

**PLUTONIUM FINISHING PLANT
PLUTONIUM RECLAMATION FACILITY**

ALARM RESPONSES FOR PRF ALARM PANEL B-6

ZO-180-803
Rev/Mod A-1
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1. INTRODUCTION

1.1. Purpose

This procedure provides responses to alarms identified on the PRF Control Room alarm panel B-6 located in the center of the east 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. Column overflow alarms for west side solvent extraction columns.
4. Low flow rate alarms for Solvent Extraction process streams.
5. High temperature for product concentrator.
6. Off gas demister pressure alarm for filtrate evaporator.
7. Cooling jacket differential pressure to tank 36 recirculation system.

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

Criticality Prevention Specifications, CPS-Z-165-80010, -80704, -80705, -80706, -80707, -80708, -80709, -80710 and -80141

4.1.1. Referenced Documents

ZO-120-007, MAKE UP CCX FOR PROCESSING

ZO-180-026, TRANSFER SOLUTIONS FROM TANKS 52.1-52.4,
126 AND 127

ZO-180-029, DRAIN PRF TANKS

ZO-180-101, PERFORM SOLVENT EXTRACTION SYSTEM CLEAN OUT
AND SHUT DOWN

ZO-180-600, PERFORM 236-Z SURVEILLANCE AND RESPONSES

ZO-181-003, OPERATE SOLVENT EXTRACTION

ZO-181-004, SHUT DOWN SOLVENT EXTRACTION SYSTEM

ZO-182-003, SHUT DOWN FILTRATE EVAPORATOR AND CONDENSER

ZO-182-011, SHUT DOWN PRODUCT CONCENTRATOR

5. OSR MATRIX

OSR/OPERATING MATRIX				OSR LIMIT
OPERATING LIMIT	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
Glovebox negative pressure	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
Exhaust HEPA Filter DP	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
	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.

5. OSR MARTIX (Cont.)

OSR/OPERATING MATRIX		OSR LIMIT		
OPERATING LIMIT	OPERATING RANGE	ACTION FOR OPERATING RANGE VIOLATION	LIMITING CONDITION FOR OPERATION (LCO)	
CONDITION/ VARIABLE	OPERATING RANGE	ACTION FOR OPERATING RANGE VIOLATION	ACTION FOR LCO VIOLATION*	
Product Concentrator Temperature	≤ 130 °C	Shut down product concentrator and notify Supervisor. See OSD-Z-184-00007 Sect. 7.3	≤ 140 °C (LCS)	SHUTDOWN PRODUCT CONCENTRATOR. See SD-CP-SAR-022 Sect. 6.1.1.5
Product Concentrator Steam supply pressure	≤ 50 psig	Shut down product concentrator and notify Supervisor. See OSD-Z-184-00007 Sect. 7.3	≤ 54 psig (LCO)	SHUTDOWN PRODUCT CONCENTRATOR. See SD-CP-SAR-022 Sect. 6.2.1.5

* Supervision shall initiate recovery steps per Section 11.6.1.2 of RHO-CD-1244 and Section 11.6.6.2 of SD-HS-SAR-025 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. An Occurrence Report shall be generated.

6. PERFORMANCE

6.1. Respond to PRF Control Room Panel B-6 Alarms

A. Respond to PRF Control Room Panel B-6 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 directed otherwise by supervision. No further actions required.

CAUTION

Running pump dry can result in pump seal damage.

3. IF Low WF alarm actuates due to normal process evolutions, end transfer prior to running pump dry. No further actions required.
4. Respond to alarms indentified by Attachment 1 per instructions of Attachment 3.
5. Record alarms and actions taken in PRF Control Room Logbook, with the exception of high/low WF alarms generated due to normal process evolutions.
6. Notify supervision of alarms, current conditions, and actions taken.

Attachment 1 - PANEL BOARD B-6
Page 1 of 1

HIGH WF TK-27 1 PG 10	LOW WF TK-27 2 PG 11	HIGH WF TK-29 3 PG 12	LOW WF TK-29 4 PG 13	HIGH WF TK-37 5 PG 14	LOW WF TK-37 6 PG 15	HIGH WF TK-38 7 PG 16	LOW WF TK-38 8 PG 17
HIGH WF TK-30 9 PG 18	LOW WF TK-30 10 PG 19	HIGH WF TK-36 11 PG 20	LOW WF TK-36 12 PG 21	HIGH WF TK-40 13 PG 22	LOW WF TK-40 14 PG 23	HIGH WF TK-41 15 PG 24	LOW WF TK-41 16 PG 25
HIGH WF TK-42 17 PG 26	LOW WF TK-42 18 PG 27	HIGH WF TK-45 19 PG 28	LOW WF TK-45 20 PG 29	HIGH WF TK-46 21 PG 30	LOW WF TK-46 22 PG 31	HIGH WF TK-20 23 PG 32	LOW WF TK-20 24 PG 33
* HIGH DIFF PRESS TK-21 25 PG 34	HIGH WF TK-23 26 PG 35	LOW WF TK-23 27 PG 36	HIGH WF TK-24 28 PG 37	LOW WF TK-24 29 PG 38	OVERFLOW CX COLUMN TK-69 30 PG 39	HIGH WF TK-21 31 PG 40	LOW WF TK-21 32 PG 41
LOW FLOW CAF TK-32 CA 33 PG 42	LOW FLOW CCX TK-33 CC 34 PG 43	HIGH WF TK-70 35 PG 44	LOW WF TK-70 36 PG 45	LOW FLOW CAX TK-32 F 37 PG 46	* HIGH WF TK-50 38 PG 47	* HIGH TEMP TK-43 39 PG 48	40
OVERFLOW TK 32 CA 41 PG 49	OVERFLOW TK 33 CC 42 PG 50	OVERFLOW TK 34 CO 43 PG 51	HIGH WF TK-49 44 PG 52	LOW WF TK-49 45 PG 53	TK-36 DIFF PRESS 46 PG 54	HIGH WF TK-52.2 47 PG 55	HIGH WF TK-52.4 48 PG 56

ACKNOWLEDGE

TEST

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

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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 (1.00). 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 B-6 ALARMS
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ALARM	POSSIBLE CAUSES	RESPONSE
<p><u>HIGH WF TK-27</u></p> <p>Volume: 57 liters WFT Range: 0-60" H₂O Set Point: 38" H₂O</p> <p>Actuated when TK-27 WFAS senses greater than 35 mA (63% of chart or a maximum of 52 liters). TK-27 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-27 typically contains recovered organic solutions which are added to solvent extraction.</p> <p>Equipment Locations: TK-27 - 1st EL. WFT - 3rd East. WFAS - behind "B" panel WFR - Chart 62 panel B-3 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-2-28018 GPL; H-2-28374</p> <p>CBRS: Loop #; A0025 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-27 WF recorder (Chart 67, B-3) and TK-52.2 indicator (B-9) along with recent trend for TK-27. <ol style="list-style-type: none"> a. <u>IF</u> TK-27 WF has not exceeded 63 % of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-27 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> TK-27 WF increased suddenly to 100%, this indicates possible high leg dip tube plugging. Continue to verify. 2. Verify that selector switch 27-SS-K (B-3) is in Position 1, OFF. 3. On 1st floor: <ol style="list-style-type: none"> a. Verify that valves 103 (EL-2) and 109 (EL-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-27.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p><u>LOW WF TK-27</u></p> <p>Volume: 57 liters WFT Range: 0-60" H₂O Set Point: 15" H₂O²</p> <p>Actuated when TK-27 WFAS senses less than 14 mA (10% of chart or a minimum of 8 liters). TK-27 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-27 typically contains recovered organic solutions which are added to solvent extraction.</p> <p>Equipment Locations: TK-27 - 1st EL WFT - 3rd East. WFAS - behind "B" panel WFR - Chart 62 panel B-3 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-2-28018 GPL; H-2-28374</p> <p>CBRS: Loop #: A0025 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-27 WF recorder (Chart 62, B-3) and TK-52.2 indicator (B-9) along with recent trend for TK-27. <ol style="list-style-type: none"> a. <u>IF</u> TK-27 WF has not dropped below 10% of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-27 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> TK-27 WF decreased suddenly to 0%, this indicates possible instrument problem. Continue to verify. 2. Verify that selector switch 27-SS-B (B-3) is OFF and pump 27-MOP-C green READY light is ON (switch 27-SS-C to STOP, B-3). 3. On 1st floor, verify that valves 100 (EL-1), 101 (EL-1), and 102 (EL-1) are CLOSED. <ol style="list-style-type: none"> a. <u>IF</u> drain valve 100 (EL-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 102 (EL-1) was open, check solution level in 1st floor glovebox EL. c. <u>IF</u> block valve 101 (EL-1) was open and pump 27 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-27.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>HIGH WF TK-29</p> <p>Volume: 57 liters WFT Range: 0-45" H₂O Set Point: 40" H₂O</p> <p>Actuated when TK-29 WFAS senses greater than 46mA (90% of chart or a maximum of 54 liters). TK-29 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-29 contains clean CAS (1.5 M Nitric Acid) which is supplied from Chem Prep TK-A108 through an automatic refill interlock which initiates fill below 35% and closes fill valve above 78%.</p> <p>Equipment Locations: TK-29 - 1st WD. WFT - 3rd West. WFAS - behind "B" panel TR - Chart 67 panel B-3 -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 - Auto fill interlock not functioning properly <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28015 H-2-28014 GPL; H-2-28373</p> <p>CBRS: Loop #; A0026 Sequence #; 1, 4 & 5 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-29 WF recorder (Chart 67, B-3) and TK-52.4 indicator (B-9) along with recent trend for TK-29. <ol style="list-style-type: none"> a. <u>IF</u> TK-29 WF has not exceeded 90% of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-29 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> TK-29 WF increased suddenly to 100%, this indicates possible high leg dip tube plugging. Continue to verify. 2. In Chem Prep (Rm 40), verify valves C-119 (D-2) and C-121 (D-3) (near TK-A108) are CLOSED. 3. On 1st floor: <ol style="list-style-type: none"> a. Verify that valve 243 (WD-2) is CLOSED. b. 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-29.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>LOW WF TK-29</p> <p>Volume: 57 liters WFT Range: 0-45" H₂O Set Point: 9" H₂O</p> <p>Actuated when TK-29 WFAS senses less than 18 mA (20% of chart or a minimum of 10 liters). TK-29 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-29 contains clean CAS (1.5 M Nitric Acid) which is supplied from Chem Prep TK-A108 through an automatic refill interlock which initiates fill below 35% and closes fill valve above 78%.</p> <p>Equipment Locations: TK-29 - 1st WD WFT - 3rd West. WFAS - behind "B" panel TR - Chart 67 panel B-3 K-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 - Auto fill interlock not functioning properly <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28015 GPL; H-2-28373</p> <p>CBRS: Loop #; A0026 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-29 WF recorder (Chart 67, B-3) and TK-52.4 indicator (B-9) along with recent trend for TK-29. <ol style="list-style-type: none"> a. <u>IF</u> TK-29 WF has not dropped below 20 % of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-29 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> TK-29 WF decreased suddenly to 0%, this indicates possible instrument problem. Continue to verify. 2. Verify that selector switch 29-SS-C (B-3) is OFF and pump 29-MOP-B green READY light is ON (switch 29-SS-B to STOP, B-3). 3. On 1st floor, verify that valves 240 (WD-1), 241 (WD-1) and 242 (WD-1) are CLOSED. <ol style="list-style-type: none"> a. <u>IF</u> drain valve 240 (WD-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 242 (WD-1) was open, check solution level in 1st floor glovebox WD. c. <u>IF</u> block valve 241 (WD-1) was open and pump 29 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-29.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE						
<p>HIGH WF TK-37</p> <p>Volume: 220 liters WFT Range: 0-250" H₂O Set Point: 175" H₂O^c</p> <p>Actuated when TK-37 WFAS senses greater than 38 mA (70% of chart). TK-37 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-37 typically contains organic solution (CAX) which is added to solvent extraction or recycled through organic clean up.</p> <p>Equipment Locations: TK-37 - 1st & 2nd WM. WFT - 3rd West. WFAS - behind "B" panel WFR - Chart 77 panel B-5 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-2-28017 GPL; H-2-28373 H-2-28379</p> <p>CBRS: Loop #; A0042 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-37 WF recorder (Chart 77, B-5) and TK-52.4 indicator (B-9) along with recent trend for TK-37. <ol style="list-style-type: none"> a. <u>IF</u> TK-37 WF has not exceeded 70% of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-37 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> TK-37 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 style="margin-left: 40px;"> <tr> <td>37 SSE (B-5)</td> <td>1 Off</td> </tr> <tr> <td>37 SSP (B-5)</td> <td>1 Off</td> </tr> <tr> <td>37 SSH (B-5)</td> <td>1 Off</td> </tr> </table> 3. On 1st and 3rd floor: <ol style="list-style-type: none"> a. Verify that valves 37-1 (3rd West), 37-2 (3rd West) and 296 (WM-1) are CLOSED. b. 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-37. 	37 SSE (B-5)	1 Off	37 SSP (B-5)	1 Off	37 SSH (B-5)	1 Off
37 SSE (B-5)	1 Off							
37 SSP (B-5)	1 Off							
37 SSH (B-5)	1 Off							

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>LOW WF TK-37</p> <p>Volume: 220 liters WFT Range: 0-250" H₂O Set Point: 25" H₂O</p> <p>Actuated when TK-37 WFAS senses less than 14 mA (10% of chart or a minimum of 20 liters). TK-37 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-37 typically contains organic solution (CAX) which is added to solvent extraction or recycled through organic clean up.</p> <p>Equipment Locations: TK-37 - 1st & 2nd WM. WFT - 3rd West. WFAS - behind "B" vel wFR - Chart 77 panel B-5 TK-52.3 and TK-52.4 - 1st EW (In glovebox)</p>	<p>- Decrease in tank level - Plugged low dip tube - Leak on High dip tube - Instrument air upset - Power interruption - Instrument failure</p> <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28017 GPL; H-2-28373 GPL; H-2-28379</p> <p>CBRS: Loop #: A0042 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-37 WF recorder (Chart 77, B-5) and TK-52.4 indicator (B-9) along with recent trend for TK-37. <ol style="list-style-type: none"> a. <u>IF</u> TK-37 WF has not dropped below 10 % of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-37 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> TK-37 WF decreased suddenly to 0%, this indicates possible instrument problem. Continue to verify. 2. Verify that selector switch 37-SS-P (B-5) is in Position 1, OFF and pump 37-MOP-D green READY light is ON (switch 37-SS-D to STOP, B-5). 3. On 1st floor, verify that valves 293 (WM-1), 294 (WM-1), 295 (WM-1), and 296 (WM-1) are CLOSED. <ol style="list-style-type: none"> a. <u>IF</u> drain valve 293 (WM-1) was open, check solution level in tanks 52.3 or 52.4 (WW) and gloveboxes WW and WV. b. <u>IF</u> sample valve 295 (WM-1) was open, check solution level in 1st floor glovebox WM. c. <u>IF</u> block valve 294 (WM-1) was open and pump 37 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 Z0-180-600 to determine possible causes of alarm and/or loss of solution from TK-37.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE								
<p>HIGH WF TK-38</p> <p>Volume: 220 liters WFT Range: 0-250" H₂O Set Point: 175" H₂O</p> <p>Actuated when TK-38 WFAS senses greater than 38 mA (70% of chart or a maximum of 232 liters). TK-38 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-38 typically contains organic solution (CAX) which is added to solvent extraction or recycled through organic clean up.</p> <p>Equipment Locations: TK-38 - 1st & 2nd WW. WFT - 3rd West. WFAS - behind "B" panel WFR - Chart 78 panel B-5 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>REFERENCES:</p> <p>Drawings: EFD; H-2-28017 GPL; H-2-28373 GPL; H-2-28379</p> <p>CBRS: Loop #: A0044 Sequence #: 1, 2 & 4 Frequency; 12 mo</p>	<p>AUTOMATIC ACTION: None</p> <p>OPERATOR ACTIONS:</p> <ol style="list-style-type: none"> 1. Check present readings for TK-38 WF recorder (Chart 78, B-5) and TK-52.4 indicator (B-9) along with recent trend for TK-38. <ol style="list-style-type: none"> a. IF TK-38 WF has not exceeded 70% of chart, notify supervision of equipment failure. No further actions required. b. IF sudden TK-38 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. IF TK-38 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>Switch</th> <th>Position</th> </tr> </thead> <tbody> <tr> <td>37-SSH (B-5)</td> <td>1 Off</td> </tr> <tr> <td>38-SSE (B-6)</td> <td>1 Off</td> </tr> <tr> <td>38-SSP (B-5)</td> <td>1 Off</td> </tr> </tbody> </table> 3. On 1st/3rd floor: <ol style="list-style-type: none"> a. Verify that valves 38-1 (3rd West), 38-2 (3rd West) and 305 (WW-1) are CLOSED. b. Verify that no solution is entering tanks 52.3 or 52.4 (WW). 4. 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. 5. Evaluate all transfers and changes in tank levels to determine possible causes of alarm and/or source of solution entering TK-38. 	Switch	Position	37-SSH (B-5)	1 Off	38-SSE (B-6)	1 Off	38-SSP (B-5)	1 Off
Switch	Position									
37-SSH (B-5)	1 Off									
38-SSE (B-6)	1 Off									
38-SSP (B-5)	1 Off									

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>LOW WF TK-38</p> <p>Volume: 220 liters WFT Range: 0-250" H₂O Set Point: 25" H₂O</p> <p>Actuated when TK-38 WFAS senses less than 14 mA (10% of chart or a minimum of 20 liters). TK-38 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-38 typically contains organic solution (CAX) which is added to solvent extraction or recycled through organic clean up.</p> <p>Equipment Locations: TK-38 - 1st & 2nd WN. WFT - 3rd West. WFAS - behind "B" panel WFR - Chart 78 panel B-5 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-2-28017 GPL H-2-28373 GPL; H-2-28379</p> <p>CBRS: Loop #; A0044 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-38 WF recorder (Chart 78, B-5) and TK-52.4 indicator (B-9) along with recent trend for TK-38. <ol style="list-style-type: none"> a. <u>IF</u> TK-38 WF has not dropped below 10 % of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-38 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> TK-38 WF decreased suddenly to 0%, this indicates possible instrument problem. Continue to verify. 2. Verify that selector switch 38-SS-P (B-5) is in Position 1, OFF and pump 38-MOP-D green READY light is ON (switch 38-SS-D to STOP, B-5). 3. On first floor, verify that valves 305 (WN-1), 306 (WN-1), 307 (WN-1) and 308 (WN-1) are CLOSED. <ol style="list-style-type: none"> a. <u>IF</u> drain valve 306 (WN-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 308 (WN-1) was open, check solution level in 1st floor glovebox WN. c. <u>IF</u> block valve 307 (WN-1) was open and pump 38 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-38.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>HIGH WF TK-30</p> <p>Volume: 57 liters WFT Range: 0-45" H₂O Set Point: 40" H₂O</p> <p>Actuated when TK-30 WFAS-A-HI senses greater than 46 mA (90% of chart or a maximum of 52 liters). TK-30 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-30 contains clean CCX (dilute Nitric Acid and HN) which is supplied from Chem Prep TK-A109 through an automatic refill interlock which initiates fill below 35% and closes fill valve above 78%.</p> <p>Equipment Locations: TK-30 - 1st and 2nd WC. WFT - 3rd West. WFAS - behind "B" panel R - Chart 75 panel B-5 K-52.3 and TK-52.4 - 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 - Auto fill interlock not functioning properly <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28019 H-2-28014 GPL; H-2-28373 H-2-28379</p> <p>CBRS: Loop #: A0027 Sequence #: 1, 4 & 5 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-30 WF recorder (Chart 75, B-5) and TK-52.4 indicator (B-9) along with recent trend for TK-30. <ol style="list-style-type: none"> a. IF TK-30 WF has not exceeded 90 % of chart, notify supervision of equipment failure. No further actions required. b. IF sudden TK-30 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. IF TK-30 WF increased suddenly to 100%, this indicates possible high leg dip tube plugging. Continue to verify. 2. In Chem Prep (RM 40), verify valves C-131 (K-2) and C-132 (K-2) are CLOSED. 3. On 1st floor: <ol style="list-style-type: none"> a. Verify that valve 247 (WE-2) is CLOSED. b. Verify that no solution is entering tanks 52.3 or 52.4 (WW). 4. 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. 5. Evaluate all transfers and changes in tank levels to determine possible causes of alarm and/or source of solution entering TK-30.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>LOW WF TK-30</p> <p>Volume: 57 liters WFT Range: 0-45" H₂O Set Point: 9" H₂O²</p> <p>Actuated when TK-30 WFAS-A-LO senses less than 18 mA (20% of chart or a minimum of 10 liters). TK-30 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-30 contains clean CCX (dilute Nitric Acid and HN) which is supplied from Chem Prep TK-A109 through an automatic refill interlock which initiates fill below 35% and closes fill valve above 78%.</p> <p>Equipment Locations: TK-30 - 1st and 2nd WC WFT - 3rd West. WFAS - behind "B" panel R - Chart 75 panel B-5 -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 - Auto fill interlock not functioning properly <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28019 H-2-28014 GPL; H-2-28373 H-2-28379</p> <p>CBRS: Loop #; A0027 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-30 WF recorder (Chart 75, B-5) and TK-52.4 indicator (B-9) along with recent trend for TK-30. <ol style="list-style-type: none"> a. IF TK-30 WF has not dropped below 20 % of chart, notify supervision of equipment failure. No further actions required. b. IF sudden TK-30 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. IF TK-30 WF decreased suddenly to 0%, this indicates possible instrument problem. Continue to verify. 2. Verify that pump 30-SS-B green READY light is ON (selector switch 30-SS-B to STOP, B-5). 3. On 1st floor, verify that valves 226 (WC-1), 227 (WC-1), 247 (WE-1) and 228 (WC-1) are CLOSED. <ol style="list-style-type: none"> a. IF drain valve 226 (WC-1) was open, check solution level in tanks 52.3 or 52.4 (WW) and gloveboxes WV and WW. b. IF sample valve 228 (WC-1) was open, check solution level in first floor glovebox WC. c. IF block valve 227 (WC-1) was open and pump 30 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-30.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>HIGH WF TK-36</p> <p>THIS ALARM WILL NOT ACKNOWLEDGE UNTIL CLEARED</p> <p>Volume: 57 liters WFT Range: 0-50" H₂O Set Point: 35" H₂O</p> <p>Actuated when TK-36 WFAS senses greater than 38 mA (70% of chart or a maximum of 49 liters). TK-36 overflows to tanks 52.3 and 52.4 (level indication on panel B-9). Alarm will NOT acknowledge or clear until after level is below set point. TK-36 contains solvent extraction product recycle solution from the CC to the CA column. TK-36 should NOT be allowed to overflow. Solution drained from TK-36 should be minimized.</p> <p>Equipment Locations: Y-36 - 2nd WT FT - 3rd West. WFAS - behind "B" panel WFR - Chart 63 panel B-3 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-2-28019 GPL; H-2-28379 H-2-28392 H-2-28393</p> <p>CBRS: Loop #: A0041 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-36 WF recorder (Chart 63, B-3) and TK-52.4 indicator (B-9) along with recent trend for TK-36. <ol style="list-style-type: none"> a. <u>IF</u> TK-36 WF has not exceeded 70 % of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-36 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> TK-36 WF increased suddenly to 100%, this indicates possible high leg dip tube plugging. Continue to verify. 2. <u>IF</u> solvent extraction is operating: <ol style="list-style-type: none"> a. Increase CAIS flow to CA Column (controller 36-FC-C, Chart 74, B-3) per rate sheet and temporarily decrease CCX flow to CC Column (33-FC-D Chart 73, B-4). b. <u>IF</u> alarm does NOT clear, perform 100% tap off by Closing valve 1107 (5th Fl), Opening valves 1118 (5th Fl) and 1120 (5th Fl) and setting TK-58 Flow Controller to 100% open (58-MFC-A, B-4) c. <u>IF</u> alarm still has not cleared, perform Solvent extraction Short Term Shutdown per ZO-181-004 and attempt to determine cause of CAIS flow loss. TK-36 may be partially drained per ZO-180-029 or transferred to TK-42 by opening <u>THEN</u> closing valve 534 (WS-3) to silence alarm. d. <u>IF</u> alarm has cleared, return all flow rates to normal flow sheet values, no additional actions required. 3. <u>IF</u> solvent extraction is NOT operating: <ol style="list-style-type: none"> a. Verify panel board selector switch 40-SS-E (B-6) is in Position 1, Off. b. On 1st floor, verify valves 36-C1, 36-C2, 36-E1 and 36-E2 are CLOSED. c. On 2nd floor, verify that valves 461 (WF-4) and 534 (WS-3) are CLOSED and on 1st floor verify that no solution is entering tanks 52.3 or 52.4 (WW). d. In 5th floor glovebox, verify that valves 1107, 1108, and 1109 are closed. e. <u>IF</u> increase and/or overflow have stopped, solution may be drained per ZO-180-029 via valves 541 (WT-3) and 542 (WT-3) to silence alarm. 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-36.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p><u>LOW WF TK-36</u></p> <p>Volume: 57 liters WFT Range: 0-50" H₂O Set Point: 8" H₂O</p> <p>Actuated when TK-36 WFAS senses less than 17 mA (16% of chart or a minimum of 9 liters). TK-36 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-36 contains solvent extraction product recycle solution from the CC to the CA column. Solution drained from TK-36 should be minimized.</p> <p>Equipment Locations: TK-36 - 2nd WT WFT - 3rd West. WFAS - behind "B" panel WFR - Chart 63 panel B-3 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-2-28019 GPL; H-2-28379</p> <p>CBRS: Loop #; A0041 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-36 WF recorder (Chart 63, B-3) and TK-52.4 indicator (B-9) along with recent trend for TK-36. <ol style="list-style-type: none"> a. <u>IF</u> TK-36 WF has not dropped below 16 % of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-36 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> TK-36 WF decreased suddenly to 0%, this indicates possible instrument problem. Continue to verify. 2. <u>IF</u> solvent extraction is operating: <ol style="list-style-type: none"> a. Decrease CAIS flow to CA Column (controller 36-FC-C, B-3) per rare sheet until level rises to acceptable operating range. b. <u>IF</u> level does NOT rise with CCR routed to TK-36, verify valve 1107 (5th) is OPEN, 1118 (5th) and 1120 (5th) are CLOSED and look for leaks on 2nd West, 5th and 6th floors. c. <u>IF</u> alarm does NOT clear and destination of CCP stream can NOT be determined, perform Short Term Shut Down per ZO-181-004. 3. <u>IF</u> solvent extraction is NOT operating: <ol style="list-style-type: none"> a. Verify that pump 36-MOP-B green READY light is ON (selector switch 36-SS-B to STOP, B-3). b. On first/second floor, verify that valves 534 (WS-3), 541 (WT-3), 542 (WT-3) and 543 (WT-3) are CLOSED. c. <u>IF</u> drain valve 541 (WT-3) was open, check solution level in tanks 52.3 or 52.4 (WW) and gloveboxes WW and WW. d. <u>IF</u> sample valve 543 (WT-3) was open, check solution level in glovebox WT. e. <u>IF</u> block valve 542 (WT-3) was open and pump 36 was ON, determine solution destination by performing Step 4. f. <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-36.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p><u>HIGH WF TK-40</u></p> <p>Volume: 210 liters WFT Range: 0-250" H₂O Set Point: 175" H₂O</p> <p>Actuated when TK-40 WFAS senses greater than 38 mA (69% of chart or a maximum of 232 liters). TK-40 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-40 typically contains spent sodium carbonate solutions from organic clean up operations.</p> <p>Equipment Locations: TK-40 - 1st & 2nd WP. WFT - 3rd West. WFAS - behind "B" panel WFR - Chart 80 panel B-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-2-28036 GPL; H-2-28373 GPL; H-2-28379 GPL; H-2-28392</p> <p>CBRS: Loop #: A0047 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-40 WF recorder (Chart 80, B-6) and TK-52.4 indicator (B-9) along with recent trend for TK-40. <ol style="list-style-type: none"> a. <u>IF</u> TK-40 WF has not exceeded 69% of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-40 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> TK-40 WF increased suddenly to 100%, this indicates possible high leg dip tube plugging. Continue to verify. 2. Verify selector switch 70-SS-G (B-1) is NOT in Position 4 TK-70 TO TK-40 and switch 40-SSJ (B-6) is set to Off. 3. On 3rd floor, verify valves 40-U1 and 40-U2 are CLOSED. 4. On 1st/2nd floor: <ol style="list-style-type: none"> a. Verify that valves 322 (WP-1), 329 (WP-2), 336(WR-1), 361 (WU-1) and 523 (WP-4) are CLOSED. b. Verify that no solution is entering tanks 52.3 or 52.4 (WW). 5. <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. 6. Evaluate all transfers and changes in tank levels to determine possible causes of alarm and/or source of solution entering TK-40.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p><u>LOW WF TK-40</u></p> <p>Volume: 210 liters WFT Range: 0-250" H₂O Set Point: 25" H₂O</p> <p>Actuated when TK-40 WFAS senses less than 14 mA (10% of chart or a minimum of 22 liters). TK-40 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-40 typically contains spent sodium carbonate solutions from organic clean up operations.</p> <p>Equipment Locations: TK-40 - 1st & 2nd WP. WFT - 3rd West. WFAS - behind "B" panel WFR - Chart 80 panel B-6 TK-52.3 and TK-52.4 - 1st WW (In glovebox)</p>	<p>- Decrease in tank level - Plugged low dip tube - Leak on High dip tube - Instrument air upset - Power interruption - Instrument failure</p> <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28036 GPL H-2-28373 GPL; H-2-28379</p> <p>CBRS: Loop #; A0047 Sequence #; 1, 3 & 4 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-40 WF recorder (Chart 80, B-6) and TK-52.4 indicator (B-9) along with recent trend for TK-40. <ol style="list-style-type: none"> a. <u>IF</u> TK-40 WF has not dropped below 10 % of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-40 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> TK-40 WF decreased suddenly to 0%, this indicates possible instrument problem. Continue to verify. 2. Verify that key selector switch 40-SS-B (B-6) is set to OFF and pump 40-MOP-D green READY light is ON (switch 40-SS-D to STOP, B-6). 3. On 1st floor, verify that valves 319 (WP-1), 320 (WP-1), 321 (WP-1), 322 (WP-1), 329 (WP-2), 336 (WR-1) and 361 (WU-1) are CLOSED. <ol style="list-style-type: none"> a. <u>IF</u> drain valve 319 (WP-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 321 (WP-1) was open, check solution level in glovebox WP. c. <u>IF</u> block valve 320 (WP-1) was open and pump 40 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-40.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>HIGH WF TK-41</p> <p>Volume: 57 liters WFT Range: 0-50" H₂O Set Point: 38" H₂O</p> <p>Actuated when TK-41 WFAS senses greater than 40 mA (76% of chart or a maximum of 53 liters). TK-41 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-41 typically contains miscellaneous aqueous waste solutions from organic clean up operations.</p> <p>Equipment Locations: TK-41 - 1st WK. WFT - 3rd West. WFAS - behind "B" panel WFR - Chart 83 panel B-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-2-28036 GPL; H-2-28373 GPL; H-2-28379 GPL; H-2-28394</p> <p>CBRS: Loop #; A0049 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-41 WF recorder (Chart 83, B-6) and TK-52.4 indicator (B-9) along with recent trend for TK-41. <ol style="list-style-type: none"> a. <u>IF</u> TK-41 WF has not exceeded 76 % of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-41 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> TK-41 WF increased suddenly to 100%, this indicates possible high leg dip tube plugging. Continue to verify. 2. Verify that selector switch 41-SS-B (B-6) is set to OFF. 3. On 3rd floor, verify valves 57-1A, 57-1B, 57-1C and 57-1D are CLOSED. 4. On 1st and 2nd floors: <ol style="list-style-type: none"> a. Verify that valves 281 (WK-2), 288 (WK-1), 484 (WK-3), 496 (WL-3) and 529 (WR-3) are CLOSED. b. Verify that no solution is entering tanks 52.1 or 52.2 (EW). 5. <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. 6. Evaluate all transfers and changes in tank levels to determine possible causes of alarm and/or source of solution entering TK-41.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p><u>LOW WF TK-41</u></p> <p>Volume: 57 liters WFT Range: 0-50" H₂O Set Point: 7" H₂O</p> <p>Actuated when TK-41 WFAS senses greater than 16 mA (14% of chart or a minimum of 8 liters). TK-41 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-41 typically contains miscellaneous aqueous waste solutions from organic clean up operations.</p> <p>Equipment Locations: TK-41 - 1st WK WFT - 3rd West. WFAS - behind "B" panel WFR - Chart 83 panel B-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-2-28036 GPL; H-2-28373</p> <p>CBRS: Loop #; A0049 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-41 WF recorder (Chart 83, B-6) and TK-52.4 indicator (B-9) along with recent trend for TK-41. <ol style="list-style-type: none"> a. <u>IF</u> TK-41 WF has not dropped below 14 % of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-41 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> TK-41 WF decreased suddenly to 0%, this indicates possible instrument problem. Continue to verify. 2. Verify that selector switch 41-SS-B (B-6) is set to OFF and pump 41-MOP-D green READY light is ON (switch 41-SS-D to STOP, B-6). 3. On 1st floor, verify that valves 277 (WK-1), 278 (WK-1), 279 (WK-1), and 281 (WK-2) are CLOSED. <ol style="list-style-type: none"> a. <u>IF</u> drain valve 277 (WK-1) was open, check solution level in tanks 52.3 or 52.4 (WW) and gloveboxes WW and WW. b. <u>IF</u> sample valve 279 (WK-1) was open, check solution level in glovebox. c. <u>IF</u> block valve 278 (WK-1) was open and pump 41 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-41.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)

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ALARM	POSSIBLE CAUSES	RESPONSE						
<p><u>HIGH WF TK-42</u></p> <p>Volume: 57 liters WFT Range: 0-50" H₂O Set Point: 38" H₂O²</p> <p>Actuated when TK-42 WFAS senses greater than 40 mA (76% of chart or a maximum of 53 liters). TK-42 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-42 is the Product Concentrator feed tank and contains solvent extraction product solution and should NOT be allowed to overflow.</p> <p>Equipment Locations: TK-42 - 2nd WS WFT - 3rd West. WFAS - behind "B" panel WFR - Chart 79 panel B-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-2-28027 GPL; H-2-28379 GPL; H-2-28414</p> <p>CBRS: Loop #; A0050 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-42 WF recorder (Chart 79, B-6) and TK-52.4 indicator (B-9) along with recent trend for TK-42. <ol style="list-style-type: none"> a. <u>IF</u> TK-42 WF has not exceeded 76% of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-42 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> TK-42 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;"> <tr> <td style="padding-right: 20px;">Switches</td> <td>Position</td> </tr> <tr> <td>42-SS-E (B-6)</td> <td>1 Off</td> </tr> <tr> <td>45/46-SS (B-8)</td> <td>1 Off</td> </tr> </table> 3. On 2nd and 5th floor column hood: <ol style="list-style-type: none"> a. Verify that valves 534 (WS-1), 535 (WS-4), 1105 (5th Fl), 1104 (5th Fl), 1115 (5th Fl) and 1120 (5th Fl) are CLOSED. b. Verify that no solution is entering tanks 52.3 or 52.4 (WW 1st Fl). 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-42. 	Switches	Position	42-SS-E (B-6)	1 Off	45/46-SS (B-8)	1 Off
Switches	Position							
42-SS-E (B-6)	1 Off							
45/46-SS (B-8)	1 Off							

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>LOW WF TK-42</p> <p>Volume: 57 liters WFT Range: 0-50" H₂O Set Point: 5" H₂O</p> <p>Actuated when TK-42 WFAS senses greater than 14 mA (10% of chart or a minimum of 8 liters). TK-42 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-42 is the Product Concentrator feed tank and contains solvent extraction product solution and should NOT be drained.</p> <p>Equipment Locations: TK-42 - 2nd WS WFT - 3rd West. WFAS - behind "B" panel WFR - Chart 79 panel B-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-2-28027 GPL; H-2-28379</p> <p>CBRS: Loop #; A0050 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-42 WF recorder (Chart 79, B-6) and TK-52.4 indicator (B-9) along with recent trend for TK-42. <ol style="list-style-type: none"> a. <u>IF</u> TK-42 WF has not dropped below 10 % of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-42 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> TK-42 WF decreased suddenly to 0%, this indicates possible instrument problem. Continue to verify. 2. Verify that pump 42-MOP-D green READY light is ON (selector switch 42-SS-D to STOP, B-6). 3. On 2nd floor, verify that valves 531 (WS-3), 532 (WS-3), 533 (WS-3) and 534 (WS-3) are CLOSED. <ol style="list-style-type: none"> a. <u>IF</u> drain valve 531 (WS-3) was open, check solution level in tanks 52.3 or 52.4 (WW) and gloveboxes WV and WW. b. <u>IF</u> sample valve 533 (WS-3) was open, check solution level in glovebox WS. c. <u>IF</u> block valve 532 (WS-3) was open and pump 42 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-42.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>HIGH WF TK-45</p> <p>Volume: 57 liters WFT Range: 0-60" H₂O Set Point: 38" H₂O²</p> <p>Actuated when TK-45 WFAS senses greater than 35 mA (63% of chart or a maximum of 53 liters). TK-45 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-45 contains solvent extraction product solutions after concentration and should NOT be allowed to overflow.</p> <p>Equipment Locations: TK-45 - 1st WS. WFT - 3rd West. WFAS - behind "B" panel WFR - Chart 94 panel B-8 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-2-28027 GPL; H-2-28373 GPL; H-2-28414</p> <p>CBRS: Loop #: A0055 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-45 WF recorder (Chart 94, B-8) and TK-52.4 indicator (B-9) along with recent trend for TK-45. <ol style="list-style-type: none"> a. <u>IF</u> TK-45 WF has not exceeded 63 % of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-45 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> TK-45 WF increased suddenly to 100%, this indicates possible high leg dip tube plugging. Continue to verify. 2. Verify that selector switch 45-SS-B (B-8) is <u>NOT</u> in Position 1, TK-43 to TK-45 and 58-SS-A is <u>NOT</u> in Position 1, TK-58 to TK-45. 3. On 5th floor: <ol style="list-style-type: none"> a. <u>IF</u> solvent extraction is not operating, verify that valves 1104 (5th Fl), and 1120 (5th Fl) are CLOSED. b. Verify that no solution is entering tanks 52.3 or 52.4 (WW 1st Fl). 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-45.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>LOW WF TK-45</p> <p>Volume: 57 liters WFT Range: 0-60" H₂O Set Point: 8" H₂O</p> <p>Actuated when TK-45 WFAS senses less than 15 mA (13% of chart or a minimum of 10 liters). The TK-45 drain line to tanks 52.3 and 52.4 has been capped. The sample valve will drain to the glovebox floor. Alarm should acknowledge but not clear until level is above set point. TK-45 contains solvent extraction product solutions after concentration and sample line flush volumes should be minimized.</p> <p>Equipment Locations: TK-45 - 1st WS WFT - 3rd West. WFAS - behind "B" panel WFR - Chart 94 panel B-8</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-2-28027 GPL; H-2-28373</p> <p>CBRS: Loop #: A0055 Sequence #: 1, 3 & 4 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-45 WF recorder (Chart 94, B-8) and note any recent trend. <ol style="list-style-type: none"> a. <u>IF</u> TK-45 WF has not dropped below 13 % of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-45 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> TK-45 WF decreased suddenly to 0%, this indicates possible instrument problem. Continue to verify. 2. Verify that selector switch 45/46-SS (B-8) is <u>NOT</u> in Position 2, TK-45 to TASK 1 or Position 3 TK-45 to TK-42 and pump 45-MOP-D green READY light is ON (switch 45-SS-D to STOP, B-8). 3. On 1st floor, verify that valves 348 (WS-1), 349 (WS-1) are CLOSED. <ol style="list-style-type: none"> a. <u>IF</u> sample valve 349 (WS-1) was open, check solution level in glovebox WS. b. <u>IF</u> block valve 348 (WS-1) was open and pump 45 was ON, determine solution destination by performing Step 4. c. <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-45.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p><u>HIGH WF TK-46</u></p> <p>Volume: 57 liters WFT Range: 0-60" H₂O Set Point: 38" H₂O</p> <p>Actuated when TK-46 WFAS senses greater than 35 mA (63% of chart or a maximum of 53 liters). TK-46 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-46 contains solvent extraction product solutions after concentration and should NOT be allowed to overflow.</p> <p>Equipment Locations: TK-46 - 1st WT. WFT - 3rd West. WFAS - behind "B" panel WFR - Chart 95 panel B-8 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-2-28027 GPL; H-2-28373 GPL; H-2-28414</p> <p>CBRS: Loop #: A0057 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-46 WF recorder (Chart 95, B-8) and TK-52.4 indicator (B-9) along with recent trend for TK-46. <ol style="list-style-type: none"> a. <u>IF</u> TK-46 WF has not exceeded 63 % of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-46 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> TK-46 WF increased suddenly to 100%, this indicates possible high leg dip tube plugging. Continue to verify. 2. Verify that selector switch 45-SS-B (B-8) is <u>NOT</u> in Position 2, TK-43 to TK-46 and 58-SS-A (B-5) is <u>NOT</u> in Position 2, TK-58 to TK-46. 3. On 5th floor: <ol style="list-style-type: none"> a. <u>IF</u> solvent extraction is not operating, verify that valves 1104 (5th Fl) and 1120 (5th Fl) are CLOSED. b. Verify that no solution is entering tanks 52.3 or 52.4 (WW 1st Fl). 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-46.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>LOW WF TK-46</p> <p>Volume: 57 liters WFT Range: 0-60" H₂O Set Point: 8" H₂O</p> <p>Actuated when TK-46 WFAS senses less than 15 mA (13% of chart or a minimum of 10 liters). TK-46 drain line to tanks 52.3 and 52.4 has been capped. The sample valve will drain to the glovebox floor. Alarm should acknowledge but not clear until level is below set point. TK-46 contains solvent extraction product solutions after concentration and sample line flush volumes should be minimized.</p> <p>Equipment Locations: TK-46 - 1st WT. WFT - 3rd West. WFAS - behind "B" panel WFR - Chart 95 panel B-8</p>	<ul style="list-style-type: none"> - Decrease in tank level - Plugged high dip tube - Instrument air upset - Power interruption - Instrument failure <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28027 GPL; H-2-28373</p> <p>CBRS: Loop #: A0057 Sequence #: 1, 3 & 4 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-46 WF recorder (Chart 95, B-8) and note any recent trend. <ol style="list-style-type: none"> a. <u>IF</u> TK-46 WF has not exceeded 13% of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-46 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> TK-46 WF increased suddenly to 0%, this indicates possible high leg dip tube plugging. Continue to verify. 2. Verify that selector switch 45/46-SS (B-8) is <u>NOT</u> in Position 4, TK-46 to TASK 1 or Position 5, TK-46 to TK-42 and pump 46-MOP-D green READY light is ON (switch 46-SS-D to STOP, B-8). 3. On 1st/2nd floor, verify that valves 358 (WT-1), 359 (WT-1) are CLOSED. <ol style="list-style-type: none"> a. <u>IF</u> sample valve 359 (WT-1) was open, check solution level in glovebox WT. b. <u>IF</u> block valve 358 (WT-1) was open and pump 46 was ON, determine solution destination by performing Step 4. c. <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-46.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE										
<p><u>HIGH WF TK-20</u></p> <p>Volume: 57 liters WFT Range: 0-50" H₂O Set Point: 35" H₂O</p> <p>Actuated when TK-20 WFAS senses greater than 38 mA (70% of chart or a maximum of 48 liters). TK-20 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-20 is the filtrate evaporator feed tank and can contain a variety of aqueous solutions.</p> <p>Equipment Locations: TK-20 - 1st ES. WFT - 3rd East. WFAS - behind "B" panel WFR - Chart 87 panel B-7 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-2-28026 GPL; H-2-28374 GPL; H-2-28380 GPL; H-2-28388 CBRS: Loop #: A0014 Sequence #: 1, 3 & 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-20 WF recorder (Chart 87, B-7) and TK-52.2 indicator (B-9) along with recent trend for TK-20. <ol style="list-style-type: none"> a. <u>IF</u> TK-20 WF has not exceeded 70% of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-20 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> TK-20 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 style="margin-left: 20px; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Switch</th> <th style="text-align: left; border-bottom: 1px solid black;">Position</th> </tr> </thead> <tbody> <tr> <td>20-SSE (B-7)</td> <td>Closed</td> </tr> <tr> <td>32-SSK (B-3)</td> <td>1 Off</td> </tr> <tr> <td>15-SS-L (A-4)</td> <td>1 Off</td> </tr> <tr> <td>22-SSB (B-7)</td> <td>Off</td> </tr> </tbody> </table> 3. On 3rd floor, verify valves 20-E1 and 20-E2 are CLOSED. 4. On 1st floor: <ol style="list-style-type: none"> a. Verify that valves 145 (ER-2), 146 (ES-2), 153 (ES-1), 155(ES-2) and 156 (ES-2) are CLOSED. b. Verify that no solution is entering tanks 52.1 or 52.2 (EW). 5. <u>IF</u> no transfers were in progress in PRF, perform PRF "Standby Surveillance - Process Vessel" surveillance checks per Z0-180-600 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-20. 	Switch	Position	20-SSE (B-7)	Closed	32-SSK (B-3)	1 Off	15-SS-L (A-4)	1 Off	22-SSB (B-7)	Off
Switch	Position											
20-SSE (B-7)	Closed											
32-SSK (B-3)	1 Off											
15-SS-L (A-4)	1 Off											
22-SSB (B-7)	Off											

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>LOW WF TK-20</p> <p>Volume: 57 liters WFT Range: 0-50" H₂O Set Point: 7" H₂O</p> <p>Actuated when TK-20 WFAS senses less than 16 mA (14% of chart or a minimum of 10 liters). TK-20 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-20 is the filtrate evaporator feed tank and can contain a variety of aqueous solutions.</p> <p>Equipment Locations: TK-20 - 1st ES WFT - 3rd East. WFAS - behind "B" panel WFR - Chart 87 panel B-7 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-2-28026 GPL; H-2-28374</p> <p>CBRS: Loop #: A0014 Sequence #: 1, 3 & 5 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-20 WF recorder (Chart 87, B-7) and TK-52.2 indicator (B-9) along with recent trend for TK-20. <ol style="list-style-type: none"> a. <u>IF</u> TK-20 WF has not dropped below 14 % of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-20 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> TK-20 WF decreased suddenly to 0%, this indicates possible instrument problem. Continue to verify. 2. Verify that selector switch 15-SS-L (A-4) is set to Position 1, OFF and pump 20-MOP-D green READY light is ON (switch 20-SS-D to STOP, B-7). 3. On first floor, verify that valves 146 (ES-1), 147 (ES-1), 148 (ES-1), 149 (ES-1), 153 (ES-1), and 155 (ES-2) are CLOSED. <ol style="list-style-type: none"> a. <u>IF</u> drain valve 147 (ES-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 149 (ES-1) was open, check solution level in glovebox ES. c. <u>IF</u> block valve 148 (ES-1) was open and pump 20 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-20.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p><u>HIGH DIFF PRESS TK-21</u></p> <p>DPT Range: 0-10" H₂O Set Point: 1" H₂O²</p> <p>Actuated when TK-21 DPAS senses greater than 14 mA (10% of chart). DPT sends an electric signal to the DPAS and the DPR representing the differential pressure across the TK-21 demister. Alarm is interlocked with EMV-21D, rerouting TK-22 process condensate solution from TK-D4 located at 241-Z back to TK-20 until 5 minutes after alarm clears. Should this interlock fail there is the possibility of routing plutonium to the ungeometrically safe waste receiver tank.</p> <p>Equipment Locations: TK-21/22 - 1st & 2nd EG. DPT - 3rd East. DPAS - behind "B" panel JPR - Chart 90 panel B-7 Interlock Relay and Timer - 3rd East Instr. shop EMV-21-D - ET-3, 2nd East</p>	<ul style="list-style-type: none"> - Overflow of TK-21 - Organic in feed - Heating Tube Failure - Plugged low dip tube - Instrument air upset - Power interruption - Instrument failure <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28026 GPL; H-2-28374 H-2-28380 H-2-28388</p> <p>OSD-Z-184-00007</p> <p>CBRS: Loop #; A0018 Sequence #; 1,2,3,4,5 & 6 Frequency; 12 mo</p>	<p><u>AUTOMATIC ACTION:</u> EMV 21-D switches to reroute TK-22 process condensate from Tank D-4 to TK-20 until 5 minutes after alarm clears.</p> <p><u>OPERATOR ACTIONS:</u></p> <ol style="list-style-type: none"> 1. Check present readings on TK-21 WF recorder (Chart 92, B-7), valve 21-D position, and recent trend for TK-21 demister Differential Pressure (B-7). <ol style="list-style-type: none"> a. IF TK-21 DP has not exceeded 10% of chart, notify supervision of equipment failure. No further actions required. b. IF sudden TK-21 DP changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. IF TK-21 DP increased suddenly to 100% and remains at that value, this indicates possible high leg dip tube plugging. Continue to verify. d. IF TK-21 DP is above 10% and EMV 21-D is in D-4 position, notify BED immediately of interlock failure and CONTINUE with Step 2. 2. IF Filtrate Evaporator is operating: <ol style="list-style-type: none"> a. IF TK-21 WF is greater than 80%, this indicates 21-DOV-B (TK-21 Outlet) is plugged causing TK-21 overflow. GO TO Step 2.d. b. IF TK-21 Steam Flow (Chart 88, B-7) is steady and above 80% of chart, this indicate a steam leak. Go to Step 2.d. c. Perform phase check of TK-20 solution: <ul style="list-style-type: none"> - IF no organic is present and TK-21 DP is below 10%, no further action required. - IF organic is present or TK-21 DP is above 10%, CONTINUE. d. Perform long term shutdown of Filtrate Evaporator per ZO-182-003. 3. IF Filtrate Evaporator is NOT operating: <ol style="list-style-type: none"> a. Verify DOV-21-A controller (Chart 92, B-7) and DOV-21-E controller (Chart 88, B-7) are in Manual with outputs at Zero. b. On 1st floor, verify valve 148 (ES-1) is CLOSED. c. On 3rd East, verify steam valves 21-E1 and 21-E2 and water valves 22-B1A and 22-B2 (across from lavatory) are CLOSED. 4. Additional recovery may include draining TK-21 to TK-23 prior to resuming operations.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p><u>HIGH WF TK-23</u></p> <p>Volume: 57 liters WFT Range: 0-60" H₂O Set Point: 38" H₂O</p> <p>Actuated when TK-23 WFAS senses greater than 35 mA (62% of chart or a maximum of 53 liters). TK-23 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-23 contains concentrated filtrate evaporator product or drain solution.</p> <p>Equipment Locations: TK-23 - 1st ER. WFT - 3rd West. WFAS - behind "B" panel WFR - Chart 97 panel B-8 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-2-28026 GPL; H-2-28374</p> <p>CBRS: Loop #; A0021 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-23 WF recorder (Chart 97, B-8) and TK-52.2 indicator (B-9) along with recent trend for TK-23. <ol style="list-style-type: none"> a. <u>IF</u> TK-23 WF has not exceeded 62 % of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-23 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> TK-23 WF increased suddenly to 100%, this indicates possible high leg dip tube plugging. Continue to verify. 2. Verify panel board selector switch 23/24-SS-B (B-8) is in Position 2, TK-21 FILTRATE CONC. TO TK-24 and 23-SS-C (B-8) is positioned to OFF. 3. On first floor: <ol style="list-style-type: none"> a. Verify that valves 152 (ES-2), 157 (ES-2) and 151 (ET-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-23.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p><u>LOW WF TK-23</u></p> <p>Volume: 57 liters WFT Range: 0-60" H₂O Set Point: 8" H₂O</p> <p>Actuated when TK-23 WFAS senses less than 15 mA (13% of chart or a minimum of 10 liters). TK-23 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-23 contains concentrated filtrate evaporator product or drain solution.</p> <p>Equipment Locations: TK-23 - 1st ER. WFT - 3rd East. WFAS - behind "B" panel WFR - Chart 97 panel B-8 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-2-28026 GPL; H-2-28374</p> <p>CBRS: Loop #: A0021 Sequence #: 1, 3 & 4 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-23 WF recorder (Chart 97, B-8) and TK-52.2 indicator (B-9) along with recent trend for TK-23. <ol style="list-style-type: none"> a. <u>IF</u> TK-23 WF has not dropped below 13 % of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-23 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> TK-23 WF decreased suddenly to 0%, this indicates possible instrument problem. Continue to verify. 2. Verify that selector switch 23-SS-C (B-8) is to "OFF" and pump 23-MOP-D green READY light is ON (switch 23-SS-D to STOP, B-8). 3. On 1st floor, verify that valves 137 (ER-1), 138 (ER-1), 139 (ER-1) and 151 (ES-1) are CLOSED. <ol style="list-style-type: none"> a. <u>IF</u> drain valve 137 (ER-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 139 (ER-1) was open, check solution level in glovebox ER. c. <u>IF</u> block valve 138 (ER-1) was open and pump 23 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-23.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>HIGH WF TK-24</p> <p>Volume: 57 liters WFT Range: 0-60" H₂O Set Point: 38" H₂O</p> <p>Actuated when TK-24 WFAS senses greater than 35 mA (62% of chart or a maximum of 55 liters). TK-24 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-24 contains concentrated filtrate evaporator product solutions.</p> <p>Equipment Locations: TK-24 - 1st EP. WFT - 3rd East. WFAS - behind "B" panel WFR - Chart 98 panel B-8 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-2-28026 GPL; H-2-28374</p> <p>CBRS: Loop #; A0022 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-24 WF recorder (Chart 98, B-8) and TK-52.2 indicator (B-9) along with recent trend for TK-24. <ol style="list-style-type: none"> a. <u>IF</u> TK-24 WF has not exceeded 62 % of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-24 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> TK-24 WF increased suddenly to 100%, this indicates possible high leg dip tube plugging. Continue to verify. 2. Verify panel board selector switch 23/24-SS-B (B-4) is in Position 1, TK-21 FILTRATE CONC. TO TK-23 and 24-SS-C (B-8) is positioned to OFF. 3. On 1st floor: <ol style="list-style-type: none"> a. Verify that valves 152 (ES-2), 157 (ES-2) and 160 (ET-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-24.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>LOW WF TK-24</p> <p>Volume: 57 liters WFT Range: 0-60" H₂O Set Point: 8" H₂O</p> <p>Actuated when TK-24 WFAS senses less than 15 mA (13% of chart or a minimum of 12 liters). TK-24 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-24 contains concentrated filtrate evaporator product solutions.</p> <p>Equipment Locations: TK-24 - 1st EP. WFT - 3rd East. WFAS - behind panel B-8 WFR - Chart 98 panel B-8 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-2-28026 GPL; H-2-28374</p> <p>CBRS: Loop #; A0022 Sequence #; 1, 3 & 4 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-24 WF recorder (Chart 98, B-8) and TK-52.2 indicator (B-9) along with recent trend for TK-24. <ol style="list-style-type: none"> a. <u>IF</u> TK-24 WF has not dropped below 13 % of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-24 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> TK-24 WF decreased suddenly to 0%, this indicates possible instrument problem. Continue to verify. 2. Verify that selector switch 24-SS-C (B-8) is to "OFF" and pump 24-MOP-D green READY light is ON (switch 24-SS-D to STOP, B-8). 3. On 1st floor, verify that valves 134 (EP-1), 135 (EP-1) and 136 (EP-1) are CLOSED. <ol style="list-style-type: none"> a. <u>IF</u> drain valve 134 (EP-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 136 (EP-1) was open, check solution level in glovebox EP. c. <u>IF</u> block valve 135 (EP-1) was open and pump 24 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-24.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p><u>OVERFLOW CX-COLUMN TK-69</u></p> <p><u>EFD HAS THIS INACTIVE BUT ALARM IS IDENTIFIED AS FUNCTIONAL ON ALARM PANEL.</u></p> <p>Actuated by conductivity probe located at the top of the CX Column. Alarm should acknowledge but not clear until solution is no longer in contact with the probe.</p> <p>Equipment Locations:</p>	<p>- Solution at top of TK-69 - Instrument failure</p> <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28020</p> <p>PISCES: Loop #; A0407 Sequence #; 1 & 2 Frequency; 6 mo</p>	<p>AUTOMATIC ACTION: NONE</p> <p>1. Alarm inactive, no response required.</p>

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>HIGH WF TK-21</p> <p>Volume: 34 liters WFT Range: 0-50" H₂O Set Point: 40" H₂O²</p> <p>Actuated when TK-21 WFAS senses greater than 42 mA (80% of chart or a maximum of 31 liters). TK-21 overflow to Tank D-4 (Not critically safe) or TK-20 via TK-22. TK-21 WF is interlocked with feed valve DOV-21-A to prevent overflow. Alarm should acknowledge but not clear until level is below set point.</p> <p>Equipment Locations: TK-21 - 1st & 2nd ET. WFT - 3rd East. WFAS - behind "B" panel WFR - Chart 87 panel B-7 TK-22 - 2nd ET</p>	<ul style="list-style-type: none"> - Increase in tank level (DOV-21-A leaking thru) - Plugged high dip tube - Instrument air upset - Power interruption - Instrument failure - Plugged outlet (21-DOV-B) <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28026 GPL; H-2-28374 H-2-28388</p> <p>CBRS: Loop #: A0016 Sequence #: 1,2,3,4,6,7,8,9 & B Frequency; 6 mo</p>	<p><u>AUTOMATIC ACTION:</u> Interlock cuts air supply to TK-21 feed valve DOV 21-A (fail closed).</p> <p><u>OPERATOR ACTIONS:</u></p> <ol style="list-style-type: none"> 1. <u>IF</u> backflushing TK-21 outlet lines, end transfer immediately. 2. Check present readings for TK-21 WF WF recorder (Chart 87, B-7) and 21-DOV-A valve position indicator (controller with Chart 92, B-7) along with recent trend for TK-21. <ol style="list-style-type: none"> a. <u>IF</u> TK-21 WF has not exceeded 80 % of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-21 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> TK-21 WF increased suddenly to 100%, this indicates possible high leg dip tube plugging. Continue to verify. 3. <u>IF</u> Filtrate Evaporator is operating and TK-21 WF above 80% or continues to increase, perform shutdown of filtrate evaporator per ZO-182-003 to perform troubleshooting and/or repairs. Outlet may be plugged. 4. <u>IF</u> Filtrate Evaporator is operating and TK-21 WF is below 80% and steady or decreasing due to evaporation. Continue to operate filtrate evaporator as normal. 5. <u>IF</u> Filtrate Evaporator is NOT operating: <ol style="list-style-type: none"> a. Verify 21-DOV-A controller (Chart 92, B-7) and 21-DOV-E controller (Chart 88, B-7) are in Manual with outputs at Zero. b. On 1st floor, verify valve 148 (ES-1) is CLOSED. c. On 3rd East, verify steam valves 21-E1 and 21-E2 and water valves 22-B1A and 22-B2 (across from lavatory) are CLOSED.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>LOW WF TK-21</p> <p>Volume: 34 liters WFT Range: 0-50" H₂O Set Point: 12" H₂O²</p> <p>Actuated when TK-21 WFAS senses less than 20 mA (24% of chart or a minimum of 12 liters). TK-21 drains to tank 23 (level indication on panel B-7). Alarm should acknowledge but not clear until level is above set point.</p> <p>Equipment Locations: TK-21 - 1st & 2nd ET. WFT - 3rd East. WFAS - behind "B" panel WFR - Chart 87 panel B-7 TK-23 - 1st ER, (Chart 97, panel B-8)</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-2-28026 GPL; H-2-28374 H-2-28388</p> <p>OSD-Z-184-00007</p> <p>CBRS: Loop #; A0016 Sequence #; 1,2,3,4,5 & B Frequency; 6 mo</p>	<p><u>AUTOMATIC ACTION:</u> Interlock cuts air supply to TK-21 steam supply valve DOV 21-E (fail closed).</p> <p><u>OPERATOR ACTIONS:</u></p> <ol style="list-style-type: none"> 1. Check present readings for TK-21 WF recorder (Chart 87, B-7) and TK-23 WF recorder (Chart 97, B-8) along with recent trend for TK-21. <ol style="list-style-type: none"> a. <u>IF</u> TK-21 WF has not dropped below 24% of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-21 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> TK-21 WF decreased suddenly to 0%, this indicates possible instrument problem. Continue to verify. 2. <u>IF</u> Filtrate Evaporator is operating, verify that steam flow to TK-21 is OFF (Chart 88, B-7) whenever TK-21 WF is below 55%. 3. On 1st floor, verify that drain valves 160 (ET-1), and 151 (ES-1) are CLOSED. <ol style="list-style-type: none"> a. <u>IF</u> drain valves were open, check solution level in TK-23. c. <u>IF</u> drain valves were closed, perform visual check of canyon and access gloveboxes for leaks. 4. On 3rd Floor East, verify that steam valves 21-E1 and 21-E2 are CLOSED (across from lavatory).

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)

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ALARM	POSSIBLE CAUSES	RESPONSE
<p>LOW FLOW CAF TK-32 CA</p> <p>Alarm is usually locked in unless operations are in progress.</p> <p>FT Range: 0-200 liters/hour Set Point: 50 liters/hour</p> <p>Actuated when CA column Feed Low Flow Alarm Switch (32 LFAS C) senses less than 20 mA (25% of chart or 50 liters/hour). Magnetic flowmeter 32-MFM(C) sends an electric signal to the CAF flow controller/recorder and the CAF low flow alarm switch. Alarm should acknowledge but not clear until flowrate is above alarm set point. If the CAF flowrate decreases below 20 liters/hour (10% of chart) the "Special Sequence Interlock" will automatically turn off the flow of CA Intermediate Scrub (CAIS) from TK-36 to the CA column and the flow of CA Recycle (CAR) from TK-27 to -120 provided it is not in the "PASS" position.</p> <p>Equipment Locations: 32-MFM(C) - 2nd (WF). FT - 3rd West. LFAS - Behind "B" panel FR - Chart 60 panel B-3 Special Sequence Interlock switch - Panel B-3 TK-17/18 WF - panel A-6</p>	<ul style="list-style-type: none"> - Lack of CAF solution - Leak between CAF tank and 32-MFM (C) - Organic in CAF - Loss of CAF pump - EMV 17/18-J failure - Power interruption - Instrument failure <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28019 H-2-28021 GPL; H-2-28373 H-2-28379</p> <p>CBRS: Loop #; A0032 Sequence #; 1 thru 8 Frequency; 12 mo</p>	<p><u>AUTOMATIC ACTION:</u> CAF Low Flow Is Part Of The Special Sequence Interlock For Solvent Extraction. This Alarm Results In The Shutdown Of CAIS And CAR Flow To The CA Column By Closing Valves 32-DOV-E And 32-DOV-H.</p> <p><u>OPERATOR ACTIONS:</u></p> <ol style="list-style-type: none"> 1. Check present readings and past trends for the CAF flowrate recorder (Chart 73, B-3) and WF for TK-17 & TK-18 (Chart 39 & 40, A-8). 2. <u>IF</u> TK-17 or TK-18 are not being recirculated or transferred and no changes in tank levels is noted, notify supervision of equipment failure. No further actions required. 3. <u>IF</u> TK-17 or TK-18 is being recirculated: <ol style="list-style-type: none"> a. Verify selector switches 17-SSJ and 18-SSJ (A-7) are in Position 2, RECIRC. b. On 2nd floor, verify valve 445 (WE-4) is closed. c. <u>IF</u> CAF flowrate does not return to 0%, shutdown TK-17 and TK-18 recirculation, visually verify EMV's 17-J (WG-3) and 18-J (WH-3) are closed and notify supervision of equipment failure. No further actions required. 4. <u>IF</u> solvent extraction system is operating: <ol style="list-style-type: none"> a. <u>IF</u> CA column feed TK-17 or 18 WF is greater than 10%, GO TO Step 5. b. <u>IF</u> CA column feed TK-17 or 18 WF is less than 10%, transfer feed solution to CAF pump tank. c. <u>IF</u> feed cannot be transferred shutdown the solvent extraction system per ZO-181-004. 5. On 1st and 2nd floor, check for leaks between current CAF pump tank and 32-MFM (C) (WF, WG, WH). <u>IF</u> leaks are present, shutdown solvent extraction system per ZO-181-004. Have maintenance repair leaks prior to restarting SX system. No further actions required. 6. In the control room and on 1st Floor, verify current CAF pump is running. <u>IF</u> pump will not operate, supervision will request that CAF makeup and transfer to CA column be performed in the one tank or shutdown the SX system per ZO-181-004. Replace TK-17 or TK-18 pump as needed.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p><u>LOW FLOW CCX TK-33 CC</u></p> <p>Alarm is usually locked in unless operations are in progress</p> <p>FT Range: 0-50 liters/hour Set Point: 5 liters/hour</p> <p>Actuated when CC column extractant Flow Alarm Switch (33 FAS D) senses less than 14 mA (10% of chart or 5 liters/hour). Magnetic flowmeter 33-MFM(D) sends an electric signal to the CCX flow controller/recorder and the CCX flow alarm switch. Alarm should acknowledge but not clear until flowrate is above alarm set point. If the CCX flowrate decreases below 5 liters/hour (10% of chart) the "Special Sequence Interlock" will automatically turn off the flow of organic to the CA and CC columns(CAX & CCF) provided it is not in the "BYPASS" position. Additional interlocks will then shut down aqueous feed stream to CA Column.</p> <p>Equipment Locations: 33-MFM(D) - 1st WB. FT - 3rd West. FAS - Behind "B" panel FR - Chart 73 panel B-5 Special Sequence Interlock switch - Panel B-4 TK-30 WF - panel B-5</p>	<ul style="list-style-type: none"> - Lack of CCX solution - Leak between TK-30 and 33-MFM(D) - Loss of TK-30 pump - Valve 247 closed - Power interruption - Instrument failure <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28019 GPL; H-2-28373 H-2-28394</p> <p>CBRS: Loop #; A0035 Sequence #; 1 thru 9 & B Frequency; 12 mo</p>	<p><u>AUTOMATIC ACTION:</u> CCX Low Flow Is Part Of The Special Sequence Interlock For Solvent Extraction. This Alarm Results In The Shutdown Of CAX and CCF flows By Closing Valves 32-DOV-F and 120-DOV-A.</p> <p><u>OPERATOR ACTIONS:</u></p> <ol style="list-style-type: none"> 1. Check present readings for CCX flowrate recorder (Chart 73, B-5) and TK-30 WF (Chart 75, B-5). 2. <u>IF</u> TK-30 is not being recirculated or transferred, and TK-30 level has not changed, notify supervision of equipment failure. No further actions required. 3. <u>IF</u> TK-30 is being recirculated: <ol style="list-style-type: none"> a. On 1st/3rd floor, verify valves 247 (WE-3), and 30-A1 & 30-A2 (3rd West) are closed. b. <u>IF</u> CCX flowrate does not return to 0% and the TK-30 WF is decreasing, shutdown TK-30 recirculation, monitor for leaks on 1st Floor (WB thru WE). c. <u>IF</u> TK-30 WF does not increase or decrease notify supervision of low flow alarm failure. No further actions required. d. <u>IF</u> TK-30 WF does increase verify CCX flow controller (Chart 73, B-5) is at 0% in "MANUAL" position and increase is not due to refilling of TK-30 from TK-A-109. e. <u>IF</u> TK-30 continues to increase notify supervision of 33-DOV-D and valve 247 (WD-1) leak through. No further immediate actions required. 4. <u>IF</u> solvent extraction system is operating, perform shutdown of SX system per Z0-181-004. <ol style="list-style-type: none"> a. <u>IF</u> CCX feed TK-30 WF is greater than 10%, GO TO Step 5. b. <u>IF</u> TK-A-109 has less than 555 lbs. make up new CCX batch per Z0-120-007. No further actions required prior to restart of SX system. c. <u>IF</u> TK-A-109 has greater than 555 lbs verify valves 30-DOV-A, 30-A1, 30-A2 (3rd West) and valves C-131 (K-2), C-133 (K-2) are open. d. <u>IF</u> valves were open TK-A-109 outlet filter may be plugged, request authorization from supervision to bypass filter by opening valve C-132 (K-2) until filter can be changed, restart SX system. 5. On 1st Floor, check for leaks between TK-30 and 33-MFM(D) (WB,WC). <u>IF</u> leaks are present, notify supervision to have maintenance repair leaks prior to restarting SX system. No further actions required. 6. In control room and on 1st floor, verify TK-30 pump is operable. <u>IF</u> pump will not operate, notify supervision and replace TK-30 pump. No further actions required prior to restart of SX system. 7. Further corrective actions may include unplugging piping and draining of CC column.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>HIGH WF TK-70</p> <p>Volume: 57 liters WFT Range: 0-60" H₂O Set Point: 38" H₂O^c</p> <p>Actuated when TK-70 WFAS senses greater than 35 mA (63% of chart or a maximum of 53 liters). TK-70 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-70 contains sodium carbonate solution for use in organic clean up CX Column.</p> <p>Equipment Locations: TK-70 - 1st WU. WFT - 3rd West. WFAS - behind "B" panel WFR - Chart 48 panel B-1 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>REFERENCES:</p> <p>Drawings: EFD; H-2-28036 GPL; H-2-28373</p> <p>CBRS: Loop #; A0065 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-70 WF recorder (Chart 48, B-1) and TK-52.4 indicator (B-9) along with recent trend for TK-70. <ol style="list-style-type: none"> a. <u>IF</u> TK-70 WF has not exceeded 63 % of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-70 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> TK-70 WF increased suddenly to 100%, this indicates possible high leg dip tube plugging. Continue to verify. 2. Verify that selector switch 70-SS-A (B-1) is in Position 1, OFF, selector switch 70-SS-G is in Position 1, ORIFICE BYPASS/OFF. 3. On first floor: <ol style="list-style-type: none"> a. Verify that valve 368 (WU-1) is CLOSED. b. Verify that no solution is entering TKs 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-70. 6. Additional response may include darning TK-70 per ZO-180-029.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>LOW WF TK-70</p> <p>Volume: 57 liters WFT Range: 0-60" H₂O Set Point: 8" H₂O</p> <p>Actuated when TK-70 WFAS senses less than 15 mA (13% of chart or a minimum of 10 liters). TK-70 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-70 contains sodium carbonate solution for use in organic clean up CX Column.</p> <p>Equipment Locations: TK-70 - 1st WU. WFT - 3rd West. WFAS - behind "y" panel WFR - Chart 48 panel B-1 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-2-28036 GPL; H-2-28373</p> <p>CBRS: Loop #: A0065 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-70 WF recorder (Chart 48, B-1) and TK-52.4 indicator (B-9) along with recent trend for TK-70. <ol style="list-style-type: none"> a. <u>IF</u> TK-70 WF has not dropped below 13 % of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-70 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> TK-70 WF decreased suddenly to 0%, this indicates possible instrument problem. Continue to verify. 2. Verify that selector switch 70-SS-G is in Position 1, ORIFICE BYPASS/OFF and pump 70-MOP-D green READY light is ON (switch 70-SS-D to STOP, B-1). 3. On 1st Floor, verify that valves 365 (WU-1), 366 (WU-1) and 367 (WU-1) are CLOSED. <ol style="list-style-type: none"> a. <u>IF</u> drain valve 365 (WU-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 367 (WU-1) was open, check solution level in glovebox WU. c. <u>IF</u> block valve 366 (WU-1) was open and pump 70 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 Z0-180-600 to determine possible causes of alarm and/or loss of solution from TK-70.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)

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ALARM	POSSIBLE CAUSES	RESPONSE
<p><u>LOW FLOW CAX TK-32 CA</u></p> <p>Alarm is usually locked in unless operations are in progress</p> <p>FT Range: 0-100 liters/hour Set Point: 10 liters/hour</p> <p>Actuated when CA column extractant Flow Alarm senses less than 14 mA (10% of chart or 10 liters/hour). Flowtransmitter 32-FT(F) sends an electric signal representing the CAX flowrate to the CAX flow controller/recorder and the CAX low flow alarm. Alarm should acknowledge but not clear until flowrate is above alarm set point. If the CAX flowrate decreases below 12 liters/hour (12% of chart) the Special Sequence Interlock will automatically turn off the flow of CA Feed from TK-17/18 to the CA column provided it is not in the "BYPASS" position. Additional interlocks will shut off aqueous flows to the CA column</p> <p>Equipment Locations: 32-FT(F) - 2nd WK. Flow Recorder/controller - Chart 69 panel B-4 Special Sequence Interlock switch - Panel B-3 TK-37/38 WF - panel B-5</p>	<ul style="list-style-type: none"> - Lack of CAX solution - Leak between CAX tank and 32-FT(F) - Loss of CAX pump - Valve failure - Power interruption - Instrument failure - Plugged line between CAX pump tank and CA column <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28017 H-2-28019 GPL; H-2-28373 H-2-28379</p> <p>CBRS: Loop #; A0600 Sequence #; 1 thru 8 Frequency; 12 mo</p>	<p><u>AUTOMATIC ACTION:</u> CAX Low Flow Is Part Of The Special Sequence Interlock For Solvent Extraction. This Alarm Shuts Off CAF Flow To The CA Column By Closing Valve 32-DOV-C.</p> <p><u>OPERATOR ACTIONS:</u></p> <ol style="list-style-type: none"> 1. Check present readings and recent trends for CAX flowrate recorder (Chart 69, B-4) and CAX feed tank WF (TKs 37 or 38, Chart 77 or 78, B-5). 2. <u>IF</u> TK-37 or 38 is not being recirculated or transferred and no changes in tank levels is noted, notify supervision of equipment failure. No further actions required. 3. <u>IF</u> TK-37 or TK-38 is being recirculated: <ol style="list-style-type: none"> a. Verify selector switches 37-SSP and 38-SSP are in Position 1, OFF. b. On 1st Floor, verify valves 299 (WN-1) and 313 (WN-1) are closed. c. <u>IF</u> CAX flowrate does not return to 0%, shutdown TK-37 and TK-38 recirculation, verify EMV's 37-K (WN-1) and 38-K (WN-1) are closed, notify supervision of equipment failure. No further actions required. 4. <u>IF</u> solvent extraction is operating, perform short term shutdown of SX system per Z0-181-004 or switch to alternate CAX pump tank. 5. <u>IF</u> current CAX tank (TK-37 or TK-38) WF is greater than 10%, verify that CAX pump is operable. <ol style="list-style-type: none"> a. <u>IF</u> pump does not work or leaks are noted associated with the CAX tank, change tanks per Z0-181-003, arrange for repairs and request approval to restart solvent extraction. c. <u>IF</u> pump was working, CONTINUE. 6. On first thru 6th Floors and the PRF canyon, check for leaks. <u>IF</u> leaks are identified, perform weekend shutdown per Z0-181-004. Arrange for maintenance to repair leaks. No further actions required prior to restarting SX system. 7. <u>IF</u> no leaks are identified and a loss of CAX is noted, perform a rough inventory of CAX in system to determine locations of possible hold up or losses. 8. Add more CAX to tank in use by positioning selector switch 37-SSE (B-5) or 38-SSE (B-6) to Position 2, ADD CAX FROM TK-A114.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>HIGH WF TK-50</p> <p>Volume: 28 liters WFT Range: 0-60" H₂O Set Point: 37" H₂O^c</p> <p>Actuated when TK-50 WFAS senses greater than 35 mA (63% of chart or a maximum of 20 liters). TK-50 overflows to demister #4 in the 234-5Z duct level room 262. <u>To prevent the possibility of transferring solution from TK-50 to the demister, criticality prevention specifications require that TK-50 not exceed 65%. Alarm should acknowledge but not clear until level is below set point.</u></p> <p>Equipment Locations: 50 SSD - Panel B-9 TK-50 - 2nd WY. WFT - 3rd West. WFAS - Behind "B" panel WF - Gauge panel B-9 K-49 - 1st EV</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-2-28016 H-2-28015 GPL; H-2-28373</p> <p>CPS; Z-165-80141</p> <p>CBRS: Loop #; A0061 Sequence #; 1,2,3 & 4 Frequency; 6 mo</p>	<p><u>AUTOMATIC ACTION:</u> Interlock Transfers Valve 50-EMV-D To The "VENT" Position.</p> <p><u>OPERATOR ACTIONS:</u></p> <ol style="list-style-type: none"> 1. Verify valve 50-D is in VENT position by setting 50-SS-D to VENT and 26" vacuum gauge (B-9) indication is decreasing or at 0%, <u>THEN CONTINUE.</u> 2. <u>IF CAS header is pressurized, close valve 29-C (29-SSC, B-3) immediately and verify valve 585 (WY-4) closed, THEN CONTINUE.</u> 3. Check present readings for TK-50 indicator (B-9) and TK-49 weight factor (Chart 99, B-9). <ol style="list-style-type: none"> a. On 2nd Floor (section WY), verify valves 583 (WY-5), and 584 (WY-5) are closed. <u>IF TK-50 WF has increased, GO TO Step 4.</u> b. <u>IF TK-50 WF has not exceeded 20%, notify supervision of equipment failure. No further actions required.</u> c. <u>IF sudden TK-50 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required.</u> 4. <u>IF WF increased to between 20-65%, drain TK-50 per ZO-180-101. No further actions required.</u> 5. <u>IF TK-50 has exceeded 65%, notify supervision of criticality posting violation/infraction and potential transfer of solution to 26" vacuum system demister. Check demister 4 (234-5Z duct level, Rm 262) for solution. Stop 26" vacuum operations until recovery plan approved by Criticality Engineering and Analysis is performed.</u>

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>HIGH TEMP TK-43</p> <p>43-TR-A 0-150°C OSR Limit: 150°C Safety Limit 140°C Limiting Control Setting</p> <p>OSD Limit: 130°C Set point: 125°C</p> <p>Thermocouple temperature element inside the process tube of TK-43 senses vapor temperature above steam jacket. Transmitter converts mV signal to a 10-50 mA signal which provides signal for recorder 43-TR-A and alarm switch 43-HTAS-A. Alarm switch feeds both annunciator panel and provides power for control switch for steam valve 43-EV-C to shut off steam.</p> <p>Equipment Locations: 43-TR-A - Chart 84, B-7 43-TT-A - 3rd West 43-HTAS-A - Behind B-7 43-EV-C - 3rd West, East wall</p>	<p>- High steam pressure (above 49 psig) - Steam regulator failure - Instrumentation failure</p> <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28027 GPL; H-2-28373 H-2-28379 H-2-28392</p> <p>CBRS: Loop #; A0053 Sequence #; 1,2,3 & 4 Frequency; 6 mo</p>	<p><u>AUTOMATIC ACTION:</u> Alarm interlock deenergizes 43-EV-C on 3rd West which shuts off steam supply to TK-43.</p> <p><u>OPERATOR ACTIONS:</u></p> <ol style="list-style-type: none"> 1. IF Safety Limit or Limiting Control Setting are exceeded, IMMEDIATELY perform Task A, EMERGENCY SHUTDOWN, of Z0-182-011, THEN notify supervision and BED and CONTINUE. 2. On 3rd Floor, verify valves 43-B1, 43-B2, 43-C1 and 43-C2C are closed (located North end or East wall on 3rd West). 3. Note TK-43 steam pressure reading on gauge 43-PI-1 (On the North wall, West side on steam regulator station. Reading should be below 49 psig). 4. Verify pump 42-MOP-D green indicator light is ON (switch 42-SS-D to STOP, B-6) and controllers 42-FC-B (Chart 82, B-6, feed) and 43-FC-B (Chart 85, B-6, steam) are in Manual mode with output at zero. 5. In PRF control room logbook, record TK-43 temperature (Chart 84, B-6), TK-43 steam pressure reading from 43-PI-1 and TK-43 steam flow (Chart 85, B-6) and note any trends. 6. On 2nd Floor, verify valve 532 (WS-3) is CLOSED. 7. Additional recovery may include full shutdown of product concentrator per Z0-182-011.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)

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ALARM	POSSIBLE CAUSES	RESPONSE																		
<p>OVERFLOW TK-32 CA</p> <p>Alarm is actuated when conductive solution contacts both metal probes of the conductivity element located at the top of the CA column on 6th floor. As electrical flow occurs between the probes the resulting voltage difference trips the alarm switch generating the alarm. The CA column typically overflows to Tanks 19, 39 and WM-1 via the MT-6 centrifuges, but in an overflow condition solution will route to Tanks 52.3 and 52.4. Alarm should acknowledge but not clear until solution no longer contacts both probes. Due to pulsing in the CA column, this alarm will tend to chatter on and off when alarming.</p>	<ul style="list-style-type: none"> - CAW valves to MT-6 not OPEN - Inadvertent solution flow to CA Column - Plug in CA column Waste piping - "Airlock" in CA column Waste piping - Instrument failure <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28019 GPL; H-2-28416</p> <p>CBRS: Loop #; A0401 Sequence #; 1 & 2 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 level indicator for tank 52.4 (B-9) and either by using video monitor or going to 6th floor, visually inspect top of CA column. 2. <u>IF</u> Solvent extraction is not running: <ol style="list-style-type: none"> a. <u>IF</u> top of CA column contains NO solution, notify supervision of equipment failure, no further actions required. b. Verify the green READY light is ON for pumps 17-MOP-D, 18-MOP-D, 29-MOP-B, 36-MOP-B, 37-MOP-D and 38-MOP-D (Respective switches to STOP). c. Verify positions of the following Control Room Switches: <table border="1" data-bbox="1006 735 1404 880"> <thead> <tr> <th>Switch</th> <th>Panel</th> <th>Position</th> </tr> </thead> <tbody> <tr> <td>17-SS-J</td> <td>A-7</td> <td>2 - RECIRC</td> </tr> <tr> <td>18-SS-J</td> <td>A-7</td> <td>2 - RECIRC</td> </tr> <tr> <td>29-SS-C</td> <td>B-3</td> <td>CLOSE</td> </tr> <tr> <td>37-SS-P</td> <td>B-5</td> <td>1 - OFF</td> </tr> <tr> <td>38-SS-P</td> <td>B-5</td> <td>1 - OFF</td> </tr> </tbody> </table> d. Verify valves 243 (WD-2), 445 (WE-4), 461 (WF-4) and 1207 (6th Fl) are closed. e. Continue to monitor tank 52.4 level as long as alarm remains locked in. 3. <u>IF</u> Solvent extraction is operating: <ol style="list-style-type: none"> a. Verify CA Column Interface Controller is in the "AUTO" mode and CA interface reading is at setpoint (Chart 68, B-3). <u>IF</u> action performed clears alarm, no addition action required. b. Verify Miscellaneous Treatment is receiving CAW solution. <ul style="list-style-type: none"> - <u>IF</u> not verify the following valves are open, 1215 (6th Fl) and either 601 or 602 (MT-6). - <u>IF</u> valves were open notify supervision of possible plug or "airlock" in CAW piping. c. <u>IF</u> alarm does not clear and tanks 52.3 and 52.4 are full, shutdown solvent extraction system per ZO-181-004 for troubleshooting and/or repairs. 4. Addition responses may include flushing or venting of CAW line or partial draining of the CA column. 	Switch	Panel	Position	17-SS-J	A-7	2 - RECIRC	18-SS-J	A-7	2 - RECIRC	29-SS-C	B-3	CLOSE	37-SS-P	B-5	1 - OFF	38-SS-P	B-5	1 - OFF
Switch	Panel	Position																		
17-SS-J	A-7	2 - RECIRC																		
18-SS-J	A-7	2 - RECIRC																		
29-SS-C	B-3	CLOSE																		
37-SS-P	B-5	1 - OFF																		
38-SS-P	B-5	1 - OFF																		

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p><u>OVERFLOW TK-33 CC</u></p> <p>Alarm is actuated when conductive solution contacts both metal probes of the conductivity element located at the top of the CC column on 6th floor. As electrical flow occurs between the probes the resulting voltage difference trips the alarm switch generating the alarm. The CA column typically overflows to Tank 36 or Tank 42 via Tank 58, but in an overflow condition solution will route to Tanks 52.3 and 52.4. Alarm should acknowledge but not clear until solution no longer contacts both probes. Due to pulsing in the CA column, this alarm will tend to chatter on and off when alarming. The top of the CC Column contains concentrated Pu product solutions during processing and should not be overflowed.</p>	<ul style="list-style-type: none"> - Inadvertent solution flow to CC Column - CCP valves not OPEN - Plug in CC Column Product piping - "Airlock" in CC Column Product piping - Instrument failure <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28019 GPL; H-2-28416</p> <p>CBRS: Loop #; A0402 Sequence #; 1 & 2 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 level indicator for TK-52.4 (B-9) by going to 6th floor, visually inspect top of CC Column. 2. <u>IF</u> Solvent extraction is not running: <ol style="list-style-type: none"> a. <u>IF</u> top of CC Column contains NO solution, notify supervision of equipment failure, no further actions required. b. Verify green READY light is ON for pumps 30-MOP-B and 120-MOP-B (switches 30-SS-B and 120-SS-B to STOP). c. Verify valves 247 (WE-2), 424 (WC-3), 429 (WC-3) and 430 (WC-3) are closed. e. Continue to monitor TK-52.4 level as long as alarm remains locked in. 3. <u>IF</u> Solvent extraction is operating: <ol style="list-style-type: none"> a. Verify CC Column Interface Controller is in "AUTO" mode and CC interface reading is at setpoint (Chart 68, B-3). <u>IF</u> action performed and alarm clears, no additional actions are required. b. Verify valve 1107 (5th Fl) is OPEN and TK-36 (Chart 63, B-3) is receiving CCP solution. c. <u>IF</u> no solution is entering TK-36, attempt to "Tap-Off" and visually check TK-58 (5th Fl) for solution flow. c. <u>IF</u> alarm still does not clear and TKs 52.3 and 52.4 are receiving solution, shutdown solvent extraction system for trouble shooting and/or repairs. 4. Addition responses may include flushing or venting of CCP line or partial draining of CC column.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
OVERFLOW TK-34 CO		
INACTIVE		

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>HIGH WF TK-49</p> <p>Volume: 57 liters WFT Range: 0-60" H₂O Set Point: 38" H₂O</p> <p>Actuated when TK-49 WFAS senses greater than 40 mA (76% of chart or a maximum of 53 liters). TK-49 overflows to tank 50. Alarm often actuates whenever vacuum is applied/removed for TK-49 as well as during slurping operations due to constant changes in reference pressure. Alarm should acknowledge but not clear until level is below set point.</p> <p>Equipment Locations: TK-49 - 1st WV. WFT - 3rd West. WFAS - Behind "B" panel WFR - Chart 99 panel B-9 TK-50 WF - Panel B-9</p>	<ul style="list-style-type: none"> - Increase in tank level - Vacuum applied/removed - Slurping in progress - Plugged high dip tube - Instrument air upset - Power interruption - Instrument failure <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28016 GPL; H-2-28373</p> <p>CBRS: Loop #; A0060 Sequence #; 1,2,3 & 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-49 WF recorder (Chart 99, B-9) and TK-50 level indicator (B-9) along with recent trend for TK-49. <ol style="list-style-type: none"> a. IF TK-49 WF has not exceeded 76% of chart, notify supervision of equipment failure. No further actions required. b. IF sudden TK-49 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. IF vacuum was just applied/removed or slurping is in progress, and WF returns to below set point, no further actions required. d. IF TK-49 WF increased suddenly to 100%, this indicates possible high leg dip tube plugging. Continue to verify. e. IF TK-50 WF is increasing, position selector switch 50-SS-D to VENT. 2. Verify that selector switch 51-SSA (B-9) is in OFF position and 49-SSB (B-8) is in VENT HEADER position. 3. On 1st floor, verify valve 392 (WX-2) and 395 (WX-2) are CLOSED. 4. Additional corrective actions may include sampling and transferring of TK-49.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>LOW WF TK-49</p> <p>Volume: 57 liters WFT Range: 0-50" H₂O Set Point: 7" H₂O²</p> <p>Actuated when TK-49 WFAS senses less than 16 mA (14% of chart or a maximum of 12 liters). TK-49 drains to tanks 52.3 and 52.4 (level indication on panel B-9) or glovebox floor. Alarm often actuates whenever vacuum is applied/removed for TK-49 as well as during slurping operations due to constant changes in reference pressure. Alarm should acknowledge but not clear until level is above set point.</p> <p>Equipment Locations: TK-49 - 1st WV. WFT - 3rd West. WFAS - behind "B" panel WFR - Chart 99 panel B-9 K-52.3 and TK-52.4 - 1st WV (In glovebox)</p>	<ul style="list-style-type: none"> - Decrease in tank level - Vacuum applied/removed - Slurping in progress - 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-2-28016 GPL; H-2-28373</p> <p>CBRS: Loop #; A0060 Sequence #; 1,2,3 & 4 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-49 WF recorder (Chart 99, B-9) and TK-52.4 indicator (B-9) along with recent trend for TK-49. <ol style="list-style-type: none"> a. <u>IF</u> TK-49 WF has not dropped below 14% of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-49 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> vacuum was just applied/removed or slurping is in progress, and WF returns to above set point, no further actions required. d. <u>IF</u> TK-49 WF decreased suddenly to 0%, this indicates possible instrument problem. Continue to verify. 2. Verify tank 49 pump green indicator light is "ON", <u>IF</u> NOT switch 49-SS-D (B-9) to "STOP". 3. On 1st floor, verify that valves 380 (WV-1), 376 (WV-1) and 381 (WV-1) are CLOSED. <ol style="list-style-type: none"> a. <u>IF</u> drain valve 380 (WV-1) was open, check solution level in tanks 52.3 or 52.4 (WV) and gloveboxes EV and EW. b. <u>IF</u> sample valve 376 (WV-1) was open, check solution level in glovebox WV. c. <u>IF</u> block valve 381 (WV-1) was open and pump 49 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-49.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p><u>TK-36 DIFF PRESS</u></p> <p>DP Cell Range: 0-50 psi Alarm Point: 10 psi (LO)</p> <p>Actuated when TK-36 DPAS senses less than 7.2 mA (10 psi difference). Two sealed Differential Pressure Cells (strain gauge type) are used to sense line pressures of the process stream and cooling water on the TK-36 cooling jacket. Each has a Pressure Transmitter which sends an electric signal (4-20 mA) to a subtractor module. This compares the two signals and sends a signal (4-20 mA equaling 0-50 psi) to the DPAS representing the differential pressure between the TK-36 cooling jacket water and the TK-36 recirculation pressure. This ensures that water pressure is greater than the pump pressure the rm interlock prevents routing 36 solution to the Z-20 crib (soon to be closed loop cooling water system). Alarm should acknowledge but not clear until water pressure is 10 psi greater than line pressure.</p> <p>Equipment Locations: TK-36 - 2nd WT. TK-36 cooling jacket - 2nd WT PE/PT-1 - 3rd West PE/PT-2 - 1st West (WT) Subtractor Module - Behind B-8 Panel DPAS - Behind B-8 Panel</p>	<ul style="list-style-type: none"> - Leak in TK-36 cooling jacket - Failed orifice in water discharge line - Loss of cooling water - Plug in TK-36 recirculation line - Power interruption - Instrument failure <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28019 GPL; H-2-28373 H-2-28392</p> <p>CBRS: Loop #; A0039 Sequence #; 1,2,3,4,5,6&7 Frequency; 6 mo</p>	<p><u>AUTOMATIC ACTION:</u> Interlock Turns Off TK-36 Pump 36-MOP-B.</p> <p><u>OPERATOR ACTIONS:</u></p> <ol style="list-style-type: none"> 1. Verify that pump 36-MOP-B green READY light in ON (switch 36-SS-B to STOP, B-3). <u>IF</u> pump was running, notify supervision of interlock failure. 2. <u>IF</u> pump 36-MOP-B was NOT in operation and water was NOT valved into cooling jacket: <ol style="list-style-type: none"> a. On 2nd Floor, verify valve 545 (WT-4) is CLOSED. b. On 3rd West, verify valves 36-E1 and 36-E2 are CLOSED. c. Determine TK-36 Surge Tank pressure from indicator on tank and record value in Control Room Logbook. d. <u>IF</u> Surge Tank pressure is above 10 psi with 3rd Floor valves 36-ST and 36-E3 open and alarm does not clear, notify supervision of possible instrument failure. 3. <u>IF</u> pump 36-MOP-B is in operation: <ol style="list-style-type: none"> a. On 3rd West, verify valves 36-E1, 36-E2, 36-E3 and 36-ST are OPEN and determine TK-36 Surge Tank pressure from indicator on tank. b. Close valve 545 (WT-4) and restart pump 36-MOP-B (36-SS-B to START) and monitor Surge Tank Reading. c. <u>IF</u> Surge Tank pressure is above 10 psi and alarm does not clear, notify supervision of possible instrument failure and end all operations involving TK-36. d. <u>IF</u> Surge Tank pressure remains below 10 psi, correct cause of water pressure loss and continue operations. 4. <u>IF</u> pump 36 runs and alarm clears: <ol style="list-style-type: none"> a. Verify valves 1107 (5th Fl), 1108 (5th Fl), 534 (WT-3), 36-C1 (3rd) and 36-C2 (3rd) are CLOSED and switch 40-SS-E (B-6) is in Position 1, OFF. b. Monitor TK-36 WF (Chart 63, B-3) for 15 minutes. c. <u>IF</u> TK-36 level rises, GO TO Step 5. d. <u>IF</u> TK-36 level remains constant, open valve 545 (WT-4). e. <u>IF</u> low DP alarm activates, throttle valve 545 (WT-4) and restart operations. Notify supervision of possible orifice failure. 5. Test for Cooling Jacket leak: <ol style="list-style-type: none"> a. Record Surge Tank pressure. b. Close valves 36-E1 and 36-E2. c. Monitor pressure, pressure decrease indicates either valve 545 is leaking or cooling jacket leak. Step 4 may be repeated for longer than 15 minutes to make this determination.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)

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ALARM	POSSIBLE CAUSES	RESPONSE
<p>HIGH WF TK-52.2</p> <p>Volume: 23 liters WFT Range: 0-25" H₂O Set Point: 20" H₂O²</p> <p>Actuated when TK-52.2 WFAS senses greater than 42 mA (80% of gauge or a maximum of 20 liters). TK-52.1/2 overflows to glovebox section EV on first east. Alarm should acknowledge but not clear until level is below set point.</p> <p>Equipment Locations: TK-52.1/2 - 1st floor EW WFT - 3rd floor east WF gauge - Panel B-9 WFAS - Behind "B" panel</p>	<ul style="list-style-type: none"> - Tank 52.1 and 52.2 increase due to: <ul style="list-style-type: none"> - East tank overflow - East tank draining - plugged high dip tube - Instrument air upset - Power interruption - Instrument failure <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28032 GPL; H-2-28374</p> <p>CBRS #; A0062 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 52.2 (B-9) level indication and respond to any alarming High or Low Weight Factor alarms per applicable procedure before proceeding. 2. Check all PRF tank levels for decreases or signs of increase near overflow level. Close all drain valves (identified by orange valve label backgrounds) on 1st East tanks. 3. On 1st floor, determine if solution continues to enter TK-52.1/2 after closing drain valves by checking glass section and/or overflow line to glovebox bay EV. <u>IF</u> solution flow stops, no further actions are required. 5. <u>IF</u> solution flow does not stop, notify supervision and perform weekend shutdown of SX system on 1st and 3rd Floor per ZO-181-004. 6. Evaluate changes in tank levels using previous PRF "Standby Surveillance - Process Vessel" surveillance checks per ZO-180-600 to determine possible causes of alarm and/or source of solution entering TK-52.1/2. 7. Recovery may include vacuuming TK-52.1/2 to TK-49 per ZO-180-101 & ZO-180-026.

Attachment 3 - RESPONSES TO PANEL B-6 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>HIGH WF TK-52.4</p> <p>Volume: 23 liters WFT Range: 0-25" H₂O Set Point: 20" H₂O</p> <p>Actuated when TK-52.4 WFAS senses greater than 42 mA (80% of gauge or a maximum of 20 liters). TK-52.3/4 overflows to glovebox section WV on first west. Alarm should acknowledge but not clear until level is below set point.</p> <p>Equipment Locations: TK-52.3/4 - 1st floor WW WFT - 3rd floor west WF gauge - Panel B-9 WFAS - Behind "B" panel</p>	<ul style="list-style-type: none"> - Tank 52.3 and 52.4 increase 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 - plugged high dip tube - Instrument air upset - Power interruption - Instrument failure <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28032 GPL; H-2-28373</p> <p>CBRS #; A0063 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 52.4 (B-9) level indication and respond to any alarming High or Low Weight Factor alarms per applicable procedure before proceeding. 2. Check all PRF tank levels for decreases or signs of increase near overflow level. Close all drain valves (identified by orange valve label backgrounds) on 1st and 2nd Floor West tanks. 3. Verify the following column drain valves are closed, 201 (WA-1), 206 (WB-1), 225 (WC-1), 257 (WF-1), and 478 (WK-3). 4. On 1st Floor, determine if solution continues to enter TK-52.3/4 after closing drain valves by checking glass section and/or overflow line to glovebox bay WV. <u>IF</u> solution flow stops, no further actions are required. 5. <u>IF</u> solution flow does not stop, notify supervision and perform weekend shutdown of SX system on 1st, 2nd and 3rd Floor per ZO-181-004. 6. Evaluate changes in tank levels using previous PRF "Standby Surveillance - Process Vessel" surveillance checks per ZO-180-600 to determine possible causes of alarm and/or source of solution entering TK-52.3/4. 7. Recovery may include vacuuming TK-52.3/4 to TK-49 per ZO-180-101 & ZO-180-026.

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