



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET SW SUITE 23T85
ATLANTA, GEORGIA 30303-8931**

July 13, 2001

Duke Energy Corporation
ATTN: Mr. H. B. Barron
Vice President
McGuire Nuclear Station
12700 Hagers Ferry Road
Huntersville, NC 28078-8985

**SUBJECT: MCGUIRE NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT
50-369/01-02, 50-370/01-02 AND INDEPENDENT SPENT FUEL STORAGE
INSTALLATION INSPECTION REPORT 72-38/01-02**

Dear Mr. Barron:

On June 17, 2001, the NRC completed an inspection at your McGuire Units 1 and 2 and the McGuire Independent Spent Fuel Storage Installation. The enclosed report documents the inspection findings which were discussed on June 20, with Mr. Jack Peele and other members of your staff.

The inspection examined activities conducted under your licenses as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your licenses. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, the inspectors identified one issue of very low safety significance (Green). This issue was determined to involve a violation of NRC requirements. However, because of its very low safety significance and because it has been entered into your corrective action program, the NRC is treating this issue as a non-cited violation, in accordance with Section VI.A.1 of the NRC's Enforcement Policy. If you deny this non-cited violation, you should provide a response with the basis for your denial, within 30 days of the date of this inspection report, to the United States Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001, with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the McGuire facility.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system

DEC

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(ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/NRC/ADAMS/index.html> (the Public Electronic Reading Room).

Sincerely,

//RA//

Malcolm T. Widmann, Acting Chief
Reactor Projects Branch 1
Division of Reactor Projects

Docket Nos. 50-369, 50-370, 72-38
License Nos. NPF-9, NPF-17

Enclosure: NRC Integrated Inspection Report 50-369/01-02, 50-370/01-02, 72-38/01-02

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos: 50-369, 50-370, 72-38

License Nos: NPF-9, NPF-17

Report No: 50-369/01-02, 50-370/01-02, 72-38/01-02

Licensee: Duke Energy Corporation

Facility: McGuire Nuclear Station, Units 1 and 2
McGuire Independent Spent Fuel Storage Installation

Location: 12700 Hagers Ferry Road
Huntersville, NC 28078

Dates: March 18, 2001 - June 16, 2001

Inspectors: S. Shaeffer, Senior Resident Inspector
M. Franovich, Resident Inspector
M. Giles, Resident Inspector, Catawba
S. Vias, Senior Reactor Inspector (Section 1RO8)
D. Jones, Senior Health Physicist (Sections 2OS1, 2OS2)
J. Wallo, Physical Security Inspector (Sections 3PP1, 3PP2,
and 4OA1)
K. Davis, Physical Security Inspector (In-Training)

Approved by: Malcolm T. Widmann, Acting Chief, Projects Branch 1
Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000369-01-02, IR05000370-01-02, IR07200038-01-02 on 03/18/01 - 06/16/2001, Duke Energy Corporation, McGuire Nuclear Station, Units 1 & 2, Quarterly Integrated Resident Inspection Report.

The inspection was conducted by resident and regional inspectors reviewing security, radiation protection, 10-year inservice inspecting of Unit 1 and limited reviews of the operational readiness of the licensee's Independent Spent Fuel Storage Installation. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process website at <http://www.nrc.gov/NRR/OVERSIGHT/index.html>

A. Inspector Identified Findings

Cornerstone: Physical Protection

Green. A non-cited violation was identified when a security officer failed to properly search two individuals prior to allowing them unescorted access to the protected area. Requirements violated were established in the McGuire Physical Security Plan and implementing procedures.

While the risk was low in this case, this issue was identified as more than a minor finding because granting site access to individuals who have not been properly searched can have a credible impact on safety. Additionally, the granting of access to improperly searched individuals can be viewed as a precursor to a significant event. Using the Physical Protection Significance Determination Process and identifying this finding as a vulnerability in Access Control, without a malevolent act, and with fewer than two similar findings in four quarters, the issue was determined to be within the licensee's response band and a Green finding. (Section 3PP2)

B. Licensee Identified Violations

No findings of significance were identified.

Report Details

Summary of Plant Status:

Unit 1 began the inspection period defueled in no mode as part of End-of-Cycle (EOC) 14 refueling outage (RFO) activities. Unit 1 was returned to service on April 16, 2001, and reached 100 percent power on April 20, 2001.

Unit 2 remained at 100 percent power during the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R04 Equipment Alignment

a. Inspection Scope

For the systems identified below, the inspectors reviewed plant documents to determine correct system lineup, and conducted walkdowns to verify that the systems were correctly aligned.

- Unit 2 Safety Injection Trains A & B (full system walkdown)
- Unit 1 hydrogen skimmer (VX) suction valves in lower containment (partial system walkdown)
- Unit 1 fueling water (FW) refueling cavity manual drain valves (partial system walkdown)
- Unit 1 4.16 kV AC 1ETA alignment and associated 600 volt load centers (partial system walkdown)

The inspectors assessed conditions such as equipment alignment (i.e., valve positions, damper position, and breaker alignment) and system operational readiness (i.e., control power and permissive status) that could affect operability of these systems. The full system walkdown also included a review of breaker red tags, an evaluation of room and cubicle ventilation, and an assessment to determine if relays and other breaker/bus protective devices are set in accordance with associated operations procedures, maintenance procedures, and the Updated Final Safety Analysis Report (UFSAR). The inspector verified the position of the refueling cavity manual drain valves located in the lower containment prior to Unit 1 entering Mode 4 conditions.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

a. Inspection Scope

To assess the adequacy of the fire protection program implementation, the inspectors toured several risk significant areas. Each of the areas was assessed for transient combustible material control, visible material condition and lineup of fire detection and suppressions systems, status of manual fire equipment, and condition of passive fire barriers.

- Vital instrumentation power equipment rooms
- Cable spreading rooms
- Unit 1 turbine and motor driven auxiliary feedwater pump rooms
- ETA and ETB switchgear rooms
- Safe shutdown facility (SSF)
- Unit 1 emergency diesel generator (EDG) rooms during maintenance activities
- Unit 1 spent fuel pool areas
- Unit 2 staging building

b. Findings

No findings of significance were identified.

1R08 Inservice Inspection (ISI) Activities

a. Inspection Scope

The inspectors evaluated inservice inspection ISI activities during the Unit 1 RFO to determine the effectiveness of the licensee's American Society of Mechanical Engineers (ASME) Section XI ISI program. This was the second and final outage of the third period of the second ten-year interval. The inspectors reviewed the following documents and observed the ISI work activities listed below:

- Inservice Inspection Report, Duke Power Company (DPC), McGuire Nuclear Station, Unit 1, Thirteenth RFO, 1/31/00.
- Second Ten-Year Interval Inspection Status
- Steam Generator (S/G) Tube Inspection Summary Report, September 2000, EOC-13 RFO, 12/14/2000
- Inservice Inspection Summary Report for Class MC Component Examinations conducted during RFO EOC13, 1/11/2001
- CFR80 Specific Assessment of Potential Degradation Mechanisms, Revision (Rev.) 3

- Eddy Current Acquisition Guidelines for DPC CFR80 S/G, Rev. 7
- Eddy Current Analysis Guidelines for DPC CFR80 S/G, Rev. 2
- NDE-703, Evaluation of Eddy Current Data for S/G Tubing, Rev. 0
- NDE-714, Administrative Guide for Resolving Differences during the Review of Eddy Current Data, Rev. 0
- Reactor Vessel Scan Report, 1991, McGuire Unit 1, 1/21/92
- NDE-620, Ultrasonic Examination of Welds in Ferric Pressure Vessels Greater than Two Inches in Thickness, Rev. 8
- NDE-25, Magnetic Particle Examination, Rev. 19
- NDE-35, Liquid Penetration Examination, Rev. 18
- NDE-12, General Radiography Procedure for Pre-Service and Inservice Inspection, Rev.10
- Code Relief Requests (98-002, 98-003, 99-003)
- PT 1NCP-226-1 6" SS NDE-35 B09.011.035A
- PT 1NC1F-540 6" SS NDE-35 B09.011.034A
- RT 1RHR-1A-2-3 35.75" SS NDE-12 C01.020.030
- RT 1RHR-1A-3-4 35.75" SS NDE-12 C01.010.050
- RT 1NV1FW-8-3 4" NDE-12
- UT 1SGD-W259 6" CS NDE-620 C02.021.008
- UT 1PZR-14 15 CS NDE-620 B03.110.004
- MT 1SGD-W259 6" CS NDE-620 C02.021.008A

The above observations and records were evaluated for compliance with Technical Specifications (TS) and Section XI of the ASME Boiler and Pressure Vessel Code, 1989 Edition, with no Addenda, and licensee procedure, 'NDE -A', "Preparation and Issue of Nondestructive Examination Procedures," Rev. 22. The inspectors also assessed whether defects were properly dispositioned.

Qualification and certification records for examiners were reviewed to verify compliance with procedure 'NDE-B', "Training, Qualifications and Certifications of Nondestructive Examination Personnel," Rev. 24. Calibration records for equipment used during these activities were also reviewed for compliance with procedure 'NDE-C', "Control of Nondestructive Examination Equipment," Rev. 8. The inspector also reviewed Corrective Action Plant Issues Database with respect to ISI/NDE issues to verify that the licensee was identifying and correcting ISI/NDE issues. The inspector performed visual examinations in the area of the reactor vessel head and the main loop connections to the reactor vessel to determine if boron deposits were present. The inspector observed eddy current testing. The results of the eddy current test were discussed with the licensee to assess how problems associated with current testing techniques and analysis of the low row u-bend tubes due were addressed. The inspector observed acquisition and analysis of the 2nd 10-year reactor vessel ISI and verified compliance with procedures 54-ISI-106-09, "Remote Ultrasonic Examinations of the Reactor Vessel and Associated Piping Welds Using Remote Manipulators and the ACCUSONEX Acquisition and Analysis System," and 54-ISI-800-03, "Remote Ultrasonic Examination of Reactor Vessel Welds in Accordance With ASME Section XI, Appendix VIII, Supplement 4 & 6," and the "Analysis Scan Plan."

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalificationa. Inspection Scope

The inspectors reviewed licensed operator requalification performance, training, and associated training documentation to verify that performance deficiencies had been addressed through the requalification training program. Specifically, the inspectors reviewed activities concerning the requalification training for the SSF conducted on May 29, 2001.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementationa. Inspection Scope

For the equipment issues described in the Problem Investigation Process (PIP) Reports listed below, the inspectors reviewed the licensee's implementation of the Maintenance Rule (10 CFR 50.65) with respect to the characterization of failures, the appropriateness of the associated a(1) or a(2) classification, and the appropriateness of either the associated a(2) performance criteria or the associated a(1) goals and corrective actions.

<u>PIP Number</u>	<u>Title/Description.</u>
M-01-0712	1A D/G low lube oil pressure during startup
M-01-1292	Adverse trend failure of E-30 Cutler hammer pushbutton switches
M-01-1247	Failure of control switch for valve 1NI-334B
M-01-1823	VA damper 3, 4, 5 failure to realign during B train ESF test
M-01-1855	Loss of ETA 4.16KV bus during engineering safeguard features (ESF) testing (1A EDG failure)
M-01-4751	"D" VI compressor "Hi" startup vibration/tripping

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

a. Inspection Scope

The inspectors reviewed the licensee's control of plant risk and configuration for the structures, systems, and components (SSCs) listed below which were within the scope of the maintenance rule or which were otherwise risk-significant. Emphasizing potential high risk configurations and high priority work items, the inspectors evaluated the following: (1) effectiveness of the work prioritization and control; (2) assessment of integrated risk of the work backlog; and (3) safety assessments and/or management activities performed when SSCs are taken out of service. The inspectors reviewed the licensee's implementation of Maintenance Rule (10 CFR 50.65) a(4), with respect to risk assessments for work activities.

<u>PIP Number/ Work Order (WO)</u>	<u>Title/Description</u>
M-01-1524	Excessive pressure identified on safety injection (NI) header 2NIPG6150 in 2B NI pump room
M-01-1868	Loss of bus 1ETA (4.1 kV safety bus) during Mode 5 with the equipment hatch open
M-01-2050	Loss of 1EVIB vital inverter and bus 1EKVB
M-01-2251	Leak developed on fire protection vitaulic coupling at jockey tank
M-01-2676	Inadvertent ground alarms on electrical load center 1ELXA
WO98352015-01	2RN-1065, chemical clean continuous vent for RN to CA flow piping

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Nonroutine Plant Evolutions

a. Inspection Scope

The inspectors reviewed the operating crews' performance during the following non-routine evolutions and/or transient conditions to determine if the response was appropriate to the event and in accordance with procedures and training. Operator logs, plant computer data, and associated operator actions were reviewed. Detailed reviews were conducted of the plant response to operator actions taken to mitigate the event/transient. In addition, the inspectors responded to the plant for the loss of 1ETA event, discussed the event with control room operators, and evaluated plant conditions through a control room board walkdown, and review of plant computer information. The inspectors also verified that residual heat removal (RHR) was not affected by the event.

<u>PIP Number</u>	<u>Title/Description</u>
M-01-1855	Entry into AP-07 due to loss of 1ETA bus during ESF test on April 11.
M-01-2050	Loss of 1 EVIB vital inverter

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed selected operability evaluations affecting risk significant SSCs listed below to assess the technical adequacy of the evaluations. Where compensatory measures were identified, the inspectors determined whether the compensatory measures were in place, would work as intended, and were appropriately controlled.

<u>PIP Number</u>	<u>Title/Description</u>
M-01-0060	NS heat exchanger low temperature
M-01-0911	Fuel selection and qualification for the TN-32 ISFSI cask
M-01-0951	Potential for CA throttle valve fouling
M-01-1142	Broken grid straps on two Unit 1 spent fuel assemblies J07 and K08
M-01-1524	Unit 2 cold leg accumulator leak pressurizing 2B NI pump discharge line
M-01-1621	Alternate method for reactor coolant system (RCS) boration/makeup
M-01-1855	Operability of EDG 1A following generator excitation failure during ESF test (EDG ran without auxiliaries for 10 minutes)

b. Findings

No findings of significance were identified.

1R16 Operator Workaroundsa. Inspection Scope

The inspectors evaluated the selected operator workaround listed below for potential effects on the functionality of mitigating systems. The workaround was reviewed to determine: (1) if the functional capability of the system or human reliability in responding to an initiating event was affected; (2) the effect on the operator's ability to implement abnormal or emergency procedures; and (3) if operator workaround problems were captured in the licensee's corrective action program. The inspectors specifically reviewed the corrective actions taken for the identified operator workaround to determine if removal from the workaround list was justified.

- M-98-3864, Diesel generator jacket water periodic venting to restore surge tank levels (operator work around 99-05)

In addition, the inspectors reviewed the cumulative effects of all identified operator workarounds on the reliability, availability, and potential for mis-operation of the identified systems; the potential for increasing an initiating event frequency; and impact on the ability of operators to respond in a correct and timely manner to a plant transient and accident. Aggregate impacts of the identified workarounds on each individual operator watch station were also reviewed.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modificationsa. Inspection Scope

The inspectors reviewed the following modification to: (1) verify that the design bases, licensing bases, and performance capability of risk significant SSCs have not been degraded through the modification; and (2) verify that the modification performed during risk significant configurations did not place the plant in an unsafe condition.

<u>Modification Number</u>	<u>Title/Description</u>
Mod 11624	Install new vent valves on Emergency Core Cooling System (ECCS) piping in the Auxiliary Building

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (PMT)a. Inspection Scope

The inspectors reviewed PMT procedures and/or observed testing activities for the equipment below to ensure the equipment was returned to service satisfactorily. The inspectors evaluated the PMT to ensure it properly addressed the work performed and that equipment functional capabilities were adequately verified.

<u>Procedure Number</u>	<u>Title/Description</u>
IP/1,2/A/4971/001	Electrical setpoint verification testing of NI pump motor overload relays
PT/0/A/4150/033	Total core reloading
PT/0/A/4150/136	Dynamic rod worth measurement (post refueling zero power physics testing)
PT/0/A/4550/003C	Core verification
PT/1/A/4350/002A	1A EDG operability
WO 9838699501	Unit 2 train A solid state protection system testing

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activitiesa. Inspection Scope

During the inspection period, the inspectors continued the review of refueling and outage related activities initiated during the previous inspection period and documented in Inspection Report 50-369, 370/00-06. Refueling and unit startup parameters were monitored during increased risk periods. Control rod drop time test results were reviewed and zero power physics test results and test conditions were also evaluated. The inspectors reviewed the 100 percent core reload video to independently verify fuel assemblies reload was conducted in accordance with cyclic-specific reload plan. The inspectors also performed a walkdown of selected portions of the reactor building prior to reactor startup to verify that debris was not present that could affect operability of the containment sump for the emergency core cooling system. The inspectors verified that appropriate equipment was available during reduced inventory and mid-loop operations (e.g., emergency power, sources of RCS make-up water, RCS level instrumentation), and outage risk control measures were implemented to prevent a loss of RHR. The inspectors also verified compliance with TS for low temperature overpressure protection

(LTOP) requirements. The following procedures were also reviewed during the licensee's restart of Unit 1:

- AP/1/A/5500/19, Loss of RHR or RHR System Leakage
- OP/1/A/6100/001, Controlling Procedure for Unit Startup
- OP/1/A/6100/SU-2, Draining the NC System
- OP/1/A/6100/SU-13, Heatup to 350°F
- OP/1/A/6100/SU-17, Aligning CA for Standby Readiness
- OP/1/A/6100/SU-19, Heatup to 557° F
- OP/1/A/6100/SU-20, Mode 1 and 2 Checklist

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

.1 Routine Surveillance Testing

a. Inspection Scope

The inspectors witnessed surveillance tests and/or reviewed test data of selected risk-significant SSCs listed below, to assess, as appropriate, whether the SSCs met TS requirements, UFSAR, and licensee procedure requirements. The inspectors also determined if the testing effectively demonstrated that the SSCs were operationally ready and capable of performing their intended safety functions. Compensatory measures, where applicable, were also verified.

<u>Procedure/WO</u>	<u>Title/Description</u>
OP/0/A/6100/006	1/M Monitoring During Startup (Approach to Criticality)
PT/0/A/4200/009A	Criticality Following a Change in Core Nuclear Characteristics
PT/0/A/4600/103B	Siren System Quarterly Test
PT/1/A/4200/009A	ESF Actuation Periodic Test
PT/1/A/4600/003F	ECCS Sump Inspection
PT/2/A/4200/019	ECCS Vent

b. Findings

No findings of significance were identified.

.2 Inservice Surveillance Testing

a. Inspection Scope

During PT/2/A/4252/001, "Unit 2 TD CA Pump Performance Test," the inspectors reviewed applicable valve stroke testing, pump vibration data, instrument calibration, and visual inspection of Unit 2 auxiliary feedwater flow control valves to determine the effectiveness of the licensee's ASME Section XI testing program. The inspectors evaluated compliance with ASME code requirements, reviewed test methods and results, acceptance criteria, test instrument range/accuracy, and compliance with TS action statements/reporting requirements. The inspectors also verified that conditions which prompted the increased testing due to high pump outboard bearing vibrations had not significantly changed, warranting expanded corrective actions.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation

a. Inspection Scope

On May 23, 2001, the inspectors observed portions of an emergency drill from the control room simulator and operator-aided computer monitor. The emergency drill involved activation of the technical support center and emergency operations facility. Operator performance, emergency and abnormal procedure use and adherence, event classifications, drill objectives, post-drill critique, and problem identification and resolutions were evaluated. The inspectors observed the operators self critique and the summary drill critique involving all drill personnel. The observations and evaluations were performed to verify that the licensee conducted an effective emergency drill that demonstrated staff and operator proficiency in responding to an event, as well as identified areas for enhancements.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control To Radiologically Significant Areas

a. Inspection Scope

The inspectors reviewed the licensee's procedures for access control to airborne radioactivity areas, radiation areas, high radiation areas, and very high radiation areas. Those procedures were evaluated for consistency with the requirements in 10 CFR 20 for posting, surveying, and controlling access to radiologically significant areas. The inspectors toured the plant and verified that radiological postings, barricades, and surveys were appropriate and consistent with the licensee's access control procedures for eight high and/or extra high radiation areas. The dose rates in three of those high radiation areas were independently verified to determine if they were consistent with the dose rates recorded on the survey maps posted at the entrances to those areas. Selected Radiation Work Permits (RWPs) typically used for work in radiologically significant areas were evaluated for incorporation of the procedurally established access controls. The alarm set points for electronic dosimeters specified by those RWPs were evaluated for appropriateness with regard to the expected dose rates in the work areas. Selected pre-job briefing forms were examined to verify that the procedurally established access controls were adequately addressed. The licensee's procedurally established access controls for highly activated non-fuel materials stored in spent fuel pools was also evaluated by the inspectors for consistency with 10 CFR 20. Recent enhancements to access control procedures for very high radiation areas and areas which may become very high radiation areas during changing plant conditions were reviewed and discussed with radiation protection management and supervision. Adherence to access control procedures and RWP specified access controls by radiation workers and radiation protection technicians working at selected job sites was observed by the inspectors. On April 19, 2001, the inspectors attended the pre-job briefing for removal and replacement of the Unit 1 FW strainer. The inspectors evaluated if access and as low as reasonably achievable (ALARA) controls were adequately addressed and consistent with licensee procedures. The inspectors also evaluated the job to determine if the work was accomplished in accordance with the prescribed access and ALARA control procedures and with the RWP requirements.

The following licensee documents were examined during the inspection:

Nuclear System Directive 501, "Temporary Storage of Radioactive Material in the Spent Fuel Pool," Rev. 4

Nuclear System Directive 507, "Radiation Protection," Rev. 5

HP/0/B/1006/012, "Control of Access to Areas of Radiological Significance," Rev. 8

SH/0/B/2000/012, "Access Controls for High, Extra High, and Very High Radiation Areas," Rev. 1

SH/0/B/2000/005, "Posting of Radiation Control Zones," Rev. 1

Radiation Work Permits:

1019	U-1 Reactor Building FW Sock Filter Removal At A Sump
1140	U-1 Reactor Building AWAW 1NC-29
1160	U-1 Reactor Building Incore Thimble Cleaning And/Or ECT
1173	U-1 Reactor Building MGMM 11126 Replace 75 GPM Orifice
1189	U-1 Reactor Building S/G Primary Diaphragm Modification
1202	U-1 Reactor Building AWAW Used Incore Detectors
1203	U-1 Reactor Building Reactor Head Leak Inspection
1207	U-1 Reactor Building AWAW Draindown And Head Set
1205	U-1 AB Access to Extra High Radiation Areas
1209	U-1 Reactor Building AWAW Debris Removal In Refuel Canal
1725	U-1 Reactor Building Reactor Head Removal & Replacement
5024	U-1 & 2 Aux. Bldg. Removal and Replacement of Radioactive Filters/Strainers

b. Findings

No findings of significance were identified.

2OS2 ALARA Planning and Controls

a. Inspection Scope

The plant collective exposure history for the years 1992 through 1999, based on the data available from NUREG-0713, was reviewed and discussed with the licensee. The inspectors observed and evaluated job site implementation of ALARA controls and radiation worker performance at selected high exposure job sites in the Unit 1 Lower Containment Building during the Unit 1 Cycle 14 (U1/C14) RFO. The work controls established for selected RWPs were evaluated by the inspectors for consistency with the ALARA planning and controls prescribed by the ALARA Pre-Planning Worksheets for work in the Unit 1 Lower Containment Building. The inspectors reviewed the job site dose rates to determine if they were consistent with the dose rates recorded on the pre-job survey maps for the selected work areas in Unit 1 Lower Containment. Records of year-to-date individual radiation exposures sorted by work groups were examined by the inspectors for significant variations of exposures among workers. Records for primary chemistry shut down controls and radiation field monitoring and trending were evaluated for consistency with the licensee's source term reduction program. Radiological work plans and exposure estimates for the five jobs anticipated to incur the highest exposures were evaluated by the inspectors for consistency with previous plant performance. Actual exposures for those jobs were compared to the exposure estimates. Records for exposures of declared pregnant workers during the previous twelve months were also reviewed by the inspectors. Incurred exposures were evaluated for consistency with the guidance provided in Regulatory Guide 8.29.

The inspectors evaluated the effectiveness of problem identification and resolution for selected radiation protection related issues. The review included issues identified and

entered into the corrective action program during August 2000 through mid-March 2001 and two Radiation Protection Program self assessments performed during 2000. The inspectors verified that substantive issues were identified, appropriately characterized with regard to safety significance and adequately addressed. Through the above reviews and observations, the licensee's ALARA program implementation and practices were evaluated by the inspectors for consistency with TS and 10 CFR Part 20 requirements.

The following licensee documents were examined during the inspection:

Duke Power Company System ALARA Manual, Rev. 12
Nuclear System Directive 507 Radiation Protection, Rev. 5
Radiation Work Permits:

1140 1NC-29 Valve Repair
1710 SG 1B Eddy Current Testing
1711 SG 1C Eddy Current Testing
1731 RCP 1B Seal Replacement
1739 RCP 1C Motor Changout

ALARA Pre-Planning Worksheets

1EOC14 General area shielding in Reactor Building
1EOC14 Valves-Corrective Maintenance
1EOC14 Valves-Preventive Maintenance
1EOC14 Lower Containment ISI Weld Inspections
1EOC14 Removal/Replacement of Reactor Head
1EOC14 Replace NCP insulation
1EOC14 S/G Eddy Current Testing
1EOC14 S/G Secondary Sludgelancing

Lower Containment Dose Rate Comparison Spreadsheet
Complex Evolution Plan: Crud Burst for 1EOC14
Self-Assessment SA-00-20 ALARA Planning and Controls
Self-Assessment SA-00-41 Significant Radiation Dose Areas

b. Findings

No findings of significance were identified.

3. SAFEGUARDS

Cornerstone: Physical Protection

3PP1 **Access Authorization (Behavior Observation Program)**

a. Inspection Scope

The inspector evaluated licensee procedures, Fitness For Duty (FFD) reports, and licensee audits. Additionally, the inspector interviewed five representatives of licensee management and five escort personnel concerning their understanding of the behavior observation portion of the personnel screening and FFD Program. In interviewing these personnel, the inspector evaluated the effectiveness of their training and abilities to recognize aberrant behavioral traits, physiological indications of narcotic and alcohol use, and work call-out reporting procedures. Licensee compliance was evaluated against requirements in the McGuire Nuclear Plant Physical Security Plan and associated procedures, which are identified below, and 10 CFR Part 26, Fitness For Duty Programs.

Duke Power Nuclear Policy Manual, NSD 217, Nuclear Security Program
Fitness-for-Duty/Continual Behavior Observation General Employee Training

b. Findings

No findings of significance were identified.

3PP2 **Access Control**

a. Inspection Scope

The inspector evaluated access control activities on April 17, and 19, 2001, and search/access control equipment testing was observed on April 18, 2001. In observing the access control activities, the inspector assessed whether officers could detect contraband prior to it being introduced into the protected area (PA). The protective barriers for the Final Access Control Facility were inspected to ensure compliance with protection standards in the Physical Security Plan. Additionally, the inspector assessed whether the officers were conducting access control equipment testing in accordance with regulatory requirements through observation, and review of procedures and log entries. Preventative and post maintenance procedures were evaluated and observed. Lock, combination, and key control procedures were evaluated, as well as, aspects of the site access authorization program. Licensee compliance was evaluated against requirements in the McGuire Nuclear Plant Physical Security Plan and associated procedures, and 10 CFR Part 73.55, Requirements for Physical Protection of Licensed Activities in Nuclear Power Reactors Against Radiological Sabotage, and Part 73.56, Personnel Access Authorization Requirements for Nuclear Power Plants. In addition to the items identified above, the following documents were reviewed:

Duke Power/McGuire Security Procedure EXAO-01, "Personnel Access
Safeguard Event Logs, 2000," Rev. 56
Key and Lock Daily and Annual Inventory Logs

b. Findings

A green finding that was dispositioned as a non-cited violation of security procedures was identified when a security officer performing plant access control duties failed to properly search two individuals prior to allowing them unescorted access to the PA. The officer did not perform a hands on search of the individuals after receiving alarms while searching them with the hand held metal detector. The search with the hand held detector was necessary, per McGuire security procedure, due to the two individuals inability to process through the walk-through metal detector without causing an alarm.

McGuire Physical Security Plan, Rev. 12, Paragraph 2.0, requires station security procedures be established and maintained which provide detailed information to the security force on implementation of plan performance objectives and specific plan commitments. Paragraph 7.0 requires all personnel, materials, packages and vehicles shall be searched for firearms, explosives, and incendiary devices or other items which could be used for radiological sabotage, prior to entry into the protected area, except under emergency conditions. Also, Paragraph 7.1(c) indicates the personnel search shall include conducting a hands on search when the search officer has a well founded suspicion that the individual may be carrying firearms, explosives, or incendiary devices.

Additionally, the Duke Power Physical Security Manual, Paragraph 6.3.1.6 states "If, when passing through the detector an alarm annunciates, the individual shall be processed through the metal detector a second time. If the alarm annunciates on the second attempt the individual shall be physically searched with a hand held metal detector; a hands on pat down search will also suffice." Paragraph 6.3.2.3 requires that if the detector (hand held) alarms during the search of an individual, the individual shall remove the metal and the suspect area shall be researched. If the metal cannot be removed (e.g., metal buttons) the area shall be subjected to a hands on search.

While the risk was low in this case, this issue was identified as more than a minor finding because granting site access to individuals who have not been properly searched can have a credible impact on safety. Additionally, the granting of access to improperly searched individuals can be viewed as a precursor to a significant event in that armed persons could potentially gain access to the control room and adversely affect plant safety. Using the Physical Protection Significance Determination Process and identifying this finding as a vulnerability in Access Control, without a malevolent act, and with fewer than two similar findings in four quarters, the issue was determined to be within the licensee's response band and a Green finding. Because of the very low safety significance of the item and because the licensee included this item in their corrective action program (PIP M-01-02012), this procedure violation is being treated as a non-cited violation (NCV) 50-369, 370/01-02-01, Failure to Perform Proper Search of Individuals Entering Protected Area.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

.1 General

a. Inspection Scope

The inspectors verified the following three Reactor Safety PIs for accuracy:

Initiating Events	Unplanned scram rate
Initiating Events	Unplanned power changes >20% per 7,000 critical hours
Initiating Events	Scrams with loss of normal heat removal

To verify the PI data, the inspectors reviewed control room logs, TS Action Item Log entries, and maintenance rule data.

b. Findings

No findings of significance were identified.

.2 Fitness-for-Dutya. Inspection Scope

The inspector evaluated Duke Power and McGuire Nuclear Plant programs for gathering and submitting data for the fitness-for-duty, personnel screening, and PA security equipment performance indicators by reviewing reports listed below. The evaluation included McGuire's tracking and trending reports and security event reports for the PI data submitted from the first quarter to the fourth quarter of 2000. Licensee performance was evaluated against guidance in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Rev. 0.

Fitness for Duty Semi-Annual Reports, January through December, 2000
 PIP M-01-02012, Security Officer Performed Inadequate Search of Personnel
 PIP M-01-01997, X-Ray Equipment Placed Out of Service After Failing
 Operational Test
 PIP M-00-05095, Total Loss of Video Camera 11 (CAS/SAS)
 PIP M-00-05069, No Picture on Monitors in CAS for Camera 2
 PIP M-00-03214, Employee Tractor Trailer Accident
 PIP M-00-00851, Employee Injury/Broken Arm
 PIP M-00-01090, Nitrogen Cylinder Inadvertently Placed With Helium Cylinder

b. Issues and Findings

No findings of significance were identified.

4OA5 Other

.1 Review of Independent Spent Fuel Storage Installation (ISFSI) Operation

a. Inspection Scope

The inspectors conducted limited reviews throughout the inspection period regarding the licensee's preparation, loading and transport of several Transnuclear TN-32 dry storage casks. These reviews were performed to confirm loading was done according to procedures and to verify that there were no releases of radiation. The inspectors reviewed, by direct observation, independent evaluation and review of identified PIPs, activities related to a variety of activities including radiation monitoring, cask preparation, cask transport. Reviews were conducted of the licensee's contingency plans and pre-job briefing, which included assessment of the impact of emergent work activities on the cask loading and transport activities. The review also included periodic monitoring of the ISFSI seal pressure monitoring alarm components and a post-transport walkdown of the cask transporter pathway which passed over components identified as safety-related or important to safety.

b. Findings

No findings of significance were identified.

.2 World Association of Nuclear Operators (WANO)/Institute of Nuclear Power Operations (INPO) Report Review

The inspectors reviewed the final report issued in May 2001 by WANO for the evaluation that was conducted at the McGuire facility during August 2000. The inspectors did not note any safety issues in the WANO report that either warranted further NRC followup or that had not already been addressed by the NRC.

4OA6 Meetings

The inspectors presented the inspection results to Mr. Jack Peele, Acting McGuire Nuclear Station Vice President, as well as other members of licensee management and staff, at the conclusion of the inspection on June 20, 2001. The licensee acknowledged the findings presented.

The inspectors asked the licensee whether any of the material examined during the inspection should be considered proprietary. No proprietary information was identified.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

Barron, B., Vice President, McGuire Nuclear Station
 Bradshaw, S., Superintendent, Plant Operations
 Cash, M., Regulatory Compliance Manager
 Crane, K., Licensing Assistant
 Dolan, B., Manager, Safety Assurance
 Evans W., Security Manager
 Geer, T., Manager, Reactor Electrical Systems Engineering
 Jamil, D., Station Manager, McGuire Nuclear Station
 Loucks, L., Manager, Radiation Protection
 Patrick, M., Superintendent, Maintenance
 Peele, J., Manager, Engineering
 Sellars, S., Security Operations Manager
 Loucks, L., Manager, Radiation Protection
 Thomas, C. J., Manager, Regulatory Compliance
 Thomas, K., Superintendent, Work Control
 Travis, B., Manager, Mechanical Civil Engineering

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

NCV 50-369, 370/01-02-01	Failure to Perform Proper Search of Individuals Entering Protected Area
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LIST OF ACRONYMS

ALARA	-	As Low As Reasonably Achievable
AP	-	Abnormal Procedure
ASME	-	American Society of Mechanical Engineers
DPC	-	Duke Power Company
ECCS	-	Emergency Core Cooling System
EDG	-	Emergency Diesel Generator
EOC	-	End of Cycle
ESF	-	Engineering Safeguard Feature
FW	-	Fueling Water
INPO	-	Institute of Nuclear Power Operations
ISFSI	-	Independent Spent Fuel Storage Installation
ISI	-	Inservice Inspection
LTOP	-	Low Temperature Overpressure Protection
NDE	-	Nondestructive Examination
NI	-	Safety Injection
NC	-	Nuclear Coolant (Reactor Coolant)
NS	-	Nuclear Spray (Containment Spray)
PI	-	Performance Indicators

PIP	-	Problem Investigation Process
PMT	-	Post Maintenance Testing
RCS	-	Reactor Coolant System
RFO	-	Refueling Outage
RHR	-	Residual Heat Removal
RN	-	Nuclear Service Water
RWP	-	Radiation Work Permit
S/G	-	Steam Generator
SSC	-	Structures, Systems, Components
SSF	-	Safe Shutdown Facility
TS	-	Technical Specifications
UFSAR	-	Updated Final Safety Analysis Report
VX	-	Hydrogen Skimmer
WANO	-	World Association of Nuclear Operators