	0
25. CRK LOP 219	Retirement of under-depreciated asset	Status Quo: Modified	0
26. CRK LP2 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program:	5
26. CRK LP2 219 26. CRK LP2 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program - Robotic:	0
26. CRK LP2 219 26. CRK LP2 219		Replacement:	0
	Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost	100% Inspection, Repair	0
26. CRK LP2 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Pressure Regulating Hydrostatic Testing	0
			-
26. CRK LP2 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Status Quo: Modified	
26. CRK LP2 219	Rate impact	ILI Program:	0
26. CRK LP2 219	Rate impact	ILI Program - Robotic:	0
26. CRK LP2 219	Rate impact	Replacement:	0
26. CRK LP2 219	Rate impact	100% Inspection, Repair	0
26. CRK LP2 219	Rate impact	Pressure Regulating	0
26. CRK LP2 219	Rate impact	Hydrostatic Testing	0
26. CRK LP2 219	Rate impact	Status Quo: Modified	0
26. CRK LP2 219	Retirement of under-depreciated asset	ILI Program:	0
26. CRK LP2 219	Retirement of under-depreciated asset	ILI Program - Robotic:	0
26. CRK LP2 219	Retirement of under-depreciated asset	Replacement:	0
26. CRK LP2 219	Retirement of under-depreciated asset	100% Inspection, Repair	0
26. CRK LP2 219 26. CRK LP2 219	Retirement of under-depreciated asset	Pressure Regulating	0
26. CKK LP2 219	Retirement of under-depreciated asset	Hydrostatic Testing	0
26. CRK LP2 219	Retirement of under-depreciated asset	Status Quo: Modified	0
27. CRK LP2 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost		5
27. CRK LOP 273	Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program: ILI Program - Robotic:	0
27. CRK LOP 273	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Replacement:	1
27. CRK LOP 273	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	100% Inspection, Repair	0
27. CRK LOP 273	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Pressure Regulating	0
27. CRK LOP 273	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Hydrostatic Testing	0
27. 618 201 275	net resent value (so year) of capital, oain, and nethericite cost	Inverostatic resting	0
27. CRK LOP 273	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Status Quo: Modified	
27. CRK LOP 273	Rate impact	ILI Program:	0
27. CRK LOP 273	Rate impact	ILI Program - Robotic:	0
27. CRK LOP 273	Rate impact	Replacement:	0
27. CRK LOP 273	Rate impact	100% Inspection, Repair	0
27. CRK LOP 273	Rate impact	Pressure Regulating	0
27. CRK LOP 273	Rate impact	Hydrostatic Testing	0
27. CRK LOP 273	Rate impact	Status Quo: Modified	0
27. CRK LOP 273	Retirement of under-depreciated asset	ILI Program:	0
27. CRK LOP 273	Retirement of under-depreciated asset	ILI Program - Robotic:	0
27. CRK LOP 273	Retirement of under-depreciated asset	Replacement:	0
27. CRK LOP 273	Retirement of under-depreciated asset	100% Inspection, Repair	0
27. CRK LOP 273	Retirement of under-depreciated asset	Pressure Regulating	0
27. CRK LOP 273	Retirement of under-depreciated asset	Hydrostatic Testing	0
27. CRK LOP 273	Retirement of under-depreciated asset	Status Quo: Modified	0
28. KBY LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program:	5
28. KBY LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program - Robotic:	0
28. KBY LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Replacement:	1
	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	100% Inspection, Repair	0
28. KBY LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Pressure Regulating	0
28. KBY LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Hydrostatic Testing	0
28. KBY LTL 168	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Status Quo: Modified	
	Rate impact	ILI Program:	0
28. KBY LTL 168	Rate impact	ILI Program - Robotic:	0
28. KBY LTL 168	Rate impact	Replacement:	0
28. KBY LTL 168	Rate impact	100% Inspection, Repair	0
28. KBY LTL 168	Rate impact	Pressure Regulating	0
28. KBY LTL 168	Rate impact	Hydrostatic Testing	0
20 KDV	Deta las est	Garbon G	
28. KBY LTL 168 28. KBY LTL 168	Rate impact	Status Quo: Modified	0
28. KBY LTL 168 28. KBY LTL 168	Retirement of under-depreciated asset	ILI Program:	0
	Retirement of under-depreciated asset Retirement of under-depreciated asset	ILI Program - Robotic: Replacement:	0
	Retirement of under-depreciated asset Retirement of under-depreciated asset	Replacement:	0
28. KBY LTL 168 28. KBY LTL 168	Retirement of under-depreciated asset	100% Inspection, Repair Pressure Regulating	0
28. KBY LTL 168	Retirement of under-depreciated asset	Hydrostatic Testing	0
28. KBY LTL 168 28. KBY LTL 168		inforestatic restilly	Ū
28. KBY LTL 168 28. KBY LTL 168			
28. KBY LTL 168 28. KBY LTL 168 28. KBY LTL 168	Retirement of under-depreciated asset	Status Ouo: Modified	0
28. KBY LTL 168 28. KBY LTL 168 28. KBY LTL 168 28. KBY LTL 168	Retirement of under-depreciated asset Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Status Quo: Modified ILI Program:	0
28. KBY LTL 168 28. KBY LTL 168 28. KBY LTL 168 28. KBY LTL 168 28. KBY LTL 168 29. SSK LTL 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program:	
28. KBY LTL 168 28. KBY LTL 168 28. KBY LTL 168 28. KBY LTL 168	Retirement of under-depreciated asset Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost	Status Quo: Modified ILI Program: ILI Program - Robotic: Replacement:	5
28. KBY LTL 168 28. KBY LTL 168 28. KBY LTL 168 28. KBY LTL 168 29. SSK LTL 219 29. SSK LTL 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program: ILI Program - Robotic: <u>Replacement:</u>	5
28. KBY LTL 168 28. KBY LTL 168 28. KBY LTL 168 28. KBY LTL 168 29. SSK LTL 219 29. SSK LTL 219 29. SSK LTL 219	Net Present Value (50 year) of Capital, 0&M, and Retirement Cost Net Present Value (50 year) of Capital, 0&M, and Retirement Cost Net Present Value (50 year) of Capital, 0&M, and Retirement Cost Net Present Value (50 year) of Capital, 0&M, and Retirement Cost	ILI Program:           ILI Program - Robotic:           Replacement:           100% Inspection, Repair	5 0 1
28. KBY LTL 168 28. KBY LTL 168 28. KBY LTL 168 28. KBY LTL 168 29. SSK LTL 219 29. SSK LTL 219 29. SSK LTL 219 29. SSK LTL 219	Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost Net Present Value (50 year) of Capital, O&M, and Retirement Cost	ILI Program: ILI Program - Robotic: <u>Replacement:</u>	5 0 1 0

	Project Execution & Lifecycle O	peration	
Lateral	Category	Alternative Evaluation Criteria	Scores
14. SAL LOP 168	System Capacity & Customer Impacts	ILI Program:	4
14. SAL LOP 168 14. SAL LOP 168	System Capacity & Customer Impacts	ILI Program - Robotic:	4
14. SAL LOP 168 14. SAL LOP 168	System Capacity & Customer Impacts	Replacement: Replacement	5
14. SAL LOP 168 14. SAL LOP 168	System Capacity & Customer Impacts System Capacity & Customer Impacts	100% Inspection, Repair & Pressure Regulating	4
14. SAL LOP 168	System Capacity & Customer Impacts	Hydrostatic Testing	0
		infurostatic resting	
14. SAL LOP 168	System Capacity & Customer Impacts	Status Quo: Modified	3
14. SAL LOP 168	Project Execution Certainty	ILI Program:	4
14. SAL LOP 168	Project Execution Certainty	ILI Program - Robotic:	2
14. SAL LOP 168	Project Execution Certainty	Replacement: Replacement	3
14. SAL LOP 168	Project Execution Certainty	100% Inspection, Repair &	2
14. SAL LOP 168	Project Execution Certainty	Pressure Regulating	5
14. SAL LOP 168	Project Execution Certainty	Hydrostatic Testing	1
14. SAL LOP 168	Project Execution Certainty	Status Quo: Modified	5
15. SA3 LTL 168 15. SA3 LTL 168	Environmental	ILI Program:	3
	Environmental	ILI Program - Robotic:	3
15. SA3 LTL 168 15. SA3 LTL 168	Environmental	Replacement: Replacement	1
15. SA3 LTL 168	Environmental Environmental	100% Inspection, Repair & Pressure Regulating	4
15. SA3 LTL 168	Environmental	Hydrostatic Testing	1
15. 545 ETE 108	Livionnentai	Tydrostatic resting	-
15. SA3 LTL 168	Environmental	Status Quo: Modified	3
15. SA3 LTL 168	Lands & ROW	ILI Program:	1
15. SA3 LTL 168	Lands & ROW	ILI Program - Robotic:	3
15. SA3 LTL 168	Lands & ROW	Replacement: Replacement	1
15. SA3 LTL 168	Lands & ROW	100% Inspection, Repair &	2
15. SA3 LTL 168	Lands & ROW	Pressure Regulating	4
15. SA3 LTL 168	Lands & ROW	Hydrostatic Testing	1
15. SA3 LTL 168	Lands & ROW	Status Quo: Modified	4
15. SA3 LTL 168	Consultation and Engagement Complexity	ILI Program:	2
15. SA3 LTL 168	Consultation and Engagement Complexity	ILI Program - Robotic:	3
15. SA3 LTL 168	Consultation and Engagement Complexity	Replacement: Replacement	2
15. SA3 LTL 168	Consultation and Engagement Complexity	100% Inspection, Repair &	1
15. SA3 LTL 168	Consultation and Engagement Complexity	Pressure Regulating	4
15. SA3 LTL 168	Consultation and Engagement Complexity	Hydrostatic Testing	1
15. SA3 LTL 168	Consultation and Engagement Complexity	Status Quo: Modified	2
15. SA3 LTL 168	Operational Complexity	ILI Program:	3
15. SA3 LTL 168	Operational Complexity	ILI Program - Robotic:	4
15. SA3 LTL 168	Operational Complexity	Replacement: Replacement	5
15. SA3 LTL 168	Operational Complexity	100% Inspection, Repair &	3
15. SA3 LTL 168	Operational Complexity	Pressure Regulating	4
15. SA3 LTL 168	Operational Complexity	Hydrostatic Testing	1
15. SA3 LTL 168	Operational Complexity	Status Quo: Modified	2
15. SA3 LTL 168	System Capacity & Customer Impacts	ILI Program:	4
15. SA3 LTL 168	System Capacity & Customer Impacts	ILI Program - Robotic:	4
15. SA3 LTL 168	System Capacity & Customer Impacts	Replacement: Replacement	5
15. SA3 LTL 168	System Capacity & Customer Impacts	100% Inspection, Repair &	4
15. SA3 LTL 168 15. SA3 LTL 168	System Capacity & Customer Impacts	Pressure Regulating	5
15. SA3 LTL 168	System Capacity & Customer Impacts	Hydrostatic Testing	0
15. SA3 LTL 168	System Capacity & Customer Impacts	Status Quo: Modified	3
15. SA3 LTL 168	Project Execution Certainty	ILI Program:	3
15. SA3 LTL 168	Project Execution Certainty	ILI Program - Robotic:	2
15. SA3 LTL 168	Project Execution Certainty	Replacement: Replacement	3
15. SA3 LTL 168	Project Execution Certainty	100% Inspection, Repair &	2
15. SA3 LTL 168 15. SA3 LTL 168	Project Execution Certainty Project Execution Certainty	Pressure Regulating Hydrostatic Testing	5
15. SA3 LTL 168	Project Execution Certainty	Hydrostatic Testing	1
15. SA3 LTL 168	Project Execution Certainty	Status Quo: Modified	5
16. COL LTL 219	Environmental	ILI Program:	3
16. COL LTL 219	Environmental	ILI Program - Robotic:	3
16. COL LTL 219	Environmental	Replacement: Replacement	2
16. COL LTL 219	Environmental	100% Inspection, Repair &	1
16. COL LTL 219 16. COL LTL 219	Environmental Environmental	Pressure Regulating	4
10.000010215	Livionnentai	Hydrostatic Testing	-
16. COL LTL 219	Environmental	Status Quo: Modified	3
16. COL LTL 219	Lands & ROW	ILI Program:	3
16. COL LTL 219	Lands & ROW	ILI Program - Robotic:	3
16. COL LTL 219	Lands & ROW	Replacement: Replacement	1
16. COL LTL 219 16. COL LTL 219	Lands & ROW	100% Inspection, Repair &	2
16. COL LTL 219 16. COL LTL 219	Lands & ROW Lands & ROW	Pressure Regulating Hydrostatic Testing	4
16. COL LTL 219	Lands & ROW	Status Quo: Modified	4
16. COL LTL 219	Consultation and Engagement Complexity	ILI Program:	
16. COL LTL 219 16. COL LTL 219	Consultation and Engagement Complexity	ILI Program - Robotic:	3
16. COL LTL 219 16. COL LTL 219	Consultation and Engagement Complexity Consultation and Engagement Complexity	Replacement: Replacement	1
16. COL LTL 219 16. COL LTL 219	Consultation and Engagement Complexity Consultation and Engagement Complexity	100% Inspection, Repair &	4
16. COL LTL 219	Consultation and Engagement Complexity	Pressure Regulating Hydrostatic Testing	4
16. COL LTL 219	Consultation and Engagement Complexity	Status Quo: Modified	2

	Technical		
Lateral	Category	Alternative Evaluation	Scores
Lateral	Category	Criteria	Scores
22. FRD LTL 219	Prevention of ruptures	ILI Program:	5
22. FRD LTL 219	Prevention of ruptures	ILI Program - Robotic:	5
22. FRD LTL 219 22. FRD LTL 219	Prevention of ruptures Prevention of ruptures	Replacement:	5
22. FRD LTL 219 22. FRD LTL 219	Prevention of ruptures Prevention of ruptures	100% Inspection, Repair Pressure Regulating	5
22. FRD LTL 219	Prevention of ruptures	Hydrostatic Testing	5
22. FRD LTL 219	Prevention of ruptures	Status Quo: Modified	2
22. FRD LTL 219 22. FRD LTL 219	Prevention of leaks with significant consequences	ILI Program:	5
22. FRD LTL 219	Prevention of leaks with significant consequences Prevention of leaks with significant consequences	ILI Program - Robotic: Replacement:	4
22. FRD LTL 219	Prevention of leaks with significant consequences	100% Inspection, Repair	4
22. FRD LTL 219	Prevention of leaks with significant consequences	Pressure Regulating	0
22. FRD LTL 219	Prevention of leaks with significant consequences	Hydrostatic Testing	0
22. FRD LTL 219	Prevention of leaks with significant consequences	Status Quo: Modified	2
22. FRD LTL 219	Proactive asset management	ILI Program:	5
22. FRD LTL 219	Proactive asset management	ILI Program - Robotic:	4
22. FRD LTL 219	Proactive asset management	Replacement:	4
22. FRD LTL 219	Proactive asset management	100% Inspection, Repair	2
22. FRD LTL 219	Proactive asset management	Pressure Regulating	0
22. FRD LTL 219	Proactive asset management	Hydrostatic Testing	0
22. FRD LTL 219	Proactive asset management	Status Quo: Modified	1
22. FRD LTL 219	Technical certainty	ILI Program:	4
22. FRD LTL 219	Technical certainty	ILI Program - Robotic:	3
22. FRD LTL 219	Technical certainty	Replacement:	5
22. FRD LTL 219	Technical certainty	100% Inspection, Repair	4
22. FRD LTL 219 22. FRD LTL 219	Technical certainty Technical certainty	Pressure Regulating	3
22. FRU LIL 219	recinical certainty	Hydrostatic Testing	3
22. FRD LTL 219	Technical certainty	Status Quo: Modified	2
23. ELK LTL 168	Prevention of ruptures	ILI Program:	5
23. ELK LTL 168	Prevention of ruptures	ILI Program - Robotic:	5
23. ELK LTL 168	Prevention of ruptures	Replacement:	5
23. ELK LTL 168 23. ELK LTL 168	Prevention of ruptures Prevention of ruptures	100% Inspection, Repair	5
23. ELK LTL 168 23. ELK LTL 168	Prevention of ruptures Prevention of ruptures	Pressure Regulating Hydrostatic Testing	5
23. EEK ETE 108	revention on opticies	Hydrostatic resting	,
23. ELK LTL 168	Prevention of ruptures	Status Quo: Modified	2
23. ELK LTL 168	Prevention of leaks with significant consequences	ILI Program:	5
23. ELK LTL 168	Prevention of leaks with significant consequences	ILI Program - Robotic:	5
23. ELK LTL 168	Prevention of leaks with significant consequences	Replacement:	4
23. ELK LTL 168 23. ELK LTL 168	Prevention of leaks with significant consequences Prevention of leaks with significant consequences	100% Inspection, Repair Pressure Regulating	4
23. ELK LTL 168	Prevention of leaks with significant consequences	Hydrostatic Testing	0
		infurostatic resting.	
23. ELK LTL 168	Prevention of leaks with significant consequences	Status Quo: Modified	2
23. ELK LTL 168	Proactive asset management	ILI Program:	5
23. ELK LTL 168	Proactive asset management	ILI Program - Robotic:	4
23. ELK LTL 168 23. ELK LTL 168	Proactive asset management Proactive asset management	Replacement: 100% Inspection, Repair	4
23. ELK LTL 168	Proactive asset management	Pressure Regulating	0
23. ELK LTL 168	Proactive asset management	Hydrostatic Testing	0
23. ELK LTL 168	Proactive asset management	Status Quo: Modified	1
23. ELK LTL 168	Technical certainty	ILI Program:	4
23. ELK LTL 168 23. ELK LTL 168	Technical certainty Technical certainty	ILI Program - Robotic: Replacement:	3
23. ELK LTL 168 23. ELK LTL 168	Technical certainty	100% Inspection, Repair	4
23. ELK LTL 168	Technical certainty	Pressure Regulating	3
23. ELK LTL 168	Technical certainty	Hydrostatic Testing	3
23. ELK LTL 168	Technical certainty	Status Quo: Modified	2
24. CRK LTL 168 24. CRK LTL 168	Prevention of ruptures Prevention of ruptures	ILI Program: ILI Program - Robotic:	5
24. CRK LTL 168	Prevention of ruptures	Replacement:	5
24. CRK LTL 168	Prevention of ruptures	100% Inspection, Repair	5
24. CRK LTL 168	Prevention of ruptures	Pressure Regulating	5
24. CRK LTL 168	Prevention of ruptures	Hydrostatic Testing	5
24. CRK LTL 168	Prevention of ruptures	Status Quo: Modified	2
24. CRK LTL 168	Prevention of leaks with significant consequences	ILI Program:	5
24. CRK LTL 168	Prevention of leaks with significant consequences	ILI Program - Robotic:	5
24. CRK LTL 168	Prevention of leaks with significant consequences	Replacement:	4
24. CRK LTL 168	Prevention of leaks with significant consequences	100% Inspection, Repair	4
24. CRK LTL 168 24. CRK LTL 168	Prevention of leaks with significant consequences	Pressure Regulating	0
24. UNK LIL 168	Prevention of leaks with significant consequences	Hydrostatic Testing	U
24. CRK LTL 168	Prevention of leaks with significant consequences	Status Quo: Modified	2
24. CRK LTL 168	Proactive asset management	ILI Program:	5
24. CRK LTL 168	Proactive asset management	ILI Program - Robotic:	4
24. CRK LTL 168	Proactive asset management	Replacement:	4
24. CRK LTL 168 24. CRK LTL 168	Proactive asset management	100% Inspection, Repair	2
24. CRK LTL 168 24. CRK LTL 168	Proactive asset management Proactive asset management	Pressure Regulating Hydrostatic Testing	0
24. CRK LTL 168	Proactive asset management	Status Quo: Modified	1

	Financial		
Lateral	Category	Alternative Evaluation Criteria	Scores
29. SSK LTL 219 Rate imp		ILI Program:	0
29. SSK LTL 219 Rate imp		ILI Program - Robotic:	0
29. SSK LTL 219 Rate imp		Replacement:	0
29. SSK LTL 219 Rate imp		100% Inspection, Repair	0
29. SSK LTL 219 Rate imp 29. SSK LTL 219 Rate imp		Pressure Regulating	0
29. 55K ETE 219 Kate Imp	dCl	Hydrostatic Testing	0
29. SSK LTL 219 Rate imp	act	Status Quo: Modified	0
	nt of under-depreciated asset	ILI Program:	0
	nt of under-depreciated asset	ILI Program - Robotic:	0
	nt of under-depreciated asset	Replacement:	0
	nt of under-depreciated asset	100% Inspection, Repair	0
	nt of under-depreciated asset	Pressure Regulating	0
29. SSK LTL 219 Retireme	nt of under-depreciated asset	Hydrostatic Testing	0
29. SSK LTL 219 Retireme	nt of under-depreciated asset	Status Quo: Modified	0
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	Project Execution & Lifecycle O	peration	
Lateral	Category	Alternative Evaluation Criteria	Scores
16. COL LTL 219	Operational Complexity	ILI Program:	4
16. COL LTL 219	Operational Complexity	ILI Program - Robotic:	4
16. COL LTL 219	Operational Complexity	Replacement: Replacement	5
16. COL LTL 219	Operational Complexity	100% Inspection, Repair &	3
16. COL LTL 219	Operational Complexity	Pressure Regulating	4
16. COL LTL 219	Operational Complexity	Hydrostatic Testing	1
16. COL LTL 219	Operational Complexity	Status Quo: Modified	2
16. COL LTL 219	System Capacity & Customer Impacts	ILI Program:	4
16. COL LTL 219	System Capacity & Customer Impacts	ILI Program - Robotic:	4
16. COL LTL 219	System Capacity & Customer Impacts	Replacement: Replacement	5
16. COL LTL 219	System Capacity & Customer Impacts	100% Inspection, Repair &	4
16. COL LTL 219	System Capacity & Customer Impacts	Pressure Regulating	5
16. COL LTL 219	System Capacity & Customer Impacts	Hydrostatic Testing	0
16. COL LTL 219	System Capacity & Customer Impacts	Status Quo: Modified	3
16. COL LTL 219	Project Execution Certainty	ILI Program:	3
16. COL LTL 219	Project Execution Certainty	ILI Program - Robotic:	2
16. COL LTL 219	Project Execution Certainty	Replacement: Replacement	3
16. COL LTL 219	Project Execution Certainty	100% Inspection, Repair &	2
16. COL LTL 219	Project Execution Certainty	Pressure Regulating	5
16. COL LTL 219	Project Execution Certainty	Hydrostatic Testing	1
16. COL LTL 219	Project Execution Certainty	Status Quo: Modified	5
17. COL LOP 168	Environmental	ILI Program:	3
17. COL LOP 168	Environmental	ILI Program - Robotic:	3
17. COL LOP 168	Environmental	Replacement: Replacement	1
17. COL LOP 168	Environmental	100% Inspection, Repair &	1
17. COL LOP 168	Environmental	Pressure Regulating	4
17. COL LOP 168	Environmental	Hydrostatic Testing	4
17. COL LOP 168	Environmental	Status Quo: Modified	3
17. COL LOP 168	Lands & ROW	ILI Program:	3
17. COL LOP 168	Lands & ROW	ILI Program - Robotic:	3
17. COL LOP 168	Lands & ROW	Replacement: Replacement	1
17. COL LOP 168	Lands & ROW	100% Inspection, Repair &	2
17. COL LOP 168	Lands & ROW	Pressure Regulating	4
17. COL LOP 168	Lands & ROW	Hydrostatic Testing	1
17. COL LOP 168	Lands & ROW	Status Quo: Modified	4
17. COL LOP 168	Consultation and Engagement Complexity	ILI Program:	1
17. COL LOP 168	Consultation and Engagement Complexity	ILI Program - Robotic:	1
17. COL LOP 168	Consultation and Engagement Complexity	Replacement: Replacement	1
17. COL LOP 168	Consultation and Engagement Complexity	100% Inspection, Repair &	1
17. COL LOP 168	Consultation and Engagement Complexity	Pressure Regulating	4
17. COL LOP 168	Consultation and Engagement Complexity	Hydrostatic Testing	1
17. COL LOP 168	Consultation and Engagement Complexity	Status Quo: Modified	1
17. COL LOP 168	Operational Complexity	ILI Program:	4
17. COL LOP 168	Operational Complexity	ILI Program - Robotic:	4
17. COL LOP 168	Operational Complexity	Replacement: Replacement	5
17. COL LOP 168	Operational Complexity	100% Inspection, Repair &	3
17. COL LOP 168 17. COL LOP 168	Operational Complexity Operational Complexity	Pressure Regulating Hydrostatic Testing	4
17. COL LOP 168	Operational Complexity	Status Quo: Modified	2
17. COL LOP 168	System Capacity & Customer Impacts	ILI Program:	4
17. COL LOP 168	System Capacity & Customer Impacts	ILI Program - Robotic:	4
17. COL LOP 168	System Capacity & Customer Impacts	Replacement: Replacement	5
17. COL LOP 168	System Capacity & Customer Impacts	100% Inspection, Repair &	4
17. COL LOP 168 17. COL LOP 168	System Capacity & Customer Impacts System Capacity & Customer Impacts	Pressure Regulating Hydrostatic Testing	5
17. COL LOP 168	System Capacity & Customer Impacts	Status Quo: Modified	3
17. COL LOP 168	Project Execution Certainty	ILI Program:	3
17. COL LOP 168	Project Execution Certainty	ILI Program - Robotic:	2
17. COL LOP 168	Project Execution Certainty	Replacement: Replacement	3
17. COL LOP 168	Project Execution Certainty	100% Inspection, Repair &	2
17. COL LOP 168 17. COL LOP 168	Project Execution Certainty Project Execution Certainty	Pressure Regulating Hydrostatic Testing	5
17.001.00.1			5
17. COL LOP 168 18. KE1 LOP 219	Project Execution Certainty Environmental	Status Quo: Modified	-
		ILI Program:	3
18. KE1 LOP 219 18. KE1 LOP 219	Environmental	ILI Program - Robotic:	3
	Environmental	Replacement: Replacement	2
18. KE1 LOP 219	Environmental	100% Inspection, Repair &	1
18. KE1 LOP 219 18. KE1 LOP 219	Environmental Environmental	Pressure Regulating Hydrostatic Testing	4
10 1/54 1 00 7 12	Environmental	Status Quo: Modified	3
18. KE1 LOP 219	1. 1.0.0000		
18. KE1 LOP 219	Lands & ROW	ILI Program:	
18. KE1 LOP 219 18. KE1 LOP 219	Lands & ROW	ILI Program - Robotic:	2
18. KE1 LOP 219 18. KE1 LOP 219 18. KE1 LOP 219	Lands & ROW Lands & ROW	ILI Program - Robotic: Replacement: Replacement	1
18. KE1 LOP 219 18. KE1 LOP 219 18. KE1 LOP 219 18. KE1 LOP 219	Lands & ROW Lands & ROW Lands & ROW	ILI Program - Robotic: Replacement: Replacement 100% Inspection, Repair &	1
18. KE1 LOP 219 18. KE1 LOP 219 18. KE1 LOP 219 18. KE1 LOP 219 18. KE1 LOP 219	Lands & ROW Lands & ROW Lands & ROW Lands & ROW	ILI Program - Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating	1 2 4
18. KE1 LOP 219 18. KE1 LOP 219 18. KE1 LOP 219 18. KE1 LOP 219	Lands & ROW Lands & ROW Lands & ROW	ILI Program - Robotic: Replacement: Replacement 100% Inspection, Repair &	1

Technical			
Lateral	Category	Alternative Evaluation Criteria	Scores
24. CRK LTL 168	Technical certainty	ILI Program:	4
24. CRK LTL 168 24. CRK LTL 168	Technical certainty Technical certainty	ILI Program - Robotic:	3
		Replacement:	4
24. CRK LTL 168 24. CRK LTL 168	Technical certainty Technical certainty	100% Inspection, Repair Pressure Regulating	4
24. CRK LTL 168	Technical certainty	Hydrostatic Testing	3
24. CRK LTL 168	Technical certainty	Status Quo: Modified	2
25. CRK LOP 219	Prevention of ruptures	ILI Program:	5
25. CRK LOP 219	Prevention of ruptures	ILI Program - Robotic:	5
25. CRK LOP 219 25. CRK LOP 219	Prevention of ruptures Prevention of ruptures	Replacement:	5
25. CRK LOP 219 25. CRK LOP 219	Prevention of ruptures Prevention of ruptures	100% Inspection, Repair	5
25. CRK LOP 219	Prevention of ruptures	Pressure Regulating Hydrostatic Testing	5
25. CRK LOP 219	Prevention of ruptures	Status Quo: Modified	2
25. CRK LOP 219	Prevention of leaks with significant consequences	ILI Program:	5
25. CRK LOP 219	Prevention of leaks with significant consequences	ILI Program - Robotic:	5
25. CRK LOP 219	Prevention of leaks with significant consequences	Replacement:	4
25. CRK LOP 219	Prevention of leaks with significant consequences	100% Inspection, Repair	4
25. CRK LOP 219	Prevention of leaks with significant consequences	Pressure Regulating	0
25. CRK LOP 219	Prevention of leaks with significant consequences	Hydrostatic Testing	0
25. CRK LOP 219	Prevention of leaks with significant consequences	Status Quo: Modified	2
25. CRK LOP 219 25. CRK LOP 219	Proactive asset management	ILI Program:	5
25. CRK LOP 219	Proactive asset management	ILI Program - Robotic:	4
25. CRK LOP 219	Proactive asset management	Replacement:	4
25. CRK LOP 219	Proactive asset management	100% Inspection, Repair	2
25. CRK LOP 219	Proactive asset management	Pressure Regulating	0
25. CRK LOP 219	Proactive asset management	Hydrostatic Testing	0
25. CRK LOP 219	Proactive asset management	Status Quo: Modified	1
25. CRK LOP 219	Technical certainty	ILI Program:	4
25. CRK LOP 219	Technical certainty	ILI Program - Robotic:	3
25. CRK LOP 219	Technical certainty	Replacement:	5
25. CRK LOP 219	Technical certainty	100% Inspection, Repair	4
25. CRK LOP 219	Technical certainty	Pressure Regulating	3
25. CRK LOP 219	Technical certainty	Hydrostatic Testing	3
25. CRK LOP 219	Technical certainty	Status Quo: Modified	2
26. CRK LP2 219	Prevention of ruptures	ILI Program:	5
26. CRK LP2 219	Prevention of ruptures	ILI Program - Robotic:	5
26. CRK LP2 219	Prevention of ruptures	Replacement:	5
26. CRK LP2 219	Prevention of ruptures	100% Inspection, Repair	5
26. CRK LP2 219	Prevention of ruptures	Pressure Regulating	5
26. CRK LP2 219	Prevention of ruptures	Hydrostatic Testing	5
26. CRK LP2 219	Prevention of ruptures	Status Quo: Modified	2
26. CRK LP2 219	Prevention of leaks with significant consequences	ILI Program:	5
26. CRK LP2 219	Prevention of leaks with significant consequences	ILI Program - Robotic:	5
26. CRK LP2 219	Prevention of leaks with significant consequences	Replacement:	4
26. CRK LP2 219	Prevention of leaks with significant consequences	100% Inspection, Repair	4
26. CRK LP2 219	Prevention of leaks with significant consequences	Pressure Regulating	0
26. CRK LP2 219	Prevention of leaks with significant consequences	Hydrostatic Testing	0
26. CRK LP2 219	Prevention of leaks with significant consequences	Status Quo: Modified	2
26. CRK LP2 219	Proactive asset management	ILI Program:	5
26. CRK LP2 219	Proactive asset management	ILI Program - Robotic:	4
26. CRK LP2 219	Proactive asset management	Replacement:	4
26. CRK LP2 219	Proactive asset management	100% Inspection, Repair	2
26. CRK LP2 219 26. CRK LP2 219	Proactive asset management Proactive asset management	Pressure Regulating Hydrostatic Testing	0
26. CRK LP2 219	Proactive asset management	Status Quo: Modified	1
26. CRK LP2 219	Technical certainty	ILI Program:	4
26. CRK LP2 219	Technical certainty	ILI Program - Robotic:	3
26. CRK LP2 219	Technical certainty	Replacement:	5
26. CRK LP2 219 26. CRK LP2 219	Technical certainty Technical certainty	100% Inspection, Repair	4
26. CRK LP2 219 26. CRK LP2 219	Technical certainty	Pressure Regulating Hydrostatic Testing	3
26. CRK LP2 219	Technical certainty	Status Quo: Modified	2
27. CRK LOP 273 27. CRK LOP 273	Prevention of ruptures	ILI Program:	5
27. CRK LOP 273 27. CRK LOP 273	Prevention of ruptures Prevention of ruptures	ILI Program - Robotic: Replacement:	5
27. CRK LOP 273 27. CRK LOP 273	Prevention of ruptures Prevention of ruptures	100% Inspection, Repair	5
27. CRK LOP 273	Prevention of ruptures Prevention of ruptures	Pressure Regulating	5
27. CRK LOP 273 27. CRK LOP 273	Prevention of ruptures Prevention of ruptures	Hydrostatic Testing	5
27. CRK LOP 273	Prevention of ruptures	Status Quo: Modified	2
27. CRK LOP 273	Prevention of leaks with significant consequences	ILI Program:	5
27. CRK LOP 273	Prevention of leaks with significant consequences	ILI Program - Robotic:	5
27. CRK LOP 273	Prevention of leaks with significant consequences	Replacement:	4
27. CRK LOP 273	Prevention of leaks with significant consequences	100% Inspection, Repair	4
27. CRK LOP 273	Prevention of leaks with significant consequences	Pressure Regulating	0
27. CRK LOP 273	Prevention of leaks with significant consequences	Hydrostatic Testing	0
27. CRK LOP 273	Prevention of leaks with significant consequences	Status Quo: Modified	2

	Financial		
Lateral	Category	Alternative Evaluation Criteria	Scores

	Project Execution & Lifecycle O	peration	
Lateral	Category	Alternative Evaluation Criteria	Scores
18. KE1 LOP 219	Consultation and Engagement Complexity	ILI Program:	1
18. KE1 LOP 219	Consultation and Engagement Complexity	ILI Program - Robotic:	
18. KE1 LOP 219	Consultation and Engagement Complexity	Replacement: Replacement	1
18. KE1 LOP 219	Consultation and Engagement Complexity	100% Inspection, Repair &	1
18. KE1 LOP 219 18. KE1 LOP 219	Consultation and Engagement Complexity	Pressure Regulating	4
	Consultation and Engagement Complexity	Hydrostatic Testing	
18. KE1 LOP 219 18. KE1 LOP 219	Consultation and Engagement Complexity	Status Quo: Modified	1
	Operational Complexity	ILI Program:	
18. KE1 LOP 219 18. KE1 LOP 219	Operational Complexity	ILI Program - Robotic:	3
18. KE1 LOP 219	Operational Complexity	Replacement: Replacement	1
18. KE1 LOP 219 18. KE1 LOP 219	Operational Complexity	100% Inspection, Repair &	4
	Operational Complexity	Pressure Regulating	
18. KE1 LOP 219	Operational Complexity	Hydrostatic Testing	1
18. KE1 LOP 219	Operational Complexity	Status Quo: Modified	2
18. KE1 LOP 219	System Capacity & Customer Impacts	ILI Program:	4
18. KE1 LOP 219	System Capacity & Customer Impacts	ILI Program - Robotic:	4
18. KE1 LOP 219	System Capacity & Customer Impacts	Replacement: Replacement	5
18. KE1 LOP 219	System Capacity & Customer Impacts	100% Inspection, Repair &	4
18. KE1 LOP 219	System Capacity & Customer Impacts	Pressure Regulating	5
18. KE1 LOP 219	System Capacity & Customer Impacts	Hydrostatic Testing	0
18. KE1 LOP 219	System Capacity & Customer Impacts	Status Quo: Modified	3
18. KE1 LOP 219	Project Execution Certainty	ILI Program:	3
18. KE1 LOP 219	Project Execution Certainty	ILI Program - Robotic:	2
18. KE1 LOP 219	Project Execution Certainty	Replacement: Replacement	3
18. KE1 LOP 219	Project Execution Certainty	100% Inspection, Repair &	2
18. KE1 LOP 219	Project Execution Certainty	Pressure Regulating	5
18. KE1 LOP 219	Project Execution Certainty	Hydrostatic Testing	1
18. KE1 LOP 219	Project Execution Certainty	Status Quo: Modified	4
19. CEL LTL 168	Environmental	ILI Program:	3
19. CEL LTL 168	Environmental	ILI Program - Robotic:	3
19. CEL LTL 168	Environmental	Replacement: Replacement	2
19. CEL LTL 168	Environmental	100% Inspection, Repair &	2
19. CEL LTL 168	Environmental	Pressure Regulating	4
19. CEL LTL 168	Environmental	Hydrostatic Testing	1
19. CEL LTL 168	Environmental	Status Quo: Modified	3
19. CEL LTL 168	Lands & ROW	ILI Program:	3
19. CEL LTL 168	Lands & ROW	ILI Program - Robotic:	3
19. CEL LTL 168	Lands & ROW	Replacement: Replacement	1
19. CEL LTL 168	Lands & ROW	100% Inspection, Repair &	2
19. CEL LTL 168	Lands & ROW	Pressure Regulating	4
19. CEL LTL 168	Lands & ROW	Hydrostatic Testing	1
			4
19. CEL LTL 168	Lands & ROW	Status Quo: Modified	
19. CEL LTL 168	Consultation and Engagement Complexity	ILI Program:	3
19. CEL LTL 168	Consultation and Engagement Complexity	ILI Program - Robotic:	4
19. CEL LTL 168	Consultation and Engagement Complexity	Replacement: Replacement	2
19. CEL LTL 168	Consultation and Engagement Complexity	100% Inspection, Repair &	1
19. CEL LTL 168 19. CEL LTL 168	Consultation and Engagement Complexity Consultation and Engagement Complexity	Pressure Regulating Hydrostatic Testing	4
			2
19. CEL LTL 168 19. CEL LTL 168	Consultation and Engagement Complexity Operational Complexity	Status Quo: Modified ILI Program:	2
19. CEL LTL 168	Operational Complexity	ILI Program - Robotic:	4
19. CEL LTL 168	Operational Complexity	Replacement: Replacement	5
19. CEL LTL 168	Operational Complexity	100% Inspection, Repair &	3
19. CEL LTL 168	Operational Complexity	Pressure Regulating	3
19. CEL LTL 168	Operational Complexity	Hydrostatic Testing	1
19. CEL LTL 168	Operational Complexity	Status Quo: Modified	1
19. CEL LTL 168	System Capacity & Customer Impacts	ILI Program:	4
19. CEL LTL 168	System Capacity & Customer Impacts	ILI Program - Robotic:	4
19. CEL LTL 168	System Capacity & Customer Impacts	Replacement: Replacement	5
	System Capacity & Customer Impacts	100% Inspection, Repair &	4
19. CEL LTL 168		Pressure Regulating	5
19. CEL LTL 168 19. CEL LTL 168	System Capacity & Customer Impacts		
		Hydrostatic Testing	0
19. CEL LTL 168	System Capacity & Customer Impacts System Capacity & Customer Impacts		0
19. CEL LTL 168 19. CEL LTL 168	System Capacity & Customer Impacts	Hydrostatic Testing Status Quo: Modified	
19. CEL LTL 168 19. CEL LTL 168 19. CEL LTL 168	System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts	Hydrostatic Testing	3
19. CEL LTL 168 19. CEL LTL 168 19. CEL LTL 168 19. CEL LTL 168 19. CEL LTL 168	System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty	Hydrostatic Testing Status Quo: Modified ILI Program: ILI Program - Robotic:	3
19. CEL LTL 168 19. CEL LTL 168	System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Execution Certainty	Hydrostatic Testing Status Quo: Modified ILI Program: ILI Program - Robotic: Replacement: Replacement	3 3 2
19. CEL LTL 168 19. CEL LTL 168	System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty	Hydrostatic Testing Status Quo: Modified ILI Program: ILI Program - Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating	3 3 2 3 2 2 4
19. CEL LTL 168 19. CEL LTL 168	System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Execution Certainty Project Execution Certainty	Hydrostatic Testing Status Quo: Modified ILI Program: ILI Program - Robotic: Replacement: Replacement 10% Inspection, Repair &	3 3 2 3 2
19. CEL LTL 168 19. CEL LTL 168	System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty	Hydrostatic Testing Status Quo: Modified IU Program: IU Program: Replacement: Replar & Pressure Regulating Hydrostatic Testing Status Quo: Modified	3 3 2 3 2 4 1 5
19. CEL LTL 168 19. CEL LTL 168 20. CAS NEL 168	System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Execution Certainty	Hydrostatic Testing, Status Quo: Modified ILI Program: ILI Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing, Status Quo: Modified ILI Program:	3 3 2 3 2 4 1 5 3
19. CEL LTL 168 19. CEL LTL 168 20. CAS NEL 168 20. CAS NEL 168	System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Execution Certainty Environmental	Hydrostatic Testing, Status Quo: Modified IU Program: Replacement Replacement: Replacement 100% Inspection, Repara Pressure Regulating, Hydrostatic Testing, Status Quo: Modified IU Program: IU Program: Robotic:	3 3 2 3 2 4 1 5 3 3 3
19. CEL ITI. 168 19. CEL ITI. 168 20. CAS NEL 168 20. CAS NEL 168	System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Execution Certainty Environmental Environmental	Hydrostatic Testing, Status Que: Modified ILI Program: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating, Hydrostatic Testing, Status Que: Modified ILI Program: Replacement: Replacement: Replacement: Replacement: Replacement:	3 3 2 3 2 4 1 5 3
19. CEL ITI. 168 19. CEL ITI. 168 20. CAS NEL 168 20. CAS NEL 168 20. CAS NEL 168	System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Execution Certainty Environmental Environmental	Hydrostatic Testing, Status Quo: Modified IU Program: Replacement Replacement: Replacement 100% Inspection, Repara Pressure Regulating, Hydrostatt Testing, Status Quo: Modified IU Program: IU Program: Robotic:	3 3 2 3 2 4 1 5 3 3 3 2 2 2
19. CELUT. 158 19. CELUT. 158 20. CAS NEL 158 20. CAS NEL 158 20. CAS NEL 158 20. CAS NEL 158	System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Execution Certainty Environmental Environmental Environmental Environmental	Hydrostatic Testing, Status Que: Modified ILI Program: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating, Hydrostatic Testing, Status Que: Modified ILI Program: Replacement: Replacement: Replacement: Replacement: Replacement:	3 3 2 3 2 4 1 5 3 3 3 2
19. CEL ITI. 168 19. CEL ITI. 168 20. CAS NEL 168 20. CAS NEL 168 20. CAS NEL 168	System Capacity & Customer Impacts System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Execution Certainty Environmental Environmental	Hydrostatic Testing, Status Quo: Modified III Program: Bobotic: Replacement: Replacement: Replacement: Pressure Regulating Hydrostatic Testing, Status Quo: Modified III Program: III Program: III Program: Replacement: Replacement: 100% Inspection, Repair &	3 3 2 3 2 4 1 5 3 3 3 2 2 2

Criteria         Ult Program.         Force           27, CK 102 P23         Proactive asset management         UP Orgam.         Force           27, CK 102 P23         Proactive asset management         100% Inspection. Senaliz         2           27, CK 102 P23         Proactive asset management         100% Inspection. Senaliz         2           27, CK 102 P23         Proactive asset management         Proactive asset management         114 Program.         4           27, CK 102 P23         Proactive asset management         114 Program.         4         114 Program.         4           27, CK 102 P23         Technical certainly         114 Program.         4         114 Program.         5           27, CK 102 P23         Technical certainly         100% Inspection, Resplat         2         7         CK 102 P3         Technical certainly         114 Program.         114 Program.         3           27, CK 102 P23         Technical certainly         Status Que: Modified         2         3		Technical		
27. CK LOP 273         Proceedwe asset management         UP regram - Robotics         4           27. CK LOP 273         Proceedwe asset management         100% Inspection, Result in, cold inspection, Result in, col		Category		Score
27. CK LOP 273         Prostive asset management         Begiasement.         400X inspection, Regain 200X inspection, Regai				
27.0       Proceeding asset management       100% inspection.secular         27.0       RUD 273       Proceeding asset management       Proceeding asset management         27.0       RUD 273       Proceeding asset management       Status Que: Modified       1         27.0       RUD 273       Proceeding asset management       Status Que: Modified       1         27.0       RUD 273       Proceeding asset management       Status Que: Modified       1         27.0       RUD 273       Technical certainly       IIIP Organm.       4         27.0       RUD 273       Technical certainly       IIP Organm.       5         27.0       RUD 273       Technical certainly       IIP Organm.       5         27.0       RUD 273       Technical certainly       Status Que: Modified       2         27.0       RUD 273       Technical certainly       Status Que: Modified       2         28.6       VIL 168       Prevention of ngubres       IIP Organm.       5         28.6       VIL 168       Prevention of ngubres       IIP Organm.       5         28.6       VIL 168       Prevention of ngubres       Status Que: Modified       2         28.6       VIL 168       Prevention of ngubres       Status Que: Modified				
27. CK UP 273     Productive asset management     Pressure Regulating     0       27. CK UP 273     Productive asset management     Hvdrostatic Testing,     0       27. CK UP 273     Productive asset management     LProgram.     4       27. CK UP 273     Technical certainty     LProgram.     4       27. CK UP 273     Technical certainty     Replacementi,     5       27. CK UP 273     Technical certainty     Pressure Regulating,     3       27. CK UP 273     Technical certainty     Pressure Regulating,     3       27. CK UP 273     Technical certainty     Hvdrostatic Testing,     3       27. CK UP 273     Technical certainty     Hvdrostatic Testing,     5       27. CK UP 273     Technical certainty     Status Quo: Modified,     5       28. KW TL 168     Prevention of ruptures     LP orgam.     500% inspection, Regal     6       28. KW TL 168     Prevention of ruptures     Hvdrostatic Testing,     5       28. KW TL 168     Prevention of ruptures     Hvdrostatic Testing,     100% inspection, Regal     6       28. KW TL 168     Prevention of ruptures     Hvdrostatic Testing,     100     100% inspection, Regal     100       28. KW TL 168     Prevention of ruptures     Hvdrostatic Testing,     100     100     100     100     100 </td <td></td> <td></td> <td></td> <td></td>				
27.0 KUOP 273     Procedive asset management     judicatatic Testing     0       27.0 KUOP 273     Procedive asset management     Status Quo: Modified     1       27.0 KUOP 273     Technical certainty     III Program.     4       27.0 KUOP 273     Technical certainty     III Program.     5       27.0 KUOP 273     Technical certainty     Prostree Regulating     2       27.0 KUOP 273     Technical certainty     Prostree Regulating     2       27.0 KUOP 273     Technical certainty     Prostree Regulating     2       27.0 KUOP 273     Technical certainty     Status Quo: Modified     2       28. KWI LI 66     Prevention of ruptures     III Program.     5       28. KWI LI 66     Prevention of ruptures     Replacementi.     5       28. KWI LI 68     Prevention of ruptures     Program.     5       28. KWI LI 68     Prevention of ruptures     Pressure Regulating.     5       28. KWI LI 68     Prevention of ruptures     Status Quo: Modified     2       28. KWI LI 68     Prevention of ruptures     Status Quo: Modified     2       28. KWI LI 68     Prevention of lask with significant consequences     Replacementi.     4005 Inspection, Regala'       28. KWI LI 68     Prevention of lask with significant consequences     Replacementi.     4005 Inspection, Regala		Proactive asset management		
Processes and management         Status Quo: Modified           27. GR Kt0 P 273         Technical certainty         III Program: 6 book: 6           27. GR Kt0 P 273         Technical certainty         IIP orgam: 6 book: 6           27. GR Kt0 P 273         Technical certainty         IP orgam: 6 book: 6           27. GR Kt0 P 273         Technical certainty         Pressure Regulating, 3           27. GR Kt0 P 273         Technical certainty         Pressure Regulating, 3           27. GR Kt0 P 273         Technical certainty         Harts Color: Modified         2           28. KW1 Lis8         Prevention of ruptures         III Program: 6 book: 6         5           28. KW1 Lis8         Prevention of ruptures         Program: 6 book: 6         5           28. KW1 Lis8         Prevention of ruptures         Program: 6 book: 6         5           28. KW1 Lis8         Prevention of ruptures         Program: 6 book: 6         5           28. KW1 Lis8         Prevention of leasis with significant consequences         III Program: 6 book: 6         5           28. KW1 Lis8         Prevention of leasis with significant consequences         Program: 6 book: 6         5           28. KW1 Lis8         Prevention of leasis with significant consequences         Program: 6 book: 6         5           28. KW1 Lis8         P				0
27. CRK 102 273       Technical certainty       III Program: bobbit:       3         27. CRK 102 273       Technical certainty       IDDS Inspection, Repair       4         27. CRK 102 273       Technical certainty       IDDS Inspection, Repair       4         27. CRK 102 273       Technical certainty       IDDS Inspection, Repair       4         27. CRK 102 273       Technical certainty       IDDS Inspection, Repair       4         27. CRK 102 273       Technical certainty       IDDS Inspection, Repair       5         27. CRK 102 273       Technical certainty       IDDS Inspection, Repair       5         28. RSW 11.168       Prevention of ruptures       IDDS Inspection, Repair       5         28. RSW 11.168       Prevention of ruptures       Prostatic Testing       5         28. RSW 11.168       Prevention of ruptures       IDDS Inspection, Repair       2         28. RSW 11.168       Prevention of lasks with significant consequences       ILl Program. Robotic:       3         28. RSW 11.168       Prevention of leasks with significant consequences       Replacement:       4         28. RSW 11.168       Prevention of leasks with significant consequences       Replacement:       4         28. RSW 11.168       Prevention of leasks with significant consequences       Replacement:      <				
27.0 KU DP 273       Technical certainty       IDP Program. Bobotic:       3         27.0 KU DP 273       Technical certainty       IDPS Inspection, Repair       4         27.0 KU DP 273       Technical certainty       Pressure Regulating       3         27.0 KU DP 273       Technical certainty       Hydrostatic Testing       3         27.0 KU DP 273       Technical certainty       Hydrostatic Testing       3         27.0 KU DP 273       Technical certainty       Hydrostatic Testing       3         27.0 KU DP 273       Technical certainty       Hydrostatic Testing       3         28.1 KW LI Life       Prevention of ruptures       IL Program. Robotic:       5         28.1 KW LI Life       Prevention of ruptures       Pressure Regulating       5         28.1 KW LI Life       Prevention of ruptures       Hydrostatic Testing       5         28.1 KW LI Life       Prevention of leaks with significant consequences       IL Program. Robotic:       5         28.1 KW LI Life       Prevention of leaks with significant consequences       Pressure Regulating       0         28.1 KW LI Life       Prevention of leaks with significant consequences       Pressure Regulating       0         28.1 KW LI Life       Prevention of leaks with significant consequences       Pressure Regulating       0 </td <td></td> <td></td> <td></td> <td></td>				
27. 08. K0 273     Technical certainty     Replacement;     Sector       27. 08. K0 273     Technical certainty     Pressure Regulating,     3       27. 08. K0 273     Technical certainty     Pressure Regulating,     3       27. 08. K0 273     Technical certainty     Pressure Regulating,     3       28. KW1 L168     Prevention of ruptures     III Program: shobitic,     5       28. KW1 L168     Prevention of ruptures     III Program: shobitic,     5       28. KW1 L168     Prevention of ruptures     Pressure Regulating,     5       28. KW1 L168     Prevention of ruptures     Pressure Regulating,     5       28. KW1 L168     Prevention of ruptures     III Program: Abobitic,     5       28. KW1 L168     Prevention of teaks with significant consequences     III Program. Robotic,     5       28. KW1 L168     Prevention of teaks with significant consequences     III Program. Robotic,     6       28. KW1 L168     Prevention of teaks with significant consequences     III Program. Robotic,     6       28. KW1 L168     Prevention of leaks with significant consequences     Regulating,     0       28. KW1 L168     Prevention of leaks with significant consequences     Hydrostatic Testing,     0       28. KW1 L168     Prevention of leaks with significant consequences     Hydrostatic Testing,     0				
27. 08. K0 273         Technical certainty         100% inspection, Repair         4           27. 08. K0 273         Technical certainty         Hydrostatic Testing,         4           27. 08. K0 273         Technical certainty         Hydrostatic Testing,         4           27. 08. K0 273         Technical certainty         Status Quo: Modified,         2           28. K9Y L1. 168         Prevention of ruptures         IU Program.         5           28. K9Y L1. 168         Prevention of ruptures         100% inspection, Repair         5           28. K9Y L1. 168         Prevention of ruptures         100% inspection, Repair         5           28. K9Y L1. 168         Prevention of ruptures         100% inspection, Repair         6           28. K9Y L1. 168         Prevention of ruptures         112 Program.         5           28. K9Y L1. 168         Prevention of leas with significant consequences         112 Program.         5           28. K9Y L1. 168         Prevention of leas with significant consequences         112 Program.         5           28. K9Y L1. 168         Prevention of leas with significant consequences         112 Program.         6           28. K9Y L1. 168         Prevention of leas with significant consequences         128 Kingam.         6           28. K9Y L1. 168         Pr			ILI Program - Robotic:	3
27. 0BK LOP 273       Technical certainty       Pressure Regulating,       3         27. 0BK LOP 273       Technical certainty       Hord static Testing,       3         27. 0BK LOP 273       Technical certainty       Status Quo: Modified,       2         28. BYU L168       Prevention of ruptures       III Program: hobotic,       5         28. BYU L168       Prevention of ruptures       III Program: hobotic,       5         28. BYU L168       Prevention of ruptures       Pressure Regulating,       5         28. BYU L168       Prevention of ruptures       Pressure Regulating,       5         28. BYU L168       Prevention of ruptures       III Program.       5         28. BYU L168       Prevention of feaks with significant consequences       III Program.       5         28. BYU L168       Prevention of feaks with significant consequences       Replacement;       4         28. BYU L168       Prevention of leaks with significant consequences       Replacement;       4         28. BYU L168       Prevention of leaks with significant consequences       Hydrostatic Testing,       0         28. BYU L168       Prevention of leaks with significant consequences       Hydrostatic Testing,       0         28. BYU L168       Prevention of leaks with significant consequences       Hydrostatic Testing, </td <td></td> <td></td> <td></td> <td></td>				
27. GR LOP 273       Technical certainty       Hydrostatic Testing       3         27. GR LOP 273       Technical certainty       Status Quo: Modified       2         28. KBY LL 168       Prevention of ruptures       IIJ Program. Robotic;       5         28. KBY LL 168       Prevention of ruptures       IIJ Program. Robotic;       5         28. KBY LL 168       Prevention of ruptures       Pressure Regulating,       5         28. KBY LL 168       Prevention of ruptures       Pressure Regulating,       5         28. KBY LL 168       Prevention of ruptures       Status Quo: Modified,       2         28. KBY LL 168       Prevention of ruptures       Status Quo: Modified,       2         28. KBY LL 168       Prevention of leaks with significant consequences       III Program. Robotic;       5         28. KBY LL 168       Prevention of leaks with significant consequences       Hydrostatic Testing,       0         28. KBY LL 168       Prevention of leaks with significant consequences       Hydrostatic Testing,       0         28. KBY LL 168       Prevention of leaks with significant consequences       Hydrostatic Testing,       0         28. KBY LL 168       Prosetive asset management       III Program.       6         28. KBY LL 168       Prosetive asset management       III Program.			100% Inspection, Repair	4
27. OK LOP 273       Technical certainty       Status Quo: Modified       2         28. RV 11.168       Prevention of ruptures       IJ Program: cbotkic.       5         28. RV 11.168       Prevention of ruptures       IP 2007am: cbotkic.       5         28. RV 11.168       Prevention of ruptures       IP 2007am: cbotkic.       5         28. RV 11.168       Prevention of ruptures       IP 2007am: cbotkic.       5         28. RV 11.168       Prevention of ruptures       IP 2007am: cbotkic.       5         28. RV 11.168       Prevention of ruptures       III Program.       5         28. RV 11.168       Prevention of leaks with significant consequences       III Program. Robotkic.       5         28. RV 11.168       Prevention of leaks with significant consequences       Replacementi.       4         28. RV 11.168       Prevention of leaks with significant consequences       Pressure Regulating.       0         28. RV 11.168       Prevention of leaks with significant consequences       Pressure Regulating.       0         28. RV 11.168       Prevention of leaks with significant consequences       Hydrostatic Testing.       0         28. RV 11.168       Prevention of leaks with significant consequences       Hydrostatic Testing.       0         28. RV 11.168       Prevention of leaks with significant		Technical certainty	Pressure Regulating	
28. HV 11.168     Prevention of ruptures     IJL Program.     5       28. HV 11.168     Prevention of ruptures     IBL Program.     5       28. HV 11.168     Prevention of ruptures     IBL Program.     102% Inspection, Repair       28. HV 11.168     Prevention of ruptures     IBL Program.     5       28. HV 11.168     Prevention of ruptures     Pressure Regulating.     5       28. HV 11.168     Prevention of ruptures     IBL Program.     5       28. HV 11.168     Prevention of ruptures     III Program.     5       28. HV 11.168     Prevention of feaks with significant consequences     III Program.     5       28. HV 11.168     Prevention of feaks with significant consequences     III Program.     5       28. HV 11.168     Prevention of leaks with significant consequences     Pressure Regulating.     0       28. HV 11.168     Prevention of leaks with significant consequences     Pressure Regulating.     0       28. HV 11.168     Prevention of leaks with significant consequences     Hydrostatic Testing.     0       28. HV 11.168     Prevention of leaks with significant consequences     Hydrostatic Testing.     0       28. HV 11.168     Proctive asset management     III Program.     100% inspection, Repair       28. HV 11.168     Proctive asset management     III Program.     100% inspection, Repai	27. CRK LOP 273	Technical certainty	Hydrostatic Testing	3
28. RFW 11:168     Prevention of ruptures     ILI Program: solution       28. RFW 11:168     Prevention of ruptures     Replacement.       28. RFW 11:168     Prevention of ruptures     Pressure Regulating.       28. RFW 11:168     Prevention of ruptures     Hydrostatic Testing.       28. RFW 11:168     Prevention of leads with significant consequences     Hydrostatic Testing.       28. RFW 11:168     Prevention of leads with significant consequences     Prevention of leads with significant consequences       28. RFW 11:168     Prevention of leads with significant consequences     Prevention of leads with significant consequences       28. RFW 11:168     Prevention of leads with significant consequences     Hydrostatic Testing.       28. RFW 11:168     Prevention of leads with significant consequences     Hydrostatic Testing.       28. RFW 11:168     Prevention of leads with significant consequences     Hydrostatic Testing.       28. RFW 11:168     Prevention of leads with significant consequences     Hydrostatic Testing.       28. RFW 11:168     Prevention of ruptures     Hydrostatic Testing.	27. CRK LOP 273	Technical certainty	Status Quo: Modified	2
28. K9V 11.168     Prevention of ruptures     III Program. Robotic:.     5       28. K9V 11.168     Prevention of ruptures     100% inspection, Repair     5       28. K9V 11.168     Prevention of ruptures     100% inspection, Repair     5       28. K9V 11.168     Prevention of ruptures     Hydrostatic Testing.     5       28. K9V 11.168     Prevention of ruptures     Hydrostatic Testing.     5       28. K9V 11.168     Prevention of leaks with significant consequences     ILI Program.     5       28. K9V 11.168     Prevention of leaks with significant consequences     ILI Program.     5       28. K9V 11.168     Prevention of leaks with significant consequences     Pressure Regulating.     0       28. K9V 11.168     Prevention of leaks with significant consequences     Pressure Regulating.     0       28. K9V 11.168     Prevention of leaks with significant consequences     Status Quo: Modified     2       28. K9V 11.168     Proactive asset management     ILI Program.     100% inspection.       28. K9V 11.168     Proactive asset management     IDI Program.     100% inspection.       28. K9V 11.168     Proactive asset management     IDI Program.     100% inspection.       28. K9V 11.168     Proactive asset management     IDI Program.     100% inspection.       28. K9V 11.168     Proactive asset management <t< td=""><td>28. KBY LTL 168</td><td>Prevention of ruptures</td><td>ILI Program:</td><td>5</td></t<>	28. KBY LTL 168	Prevention of ruptures	ILI Program:	5
28.8 KV11.168     Prevention of ruptures     Replacement:     Section, Repair       28.8 KV11.168     Prevention of ruptures     Pressure Regulating,     Section, Repair       28.8 KV11.168     Prevention of ruptures     Hydrosatik Testing,     Section, Repair       28.8 KV11.168     Prevention of ruptures     Hydrosatik Testing,     Section, Repair       28.8 KV11.168     Prevention of leaks with significant consequences     ILP Program,     Section, Repair       28.8 KV11.168     Prevention of leaks with significant consequences     ILP Repair     Get Section, Repair       28.8 KV11.168     Prevention of leaks with significant consequences     ILP Repair     Get Section, Repair       28.8 KV11.168     Prevention of leaks with significant consequences     Status Quo: Modified     2       28.8 KV11.168     Prevention of leaks with significant consequences     ILP Corgram, Robotic,     4       28.8 KV11.168     Prevention of reaks with significant consequences     ILP Corgram, Robotic,     4       28.8 KV11.168     Prevention of reaks with significant consequences     ILP Corgram, Robotic,     4       28.8 KV11.168     Prevention of reaks with signi	28. KBY LTL 168			5
28. 847 UT. 168     Prevention of ruptures     100% inspection, Repair     5       28. 847 UT. 168     Prevention of ruptures     Hydrostatic Testing,     5       28. 847 UT. 168     Prevention of ruptures     Hydrostatic Testing,     5       28. 847 UT. 168     Prevention of ruptures     LP Cogram.     5       28. 847 UT. 168     Prevention of leaks with significant consequences     LP Cogram.     5       28. 847 UT. 168     Prevention of leaks with significant consequences     LP Cogram.     5       28. 847 UT. 168     Prevention of leaks with significant consequences     Pressure Regulating,     0       28. 847 UT. 168     Prevention of leaks with significant consequences     Pressure Regulating,     0       28. 847 UT. 168     Prevention of leaks with significant consequences     Status Quo: Modified     2       28. 847 UT. 168     Proactive asset management     LP Drogram.     10       28. 847 UT. 168     Proactive asset management     100% inspection, Repair     2       28. 847 UT. 168     Proactive asset management     100% inspection, Repair     2       28. 847 UT. 168     Proactive asset management     Hydrostatic Testing, diakset, Replacement:     4       28. 847 UT. 168     Proactive asset management     Hydrostatic Testing, diakset, Replacement:     4       28. 847 UT. 168     Proactive asset manageme				5
28. KBY IL168     Presention of ruptures     Pressure Regulating,     5       28. KBY IL168     Prevention of ruptures     Hydrostatic Testing,     5       28. KBY IL168     Prevention of ruptures     Li Program.     5       28. KBY IL168     Prevention of reaks with significant consequences     Li Program.     5       28. KBY IL168     Prevention of reaks with significant consequences     Li Program.     5       28. KBY IL168     Prevention of reaks with significant consequences     Replacementi.     4       28. KBY IL168     Prevention of reaks with significant consequences     Pressure Regulating,     0       28. KBY IL168     Prevention of reaks with significant consequences     Pressure Regulating,     0       28. KBY IL168     Prevention of reaks with significant consequences     Hydrostatic Testing,     0       28. KBY IL168     Prevention of reaks with significant consequences     Status Quo: Modified,     2       28. KBY IL168     Proactive asset management     Li Program.     6       28. KBY IL168     Proactive asset management     Pressure Regulating,     0       28. KBY IL168     Proactive asset management     Status Quo: Modified,     2       28. KBY IL168     Technical certainty     Li Program.     4       28. KBY IL168     Technical certainty     Li Program.     4    <				5
28. BVTL 168     Prevention of ruptures     Hydrostatic Testing     S       28. BVTL 168     Prevention of ruptures     ILl Program.     5       28. BVTL 168     Prevention of leaks with significant consequences     ILL Program.     5       28. BVTL 168     Prevention of leaks with significant consequences     ILL Program.     5       28. BVTL 168     Prevention of leaks with significant consequences     ILL Program.     6       28. BVTL 168     Prevention of leaks with significant consequences     Hydrostatic Testing.     6       28. BVTL 168     Prevention of leaks with significant consequences     Hydrostatic Testing.     6       28. BVTL 168     Prevention of leaks with significant consequences     Status Quo: Modified     2       28. BVTL 168     Prevention of leaks with significant consequences     Status Quo: Modified     2       28. BVTL 168     Prevention of leaks with significant consequences     Status Quo: Modified     2       28. BVTL 168     Proactive asset management     ILP forgram. Robotic.     4       28. BVTL 168     Proactive asset management     Hydrostatic Testing.     0       28. BVTL 168     Proactive asset management     Hydrostatic Testing.     0       28. BVTL 168     Proactive asset management     Hydrostatic Testing.     0       28. BVTL 168     Technical certainty     ILP fo				5
Bit Protection         Differentiation           28. BY U1.165         Prevention of leaks with significant consequences         ILP Program.         5           28. BY U1.165         Prevention of leaks with significant consequences         ILP Program.         5           28. BY U1.165         Prevention of leaks with significant consequences         ILP Program.         5           28. BY U1.168         Prevention of leaks with significant consequences         Replacementi.         4           28. BY U1.168         Prevention of leaks with significant consequences         Hydrostatic Testing.         0           28. BY U1.168         Prevention of leaks with significant consequences         Hydrostatic Testing.         0           28. BY U1.168         Prevention of leaks with significant consequences         Hydrostatic Testing.         0           28. BY U1.168         Prevention of leaks with significant consequences         Hydrostatic Testing.         0           28. BY U1.168         Proactive asset management         ILP Program.         4           28. BY U1.168         Proactive asset management         Status Quo: Modified.         2           28. BY U1.168         Proactive asset management         Status Quo: Modified.         2           28. BY U1.168         Technical certainty         ILP Program.         4				5
28. 87 VT. 168     Prevention of leaks with significant consequences     III Program. 6botic:       28. 87 VT. 168     Prevention of leaks with significant consequences     III Program. 6botic:       28. 87 VT. 168     Prevention of leaks with significant consequences     IDDS inspection, Repair       28. 87 VT. 168     Prevention of leaks with significant consequences     Pressure Regulating,       28. 87 VT. 168     Prevention of leaks with significant consequences     Pressure Regulating,       28. 87 VT. 168     Prevention of leaks with significant consequences     Status Quo: Modified       28. 87 VT. 168     Prevention of leaks with significant consequences     Status Quo: Modified       28. 87 VT. 168     Proactive asset management     ILI Program.     5       28. 87 VT. 168     Proactive asset management     IDDS inspection, Repair     4       28. 87 VT. 168     Proactive asset management     Pressure Regulating,     0       28. 87 VT. 168     Proactive asset management     Pressure Regulating,     0       28. 87 VT. 168     Proactive asset management     Status Quo: Modified     12       28. 87 VT. 168     Proactive asset management     Status Quo: Modified     12       28. 87 VT. 168     Technical certainty     III Program.     4       28. 87 VT. 168     Technical certainty     III Program.     5       28. 87 VT. 168				
28. 8FV TL 168     Prevention of leaks with significant consequences     ILP rogram. : Bobbicit.     5       28. 8FV TL 168     Prevention of leaks with significant consequences     100% inspection, Benair     4       28. 8FV TL 168     Prevention of leaks with significant consequences     100% inspection, Benair     4       28. 8FV TL 168     Prevention of leaks with significant consequences     110 Program. : Bobbicit.     5       28. 8FV TL 168     Prevention of leaks with significant consequences     111 Program. : Bobbicit.     2       28. 8FV TL 168     Prevention of leaks with significant consequences     111 Program. : Bobbicit.     4       28. 8FV TL 168     Proactive asset management     ILP forgram. : Bobbicit.     4       28. 8FV TL 168     Proactive asset management     100% inspection. : Break     2       28. 8FV TL 168     Proactive asset management     100% inspection. : Break     2       28. 8FV TL 168     Proactive asset management     Hydrostatic Testing.     0       28. 8FV TL 168     Proactive asset management     Hydrostatic Testing.     0       28. 8FV TL 168     Proactive asset management     Status Quo: Modified     1       28. 8FV TL 168     Technical certainty     ILP orgram. : Bobbicit.     3       28. 8FV TL 168     Technical certainty     ILP orgram. : Bobbicit.     3       28. 8FV TL 168 <td></td> <td></td> <td></td> <td>2</td>				2
28. BVTL 158       Prevention of leaks with significant consequences       Replacement:       4         28. BVTL 158       Prevention of leaks with significant consequences       100% inspection. Beapiar       4         28. BVTL 168       Prevention of leaks with significant consequences       100% inspection. Beapiar       4         28. BVTL 168       Prevention of leaks with significant consequences       100% inspection. Beapiar       4         28. BVTL 168       Prevention of leaks with significant consequences       Status Quo: Modified       2         28. BVTL 168       Proactive asset management       ILl Program. Boobtic.       4         28. BVTL 168       Proactive asset management       ID0% inspection. Repair       2         28. BVTL 168       Proactive asset management       Preserve Regulating       0         28. BVTL 168       Proactive asset management       Preserve Regulating       0         28. BVTL 168       Proactive asset management       Status Quo: Modified       10         28. BVTL 168       Proactive asset management       Status Quo: Modified       10         28. BVTL 168       Technical certainty       ILl Program. Robotic:       5         28. BVTL 168       Technical certainty       Breacement:       5         28. BVTL 168       Technical certainty       Breac		Prevention of leaks with significant consequences		5
28. 8FV 11.168       Prevention of leaks with significant consequences       Replacement:       4         28. 8FV 11.168       Prevention of leaks with significant consequences       Pressure Regulating.       0         28. 8FV 11.168       Prevention of leaks with significant consequences       Hydrostatic Testing.       0         28. 8FV 11.168       Prevention of leaks with significant consequences       Hydrostatic Testing.       0         28. 8FV 11.168       Prevention of leaks with significant consequences       Hydrostatic Testing.       0         28. 8FV 11.168       Proactive asset management       HP Organn - Robotic:.       2         28. 8FV 11.168       Proactive asset management       Pressure Regulating.       0         28. 8FV 11.168       Proactive asset management       Pressure Regulating.       0         28. 8FV 11.168       Proactive asset management       Hydrostatic Testing.       0         28. 8FV 11.168       Proactive asset management       Status Que: Modified       1         28. 8FV 11.168       Proactive asset management       Hydrostatic Testing.       0         28. 8FV 11.168       Technical certainty       Hydrostatic Testing.       3         28. 8FV 11.168       Technical certainty       Replacement:       4         28. 8FV 11.168       Technical certainty			ILI Program - Robotic:	5
28. 879 UT. 168     Prevention of leaks with significant consequences     100% inspection, Repair     0       28. 879 UT. 168     Prevention of leaks with significant consequences     Hydrostatic Testing,     0       28. 879 UT. 168     Prevention of leaks with significant consequences     Status Quo: Modified     0       28. 879 UT. 168     Prevention of leaks with significant consequences     Status Quo: Modified     1       28. 879 UT. 168     Procentine asset management     ILP forgram: 600bit;     4       28. 879 UT. 168     Proactive asset management     ID0% inspection, Repair     2       28. 879 UT. 168     Proactive asset management     100% inspection, Repair     2       28. 879 UT. 168     Proactive asset management     Hydrostatic Testing,     0       28. 879 UT. 168     Proactive asset management     Status Quo: Modified     1       28. 879 UT. 168     Proactive asset management     Status Quo: Modified     1       28. 879 UT. 168     Proactive asset management     Status Quo: Modified     1       28. 879 UT. 168     Technical certainty     ILP forgram: Robotic;     3       28. 879 UT. 168     Technical certainty     ILP forgram: Robotic;     3       28. 879 UT. 168     Technical certainty     Pressure Regulatin;     3       28. 879 UT. 168     Technical certainty     Hydrostatic Testin;	28. KBY LTL 168			4
28. KBY UT: 168     Presention of leaks with significant consequences     Pressure Regulating, 0       28. KBY UT: 168     Prevention of leaks with significant consequences     Hydrostatic Testing, 0       28. KBY UT: 168     Prevention of leaks with significant consequences     Hydrostatic Testing, 0       28. KBY UT: 168     Prevention of leaks with significant consequences     Hydrostatic Testing, 0       28. KBY UT: 168     Proactive asset management     HProgram: 60bRit; 0       28. KBY UT: 168     Proactive asset management     Pressure Regulating, 0       28. KBY UT: 168     Proactive asset management     Pressure Regulating, 0       28. KBY UT: 168     Proactive asset management     Hydrostatic Testing, 0       28. KBY UT: 168     Proactive asset management     Status Quo: Modified     1       28. KBY UT: 168     Proactive asset management     Status Quo: Modified     1       28. KBY UT: 168     Technical certainty     ILl Program: Robotit; 3     3       28. KBY UT: 168     Technical certainty     Replacement; 5       28. KBY UT: 168     Technical certainty     Pressure Regulating, 5       28. KBY UT: 168     Technical certainty     Hydrostatic Testing, 3       28. KBY UT: 168     Technical certainty     Status Quo: Modified     2       29. SK UT: 219     Presention of ruptures     ILProgram: Robotit; 5       29. SK UT: 219	28. KBY LTL 168		100% Inspection, Repair	4
22.8 K9V1T1568     Prevention of leaks with significant consequences     Hydrostatic Testing     0       23.8 K9V1T168     Prevention of leaks with significant consequences     Status Que: Modified     2       24.8 K9V1T168     Proactive asset management     ILP forgram: - Bobbitic.     4       24.8 K9V1T168     Proactive asset management     ILP forgram: - Bobbitic.     4       24.8 K9V1T168     Proactive asset management     100X inspection, Repair     2       24.8 K9V1T168     Proactive asset management     Hydrostatic Testing     0       28.4 K9V1T168     Proactive asset management     Hydrostatic Testing     0       28.4 K9V1T168     Proactive asset management     Hydrostatic Testing     0       28.4 K9V1T168     Proactive asset management     Status Que: Modified     1       28.4 K9V1T168     Technical certainty     ILP forgram: cobotic.     3       28.4 K9V1T168     Technical certainty     ILP forgram: cobotic.     3       28.4 K9V1T168     Technical certainty     Pressure Regulating.     3       28.4 K9V1T168     Technical certainty     Hydrostatic Testing.     3       28.4 K9V1T168     Technical certainty     Hydrostatic Testing.     3       29.5 K1T219     Prevention of ruptures     ILP forgram.     3       29.5 K1T219     Prevention of ruptures	28. KBY LTL 168			0
28. 87 VT. 168       Proactive asset management       III Program: 6 both:         28. 87 VT. 168       Proactive asset management       III Program: 6 both:         28. 87 VT. 168       Proactive asset management       III Program: 6 both:         28. 87 VT. 168       Proactive asset management       IIII Program: 6 both:         28. 87 VT. 168       Proactive asset management       IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII				0
28. 87 VT. 168       Proactive asset management       III Program: 6 both:         28. 87 VT. 168       Proactive asset management       III Program: 6 both:         28. 87 VT. 168       Proactive asset management       III Program: 6 both:         28. 87 VT. 168       Proactive asset management       IIII Program: 6 both:         28. 87 VT. 168       Proactive asset management       IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	28. KBY LTL 168	Prevention of leaks with significant consequences	Status Quo: Modified	2
28. 847 UT. 168     Proactive asset management     III Program. Robotic:     4       28. 847 UT. 168     Proactive asset management     100% Inspection, Repair     4       28. 847 UT. 168     Proactive asset management     100% Inspection, Repair     4       28. 847 UT. 168     Proactive asset management     100% Inspection, Repair     6       28. 847 UT. 168     Proactive asset management     111 Program.     6       28. 847 UT. 168     Proactive asset management     111 Program.     6       28. 847 UT. 168     Technical certainty     111 Program.     111 Program.       28. 847 UT. 168     Technical certainty     111 Program.     7       28. 847 UT. 168     Technical certainty     100% Inspection, Repair     3       28. 847 UT. 168     Technical certainty     100% Inspection, Repair     3       28. 847 UT. 168     Technical certainty     Pressure Regulating.     3       28. 847 UT. 168     Technical certainty     Hydrogram.     6       28. 847 UT. 168     Technical certainty     Status Que: Modified     2       29. 55 UT. 219     Prevention of ruptures     111 Program.     100% Inspection, Repair       29. 55 UT. 219     Prevention of ruptures     112 Program.     5       29. 55 UT. 219     Prevention of ruptures     112 Program.     100% Inspect	28. KBY LTI 168			5
28. BY UT 168     Proactive asset management     Replacement.     100% Inspection, Repair       28. BY UT 168     Proactive asset management     100% Inspection, Repair       28. KBY UT 168     Proactive asset management     Pressure Regulating     0       28. KBY UT 168     Proactive asset management     Hydrostatic Testing     0       28. KBY UT 168     Proactive asset management     Status Que: Modified     1       28. KBY UT 168     Proactive asset management     Status Que: Modified     1       28. KBY UT 168     Technical certainty     III Program.     4       28. KBY UT 168     Technical certainty     100% Inspection, Repair     4       28. KBY UT 168     Technical certainty     Pressure Regulating     3       28. KBY UT 168     Technical certainty     Hydrostatic Testing.     3       28. KBY UT 168     Technical certainty     Status Que: Modified     2       29. SK UT 219     Prevention of ruptures     III Program.     5       29. SK UT 219     Prevention of ruptures     Pressure Regulating.     5       29. SK UT 219     Prevention of ruptures     Pressure Regulating.     5       29. SK UT 219     Prevention of ruptures     Hydrostatic Testing.     5       29. SK UT 219     Prevention of ruptures     Hydrostatic Testing.     5		Broactive asset management		4
28. KBY LTL ISB     Proactive asset management     100% Inspection, Repair     2       28. KBY LTL ISB     Proactive asset management     Pressure Regulating     0       28. KBY LTL ISB     Proactive asset management     Hydrostatic Testing,     0       28. KBY LTL ISB     Proactive asset management     Katus Quo: Modified,     0       28. KBY LTL ISB     Proactive asset management     Status Quo: Modified,     0       28. KBY LTL ISB     Proactive asset management     U Program. Robotic:     3       28. KBY LTL ISB     Technical certainty     U Program. Robotic:     5       28. KBY LTL ISB     Technical certainty     Pressure Regulating,     3       28. KBY LTL ISB     Technical certainty     Pressure Regulating,     3       28. KBY LTL ISB     Technical certainty     Hydrostatic Testing,     3       28. KBY LTL ISB     Technical certainty     Status Quo: Modified,     2       28. KBY LTL ISB     Technical certainty     KHydrostatic Testing,     3       28. KBY LTL ISB     Technical certainty     Status Quo: Modified,     2       29. SKX LT 219     Prevention of ruptures     ILP Program. Robotic:     5       29. SKX LT 219     Prevention of ruptures     Hydrostatic Testing,     5       29. SKX LT 219     Prevention of ruptures     Hydrostatic Testing, <td></td> <td>Proactive asset management</td> <td>Benlesement</td> <td>4</td>		Proactive asset management	Benlesement	4
28. BY UT 168       Proactive asset management       Pressure Regulating       0         28. BY UT 168       Proactive asset management       Hydrostatic Testing       0         28. KBY UT 168       Proactive asset management       Status Que: Modified       0         28. KBY UT 168       Proactive asset management       Status Que: Modified       0         28. KBY UT 168       Technical certainty       ILl Program.       4         28. KBY UT 168       Technical certainty       ILl Program.       4         28. KBY UT 168       Technical certainty       ID/ Singaction, Repair       3         28. KBY UT 168       Technical certainty       Pressure Regulating, 3       3         28. KBY UT 168       Technical certainty       Hydrostatic Testing, 3       3         28. KBY UT 168       Technical certainty       Status Que: Modified       2         29. SK UT 219       Prevention of ruptures       ILl Program.       5         29. SK UT 219       Prevention of ruptures       ILl Program.       5         29. SK UT 219       Prevention of ruptures       Hydrostatic Testing, 5       5         29. SK UT 219       Prevention of ruptures       Status Que: Modified       2         29. SK UT 219       Prevention of ruptures       Hydrostatic Testing, 5		Proactive asset management		
28. RFV1T168     Proactive asset management     Hydrostatic Testing     0       28. RFV1T168     Proactive asset management     Status Quo: Modified     1       28. RFV1T168     Proactive asset management     Status Quo: Modified     1       28. RFV1T168     Technical certainty     III Program:     1       28. RFV1T168     Technical certainty     III Program:     100% inspection. Repair       28. RFV1T168     Technical certainty     100% inspection. Repair     3       28. RFV1T168     Technical certainty     100% inspection. Repair     3       28. RFV1T168     Technical certainty     Pressure Regulating     3       28. RFV1T168     Technical certainty     Hydrostatic Testing     3       28. RFV1T168     Technical certainty     Status Quo: Modified     2       29. SK R1219     Prevention of ruptures     III Program: Robotic:     5       29. SK R1219     Prevention of ruptures     Pressure Regulating     5       29. SK R1219     Prevention of ruptures     Status Quo: Modified     2       29. SK R1219     Prevention of ruptures     Hydrostatic Testing     00% inspection. Repair       29. SK R1219     Prevention of fugures     Hydrostatic Testing     0       29. SK R1219     Prevention of fugures     Hydrostatic Testing     0       <				
28. 897 UT. 168     Technical certainty     III. Program:.     4       28. 887 UT. 168     Technical certainty     III. Program:.     4       28. 887 UT. 168     Technical certainty     III. Program:.     5       28. 887 UT. 168     Technical certainty     100% Inspection. Repair     3       28. 887 UT. 168     Technical certainty     100% Inspection. Repair     3       28. 887 UT. 168     Technical certainty     Pressure Regulating.     3       28. 887 UT. 168     Technical certainty     Status Que: Modified.     2       28. 887 UT. 168     Technical certainty     Status Que: Modified.     2       29. 55X UT. 219     Prevention of ruptures     III Program.     5       29. 55X UT. 219     Prevention of ruptures     100% Inspection. Repair     5       29. 55X UT. 219     Prevention of ruptures     100% Inspection. Repair     2       29. 55X UT. 219     Prevention of ruptures     100% Inspection. Repair     2       29. 55X UT. 219     Prevention of leaks with significant consequences     III Program.     6       29. 55X UT. 219     Prevention of leaks with significant consequences     III Program.     6       29. 55X UT. 219     Prevention of leaks with significant consequences     III Program.     6       29. 55X UT. 219     Prevention of leaks with significant cons				0
28. 897 UT. 168     Technical certainty     III. Program:.     4       28. 887 UT. 168     Technical certainty     III. Program:.     4       28. 887 UT. 168     Technical certainty     III. Program:.     5       28. 887 UT. 168     Technical certainty     100% Inspection. Repair     3       28. 887 UT. 168     Technical certainty     100% Inspection. Repair     3       28. 887 UT. 168     Technical certainty     Pressure Regulating.     3       28. 887 UT. 168     Technical certainty     Status Que: Modified.     2       28. 887 UT. 168     Technical certainty     Status Que: Modified.     2       29. 55X UT. 219     Prevention of ruptures     III Program.     5       29. 55X UT. 219     Prevention of ruptures     100% Inspection. Repair     5       29. 55X UT. 219     Prevention of ruptures     100% Inspection. Repair     2       29. 55X UT. 219     Prevention of ruptures     100% Inspection. Repair     2       29. 55X UT. 219     Prevention of leaks with significant consequences     III Program.     6       29. 55X UT. 219     Prevention of leaks with significant consequences     III Program.     6       29. 55X UT. 219     Prevention of leaks with significant consequences     III Program.     6       29. 55X UT. 219     Prevention of leaks with significant cons		D		
28. 86 VT.15.68     Technical certainty     III Program. Robotic:     3       28. 86 VT.15.68     Technical certainty     Beplacement:     3       28. 86 VT.15.68     Technical certainty     ID0% Inspection, Repair     3       28. 86 VT.15.68     Technical certainty     ID0% Inspection, Repair     3       28. 86 VT.15.68     Technical certainty     Interview Regulating     3       28. 86 VT.15.68     Technical certainty     Hydrostatic Testing     3       28. 86 VT.15.68     Technical certainty     Status Quo: Modified     2       28. 85 VT.21.219     Prevention of ruptures     III Program. Robotic:     5       29. 55 XT.12.219     Prevention of ruptures     Replacement:     5       29. 55 XT.12.219     Prevention of ruptures     Pressure Regulating     5       29. 55 XT.12.219     Prevention of ruptures     Status Quo: Modified     2       29. 55 XT.12.219     Prevention of ruptures     Status Quo: Modified     2       29. 55 XT.12.219     Prevention of ruptures     Status Quo: Modified     2       29. 55 XT.12.219     Prevention of ruptures     Hydrostatic Testing, 0       29. 55 XT.12.219     Prevention of feask with significant consequences     Hydrostatic Testing, 0       29. 55 XT.12.219     Prevention of feask with significant consequences     Hydrostatic Testing, 0<		Proactive asset management		4
28. 897 UT. 168     Technical certainty     100% Inspection, Repair       28. 887 UT. 168     Technical certainty     100% Inspection, Repair       28. 887 UT. 168     Technical certainty     Pressure Regulating, 3       28. 887 UT. 168     Technical certainty     Pressure Regulating, 3       28. 887 UT. 168     Technical certainty     Pressure Regulating, 3       28. 887 UT. 168     Technical certainty     Status Que: Modified       29. 558 UT. 219     Prevention of ruptures     UP Program.       29. 558 UT. 219     Prevention of ruptures     UP program.       29. 558 UT. 219     Prevention of ruptures     100% Inspection, Repair       29. 558 UT. 219     Prevention of ruptures     Presention of ruptures       29. 558 UT. 219     Prevention of ruptures     Presention of ruptures       29. 558 UT. 219     Prevention of ruptures     Status Que: Modified       29. 558 UT. 219     Prevention of ruptures     Status Que: Modified       29. 558 UT. 219     Prevention of leaks with significant consequences     IU Program.       29. 558 UT. 219     Prevention of leaks with significant consequences     IU Program.       29. 558 UT. 219     Prevention of leaks with significant consequences     IU Program.       29. 558 UT. 219     Prevention of leaks with significant consequences     High Presention of leaks with significant consequences			ILI Program Bahatia	
28. 8 W1 TL 168     Technical certainty     100% Inspection, Repair     4       28. 8 W1 TL 68     Technical certainty     Pressure Regulating,     3       28. 4 8 W1 TL 168     Technical certainty     Hydrostatic Testing,     3       28. 4 8 W1 TL 168     Technical certainty     Status Que: Modified     2       29. 4 8 W1 TL 168     Technical certainty     Status Que: Modified     2       29. 5 SK TL 219     Prevention of ruptures     ILl Program. Robotic:     5       29. 5 SK TL 219     Prevention of ruptures     Replacement:     5       29. 5 SK TL 219     Prevention of ruptures     ID/S Inspection, Repair     5       29. 5 SK TL 219     Prevention of ruptures     Pressure Regulating,     5       29. 5 SK TL 219     Prevention of ruptures     Pressure Regulating,     5       29. 5 SK TL 219     Prevention of ruptures     Status Que: Modified     2       29. 5 SK TL 219     Prevention of ruptures     Status Que: Modified     2       29. 5 SK TL 219     Prevention of ruptures     Status Que: Modified     2       29. 5 SK TL 219     Prevention of relax with significant consequences     ILP forgram. Robotic;     5       29. 5 SK TL 219     Prevention of feals with significant consequences     Hydrostatic Testing,     0       29. 5 SK TL 219     Prevention of feals w				
28. KBV TL 168     Technical certainty     Pressure Regulating,     3       28. KBV TL 168     Technical certainty     Hydrostatic Testing,     3       28. KBV TL 168     Technical certainty     Hydrostatic Testing,     3       29. SK TL 219     Prevention of ruptures     ILl Program. Robotic,     5       29. SK TL 219     Prevention of ruptures     Replacement,     5       29. SK TL 219     Prevention of ruptures     IDO's Inspection, Repair 5       29. SK TL 219     Prevention of ruptures     Pressure Regulating,     5       29. SK TL 219     Prevention of ruptures     Pressure Regulating,     5       29. SK TL 219     Prevention of ruptures     ILl Program. Robotic,     5       29. SK TL 219     Prevention of ruptures,     Hudrostatic Testing,     5       29. SK TL 219     Prevention of relasks with significant consequences     ILl Program. Robotic,     5       29. SK TL 219     Prevention of feasks with significant consequences     Replacement,     4       29. SK TL 219     Prevention of feasks with significant consequences     Replacement,     4       29. SK TL 219     Prevention of feasks with significant consequences     Replacement,     4       29. SK TL 219     Prevention of feasks with significant consequences     Replacement,     4       29. SK TL 219     Prevent			Replacement:	
28. R8/TU.168     Technical certainty     Hydrostatic Testing,     3       28. R8/TU.168     Technical certainty     Status Quo: Modified,     2       29. SKI 12.19     Prevention of ruptures     III Program:     5       29. SKI 12.19     Prevention of ruptures     III Program:     5       29. SKI 12.19     Prevention of ruptures     IIII Program:     5       29. SKI 12.19     Prevention of ruptures     100% inspection, Repair     5       29. SKI 12.19     Prevention of ruptures     100% inspection, Repair     5       29. SKI 12.19     Prevention of ruptures     Hydrostatic Testing,     5       29. SKI 12.19     Prevention of ruptures     Hydrostatic Testing,     5       29. SKI 12.19     Prevention of ruptures     Status Quo: Modified,     2       29. SKI 12.19     Prevention of leaks with significant consequences     III Program: Robotic;     5       29. SKI 12.19     Prevention of leaks with significant consequences     100% inspection, Repair     4       29. SKI 12.19     Prevention of leaks with significant consequences     Hydrostatic Testing,     0       29. SKI 12.19     Prevention of leaks with significant consequences     Hydrostatic Testing,     0       29. SKI 12.19     Prevention of leaks with significant consequences     Hydrostatic Testing,     0       29. SK	28. KBY LTL 168			
28. K87 LTI 168     Technical certainty     Status Quo: Modified     2       29. SK UT. 219     Prevention of ruptures     ILI Program.     5       29. SK UT. 219     Prevention of ruptures     ILI Program.     6       29. SK UT. 219     Prevention of ruptures     ID0% Inspection. Repair     5       29. SK UT. 219     Prevention of ruptures     ID0% Inspection. Repair     5       29. SK UT. 219     Prevention of ruptures     Pressure Regulating.     5       29. SK UT. 219     Prevention of ruptures     Horsonian.     5       29. SK UT. 219     Prevention of ruptures     Horsonian.     5       29. SK UT. 219     Prevention of ruptures     ILI Program.     5       29. SK UT. 219     Prevention of ruptures     ILI Program.     5       29. SK UT. 219     Prevention of ruptures     ILI Program.     6       29. SK UT. 219     Prevention of relask with significant consequences     ILI Program. Robotic:     5       29. SK UT. 219     Prevention of leasks with significant consequences     Prostiton Repair     4       29. SK UT. 219     Prevention of leasks with significant consequences     Prostiton Repair     4       29. SK UT. 219     Prevention of leasks with significant consequences     Prostiton Repair     5       29. SK UT. 219     Prevention of leask with significant			Hydrostatic Testing	3
29. SK III. 219     Prevention of ruptures     III Program.     52       29. SK III. 219     Prevention of ruptures     Replacement.     52       29. SK III. 219     Prevention of ruptures     III. 2007 and 1000 for tuptures       29. SK III. 219     Prevention of ruptures     Presention of ruptures       29. SK III. 219     Prevention of ruptures     Hordstatic Testing.       29. SK III. 219     Prevention of ruptures     Hordstatic Testing.       29. SK III. 219     Prevention of ruptures     Hordstatic Testing.       29. SK III. 219     Prevention of ruptures     III. Program.       29. SK III. 219     Prevention of ruptures     III. Program.       29. SK III. 219     Prevention of ruptures     III. Program.       29. SK III. 219     Prevention of leaks with significant consequences     III. Program.       29. SK III. 219     Prevention of leaks with significant consequences     Prostotion fleaks with significant consequences     Prostotion fleaks with significant consequences       29. SK III. 219     Prevention of leaks with significant consequences     Status Quo: Modified     2       29. SK III. 219     Prevention of leaks with significant consequences     Hydrostatic Testing     0       29. SK III. 219     Proactive asst management     III. Program. Robotic:     4       29. SK III. 219     Proactive asst management     Replacem				
29. SSK III. 219     Prevention of ruptures     III Program. Robotic:     5       29. SSK III. 219     Prevention of ruptures     100% inspection, Repair     5       29. SSK III. 219     Prevention of ruptures     100% inspection, Repair     5       29. SSK III. 219     Prevention of ruptures     100% inspection, Repair     5       29. SSK III. 219     Prevention of ruptures     100% inspection, Repair     5       29. SSK III. 219     Prevention of ruptures     110 Program. Robotic:     5       29. SSK III. 219     Prevention of leaks with significant consequences     110 Program. Robotic:     5       29. SSK III. 219     Prevention of leaks with significant consequences     100% inspection, Repair     2       29. SSK III. 219     Prevention of leaks with significant consequences     100% inspection, Repair     2       29. SSK III. 219     Prevention of leaks with significant consequences     100% inspection, Repair     2       29. SSK III. 219     Prevention of leaks with significant consequences     100% inspection, Repair     2       29. SSK III. 219     Prevention of leaks with significant consequences     100% inspection, Repair     2       29. SSK III. 219     Prevention of leaks with significant consequences     100% inspection, Repair     2       29. SSK III. 219     Prevention of leaks with significant consequences     100% inspection, Repair<		Technical certainty	Status Quo: Modified	
29. SK II. 219     Prevention of ruptures     Replacement:     5       29. SK II. 219     Prevention of ruptures     100% inspection, Repair     5       29. SK II. 219     Prevention of ruptures     Hordstatic Testing,     5       29. SK II. 219     Prevention of ruptures     Hordstatic Testing,     5       29. SK II. 219     Prevention of ruptures     Hordstatic Testing,     5       29. SK II. 219     Prevention of ruptures     Hordstatic Testing,     5       29. SK II. 219     Prevention of ruptures     III. Program:     5       29. SK II. 219     Prevention of leaks with significant consequences     III. Program:     5       29. SK II. 219     Prevention of leaks with significant consequences     Replacement;     4       29. SK II. 219     Prevention of leaks with significant consequences     Prostore asket management     100% inspection, Repair       29. SK II. 219     Prevention of leaks with significant consequences     Status Quo: Modified     2       29. SK II. 219     Proactive asket management     III. Program: Robotic:     4       29. SK II. 219     Proactive asket management     III. Program: Cobotic:     5       29. SK II. 219     Proactive asket management     III. Program: Cobotic:     2       29. SK II. 219     Proactive asket management     Replacement;     4			ILI Program:	
29. SSK II. 219     Prevention of ruptures     100% inspection, Repair     5       29. SSK II. 219     Prevention of ruptures     Hydrostatic Testing     5       29. SSK II. 219     Prevention of ruptures     Status Quo: Modified     2       29. SSK II. 219     Prevention of ruptures     Status Quo: Modified     2       29. SSK II. 219     Prevention of reaks with significant consequences     III Program. Robotic:     5       29. SSK II. 219     Prevention of feaks with significant consequences     III Program. Robotic:     5       29. SSK II. 219     Prevention of feaks with significant consequences     III Program. Robotic:     5       29. SSK II. 219     Prevention of feaks with significant consequences     Presection Reserves     100% inspection, Repair       29. SSK II. 219     Prevention of feaks with significant consequences     Hydrostatic Testing     0       29. SSK II. 219     Prevention of feaks with significant consequences     Hydrostatic Testing     0       29. SSK II. 219     Prevention of feaks with significant consequences     Hydrostatic Testing     0       29. SSK II. 219     Prevention of feaks with significant consequences     Hydrostatic Testing     0       29. SSK II. 219     Proactive asset management     H Program. Robotic:     4       29. SSK II. 219     Proactive asset management     Pressure Regulating     0			ILI Program - Robotic:	5
29. SS III. 219     Prevention of ruptures     Pressure Regulating.     S       29. SS III. 219     Prevention of ruptures     Hydrostatic Testing.     S       29. SS III. 219     Prevention of ruptures     Environment of the second	29. SSK LTL 219	Prevention of ruptures	Replacement:	5
29. SS KIT. 219     Prevention of ruptures     Pressure Regulating.     55       29. SS KIT. 219     Prevention of ruptures     Hydrostatic Testing.     57       29. SS KIT. 219     Prevention of ruptures     Environment of the set of the se	29. SSK LTL 219	Prevention of ruptures	100% Inspection, Repair	5
29. SSK III. 219     Prevention of ruptures     Hydrostatic Testing     5       29. SSK III. 219     Prevention of ruptures     Status Quo: Modified     2       29. SSK III. 219     Prevention of leaks with significant consequences     ILI Program. Robotic:     5       29. SSK III. 219     Prevention of leaks with significant consequences     ILI Program. Robotic:     5       29. SSK III. 219     Prevention of leaks with significant consequences     ILI Program. Robotic:     5       29. SSK III. 219     Prevention of leaks with significant consequences     ILI Program. Robotic:     5       29. SSK III. 219     Prevention of leaks with significant consequences     Hydrostatic Testing     0       29. SSK III. 219     Prevention of leaks with significant consequences     Hydrostatic Testing     0       29. SSK III. 219     Prevention of leaks with significant consequences     Hydrostatic Testing     0       29. SSK III. 219     Prevention of leaks with significant consequences     Hydrostatic Testing     0       29. SSK III. 219     Proactive asset management     ILI Program. Robotic:     4       29. SSK III. 219     Proactive asset management     Presection Repair     0       29. SSK III. 219     Proactive asset management     Hydrostatic Testing     0       29. SSK III. 219     Proactive asset management     Hydrostating     0 <t< td=""><td>29. SSK LTL 219</td><td>Prevention of ruptures</td><td>Pressure Regulating</td><td>5</td></t<>	29. SSK LTL 219	Prevention of ruptures	Pressure Regulating	5
29. SSK IT. 219     Prevention of leaks with significant consequences     IJI Program. Robotic:       29. SSK IT. 219     Prevention of leaks with significant consequences     IB Program. Robotic:       29. SSK IT. 219     Prevention of leaks with significant consequences     IB Program. Robotic:       29. SSK IT. 219     Prevention of leaks with significant consequences     IDX Insection. Repair       29. SSK IT. 219     Prevention of leaks with significant consequences     Pressure Begulating.       29. SSK IT. 219     Prevention of leaks with significant consequences     Pressure Begulating.       29. SSK IT. 219     Prevention of leaks with significant consequences     IJ Wrogram.       29. SSK IT. 219     Prevention of leaks with significant consequences     III Program.       29. SSK IT. 219     Prevention of leaks with significant consequences     III Program.       29. SSK IT. 219     Proactive asset management     III Program.       29. SSK IT. 219     Proactive asset management     Replacementi.       29. SSK IT. 219     Proactive asset management     Pressure Begulating.       29. SSK IT. 219     Proactive asset management     Pressure Begulating.       29. SSK IT. 219     Proactive asset management     Pressure Begulating.       29. SSK IT. 219     Proactive asset management     Hydrostatic Testing.       29. SSK IT. 219     Proactive asset management     Hydrostatic Testing.<	29. SSK LTL 219			5
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29. SK III. 219     Prevention of leaks with significant consequences.     IL Program. Robotic:.     5       29. SK III. 219     Prevention of leaks with significant consequences.     100% Inspection, Repair     4       29. SK III. 219     Prevention of leaks with significant consequences.     100% Inspection, Repair     4       29. SK III. 219     Prevention of leaks with significant consequences.     Hydrostatic Testing.     0       29. SK III. 219     Prevention of leaks with significant consequences.     Hydrostatic Testing.     0       29. SK III. 219     Prevention of leaks with significant consequences.     Hydrostatic Testing.     0       29. SK III. 219     Prevention of leaks with significant consequences.     Hydrostatic Testing.     0       29. SK III. 219     Prevention of leaks with significant consequences.     Hydrostatic Testing.     0       29. SK III. 219     Proactive asset management.     Hydrostatic Testing.     0       29. SK III. 219     Proactive asset management.     Hydrostatic Testing.     0       29. SK III. 219     Proactive asset management.     Hydrostatic Testing.     0       29. SK III. 219     Proactive asset management.     Hydrostatic Testing.     0       29. SK III. 219     Proactive asset management.     Hydrostatic Testing.     0       29. SK III. 219     Technical certainty.     HJ Program.     5	29. SSK [TL 219	Prevention of leaks with significant consequences		5
29. SS KIT. 219     Prevention of leaks with significant consequences     Replacement,       29. SS KIT. 219     Prevention of leaks with significant consequences     100% inspection, Repair       29. SS KIT. 219     Prevention of leaks with significant consequences     Hydrostatic Testing,     0       29. SS KIT. 219     Prevention of leaks with significant consequences     Hydrostatic Testing,     0       29. SS KIT. 219     Prevention of leaks with significant consequences     Hydrostatic Testing,     0       29. SS KIT. 219     Prevention of leaks with significant consequences     Status Quo: Modified,     2       29. SS KIT. 219     Prevention of leaks with significant consequences     Hydrostatic Testing,     0       29. SS KIT. 219     Proactive asset management     IJ Program: 6bobit;     4       29. SS KIT. 219     Proactive asset management     Pressure Regulating,     0       29. SS KIT. 219     Proactive asset management     Pressure Regulating,     0       29. SS KIT. 219     Proactive asset management     Status Quo: Modified,     1       29. SS KIT. 219     Proactive asset management     Status Quo: Modified,     0       29. SS KIT. 219     Proactive asset management     Status Quo: Modified,     0       29. SS KIT. 219     Technical certainty     IJ Program:     4       29. SSK IT. 219     Technical certainty		Prevention of leaks with significant consequences		5
29. SSK ITI. 219     Prevention of leaks with significant consequences     100% inspection, Bepair     4       29. SSK ITI. 219     Prevention of leaks with significant consequences     Pressure Regulating,     0       29. SSK ITI. 219     Prevention of leaks with significant consequences     Hydrostatic Testing,     0       29. SSK ITI. 219     Prevention of leaks with significant consequences     Status Quo: Modified     2       29. SSK ITI. 219     Prevention of leaks with significant consequences     Status Quo: Modified     2       29. SSK ITI. 219     Proactive asset management     ILI Program. Robotic:     4       29. SSK ITI. 219     Proactive asset management     100% inspection, Repair     2       29. SSK ITI. 219     Proactive asset management     100% inspection, Repair     2       29. SSK ITI. 219     Proactive asset management     Hydrostatic Testing,     0       29. SSK ITI. 219     Proactive asset management     Hydrostatic Testing,     0       29. SSK ITI. 219     Proactive asset management     Hydrostatic Testing,     0       29. SSK ITI. 219     Proactive asset management     Hydrostatic Testing,     0       29. SSK ITI. 219     Technical certainty     ILI Program.     4       29. SSK ITI. 219     Technical certainty     IL Program.     4       29. SSK ITI. 219     Technical certainty		Provention of leaks with significant consequences		
29. SSK IT. 219     Prevention of leaks with significant consequences     Pressure Regulating.     0       29. SSK IT. 219     Prevention of leaks with significant consequences     Hydrostatic Testing.     0       29. SSK IT. 219     Prevention of leaks with significant consequences     Hydrostatic Testing.     0       29. SSK IT. 219     Prevention of leaks with significant consequences     Status Que: Modified.     2     2       29. SSK IT. 219     Proactive asset management     ILP Program. Bobotic.     4       29. SSK IT. 219     Proactive asset management     102% Inspection, Repair.     4       29. SSK IT. 219     Proactive asset management     Proscative asset management     2       29. SSK IT. 219     Proactive asset management     Proscative asset management     4       29. SSK IT. 219     Proactive asset management     Hydrostatic Testing.     6       29. SSK IT. 219     Proactive asset management     Status Que: Modified     1       29. SSK IT. 219     Proactive asset management     Status Que: Modified     1       29. SSK IT. 219     Proactive asset management     Status Que: Modified     2       29. SSK IT. 219     Proactive asset management     Hydrostatic Testing.     6       29. SSK IT. 219     Proble certainty     Hydrostatic Resplay     2       29. SSK IT. 219     Technical certainty <td></td> <td></td> <td></td> <td></td>				
29. SSK ITI 219     Prevention of leaks with significant consequences     Hydrostatic Testing     0       29. SSK ITI 219     Prevention of leaks with significant consequences     Status Quo: Modified     2       29. SSK ITI 219     Proactive asset management     ILI Program. 6botic:     4       29. SSK ITI 219     Proactive asset management     ILI Program. 6botic:     4       29. SSK ITI 219     Proactive asset management     100% inspection, Repair       29. SSK ITI 219     Proactive asset management     100% inspection, Repair       29. SSK ITI 219     Proactive asset management     100% inspection, Repair       29. SSK ITI 219     Proactive asset management     Hydrostatic Testing.       29. SSK ITI 219     Proactive asset management     Hydrostatic Testing.       29. SSK ITI 219     Proactive asset management     Hydrostatic Testing.       29. SSK ITI 219     Technical certainty     ILI Program:       29. SSK ITI 219     Technical certainty     ILI Program:       29. SSK ITI 219     Technical certainty     ILI Program:       29. SSK ITI 219     Technical certainty     Replacement:       29. SSK ITI 21	29. 55K LTL 219	Prevention of leaks with significant consequences	100% Inspection, Repair	
29. SSK UT. 219         Prevention of leaks with significant consequences         Status Quo: Modified         2           29. SSK UT. 219         Proactive asset management         ILI Program: 50-50-50-50-50-50-50-50-50-50-50-50-50-5				0
29. SS KIT. 219         Proactive asset management         ILI Program:         5           29. SS KIT. 219         Proactive asset management         ILI Program:         62           29. SS KIT. 219         Proactive asset management         ID2% Inspection, Repair         22           29. SS KIT. 219         Proactive asset management         ID2% Inspection, Repair         22           29. SS KIT. 219         Proactive asset management         Proscience Regulating, 0         0           29. SS KIT. 219         Proactive asset management         Hydrostatic Testing, 0         0           29. SS KIT. 219         Proactive asset management         Status Que: Modified, 0         0           29. SS KIT. 219         Proactive asset management         Status Que: Modified, 0         0           29. SS KIT. 219         Proactive asset management         Status Que: Modified, 0         0           29. SS KIT. 219         Problemail certainty         ILI Program. Abobit:         4           29. SS KIT. 219         Technical certainty         ILI Program. Robotit:         5           29. SSK IT. 219         Technical certainty         100% Inspection, Repair         2           29. SSK IT. 219         Technical certainty         100% Inspection, Repair         3           29. SSK IT. 219         Technical cer				
29. SSK III. 219     Proactive asset management     III Program. Robotic:     4       29. SSK III. 219     Proactive asset management     Replacement:     4       29. SSK III. 219     Proactive asset management     100% Inspection, Repair     2       29. SSK III. 219     Proactive asset management     Pressure Regulating     0       29. SSK III. 219     Proactive asset management     Hydrostatic Testing,     0       29. SSK III. 219     Proactive asset management     Hydrostatic Testing,     0       29. SSK III. 219     Proactive asset management     Hydrostatic Testing,     0       29. SSK III. 219     Proactive asset management     Status Que: Modified     1       29. SSK III. 219     Technical certainty     III Program. Robotic:,     3       29. SSK III. 219     Technical certainty     Replacement:     5       29. SSK III. 219     Technical certainty     100% Inspection, Repair, IS     5       29. SSK III. 219     Technical certainty     Pressure Regulating, 3     3       29. SSK III. 219     Technical certainty     Hydrostatic Testing, 3       29. SSK III. 219     Technical certainty     Hydrostatic Testing, 3       29. SSK III. 219     Technical certainty     Hydrostatic Testing, 3		Prevention of leaks with significant consequences		
29. SSK LTI. 219     Proactive asset management.     Replacement.     Replacement.       29. SSK LTI. 219     Proactive asset management     100% inspection. Repair     2       29. SSK LTI. 219     Proactive asset management     Pressive asset management     23. SSK LTI. 219     Proactive asset management     Hydrostatic Testing.     0       29. SSK LTI. 219     Proactive asset management     Status Quo: Modified     0       29. SSK LTI. 219     Proactive asset management     Status Quo: Modified     0       29. SSK LTI. 219     Technical certainty     LL Program.     4       29. SSK LTI. 219     Technical certainty     LL Program.     4       29. SSK LTI. 219     Technical certainty     LL Program.     5       29. SSK LTI. 219     Technical certainty     100% inspection, Repair     2       29. SSK LTI. 219     Technical certainty     100% inspection, Repair     3       29. SSK LTI. 219     Technical certainty     100% inspection, Repair     3       29. SSK LTI. 219     Technical certainty     100% inspection, Repair     3       29. SSK LTI. 219     Technical certainty     Hydrostatic Testing.     3		Proactive asset management	ILI Program:	5
29. SSK ITI. 219     Proactive asset management     100% inspection, Repair     2       29. SSK ITI. 219     Proactive asset management     Pressure Regulating     0       29. SSK ITI. 219     Proactive asset management     Hydrostatic Testing     0       29. SSK ITI. 219     Proactive asset management     Hydrostatic Testing     0       29. SSK ITI. 219     Proactive asset management     Status Que: Modified     1       29. SSK ITI. 219     Technical certainty     ILI Program:     4       29. SSK ITI. 219     Technical certainty     Replacement:     5       29. SSK ITI. 219     Technical certainty     100% Inspection, Repair     5       29. SSK ITI. 219     Technical certainty     100% Inspection, Repair     5       29. SSK ITI. 219     Technical certainty     100% Inspection, Repair     5       29. SSK ITI. 219     Technical certainty     Horse Regulating     3       29. SSK ITI. 219     Technical certainty     Hydrostatic Testing     3       29. SSK ITI. 219     Technical certainty     Hydrostatic Testing     3			ILI Program - Robotic:	4
29. SSK UT 219     Proactive asset management     Pressure Regulating,     0       29. SSK UT 219     Proactive asset management     Hydrostatic Testing,     0       29. SSK UT 219     Proactive asset management     Status Quo: Modified     1       29. SSK UT 219     Productive asset management     Status Quo: Modified     1       29. SSK UT 219     Pechnical certainty     ILI Program.     4       29. SSK UT 219     Technical certainty     ILI Program.     4       29. SSK UT 219     Technical certainty     Replacement.     5       29. SSK UT 219     Technical certainty     100% inspection, Repair     5       29. SSK UT 219     Technical certainty     100% inspection, Repair     3       29. SSK UT 219     Technical certainty     Hydrostatic Testing.     3       29. SSK UT 219     Technical certainty     Mydrostatic Testing.     3       29. SSK UT 219     Technical certainty     Hydrostatic Testing.     3		Proactive asset management	Replacement:	4
29. SSK LTL 219         Proactive asset management         Hydrostatic Testing         0           29. SSK LTL 219         Proactive asset management         Status Que: Modified         1           29. SSK LTL 219         Technical certainty         LLP Program:         4           29. SSK LTL 219         Technical certainty         LLP Program:         4           29. SSK LTL 219         Technical certainty         Replacement:         5           29. SSK LTL 219         Technical certainty         Replacement:         5           29. SSK LTL 219         Technical certainty         100% Inspection, Repair         4           29. SSK LTL 219         Technical certainty         Hord Status Certainty         5           29. SSK LTL 219         Technical certainty         Hord Status Certainty         4           29. SSK LTL 219         Technical certainty         Hord Status Certainty         3           29. SSK LTL 219         Technical certainty         Hydrostatic Testing         3           29. SSK LTL 219         Technical certainty         Hydrostatic Testing         3			100% Inspection, Repair	
29. SK LTL 219     Proactive asset management     Hydrostatic Testing     O       29. SK LTL 219     Proactive asset management     Status Quo: Modified     1       29. SK LTL 219     Proactive asset management     Status Quo: Modified     1       29. SK LTL 219     Technical certainty     LLP Pogram: About Company     4       29. SK LTL 219     Technical certainty     Replacement: So SK LTL 219     Technical certainty       29. SK LTL 219     Technical certainty     Pressure Regulating, 3       29. SK LTL 219     Technical certainty     Pressure Regulating, 3       29. SSK LTL 219     Technical certainty     Hydrostatic Testing, 3       29. SK LTL 219     Technical certainty     Hydrostatic Testing, 3				0
29. SSK IT. 219         Technical certainty         LIP Program: Internical certainty         LIP rogram: Internical certainty           29. SSK IT. 219         Technical certainty         Replacement: 29. SSK IT. 219         Stephical certainty         Stephical certainty           29. SSK IT. 219         Technical certainty         100% inspection, Repair 29. SSK IT. 219         Technical certainty         100% inspection, Repair 29. SSK IT. 219         Technical certainty         Pressure Regulating 30. SSK IT. 219         Technical certainty         Hydrostatic Testing 30. SSK IT. 219         Technical certainty         Stephical certainty         St	29. SSK LTL 219		Hydrostatic Testing	0
29. SSK IT. 219         Technical certainty         LIP Program: Internical certainty         LIP rogram: Internical certainty           29. SSK IT. 219         Technical certainty         Replacement: 29. SSK IT. 219         Stephical certainty         Stephical certainty           29. SSK IT. 219         Technical certainty         100% inspection, Repair 29. SSK IT. 219         Technical certainty         100% inspection, Repair 29. SSK IT. 219         Technical certainty         Pressure Regulating 30. SSK IT. 219         Technical certainty         Hydrostatic Testing 30. SSK IT. 219         Technical certainty         Stephical certainty         St	29. SSK LTL 219	Proactive asset management	Status Quo: Modified	1
29. SS K IT. 219         Technical certainty         III Program - Robotic:         3           29. SSK IT. 219         Technical certainty         Replacement:         5           29. SSK IT. 219         Technical certainty         100% inspection, Repair         4           29. SSK IT. 219         Technical certainty         Pressure Regulating         3           29. SSK IT. 219         Technical certainty         Pressure Regulating         3           29. SSK IT. 219         Technical certainty         Hydrostatic Testing,         3	29. SSK LTL 219		ILI Program:	4
29. SSK LTL 219         Technical certainty         Replacement.         5           29. SSK LTL 219         Technical certainty         100% Inspection, Repair         5           29. SSK LTL 219         Technical certainty         Pressure Regulating         3           29. SSK LTL 219         Technical certainty         Pressure Regulating         3           29. SSK LTL 219         Technical certainty         Hydrostatic Testing         3	29. SSK LTL 219	Technical certainty	ILI Program - Robotic:	3
29. SSK LTL 219     Technical certainty     100% Inspection, Repair     4       29. SSK LTL 219     Technical certainty     Pressure Regulating     3       29. SSK LTL 219     Technical certainty     Hydrostatic Testing     3				5
29. SXk LTL 219         Technical certainty         Pressure Regulating         3           29. SXk LTL 219         Technical certainty         Hydrostatic Testing         3				4
	29. SSK LTL 219	Technical certainty	Pressure Regulating	3
29. SSK UTL 219 Technical certainty Status Quo: Modified 2	29. SSK LTL 219	Technical certainty	Hydrostatic Testing	3
	29. SSK LTL 219	Technical certainty	Status Quo: Modified	2

	Filialicial		
Lateral	Category	Alternative Evaluation Criteria	Scores

	Project Execution & Lifecycle O		
Lateral	Category	Alternative Evaluation Criteria	Score
20. CAS NEL 168	Lands & ROW	ILI Program:	3
20. CAS NEL 168	Lands & ROW	ILI Program - Robotic:	3
20. CAS NEL 168	Lands & ROW	Replacement: Replacement	1
20. CAS NEL 168	Lands & ROW	100% Inspection, Repair &	2
20. CAS NEL 168	Lands & ROW		4
20. CAS NEL 168	Lands & ROW	Pressure Regulating Hydrostatic Testing	1
20.000022100	Lands & Now	invulostatic resting	-
20. CAS NEL 168	Lands & ROW	Status Quo: Modified	4
20. CAS NEL 168	Consultation and Engagement Complexity	ILI Program:	3
20. CAS NEL 168	Consultation and Engagement Complexity	ILI Program - Robotic:	4
20. CAS NEL 168	Consultation and Engagement Complexity	Replacement: Replacement	2
20. CAS NEL 168	Consultation and Engagement Complexity	100% Inspection, Repair &	1
20. CAS NEL 168	Consultation and Engagement Complexity	Pressure Regulating	4
20. CAS NEL 168	Consultation and Engagement Complexity	Hydrostatic Testing	1
20. CAS NEL 168	Consultation and Engagement Complexity	Status Quo: Modified	2
20. CAS NEL 168	Operational Complexity	ILI Program:	3
20. CAS NEL 168	Operational Complexity	ILI Program - Robotic:	3
20. CAS NEL 168	Operational Complexity	Replacement: Replacement	5
20. CAS NEL 168	Operational Complexity	100% Inspection, Repair &	2
20. CAS NEL 168	Operational Complexity	Pressure Regulating	3
20. CAS NEL 168	Operational Complexity	Hydrostatic Testing	1
20. OKS NEE 108	Operational complexity	invulostatic resting	-
20. CAS NEL 168	Operational Complexity	Status Quo: Modified	1
20. CAS NEL 168 20. CAS NEL 168	System Capacity & Customer Impacts	III Program:	4
20. CAS NEL 168 20. CAS NEL 168	System Capacity & Customer Impacts	ILI Program: III Program - Robotic:	4
20. CAS NEL 168 20. CAS NEL 168		ILI Program - Robotic: Replacement: Replacement	4
	System Capacity & Customer Impacts	Replacement: Replacement	5
20. CAS NEL 168	System Capacity & Customer Impacts	100% Inspection, Repair &	-
20. CAS NEL 168	System Capacity & Customer Impacts	Pressure Regulating	5
20. CAS NEL 168	System Capacity & Customer Impacts	Hydrostatic Testing	0
20.010.00		Charles On a Martin 1	*
20. CAS NEL 168 20. CAS NEL 168	System Capacity & Customer Impacts Project Execution Certainty	Status Quo: Modified	3
		ILI Program:	
20. CAS NEL 168	Project Execution Certainty	ILI Program - Robotic:	2
20. CAS NEL 168	Project Execution Certainty	Replacement: Replacement	3
20. CAS NEL 168	Project Execution Certainty	100% Inspection, Repair &	2
20. CAS NEL 168	Project Execution Certainty	Pressure Regulating	4
20. CAS NEL 168	Project Execution Certainty	Hydrostatic Testing	1
20. CAS NEL 168	Project Execution Certainty	Status Quo: Modified	5
21. TRA LTL 168	Environmental	ILI Program:	4
21. TRA LTL 168	Environmental	ILI Program - Robotic:	4
21. TRA LTL 168	Environmental	Replacement: Replacement	3
21. TRA LTL 168	Environmental	100% Inspection, Repair &	2
21. TRA LTL 168	Environmental	Pressure Regulating	4
21. TRA LTL 168	Environmental	Hydrostatic Testing	1
21. TRA LTL 168	Environmental	Status Quo: Modified	3
21. TRA LTL 168	Lands & ROW	ILI Program:	2
21. TRA LTL 168	Lands & ROW	ILI Program - Robotic:	2
21. TRA LTL 168	Lands & ROW	Replacement: Replacement	1
21. TRA LTL 168	Lands & ROW	100% Inspection, Repair &	1
21. TRA LTL 168	Lands & ROW	Pressure Regulating	4
21. TRA LTL 168	Lands & ROW	Hydrostatic Testing	1
21. TRA LTL 168	Lands & ROW	Status Quo: Modified	2
21. TRA LTL 168	Consultation and Engagement Complexity	ILI Program:	2
21. TRA LTL 168	Consultation and Engagement Complexity	ILI Program - Robotic:	3
21. TRA LTL 168	Consultation and Engagement Complexity	Replacement: Replacement	2
21. TRA LTL 168	Consultation and Engagement Complexity	100% Inspection, Repair &	1
21. TRA LTL 168	Consultation and Engagement Complexity	Pressure Regulating	3
21. TRA LTL 168	Consultation and Engagement Complexity	Hydrostatic Testing	1
21. TRA LTL 168	Consultation and Engagement Complexity	Status Quo: Modified	2
21. TRA LTL 168	Operational Complexity	ILI Program:	3
21. TRA LTL 168	Operational Complexity	ILI Program - Robotic:	3
21. TRA LTL 168	Operational Complexity	Replacement: Replacement	5
21. TRA LTL 168	Operational Complexity	100% Inspection, Repair &	3
21. TRA LTL 168	Operational Complexity	Pressure Regulating	3
21. TRA LTL 168	Operational Complexity	Hydrostatic Testing	1
21. TRA LTL 168	Operational Complexity	Status Quo: Modified	1
21. TRA LTL 168	System Capacity & Customer Impacts	ILI Program:	4
21. TRA LTL 168	System Capacity & Customer Impacts	ILI Program - Robotic:	4
21. TRA LTL 168	System Capacity & Customer Impacts	Replacement: Replacement	5
	System Capacity & Customer Impacts	100% Inspection, Repair &	4
21. TRA LTL 168	System Capacity & Customer Impacts	Pressure Regulating	5
21. TRA LTL 168 21. TRA LTL 168	System Capacity & Customer Impacts	Hydrostatic Testing	0
21. TRA LTL 168			
	System capacity & customer impacts		3
21. TRA LTL 168		Status Quo: Modified	
21. TRA LTL 168 21. TRA LTL 168	System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty	Status Quo: Modified ILI Program:	3
21. TRA LTL 168 21. TRA LTL 168 21. TRA LTL 168 21. TRA LTL 168	System Capacity & Customer Impacts Project Execution Certainty	ILI Program:	3
21. TRA LTL 168 21. TRA LTL 168	System Capacity & Customer Impacts Project Execution Certainty Project Execution Certainty	ILI Program: ILI Program - Robotic:	2
21. TRA LTL 168 21. TRA LTL 168	System Capacity & Customer Impacts Project Execution Certainty Project Execution Certainty Project Execution Certainty	ILI Program: ILI Program - Robotic: Replacement: Replacement	2
21. TRA LTL 168 21. TRA LTL 168	System Capacity & Customer Impacts Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty	ILI Program: ILI Program - Robotic: Replacement: Replacement 100% Inspection, Repair &	2 3 2
21. TRA LTL 168 21. TRA LTL 168	System Capacity & Customer Impacts Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty	ILI Program:           ILI Program - Robotic:           Replacement: Replacement           100% Inspection, Repair &           Pressure Regulating	2 3 2 4
21. TRA LTL 168 21. TRA LTL 168	System Capacity & Customer Impacts Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty	ILI Program: ILI Program - Robotic: Replacement: Replacement 100% Inspection, Repair &	2 3 2

Technical			
Lateral	Category	Alternative Evaluation Criteria	Scores

	Financial		
Lateral	Category	Alternative Evaluation Criteria	Scores

	Project Execution & Lifecycle Op	peration	
Lateral	Category	Alternative Evaluation Criteria	Score
FRD LTL 219	Environmental	ILI Program:	3
FRD LTL 219	Environmental	ILI Program - Robotic:	3
FRD LTL 219	Environmental	Replacement: Replacement	1
FRD LTL 219	Environmental	100% Inspection, Repair &	1
FRD LTL 219	Environmental	Pressure Regulating	4
FRD LTL 219	Environmental	Hydrostatic Testing	1
THE LICENS	chini chini chi an	inverostatic resting	1
FRD ITL 219	Environmental	Status Quo: Modified	3
FRD LTL 219	Lands & ROW	ILI Program:	3
. FRD LTL 219	Lands & ROW	ILI Program - Robotic:	3
. FRD LTL 219	Lands & ROW	ILI Program - Robotic.	1
. FRD LTL 219	Lands & ROW	Replacement: Replacement	2
. FRD LTL 219	Lands & ROW	100% Inspection, Repair &	4
		Pressure Regulating	
FRD LTL 219	Lands & ROW	Hydrostatic Testing	1
FRD LTL 219	Lands & ROW		4
		Status Quo: Modified	
FRD LTL 219	Consultation and Engagement Complexity	ILI Program:	2
FRD LTL 219	Consultation and Engagement Complexity	ILI Program - Robotic:	3
FRD LTL 219	Consultation and Engagement Complexity	Replacement: Replacement	1
FRD LTL 219	Consultation and Engagement Complexity	100% Inspection, Repair &	1
. FRD LTL 219	Consultation and Engagement Complexity	Pressure Regulating	3
FRD LTL 219	Consultation and Engagement Complexity	Hydrostatic Testing	1
FRD LTL 219	Consultation and Engagement Complexity	Status Quo: Modified	1
FRD LTL 219	Operational Complexity	ILI Program:	4
FRD LTL 219	Operational Complexity	ILI Program - Robotic:	4
. FRD LTL 219	Operational Complexity Operational Complexity		5
. FRD LTL 219	Operational Complexity Operational Complexity	Replacement: Replacement	3
. FRD LTL 219 . FRD LTL 219		100% Inspection, Repair &	3
	Operational Complexity	Pressure Regulating	
FRD LTL 219	Operational Complexity	Hydrostatic Testing	1
		-	
FRD LTL 219	Operational Complexity	Status Quo: Modified	1
FRD LTL 219	System Capacity & Customer Impacts	ILI Program:	4
. FRD LTL 219	System Capacity & Customer Impacts	ILI Program - Robotic:	4
FRD LTL 219	System Capacity & Customer Impacts	Replacement: Replacement	5
FRD LTL 219	System Capacity & Customer Impacts	100% Inspection, Repair &	4
FRD LTL 219	System Capacity & Customer Impacts	Pressure Regulating	0
FRD LTL 219	System Capacity & Customer Impacts	Hydrostatic Testing	0
			-
FRD LTL 219	System Capacity & Customer Impacts	Status Quo: Modified	3
FRD LTL 219	Project Execution Certainty		3
FRD ITL 219	Project Execution Certainty	ILI Program: ILI Program - Robotic:	2
FRD LTL 219			3
	Project Execution Certainty	Replacement: Replacement	
FRD LTL 219	Project Execution Certainty	100% Inspection, Repair &	2
FRD LTL 219	Project Execution Certainty	Pressure Regulating	4
FRD LTL 219	Project Execution Certainty	Hydrostatic Testing	1
. FRD LTL 219	Project Execution Certainty	Status Quo: Modified	5
. ELK LTL 168	Environmental	ILI Program:	3
. ELK LTL 168 . ELK LTL 168	Environmental Environmental	ILI Program: ILI Program - Robotic:	3
. ELK LTL 168 . ELK LTL 168 . ELK LTL 168	Environmental Environmental Environmental	ILI Program: ILI Program - Robotic: Replacement: Replacement	3
. ELK LTL 168 . ELK LTL 168	Environmental Environmental	ILI Program: ILI Program - Robotic: Replacement: Replacement	3
. ELK LTL 168 . ELK LTL 168 . ELK LTL 168 . ELK LTL 168	Environmental Environmental Environmental	ILI Program: ILI Program - Robotic:	3
. ELK LTL 168 . ELK LTL 168 . ELK LTL 168	Environmental Environmental Environmental Environmental	ILI Program:           ILI Program - Robotic:           Replacement: Replacement           100% Inspection, Repair &           Pressure Regulating	3 3 2 2
. ELK LTL 168 . ELK LTL 168 . ELK LTL 168 . ELK LTL 168 . ELK LTL 168	Environmental Environmental Environmental Environmental Environmental	ILI Program:           ILI Program - Robotic:           Replacement: Replacement           100% Inspection, Repair &	3 3 2 2 4
. ELK LTL 168 . ELK LTL 168 . ELK LTL 168 . ELK LTL 168 . ELK LTL 168	Environmental Environmental Environmental Environmental Environmental	ILI Program: ILI Program - Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing	3 3 2 2 4 1
. ELK LTL 168 . ELK LTL 168	Environmental Environmental Environmental Environmental Environmental Environmental Environmental	<u>ILI Program</u> . <u>Replacement: Replacement</u> 100% inspection, Repair & <u>Pressure Regulating</u> <u>Hydrostatic Testing</u> <u>Status Quo: Modified</u>	3 3 2 2 4
. ELK LTL 168 . ELK LTL 168	Environmental Environmental Environmental Environmental Environmental Environmental Environmental Ands & ROW	ILI Program: ILI Program - Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating, Hydrostatic Testing, Status Quo: Modified ILI Program;	3 3 2 2 2 4 1 3 3
. ELK LTL 168 . ELK LTL 168	Environmental Environmental Environmental Environmental Environmental Environmental Environmental Lands & ROW Lands & ROW	ILI Program: ILI Program - Robatic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: ILI Program - Robatic;	3 3 2 2 2 4 1 3 3 3 3
. ELK LTL 168 . ELK LTL 168	Environmental Environmental Environmental Environmental Environmental Environmental Environmental Environmental Lands & ROW Lands & ROW Lands & ROW	UP Program: IU Program - Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified IU Program: IU Program: IU Program: Replacement: Replacement	3 3 2 2 4 1 3 3 3 3 1
ELK LTL 168 ELK LTL 168	Environmental Environmental Environmental Environmental Environmental Environmental Environmental Environmental Lands & ROW LANDS Lands & ROW LANDS LA	LU Program: ILU Program: - Robotic: Replacement: Replacement 100% inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: ILI Program - Robotic: Replacement: Replacement 100% inspection, Repair &	3 3 2 2 2 4 1 1 3 3 3 3 1 2
ELK LTL 168 ELK LTL 168	Environmental Environmental Environmental Environmental Environmental Environmental Environmental Lands & ROW LAND	UP Program: ILI Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: Robotic: Replacement: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating	3 3 2 2 4 1 1 3 3 3 3 1 2 4
ELK LTL 168 ELK LTL 168	Environmental Environmental Environmental Environmental Environmental Environmental Environmental Environmental Lands & ROW LANDS Lands & ROW LANDS LA	LU Program: ILU Program: - Robotic: Replacement: Replacement 100% inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: ILI Program - Robotic: Replacement: Replacement 100% inspection, Repair &	3 3 2 2 2 4 1 1 3 3 3 3 1 2
ELK LTL 168 ELK LTL 168	Environmental Environmental Environmental Environmental Environmental Environmental Environmental Lands & ROW LANDS &	UP Program: ILI Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: ILI Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing	3 3 2 2 2 4 1 1 3 3 3 1 2 2 4 4 1
ELK LTL 168 ELK LTL 168	Environmental Environmental Environmental Environmental Environmental Environmental Environmental Lands & ROW LAND	LU Program: JU Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing, Status Quo: Modified UI Program: IU Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating, Hydrostatic Testing, Status Quo: Modified	3 3 2 2 2 4 1 1 3 3 3 3 1 2 4 4 1 1
ELK LTL 168 ELK LTL 168	Environmental Environmental Environmental Environmental Environmental Environmental Lands & ROW LANDS	UP Program: ILI Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program:	3 3 2 2 4 1 1 3 3 3 3 1 2 2 4 1 2 4 1 2 4 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
ELK LTL 168 ELK LTL 168	Environmental Environmental Environmental Environmental Environmental Environmental Environmental Environmental Ands & ROW Lands & ROW Consultation and Engagement Complexity	UP Program: UI Program: Robotic: Replacement: Replacement 100% inspection, Repair & Pressure Regulating Hydrostatic Testing. Status Que: Modified UI Program: Replacement: Replacement 100% inspection, Repair & Pressure Regulating Hydrostatic Testing Status Que: Modified IU Program: UI Program: UI Program: Notatic Testing	3 3 2 2 2 4 4 1 1 3 3 3 3 3 3 1 1 2 2 4 4 1 1 2 4 4 3 3 4
ELK LTL 168 ELK LTL 168	Environmental Environmental Environmental Environmental Environmental Environmental Environmental Lands & ROW Consultation and Engagement Complexity Consultation and Engagement Complexity Consultation and Engagement Complexity Consultation and Engagement Complexity	UP Program: ILI Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program:	3 3 2 2 2 2 2 4 4 1 1 3 3 3 3 3 3 3 1 1 2 2 4 4 1 1 2 2 4 4 1 1 2 2 2 2 2 2
ELK LTL 168 ELK LTL 168	Environmental Environmental Environmental Environmental Environmental Environmental Environmental Environmental Ands & ROW Lands & ROW Consultation and Engagement Complexity	UP Program: UI Program: Robotic: Replacement: Replacement 100% inspection, Repair & Pressure Regulating Hydrostatic Testing. Status Que: Modified UI Program: Replacement: Replacement 100% inspection, Repair & Pressure Regulating Hydrostatic Testing Status Que: Modified IU Program: UI Program: UI Program: Notatic Testing	3 3 2 2 2 4 4 1 1 3 3 3 3 3 3 3 1 1 2 2 4 4 1 1 2 4 4 3 3 4 4
ELK LTL 168 ELK LTL 168	Environmental Lands & ROW Consultation and Engagement Complexity Consultation and Engagement	UP Program: ILI Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing. Status Quo: Modified ILI Program: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: ILI Program: Robotic: Replacement: Replacement 100% Inspection, Repair &	3 3 2 2 2 2 2 4 4 1 1 3 3 3 3 3 3 3 1 1 2 2 4 4 1 1 2 2 4 4 1 1 2 2 2 2 2 2
ELK UT. 168 ELK UT. 168	Environmental Environmental Environmental Environmental Environmental Environmental Environmental Environmental Lands & ROW Consultation and Engagement Complexity Consultation and	UP Program: III Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing, Status Que: Modified IU Program: IU Program: IU Program: Replacement: Replacement Pressure Regulating, Hydrostatic Testing, Status Que: Modified IU Program: Batus Que: Modified IU Program: Robotic: Replacement: Replacement: Replacement: Replacement: Replacement: Replacement: Replacement: Replacement: Replacement: Replacement: Repla	3 3 2 2 2 4 4 1 1 3 3 3 3 3 3 1 1 2 2 4 4 1 1 2 2 4 4 1 1 2 2 1 1 1 2 2 2 2
ELK UTL 168 ELK LTL 168	Environmental Lands & ROW Consultation and Engagement Complexity Consultation and Engagement	UP Program: ILI Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing. Status Quo: Modified ILI Program: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: ILI Program: Robotic: Replacement: Replacement 100% Inspection, Repair &	3 3 3 2 2 2 2 2 2 4 4 1 1 2 2 4 4 4 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
EKT. 168 EKK. 17. 168	Environmental Environmental Environmental Environmental Environmental Environmental Environmental Environmental Lands & ROW Consultation and Engagement Complexity Consultation Consultation Consultation Consultation Consultation Consultation Consultation Cons	UP Program: III Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing, III Program: III Program: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating, Hydrostatic Testing, Status Quo: Modified III Program: III Program: Robotic: Replacement: Replacement: Replacement: Replacement: Replacement: Replacement: Replacement: Replacement: Replacement: Replacement: Replacement: Replacement: Replacement: Replacement: Replacement: Replacement: Replacement: Replacement: Pressure Regulating, Hydrostatic Testing, Hydrostatic Testing,	3 3 3 2 2 2 4 1 1 3 3 3 1 1 2 2 4 4 1 1 2 2 4 4 1 1 2 2 4 4 1 1 2 2 3 3 3 1 1 2 2 2 2 4 4 1 1 2 2 2 2 2 2 2 2 2 2
EKT (T) 168 EKT (T) 168	Environmental Lands & ROW Consultation and Engagement Complexity C	UP Program: ILI Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating, Hydrostatic Testing, Status Quo: Modified ILI Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating, Hydrostatic Testing, ILI Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating, Hydrostatic Testing, Status Quo: Modified Status Quo: Modified Status Quo: Modified	3 3 2 2 2 4 4 1 1 3 3 3 3 1 1 2 2 4 4 4 2 1 1 3 3 3 1 2 2 2 4 4 1 1 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
EKTU 168 EKKUT 168	Environmental Environmental Environmental Environmental Environmental Environmental Environmental Environmental Lands & ROW Consultation and Engagement Complexity Consultation and	UP Program: III Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating. Hydrostatic Testing. III Program: III Program: III Program: Replacement 100% Inspection, Repair & Pressure Regulating. Hydrostatic Testing. Status Quo: Modified III Program: III Program: II	3 3 3 2 2 2 4 4 1 1 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
EN KT 1185 ENK TT 165 ENK TT 165 ENK TT 165 ENK TT 168 ENK TT 168	Environmental Environmental Environmental Environmental Environmental Environmental Environmental Environmental Environmental Lands & ROW Consultation and Engagement Complexity Con	UP Program: ILI Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Status Quo: Modified ILI Program: ILI Program: Robotic: Replacement: Replacement: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing ILI Program: Bobotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: Robotic: Status Quo: Modified ILI Program: Status Quo: Modified ILI Program: Status Quo: Modified ILI Program: Status Quo: Modified ILI Program: Status Quo: Modified ILI Program: ILI Program: Robotic: ILI Program: ILI Program:	3 3 2 2 2 2 2 2 2 4 4 1 1 1 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
EKT (T) 188 EKK (T) 188 EKK (T) 168 EKK (T) 168	Environmental Environmental Environmental Environmental Environmental Environmental Environmental Environmental Environmental Lands & ROW Consultation and Engagement Complexity Operational Complexity Operational Complexity Operational Complexity	UP Program: UP Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating, Hydrostatik Testing, UP Program: UP Program: UP Program: UP Program: Description, Repair & Pressure Regulating, Hydrostatic Testing, Status Quo: Modified UP Program: UP Pr	3 3 3 2 2 2 2 2 2 4 4 1 1 1 1 2 2 4 4 3 3 1 1 1 2 2 4 4 4 5 5
EK UT 158 EK UT 158 EK UT 158 EK UT 168 EK UT 158 EK UT 158 EK UT 158 EK UT 158 EK UT 158 EK UT 158 EK UT 168 EK UT 168	Environmental Environmental Environmental Environmental Environmental Environmental Environmental Environmental Environmental Lands & ROW Consultation and Engagement Complexity Complexity Consultation and Engagement Com	UP Program: IL Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Status Quo: Modified ILI Program: ILI Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing ILI Program: Bobotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: ILI Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Status Quo: Modified ILI Program: ILI Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Replacement: Replacement 100% Inspection, Repair & Replacement: Replacement 100% Inspection, Repair & Replacement: Replacement	3 3 3 2 2 2 2 2 3 3 3 3 3 3 3 1 1 2 2 4 4 4 2 2 1 1 1 1 2 2 4 4 4 5 5 3 3
EKTU 188 EKKUT 168 EKKUT 168	Environmental Environmental Environmental Environmental Environmental Environmental Environmental Environmental Environmental Lands & ROW Consultation and Engagement Complexity Complexity Operational Co	UP Program: III Program: Robotic: Replacement: Replacement 100% inspection, Repair & Pressure Regulating, Hydrostatik Testing, III Program: III Program: III Program: III Program: Robotic: Replacement: Replacement 100% inspection, Repair & Pressure Regulating, Hydrostatik Testing, Status Quo: Modified III Program: Robotic: Replacement: Replacement 100% inspection, Repair & Pressure Regulating, Hydrostatik Testing, Status Quo: Modified III Program: Robotic: Replacement: Replacement: 100% inspection, Repair & Pressure Regulating, Hydrostatik Testing, Status Quo: Modified III Program: III Program: Robotic: Replacement: Replacement: Replacement: Replacement: Replacement: Replacement: III Program: Robotic: Replacement: Replacement: Replacement: Replacement: III Program: Robotic: Replacement: Replacement: Replacement: Replacement: Replacement: Replacement: Replacement: Replacement: Replacement: Replacement: III Program: III Program: III Program: III Program: III Program: IIII Program: Robotic: Replacement: Replacement: Re	3 3 2 2 2 2 4 4 1 1 2 4 4 4 4 2 1 1 2 2 4 4 4 4 5 3 3 3 3 3 3 3 3 3 3 3 3 3
EK UT 158 EK UT 158 EK UT 158 EK UT 168 EK UT 158 EK UT 158 EK UT 158 EK UT 158 EK UT 158 EK UT 168 EK UT 168	Environmental Environmental Environmental Environmental Environmental Environmental Environmental Environmental Environmental Lands & ROW Consultation and Engagement Complexity Complexity Consultation and Engagement Com	UP Program: IL Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Status Quo: Modified ILI Program: ILI Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing ILI Program: Bobotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: ILI Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Status Quo: Modified ILI Program: ILI Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Replacement: Replacement 100% Inspection, Repair & Replacement: Replacement 100% Inspection, Repair & Replacement: Replacement	3 3 3 2 2 2 2 2 3 3 3 3 3 3 3 1 1 2 2 4 4 4 2 2 1 1 1 1 2 2 4 4 4 5 5 3 3
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Lateral	Category	Alternative Evaluation Criteria	Scores

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23. ELK LTL 168 23. ELK LTL 168 23. ELK LTL 168	Project Execution Certainty		
23. ELK LTL 168 23. ELK LTL 168		ILI Program - Robotic:	2
23. ELK LTL 168	Project Execution Certainty	Replacement: Replacement	3
23. ELK LTL 168	Project Execution Certainty	100% Inspection, Repair &	2
23 FLK ITL 168	Project Execution Certainty	Pressure Regulating	4
23. EEK ETE 100	Project Execution Certainty	Hydrostatic Testing	1
23. ELK LTL 168	Project Execution Certainty	Status Quo: Modified	5
24. CRK LTL 168	Environmental	ILI Program:	3
24. CRK LTL 168	Environmental	ILI Program - Robotic:	3
24. CRK LTL 168	Environmental	Replacement: Replacement	2
24. CRK LTL 168	Environmental	100% Inspection, Repair &	1
24. CRK LTL 168	Environmental	Pressure Regulating	4
24. CRK LTL 168	Environmental	Hydrostatic Testing	1
24. CRK LTL 168	Environmental	Status Quo: Modified	3
24. CRK LTL 168	Lands & ROW	Status Quo: Modified ILI Program:	3
24. CRK LTL 168	Lands & ROW	ILI Program - Robotic:	3
24. CRK LTL 168	Lands & ROW		1
24. CRK LTL 168 24. CRK LTL 168	Lands & ROW Lands & ROW	Replacement: Replacement	2
24. CRK LTL 168 24. CRK LTL 168	Lands & ROW Lands & ROW	100% Inspection, Repair &	4
24. CRK LTL 168 24. CRK LTL 168	Lands & ROW Lands & ROW	Pressure Regulating Hydrostatic Testing	4
27. UNK LIL 100	Lands & HOTT	inverostatic resting	1
24. CRK LTL 168	Lands & ROW	Status Quo: Modified	4
24. CRK LTL 168	Consultation and Engagement Complexity	ILI Program:	2
24. CRK LTL 168	Consultation and Engagement Complexity	ILI Program - Robotic:	3
24. CRK LTL 168	Consultation and Engagement Complexity	Replacement: Replacement	1
24. CRK LTL 168	Consultation and Engagement Complexity	100% Inspection. Repair &	1
24. CRK LTL 168	Consultation and Engagement Complexity	Pressure Regulating	4
24. CRK LTL 168	Consultation and Engagement Complexity	Hydrostatic Testing	4
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24. CRK LTL 168	Consultation and Engagement Complexity	Status Quo: Modified	2
24. CRK LTL 168	Operational Complexity	ILI Program:	4
24. CRK LTL 168	Operational Complexity	ILI Program - Robotic:	4
24. CRK LTL 168	Operational Complexity	Replacement: Replacement	5
24. CRK LTL 168	Operational Complexity	100% Inspection, Repair &	3
24. CRK ITI 168	Operational Complexity	Pressure Regulating	4
24. CRK LTL 168	Operational Complexity	Hydrostatic Testing	1
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24. CRK LTL 168	Operational Complexity	Status Quo: Modified	2
24. CRK LTL 168	System Capacity & Customer Impacts	ILI Program:	4
24. CRK LTL 168	System Capacity & Customer Impacts	ILI Program - Robotic:	4
24. CRK LTL 168	System Capacity & Customer Impacts	Replacement: Replacement	5
24. CRK LTL 168	System Capacity & Customer Impacts	100% Inspection, Repair &	4
24. CRK LTL 168	System Capacity & Customer Impacts	Pressure Regulating	0
24. CRK LTL 168	System Capacity & Customer Impacts	Hydrostatic Testing	5
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24. CRK LTL 168	System Capacity & Customer Impacts	Status Quo: Modified	3
24. CRK LTL 168	Project Execution Certainty	ILI Program:	4
24. CRK LTL 168	Project Execution Certainty	ILI Program - Robotic:	2
24. CRK LTL 168	Project Execution Certainty	Replacement: Replacement	3
24. CRK LTL 168	Project Execution Certainty	100% Inspection, Repair &	2
24. CRK LTL 168	Project Execution Certainty	Pressure Regulating	5
24. CRK LTL 168	Project Execution Certainty	Hydrostatic Testing	1
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24. CRK LTL 168	Project Execution Certainty	Status Quo: Modified	5
25. CRK LOP 219	Environmental	ILI Program:	3
25. CRK LOP 219	Environmental	ILI Program - Robotic:	3
25. CRK LOP 219	Environmental	Replacement: Replacement	2
25. CRK LOP 219	Environmental	100% Inspection, Repair &	1
25. CRK LOP 219	Environmental	Pressure Regulating	4
25. CRK LOP 219	Environmental	Hydrostatic Testing	1
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25. CRK LOP 219	Environmental	Status Quo: Modified	3
25. CRK LOP 219	Lands & ROW	ILI Program:	3
25. CRK LOP 219	Lands & ROW	ILI Program - Robotic:	3
25. CRK LOP 219	Lands & ROW	Replacement: Replacement	1
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25. CRK LOP 219	Lands & ROW	Status Quo: Modified	4
25. CRK LOP 219 25. CRK LOP 219	Consultation and Engagement Complexity	ILI Program:	4
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25. CRK LOP 219	Consultation and Engagement Complexity		1
25. CRK LOP 219	Consultation and Engagement Complexity	100% Inspection, Repair & Pressure Regulating	4
25. CRK LOP 219	Consultation and Engagement Complexity	Hydrostatic Testing	1
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25. CRK LOP 219	Consultation and Engagement Complexity	Status Quo: Modified	2
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Lateral	Category	Alternative Evaluation Criteria	Scores
25. CRK LOP 219	System Capacity & Customer Impacts	ILI Program:	4
25. CRK LOP 219	System Capacity & Customer Impacts	ILI Program - Robotic:	4
25. CRK LOP 219	System Capacity & Customer Impacts	Replacement: Replacement	5
25. CRK LOP 219	System Capacity & Customer Impacts	100% Inspection, Repair &	4
25. CRK LOP 219	System Capacity & Customer Impacts	Pressure Regulating	0
25. CRK LOP 219	System Capacity & Customer Impacts	Hydrostatic Testing	5
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25. CRK LOP 219 25. CRK LOP 219	System Capacity & Customer Impacts Project Execution Certainty	Status Quo: Modified ILI Program:	4
25. CRK LOP 219 25. CRK LOP 219	Project Execution Certainty Project Execution Certainty	ILI Program - Robotic:	2
25. CRK LOP 219	Project Execution Certainty	Replacement: Replacement	3
25. CRK LOP 219	Project Execution Certainty	100% Inspection, Repair &	2
25. CRK LOP 219	Project Execution Certainty	Pressure Regulating	5
25. CRK LOP 219	Project Execution Certainty	Hydrostatic Testing	1
25. CRK LOP 219	Project Execution Certainty		5
26. CRK LDP 219	Environmental	Status Quo: Modified ILI Program:	3
26. CRK LP2 219	Environmental	ILI Program - Robotic:	3
26. CRK LP2 219	Environmental	Replacement: Replacement	2
26. CRK LP2 219	Environmental	100% Inspection, Repair &	1
26. CRK LP2 219	Environmental	Pressure Regulating	4
26. CRK LP2 219	Environmental	Hydrostatic Testing	1
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26. CRK LP2 219 26. CRK LP2 219	Environmental	Status Quo: Modified	3
26. CRK LP2 219 26. CRK LP2 219	Lands & ROW Lands & ROW	ILI Program: ILI Program - Robotic:	3
26. CRK LP2 219	Lands & ROW	Replacement: Replacement	1
26. CRK LP2 219	Lands & ROW	100% Inspection, Repair &	2
26. CRK LP2 219	Lands & ROW	Pressure Regulating	4
26. CRK LP2 219	Lands & ROW	Hydrostatic Testing	1
26. CRK LP2 219	Lands & ROW	Status Quo: Modified	4
26. CRK LP2 219 26. CRK LP2 219	Consultation and Engagement Complexity Consultation and Engagement Complexity	ILI Program: ILI Program - Robotic:	2
26. CRK LP2 219 26. CRK LP2 219	Consultation and Engagement Complexity	Replacement: Replacement	1
26. CRK LP2 219	Consultation and Engagement Complexity	100% Inspection, Repair &	1
26. CRK LP2 219	Consultation and Engagement Complexity	Pressure Regulating	4
26. CRK LP2 219	Consultation and Engagement Complexity	Hydrostatic Testing	1
26. CRK LP2 219	Consultation and Engagement Complexity	Status Quo: Modified	2
26. CRK LP2 219	Operational Complexity	ILI Program:	4
26. CRK LP2 219 26. CRK LP2 219	Operational Complexity Operational Complexity	ILI Program - Robotic:	4
26. CRK LP2 219 26. CRK LP2 219	Operational Complexity Operational Complexity	Replacement: Replacement 100% Inspection, Repair &	3
26. CRK LP2 219	Operational Complexity	Pressure Regulating	4
26. CRK LP2 219	Operational Complexity	Hydrostatic Testing	1
26. CRK LP2 219	Operational Complexity	Status Quo: Modified	3
26. CRK LP2 219	System Capacity & Customer Impacts	ILI Program:	4
26. CRK LP2 219 26. CRK LP2 219	System Capacity & Customer Impacts	ILI Program - Robotic:	4
26. CRK LP2 219 26. CRK LP2 219	System Capacity & Customer Impacts System Capacity & Customer Impacts	Replacement: Replacement 100% Inspection, Repair &	4
26. CRK LP2 219	System Capacity & Customer Impacts	Pressure Regulating	0
26. CRK LP2 219	System Capacity & Customer Impacts	Hydrostatic Testing	5
26. CRK LP2 219	System Capacity & Customer Impacts	Status Quo: Modified	3
26. CRK LP2 219	Project Execution Certainty	ILI Program:	4
26. CRK LP2 219	Project Execution Certainty	ILI Program - Robotic:	2
26. CRK LP2 219 26. CRK LP2 219	Project Execution Certainty Project Execution Certainty	Replacement: Replacement	3
26. CRK LP2 219 26. CRK LP2 219	Project Execution Certainty Project Execution Certainty	100% Inspection, Repair & Pressure Regulating	5
26. CRK LP2 219	Project Execution Certainty Project Execution Certainty	Hydrostatic Testing	1
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26. CRK LP2 219	Project Execution Certainty	Status Quo: Modified	5
27. CRK LOP 273	Environmental	ILI Program:	3
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27. CRK LOP 273 27. CRK LOP 273 27. CRK LOP 273	Environmental Environmental Environmental	ILI Program: ILI Program - Robotic: Replacement: Replacement	3 3 1
27. CRK LOP 273 27. CRK LOP 273 27. CRK LOP 273 27. CRK LOP 273 27. CRK LOP 273	Environmental Environmental Environmental Environmental	ILI Program: ILI Program - Robotic: Replacement: Replacement 100% Inspection, Repair &	3 3 1 1
27. CRK LOP 273 27. CRK LOP 273 27. CRK LOP 273	Environmental Environmental Environmental Environmental Environmental	ILI Program:           ILI Program - Robotic:           Replacement: Replacement           100% Inspection, Repair &           Pressure Regulating	3 3 1
27. CRK LOP 273 27. CRK LOP 273	Environmental Environmental Environmental Environmental	ILI Program: ILI Program - Robotic: Replacement: Replacement 100% Inspection, Repair &	3 3 1 1 4
27. CRK LOP 273 27. CRK LOP 273	Environmental Environmental Environmental Environmental Environmental	ILI Program:           ILI Program - Robotic:           Replacement: Replacement           100% Inspection, Repair &           Pressure Regulating	3 3 1 1 4
27. CRK LOP 273 27. CRK LOP 273	Environmental Environmental Environmental Environmental Environmental Environmental Environmental Ands & ROW	ILI Program: ILI Program - Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program:	3 3 1 1 4 1 2 3
27. CRK LOP 273 27. CRK LOP 273	Environmental Environmental Environmental Environmental Environmental Environmental Environmental Lands & ROW Lands & ROW	ILI Program: ILI Program - Robotic: Replacement: Replacement 100% Inspection, Repair & Prossure Regulating Hydrostatic Testing, Status Quo: Modified ILI Program - Robotic:	3 3 1 1 4 1 2 3 3
27. CRK LOP 273 27. CRK LOP 273	Environmental Environmental Environmental Environmental Environmental Environmental Lands & ROW Lands & ROW	ILI Program: ILI Program. Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program. ILI Program. ILI Program.	3 3 1 1 4 1 2 3 3 1
27. CRK LOP 273 27. CRK LOP 273	Environmental Environmental Environmental Environmental Environmental Environmental Environmental Environmental Lands & ROW	LU Program: ILU Program: Robotic: Replacement: Replacement 100% inspection, Repair & Pressure Regulating Hydrostatic Testing ILU Program: Robotic: Replacement: Replacement 100% inspection, Repair &	3 3 1 1 4 4 1 2 3 3 3 1 2
27. CRK LOP 273 27. CRK LOP 273	Environmental Environmental Environmental Environmental Environmental Environmental Lands & ROW LANDS	ILI Program: ILI Program: Robotic: Replacement: Replacement 100% Inspection. Repair & Pressure Regulating. Hydrostatic Testing. Status Quo: Modified ILI Program: Robotic: Replacement: Replacement 100% Inspection. Repair & Pressure Regulating.	3 3 1 1 4 1 2 3 3 1 2 4
27. CRK LOP 273 27. CRK LOP 273	Environmental Environmental Environmental Environmental Environmental Environmental Environmental Environmental Lands & ROW	LU Program: ILU Program: Robotic: Replacement: Replacement 100% inspection, Repair & Pressure Regulating Hydrostatic Testing ILU Program: Robotic: Replacement: Replacement 100% inspection, Repair &	3 3 1 1 4 4 1 2 3 3 3 1 2
27. CRK LOP 273 27. CRK LOP 273	Environmental Environmental Environmental Environmental Environmental Environmental Lands & ROW LANDS & LandS	ILI Program: ILI Program: Robotic: Replacement: Replacement 100% Inspection. Repair & Pressure Regulating Hydrostatic Testing ILI Program: Robotic: Replacement: Replacement: Replacement 100% Inspection. Repair & Pressure Regulating Hydrostatic Testing	3 3 1 1 4 1 1 2 3 3 1 2 4 1
27. CHK LOP 273 27. CHK LOP 273	Environmental Environmental Environmental Environmental Environmental Environmental Environmental Environmental Lands & ROW La	LU Program: LU Program: Robotic: Replacement: Replacement 100% inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified LU Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified	3 3 1 1 4 1 2 3 3 3 1 2 4
27. CRK LOP 273 27. CRK LOP 273	Environmental Environmental Environmental Environmental Environmental Environmental Environmental Lands & ROW Consultation and Engagement Complexity	ILI Program: ILI Program: Robotic: Replacement: Replacement 100% Inspection. Repair & Pressure Regulating Hydrostatic Testing ILI Program: Robotic: Replacement: Replacement: Replacement 100% Inspection. Repair & Pressure Regulating Hydrostatic Testing	3 3 1 4 1 2 3 3 1 2 4 1 1 4
27. GK LOP 273 27. GK LOP 273	Environmental Environmental Environmental Environmental Environmental Environmental Environmental Environmental Lands & ROW La	LU Program: LU Program: Robotic: Replacement: Replacement 100% Inspection. Repair & Pressure Regulating. Hydrostatic Testing. Status Que: Modified II Program: Robotic: Replacement: Replacement 100% Inspection. Repair & Pressure Regulating Hydrostatic Testing. Status Que: Modified III Program:	3 3 1 1 4 1 2 3 3 1 2 4 1 1 4 2
27. OK IGO 273 27. OK IGO 273	Environmental En	UP Program: UP Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating, Hydrostatic Testing, Status Quo: Modified UP Program: Robotic: Replacement: Replacement Status Quo: Modified UP Program: Status Quo: Modified UP Program: Robotic: Replacement: Replacement 100% Inspection, Repair &	3 3 1 1 4 1 1 2 3 3 1 2 4 1 1 2 2 1 1
27. ORK IGP 273 27. ORK IGP 273	Environmental Environmental Environmental Environmental Environmental Environmental Environmental Lands & ROW Cands & ROW Consultation and Engagement Complexity Consult	LU Program: LU Program: Robotic: Replacement: Replacement 100% inspection. Repair & Pressure Regulating. Hydrostatic Testing Status Que: Modified IU Program: Replacement: Replacement 100% inspection. Repair & Pressure Regulating Hydrostatic Testing. Status Que: Modified IU Program: Robotic: Replacement: Replacement Status Que: Modified IU Program: Robotic: Replacement: Replacement: Replacement Replacement: Replacement	3 3 1 4 1 2 3 3 1 2 4 1 2 4 1 1 2 2 4 1 1 1 4
27. OK IGO 273 27. OK IGO 273	Environmental En	UP Program: UP Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating, Hydrostatic Testing, Status Quo: Modified UP Program: Robotic: Replacement: Replacement Status Quo: Modified UP Program: Status Quo: Modified UP Program: Robotic: Replacement: Replacement 100% Inspection, Repair &	3 3 1 4 1 1 2 3 3 1 1 2 4 1 1 2 4 1 1 2 2 1 1

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27. CRK LOP 273	Operational Complexity	ILI Program:	4
27. CRK LOP 273	Operational Complexity	ILI Program - Robotic:	4
27. CRK LOP 273	Operational Complexity	Replacement: Replacement	5
27. CRK LOP 273	Operational Complexity	100% Inspection, Repair &	3
27. CRK LOP 273	Operational Complexity	Pressure Regulating	4
27. CRK LOP 273	Operational Complexity	Hydrostatic Testing	1
27. CRK LOP 273	Operational Complexity	Chattan Ourse Mandliff and	2
27. CRK LOP 273 27. CRK LOP 273	System Capacity & Customer Impacts	Status Quo: Modified ILI Program:	4
27. CRK LOP 273	System Capacity & Customer Impacts	ILI Program - Robotic:	4
27. CRK LOP 273	System Capacity & Customer Impacts	Replacement: Replacement	5
27. CRK LOP 273	System Capacity & Customer Impacts	100% Inspection, Repair &	4
27. CRK LOP 273	System Capacity & Customer Impacts	Pressure Regulating	0
27. CRK LOP 273	System Capacity & Customer Impacts	Hydrostatic Testing	C
27. CRK LOP 273	System Capacity & Customer Impacts	Status Quo: Modified	3
27. CRK LOP 273	Project Execution Certainty	ILI Program:	4
27. CRK LOP 273	Project Execution Certainty	ILI Program - Robotic:	2
27. CRK LOP 273	Project Execution Certainty	Replacement: Replacement	3
27. CRK LOP 273	Project Execution Certainty Project Execution Certainty	100% Inspection, Repair &	2
27. CRK LOP 273	Project Execution Certainty	Pressure Regulating	5
27. CRK LOP 273	Project Execution Certainty	Hydrostatic Testing	1
27. CRK LOP 273 28. KBY LTL 168	Project Execution Certainty Environmental	Status Quo: Modified	5
28. KBY LTL 168 28. KBY LTL 168	Environmental	ILI Program: ILI Program - Robotic:	3
28. KBY LTL 168	Environmental	Replacement: Replacement	2
28. KBY LTL 168	Environmental	100% Inspection, Repair &	1
28. KBY LTL 168	Environmental	Pressure Regulating	4
28. KBY LTL 168	Environmental	Hydrostatic Testing	1
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28. KBY LTL 168 28. KBY LTL 168	Environmental	Status Quo: Modified ILI Program:	3
28. KBY LTL 168	Lands & ROW		3
28. KBY LTL 168	Lands & ROW	ILI Program - Robotic: Replacement: Replacement	3
28. KBY LTL 168	Lands & ROW	100% Inspection, Repair &	2
28. KBY LTL 168	Lands & ROW	Pressure Regulating	4
28. KBY LTL 168	Lands & ROW	Hydrostatic Testing	1
28. KBY LTL 168	Lands & ROW	Status Quo: Modified	4
28. KBY LTL 168	Consultation and Engagement Complexity	ILI Program:	2
28. KBY LTL 168 28. KBY LTL 168	Consultation and Engagement Complexity	ILI Program - Robotic:	1
28. KBY LTL 168 28. KBY LTL 168	Consultation and Engagement Complexity Consultation and Engagement Complexity	Replacement: Replacement	1
28. KBY LTL 168	Consultation and Engagement Complexity	100% Inspection, Repair &	4
28. KBY LTL 168	Consultation and Engagement Complexity	Pressure Regulating Hydrostatic Testing	1
28. KBY LTL 168	Consultation and Engagement Complexity	Status Quo: Modified	2
28. KBY LTL 168	Operational Complexity	ILI Program:	4
28. KBY LTL 168 28. KBY LTL 168	Operational Complexity	ILI Program - Robotic:	4
28. KBY LTL 168 28. KBY LTL 168	Operational Complexity Operational Complexity	Replacement: Replacement	3
28. KBY LTL 168 28. KBY LTL 168	Operational Complexity Operational Complexity	100% Inspection, Repair & Pressure Regulating	4
28. KBY LTL 168	Operational Complexity	Hydrostatic Testing	1
28. KBY LTL 168	Operational Complexity	Status Quo: Modified	2
28. KBY LTL 168	System Capacity & Customer Impacts	ILI Program:	4
28. KBY LTL 168 28. KBY LTL 168	System Capacity & Customer Impacts	ILI Program - Robotic:	4
	System Capacity & Customer Impacts	Replacement: Replacement	5
29 KDV 1TL 1/0	System Capacity & Customer Impacts	100% Inspection, Repair &	4
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28. KBY LTL 168	System Capacity & Customer Impacts System Capacity & Customer Impacts	Pressure Regulating Hydrostatic Testing	0
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28. KBY LTL 168 28. KBY LTL 168 28. KBY LTL 168 28. KBY LTL 168	System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty	Hydrostatic Testing Status Quo: Modified ILI Program:	3
28. KBY LTL 168 28. KBY LTL 168 28. KBY LTL 168 28. KBY LTL 168 28. KBY LTL 168	System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Execution Certainty	Hydrostatic Testing <u>Status Quo: Modified</u> <u>ILI Program:</u> <u>ILI Program - Robotic:</u>	0 3 4 2
28. KBY LTL 168 28. KBY LTL 168 28. KBY LTL 168 28. KBY LTL 168	System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Execution Certainty Project Execution Certainty	Hydrostatic Testing <u>Status Quo: Modified</u> <u>IU Program:</u> <u>ILI Program - Robotic:</u> Replacement: Replacement	3 4 2 3
28. KBY LTL 168 28. KBY LTL 168	System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty	Hydrostatic Testing Status Quo: Modified ILI Program: ILI Program - Robotic: Replacement: Replacement 100% Inspection, Repair &	3 4 2 3 2
28. KBY LTL 168 28. KBY LTL 168	System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Execution Certainty Project Execution Certainty	Hydrostatic Testing <u>Status Quo: Modified</u> <u>IU Program:</u> <u>ILI Program - Robotic:</u> Replacement: Replacement	3
28. KBY LTL 168 28. KBY LTL 168	System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty	Hydrostatic Testing Status Quo: Modified IU Program: IU Program - Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing	3 4 2 3 2 5 1
28. KBY LTL 168 28. KBY LTL 168	System Capacity & Customer impacts System Capacity & Customer impacts Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty Project Execution Certainty	Hydrostatic Testing Status Quo: Modified ILI Program: ILI Program: Robotic: Replacement: Replare. Pressure Regulating Hydrostatic Testing Status Quo: Modified	3 4 2 3 2 5 1
28. KBY LTL 168 28. KBY LTL 168 29. SSK LTL 219	System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Environmental	Hydrostatic Testing Status Quo: Modified IU Program: IU Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified IU Program:	3 4 2 3 2 5 1 1 5 2
28. KBY LTL 168 28. KBY LTL 168 29. SKK LTL 219 29. SSK LTL 219	System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Environmental Environmental	Hydrostatic Testing Status Quo: Modified III Program. Pobotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating, Hydrostatic Testing, Status Quo: Modified IU Program: IU Program. Robotic:	3 4 2 3 2 5 1 1 5 2 2 2 2
28. KBY LTL 168 28. KBY LTL 168 29. SSK LTL 219	System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Environmental Environmental	Hydrostatic Testing Status Quo: Modified ILI Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: Robotic: Replacement: Replacement: Replacement: Replacement:	3 4 2 3 2 5 1 1 5 2 2 2 2 1
28. KBY LTL 168 28. KBY LTL 168 29. SKK LTL 168 29. SSK LTL 219 29. SSK LTL 219 29. SSK LTL 219	System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Environmental Environmental	Hydrostatic Testing Status Quo: Modified III Program. Pobotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating, Hydrostatic Testing, Status Quo: Modified IU Program: IU Program. Robotic:	3 4 2 3 2 5 1 1 5 2
28. KBY LTL 168 28. KBY LTL 168 29. SKK LTL 219 29. SSK LTL 219 29. SSK LTL 219	System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Executio	Hydrostatic Testing Status Quo: Modified III Program: Replacement Replacement: Replacement 100% Inspection, Repair Processure Regulating, Hydrostatic Testing, Status Quo: Modified IU Program: IU Program: Replacement 100% Inspection, Repair &	3 4 2 3 2 2 5 1 1 5 2 2 2 2 2 2 1 1 4
28. K8Y LTI 168 28. K8Y LTI 168 29. S5K LTI 219 29. S5K LTI 219 29. S5K LTI 219 29. S5K LTI 219	System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Executio	Hydrostatic Testing Status Que: Modified IU Program: Robotic: IU Program: Robotic: Replacement: Replacement 100% inspection, Repair & Pressure Regulating Hydrostatic Testing IU Program: IU Program: Replacement: Replacement 100% inspection, Repair & Pressure Regulating Hydrostatic Testing	3 4 2 3 3 2 2 5 5 5 5 5 5 5 2 2 2 2 2 2 1 1 1 1 4 4 4 1
28. K8Y LTI 168 28. K8Y LTI 168 29. SSK LTI 219 29. SSK LTI 219 29. SSK LTI 219 29. SSK LTI 219 29. SSK LTI 219	System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Executio	Hydrostatic Testing Status Quo: Modified III Program: Bobolic: Replacement: Replacement: Replacement: 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing III Program: Robotic: III Program: Robotic: Replacement: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified	3 4 4 2 2 2 2 2 2 2 2 2 2 2 2 2
28. K8Y LTI 168 28. K8Y LTI 168 29. S5K LTI 219 29. S5K LTI 219 29. S5K LTI 219 29. S5K LTI 219	System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Executio	Hydrostatic Testing Status Que: Modified IU Program: Robotic: Replacement: Replacement 100% inspection, Repair & Pressure Regulating Hydrostatic Testing Status Que: Modified IU Program: Replacement: Replacement 100% inspection, Repair & Pressure Regulating Hydrostatic Testing, Status Que: Modified IU Program:	3 4 2 2 3 3 2 2 5 5 5 5 2 2 2 2 2 2 2 1 1 1 4 4 4
28. KBY LTI 168 28. KBY LTI 168 29. SSK LTI 219 29. SSK LTI 219	System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Executio	Hydrostatic Testing Status Quo: Modified III Program: Bobolic: Replacement: Replacement: Replacement: 100% Inspection, Regulating Hydrostatic Testing Status Quo: Modified III Program: III Program: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified III Program: Status Quo: Modified III Program: Status Quo: Modified III Program: Status Quo: Modified III Program:	3 4 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
28. K8Y LTI 168 28. K8Y LTI 168 29. SSK LTI 219 29. SSK LTI 219	System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Project Executio	Hydrostatic Testing Status Quo: Modified ILI Program: Robotic: Replacement: Replacement 100% inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: ILI Program: Replacement: Replacement 100% inspection. Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified ILI Program: Ruf Program: Robotic: Replacement: Replacement: Repl	33 44 22 55 55 22 22 22 22 22 22 22 22 22 22
28. K8Y LTI 168 28. K8Y LTI 168 29. SSK LTI 219 29. SSK LTI 219 29. SSK LTI 219 29. SSK LTI 219 29. SSK LTI 219	System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Environmental En	Hydrostatic Testing Status Quo: Modified III Program: Bobolic: Replacement: Replacement: Replacement: 100% Inspection, Regulating Hydrostatic Testing Status Quo: Modified III Program: III Program: Replacement 100% Inspection, Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified III Program: Status Quo: Modified III Program: Status Quo: Modified III Program: Status Quo: Modified III Program:	3 4 2 2 2 5 5 5 2 2 2 2 2 2 2 2 2 2 2 2 2
28. K8Y LTI 168 28. K8Y LTI 168 29. SSK LTI 219 29. SSK LTI 219	System Capacity & Customer Impacts System Capacity & Customer Impacts Project Execution Certainty Provementai Environmentai Env	Hydrostatic Testing Status Quo: Modified III Program: Robotic: Replacement: Replacement Replacement: Replacement 100% Inspection. Repair & Pressure Regulating Hydrostatic Testing III Program: Robotic: Replacement: Replacement 100% Inspection. Repair & Pressure Regulating Hydrostatic Testing Status Quo: Modified III Program: Robotic: Replacement: Replacement III Program: Robotic: Replacement: Replacement 100% Inspection. Repair & Status Quo: Modified III Program: Robotic: Replacement: Replacement 100% Inspection. Repair & Replacement: Replacement 100% Inspection. Repair & Replacement: Replacement	33 44 22 55 55 22 22 22 22 22 22 22 22 22 22

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Scor	Alternative Evaluation Criteria	Category	Lateral		
2	ILI Program:	Consultation and Engagement Complexity	29. SSK LTL 219		
3	ILI Program - Robotic:	Consultation and Engagement Complexity	29. SSK LTL 219		
1	Replacement: Replacement	Consultation and Engagement Complexity	29. SSK LTL 219		
1	100% Inspection, Repair &	Consultation and Engagement Complexity	29. SSK LTL 219		
- 4	Pressure Regulating	Consultation and Engagement Complexity	29. SSK LTL 219		
1	Hydrostatic Testing	Consultation and Engagement Complexity	29. SSK LTL 219		
2	Status Quo: Modified	Consultation and Engagement Complexity	29. SSK LTL 219		
4	ILI Program:	Operational Complexity	29. SSK LTL 219		
4	ILI Program - Robotic:	Operational Complexity	29. SSK LTL 219		
5	Replacement: Replacement	Operational Complexity	29. SSK LTL 219		
3	100% Inspection, Repair &	Operational Complexity	29. SSK LTL 219		
4	Pressure Regulating	Operational Complexity	29. SSK LTL 219		
1	Hydrostatic Testing	Operational Complexity	29. SSK LTL 219		
2	Status Quo: Modified	Operational Complexity	29. SSK LTL 219		
4	ILI Program:	System Capacity & Customer Impacts	29. SSK LTL 219		
4	ILI Program - Robotic:	System Capacity & Customer Impacts	29. SSK LTL 219		
5	Replacement: Replacement	System Capacity & Customer Impacts	29. SSK LTL 219		
4	100% Inspection, Repair &	System Capacity & Customer Impacts	29. SSK LTL 219		
0	Pressure Regulating	System Capacity & Customer Impacts	29. SSK LTL 219		
0	Hydrostatic Testing	System Capacity & Customer Impacts	29. SSK LTL 219		
3	Status Quo: Modified	System Capacity & Customer Impacts	29. SSK LTL 219		
4	ILI Program:	Project Execution Certainty	29. SSK LTL 219		
2	ILI Program - Robotic:	Project Execution Certainty	29. SSK LTL 219		
3	Replacement: Replacement	Project Execution Certainty	29. SSK LTL 219		
2	100% Inspection, Repair &	Project Execution Certainty	29. SSK LTL 219		
5	Pressure Regulating	Project Execution Certainty	29. SSK LTL 219		
1	Hydrostatic Testing	Project Execution Certainty	29. SSK LTL 219		
5	Status Quo: Modified	Project Execution Certainty	29. SSK LTL 219		

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## Appendix J-1 STANTEC FEED REPORT

## **EVIDENTIARY UPDATE AND ERRATA, APRIL 5, 2019**

# Appendix J-3 PRS BASIS OF ESTIMATE

## **EVIDENTIARY UPDATE AND ERRATA, APRIL 5, 2019**

Appendix J-4 PLR BASIS OF ESTIMATE

**EVIDENTIARY UPDATE APRIL 5, 2019** 

## Appendix N-1 AGGREGATED FINANCIAL SCHEDULES

## **EVIDENTIARY UPDATE AND ERRATA APRIL 5, 2019**

# Appendix N-2 INDIVIDUAL FINANCIAL SCHEDULES

## **EVIDENTIARY UPDATE AND ERRATA, APRIL 5, 2019**

## **REFER TO LIVE SPREADSHEET MODELS**

Provided in electronic format only as separate exhibits