

**PLUTONIUM FINISHING PLANT
PLUTONIUM RECLAMATION FACILITY**

ALARM RESPONSES FOR PRF ALARM PANEL A-2

ZO-180-800
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 A-2 located on the South end of the West control panel of Room 44.

1.2. Scope

The alarms associated with this panel are as follows:

1. High Weight Factor (tank level) alarms for canyon tanks in PRF.
2. Low Weight Factor (tank level) alarms for canyon tanks in PRF.
3. Chemical Preparation Room 40 alarms (CCL₄ high and low concentration, NO_x concentration, CCL₄ and NO_x monitor failure, TK-A-105/106 High Level, and Floor Liquid alarms).
4. 17" Vacuum Problem Alarm.
5. Miscellaneous Treatment Hot Plate Alarm.
5. Three inactive alarms (TK-12 and ED Dissolver Differential Pressure Alarms for the Slag and Crucible dissolver system and the Chemical Preparation Conductivity Alarm).

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.

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4. TOOLS, EQUIPMENT AND MATERIAL

4.1. References

WHC Radiological Control Manual, WHC-CM-1-6
Material Safety Data Sheets #1102 (CCl₄) and #1391 (NO_x)
Radiation Work Permits, Z-007, Z-012
Criticality Prevention Specifications CPS-Z-165-80010, -80707, -80709, and
-80715

4.1.1. Referenced Documents

ZO-120-003, FILL TK-A105 WITH 57% HNO₃
ZO-120-800, RESPOND TO CARBON TETRACHLORIDE MONITOR ALARM
ZO-170-318, RESPOND TO CHEMICAL SPILL OR LEAK IN PFP
ZO-180-600, PERFORM 236-Z SURVEILLANCE AND RESPONSES
ZO-181-900, PERFORM EMERGENCY SHUTDOWN OF A AND B PANEL BOARDS

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

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

PFP
PRF

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6. PERFORMANCE

6.1. Respond to PRF Control Room Panel A-2 Alarms

A. Respond to PRF Control Room Panel A-2 Alarms

1. Silence alarm by pressing ACKNOWLEDGE button.
2. IF High WF alarm actuates due to normal process evolutions, end transfer prior to overflowing tank unless approved by supervision. No further actions required.
3. IF Low WF alarm actuates due to normal process evolutions, end transfer prior to running pump dry to prevent pump seal damage. No further actions required.
4. Respond to alarms per section of Attachment 3 as indicated by Attachment 1.
5. Record alarms and actions taken in PRF Control Room Logbook, except for high or low WF alarms due to normal process evolutions.
6. Notify supervision of alarms, actions taken, and current condition, with the exception of high or low WF alarms due to normal process evolutions.

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Attachment 1 - PANEL BOARD A-2
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1	HIGH WF TK-WM-1 Page 9	* HIGH CCl ₄ Page 10	CCl ₄ MONITOR FAILURE Page 11
5	LOW WF TK-WM-1 Page 12	* LOW CCl ₄ Page 13	* 17 IN. VACUUM PROBLEM Page 14
9	HIGH WF TK-127 Page 15	* TK-A105 HIGH HIGH LEVEL Page 16	* CHEM PREP FLOOR LIQUID Page 17
13	LOW WF TK-127 Page 18	* CHEM PREP CONDUCTIVITY ALARM Page 19	
17	* TK-12 DP (12 LPAD) Page 19		
21	* ED CONDENSER DIFF PRESS-HIGH ED-DPA-DI Page 19	MT-5 HOT PLATE ALARM Page 20	
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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 A-2 ALARMS
Page 1 of 12

ALARM	POSSIBLE CAUSES	RESPONSE
<p>HIGH WF TK-WM-1</p> <p>Volume: 260 liters WFT Range: 0-250" H₂O Set Point: 125" H₂O²</p> <p>Actuated when TK-WM-1 WFAS senses greater than 34 mA (70% of chart or a maximum of 184 liters). TK-WM-1 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-WM-1 receives waste solution from the CA column for sampling and storage prior to shipment to 241-Z waste handling facility.</p> <p>Equipment Locations: TK-WM-1 - 1st & 2nd WE. WFT - 3rd West. WFAS - behind "A" panel WFR - Chart #1 panel A-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><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28041 GPL; H-2-28373 H-2-28379</p> <p>CBRS: Loop #: A0071 Sequence #: 1, 3, 6 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-WM-1 WF recorder (A-1) and TK-52.4 indicator (B-9) along with recent trend for TK-WM-1. <ol style="list-style-type: none"> a. <u>IF</u> TK-WM-1 WF has not exceeded 70% of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-WM-1 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> WF increased suddenly to 100%, this indicates possible high leg dip tube plugging. Continue to verify. 2. Verify that selector switch 32-SS-W (B-4) is in Position 1, OFF. 3. On first floor: <ol style="list-style-type: none"> a. Verify that valve 252 (WE-1) 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-WM-1.

Attachment 3 - RESPONSES TO PANEL A-2 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>HIGH CCL₄</p> <p>This is a common alarm for all Room 40 CCL₄ and NOx monitors.</p> <p>Source Tanks: TK-A-114</p> <p>Actuated when the Miram 983 ambient air monitor system senses above 5 ppm CCL₄, either GD-40-1 or GD-40-2 senses above 1 ppm CCL₄ or either GD-40-3 or GD-40-4 senses above 1.5 ppm NOx. Determination of which unit generated the alarm must be done in Corridor 47.</p> <p>TK-A-115 TK-A-116 TK-A-117 TK-A-110 TK-A-113</p>	<ul style="list-style-type: none"> - Overflow from CCL₄ tanks - Leaks from CCL₄ tanks - Reactions between incompatible chemicals <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28014 GPL; H-2-28380</p> <p>MSDS; #1102, CCL₄ #1391, NOx</p> <p>CBRS: Loop #; A0271 Sequence #; 1, 2 & 3 Frequency; 6 mo</p>	<p><u>AUTOMATIC ACTION:</u> leave room (Chem Prep) immediately, unless on supplied air</p> <p><u>OPERATOR ACTIONS:</u></p> <ol style="list-style-type: none"> 1. Verify all personnel in Chem. Prep. are on supplied breathing air and wearing proper PPE or ensure they EXIT IMMEDIATELY. PPE includes protective suits, PVA or neoprene gloves. 2. Respond to alarm per ZO-120-800.

Attachment 3 - RESPONSES TO PANEL A-2 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p><u>CCL₄ MONITOR FAILURE</u></p> <p>Actuated when any one of the CCL₄ or NO_x monitors fails to take or analyze a sample of Room 40 air for CCL₄ analysis. The monitors sample the air essentially every minute, so a rapid indication of room air concentration of CCL₄ or NO_x is apparent.</p> <p>Equipment Locations: Monitors - Corridor 47 White Flashing Lights - Room 40 and Corridor 47 Air Monitors - Northeast end of Room 40 and Centered above tanks A114 / A115 CCL₄ Printout - Room 45 Shift Office</p>	<ul style="list-style-type: none"> - Plugged sample lines - Break in sample lines - Power interruption - Instrument failure <p><u>REFERENCES:</u></p> <p>Drawings : EFD; H-2-28014 GPL; H-2-28380</p> <p>MSDS; #1102, CCL₄ #1391, NO_x</p> <p>CBRS: Loop#; A0271 Sequence #; 1, 2 & 3 Frequency; 6 mo</p>	<p><u>AUTOMATIC ACTION:</u> None</p> <p><u>OPERATOR ACTIONS:</u></p> <ol style="list-style-type: none"> 1. Respond to alarm per ZO-120-800

Attachment 3 - RESPONSES TO PANEL A-2 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p><u>LOW WF TK-WM-1</u></p> <p>Volume: 260 liters WFT Range: 0-250" Set Point: 25"</p> <p>Actuated when TK-WM-1 WFAS senses less than 14 mA (10% of chart or a minimum of 30 liters). TK-WM-1 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-WM-1 receives waste solutions from the CA column for sampling and storage prior to shipment to the 241-Z waste handling facility.</p> <p>Equipment Locations: Tk-WM-1 - 1st & 2nd WE. WFT - 3rd West. WFAS - behind "A" panel WFR - Chart #1 panel A-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-2-28041 GPL; H-2-28373 H-2-28379</p> <p>CBRS: Loop #; A0071 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-WM-1 WF recorder (A-1) and TK-52.4 indicator (B-9) along with recent trend for TK-WM-1. <ol style="list-style-type: none"> a. <u>IF</u> TK-WM-1 WF has not dropped below 10% of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-WM-1 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> WF decreased suddenly to 0%, this indicates possible instrument problem. Continue to verify. 2. Verify tank WM-1 pump switch WM1-SS-A (A-1) is OFF and key switch EMV-WM1A is CLOSED (green light ON). 3. On first floor, verify that valves 249 (WE-1), 250 (WE-1), 251 (WE-1) and 252 (WE-1) are CLOSED. <ol style="list-style-type: none"> a. <u>IF</u> drain valve 249 was open, check solution level in tanks 52.3 or 52.4 (WW) and gloveboxes WV and WW. b. <u>IF</u> sample valve 251 was open, check solution level in glovebox EE. c. <u>IF</u> block valve 250 was open and pump WM-1 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-WM-1.

Attachment 3 - RESPONSES TO PANEL A-2 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>LOW CCL₄</p> <p>Source Tanks : A114 and A115</p> <p>Actuated when the Miram 983 ambient air monitor system placed in room 40 monitors the concentration of CCL₄ and alarms when the concentration of CCL₄ exceeds safe operating range (excess of 3 ppm). The white flashing light in the corridor outside Room 40 and inside Room 40 does NOT activate for the LO alarm. When concentrations decrease below alarm limits, the alarm will stop.</p> <p>The monitor samples the air essentially every minute, so a rapid indication of room level concentration level of CCL₄ in the air is apparent.</p> <p>Equipment Locations :</p> <p>CCL₄ Monitor - Corridor 47</p> <p>White Flashing Lights - Room 40 and Corridor 47</p> <p>Air Monitors - Northeast end of Room 40 and Centered above tanks A114 / A115</p> <p>CCL₄ Printout - Room 45 Shift Office</p>	<ul style="list-style-type: none"> - Break in the lines - Filter leakage - Overflow of tank while making up chemicals - Installing and removing POGO pump - Power interruption - Instrument failure <p><u>REFERENCES:</u></p> <p>Drawings : EFD; H-2-28014 GPL; H-2-28380</p> <p>MSDS; #1102, CCL₄</p> <p>CBRS: Loop #; A0271 Sequence #; 1, 2 & 3 Frequency; 6 mo</p>	<p><u>AUTOMATIC ACTION:</u> None</p> <p><u>OPERATOR ACTIONS:</u></p> <ol style="list-style-type: none"> 1. Verify all personnel in Chem. Prep. are on supplied breathing air and wearing proper PPE or ensure they EXIT IMMEDIATELY. PPE includes protective suits, PVA or neoprene gloves. 2. Respond to alarm per ZO-120-800.

Attachment 3 - RESPONSES TO PANEL A-2 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p><u>17 IN. VACUUM PROBLEM</u></p> <p>Set Point: 10" Hg VACUUM</p> <p>Actuated when the pump pressure is below 10" Hg. The 17" Hg air sampling vacuum system motive power is provided by two NASH vacuum pumps located on the 3rd floor, room 35, of PRF. The NASH CL-402 pumps are powered by 25 HP electric motors and have a capacity of approximately 400 cfm at 17" Hg vacuum. The 17" vacuum is essential to the air monitoring system in potentially contaminated areas within the confines of the buildings. Its failure would disable monitoring of an airborne contamination spread within 236-Z Building.</p> <p>Equipment Location : 17" VACUUM PROBLEM- Panel Board A-2 17" VACUUM PROBLEM- Power Control Room NASH Vacuum Pumps - 3rd Floor, Room 35 Vacuum Gauge - 3rd Floor, Room 35 Pump Breakers- Room 36 (instrument shop)</p>	<ul style="list-style-type: none"> - Power interruption - Equipment failure (pump and motor) - Loss of water pressure - Breaker malfunction - Improper valve alignment when switching pumps - Breach in vacuum line <p><u>References :</u></p> <p>Drawings: EFD; GPL;</p> <p>POP - ZO-060-610</p> <p>CBRS: Loop #; C0225 Sequence #; 1-8 Frequency ; 12 mth</p>	<p><u>AUTOMATIC ACTION:</u> None</p> <p><u>OPERATOR ACTIONS:</u></p> <ol style="list-style-type: none"> 1. <u>IF</u> the Solvent Extraction Process is operating perform emergency shut down per ZO-181-900 and all other PRF 900 series procedures. 2. Make the following PAX announcement TWICE: "Attention all personnel in PRF, Due to a loss of the 17 inch sample vacuum, please make an orderly evacuation of the 236-Z facility at this time." 3. Evacuate from 236-Z building and post Door 10 (PRF front door) "ON MASK". 4. Notify Power Control Room, Shift Manager or Assistant Shift Manager and PFP Health Physic Supervisor that a loss of sample vacuum has occurred.

Attachment 3 - RESPONSES TO PANEL A-2 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p><u>HIGH WF TK-127</u></p> <p>Volume: 238 liters WFT Range: 0-250" H₂O Set Point: 175" H₂O</p> <p>Actuated when TK-127 WFAS senses greater than 38 mA (70% of chart or a maximum of 168 liters). TK-127 overflows to tanks 52.1 and 52.2 (level indication on panel B-9). Alarm should acknowledge but not clear until level is below set point.</p> <p>Equipment Locations: Tk-127 - 1st & 2nd EE. WFT - 3rd East. WFAS - behind "A" panel WFR - Panel A-1 TK-52.1 and TK-52.2 - 1st EW (In glovebox)</p>	<ul style="list-style-type: none"> - Increase in tank level - Plugged high dip tube - Instrument air upset - Power interruption - Instrument failure <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28022 GPL; H-2-28374 H-2-28380</p> <p>CBRS: Loop #: A0500 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-127 WF recorder (A-1) and TK-52.2 indicator (B-9) along with recent trend for TK-127. <ol style="list-style-type: none"> a. <u>IF</u> TK-127 WF has not exceeded 70% of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-127 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> WF increased suddenly to 100%, this indicates possible high leg dip tube plugging. Continue to verify. 2. On first floor: <ol style="list-style-type: none"> a. Verify that valves 68 (EG-1), 69 (EE-1), and 78 (EE-1) are CLOSED. b. Verify that no solution is entering tanks 52.1 or 52.2 (EW). 3. <u>IF</u> no transfers were in progress in PRF, perform PRF "Standby Surveillance - Process Vessel" surveillance checks per ZO-180-600 and identify any changes in tank levels. 4. Evaluate all transfers and changes in tank levels to determine possible causes of alarm and/or source of solution entering TK-127.

Attachment 3 - RESPONSES TO PANEL A-2 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p><u>TK-A105 HIGH HIGH LEVEL</u></p> <p>Volume: 1700 liters Overflow: 1360 liters Contents: Nitric Acid (12M)</p> <p>Actuated when the TK-A-105 Conductivity Element (probe) is contacted with solution. Liquid Level Switch High High 105 receives an electric signal from the probe and is interlocked to shut off the HNO₃ pump at 2735-Z and activates the TK-A-105 High High Level Alarm. The pump interlock prevents the overflow of TK-A105 to the diked floor area of Chem Prep. TK-A-105 receives solution from 2735-Z only. Alarm should acknowledge but not clear until solution does not contact conductivity probe.</p> <p>Equipment Locations: TK-A105 - East end, South side of Chem Prep Conductivity Element - Top of TK-A-105 2735-Z - East of 234-5Z, south of change room</p>	<ul style="list-style-type: none"> - Increase in tank level - Short in Probe Wiring - Power interruption - Instrument failure <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28014</p> <p>CBRS: Loop #; A0673 Sequence #; 4</p>	<p><u>AUTOMATIC ACTION:</u> TK-A-105 High High Level Alarm is Interlocked To Shut OFF HNO₃ Pump At 2735-Z.</p> <p><u>OPERATOR ACTIONS:</u></p> <ol style="list-style-type: none"> 1. Check present readings for TK-A105 on LIS-40A (C-3) channel 1 and observe for trends. <ol style="list-style-type: none"> a. <u>IF</u> transfer of HNO₃ from 2735-Z to TK-A105 is in progress, end transfer per ZO-120-003. Notify supervision of TK-A-105 liquid level alarm interlock malfunction. b. <u>IF</u> TK-A105 is below 75% and alarm does not clear, notify supervision of equipment failure. No further actions required. 2. <u>BEFORE</u> to entering Room 40, look through side door windows or slowly open center door to determine status of Tank. <ol style="list-style-type: none"> a. <u>IF</u> solution is overflowing or present in catch basin below overflow line, verify HNO₃ pump is OFF and valve AS-5 is CLOSED (2735-Z) <u>BEFORE</u> proceeding respond to nitric acid spill per ZO-170-318 . b. <u>IF</u> NO solution is overflowing or present in the catch basin below overflow line, CONTINUE. 3. In Chem Prep Room 40: <ol style="list-style-type: none"> a. Verify that valves C-81 (P-1), C-82 (A-2), C-83 (A-2), C-84 (B-2) and C-85 (A-2) are CLOSED. b. Verify on LI-A105 that tank level is no longer increasing. c. <u>IF</u> not already performed, verify HNO₃ pump is OFF and valve AS-5 is CLOSED (2735-Z). d. Periodically monitor for solution entering the catch basin from the TK-A105 overflow line until alarm clears. 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-A105.

Attachment 3 - RESPONSES TO PANEL A-2 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<p>CHEM PREP FLOOR LIQUID</p> <p>Activated when one of two Conductivity Elements (probes) senses the presence of liquid. These probes are located in the Chemical Preparation catch basin underneath the floor grating and are next to the east and west floor risers. The alarm test switch for the Chem Prep Floor Liquid alarm circuit is located on the west wall of Room 44 behind the A-5 panel.</p> <p>Equipment Locations: TK-A105 - East end, South side of Chem Prep LIS-40A - Panel C-3 Rm 44</p>	<ul style="list-style-type: none"> - Overflow of tank - Piping leak - Sample valve failure - Conductive material in contact with probe - Short in Probe Wiring - Power interruption - Instrument failure - Test switch activated <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28014</p> <p>PM # 2222128</p>	<p><u>AUTOMATIC ACTION:</u> None</p> <p><u>OPERATOR ACTIONS:</u></p> <ol style="list-style-type: none"> 1. Notify any personnel in Chem Prep to stop all chemical transfers until reason for alarm can be determined. 2. <u>IF</u> personnel are working in Chem Prep, request that they check for solution near floor risers. <ol style="list-style-type: none"> a. <u>IF</u> no solution is present GO TO step 4. b. <u>IF</u> unknown solution is present, exit Room 40, place on "Fresh Air" status, notify supervision and don full acid suit and respiratory protection prior to reentering to determine source of solution. Self Contained Breathing Apparatus (SCBAs) are located in corridor next to MT (Room 41) entrance. These are to be used only for emergency investigation and recovery actions not expected to last more than 20 minutes. Notify supervision of findings and respond to spill or leak per ZO-170-318. No further actions required. c. <u>IF</u> source of solution is known, determine need for PPE (Acid Suit, Fresh Air, etc). Notify supervision and respond to spill or leak per ZO-170-318. No further actions required. 3. <u>BEFORE</u> entering Room 40, look through side door windows or slowly open center door to determine status of solution in catch basin. <ol style="list-style-type: none"> a. <u>IF</u> solution is overflowing or present in catch basin below overflow line, perform Step 2.a of this procedure. b. <u>IF</u> NO solution is overflowing or present in catch basin below overflow line, CONTINUE. 4. Check for any conductive material in contact with either probe, remove as necessary. No further actions required. 5. <u>IF</u> no material is contacting probes, notify supervision of equipment failure and initiate surveillance of Chem Prep floor until repairs are complete.

Attachment 3 - RESPONSES TO PANEL A-2 ALARMS (Cont.)
Page 10 of 12

ALARM	POSSIBLE CAUSES	RESPONSE
<p><u>LOW WF TK-127</u></p> <p>Volume: 238 liters WFT Range: 0-250" H₂O Set Point: 25" H₂O</p> <p>Actuated when TK-127 WFAS senses less than 14 mA (10% of chart or a minimum of 32 liters). TK-127 drains to tanks 52.1 and 52.2 (level indication on panel B-9) or glovebox floor. Alarm should acknowledge but not clear until level is above set point.</p> <p>Equipment Locations: TK-127 - 1st & 2nd EE. WFT - 3rd East. WFAS - behind "A" panel WFR - Panel A-1 TK-52.1 and TK-52.2 - 1st EW (In glovebox)</p>	<ul style="list-style-type: none"> - Decrease in tank level - Plugged low dip tube - Leak on High dip tube - Instrument air upset - Power interruption - Instrument failure <p><u>REFERENCES:</u></p> <p>Drawings: EFD; H-2-28022 GPL; H-2-28374 H-2-28380</p> <p>CBRS: Loop #; A0500 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-127 WF recorder (A-1) and TK-52.2 indicator (B-9) along with recent trend for TK-127. <ol style="list-style-type: none"> a. <u>IF</u> TK-127 WF has not dropped below 10% of chart, notify supervision of equipment failure. No further actions required. b. <u>IF</u> sudden TK-127 WF changes correspond to outages in electrical power or instrument air and reading returned to previous value, no actions required. c. <u>IF</u> WF decreased suddenly to 0%, this indicates possible instrument problem. Continue to verify. 2. Verify tank 127 pump switch 127-SS-D (A-1) is OFF. 3. On 1st, verify that valves 78 (EE-1), 70 (EE-1), 77 (EE-1), 68 (EG-1) and 69 (EE-1) are CLOSED. <ol style="list-style-type: none"> a. <u>IF</u> drain valve 78 (EE-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 77(EE-1) was open, check solution level in glovebox EE. c. <u>IF</u> block valve 70 (EE-1) was open and pump 127 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-127.

Attachment 3 - RESPONSES TO PANEL A-2 ALARMS (Cont.)
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ALARM	POSSIBLE CAUSES	RESPONSE
<u>CHEM PREP CONDUCTIVITY ALARM</u> Alarm is inactive	<ul style="list-style-type: none"> - Power interruption - Instrument failure 	<u>AUTOMATIC ACTION:</u> None <u>OPERATOR ACTIONS:</u> 1. Notify supervision of equipment failure, no further response required.

ALARM	POSSIBLE CAUSES	RESPONSE
<u>TK-12 DP (12 LPAD)</u> Alarm is inactive unless Slag and Crucible is activated.	<ul style="list-style-type: none"> - Power interruption - Instrument failure 	<u>AUTOMATIC ACTION:</u> None <u>OPERATOR ACTIONS:</u> 1. Notify supervision of equipment failure, no further response required.

ALARM	POSSIBLE CAUSES	RESPONSE
<u>CONDENSER DIFF PRESS- GH (ED-PDA-DI)</u> Alarm is inactive unless Slag and Crucible is activated.	<ul style="list-style-type: none"> - Power interruption - Instrument failure 	<u>AUTOMATIC ACTION:</u> None <u>OPERATOR ACTIONS:</u> 1. Notify supervision of equipment failure, no further response required.

Attachment 3 - RESPONSES TO PANEL A-2 ALARMS (Cont.)
 Page 12 of 12

ALARM	POSSIBLE CAUSES	RESPONSE
<p><u>MT-5 HOT PLATE ALARM</u></p> <p>Activated by alarm on Miscellaneous Treatment alarm panel in Room 41.</p>	<ul style="list-style-type: none"> - Alarm on MT alarm panel - Power interruption - Instrument failure <p><u>REFERENCES:</u></p> <p>ZO-183-800, ALARM RESPONSES FOR MT ALARM PANELS</p> <p>CBRS # A0640 Sequence ; 1 Frequency; 6 mo</p>	<p><u>AUTOMATIC ACTION:</u> None</p> <p><u>OPERATOR ACTIONS:</u></p> <ol style="list-style-type: none"> 1. <u>IF</u> personnel are in Miscellaneous Treatment, notify them of alarm. No further response required. 2. Proceed to Miscellaneous Treatment (Room 41) and respond to alarm per ZO-183-800.

Date Received: 10-4-93 CW

INFORMATION RELEASE REQUEST

Reference: WHC-CM-3-4

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Lead Author <u>Steve Seand</u>	Phone 376-3776	MSIN 116-30	Other Author(s) or Requestor <u>Ecology Steve Seand</u>		
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