



**Department of Energy**  
Richland Operations Office  
P.O. Box 550  
Richland, Washington 99352

11-AMRC-0176

JUL 19 2011

Ms. J. A. Hedges, Program Manager  
Nuclear Waste Program  
State of Washington  
Department of Ecology  
3100 Port of Benton Blvd.  
Richland, Washington 99354

Dear Ms. Hedges:

**CERTIFICATION OF CLEAN CLOSURE FOR THE 331-C STORAGE FACILITY**

Closure activities for the 331-C Storage Facility are completed. The Owner/Operator Closure Certification (Attachment 1) and the independent registered Professional Engineer's Clean Closure Certification Report (Attachment 2) are provided in accordance with Washington Administrative Code (WAC) 173-303-610-(6). The closure certifications were prepared in accordance with WAC 173-303-610 and the 331-C Closure Plan. If you have questions, please contact me or your staff may contact Rudy Guercia, of the River Corridor Closure Project at (509) 376-5494.

Sincerely,

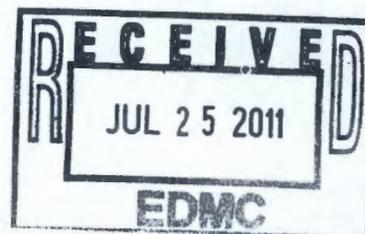
A handwritten signature in black ink, appearing to read "Joe R. Franco".

Joe R. Franco, Assistant Manager  
for the River Corridor

AMRC:RFG

Attachments (2)

cc w/attachs: (See Page 2)



535

Ms. J. A. Hedges  
11-AMRC-0176

-2-

cc w/attachs:

G. Bohnee, NPT

F. W. Bond, Ecology

P. E. Eberlein, Ecology

D. A. Faulk, EPA

L. E. Gadbois, EPA

T. A. Harris, WCH

R. Jim, YN

S. Harris, CTIUR

M. L. Proctor, WCH

C. P. Strand, WCH

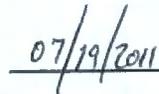
**Administrative Record, H6-08 (331-C Storage Facility)**  
Environmental Portal, A3-01

OWNER/OPERATOR  
CLEAN CLOSURE CERTIFICATION  
FOR  
331-C HAZARDOUS WASTE STORAGE FACILITY

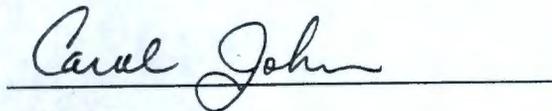
We, the undersigned, hereby certify that the 331-C Hazardous Waste Storage Facility closure activities were performed in accordance with specifications in the Closure Plan.



Owner/Operator  
Joe R. Franco, Assistant Manager  
for the River Corridor  
U.S. Department of Energy  
Richland Operations Office



Date



Co-Operator  
Carol Johnson, President and Project Manager  
Washington Closure Hanford



Date

June 30, 2011

S015174A00-09-005-001

Ms. Lindsay Mahony  
324 IQRPE Subcontract Technical Representative  
Washington Closure Hanford  
2620 Fermi Avenue  
Richland, Washington 99354

**RECEIVED**  
**JUL 06 2011**  
**WCH - DOCUMENT CONTROL**

**RE: CLEAN CLOSURE CERTIFICATION REPORT, 331-C FACILITY, HANFORD SITE, WASHINGTON**

Shannon & Wilson, Inc. provided an Independent, Qualified, Registered Professional Engineer (IQRPE) to verify clean closure of the 331-C Storage Unit in the Hanford Site 300 Area. Services were provided in accordance with Addendum H to the 331-C Storage Unit Closure Plan (June 30, 2009, Revised June 28, 2011).

The 331-C Storage Unit is a specific area within Building 331-C. It consists of the building's north room and a fenced area under a canopy located directly east of the north room. The interior area has a metal containment barrier around the room's perimeter, with smaller containment areas for segregation of incompatible wastes (Cells 1 through 4). The floor is sealed with epoxy paint. Collection sumps span the doorways on the north and east sides, and Cells 1 through 4 have individual containment sumps. The exterior area also has a containment barrier, epoxy floor paint, and a collection sump (Cell 10). A figure from the Part III, Operating Unit 15 Unit-Specific Conditions for the 331-C Storage Unit is attached, which shows the Storage Unit and containment area layout.

### 1.0 WORK SCOPE

Shannon & Wilson's work scope included performing a visual inspection of the 331-C Storage Unit, and a review of pertinent facility records. In accordance with Section H.1.2.3.2 Examination of Structure Surfaces, the inspection was performed after waste inventory removal, but prior to decontamination.

## **1.1 Facility Inspection**

The objective of the visual inspection was to determine if the structure meets the clean closure standard, which is a visually verifiable standard established in accordance with WAC 173-303-610(2)(b)(ii). The inspection process was also used to identify materials that will remain after closure that would require decontamination to meet the standard. The standard is the absence of obvious stains or residues that would indicate potential dangerous waste contamination. Surfaces must be free of indications of potential dangerous waste, except for residual waste stains consisting of light shadows, slight streaks, or minor discoloration. *A clean debris surface means the surface, that when viewed without magnification, shall be free of all visible contaminated soil and hazardous waste, except that residual staining from soil and waste consisting of light shadows, slight streaks, or minor discoloration, and soils and waste in cracks, crevices and pits shall be limited to no more than 5% of each square inch of surface area (40 CFR 268.45).*

Shannon & Wilson's IQRPE and a Senior Environmental Specialist performed a visual inspection of the 331-C Storage Unit on June 13, 2011. They were accompanied by Washington Closure Hanford (WCH) personnel. The visual inspection was performed after dangerous waste inventories had been removed from the facility. The unit surfaces were inspected to identify cracks or other openings through which dangerous waste or decontamination fluids might migrate. Photographs taken during the inspection are attached.

## **1.2 Records Review**

Shannon & Wilson reviewed the following documents as they pertain to the 331-C Storage Unit:

- 331-C Turnover Book, February 2011, PNNL (195 pages)
- Battelle letter RE: 331 Building Air Chemical Emissions Inventory and Compliance Assessment, 10/08/2000, (13 pages) (This document included additional 331 facilities other than 331-C.)
- Building 331-C, Site Characterization and Vulnerability Assessment, 01/30/1998 (15 pages); and Rev 1 09/02/2003 (13 pages)
- 331-C Facility Use Agreement Exception Report, 05/05/2006 (2 pages)
- Email regarding facility name change, 07/11/2006 (1 page)
- Action Plan include 331C Outdoor Radioactive Material Area in the 331C Facility Use Agreement, 05/15/2001 (4 pages)

- Beryllium screening results, 09/09/2005 (1 page)
- Stewardship Information System 331C Facility Summary Report, 08/02/2010 (3 pages)
- Facility Profile: 331C, 12/28/2010 (1 page)
- Part III, Operating Unit 15, Unit-Specific Conditions, 331-C Storage Unit, quarter ending 12/31/2007 (99 pages)
- Excerpt from Battelle Facilities Administration Catalog (12/1984 version) – 331 C Animal Care Facility Storage (3 pages)
- 331-C Storage Unit Daily Operations Log – March 29, 2006 through February 4, 2011 (136 pages)
- Weekly Inspection Forms (03/31/2006 through 02/04/2011)

## **2.0 FINDINGS AND CONCLUSIONS**

### **2.1 Facility Inspection**

The following comments pertain to items noted during the visual inspection:

- The epoxy floor paint has been patched at numerous locations, but no breaches are apparent in the floor coating; the sealant over expansion joints appears to be intact (Photo 1).
- Collection sumps inside the building were empty at the time of the reconnaissance, and no evidence of cracks were noted (Photo 2).
- The collection sump at Cell 10, which is outside of the building canopy, was full of standing water from precipitation at the time of the reconnaissance (Photo 3). The grate and concrete pad elevation is higher than the surrounding ground elevation, which prevents general site runoff from entering the sump (Photo 4). Even though the pit interior could not be visually assessed, the sump's ability to retain standing water is indicative of its soundness.
- Floor areas below former storage cabinet locations in the Storage Unit were observed for indications of spillage. A small area of discoloration was observed at the former location of a flammable storage cabinet in the Storage Unit south area (Photo 5). In my opinion, minor paint discoloration on the floor at this location does not exceed the "light shadows, slight streaks, or minor discoloration" threshold.

- One other small area with slight staining was observed in the south part of Storage Unit Cell 3 (Photo 6). The staining may be associated with condensation from the air conditioner (noted in daily log on 05/04/2010). The inspector noted that he mopped up the water and notified the building maintenance representative. In my opinion, minor staining on the floor at this location does not exceed the "light shadows, slight streaks, or minor discoloration" threshold.

## **2.2 Records Review**

Records reviewed indicate that the building that houses the 331-C Storage Unit was constructed in the early 1970s and was renovated in 2000. Upgrades were completed in 2006 to meet requirements for storage of dangerous waste. Waste storage began in March 2006 in accordance with a Temporary Authorization from the Washington Department of Ecology (Part III, Operating Unit 15.2.1).

The operating records reviewed for this closure assessment span the period from March 29, 2006 through February 4, 2011. Daily inspections were performed whenever waste packaging, transfer, shipping, or movement operations were carried out at 331-C Storage Unit, and entries were made in a log book. Specific inspection points included:

- Stored containers for leaks or damage,
- Mislabeled or open containers,
- Improper storage,
- Disorderliness or uncleanliness, and
- Accumulation of waste in containment systems.

Inspections were also performed on a weekly basis, and findings were documented on a checklist. The operating permit requires that corrective actions be completed within one week of the inspection unless there is a documented reason for delay. The responsible personnel date and initial the form when the corrective action is completed.

Specific findings from our document review that are pertinent to the issue of potential releases of dangerous wastes, or incidents that may have resulted in the accumulation of liquids (including water) on the floor, include the following:

- Weekly inspection reports noted occasional floor paint chipping; work orders for paint repair were documented, and it appears that repairs were performed in a timely manner, typically within one week.

- Daily logs indicate that rain water and snow melt regularly accumulate in the outdoors sump (Cell 10). Records indicate that the water was pumped out and discharged to the sewer (permits were issued in 2006, 2007 and 2008), or in recent years was discharged to the ground surface.
- Daily log entry for 07/24/2006 indicated that approximately 10 millileters (ml) of formamide was spilled in Cell 3. It was absorbed with a cloth towel and placed in a 250 ml container. The entry indicated that there was no release to the environment.
- Daily log entry for 01/03/2007 indicated that the roof was leaking in Cell 6.
- Daily log entry for 01/22/2007 indicated that the Fire Department responded to an alarm at 331-C, but no fire was found. Cause of the alarm was a valve in the dry suppression system.
- Daily log entry for 02/02/2007 indicated that "Item 113804 was found to be leaking. A very small amount of Washington State Dangerous Waste (WSD) liquid had leaked through outer containment bag. Item was overpacked into a 1-gallon poly bucket and placed back into storage." We made a follow-up request by email (06/17/2011) for additional information regarding this release. A response received on 06/20/2011 from the individual who performed the 2007 inspection and made the log book entry indicated that the leak was very minor, and liquid did not escape from the containment cabinet.
- Daily log entry for 01/29/2008 indicated that the roof was leaking in Cell 6.
- Daily log entry for 04/04/2008 indicated that a small quantity (less than 15 ml) of yellow liquid condensation was found inside a 1C storage cabinet. Several items were transferred to the fume hood, and the cabinet was wiped down. There were no indications that the liquid contacted the floor.
- Daily log entry for 07/29/2009 indicated that fiber drum 9226 was wet towards the bottom. It was overpacked into an 85-gallon metal container; no liquid escaped the drum.
- Daily log entry for 05/04/2010 indicated that air conditioner condensation had dripped into Cell 3 and was mopped up.

### **3.0 CERTIFICATION**

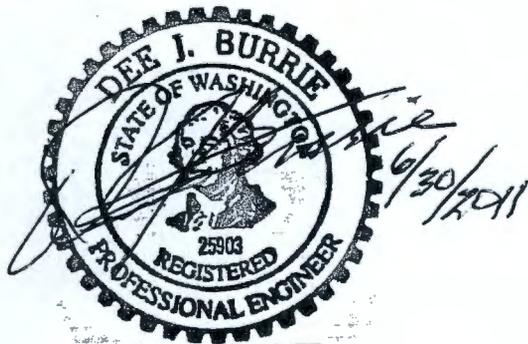
I, undersigned, hereby certify that the 331-C Storage Unit meets the clean closure standard as specified in Addendum H (331-C Storage Unit Closure Plan). This certification is based on my review of pertinent documents and my personal observations.

Washington Closure Hanford  
Attn: Ms. Lindsay Mahony  
June 30, 2011  
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**SHANNON & WILSON, INC.**

The above statement is true and complete to the best of my knowledge and within the limits of professional judgment under the prevailing standard of care on this 30<sup>th</sup> day of June, 2011.

Respectfully submitted,  
**SHANNON & WILSON, INC.**

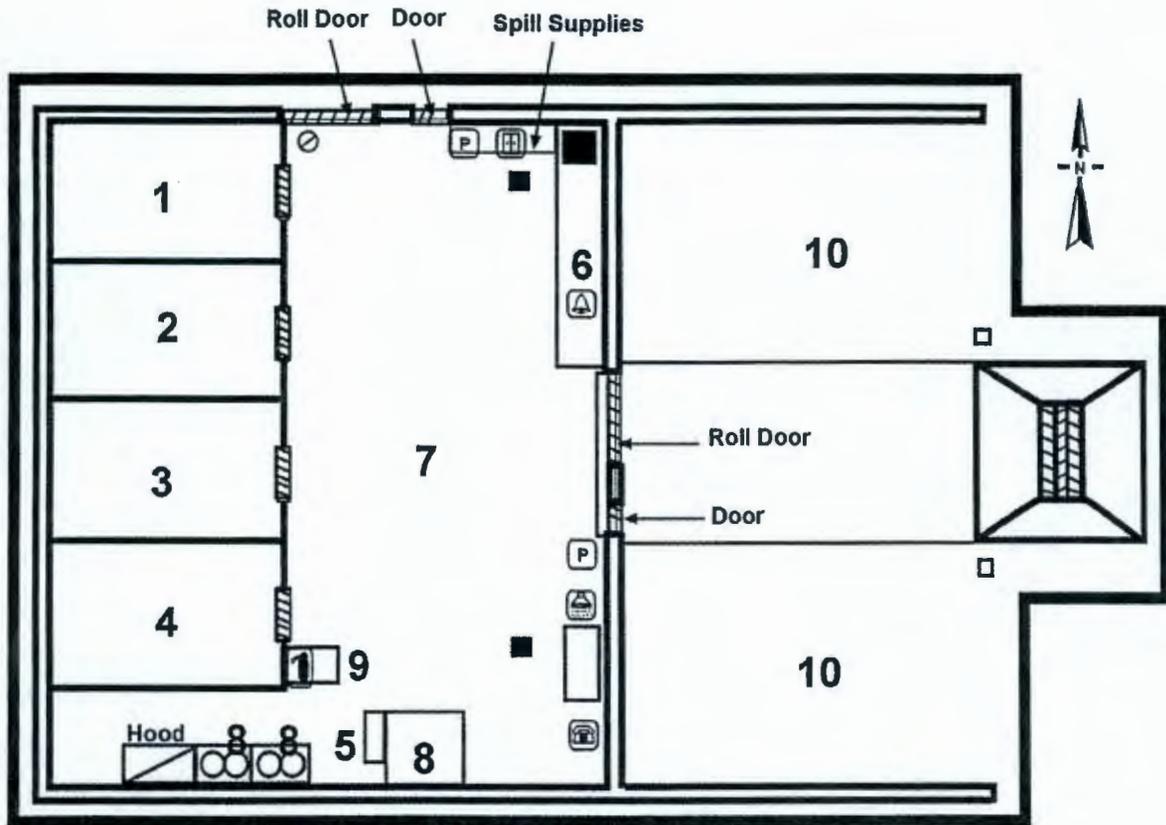


Dee J. Burrie, P.E. (Washington 25903)  
Vice President

DRP:DJB/drp

Attachments: Figure – 331-C Storage Unit  
Photos 1-6 (June 13, 2011)

### 331-C Storage Unit



Legend					
	Emergency Equipment Cabinet		Phone		Fire Alarm Pull Box
	Safety Shower/Eyewash		Fire Alarm Bell		10 Lb. ABC Fire Extinguisher
	Emergency Lights		Collection Sump		15 Lb. Or Larger Class D Fire Extinguisher
	HVAC Shutoff		TSD Boundary		

#### Legend

1. Acids, Oxidizers
2. Poisons, Class 9
3. Alkaline, WSDW, Organic Peroxides
4. Organics Flammable and Compressed Aerosols
5. Compressed gases
6. Universal/ Recycling Storage Area
7. Class 9, WSDW, Non-flammable and Compatible Waste
8. Flammable Storage
9. Explosive Magazine
10. Outdoor Non-regulated Drum Storage



Photo 1. Section of floor in Cell 7 showing patched areas and sealed expansion joint; the collection sump at entrance of Cell 4 is visible at the upper right.

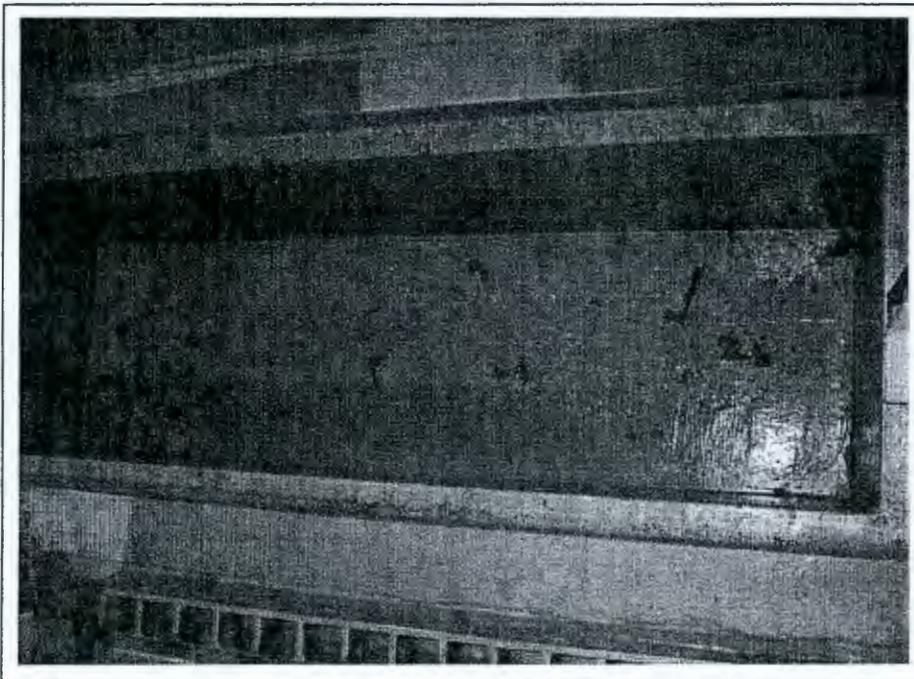


Photo 2. Collection sump at entrance of Cell 3; dark spots are loose dirt and cobwebs.

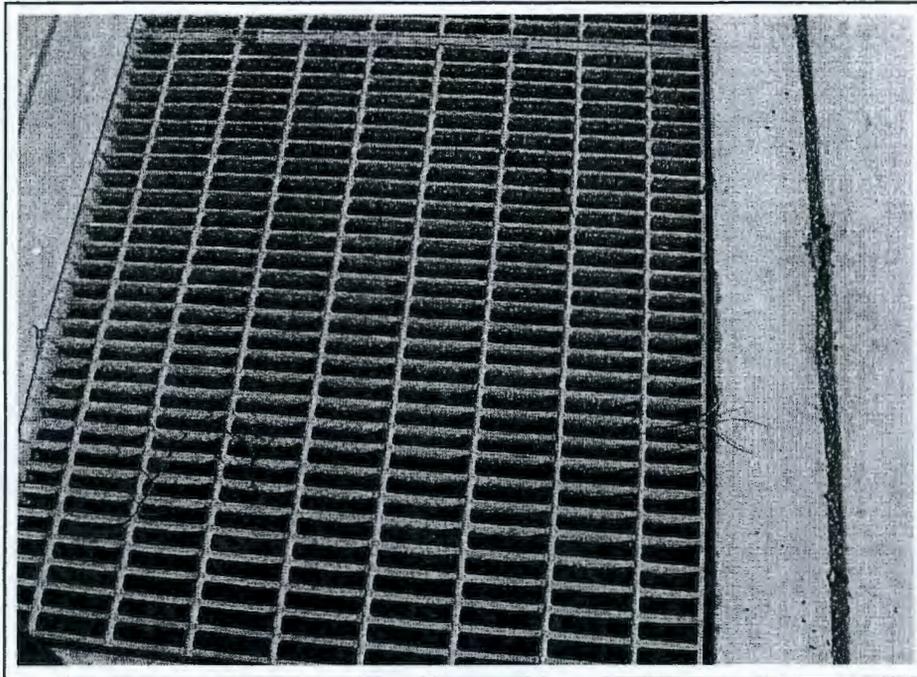


Photo 3. Grate over outdoor collection sump in Cell 10.

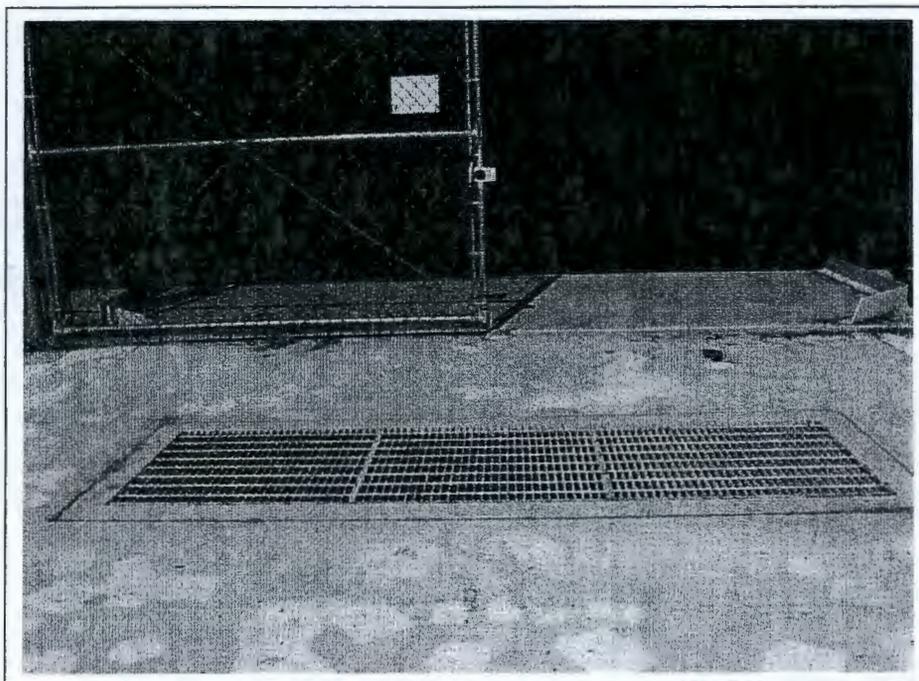


Photo 4. View toward the west showing outdoor collection sump and Cell 10.

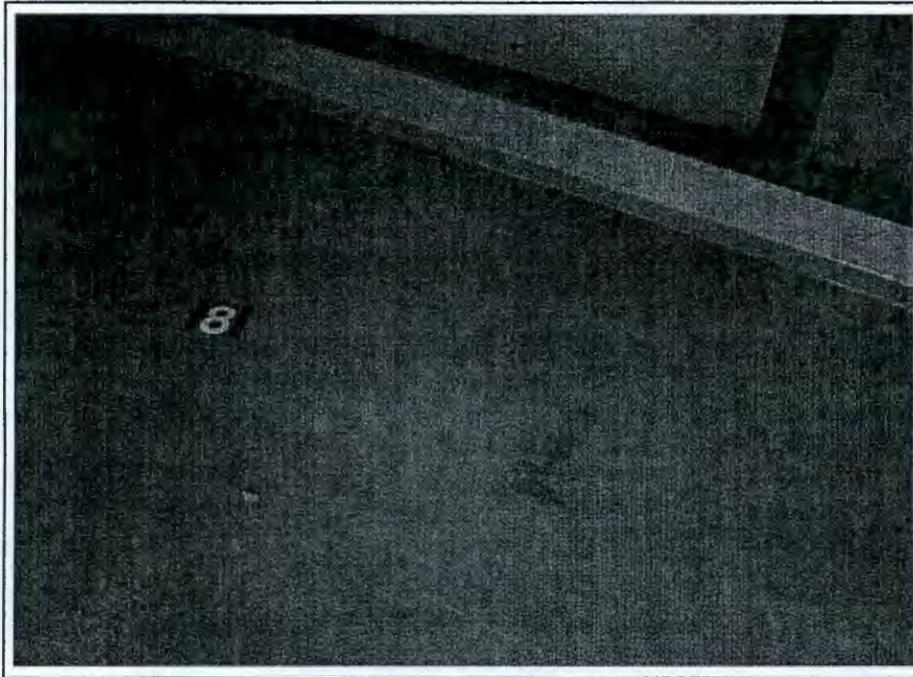


Photo 5. Floor below the former location of a flammable materials storage locker at south end of 331-C Storage Unit.



Photo 6. Minor staining on floor in Cell 3.