

Engineering Evaluation of Nitrogen Purge Fill Station

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Richland, WA 99352

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Abstract: This document is a Engineering/Tools Evaluates for tools used to fill the Cross-Site transfer line encasements with nitrogen

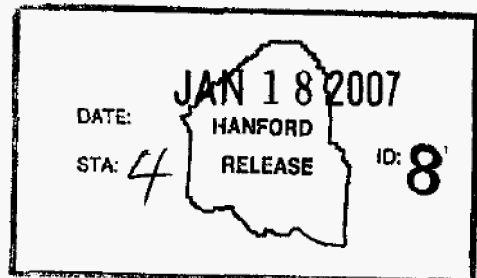
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1/18/07

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**ENGINEERING EVALUATION OF
SPECIAL TOOLS OR TEST EQUIPMENT**
(Refer to Procedure TFC-OPS-MAINT-C-01)

7. RPP No. RPP-32341 Rev. 0

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Section 1 – REQUEST

1. WORK PACKAGE NO. WFO-WO-05-003076

2. Brief Description (Identifies item(s) required to be evaluated):

The Cross-Site transfer lines (WT-SNL-3150, WT-SLL-3160) encasement has a nitrogen purge to maintain the low moisture content. The nitrogen purge is required to be refilled due to process changes or leakage of the nitrogen over time. This engineering evaluation will ensure the refill equipment is adequate for the use and that all safety concerns are considered before the equipment is used.

3. Was an Engineering Evaluation previously performed and documented? Yes No Unknown

If YES, Document Number and Revision:

4. REQUESTOR: Mark H Brown

5. Phone No. 372-1611

6. Date 1-9-2007

Section 2 - ENGINEERING EVALUATION

8. Is the existing evaluation adequate Yes No N/A Document Nos.

9. Description:

The nitrogen purge fill station consists of a 1. Fill manifold (including a pressure relief valve (set @ 30 psi), M&TE digital Heise pressure gauge, piping and valves), 2. Barrel heater with a temperature indication, and 3. Pressure regulator set at 10 psig. The safety concerns that may be created by using this equipment is pressure and temperature of the nitrogen. The filling and operating the equipment is a routine process for operation, therefore no new hazards or risks will be introduced.

10. Prerequisite Conditions

(a) Identify temporary conditions

The nitrogen fill station will be connected to the encasement fill piping located inside the 6241-A, and 6241-V vaults

(b) Identify required operations

The nitrogen fill station is connected between the Oxarc liquid nitrogen tanker trailer and the encasement fill piping. The nitrogen fill station piping connections shall have an in-service leak check performed prior to placing in use. The test pressure will be 10 psig.

(c) High pressure requirements

All nitrogen fill station components shall have a pressure rating of 100 psig or greater. The nitrogen placed inside the Cross-Site transfer line encasement will be 6 to 8 psig.

(d) High temperature limitations

All nitrogen barrel heater components shall have a temperature rating of 200 deg F or greater. The nitrogen placed inside the Cross-Site transfer line encasement will be heated inside the barrel heater. The temperature of the nitrogen will be heated to approximately 60 deg F prior to placement inside the encasement.

(e) Noise restrictions

N/A

11. Radiological Conditions

(a) Exposure to radiation

N/A. No significant exposure to the equipment is expected.

(b) Spread of contamination

The secondary piping is free of contamination. The system was just tie-in to and was refill with nitrogen. The work package will monitor for contamination during this whole evaluations.

12. Chemical Conditions

(a) Vapors

Nitrogen vapors

(b) Fumes

Nitrogen fumes

(c) Aerosol

N/A

13. Electrical Conditions

(a) Electrical hazards, requirements and loading

N/A

**ENGINEERING EVALUATION OF
SPECIAL TOOLS OR TEST EQUIPMENT**
(continued)

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1. WORK PACKAGE NO. WFO-WO-05-003076

14. Weight/Loading Conditions

(a) Rigging/Hoisting requirements and recommendations

N/A

(b) Structural integrity during use and applied loads

N/A

(c) Vibration loading

N/A

15. Environmental Conditions

(a) Weather

N/A

(b) Flammable Gas issues and considerations

N/A

16. Strength of Material Requirements

Loads on the nitrogen fill station components are limited to the internal pressure stresses. The applied stresses are below ASME B31.3 code allowable stresses assuming components of the proper pressure rating will be used.

17. Other Design Considerations

(a) Mock-up requirements

N/A. The filling of the encasement has recently been performed on a routine basis.

(b) Training considerations or Pre-Job

N/A

18. Interface hardware and equipment

N/A

19. Lessons Learned from past issues and applications

N/A

20. Attachments

Yes, Pictures of the berrel heater and fill manifold

Section 3 - CONCLUSION

21. Is the Item acceptable for use?

Yes No
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22. Evaluation Description:

Hardware is safe for use. This evaluation is a qualitative assessment of the temporary nitrogen fill station for uses under work package WFO-WO-05-001076. This evaluation is based on field inspection of assembly and the past use of these types of station. (materials and method of fabrication) and engineering judgment. In the absence of form an analytical calculations supporting this conclusion, it should be noted that such calculations regarding the stress capacity (hoop/axial) of the tool would not result in identifying controls or limits more constraining that those currently specified in the Limit Conditions for use.

23. Limiting conditions of use:

Evaluation is valid for use under work scope in work package WFO-WO-05-001076. Tool should be used with caution so as to not place excessive bending forces on the copper tubing.

24. Responsible Engineer: (Print Name/Sign)

Mark H Brown *MHB*

25. Date

1-18-2007

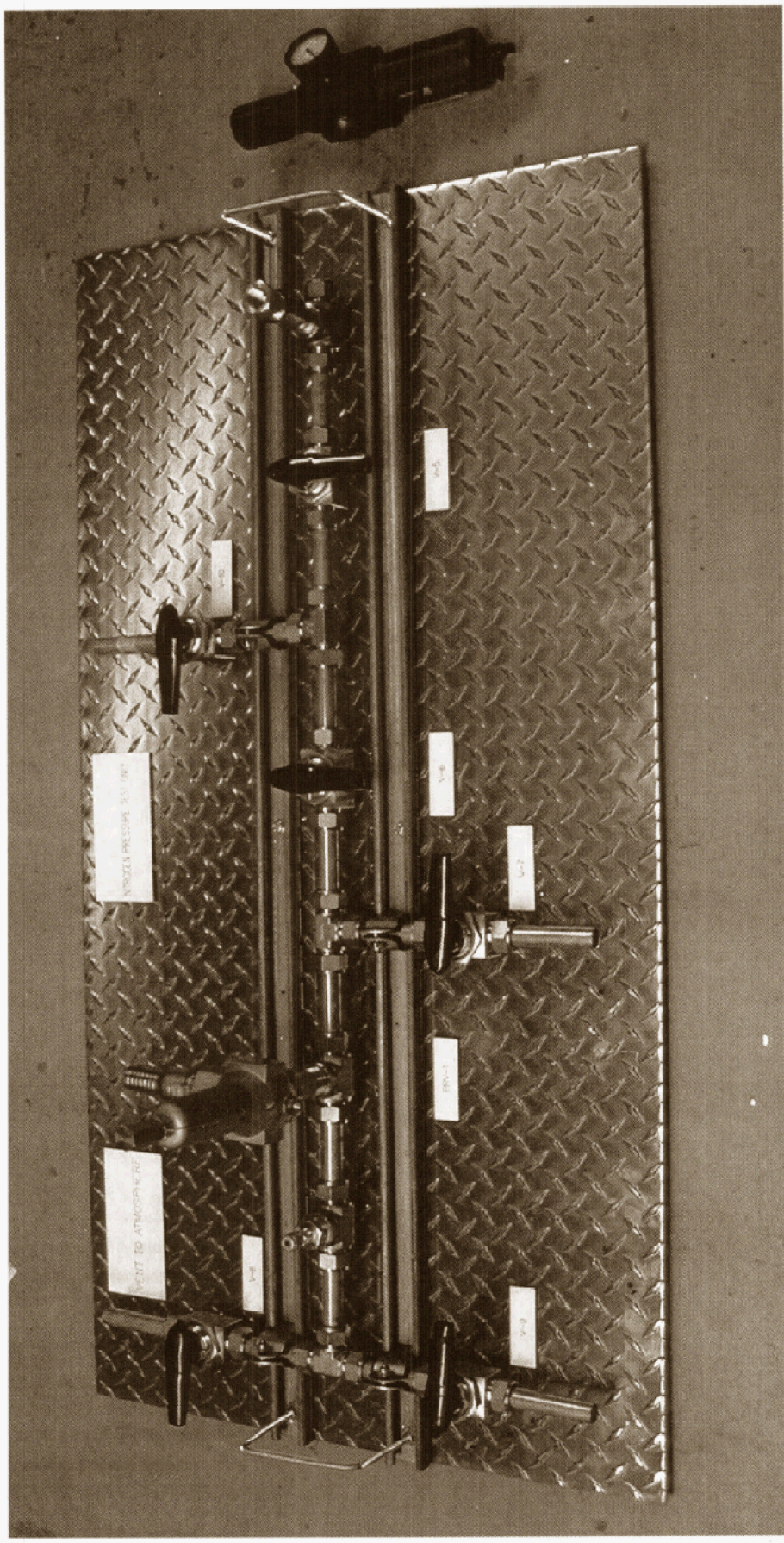
26. Engineering Manager Approval: (Print Name/Sign)

CRAIG JORGENSEN *CJ*

27. Date

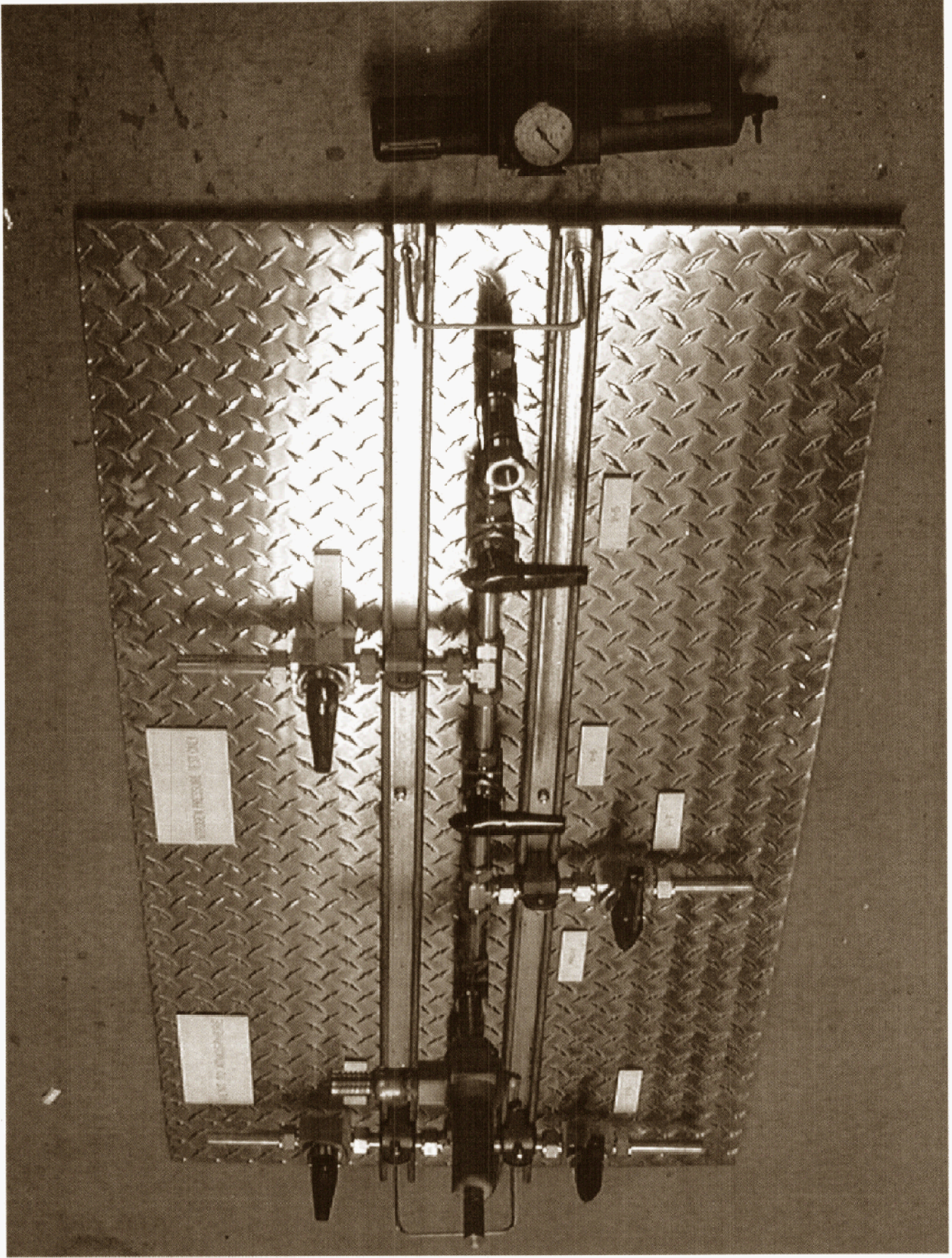
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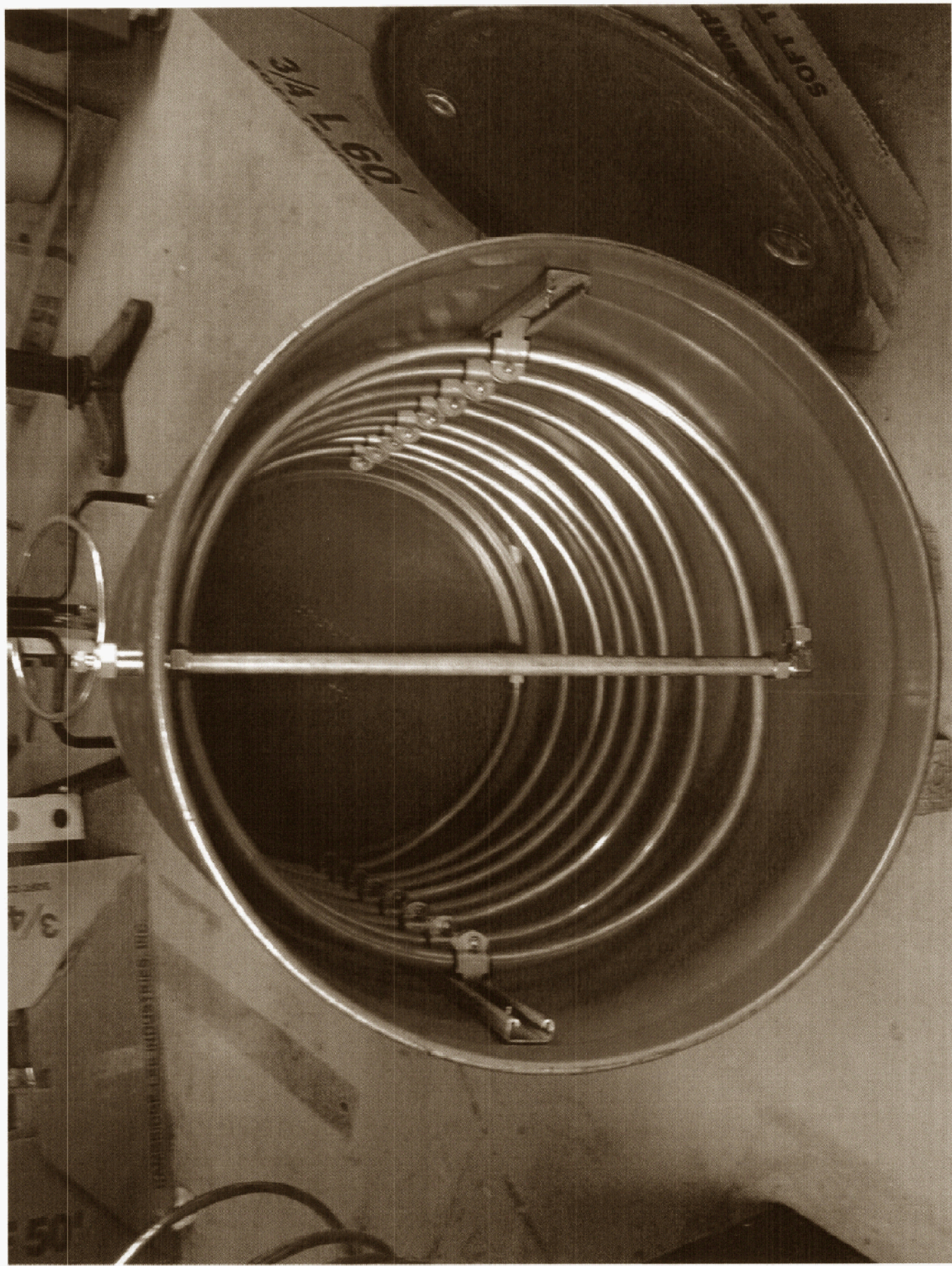
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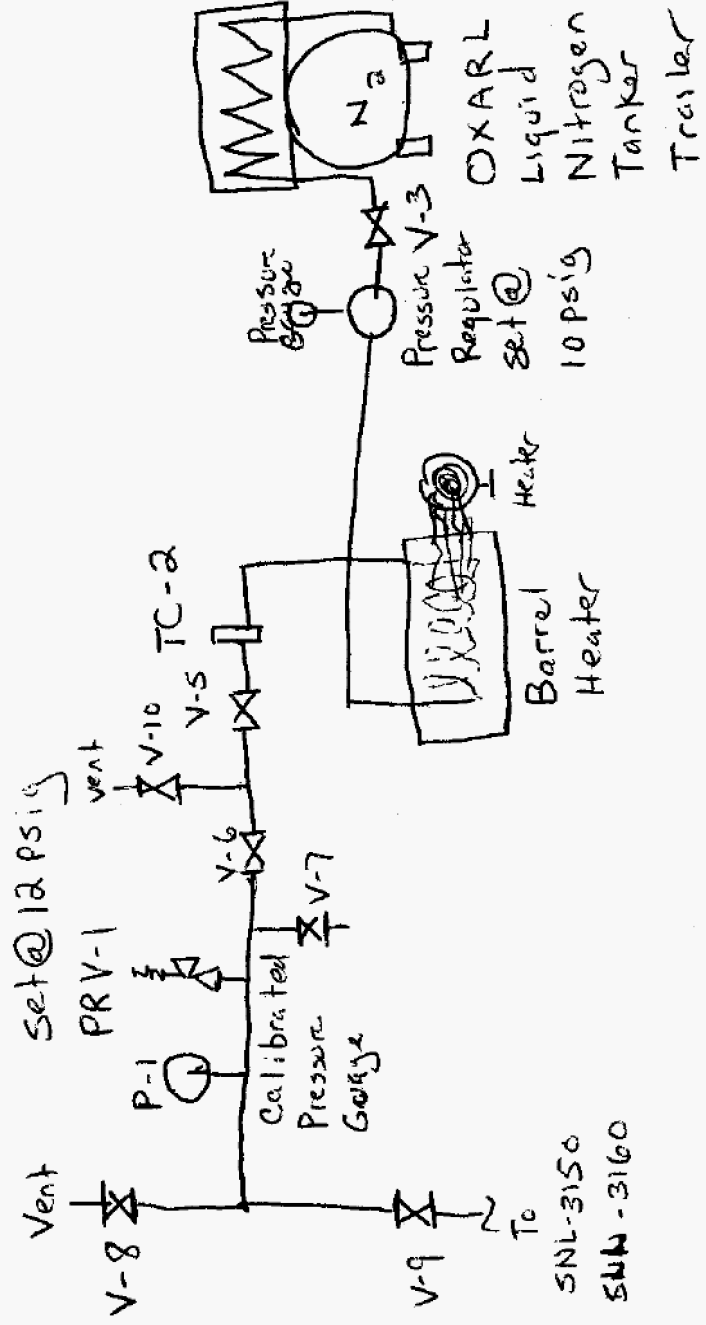
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| Subject | Nitrogen Purge Fill Station |
| Originator | Mark H Brown |
| Checker | N/A |
| Date | 1-15-2007 |

ANALYTICAL CALCULATIONS