

VERIFICATION

STATE OF OHIO)
)
COUNTY OF HAMILTON) **SS:**

The undersigned, Bradley A. Seiter, Sr. Project Manager, being duly sworn, deposes and says that he has personal knowledge of the matters set forth in the foregoing data requests, and that they are true and correct to the best of his knowledge, information, and belief.



Bradley A. Seiter Affiant

Subscribed and sworn to before me by Bradley A. Seiter on this 15th day of November, 2022.



NOTARY PUBLIC

My Commission Expires: July 8, 2027



EMILIE SUNDERMAN
Notary Public
State of Ohio
My Comm. Expires
July 8, 2027

VERIFICATION

STATE OF NORTH CAROLINA)
) SS:
COUNTY OF MECKLENBURG)

The undersigned, Brian Weisker, Sr. Vice President, Chief Operating Officer Natural Gas, being duly sworn, deposes and says that he has personal knowledge of the matters set forth in the foregoing data requests, and that they are true and correct to the best of his knowledge, information, and belief.

Brian Weisker

Brian Weisker Affiant

Subscribed and sworn to before me by Brian Weisker on this 3rd day of November, 2022.

SHANNON L. WALL
Notary Public, North Carolina
Mecklenburg County
My Commission Expires
June 28, 2027

Shannon L. Wall

NOTARY PUBLIC

My Commission Expires: 6/28/2027

KyPSC Case No. 2022-00084
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Duke Energy Kentucky
Case No. 2022-00084
STAFF Fourth Set Data Requests
Date Received: October 26, 2022

STAFF-DR-04-001

REQUEST:

Refer to the testimony of Brian R. Weisker, pages 4-5, lines 11-21, 1-5, State verbatim and cite any language in CFR Part 192 that requires replacement or retrofitting of existing pipeline to accommodate an in-line inspection (ILI) tool.

RESPONSE:

Subpart O of CFR Part 192 states that the appropriate methods must be used to assess threats that are active on covered pipeline segments. AM07 contains segments of A.O. Smith pipe with active manufacturing, construction, and Low Frequency Electric Resistance Weld (LF-ERW) threats that can only be assessed via ILI or pressure test. A.O. Smith pipe is known to have hard spots (manufacturing defect) that can lead to failure if not inspected with the appropriate ILI tool. These hard spots on A.O. Smith pipe of similar vintage as that contained in line AM07 were documented in the final NTSB report NTSB/PIR-22/02 as one of the causes of the 2019 Danville Kentucky Enbridge pipeline rupture.

The active threats contained on AM07 must be assessed via ILI or pressure test at a maximum of every 7 years.

Duke Energy believes that the safest and most cost-effective path forward is to replace the current pipeline with a new line that is ILI capable.

§ 192.921 How is the baseline assessment to be conducted?

(a) *Assessment methods.* An operator must assess the integrity of the line pipe in each covered segment by applying one or more of the following methods for each threat to which the covered segment is susceptible. An operator must select the method or methods best suited to address the threats identified to the covered segment (See [§ 192.917](#)).

(1) Internal inspection tool or tools capable of detecting those threats to which the pipeline is susceptible. The use of internal inspection tools is appropriate for threats such as corrosion, deformation and mechanical damage (including dents, gouges and grooves), material cracking and crack-like defects (*e.g.*, stress corrosion cracking, selective seam weld corrosion, environmentally assisted cracking, and girth weld cracks), hard spots with cracking, and any other threats to which the covered segment is susceptible. When performing an assessment using an in-line inspection tool, an operator must comply with [§ 192.493](#). In addition, an operator must analyze and account for uncertainties in reported results (*e.g.*, tool tolerance, detection threshold, probability of detection, probability of identification, sizing accuracy, conservative anomaly interaction criteria, location accuracy, anomaly findings, and unity chart plots or equivalent for determining uncertainties and verifying actual tool performance) in identifying and characterizing anomalies;

(2) Pressure test conducted in accordance with [subpart J of this part](#). The use of subpart J pressure testing is appropriate for threats such as internal corrosion; external corrosion and other environmentally assisted corrosion mechanisms; manufacturing and related defects threats, including defective pipe and pipe seams; stress corrosion cracking; selective seam weld corrosion; dents; and other forms of mechanical damage. An operator must use the test pressures specified in Table 3 of section 5 of ASME/ANSI B31.8S (incorporated by reference, *see* [§ 192.7](#)) to justify an extended reassessment interval in accordance with [§ 192.939](#).

(3) Spike hydrostatic pressure test conducted in accordance with [§ 192.506](#). The use of spike hydrostatic pressure testing is appropriate for time-dependent threats such as stress corrosion cracking; selective seam weld corrosion; manufacturing and related defects, including defective pipe and pipe seams; and other forms of defect or damage involving cracks or crack-like defects;

§ 192.939 What are the required reassessment intervals?

An operator must comply with the following requirements in establishing the reassessment interval for the operator's covered pipeline segments.

(a) ***Pipelines operating at or above 30% SMYS.*** An operator must establish a reassessment interval for each covered segment operating at or above 30% SMYS in accordance with the requirements of this section. The maximum reassessment interval by an allowable reassessment method is 7 calendar years. Operators may request a 6-month extension of the 7-calendar-year reassessment interval if the operator submits written notice to OPS, in accordance with [§ 192.18](#), with sufficient justification of the need for the extension. If an operator establishes a reassessment interval that is greater than 7 calendar years, the operator must, within the 7-calendar-year period, conduct a confirmatory direct assessment on the covered segment, and then conduct the follow-up reassessment at the interval the operator has established. A reassessment carried out using confirmatory direct assessment must be done in accordance with [§ 192.931](#). The table that follows this section sets forth the maximum allowed reassessment intervals.

(1) ***Pressure test or internal inspection or other equivalent technology.*** An operator that uses pressure testing or internal inspection as an assessment method must establish the reassessment interval for a covered pipeline segment by -

(i) Basing the interval on the identified threats for the covered segment (see [§ 192.917](#)) and on the analysis of the results from the last integrity assessment and from the data integration and risk assessment required by [§ 192.917](#); or

(ii) Using the intervals specified for different stress levels of pipeline (operating at or above 30% SMYS) listed in ASME B31.8S (incorporated by reference, see [§ 192.7](#)), section 5, Table 3.

PERSON RESPONSIBLE: Brian R. Weisker

**Duke Energy Kentucky
Case No. 2022-00084
STAFF Fourth Set Data Requests
Date Received: October 26, 2022**

STAFF-DR-04-002

REQUEST:

Refer to Duke Kentucky's response to Commission Staff's Third Request for Information (Staff's Third Request), Item 1(c). State whether pressure testing without retrofitting for use of an ILI tool would result in excavation or replacement work.

RESPONSE:

Excavation work would be required in order to separate the sections of pipe being tested from the remainder of the mainline and regulating stations that must be left in service. In addition, pipeline features that would prevent the passage of cleaning and drying pigs would need to be replaced in order for the pressure test to be conducted. Any failures that may occur during pressure testing would need to be excavated and repaired.

PERSON RESPONSIBLE: Brian R. Weisker

Duke Energy Kentucky
Case No. 2022-00084
STAFF Fourth Set Data Requests
Date Received: October 26, 2022

STAFF-DR-04-003

REQUEST:

Refer to Duke Kentucky's response to Staff's Third Request, Item 1(a).

- a. State the estimated cost of pressure testing the existing AM07 pipeline without retrofitting for use of an ILI tool. Itemize these costs by costs of testing, bypassing, temporary gas supply, excavation, and correcting deficiencies found during testing.
- b. Provide any documentation or other information used to determine the estimated cost stated in response to Item 3(a) above.
- c. Provide a cost-benefit analysis of the proposed pipeline replacement, including capital cost, depreciation, and future testing costs for the life of the new pipeline and a cost-benefit analysis of pressure testing existing pipeline without retrofitting for use of an ILI tool for the same period in time.

RESPONSE:

- a. The cost to pressure test the first phase of the AM07 pipeline would be approximately \$15 million. Temporary gas would make up at least \$5 million of that with the remaining being budgeted for engineering, material, excavation, and labor. Correction of deficiencies discovered during a pressure test would be consider retrofitting the line and therefore is not included in the estimate for hydrotesting the line. In addition, any deficiencies identified will extend the use of temporary gas, and those costs are not included in the estimate.
- b. Please refer to STAFF-DR-04-003(b) Attachment for cost estimate breakdown.

c. Objection. This request is unreasonable and overly broad and unduly burdensome and calls for speculation. The Company has not performed the analysis in the format requested and has not conducted a depreciation study for the entire AM07 project, which is a multi-year phase in construction. Without waiving said objection, and to the extent discoverable, the Company submits that the estimated costs of the first phase AM07 replacement project are \$32.25 million as noted in STAFF-DR-02-001(c). This project estimate was provided to address the replacement of the first phase of AM07. The need for the project was explained in the Company's Application and is due to the now known risk of failure of the type of pipe used in the construction of the initial AM07 decades ago. An initial In-Line Inspection will occur 10 years after installation of the pipeline, with on-going inspections occurring every 7 years thereafter. Approximate costs to perform an In-Line Inspection on AM07 phase 1 is \$300,000.

The estimated cost of hydro pressure testing phase 1 of the existing pipeline without retrofitting for use of an ILI is approximately \$15 million as noted in response to (a). As noted, this does not include any costs to repair deficiencies identified while performing the hydrotest. Thus, additional costs to repair discovered deficiencies would be incremental, and would take the line out of service for additional time and an unknown incremental cost along with risks to the system and customer reliability to continue natural gas service if the repairs could not be accomplished in sufficient time to put the line back in service for winter heating seasons. Additionally, A hydrotest of AM07 Phase I pipeline would be required on a 7-year cycle at an approximate cost of \$15 million (not including inflation) each time the hydrotest is performed.

In addition to significantly reducing the 7-year cycle assessment costs, In-Line Inspections will provide data to fully understand the integrity of the pipeline and physical condition of the pipeline that cannot be determined from a pressure test. Replacement of AM07 provides the customer with a safer, cost effective solution.

PERSON RESPONSIBLE: Bradley A. Seiter

Line AM07 Re-Hydro					
Kentucky					
Project Cost Breakdown					
Class 5					
Revision: A		Capital Improvement and Retirement	Capital Improvement		Retirement
WBS 1	Description		Size / Name		
		Length / Qty	Total	Phase 1 Only	Pipe Abandon 1
NGENGNC	Engineering	\$ 116,300	\$ 108,200	\$ 108,200	\$ 8,100
NGLANDC	Land - Permanent	\$ -	\$ -	\$ -	\$ -
NGLANDC	Land - Temporary	\$ 84,300	\$ 84,300	\$ 84,300	\$ -
NGLANDC	Land - Support	\$ 40,000	\$ 40,000	\$ 40,000	\$ -
NGLANDC	Land Legal	\$ -	\$ -	\$ -	\$ -
NGMATEC	Materials/Equipment	\$ 246,500	\$ 234,500	\$ 234,500	\$ 12,000
NGCONPC	Construction Serv - Pipeline	\$ 10,012,000	\$ 9,970,500	\$ 9,970,500	\$ 41,500
NGCONFC	Construction Serv - Facility	\$ -	\$ -	\$ -	\$ -
NGFITSC	Field Inspections	\$ 604,600	\$ 598,300	\$ 598,300	\$ 6,300
NGFITSC	Field Testing	\$ 10,000	\$ 10,000	\$ 10,000	\$ -
NGMPGL	Duke Labor	\$ 238,000	\$ 174,000	\$ 174,000	\$ 64,000
NGMOTH	Other Direct Costs	\$ 60,000	\$ 44,000	\$ 44,000	\$ 16,000
	Subtotal Direct Cost	\$ 11,411,700	\$ 11,263,800	\$ 11,263,800	\$ 147,900
	Project Contingency	\$ 1,730,900	\$ 1,689,600	\$ 1,689,600	\$ 41,300
	Project Escalation	\$ -	\$ -	\$ -	\$ -
	Total Contingency & Escalation	\$ 1,730,900	\$ 1,689,600	\$ 1,689,600	\$ 41,300
	Total Direct Cost	\$ 13,142,600	\$ 12,953,400	\$ 12,953,400	\$ 189,200
NGMAFD	AFUDC Debt	\$ 276,400	\$ 276,400	\$ 276,400	\$ -
NGMOVH	Overhead and Allocations	\$ 1,564,300	\$ 1,511,400	\$ 1,511,400	\$ 52,900
	Total PNG Overhead Cost	\$ 1,840,700	\$ 1,787,800	\$ 1,787,800	\$ 52,900
	Project Total	\$ 14,983,300	\$ 14,741,200	\$ 14,741,200	\$ 242,100

Notes:

1. Contingency is not included on escalation.
2. Overheads and Allocations calculated using 12% of Total Direct Cost less Land Purchase, Materials/Equipment and FERC cost.
3. AFUDC calculated using 3.69% of total Direct Cost. (No AFUDC on Retirement Cost.)
4. No Project Escalation is assumed.

Line AM07 Re-Hydro						
Pipe NPS						
						Revision # A
Control Code	Component Description	Units	Unit of Measure	Unit Cost	Sub-totals	Totals
Internal Engineering & Construction Management						
G101	PNG Labor	40	Month	\$ 4,350	\$ 174,000	
OTH001	Other Direct Cost	40	Month	\$ 1,100	\$ 44,000	
Sub-Total - Internal E&CM					\$	218,000
External Engineering						
G801	Pre-Design Activities	8	Hour	\$ 125	\$ 1,033	
G802	Route Development	9	Hour	\$ 125	\$ 1,136	
G803	Project Management	36	Hour	\$ 125	\$ 4,442	
G804	Records Research	2	Hour	\$ 125	\$ 207	
G805	Estimating & Scoping	6	Hour	\$ 125	\$ 723	
G806	Land Survey	93	Hour	\$ 125	\$ 11,569	
G807	Land Acquisition Support (Engineering)	38	Hour	\$ 125	\$ 4,751	
G808	Environmental Services & Permitting	33	Hour	\$ 125	\$ 4,132	
G809	Geotechnical Services	45	Hour	\$ 125	\$ 5,681	
G810	Design - Pipeline	76	Hour	\$ 125	\$ 9,503	
G811	Design - Facility	0	Hour	\$ 125	\$ -	
G812	Cathodic Protection	2	Hour	\$ 125	\$ 207	
G813	Bid Package Development	14	Hour	\$ 125	\$ 1,756	
G814	Construction Support	107	Hour	\$ 125	\$ 13,428	
G815	As-Built Survey	347	Hour	\$ 125	\$ 43,383	
G815	Project Close-out	10	Hour	\$ 125	\$ 1,240	
G663	MAOP	1	Lump Sum	\$ 5,000	\$ 5,000	
Sub-Total - External Engineering					\$	108,200
Land Services						
G661	Transmission - Fee Purchase - Rural	0	Acre	\$ -	\$ -	
G661	Transmission - Fee Purchase - Urban	0	Acre	\$ 125,000	\$ -	
G662	Transmission - Permanent Easements - Rural	0	Acre	\$ -	\$ -	
G662	Transmission - Permanent Easements - Urban	0	Acre	\$ 150,000	\$ -	
G662	Transmission - Stations Easements - Rural	0	Acre	\$ -	\$ -	
G662	Transmission - Stations Easements - Urban	0	Acre	\$ 175,000	\$ -	
G663	Transmission - Temporary Easements - Rural	0	Acre	\$ -	\$ -	
G663	Transmission - Temporary Easements - Urban	1	Acre	\$ 31,250	\$ 31,300	
G662 PA	Transmission - Access Roads	4	Each	\$ 10,000	\$ 40,000	
G663	Transmission - Laydown Yard	0	Months	\$ 4,200	\$ -	
G656	Transmission - Damages	4	Per Parcel	\$ 3,250	\$ 13,000	
G656	Transmission - Additional Damages	0	Acre	\$ -	\$ -	
G301	Contract Labor - Land Services	4	Per Parcel	\$ 10,000	\$ 40,000	
G301	Contract Labor - Legal	0	Per Parcel	\$ 20,000	\$ -	
Sub-Total - Land Services					\$	124,300
Construction Services - Pipeline		23760	Overall LF of Pipe installed			
820	Mob/Demob	1	Lump Sum	\$ 906,402	\$ 906,402	
821	Clearing and Grubbing	0	acre	\$ -	\$ -	
821	Tree Cutting Only/No Grubbing	0	acre	\$ -	\$ -	
829	Conventional Upland Lay	20	Linear Foot	\$ 579	\$ 11,580	
829	Conventional Upland Lay (Residential)	0	Linear Foot	\$ -	\$ -	
830	Conventional Wetland Lay	0	Linear Foot	\$ -	\$ -	
825	Conventional Bore - Dirt	0	Linear Foot	\$ -	\$ -	
826	Conventional Bore - Rock	0	Linear Foot	\$ -	\$ -	
827	Directional Drill - Dirt	0	Linear Foot	\$ -	\$ -	
828	Directional Drill - Rock	0	Linear Foot	\$ -	\$ -	
828	SCAR Guard Application	0	Linear Foot	\$ -	\$ -	
822	Rock Excavation - Blasting	0	Cubic Yard	\$ -	\$ -	
822	Rock Excavation - Mechanical	0	Cubic Yard	\$ -	\$ -	
829	Stopples Pit	4	Each	\$ 54,139	\$ 216,556	
829	Padding - Job Site	0	Linear Foot	\$ -	\$ -	
829	Padding - Haul	0	Linear Foot	\$ -	\$ -	
829	Sand Padding over Existing Lines	0	Cubic Yard	\$ -	\$ -	
822	Rock Shield	0	Linear Foot	\$ -	\$ -	
831	Saddle Bag Weight	0	Each	\$ -	\$ -	
831	River Weight	0	Each	\$ -	\$ -	
831	Concrete Coating	0	Linear Foot	\$ -	\$ -	
837	Zinc Ribbon (AC Mitigation)	0	Linear Foot	\$ -	\$ -	
837	Anode Bed	0	Each	\$ -	\$ -	
835	Temporary Clean-up / Temporary Stabilization	4	Lump Sum	\$ 2,500	\$ 10,000	
833	Hydro Test 1	11880	Linear Foot	\$ 140	\$ 1,663,200	
833	Hydro Test 2	11880	Linear Foot	\$ 140	\$ 1,663,200	
833	Hydro Test 3	0	Linear Foot	\$ 140	\$ -	
833	Hydro Test 4	0	Linear Foot	\$ 140	\$ -	
833	Hydro Test 5	0	Linear Foot	\$ 140	\$ -	
833	Hydro Water Testing	0	Lump Sum	\$ 25,000	\$ -	
834	Commissioning 1	11880	Linear Foot	\$ 5	\$ 59,400	

834	Commissioning 2	11880	Linear Foot	\$ 5	\$ 59,400
834	Commissioning 3	0	Linear Foot	\$ 5	\$ -
834	Commissioning 4	0	Linear Foot	\$ 5	\$ -
834	Commissioning 5	0	Linear Foot	\$ 5	\$ -
837	Re-coating of Exposed Pipe (Hand Application)	0	Linear Foot	\$ -	\$ -
837	Re-coating of Exposed Pipe (Spray Application)	0	Linear Foot	\$ -	\$ -
837	Armor Plate	0	Linear Foot	\$ -	\$ -
829	Daylight Existing Utilities (Pot Holing)	4	Lump Sum	\$ 1,500	\$ 6,000
829	AirVac/Hydro Vac Excavation	0	Cubic Foot	\$ -	\$ -
829	Pipe Rack Construction (Dirt/Sand Berm)	0	Lump Sum	\$ -	\$ -
829	Transition Of Bevels	0	Each	\$ -	\$ -
837	Test Station Installation	4	Each	\$ 1,000	\$ 4,000
829	Temporary Stabilization	0	Linear Foot	\$ -	\$ -
630	Silt Fence (metal post & wire backing)	4	Lump Sum	\$ 7,500	\$ 30,000
630	Conventional Silt Fence	0	Linear Foot	\$ -	\$ -
630	Super Silt Fence (metal post & chainlink fence backi	0	Linear Foot	\$ -	\$ -
630	Curlex Blanket with Staples (4 x 100)	0	Square Yard	\$ -	\$ -
630	Curlex Double Net Blanket with Staples (4 x 100)	0	Square Yard	\$ -	\$ -
630	Curlex Triple Net Blanket with Staples (4 x 100)	0	Square Yard	\$ -	\$ -
630	Curlex Premier Coconut Blanket with Staples (4 x 10	0	Square Yard	\$ -	\$ -
630	Curlex Premier Straw/Coconut Blanket with Staples	0	Square Yard	\$ -	\$ -
630	Hydroseeding Temporary Stabilization	0	Square Yard	\$ -	\$ -
630	Hydroseeding Permanent Stabilization	0	Square Yard	\$ -	\$ -
630	Rip Rap Placement	0	Ton	\$ -	\$ -
630	Gravel Placement	0	Ton	\$ -	\$ -
630	Geo Textile Fabric	0	Square Yard	\$ -	\$ -
630	Safety Fence	600	linear ft	\$ 8	\$ 4,800
630	Culvert Pipe (CMP)	0	Inch Dia per LF	\$ -	\$ -
630	Sack Breakers	0	Each	\$ -	\$ -
630	Sediment Basin (excludes rock)	0	Each	\$ -	\$ -
630	Trench Breaker (Plug)	0	Each	\$ -	\$ -
630	Foam Breakers	0	Each	\$ -	\$ -
630	Construction (Timber) Mats	100	Linear Foot (Width)	\$ 700	\$ 70,000
630	Laminated (Truck) Mats	0	Linear Foot (Width)	\$ -	\$ -
630	Bentonite Trench Seals in Wetlands	0	Each	\$ -	\$ -
630	Permanent Seeding (seed straw, and tack)	20000	Square Foot	\$ 0.11	\$ 2,200
630	Intermediate Seeding (seed straw, and tack)	0	Square Foot	\$ -	\$ -
630	Dry Crossing (Flume or Dam/Pump Method)	0	Each	\$ -	\$ -
630	Sod	0	SF	\$ -	\$ -
630	Straw Wattle 9" x 10'	0	Each	\$ -	\$ -
630	Sediment Log 8"	0	Each	\$ -	\$ -
630	Sediment Log 10"	0	Each	\$ -	\$ -
630	Sediment Log 12"	0	Each	\$ -	\$ -
630	Sediment Log 20"	0	Each	\$ -	\$ -
630	Erosion Eel 10"	0	Each	\$ -	\$ -
630	Erosion Eel 12"	0	Each	\$ -	\$ -
630	Erosion Eel 14"	0	Each	\$ -	\$ -
630	Erosion Eel 20"	0	Each	\$ -	\$ -
630	Permanent Waterbar Installation	0	Each	\$ -	\$ -
630	Temporary Waterbar Installation	0	Each	\$ -	\$ -
630	Filtration Sediment Bags 10' x 15'	0	Each	\$ -	\$ -
630	Dewater Structure	2	Lump Sum	\$ 5,000	\$ 10,000
630	Clear Water Diversion Pit	0	Lump Sum	\$ -	\$ -
630	Stabilized Construction Entrance 20'W x 50'L x 6"D	0	Lump Sum	\$ -	\$ -
831	Well Points	0	Each	\$ -	\$ -
832	Air Bridges	0	Each	\$ -	\$ -
832	Chain Link Fence & Gates – New	0	Linear Foot	\$ -	\$ -
832	Chain Link Fence & Gates - Repair	0	Linear Foot	\$ -	\$ -
832	Temporary Pasture Fencing	0	Linear Foot	\$ -	\$ -
832	Permanent Access Roads	0	Linear Foot	\$ -	\$ -
832	Temporary Access Roads	200	Linear Foot	\$ 67	\$ 13,400
832	Top Soil	0	Ton	\$ -	\$ -
832	Asphalt Removal/Restoration	0	Square Foot	\$ -	\$ -
832	Sheet Piling	0	Day	\$ -	\$ -
832	Ditch Shoring	0	Day	\$ -	\$ -
832	Road Plates (10' Long)	0	Each	\$ -	\$ -
832	Trench Boxes	0	Day	\$ -	\$ -
832	Traffic Control (Flaggers)	30	Day	\$ 5,000	\$ 150,000
832	Traffic Control (Signage)	60	Day	\$ 100	\$ 6,000
832	Traffic Control (Barriers)	40	Day	\$ 100	\$ 4,000
832	Flowable Fill	0	Cubic Yard	\$ -	\$ -
832	Noise Reduction Barriers	0	Day	\$ -	\$ -
837	Rectifier/Groundbed (CP)	4	Each	\$ 2,500	\$ 10,000
837	ACVG Testing (less than 10 miles)	0	Mile	\$ 9,000	\$ -
837	ACVG Testing (greater than 10 miles)	0	Mile	\$ 6,000	\$ -
	MLV Installation	0	Each	\$ -	\$ -

	SCADA for MLV Sites	0	Each	\$ 100,000	\$ -	
	Electrical/Controls for MLV Sites	0	Each	\$ 50,000	\$ -	
	Security for MLV Sites	0	Each	\$ 21,000	\$ -	
	L/R Installation	0	Each	\$ -	\$ -	
	Painting & Waxing Flanges	0	Lump Sum	\$ 25,000	\$ -	
	Staging & Laydown Yard	0	Acre	\$ 65,000	\$ -	
	Railway Crossings	0	Each	\$ 20,000	\$ -	
	Temp LNG Skids	3	Lump Sum	\$ 1,500,000	\$ 4,500,000	
	Contractor Tap Support	4	Each	\$ 68,470	\$ 273,880	
	TDW - Hot Tap	0	Each	\$ -	\$ -	
	TDW - Tap & Stop	4	Each	\$ 74,100	\$ 296,400	
	TDW - Bypass	0	Each	\$ -	\$ -	
	HDD Mudd Disposal	0	Linear Foot	\$ -	\$ -	
	HDD Mudd Engineer	0	Per HDD	\$ 20,000	\$ -	
Sub-Total - Construction Services - Pipeline					\$	9,970,500
Field Inspection & Testing						
G880	Construction Inspection	712	Man-Days	\$ 840	\$ 598,230	
G881	Non-Destructive Testing	5	Days	\$ 2,000	\$ 9,971	
Sub-Total - Field Inspection & Testing					\$	608,300
Major Equipment & Materials						
	Pipe					
G205	24" Standard Wall, X52, Coated, DRL	40	Linear Foot	\$ 208	\$ 8,320	
G205	XX" Standard Wall, X52, Powercrete	0	Linear Foot	\$ -	\$ -	
G205	XX" Standard Wall, X52, Bare	0	Linear Foot	\$ -	\$ -	
	Fittings					
G205	XX" 3R - 45 deg ell - Segmentable	0	Each	\$ -	\$ -	
G205	XX" 3R - 90 deg ell - Segmentable	0	Each	\$ -	\$ -	
	Equipment					
G204	24" TDW Stopple	4	Each	\$ 44,300	\$ 177,200	
G204	XX" TDW Spherical Tee	0	Each	\$ -	\$ -	
G204	XX" L/R Module	0	Each	\$ -	\$ -	
G204	XX" MLV Module	0	Each	\$ -	\$ -	
	Miscellaneous					
	Rectifier/Groundbed Material (CP)	4	Each	\$ 2,500	\$ 10,000	
	AC Mitigation Material	0	Each	\$ 45,000	\$ -	
G204	SCAR Guard	0	Linear Foot	\$ -	\$ -	
G205	Misc. Materials (10% of Total Major)	1	Calculated	\$ 19,552	\$ 19,552	
G205	Taxes & Freight (9% of All Material)	1	Calculated	\$ 19,356	\$ 19,356	
Sub-Total - Materials					\$	234,500
Sub-Total					\$	11,263,800
Escalation					\$	-
Contingency					\$	1,689,600
Pipeline Estimate Total					\$	12,953,400

Line AM07 Re-Hydro Retirement							Revision #	A
Control Code	Component Description	Units	Unit of Measure	Unit Cost	Sub-totals	Totals		
Internal Engineering & Construction Management								
G101	PNG Labor	40	Month	\$ 1,600	\$ 64,000			
OTH001	Other Direct Cost	40	Month	\$ 400	\$ 16,000			
Sub-Total - Internal E&CM						\$	80,000	
External Engineering								
G810	Design - Pipeline	64	Hour	\$ 125	\$ 8,025			
G811	Design - Facility	0	Hour	\$ 125	\$ -			
G663	MAOP	1	Lump Sum	\$ -	\$ -			
Sub-Total - External Engineering						\$	8,100	
Land Services								
G-663	Transmission - Temp Work Space - Rural	0	Acre	\$ 45,000	\$ -			
G-663	Transmission - Temp Work Space - Urban	0	Acre	\$ 5,000	\$ -			
G-662 PA/G-663 TA	Transmission - Access Roads	0	Each	\$ 10,000	\$ -			
G-301	Contract Labor - Land Services	0	Per Parcel	\$ 10,000	\$ -			
Sub-Total - Land Services						\$	-	
Construction Services - Pipeline		0	Overall LF of Pipe to be Abandoned					
850	Mob/Demob	1	Lump Sum	\$ 3,770	\$ 3,770			
	Demo Equipment	0	Days	\$ 7,500	\$ -			
823	Grouting of Abandoned Pipe	0	Cubic Yard	\$ -	\$ -			
824	Removal of Existing Pipeline	20	Linear Foot	\$ 260	\$ 5,200			
	Tar Coated Steel Remediation & Removal	0	LF	\$ -	\$ -			
	Install & Remove Flare + Mob/Demob	0	Lump Sum	\$ 50,000	\$ -			
G863	Launcher/Receiver Removal	0	Each	\$ 75,000	\$ -			
G863	Small Station Removal	0	Each	\$ 35,000	\$ -			
G863	Medium Station Removal	0	Each	\$ 50,000	\$ -			
G863	Large Station Removal	0	Each	\$ 85,000	\$ -			
	Haul Materials	2	Lump Sum	\$ 10,000	\$ 20,000			
	Nitrogen Clearing	0	Lump Sum	\$ 50,000	\$ -			
	Line Locating	1	Week	\$ 12,500	\$ 12,500			
	Contractor Tap Support	0	Days	\$ -	\$ -			
	Seeding	0	SF	\$ -	\$ -			
	Clean up	0	LF	\$ -	\$ -			
	TDW Tap	0	Each	\$ -	\$ -			
Sub-Total - Construction Services - Pipeline						\$	41,500	
Field Inspection & Testing								
G880	Construction Inspection	7	Man-Days	\$ 840	\$ 6,225			
G881	Non-Destructive Testing	0	Days	\$ 2,000	\$ -			
Sub-Total - Field Inspection & Testing						\$	6,300	
Major Equipment & Materials								
G205	Purge Materials	2	Lump Sum	\$ 5,000	\$ 10,000			
G204	Stopple	0	Each	\$ -	\$ -			
G204	Stopple	0	Each	\$ -	\$ -			
G205	Misc. Materials (10% of Total Major)	1	Calculated	\$ 1,000	\$ 1,000			
G205	Taxes & Freight (9% of All Material)	1	Calculated	\$ 990	\$ 990			
Sub-Total - Materials						\$	12,000	
Sub-Total						\$	147,900	
Escalation						\$	-	
Contingency						\$	22,200	
Pipeline Estimate Total						\$	170,100	