



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION IV
1600 EAST LAMAR BOULEVARD
ARLINGTON, TEXAS 76011-4511

March 23, 2018

Adam C. Heflin, President,
Chief Executive Officer,
and Chief Nuclear Officer
Wolf Creek Nuclear Operating Corporation
P.O. Box 411
Burlington, KS 66839

**SUBJECT: WOLF CREEK GENERATING STATION - INSPECTION OF THE
IMPLEMENTATION OF MITIGATION STRATEGIES AND SPENT FUEL POOL
INSTRUMENTATION ORDERS AND EMERGENCY PREPAREDNESS
COMMUNICATION/STAFFING/MULTI-UNIT DOSE ASSESSMENT PLANS –
INSPECTION REPORT 05000482/2018008**

Dear Mr. Heflin:

On January 25, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed the onsite portion of this inspection at your Wolf Creek Generating Station. On March 7, 2018, the NRC inspectors discussed the results of this inspection with Mr. J. McCoy, Vice President, Engineering, and other members of your staff. The results of this inspection are documented in the enclosed report.

The inspection examined activities conducted under your license as they relate to the implementation of mitigation strategies and spent fuel pool instrumentation orders (EA-12-049 and EA-12-051) and Emergency Preparedness Communication, Staffing, and Multi-Unit Dose Assessment Plans, your compliance with the Commission's rules and regulations, and with the conditions of your operating license. Within these areas, the inspection involved examination of selected procedures and records, observation of activities, and interviews with station personnel.

The NRC inspectors did not identify any finding or violation of more than minor significance.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Nicholas H. Taylor, Branch Chief
Project Branch B
Division of Reactor Projects

Docket: 50-482
License: NPF-42

Enclosure:
Inspection Report 05000482/2018008

**U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report**

Docket Number(s): 05000482

License Number(s): NPF-42

Report Number(s): 05000482/2017009

Enterprise Identifier: I-2018-008-0003

Licensee: Wolf Creek Nuclear Operating Corporation

Facility: Wolf Creek Generating Station

Location: Burlington, KS

Inspection Dates: January 22, 2018 to March 7, 2018

Inspectors: R. Alexander, Sr. Project Engineer (Team Leader)
M. Stafford, Resident Inspector – Cooper
F. Thomas, Resident Inspector – Wolf Creek
M. Tobin, Resident Inspector – Arkansas Nuclear One

Approved By: Nicholas H. Taylor
Chief, Project Branch B
Division of Reactor Projects

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring licensee's performance by conducting a Temporary Instruction 2515/191, "Implementation of Mitigation Strategies and Spent Fuel Pool Instrumentation Orders and Emergency Preparedness Communication/Staffing/Multi-Unit Dose Assessment Plans" at Wolf Creek Generating Station in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC's program for overseeing the safe operation of commercial nuclear power reactors. Refer to <https://www.nrc.gov/reactors/operating/oversight.html> for more information. NRC and self-revealed findings, violations, and additional items are summarized in the table below.

List of Findings and Violations

No findings were identified.

INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at <http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html>. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards."

OTHER ACTIVITIES – TEMPORARY INSTRUCTIONS, INFREQUENT AND ABNORMAL

TI 2515/191 - Inspection of the Implementation of Mitigation Strategies and Spent Fuel Pool Instrumentation Orders and Emergency Preparedness Communication/Staffing/Multi-Unit Dose Assessment Plans

Inspectors verified plans for complying with NRC Orders EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12056A045) and EA-12-051, Order Modifying Licenses With Regard to Reliable Spent Fuel Pool Instrumentation (ADAMS No. ML12054A679) are in place and are being implemented by the licensee. Additionally, the inspection verified implementation of staffing and communications information provided in response to the March 12, 2012, request for information letter (ADAMS No. ML12053A340) and multiunit dose assessment information provided per COMSECY-13-0010, "Schedule and Plans for Tier 2 Order on Emergency Preparedness for Japan Lessons Learned", dated March 27, 2013, (ADAMS No. ML12339A262).

- (1) Based on samples selected for review, the inspectors verified that the licensee satisfactorily implemented appropriate elements of the Diverse and Flexible Coping Strategies (FLEX) as described in the plant specific submittals [including the Final Integrated Plan (ADAMS Accession No. ML17026A194)] and the associated safety evaluation (ADAMS No. ML17144A009) and determined that the licensee is in compliance with NRC Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events. The inspectors verified the licensee satisfactorily:
 - a) developed and issued FLEX Support Guidelines (FSGs) to implement the FLEX strategies for postulated external events;
 - b) integrated their FSGs into their existing plant procedures such that entry into and departure from the FSGs were clear when using existing plant procedures;
 - c) protected FLEX equipment from site-specific hazards;
 - d) developed and implemented adequate testing and maintenance of FLEX equipment to ensure their availability and capability;

- e) trained their staff to assure personnel proficiency in the mitigation of beyond-design basis events; and
 - f) developed the means to ensure the necessary off-site FLEX equipment would be available from off-site locations.
- (2) Based on samples selected for review, the inspectors verified that the licensee satisfactorily implemented appropriate elements of the FLEX strategy as described in the plant specific submittals [including the Final Integrated Plan (ADAMS Accession No. ML17026A194)] and the associated safety evaluation (ADAMS No. ML17144A009) and determined that the licensee is in compliance with NRC Order EA-12-051, Order Modifying Licenses With Regard to Reliable Spent Fuel Pool Instrumentation. The inspectors verified the licensee satisfactorily :
- a) installed the spent fuel pool (SFP) instrumentation sensors, cabling and power supplies to provide physical and electrical separation as described in the plant specific submittals and safety evaluation;
 - b) installed the SFP instrumentation display in the location, environmental conditions and accessibility as described in the plant specific submittals;
 - c) trained their staff to assure personnel proficiency with the maintenance, testing, and use of the SFP instrumentation; and
 - d) developed and issued procedures for maintenance, testing and use of the reliable SFP instrumentation.
- (3) The inspectors reviewed information provided in the licensee's multi-unit dose submittal and in response to the NRC's March 12, 2012, request for information letter (ADAMS No. ML12053A340), and verified that the licensee satisfactorily implemented enhancements pertaining to Near-Term Task Force Recommendation 9.3 in response to a large scale natural emergency event that results in an extended loss of all ac power to all site units and impedes access to the site. The inspectors verified the following:
- a) the licensee satisfactorily implemented required staffing changes to support an extended loss of all AC power (ELAP)/loss of ultimate heat sink (LUHS) scenario;
 - b) EP communications equipment and facilities are sufficient for dealing with an ELAP/LUHS scenario; and
 - c) the licensee implemented multi-unit/-source dose assessment capabilities (including releases from spent fuel pools) using the licensee's site-specific dose assessment software and approach.

The inspectors verified that non-compliances with requirements and standards identified during the inspection were entered into the licensee's corrective action program as appropriate.

EXIT MEETINGS AND DEBRIEFS

The inspectors verified no proprietary information was retained or documented in this report.

- On January 25, 2018, the inspection team presented the on-site inspection results in a management debrief to Mr. J. McCoy, Vice President, Engineering, and other members of the site staff.
- On March 7, 2018, the inspection team leader presented the final inspection results in a telephonic exit meeting to Mr. J. McCoy, Vice President, Engineering, and other members of the site staff.

DOCUMENTS REVIEWED

Other Activities – TI 2515/191

Procedures/Instructions

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AP 16B-003	Planning and Scheduling Preventative Maintenance	8A
AP 21A-002	Diverse and Flexible Coping Mitigation Strategies (FLEX) Program	2
AP 21A-002	Diverse and Flexible Coping Mitigation Strategies (FLEX) Program	2
EC LI-59/60	Operating Instruction: FLEX Spent Fuel Pool Level Backup Power	0
EMG C-0	Loss of All AC Power	42
EMG C-0	Loss of All AC Power	42
EPP 06-012	Dose Assessment	14D
EPP 06-018	Maintenance of Emergency Facilities and Communications Checks	13
FD510	FLEX 500 KW Generator #1, Operating Instruction	3
FD-FIP-001	Wolf Creek Generating Station Diverse and Flexible Coping Mitigation Strategies Final Integrated Plan	2
FSG-03	Alt Low Pressure FW Source	1
FSG-04	ELAP [Extended Loss of AC Power] DC [Direct Current] Load Shed/Management	2
FSG-05	Initial Assessment and FLEX Equipment Staging	2
FSG-06	Alt CST Makeup	1
FSG-07	Loss of Vital Instrumentation or Control Power	1
FSG-11	Alternate SFP Makeup Cooling	2
FSG-12	Alt Containment Cooling in Modes 5 and 6	1
OFN NB-034	Loss of All AC Power – Shutdown Condition	30
OFN SG-048	Flash Flood Warning	5
PFD610	FLEX RCS Pump #1 Operating Instruction	3
SATCOM	Satellite Phone System Operating Instruction	0
SYS FD-001	Operations Monthly FLEX Tasks	2
SYS FD-002	Operations Annual FLEX Tasks	0
SYS OPS-008	Cold Weather Operations	5
WCCH-06	Running EDCP When the Computer Network is Unavailable	03

Preventative Maintenance Activities

<u>Number</u>	<u>Title</u>	<u>Revision</u>
16-411046-019	Perform a functional test and inspection PM of FLEX Portable 6000W Generator Diesel Engine Driven, FD100A.	11/17/2016
16-415695-001	Functional Test and Inspection - FLEX Spent Fuel Pool Pump #1 (90 day)	8/28/2016

<u>Number</u>	<u>Title</u>	<u>Revision</u>
16-416987-000	FLEX CAT 924K Wheel Loader Warranty Service	8/25/2016
17-421260-001	PFD611 - (1092 day) Performance Test of the FLEX RCS Pump #2	{None}
17-421376-000	CFD620 – (1092 day) Perform Oil and Filter Replacement and Maintenance of the FLEX Electric Driven Air Compressor #1	{None}
17-421387-000	FD510 - (1092 day) Perform Inspection, Battery Replacement, and Unloaded Run of the FLEX 500KW Generator #1	1/17/2018
17-422130-001	Annual Operational Testing for Spent Fuel Pool Pump #2	9/7/2017
17-422144-001	Annual Coolant Testing for Spent Fuel Pool Pump #2	7/22/2017
17-422146-000	PFD6010 – (364 day) Component Operational Inspection of the FLEX RCS Pump #1	8/16/2017
17-422192-001	Quarterly Functional Testing for Spent Fuel Pool Pump #2	9/15/2017
17-423378-000	CFD620 – (364 day) Functional Test and Inspection of the FLEX Electric Driven Air Compressor #1	11/9/2017
17-423378-004	CFD621 – (364 day) Functional Test and Inspection of the FLEX Electric Driven Air Compressor #2	11/9/2017
17-423385-001	PFD611 – (91 day) Manual Shaft Rotation and Lubrication of the FLEX RCS Pump #2	9/21/2017
17-424464-000	CFD630 – (364 day) Perform Oil and Filter Replacement and Maintenance of the FLEX Diesel Driven Air Compressor #1	10/20/2017
17-424466-001	CFD631 – (364 day) Perform Oil and Filter Replacement and Maintenance of the FLEX Diesel Driven Air Compressor #2	11/3/2017
17-424534-000	Perform Normal PM (Two Point) Calibration of ECLPL0059 per CWI INC EC-0059	11/21/2017
17-424534-001	Perform Normal PM (Two Point) Calibration of ECLPL0060 per CWI INC EC-0060	11/21/2017
17-424658-000	Troubleshoot EC LI-60	3/27/2017
17-424713-000	PFD611 – (As Required) Perform the Return to Standby Maintenance for the FLEX RCS Pump #2	{None}
17-425351-000	FD102A - (364 day) Perform Functional Test and Inspection of the FLEX Generator, Gasoline Engine Driven w/Light Kit	12/14/2017
17-425352-001	SFD701 - (364 day) Perform Trailer and Axle Inspection of the FLEX 480V Cable Trailer #2.	11/30/2017
17-426699-000	QF020, QF021, QF022 – Electrical PM for E-Plan Satellite Telephone Power Supplies and battery replacement	12/12/2017
17-428359-000	Spent Fuel Pool Level Instrumentation System UPS Backup Battery Replacement (ECLQY0059) Work with 17-424505-000	12/19/2017

<u>Number</u>	<u>Title</u>	<u>Revision</u>
17-431110-001	Replace existing "short" cable with new 150' cable, in support of resolution to CR #00114670	12/21/2017
17-433235-000	FD510 - (91 day) Perform Functional Test and Inspection of the FLEX 500KW GENERATOR #1	11/6/2017
17-433728-000	Troubleshoot FLEX Spent Fuel Pool Level UPS	12/19/2017

Training Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
	Security FLEX Update	{None}
GE0035601	E-Plan Training – Generic Basic FLEX Cert	1/22/2014
GE0035602	E-Plan Training – Generic Advanced FLEX Cert	1/22/2014
GE1135662	2017 Table Top Series II – FLEX	37
GE1235626	E-Plan Training – Topics in E-Plan Communications	6/27/2017
GE5251601	E-Plan Training – Decision Making Under Stress	6/14/2017
LO1752001	Licensed Operator Training - Diverse and Flexible Coping Mitigation Strategies (FLEX) Program	4/21/2016
MI1203301	I&C Training - Guided Wave Radar (Spent Fuel Level Indication System)	7/28/2015
MJ8310501	Mechanical Training – FLEX	12/15/2016
OP1352001	Operations Training – FLEX Project Overview	7/11/2016
OP8352002	Operations Training - Alternate Instrument Monitoring and Control - FLEX	5/19/2016
OP8352003	Operations Training – FLEX Overview Seminar	9/7/2017

Other Documents/Reports

<u>Number</u>	<u>Title</u>	<u>Revision</u>
	Hampel Oil – Standby Fuel Letter	12/20/2017
	Study of the Adequacy of the FLEX Buildings Separation Considering Severe Storms and High Wind Conditions	5/19/2016
	FLEX Support Guideline Validation Process - Revision 1	3/13/2017
	FLEX On-Shift Staffing Assessment – Revision1	1/3/2018
	FLEX Support Guideline (FSG) Validation Process	1
	SAFER Response Plan for Wolf Creek Generating Station	2
14864	CST Valve House Missile Protection and Seismic Upgrade	02
Basic Engineering Disposition	Battery Room Ventilation Strategy Post-ELAP in Extreme Winter Conditions	9/29/2016
Evaluation FD-17-009	Structural Design for FLEX Storage Buildings	0
FD-FIP-001	Wolf Creek Generating Station (WCGS) Diverse and Flexible Coping Mitigation Strategies (FLEX) Final Integrated Plan	2

<u>Number</u>	<u>Title</u>	<u>Revision</u>
WCNOC-183	Operations and Maintenance Manual - RCS Pump Cat Triplex 353 1 HS.AIP Plunger Pump Rated 20 GPM @ 1650 Psig	WO1
WCNOC-185	Beyond Design Basis FLEX Equipment, Operation and Maintenance Manual – 500KW Generator, C15 Model	6/9/2016
WCNOC-189	Operations and Maintenance Manual - Atlas Copco Portable Diesel Air Compressor Model XAS 90 KD7	WO1
WCNOC-193	Operations and Maintenance Manual - 2015 Polaris Ranger XP900	WO2
WCNOC-194	Operations and Maintenance Manual - Terex RL4 Light Tower Kubota Diesel Engine	WO1
WM 12-0041	Wolf Creek Nuclear Operating Corporation, Subject: Docket No. 50482: Wolf Creek Nuclear Operating Corporation submittal of Emergency Preparedness Communications Assessment Results in Response to Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendation 9.3 of the Near-Term Task Force Review of Insights from the Fukushima Dai-Ichi Accident	10/31/2012

Corrective Action Program Documents (CRs & Procedure Change Requests [PCRs])

91772	102734	103481	103964
104464	105070	105172	105334
105630	109447	109449	110066
111003	111336	112524	112863
113820	114020	114669	114670
114897	114911	115026	115343
115706	116293	116581	117055
117056	117058	117059	117062
117241	117429	117945	117946
117992	117993	118066	118146
118223	118911	118912*	118913*
118950*	118979*	118980*	118981*
119011*	120160*	PCR 67735*	PCR 67731*
PCR 67729*	PCR 67725*	PCR 67722*	

* - Initiated as a result of this inspection

WOLF CREEK GENERATING STATION - INSPECTION OF THE IMPLEMENTATION OF
MITIGATION STRATEGIES AND SPENT FUEL POOL INSTRUMENTATION ORDERS AND
EMERGENCY PREPAREDNESS COMMUNICATION/ STAFFING/MULTI-UNIT DOSE
ASSESSMENT PLANS – INSPECTION REPORT 05000482/2018008 – DATED MARCH 23,
2018

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