Respond to Low Nitrogen Pressure Alarm SY-Farm

Tank Farm Alarm Response Procedure

USQ # TF-14-0322-S, Rev. 1

SY FARM NITROGEN SYSTEM ALARM INDEX

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RECORDS

No records are generated during the performance of this procedure.
Respond to Low Nitrogen Pressure Alarm SY-Farm

Facility: SY-TANK FARM

Panel: SY241-WST-PNL-101

Source: SY241-WST-PS-103 (Locally indicated by SY241-WST-PI-123)

Alarm #: 1

Setpoint: 120 psig

Alarm Class: Equipment Status

Alarm Description: Nitrogen gas is supplied from SY241-WST-TK-104 (500 gallon Dewar tank) to the nitrogen distribution manifold located inside Nitrogen Distribution Cabinet SY241-WST-PNL-101. When nitrogen pressure drops below 120 psig, low pressure is detected by pressure switch SY241-WST-PS-103. The pressure switch activates the low-pressure alarm.

NOTE - Alarm Response Procedures are not designed for, nor intended to be applied to, "expected" alarms generated by approved work activities or procedures.

- The nitrogen Dewar is rented from an outside vendor. Any maintenance or repair will be performed by the respective vendor through stores procurement.

Automatic Actions:

1. Audible horn labeled "Low Pressure Alarm" located on SY241-WST-PNL-101 (Nitrogen Gas Distribution Cabinet) will sound.

Immediate Actions:

NOTE - Amber pilot light labeled "Alarm Acknowledge" will illuminate, audible horn will discontinue alarming and the red pilot light labeled "Nitrogen Low Pressure" will continue to illuminate when the Alarm Acknowledge button is pressed.

[1] PRESS button labeled "Alarm Acknowledge" to acknowledge low-pressure alarm AND CHECK the following occurs:

- Amber pilot light labeled "Alarm Acknowledge" illuminates
- Audible horn discontinues alarming
- Red pilot light labeled "Nitrogen Low Pressure" continues to illuminate.


[4] RECORD tank contents and manifold pressure findings on TF-OR-WR-ST, Nitrogen Distribution System Pressure readings AND FORWARD to Shift Manager.

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Panel: SY241-WST-PNL-101

Alarm #: 1

Source: SY241-WST-PS-103

Setpoint: 120 psig

(Continued)

Immediate Actions (Cont.):

[5] IF there is a catastrophic loss of liquid nitrogen, CONTACT the Hanford Fire Department (911) for emergency support (373-0911 for cell phone) AND PROVIDE all information available.

Supplemental Actions:

[6] ENSURE valve SY241-WST-V-177 is in the OPEN/ON position.

[7] IF tank contents value recorded for step [2] is LESS THAN 30 inches H₂O (identified by "Report" decal) AND manifold pressure value recorded for step [3] is LESS THAN 120 psig, PERFORM the following:

NOTE - Alarm resets at approximately 140 psig when system is re-pressurized to operating specifications (140 psig to 160 psig).

[7.1] CONNECT the back-up nitrogen bottles to the Nitrogen Distribution Cabinet per procedure TO-020-830, Section 5.3.

[7.2] ENSURE back-up nitrogen bottles supply an operating pressure range of 140 - 160 psig to Nitrogen Distribution Cabinet.

[7.3] IF nitrogen supply cannot be supplied at a pressure range of 140 - 160 psig, NOTIFY Shift Manager and proceed.

[8] IF tank contents value recorded for step [2] is GREATER THAN 30 in. H₂O (identified by "Report" decal) AND manifold pressure value recorded for step [3] is GREATER THAN 120 psig, PERFORM the following:

[8.1] REQUEST Shift Manager NOTIFY stores procurement that a cryogenic technician is needed to troubleshoot failure of nitrogen Dewar.

[8.2] CONNECT the back-up nitrogen bottles to the Nitrogen Distribution Cabinet per procedure TO-020-830, Section 5.3.

[8.3] ENSURE back-up nitrogen bottles supply an operating pressure range of 140 - 160 psig to Nitrogen Distribution Cabinet.

[8.4] IF nitrogen supply cannot be supplied at a pressure range of 140 - 160 psig, NOTIFY Shift Manager and proceed.

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Respond to Low Nitrogen Pressure Alarm SY-Farm

Facility: SY-TANK FARM

Panel: SY241-WST-PNL-101  Alarm #: 1

Source: SY241-WST-PS-103  Setpoint: 120 psig
(Locally indicated by SY241-WST-PI-123)

Supplemental Actions (Cont.):

[9] IF problem is not resolved, REQUEST assistance.

Possible Causes:

1. Nitrogen Dewar has a low level of liquid nitrogen.
2. Instrument malfunction.
3. Closed valve SY241-WST-V-177 located between Dewar and Distribution Cabinet.
5. Large leak in system may cause manifold pressure to drop below the pressure switch's set point.

References:

Drawings: H-2-821641 through H-2-821643, H-14-020631
Documents: Vendor Information VI# 22599
WHC-SD-WM-SDD-057
TO-020-830, Operate SY Farm Nitrogen DEWAR System
TF-OR-WR-ST, ST Weekly Rounds