ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket No.:	030-03628
License No.:	04-04279-01
Report No.:	030-03628/96-01
Licensee:	Department of the Army Test, Measurement, and Diagnostic Equipment Support Center
Facility:	Building 300
Location:	Sacramento Army Depot Sacramento, California 95813
Dates:	August 1 and 30, 1996
Inspector:	James L. Montgomery, Senior Health Physicist
Approved by:	Frank A. Wenslawski, Chief Materials Branch
Attachments:	(A) Instruments Used and Survey Methodology
	(B) Supplemental Inspection Information

EXECUTIVE SUMMARY

Department of the Army
Test, Measurement, and Diagnostic Equipment Support Center
NRC Inspection Report 030-03628/96-01

This was a special announced decommissioning closeout inspection consisting of beta-gamma surveys and wipe test sampling of the licensee's decommissioned Building 300. The closeout survey was performed to support a decommissioning license termination review. Analysis of the NRC survey and wipe test data revealed that no residual licensed material above natural background remains at the licensee's facility. These findings are consistent with the extensive decommissioning survey and wipe test data provided to the NRC licensing staff by the licensee's consultant.

Report Details

1 Closeout Inspection and Survey

a. Inspection Scope (83890)

The inspector reviewed the licensee's decommissioning survey plan and data, including the history of licensed material used at Building 300. Extensive review of the licensee consultant's decommissioning activities and survey data had also been performed by the NRC Senior License Reviewer. The inspector discussed the licensee's decommissioning activities with the Senior License Reviewer on several occasions. The review of the licensee's decommissioning plan and consultant decommissioning and survey activities by NRC license reviewers indicated that Building 300 has been decommissioned and decontaminated in accordance with NRC requirements and radiological release limits published in NRC Policy and Guidance Directive FC 83-23. This inspection focused on performing NRC confirmatory radiological surveys of the licensee's facility.

b. Observations and Findings

On August 1, 1996, the inspector conducted a confirmatory survey of the vacant Building 300 floors, floor drains, ceiling and roof ventilation openings, roof surface, roof ventilation plenums, and soil and concrete sidewalks adjacent to Building 300. The inspector's surveys consisted of random ambient gamma scintillometer measurements during a building walkthrough, thin window Geiger-Mueller (GM) pancake surface contamination spot readings and 23 swipe samples taken on floor, roof, ventilation, and plumbing surfaces. Survey methodology and instruments are described in detail in Attachment A.

All building equipment and furniture had been removed. With one exception, ambient gamma radiation levels (inside the building) ranged from background (10-12 MicroRoentgens per hour) (μR/hr) to 14 μR/hr. A green glazed tile covering the walls of the men's and women's restrooms produced a slightly elevated reading of 15-20 μR/hr.

All roof readings read 10-12 μR/hr. Surveys taken 360° around and several meters out from Building 300 ranged from background (10-12 μR/hr) to 14 μR/hr. All outdoor areas surveyed consisted of either concrete sidewalks or bare soil and small rocks.

With the exception of the restroom tile, all beta/gamma surface readings were background (800 counts per minute (cpm) for the 44-3 NaI probe and 30 cpm for the 44-9 probe). The tile surface readings using the 44-9 probe averaged 75 cpm. The slightly elevated tile readings appear to be caused by a non-removable naturally occurring substance within the tile.

Twenty-three dry swipes for removable contamination were randomly taken on floor, drain, roof, and vent surfaces. These wipes were sealed in dry scintillation counting vials and sent to the NRC Region III laboratory for analysis. Eighteen swipes were counted for gross alpha and beta radiation in a gas proportional counter. Five swipes, taken in East Calibration Room 13, where a leaking tritiated accelerator target was once stored, were counted by liquid scintillation for tritium. No wipes exceeded the minimum detectable activity (MDA) for the counting instruments.

c. Conclusions

The above survey results agree with the data reported by the licensee's consultant. Building 300 appears to be devoid of all licensed material formerly used at this facility. It should be noted that no attempt was made to specifically survey for radium 226 (i.e., no alpha surveys were performed), which was also used at Building 300, but is not regulated by the NRC. The licensee's consultant and the California Department of Health Services have surveyed Building 300 for radium 226 and found no contamination exceeding natural background. An inspector from the California Department of Health Services was present during the August 1, 1996, survey and also performed her own surveys of Building 300, and indicated she did not observe any readings significantly above natural background.

2 Exit Meeting Summary

On September 16, 1996, a telephone exit briefing was held with the licensee to summarize the closeout survey findings. The licensee was informed that all survey results indicated no contamination or radiation levels significantly above natural background, and that the inspector has recommended to the NRC Senior License Reviewer that License No. 04-04279-01 be terminated as requested.

Attachment A

INSTRUMENTS USED AND SURVEY METHODOLOGY

MODEL	NRC SERIAL #	LAST CALIBRATED
Ludlum Model 3 (w/44-3 & 44-9 probes)	020307	7/22/96
Eberline Model PRM-7	010839	3/21/96

Instruments/detectors were response tested prior to the inspection. Response was as expected (plus or minus 10 percent) using a cesium 137 source traceable to a National Institute of Standards and Technology calibration record.

The Ludlum Model 3 rate meter was coupled to a low energy gamma radiation sensitive 3.9 centimeter (cm) diameter thin crystal scintillation detector (Model 44-3). The detector was moved over the surfaces (3-6 cm per second) being investigated at a height of approximately 1-2 cm. Randomly, the meter was placed in contact with the surface until the meter reading stabilized (10-20 seconds). An "S" pattern was utilized in scanning the facility. Areas exhibiting elevated gamma readings were further scanned and contact surveyed with the thin window beta-gamma pancake probe (44-9).

The Eberline PRM-7 (with an internal gamma scintillation detector) was held above the walking surfaces (including the building roof) at approximately 1 meter. Readings were taken/logged after the meter stabilized (10-15 seconds).

Removable radioactivity dry smears were analyzed using a Gamma Products Model G5000E gas proportional counter and Packard Model 2500TR liquid scintillation counter at the NRC Region III laboratory.

Background Determinations

Instrument response to ambient radiation background was established in adjacent areas and on surfaces not expected to have been affected by the licensee's activities.

General area gamma exposure rate (PRM-7): 10-12 μR/hr

Surface activity (Ludlum Model 44-9, PC): 30 cpm

Surface and air gamma scintillation activity (Ludlum Model 44-3): 700-800 cpm

Counting Equipment Statistics

Using the guidance in NUREG/CR-5849, the NRC portable rate meter radiation detection instruments were found to have the following MDA capabilities:

- Ludlum 3 with Model 44-9 (GM pancake probe): 4208 disintegrations per minute (dpm)/100 cm^2 when used in the surface scanning mode.

- Ludlum 3 with Model 44-9 (GM pancake probe): 1576 dpm/100 cm^2 when used in the fixed position surface monitoring mode.

- Gamma Products Model G5000E gas proportional counter: alpha, 6 dpm/100 cm^2; beta, 11 dpm/100 cm^2

- Packard Model 2500TR liquid scintillation counter: 15 dpm/vial

Residual Radioactive Contamination Criteria Used

Based on the licensee's use of beta and beta-gamma emitters at this facility, the following residual contamination limits from NRC Policy and Guidance Directive FC 83-23 were used during this survey:

Unknown Beta-Gamma Emitters:

Total Activity
(Fixed & Removable Surface Activity)

5,000 dpm/100 cm^2, averaged over 1 m^2
15,000 dpm/100 cm^2, maximum in 100 cm^2

Removable Activity

1000 dpm/100 cm^2

General Area Gamma Exposure Rate Criteria Used:

Less than 5.0 μR/hr above background, when measured at approximately 1 meter above surfaces/floors of structures, and less than 10 μR/hr above background, when measured at approximately 1 meter above the ground for soils and lands.

Attachment B

SUPPLEMENTAL INSPECTION INFORMATION

LIST OF PERSONS CONTACTED

Licensee

G. Komp, Senior Health Physicist

Non-Licensee

C. Payton, Anteon Corporation (Subcontractor)
P. Lienwander, Environmental Management Branch,
California Department of Health Services

INSPECTION PROCEDURE USED

IP 83890: Closeout Inspection and Survey

LIST OF ACRONYMS USED

cm	centimeter
cpm	counts per minute
dpm	disintegrations per minute
GM	Geiger-Mueller
MDA	minimum detectable activity
μR/hr	MicroRoentgens per hour