

POST INSPECTION MEMORANDUM

Director Approval: Chris Hoidal _____

Peer Review: Tom Finch _____

Inspector Review: Scott Rukke _____

Senior Engineer Review: Kim West _____

Tracking Number: PG-021400

Date: March 28, 2003

Operator Inspected:

Williams Gas Pipeline West
295 Chipeta Way
Salt Lake City, UT 84108

Opid: 3845

Region: Western

Unit Inspected: Plymouth LNG Plant **Unit ID.** 1155
Plymouth District
P.O. Box 550
Umatilla, OR 97882

Unit Type: Natural Gas Peak Shaving LNG Storage Facility

Inspection Type: Standard

Record Location: Plymouth, WA

Inspection Dates: December 1 through December 5, 2002

AFOD: Five

Operator Contact: Larry Olson, Compliance Officer

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Unit Description: Peak Shaving LNG Storage Facility

Facilities Inspected:

The LNG facility consists of two storage tanks with a capacity of 348,000 bbl each (90 feet). The liquefaction process consists of two, 6MMCFD cold towers, each operated as an integrated cascade loop system. The facility includes four vaporizers rated at 75MMCFD. LNG 1 was placed in operation in 1975 and LNG 2 was placed in operation in 1979. Both LNG system 1 and LNG system 2 share use of the four vaporizers. The facility is located approximately 45 minutes southwest of Pasco, Washington, west of Interstate 395 and south of Highway 82, in Plymouth, Washington. The Plymouth LNG facility uses an integrated cascade loop liquefaction process to produce and store LNG gas during the summer months as a peak shaving operation. The LNG can then be vaporized and injected into the pipeline during times of higher than normal demand. LNG boil off is re-injected into the pipeline.

The entire facility, including both tanks and grounds were inspected. A complete review of the

Operations and Maintenance (O&M) Manual and records was conducted. Emphasis was placed on the inspection of the control room equipment and operations. Tank instrumentation data was reviewed through the control room SCADA system for verification of compliance with the requirements of Part 193.2209. The operator is currently upgrading the control panel and portions of the panel were removed for rewiring. The panel was fully operational but portions of the alarm lighting system were deactivated. Fire detectors in the LNG 2 building, the refrigerant storage area, propane storage area and the loading facilities were physically tested with an ultraviolet light source. The following fire detectors were tested and monitored in the control room for activation: F-33, F-34, F-35, F-36, F-37, F-38, F-39, F-40, F-21, F-22, F-23. All detectors operated and locked out as designed. Fire detector F-21 appears to have moved from its original alignment and needs to be realigned with the area to be monitored. The ultraviolet light source was weak and required the tester to be within approximately 5 to 10 feet of the fire detectors to activate them. The Emergency Shut Down (ESD) switch was activated on the LNG 2 building to verify proper function and alarm. The ESD functioned as designed when tested.

Methane detector No. 12 in compressor building 1 was tested for the presence of gas and the calibration verified. It was monitored in the control room and alarmed and locked out as designed. Propane detector No. G-1 in compressor building 1 was tested and the calibration verified. Propane detector No. 42 was tested and the calibration verified. Both propane detectors were monitored in the control room and alarmed and locked out as designed. The auxiliary power supply room heat detectors were tested for radiant heat detection with a heat gun and monitored in the control room. The heat detectors functioned as designed and alarmed the control panel.

Cathodic protection test readings were taken for the following facilities: Auxiliary power fuel supply - 1.134v, Storage tank vent gas pipeline -0.970v, Fuel gas to liquefaction unit -0.971v, send out gas -0.970v, 22 inch mainline -1.592v. All cathodic protection test readings meet or exceed Williams adopted criteria of -0.85v. Various components and exposed piping were visually inspected for any signs of coating damage or atmospheric corrosion.

Backup power supplies were visually inspected and the auxiliary power supply generator was started and monitored from the control room. Backup power supply functioned as designed. The back up battery power supply was visually inspected but not brought on-line.

Relief valves C11B and C11A were tested with nitrogen to ensure they relieved and reseated at the proper set points. Records indicate that the set points were required to be set at 900 psig for both valves. The valves opened at 903 psig, which is within tolerances allowed.

Particular attention was paid to the fire control equipment and pump house. The pump system consists of 2 diesel powered pumps and 1 electric primary pump. Each pump system has one relief valve installed. The fire control equipment pumps and control panel were visually inspected along with the 3 relief valves on the fire control water supply. All fire extinguishers were checked for maintenance and on-site instructions for use. Permanent fire control nozzles and foam generators were visually inspected. The foam storage building and tanks were visually inspected. Personnel fire protection clothing was visually inspected. Plymouth has two areas designated as smoking areas. Both areas were marked as required and were outside areas designated as prohibited by Part 193.2805(a)(2).

A physical inspection was conducted of the tank foundations and various tank equipment and piping. Tank foundation and frost heave records were reviewed. The foundations were surveyed by a contracted survey service. Records indicate that minimal settling of the tank foundations has occurred since the original installations. Support systems for components and the pipe rack were visually inspected for

settling and any other detrimental changes that could impair support. Heavy ice formations were observed around the LNG 2 tank pump but did not appear to be detrimental to the equipment. Diking, impound and runway systems were visually inspected on LNG 2. The liquefaction refrigerant storage system and impound facilities were visually inspected. Cargo transfer areas and transfer hoses were visually inspected.

The perimeter enclosure was walked from the outside and inspected for any potential unauthorized entry points and required signage.

Persons Interviewed:

Von Studor, District Manager
Patricia Maier, Administration
Larry Olson, Compliance, Williams Gas PL
Les Edwards, William's CP Manager

Probable Violations/Concerns:

The inspection did not find any non-compliance items, but did note ten areas of concern.

1. **Area of Concern:** Part 193.2619©)(2) requires control systems that are intended for fire protection to be inspected and tested at regular intervals not to exceed 6 months. Records review for the fire protection water system indicated that relief valves were tested at an interval that exceeded 6 months. This appears to be a programming error in Williams' Maintenance Management System (MMS). MMS allows the maintenance frequency to go to the end of the month in which the maintenance activity is due. In addition to the 6 month frequency Williams also maintains the pumps on a monthly basis. This maintenance includes the running of the pumps and a pressurization of the fire control water system. In order for the water system to hold pressure at the design pressure the relief valves open and re-circulate the pump outlet flow back into the pump suction line. If the relief valve does not open, system pressure builds and a backup pressure switch will shut down the pump system when it reaches a predetermined pressure. For this reason, WUTC Staff agree with Williams that based on the system design, the relief valves are actually checked on a monthly basis along with the pumps even though documentation does not indicate this.

Recommended Action: Review Williams' MMS programming to ensure compliance with applicable codes and requirements. Revise Williams' documentation procedures to ensure all applicable maintenance activities are documented at the frequencies required by code.

2. **Notice of Amendments:** Part 193.2513©)(4) requires that tank truck engines not be restarted after transfer operations until any released vapors have dissipated. Williams' procedure 41.01.122 does not address this requirement.

Recommended Action: Add procedures to Williams' O&M Manual addressing this requirement.

3. **Notice of Amendments:** Part 193.2515(b) requires that appropriate action be taken after an incident investigation to minimize a recurrence of the incident. Williams was unable to provide a procedure that addresses this requirement.

Recommended Action: Add procedures to Williams' O&M Manual that address this requirement.

4. **Notice of Amendments:** Part 193.2515(c) requires that each component involved in an incident remain on-site until the investigation is complete or the investigative authority otherwise provides. Williams O&M Manual does not address this requirement.

Recommended Action: Add procedures to Williams' O&M Manual addressing this requirement.

5. **Notice of Amendments:** Part 193.2013(a) requires operators to use the stated edition of manuals incorporated by reference in the CFR Part 193. Williams was referencing the NFPA 59A, 2001 edition during this inspection. The CFR lists the 1996 edition as the manual incorporated by reference. Williams was referencing the 2000 edition of the American Gas Association, Purging Principles and Practices (AGA) during this inspection. The CFR lists the 1975 edition as the manual incorporated by reference.

Recommended Action: Use the specified manuals incorporated by reference in the CFR. Revise Williams O&M Manual to specify the approved editions of manuals incorporated by reference.

6. **Notice of Amendments: Part 193.2819(d) requires that gas detection equipment meets** installation requirements specified in NFPA 59A. This would include any revisions or replacement of existing detection equipment. Williams' O&M Manual does not address this requirement.

Recommended Action: Add procedures to Williams' O&M Manual to address this requirement.

7. **Notice of Amendments:** Part 193.2505 requires leak checks of all cryogenic components after cool down has been achieved. Part 193.2521 requires that records be maintained of the results of each inspection, test and investigation required by Part F. Williams only documents leaks found after cool down. Williams does not document cool down leak checks except when leaks are found.

Recommended Action: Document leak checks performed after cool down. Revise Williams' procedures to require cool down leak check documentation.

8. **Area of Concern:** Part 193.2917 requires warning signs along the protective enclosure to be readable at night from a distance of 100 feet. Warning signs on the south side of the protective enclosure were readable but faded due to sun exposure.

Recommended Action: Replace signs as necessary to ensure they are visible and readable from 100 feet at night. Provide training to appropriate personnel on the protective enclosure signage requirements.

9. **Area of Concern:** Part 193.2903(c) requires that protective enclosures not be located near any features outside the facility that could be used to breach the facility. On the south end of the Plymouth enclosure by the railroad tracks there is a 4-inch by 6-inch post installed near the

enclosure that could be used to breach the facility. On the northwest corner there is a guy wire installed from a power pole over the protective enclosure, which could be used to breach the facility.

Recommended Action: Take appropriate action to ensure that the post and guy wire cannot be used to breach the protective enclosure. Provide training to appropriate security personnel in recognizing areas where potential security breaches exist.

10. **Area of Concern:** Fire detector F-21 appears to have moved from its original alignment and needs to be realigned with the area to be monitored.

Comments:

This year's field inspection placed emphasis on LNG 2.

Recommendations:

Continue to inspect the facility on a normal inspection cycle. During the 2003 inspection, place emphasis on the field inspection of LNG 1.

Attachments:

1. **IOCS Form**
2. **Standard Inspection Report for an LNG Facility**
3. **Fire control system maintenance records**
4. **Fire pump servicing procedure**