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October 10, 1996

FOIA/PA REQUEST

Mr. Carlton C. Kammerer, Director  
Division of Freedom of Information  
and Publication Services  
Office of Administration  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Case No: 96-411  
Date Rec'd: 10-16-96  
Action Off: Brown  
Related Case: \_\_\_\_\_

Re: Freedom of Information Act Request

Dear Mr. Kammerer:

Pursuant to the Freedom of Information Act (5 U.S.C. § 552) and the U.S. Nuclear Regulatory Commission's (NRC) regulations (10 C.F.R. Part 9, Subpart A), I request a copy of Wolf Creek Generating Station's Licensee Event Report (LER) 50-482-88-028 with all revisions and supplements. This LER is referenced in the "Additional Information" section of Wolf Creek's LER 92-007 which is attached for your convenience. LER 88-028 could not be located through a database search of the NRC Public Document Room's Bibliographic Retrieval System.

I would appreciate your prompt response within ten (10) working days of the receipt of this request, as provided by 10 C.F.R. Part 9 and the NRC's policies. If you require additional information, please let me know. I can be reached at (202) 634-1439.

Sincerely,  
  
Michael K. O'Mealia

Enc.: as stated

FOIA  
11

# WOLF CREEK

NUCLEAR OPERATING CORPORATION

John A. Bailey  
Vice President  
Operations

April 27, 1992

NO 92-0113

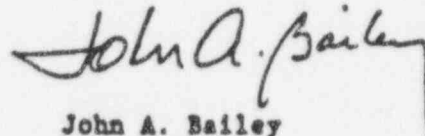
U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Mail Station P1-137  
Washington, D. C. 20555

Subject: Docket No. 50-482; Licensee Event Report 92-007-00

Gentlemen:

The attached Licensee Event Report (LER) is submitted pursuant to 10 CFR 20.405(a)(1)(i) concerning an exposure of an individual in excess of the applicable limits in 10 CFR 20.101.

Very truly yours,



John A. Bailey  
Vice President  
Operations

JAB/jra

Attachment

cc: A. T. Howell (NRC), w/a  
R. D. Martin (NRC), w/a  
G. A. Pick (NRC), w/a  
W. D. Reckley (NRC), w/a

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PO Box 11 / Burlington, NJ 08639 Phone (316) 364-8831

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*Handwritten notes:*  
R. E. Peyton  
QF0211  
HIS

# LICENSEE EVENT REPORT (LER)

PLANT NAME (1)

Wolf Creek Generating Station

DOCKET NUMBER (2)

0 5 | 0 | 0 | 0 | 4 | 8 | 2 | 1 | 0 | 15

PAGE (3)

TITLE (4) Hot Particle Picked Up During Reactor Coolant System Shim Restraint Rework Inspection Results In Exposure Exceeding 10 CFR 20.101 Requirements

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)			
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	DOCKET NUMBER (8)			
0	3	2	9	2	- 0 0 7 - 0 0	0	4	2	7	9	2	0 5   0   0   0   1   1

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR (Check one or more of the following) (11)

OPERATING MODE (9)	3	20.402(b)	30.405(e)	50.73(a)(2)(iv)	73.71(b)	
	POWER LEVEL (10) 0.010	<input checked="" type="checkbox"/>	20.405(a)(1)(i)	50.36(a)(1)	50.73(a)(2)(v)	73.71(c)
		<input type="checkbox"/>	20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and on Test, NRC Form 568A)
		<input type="checkbox"/>	20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
		<input type="checkbox"/>	20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
		<input type="checkbox"/>	20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(ix)	
<input type="checkbox"/>	20.405(a)(1)(vi)	50.73(a)(2)(iv)	50.73(a)(2)(x)			

LICENSEE CONTACT FOR THIS LER (12)

NAME: Steve A. Wideman - Supervisor Licensing

TELEPHONE NUMBER: 3 | 1 | 6 | 3 | 6 | 4 | - | 8 | 8 | 3 | 1

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

ALPHA	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	BETA	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC

SUPPLEMENTAL REPORT EXPECTED (14)

EXPECTED SUBMISSION DATE (15)

MONTH:    DAY:    YEAR:   

YES (If not complete) EXPECTED SUBMISSION DATE:     NO

BS\*FACT (Limit to 1422 characters. 18 approximately fifteen single space typewritten lines) (16)

On March 26, 1992, an engineer in the Radiologically Controlled Area was discovered to have a localized area of contamination on the left cheek. The contamination was determined to be a hot particle which probably originated from work previously performed which required breaching the Reactor Coolant System (RCS). The exposure was conservatively estimated, using the VARSKIN computer code, to be 27.8 Rem to the skin of the whole body. This exposure exceeds the 10 CFR 20.101 quarterly dose limit for the skin of the whole body. The particle was sent to Battelle Pacific Northwest Laboratories for further analysis to better determine its origin.

This event probably resulted from the transfer of a hot particle to the individuals left cheek during use of plant communications equipment. In order to reduce the probability of recurrence, Wolf Creek Nuclear Operating Corporation is reviewing the hot particle control program and policies regarding the use of communications equipment in contaminated areas for possible enhancements.

**LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION**

PLANT NAME (1)  <b>Wolf Creek Generating Station</b>	DCKET NUMBER (2)  0   8   0   0   0   4   8   2	LER NUMBER (3)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	0   2   0   5
		9   2	- 0   0   7	- 0   0	0   2

TEXT (If more space is required use additional NRC Form 2004-2) (17)

**INTRODUCTION**

On March 26, 1992, an engineer in the Radiologically Controlled Area (RCA) was discovered to have a localized area of contamination on the left cheek. Subsequent evaluation indicated that the resulting exposure exceeded the 10 CFR 20.101 quarterly dose limit for the skin of the whole body. This report is being submitted in accordance with 10 CFR 20.405(a)(2)(i). The information required by 10 CFR 20.405(a)(2)(b) is provided separately as an attachment to this report.

**DESCRIPTION OF EVENT**

On March 26, 1992, at approximately 0745 CST, a non-licensed Nuclear Plant Engineering (NPE) engineer entered the bioshield area of loop "A" in the Containment Building (NH) to perform inspection activities on the Reactor Coolant System (RCS)(AB) crossover leg restraint clearance between the saddle blocks and support structures (AB-SPT) after shims were welded in place. The plant was in Mode 3, Hot Shutdown at the time of the event. This activity was part of the actions being taken to correct conditions which led to the noise heard in containment on February 28, 1992.

To perform the inspection activities, the engineer used a multiple thickness feeler gauge to measure clearances. At approximately 1000 CST, the feeler gauge became disassembled. Two or three blades and the retaining nut fell into the "A" crossover leg support structure floor indentation which is two to three inches lower than the surrounding floor. The engineer noted a tight clearance between the side of the indentation and the support structure. The engineer picked up the the fallen pieces with the left hand and re-assembled the feeler gauge.

At approximately 1100 CST, the engineer left the bioshield to use the gaitronics (plant public address system) (FI) to call for relief. Upon exiting the Containment Building at approximately 1200 CST, the engineer frisked in accordance with plant procedures using an Eberline Radiation Monitor, model RM-14, with an HP-210 probe. The engineer discovered a localized area of contamination on the left cheek and, in accordance with plant procedures, contacted Health Physics personnel. A Health Physics technician immediately escorted the engineer to the decontamination area. Using a cotton swab, the Health Physics technician removed a hot particle from the engineer's face. Subsequent surveys verified that there was no remaining contamination of the engineer.

**LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION**

PLANT NAME (1)  <b>Wolf Creek Generating Station</b>	DOCKET NUMBER (2)  0   5   0   0   0   4   8   2	LER MARK (3) <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 10%;">YEAR</th> <th style="width: 10%;">SEQUENTIAL NUMBER</th> <th style="width: 10%;">REVISION NUMBER</th> </tr> <tr> <td style="text-align: center;">9   2</td> <td style="text-align: center;">-   0   0   7</td> <td style="text-align: center;">-   0   0   0   3</td> </tr> </table>	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	9   2	-   0   0   7	-   0   0   0   3	PAGE (3)  0   3 OF 0   6
YEAR	SEQUENTIAL NUMBER	REVISION NUMBER							
9   2	-   0   0   7	-   0   0   0   3							

TEXT (if more space is required use additional NRC Form 288A-2) (17)

The hot particle was sent to Chemistry for isotopic analysis and found to be composed of 5.37 microcuries of Cobalt 60. Because of the source strength of the hot particle, the particle is believed to have resulted from a planned breach of the RCS during steam generator [AB-SG] bowl draining during this or previous refueling outages. The hot particle has been shipped to Battelle Pacific Northwest Laboratories for further analysis to better determine its source.

Initial conservative calculations of the exposure assumed that the hot particle was on the engineer's face from the time of entry into Containment at approximately 0745 CST, until it was removed at approximately 1215 CST. Using this exposure period (4 hours 30 minutes) and the source strength of 5.37 microcuries the engineer's exposure was conservatively estimated to be 99.7 Rem using the VARSKIN computer program.

The engineer, and others, working in the area were interviewed in an attempt to determine the most likely time and location that the hot particle had been picked up. In addition to these interviews, previous surveys and contamination reports, a shim work video tape, radiation work permits, and training records were reviewed.

This investigation indicated that the engineer was most likely contaminated while using the gaitronics to call for relief. It is believed that the particle was originally picked up at approximately 1000 CST when the engineer retrieved the pieces of the disassembled feeler gauge from the indentation near the support structure and transferred to the left cheek during the use of the gaitronics at approximately 1100 CST.

Using this sequence of events, the engineer's exposure was divided into two separate periods. First, for the period from approximately 1000 CST to 1100 CST the hot particle was assumed to be on the engineer's left hand; then, from approximately 1100 CST to 1215 CST, it was assumed to be on the left cheek. Using these elapsed times and a 5.37 microcurie source, the engineer's exposure was recalculated using the VARSKIN computer code. The dose to the hand was determined to be negligible because of the rubber gloves and cotton glove liners worn during the work. The dose to the skin of the whole body, due to the hot particle on the cheek, was found to be 27.8 Rem. This estimated dose received by the skin of the whole body exceeds the 10 CFR 20.101 permissible occupational dose of 7.5 Rem per Quarter to the skin of the whole body.

This dose assessment and its ramifications have been discussed with the engineer. In addition, because of the dose received, the engineer was ineligible for work in the RCA until April 20, 1992.



**LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION**

FACILITY NAME (1)  <b>Wolf Creek Generating Station</b>	DOCKET NUMBER (2)  0   8   0   0   0   4   8   2	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2">YEAR</th> <th colspan="2">SEQUENTIAL NUMBER</th> <th colspan="2">REVISION NUMBER</th> </tr> <tr> <td style="text-align: center;">9</td> <td style="text-align: center;">2</td> <td style="text-align: center;">-</td> <td style="text-align: center;">0   0   7</td> <td style="text-align: center;">-</td> <td style="text-align: center;">0   0</td> </tr> </table>	YEAR		SEQUENTIAL NUMBER		REVISION NUMBER		9	2	-	0   0   7	-	0   0	PAGE (3)  0   4 of 0   5
YEAR		SEQUENTIAL NUMBER		REVISION NUMBER											
9	2	-	0   0   7	-	0   0										

TEXT (If more space is required, use additional NRC Form 308A's) (17)

**ROOT CAUSE AND CORRECTIVE ACTIONS**

Investigation of this event has indicated that the engineer was most likely contaminated when a hot particle, picked up while retrieving parts of a disassembled tool, was transferred to the face during use of the gaitronics. Analysis of the particle has shown that it probably came from the RCS during the steam generator bowl drain down activities during previous refueling outages.

The work area was immediately surveyed by Health Physics personnel. One additional particle was found but its activity level was less than that required by the Wolf Creek Nuclear Operating Corporation (WCNOC) hot particle program for declaring the area a hot particle zone. Additional surveys of the area during the remaining work activities showed no further evidence of hot particles. The work activity was completed with no further contamination events and the plant returned to normal operations. Follow-up surveys of the gaitronics station used by the engineer were performed during a routine Containment entry. No contamination of the gaitronics station was found. Because this sequence of events was developed after the unit had returned to power operations, a survey of the indentation for hot particles was not performed. The support structure indentations of all four loops will be examined during the next outage of sufficient duration to perform an inspection of the area.

To further reduce the potential for future hot particle contaminations, procedure RPP 02-510, "Hot Particle Contamination Control", will be evaluated to determine if hot particle definitions and guidelines should be revised. This would reduce the possibility of hot particle contamination because the hot particle control program would be entered upon discovery of particles with much lower activity levels. Hot particle control will be emphasized during work planning for Steam Generator bowl draining activities. The Radiation Work Permit used to perform Steam Generator bowl draining will be revised to include specific information to reduce the possibility of hot particle generation or spread. A discussion of this event will be included in General Employee Training, Radiation Worker training, and Radiation Worker Requalification training.

A policy for the use of communication equipment in contaminated areas will be defined so that workers do not inadvertently contaminate equipment or themselves after working in contaminated areas. These actions will be completed by December 31, 1992.

**LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION**

PLANT NAME (1)	DOCKET NUMBER (2)	LER NUMBER (3)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	OF	PAGES
Wolf Creek Generating Station	06000482	92	- 007	- 00	05	OF 05

IF more space is required, use additional NRC Form 302A's (17)

**ADDITIONAL INFORMATION**

The engineer involved in this event was current in all required radiation worker training and followed the requirements of the appropriate Radiation Work Permit at the time of the overexposure.

LER 482/86-028-01 reported a previous hot particle contamination event which resulted in an overexposure beyond 10 CFR 20.101 limits. A review of the hot particle contamination control program was performed and it was determined that the program adequately addressed hot particle concerns. Hot particles, usually microscopic in nature, come primarily from two sources; failed fuel and neutron activated corrosion and wear products. A hot particle on the skin results in a high beta dose to a small area. The area used to calculate a beta dose is one square centimeter at a depth of 7 E-3 centimeter per the VARSKIN computer code. There is scientific evidence indicating that highly localized exposure of the skin by a hot particle is less biologically damaging than a more uniform irradiation by the same quantity of radioactive material. The VARSKIN computer code was developed by Battelle Pacific Northwest Laboratories in 1987 and is used industry-wide in accordance with NUREG/CR-4418 for calculating the dose received during skin contamination.