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 RECIPIENT NAME RECIPIENT AFFILIATION

SUBJECT: LER 88-027-01: on 881006, potential personnel overexposure due to HPC to neck of mechanic working in containment bldg.
 W/8 ltr.

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Turkey Point Unit 3	DOCKET NUMBER (2) 0 5 0 0 0 2 1 5 0	PAGE (3) 1 OF 0 1 3
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TITLE (4) **Potential Personnel Overexposure Due to Hot Particle Contamination to Neck of Mechanic While Performing Work in Containment Building**

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)		
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES		
									N/A		
10	06	88	88	027	01	05	04	89	DOCKET NUMBER(S) 0 5 0 0 0		

OPERATING MODE (9) 5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)						
POWER LEVEL (10) 0,0,0	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.406(c)	<input type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)			
	<input type="checkbox"/> 20.406(a)(1)(i)	<input type="checkbox"/> 50.36(c)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)			
	<input type="checkbox"/> 20.406(a)(1)(ii)	<input type="checkbox"/> 50.36(c)(2)	<input checked="" type="checkbox"/> 50.73(a)(2)(vi)	OTHER (Specify in Abstract below and in Text, NRC Form 366A) Voluntary			
	<input type="checkbox"/> 20.406(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)				
	<input type="checkbox"/> 20.406(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)				
<input type="checkbox"/> 20.406(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(x)					

LICENSEE CONTACT FOR THIS LER (12)

NAME Craig Mowrey, Regulation and Compliance	TELEPHONE NUMBER AREA CODE 3 0 5 2 4 6 - 6 9 7 1
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS

SUPPLEMENTAL REPORT EXPECTED (14)

<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15) MONTH: DAY: YEAR:
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ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On October 6, 1988 at 2005, Unit 3 was in cold shutdown, Mode 5, when a mechanic was found to be contaminated when exiting the containment building. The mechanic had been performing activities associated with unbolting and opening the containment building equipment hatch. Upon exiting the building, a whole body frisk identified contamination on his neck. A Health Physics technician determined that the contamination was a hot particle. The HP technician removed the particle using tape. Contact readings from an ion chamber survey meter indicated a contact gamma dose rate of 3.5 mR/hr and an open window response of 80 mR/hr. Total activity for the particle was measured to be 3.679 microCuries (uCi), a computer code calculated a dose factor of 3.487 rem - centimeter squared per uCi - hour. Following an investigation, the dose was estimated to be between 6.94 and 12.39 rem. Due to the estimated dose, the event was conservatively reported in accordance with 10 CFR 20.405. The particle was sent to Battelle Pacific Northwest Laboratory for analysis after which the dose of record was calculated. No specific cause for this event has been identified. After discovery of the particle, additional temporary controls were implemented for Unit 3 Containment including full hood use, periodic hot particle surveys, and personnel surveys with ion chambers survey instruments. A wet mop/dry wipe decontamination of containment walkway areas was also performed immediately after this event.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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TEXT (If more space is required, use additional NRC Form 366A's) (17)

This LER is a supplement to LER 250 88-027-00 submitted on November 7, 1988. The event described was determined to not be reportable, and the reason for this LER has been revised to a voluntary report.

Event Description

On October 6, 1988 at 2005, Unit 3 was in cold shutdown, Mode 5, when a mechanic (non-licensed utility employee) was found to be contaminated upon exiting the containment building (EIS Code NH). The mechanic had been performing activities associated with unbolting and opening the containment building equipment hatch. Upon exiting the building, a whole body frisk identified contamination on his neck. A Health Physics (HP) technician (non-licensed contract employee) escorted the mechanic to the decontamination shower facility, where he determined that the contamination was a hot particle. The HP technician removed the particle using tape and sent the particle to the HP counting room for gamma analysis. Contact readings obtained with an ion chamber survey meter indicated a contact gamma dose rate of 3.5 milliroentgen per hour (mR/hr) and the open window response of 80 mR/hr.

Gamma analysis of the particle indicated that 96.9 percent of the particle activity was due to two isotopes. 83.7 percent of the activity was from Cobalt 60 (Co-60) and 13.2 percent was from Manganese 54 (Mn-54). Total activity for the particle was measured to be 3.679 microCuries (uCi). The computer code VARSKIN was used to calculate a dose factor of 3.487 rem - centimeter squared per uCi - hour.

A conservative estimate of the exposure time based on time of entry into the containment building until removal of the particle by the HP technician, resulted in an initial skin dose estimate of 17.5 rem. Following an investigation to verify the exposure time, particle activity and apparent self-absorption of beta radiation within the particle, the dose was initially conservatively estimated to be between 6.94 and 12.39 rem. The particle was sent to Battelle Pacific Northwest Laboratory for analysis, after which the dose of record was calculated. Based on the results of the Battelle Pacific Northwest Laboratory analysis, and a review of the work evolution, a skin dose of 5.765 rem has been assigned for the exposure. The whole body dose was determined to be 0.047 rem.

Cause of Event

No specific cause for this event has been identified. A radioactive particle of this magnitude and composition was not expected to be present in the individuals work area. Additional hot particles were not found in the Unit 3 containment building, or on the other crew members who worked with the mechanic on the same job. The incident appears to be an isolated event for which no specific cause will be determined.



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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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TEXT (If more space is required, use additional NRC Form 366A's) (17)

Analysis of Event

The hot particle was collected and analyzed to determine the activity and composition of the activity. The particle was sent to Battelle Pacific Northwest Laboratories for further analysis. Interviews were conducted with the worker to determine the exact work location, tasks and possible exposure times. Based on the results of the Battelle Northwest Laboratory analysis and a review of the work evolution, the dose to the skin of the worker was determined to be 5.765 rem and the whole body dose 0.047 rem. When added to previous dose for the quarter, the individual's dose remained within the limits of 10 CFR 20 for exposure to radiation workers.

Corrective Actions

Immediately following the discovery of the particle, the following additional temporary controls were implemented for Unit 3 Containment to address the apparent potential hot particle contamination:

- 1) Personnel surveys were performed approximately every 30 minutes in low background areas using an ion chamber instrument with the window open.
- 2) Hot particle tape surveys were performed on the containment walkways approximately every two hours.
- 3) Full hoods were used in lieu of caps when worn for anti-contamination protection. Caps were used in conjunction with hoods for respirator use only.

Following a review by Health Physics management on October 28, 1988, the first two of these controls were relaxed to 2 hours and once per shift, respectively, for the remainder of the outage. The third control remained in effect for the duration of the outage.

In addition, a wet mop/dry wipe decontamination of the containment walkway areas was performed immediately after this event.

Additional Information

No similar (potential) hot particle overexposures have been reported.

No equipment failures were identified.



MAY 4 1989

L-89-89
10 CFR 50.73


U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 20555

Gentlemen:

Re: Turkey Point Unit 3
Docket No. 50-250
Reportable Event: 250-88-27 Revision 1
Date of Event: October 6, 1988
Potential Personnel Overexposure Due to
Hot Particle Contamination to Neck of Mechanic
While Performing Work in Containment Building

The attached Licensee Event Report Revision is being submitted to provide an update on the determination of the dose of record and the corrective action. Our original report was issued November 7, 1988 in FPL letter L-88-483.

Very truly yours,


W. F. Conway
Senior Vice President - Nuclear

WFC/RHF/gp

Attachment

cc: Stewart D. Ebnetter, Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, Turkey Point Plant

IFD 2/11