

PLUTONIUM FINISHING PLANT
PLUTONIUM RECLAMATION FACILITY

ALARM RESPONSES FOR PRF ALARM PANEL A-5

ZO-180-801
Rev/Mod A-1
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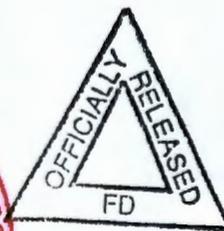


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1. INTRODUCTION

1.1. Purpose

This procedure provides responses to alarms identified on the PRF Control Room alarm panel A-5 located on the north end of the west control panel of Room 44.

1.2. Scope

The alarms associated with these panels are as follows:

1. High Weight Factor (tank level) alarms for miscellaneous canyon tanks in PRF.
2. Low Weight Factor (tank level) alarms for miscellaneous canyon tanks in PRF.
3. Hood overflow alarms for 1st floor east and west access gloveboxes.
4. Low Nitrogen sparge flow alarms to the Slag and Crucible dissolver system (Inactive).

1.3. Applicability

Alarms on these panels may alarm during any plant or process condition and the specific alarm responses will address these conditions.

2. PRECAUTION AND LIMITATIONS

2.1. Criticality

All posted criticality prevention limits shall be read and followed.

The maximum depth of any solid and solution accumulations in gloveboxes shall not exceed 1 inch.

Liquid spills up to weir height shall be cleaned up to less than 1 inch within 24 hours, or verified to be less than 2500 g/ft² Pu.

3. PREREQUISITE ACTION

An alarm condition exists.

4. TOOLS, EQUIPMENT AND MATERIAL

4.1. References

Radiation Work Permits, Z-007, Z-012
WHC Radiological Control Manual, WHC-CM-1-6
Plutonium Finishing Plant Administration, WHC-CM-5-8, Section 1.34
Criticality Prevention Specifications, CPS-Z-165-80708, -80707, -80709, -80710, -80701, and -80010

4.1.1. Referenced Documents

ZO-180-032, PICK UP GLOVEBOX FLOORS VIA TK-49
ZO-180-600, PERFORM 236-Z SURVEILLANCE AND RESPONSES
ZO-181-004, SHUT DOWN SOLVENT EXTRACTION
ZO-182-003, SHUT DOWN FILTRATE EVAPORATOR AND CONDENSER

OSR/OPERATING MATRIX

	OPERATING LIMIT		OSR LIMIT
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CONDITION/ VARIABLE	OPERATING RANGE	ACTION FOR OPERATING RANGE VIOLATION	LIMITING CONDITION FOR OPERATION (LCO)	ACTION FOR LCO NON- CONFORMANCE*
Glovebox gloves and bags	Failed or leaking glovebox gloves shall be replaced before operation within the glovebox.	Same as OSR LCO violation	Failed or leaking glovebox gloves shall be replaced before operation within the glovebox.	STOP WORK IN GLOVEBOX See RHO-CD-1244 Sect. 11.3.1
	Gloves which fail during operation shall be identified and replaced before operation continues.	Same as OSR LCO violation.	Gloves which fail during operation shall be identified and replaced before operation continues.	STOP WORK IN GLOVEBOX See RHO-CD-1244 Sect. 11.3.1
Glovebox negative pressure	Must be between -0.5 in. WG and -2.0 in. WG.	Stop work, check for hood leaks, and adjust to operating range.	Must be more negative than -0.3 in. WG.	STOP WORK IN GLOVEBOX See RHO-CD-1244 Sect. 11.3.1
Exhaust HEPA Filter DP	Must be less than 3 in. WG.	Schedule filter change.	Must be less than 4 in. WG.	STOP WORK IN GLOVEBOX See SD-HS-SAR-007 Sect. 11.3.2

* Supervision shall initiate recovery steps per Section 11.6.1.2 of RHO-CD-1244 or Section 11.6.6.2 of SD-HS-SAR-007, as applicable, within 24 hr. Supervision shall immediately contact the Duty Manager, Manager of process effected, Plant Manager, PFP Process Engineering, and Facility Safety Engineer. The situation, notifications and start time of the event shall be recorded in operations logbook.

6. PERFORMANCE

6.1. Respond to PRF Control Room Panel A-5 Alarms

A. Respond to PRF Control Room Panel A-5 Alarms

1. Silence alarm by pressing ACKNOWLEDGE button.
2. IF High WF alarm actuates due to normal process evolutions, end transfer prior to overflowing tank unless approved by supervision. No further actions required.

CAUTION

Running a pump dry can result in pump seal damage.

3. IF Low WF alarm actuates due to normal process evolutions, end transfer. No further actions are required.
4. Respond to alarms per section of Attachment 3 as indicated by Attachment 1.
5. Record alarms and actions taken in PRF Control Room Logbook. High and low WF alarms from normal process evolutions need not be recorded.
6. Notify supervision of alarms and actions taken, with the exception of high and low WF alarms from normal process evolutions.

Attachment 1 - ROOM 44 ALARM PANEL A-5
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HIGH WF TK-10 1 Pg 8	LOW WF TK-10 2 Pg 9	HIGH WF TK-12 3 Pg 10	LOW WF TK-12 4 Pg 11	NO N2 SPARGE FLOW 5 Pg 12	ED DISSOLV N2 SPARGE LOW ED-LFA-D 6 Pg 12
HIGH WF TK-15 7 Pg 13	LOW WF TK-15 8 Pg 14	HIGH WF TK-17 9 Pg 15	LOW WF TK-17 10 Pg 16	HIGH WF TK-18 11 Pg 17	LOW WF TK-18 12 Pg 18
HIGH WF TK-19 13 Pg 19	LOW WF TK-19 14 Pg 20	HIGH WF TK-25 15 Pg 21	LOW WF TK-25 16 Pg 22	HIGH WF TK-26 17 Pg 23	LOW WF TK-26 18 Pg 24
HIGH WF TK-28 19 Pg 25	LOW WF TK-28 20 Pg 25	WEST HOOD OVERFLOW * 21 Pg 26	EAST HOOD OVERFLOW * 22 Pg 27	HIGH WF TK-126 23 Pg 28	LOW WF TK-126 24 Pg 29

ACKNOWLEDGE

TEST

* Indicates cover is RED, and
IMMEDIATE RESPONSE ACTION IS REQUIRED.

Attachment 2 - WEIGHT FACTOR LEVEL INDICATION SYSTEM DESCRIPTION
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- WF - Weight Factor: Unit of level indication equivalent to liquid height in inches of water. Actual height of solution in tank may be lower than indication for solution densities greater than water. Measured by differential pressure between top and bottom dip tubes due to weight of liquid.
- Dip Tube - Air sensing tubing running from the WF Transmitter to the tank. Low leg indicates low pressure and is attached to the tank vent. High leg indicates high pressure and terminates at the bottom of the tank. Air rotameters on 3rd floor provide control and indication of air flow through the dip tubes to ensure proper operation.
- WFT - Weight Factor Transmitter: Converts the differential pressure from the dip tubes to electric signal (10-50 mA) that provides level signal for control room indication and alarms.
- WFAS - Weight Factor Alarm Switch: Monitors electric signal (10-50 mA) from WFT for either Low and/or High current flow and trips alarm relay at values below and/or above set points.
- WFR - Weight Factor Recorder: Converts electric signal (10-50 mA) to a strip chart recorder and indication on a 0-100% scale. PRF tank calibration manual (located in the Control Room) may be used to convert chart readings to actual tank volumes.

Attachment 3 - RESPONSES TO PANEL A-5 ALARMS
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>HIGH WF TK-10</p> <p>Volume: 96 liters WFT Range: 0-250" H₂O Set Point: 175" H₂O^c</p> <p>Actuated when TK-10 WFAS senses greater than 38 mA (70% of chart or a maximum of 92 liters). TK-10 overflows to tanks 52.1 and 52.2 (level indication on panel B-9). Alarm should acknowledge but not clear until level is below set point.</p> <p>Equipment Locations: TK-10 - 1st & 2nd EG. WFT - 3rd East. WFAS - behind panel A-5 WFR - Chart 20 panel A-5 TK-52.1 and TK-52.2 - 1st EW (In glovebox)</p>	<ul style="list-style-type: none"> - Increase in tank level - Plugged high dip tube - Instrument air upset - Power interruption - Instrument failure <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-93496 GPL; H-2-28375 H-2-28380</p> <p>CBRS: Loop #: A0001 Sequence #: 1, 2 & 4 Frequency; 12 mo</p>	<p><u>AUTOMATIC ACTION:</u> None</p> <p><u>OPERATOR ACTION:</u></p> <ol style="list-style-type: none"> 1. Check present readings for TK-10 WF Recorder (A-5) and TK-52.2 indicator (B-9) along with recent trend for TK-10. <ol style="list-style-type: none"> a. <u>IF</u> TK-10 WF has not exceeded 70 % of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-10 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> WF increased suddenly to 100%, this indicates possible high leg dip tube plugging. Continue to verify. 2. Verify that selector switch 10-SS-F (A-5) is in position 1 "OFF" and 10-SS-C (A-4) is OFF. 3. On 1st floor: <ol style="list-style-type: none"> a. Verify that valves 76 (EG-1) and 89 (EG-1) are CLOSED. b. Verify that no solution is entering tanks 52.1 or 52.2 (EW). 4. <u>IF</u> no transfers were in progress in PRF, perform PRF "Standby Surveillance - Process Vessel" surveillance checks per ZO-180-600 and identify any changes in tank levels. 5. Evaluate all transfers and changes in tank levels to determine possible causes of alarm and/or source of solution entering TK-10.

Attachment 3 - RESPONSES TO PANEL A-5 ALARMS (Cont.)
Page 2 of 22

ALARM	POSSIBLE CAUSES	RESPONSE
<p>LOW WF TK-10</p> <p>Volume: 96 liters WFT Range: 0-250" H₂O Set Point: 25" H₂O</p> <p>Actuated when TK-10 WFAS senses less than 14 mA (10% of chart or a minimum of 9 liters). TK-10 drains to tanks 52.1 and 52.2 (level indication on panel B-9) or glovebox floor. Alarm should acknowledge but not clear until level is above set point.</p> <p>Equipment Locations: TK-10 - 1st & 2nd EG. WFT - 3rd East. WFAS - behind panel A-5 WFR - Chart #20 panel A-5 TK-52.1 and TK-52.2 - 1st EW (in glovebox)</p>	<ul style="list-style-type: none"> - Decrease in tank level - Plugged low dip tube - Leak on High dip tube - Instrument air upset - Power interruption - Instrument failure <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-93496 H-2-28037 GPL; H-2-28374 H-2-28380</p> <p>CBRS: Loop #; A0001 Sequence #; 1, 2 & 3 Frequency; 12 mo</p>	<p><u>AUTOMATIC ACTION:</u> None</p> <p><u>OPERATOR ACTION:</u></p> <ol style="list-style-type: none"> 1. Check present readings for TK-10 WF recorder (A-5) and TK-52.2 indicator (B-9) along with recent trend for TK-10. <ol style="list-style-type: none"> a. <u>IF</u> TK-10 WF has not dropped below 10 % of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-10 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> WF decreased suddenly to 0%, this indicates possible instrument problem. Continue to verify. 2. Verify tank 10 pump green indicator light is ON (switch 10-MOP-D to STOP, A-4). 3. On 1st floor, verify that valves 79 (EG-1), 80 (EG-1) and 81 (EG-1) are CLOSED. <ol style="list-style-type: none"> a. <u>IF</u> drain valve 79 (EG-1) was open, check solution level in tanks 52.1 or 52.2 (EW) and gloveboxes EV and EW. b. <u>IF</u> sample valve 81 (EG-1) was open, check solution level in glovebox EG. c. <u>IF</u> block valve 80 (EG-1) was open and pump 10 was ON, determine solution destination by performing Step 4. d. <u>IF</u> all valves are closed, perform visual check of canyon and access gloveboxes for leaks. 4. Compare changes in tank levels and gloveboxes to previous PRF "Standby Surveillance - Process Vessel" surveillance checks per ZO-180-600 to determine possible causes of alarm and/or loss of solution from TK-10.

Attachment 3 - RESPONSES TO PANEL A-5 ALARMS (Cont.)
Page 3 of 22

ALARM	POSSIBLE CAUSES	RESPONSE
<p>HIGH WF TK-12</p> <p>Volume: 96 liters WFT Range: 0-250" H₂O Set Point: 175" H₂O</p> <p>Actuated when TK-12 WFAS senses greater than 38 mA (70% of chart or a maximum of 92 liters). TK-12 overflows to tanks 52.1 and 52.2 (level indication on panel B-9). Alarm should acknowledge but not clear until level is below set point. Tk-12 is typically used to store miscellaneous process solutions.</p> <p>Equipment Locations: TK-12 - 1st & 2nd EH. WFT - 3rd East. WFAS - behind panel A-5 WFR - Chart #38 panel A-6 TK-52.1 and TK-52.2 - 1st EW (In glovebox).</p>	<ul style="list-style-type: none"> - Increase in tank level - Plugged high dip tube - Instrument air upset - Power interruption - Instrument failure <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-93496 GPL; H-2-28375 H-2-28380</p> <p>CBRS: Loop #: A0003 Sequence #: 1, 2 & 4 Frequency; 12 mo</p>	<p><u>AUTOMATIC ACTION:</u> None</p> <p><u>OPERATOR ACTION:</u></p> <ol style="list-style-type: none"> 1. Check present readings for TK-12 WF recorder (A-6) and TK-52.2 indicator (B-9) along with recent trend for TK-12. <ol style="list-style-type: none"> a. <u>IF</u> TK-12 WF has not exceeded 70 % of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-12 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> WF increased suddenly to 100%, this indicates possible high leg dip tube plugging. Continue to verify. 2. Verify that selector switch 12-SS-C (A-5) and 13-SS-A (A-5) are in OFF position. 3. On 1st/2nd floor: <ol style="list-style-type: none"> a. Verify that valves 92 (EH-1), 94 (EH-1) and 648 (EH-4) are CLOSED. b. Verify that no solution is entering tanks 52.1 or 52.2 (1ST-EW). 4. <u>IF</u> no transfers were in progress in PRF, perform PRF "Standby Surveillance - Process Vessel" surveillance checks per ZO-180-600 and identify any changes in tank levels. 5. Evaluate all transfers and changes in tank levels to determine possible causes of alarm and/or source of solution entering TK-12.

Attachment 3 - RESPONSES TO PANEL A-5 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>LOW WF TK-12</p> <p>Volume: 96 liters WFT Range: 0-250" H₂O Set Point: 25" H₂O</p> <p>Actuated when TK-12 WFAS senses less than 14 mA (10% of chart or a minimum of 9 liters). TK-12 drains to tanks 52.1 and 52.2 (level indication on panel B-9) or glovebox floor. Alarm should acknowledge but not clear until level is above set point. TK-12 is typically used to store miscellaneous process solutions.</p> <p>Equipment Locations: TK-12 - 1st & 2nd EH. WFT - 3rd East. WFAS - behind panel A-5 WFR - Chart #38 panel A-6 TK-52.1 and TK-52.2 - 1st EW (In glovebox)</p>	<ul style="list-style-type: none"> - Decrease in tank level - Plugged low dip tube - Leak on High dip tube - Instrument air upset - Power interruption - Instrument failure <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-93496 H-2-28037 GPL; H-2-28374 H-2-28380</p> <p>CBRS: Loop #; A0003 Sequence #; 1, 2 & 3 Frequency; 12 mo</p>	<p><u>AUTOMATIC ACTION:</u> None</p> <p><u>OPERATOR ACTION:</u></p> <ol style="list-style-type: none"> 1. Check present readings for TK-12 WF recorder (A-6) and TK-52.2 indicator (B-9) along with recent trend for TK-12. <ol style="list-style-type: none"> a. IF TK-12 WF has not dropped below 10 % of chart, notify supervision of equipment failure. No further actions required. b. IF sudden TK-12 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. IF WF decreased suddenly to 0%, this indicates possible instrument problem. Continue to verify. 2. Verify tank 12 pump green indicator light is ON (switch 12-MOP-D to STOP, A-6). 3. On 1st floor, verify that valves 82 (EH-1), 83 (EH-1) and 84 (EH-1) are CLOSED. <ol style="list-style-type: none"> a. IF drain valve 82 (EH-1) was open, check solution level in tanks 52.1 or 52.2 (EW) and gloveboxes EV and EW. b. IF sample valve 84 (EH-1) was open, check solution level in glovebox EG. c. IF block valve 83 (EH-1) was open and pump 12 was ON, determine solution destination by performing Step 4. d. IF all valves are closed, perform visual check of canyon and access gloveboxes for leaks. 4. Compare changes in tank levels and gloveboxes to previous PRF "Standby Surveillance - Process Vessel" surveillance checks per ZO-180-600 to determine possible causes of alarm and/or loss of solution from TK-12.

Attachment 3 - RESPONSES TO PANEL A-5 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
NO N2 SPARGE FLOW	<p>N/A</p> <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-93533</p> <p>CBRS: Loop# A0108 Seq.# 8</p>	<p>AUTOMATIC ACTION: N/A</p> <p>1. No response necessary, Slag and Crucible operation is inactive.</p>
ED DISSOLV W2 SPANG LOW ED - LFA - D	<p>N/A</p> <p><u>REFERENCES:</u></p> <p>Drawings: EFD;</p> <p>CBRS: Loop# Seq.#</p>	<p>AUTOMATIC ACTION: N/A</p> <p>1. No response necessary, Slag and Crucible operation is inactive.</p>

Attachment 3 - RESPONSES TO PANEL A-5 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE								
<p>HIGH WF TK-15</p> <p>Volume: 57 liters WFT Range: 0-60" Set Point: 38"</p> <p>Actuated when TK-15 WFAS senses greater than 35 mA (63% of chart or a maximum of 52 liters). TK-15 overflows to tanks 52.1 and 52.2 (level indication on panel B-9). Alarm should acknowledge but not clear until level is below set point. TK-15 is typically used to store miscellaneous process solutions.</p> <p>Equipment Locations: TK-15 - 1st and 2nd EJ. WFT - 3rd East. WFAS - behind "A" panel WFR - Chart #29 panel A-4 TK-52.1 and TK-52.2 - 1st EW (In glovebox).</p>	<ul style="list-style-type: none"> - Increase in tank level - Plugged high dip tube - Instrument air upset - Power interruption - Instrument failure <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28022 GPL; H-2-28374 H-2-28380</p> <p>CBRS: Loop #: A0005 Sequence #: 1, 5 & 7 Frequency; 12 mo</p>	<p><u>AUTOMATIC ACTION:</u> None</p> <p><u>OPERATOR ACTIONS:</u></p> <ol style="list-style-type: none"> 1. Check present readings for TK-15 WF Recorder (A-4) and TK-52.2 indicator (B-9) along with recent trend for TK-15. <ol style="list-style-type: none"> a. <u>IF</u> TK-15 WF has not exceeded 63% of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-15 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> WF increased suddenly to 100%, this indicates possible high leg dip tube plugging. Continue to verify. 2. Verify panel board selector switches are in the following positions: <table border="0" style="margin-left: 20px;"> <thead> <tr> <th style="text-align: left;"><u>Switch</u></th> <th style="text-align: left;"><u>Position</u></th> </tr> </thead> <tbody> <tr> <td>15-SS-T (A-3)</td> <td>2 OFF</td> </tr> <tr> <td>15-SS-H (A-5)</td> <td>CLOSED</td> </tr> <tr> <td>15-SS-L (A-4)</td> <td>1 OFF</td> </tr> </tbody> </table> 3. On 1ST/2ND floor: <ol style="list-style-type: none"> a. Verify that valves 90 (EJ-2), 91 (EJ-1), 93 (EJ-1), 662 (ED-3) and 663 (ED-3) are CLOSED. b. Verify that no solution is entering tanks 52.1 or 52.2 (EW-1). 4. <u>IF</u> no transfers were in progress in PRF, perform PRF "Standby Surveillance - Process Vessel" surveillance checks per ZO-180-600 and identify any changes in tank levels. 5. Evaluate all transfers and changes in tank levels to determine possible causes of alarm and/or source of solution entering TK-15. 	<u>Switch</u>	<u>Position</u>	15-SS-T (A-3)	2 OFF	15-SS-H (A-5)	CLOSED	15-SS-L (A-4)	1 OFF
<u>Switch</u>	<u>Position</u>									
15-SS-T (A-3)	2 OFF									
15-SS-H (A-5)	CLOSED									
15-SS-L (A-4)	1 OFF									

Attachment 3 - RESPONSES TO PANEL A-5 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>LOW WF TK-15</p> <p>Volume: 57 liters WFT Range: 0-60" H₂O Set Point: 7" H₂O</p> <p>Actuated when TK-15 WFAS senses less than 15 mA (11% of chart or a minimum of 10 liters). TK-15 drains to tanks 52.1 and 52.2 (level indication on panel B-9) or glovebox floor. Alarm should acknowledge but not clear until level is above set point. TK-15 is typically used to store miscellaneous process solutions.</p> <p>Equipment Locations: TK-15 - 1st & 2nd EJ. WFT - 3rd East. WFAS - behind "A" panel WFR - Chart #29 panel A-4 TK-52.1 and TK-52.2 - 1st EW (in glovebox)</p>	<ul style="list-style-type: none"> - Decrease in tank level - Plugged low dip tube - Leak on High dip tube - Instrument air upset - Power interruption - Instrument failure <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28022 GPL; H-2-28374 H-2-28380</p> <p>CBRS: Loop #: A0005 Sequence #: 1, 5 & 6 Frequency; 12 mo</p>	<p>AUTOMATIC ACTION: None</p> <p><u>OPERATOR ACTION:</u></p> <ol style="list-style-type: none"> 1. Check present readings for TK-15 WF recorder (A-4) and TK-52.2 indicator (B-9) along with recent trend for TK-15. <ol style="list-style-type: none"> a. <u>IF</u> TK-15 WF has not dropped below 11 % of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-15 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> WF decreased suddenly to 0%, this indicates possible instrument problem. Continue to verify. 2. Verify tank 15 pump green indicator light is ON (switch 15-SS-J to STOP, A-5). 3. On first floor, verify that valves 85 (EJ-1), 86 (EJ-1), 87 (EJ-1), 88 (EJ-1), 91 (EJ-1) and 93 (EJ-1) are CLOSED. <ol style="list-style-type: none"> a. <u>IF</u> drain valve 85 (EJ-1) was open, check solution level in tanks 52.1 or 52.2 (EW) and gloveboxes EV and EW. b. <u>IF</u> sample valve 87 (EJ-1) was open, check solution level in glovebox EG. c. <u>IF</u> block valve 86 (EJ-1) was open and pump 15 was ON, determine solution destination by performing Step 4. d. <u>IF</u> all valves are closed, perform visual check of canyon and access gloveboxes for leaks. 4. Compare changes in tank levels and gloveboxes to previous PRF "Standby Surveillance - Process Vessel" surveillance checks per ZO-180-600 to determine possible causes of alarm and/or loss of solution.

Attachment 3 - RESPONSES TO PANEL A-5 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>HIGH WF TK-17</p> <p>Volume: 234 liters WFT Range: 0-250" H₂O Set Point: 175" H₂O</p> <p>Actuated when TK-17 WFAS senses greater than 38 mA (70% of chart or a maximum of 232 liters). TK-17 overflows to tanks 52.3 and 52.4 (level indication on panel B-9). Alarm should acknowledge but not clear until level is below set point. TK-17 is typically used to makeup feed for the SX system and does receive solution directly from chem prep.</p> <p>Equipment Locations: TK-17 - 1st & 2nd WG. WFT - 3rd West. WFAS - behind "A" panel WFR - Chart #39 panel A-6 TK-52.3 and TK-52.4 - 1st WW (In glovebox).</p>	<ul style="list-style-type: none"> - Increase in tank level - Plugged high dip tube - Instrument air upset - Power interruption - Instrument failure <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28021 GPL; H-2-28373 H-2-28379</p> <p>CBRS: Loop #; A0007 Sequence #; 1, 2 & 4 Frequency; 12 mo</p>	<p><u>AUTOMATIC ACTION:</u> None</p> <p><u>OPERATOR ACTION:</u></p> <ol style="list-style-type: none"> 1. Check present readings for TK-17 WF recorder (A-6) and TK-52.4 indicator (B-9) along with recent trend for TK-17. <ol style="list-style-type: none"> a. IF TK-17 WF has not exceeded 70 % of chart, notify supervision of equipment failure. No further actions required. b. IF sudden TK-17 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. IF WF increased suddenly to 100%, this indicates possible high leg dip tube plugging. Continue to verify. 2. Verify that selector switch 17-SS-K (A-6) is in Position 1 OFF, switch 17-SS-E (A-6) is in Position 1 OFF and 17-SS-J (A-7) is in Position 2 RECIRC. 3. On 2nd floor, verify that valves 480 (WG-4), 486 (WG-4) and 487 (WH-4) are CLOSED. 4. On first floor, verify that no solution is entering tanks 52.3 or 52.4 (WW). 5. IF no transfers were in progress in PRF, perform PRF "Standby Surveillance - Process Vessel" surveillance checks per ZO-180-600 and identify any changes in tank levels. 6. Evaluate all transfers and changes in tank levels to determine possible causes of alarm and/or source of solution entering TK-17.

Attachment 3 - RESPONSES TO PANEL A-5 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>LOW WF TK-17</p> <p>Volume: 234 liters WFT Range: 0-250" H₂O Set Point: 25" H₂O</p> <p>Actuated when TK-17 WFAS senses less than 14 mA (10% of chart or a minimum of 20 liters). TK-17 drains to tanks 52.3 and 52.4 (level indication on panel B-9) or glovebox floor. Alarm should acknowledge but not clear until level is above set point. TK-17 is typically used to makeup feed for the SX system.</p> <p>Equipment Locations: TK-17 - 1st & 2nd WG. WFT - 3rd West. WFAS - behind "A" panel WFR - Chart #39 panel A-6 TK-52.3 and TK-52.4 - 1st WW (In glovebox)</p>	<ul style="list-style-type: none"> - Decrease in tank level - Plugged low dip tube - Leak on High dip tube - Instrument air upset - Power interruption - Instrument failure <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28021 GPL; H-2-28373 H-2-28374</p> <p>CBRS: Loop #: A0007 Sequence #: 1, 2 & 3 Frequency; 12 mo</p>	<p><u>AUTOMATIC ACTION:</u> None</p> <p><u>OPERATOR ACTIONS:</u></p> <ol style="list-style-type: none"> 1. Check present readings for TK-17 WF recorder (A-6) and TK-52.4 indicator (B-9) along with recent trend for TK-17. <ol style="list-style-type: none"> a. <u>IF</u> TK-17 WF has not dropped below 10 % of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-17 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> WF decreased suddenly to 0%, this indicates possible instrument problem. Continue to verify. 2. Verify tank 17 pump green indicator light is ON (switch 17-SS-D to STOP, A-6). 3. On 1st floor, verify that valves 263 (WG-1), 264 (WG-1) and 265 (WG-1) are CLOSED. <ol style="list-style-type: none"> a. <u>IF</u> drain valve 263 (WG-1) was open, check solution level in tanks 52.3 or 52.4 (WW) and gloveboxes WV and WW. b. <u>IF</u> sample valve 265 (WG-1) was open, check solution level in glovebox WG. c. <u>IF</u> block valve 264 (WG-1) was open and pump 17 was ON, determine solution destination by performing Step 4. d. <u>IF</u> all valves are closed, perform visual check of canyon and access gloveboxes for leaks. 4. Compare changes in tank levels and gloveboxes to previous PRF "Standby Surveillance - Process Vessel" surveillance checks per ZO-180-600 to determine possible causes of alarm and/or loss of solution from TK-17.

Attachment 3 - RESPONSES TO PANEL A-5 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE								
<p>HIGH WF TK-18</p> <p>Volume: 234 liters WFT Range: 0-250" H₂O Set Point: 175" H₂O²</p> <p>Actuated when TK-18 WFAS senses greater than 38 mA (70% of chart or a maximum of 232 liters). TK-18 overflows to tanks 52.3 and 52.4 (level indication on panel B-9). Alarm should acknowledge but not clear until level is below set point. TK-18 is typically used to transfer SX feed to the CA column.</p> <p>Equipment Locations: TK-18 - 1st & 2nd WH. WFT - 3rd West. WFAS - behind A-panel WFR - Chart 40 panel A-6 TK-52.3 and TK-52.4 - 1st WW (In glovebox).</p>	<ul style="list-style-type: none"> - Increase in tank level - Plugged high dip tube - Instrument air upset - Power interruption - Instrument failure <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28021 GPL; H-2-28373 H-2-28379</p> <p>CBRS: Loop #: A0010 Sequence #: 1, 2 & 4 Frequency; 12 mo</p>	<p><u>AUTOMATIC ACTION:</u> None</p> <p><u>OPERATOR ACTIONS:</u></p> <ol style="list-style-type: none"> 1. Check present readings for TK-18 WF recorder (A-6) and TK-52.4 indicator (B-9) along with recent trend for TK-18. <ol style="list-style-type: none"> a. <u>IF</u> TK-18 WF has not exceeded 70 % of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-18 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> WF increased suddenly to 100%, this indicates possible high leg dip tube plugging. Continue to verify. 2. Verify panel board selector switches are in the following positions: <table border="0" style="margin-left: 20px;"> <thead> <tr> <th style="text-align: left;"><u>Switch</u></th> <th style="text-align: left;"><u>Position</u></th> </tr> </thead> <tbody> <tr> <td>18-SS-J (A-7)</td> <td>2, RECIRC</td> </tr> <tr> <td>17-SS-J (A-7)</td> <td>2, RECIRC</td> </tr> <tr> <td>17-SS-K (A-6)</td> <td>1, OFF</td> </tr> </tbody> </table> 3. On first/second floor: <ol style="list-style-type: none"> a. Verify that valves 445 (WE-4), 472 (WG-4) and 488 (WH-4) are CLOSED. b. Verify that no solution is entering tanks 52.3 or 52.4 (WW-1). 4. <u>IF</u> no transfers were in progress in PRF, perform PRF "Standby Surveillance - Process Vessel" surveillance checks per ZO-180-600 and identify any changes in tank levels. 5. Evaluate all transfers and changes in tank levels to determine possible causes of alarm and/or source of solution entering TK-18. 	<u>Switch</u>	<u>Position</u>	18-SS-J (A-7)	2, RECIRC	17-SS-J (A-7)	2, RECIRC	17-SS-K (A-6)	1, OFF
<u>Switch</u>	<u>Position</u>									
18-SS-J (A-7)	2, RECIRC									
17-SS-J (A-7)	2, RECIRC									
17-SS-K (A-6)	1, OFF									

Attachment 3 - RESPONSES TO PANEL A-5 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>LOW WF TK-18</p> <p>Volume: 234 liters WFT Range: 0-250" H₂O Set Point: 25" H₂O</p> <p>Actuated when TK-18 WFAS senses less than 14 mA (10% of chart or a minimum of 20 liters). TK-18 drains to tanks 52.3 and 52.4 (level indication on panel B-9) or glovebox floor. Alarm should acknowledge but not clear until level is above set point. TK-18 is typically used to transfer SX feed to the CA column.</p> <p>Equipment Locations: TK-18 - 1st & 2nd WH. WFT - 3rd West. WFAS - behind A-panel WFR - Chart 40 panel A-6 TK-52.3 and TK-52.4 - 1st WW (In glovebox)</p>	<ul style="list-style-type: none"> - Decrease in tank level - Plugged low dip tube - Leak on High dip tube - Instrument air upset - Power interruption - Instrument failure <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28021 GPL; H-2-28373 H-2-28379</p> <p>CBRS: Loop #: A0010 Sequence #: 1, 2 & 3 Frequency; 12 mo</p>	<p><u>AUTOMATIC ACTION:</u> None</p> <p><u>OPERATOR ACTIONS:</u></p> <ol style="list-style-type: none"> 1. Check present readings for TK-18 WF recorder (A-6) and TK-52.4 indicator (B-9) along with recent trend for TK-18. <ol style="list-style-type: none"> a. <u>IF</u> TK-18 WF has not dropped below 10 % of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-18 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> WF decreased suddenly to 0%, this indicates possible instrument problem. Continue to verify. 2. Verify tank 18 pump green indicator light is ON (switch 18-SSD to STOP, A-6). 3. On 1st floor, verify that valves 266 (WH-1), 267 (WH-1) and 268 (WH-1) are CLOSED. <ol style="list-style-type: none"> a. <u>IF</u> drain valve 266 (WH-1) was open, check solution level in tanks 52.3 or 52.4 (EW) and gloveboxes WV and WW. b. <u>IF</u> sample valve 268 (WH-1) was open, check solution level in glovebox WH. c. <u>IF</u> block valve 267 (WH-1) was open and pump 18 was ON, determine solution destination by performing Step 4. d. <u>IF</u> all valves are closed, perform visual check of canyon and access gloveboxes for leaks. 4. Compare changes in tank levels and gloveboxes to previous PRF "Standby Surveillance - Process Vessel" surveillance checks per ZO-180-600 to determine possible causes of alarm and/or loss of solution from TK-18.

Attachment 3 - RESPONSES TO PANEL A-5 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE						
<p>HIGH WF TK-19</p> <p>Volume: 234 liters WFT Range: 0-250" H₂O Set Point: 175" H₂O</p> <p>Actuated when TK-19 WFAS senses greater than 38 mA (70% of chart or a maximum of 234 liters). TK-19 overflows to tanks 52.3 and 52.4 (level indication on panel B-9). Alarm should acknowledge but not clear until level is below set point. TK-19 is typically used to receive and store CA column waste solution from the SX system.</p> <p>Equipment Locations: TK-19 - 1st and 2nd WJ. WFT - 3rd West. WFAS - behind A-panel WFR - Chart 42 panel A-7 TK-52.3 and TK-52.4 - 1st WW (In glovebox).</p>	<ul style="list-style-type: none"> - Increase in tank level - Plugged high dip tube - Instrument air upset - Power interruption - Instrument failure <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28041 GPL; H-2-28373 H-2-28379</p> <p>CBRS: Loop #; A0012 Sequence #; 1, 3 & 5 Frequency; 6 mo</p>	<p><u>AUTOMATIC ACTION:</u> None</p> <p><u>OPERATOR ACTIONS:</u></p> <ol style="list-style-type: none"> 1. Check present readings for TK-19 WF recorder (A-7) and TK-52.4 indicator (B-9) along with recent trend for TK-19. <ol style="list-style-type: none"> a. <u>IF</u> TK-19 WF has not exceeded 70% of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-19 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> WF increased suddenly to 100%, this indicates possible high leg dip tube plugging. Continue to verify. 2. Verify panel board selector switches are in the following positions: <table border="0" style="margin-left: 20px;"> <thead> <tr> <th style="text-align: left;"><u>Switch</u></th> <th style="text-align: left;"><u>Position</u></th> </tr> </thead> <tbody> <tr> <td>19-SS-A (A-7)</td> <td>OFF</td> </tr> <tr> <td>32-SSW (B-4)</td> <td>1, OFF</td> </tr> </tbody> </table> 3. On first floor verify that no solution is entering tanks 52.3 or 52.4 (WW). 4. <u>IF</u> no transfers were in progress in PRF, perform PRF "Standby Surveillance - Process Vessel" surveillance checks per ZO-180-600 and identify any changes in tank levels. 5. Evaluate all transfers and changes in tank levels to determine possible causes of alarm and/or source of solution entering TK-19. 	<u>Switch</u>	<u>Position</u>	19-SS-A (A-7)	OFF	32-SSW (B-4)	1, OFF
<u>Switch</u>	<u>Position</u>							
19-SS-A (A-7)	OFF							
32-SSW (B-4)	1, OFF							

Attachment 3 - RESPONSES TO PANEL A-5 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>LOW WF TK-19</p> <p>Volume: 234 liters WFT Range: 0-250" H₂O Set Point: 26" H₂O</p> <p>Actuated when TK-19 WFAS senses less than 14 mA (10% of chart or a minimum of 32 liters). TK-19 drains to tanks 52.3 and 52.4 (level indication on panel B-9) or glovebox floor. Alarm should acknowledge but not clear until level is above set point. TK-19 is typically used to receive and store CA column waste solutions from the SX system.</p> <p>Equipment Locations: TK-19 - 1st & 2nd WJ. WFT - 3rd West. WFAS - behind A-panel WFR - Chart 42 panel A-7 TK-52.3 and TK-52.4 - 1st WW (In glovebox)</p>	<ul style="list-style-type: none"> - Decrease in tank level - Plugged low dip tube - Leak on High dip tube - Instrument air upset - Power interruption - Instrument failure <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28041 GPL; H-2-28373 H-2-28379</p> <p>CBRS: Loop #: A0012 Sequence #: 1, 3 & 4 Frequency; 6 mo</p>	<p><u>AUTOMATIC ACTION:</u> None</p> <p><u>OPERATOR ACTION:</u></p> <ol style="list-style-type: none"> 1. Check present readings for TK-19 WFreorder (A-7) and TK-52.4 indicator (B-9) along with recent trend for TK-19. <ol style="list-style-type: none"> a. <u>IF</u> TK-19 WF has not dropped below 10 % of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-19 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> WF decreased suddenly to 0%, this indicates possible instrument problem. Continue to verify. 2. Verify tank 19 pump green indicator light is ON (switch 19 SS-D to STOP, A-7) and selector switch 19-SSA (A-7) is "OFF". 3. On 1st floor, verify that valves 274 (WJ-1), 275 (WJ-1), 276 (WJ-1) and 378 (WW-1) are CLOSED. <ol style="list-style-type: none"> a. <u>IF</u> drain valve 274 (WJ-1) was open, check solution level in tanks 52.3 or 52.4 (WW) and gloveboxes WW and WJ. b. <u>IF</u> sample valve 276 (WJ-1) was open, check solution level in glovebox WJ. c. <u>IF</u> block valve 275 (WJ-1) was open and transfer valve to 241-2 valve 378 (WW) or pump 19 was ON, determine solution destination by performing Step 4. d. <u>IF</u> all valves are closed, perform visual check of canyon and access gloveboxes for leaks. 4. Compare changes in tank levels and gloveboxes to previous PRF "Standby Surveillance - Process Vessel" surveillance checks per ZO-180-600 to determine possible causes of alarm and/or loss of solution from TK-19.

Attachment 3 - RESPONSES TO PANEL A-5 ALARMS (cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE								
<p>HIGH WF TK-25</p> <p>Volume: 57 liters WFT Range: 0-60" H₂O Set Point: 38" H₂O</p> <p>Actuated when TK-25 WFAS senses greater than 36 mA (65% of chart or a maximum of 52 liters). TK-25 overflows to tanks 52.1 and 52.2 (level indication on panel B-9). Alarm should acknowledge but not clear until level is below set point. TK-25 is typically used to receive and store high plutonium feed for the SX system.</p> <p>Equipment Locations: TK-25 - 1st EN. WFT - 3rd East. WFAS - behind "A" panel WFR - Chart #33 panel A-5 TK-52.1 and TK-52.2 - 1st EW (In glovebox)</p>	<ul style="list-style-type: none"> - Increase in tank level - Plugged high dip tube - Instrument air upset - Power interruption - Instrument failure <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28023 GPL; H-2-28374</p> <p>CBRS: Loop #: A0023 Sequence #: 1, 2 & 3 Frequency; 12 mo</p>	<p><u>AUTOMATIC ACTION:</u> None</p> <p><u>OPERATOR ACTION:</u></p> <ol style="list-style-type: none"> 1. Check present readings for TK-25 WF Recorder (A-5) and TK-52.2 indicator (B-9) along with recent trend for TK-25. <ol style="list-style-type: none"> a. <u>IF</u> TK-25 WF has not exceeded 65% of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-25 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> WF increased suddenly to 100%, this indicates possible high leg dip tube plugging. Continue to verify. 2. Verify panel board selector switches are in the following positions: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Switch</th> <th>Position</th> </tr> </thead> <tbody> <tr> <td>25-SSF (A-5)</td> <td>1, OFF</td> </tr> <tr> <td>25-SS-G (A-4)</td> <td>1, OFF</td> </tr> <tr> <td>25-SS-B (A-5)</td> <td>OFF</td> </tr> </tbody> </table> 3. On first floor, verify that no solution is entering tanks 52.1 or 52.2 (EW). 4. <u>IF</u> no transfers were in progress in PRF, perform PRF "Standby Surveillance - Process Vessel" surveillance checks per ZO-180-600 and identify any changes in tank levels. 5. Evaluate all transfers and changes in tank levels to determine possible causes of alarm and/or source of solution entering TK-25. 	Switch	Position	25-SSF (A-5)	1, OFF	25-SS-G (A-4)	1, OFF	25-SS-B (A-5)	OFF
Switch	Position									
25-SSF (A-5)	1, OFF									
25-SS-G (A-4)	1, OFF									
25-SS-B (A-5)	OFF									

Attachment 3 - RESPONSES TO PANEL A-5 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>LOW WF TK-25</p> <p>Volume: 57 liters WFT Range: 0-60" H₂O Set Point: 7" H₂O²</p> <p>Actuated when TK-25 WFAS senses less than 14 mA (11% of chart or a minimum of 12 liters). TK-25 drains to tanks 52.1 and 52.2 (level indication on panel B-9) or glovebox floor. Alarm should acknowledge but not clear until level is above set point. TK-25 is typically used to receive and store high plutonium feed for the SX system.</p> <p>Equipment Locations: TK-25 - 1st EN. WFT - 3rd West. WFAS - behind "A" panel WFR - Chart #33 panel A-5 TK-52.1 and TK-52.2 - 1st EW (In glovebox)</p>	<ul style="list-style-type: none"> - Decrease in tank level - Plugged low dip tube - Leak on High dip tube - Instrument air upset - Power interruption - Instrument failure <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28023 GPL; H-2-28374</p> <p>CBRS: Loop #: A0023 Sequence #: 1, 2 & 4 Frequency; 12 mo</p>	<p><u>AUTOMATIC ACTION:</u> None</p> <p><u>OPERATOR ACTIONS:</u></p> <ol style="list-style-type: none"> 1. Check present readings for TK-25 WF recorder (A-5) and TK-52.2 indicator (B-9) along with recent trend for TK-25. <ol style="list-style-type: none"> a. <u>IF</u> TK-25 WF has not dropped below 11% of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-25 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> WF decreased suddenly to 0%, this indicates possible instrument problem. Continue to verify. 2. Verify tank 25 pump green indicator light is ON (selector switch 25-SS-C to STOP, A-5). 3. On 1st floor, verify that valves 124 (EN-1), 125 (EN-1) and 126 (EN-1) are CLOSED. <ol style="list-style-type: none"> a. <u>IF</u> drain valve 124 (EN-1) was open, check solution level in tanks 52.1 or 52.2 (EW) and gloveboxes EV and EW. b. <u>IF</u> sample valve 126 (EN-1) was open, check solution level in glovebox EN. c. <u>IF</u> block valve 125 (EN-1) was open and pump 25 was ON, determine solution destination by performing Step 4. d. <u>IF</u> all valves are closed, perform visual check of canyon and access gloveboxes for leaks. 4. Compare changes in tank levels and gloveboxes to previous PRF "Standby Surveillance - Process Vessel" surveillance checks per ZO-180-600 to determine possible causes of alarm and/or loss of solution from TK-25.

Attachment 3 - RESPONSES TO PANEL A-5 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE								
<p>HIGH WF TK-26</p> <p>Volume: 57 liters WFT Range: 0-60" H₂O Set Point: 38" H₂O</p> <p>Actuated when TK-26 WFAS senses greater than 36 mA (65% of chart or a maximum of 52 liters). TK-26 overflows to tanks 52.1 and 52.2 (level indication on panel B-9). Alarm should acknowledge but not clear until level is below set point. TK-25 is typically used to receive and store high plutonium feed for the SX system.</p> <p>Equipment Locations: TK-25 - 1st EM. WFT - 3rd East. WFAS - behind "A" panel WFR - Chart #34 panel A-5 TK-52.1 and TK-52.2 - 1st EW (In glovebox)</p>	<ul style="list-style-type: none"> - Increase in tank level - Plugged high dip tube - Instrument air upset - Power interruption - Instrument failure <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28023 GPL; H-2-28374</p> <p>CBRS: Loop #: A0023 Sequence #: 1, 2 & 3 Frequency; 12 mo</p>	<p><u>AUTOMATIC ACTION:</u> None</p> <p><u>OPERATOR ACTIONS:</u></p> <ol style="list-style-type: none"> 1. Check present readings for TK-26 WF recorder (A-5) and TK-52.2 indicator (B-9) along with recent trend for TK-26. <ol style="list-style-type: none"> a. <u>IF</u> TK-26 WF has not exceeded 65% of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-26 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> WF increased suddenly to 100%, this indicates possible high leg dip tube plugging. Continue to verify. 2. Verify panel board selector switches are in the following positions: <table border="1" data-bbox="911 866 1217 959"> <thead> <tr> <th>Switch</th> <th>Position</th> </tr> </thead> <tbody> <tr> <td>25-SSF (A-5)</td> <td>1, OFF</td> </tr> <tr> <td>25-SSG (A-4)</td> <td>1, OFF</td> </tr> <tr> <td>26-SSB (A-5)</td> <td>OFF</td> </tr> </tbody> </table> 3. On first floor, verify that no solution is entering tanks 52.1 or 52.2 (EW). 4. <u>IF</u> no transfers were in progress in PRF, perform PRF "Standby Surveillance - Process Vessel" surveillance checks per ZO-180-600 and identify any changes in tank levels. 5. Evaluate all transfers and changes in tank levels to determine possible causes of alarm and/or source of solution entering TK-25. 	Switch	Position	25-SSF (A-5)	1, OFF	25-SSG (A-4)	1, OFF	26-SSB (A-5)	OFF
Switch	Position									
25-SSF (A-5)	1, OFF									
25-SSG (A-4)	1, OFF									
26-SSB (A-5)	OFF									

Attachment 3 - RESPONSES TO PANEL A-5 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>LOW WF TK-26</p> <p>Volume: 57 liters WFT Range: 0-60" H₂O Set Point: 7" H₂O²</p> <p>Actuated when TK-25 WFAS senses less than 14 mA (11% of chart or a minimum of 8 liters). TK-26 drains to tanks 52.1 and 52.2 (level indication on panel B-9) or glovebox floor. Alarm should acknowledge but not clear until level is above set point.</p> <p>Equipment Locations: TK-25 - 1st EM. WFT - 3rd West. WFAS - behind A-panel WFR - Chart 34 panel A-5 TK-52.1 and TK-52.2 - 1st EW (In glovebox)</p>	<ul style="list-style-type: none"> - Decrease in tank level - Plugged low dip tube - Leak on High dip tube - Instrument air upset - Power interruption - Instrument failure <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28023 GPL; H-2-28374</p> <p>CBRS: Loop #; A0023 Sequence #; 1, 2 & 4 Frequency; 12 mo</p>	<p><u>AUTOMATIC ACTION:</u> None</p> <p><u>OPERATOR ACTIONS:</u></p> <ol style="list-style-type: none"> 1. Check present readings for TK-26 WF recorder (A-5) and TK-52.2 indicator (B-9) along with recent trend for TK-26. <ol style="list-style-type: none"> a. IF TK-26 WF has not dropped below 11% of chart, notify supervision of equipment failure. No further actions required. b. IF sudden TK-26 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. IF WF decreased suddenly to 0%, this indicates possible instrument problem. Continue to verify. 2. Verify tank 26 pump green indicator light is ON (selector switch 26-SSC to STOP, A-5). 3. On 1st floor, verify that valves 119 (EM-1), 120 (EM-1) and 121 (EM-1) are CLOSED. <ol style="list-style-type: none"> a. IF drain valve 119 (EM-1) was open, check solution level in tanks 52.1 or 52.2 (EW) and gloveboxes EV and EW. b. IF sample valve 121 (EM-1) was open, check solution level in glovebox EN. c. IF block valve 120 (EM-1) was open and pump 26 was ON, determine solution destination by performing Step 4. d. IF all valves are closed, perform visual check of canyon and access gloveboxes for leaks. 4. Compare changes in tank levels and gloveboxes to previous PRF "Standby Surveillance - Process Vessel" surveillance checks per ZO-180-600 to determine possible causes of alarm and/or loss of solution from TK-26.

Attachment 3 - RESPONSES TO PANEL A-5 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>High Weight Factor TK-28</p> <p>Tank 28 is inactive</p>	<p>N/A</p> <p><u>REFERENCES:</u></p> <p>Drawings:</p> <p>CBRS:</p>	<p>AUTOMATIC ACTION: N/A</p> <p>1. No response necessary, Tank 28 is inactive.</p>
<p>Low Weight Factor TK-28</p> <p>Tank 28 is inactive</p>	<p>N/A</p> <p><u>REFERENCES:</u></p> <p>Drawings:</p> <p>CBRS:</p>	<p>AUTOMATIC ACTION: N/A</p> <p>1. No response necessary, TK-28 is inactive.</p>

Attachment 3 - RESPONSES TO PANEL A-5 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p><u>WEST HOOD OVERFLOW</u></p> <p>Electrical conductivity element (CE) activates the hood overflow alarm whenever conductive material completes the circuit between the two metal probes of the element. A complete circuit energizes a Conductivity Alarm Switch (CAS) relay which activates the alarm.</p> <p>Equipment Locations: CE - South East bottom of WW CAS - 3rd west, west wall</p>	<ul style="list-style-type: none"> - Tank 52.3 and 52.4 overflow due to: <ul style="list-style-type: none"> - West tank overflow - West tank draining - SX column overflow - Vented transfer to or from HC-227-S - Piping leaks - Tank 52.3 or 52.4 leaks - Overflow from adjacent section gloveboxes <ul style="list-style-type: none"> - piping leaks - sample valves open - Conductive materials contacting probes - Instrument malfunction <p>REFERENCES:</p> <p>Drawings: EFD; H-2-28032 GPL; H-2-28373</p> <p>PM: Number; #2222128 Frequency; weekly</p>	<p>AUTOMATIC ACTION: None</p> <p>OPERATOR ACTIONS:</p> <ol style="list-style-type: none"> 1. Check 52.4 (B-9) level indication and respond to any alarming High or Low Weight Factor alarms per applicable procedure before proceeding. 2. <u>IF</u> tank 29 level is fluctuating (Chart 67, B-3), close 1st floor valves 240 (WD-1), 241 (WD-1) and 242 (WD-1) along with Chem Prep valves C-119 (O-2) and C-121 (O-2) on tank A-108 outlet. 3. <u>IF</u> tank 30 level is fluctuating (Chart 75, B-5), close first floor valves 226 (WC-1), 227 (WC-1) and 228 (WC-1) along with Chem Prep valves C-131 (K-2) and C-132 (K-2) on tank A-109 outlet. 4. On first floor, visually check the probes. <ol style="list-style-type: none"> a. <u>IF</u> solution is present CONTINUE to Step 5. b. <u>IF</u> conductive materials (such as tools, waste, piping, etc.) are in contact with probes, remove items and verify alarm has cleared. c. <u>IF</u> nothing is touching probes or alarm does not clear after material has been removed, notify supervision of instrumentation problem. No further action required. 5. Determine status of solution in glovebox. <ol style="list-style-type: none"> a. <u>IF</u> solution is still flowing into glovebox, CONTINUE to Step 6. b. <u>IF</u> no solution is flowing out of glovebox and level is above criticality drain, isolate area, notify BED and GO TO Step 8. c. <u>IF</u> solution is not flowing and level is below criticality drain, GO TO Step 9. 6. Determine source of solution flow. <ol style="list-style-type: none"> a. <u>IF</u> solution is leaking from tanks 52.3, 52.4 or piping in WW section, end any transfers in progress and GO TO Step 8. b. <u>IF</u> solution is overflowing gloveboxes from beyond WW section, follow solution to the first glovebox that is not full and look for open sample valves or leaks. Close any open sample valves or refer to GPL drawings to isolate leaks. WHEN solution flow has stopped, GO TO Step 8. c. <u>IF</u> tanks 52.3 and 52.4 are full and solution is overflowing from glovebox WW to WV, end any transfers in progress and CONTINUE. 7. Isolate possible sources of solution flow. <ol style="list-style-type: none"> a. <u>IF</u> Solvent Extraction is operating, perform short term shut down per ZO-181-004. b. Verify all block and drain valves (orange background) on 1st and 2nd West are CLOSED. c. <u>IF</u> solution is still flowing into glovebox, verify all valves on the East side of 3rd West (chemical addition to West side) are CLOSED. d. RETURN TO Step 5. 8. <u>IF</u> no transfers were in progress in PRF, perform PRF "Standby Surveillance - Process Vessel" surveillance checks per ZO-180-600 and identify any level changes. 9. Evaluate all transfers and changes in tank levels to determine possible causes of alarm and/or source of solution entering the glovebox. 10. Recovery may include slurping bays per ZO-180-032.

Attachment 3 - RESPONSES TO PANEL A-5 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p><u>EAST HOOD OVERFLOW</u></p> <p>Electrical conductivity element (CE) activates the hood overflow alarm whenever conductive material completes the circuit between the two metal probes of the element. A complete circuit energizes a Conductivity Alarm Switch (CAS) relay which activates the alarm.</p> <p>Equipment Locations: CE - South West bottom of EW CAS - 3rd east, east wall</p>	<ul style="list-style-type: none"> - Tank 52.1 and 52.2 overflow due to: <ul style="list-style-type: none"> - East tank overflow - East tank draining - Piping leaks - Tank 52.1 or 52.2 leaks - Overflow from adjacent section gloveboxes <ul style="list-style-type: none"> - piping leaks - sample valves open - Conductive materials contacting probes - Instrument malfunction <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28032 GPL; H-2-28374</p> <p>PM: Number; #2222128 Frequency; weekly</p>	<p><u>AUTOMATIC ACTION:</u> None</p> <p><u>OPERATOR ACTIONS:</u></p> <ol style="list-style-type: none"> 1. Check 52.2 (B-9) level indication and respond to any alarming High or Low Weight Factor alarms per applicable procedure before proceeding. 2. On 1st floor, visually check the probes. <ol style="list-style-type: none"> a. <u>IF</u> solution is present <u>CONTINUE</u> to Step 3. b. <u>IF</u> conductive materials (such as tools, waste, piping, etc.) are in contact with probes, remove items and verify alarm has cleared. c. <u>IF</u> nothing is touching probes or alarm does not clear after material has been removed, notify supervision of instrumentation problem. No further action required. 3. Determine status of solution in glovebox. <ol style="list-style-type: none"> a. <u>IF</u> solution is still flowing into glovebox, <u>CONTINUE</u> TO Step 4. b. <u>IF</u> no solution is flowing out of glovebox and level is above criticality drain, isolate area, notify BED and GO TO Step 6. c. <u>IF</u> solution is not flowing and level is below criticality drain, GO TO Step 6. 4. Determine source of solution flow. <ol style="list-style-type: none"> a. <u>IF</u> solution is leaking from tanks 52.1, 52.2 or piping in EW section, end any transfers in progress and GO TO Step 6. b. <u>IF</u> solution is overflowing gloveboxes from beyond EV section, follow solution to the first glovebox that is not full and look for open sample valves or leaks. Close any open sample valves or refer to GPL drawings to isolate leaks. <u>WHEN</u> solution flow has stopped, GO TO Step 6. c. <u>IF</u> tanks 52.1 and 52.2 are full and solution is overflowing from glovebox EV to EW, end any transfers in progress and Continue. 5. Isolate possible sources of solution flow. <ol style="list-style-type: none"> a. <u>IF</u> Filtrate Evaporator is operating, perform short term shut down per ZO-182-003. b. Verify all block and drain valves (orange background) for tanks on 1st and 2nd East are CLOSED. c. <u>IF</u> solution is still flowing into glovebox, verify all valves on the West side of 3rd East (chemical addition to East side) are CLOSED. d. RETURN TO Step 5. 8. <u>IF</u> no transfers were in progress in PRF, perform PRF "Standby Surveillance - Process Vessel" surveillance checks per ZO-180-600 and identify any changes in tank levels. 9. Evaluate all transfers and changes in tank levels to determine possible causes of alarm and/or source of solution entering the glovebox. 10. Additional recovery actions may include slurping gloveboxes per ZO-180-032.

Attachment 3 - RESPONSES TO PANEL A-5 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>HIGH WF TK-126</p> <p>Volume: 234 liters WFT Range: 0-250" H₂O Set Point: 175" H₂O</p> <p>Actuated when TK-126 WFAS senses greater than 38 mA (70% of chart or a maximum of 232 liters). TK-126 overflows to tanks 52.1 and 52.2 (level indication on panel B-9). Alarm should acknowledge but not clear until level is below set point. TK-126 is typically used to store miscellaneous process solutions.</p> <p>Equipment Locations: TK-126 - 1st & 2nd EF. WFT - 3rd East. WFAS - behind "A" panel WFR - Chart #28 panel A-4 TK-52.1 and TK-52.2 - 1st EW (In glovebox).</p>	<ul style="list-style-type: none"> - Increase in tank level - Plugged high dip tube - Instrument air upset - Power interruption - Instrument failure <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28022 GPL; H-2-28374</p> <p>CBRS: Loop #; A0070 Sequence #; 1, 2 & 4 Frequency; 12 mo</p>	<p><u>AUTOMATIC ACTION:</u> None</p> <p><u>OPERATOR ACTIONS:</u></p> <ol style="list-style-type: none"> 1. Check present readings for TK-126 WF recorder (A-4) and TK-52.2 indicator (B-9) along with recent trend for TK-126. <ol style="list-style-type: none"> a. <u>IF</u> TK-126 WF has not exceeded 70 % of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-126 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> WF increased suddenly to 100%, this indicates possible high leg dip tube plugging. Continue to verify. 2. On 1st floor: <ol style="list-style-type: none"> a. Verify that valves 63 (EF-1), 64 (EF-1), and 71 (EF-1) are CLOSED. b. Verify that no solution is entering tanks 52.1 or 52.2 (EW). 3. <u>IF</u> no transfers were in progress in PRF, perform PRF "Standby Surveillance - Process Vessel" surveillance checks per ZO-180-600 and identify any changes in tank levels. 4. Evaluate all transfers and changes in tank levels to determine possible causes of alarm and/or source of solution entering TK-126.

Attachment 3 - RESPONSES TO PANEL A-5 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>LOW WF TK-126</p> <p>Volume: 234 liters WFT Range: 0-250" H₂O Set Point: 26" H₂O</p> <p>Actuated when TK-126 WFAS senses less than 14 mA (10% of chart or a minimum of 20 liters). TK-126 drains to tanks 52.1 and 52.2 (level indication on panel B-9) or glovebox floor. Alarm should acknowledge but not clear until level is above set point. TK-126 is typically used to store miscellaneous process solutions.</p> <p>Equipment Locations: TK-126 - 1st & 2nd EF. WFT - 3rd East. WFAS - behind "A" panel WFR - Chart #28 panel A-4 TK-52.1 and TK-52.2 - 1st EW (In glovebox)</p>	<ul style="list-style-type: none"> - Decrease in tank level - Plugged low dip tube - Leak on High dip tube - Instrument air upset - Power interruption - Instrument failure <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28022 GPL; H-2-28374</p> <p>CBRS: Loop #; A0070 Sequence #; 1, 2 & 3 Frequency; 12 mo</p>	<p><u>AUTOMATIC ACTION:</u> None</p> <ol style="list-style-type: none"> 1. Check present readings for TK-126 WF recorder (A-4) and TK-52.2 indicator (B-9) along with recent trend for TK-126. <ol style="list-style-type: none"> a. <u>IF</u> TK-126 WF has not dropped below 10 % of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-126 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> WF decreased suddenly to 0%, this indicates possible instrument problem. Continue to verify. 2. Verify tank 126 pump green indicator light is ON (switch 126 SS-D to OFF, A-5). 3. On 1st floor, verify that valves 61 (EF-1), 62 (EF-1), 63 (EF-1), and 64 (EF-1) are CLOSED. <ol style="list-style-type: none"> a. <u>IF</u> drain valve 62 (EF-1) was open, check solution level in tanks 52.1 or 52.2 (EW) and gloveboxes EV and EW. b. <u>IF</u> sample valve 61 (EF-1) was open, check solution level in glovebox EF. c. <u>IF</u> block valve 63 (EF-1) was open and pump 126 was ON, determine solution destination by performing Step 4. d. <u>IF</u> all valves are closed, perform visual check of canyon and access gloveboxes for leaks. 4. Compare changes in tank levels and gloveboxes to previous PRF "Standby Surveillance - Process Vessel" surveillance checks per ZO-180-600 to determine possible causes of alarm and/or loss of solution from TK-126.

ORIGINAL

Date Received: 10-4-93 CW

INFORMATION RELEASE REQUEST

Reference: WHC-CM-3-4

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