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28 October 2020

Gregory Ochs
Director, Central Region, OPS
Pipeline and Hazardous Materials Safety Administration
901 Locust Street, Suite 480
Kansas City, MO 64106

Dear Mr. Ochs

Re: Notice of Amendment - CPF 3-2020-5018M

In response to your letter dated October 8, 2020 NOVA Chemicals is not contesting the Notice of Amendment. Attached for your consideration are the responses addressing each of the items PHMSA identified for review within NOVA's plans or procedures.

The following is a brief overview of NOVA's response to these items:

Item #1 - Pipeline Integrity Management in High Consequence Areas

- P-195.422 Pipeline Repair Procedure and NOVA Chemicals ME Pipeline Excavation, Mitigation and Repair Criteria table has been modified to define defect repair criteria and acceptable repair methods for identified defects

Item #2 – Internal Corrosion Mitigation

- P-195.569 has been modified to address external corrosion only
- P-195.579 has been modified to provide instruction and guidance on how to inspect for internal corrosion
- F-195.422 (a) has been modified to provide guidance on how to inspect the pipe, record and document any findings, and provide directions for repairs, if required

Item #3 – Control Room Management – Shift Turnover

- A routine task has been added to NOVA Chemicals Operations Log System and the Control Room Management manual has been updated to include methods of recording shift-change practices and producing a record for future inspections

Item #4 - Qualifications for Supervisors

- P-195.555 has been developed to govern corrosion control qualifications for supervisors
- F-195.555 has been developed to define corrosion control qualifications for supervisors and verify compliance

We appreciate the time taken to review and improve NOVA Chemicals' plans and procedures. Please contact the undersigned in any future correspondence(s).

Sincerely,
NOVA Chemicals Corporation

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Attachments:
P-195.422 Pipeline Repair Procedure
ME Pipeline Excavation, Mitigation and Repair Criteria Table
P-195.569 External Examination of Exposed Pipe
P-195.579 Internal Corrosion
F-195.422 (a) Leak/Investigation Repair Exposed Pipe and Foreign Pipeline Crossing Report
P-195.446 Control Room Management
P-195.555 Corrosion Control Supervisor Qualifications
F-195.555 Corrosion Control Supervisor Qualifications

NOVA Chemicals (Canada) Ltd. **Corunna Operations**

	MATERIAL FLOW OPERATING	Procedure No. P-195.422
Revision No.: 07	OPERATIONS AND MAINTENANCE	Page 1 of 46
	US PIPELINES	
Revision Date: 11.05.19	**PIPELINE REPAIR PROCEDURES**	Initial issue date: 01.31.07
Issuer: Megan Copley	**Approval: Terry Johnson**	

Purpose

This procedure describes the steps to ensure that the pipeline is repaired in a manner consistent with DOT regulations

Scope

Extracted from 49 CFR 195.422

(a) Each operator shall, in repairing its pipeline systems, ensure that the repairs are made in a safe manner and are made so as to prevent damage to persons or property.

(b) No operator may use any pipe, valve, or fitting, for replacement in repairing pipeline facilities, unless it is designed and constructed as required by this part.

Application

Applies to all hazardous liquid pipelines regulated by the U.S. Department of Transportation (DOT)

Frequency

As needed

Responsibilities

In order to complete this activity, you must be qualified under NOVA Chemicals' Operator Qualification (OQ) Program.

Performed by: Reliability Inspection Specialist, Mechanical Maintenance, Contractor

Special Considerations

- Evaluate, for repair, a pipeline whenever an anomaly is found. Ensure time restraints as listed in the Integrity Management Program (IMP) regulations and CFR 195 are adhered to.
- An anomaly (gouge, groove, dent, corrosion, or leak) is one that impairs the safety and serviceability of a pipeline and requires repair.
- An operator must consider the risk to people, property, and the environment in prioritizing the correction of any conditions

- Take temporary measures to protect life and property from hazards resulting from a leaking, defective or damaged pipeline with an injurious damage condition.
- Determine the repair method for an anomaly according to the type of damage or defect.
- Use the un-pressurized repair alternate if either of the following two conditions exists:
    - Pipe geometry is deformed so it prevents proper installation of a pressurized repair
    - Leakage makes pressurized repair unsafe
- A pressurized repair is one that is carried out while the pressure in the pipeline is higher than atmospheric.
- If a pressurized repair is made, reduce the pressure of the line to the limits established by each repair method. All repair methods established by this procedure are considered permanent. The use of a leak clamp is considered a temporary measure that may be taken to protect life and property. Refer to tables 451.6.2(b)-1 & 2 “Acceptable Pipeline Repair Methods” (found in the NOVA Chemicals ME Pipeline Excavation, Mitigation and Repair Criteria document) for acceptable – mechanical bolt on clamps
- After repairing a leak, verify that the leak has been contained and no additional leaks exist in the immediate area
- When emergency conditions exist, field and support personnel must contact the control room (via phone call or radio communications).

Safety and Environmental Precautions

N/A

Covered Tasks

For required training, evaluation methods and AOC recognition, refer to the following applicable Covered Task(s):

- 5.1: Examine for Mechanical Damage on Buried or Submerged Pipe
- 5.2: Examine for External Corrosion on Buried or Submerged Pipe
- 38.3: Visually Inspect that Welds Meet DOT requirements
- 39: Backfilling a Trench Following Maintenance
- 40.1: Fit Full Encirclement Welded Split Sleeve

- 41: Conduct Pressure Test

The applicability of the tasks depends on the investigation and repair method utilized.

Attachments

F-195.422	Repair Work Order
F-195.310	Pipeline Pressure Test Record and Contractor report

Mandatory Record Keeping

Complete all applicable forms and additional documentation as required. Ensure all applicable documents are filed with the Pipeline Regulatory Specialist.

References

49 CFR 195.120	Passage of Internal Inspection Devices
49 CFR 195.422	Pipeline Repairs
49 CFR 195.452	Pipeline Integrity Management in High Consequence Areas

Related Procedures/Specifications

F-195.200	Pipeline Construction / Replacement Packet
F-195.422	Repair Work Order
F-195.422(a)	Leak Investigation / Repair, Exposed Pipe and Foreign Pipeline Crossing Report
P-195.5	Conversion of Service
P-195.50	Reporting Accidents and Safety-Related Conditions
P-195.214	Welding
P-195.230C	Replacement of a Weld or Cylinder of Pipe
P-195.234	Non-destructive Testing of Welds
P-195.300	Pressure Testing
P-195.406	Maximum Operating Pressure (MOP) Determination
P-195.402(c) (14)	Trench Safety
P-195.569	External Examination of Exposed Pipe

NOVA Chemicals ME Pipeline Excavation, Mitigation and Repair Criteria including the tables 451.6.2(b) 1 & 2 - Acceptable Pipeline Repair Methods

Before you start, check that:

- Ensure that all employees and contractors involved in this activity have completed the following, as applicable:
  - Review of all procedures being used or referred to in this activity
  - All task specific AOC(s) conditions and responses have been reviewed and understood so appropriate steps can be taken in the event of occurrence
  - Have a clear understanding of the reporting requirements

Action	Key Points	Init'l
1. No operator may use any pipe, valve, or fitting for replacement or repairing pipeline facilities unless it is designed and constructed as required by 49 CFR Part 195.		
2. Preliminary Investigation		
a) Inspect any exposed pipeline for leaks, impact damage, coating conditions, and external corrosion	Must be OQ per Covered tasks 5.1 Examine for Mechanical Damage on Buried or Submerged Pipe & 5.2 Examine for External Corrosion on Buried or Submerged Pipe	
b) Visually inspect buried welds whenever the coating has been removed for any reason	Must be OQ per Covered task 38.3 Visually Inspect that Welds Meet DOT requirements	
c) Make a preliminary assessment to determine the extent of the damage or defect. In most cases a visual inspection is sufficient. Use X-ray or other forms of inspection that could be considered helpful if conditions warrant		

Action	Key Points	Init'l
d) Investigate to determine the cause of any leaks that are found e) Determine if a safety related condition exists and whether it should be reported. Use Procedure P-195.50 f) Determine if the damage requires repair and the repair method to use **3. Evaluation of Damage Extent** a) Make a precise evaluation of the extent of any damage or defect b) Compare the extent of any damage or defect against the limits established in Reasons and Schedule for Repair section c) Confirm the damage as injurious to the facilities if its extent exceeds the limits established **4. Repairs While Operating Under Pressure**		

Action	Key Points	Init'l
a) The pressure criteria in this procedure are based upon industry experience and mathematical analysis predicting acceptable pipeline pressures. Such experience indicates that a pipeline that has been damaged and does not subsequently fail (rupture) probably will not fail during the course of repair activities if the actual pressure in the pipe is reduced. With this consideration, the greater the pressure reduction, the lesser the probability that a pipe failure will occur b) To minimize risk, activities should be accomplished at the lowest operating pressure possible c) Good engineering judgment is needed to determine the appropriate pressure depending on the extent of damage to the pipeline, deliverability requirements and other circumstances d) Facility management must be consulted, and written approval obtained when pipeline pressures are above the recommended maximum pressures and left in service e) The condition of the pipeline is the condition of that segment of the line in the immediate surroundings where the described activities are taking place or are expected to take place		

Action	Key Points	Init'l
5. Removing/Returning Equipment For/After Repair a) Notify employees/personnel in the area before removing/installing equipment b) When taking equipment out of service, it is important to isolate it by using Lock Out/Tag Out procedures c) When depressurizing pipeline equipment, it is first necessary to close off all necessary valves d) Before opening the bleeder valve to depressurize pipeline equipment, ensure all flare connections are tight and are open to the flare e) A bleeder valve should be opened slowly and monitor metal temperature to ensure it stays about –20°C f) If you are unable to depressurize equipment normally, you should Notify Regional Pipeline Integrity Coordinator and NOVA Chemicals Material Flow Control Room g) If removing or installing equipment requires entry into a confined space, special procedures need to be followed (1) If hazardous atmospheric conditions are encountered		

Action	Key Points	Init'l
(2) Evacuate all non-essential personnel (3) Essential personnel should wear PPE (4) Do not conduct work that could ignite the hazardous materials (5) Notify other area personnel and Regional Pipeline Integrity Coordinator (6) If local emergency services are needed, call 911 (7) Move to a safe, upwind location (8) Secure the area, if necessary h) If pressurized/trapped hydrocarbons are present in a valve body or other components, do not remove and notify Regional Pipeline Integrity Coordinator and NOVA Chemicals Material Flow Control Room Centre **6. Requirements for In-Line Inspections** a) All permanent line pipe repairs, valve replacements, fittings, or other component repairs shall be designed and constructed to accommodate the passage of in-line inspection (ILI) devices per 49 CFR 195.120		

Action	Key Points	Init'l
b) All in-line inspections shall be completed per a project specific procedure, P-195.591 and NOVA Chemicals IMP c) Results for pipeline examinations executed from the evaluation and analysis of ILI data shall be recorded in the inspection report distributed as required. d) Record keeping requirements for ILI results shall follow the requirements of the Records portion of this procedure and the Pipeline IMP		
7. Reasons and Schedule for Repair a) If as a result of a pipeline examination, or as a result of the evaluation of ILI data, any one of the conditions listed below is found, prompt action is required to evaluate and repair and/or remediate the condition in accordance to the schedule indicated in the NOVA Chemicals ME Pipeline Excavation, Mitigation and Repair Criteria document (which includes the provisions of CFR 195)	Refer to the NOVA Chemicals ME Pipeline Excavation, Mitigation and Repair Criteria document and CFR 195.452(h) and 195.422	

Action	Key Points	Init'l
b) Discovery of a condition occurs when an operator has adequate information to determine that a condition presenting a potential threat to the integrity of the pipeline exists. An operator must promptly, but no later than 180 days after an integrity assessment, obtain sufficient information about a condition to make that determination, unless the operator can demonstrate that the 180-day period is impracticable. (1) If the operator believes that 180 days are impracticable to make a determination about a condition found during an assessment, the pipeline operator must notify PHMSA and provide an expected date when adequate information will become available.	NOVA Chemicals considers the integrity assessment to be the in-line inspection tool run and the receipt and analysis of the results provided by the ILI vendor. If notification to PHMSA is required, an operator must provide this notification by: a) Sending the notification by electronic mail to InformationResourcesManager@dot.gov; or b) Sending the notification by mail to ATTN: Information Resources Manager, DOT/PHMSA/OPS, East Building, 2nd Floor, E22-321, 1200 New Jersey Ave SE., Washington, DC 20590.	

Action	Key Points	Init'l
c) An operator must complete remediation of a condition according to a schedule prioritizing the conditions for evaluation and remediation. If an operator cannot meet the schedule for any condition, the operator must explain the reasons why it cannot meet the schedule and how the changed schedule will not jeopardize public safety or environmental protection.		
d) Immediate Condition (per CFR 195.452(h)(4)	All these listed, as well as any condition listed in Procedure P-195.50 Safety-Related Conditions, shall be reported to the Regional Pipeline Integrity Coordinator for a "Safety Related Condition" evaluation	
(1) Metal loss greater than 80% of nominal wall regardless of dimensions		
(2) Metal loss, which after an engineering evaluation, results in a predicted burst pressure less than maximum operating pressure at the location of the condition		
(3) Any dent located on top of the pipeline (above the 4 & 8 o'clock positions) with indication of metal loss, cracking, or stress riser		

Action	Key Points	Init'l
(4) Any dent located on top of the pipeline (above the 4 & 8 o'clock positions) with a depth greater than 6% of nominal diameter (5) Any indication discovered through an Integrity Assessment (ILI or Hydrotest as defined by 49 CFR 195.452) that in the judgment of the Reliability Inspection Specialist requires immediate action (6) It is required that the first response after discovering any of the above conditions be a reduction in operating pressure or shutdown of the affected pipeline. An operator must calculate the temporary reduction in operating pressure using the formulas referenced in paragraph CFR 195.452(h)(4)(i)(B). If no suitable remaining strength calculation method can be identified, an operator must implement a minimum 20 percent or greater operating pressure reduction, based on actual operating pressure for two months prior to the date of inspection, until the anomaly is repaired. Refer to 49 CFR 195.452 (h)(4)(i)	If the operator cannot meet the schedule for evaluation and remediation as described below and cannot provide safety through a temporary reduction in operating pressure, the operator must notify PHMSA by a) Sending the notification by electronic mail to InformationResourcesManager@dot.gov; or b) Sending the notification by mail to ATTN: Information Resources Manager, DOT/PHMSA/OPS, East Building, 2nd Floor, E22-321, 1200 New Jersey Ave SE., Washington, DC 20590.	

Action	Key Points	Init'l
(7) Any temporary pressure reduction in operating pressure taken until a repair can be completed for any of the above conditions cannot exceed 365 days without taking additional remedial actions to assure the safety of the affected pipeline and notifying PHMSA to explain reasons for the delay.	If notification to PHMSA is required, an operator must provide this notification by: a) Sending the notification by electronic mail to InformationResourcesManager@dot.gov; or b) Sending the notification by mail to ATTN: Information Resources Manager, DOT/PHMSA/OPS, East Building, 2nd Floor, E22-321, 1200 New Jersey Ave SE., Washington, DC 20590.	
e) 60-Day Condition (1) Any dent located on top of the pipeline (above the 4 & 8 o'clock positions) with depth greater than 3 % of nominal diameter (greater than 0.250" deep for twelve (12") inches (30.48 cm) NPS or smaller) (2) Any dent located on the bottom of the pipe with an indication of metal loss, cracking, or stress riser		
f) 180-Day Condition (1) Any dent greater than 2% of nominal diameter (0.250" deep for twelve (12") inches (30.48 cm) NPS or smaller) that affects a girth weld or long seam		

Action	Key Points	Init'l
(2) Any dent located on top of the pipeline (above the 4 & 8 o'clock positions) with a depth greater than 2% of nominal diameter (0.250" deep for twelve (12") inches (30.48 cm) NPS or smaller) (3) Any dent located on the bottom of the pipe greater than 6% of nominal diameter (4) Metal loss, which after an engineering evaluation, results in a operating pressure less than the established maximum operating pressure at the location of the condition (5) Any area of general corrosion with metal loss greater than 50% of nominal wall (6) Metal loss greater than 50% of nominal wall located at a foreign line crossing, or in an area with widespread circumferential corrosion, or in an area that could affect a girth weld (7) An indication that, when evaluated with appropriate Non-destructive Examination (NDE) techniques, is determined to be a crack (8) Corrosion of or along a longitudinal seam weld		

Action	Key Points	Init'l
(9) A gouge or groove greater than 12.5% of nominal wall (10) Any indication discovered through an Integrity Assessment that in the judgment of the ILI Specialist could impair pipeline integrity g) Action to remediate the conditions listed above is dependent upon the category of the condition as well as on where within the pipeline right-of-way the condition is located. When a condition that has the potential to reduce the pipeline's integrity is located within a High Consequence Area (HCA) as defined in 49 CFR 195.452, or if the potential exists that a release caused by the condition could affect a HCA, the schedule to execute the appropriate remediation is detailed above. **Field Inspection / Evaluation of Pipe Defects** **8. Pressure Reduction**		

Action	Key Points	Init'l
a) Whenever a specific pipeline anomaly is to be physically examined and evaluated for possible repair, the possibility of sudden failure of the anomaly must be recognized. To minimize the risks to personnel and facilities, the internal pressure level in the pipeline should be reduced to a level that would be expected to prevent a near-failure anomaly from failing while the excavation, physical examination, and repair is in progress. In this respect two types of anomalies are relevant: (1) Anomalies for which the remaining strength can be calculated (2) Anomalies of unknown significance (for which the remaining strength cannot be calculated) b) When excavating and physically evaluating an anomaly for possible repair or excavating and physically responding to an in-line inspection where the data indicate the presence of an anomaly that may affect the integrity of the pipeline, the pressure level at the location of the anomaly should be reduced as follows depending on the type of anomaly: c) Anomalies for which the remaining strength can be calculated:		

Action	Key Points	Init'l
(1) The pressure level at the location of the anomaly should be reduced to the calculated safe operating pressure d) Anomalies of unknown significance operating at a pressure equivalent to or greater than 40% of SMYS: (1) The pressure level at the location of the anomaly should be reduced to 80% of the pressure at the time the anomaly was identified e) The pipeline segment should not be shut-in if the resulting pressure at the location of the anomaly exceeds the actual operating pressure at the time the anomaly was discovered f) Each type of defect (corrosion, weld anomaly, dent, gouge, other) has different inspection requirements and evaluation routines. The inspection and evaluation approach to each type of defect will be discussed in the following sections **9. Dents – the following are critical factors when inspecting and measuring dents:**		

Action	Key Points	Init'l
a) Depth - the total depth extends from any raised area above the normal surface of the pipe to the deepest part of the dent. A straight edge shall be placed longitudinally (down the pipe) across the dent and the depth measured from the bottom of the straight edge to the deepest point in the dent b) The presence of associated corrosion or gouges and the proximity to lap seams, welds, and previous repairs c) Dents meeting any of the following conditions shall be repaired or replaced (1) Dents exceeding a depth of - 6% of the Outside Diameter; (one-quarter (¼") inch (.64 cm) on four (4") inch (10.16 cm) or less diameter pipe) (2) Dents that affect the pipe curvature at the lap seam and longitudinal or girth welds; (3) Dents that affect pipe curvature at a previous repair; and (4) Dents containing any gouge or corrosion **10. Gouges — The following are critical factors when inspecting and measuring gouges**		

Action	Key Points	Init'l
a) Depth – to be measured after filing off any ridge or displaced metal flush with the contour of the adjacent pipe. Failure to remove the ridge may cause an inaccurate depth measurement. The defect depth shall then be measured to proceed with the preliminary evaluation b) The presence of any associated corrosion or dents (refer to section on dents) c) Gouges meeting any of the following conditions shall be repaired or replaced. When filing or grinding a gouge as part of the repair operation, at no time shall more than 40% of the nominal wall thickness of the pipe be removed		

Action	Key Points	Init'l
(1) Gouges with an initial depth of 12.5% or greater of the nominal wall thickness shall be ground smooth and permanently repaired. After filing or grinding is completed, the area shall be non-destructively examined by wet magnetic particle by a qualified individual to make sure no linear indications remain present. Acceptance criteria shall meet the current CFR Title 49 approved API 1104 section 9.4. Procedural criteria shall comply with the current CFR Title 49 approved API 1104 Section 11.2 and ASTM E709. Only NDT Level II or Level III (ASNT or CGSB) shall calibrate equipment or interpret results (2) Gouges with an initial depth greater than 20% of nominal wall thickness shall be reported to Engineering for further evaluation. These are considered severe gouges **11. Other Defects** a) Several other types of defects may be found in line pipe including: Seam Splits, Longitudinal Cracks, Stress Corrosion Cracking (SCC), Hard Spots, Blisters, Wrinkles / Buckles, Laminations, and Mill Defects		

Action	Key Points	Init'l
b) Some of these defects (mill defects, mid wall laminations not at welds) were created during the pipe mill manufacturing process. These defects have either been fully hydrotested at the time of construction, or have been service tested throughout years of pipeline operation and most are therefore considered structurally sound. These conditions should be reported to Reliability Inspection Specialist for further evaluation c) Seam splits, stress corrosion cracking (SCC), or any other crack like defects are serious defects. These conditions shall be reported for a "Safety Related Condition" evaluation (Procedure P-195.50 Reporting Accidents and Safety Related Conditions) and to the Reliability Inspection Specialist and the Regional Pipeline Integrity Coordinator for further evaluation **12. Repair of Imperfections and Damages** a) Except as provided in 2 below, each imperfection or damage that impairs the serviceability of a segment of steel transmission line operating at or above 40% of specified minimum yield strength must be repaired as follows:		

Action	Key Points	Init'l
(1) If it is feasible to take the segment out of service, the imperfection or damage must be removed by cutting out a cylindrical piece of pipe and replacing it with pipe of similar or greater design strength (2) If it is not feasible to take the segment out of service, one of the repair methods described in sections A through L below must be applied. Repair sleeves shall be welded using a qualified procedure specifying low hydrogen rod b) Submerged offshore pipelines and submerged pipelines in inland navigable waters may be repaired by mechanically applying a full encirclement split sleeve of appropriate design over the imperfection or damage **13. Repair of Leaks** a) If feasible, the segment of pipeline must be taken out of service and repaired by cutting out a cylindrical piece of pipe and replacing it with pipe of similar or greater design strength b) If it is not feasible to take the segment of pipeline out of service, repairs must be made by applying one of the repair methods described below.		

Action	Key Points	Init'l
c) If the leak is due to a corrosion pit, the repair may be made temporarily by installing a properly designed bolt-on-leak clamp d) Either the sleeve or the clamp is to be removed and replaced by a cylindrical piece as soon as it is feasible to take the piping out of service e) All repairs performed must be tested and inspected f) If feasible, the segment of pipeline must be taken out of service and repaired by cutting out a cylindrical piece of pipe and replacing it with pipe of similar or greater design strength g) If it is not feasible to take the segment of pipeline out of service, repairs must be made by applying one of the repair methods described below. h) If the leak is due to a corrosion pit, the repair may be made temporarily by installing a properly designed bolt-on-leak clamp i) Either the sleeve or the clamp is to be removed and replaced by a cylindrical piece as soon as it is feasible to take the piping out of service j) All repairs performed must be tested and inspected		

Action	Key Points	Init'l
14. Pipeline Repair Methods	Refer to tables 451.6.2(b)-1 & 2 "Acceptable Pipeline Repair Methods" (found in the NOVA Chemicals ME Pipeline Excavation, Mitigation and Repair Criteria document) to determine when each of the following pipeline repair methods are acceptable to use	
a) Acceptable repair methods are listed in steps 15 through 25		
15. Replacement Pipe	Refer to tables 451.6.2(b)-1 & 2 "Acceptable Pipeline Repair Methods" (found in the NOVA Chemicals ME Pipeline Excavation, Mitigation and Repair Criteria document) – criteria for "replace as cylinder"	
(1) The replacement pipe must be tested to the pressure required for a new line installed in the same location. This test may be made on the pipe before it is installed. See Procedure P-195.300 Pressure Testing	Must be OQ per covered task 41: Conduct Pressure Test Fill out for F-195.310 Pipeline Pressure Test Record and Contractor report, or approved equivalent	
(2) Test pressures are defined in detail in the Michigan Gas Safety Code book. Please refer to R 460.14503, R 460.14505 and R 460.14507. Required test pressure is 2160 psig for the pipeline system		
b) Inspection and test of welds		

Action	Key Points	Init'l
(1) Visual inspection of welding must be conducted to ensure that the welding is performed in accordance with the welding procedure (2) Nondestructive testing of weld must be performed by a trained technician. Interpretation of x-rays shall be made by a technician trained to a Level II. See Procedure P-195.234 (3) All welds should be 100% radiograph examined		
16. Weld Plus Coupling	Refer to tables 451.6.2(b)-1 & 2 "Acceptable Pipeline Repair Methods" (found in the NOVA Chemicals ME Pipeline Excavation, Mitigation and Repair Criteria document) – criteria for fittings	
a) Prepare Weld Plus for installation (1) Remove paint, scale & rust (2) Check sealing & centering bolts (3) Check seals for dirt & cracking b) Perform ultrasound for fillet welds c) Grind or file welded side seam d) Slide Weld Plus completely on to new pipe		

Action	Key Points	Init'l
e) Set in and support new pipe f) Slide Weld Plus to predetermined points g) Snug all centering bolts evenly, maintaining space between pipeline & Weld Plus Coupling h) Tighten sealant bolts to manufacturers specifications i) Fill pipeline slowly to 50% of recommended working pressure for the Weld Plus Coupling j) Post fire watch k) Cut off excess sealant element bolt and centering bolt ends l) Weld the Weld Plus Coupling ends and sealant elements bolts m) Weld up centering bolts n) Request return to operating pressure o) Request magnetic particle test to be conducted twelve (12) hours after the line has been restored to normal operations		

Action	Key Points	Init'l
17. Sealing the Pipeline with a Stopple Plugging Machine	Refer to tables 451.6.2(b)-1 & 2 "Acceptable Pipeline Repair Methods" (found in the NOVA Chemicals ME Pipeline Excavation, Mitigation and Repair Criteria document) – criteria for hot tap	
a) A job specific procedure will be developed and placed into the project files whenever stoppling is to be performed.		
18. Removal by Grinding	Refer to tables 451.6.2(b)-1 & 2 "Acceptable Pipeline Repair Methods" (found in the NOVA Chemicals ME Pipeline Excavation, Mitigation and Repair Criteria document) – criteria for removal by grinding	
a) A job specific procedure will be developed and placed into the project files whenever grinding is to be performed.		
19. Sandwich Valve Installation	Refer to tables 451.6.2(b)-1 & 2 "Acceptable Pipeline Repair Methods" (found in the NOVA Chemicals ME Pipeline Excavation, Mitigation and Repair Criteria document) – criteria for removal by grinding – criteria for hot tap and/or fittings	
a) Check bolts, faces and sandwich valves		

Action	Key Points	Init'l
b) Rig sandwich valve for installation: (1) Clean the flange face of the stopple fitting and the bottom face of the sandwich valve (2) Install the proper gasket c) Install sandwich valve: (1) Mount the sandwich valve on the stopple fitting making sure retainer ring screws are not obstructed (2) Quarter and tighten the stud nuts (refer to flange tightening procedure) (3) Install cat walk (4) Open the sandwich valve with the valve handle and record the number of turns for later use. On larger sandwich valves the travel distance of the valve extension rod is measured (5) Check for proper sandwich valve and stopple fitting bore alignment using a straight edge (If alignment is poor, loosen stud nuts and make the adjustment) d) Take measurements		

Action	Key Points	Init'l
(1) Measure and record from the top of the sandwich valve to the top centre of the pipeline, including gaskets (This measurement will be used in both the tapping and stopple plugging operation) (2) Measure and record from the top of the sandwich valve, plus the gaskets, to the top of the retainer ring segments (This measurement will be used to set the lock-o-ring plug)		
20. Oversleeve Installation	Refer to tables 451.6.2(b)-1 & 2 "Acceptable Pipeline Repair Methods" (found in the NOVA Chemicals ME Pipeline Excavation, Mitigation and Repair Criteria document) – criteria for reinforcing full encirclement sleeve (Type A) / pressure containing full sleeve encirclment (Type B) / Composite sleeve Must be OQ per covered task 40.1: Fit Full Encirclement Welded Split Sleeve	
a) Prepare surface by wire buffing or abrasive blasting is required b) Fill dents or voids as needed c) Obtain the induced AC potential		

Action	Key Points	Init'l
d) Ensure proper ultrasonic has been done for weld ends e) Refer to Authorization Procedure for direct welding on line f) Prepare & fit collars to pipeline using jacks & chains so inside welds are four (4") inches (10.16 cm) less than desired length of overlseeve when using four (4") inches (10.16 cm) collars g) Post fire watch h) Tack weld side seams of collars i) Remove jacks & chains from collars j) Weld side seams of collars k) Prepare & fit bottom & top halves of oversleeve to collars using jacks & chains (desired length of oversleeve is distance between centres of collars) l) Tack weld side seams of oversleeve m) Remove jacks & chains from oversleeve n) Weld side seams of oversleeve o) Weld oversleeve ends to centre of collars p) Weld ends of collars to pipeline.		

Action	Key Points	Init'l
q) Request magnetic particle test of oversleeve after twelve (12) hours		
21. Steel Compression Reinforcement Sleeve Installation (e.g. Petrosleeve)	Refer to tables 451.6.2(b)-1 & 2 "Acceptable Pipeline Repair Methods" (found in the NOVA Chemicals ME Pipeline Excavation, Mitigation and Repair Criteria document) – criteria for Pressure Containing Full Encirclement sleeve (Type B)	
1. Personnel installing sleeve(s) shall be competent in the installation procedures by the sleeve manufacturer or supplier, or by personnel who have been so trained and qualified.	Must be OQ per covered task 40.1: Fit Full Encirclement Welded Split Sleeve	
2. Prepare external pipe surface and compression sleeve by wire buffing or abrasive blasting.		
3. Fill dents or voids as needed.		
4. If sleeve is to be installed over a circumferential weld joint or a mill weld seam with a protruding weld cap, excessive weld cap material shall be removed, or the sleeve shall be "grooved" to prevent stress concentrations at the weld locations. Any resultant reduction in wall thickness of the sleeve shall be considered in determining the maximum stress in the sleeve.		

Action	Key Points	Init'l
5. Ensure compression sleeve is to be installed over the centerline of the defect. Adjust orientation of sleeve, so that the weld seams are not directly over top of the defect(s). 6. Apply epoxy filler over entire area being covered by the compression sleeve. 7. Prepare & fit sleeve halves to pipeline using jacks & chains so the outer edges and center portions of the sleeve seams can be welded, leaving only the chain locations without weld. 8. Post fire watch. 9. Sleeve is to be welded in two phases. 10. Phase 1: Weld side seams and center portion of sleeve seams. 11. Remove jacks & chains from collars. 12. Phase 2: Weld remaining portions of sleeve seams. 13. Request magnetic particle test of sleeve welds after weld temperatures have returned to ambient temperature. 14. If NDE results show no relevant indications, remove lifting/grounding lug and perform magnetic particle of "grind off" area (if applicable)		

Action	Key Points	Init'l
22. Clock Spring Installation a) Refer to excavation procedure b) Prepare surface by wire buffing or abrasive blasting c) Remove excess moisture from pipe with acetone, if needed d) Scribe pipe by using mylar wrap or 3 wraps of Clock Spring e) Remove the unprinted release film of starter pad f) Centre and square the starter pad and press onto the pipe surface g) Apply filler to defects, pipe seam and edge of starter pad h) Apply adhesive evenly over the pipe section that will immediately be covered with Clock Spring including starter pad (applying in one direction only over the starter pad) i) Remove printed side of release film from starter pad	Refer to tables 451.6.2(b)-1 & 2 "Acceptable Pipeline Repair Methods" (found in the NOVA Chemicals ME Pipeline Excavation, Mitigation and Repair Criteria document) – criteria for composite sleeve	

Action	Key Points	Init'l
j) Pull the lead edge beneath the pipe to cover the starter pad k) Align the circumferential edge of the Clock Spring with the scribed area l) Tap with hammer Clock Spring lead edge onto starter pad m) Apply adhesive while supporting the coiled Clock Spring atop the pipe (on larger diameter pipe, use spool feeder support for the Clock Spring) n) Wrap the Clock Spring around the pipe on the adhesive coated area o) Continue applying adhesive and wrapping until Clock Spring is completely wrapped p) Install lock tight pad on Clock Spring q) Tap the lock tight end of the cinch strap onto the lock tight pad that is mounted on the Clock Spring r) Cinch Clock Spring onto the pipe using the cinch strap hooks so that adhesive squeezes out the ends. s) Tap Clock Spring edges with wooden block for final alignment t) Tape the Clock Spring into position while maintaining pressure on the tension bar		

Action	Key Points	Init'l
u) Seal by hand pressure rubber sealant along outside edges and seams v) Cover edges and seams with sealing tape		
23. Tight-fitting Sleeve Installation	Refer to tables 451.6.2(b)-1 & 2 "Acceptable Pipeline Repair Methods" (found in the NOVA Chemicals ME Pipeline Excavation, Mitigation and Repair Criteria document) – criteria for reinforcing full encirclement sleeve (Type A) Must be OQ per covered task 40.1: Fit Full Encirclement Welded Split Sleeve	
a) Prepare surface by wire buffing or abrasive blasting as required b) Fill dents or voids as needed c) Obtain the induced AC potential d) Ensure proper ultrasonic has been done for weld ends e) Refer to authorization procedure for direct welding on line f) Prepare and fit top & bottom of tight fitting sleeve to pipeline: (1) Install backup straps under longitudinal welds		

Action	Key Points	Init'l
(2) Using jacks & chains to achieve a tight fit and equal welding gaps for the side seam g) Post fire watch h) Weld first pass on side seams in all accessible areas i) Remove jacks & chains j) Complete welding side seams to each other k) Weld ends to pipeline l) Request magnetic particle test to be conducted twelve (12) hours after line is restored to normal operations		
24. Plugging the Pipeline with the Lock-O-Ring Plug	Refer to tables 451.6.2(b)-1 & 2 "Acceptable Pipeline Repair Methods" (found in the NOVA Chemicals ME Pipeline Excavation, Mitigation and Repair Criteria document) – criteria for hot tap	
a) Install coupon to plug making sure arrows are aligned b) Install and tighten plug holder to boring bar with retainer rod on tapping machine c) Inspect: (1) Plug		

Action	Key Points	Init'l
(2) Ball check (3) Spring (4) Teflon seat d) Assemble components (1) Install rubber o-ring into lower grove of lock-o-ring plug (2) Align and tighten plug to plug holder (3) Tighten plug into boring bar e) Take necessary measurements f) Install tapping machine with plug fully retracted g) Equalize pressure (1) Attach two (2") inch (5.08 cm) equalization line (2) Equalize pressure only through bypass on sandwich valve (3) Open two (2") inch (5.08 cm) equalization line (optional) h) Advance opposite segments after coupon passes segments i) Run plug down to the top of segments		

Action	Key Points	Init'l
(1) Power plug down within two (2") inch (5.08 cm) (2) Hand crank to top of segments (3) Back up plug four (4) turns one-quarter (1/4") inch (.63 cm) j) Retract opposite segments k) Crank down proper number of turns manually to set plug l) Install all segments m) Crank down until plug stops and back up until plug stops, then one turn down. n) Release plug from boring bar with measuring rod o) Back off boring bar twelve (12) turns on tapping machine p) Close two (2") inch (5.08 cm) equalization line q) Open one-quarter (1/4") inch (.63 cm) bleeder valve & reset if pressure does not bleed off r) Retract measuring rod to zero (0) s) Drain tapping machine t) Disconnect two (2") inch (5.08 cm) equalization line		

Action	Key Points	Init'l
u) Pull tapping machine v) Remove oil in sandwich valve w) Remove plug adapter for future use x) Close sandwich valve y) Plug two (2") inch (5.08 cm) z) Remove two (2") inch (5.08 cm) valve aa) Install two (2") inch (5.08 cm) cap with Teflon tape bb) Remove sandwich valve cc) Install flextalic gasket & blind flange on stopple fitting and bolt completion blind		
25. Maintenance, service and inspection of components (may lead to repairs) a) Activities related to the maintenance, service and inspection of components (which my lead to repairs) are found in steps 26 to 31		
26. Shorted Casing a) Conduct on / off potential tests on the casing and carrier pipe to detect casing shorts. b) Make One-call and ensure that any affected operators have marked their facilities		

Action	Key Points	Init'l
c) Expose casing and excavate workable area around the carrier pipe		
d) Remove end seal		
e) If hazardous liquid are found within casings, Cease all work activity, secure the area and notify the Regional Pipeline Integrity Coordinator		
f) Centre the carrier pipe within the casing		
g) Install casing insulator and centering cradle while providing adequate support		
h) Install test wires as required		
i) Backfill supported pipe and casing end in such a manner that stresses will not be added which can lead to a catastrophic failure	Must be OQ per Covered task 39 Backfilling a trench following maintenance	
j) Conduct testing to ensure the casing is repaired		
27. Service Flow Switches		
a) Notify SCADA coordinator of test		
b) Troubleshoot/repair inoperable flow switch components		
(1) Verify the field device has power to the switch		

Action	Key Points	Init'l
(2) Verify circuit configuration jumpers are correct. c) Check flow switches for operability (1) Verify there is sufficient flow through the pipeline to operate the device (2) Adjust switch to indicate flow (3) Re-test with no flow & operate with flow d) Remove inoperable flow switch components (1) Remove power from device (2) Disconnect wiring (3) Notify Pipeline Coordinator that switch is ready for removal by a mechanic e) Replace inoperable flow switch components (1) Replace conduit fittings & wiring (2) Check configuration (3) Re-energize circuit f) Examine flow switches for leaks and visual defects		

Action	Key Points	Init'l
g) Conduct post maintenance operational test (1) Verify there is sufficient flow through the pipeline to operate the device (2) Adjust switch to indicate flow (3) Re-test with no flow & operate with flow h) Check alarm(s) for operability		
28. Bolt and Tighten Flange a) The integrity of the seal depends upon: (1) selection of correct components appropriate for the application (2) careful preparation, cleaning, installation and assembly (3) correct bolt tightening and loading	Ensure use of NOVA Chemicals ES-PPG-1004 for Standard Bolting	
29. Gaskets a) Gaskets should be as required in the NOVA Engineering Specifications and/or certified Pipeline Drawings. b) When cutting of soft gaskets (1) use a good cutter		

Action	Key Points	Init'l
(2) ensure the gasket is the correct size (3) cut the bolt holes slightly smaller than the bolt shaft diameter (4) ensure that the inside diameter of the gasket is not less than the inside diameter of the process line c) Gaskets and gasket materials should be stored in a cool, dry place, away from direct sunlight, water, oil and chemicals. Gaskets should be kept clean and free from mechanical damage (ideally, store in sealed poly bags). Store sheet materials flat. Do not hang gaskets d) Gaskets should be as carried carefully, ideally with some form of protective cover e) Do NOT bend gaskets f) Always transport large diameter metallic and semi-metallic gaskets on their mounting to the installation site g) Gasket installation and centralization: (1) Carefully insert the new gasket between the flanges to prevent damage to the gasket surfaces		

Action	Key Points	Init'l
(2) For larger diameter spiral wound gaskets, seat the gasket in its mounting on the flange, remove the securing straps, then slide the gasket from its mounting onto the flange using an appropriate number of persons to avoid damage to the gasket (3) Ensure the gasket is central in the flange (4) Do not use jointing compounds or releasing agents (5) Line up the joint components and examine them to ensure that an acceptable fit has been obtained (6) Take care when bringing the flanges together, to ensure that the gasket is not pinched or otherwise damaged **30. Fasteners** a) When selecting fasteners (bolts or studs), select fasteners with sufficient yield strength to ensure they are within their elastic limit at the required load b) Bolts and studs must have the same modulus of elasticity c) If there is corrosion on the fasteners do NOT reuse them		

Action	Key Points	Init'l
d) Select nuts with a proof load 20% greater than the ultimate tensile strength of the fasteners e) Washers and nuts should be made of the same material f) Number of bolts the flange is designed for should always be used g) Lubrication of fastener threads and all bearing surfaces (1) lubricate fastener threads and all bearing surfaces (underside of bolt heads, nuts, washers) (2) use only specified lubricants (3) apply the lubricant in a consistent manner as a thick, uniform coating (4) ensure lubricant does not contaminate either flange or gasket faces (5) Avoid contamination of the lubricant by storing in a closed container. After use, store in a "clean" area		
31. Tightening a) Flange tightening shall be performed in accordance with NOVA's Flange Closure Procedure.	Ensure use of NOVA Chemicals ES-PPG-1004 for Standard Bolting	

Action	Key Points	Init'l
b) Installation of Plidco Split Sleeve c) Follow manufacturer's procedure **32. Records — the following records must be kept for repairs** a) All completed forms	Provide forms to the Pipeline Regulatory Specialist and the DOT Administrator	
b) Submit as-built sketches to engineering to update the drawings if pipe is replaced c) Maintain the records of each pipe repair for the useful life of the pipeline. Include at a minimum, the date, location, and description of each repair d) Maintain the records of each repair made to parts of the pipeline system other than pipe for at least 1 year. Include at a minimum, the date, location, and description of each repair		

NOVA Chemicals ME Pipeline Excavation, Mitigation and Repair Criteria

Methods for Evaluating ILI Results based on API RP1160, D.O.T. PHMSA 195 & CSA Z662
(Reference Tab "B31.4-2006 Table 451.6.2(b)" for acceptable repair methods)
When prioritizing of repairs, you must consider the risk to people, property and the environment*

Revision (log found on Pg 2): 13
Revision Date: April 23, 2020
Approved by: Scott E. Compagnion / Jordan Douglas

	Defects Requiring Immediate Action Prior to Pipeline Being Returned to Service Following the Discovery of a Condition
	Proposed NOVA Criteria
1	Metal Loss greater than 80% of nominal wall, or wall loss plus tool error is 80% or greater
2	Predicted burst pressure is less than 1.25 times MOP
3	Corroded areas that contain cracks, or that are concentrated in the seams of electric resistance welded or flash welded pipe, or that are located in material likely to exhibit brittle fracture initiation.
4	Any dent that contains indications of cracking
5	Any dent (above the 4 and 8 o'clock position) that contains indications of wall loss or stress risers (gouges, grooves, arc burns, or cracks)
6	A dent located on the top of the pipeline (above the 4 and 8 o'clock position) with a depth greater than 6 mm (.236") in NPS 3 pipe or smaller or 6% of the outside diameter in pipe larger than NPS 3
7	Dents that are sharp with a length to depth ratio (L/d) less than 20, unless their measured curvature strain is less than 6%
8	Internal corrosion area with greater than 50% wall loss and no means to cease the corrosion.
9	External anomaly - (.85dl) RPR less than .8; Internal anomaly - (.85dl) RPR Less than 1.0
10	Any indication of cracking
11	An anomaly that, in the judgment of the person designated to evaluate assessment results, requires action. Consider the risk to people, property and the environment.

	Defects Requiring Remediation within 60 days from the Discovery of a Condition
	Proposed NOVA Criteria
1	A dent located on the top of the pipeline (above the 4 and 8 o'clock positions) with a depth greater than 3% of the pipeline diameter (greater than 0.250 inches in depth for a pipeline diameter less than Nominal Pipe Size (NPS12).
2	Any dent (below the 4 and 8 o'clock position) that contains indications of stress risers (gouges, grooves, arc burns, or cracks etc.) or corrosion.
3	The following features shall be considered to be defects unless determined by an engineering assessment to be acceptable: a) Ripples, wrinkles and buckles that contain stress concentrators (corrosion, manufacturing features, gouges, grooves, arcburns, welds, or cracks); and b) Ripples, wrinkles, and buckles with crest-to-trough dimensions having i) ratio of feature height / pipe outside diameter greater than 0.02; ii) ratio of feature height / pipe outside diameter greater than (0.01)x((30-S[ksi]/10)+1) or (0.01)x((206.84-S[MPa]/68.95)+1) for liquid pipelines with a maximum operating stress (S) between 137.90MPa (20ksi) and 206.84MPa (30ksi); iii) ratio of feature height / pipe outside diameter greater than (0.005)x((47-S[ksi]/10)+1) or (0.005)x((324.05-S[MPa]/117.21)+1) for liquid pipelines with a maximum operating stress (S) between 206.84MPa (30ksi) and 324.05MPa (47ksi); iv) ratio of feature height / pipe outside diameter greater than 0.005 for liquid pipelines with a maximum operating stress (S) greater than 324.05MPa (47ksi); v) ratio of feature height / pipe outside diameter greater than (0.01)x((47-S[ksi]/17)+1) or (0.01)x((324.05-S[MPa]/117.21)+1) for gas pipelines with a maximum operating stress (S) between 255.11MPa (37ksi) and 324.05MPa (47ksi);or vi) Ratio of feature height / pipe outside diameter greater than 0.01 for gas pipelines with a maximum operating stress (S) greater than 324.05MPa (47ksi).
4	An anomaly that, in the judgment of the person designated to evaluate assessment results, requires action. Consider the risk to people, property and the environment.

	Defects Requiring Remediation within 180 days from the Discovery of a Condition
	Proposed NOVA Criteria
1	A dent with a depth greater than 2% of pipeline diameter [greater than 0.236" in depth for a pipeline diameter less than NPS 12] located on top of the pipeline or at a girth or longitudinal seam weld
2	Any dent (below the 4 and 8 o'clock position) with a depth greater than 6% of the pipeline's diameter
3	Preferential or selective seam corrosion of or along a seam weld
4	A gouge or groove greater than 12.5% of nominal wall
5	Metal loss greater than 50% of nominal wall
6	Internal corrosion area with 30%-50% wall loss and no means to cease the corrosion.
7	A potential crack indication
8	Pipe out of roundness (Ovality) shall be limited to the difference between the maximum and minimum diameters not exceeding 5% of the specified outside diameter of the pipe. Pipe not meeting this requirement shall be removed.
9	An anomaly that, in the judgment of the person designated to evaluate assessment results, requires action. Consider the risk to people, property and the environment.

	Defects Requiring Verification on a Scheduled Basis From the Discovery of a Condition
	Proposed NOVA Criteria
1	External metal loss greater than 35% of nominal wall
2	Predicted burst pressure is less than 2 times established MOP at the location of the anomaly
3	Gouges, grooves less than 12.5% of nominal wall thickness and arc burns shall be considered to be defects.
4	Corroded areas that are not located in dents and that have a depth greater than 10%, up to and including 80%, of the nominal wall thickness of the pipe shall be acceptable, provided that (a)the longitudinal length of the corroded area does not exceed the maximum allowable longitudinal extent determined as specified in ASME B31G; or (b) the MOP is equal to or less than the failure pressure of the pipe containing the corroded area multiplied by the terms in the following expression: MOP ≤ Pfail × (F × L × J × T) (Urgency of repair determined by Engineering assessment)
5	Internal corrosion area with 15%-30% wall loss and no means to cease the corrosion, unless internal corrosion has been validated at another location.
6	An anomaly that, in the judgment of the person designated to evaluate assessment results, requires action. Consider the risk to people, property and the environment.

NOVA Chemicals ME Pipeline Excavation, Mitigation and Repair Criteria

Methods for Evaluating ILI Results based on API RP1160, D.O.T. PHMSA 195 & CSA Z662
(Reference Tab "B31.4-2006 Table 451.6.2(b)" for acceptable repair methods)
When prioritizing of repairs, you must consider the risk to people, property and the environment*

Revision (log found on Pg 2): 13
Revision Date: April 23, 2020
Approved by: Scott E. Compagnion / Jordan Douglas

	Revision Changes
Rev 1	Nov 6, 2014 -Scheduled Basis - Item 4 - Changed "with less than 30%" to "with 15%-30%" and changed "reason for deferral..." section to "Revisions Changes" section.
Rev 2	April 17, 2015 - Immediate Action - Item 9 - Added "External anomaly - (.85dl) RPR less than .8; Internal anomaly - (.85dl) RPR Less than 1.0"
Rev 3	June 5, 2015 - Immediate Action - Item 10 - Added "Any indication of cracking"
Rev 4	September 14, 2015 - Immediate Action - Item 7 - "Dents that contain corroded areas with a depth greater than 40% of the nominal wall thickness of the pipe" changed to "A dent located on the top of the pipeline (above the 4 and 8 o'clock positions) that has any indication of metal loss" 180 Day Action - Item 5 - "Dents that contain corroded areas having a depth greater than 10%, up to and including 40%, of the nominal wall thickness of the pipe and a depth and length that exceed the maximum allowable longitudinal extent determined as specified in ASME B31G." - DELETED
Rev 5	December 10, 2015 - Immediate Action - Item 13 - Added - "Pipe out of roundness (Ovality) shall be limited to the difference between the maximum and minimum diameters not exceeding 5% of the specified outside diameter of the pipe. Pipe not meeting this requirement shall be removed." Immediate Action - Item 7 - Added - "Dents that are sharp with a length to depth ratio (L/d) less than 20, unless their measured curvature strain is less than 6%" 60-Day Action - Item 3 - Added - The following features shall be considered to be defects unless determined by an engineering assessment to be acceptable: a) Ripples, wrinkles and buckles that contain stress concentrators (corrosion, manufacturing features, gouges, grooves, arcburns, welds, or cracks); and b) Ripples, wrinkles, and buckles with crest-to-trough dimensions having i) ratio of feature height / pipe outside diameter greater than 0.02; ii) ratio of feature height / pipe outside diameter greater than (0.01)x((30-S[ksi]/10)+1) or (0.01)x((206.84-S[MPa]/68.95)+1) for liquid pipelines with a maximum operating stress (S) between 137.90MPa (20ksi) and 206.84MPa (30ksi); iii) ratio of feature height / pipe outside diameter greater than (0.005)x((47-S[ksi]/10)+1) or (0.005)x((324.05-S[MPa]/117.21)+1) for liquid pipelines with a maximum operating stress (S) between 206.84MPa (30ksi) and 324.05MPa (47ksi); iv) ratio of feature height / pipe outside diameter greater than 0.005 for liquid pipelines with a maximum operating stress (S) greater than 324.05MPa (47ksi); v) ratio of feature height / pipe outside diameter greater than (0.01)x((47-S[ksi]/17)+1) or (0.01)x((324.05-S[MPa]/117.21)+1) for gas pipelines with a maximum operating stress (S) between 255.11MPa (37ksi) and 324.05MPa (47ksi); or vi) Ratio of feature height / pipe outside diameter greater than 0.01 for gas pipelines with a maximum operating stress (S) greater than 324.05MPa (47ksi).
Rev 6	February 24, 2016 - Immediate Action - Item 8 - "Dents that contain corroded areas with a depth greater than 40% of the nominal wall thickness of the pipe" - DELETED Immediate Action - Item 5 - Changed - "Any dent (above the 4 and 8 o'clock position) that contains indications of stress risers (gouges, grooves arc burns, or cracks)" to "Any dent (above the 4 and 8 o'clock position) that contains indications of *wall loss or* stress risers (gouges, grooves, arc burns, or cracks)"
Rev 7	October 4, 2016 - Immediate Action - Item 3 - "Corroded areas that contain cracks, or that are concentrated in the seams of electric resistance welded or flash welded pipe, or that are located in material likely to exhibit brittle fracture initiation." changed to "Corroded areas that contain cracks or that are located in material likely to exhibit brittle fracture initiation.". Weld attack is covered under 180 day Action Item 3.
Rev 8	February 20, 2019 - Immediate Action - Item 12 - "Pipe out of roundness (Ovality) shall be limited to the difference between the maximum and minimum diameters not exceeding 5% of the specified outside diameter of the pipe. Pipe not meeting this requirement shall be removed." moved to Remmediation within 180 days - Item 8. Justification - CSA does not specifiy timelime for anomly remmediation, therefore, immediate action not required.
Rev 9	March 14, 2019 - Scheduled Basis - Item 4 - Changed to "Corroded areas that are not located in dents and that have a depth greater than 10%, up to and including 80%, of the nominal wall thickness of the pipe shall be acceptable, provided that (a)the longitudinal length of the corroded area does not exceed the maximum allowable longitudinal extent determined as specified in ASME B31G; or (b) the MOP is equal to or less than the failure pressure of the pipe containing the corroded area multiplied by the terms in the following expression: MOP ≤ Pfail × (F × L × J × T) (Urgency of repair determined by Engineering assessment)" and Former Item 4 re-numbered to 5
Rev 10	August 2, 2019 - "An anomaly that, in the judgment of the person designated to evaluate assessment results, requires action" added to Defects Requiring Remediation within 60 days from the ILI Run - Item 4; Defects Requiring Remediation within 180 days from the ILI Run - Item 9 and Defects Requiring Verification on a Scheduled Basis - Item 6. This was done as follow up to 2019 DOT audit. This allows inspector to select anomlies for verification for any timeline, as required.
Rev 11	Added tab for "B31.4-2006 Table 451.6.2(b)" table - Acceptable Pipeline Repair Methods; Added "(Reference Tab "B31.4-2006 Table 451.6.2(b)" for acceptable repair methods) to the title
Rev 12	February 11, 2020 - Document format altered to fit page better during printing.
Rev 13	April 23, 2020 - Row 5/Col C - Changed cell from "Date" to "Revision Date". Item titles changed from "Defects Requiring Immediate Action Prior to Pipeline being returned to service" to "Defects Requiring Immediate Action Prior to Pipeline Being Returned to Service Following the Discovery of a Condition"; "Defects Requiring Remediation within 60 days from the ILI Run" to "Defects Requiring Remediation within 60 days from the Discovery of a Condition"; "Defects Requiring Remediation within 180 days from the ILI Run" to "Defects Requiring Remediation within 180 days from the Discovery of a Condition"; and "Defects Requiring Verification on a Scheduled Basis" to "Defects Requiring Verification on a Scheduled Basis From the Discovery of a Condition". Immediate Action - Item 11, Remediation within 60 Days - Item 4, Remediation within 180 Days - Item 9 and Scheduled Basis - Item 6 were all changed from "An anomaly that, in the judgment of the person designated to evaluate assessment results, requires action." to "An anomaly that, in the judgment of the person designated to evaluate assessment results, requires action. Consider the risk to people, property and the environment.". Added "**When prioritizing of repairs, you must consider the risk to people, property and the environment**" to Row 3 Description.

NOVA Chemicals (Canada) Ltd. **Corunna Operations**

	MATERIAL FLOW OPERATING	Procedure No. P-195.569
Revision No.: 07	OPERATIONS AND MAINTENANCE	Page 1 of 3
	US PIPELINES	
Revision Date: 09.11.19	**EXTERNAL EXAMINATION OF EXPOSED PIPE**	Initial issue date: 01.31.07
Issuer: Megan Copley	**Approval: Terry Johnson**	

Purpose

This procedure provides the steps necessary to establish a standard program for examination of exposed pipe, for evidence of external corrosion.

Scope

Extracted from 49 CFR 195.569

Whenever you have knowledge that any portion of a buried pipeline is exposed, you must examine the exposed portion for evidence of external corrosion if the pipe is bare, or if the coating is deteriorated. If you find external corrosion requiring corrective action under §195.585, you must investigate circumferentially and longitudinally beyond the exposed portion (by visual examination, indirect method, or both) to determine whether additional corrosion requiring remedial action exists in the vicinity of the exposed portion.

Application

Applies to all hazardous liquid pipelines regulated by the U.S. Department of Transportation (DOT)

Frequency

As needed

Responsibilities

In order to complete this activity, you must be qualified under NOVA Chemicals' Operator Qualification (OQ) Program.

Performed by: Reliability Inspection Specialist, Contractor

Special Considerations

N/A

Safety and Environmental Precautions

N/A

Covered Tasks

For required training, evaluation methods and AOC recognition, refer to the following applicable Covered Task(s):

- 5.1: Examine for Mechanical Damage on Buried or Submerged Pipe
- 5.2: Examine for External Corrosion on Buried or Submerged Pipe
- 8.1: Measure Pit Depth with Pit Gauge
- 8.2: Measure Wall Thickness with Ultrasonic Meter
- 8.3: Measure Corroded Area

Attachments

F-195.422(a)	Leak Investigation/Repair, Exposed Pipe and Foreign Pipeline Crossing Report

Mandatory Record Keeping

Complete all applicable forms and additional documentation as required. Ensure all applicable documents are filed with the Pipeline Regulatory Specialist.

References

49 CFR 195.569	Do I have to examine exposed portions of buried pipelines?

Related Procedures/Specifications

P-195.50	Reporting Accidents and Safety-Related Conditions
P-195.579	Internal Corrosion
NACE SP0169-2007	Control of External Corrosion on Underground or Submerged Metallic Piping Systems

Before you start, check that:

- Ensure that all employees and contractors involved in this activity have completed the following, as applicable:
  - Review of all procedures being used or referred to in this activity
  - All task specific AOC(s) conditions and responses have been reviewed and understood so appropriate steps can be taken in the event of occurrence
  - Have a clear understanding of the reporting requirements

Action	Key Points	Init'l
1. Complete external examination of exposed pipe as prescribed by NACE SP0169.		
2. Complete and file observations	Form F-195.422(a) Retain record for life of the pipeline.	

NOVA Chemicals (Canada) Ltd. **Corunna Operations**

	MATERIAL FLOW OPERATING	Procedure No. P-195.579
Revision No.: 07	OPERATIONS AND MAINTENANCE	Page 1 of 5
	US PIPELINES	
Revision Date: 09.11.19	**INTERNAL CORROSION**	Initial issue date: 01.31.07
Issuer: Megan Copley	**Approval: Terry Johnson**	

Purpose

This procedure gives the requirements to mitigate internal Corrosion for the detection, monitoring, and control of internal corrosion, and required corrective actions for pipeline facilities.

Scope

Extracted from 49 CFR 195.579

(a) General. If you transport any hazardous liquid or carbon dioxide that would corrode the pipeline, you must investigate the corrosive effect of the hazardous liquid or carbon dioxide on the pipeline and take adequate steps to mitigate internal corrosion.

(b) Inhibitors. If you use corrosion inhibitors to mitigate internal corrosion, you must—

(1) Use inhibitors in sufficient quantity to protect the entire part of the pipeline system that the inhibitors are designed to protect;

(2) Use coupons or other monitoring equipment to determine the effectiveness of the inhibitors in mitigating internal corrosion; and

(3) Examine the coupons or other monitoring equipment at least twice each calendar year, but with intervals not exceeding 7½ months.

(c) Removing pipe. Whenever you remove pipe from a pipeline, you must inspect the internal surface of the pipe for evidence of corrosion. If you find internal corrosion requiring corrective action under §195.585, you must investigate circumferentially and longitudinally beyond the removed pipe (by visual examination, indirect method, or both) to determine whether additional corrosion requiring remedial action exists in the vicinity of the removed pipe.

(d) Breakout tanks. After October 2, 2000, when you install a tank bottom lining in an aboveground breakout tank built to API Spec 12F (incorporated by reference, see §195.3), API Std 620 (incorporated by reference, see §195.3), API Std 650 (incorporated by reference, see §195.3), or API Std 650's predecessor, Standard 12C, you must install the lining in accordance with API RP 652 (incorporated by reference, see §195.3). However, you don't need to comply with API RP 652 when installing any tank for which you note in the corrosion control procedures established under

§195.402(c)(3) why compliance with all or certain provisions of API RP 652 is not necessary for the safety of the tank.

Application

Applies to all hazardous liquid pipelines regulated by the U.S. Department of Transportation (DOT)

Frequency

As needed

Responsibilities

In order to complete this activity, you must be qualified under NOVA Chemicals' Operator Qualification (OQ) Program.

Performed by: Reliability Inspection Specialist, Contractor

Special Considerations

N/A

Safety and Environmental Precautions

When emergency conditions exist, field and support personnel must contact the control room (via phone call or radio communications).

Covered Tasks

For required training, evaluation methods and AOC recognition, refer to the following applicable Covered Task(s):

- 8.1: Measure Pit Depth with Pit Gauge
- 8.2: Measure Wall Thickness with Ultrasonic Meter
- 8.3: Measure Corroded Area
- 12.0: Visually Inspect Internal Pipe Surface

Attachments

F-195.579(b)(2)	Coupon Inspection and Corrosive Effect Investigation
F-195.422(a)	Leak Investigation/Repair, Exposed Pipe and Foreign Pipeline Crossing Report
F-195.406	MOP Determination

Mandatory Record Keeping

Complete all applicable forms and additional documentation as required. Ensure all applicable documents are filed with the Pipeline Regulatory Specialist.

References

49 CFR 195.563	Which Pipelines Must Have Cathodic Protection?
49 CFR 195.579	What must I do to mitigate internal corrosion?

Related Procedures/Specifications

P-195.50	Reporting Accidents and Safety-Related Conditions
P-195.422	Pipeline Repair Procedures
P-195.583	Visually Inspect for Atmospheric Corrosion
AGA PR-3-805	A Modified Criterion for Evaluating the Remaining Strength of Corroded Pipe
ASME/ANSI B31G-1991	Manual for Determining the Remaining Strength of Corroded Pipelines

Before you start, check that:

- Ensure that all employees and contractors involved in this activity have completed the following, as applicable:
  - Review of all procedures being used or referred to in this activity
  - All task specific AOC(s) conditions and responses have been reviewed and understood so appropriate steps can be taken in the event of occurrence
  - Have a clear understanding of the reporting requirements

Action	Key Points	Init'l
1. **Whenever pipe is removed, visually inspect the internal surface. This includes the removed component section and the observable portion of the pipe upstream and downstream of the removed component or access point** a) Confirm that pipe is in a condition to allow internal inspection (empty) and if removed that orientation has been properly marked. b) Visually inspect the removed section for internal corrosion c) If you find internal corrosion requiring corrective action under §195.585, you must investigate circumferentially and longitudinally beyond the removed pipe (by visual examination, indirect method, or both) to determine whether additional corrosion requiring remedial action exists in the vicinity of the removed pipe.	Note: You must have appropriate OQ training to perform this visual inspection Checking for Stress Corrosion Cracking may also be appropriate	

Action	Key Points	Init'l
d) Document your observations whether corrosion is found or not	See step 2 Note: Special care should be taken in recording the patterns and location of general corrosion, pitting, mechanical damage and/or scale buildup.	
2. Record details of the inspection per form F-195.422(a) Leak investigation/repair/exposed pipe and foreign pipeline crossing report	Internal Surface Inspection section	
3. Repair. If internal corrosion has or may have reduced the wall thickness of a segment of pipe to less than that required for the maximum operating pressure, pipe repair or replacement should be planned, or the working pressure reduced a) Repair Work Order form F-195.422 must be completed and retained	It should also be used in conjunction with procedure P-195.422 to document all repairs as they are complete.	
4. Maintain applicable records for the life of the pipeline.		

NOVA Chemicals (Canada) Ltd. **Corunna Operations**

	MATERIAL FLOW OPERATING	Form No. F-195.422(a)
Revision No.: 05	OPERATIONS AND MAINTENANCE	Page 1 of 11
	US PIPELINES	
Revision Date: 09.12.19	**LEAK INVESTIGATION/REPAIR EXPOSED PIPE AND FOREIGN PIPELINE CROSSING REPORT**	Initial issue date: 01.31.07
Issuer: Megan Copley	**Approval: Terry Johnson**	

Purpose

This form should be used anytime there is a potential leak on the pipeline or the pipe is exposed or cut for any reason.

Frequency

As needed

Special Considerations

As applicable, NOVA Chemicals may approve third party reports and/or forms as meeting the record keeping requirements. In such cases, completion of this form is not required.

Mandatory Record Keeping

Complete all applicable forms and additional documentation as required. Ensure all applicable documents are filed with the Pipeline Regulatory Specialist.

1. Complete appropriate sections of this form.
2. If corrosion of any kind is found or the coating is found to be damaged, forward a copy of this report to the mechanical engineer.
3. If the leak constitutes an emergency, follow procedure P-195.402(e) and complete form F-195.402(e)
4. Use procedure P-195.50 to determine if this is a reportable accident. If so, follow the directions in the procedure for reporting via the PHMSA portal
5. If a repair is needed, complete repair work order form F-195.422 and generate notification.
6. Complete for F-195.200 if the repair involves pipe replacement.
7. Have supervisor and all associated individuals/contractors sign form
8. Place record in File 195.422. Retain for 2 years or until next review whichever is longer, 1 year for component replacement and for the life of the pipeline for pipe replacement.

Related Procedures and Forms

P-195.250 Measure Underground Clearance

P-195.252	Excavation and Backfilling
P-195.402(e)	Emergency Response
P-195.412(a)	Right of Way Inspections
P-195.412(b)	Inspect Navigable Waterway Crossings
P-195.422	Pipeline Repair Procedures
P-195.442	Damage Prevention Program
P-195.557	Apply and Repair External Coating
P-195.569	Internal and External Inspection of Exposed Pipelines
F-195.200	Pipeline Construction / Replacement Packet
F-195.422	Repair Work Order

Required Signatures

Company	**Name**	**Title:** Reliability Inspection Specialist
Signature	**Date**	**Time**
Company	**Name**	**Title**
Signature	**Date**	**Time**
Company	**Name**	**Title**
Signature	**Date**	**Time**
Company	**Name**	**Title**
Signature	**Date**	**Time**

Identification:

Line Name:_____ Operating Pressure:_____
Milepost:_____ Latitude:_____ Longitude:_____
Closest Landmark:_____

Landowner:_____ Phone:_____
Address:_____ City:_____ State:____ Zip:_____

Leak Report:

Date of Leak:_____ Leak Reported By:_____
Cause of Leak:_____
Type of fluid lost:_____ Total Barrels Lost:_____ Barrels Recovered:_____
Net Barrels Lost:_____ Type of property damaged:_____
Extent of Damage:_____
Max. Depth:_____ Type and Method of Clean-up:_____
Information furnished to:_____

Exposed Pipe Inspection:

Why was the pipe exposed?

Pipe Design Data

Outer Diameter: _____ in.
Wall Thickness: _____ in.
Grade:_____
Avg Cover: _____ in

Exposure

Length: _____ ft.
From _____
To _____

External Defects

☐ None ☐ Arc Burn ☐ Defective Girth Weld
☐ Mechanical Gouge ☐ Cold Lap ☐ Other:_____
☐ Dent ☐ Defective Seam Weld
Deepest Defect _____ in.
Percent of Wall Thickness _____ %

Corrosion

☐ None ☐ Pitting ☐ Rust ☐ Scale
Largest Diameter _____ in.
Deepest Depth _____ in.
☐ General Loss of Wall Thickness
- UT Wall Thickness _____ in.

Length of Corroded Area:_____
Located: ☐ At holiday
☐ On bare pipe
☐ Beneath non-bonded coating
☐ Other:_____
Cause: ☐ Galvanic
☐ Bacterial
☐ Stray current
☐ Other:_____

Coating

Type:_____ Manufacturer:_____ Year Coated:_____

Method Applied: ☐ Mill ☐ Yard ☐ Field ☐ Unknown

Cause of Failure: ☐ Damage ☐ Defective Application ☐ Defective Material

☐ Decomposition ☐ Other:_____

Holiday found in coating due to:

☐ Backfilling ☐ Soil Stress ☐ Rock penetration ☐ Clod penetration

☐ Other:_____

Lack of bond found in coating due to:

☐ Backfill impact ☐ Water on pipe or primer

☐ Poor cleaning ☐ Soil on pipe or primer

☐ Other:_____

Description of Exposed Pipe.

_____

_____

_____

_____

_____

_____

Attach Photo if available

Internal Pipe Surface Inspection:

Location

☐ Onshore ☐ Offshore ☐ Inland Body of Water (Name body of water: _____)

Pipeline within right-of-way of: ☐ Railroad ☐ Paved road / street ☐ Highway

Street address: _____

System name: _____ Location code: _____

Pipeline station number: _____

City, County/Parish, State: _____

Nearest major landmark: _____

Why was this pipe removed?

Pipe

Commodity Transported: _____ Length removed: _____ ft.

Outer diameter: _____ in. From _____

Wall thickness: _____ in. To _____

Grade: _____

Internal Corrosion

☐ None ☐ Scale

☐ Pitting ☐ General loss of wall thickness

☐ Rust

Length of Corroded area: _____ feet

Deepest Internal Defect: _____ in

Percent of wall thickness lost: _____ %

Largest corrosion pit diameter _____

Corrosive Effect Investigation

Where was sample taken? _____

ILI Inspection

Internal Pipeline

Pig trap

Is commodity corrosive? ☐ Yes ☐ No

Was foreign material sent to lab for analysis? ☐ Yes ☐ No

If so, Name of lab: _____

Address: _____

_____

Attach lab analysis.

Completed by:_____ Date:_____

Foreign Pipeline Crossing Report:

Company Pipeline Information

Line Section Name:_____

Outer Diameter:_____ inches Commodity Carried:_____

Type of Coating: _____

Foreign Pipeline Information

Company Name: _____

Address: _____

Contact Person: _____ Title: _____

Line Section Name: _____

Outer Diameter: _____ inches Commodity Carried: _____

Type of Coating: _____

Crossing Location

Company Milepost: _____ Foreign Company Milepost: _____

Closest Landmark: _____

Cathodic Protection

Location of nearest rectifier: _____ miles _____ direction

This rectifier is owned by: _____

Rectifier operates at _____ volts or _____ amps.

Interference Bonds

Is a bond installed? ☐ YES ☐ NO

If so what is the size and type? _____

How long is the bond? _____ inches

Where is the bond located?

How is the bond marked? _____

How many amperes are drained? _____ What is the size of the shunt? _____Ohms

NOVA is Positive / Negative in bond.

Repair Record:

Does this report make permanent a previously reported temporary repair? ☐ Yes ☐ No

If so, what is the old report number? ____

Was pipe installed? ☐ Yes ☐ No

If so, OD:_____Footage:_____Type:_____ Weight: _____ WT:_____
Grade: _____

Was the pipe previously tested: ☐ Yes ☐ No

If so, attach record _____ psi

If not, pressure test according to P-195.300

Replacement coating type: _____

Type of manufacturing process:_____

If not describe repair: _____

_____

_____

Full slab/ft.:____ # patches_____ Displaced:_____ft. Idled:_____ft.

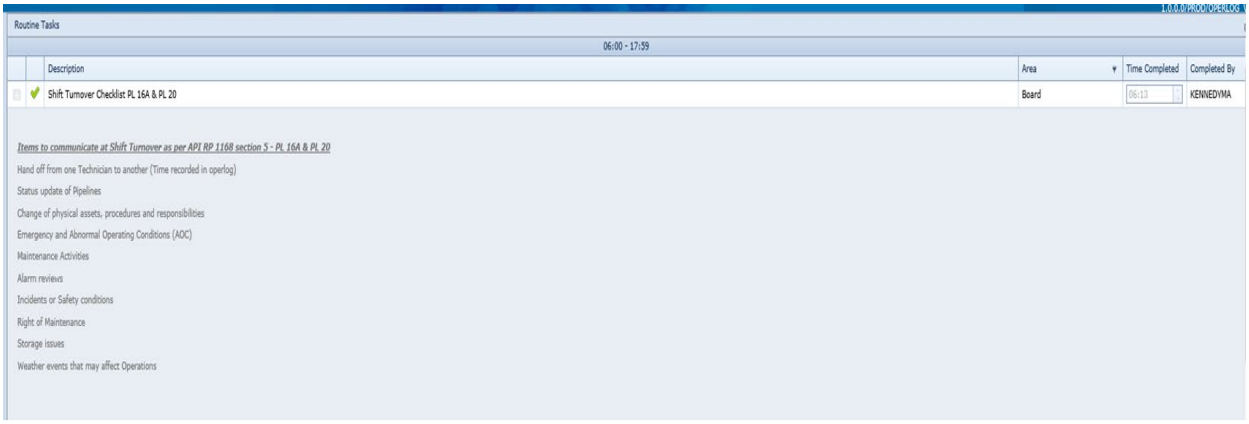
Coating Reconditioned:_____ft. Abandoned:___ft.

DRAFT

195.446(c)(5)

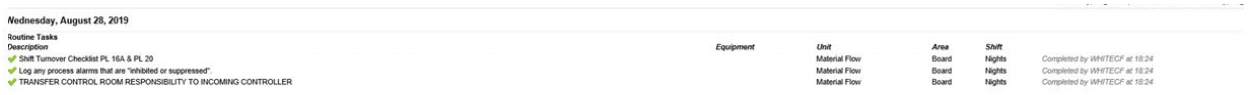
(5) Implement section 5 of API RP 1168 (incorporated by reference, see §195.3) to establish procedures for when a different controller assumes responsibility, including the content of information to be exchanged.

NOVA Chemicals had established a shift turnover reference checklist that was used at shift turnover to ensure the items from Section 5 of API RP 1168 were covered, but because it was a reference checklist, records of its use at shift changeover were not recorded. In order to ensure that records were kept that the conversations occurred, a Routine Task was added to Operlog that must be completed at each shift turnover and that must be logged. Below is the expanded routine task to show the items discussed and the confirmation that this was closed off by Mitch Kennedy at 6:13 am on August 28th.



Operlog Routine Task.msg

This is a record that the night shift on August 28th also completed the task (sign off by Carly White at 18:24).



Operlog Shift Turnover Task.msg

Text has been added to the Control Room Management Manual to reflect this activity. Below is an excerpt showing the addition of this activity to the manual.

4.2 Shift Turnover Meeting

A shift turnover (handoff) meeting is conducted to brief incoming Control Room Technicians on the status of current operations. Part of this turnover meeting is a clear understanding that incoming Control Room Technicians have taken over the responsibility for operations. The turnover meeting is typically conducted at the pipeline console.

Individual pipeline technicians determine the extent and detail of information provided and documented for effective shift turnover. The following items are addressed during shift turnover:

- Emergency/AOCs and any actions planned or taken; (see CO-00011)
- Daily operation information; (see CO-00011)
- Status of scheduled/unscheduled maintenance activities; (see CO-00011)
- Incident and/or safety conditions; (see CO-00011)
- Changes to physical assets, practices and responsibilities; (see CO-00011)
- Alarm reviews; (see OMO-06001 Board & Area Technician Responsibilities.doc) and/or
- Third-party incidents with potential direct or indirect impact on operations. (see CO-00011)
- The Routine Task in Operlog titled “Shift Turnover Checklist PL 16A and 20” covers the content required to be discussed per API RP 1168 section 5. Having these topics as a routine task ensures communication between the incoming and outgoing technicians covers what was previously in the shift turnover reference list, and also logs the time

and date it was completed at each turnover. This process is completed and recorded each shift to meet CFR 195.446(c)(5).

NOVA Chemicals (Canada) Ltd. **Corunna Operations**

	MATERIAL FLOW OPERATING	Procedure No. P-195.555
Revision No.: 02	OPERATIONS AND MAINTENANCE	Page 1 of 3
	US PIPELINES	
Revision Date: 00.00.0000	**CORROSION CONTROL SUPERVISOR QUALIFICATIONS**	Initial issue date: 00.00.0000
Issuer: Christine Tomlinson	**Approval: Terry Johnson**	

Purpose

This procedure will provide the qualification requirements for the corrosion control inspector and verification of the necessary training.

Scope

In accordance with 49 CFR 195.555, corrosion control inspectors ensuring compliance shall maintain a thorough knowledge of procedures established under 49 CFR 195.402(c)(3) and provide documentation of training.

Application

Applies to personnel who may be responsible for supervising internal and external corrosion control procedures of hazardous liquid pipelines regulated by the U.S. Department of Transportation (DOT).

Frequency

Every 3 years or as needed

Responsibilities

Performed by: Reliability Inspection Specialist

Special Considerations

N/A

Safety and Environmental Precautions

N/A

Covered Tasks

For required training, evaluation methods and AOC recognition, refer to the following applicable Covered Task(s):

- 5.1 Examine for Mechanical Damage on Buried or Submerged Pipe

- 5.2 Examine for External Corrosion on Buried or Submerged Pipe
- 5.3 Inspect the Condition of External Coating on Buried or Submerged Pipe
- 7.1 Visual Inspection of Atmospheric Coatings
- 7.7 Perform Coating Inspection
- 8.1 Measure Pit Depth
- 8.3 Measure Corroded Area
- 12.0 Visually Inspect Internal Pipe Surface

Attachments

F-195.555 Corrosion Control Supervisor Qualifications

Mandatory Record Keeping

Complete all applicable forms and additional documentation as required. Ensure all applicable documents are filed with the Pipeline Regulatory Specialist.

References

49 CFR 195.555	What are the qualifications for supervisors
49 CFR 195.402(c)(3)	Procedural Manual for Operations, Maintenance, and Emergencies

Related Procedures/Specifications

P-195.422 Pipeline Repair Procedure
P-195.557 Apply and Repair External Coating
P-195.569 External Examination of Exposed Pipe
P-195.573(a) Monitor External Corrosion Protected Pipelines
P-195.579 Internal Corrosion
P-195.581 Protection Against Atmospheric Corrosion
P-195.583 Visually Inspect for Atmospheric Corrosion
P-195.585 Corroded Pipe Correction
P-195.591 In-Line Inspection of Pipelines

Before you start, check that:

- Ensure that all supervisors involved in this activity have completed the following, as applicable:
    - Review of all procedures being used or referred to in this activity
    - Have a clear understanding of the reporting requirements
    - Provide the Pipeline Regulatory Specialist with the required certification(s) of training pertaining to the specific Covered Task.

NOVA Chemicals (Canada) Ltd. **Corunna Operations**

	MATERIAL FLOW OPERATING	Form No. F-195.555
Revision No.: 03	OPERATIONS AND MAINTENANCE	Page 1 of 5
	US PIPELINES	
Revision Date: 00.00.0000	**CORROSION CONTROL SUPERVISOR QUALIFICATIONS**	Initial issue date: 00.00.0000
Issuer: Christine Tomlinson	**Approval: Terry Johnson**	

Purpose

This form should be used to document training of corrosion control supervisors conducted under procedure P-195.555.

Frequency

Every 3 years or as needed

Special Considerations

As applicable, NOVA Chemicals may approve third party reports and/or forms as meeting the record keeping requirements.

Mandatory Record Keeping

Complete all applicable forms and additional documentation as required. Ensure all applicable documents are filed with the Pipeline Regulatory Specialist.

1. Conduct Corrosion Control Supervisor Qualifications review according to P-195.555.
2. Ensure supervisors have a complete knowledge of the internal and external corrosion related procedures for which they are responsible.
3. Have the Pipeline Regulatory Specialist and the Regional Pipeline Integrity Coordinator sign form.
4. Place in File 195.555. Retain for 3 years.

Related Procedures and Forms

P-195.555 Corrosion Control Supervisor Qualifications

Required Signatures

Company	**Name**	**Title:** Pipeline Regulatory Specialist
Signature	**Date**	**Time**
Company	**Name**	**Title:** Regional Pipeline Integrity Coordinator
Signature	**Date**	**Time**

Training:

Name of Corrosion Control Supervisor:	
Name of Certification	**Expiry Date**
API 570 Piping Inspection Code / Inspector Certification	
NACE Cathodic Protection (CP1)	
NCCER 61104-02 Measurement Pit Depth and Wall Thickness	
NCCER 61105-02 Inspect Buried and Submerged Pipe When Exposed	
NCCER 61106-02 Aboveground Pipe Coating and Inspection	
NCCER 61110-02 Inspect Internal Pipe Surfaces	
NCCER 61206-02 Performing Coating Inspection	
NCCER 62204-02 Pipeline Coating Inspection	
NCCER 71101-14 Field Abnormal Operating Conditions	
NCCER AOCFG-17 Abnormal Operating Conditions Field or Gas	

Name of Certification	**Expiry Date**
NCCER CT12-0-17 Visually Inspect Internal Pipe Surface	
NCCER CT5_1-17 Examine for Mechanical Damage on Buried or Submerged Pipe	
NCCER CT5_2-17 Examine for External Corrosion on Buried or Submerged Pipe	
NCCER CT5_3-17 Inspect the Condition of External Coating on Buried or Submerged Pipe	
NCCER CT7_1-17 Visual Inspection of Atmospheric Coatings	
NCCER CT7_7-17 Perform Coating Inspection	
NCCER CT8_1-17 Measure Pit Depth with Pit Gauge	
NCCER CT8_3-17 Measure Corroded Area	
Veriforce 401 Examination of Buried Pipelines When Exposed	
Veriforce 414 Inspect for Internal Corrosion Whenever Pipeline is Removed	
Veriforce 427 Inspection of Above or Below Ground Piping	

Name of Certification	**Expiry Date**
Veriforce 418 General and Localized Corrosion Measurement – Remedial Measures	
Veriforce 421 Measurement of Depth of Pitting with Pit Gauge	