

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
WASHINGTON, D.C. 20555

OCTOBER 28, 1983

IE INFORMATION NOTICE 83-72: ENVIRONMENTAL QUALIFICATION TESTING EXPERIENCE

Addressees:

All holders of a nuclear power reactor operating license (OL) or construction permit (CP).

Purpose:

This information notice is provided to inform the licensees of environmental qualification test failures. These test failures are based on (1) Construction Deficiency Reports and 10 CFR Part 21 Reports submitted to the NRC, and (2) results from the NRC-sponsored environmental qualification methodology research program. This information notice also serves to inform the licensees of findings that resulted from inspections conducted by the licensee or its agent of equipment that has been environmentally qualified and is being delivered or installed at the sites.

Because of the potential safety significance and related generic implications of these test failures and inspection findings, addressees are expected to review the information for applicability to their facilities. No specific response to this information notice is required.

Description of Circumstances:

The NRC has received a number of Construction Deficiency Reports and 10 CFR Part 21 Reports from licensees and vendors of safety-related equipment. These reports describe a number of test failures and the circumstances under which the equipment failed to function during environmental qualification testing. These reports also indicate that there are a number of instances in which delivered equipment and components contained material that did not conform to standards for safety, thus rendering the qualified equipment and components unqualified. In addition to the monitoring and assessing of environmental qualification information received from the industry, the NRC has also sponsored a number of qualification tests of certain safety-related equipment under its environmental qualification methodology research program, which has resulted in a number of adverse test results. This information notice is published with the following objectives:

1. To disseminate the information on matters related to the environmental qualification of equipment and on test results, as received from the licensees and equipment vendors.

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1. To disseminate the information on matters related to the environmental qualification of equipment and on test results, as received from the licensees and equipment vendors.
2. To disseminate the results of NRC-sponsored environmental qualification tests which were recently completed.
3. To provide the licensees with the status of NRC inspection on quality assurance activities at the environmental testing laboratories.

The enclosed series of Qualification Notices (Attachment 1) describes the circumstances of each failure, failure mode, and qualification concerns as described in various reports and sources indicated above. Please note that for items in Qualification Notices No. 14 through 19 the vendors have issued service instructions to the affected users regarding corrective action to be taken.

Questions regarding the details of tests described in Attachment 1 should be directed either to the equipment manufacturer or the cognizant design/test agency. If you have other questions regarding this information notice, please contact the Regional Administrator of the appropriate NRC Regional Office, or this office.

E. L. Jordan, Director
Division of Emergency Preparedness and
Engineering Response
Office of Inspection and Enforcement

Attachments:

1. Series of Equipment Environmental Qualification Notices
2. List of Recently Issued IE Information Notices

Technical Contact: N. B. Le, IE
(301) 492-9673

RCPB:QASIP:IE*
TLe/vjj
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Tech Editor*
RSanders
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RCPB:QASIP:IE
MPeranich
09/23/83

RCPB:QASIP:IE
RHeishman
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DD:QASIP:IE
JPartlow
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DIR:QASIP:IE
JTaylor
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DE:QASIP:IE
EJordan
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*See previous concurrence

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2. To disseminate the results of NRC-sponsored environmental qualification tests which were recently completed.

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Equipment Environmental Qualification Notice No. 12

Related Information Notices

1. Information Notices relating to environmental qualification of equipment that have been published since IN 82-52, which included Equipment Environmental Qualification Notices No. 1 through No. 11, are:

IN 83-40 Need To Environmentally Qualify Epoxy Grouts and Sealers

IN 83-45 Environmental Qualification Test of General Electric Company
"CR-2940" Position Selector Control Switch

2. The Equipment Environmental Qualification Notices issued to date (No. 1 through No. 24) will be updated, if required, in the next periodical information notice.

Equipment Environmental Qualification Notice No. 13

Test Summary Report No. 1

Equipment: Anaconda flexible conduit

Test Facility: Myle Laboratories

Cognizant Design and/or Test Agency: Washington Public Power
Supply System (WPPSS)

Failed Component: Anaconda flexible conduit

Type of Test: Environmental qualification testing at LOCA conditions

Description of Failure(s):

Polyethylene copolymer jacket of the flexible conduit degraded while exposed to the following LOCA conditions:

340°F and 45 psig for 3 hr.
320°F and 45 psig for 3 hr.
250°F and 25 psig for 18 hr.

Failure Mode:

Polyethylene copolymer jacket melted while exposed to LOCA temperature, pressure, and steam environment.

Possible Corrective Action Considerations:

WPPSS is reviewing the failure, and will report corrective action at a later date.

Generic Implications:

Melted polyethylene jacket would allow steam and spray solution to enter otherwise watertight junction boxes, and equipment housings. This in turn will cause degradation and short-circuiting of other safety-related components or electrical circuits inside the junction boxes and equipment housings.

Equipment Environmental Qualification Notice No. 14

Test Summary Report No. 1

Equipment: Rockwell International post-LOCA hydrogen recombiner

Test Facility: Wyle-Norco

Cognizant Design and/or Test Agency: Rockwell International (RI)
Energy Systems Group (ESG)

Failed Component: ITT Barton pressure transducer, 4-20 ma, part number
D4R-29098

Type of Test: Typical IEEE 323 environmental qualification

Description of Failure(s):

ITT Barton pressure transducers, will not withstand radiation dose of 1×10^7 rads (and may not operate satisfactorily after radiation exposures in excess of 10^4 rads TID because of gradual drifting of readings). These pressure transducers are installed in several delivered recombiners and are used to measure recombiner inlet gas flow, total flow, and inlet gas pressure.

Failure Mode:

Pressure transducer did not operate satisfactorily after exposure to radiation dosage in excess of 10^4 rads.

Possible Corrective Action Considerations:

ESG recommended the following corrective action to each affected customer, as a short-term corrective measure for operating plants: Temporary wiring modification in the control cabinet should be made to allow operation of the recombiner in the manual flow control mode, until the transducer can be replaced with a qualified transducer.

Generic Implications:

Rockwell International reported that recombiners with ITT-Barton transducers were shipped to the following plants: Limerick, LaSalle County, Nine Mile Point 2, E. I. Hatch 2, and Fermi 2.

Equipment Environmental Qualification Notice No. 15

Test Summary Report No. 1

Equipment: Rockwell International Post-LOCA hydrogen recombiner

Test Facility: Wyle-Norco

Cognizant Design and/or Test Agency: Rockwell International (RI)
Energy Systems Group (ESG)

Failed Component: Microswitch, DPST toggle switch, rated 15A, 125-250 VAC,
1/2 hp, 125 VAC, part number 12TSI-2.

Type of Test: Typical IEEE 323 environmental qualification

Description of Failure(s):

Both poles of the microswitch failed to close when the switch was activated during the post-LOCA environmental cycling test. It was noted that during the post-seismic functional test, the switch operation appeared to be weak and not as firm as normal. Disassembly and examination of the switch revealed that the plastic slides were missing and there was considerable debris around the switch's operating handle.

Failure Mode:

ESG concluded that the plastic slides were sufficiently degraded during the thermal and radiation aging that when the switch was exposed to the vibration and shock from the seismic test, the plastic slides broke into many pieces (when the switch was operated on with snap action).

Possible Corrective Action Considerations:

Engineering Field Bulletins have been issued by RI informing users to install jumpers bypassing the switch. RI has eliminated the switch in its recent designs.

Generic Implications:

The switch is used in the control circuits of the reversing motor starters for the hydrogen recombiner motor-operated valves. Rockwell International reported that recombiners with microswitches were shipped to the following plants: Fermi 2, Shoreham 1, Limerick, E. I. Hatch 2, Nine Mile Point 2, and LaSalle County.

Equipment Environmental Qualification Notice No. 16

Test Summary Report No. 1

Equipment: Rockwell International post-LOCA hydrogen recombiner

Test Facility: Wyle-Norco

Cognizant Design and/or Test Agency: Rockwell International (RI)
Energy Systems Group (ESG)

Failed Component: Square D disconnect switch, three-pole nonfusible unit, 30A, 15 hp at 480 VAC or 20 hp at 600 VAC, part number 9422-RC-1.

Type of Test: Typical IEEE 323 environmental qualification

Description of Failure(s):

Square D disconnect switch, failed to operate following the irradiation phase of the EQ test. ESG concluded that the applied radiation dose of 1.1×10^7 rads has sufficiently degraded the plastic component to initiate the failure.

Failure Mode:

The failure is attributed to a plastic component breaking when the switch was mechanically operated.

Possible Corrective Action Considerations:

ESG recommended that the users of the RI recombiner eliminate the disconnect switch from the circuit.

Generic Implications:

The switch is used as the main disconnect for the recombiner skid 480-VAC, 3-phase, power bus to the inlet gas, recirculating gas and water valve motor circuits. The switch could fail open during a seismic event following the LOCA, thus disrupting power to the recombiner skid. Rockwell International reported that recombiners with Square D disconnect switches were shipped to the following plants: Limerick, LaSalle County, Nine Mile Point 2, E. I. Hatch 2, and Fermi 2.

Equipment Environmental Qualification Notice No. 17

Test Summary Report No. 1

Equipment: Rockwell International post-LOCA hydrogen recombiner

Test Facility: Wyle-Norco

Cognizant Design and/or Test Agency: Rockwell International (RI)
Energy Systems Group (ESG)

Failed Component: Timetrol SCR power controller, three-phase, 1066Z series,
part number 2053C-125K

Type of Test: Typical IEEE 323 environmental qualification

Description of Failure(s):

The Timetrol SCR power controller failed the functional testing after the unit was irradiated. The SCR controller controls the recombiner's heaters.

Failure Mode:

The SCR power controller failed after being exposed to radiation dose of 1.62×10^6 rads.

Possible Corrective Action Considerations:

ESG recommended that the users of the RI recombiner replace the Timetrol SCR unit with a unit compatible with ESG current design.

Generic Implications:

Rockwell International reported that recombiners with Timetrol SCR power controllers were shipped to the following plants: Fermi 2, Limerick, Beaver Valley, North Anna, Millstone 3, Three Mile Island 2, and Zion.

Equipment Environmental Qualification Notice No. 18

Test Summary Report No. 1

Equipment: Rockwell International post-LOCA hydrogen recombiner

Test Facility: Wyle-Norco

Cognizant Design and/or Test Agency: Rockwell International (RI)
Energy Systems Group (ESG)

Failed Component: Automatic Timing & Control (ATC) time delay relay, 120
VAC, 50-60 Hz, part number 319B006QIC, IEEE No. 21A.

Type of Test: Typical IEEE 323 environmental qualification

Description of Failure(s):

Automatic Timing and Control (ATC) time delay relay failed the final performance test following the post-LOCA environmental cycling test. The relay failed when the unit was subjected to an elevated temperature test with high humidity (RH greater than 90 percent). The relay coil of the timer was energized and after one cycle, it failed to hold closed.

Failure Mode:

The failure was attributed to an oxide film on the relay contacts which occurred during the EQ testing. (NOTE: The timer is not a sealed unit)

Possible Corrective Action Considerations:

Because the ATC time delay is not a sealed unit, ESG recommended the existing timer for BWR Mark 3 and PWR plants be replaced with an EQ qualified, sealed timer. However for BWR Mark 1 and 2, ESG stated that the replacement of the existing timer is not necessary, because the loss of this timer on the BWR Mark 1 and 2 hydrogen recombiners should not result in a loss of safety function.

Generic Implications:

Rockwell International reported that recombiners with ATC time delay relays were shipped to the following plants: Beaver Valley, North Anna, Surry, Millstone 3, Three Mile Island 2, Palo Verde, Hartsville, Phipps Bend, Clinton, Byron, Cherokee, Perkins, Oconee, Marble Hill, Braidwood, and Zion.

Equipment Environmental Qualification Notice No. 19

Test Summary Report No. 1

Equipment: Rockwell International post-LOCA hydrogen recombiner

Test Facility: Wyle-Norco

Cognizant Design and/or Test Agency: Rockwell International (RI)
Energy Systems Group (ESG)

Failed Component: ITE Gould circuit breaker, 3-pole, 600 VAC, fully enclosed, thermal magnetic, part number EF3-B015, IEEE No. 79

Type of Test: Typical IEEE 323 environmental qualification

Description of Failure(s):

The ITE Gould circuit breaker opened when temperature reached 165°F (150°F design plus 15°F margin) and also opened at post-test ambient temperature during the post-LOCA phase of the EQ testing. After this failure, a new EF3-B015 circuit breaker was tested under the same test condition as in the previous test and it was observed that the circuit breaker tripped without carrying any load current when the test temperature reached 169°F at high relative humidity. Additional testing was performed and the result was that the same breaker would trip at 145°F. To establish the temperature at which the EF3-B015 circuit breaker would carry the required load without tripping, ESG performed several tests and reported that the circuit breaker did not trip at 140°F while carrying 3.5 amperes, and the breaker remained closed after several days at 130°F with 3.5-ampere load current. ESG also reported that discussion with ITE Gould personnel indicates this potential failure problem may be common to several lines of ITE thermal magnetic circuit breakers at temperatures greater than 120°F. These circuit breakers include type EF2-B, EF3-B, HE3-B, and JL3-B, all of which have been used in recombiner application; however, no testing has yet been performed on these models.

Failure Mode:

The ITE Gould circuit breaker opened when ambient temperature reached 165°F.

Possible Corrective Action Considerations:

The ITE Gould circuit breakers are used to provide 480 VAC to various RI recombiner components and control devices. The failure of these breakers would prevent the operation and cause the recombiner to shut down. ESG has informed the users of RI recombiners about this potential defect and recommended that as an interim fix, the circuit breaker be bypassed and as an alternative fix, the power cabinet be relocated. Supplemental cooling to reduce the cabinet temperature to less than 100°F for PWR recombiners is also recommended.

Equipment Environmental Qualification Notice No. 19 (Cont.)

Test Summary Report No. 1 (Cont.)

Possible Corrective Action Considerations (Cont.):

ESG states that replacement of the "thermal magnetic" breakers with "magnetic only" breakers is being considered as the permanent fix on the RI recombiners.

Generic Implications:

Rockwell International reported that recombiners with ITE Gould circuit breakers were shipped to the following facilities: Fermi 2, Shoreham 1, E. I. Hatch 2, Nine Mile Point 2, LaSalle County, Hartsville, Phipps Bend, Clinton, Byron, and Palo Verde.

Equipment Environmental Qualification Notice No. 20

Test Summary Report No. 1

Equipment: ITT-Barton electronic transmitters

Test Facility: ITT

Cognizant Design and/or Test Agency: ITT-Barton

Failed Component: Barton transmitter, suppressed zero model 763

Type of Test: Performance test

Description of Potential Failure(s):

The potential defect exhibits itself as a negative shift in output during initial exposure to operating pressure. The amount of the shift is a function of the process pressure and the calibrated span of the instrument.

Failure Mode:

ITT-Barton reported that further testing of model 763 pressure transmitter has identified the specific cause for the reported defect. It is due to the combined creep in:

1. The link wire between the pressure bourdon tube and strain-sensing beam, and
2. The material used to attach the link wire to the bourdon tube and to the strain-sensing beam.

Long-term testing on the 763 pressure transmitter is continuing.

Possible Corrective Action Considerations:

The failure is under review by ITT. Users of this instrument are expected to take necessary administrative control and inform their plant staff of the potential defect.

Generic Implications:

ITT-Barton reported that all suppressed zero model 763 transmitters shipped prior to June 30, 1983, may not perform to Barton's specifications.

Equipment Environmental Qualification Notice No. 21

Test Summary Report No. 1

Equipment: Barksdale pressure switches

Test Facility: Sandia National Laboratories (SNL)

Cognizant Design and/or Test Agency: NRC/RES

Failed Components: Barksdale pressure switches models B2T and D2H

Type of Test: Typical IEEE 323 LOCA simulation

Description of Failure(s):

One unit of model B2T shorted out at 5 minutes into the test but recovered on the cooling side of the first temperature transient, then failed again on the next LOCA profile temperature transient. The second unit of model B2T failed at 6 hours, 43 minutes into the test. Two units of model D2H shorted out at 10 minutes into the test but recovered on the cooling side of the first LOCA profile temperature transient, then failed again on the next LOCA profile temperature. These pressure switches were unaged and were exposed to a typical IEEE 323 LOCA simulation profile in the SNL facility test chamber which used saturated steam to achieve a LOCA temperature profile. An evaluation test was also performed on new pressure switches of the same models previously tested. It was observed that at the 10 psig plateau one Barksdale model D2H was shorted out. All other D2H and B2T models failed at the 40 psig plateau.

Failure Mode:

Pressure switches experienced "blown" seals that allowed water to accumulate in the switch housing, and as a result, exhibited electrical shorts across the microswitches.

Possible Corrective Action Considerations:

NRC is planning no further testing on these models at this time. Barksdale pressure switch models B2T and D2H should be replaced with qualified models if their application is for installation in areas where high pressure and steam/spray environment are anticipated.

Generic Implications:

The failure of the pressure switch could prevent proper operation of safety-related functions and could lead to inappropriate operator actions.

Equipment Environmental Qualification Notice No. 22

Test Summary Report No. 1

Equipment: Static-O-Ring pressure switches

Test Facility: Sandia National Laboratories (SNL)

Cognizant Design and/or Test Agency: NRC/RES

Failed Components: Static-O-Ring (SOR) model 5N and 12N

Type of Test: Typical IEEE 323 LOCA simulation

Description of Failure(s):

One unit of model 5N failed in the first 2 minutes, and other units of model 5N and model 12N failed approximately 5 minutes into the LOCA transient. Pressure switch housings were penetrated resulting in diaphragm rupture and steam blowing out through pressure lines. These pressure switches were unaged and were exposed to a typical IEEE 323 LOCA simulation profile in the SNL facility test chamber which used saturated steam to achieve a LOCA temperature profile. An evaluation test was also performed on new pressure switches of same models, and similar failures were experienced.

Failure Mode:

Upon disassembly, the pressure switches were found to have "blown in" gaskets and the elastometric diaphragms were found to have ruptured.

Possible Corrective Action Considerations:

SOR pressure switch models 5N and 12N (and other models of similar design) should be replaced with qualified models if their installation is in areas where high pressure and steam/spray environment are anticipated. NRC is planning no further testing on these models at the present time.

Generic Implications:

These pressure switches are used in various safety-related applications. The systems affected could be the residual heat removal (RHR), nuclear boiler (NB), reactor core isolation cooling (RCIC), and reactor protection system (RPS). The failure of these pressure switches could adversely affect the safe operation of the plant.

Equipment Environmental Qualification Notice No. 23

Test Summary Report No. 1

Equipment: ITT-Barton electronic transmitters

Test Facility: ITT

Cognizant Design and/or Test Agency: ITT-Barton

Failed Component: Barton transmitter models M-763 and M-764

Type of Test: Performance test

Description of Failure(s):

The potential defect exhibits itself in the form of thermal non-repeatability, and results in performance outside Barton's specification. Transmitters manufactured after September 1, 1981 are suspect. ITT-Barton reported that a total of 474 Barton transmitters (model M-763) and 628 Barton transmitters (model M-764) have been delivered to domestic locations.

Failure Mode:

A leakage current path through the shafts of the zero and span potentiometers to the mounting bracket was detected. This resulted in non-repeatability at 320°F, according to ITT-Barton.

Possible Corrective Action Considerations:

ITT-Barton recommends the installation of a fiberglass insulator between the potentiometer shafts and the mounting brackets. Field repair kits are being prepared by Barton for onsite correction of the leakage current problem. ITT-Barton has notified all of its customers of this potential defect.

Generic Implications:

The thermal non-repeatability of these transmitters could impede the intended function of a safety system that is actuated or controlled by these transmitters. In addition, due to the thermal non-repeatability the instrument indication in the control room could become inaccurate. Tests conducted on corrected transmitters have revealed that the test methodology used on all units identified as potentially defective contributed to the out-of-specification performance at normal temperature. Barton has provided its customers with the worst case performance data for their evaluation. Barton also states that some changes to the test methods were made, and presently the specified performance is being achieved in production.

Equipment Environmental Qualification Notice No. 24

GENERIC QA PROBLEMS IN THE EQUIPMENT QUALIFICATION INDUSTRY

The NRC has performed several QA programmatic reviews of companies and laboratory facilities that perform tests to environmentally qualify safety-related electrical equipment used in the harsh environment. This effort was started in late August 1982 to assess the testing organization's establishment and implementation of the QA program based on 10 CFR Part 50, Appendix B criteria.

During these QA programmatic reviews, several generic problems related to the testing industry were identified. They are as follows:

1. Organizations (architect engineers (AEs), manufacturers, suppliers, and testing laboratories) have failed to include 10 CFR Part 50, Appendix B or equivalent quality requirements and 10 CFR Part 21 requirements in purchase orders or contracts. In one case a testing laboratory was performing environmental qualification testing without knowing it was testing safety-related electrical equipment, because the purchase order or contract did not include quality control or 10 CFR Part 21 requirements. NRC inspectors have identified many similar failures to pass on requirements between involved organizations. The NRC considers this to be a serious problem because testing without knowing the criticality of the equipment being tested would likely result in less caution during testing and little concern relative to deviation or defect reporting in accordance with 10 CFR Part 21.
2. A few testing facilities failed to establish and implement a QA program. Other testing facilities failed to properly implement 10 CFR Part 21.
3. The majority of the manufacturing test facilities and testing organizations inspected had QA programs that were deficient or nonconforming. The seriousness of these nonconformances ranged from no QA program to less serious nonconformances such as failing to follow procedures.
4. The generic problems described above have in most cases, been caused by the test organization's customers (manufacturer, AE, or licensee). That is, these upline customers have failed to pass on NRC requirements in procurement documents, failing to ensure that QA programs were established and properly implemented. It is apparent that the audit process (licensee to lowest subcontract tier) is not working properly. A recent example was identified in which three utilities and five AEs had performed audits of the vendor's QA program for manufacturing but had not audited the EQ test program to ensure proper establishment/implementation of the QA program.

Equipment Environmental Qualification Notice No. 24

Equipment: Limitorque valve operators

Reference: Construction Deficiency Report - Part 50.55(e)
Facilities: 50-329, -330

Description of Circumstances:

The Bechtel Associates Professional Corporation, A/E for Consumers Power Company's Midland Plant Units 1 and 2, has recently reported to the NRC the following deficiencies related to the Limitorque valve operators at the Midland plants:

1. The use of underrated terminal blocks in Limitorque operators
2. The use of terminal blocks without proper environmental qualification in Limitorque operators
3. Additional concerns regarding qualification of various Limitorque operator components

These concerns are detailed below.

A. Underrated Terminal Blocks

While replacing a damaged terminal block on a Limitorque operator, Bechtel determined that some of the terminal blocks used for the termination of the leads from the 460-volt motor were rated less than 460-volt. These Limitorque operators, when used on safety-related valves, must function on an emergency core cooling actuation signal (ECCAS). In addition to being a personnel safety hazard, the potential exists for short circuit/flashover, which could render the valves inoperative.

B. Environmental Qualification

During random inspection for underrated terminal blocks, it was discovered that, in some cases, terminal blocks were used from manufacturers not covered by existing qualification reports.

Limitorque provided the following information on environmental qualification of terminal blocks in its July 31, 1981, letter to Bechtel.

The Buchanan 0524 has been qualified by analysis. To supplement the qualification by analysis, Limitorque is currently running a type test on the Buchanan 0524 terminal block. The Buchanan 0824 terminal blocks are not qualified and must be replaced.

Equipment Environmental Qualification Notice No. 24 (Cont.)

Description of Circumstances (Cont.):

Some of the Limitorque operators having Buchanan 0824 type terminal blocks have been used on safety-related valves located inside containment. These operators must function on an ECCAS. The potential exists for a terminal block to fail during its intended service life because of aging and radiation effects, which would render the valve inoperable and prevent proper operation of the safety-related system.

C. Additional Qualification Concerns

During the month of June 1982, a random inspection was made of safety-related Limitorque valve operators supplied through various valve manufacturers and installed inside the reactor building. This inspection resulted in various potential concerns regarding qualification of these Limitorque operators. These concerns are:

1. The motor nameplate ambient temperature rating on various motors installed on some Limitorque operators is 40°C. Limitorque has verbally stated that the Class B insulation motors rated for a 40°C ambient temperature have not undergone qualification testing in accordance with IEEE Std 382-1972 for the specified normal, accident, and postaccident environment. Class H insulation motors are rated for 50°C ambient temperature, but the qualification testing in accordance with IEEE Std 382-1972 for these motors is presently unknown.
2. No identification was evident on certain materials internal to the Limitorque operators (e.g., wiring, insulation, etc.). It is not presently known whether these types are qualified for the service conditions.
3. Various orientations of installed operators were observed. It is not presently known whether the operators are qualified for all installed orientations.
4. Drain plugs on operators were observed to be both in place and removed. Orientation of the operators did not always result in the drain holes being at the lowest point of the installed operator. It is not presently known whether the existence of the drain plug or the orientation of the drain hole is essential to proper operation of the operator or is in conformance with the qualification tests for the operator.
5. Various Limitorque operator limit switch gear frames were observed to be made of a white metal. It is not presently known whether these gear frames are qualified for the service conditions.

Equipment Environmental Qualification Notice No. 24 (Cont.)

Description of Circumstances: (Cont.)

6. Information obtained from purchase order files and qualification files does not agree with the installed components.
7. It is presently not known whether space heaters are qualified or required to be qualified.
8. Various O-rings are located throughout the actuator. It is not presently known whether these components are qualified for the service conditions.
9. Unidentifiable terminal blocks (nonpower lead connectors inside the operators) were observed in other Limitorque operators. It is not presently known whether these components are qualified for the service conditions.

LIST OF RECENTLY ISSUED
IE INFORMATION NOTICES

Information Notice No.	Subject	Date of Issue	Issued to
83-71	Defects in Load-Bearing Welds on Lifting Devices for Vessel Head and Internals	10/27/82	All nuclear power facilities holding an OL or CP
83-70	Vibration-Induced Valve Failures	10/27/83	All nuclear power facilities holding an OL or CP
83-69	Improperly Installed Fire Dampers at Nuclear Power Plants	10/21/83	All nuclear power facilities holding an OL or CP
83-68	Respirator User Warning - Defective Self-Contained Breathing Apparatus Air Cylinders	10/11/83	All nuclear power facilities holding an OL or CP; research and test reactors, fuel cycle licensees; Priority 1 material licensees
83-67	Emergency-Use Respirator Material Defect Causes Production of Noxious	10/11/83	All nuclear power facilities holding an OL or CP; research and test reactors, fuel cycle licensees; Priority 1 material licensees
83-66	Facility at Argentine Critical Facility	10/7/83	All nuclear power facilities holding an OL or CP; non-power reactor, critical facility and fuel cycle licensees
83-65	Surveillance of Flow in RTD Bypass Loops Used in Westinghouse Plants	10/07/83	All Westinghouse facilities holding an OL or CP
83-64	Lead Shielding Attached to Safety-Related Systems Without 10 CFR 50.59 Evaluations	09/29/83	All power reactor facilities holding an OL or CP

OL = Operating License
CP = Construction Permit

YOUNGSTOWN WELDING & ENG CO
P O BOX 2461
YOUNGSTOWN OH 44509

YOUNGSTOWN WELDING & ENG CO
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YUBA HEAT TRANSFER CORP
CHAS. JEN DENT
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CARL A SARGENT
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115238091757 1 99999
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115230082283 1 99999
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115230092869 1 99999
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115009091750 1 99999
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115230064758 1 99999
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B E SCARCA
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133065055288 1 99999
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215230001417 1 99999
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199352053149 1 99999
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199352055108 1 99999
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215230006522 1 99999
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215230006498 1 99999
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1156630531142 1 99999
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115230022974 1 99999
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185282091751 1 99999
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1150240531139 1 99999
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ELECTRO MECHANICAL DIVISION
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CHESWICK AVENUE
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121030081454 1 99999
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112663001142 1 99999
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115230092715 1 99999
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137830081131 1 99999
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121030091759 1 99999
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215230001379 1 99999
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114240091752 1 99999
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1325960531144 1 99999
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120014056984 1 99999
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119113091758 1 99999
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199352091760 1 99999
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115230006610 1 99999
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215230001222 1 99999
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114845053148 1 99999
WESTINGHOUSE ELECTRIC CORP
INDUST & GOVT TUBE DIV
QUALITY ASSURANCE MANAGER
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115220001629 1 99999
WESTINGHOUSE ELECTRIC CORP
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115663091249 1 99999
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AESD
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115230065223 1 99999
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115230006709 1 99999
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225305005701 1 99999
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125305004355 1 99999
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126506081876 1 99999
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199352080582 1 99999
WASHINGTON PUB POWER SUPL SYS
WASHINGTON NUCLEAR 3
PLANT MANAGER
RICHLAND WA 99352

199352081528 1 99999
WASHINGTON PUB POWER SUPL SYS
C S CARLISLE
DEPUTY PROGRAM MANAGER-VNP-2
PO BOX 968
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W J WOOLLEY CO
A B BONIFACIO
QA MANAGER
1315 W 22ND ST
OAKBROOK IL 60521

120874066211 1 99999
W L FAUTH ASSOC INC
NUCLEAR INDUSTRY CONSULTANTS
14411 POPLAR HILL RD
GERMANTOWN MD 20874

261820001585 1 99999
WAALER EVANS & GORDON
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110007057894 1 99999
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119481053133 1 99999
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PO BOX 873
VALLEY FORGE PA 19481

107036091743 1 99999
WALWORTH CO
ALOYCO PLANT
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LINDEN NJ 07036

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WASHINGTON DEPT OF SOC & HLTH
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198504080853 1 99999
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WASHINGTON PUB POWER SUPL SYS
WASHINGTON NUCLEAR 2
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198541004554 1 99999
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223219007071 1 99999
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123233081537 1 99999
VIRGINIA CORP OF RICHMOND
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VIRGINIA ELECTRIC & POWER CO
NORTH ANNA 1 NPS
PLANT MANAGER
MINERAL VA 23117

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VIRGINIA ELECTRIC & POWER CO
NORTH ANNA 3 NPS
PLANT MANAGER
MINERAL VA 23117

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VIRGINIA ELECTRIC & POWER CO
SURREY 1 NPS
PLANT MANAGER
SURREY VA 23883

123117080970 1 99999
VIRGINIA ELECTRIC & POWER CO
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223261005672 1 99999
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123261080952 1 99999
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123209091591 1 99999
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VIRGINIA ELECTRIC & POWER CO
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NORTH ANNA 2 NPS
PLANT MANAGER
MINERAL VA 23117

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VICE PRESIDENT
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VIRGINIA ELECTRIC & POWER CO
SURREY 2 NPS
PLANT MANAGER
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VIRGINIA ELECTRIC & POWER CO
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123261005558 1 99999
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A B FLANAGAN
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123204080945 1 99999
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123883079289 1 99999
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220006006552 1 99999
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105495091739 1 99999
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RAVENUE C GRISHOLD INDUST PKWY
WILLISTON VT 05495

205602005891 1 99999
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105602065591 1 99999
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105602091612 1 99999
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105354080590 1 99999
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VERMONT YANKEE 1 NPS
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201701005883 1 99999
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205301005886 1 99999
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101701005618 1 99999
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144104091740 1 99999
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101950065238 1 99999
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105495053130 1 99999
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P J STRELCEZYK
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105602053196 1 99999
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205602005895 1 99999
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205602005897 1 99999
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105301036326 1 99999
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201701007004 1 99999
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144104053725 1 99999
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210511005686 1 99999
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176011012301 1 99999
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176012081627 1 99999
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276011006384 1 99999
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194596056507 1 99999
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294596006567 1 99999
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294596007126 1 99999
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101613091729 1 99999
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AMERICAN BRIDGE DIV
GEORGE SUMNER
PLANT QA MANAGER
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184103028043 1 99999
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208225005638 1 99999
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176011056496 2 99999
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ARLINGTON TX 76011

176012081628 1 99999
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176012003589 1 99999
US HRC REGION IV
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BRANCH CHIEF
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ARLINGTON TX 76012

294596006383 1 99999
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194596081626 1 99999
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194596092222 1 99999
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120510093223 1 99999
US SENATE
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168102079365 1 99999
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107081064448 1 99999
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184663053128 1 99999
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120555081463 1 99999
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120555078798 1 99999
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120555081604 1 99999
US HRC
BDO
WALT SCHWINK
PROGRAM MANAGER
HBB-6104
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120555069718 1 99999
US HRC
ASLBP
FREDERICK SHON
HUU-439
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120555028206 1 99999
US HRC
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SUB WEISSBERG
STATE LIAISON OFFICER
AB-2032
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119406003570 3 99999
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REGIONAL ADMINISTRATOR
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119406026175 1 99999
US HRC REGION I
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KING OF PRUSSIA PA 19406

219406006387 1 99999
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REGIONAL ADMINISTRATOR
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130303081629 1 99999
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130303042718 1 99999
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120555081107 1 99999
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AKOD
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263A BUS
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120555007804 1 99999
US HRC
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120555007803 1 99999
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119406004826 1 99999
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119406081633 1 99999
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130303056497 1 99999
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101 HARRIETTA STREET
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ATLANTA GA 30303

230303006346 1 99999
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160137064870 1 99999
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120555066613 1 99999
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120555062544 1 99999
US NRC
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CHRISTINE H KOHL
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EUV-529
WASHINGTON DC 20555

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US NRC
ASLBP
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US NRC
ABOD
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120555030757 1 99999
US NRC
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120555052087 1 99999
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120555009542 1 99999
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120555006247 1 99999
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120555026886 1 99999
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120555093290 1 99999
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120555003890 1 99999
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120555031467 1 99999
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H-1016
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ENRETH A LUEBKE
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TECHNICAL ACTIVITIES
H-1016
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120555004171 1 99999
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120555007785 1 99999
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120555078950 1 99999
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120555038234 1 99999
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120555056993 1 99999
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120555009813 1 99999
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120555064868 1 99999
US NRC
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120555003845 1 99999
US NRC
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120555077553 1 99999
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10307001100 1 US NRC SEABROOK NPS RESIDENT INSPECTOR PO BOX 1149 SEABROOK	99999 NM 03874	1203300321 1 US NRC SECY SECRETARY H-1149 WASHINGTON	99999 DC 20555
137379051333 1 US NRC SEQUOYAN NPS RESIDENT INSPECTOR 2600 IGONS PERRY RD SODDY DAISS	99999 TN 37379	111778051341 1 US NRC SHOREHAM NPS RESIDENT INSPECTOR PO BOX B ROCKY POINT	99999 NY 11778
177414051312 1 US NRC SOUTH TEXAS NPS RESIDENT INSPECTOR PO BOX 910 DAY CITY	99999 TX 77414	133457056920 1 US NRC ST LUCIE NPS RESIDENT INSPECTOR 7585 SOUTH HWY A1A JENSEN BEACH	99999 FL 33457
129065092300 1 US NRC SUNNER NPS RESIDENT INSPECTOR RTE 1 BOX 64 JENKINSVILLE	99999 SC 29065	123883064021 1 US NRC SUNRY NPS RESIDENT INSPECTOR RTE 1 BOX 166 SUNRY	99999 VA 23883
118655051344 1 US NRC SUSQUEHANNA NPS RESIDENT INSPECTOR PO BOX 52 SHICKSHINNY	99999 PA 18655	117057077547 1 US NRC THREE MILE ISLAND NPS-1 SR RESIDENT INSPECTOR PO BOX 311 HIDDLETOWN	99999 PA 17057
120555064864 1 US NRC TRAINING & ADM STAFF DIRECTOR EUN-359 WASHINGTON	99999 DC 20555	197048051320 1 US NRC TROJAN NPS RESIDENT INSPECTOR PO BOX 0 RAINIER	99999 OR 97048
133030051316 1 US NRC TURKEY POINT NPS RESIDENT INSPECTOR PO BOX 1207 HONESTEAD	99999 PL 33030	105354056253 1 US NRC VERMONT YANKEE NPS RESIDENT INSPECTOR PO BOX 176 VERNON	99999 VT 05354
130830080044 1 US NRC VOGTLE NPS RESIDENT INSPECTOR PO BOX 572 WAYNESBORO	99999 GA 30830	170066057471 1 US NRC WATERFORD NPS RESIDENT INSPECTOR PO BOX 822 KILLONA	99999 LA 70066
137381053194 1 US NRC WATTS BAR NPS RESIDENT INSPECTOR RTE 2 BOX 300 SPRING CITY	99999 TN 37381	166839057446 1 US NRC WOLF CREEK NPS RESIDENT INSPECTOR PO BOX 311 BURLINGTON	99999 KS 66839
199352051322 1 US NRC WPPSS 1 NPS RESIDENT INSPECTOR PO BOX 69 RICHLAND	99999 WA 99352	199352057472 1 US NRC WPPSS 2 NPS RESIDENT INSPECTOR PO BOX 69 RICHLAND	99999 WA 99352
198541057159 1 US NRC WPPSS 3 NPS RESIDENT INSPECTOR PO BOX 545 ELMA	99999 WA 98541	101350056252 1 US NRC YANKEE ROVE NPS RESIDENT INSPECTOR PO BOX 28 MONROE BRIDGE	99999 MA 01350

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 RESIDENT INSPECTOR
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 US NRC
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 US NRC
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 QUAD CITIES NPS
 RESIDENT INSPECTOR
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 CORDOVA IL 61242
 120555066490 1 99999
 US NRC
 RES-DIV OF ACCIDENT EVALUATION
 DIRECTOR
 SS-1130
 WASHINGTON DC 20555
 120555063085 1 99999
 US NRC
 RES-DIV OF ENGINEERING TECH
 SECTION LEADER-STRUCTURAL ENGR
 MECHANICAL/STRUCTURAL ENGR BR
 SS-1130
 WASHINGTON DC 20555
 120555063568 1 99999
 US NRC
 RES-DIV OF FACILITY OPERATIONS
 BRANCH CHIEF
 INSTRUMENTATION & CONTROL BR
 SS-1130
 WASHINGTON DC 20555
 170775065848 1 99999
 US NRC
 RIVERBEND NPS
 RESIDENT INSPECTOR
 PO BOX 1051
 ST FRANCISVILLE LA 70775
 108038051342 1 99999
 US NRC
 SALEM NPS
 RESIDENT INSPECTOR
 PO DRAWER I
 HANCOCKS BRIDGE NJ 08038

US NRC
 OYSTER CREEK NPS
 RESIDENT INSPECTOR
 PO BOX 445
 FORKED RIVER NJ 08731
 185001051310 1 99999
 US NRC
 PALO VERDE NPS
 RESIDENT INSPECTOR
 PO BOX 21324
 PHOENIX AZ 85001
 144081056716 1 99999
 US NRC
 PERRY NPS
 RESIDENT INSPECTOR
 PARNLEY AT CENTER RD
 PERRY OH 44081
 102360055458 1 99999
 US NRC
 PILGRIM NPS
 RESIDENT INSPECTOR
 PO BOX 867
 PLYMOUTH MA 02360
 155089051329 1 99999
 US NRC
 PRAIRIE ISLAND NPS
 RESIDENT INSPECTOR
 RR 2 BOX 500A
 WELCH WY 55089
 195638051321 1 99999
 US NRC
 RANCHO SECO NPS
 RESIDENT INSPECTOR
 14410 TWIN CITIES RD
 MERRALD CA 95638
 120555063080 1 99999
 US NRC
 RES-DIV OF ENGINEERING TECH
 DIVISION DIRECTOR
 SS-1130
 WASHINGTON DC 20555
 120555066611 1 99999
 US NRC
 RES-DIV OF ENGINEERING TECH
 BRANCH CHIEF
 MECHANICAL/STRUCTURAL ENGR BR
 SS-1130
 WASHINGTON DC 20555
 120555063571 1 99999
 US NRC
 RES-DIV OF FACILITY OPERATIONS
 BRANCH CHIEF
 HUMAN FACTORS BR
 SS-1130
 WASHINGTON DC 20555
 129550057468 1 99999
 US NRC
 ROBINSON NPS
 RESIDENT INSPECTOR
 RTE 5 BOX 266-1A
 HARTSVILLE SC 29550
 192672051318 1 99999
 US NRC
 SAN ONOPRE NPS
 RESIDENT INSPECTOR
 PO BOX 4329
 SAN CLEMENTE CA 92672

US NRC
NRR-DIV SYSTEMS INTEGRATION
BRANCH CHIEF
INSTRU & CONTROL SYS BR
P-1030C
WASHINGTON DC 20555

120555056772 1 99999
US NRC
NRR-DIV SYSTEMS INTEGRATION
SECTION LEADER-EFFLUENT TR SYS
METEOR & EFFLUENT TREAT SYS BR
P-730
WASHINGTON DC 20555

120555056796 1 99999
US NRC
NRR-DIV SYSTEMS INTEGRATION
BRANCH CHIEF
RADIOLOGICAL ASSESSMENT BR
P-712
WASHINGTON DC 20555

120555056740 1 99999
US NRC
NRR-PLAN & PROG ANALYSIS STAFF
BRANCH CHIEF
TECHNICAL SUPPORT BR
P-408
WASHINGTON DC 20555

120555056741 2 99999
US NRC
NRR-THI PROGRAM OFFICE
SECTION LEADER
ENVIRONMENT REVIEW
AR-5031
WASHINGTON DC 20555

120555004754 1 99999
US NRC
OCA
OFFICE DIRECTOR
H-1159
WASHINGTON DC 20555

120555038064 1 99999
US NRC
OCH
TECH ASSIST TO COM ANHEARNE
H-1149
WASHINGTON DC 20555

120555038066 1 99999
US NRC
OCH
TECH ASSIST TO CHAIR PALLADINO
H-1159
WASHINGTON DC 20555

120555003920 1 99999
US NRC
OGC
GENERAL COUNSEL
H-1035
WASHINGTON DC 20555

120555003928 1 99999
US NRC
OPA
OFFICE DIRECTOR
HMBB-3709
WASHINGTON DC 20555

120555003995 1 99999
US NRC
ORR
BRANCH CHIEF
DHI
HMBB-7602
WASHINGTON DC 20555

US NRC
NRR-DIV SYSTEMS INTEGRATION
SECTION LEADER-RAD PROTECT
RADIOLOGICAL ASSESSMENT BR
P-712
WASHINGTON DC 20555

120555056790 1 99999
US NRC
NRR-DIV SYSTEMS INTEGRATION
SPECIAL ASSISTANT
POLICY DEVELOPMENT
P-802
WASHINGTON DC 20555

120555063630 1 99999
US NRC
NRR-DIV SYSTEMS INTEGRATION
BRANCH CHIEF
ACCIDENT EVALUATION BR DSI
P-802B
WASHINGTON DC 20555

117057056750 1 99999
US NRC
NRR-THI PROGRAM OFFICE
DEPUTY PROGRAM DIRECTOR
THI SITE - PO BOX 311
MIDDLETON PA 17057

120555056749 1 99999
US NRC
NRR-THI PROGRAM OFFICE
SECTION LEADER
SAFETY REVIEW
AR-5031
WASHINGTON DC 20555

120555031469 1 99999
US NRC
OCH
TECH ASSIST TO COM ASSELSTINE
H-1149
WASHINGTON DC 20555

120555038065 1 99999
US NRC
OCH
TECH ASSIST TO COM GILINSKY
H-1149
WASHINGTON DC 20555

120555003969 1 99999
US NRC
OELD-RULEMAKING & ENFORCE DIV
DIVISION DIRECTOR
HMBB-9604
WASHINGTON DC 20555

120555003989 1 99999
US NRC
OIP
OFFICE DIRECTOR
HWS-414
WASHINGTON DC 20555

120555003916 1 99999
US NRC
OPE
OFFICE DIRECTOR
H-1013
WASHINGTON DC 20555

120555056728 1 99999
US NRC
OSP-STATE & LICENSEE RELATIONS
ASSISTANT DIRECTOR
AR-5037
WASHINGTON DC 20555

120555056724 1 99999
 US NRC
 NRR-DIV OF ENGINEERING
 BRANCH CHIEF
 CHEMICAL ENG BR
 P-302
 WASHINGTON DC 20555

120555056724 1 99999
 US NRC
 NRR-DIV OF LICENSING
 DEPUTY DIRECTOR
 528
 WASHINGTON DC 20555

120555056810 1 99999
 US NRC
 NRR-DIV OF LICENSING
 BRANCH CHIEF
 ORB 01
 440
 WASHINGTON DC 20555

120555056812 1 99999
 US NRC
 NRR-DIV OF LICENSING
 BRANCH CHIEF
 ORB 03
 430
 WASHINGTON DC 20555

120555056817 1 99999
 US NRC
 NRR-DIV OF LICENSING
 BRANCH CHIEF
 LICENSING BR-1
 316
 WASHINGTON DC 20555

120555063023 1 99999
 US NRC
 NRR-DIV OF LICENSING
 BRANCH CHIEF
 SYSTEMATIC EVALUATION PGN BR
 516
 WASHINGTON DC 20555

120555063900 1 99999
 US NRC
 NRR-DIV OF LICENSING
 BRANCH CHIEF
 STAN & SPECIAL PROJECTS BR
 340
 WASHINGTON DC 20555

120555066420 1 99999
 US NRC
 NRR-DIV OF LICENSING
 BRANCH CHIEF
 ORB-4
 416A
 WASHINGTON DC 20555

120555056782 1 99999
 US NRC
 NRR-DIV SAFETY TECHNOLOGY
 DIRECTOR
 P-278
 WASHINGTON DC 20555

120555056788 1 99999
 US NRC
 NRR-DIV SAFETY TECHNOLOGY
 SECTION LEADER-STSS
 LICENSING GUIDANCE BR
 286
 WASHINGTON DC 20555

120555056792 1 99999
 US NRC
 NRR-DIV SAFETY TECHNOLOGY
 BRANCH CHIEF
 SAFETY PROG EVALUATION BR
 216
 WASHINGTON DC 20555

120555056770 1 99999
 US NRC
 NRR-DIV OF ENGINEERING
 BRANCH CHIEF
 STRUCTURAL & GEOTECH ENGN BR
 P-1022
 WASHINGTON DC 20555

120555056799 1 99999
 US NRC
 NRR-DIV OF LICENSING
 BRANCH CHIEF
 LICENSING BR-2
 328
 WASHINGTON DC 20555

120555056811 1 99999
 US NRC
 NRR-DIV OF LICENSING
 BRANCH CHIEF
 OPERATING REACTOR BR-2
 416B
 WASHINGTON DC 20555

120555056814 1 99999
 US NRC
 NRR-DIV OF LICENSING
 BRANCH CHIEF
 ORB 05
 308
 WASHINGTON DC 20555

120555058236 1 99999
 US NRC
 NRR-DIV OF LICENSING
 BRANCH CHIEF
 LICENSING BR-3
 124
 WASHINGTON DC 20555

120555063682 1 99999
 US NRC
 NRR-DIV OF LICENSING
 BRANCH CHIEF
 OPERATING REACTORS ASSESS BR
 540
 WASHINGTON DC 20555

120555064843 1 99999
 US NRC
 NRR-DIV OF LICENSING
 DIRECTOR
 528
 WASHINGTON DC 20555

120555056753 1 99999
 US NRC
 NRR-DIV SAFETY TECHNOLOGY
 TECHNICAL ASSISTANT
 278
 WASHINGTON DC 20555

120555056784 1 99999
 US NRC
 NRR-DIV SAFETY TECHNOLOGY
 ASSISTANT DIRECTOR
 GENERIC PROJECTS
 278
 WASHINGTON DC 20555

120555056791 1 99999
 US NRC
 NRR-DIV SAFETY TECHNOLOGY
 ASSISTANT DIRECTOR
 TECHNOLOGY
 266
 WASHINGTON DC 20555

120555056794 2 99999
 US NRC
 NRR-DIV SAFETY TECHNOLOGY
 BRANCH CHIEF
 RELIABILITY & RISK ASSESS BR
 216
 WASHINGTON DC 20555

155362055884 1 99999
US NRC
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113093080043 1 99999
US NRC
NINE MILE POINT NPS
RESIDENT INSPECTOR
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120555004773 1 99999
US NRC
NHSS-DIV FUEL CYCLE MATL SPTY
DIRECTOR
SS-396
WASHINGTON DC 20555

120555035625 1 99999
US NRC
NHSS-DIV OF SAFEGUARDS
BRANCH CHIEF
LICENSING POLICY & PROGRAMS BR
SS-881
WASHINGTON DC 20555

120555029836 1 99999
US NRC
NHSS-DIV OF WASTE MANAGEMENT
DIVISION DIRECTOR
SS-623
WASHINGTON DC 20555

120555056805 1 99999
US NRC
NRR-DIV HUMAN FACTORS SAFETY
BRANCH CHIEF
OPERATOR LICENSING BR
AR-5221
WASHINGTON DC 20555

120555056729 1 99999
US NRC
NRR-DIV OF ENGINEERING
BRANCH CHIEF
EQUIPMENT QUALIFICATION BR
P-234
WASHINGTON DC 20555

120555056731 1 99999
US NRC
NRR-DIV OF ENGINEERING
ASSISTANT DIRECTOR
MATLS & QUALIF ENGINEERING
P-302
WASHINGTON DC 20555

120555056739 1 99999
US NRC
NRR-DIV OF ENGINEERING
SECTION LEADER-SDQ
EQUIP QUALIF BR
538
WASHINGTON DC 20555

120555056745 1 99999
US NRC
NRR-DIV OF ENGINEERING
BRANCH CHIEF
MATERIALS ENGR BR
P-328
WASHINGTON DC 20555

120555056747 1 99999
US NRC
NRR-DIV OF ENGINEERING
DIRECTOR
P-202
WASHINGTON DC 20555

113093057469 1 99999
US NRC
NINE MILE POINT NPS
RESIDENT INSPECTOR
PO BOX 126
LYCONING NY 13093

120555004023 1 99999
US NRC
NHSS
OFFICE DIRECTOR
SS-958
WASHINGTON DC 20555

120555024900 1 99999
US NRC
NHSS-DIV FUEL CYCLE MATL SPTY
SECTION LEADER
TECH ASSESS EVALUATION SECTION
SS-396
WASHINGTON DC 20555

120555055502 1 99999
US NRC
NHSS-DIV OF SAFEGUARDS
DIVISION DIRECTOR
SS-881
WASHINGTON DC 20555

123117051334 1 99999
US NRC
NORTH ANNA NPS
RESIDENT INSPECTOR
RTE 2 BOX 78A
BIRMINGHAM VA 23117

120555056815 1 99999
US NRC
NRR-DIV HUMAN FACTORS SAFETY
DIRECTOR
P-242
WASHINGTON DC 20555

120555056730 1 99999
US NRC
NRR-DIV OF ENGINEERING
SECTION LEADER-CORROSION ENGR
CHEM ENGR BR
P-1000
WASHINGTON DC 20555

120555056736 1 99999
US NRC
NRR-DIV OF ENGINEERING
SECTION LEADER-B
STRUCTURAL ENGR BR
P-1022
WASHINGTON DC 20555

120555056743 1 99999
US NRC
NRR-DIV OF ENGINEERING
SECTION LEADER-CHEMICAL TECH
CHEMICAL ENGR BR
P-802
WASHINGTON DC 20555

120555056746 1 99999
US NRC
NRR-DIV OF ENGINEERING
ASSISTANT DIRECTOR
COMPONENTS & STRUCTURE ENGR
P-530
WASHINGTON DC 20555

120555056755 1 99999
US NRC
NRR-DIV OF ENGINEERING
SECTION LEADER-ENVIR QUALITY
EQUIP QUALIF BR
440
WASHINGTON DC 20555

US NRC
IE-DIV ENER PREP & ENGR RESPON
SECTION CHIEF
ENGR & GEN COMMUN BR SECT B
EVS-312A
WASHINGTON DC 20555

120555078987 1 99999
US NRC
IE-DIV ENER PREP & ENGR RESPON
SECTION CHIEF
INCIDENT RESPONSE BR SECTION B
EVS-359
WASHINGTON DC 20555

120555063643 1 99999
US NRC
IE-DIV QUAL ASSUR SPGDS & INSP
BRANCH CHIEF
SPGDS & NATLS PROGRAMS BR
EVS-359
WASHINGTON DC 20555

120555063645 2 99999
US NRC
IE-DIV QUAL ASSUR SPGDS & INSP
BRANCH CHIEF
REACTOR CONSTRUCTION PROGRS BR
EVS-360
WASHINGTON DC 20555

120555082518 1 99999
US NRC
IE-DIV QUAL ASSUR SPGDS & INSP
DEPUTY DIVISION DIRECTOR
EVS-360
WASHINGTON DC 20555

110511051346 1 99999
US NRC
INDIAN POINT 2 NPS
RESIDENT INSPECTOR
PO BOX 38
BUCHANAN NY 10511

154216055881 1 99999
US NRC
KEWAUNEE NPS
RESIDENT INSPECTOR
RTE 1 BOX 999
KEWAUNEE WI 54216

161341051325 1 99999
US NRC
LASALLE NPS
RESIDENT INSPECTOR
RR 1 BOX 224
MANSFIELD IL 61341

104578055456 1 99999
US NRC
MAINE YANKEE NPS
RESIDENT INSPECTOR
PO BOX 8
WISCASSET ME 04578

128078057470 1 99999
US NRC
MCGUIRE NPS
RESIDENT INSPECTOR
RTE 4 BOX 529
MONTICELLO NC 28078

106385092296 1 99999
US NRC
MILLSTONE III NPS
SR RESIDENT INSPECTOR
PO BOX 615
WATERFORD CT 06385

US NRC
IE-DIV ENER PREP & ENGR RESPON
SECTION CHIEF
ENGR & GEN COMMUN BR SECT A
EVS-312A
WASHINGTON DC 20555

120555063635 1 99999
US NRC
IE-DIV QUAL ASSUR SPGDS & INSP
DIVISION DIRECTOR
EVS-360
WASHINGTON DC 20555

120555063644 1 99999
US NRC
IE-DIV QUAL ASSUR SPGDS & INSP
BRANCH CHIEF
OPERATING REACTOR PROGRAMS BR
EVS-360
WASHINGTON DC 20555

120555078894 1 99999
US NRC
IE-DIV QUAL ASSUR SPGDS & INSP
BRANCH CHIEF
QUALITY ASSURANCE BR
EVS-305A
WASHINGTON DC 20555

137411078989 1 99999
US NRC
IE-TECHNICAL TRAINING CENTER
CENTER DIRECTOR
TTC
CHATTANOOGA TN 37411

110511080042 1 99999
US NRC
INDIAN POINT 3 NPS
RESIDENT INSPECTOR
PO BOX 66
BUCHANAN NY 10511

154632055886 1 99999
US NRC
LA CROSSE NPS
RESIDENT INSPECTOR
RR 1 BOX 276
GENOA WI 54632

119464053346 1 99999
US NRC
LIMERICK NPS
RESIDENT INSPECTOR
PO BOX 47
SARATOGA PA 19464

147147052527 1 99999
US NRC
MARBLE HILL NPS
RESIDENT INSPECTOR
3738 MARBLE HILL RD
MADISON IN 47147

148640051314 1 99999
US NRC
MIDLAND NPS
RESIDENT INSPECTOR
RTE 7
MIDLAND MI 48640

106357074458 1 99999
US NRC
MILLSTONE NPS
RESIDENT INSPECTOR
PO DRAWER KK
MANTIC CT 06357

US NRC
DRESDEN STATION NPS
RESIDENT INSPECTOR
RR 1
MORRIS IL 60450

120555067244 1 99999
US NRC
EDO
TECHNICAL ASSISTANT
HDB-6209
WASHINGTON DC 20555

148166056259 1 99999
US NRC
PERMI NPS
RESIDENT INSPECTOR
6450 NORTH DIXIE HWY
NEWPORT RI 08166

168023057474 1 99999
US NRC
FORT CALHOUN NPS
RESIDENT INSPECTOR
PO BOX 309
FORT CALHOUN NE 68023

114519057473 1 99999
US NRC
GINNA NPS
RESIDENT INSPECTOR
1503 LAKE RD
ONTARIO NY 14519

106423056254 1 99999
US NRC
HADDAM NECK NPS
RESIDENT INSPECTOR
EAST HADDAM POST OFFICE
EAST HADDAM CT 06423

108038055459 1 99999
US NRC
HOPE CREEK NPS
RESIDENT INSPECTOR
PO BOX 241
HANCOCKS BRIDGE NJ 08038

120555063606 1 99999
US NRC
IE
BRANCH CHIEF
PROGRAM SUPPORT BR
EUV-359
WASHINGTON DC 20555

12055506784 1 99999
US NRC
IE
STAFF DIRECTOR
ENFORCEMENT STAFF
EUV-359
WASHINGTON DC 20555

120555063622 1 99999
US NRC
IE-DIV EMER PREP & ENGR RESPON
DEPUTY DIVISION DIRECTOR
EUV-359
WASHINGTON DC 20555

120555063639 1 99999
US NRC
IE-DIV EMER PREP & ENGR RESPON
BRANCH CHIEF
EVENTS ANALYSIS BR
EVS-305A
WASHINGTON DC 20555

US NRC
DUANE ARNOLD NPS
RESIDENT INSPECTOR
RR 1
PALO IA 52324

136319065849 1 99999
US NRC
PARLEY NPS
RESIDENT INSPECTOR
RTE 2 PO BOX 24
COLUMBIA AL 36319

113093057158 1 99999
US NRC
FITZPATRICK NPS
RESIDENT INSPECTOR
PO BOX 136
LYCONING NY 13093

180651051331 1 99999
US NRC
FORT ST VRAIN NPS
RESIDENT INSPECTOR
PO BOX 640
PLATTEVILLE CO 80651

139150056255 1 99999
US NRC
GRAND GULF NPS
RESIDENT INSPECTOR
RTE 2 BOX 399
PORT GIBSON MS 39150

127562057157 1 99999
US NRC
HARRIS NPS
RESIDENT INSPECTOR
ROUTE 1 BOX 315B
NEW HILL NC 27562

120555063603 1 99999
US NRC
IE
OFFICE DIRECTOR
EUV-359
WASHINGTON DC 20555

120555063634 1 99999
US NRC
IE
DEPUTY OFFICE DIRECTOR
EUV-359
WASHINGTON DC 20555

120555056764 1 99999
US NRC
IE-DIV EMER PREP & ENGR RESPON
BRANCH CHIEF
EMERGENCY PREPAREDNESS BR
EUV-359
WASHINGTON DC 20555

120555063633 1 99999
US NRC
IE-DIV EMER PREP & ENGR RESPON
DIVISION DIRECTOR
EVS-305A
WASHINGTON DC 20555

120555063649 1 99999
US NRC
IE-DIV EMER PREP & ENGR RESPON
BRANCH CHIEF
ENGR & GENERIC COMMUNICATIONS
EVS-312A
WASHINGTON DC 20555

US NRC
ASLBP
CHAIRMAN
EUV-439
WASHINGTON DC 20555

120555020228 1 99999
US NRC
ASLBP
LIBRARY
EUV-439
WASHINGTON DC 20555

115077052530 1 99999
US NRC
BEAVER VALLEY 1 NPS
RESIDENT INSPECTOR
PO BOX 298
SHIPPINGPORT PA 15077

135752056922 1 99999
US NRC
BELLEFONTE NPS
RESIDENT INSPECTOR
PO BOX 877
HOLLYWOOD AL 35752

160407078940 1 99999
US NRC
BRAIDWOOD NPS
RESIDENT INSPECTOR
RR 1 BOX 99
BRACEVILLE IL 60407

128461051337 1 99999
US NRC
BRUNSWICK NPS
RESIDENT INSPECTOR
STAR RTE 1 BOX 208
SOUTHPORT NC 28461

165077052529 1 99999
US NRC
CALLAWAY NPS
RESIDENT INSPECTOR
RR 1 BOX 1H
STREEDMAN MO 65077

129745066556 1 99999
US NRC
CATAUBA NPS
RESIDENT INSPECTOR
ROUTE 2 BOX 179H
YORK SC 29745

176043051311 1 99999
US NRC
COMANCHE PEAK NPS
RESIDENT INSPECTOR
PO BOX 38
GLEN ROSE TX 76043

132629054656 1 99999
US NRC
CRYSTAL RIVER NPS
RESIDENT INSPECTOR
RTE 3 BOX 717
CRYSTAL RIVER FL 32629

143449051326 1 99999
US NRC
DAVIS BESSE NPS
RESIDENT INSPECTOR
5503 NORTH STATE RTE 2
OAK HARBOR OH 43449

US NRC
ASLBP
ASSISTANT EXECUTIVE SECRETARY
EUV-439
WASHINGTON DC 20555

120555067119 1 99999
US NRC
ASLBP
TECHNICAL ADVISOR
EUV-439
WASHINGTON DC 20555

115077077510 1 99999
US NRC
BEAVER VALLEY 2 NPS
RESIDENT INSPECTOR
PO BOX 181
SHIPPINGPORT PA 15077

149720055885 1 99999
US NRC
BIG ROCK POINT NPS
RESIDENT INSPECTOR
RR 3 BOX 600
CHARLEVOIX MI 49720

135611051315 1 99999
US NRC
BPOUNTS FERRY NPS
RESIDENT INSPECTOR
ROUTE 2 PO BOX 311
ATHENS AL 35611

161010066839 1 99999
US NRC
BYRON NPS
RESIDENT INSPECTOR
4448 NORTH GERMAN CHURCH RD
BYRON IL 61010

120657055454 1 99999
US NRC
CALVERT CLIFF NPS
RESIDENT INSPECTOR
PO BOX 437
LUSBY MD 20657

161727055455 1 99999
US NRC
CLINTON NPS
RESIDENT INSPECTOR
RR 3 BOX 229-A
CLINTON IL 61727

168321064276 1 99999
US NRC
COOPER STATION NPS
RESIDENT INSPECTOR
PO BOX 218
BROWNVILLE NE 68321

149127051324 1 99999
US NRC
D C COOK NPS
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193424053477 1 99999
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120515081496 1 99999
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120380079658 1 99999
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HEADQUARTERS
COMMANDANT OF THE MARINE CORPS
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LMA 3
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120555003911 1 99999
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ACRS
EXECUTIVE DIRECTOR
H-1016
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120555003956 1 99999
US NRC
ADM-DIV OF TIDC
BRANCH CHIEF
RECORDS SERVICES BR
042
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120555051515 1 99999
US NRC
ABOD
DIRECTOR
EWS-263A
WASHINGTON DC 20555

120555003909 1 99999
US NRC
ASLAP
CHAIRMAN
EWH-529
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RIS COORDINATOR
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