241-C Tank Farm Ventilation System Level 2 Specification

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U.S. Department of Energy Contract DE-AC27-08RV14800

EDT/ECN: ECN-12-000059 UC:
Cost Center: Charge Code:
B&R Code: Total Pages: 3

Key Words: 241-C, Level 2 Specification, Ventilation, HVAC Portable Exhausters, POR107, POR-008, POR-03

Abstract: This Level II Specification establishes the functional, performance, design development, interface, test, and design verification requirements for a ventilation system to use during retrieval of the 241-C Tank Farm 100-Series Tanks. This specification references the codes and standards to be considered during the design, fabrication, installation, and testing of the ventilation system.

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## Change Control Record

<table>
<thead>
<tr>
<th>Revision</th>
<th>Description of Change – Replace, Add, and Delete Pages</th>
<th>Authorized for Release</th>
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</thead>
<tbody>
<tr>
<td>0</td>
<td>Initial Issue on record from 2005</td>
<td>John Propson, Warren Thompson</td>
</tr>
<tr>
<td>1</td>
<td>Correct original issue, equipment described in the level 2 specification was never completed. This update matches field configuration and update reference’s and codes</td>
<td>Terry D Kaiser, Troy Farris</td>
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<tr>
<td>1A</td>
<td>ECN-12-000059 updates RPP-21519 by taking out the requirement for system components to meet PC1.</td>
<td>PK Fink, RE Bauer</td>
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A-6003-835 (REV 2)
j. Design shall include provisions for periodic testing of monitoring, surveillance, and alarm systems.

k. Design shall provide for the detection and isolation of faults to minimize risks to equipment, personnel, and environment.

l. To the greatest extent possible, the ventilation system components shall be capable of being decontaminated, dismantled as necessary, and disposed of as radioactive waste.

m. The ventilation system shall be designed to facilitate maintenance with commercially available tools wherever possible.

n. The minimum number of spares for like components shall be determined based on mean time between failure and the number of components installed.

o. The ventilation system shall be designed to facilitate meeting the requirements of the TFC-ESHQ-S-STD-03.

7.0 Environmental Conditions

7.1 Natural Environments

a. All system components shall be compatible with the environmental conditions listed below, as applicable. The structural design and analysis shall, as a minimum, be performed to the design requirements of TFC-ENG-STD-06, with the exemptions identified in RPP-19233, using the following parameters:

i. The ambient air temperature range is \(-35.5^\circ C \) to \(48.9^\circ C\) \((32^\circ F \) to \(120^\circ F)\), and with a maximum 24-hour differential of \(28.9^\circ C\) \((52^\circ F)\).

ii. The relative humidity range is 0 – 100 percent (Rate of change is negligible).

iii. The hail diameter is less than or equal to 1.9 cm \((0.75\ in.)\).

iv. The sand/dust concentration is \(0.177\ gm/m^3\) with a typical size of \(350\ \mu m\).

v. The solar radiation range is between \(4\ W/m^2\) and \(406\ W/m^2\).

vi. The glaze is \(2.54\ cm\) \((1\ in.)\).

b. The exhaust skid shall be designed to avoid resonance resulting from the harmony between the natural frequency of the structure and the operating frequency of reciprocating or rotating equipment supported on the structure. The operating frequency of supported equipment shall be determined from manufacturers' data prior to completion of structural design. Resonance shall be prevented by designing equipment vibration and sound isolation supports to reduce the dynamic transmission of the applied load.

7.2 Induced Environments

Materials that come in contact with the air stream shall be designed to operate in the following conditions:

a. Maximum Moisture Separator Inlet Air Temperature: \(<195^\circ F\)

b. Moisture Content: 100 percent relative humidity