CASCADE NATURAL GAS CORPORATION

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Pipeline Safety Program

INTEROFFICE MEMO

To: Mount Vernon District

From: John Bailey

RE: 6" East Mount Vernon HP Line Uprate

Date: November 13, 2015

Completion Date: November 25, 2015

Project Summary

Cascade Natural Gas currently operates Line #24 - 6" East Mount Vernon High Pressure (HP) Line in Skagit County, Washington, starting at the Mount Vernon Gate Station (O-6) and ending at R-167. Cascade also operates Line #15 – 6" Mount Vernon HP Line starting at R-167 and ending near the intersection of McLaughlin Rd and McLaughlin Extension Rd at V-196. Cascade is proposing to remove the portion of the existing 6" HP line between R-167 and R-168 from Line #15 and add it to Line #24. At the conclusion of this procedure, Line #24 will run from O-6 to R-168 and Line #15 will run from R-168 to V-196. Cascade is proposing to increase the maximum allowable operating pressure (MAOP) on the entire Line #24 (between O-6 and R-168) from 250 pounds per square inch gauge (psig) to 395 psig. The portion of the pipeline between O-6 and R-167 was installed in 2014 and the portion of the pipeline between R-167 and R-168 was installed in 1989. The line to be uprated totals approximately 13,253 feet in length. Line #25 – 4" Mount Vernon Gate HP Line, which parallels Line #24 from O-06 to R-167, will also be included in the uprate and is assumed to be included as part of Line #24 for the remainder of this document.

The proposed uprate would occur following the upgrade of the Mount Vernon Gate Station. The upgrade would include a new regulator station where Cascade would control the pressure of gas from Northwest Pipeline (NWP) into the Mount Vernon Distribution System (R-166). This station would initially operate at an MAOP of 250 psig and soon after operate at an MAOP of 395 psig following the uprate.

It should be noted that the 6" East Mount Vernon HP Line roughly parallels the 4" Mount Vernon HP Line (Line number 4 in the Mount Vernon District) for much of its length. This 4" line would not be included in the uprate and would continue to operate at 250 psig.

As the project is subject to the requirements of DOT Part 192 Subpart K, "Uprating" and WAC 480-93-155, "Increasing maximum allowable operating pressure", the review of the pipeline and its components include the following:

1. All affected gas facilities with their manufactured design operating pressure and specifications;
2. All original pressure test records;
3. All previous operating pressures and specifications;
4. All leaks, the date and method of repair;

5. All downstream regulators, relief valves, valves, and meter sets;
6. Current condition of the line.
7. Cathodic protection history of the line.

Design and Material Specifications

Pipe: The portion of the 6" East Mount Vernon HP Line between R-167 and R-168 was installed in 1989 at a total length of 12,783 feet. The pipeline was designed, tested, and certified to operate at 400 psig; however, it has operated at an MAOP of 250 psig since its installation.

The 4" Mount Vernon Gate HP Line was installed in 2005 at a total length of 420 feet. The pipeline was designed, tested, and certified to operate at 960 psig; however, it also has operated at an MAOP of 250 psig since its installation.

A short extension of the 6" East Mount Vernon HP Line was installed in 2014 to directly connect the existing line to the Mount Vernon Gate Station. This pipeline was designed, tested, and certified to operate at 500 psig; however, it has operated at an MAOP of 250 psig since its installation.

Table 1 lists the pipe specifications on all main segments included in the pipeline.

Table 1. Pipe Specifications

Installation Date	ER Number	Diameter, Wall Thickness, Grade, and Coating	Total Length	Test Pressure	Certification Pressure	Highest Operating Pressure
1/19/1989	33699	6.625" x 0.188" API 5L Grade X-42, x-tru coat	12,000'	600 psig	400 psig	250 psig
1/19/1989	33699	6.625" x 0.188" API 5L Grade B, x-tru coat	783'	600 psig	400 psig	250 psig
9/30/2005	G0075193	4.5" x 0.237" API 5L Grade X-46 x-tru coat	420'	1440 psig	960 psig	250 psig
10/04/2014	177232	6.625" x 0.188" API 5L Grade X-52, x-tru coat	470'	750 psig	500 psig	250 psig

Services: There would be one service line off the 6" East Mount Vernon HP Line included in the uprate. The existing service line at 22508 Gunderson Rd was installed in 2008 and pressure tested at a pressure of 450 psig. In 2015 the HPSS on this service line was replaced and the line was disconnected, tested at a pressure of 750 psig, and reconnected to the existing curb valve tee on the 6" main which has a factory pressure rating of 1440 psig.

Regulators: Three Regulator stations would be included in the uprate of the 6" East Mount Vernon HP Line. R-166, R-167, and R-168 were installed as part of the Mount Vernon Gate Upgrade.

R-166 directly controls the pressure of gas from Northwest Pipeline (NWP) into the 6" East Mount Vernon HP Line. R-167 and R-168 would each control pressure between the newly

uprated system (MAOP of 395 psig) line and the non-uprated system (MAOP of 250 psig). The regulators on the 6" East Mount Vernon HP Line are listed on **Table 2**:

Table 2. Regulator Specifications.

Regulator Number	Install Date	Lowest Rated Component	Test Pressure	Certification Pressure
R-166	11/20/2014	740 psig	750 psig	500 psig
R-167	9/19/2014	740 psig	600 psig	400 psig
R-168	9/16/2014	740 psig	750 psig	500 psig

Valves: There are a total of six mainline valves on the 6" East Mount Vernon HP Line that will be included in the uprate as shown on **Table 3**.

Table 3. Valve Specifications.

Valve Number	Install Date	Inlet Valve	Pressure Rating	Test Pressure	Certification Pressure
V-154	9/30/2005	4" Cameron Ball Valve, Fig. #800602-1-216	1480 psig	1440 psig	960 psig
V-155	9/30/2005	4" Cameron Ball Valve, Fig. #800602-1-216	1480 psig	1440 psig	960 psig
V-159	9/30/2005	4" Cameron Ball Valve, Fig. #800603-1-216	1480 psig	1440 psig	960 psig
V-197	9/17/2009	6" Ballomax Ball Valve, Fig. #6BMW740RP	740 psig	750 psig	500 psig
V-219	12/18/2014	6" Ballomax Ball Valve, Fig #6BMW740RP	740 psig	750 psig	500 psig
V-221	9/16/2014	6" Ballomax Ball Valve, Fig. #6BMW740RP	740 psig	750 psig	500 psig

Odorizers: The odorizer (O-6) for the Mount Vernon Distribution System is located at the start of the 6" East Mount Vernon HP Line, immediately downstream of R-166. The previous odorizer (O-2) was replaced and relocated as part of the Mount Vernon Gate Upgrade.

Meter Sets: There are no meter sets without service regulators on the 6" East Mount Vernon HP Line.

Leak History

The leak history of the 6" East Mount Vernon HP Line and associated mains and facilities since installation has been reviewed, and no leaks have been reported.

Cathodic Protection

The cathodic history of the 6" East Mount Vernon HP Line over the past five years has been reviewed and records indicate that all associated mains have adequate cathodic protection. Annual survey locations are and their reads are shown on **Table 4.**

Table 4. Annual Cathodic Survey Potential Reads.

Year	Pipe to Soil Potential (V)	
	O-2 Inlet	R-7 Inlet
2015	-1.359	-1.500
2014	-1.008	-1.285
2013	-1.378	-1.476
2012	-1.140	-1.234
2011	-1.103	-1.108
2010	-1.055	-1.083
2009	-1.075	-1.113
2008	-1.069	-1.138
2007	-1.150	-1.130
2006	-1.053	-1.270

Note: All readings are within acceptable ranges, as defined as less (more negative) than -0.900 V DC.

Regulator and Relief Valve Capacity

Each regulator station off of the 6" East Mount Vernon HP Line has been reviewed to ensure the regulator failure capacity does not exceed the downstream relief valve capacity at the proposed MAOP of 395 psig. As shown on **Table 5,** all relief valve capacities are adequate. Calculations for the regulator and relief capacities are provided below.

Table 5. Regulator Capacity.

Regulator Number	MAOP (psig)		Regulator Device	Relief Device	Regulator Capacity (cfh)	Relief Valve Capacity (cfh)
	Inlet	Outlet				
R-166	960	395	3" Mooney FG-18 w/ 100% plate**	4" Mooney FG-40 w/ 100% plate	4,134,940**	3,435,335
R-167	395	250	2" Mooney FG-30 w/ 50% plate	3" Mooney FG-17 w/ 100% plate	401,450	1,178,047
R-168	395	250	3" Mooney FG-17 w/ 100% plate	4" Mooney FG-40 w/ 100% plate	1,521,070	2,219,510

**Note: Regulators are installed in a worker/monitor configuration with a token relief.

Simplified Gas Sizing Equation

$$Q = 1.29 \cdot Cg \cdot P_1 \text{ if } \frac{P_1 - P_2}{P_1} \geq 0.64$$

Universal Gas Sizing Equation

$$Q = \sqrt{\frac{520}{G \cdot T}} \cdot Cg \cdot P_1 \cdot \sin\left[\frac{3417}{C1}\sqrt{\frac{P_1 - P_2}{P_1}}\right] deg.$$

where:

$Q = Flow\ Rate\ (SCFH)$

$Cg = Gas\ Sizing\ Coefficient$

$P_1 = Inlet\ Pressure\ (PSIA)$

$P_2 = Outlet\ Pressure\ (PSIA)$

$C1 = Valve\ Recovery\ Coefficient$

$G = Specific\ Gravity\ (0.6\ for\ Natural\ Gas)$

$T = Gas\ Temperature\ (°Rankine)$

For R-166 Regulator Device:

$$Q = \sqrt{\frac{520}{G \cdot T}} \cdot Cg \cdot P_1 \cdot \sin\left[\frac{3417}{C1}\sqrt{\frac{P_1 - P_2}{P_1}}\right] deg. =$$

$$\sqrt{\frac{520}{0.6 \cdot 520}} \cdot 3450 \cdot 974.7 \cdot \sin\left[\frac{3417}{36}\sqrt{\frac{974.7 - 409.7}{974.7}}\right] deg. = 4{,}134{,}940\ SCFH$$

For R-166 Relief Device:

$$Q = 1.29 \cdot Cg \cdot P_1 = 1.29 \cdot 6500 \cdot 409.7 = 3{,}435{,}335\ SCFH$$

For R-167 Regulator Device:

$$Q = \sqrt{\frac{520}{G \cdot T}} \cdot Cg \cdot P_1 \cdot \sin\left[\frac{3417}{C1}\sqrt{\frac{P_1 - P_2}{P_1}}\right] deg. =$$

$$\sqrt{\frac{520}{0.6 \cdot 520}} \cdot 820 \cdot 409.7 \cdot \sin\left[\frac{3417}{30}\sqrt{\frac{409.7 - 264.7}{409.7}}\right] deg. = 401{,}450\ SCFH$$

For R-167 Relief Device:

$$Q = 1.29 \cdot Cg \cdot P_1 = 1.29 \cdot 3450 \cdot 264.7 = 1{,}178{,}047\ SCFH$$

For R-168 Regulator Device:

$$Q = \sqrt{\frac{520}{G \cdot T}} \cdot Cg \cdot P_1 \cdot \sin\left[\frac{3417}{C1}\sqrt{\frac{P_1 - P_2}{P_1}}\right] deg. =$$

$$\sqrt{\frac{520}{0.6 \cdot 520}} \cdot 3450 \cdot 409.7 \cdot \sin\left[\frac{3417}{36}\sqrt{\frac{409.7 - 264.7}{409.7}}\right] deg. = 1{,}521{,}070\ SCFH$$

For R-168 Relief Device:

$$Q = 1.29 \cdot Cg \cdot P_1 = 1.29 \cdot 6500 \cdot 264.7 = 2{,}219{,}510\ SCFH$$

Maximum Allowable Operating Pressure

The proposed MAOP of 395 psig results in a hoop stress of no more than 19.9 percent of specified minimum yield strength (SMYS) for the 6" East Mount Vernon HP Line. As this is less than 20 percent of SMYS, the classification of line would remain as HP distribution.

$$\sigma_{hoop} = \frac{p \cdot d}{2 \cdot t} = \frac{395\,psig \cdot 6.625\,in}{2 \cdot 0.188\,in} = 6960\,psi \qquad \frac{6960\,psi}{35000\,psi} = 0.199 = 19.9\%$$

The proposed MAOP of 395 psig results in a hoop stress of no more than 8.15 percent of specified minimum yield strength (SMYS) for the 4" Mount Vernon Gate HP Line. As this is less than 20 percent of SMYS, the classification of line would remain as HP distribution.

$$\sigma_{hoop} = \frac{p \cdot d}{2 \cdot t} = \frac{395\,psig \cdot 4.500\,in}{2 \cdot 0.237\,in} = 3750\,psi \qquad \frac{3750\,psi}{46000\,psi} = 0.0815 = 8.15\%$$

Pressure Monitoring Equipment

Telemetry currently monitors system pressures at the Mount Vernon Gate Station. This telemetry monitors pressure both upstream and downstream of R-166. An ERX pressure recorder would be installed at R-168 to record both inlet and outlet pressure.

Work Prior to Uprate

All facilities required for the Mount Vernon Gate Upgrade must be installed and in-service prior to the uprate commencing. This includes the Mount Vernon Gate Upgrade. The following tasks should be confirmed prior to commencing the uprate. The tasks should be checked off, initialed, and dated when confirmed.

Mount Vernon Gate Upgrade

1. Regulator R-166 at the Mount Vernon Gate is installed and in-service, with Cascade accepting gas from NWP at full pipeline pressure (MAOP of 960 psig). Regulator and relief valve must be set for an MAOP of 250 psig. ☐

2. The 6" East Mount Vernon HP Line extension (WO 177232) from R-166 to the existing 6" East Mount Vernon HP Line near R-167 is complete. The 4" and 6" HP Lines must be physically disconnected at the tie-in location. ☐

3. Regulator R-167 at the old odorizer location must be installed and in-service, although the regulators and relief valve will not be working at this time, as the MAOPs on the inlet and outlet side are each 250 psig. ☐

4. Regulator R-168 must be installed and in-service, although the regulators and relief valve will not be working at this time, as the MAOPs on the inlet and outlet side are each 250 psig. ☐

5. Odorizer O-6 must be installed and in-service at R-166, and the old odorizer, O-2, must be retired. The new odorizer should be active for a sufficient period to ensure proper odorization rates into the system. ☐

6. An ERX pressure recorder must be installed at R-168 to monitor the pressure upstream and downstream of the regulator station. ☐

7. The original feed from NWP must be retired. This feed must be cut and capped just north of the 90° weld elbow located east of the weld tee and line stopper fitting that are approx. 5'-4" south of valve V-159 on the 4" Mount Vernon Gate HP Line. ☐

Plan for Uprate

The MAOP of the 6" East Mount Vernon HP Line will be increased from 250 psig to 395 psig by increasing the operating pressure in four equal increments. After each increase, a leak survey will be performed along the entire pipeline, including all main extensions, service lines, regulators, high pressure service sets, and any other piping that will be operating at a higher pressure.

All facilities to be included in the Uprate are highlighted on the attached 6" East Mount Vernon HP Line Uprate map. Local crews will ensure that all services, mains, and facilities that come off the Line have been posted on the attached drawing and will contact Engineering Services prior to the Uprate if any facilities have not been posted. The lines and all associated facilities must be leak surveyed as detailed below as part of this Uprate. The pipeline ROW should also be checked to ensure that it is accessible along the entire pipeline route.

The following steps will be taken in order and checked off, initialed, and dated when completed. Each Phase must be completed in its entirety before moving on to the next Phase. If a Phase is interrupted, the entire Phase must be restarted. Different Phases may be performed on different days or at separate times. If any leaks are detected, they must be repaired before completing the phase, unless determined they can be deferred by Engineering Services.

Phase 1: Prior to Uprate

1. Inform Engineering Services that the uprate will be occurring. ☐

2. Inform Gas Control that the uprate will be occurring. ☐

3. Confirm with Gas Control (or directly at the Pipeline meter) that the flow rates for the Mount Vernon system are below 250,000 cfh before proceeding with the uprate. Contact Engineering Services if flow rates are above 250,000 cfh for approval to proceed. ☐

4. Ensure valves V-159 and V-219 at the Mount Vernon Gate are in the open position. ☐

5. Ensure V-154, V-155 (R-167 bypass), and V-156 are in the open position. ☐

6. Ensure V-198, V-221, and V-222 are in the open position. ☐

7. Install pressure monitoring gages upstream and downstream of R-168 and install paper chart upstream of R-168 to record pressure increase. ☐

8. Close V-197 and the downstream block valves and bypass valve at R-168 (upstream block valves at R-168 should be left in the open position). This will isolate flow in the 6" East Mount Vernon HP Line. ☐

9. Monitor pressure at the downstream side of R-168 to ensure pressure maintains a minimum of 120 psig and stabilizes before proceeding. If pressure drops below 120 psig, slowly open the R-168 bypass valve to bring pressure back up, and contact Engineering Services before proceeding. ☐

   Note: Pressure at the downstream side of R-168 should be periodically checked during the uprate to ensure adequate pressure downstream of the 6" East Mount Vernon HP Line.

10. Install pressure monitoring gauge downstream of V-154 to periodically check upstream pressure at R-167 throughout the uprate. ☐

11. Ensure the relief stack block valve at R-168 is in the closed position. ☐

12. Leak survey the system outlined above and in the drawing. All leaks must be repaired before any uprate, unless approved by Engineering Services or the District Operations Manager. Fill out and initial below. ☐

Survey 1 conducted by:		FI Unit serial number:	
Date:		FI Unit last calibration:	

13. Document the leak survey on forms CNG 286, 295, 297, 353, as well as complete all documentation as required per CNG procedures for leak survey. ☐

Phase 2 – First Pressure Increase

14. Install pressure monitoring gauge downstream of V-155 and assign personnel to operate valve and monitor pressure throughout this Phase. ☐

15. Remove lock on V-155, and ensure valve is operational. ☐

16. Close the outlet block valves and bypass valve at R-167. This will take the regulator out of service. ☐

17. Ensure the relief block valve at R-167 is in the closed position. ☐

18. Throttle V-155 to control downstream pressure at approximately 220 psig. ☐

19. Install pressure monitoring gauge downstream of R-166 and assign personnel to operate the R-166 bypass valve and monitor pressure throughout the uprate. ☐

20. Close the relief block valve at R-166. ☐

    Note: Station pressures must not be left unmonitored after this step until the uprate is complete, as the over-pressure protection device at R-166 has been disabled.

21. Remove locks on R-166 bypass valves and ensure valves are operational. ☐

22. Close inlet block valves to R-166. ☐

23. Open the R-166 upstream bypass valve, and slowly open the R-166 downstream bypass valve to maintain downstream pressure. The upstream bypass valve may be left in a partially open position if it aids in controlling pressure. ☐

24. Further open the R-166 downstream bypass valve to gradually increase downstream pressure to **287 psig**, and maintain as constant as possible. Record the exact time when the new pressure is reached: _____. ☐

25. Leak survey the system outlined above and in the drawing. All leaks must be investigated per CP 740 and repaired before any uprate, unless approved by Engineering Services or the District Operations Manager. Fill out and initial below. ☐

Survey 2 conducted by:		FI Unit serial number:	
Date:		FI Unit last calibration:	

26. Document the leak survey on forms CNG 286, 295, 297, 353, as well as complete all documentation as required per CNG procedures for leak survey. ☐

27. Set lock-up pressure at R-167 to 240 and 230 psig on the operating and standby runs respectively. Set the relief valve at 260 psig. Complete Form 287A for the special maintenance. This step may be completed while the leak survey is occurring. ☐

28. Open and lock the R-167 relief stack block valve. Open the outlet block valves at each regulator run. ☐

29. Close and lock V-155 (R-167 bypass). ☐

    Note: Personnel may leave V-155 unattended at this time. Pressure should be periodically checked downstream of V-155 during the uprate to ensure adequate operation of R-167.

Phase 3 – Second Pressure Increase

30. Further open the R-166 downstream bypass valve to gradually increase downstream pressure to **324 psig**, and maintain as constant as possible. Record the exact time when the new pressure is reached: _____. ☐

31. Leak survey the system outlined above and in the drawings. All leaks must be investigated per CP 740 and repaired before any uprate, unless approved by Engineering Services or the District Operations Manager. Fill out and initial below. ☐

Survey 3 conducted by:		FI Unit serial number:	
Date:		FI Unit last calibration:	

32. Document the leak survey on forms CNG 286, 295, 297, 353, as well as complete all documentation as required per CNG procedures for leak survey. ☐

Phase 4 – Third Pressure Increase

33. Further open the R-166 downstream bypass valve to gradually increase downstream pressure to **361 psig**, and maintain as constant as possible. Record the exact time when the new pressure is reached: _____. ☐

34. Leak survey the system outlined above and in the drawings. All leaks must be investigated per CP 740 and repaired before any uprate, unless approved by Engineering Services or the District Operations Manager. Fill out and initial below. ☐

Survey 4 conducted by:		FI Unit serial number:	
Date:		FI Unit last calibration:	

35. Document the leak survey on forms CNG 286, 295, 297, 353, as well as complete all documentation as required per CNG procedures for leak survey. ☐

Phase 5 – Final Pressure Increase

36. Further open the R-166 downstream bypass valve to gradually increase downstream pressure to **400 psig**, and maintain as constant as possible. Record the exact time when the new pressure is reached: _____. ☐

37. Confirm that pressures upstream of R-167 and R-168 reach a minimum of 395 psig. If necessary, further open the R-166 downstream bypass valve to gradually increase downstream pressure to no more than **415 psig**. Contact Engineering Services for instruction if pressures upstream of R-167 and R-168 fail to reach a minimum of 395 psig.

38. Record exact time pressure of 395 psig upstream of R-167 is reached: _____. ☐

39. Record exact time pressure of 395 psig upstream of R-168 is reached: _____. ☐

40. Leak survey the system outlined above and in the drawings. All leaks must be investigated per CP 740 and repaired before any uprate, unless approved by Engineering Services or the District Operations Manager. Fill out and initial below. ☐

Survey 5 conducted by:		FI Unit serial number:	
Date:		FI Unit last calibration:	

41. Document the leak survey on forms CNG 286, 295, 297, 353, as well as complete all documentation as required per CNG procedures for leak survey. ☐

Phase 6 – Complete Uprate

42. Set lock-up pressure at R-166 to 390 and 380 psig on the operating and standby runs respectively. Set monitor pressure to 405 and 400 psig on the operating and standby runs respectively. Set the relief valve at 420 psig and leave relief block valve locked in the open position. Complete Form 287A for special maintenance. ☐

43. Once one of the regulator runs is in-service, close and lock the R-166 bypass valves. Personnel may leave the station unattended at this point. ☐

44. Remove pressure monitoring gauges at R-166 bypass, R-168, V-154, and V-155. ☐

45. Remove the paper chart at R-168. ☐

46. Soap test the tie-in welds on the curb valve tee at 22508 Gunderson Rd. where the tee connects to the 6" East Mount Vernon HP Line and where the HP service line connects to the tee. ☐

47. Inform Engineering Services that the uprate has been completed. ☐

48. Inform Gas Control that the uprate has been completed, and final pressure adjustments will be forthcoming. ☐

Phase 7 – Set System Regulators

If Phase 7 cannot be completed on the same day, ensure locks are installed on all closed valves at R-167 and R-168 before leaving unattended.

49. Set lock-up pressure at R-168 to 248 and 238 psig on the operating and standby runs respectively. Set the relief valve at 260 psig and leave relief block valve locked in the open position. Complete Form 287A for special maintenance. ☐

50. Ensure V-221 and V-222 (R-168 inlet and outlet valves) are open and the station is flowing gas. ☐

51. Recheck the lock-up pressure at R-167 of 240 and 230 psig on the operating and standby runs respectively. Recheck the relief valve set-point at 260 psig and leave relief block valve locked in the open position. Complete Form 287A for special maintenance. ☐

52. Ensure V-154 and V-156 (R-167 inlet and outlet valves) are open. Station may not be flowing gas as the set-points are lower than that of R-168. ☐

53. Inform Gas Control that the all system pressure adjustments are complete. ☐

Suspending Uprate:

If at any time the uprate must be suspended, the following actions must be taken:

1. Inform Engineering Services that the uprate has been suspended and provide an explanation for the suspension. ☐

2. Inform Gas Control that the uprate has been suspended. ☐

3. Fully close and lock R-166 bypass valves. ☐

4. Open R-166 inlet block valves. ☐

5. Allow pressure in the line to bleed off until pressure drops below 250 psig. Gas may be purged if pressure does not bleed off in a timely manner. ☐

6. Open and lock relief block valve at R-166. ☐

7. Open V-155 and V-197. ☐

8. Maintain all completed checklists and paperwork. ☐

Personnel may leave R-166 unattended at this time provided the site is secure. When resuming the uprate, all steps in the *Prior to Uprate* section must be recompleted or verified. The phase that was interrupted may then be restarted from the beginning.

Work Following Uprate:

1. Send uprate chart to Engineering Services.
2. Submit all maintenance forms and leak survey documents to District Manager.
3. Update HP line information in System Design Data folder.
4. Update Mount Vernon Emergency plan. Add schematic of Mount Vernon HP network to Emergency Plan.
5. Sign and complete uprate plan and return to Engineering Services.

	Name	Signature	Date
Plan approved by Engineering Services:			
On-Site Supervisor certifies work complete per plan:			
District Manager certifies work complete per plan:			
Engineering Services certifies System Design Data and Emergency Plan have been updated:			
Engineering Services certifies that work completed meets all plan requirements:			

General Notes:

No main line valve (any valve with a V-designation) shall be opened or closed during this process unless directed in this plan or approved by the Project Engineer.

Any changes to this procedure shall be approved by the Project Engineer and documented on this procedure.

Contacts:

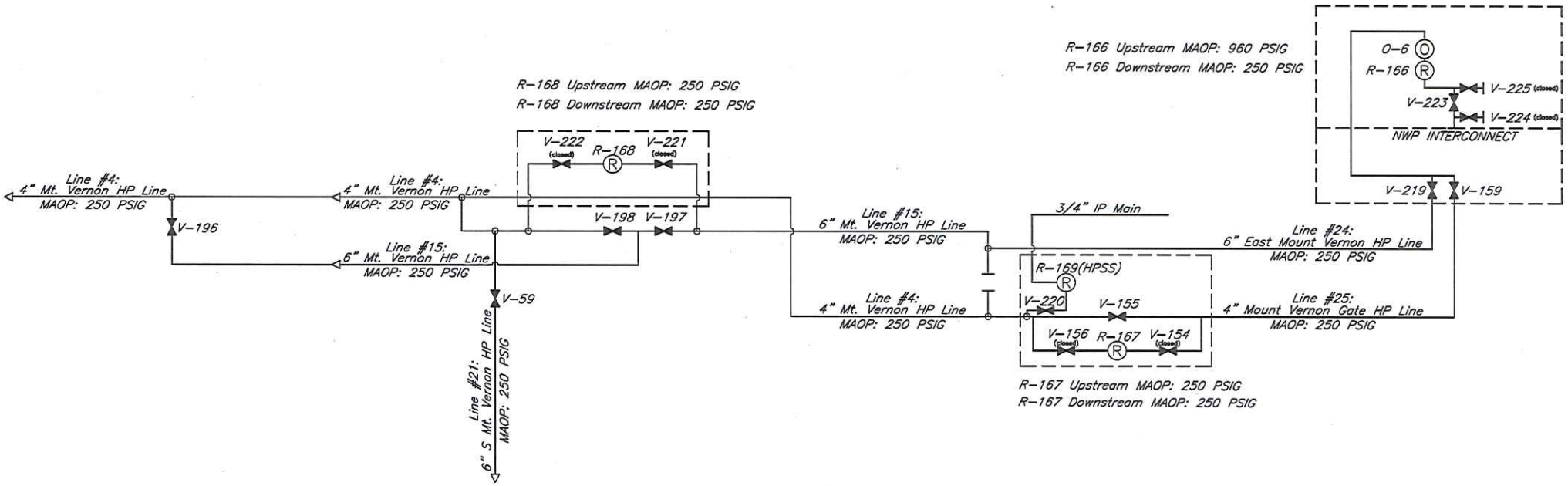
Project Engineer: John Bailey (509-734-4552)

District Manager: Tiffany Urland (360-853-6902)

District Operations Manager: Ted McCammant (360-708-4689)

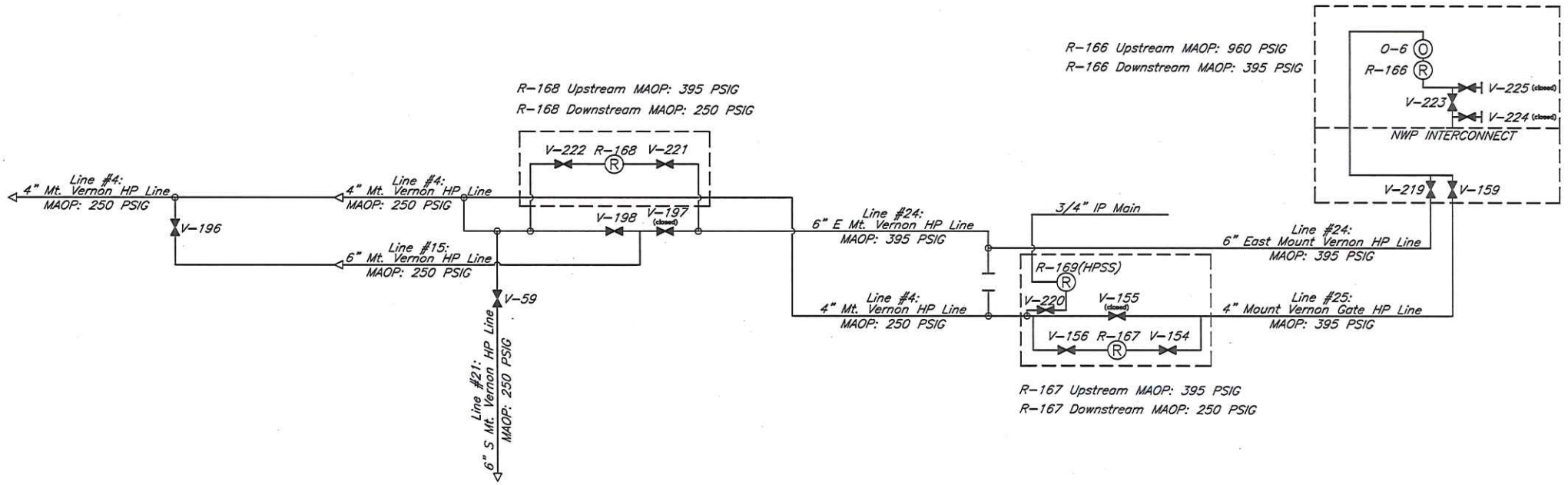
CNG Gas Control Room: (844-734-4607)

Mt Vernon Gate HP System Configuration - Before Uprate



NOTE: All valves open unless otherwise indicated
Odorization occurs upstream of R-166 relief

Mt Vernon Gate HP System Configuration - After Uprate



NOTE: All valves open unless otherwise indicated
Odorization occurs upstream of R-166 relief