

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

June 13, 1997

MEMORANDUM FOR: G. W. Cunningham, Technical Director

FROM: J. Kent Fortenberry / Joe Sanders

SUBJECT: SRS Activity Report for Week Ending June 13, 1997

Rich Tontodonato and Lisa Jellett were onsite this week reviewing hydrogen retention in HLW tanks, the safety equipment backfit analysis being utilized for HLW facilities, 96-1 issues, the Consolidated Incinerator Facility, and the Replacement High-Level Waste Evaporator.

WSRC Facility Evaluation Board (FEB) - Pete Graef is scheduled to brief the Board on the FEB on June 20. All WSRC ESH&QA independent oversight functions were consolidated and assumed by the FEB in 1995. The FEB consists of three evaluation teams of about 12 members each. Nineteen evaluations were scheduled for 1997, directed at specific facilities, operating areas (such as Solid Waste), and site-wide programs. FEB evaluations generally appear to be competent and frank assessments of operations, engineering, maintenance, rad con, ESH&QA, training, and facility organization. FEB issues require corrective action plans and identification of fundamental causes. FEB reports have been useful to DNFSB site representatives and technical staff reviewing SRS facilities and programs.

Hydroxylamine Nitrate (HAN) at SRS - F-Canyon uses HAN as a plutonium reductant in both solvent extraction processes and in sump handling. H-Canyon last used HAN during the Pu-242 campaign. Neither FB- or HB-Line use HAN. Several action items were identified at SRS as a result of the HAN explosion at Hanford. These actions include confirming or conducting flushing of head tanks and associated piping used in previous HAN related processes, installing blanks to prevent heating of HAN makeup tanks in F-Area Cold Feed Prep (222-F), and ensuring proper storage of HAN. Although SRS has experienced several uncontrolled reactions involving HAN- nitric acid, there has always been sufficient venting to preclude the violence of the Hanford event. As a result of the recent F-Canyon Tank 17.5 eruption (see 1/10/97 Weekly Report), SRS is currently investigating the feasibility of operating canyon processes without using HAN.

Seismic Analysis for Actinide Packaging & Storage Facility (APSF) - A Seismic Analysis Plan is being developed (T-ESR-F-XX, Rev A). This draft plan relies heavily on the Structural Design Criteria (Standard No. 01060) from the SRS Engineering Standard Manual (WSRC-TM- 95-1). The site specific response spectra is currently under revision and will be included in Rev 2 of this SRS Structural Design Criteria. A geotechnical characterization of F-Area (WSRC-TC- 96-0069, 9/96) includes the proposed site for the APSF. This study used both old and new subsurface information including 40 cone penetration tests, 12 exploratory boreholes, data from 98 pre-existing boreholes, and a shallow high resolution seismic reflection survey. Data specific to the proposed APSF site includes 6 cone penetration tests and 2 boreholes. The depth of these tests ranged between 150 and 160 feet (depth of refusal). This week, 11 additional cone penetration tests were initiated specific to the APSF site.

Attachment 1: Summary of RFETS Vaults

Note: All rooms are on the ground level, in the middle of the building, in contamination areas, have small gaps under the door, have floors that are scratched and missing some paint unless otherwise noted.

General Layout and Room Condition	Packaging/Material	Fire Protection	Penetrations	Other Comments
<p>2 levels, mezzanine has grating for a floor</p> <p>Generally in good condition</p> <p>Combustible coal tar pitch (used to prevent water intrusion) was leaking from 6 small holes in the wall, forming 2 small puddles including 1 around a drum</p>	<p>Shipping containers (drums) are stacked one or two high, no restraints for 2nd level</p> <p>Mostly plutonium metal components</p>	<p>Fire sprinklers on both levels, no drains</p> <p>Posting on door prohibits combustible storage within 12' and drum storage within 8'</p> <p>Vault door is not fire rated</p>	<p>Water pipes on both levels supply sprinklers</p> <p>4 criticality drain lines</p> <p>Return supply ducts</p>	<p>Despite posting, wooden scaffolding and a ladder were stored next to the door outside the vault. A wooden ladder was stored inside the vault next to the door.</p> <p>Building mgmt committed to cleaning up tar and removing wood.</p> <p>Lots of tanks, piping, and chillers stored outside. Last Fall, 4000+ gallons of tower water leaked from a chiller condenser, some of which entered vault and overfilled the berm.</p> <p>Dose rates < 53 mrem/hr</p>
<p>2 levels, mezzanine has grating for a floor</p> <p>Generally in good condition</p> <p>Combustible coal tar pitch (used to</p>	<p>Shipping containers (drums) are stacked one or two high, no restraints for 2nd leve</p> <p>Mostly plutonium metal components</p>	<p>Fire sprinklers on both levels, no drains</p> <p>Fire hose reel</p> <p>Posting on door prohibits combustible</p>	<p>Water pipes on both levels supply sprinklers</p> <p>2 criticality drain lines</p> <p>Return supply ducts</p>	<p>Building mgmt committed to cleaning up tar.</p> <p>Some drums looked pretty beat up and some lids looked like they might be slightly bulged,</p>

<p>prevent water intrusion) was leaking from several small holes in the wall, forming small puddles including 1 around a drum</p>		<p>storage within 12' and drum storage within 8'</p> <p>Vault door is not fire rated</p>		<p>possibly from handling</p> <p>Not a contamination area, just a radiological buffer area</p> <p>Lots of pipes and tanks outside vault</p> <p>Dose rates < 35 mrem/hr</p>
<p>Submarine door with no gap at bottom</p> <p>Cages on sides containing 3 shelves</p>	<p>10 gallon drums</p> <p>Metal and oxide</p>	<p>None</p> <p>No drains</p>	<p>Electrical</p>	
<p>Submarine door with no gap at bottom</p> <p>Cages on sides containing 3 shelves</p>	<p>Metal and oxide</p>			<p>This vault was not able to be walked down. A quick visual inspection from the door 6 months ago revealed no problems.</p>
<p>3 levels, 2 floors have grating for the floor</p> <p>Storage cabinets along walls</p> <p>Elevator</p>	<p>Each shelf can hold 4 10-gallon drums</p>	<p>Smoke detectors</p> <p>No drains</p> <p>Door is not fire rated- site reviewing coatings for door that could increase fire resistance</p>	<p>Just electrical</p>	<p>Vault was still under construction when toured. SNM is now being stored</p> <p>Cabinets have a slot on side walls and around shelves to allow air to circulate and cool off the Pu, with 50% ventilation steady-state temperature will be ~89°F.</p>
<p>Cages line walls and interior with 3 or 4 shelves</p>	<p>Various sized drums are in the cages</p>	<p>Sprinkler system</p> <p>no drains</p>	<p>Fire water and electrical</p>	<p>Two criticality infractions: wet/dry and drums</p>

<p>High ceiling</p>	<p>FL and 10 gallon drums stand in the aisles</p> <p>FL's contain Pu metal components</p> <p>Drums contain buttons and other metal</p> <p>Some salt residues present</p> <p>Mostly oxide inside the caged drums</p>	<p>2 fire extinguishers</p>		<p>Dose rates < 24 mrem/hr</p> <p>RCRA unit</p> <p>Not a contamination area, just a radiological buffer area</p>
<p>Large shielded sliding doors line the wall, several shelves are behind the door</p>	<p>Were not able to open doors during visit.</p> <p>On a previous visit, some doors were opened. Various U metal parts and components, and other SNM sat on shelves in plastic bags.</p> <p>About 1 dozen 10 gallon drums containing buttons and other metal on floor.</p> <p>Targets sit in taped lobster pots on carts</p>	<p>Posting: No combustibles in vault.</p> <p>No drains</p> <p>Sprinklers in outside hall only.</p>	<p>None</p>	<p>Despite prohibition of combustibles, mops were stored in vault. Shift manager said he would have them removed.</p> <p>Hall floor slopes up to door.</p>
<p>There are 5 shelves of lead-lined cylinders in which cans sit loose. These cylinders are mounted to the rack.</p> <p>3 carts also in vault.</p>	<p>Sealed produce cans sit inside the lead</p> <p>Mostly metal, buttons, and stabilized oxide.</p> <p>Peroxide cake in taped slip lid cans</p>	<p>Posting: No combustibles in vault</p> <p>No drains</p> <p>Sprinklers in outside hall only</p>	<p>Ventilation ducts</p> <p>Part of a chainveyor penetrates the vault.</p> <p>One unknown vertical pipe.</p>	<p>Vault has been an airborne contamination area since 1994 because it failed smoke and SAAM audibility tests</p> <p>Dose rates < 19 mrem/hr</p> <p>Hall floor slopes up to door</p> <p>Criticality infraction for moderated material.</p>

				Despite combustible prohibition, nylon or canvas bags, rope, and tape were stored in vault. Shift manager agreed to remove them.
4 shelves line the wall	Oxide, peroxide cake, and metal are in containers. 3 carts contain metal parts	None No drains	Plenum drain Cooling water supply and drain lines Ventilation, electrical and other pipes	The floor was heavily stained. Several stained towels lined the floor.
2 levels, mezzanine has grating for a floor 6 shelves: lower 2 behind doors and other 4 has fixed positions	Mostly buttons, fluoride, or peroxide cake. Also contains oxide, other metal, salts, and SS&C. Parts on carts. Much of it is RCRA.	Sprinkler system on both levels No drains	Ventilation ducts.	Dose rates < 40 mrem/hr
4 racks of water-filled annular storage containers in fixed positions	4 racks of water-filled annular storage containers in fixed positions	Sprinkler system No drains	Plenum drain Refrigerant line Supply return filter	Dose rates < 21 mrem/hr 2 criticality infractions: moderated items and drums Cracks along west wall Paint peeling
5 levels of racks	Cans contain alloys, button, and oxide-many with high Am 3 drums contain scrub and dicesium hexachloroplutonate salt	No drains	Process cooling water return line Inert return ducts Several unidentified pipes	Because of structural concerns with exterior wall, this vault is being deactivated Dose rates < 11

				mrem/hr
Unable to enter since electronic dosimeter malfunctioned				
<p>This large room is tightly packed with carts and no aisles</p> <p>It is impossible to inspect most of the carts without moving many carts out of the room</p>	<p>Carts contain U and Pu metal components and parts</p> <p>Some parts and components are double bagged in plastic</p> <p>No noticeable degradation of plastic</p> <p>Some U metal components are Pu-contaminated and awaiting decon</p> <p>Lobster pots contain targets</p>	No drains or sprinklers	Some cooling water lines	<p>Several ~2' high plastic bottles along wall (not near carts)-1 looked like it was half full with water</p> <p>Old large X-ray unit</p> <p>4 - 6 carts are criticality infracted</p> <p>Dose rates < 13 mrem/hr</p>
<p>2 levels, 1 has grating for a floor</p> <p>5 shelves of 8802 cans locked in place</p> <p>Some cans shielded with lead or water</p>	Residues are stored in many of the cans	No drains or sprinklers	Ventilation ducting	<p>High radiation area</p> <p>Dose rates up to 214 mrem/hr</p>
<p>Several dozen lobster pots stacked 1 high on floor</p>	Pots contain targets, parts, U metal components, and peroxide cake.	<p>No sprinklers or drains</p> <p>Posting: No combustibles allowed</p>	Ventilation ducting	Dose rates < 31 mrem/hr
<p>2 parts in vault: storage and working</p> <p>Storage consists of 6 shelves behind</p>	U metal components sit on cardboard and/or wrapped in 1 layer of plastic (not a bag	Had to evacuate vault due to malfunctioning electronic	Had to evacuate vault due to malfunctioning electronic	<p>Dose rates < 4.3 mrem/hr</p> <p>Some 10 and 30 gallon drums are</p>

<p>cages</p> <p>Working area contains carts and tables</p>	<p>Classified shapes and targets in lobster pots</p> <p>Other parts in plastic bags or Al foil</p>	<p>dosimeter before this could be checked</p>	<p>dosimeter before this could be checked</p>	<p>criticality infracted</p>
<p>7 shelves of racks behind cages</p> <p>Several carts in aisles</p>	<p>Carts contain U metal components, parts and</p> <p>Some of the components wrapped in foil</p>	<p>Posting: No combustibles</p> <p>Sprinklers</p> <p>No drains</p>	<p>Room exhaust ducting</p> <p>Fire water piping</p>	<p>Dose rates < 5.1 mrem/hr</p> <p>There are cracks around the cinder blocks forming the wall facing the hallway</p> <p>Criticality infracted</p>