



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

June 06, 2022

Mr. Brad Kapellas, Site Vice President
Entergy Operations, Inc.
Grand Gulf Nuclear Station
P.O. Box 756
Port Gibson, MS 39150

**SUBJECT: GRAND GULF NUCLEAR STATION – BIENNIAL PROBLEM IDENTIFICATION
AND RESOLUTION INSPECTION REPORT 05000416/2022011**

Dear Mr. Kapellas:

On May 12, 2022, the U.S. Nuclear Regulatory Commission (NRC) completed a problem identification and resolution inspection at your Grand Gulf Nuclear Station and discussed the results of this inspection with you and other members of your staff. The results of this inspection are documented in the enclosed report.

The NRC inspection team reviewed the station's problem identification and resolution program and the station's implementation of the program to evaluate its effectiveness in identifying, prioritizing, evaluating, and correcting problems, and to confirm that the station was complying with NRC regulations and licensee standards for problem identification and resolution programs. Based on the samples reviewed, the team determined that your staff's performance in each of these areas adequately supported nuclear safety.

The team also evaluated the station's processes for use of industry and NRC operating experience information and the effectiveness of the station's audits and self-assessments. Based on the samples reviewed, the team determined that your staff's performance in each of these areas adequately supported nuclear safety. One notable observation was the excellent audit that was performed on your facility's Corrective Action Program, by the Nuclear Independent Oversight organization. It was thorough, detailed and appropriately critical. It is an indication of a mature organization to view itself critically.

Finally, the team reviewed the station's programs to establish and maintain a safety-conscious work environment and interviewed station personnel to evaluate the effectiveness of these programs. Based on the team's observations and the results of these interviews the team found no evidence of challenges to your organization's safety-conscious work environment. Your employees appeared willing to raise nuclear safety concerns through at least one of the several means available.

No findings or violations of more than minor significance were identified during this inspection.

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 Title 10 of the *Code of Federal Regulations* 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

A handwritten signature in black ink, appearing to read 'A. Agrawal', with a stylized flourish at the end.

Signed by Agrawal, Ami
on 06/06/22

Ami N. Agrawal, Team Lead
Inspection Program & Assessment Team
Division of Operating Reactor Safety

Docket No. 05000416
License No. NPF-29

Enclosure:
As stated

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GRAND GULF NUCLEAR STATION – BIENNIAL PROBLEM IDENTIFICATION AND
RESOLUTION INSPECTION REPORT 05000416/2022011 – DATED JUNE 06, 2022

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SUNSI Review ADAMS: Non-Publicly Available Non-Sensitive Keyword:
By:RVA Yes No Publicly Available Sensitive NRC-002

OFFICE	SRI: DORS/IPAT	RI: DORS/DIOR	RI: DORS/RCB	RI: DORS/PBC	TL:DRS/IPAT
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**U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report**

Docket Number: 05000416

License Number: NPF-29

Report Number: 05000416/2022011

Enterprise Identifier: I-2022-011-0000

Licensee: Entergy Operations, Inc.

Facility: Grand Gulf Nuclear Station

Location: Port Gibson, MS

Inspection Dates: April 25, 2022 to May 13, 2022

Inspectors: R. Azua, Senior Reactor Inspector
H. Freeman, Senior Project Engineer
S. Hedger, Senior Emergency Preparedness Inspector
J. Reynoso, Health Physicist

Approved By: Ami N. Agrawal, Team Leader
Inspection Programs & Assessment Team
Division of Operating Reactor Safety

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting a biennial problem identification and resolution inspection at Grand Gulf Nuclear 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.

List of Findings and Violations

No findings or violations of more than minor significance were identified.

Additional Tracking Items

None.

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 – BASELINE

71152B - Problem Identification and Resolution

Biennial Team Inspection (IP Section 03.04) (1 Sample)

- (1) The inspectors performed a biennial assessment of the licensee's corrective action program, use of operating experience, self-assessments and audits, and safety conscious work environment.
 - **Corrective Action Program Effectiveness:** The inspectors assessed the corrective action program's effectiveness in identifying, prioritizing, evaluating, and correcting problems. The inspectors also conducted a five-year review of the Reactor Core Isolation Cooling system.
 - **Operating Experience, Self-Assessments and Audits:** The inspectors assessed the effectiveness of the station's processes for use of operating experience, audits and self-assessments.
 - **Safety Conscious Work Environment:** The inspectors assessed the effectiveness of the station's programs to establish and maintain a safety-conscious work environment.

INSPECTION RESULTS

Assessment	71152B
<u>Effectiveness of Problem Identification:</u> Based on the samples reviewed, the team determined that the licensee's performance in this area adequately supported nuclear safety. Overall, the team found that the licensee was identifying and documenting problems at an appropriately low threshold that supported nuclear safety.	
<u>Effectiveness of Prioritization and Evaluation of Issues:</u> Overall, the team found that the licensee was appropriately prioritizing and evaluating issues to support nuclear safety. Of the samples reviewed, the team found that the licensee, in general, correctly characterized condition reports as to whether they represented conditions adverse to quality, and then prioritized the evaluation and corrective actions in accordance with program guidance.	

One example was identified where this was not the case. The team informed the licensee of this error, and they addressed it through the corrective action program.

Effectiveness of Corrective Actions: Overall, the team concluded that the licensee's corrective actions supported nuclear safety. Specifically, that the staff at the Grand Gulf Nuclear Station developed effective corrective actions for the problems evaluated in the corrective action program and generally implemented these corrective actions in a timely manner commensurate with their safety significance. Having said this, the team did identify instances where condition reports did not provide adequate detail to clearly define the concern being raised, there were other instances where attention to detail was not applied, and there were condition reports closed to work orders, or to other condition reports without careful consideration as to what was the issue that needed to be resolved i.e., a broke-fix mentality. One such example of this is discussed in the minor violation documented in this report.

- As part of this inspection, the team selected the Reactor Core Isolation Cooling (RCIC) system for a focused review within the corrective action program. For this system, the team performed sample selections of condition reports, looking at the adequacy of the licensee's evaluation process for determining which items are placed in the corrective actions process, and the corrective actions taken. The team also reviewed the licensee's use of operational experience and the Part 21 process' with respect to this system. Finally, the team performed walkdowns of accessible portions of this system. Based on these walkdowns, the material condition of the RCIC system appeared to be adequate.

Corrective Action Program Assessment: Based on the samples reviewed, the team determined the licensee's corrective action program complied with regulatory requirements and self-imposed standards, and the licensee's implementation of the corrective action program adequately supported nuclear safety. The team found that management's oversight of the corrective action program process was effective.

Assessment	71152B
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Operating Experience: The team reviewed a variety of sources of Operating Experience including part 21 notifications and other vendor correspondence, NRC generic communications, and publications from various industry groups including INPO and EPRI. The team determined that the Grand Gulf Nuclear Generating Station is adequately screening and addressing issues identified through Operational Experience that apply to the station and that this information is evaluated in a timely manner once it is received. Having said this, a couple of minor examples of process errors regarding Part 21's were identified and entered into the licensee's corrective action program.

Self-Assessments and Audit Assessment: The team reviewed a sample of the licensee's departmental self-assessments and audits to assess whether they regularly identified performance trends and effectively addressed them. The team also reviewed audit reports to assess the effectiveness of assessments in specific areas. Overall, the team concluded that the licensee had an effective departmental self-assessment and audit process. The audits that the team reviewed were very detailed, thorough, and identified issues. One notable example that the team observed was the audit that was performed on the Grand Gulf's Corrective Action Program by the Nuclear Independent Oversight (NIOS) group. It was an excellent example of an audit. It was thorough, demonstrating technical rigor,

and was appropriately critical. It was quite insightful. The team also had a chance to review a NIOS Elevation and Escalation of Nuclear Independent Oversight Concerns during the team's review of material storage and supply chain areas. The process seemed to appropriately elevate issues to the proper levels as necessary.

Assessment	71152B
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Safety-Conscious Work Environment: The team interviewed approximately 30 individuals in a number of group sessions of varying size, plus some one-on-one interviews. Some of the interviews were conducted in person while some others were performed remotely. The purpose of these interviews was (1) to evaluate the willingness of your staff to raise nuclear safety issues, either by initiating a condition report or by another method, (2) to evaluate the perceived effectiveness of the corrective action program at resolving identified problems, and (3) to evaluate Grand Gulf's safety-conscious work environment (SCWE). The focus group participants included personnel from Security, Radiation Protection, Electrical/Mechanical Maintenance, Nuclear Independent Oversight Services, and Operations. Overall, Grand Gulf was found to have an adequate Safety Conscious Work Environment.

Willingness to Raise Nuclear Safety Issues: In all the interviews, the team found no evidence of challenges to the safety-conscious work environment. Individuals in these groups expressed a willingness to raise nuclear safety concerns and other issues through at least one of the several means available.

However, the team found some work environment challenges in the security department. Through interviews with the staff members, it was identified that an environment exists where morale among officers is low due to continued staffing issues and high levels of overtime, leading to fatigue and work/life balance issues. Having said this, the security staff appeared to like their new management. Specifically, the staff felt that their new leadership did not take them for granted and made the officers feel more like they were a part of the Grand Gulf organization.

With regard to Radiation Protection, outage staffing and concerns with the organizations electronic data processing system were a recurring complaint.

The team posited that continued degradation of staff morale due to fatigue, could negatively impact staff performance. Specifically, tired and distracted people make mistakes. Plus, low morale may ultimately have a negative impact on SCWE.

Overall, the team concluded that all work groups at Grand Gulf maintained a healthy safety-conscious work environment. However, morale issues may have a deleterious effect on staff performance and potentially on plant safety.

Employee Concerns Program: The team looked at Grand Gulf's Employee Concerns Program (ECP). The team interviewed the ECP manager and reviewed a number of investigations. Overall, the team determined that the investigation packages were of excellent quality clearly demonstrating steps taken and basis for conclusions. In addition, the ECP manager demonstrated detailed knowledge of all the cases that were reviewed.

Minor Violation	71152B
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Minor Violation: The inspectors determined the performance deficiency was minor.

Licensee personnel failed to follow procedural requirements for performing in-service testing (IST) of relief valves as specified in IST Position 4, "IST Relief Valve Additional Tests," of Procedure CEP-IST-4, "Standard on IST," Revision 310.

This procedure provides relief valve IST requirements, and states in part that "When additional relief valves are to be tested due to exceeding as-found set pressure tolerances, the time period for testing the additional valves (for relief valves tested online), should be at the earliest opportunity that testing is practical, but should be no later than three months from the as-found set-pressure failure. If it is determined that the additional testing cannot be performed during the three months, then engineering justification, with a test schedule, shall be provided with the appropriate site management concurrence."

Contrary to the above, following the failure of the Standby Liquid Control (SLC) system relief valve 1C41F029B to pass its as-found set-pressure test on November 2, 2021, the licensee failed to either test the alternate relief valve 1C41F029A, or provide an engineering justification for not performing said test before they exceeded the three month requirement as specified in the procedure. The relief valve was successfully tested approximately 20 days after the specified time limit.

Through the review of this issue, the team identified a Corrective Action Program observation that was transmitted to licensee management. Specifically, this performance deficiency occurred following a similar performance deficiency, where the licensee failed to test the relief valve until eight months after the three month time limit. In that instance, the licensee had multiple condition reports that pointed to this performance deficiency, however, these condition reports were viewed narrowly, and were closed with no additional action other than the scheduled work activity to have the second valve tested nine months after the first relief valve failure. None of these previous condition reports appeared to prompt an effort to perform the required test at the earliest opportunity practical, or to perform an engineering justification, with a test schedule, and with the appropriate site management concurrence. Nor did these previous condition reports inform licensee personnel with regard to this potential error trap, which subsequently resulted in this performance deficiency.

Screening: The inspectors determined the performance deficiency was minor. This failure to comply with procedural requirements did not affect the Mitigating System's cornerstone objective. As a result, this issue is considered to be of low safety significance and constitutes a minor violation that is not subject to enforcement action in accordance with the NRC's Enforcement Policy.

Enforcement: This failure to comply with 10 CFR Part 50 Appendix B, Criterion V constitutes a minor violation that is not subject to enforcement action in accordance with the NRC's Enforcement Policy.

EXIT MEETINGS AND DEBRIEFS

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

- On May 12, 2022, the inspectors presented the biennial problem identification and resolution inspection results to Brad Kapellas and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71152B	Calculations	NEDC-31336P-A	General Electric Instrument Setpoint Methodology	9/1/1996
	Corrective Action Documents	CR-GGN-	2016-06925, 2017-01691, 2017-02097, 2017-04325, 2017-04706, 2017-05678, 2017-07320, 2017-07376, 2017-08246, 2017-10536, 2017-10687, 2017-11284, 2018-00320, 2018-00682, 2018-02063, 2018-04101, 2018-05267, 2018-05493, 2018-07805, 2018-10127, 2018-10521, 2018-12710, 2019-00934, 2019-01185, 2019-03330, 2019-04137, 2019-05198, 2019-07477, 2019-07766, 2019-09406, 2019-09743, 2020-00340, 2020-00587, 2020-00694, 2020-01884, 2020-02586, 2020-02676, 2020-02697, 2020-02849, 2020-02965, 2020-03162, 2020-03363, 2020-03605, 2020-03862, 2020-03956, 2020-04152, 2020-04754, 2020-04829, 2020-04842, 2020-05075, 2020-05197, 2020-05225, 2020-05234, 2020-05246, 2020-05363, 2020-05524, 2020-05557, 2020-05694, 2020-05697, 2020-06217, 2020-06247, 2020-06552, 2020-06554, 2020-06612, 2020-06893, 2020-06894, 2020-06915, 2020-07006, 2020-07007, 2020-07074, 2020-07504, 2020-07879, 2020-07882, 2020-08197, 2020-08293, 2020-08349, 2020-08413, 2020-08653, 2020-09069, 2020-09266, 2020-09284, 2020-09285, 2020-09294, 2020-09375, 2020-09676, 2020-09813, 2020-09956, 2020-09991, 2020-10405, 2020-10616, 2020-10682, 2020-10720, 2020-11118, 2020-11771, 2020-11892, 2021-00133, 2021-00869, 2021-01014, 2021-01324, 2021-01584, 2021-01727, 2021-01892, 2021-02115, 2021-02394, 2021-02695, 2021-02742, 2021-03024, 2021-03033, 2021-03035, 2021-03569, 2021-03996, 2021-04288, 2021-04290, 2021-04370, 2021-04399, 2021-04400, 2021-04443, 2021-04560, 2021-04679, 2021-04714, 2021-04720, 2021-04848, 2021-04896, 2021-04916, 2021-05572, 2021-05663, 2021-05700, 2021-05758, 2021-05972, 2021-06232, 2021-06403, 2021-06420, 2021-06950, 2021-06977, 2021-06978, 2021-07027, 2021-07035, 2021-07184, 2021-07228, 2021-	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			07243, 2021-07578, 2021-07638, 2021-07867, 2021-08433, 2021-08786, 2021-08789, 2021-08790, 2021-08933, 2021-09173, 2021-09325, 2021-09328, 2021-09383, 2021-09430, 2021-09432, 2021-09520, 2021-09598, 2022-00057, 2022-00354, 2022-00610, 2022-01436, 2022-01439, 2022-01672, 2022-01991, 2022-02375, 2022-02421, 2022-02601, 2022-03127, 2022-03336, 2022-03495, 2022-03683, 2022-05267, 2022-05410	
		CR-HQN-	2020-00331, 2020-00744, 2021-00302, 2021-01960, 2021-02040, 2022-00226, 2022-00886, 2022-00914	
	Corrective Action Documents Resulting from Inspection	CR-GGN-	2022-04857, 2022-04858, 2022-04909, 2022-04927, 2022-04968, 2022-04970, 2022-05019, 2022-05202, 2022-05357, 2022-05360, 2022-05369, 2022-05378, 2022-05448, 2022-05480,	
		CR-HQN-	2022-00914	
	Engineering Changes	Design Change Package 81050	Continuous Backfill System for Reactor Core Isolation Cooling (RCIC) Steam Header Leak Detectors 1E31N083A and 1E31N031B	0
		Design Equivalent Change 88145	Main Turbine Bypass Control Valve Time Response Logic Change, CR-GGN-2020-09166, 09775	0
		Engineering Change Number 60805	Install Sight Glass and Locate RCIC Vent Valves at Floor Level To Allow Monitoring of Air From RCIC Discharge Vent Line, CR-GGN-2015-3415 CA 3, For GL 08-01 and SER 2-05	10/12/2016
	Engineering Evaluations	174377	Valve, Relief, CS Body, CL2, 3/4", 150LB, FNPT, Stainless Steel Disc	12/31/2020
		Engineering Request ER-GG-2004-0043-003	Field Tests Indicate that Additional Modification Required for RCIC Exhaust Check Valve E51F040 Counterweight	3/12/2004
	Miscellaneous		System Health Report: E51 - Reactor Core Isolation Cooling	05/15/2021, 02/28/2022
			Root Cause Evaluation, Site: Grand Gulf Nuclear Station, CR Number: CR-GGN-2020-12131, Event Title: Turbine Trip on	1

Inspection Procedure	Type	Designation	Description or Title	Revision or Date	
			Low Primary Water Tank Level		
			GGNS 2022, Radiation Protection Log Entries Search Report	05/04/2022	
		Document 23A5056	Control Rod Drive-Alternate Rod Insertion & Reactor Recirc Pump Trip Modification	11/19/1986	
		Equipment Purchasing and Dedication / Procurement Engineering (PE-GGN-)	00185418, 00217271		
		GNRO 2022-00018	Annual Radioactive Effluent Release Report	04/28/2022	
		LO-GLO-2019-00018	Activity Topic: Ops Training 12 Points Assessment;	12/18/2021	
		NEDE-31096-P-A	Licensing Topical Report, Anticipated Transients Without Scram, Response to NRC ATWS Rule, 10 CFR 50.62	2/1/1987	
		RF22 Report Work Tracking (WT-GGN-)	Refueling Outage 22 Outage ALARA Report 2020-00015, 2021-00050	05/23/2020	
		Procedures	01-S-18-6	Risk Assessment of Maintenance Activities	19, 20, 22, 23, 24, 25
			02-S-01-34	Auxiliary Building Rounds	53
	04-1-01-N43-1		Primary Water System	62, 67	
	05-1-02-VI-4		Security Threat	25	
	05-S-01-EP-1		Emergency/Severe Accident Procedure Support Documents	41	
		05-S-01-STRATEGY	Alternate Strategy	13	
		06-IC-1B21-R-0008	Reactor Vessel Water Level Calibration (ECCS)	112	
	06-IC-1B21-R-0015	ATWS Reactor Vessel Level Calibration	104		
	07-S-53-B21-2	Reactor Pressure Vessel or Jet Pump Developed Head	10		
	EN-DC-306	Acceptance of Commercial-Grade Items/Services in Safety-Related Applications	9		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		EN-DC-313	Procurement Engineering Process	19
		EN-FAP-LI-001	Performance Improvement Review Group (PRG) Process	019
		EN-LI-102	Corrective Action Program	47
		EN-LI-118	Causal Analysis Process	35
		EN-LI-121	Trending and Performance Review Process	28
		EN-MP-101	Supply Chain Process	7
		EN-MP-112	Shelf-Life Program	9
		EN-MP-125	Control of Materials	18
		EN-MP-140	In-Storage Maintenance Process	5
		EN-QV-106	Elevation and Escalation of Nuclear Independent Oversight Concerns	16
		EN-QV-109	Audit Process	40
		EN-QV-111	Training and Certification of Inspection/Verification and Examination Personnel	19
		EN-QV-137	Supplier Commercial Grade Survey	4
		EN-RP-100	Radiation Worker Expectations	13
		EN-RP-101	Access Control for Radiologically Controlled Areas	16
		EN-RP-102	Radiological Control	8
		EN-RP-104	Personnel Contamination Events	11
		EN-RP-105	Radiological Work Permits	19
		EN-RP-108	Radiation Protection Posting	23
		EN-RP-110	ALARA Program	14
		EN-RP-110-04	Radiation Protection Risk Assessment Process	8
		EN-RP-121	Radioactive Material Control	18
		EN-RP-210	Area Monitoring Program	1
		EN-WM-104	On Line Risk Assessment	23
		SOI 04-S-01-G17-4	Station Instruction; Liquid Radwaste Discharge	128
			Radiation Work Permits (RWPs)	RWP
	Self-Assessments	LO-GLO-2019-00171	Self-Assessment for Pre-NRC Inspection: Radiation Monitoring Instrumentation Assessment	07/29/2020

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		LO-GLO-2019-00172	Self-Assessment Pre-NRG inspection Module	07/27/2020
		LO-GLO-2019-00174	Pre-NRC Self-Assessment Grand Gulf Nuclear Station	15
		LO-GLO-2019-00193	Self-Assessment for the 2021 NRC Inspection for Evaluation of Changes, Tests, and Experiments	3/29/2021
		LO-GLO-2020-00005	Self-Assessment Radiological Hazard and Exposure Controls	01/24/2020
		QA-10-2020-GGNS-1	2020 Maintenance Audit Notification/Audit Plan Memorandum	06/12/2020
		QA-11-2020-GGNS-1	Supply Chain/ Procurement Engineering QA audit	05/05/2020
		QA-12-18-2021-GGNS-1	Audit Area Title: Combined Operations and Technical Specifications; Audit Period: June 7, 2021, to July 23, 2021	7/23/2021
		QA-19-2020-GGNS-1	Audit Area Title: Training; Audit Period: February 3, 2020, to March 9, 2020	3/9/2020
		QA-4-2020-GGNS-1	Audit Area Title: Engineering (Design Control); Audit Period: March 09, 2020, through March 19, 2020	5/19/2020
		Work Orders		361746, 444984, 52979598, 558333