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Applicable Field Changes _____

SOP 65-02

TEMPORARY COLD CHEMICAL SYSTEM SODIUM HYDROXIDE
TRANSFER AND DISTRIBUTION

Rev. 0

Approved *[Signature]*
Operations Manager

Approved *[Signature]*
Cognizant Engineering
Manager

Date 6/15/89

Date 6/15/89

Approved *[Signature]*
Radiation and Safety
Manager

Approved *[Signature]* 6/15/89
Quality Assurance

Date 6/15/89

Date 6-15-89

System Quality Level N

System Safety Class N

The estimated accumulated dose for the work described
in this document is less than 100 mrem.

WEST VALLEY NUCLEAR SERVICES CO., INC.

June 1989

Prepared by: *[Signature]* 6-14-89
D. J. Floetz

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RECORD OF REVISION

PROCEDURE

If there are changes to the procedure, the revision number increases by one. These changes are indicated in the left margin of the body by an arrow (>) at the beginning of the paragraph that contains a change.

Example:

> The arrow in the margin indicates a change.

Procedure No. SOP 65-02, Rev. 0

Date: June 1989

<u>Rev. No.</u>	<u>Description of Changes</u>	<u>No. of Page</u>	<u>Dated</u>
0	Initial Document	All	06/89

SOP 65-02
Rev. 0

RECORD OF REVISION (CONTINUATION SHEET)

Rev. No	Description of Changes	No. of Page	Dated
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LIST OF EFFECTIVE PAGES

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TEMPORARY COLD CHEMICAL SYSTEM SODIUM HYDROXIDE
TRANSFER AND DISTRIBUTION

REV. 0

1.0 SCOPE

This document covers the transfer of concentrated Sodium Hydroxide from 14D-2 in the YARD to the Temporary Cold Chemical System (TCCS) section of the Vitrification Facility using the portable caustic tank 65D-06T and the transfer to either the Main Mix Tank (65D-03) or the Shim Mix Tank (65D-04) within that facility.

2.0 DEFINITIONS AND ABBREVIATIONS

2.1 Definitions

None

2.2 Abbreviations

NaOH - Sodium Hydroxide (Caustic), for the purposes of this procedure, at a nominal strength of 50 percent.
MCC - Motor Control Center
MSDS - Material Safety Data Sheet
Vitops - Vitrification Operations
VOSS - Vitrification Operations Shift Supervisor

3.0 RESPONSIBILITIES

3.1 Vitops is responsible for implementing this procedure in its entirety.

3.2 Analytical Process Chemistry is responsible for analyzing the samples which may be taken and reporting the results to the VOSS.

3.3 The VOSS is responsible for supervising the work of the Vitops.

4.0 TOOLS, EQUIPMENT, COMPONENTS, AND REFERENCES

4.1 Tools

Ordinary hand tools, e.g. wrenches.

4.2 Equipment and Components

- 4.2.1 Concentrated NaOH Storage Tank - 14D-2
- 4.2.2 Concentrated NaOH Pump - 14G-4
- 4.2.3 TCCS Concentrated NaOH Batch Meter - 65FQIC-221
- 4.2.4 TCCS Concentrated NaOH pump 65G-06
- 4.2.5 Main Mix Tank - 65D-03
- 4.2.6 Shim Mix Tank - 65D-04
- 4.2.7 Sample Bottles, non-glass only
- 4.2.8 Safety Shower(s) in TCCS area
- 4.2.9 Personal Protective Equipment, as listed in step 6.1
- 4.2.10 Portable Caustic Transfer Tank 65D-06T
- 4.2.11 Lift Truck

4.3 References

WVDP-011, Industrial Hygiene and Safety Manual
900D-2174 2175, and 2176
SIP 89-01, TCCS Spill Control.
SIP 88-05, TCCS Main Mix Tank 65D-03
MSDS for Sodium Hydroxide

5.0 GENERAL INFORMATION

Sodium Hydroxide (Caustic) is received on this site in liquid form at a concentration of approximately 50 percent. The bulk storage tank is 14D-2 in the east YARD. Since 50 percent caustic freezes at about 52°F, the tank is heated. When caustic is required at the TCCS, tank 65D-06T is transported to the 14D-2 area and filled using pump 14G-4. The portable tank is then returned to the TCCS and connected to the inlet of 65G-06 for addition to either the Main Mix Tank or the Shim Mix Tank.

The filling of 65D-06T must be performed under the constant surveillance of an operator properly dressed to respond to a leak or spill.

Whenever 65D-06T is being transported on the plant roads, traffic control is to be established by the VOSS with particular regard to avoiding this transport activity when nitric acid is being unloaded or the potential for interaction with construction activities exists. The lift truck operator will carry a portable two-way radio and will not, for any reason, abandon the lift truck or load during the transport. Use the radio to call for assistance.

OPERATORS SHOULD PERFORM FREQUENT CHECKS ON SYSTEMS THAT ARE TURNED ON OR SHUT DOWN TO ASSURE THAT THE SYSTEM DOES WHAT IS EXPECTED, I.E., WATER FLOWS, PRESSURE RISES, LEVEL INDICATORS CHANGE, ETC. IF THE REQUIRED ACTION THAT IS SUPPOSED TO HAPPEN DOES NOT HAPPEN, (1) STOP - DO NOT ATTEMPT TO PERFORM THE NEXT STEP, (2) SECURE THE SYSTEM IN A SAFE MODE, AND (3) NOTIFY SHIFT SUPERVISOR IMMEDIATELY.

6.0 PROCEDURE

6.1 Personal Protective Equipment

6.1.1 SEE WARNING: Sodium Hydroxide is highly corrosive. Review the MSDS for NaOH. Contact of this liquid with the skin, or eyes can cause burns and severe damage if the contact is prolonged. If contact is made, flush the affected areas for a minimum of 15 minutes with water, and report to your Shift Supervisor and the Site Medical Office.

WARNING: WHEN LOADING BULK LIQUID CHEMICALS INTO PORTABLE TANKS, THE OPERATOR WILL WEAR A HARD HAT WITH FACE SHIELD, GOGGLES, RUBBER GLOVES, AND GAUNTLET GLOVES, FULL VINYL SUIT AND RUBBER BOOTS. ALL SUIT OPENINGS WILL BE SEALED WITH TAPE. PANTS WILL BE WORN OVER THE BOOTS TO PREVENT SOLUTIONS FROM ENTERING THE BOOTS. THE SAFETY SHOWER WILL BE TESTED PRIOR TO THE TRANSFER, AND OPERATED CONTINUOUSLY DURING THE TRANSFER.

6.2 Loading Concentrated Sodium Hydroxide into 65D-06T

6.2.1 Determine the amount of caustic needed by consulting the mix plan. The maximum fill volume for 65D-06T is this number plus approximately 70 litres (not to exceed 65D-06T volume of 600 litres) because of a requirement to leave not more than 100 litres in 65D-06T following transfer to the mix tank in the TCCS. It is also important to plan the amount to be transferred to be certain that the amount to remain following the addition via 65G-06 can be read out on the scale on 65D-06T

6.2.2 SEE CAUTION: Check that 65G-06 breaker is locked out at the MCC. Wearing goggles and gloves, disconnect the "Kamvalok" fitting between 65D-06T and 65G-06 after closing the kamvalok valve. Cap and plug the exposed fitting ends. Carefully lift 65D-06T with the lift truck forks, secure the tank to

the lift truck with rope, and transport the tank to the 14D-2 area. The stainless steel transfer hose, stored at the TCCS, should be taken along.

CAUTION: BE SURE TO RELEASE THE KAMVALOK CAM ARMS BEFORE ENGAGING THE LIFT TRUCK FORKS WITH 65D-06T. THIS MINIMIZES STRAIN ON THE TANK AND PUMP FITTINGS DURING ANY PULLING ACTION WHICH COULD OCCUR.

- 6.2.3 When traffic controls have been established, check the operation of the two-way radio. Transport 65D-06T to the 14D-2 area and locate for the filling operation. Discontinue traffic control, but establish a roped off area around the loading area.
- 6.2.4 Check the safety shower and eyewash and leave both running during the transfer. Don the Personal Protective Equipment listed in step 6.1.1.
- 6.2.5 Check that valves 1413, 1414, 1415, 1418, 1419, 1420, 1421, 1424, and 1426 are closed. (See attachment 1.) Also check that the load out valve (located on a tee between valves 1418 and 1419, the 14D-2A inlet) is closed.
- 6.2.6 Open the cover of 65D-06T and secure the transfer hose in the tank opening with stainless steel wire or nylon wireties. Connect the other end of the hose to the quick disconnect on the load out valve.
- 6.2.7 Close the 14G-4 breaker in the laundry building MCC. NOTE: the laundry building is a radioactive materials storage area and requires dosimetry for entry.
- 6.2.8 Open the 14G-4 suction valve, 1413. Open the water purge to the seal of 14G-4, and start the pump. Open valve 1418.

- 6.2.9 Open the load out hose valve and fill 65D-06T to the target level. Keep in mind that, if 65D-06T is slanted, the volume will be the average of the two opposite sidebar readings. Close the load out valve when the desired level has been reached.
- 6.2.10 Shut down 14G-4 and close the seal water valve, the suction valve 1413, and the discharge valve 1418. Walk down hose from loadout valve to tank, draining liquid trapped in line. Disconnect the transfer hose from the load out valve and remove the hose from 65D-06T hatch. Replace the hatch cover securely on 65D-06T. Drain and flush the hose to the pad area drain, and reinstall the quick disconnect closure on the load out valve. Ensure hose is empty of flush water, wrap in plastic for return to TCCS area. Shut down the safety shower and eyewash. Reopen the 14G-4 breaker closed in 6.2.7.
- 6.2.11 When ready to transport 65D-06T, reestablish traffic controls and recheck the operation of the two-way radio.
- 6.2.12 SEE CAUTION: Carefully transport 65D-06T to the TCCS area. Discontinue traffic control. Wearing gloves and goggles, remove the plug and cap installed in step 6.3.2. With a guide operator, carefully place 65D-06T on the tank platform in the TCCS and mate the kamvalok connector. When the tank is resting on the platform, remove the rope from the tank. Carefully withdraw the lift truck forks from the tank pallet. Do not allow the tank to slide as the connection would be strained.

CAUTION: BE SURE TO KEEP THE KAMVALOK CAM ARMS RELEASED UNTIL THE LIFT TRUCK FORKS HAVE BEEN WITHDRAWN FROM 65D-06T. THIS MINIMIZES STRAIN ON THE TANK AND PUMP FITTINGS DURING ANY PULLING ACTION WHICH COULD OCCUR.

6.3 Transferring Caustic from 65D-06T to the Main Mix Tank 65D-03 or the Shim Mix Tank 65D-04

6.3.1 The Feed Mix Work Document will detail the amount of caustic to be added, the rate of addition, and the tank which is to receive the caustic. The selector valves relating to which tank receives are 65H-727 for the Shim Mix Tank; and 65H-726 for the Main Mix Tank. Both are normally closed. Open the appropriate valve and ensure the valve for the tank not receiving caustic is closed, locked, and tagged.

6.3.2 Check that the following valves are closed:

- o 65H-706 - the caustic pump inlet flush valve (closed and capped)
- o 65H-704 - the caustic pump discharge flush valve (closed and capped)
- o 65H-703 - the caustic batch autovalve, (operates automatically)

6.3.3 Check that the following valves are open:

- o 65H-723 - the caustic pump inlet valve (kamvalok)
- o 65H-705 - the caustic pump discharge valve

6.3.4 Check that the TCCS control panel switch for 65G-06 is in the "off" position, then close the MCC breaker for the caustic pump 65G-06. Note: The selector switch and lights on this MCC breaker are inactive.

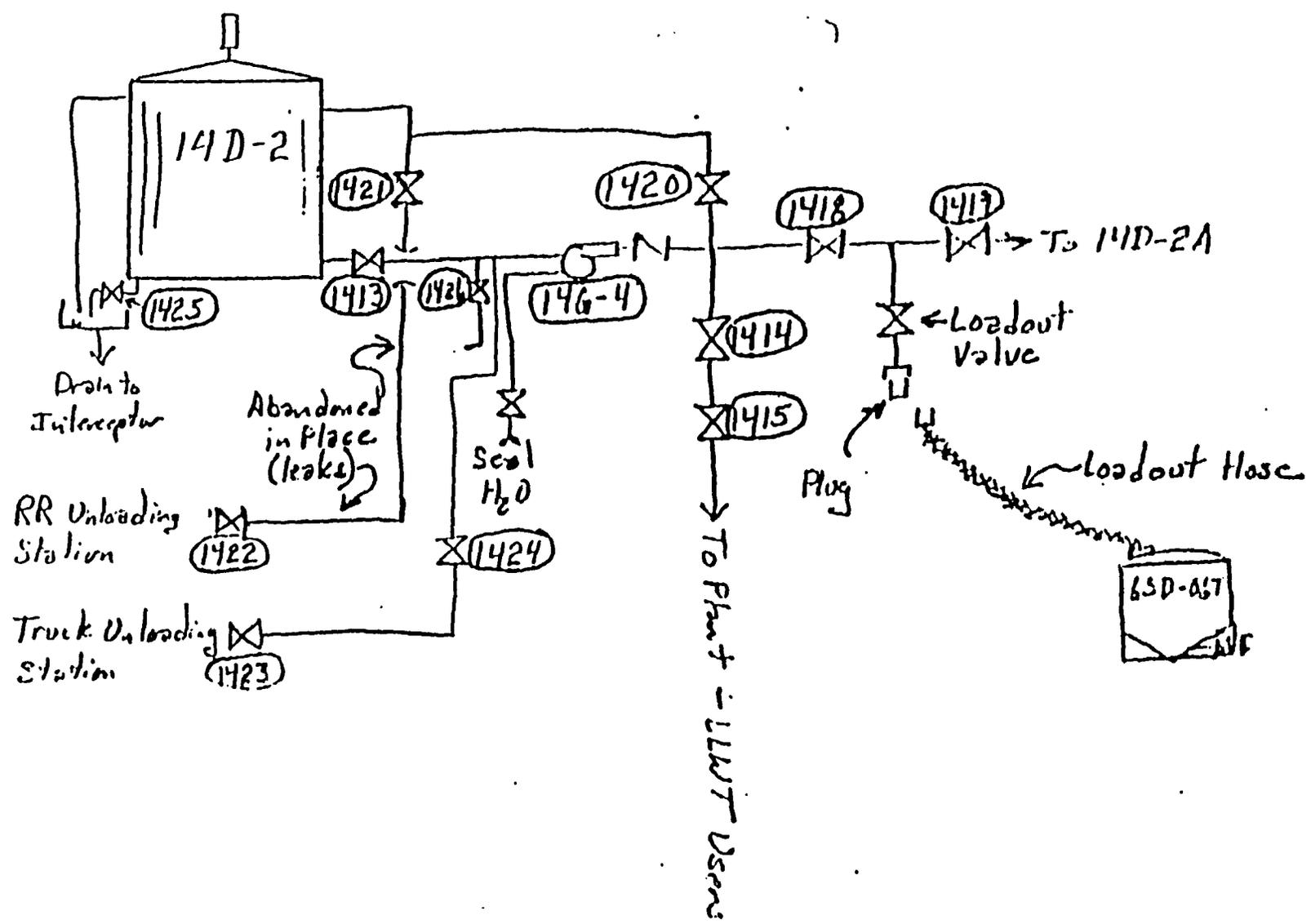
6.3.5 Setup the batch programmer by performing the following steps:

1. press "program."
2. press "preset" then the desired litres to be transferred (to the 1/10 litre). Note that the programmed value may be slightly less than the planned delivery due to a known overshoot. The mix plan will detail this. Then press "enter."

Note: If more than 5 seconds elapse between key strokes, the batch controller leaves the program mode. This will require returning to step 1 to restart programming.

3. Reset the counter by pressing "reset" then "count." This should clear the counter.
4. Check the programmed litres by pressing "preset," the readout should show the step #2 value and then return to zero. Log the volumes of 65D-06T and the receiving tank on the mix plan.
5. Place the TCCS control panel switch for 65G-06 from "off" to "auto." See step 6.4.7.
6. Press "start" on the batch programmer and 65G-06 will start and 65H-703 will open to deliver the programmed volume to the tank selected in step 6.4.1. Note that the pump will not start if either 65D-03 or 65D-04 are at high level.

7. During the transfer, the rate may be checked by pressing "rate." Increase or decrease the speed setting for 65G-06 to bring the rate to the target value listed in the mix plan. Press "count" to return to the litres delivered readout.
 8. When the programmed number of litres is reached, the batch controller will shut down 65G-06 and close 65H-703. Return the TCCS control panel switch for 65G-06 to the "off" position.
 9. Open the MCC breaker for 65G-06 and lock and tag.
- 6.3.6 If it is desired to stop the transfer before completion, any of the following will do so:
1. Emergency Stop - stops the grinder, both agitators, and both the acid and caustic pumps (because of interlocking, only one pump could be running)
 2. Batch Controller "stop" - stops the batching and flashes indicating incomplete batch.
 3. Turn the 65G-06 TCCS Control Panel Switch to "off."
- Note: In each of these cases, record the count value for future reference. Contact the VOSS before attempting restart of the batching operation.
- 6.3.7 When the batch transfer of caustic is complete, close the supply valve opened in step 6.3.1 and 65H-705 the caustic pump discharge valve.
- 6.3.8 Log the volume delivered in the mix data sheet.



SUBJECT: Loadout Valve
65D-067

NUMBER: SKDTF030689-1 PAGE 1 of 1
PREPARED BY: MLO
CHECKED BY: [Signature]
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