



M. Christopher Nolan  
526 South Church Street  
Charlotte, NC 28202

Mailing Address:  
Mail Code EC2ZF/ P.O. Box 1006  
Charlotte, NC 28201-1006  
704.382.7426

10 CFR 50.4(b)(5)(ii)  
10 CFR 50.54(q)(5)

Serial: RA-16-0022  
April 21, 2016

U.S. Nuclear Regulatory  
Attn: Document Control Desk  
Washington, DC 20555-0001

OCONEE NUCLEAR STATION, UNITS 1, 2 AND 3  
DOCKET NOS. 50-269, 50-270, 50-287  
LICENSE NOS. DPR-38, DPR-47 AND DPR-55

**Subject: TRANSMITTAL OF EMERGENCY PLAN IMPLEMENTING PROCEDURE: EP  
FAM 3.3, REVISION 15**

In accordance with 10 CFR 50.4(b)(5)(iii), 10 CFR 50.54(q)(5) and 10 CFR 50, Appendix E, Section V, Duke Energy is submitting revised Fleet Emergency Plan Implementing Procedure EP FAM 3.3, Alert and Notification System (Siren Program) Revision 15 for Oconee Nuclear Station, Units 1, 2 and 3. The effective date of EP FAM 3.3, Revision 15 was March 31, 2016.

Duke Energy has evaluated this procedure revision in accordance with 10 CFR 50.54(q), and determined that the revision does not constitute a reduction in the effectiveness of the Emergency Plan for Oconee Nuclear Station, Units 1, 2 and 3 and that the Emergency Plan, as changed, continue to meet the standards of 10 CFR 50.47(b) and the requirements of 10 CFR 50, Appendix E.

Enclosure 1 provides a 10 CFR 50.54(q)(5) summary for procedure EP FAM 3.3, Revision 15. Enclosure 2 contains a copy of procedure EP FAM 3.3, Revision 15.

This document contains no regulatory commitments. Please refer any questions regarding this submittal to Mr. Art Zaremba at 980-373-2062.

**U.S. Nuclear Regulatory Commission**

Page 2 of 4

Sincerely,

A handwritten signature in black ink, appearing to read "M. Christopher Nolan". The signature is fluid and cursive, with a prominent initial "M" and a long, sweeping underline.

M. Christopher Nolan  
Director - Nuclear Regulatory Affairs

Enclosures:

1. 10 CFR 50.54(q)(5) Summary
2. Copy of Fleet Emergency Preparedness Procedure

**U.S. Nuclear Regulatory Commission**

Page 3 of 4

xc (w/ Enclosures):

U. S. Nuclear Regulatory Commission - Region II  
Marquis One Tower  
245 Peachtree Center Ave., NE Suite 1200  
Atlanta, GA 30303-1257

R. Hall, Senior Project Manager (ONS)  
U. S. Nuclear Regulatory Commission  
One White Flint North, Mail Stop 8 G9A  
11555 Rockville Pike  
Rockville, MD 20852-2738

E.L. Crowe  
NRC Senior Resident Inspector  
Oconee Nuclear Station

**U.S. Nuclear Regulatory Commission**

Page 4 of 4

bxc (w/out enclosure):

P.M. Street

C.J. Wasik

P.C. Metler (For ONS Licensing/Nuclear Records)

M.C. Nolan

A.H. Zaremba

A. Young

ELL

File: (Corporate)



### **10 CFR 50.54(q)(5) Summary**

In accordance with 10 CFR 50.54(q)(5), Duke Energy is providing a summary of the Fleet Emergency Plan Implementing Procedure being submitted with this letter.

EP FAM 3.3, Alert and Notification System (Siren Program), Revision 15

- The administrative and physical means for alerting the public within the EPZ has not changed. The siren system will continue to be used for prompt public alerting. The activation method did not change. This revision to the EP FAM did not change the locations of the sirens or the model siren used. It did not change the siren testing frequency. The revision added a siren battery replacement checklist. The Emergency Plan does not specify a type of power supply or describe the backup batteries.

Implementation of EP FAM 3.3 , Revision 15 does not result in a reduction in effectiveness of the Emergency Plan, as written and approved for Oconee. The procedure revision continues to comply with the FEMA approved ANS design report and supporting FEMA approved letter (dated June 2010). The siren system will be tested periodically as required by 10 CFR50.47 (b)(6), Appendix E.IV.G, NUREG-0654 Appendix 3, and FEMA P-1028, *Radiological Emergency Preparedness Manual*, Part V; Supplemental Guidance, A. Alert and Notification Systems, and the results reported to FEMA per NUREG-0654 Appendix 3.

RA-16-0022  
Enclosure 2

**Copy of Fleet Emergency Preparedness Procedure**



## EMERGENCY PLAN RELATED

### EMERGENCY PLANNING FUNCTIONAL AREA MANUAL

#### 3.3 Alert and Notification System (Siren Program)

<u>Revision Number</u>	<u>Issue Date</u>
0	06/30/00
1	06/28/01
2	02/26/03
3	07/14/03
4	06/30/04
5	03/21/05
6	03/29/06
7	04/13/07
8	06/29/07
9	04/23/08
10	10/02/08
11	06/29/10
12	08/12/14
13	02/05/15
14	06/18/15
15	03/31/16

## 3.3 Alert and Notification System (Siren Program)

**3.3 DOCUMENT REVISION DESCRIPTION**

<b><u>REVISION NO.</u></b>	<b><u>PAGES OR SECTIONS REVISED AND DESCRIPTION</u></b>
11	<p>See archived copy of Revision 14 for previous revision history.</p> <p>Added PIPs M-08-6260 and O-10-0882 to Section 3.3.2 References.</p> <p>Revised Section 3.3.5 to describe redundant capability of Centralert EOS Control Units at the Nuclear Stations and capability for 24 hour coverage for central control stations.</p> <p>Revised Sections 3.3.6.1 and 3.3.6.3 to clarify that Growl Tests will be conducted after maintenance is performed based on feedback from 2009 NRC Inspections. Added a note to Section 3.3.6.1 to indicate that the table represents the minimum testing frequency.</p> <p>Revised Section 3.3.7.1 to reflect that Site Services Group may schedule siren preventive maintenance using their work management system and to provide information regarding monitoring of grounding values during siren preventive maintenance.</p> <p>Revised Section 3.3.12 and Attachment 3.3.14.3 to add the telephone number for the Director of the Power Delivery Emergency Operations Center.</p> <p>Revised Attachment 3.3.14.3 to address that an initial siren test failure can be counted as a success when the re-poll indicates success, as allowed by EP FAM 3.7 {PIP O-10-0882} and to delete a TELECOMM siren support phone number that is no longer staffed.</p> <p>Revised Attachment 3.3.14.6 to correct a typographic error.</p> <p>Revised Attachment 3.3.14.7 to record grounding values. {PIP M-08-6260}</p> <p>Revised Attachment 3.3.14.9 per recommendations from Telecommunications.</p> <p>Revised Attachment 3.3.14.11 to show correct instructions for Repeater Equipment Preventive Maintenance.</p>
12	<p>Changed group names from Emergency Planning to Emergency Preparedness and Regulatory Compliance to Regulatory Affairs throughout. Changed to use a consistent spelling of Telecom.</p> <p>Corrected spelling of Enterprise Help Desk system ticket to PICCASO throughout. Deleted references to Remedy, Telecom work request, and TELECOMM ticket and replaced them with</p>

### 3.3 Alert and Notification System (Siren Program)

PICCASO throughout.

Revised Section 3.3.2 References to add NEI 99-02, procedures AD-EP-ALL-0002 and AD-LS-ALL-0002, as well as PIPs C-12-8896, O-12-9208, C-13-2229, C-13-5280, C-13-11548, C-13-11882, C-13-11546, G-13-1144, M-13-6340 and G-14-0168.

Revised Section 3.3.3.5 to capitalize Preventive Maintenance  
74{Editorial}

Revised Section 3.3.3.9 to update reference from NSD-227 to AD-LS-ALL-0002, Regulatory Correspondence. {DocuTracks NGO-2014-000019 and PIP G-14-0168}

Revised Sections 3.3.3.3, 3.3.6.1, and 3.3.6.4 to show that all counties will now do silent testing on Thursdays. {DocuTracks NGO-2014-000022}

Revised Section 3.3.6.4 to update the process for notifying Telecom.

Revised Section 3.3.6.6 to add NEI 99-02 and to update procedure reference for NRC Performance Indicators from EP FAM 3.7 to procedure AD-EP-ALL-0002 {DocuTracks NGO-2013-00181}. Specified which periodic tests are included in the NRC ANS Performance Indicator {DocuTracks NGO-2013-000004 and PIP O-12-9208}. Changed approval authority for FEMA correspondence to match guidance in AD-LS-ALL-0002, Regulatory Correspondence. {DocuTracks NGO-2014-000019 and PIP G-14-0168}, and deleted reference to example cover letter.

Revised Section 3.3.12 to delete information about requesting priority for power restoration in a natural disaster {DocuTracks NGO-2013-000127 and PIP M-13-6340}. Changed focus to support FEMA Disaster Initiated Review.

Revised Section 3.3.14 to delete Attachment 3.3.14.6 and add new Attachment 3.3.14.15.

Revised Attachment 3.3.14.3 to update the Enterprise Help Desk phone number {DocuTracks NGO-2013-000099 and PIP G-13-1144} and to delete Power Delivery EOC phone number. {DocuTracks NGO-2013-000127 and PIP M-13-6340}

Revised Attachment 3.3.14.4 steps 5 and 6 and Attachment 3.3.14.5 steps 8 and 9 to change TELECOMM's work request system to the PICCASO system.

Revised Attachment 3.3.14.5 to delete note regarding disabling Catawba Siren 22 and added Carowinds as a location to be contacted in Step 1. {DocuTracks NGO-2013-000039 and PIP C-13-2229} Also, revised Attachment 3.3.14.5 to clarify

### 3.3 Alert and Notification System (Siren Program)

notifications in the event of a siren failure during the test.

Deleted Attachment 3.3.14.6.

Revised Attachment 3.3.14.7 to provide a duration for the chopper switch test to ensure it meets the FEMA definition of a growl test and to update guidance on changing Rotator drive belts.

Revised Attachments 3.3.14.8 and 3.3.14.10 to add a second page with lines for sirens 46 through 89.

Revised Attachment 3.3.14.9 to enhance RTU Preventive Maintenance documentation {PIP C-13-2170}.

Revised Attachment 3.3.14.11 to revise annual repeater equipment Preventive Maintenance include changes recommended by Telecom and EP {PIP C-12-8896}.

Revised Attachment 3.3.14.13 to update the Enterprise Help Desk phone number {DocuTracks NGO-2013-000099 and PIP G-13-1144}.

Added new Attachment 3.3.14.15 to provide a PM procedure for the radio added by a new "tail-end link" configuration {PIP C-13-11882}.

13 Revised Section 3.3.2 References to add procedure AD-EP-ALL-0901 and PIPs M-14-4744 and M-14-5252.

Revised Step 3.3.12 to refer to AD-EP-ALL-0901 instead of EP FAM 3.4, as AD-EP-ALL-0901 superseded EP FAM 3.4.

Replaced Attachment 3.3.14.7 with new Annual Siren Preventive Maintenance Checklist. {PIP M-14-5252}

Added new Attachment 3.3.14.16 to provide instructions for local (station) activation of the CNS, MNS, or ONS EPZ county sirens. {PIP M-14-4744}

14 Throughout document - Deleted PIP references that were not CAPRs or commitments.

Revised Section 3.3.2, References, to replace superseded documents with current references.

Corrected typographic error on Attachment 3.3.14.1.

Revised Attachment 3.3.14.2 to delete references to Duke Energy pagers. Removed comment about intrusion alarm not being used.

Revised Attachments 3.3.14.7 and 3.3.14.9 to change preventive maintenance practices as required by the addition of backup DC power to the sirens.

### 3.3 Alert and Notification System (Siren Program)

15

Added Attachment 3.3.14.17, Siren Battery Replacement Checklist, and updated list of Attachments in 3.3.14.

### 3.3 Alert and Notification System (Siren Program)

#### 3.3 Alert and Notification System (Siren Program)

##### 3.3.1 Purpose

To describe the Alert and Notification System (Siren Program) for the nuclear stations. This includes associated testing and maintenance processes of the system.

##### 3.3.2 References

- Catawba Nuclear Station Emergency Plan
- McGuire Nuclear Station Emergency Plan
- Oconee Nuclear Station Emergency Plan
- NUREG-0654, Rev 1, *Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants*
- 10CFR Part 50, Appendix E
- 44CFR 350.14
- Siren Manufacturer's Manuals
- Radio Remote Control Manufacturer's Manuals
- FEMA P-1028, *Radiological Emergency Preparedness Program Manual*, Part V: Supplemental Guidance, A. Alert and Notification Systems
- AD-LS-ALL-0006, Notification/Reportability Evaluations
- NEI 99-02, *Regulatory Assessment Performance Indicator Guideline*
- AD-EP-ALL-0002, NRC Regulatory Assessment Performance Indicator Guideline Emergency Preparedness Cornerstone
- AD-EP-ALL-0901, Determining the Status of Offsite Emergency Preparedness
- AD-LS-ALL-0002, Regulatory Correspondence

##### 3.3.3 Responsibilities

- 3.3.3.1 Site Emergency Preparedness (SEP) is responsible for coordinating and ensuring the various tests are performed and documented.
- 3.3.3.2 Telecom (Toddville/Oconee) is responsible for performing the Tuesday silent tests.
- 3.3.3.3 The counties are responsible for performing the Thursday silent tests.
- 3.3.3.4 The counties are responsible for performing the quarterly tests.
- 3.3.3.5 Telecom (Toddville/Oconee) is responsible for performing Preventive Maintenance (PM) and repairs to the feedback system (radio control system).



### 3.3 Alert and Notification System (Siren Program)

- 3.3.3.6 The Site Services Groups are responsible for PM and repairs associated with the mechanical, structural, and electrical operation of the sirens for their respective stations.
- 3.3.3.7 Corporate Real Estate Services (CRES) is responsible for siren coverage recommendations and for coordinating siren installations and relocations.
- 3.3.3.8 SEP is responsible for area population studies and associated maps.
- 3.3.3.9 SEP is responsible for informing the Federal Emergency Management Agency (FEMA) about Alert and Notification System changes. Alert and Notification System changes must be evaluated per 10 CFR 50.54 (q) using the guidance in Emergency Planning FAM Section 3.10. Submittals to FEMA are to be prepared using AD-LS-ALL-0002, Regulatory Correspondence.

#### 3.3.4 General Description

Duke Energy has installed sirens around each of its nuclear power plants to provide the public with prompt notification in case of a nuclear power plant emergency. These sirens are located within the Emergency Planning Zone (EPZ) of each nuclear site. The EPZ counties for each site are as follows:

<b><u>Catawba (89 sirens)</u></b>	<b><u>McGuire (67 sirens)</u></b>	<b><u>Oconee (65 sirens)</u></b>
York Co. (SC)	Mecklenburg Co.	Oconee Co.
Gaston Co. (NC)	Gaston Co.	Pickens Co.
Mecklenburg Co. (NC)	Iredell Co.	
	Lincoln Co.	
	Catawba Co.	

The EPZ counties activate the sirens in their county from their siren control point. (See attachment 3.3.14.1 for the siren sites for each county.)

If the sirens sound for an extended period of time (or sound repeatedly with breaks after three-minute periods), the public should listen to Emergency Alert System messages on radio or television for information.

#### 3.3.5 Siren System Equipment

Duke Energy uses the 2001 AC model siren manufactured by Federal Signal Corporation. Control and monitoring are provided with the Centralert EOS system. These systems are connected to a wireless communication system that monitors the operational status of the siren system and provides control capability for activating, testing, and feedback. Features of the control and feedback system include:

- A dedicated 900MHz multiple address system (MAS) channel radio.
- Use of the powerful repeater concept for more reliable operation.

### 3.3 Alert and Notification System (Siren Program)

- Use of bi-directional communications (polling) to verify proper status of each siren. The operator can verify from any controller location whether the remote controls and sirens are operating properly.
- Immediate indication for each siren in case of false activation (visual alarm at all locations).

The equipment housed at each county control point consists of a Centralert EOS Control Unit, a personal computer, a monitor, and a printer. The county controller is used to activate all county sirens within a respective county during an emergency or a test. It is also used for constant monitoring and documentation reports for any problems associated with individual sirens (testing failures, false activations, etc.).

The equipment housed at each nuclear site consists of a Centralert EOS Control Unit, a server, a personal computer, monitor, and a printer. It is primarily used for constant monitoring and documentation reports for any tests and/or problems associated with individual sirens. This site siren equipment also serves as redundant, full functioning controllers with all activation and testing capabilities, if needed. It may be used to initiate the silent tests and other tests/activations deemed necessary (i.e., regular testing, post maintenance, troubleshooting, retests, etc.).

The central control stations have redundant full functioning controllers with all activation and testing capabilities. The central control stations are used to monitor the status of each siren and controller in the system. They are also used to initiate the silent tests and other tests/activations deemed necessary i.e., post maintenance, troubleshooting, retests, etc. The central control stations for MNS and CNS are located at Toddville and are maintained/monitored by Toddville Telecommunications. The central control station for ONS is located onsite at Oconee and is maintained/monitored by site Telecommunications. Twenty-four hour coverage can be/is maintained via remote access from LIT, Toddville, or ONS Telecommunications. These are redundant control stations or multiple signals approved as part the actual system activation process.

## 3.3 Alert and Notification System (Siren Program)

## 3.3.6 Siren System Testing

## 3.3.6.1 Test Frequency

Periodic testing of the sirens is performed as follows:

Test	Req'd By	Min. Req'd Freq.	Norm. Freq. Perf. By Duke
Silent Test	FEMA-REP-10, NUREG – 0654 Rev. 1, App.3	Every two weeks.	Silent tests conducted by Telecom are normally performed weekly on Tuesdays. Silent tests conducted by the counties are normally performed weekly on Thursdays.
Full Cycle Test (called full-scale test by FEMA)	FEMA-REP-10, NUREG – 0654 Rev. 1, App.3	Annually.	Normally performed on the second Wednesday of each quarter, or during the biennial exercise. See Notes 1 and 2 below.
Growl Test	FEMA-REP-10, NUREG – 0654 Rev. 1, App.3, FEMA CPG 1-17 March 1, 1980	Quarterly and after PM/maintenance is performed.	See NOTE 1 below for quarterly test.

**NOTE:**

1. Quarterly full cycle tests fulfill/exceed the requirements for quarterly growl tests.
2. Each site may elect to perform some method of feedback system verification during the full cycle siren test.
3. The table above reflects minimum testing frequencies.

Remote terminal unit (RTU) and controller status indicators, definitions, and actions to be taken are listed in attachment 3.3.14.2.

Deficiencies and corrective actions are identified according to attachment 3.3.14.3.

## 3.3.6.2 Low-Growl Test

This test is no longer performed.

### 3.3 Alert and Notification System (Siren Program)

#### 3.3.6.3 Growl Test

For the FEMA CPG 1-17 growl test following PM and maintenance, the siren chopper is sounded for a short period of time so that it never produces full sound output.

#### 3.3.6.4 Silent Test

A silent test confirms satisfactory rotation of the horn system and that the radio feedback system is receiving signals. Silent tests are normally performed on Tuesdays and after PM/corrective maintenance by Telecom and on Thursdays by the counties.

A silent test printout is generated via the siren feedback system as a result of this test.

Emergency Preparedness documents the tests per attachment 3.3.14.4, periodic test procedure (PT), or other comparable methods.

Sirens that fail the silent test are reported to Telecom via the Enterprise Help Desk (EHD) or PICCASO.

Telecom will retest the failed sirens and determine the actual status. Telecom will coordinate appropriate repairs with the respective station's Site Services Group.

Activation and testing instructions are provided in the software manual for the siren system monitoring station.

#### 3.3.6.5 Full Cycle Test

A full cycle test is required to be performed annually. Duke Energy typically performs a full cycle test on all sirens quarterly, rather than performing a quarterly growl test.

Full cycle tests are performed by the counties. A siren test printout is generated by the siren feedback system as a result of this test. The full cycle test is conducted according to attachment 3.3.14.5, periodic test procedure (PT), or other comparable methods.

Sirens which fail the full cycle test are reported to Telecom via the Enterprise Help Desk (EHD) or PICCASO.

Telecom retests the failed sirens and determines the actual status.

Telecom coordinates appropriate repairs with the respective station's Site Services Group. Following a valid failure during any full cycle siren test, an actual sounding retest of sufficient duration to assure that the site is fully operational is performed. This retest is to be coordinated with the off-site agencies and/or Corporate Communications as appropriate for each station.

Activation and testing instructions are provided in the software manual for the siren system monitoring station.

## 3.3 Alert and Notification System (Siren Program)

## 3.3.6.6 Siren Performance Tracking

Siren performance results may be tracked in the siren performance tracking system or other comparable methods.

Refer to NEI 99-02, *Regulatory Assessment Performance Indicator Guideline* and AD-EP-ALL-0002, NRC Regulatory Assessment Performance Indicator Guidelines Emergency Preparedness Cornerstone, for siren performance indicator criteria and calculation methods. The periodic tests included in the NRC Alert and Notification System (ANS) Performance Indicator are the weekly silent tests conducted by Telecom and the counties and the quarterly full cycle tests.

A letter is sent to FEMA each January to summarize overall siren availability for the previous year. Yearly siren availability data shall be verified to be complete and accurate using a process similar to that used for the NRC Alert and Notification System Performance Indicator (NSD-225). This letter shall be signed by the Organizational Effectiveness Manager/designee. FEMA siren availability is the ratio of siren test successes in a year divided by the number of test opportunities in a year x 100%. FEMA siren availability is based on test opportunities and is calculated as shown below.

Yearly siren availability =  $\frac{a+b+c}{d} \times 100\%$ , where

a = no. of successful silent tests performed by Telecom

b = no. of successful silent tests performed by counties

c = no. of quarterly test successes

d = total no. of test opportunities for silent and quarterly tests

Sirens that are out of service or undergoing corrective maintenance at the time of the test are to be included in the number of test opportunities (d).

### 3.3 Alert and Notification System (Siren Program)

#### 3.3.7 Maintenance

##### 3.3.7.1 Siren Preventive Maintenance (PM)

Siren PM is performed by the respective station's Site Services Group. EP either requests maintenance resources through the Site Services Group or it is scheduled by the Site Services Group's work management system.

PM is performed on all sirens at least annually.

PM is documented on attachment 3.3.14.7, "Annual Siren Preventive Maintenance Checklist." Completed checklists are forwarded to Emergency Preparedness for any needed corrective action follow-up and retention. Record retention requirements are specified in the information retention policy.

Siren ground system readings are measured during PM a minimum of once every 5 years. There are no specific acceptance criteria for grounding values. Grounding values vary widely within the Duke fleet and can be affected by topography and soil moisture content. The manufacturer does not specify acceptable grounding values. Benchmarking results show that not all licensees take grounding values, and for those that do, acceptance values vary widely. Siren performance issues, including those caused by grounding related issues would be identified during the siren testing program.

Emergency Preparedness documents that annual siren PM has been performed and documents test dates on attachment 3.3.14.8.

Emergency Preparedness updates annual maintenance dates in the EP database and provides a copy to the PM supervisor.

##### 3.3.7.2 Remote Terminal Unit (RTU) Preventive Maintenance

RTU PM is performed by Telecom (Toddville and Oconee).

RTU PM is scheduled by Telecom through Telecom's work management system. PM is performed on all RTU's at least annually.

RTU PM is documented on attachment 3.3.14.9 and forwarded to Telecom siren program technical support for any needed corrective action, follow-up, and retention. A copy is forwarded to EP.

EP documents that the annual RTU PM has been performed and documents test dates on attachment 3.3.14.10.

##### 3.3.7.3 Repeater Equipment Preventive Maintenance

Repeater PM is performed annually by Telecom and is documented on attachment 3.3.14.11.

EP reviews the completed attachment 3.3.14.11 for corrective action, follow-up, and retention.

EP documents that the annual repeater PM has been performed and documents the test date on Attachment 3.3.14.12.

### 3.3 Alert and Notification System (Siren Program)

#### 3.3.7.4 Corrective Maintenance

The respective station's Site Services performs all corrective maintenance associated with the mechanical/electrical/structural operation of the siren.

Telecom (Toddville/Oconee) performs all corrective maintenance associated with the siren radio transmission system.

Corrective maintenance is completed as soon as practical. The county in which the siren is located may take compensatory action (i.e., alternate route alerting, etc.) if needed.

#### 3.3.7.5 Post-Maintenance Testing (Preventive/Corrective)

FEMA and NRC guidance state that a growl test is to be conducted following PM. Per discussions with FEMA Region IV, the intent is to require that an adequate post-maintenance test is performed to ensure the siren is operable following maintenance. PM, including post-maintenance testing, is documented on attachment 3.3.14.7, "Annual Siren Preventive Maintenance Checklist".

Following a valid failure during any full cycle siren test, perform an actual sounding retest of sufficient duration to assure that the site is fully operational. Coordinate this retest with the off-site agencies and/or Corporate Communications as appropriate for each site.

#### 3.3.7.6 Wooden Siren Pole Inspection

For siren sites with wooden poles, a detailed wooden pole inspection should be performed once every five years. This is in addition to the standard items performed during the Annual PM. This inspection may be performed during annual PM with qualified personnel and specific inspection guidance. It may also be performed as a separate inspection by a qualified subject matter expert.

#### 3.3.8 Siren Trouble Calls

Guidance for siren trouble calls is provided in attachment 3.3.14.13.

#### 3.3.9 Siren Complaints

Siren complaints are documented on attachment 3.3.14.13 to ensure appropriate follow-up and corrective actions.

#### 3.3.10 Siren Relocations

Guidance for siren relocations is provided in attachment 3.3.14.14.

### 3.3 Alert and Notification System (Siren Program)

#### 3.3.11 NRC Reports

If 25% or more of the specific nuclear station's sirens are declared inoperable at one time for more than one hour, the NRC shall be notified within eight hours per the respective station's NRC reporting procedure.

#### 3.3.12 Support for FEMA Disaster Initiated Review

Refer to AD-EP-ALL-0901, Determining the Status of Offsite Emergency Preparedness, as needed, for guidance to support a FEMA/NRC restart assessment.

#### 3.3.13 Significant Change Reporting

Duke Energy must inform FEMA about significant changes to the Alert and Notification System. Per the "Discussion of NREP Parking Lot Items" ADAMS Accession Number ML052000263, pages 16 and 17:

As it relates to an alert and notification (A&N) system, a "significant change", requiring FEMA review and approval prior to implementation includes:

- A change in EPZ boundaries requiring the addition of new alerting devices or changes the number of local governments that must be involved in alert and notification.
- A change in EPZ population requiring a change to the A&N system siren sound levels.
- Substituting one form of alerting for another (e.g., sirens for special alerting devices).
- Addition to or upgrading of alerting devices based on evidence of inadequate A&N system coverage.
- A change to maintenance methods that is not addressed in the design report.
- A change to testing methods that is not addressed in the design report.
- A loss of administrative control of special alerting devices that brings into question whether affected population(s) can be notified in a timely manner.
- A change in siren locations and/or ratings not explicitly considered as acceptable by a FEMA technical evaluation.
- A change to the siren control system that is not addressed in the design report.
- Any change that can reasonably be expected to reduce siren sound coverage. Such changes include:
  - Degradation in sirens output below that assumed in the design report due to design due to installation or maintenance practices;
  - Substitution using a siren with lower sound rating;
  - Substitution using directional siren for an omni-directional siren;
  - Increasing the siren operating frequency;
  - Siren control system design, configuration control or software quality assurance problems identified during system operation and maintenance that can be reasonably expected to cause more than 10% of the sirens not being actuated in an actual emergency unless the A&N system is modified; or



### 3.3 Alert and Notification System (Siren Program)

- Addition of buildings or man-made changes in topographical features that can be reasonably expected to result in “shadowing” of sound from nearby siren(s) not previously accounted for.
- Any other item that brings into question the ability of the A&N system to perform in the way it was described in the Design Report. This can be based on NRC inspection findings or significance determination, REP exercise results, telephone survey results or the FEMA Regional Assistance Committee (RAC) chair judgment.

#### 3.3.14 Attachments

- 3.3.14.1 County Specific Siren Lists
- 3.3.14.2 RTU and Controller Status Indicator Definitions
- 3.3.14.3 Identifying Deficiencies and Corrective Actions
- 3.3.14.4 Siren Silent Test
- 3.3.14.5 Full Cycle Siren Test
- 3.3.14.6 Deleted
- 3.3.14.7 Annual Siren Preventive Maintenance Checklist
- 3.3.14.8 Annual Siren Preventive Maintenance Performance Verification
- 3.3.14.9 Annual RTU Preventive Maintenance Checklist
- 3.3.14.10 Annual RTU Preventive Maintenance Performance Verification
- 3.3.14.11 Annual Repeater Equipment Preventive Maintenance Checklist
- 3.3.14.12 Annual Siren Repeater Preventive Maintenance Performance Verification
- 3.3.14.13 Siren Trouble Call Guidance for Emergency Preparedness and Siren Complaint Information
- 3.3.14.14 General Guidance for Siren Installation/Relocations
- 3.3.14.15 Annual Preventive Maintenance Checklist - Siren Sites with a Tail-End Link
- 3.3.14.16 Local (Station) Activation of Emergency Sirens
- 3.3.14.17 Siren Battery Replacement Checklist

### COUNTY SPECIFIC SIREN LIST

#### Catawba Nuclear Station

<u>GASTON</u>		<u>MECKLENBURG</u>		<u>YORK</u>		
Site	28	Site	1	Site	2	48
	29		20		3	49
	30		21		4	50
	31		23		5	51
	33		24		6	52
	67		25		7	53
			26		8	54
			27		9	55
			63		10	56
			68		11	57
			85		12	58
			86		13	59
			87		14	60
			88		15	61
			89		16	62
					17	64
					18	65
					19	66
					22	69
					32	70
					34	71
					35	72
					36	73
					37	74
					38	75
					39	76
					40	77
					41	78
					42	79
					43	80
					44	81
					45	82
					46	83
					47	84

All sirens are Federal Signal model 2001AC.

**COUNTY SPECIFIC SIREN LIST**  
**McGuire Nuclear Station**

<u>GASTON</u>	<u>MECKLENBURG</u>	<u>IREDELL</u>	<u>LINCOLN</u>
18	11	5	1
19	15	6	2
28	21	7	3
36	22	8	4*
37	23	10	9
38	25	57	12
39	26	62	13
48	27		14
50	29		16
52	30		17
	31		20
	32		24
	33		53
	34		63
	35		64
	40		65
	41		
	42		
	43		
	44		
	45		
	46		
	47		
	49		
	51		
	54		
	55		
	56		
	58		
	59		
	60		
	61		
	66		
	67		

\* Located in Catawba County - activated from Lincoln County.

All sirens are Federal Signal model 2001AC.

**COUNTY SPECIFIC SIREN LIST****Oconee Nuclear Station**

<u>OCONEE</u>	<u>PICKENS</u>
1	5
2	6
3	7
4	8
10	9
11	21
12	22
13	23
14	25
15	26
16	27
17	28
18	29
19	40
20	41
24	42
30	43
31	44
32	45
33	46
34	47
35	48
36	51
37	52
38	53
39	54
49	55
50	63
56	
57	
58	
59	
60	
61	
62	
64	
65	

All sirens are Federal Signal model 2001 AC.

**RTU and Controller Status Indicator Definitions**

Status	Definition	Action Required by EP
Success	All truth table criteria was validated. Siren, RTU, and Controller are operational.	None
Fail - Comm	Unable to obtain results from RTU	Compare with results from Telecom and/or county printouts. If these printouts show success, the test may be considered a success. If the TSC, Telecom, and county printouts all show a failure, the problem should be reported to Enterprise Help Desk or submit PICCASO incident request to Telecom.
Fail - Rotation	Failed sensor or rotator motor is not operational.	Report to Enterprise Help Desk or submit PICCASO incident request to Telecom.
Fail - Chopper	Failed sensor or chopper motor is not operational.	Report to Enterprise Help Desk or submit PICCASO incident request to Telecom.
Fail - Sound	Failed sensor or siren is not operational	Report to Enterprise Help Desk or submit PICCASO incident request to Telecom.
<b>Multiple failures (rotation, chopper, sound, or various combinations) associated with a single siren as identified on printout and screen from activating site should be documented in PICCASO ticket for proper problem resolution and also to assist with historical trending information.</b>		

Additional information can be obtained by observing the color of various icons associated with the individual sirens on the screen. There are three colors (blue, red, and yellow) representing different classes of events.

**Blue** Icons indicate unsolicited alarms. An unsolicited alarm will result in notification to EP and other personnel groups (i.e., Telecom). There are two events which would classify as an unsolicited alarm:

1. False Activation
2. Intrusion

**Red** Icons indicate availability alarms. An availability alarm is triggered after an RTU Status (Poll) command is issued. An RTU Status is part of the sequence of the Silent Test, Alert, and the communication tests which are scheduled twice a day. A red icon indicates that a test or alert would likely fail and actions should be initiated to identify and resolve underlying issues. Because there are different success / availability criteria associated with the various tests, this event will be limited to:

1. Fail - Comm

## 3.3 Alert and Notification System (Siren Program)

## Attachment 3.3.14.2

**Yellow** Icons indicate warnings. A warning is triggered after an RTU Status (Poll) command is issued. An RTU Status is part of the sequence of the Silent Test, Alert, and the communication tests which are scheduled twice a day. These represent events which should be diagnosed and resolved. The following events are currently configured as warnings:

1. Main 48 VDC (from rectifier)
2. 48 VDC Battery (Future Source for Siren, RTU, Radio)
3. 18 VAC
4. 12 VDC Battery

Note that warning event #1 could be the cause for silent test and alert test failures. If, however, an alternate 48V Battery source is added at a later date, that would not be the case.

ICON (under siren name)	Definition	Action
<b>Blue</b>	Unsolicited Alarm. Currently limited to False Activation	County will receive audible alarm if activated and speakers not turned down. EP and other personnel identified by EP will receive page and/or e-mail indicating a RTU alarm. EP should initiate problem investigation by submitting PICCASO incident request to Telecom.
<b>Red</b>	Availability Alarm. Currently limited to Fail - Comm.	Telecom will investigate and resolve as part of silent test, alert test problem resolution activities initiated by EP. If alarm results from one of the auto scheduled communication tests, Telecom will initiate, resolve, and document.
<b>Yellow</b>	Warning Alarm. Currently limited to rectified 48VDC, 18VAC, and 12VDC Battery	Telecom will investigate and resolve as part of silent test, alert test problem resolution activities initiated by EP. If alarm results from one of the auto scheduled communication tests, Telecom will initiate, resolve, and document.

### Identifying Deficiencies and Corrective Actions

1. Deficiencies can be identified by reviewing the silent and alert reports printed by the Centralert system. Deficiencies may also be identified by field observations of tests, field observations during maintenance and PM activities, observations made through trending PIP's, PM checklists, and other reports.
2. Sirens and remote controller equipment are considered to be operational when indicated by "SUCCESS".
3. Sirens are considered to be inoperable when the status is listed with a "Fail" prefix. Deficiencies such as these should be reported to the Enterprise Help Desk (EHD). (See note 1). Corrective actions are documented by listing the PICCASO ticket number. Siren failures will be entered in the siren failure summary database. If a siren failure is determined to be due only to testing equipment, and subsequent testing shows the siren to be operable (verified by telemetry or simultaneous local verification) without any corrective action having been performed, the initial siren test should be considered a success. Maintenance records should be complete enough to support such determination and validation during NRC inspection. The siren system is designed with equipment redundancy and feedback capabilities. Since the use of a redundant control stations or multiple signals is approved by this procedure, then activation from either control station or any signal should be considered a success. A failure of both systems would only be considered one failure, whereas the success of either system would be considered a success.
4. Normal corrective maintenance is to be completed as soon as practical. The corrective action time frame for making "other than normal" siren repairs should be specified when calling EHD to report a problem. The requested time frame should be documented on the PICCASO ticket. EP may extend the time frame for reasons such as parts availability. Or, EP may request that the time frame be shortened due to factors such as approaching adverse weather or the percentage of failures currently existing. For example, if the success rate is approaching or is less than 95%, the requested time frame may need to be immediate or within the next 24 hours. The county in which the siren is located may take compensatory action if needed (i.e., alternate route alerting, etc.).
5. EP may use some of the following documents to determine and evaluate trends: siren failure summary problem records, PIPs, Centralert reports, work requests, etc. Criteria used for trending may include:
  - the same problem reported with a siren three or more weeks in a row.
  - a siren fails both silent tests in the same week.
  - a siren fails three consecutive silent tests.
  - a siren that consistently has problems, either repetitious problems or different problems, as determined by EP upon evaluation of tests performed, by normal and field observations and by tests performed by the counties.
  - A siren that experiences any kind of a problem 50% of the time during a one-month period.
  - A siren that passes weekly silent tests, but fails the quarterly siren test two or more times in a 12-month period.

## 3.3 Alert and Notification System (Siren Program)

## Attachment 3.3.14.3

6. Examples of problems that may be PIP'd include, but are not limited to:
- incidental damage to a siren (ex. vehicular damage, storm damage).
  - a siren that fails a quarterly test.
  - A siren that passes the weekly silent tests, but fails the quarterly alert test.
  - a siren that demonstrates an adverse trend as determined in step 5 above.
  - situations where greater than 25% of a station's sirens are declared inoperable at one time.

**Note**

1. The EHD phone number is 704-382-4357.



**SIREN SILENT TEST**

DATE OF TEST \_\_\_\_\_

**NOTE: e-mail may be used in lieu of this attachment.**

- 1) Obtain printout from the siren printer in the TSC. (At Oconee, the printout is faxed to EP from the counties.)
- 2) Review printout to ensure all the counties have performed a successful test. If the test has not been performed successfully by all counties, make a call to the appropriate county to request that the test be performed.
- 3) Review printout for indications of "Failures" or "Not Verified". Document results below and update the siren performance tracking database. NOTE: If >25% of the sirens failed, perform the following:
  - Notify Site Emergency Preparedness Manager
  - Notify Site Regulatory Affairs
  - Have the Control Room notify the NRC via the specific station's NRC Reporting Procedure (within 8 hours). Indicate that we will be notifying the counties to implement back-up route alerting.

## 4) RESULTS:

<u>County</u>	<u>No. Tested</u>	<u>No. of Successes</u>	<u>No. of Failures and Not Verified</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
TOTAL	_____	_____	_____

COMMENTS: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

- 5) Telecom will retest the failed sirens and determine the actual status. Telecom will coordinate appropriate repairs via the PICCASO system and/or with the respective station's Site Services Group.
- 6) Telecom will communicate the results of action taken or successful retests via the PICCASO system and/or e-mail. Print out a copy for records.
- 7) Package the test results (siren printout, silent test enclosure, and e-mail notes) and file appropriately. Record retention requirements are specified in the information retention policy.
- 8) Document failures for tracking and trending purposes via the appropriate process.

**FULL CYCLE SIREN TEST**

DATE OF TEST \_\_\_\_\_

- 1) \_\_\_\_\_ On the morning of the test, contact the following as a reminder:

_____ Telecom	_____ EPZ Counties	_____ Site Switchboard
_____ Site Services Group	_____ Corporate Communications	_____ WCC SRO
_____ Control Room	_____ OPS Work Manager	_____ NRC
_____ [CNS] Carowinds (3rd quarter test only)		

- 2) \_\_\_\_\_ At approximately 11:45, contact the EPZ counties in preparation for siren activation. (Time varies at each nuclear station.)
- 3) \_\_\_\_\_ Perform a count down for the counties and at 11:50, ask the counties to activate the sirens. (Optional at ONS.)
- 4) \_\_\_\_\_ Ask the counties to activate EAS (If applicable). (Optional at ONS.)
- 5) \_\_\_\_\_ Document test results below.

County _____	No. Tested _____	No. of Successes _____	No. of Failures and Not Verified's _____	Siren Number(s) (Failures & Not Verified) _____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
<b>TOTAL:</b>	_____	_____	_____	_____

- 6) \_\_\_\_\_ **IF** there were siren failures during the test, assess the number of failed sirens \_\_\_\_\_. **IF** > 25% of total sirens have failed, perform the following:
- \_\_\_\_\_ Notify Site Emergency Planner
  - \_\_\_\_\_ Notify Site Regulatory Affairs
  - \_\_\_\_\_ Request the Control Room notify the NRC via the site specific NRC reporting procedure within 8 hours. Advise the Control Room that Emergency Preparedness will be notifying the counties to implement back-up route alerting.
  - \_\_\_\_\_ Contact the affected EPZ counties and recommend they implement back-up route alerting.
- 7) \_\_\_\_\_ **IF** failure(s) occurred, report failures to Telecom EHD. (Optional at ONS.)
- 8) \_\_\_\_\_ Telecom will coordinate appropriate repairs via the PICCASO system and/or with SSG.
- 9) \_\_\_\_\_ Telecom/SSG will communicate the results of action taken or successful retests via a PICCASO system ticket. Print a copy for records.
- 10) \_\_\_\_\_ Package the test results (siren printout, and E-MAIL notes) and file appropriately.
- 11) \_\_\_\_\_ Send record copy to master file (ex. CNS - FILE #CN134.11).
- 12) \_\_\_\_\_ Document failures for tracking and trending purposes via the appropriate process. Use PIP process as appropriate for corrective actions involving siren failures.

**Attachment Deleted**

### 3.3 Alert and Notification System (Siren Program)

## Annual Siren Preventive Maintenance Checklist

\_\_\_\_\_  
DATE \_\_\_\_\_

SIREN SITE NO \_\_\_\_\_  
POWER METER NO \_\_\_\_\_

**WARNING: OBSERVE ALL SAFETY RULES; USE HEARING PROTECTION WHEN APPROPRIATE**

☒ Indicates Completed Step; \_\_\_\_\_ Completed Step, Requires Initials; \_\_\_\_\_ Completed Step, Requires Double Sign-off

### 1.0 Initial Checks

- 1.1. Implement work zone safety practices ☐
- 1.2. Contact Counties, Telecomm, and Emergency Preparedness to advise that the sirens will be out of service during annual preventative maintenance and provide an expected return to service date. \_\_\_\_\_
- 1.3. Electrical ground (verify undamaged; pole to ground rod, boxes grounded, connectors in place/secure) ☐
- 1.4. Trees, bushes, vines, etc. (Trim/cut as appropriate to allow safe access and to avoid interferences) ☐

### 2.0 Pre-operational Checks (refer to maintenance manual as necessary)

- 2.1. Rotation switch test (horn rotates) ☐
- 2.2. Chopper switch test (Note: BUMP; chopper is sounded for a short period of time so that it never produces full sound. Hold a minimum of two (2) seconds to avoid damage to relay.) ☐
- 2.3. All switches to ON ☐
- 2.4. Place AC breaker to the OFF position and lock the breaker box \_\_\_\_\_
- 2.5. Verify zero ("0") AC energy \_\_\_\_\_
- 2.6. Place DC switch to the OFF position and lock the DC box \_\_\_\_\_
- 2.7. Verify zero ("0") DC energy \_\_\_\_\_

**Note:** Steps 3.1 to 3.22 can be performed in any order.

### 3.0 Misc. Checks

- 3.1. Pole (condition, vertical  $\pm$  5 degrees) ☐
- 3.2. Guy wire present (Y or N). Guy wire needed (Y or N) ☐
- 3.3. Service cable (connections & drip cap good, no interferences) ☐
- 3.4. Wiring & connections (conduit, flex, insulation, connections good) ☐
- 3.5. All boxes/enclosures in good condition (radio box, etc.) ☐
- 3.6. Breaker disconnect (good condition) ☐
- 3.7. Rotation signal cable (good condition, connection good) ☐
- 3.8. Structural/mechanical connections tight ☐
- 3.9. Antenna, antenna cable, & connections (undamaged, connections tight, cable properly anchored to the pole) ☐
- 3.10. Horn rotator switch/cable (undamaged, switch properly adjusted, connections tight, properly anchored to pole) ☐
- 3.11. Nests/debris removed ☐
- 3.12. Horn screens (in place and in good condition) ☐
- 3.13. Oil leaks (Need attention? Y or N) ☐
- 3.14. Painted surfaces (circle one: **Good – Sat – Bad – Very Bad**) ☐
- 3.15. Tree trimming and growth around siren and service lines (Rate need: **None, Low, Med, High**) ☐

### 3.3 Alert and Notification System (Siren Program)

- 3.16. Siren number plate(s) or number decal in place ☐
- 3.17. Enclosure locks (in place, operational) ☐
- 3.18. Warning labels in place ☐
- 3.19. As applicable, perform detailed wood siren pole inspection every 5 years (i.e., 2015, 2020, 2025) ☐
- 3.20. Clear drain holes in bottom of antenna housing (where practical. Not practical where standard Bucket truck cannot reach antenna) ☐
- 3.21. Rotation and chopper contactors are in good condition (Y or N) ☐
- 3.22. Lubricate locks ☐

## 4.0 Preventive Maintenance

- 4.1. Check rotation and chopper contacts, and [CNS] replace or clean as necessary ☐
- 4.2. Check synthetic oil in rotator gear box ☐
- 4.3. Rotator drive belt depresses approx. 1/2" when pressure is applied to the belt with one finger. Replace belt if worn, **OR** as necessary ☐
- 4.4. Apply grease to rotator spur and pinion gears ☐
- 4.5. Adjust drive band for 20-25 lbs. of pull after the horn begins to move ☐
- 4.6. **HOLD** until maintenance complete
- 4.7. **Unlock AC breaker box and place AC Breaker to ON** ☐
- 4.8. **Unlock DC box and place DC switch to ON** ☐
- 4.9. Measure ground system reading and record value ☐

## 5.0 Post Maintenance (refer to maintenance manual as necessary)

**NOTE:** Switches are momentary.

- 5.1. Radio is OFF ☐
- 5.2. **Test AC Rotation (Circle one: Rotation Satisfactory Y or N)** ☐
- 5.3. **Test AC Chopper for greater than two seconds (Note: BUMP; chopper is sounded for a short period of time so that it never produces full sound. Hold a minimum of two (2) seconds to avoid damage to relay.)** ☐
- 5.4. **Place AC Breaker to OFF** ☐
- 5.5. **Verify zero ("0") AC energy** ☐
- 5.6. **Test DC Rotation (Circle one: Rotation Satisfactory Y or N)** ☐
- 5.7. **Test DC Chopper for greater than two seconds (Note: BUMP; chopper is sounded for a short period of time so that it never produces full sound. Hold a minimum of two (2) seconds to avoid damage to relay.)** ☐
- 5.8. **Place AC Breaker to ON** ☐
- 5.9. All switches to ON ☐
- 5.10. Radio is ON ☐
- 5.11. Notify Telecom to perform Silent Test (Circle one: Silent Test successful – Y or N) ☐

**NOTE:** If post-maintenance functional tests are not successful, EP must be notified so that Warning Points can be notified. A siren must not be left in a non-functional state without notifying EP.

- 5.12. **IF** test unsuccessful, troubleshoot /repair as necessary and document in section 6.0 ☐
- 5.13. **Lock and secure siren boxes** ☐

### 3.3 Alert and Notification System (Siren Program)

- 5.14. Notify Counties, Telecomm, and Emergency Preparedness that the sirens have been returned to service ☐
- 5.15. **IF** battery replacement required, perform actions per 6.0 ☐

### 6.0 Remarks and/or follow-up corrective maintenance

Record Work Request Numbers, PICCASO tickets for corrective actions.

---

---

---

---

---

---

---

**7.0 Checklist completed by:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**8.0 EP Verification** ☐

**EP Database updated by:** \_\_\_\_\_ **Date:** \_\_\_\_\_

## 3.3 Alert and Notification System (Siren Program)

Attachment 3.3.14.8

Annual Siren Preventive Maintenance Performance Verification _____ Nuclear Station Emergency Preparedness				
Siren Number	Last PM Date	Earliest Due Date	Latest Due Date	Actual Test Date
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				
36				
37				
38				
39				
40				
41				
42				
43				
44				
45				

## 3.3 Alert and Notification System (Siren Program)

Annual Siren Preventive Maintenance Performance Verification _____ Nuclear Station Emergency Preparedness				
Siren Number	Last PM Date	Earliest Due Date	Latest Due Date	Actual Test Date
46				
47				
48				
49				
50				
51				
52				
53				
54				
55				
56				
57				
58				
59				
60				
61				
62				
63				
64				
65				
66				
67				
68				
69				
70				
71				
72				
73				
74				
75				
76				
77				
78				
79				
80				
81				
82				
83				
84				
84				
86				
87				
88				
89				



**Annual RTU and Battery Preventive Maintenance Checklist  
2001AC Siren**

Nuclear Station \_\_\_\_\_

Siren Site No. \_\_\_\_\_

PICASSO Ticket No. \_\_\_\_\_

Date: \_\_\_\_\_

**NOTE:** Documentation of issues or anomalies found during this activity is of the utmost importance. Failure to document prevents detection of negative trends and development of remedial solutions that could improve ANS KPI at other DEC plants with similarly designed systems. Document all deficiencies in Section XX of this form.

**Verification of Proper Notification** -- Verify EP Specialist is aware of any planned maintenance and general siren locations at least 24 hours in advance. EP Specialist may elect to notify appropriate Warning Points advising of possible route alerting in affected areas while site is inoperable due to maintenance.

**PRIOR TO BEGINNING WORK:**

**PERFORM JHA AND ASSESS THE SITE FOR HAZARDS. OBSERVE ALL DUKE ENERGY SAFETY RULES FOR IDENTIFIED HAZARDS.**

**DOCUMENT ALL ABNORMAL SAFETY RISKS IN SECTION XX OF THIS FORM**

**Ensure Site is Placed into Maintenance Mode at each control point capable of sending alarms to prevent false Intrusion or Activation alarms from being generated during PM Activities.**

- ( √ ) Indicates completed step.  
( NA ) Use if step is not applicable

**Vehicle and Personal Safety Assessment**

- A. ( ) Verify vehicle is safely out of traffic. Use strobes or cones as required.
- B. ( ) Verify adherence to PPE standards for the risks at this site. (May include: Hardhat, Safety Glasses, Protective Footwear, Safety / Reflective Vests, Hearing Protection, Gloves, etc.)

**Verification of Availability**

- C. ( ) Verify siren is available by completing a successful silent test. Test should be conducted on same business day and prior to beginning any preventative maintenance activities.

**Energy Isolation**

- D. ( ) Open breaker panel and de-energize 30A 240V breaker. Properly secure panel to prevent inadvertent activation while working inside enclosures.

## 3.3 Alert and Notification System (Siren Program)

Attachment 3.3.14.9

- E. ( ) Open battery enclosure and de-energize feed from 48V battery bank by turning switch in upper left hand corner of battery cabinet to the off position.

**Zero Energy Validation**

- F. ( ) Using DVM, verify minimal voltage present on any K3 (48 V) Contactor lugs. (Some voltage may be present until capacitors fully discharge)

**Resistance Measurements**

- G. ( ) Measure and record resistance between pin 2 (Blue Wire) of J08 and C2 on the Chopper Contactor \_\_\_\_\_ Ohms – (Should be 0)
- H. ( ) Measure and record resistance between pin 1 (Black Wire) of J08 and pin 9 of J05 \_\_\_\_\_ Ohms-- (Should be 0)
- I. ( ) Measure resistance between PolyPhaser (RF surge suppression) ground and driven ground rod \_\_\_\_\_. **IF** greater than 1 ohm, document deficiencies in Section XX.

**RTU Enclosure Connections Validation**

- J. ( ) Verify all wires terminated in DIN Rail terminal blocks are making a good electrical connection. If necessary, release tension and verify you can see copper wiring contacting barrier strip.
- K. ( ) Physically check tension on each Sta-Kon female spade connector on 48V, Rotation, and Chopper contactor terminals. If any are loose, remove and slightly compress female receptacle and reconnect.
- L. ( ) Physically check tension of Sta-Kon connections on AC Transformer. If any are loose, remove and slightly compress female receptacle and reconnect.
- M. ( ) Replace RTU battery and mark installation date on battery.
- N. ( ) Physically check tension of Sta-Kon connections on RTU battery. If either are loose, remove and slightly compress female receptacle and reconnect.
- O. ( ) Verify all RTU wiring connections are securely connected to phoenix connectors and phoenix connectors are fully inserted into sockets. Document deficiencies in Section XX.
- P. ( ) Verify P1, P2, P3, and P4 connections and Sta-Kon terminal connections associated with 12V chargers are secure.

**NOTE:** This is a vented cabinet so signs of *some* moisture is not abnormal.

- Q. ( ) Inspect RTU enclosure for signs of moisture. If minimal moisture present, replace desiccant. If excess moisture present, document deficiencies in Section XX.

**WARNING:**

- All personal metal items such as rings, bracelets, necklaces, watches, etc. **SHALL** be removed to avoid electrical shock.
- A face shield, goggles, acid resistant gloves, acid resistant apron, and an eyewash with a minimum 15 gallon capacity is required for Battery Replacement.

**NOTE:**

**IF** material is released or spilled, the spill material should be contained, washed with water or neutralized with sodium carbonate or bicarbonate. The waste should be disposed of as general waste. A face shield, goggles, acid resistant gloves, acid resistant apron, and an eyewash with a minimum 15 gallon capacity is required for handling spill material.

**Battery Enclosure Connections Validation**

- R. ( ) Verify that screen on vents are in good condition. If torn or signs of insects, document in Section XX.
- S. ( ) Verify that all battery straps are secure. Document deficiencies in Section XX.
- T. ( ) Verify that protective grease is used on all battery connections. If signs of corrosion, clean terminals and straps before applying protective grease. Document deficiencies in Section XX.
- U. ( ) Check for loose connections associated with each 12V fuse in battery enclosure. Note any deficiencies in Section XX.

**Restoration of DC Power and Validation**

- V. ( ) Restore Battery power to cabinet by enabling disconnect switch in battery cabinet.
- W. Using DVM, measure and record DC voltage observed on Brown Wire on TB4.  
Voltage measured = \_\_\_\_\_ VDC. If less than 50VDC, troubleshoot for possible charger or battery fault. (NOTE: At this point, the chargers are not energized.)
- X. ( ) Test Rotation Motor via the **Rotation Switch**. While holding Rotation switch in the active position, verify the LED on RTU board associated with Rotation Sensor lights momentarily when the siren passes the sensor.

**NOTE:** Normally this step will be NA.

- Y. ( ) **IF** deficiencies were identified in step G or H, test chopper by holding the chopper switch in the active position for at least 2 seconds. Prior to testing, ensure that you notify EP specialist or designee and contact appropriate county warning point via the non-emergency number and validate a short alert of no more than 30 seconds is acceptable.

**Restoration of AC Power**

- Z. ( ) Enable 240VAC Breaker.

## 3.3 Alert and Notification System (Siren Program)

- AA. Measure input voltage on terminal 2 of 48V contactor K3. (This is output of battery.) Voltage measured = \_\_\_\_\_ VDC.
- BB. Measure input voltage on terminal 3 of 48V contactor K3. (This is the output of Transformer Rectifier.) Voltage measured = \_\_\_\_\_ VDC
- CC. ( ) Capture AC voltage on input to transformer in RTU Cabinet \_\_\_\_\_  
Capture AC voltage on output of transformer in RTU Cabinet \_\_\_\_\_
- DD. ( ) 13.6V Output (From RTU Board) – Measure output and if necessary adjust charger output per RTU setup guidelines.
- EE. ( ) Close and secure AC Panel box

**Radio Power and Signal Strength**

- FF. ( ) Measure and record RSSI levels \_\_\_\_\_. **IF** less than -95dBm, compare to previous year PM, document deficiencies in Section XX and create PICASSO ticket to evaluate whether it can be improved.
- GG. ( ) Check forward transmit power; replace radio if under 4.5 watts \_\_\_\_\_. Document deficiencies in Section XX and create PICASSO ticket to replace radio.
- HH. ( ) Measure and record reflected transmit power \_\_\_\_\_ Watts. **IF** greater than 10% of measured forward power, document deficiencies in Section XX.

**Labeling** (Document deficiencies in Section XX)

- II. ( ) Verify Silent Test label on inside of RTU cabinet
- JJ. ( ) Verify Siren # label is prominently displayed at site
- KK. ( ) Verify Public Information (who / where to call) label is prominently displayed

**DC Power System Checks**

- LL. ( ) Using Clamp on meter, capture the charging current to each battery. (A fully charged battery should result in a reading of .3A or less.)
- **IF** significant differences are recorded between batteries, document deficiencies in Section XX.

Battery 1 \_\_\_\_\_ Battery 2 \_\_\_\_\_ Battery 3 \_\_\_\_\_ Battery 4 \_\_\_\_\_

- MM. ( ) Using Midtronics, capture conductance reading. (Minimum reading is 700 mhos at a reference temperature of 49 degrees Fahrenheit.)
- **IF** any battery fails to meet minimum conductance, document in Section XX **AND** create PICASSO Ticket in section ZZ to have appropriate Site Services Group replace.

Battery 1 \_\_\_\_\_ Battery 2 \_\_\_\_\_ Battery 3 \_\_\_\_\_ Battery 4 \_\_\_\_\_

**Antenna and Pole Information**

## 3.3 Alert and Notification System (Siren Program)

- NN. ( ) **IF** Yagi antenna is used, validate azimuth is within 15 degrees of calculated value.  
**IF** a traditional compass is used, compensate for the difference between true north and magnetic north.
- **IF** out of tolerance, create a PICCASO ticket requesting assistance from appropriate Site Services Group to correct.
- OO. ( ) Antenna extension installed? (Circle one: Yes / No)
- PP. ( ) Type of Pole (Circle one: Concrete / Wood)
- QQ. ( ) Separate taller pole installed for Yagi Antenna? (Circle one: Yes / No).
- **IF** yes, validate that coax is sufficiently protected and document any deficiencies in Section XX.
- RR. ( ) Type of Coax \_\_\_\_\_ (i.e. LDF-40A, LDF – 50A, etc.)
- SS. ( ) Type of Yagi Antenna (Circle) 5 element, 7 element, dual 7 element, 9 element, 11 element, or Other \_\_\_\_\_

**Wrap-Up and Testing**

- TT. ( ) From any testing location, perform a maintenance poll and verify no anomalies associated with voltages or alarms are present. Correct any anomalies before proceeding to next step.
- UU. ( ) Close and secure battery and RTU cabinets
- VV. ( ) Complete a successful Maintenance Silent Test from appropriate Telecom testing location **before leaving site**.
- WW. ( ) Verify testers place siren site in normal operation mode / take out of maintenance mode at this time.

**Documentation of Deficiencies and Validation of Accuracy**

- XX. ( ) Document any deficiencies and/or corrective actions taken/recommendations while on site. **IF** necessary, add additional pages to back of this form. All deficiencies which cannot be resolved while on site should have a corresponding Picasso Ticket listed in section ZZ. **(Write Legibly)**

---

---

---

---

---

---

---

3.3 Alert and Notification System (Siren Program)

---

---

---

---

---

YY. ( ) **Carefully read over checklist and verify each step has been completed and all deficiencies noted. IF errors noted, strike through and initial corrections.**

ZZ. Picasso Tickets Generated For Issues Not Resolved at Time of PM. **(Write Legibly)**

- 1) . \_\_\_\_\_
- 2) . \_\_\_\_\_
- 3) . \_\_\_\_\_
- 4) . \_\_\_\_\_
- 5) . \_\_\_\_\_

AAA. Miscellaneous Comments that you feel should be documented but not captured in any major section. **(Write Legibly)**

---

---

---

BBB. ( ) Verify Picasso Tickets are generated and numbers captured in section ZZ. Do not check off until tickets are created.

CCC. Telecom Checklist completed by: \_\_\_\_\_ **(Signature)**

DDD. ( ) Date Checklist completed \_\_\_\_\_ (May be different than actual work if Picasso tickets were generated and recorded in section ZZ.)

EEE. ( ) Create and file copy of completed PM form which can be referenced for any deficiencies which occur between date of this PM and the next annual PM. Send original checklist along with final Silent Test to EP Specialist. It is not necessary to provide copies of appendix drawings.

3.3 Alert and Notification System (Siren Program)

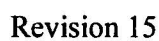
**Site Emergency Planning Section**

FFF. EP database update by: \_\_\_\_\_ (Signature)

Date: \_\_\_\_\_

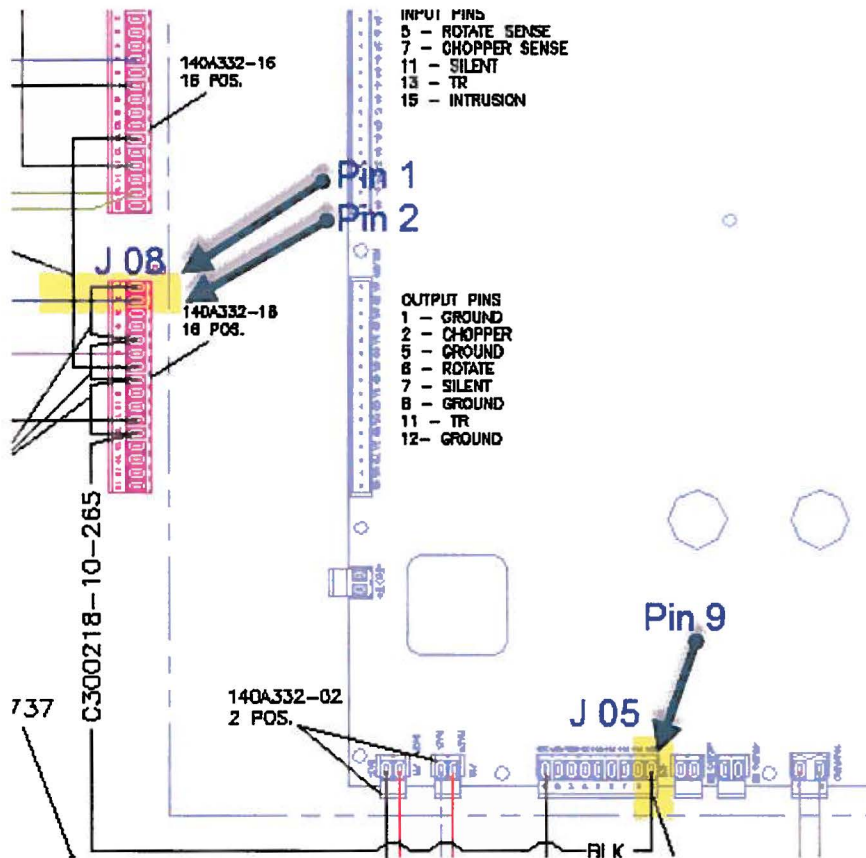


### Attachment 3.3.14.9

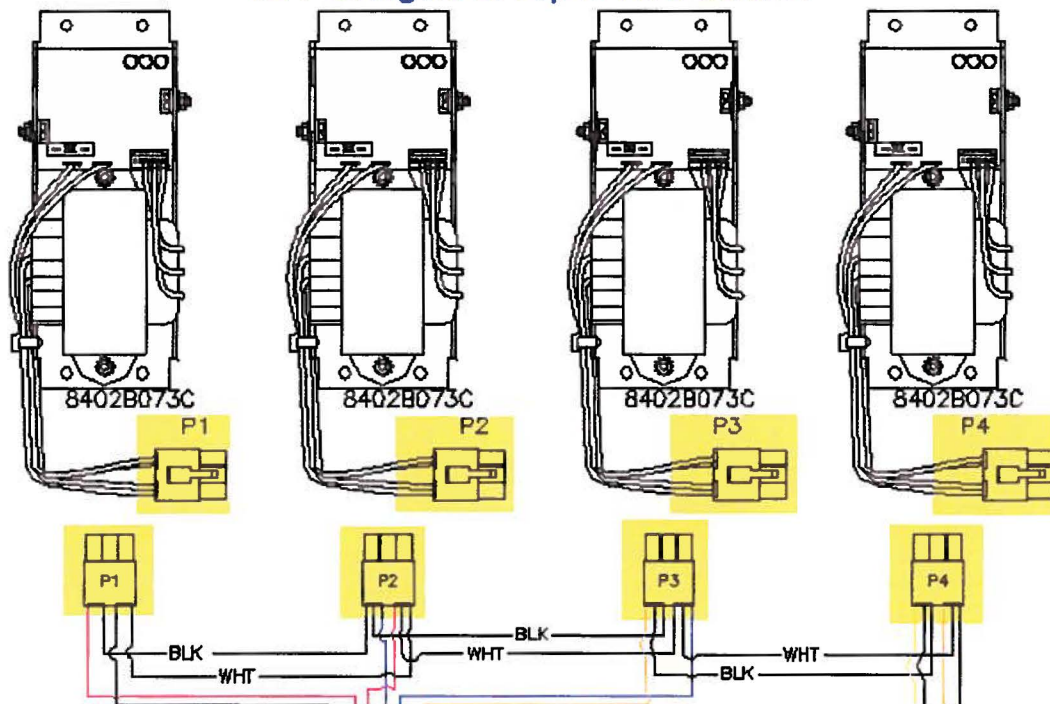




### 3.3 Alert and Notification System (Siren Program)



### 12 V Chargers at Top of RTU Cabinet



3.3 Alert and Notification System (Siren Program)

Annual RTU Preventive Maintenance Performance Verification Nuclear Station Emergency Preparedness				
Siren Number	Last PM Date	Earliest Due Date	Latest Due Date	Actual Test Date
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				
36				
37				
38				
39				
40				
41				
42				
43				
44				
45				
46				

## 3.3 Alert and Notification System (Siren Program)

Annual RTU Preventive Maintenance Performance Verification _____ Nuclear Station Emergency Preparedness				
Siren Number	Last PM Date	Earliest Due Date	Latest Due Date	Actual Test Date
47				
48				
49				
50				
51				
52				
53				
54				
55				
56				
57				
58				
59				
60				
61				
62				
63				
64				
65				
66				
67				
68				
69				
70				
71				
72				
73				
74				
75				
76				
77				
78				
79				
80				
81				
82				
83				
84				
84				
86				
87				
88				
89				

**Annual Repeater Equipment Preventive Maintenance  
Checklist**

Nuclear Station \_\_\_\_\_

PICCASO Ticket No. \_\_\_\_\_

Repeater Location \_\_\_\_\_

**NOTE: PERFORM PERSONAL SAFETY ASSESSMENT PRIOR TO BEGINNING WORK.**

( √ ) Indicates completed step.

- A. ( ) Verify notch filter adjusters are secured in place. Document needed actions and PICCASO Ticket number in Comments section.
- B. ( ) Shelter Wiring -- Visually inspect and verify associated power, RF, control wiring and all associated connectors inside communications shelter are tight and in good condition. (Guard against over tightening and stripping threads.) Document needed actions and PICCASO Ticket number in Comments section.
- C. ( ) Repeater Cabinet Wiring - Visually inspect and verify all power, RF, control cabling and all associated connectors inside repeater cabinet are tight and in good condition. (Guard against over tightening and stripping threads.) Document needed actions and PICCASO Ticket number in Comments section.
- D. ( ) External Ground -- Verify coax cable-to-building ground is in place and secure. Measure and record resistance from ground kit to external ground bar. \_\_\_\_\_ (ohms) Measured value should be less than 1 ohm. Documented values should include 2 decimal spaces. Document needed actions and PICCASO Ticket number in Comments section.
- E. ( ) RF Surge Protection -- Verify lightning protection device (Polyphaser) is free of any corrosion and ground is secure. Measure and record resistance from Polyphaser to internal Master Ground Bar (MGB). \_\_\_\_\_ (ohms) Measured value should be less than 1 ohm. Documented values should include 2 decimal spaces. Document needed actions and PICCASO Ticket number in Comments section
- F. ( ) Rack Ground -- Verify rack / cabinet ground is in place and secure. Rack ground should be bonded to aisle ground or extended to MGB. Measure and record resistance from repeater ground to MGB \_\_\_\_\_ (ohms) Measured value should be less than 1 ohm. Documented values should include 2 decimal spaces. Document needed actions and PICCASO Ticket number in Comments section
- G. ( ) Configuration Validation -- Using laptop PC or repeater front panel controls, confirm repeater configuration is according to the configuration settings given in the repeater equipment manual. Document changes made in the Comments section.
- H. ( ) Use laptop PC or repeater front panel controls to confirm repeater configuration is according to the configuration settings given in the repeater equipment manual. Document changes made in the Comments section below.

### 3.3 Alert and Notification System (Siren Program)

NOTE: Schedule items I, J, K, and L with EP to ensure standby backup route alerting by the counties, since the system must be down to perform these checks. (Perform as needed, or every three years as a minimum, i.e., year 2010, 2013, and 2016, etc.)

#### I. ( ) RSSI Measurements --

Document location of master radio used for RSSI Baseline

---

Transceiver A -- Measure RSSI baseline with notch filter bypassed \_\_\_\_\_ dBm  
Restore cabling so that notch filter is in-line.

Measure RSSI with notch filter in-line \_\_\_\_\_ dBm.

1. **IF** RSSI is not greater than -85dBm, troubleshoot and make corrections.
2. **IF** RSSI difference with notch filter in place is more than 2dB, take steps to fine tune notch filter and add verbiage to comments section.
3. Obtain RSSI level after corrections were made: \_\_\_\_\_ dBm.

Record RSSI level and date on configuration data sheet in back of repeater equipment manual.

Transceiver B -- Measure RSSI baseline with notch filter bypassed \_\_\_\_\_ dBm  
Restore cabling so that notch filter is in-line.

Measure RSSI with notch filter in-line \_\_\_\_\_ dBm.

1. **IF** RSSI is not greater than -85dBm, troubleshoot and make corrections.
2. **IF** RSSI difference with notch filter in place is more than 2dB, take steps to fine tune notch filter and add verbiage to comments section.
3. Obtain RSSI level after corrections were made: \_\_\_\_\_ dBm.

Record RSSI level and date on configuration data sheet in back of repeater equipment manual.

#### J. ( ) Forward Power Testing -

Transceiver A -- Use watt meter to check forward transmit power \_\_\_\_\_ watts ; repair if under 4.0 watts. PICCASO Ticket # \_\_\_\_\_

Transceiver B -- Use watt meter to check forward transmit power \_\_\_\_\_ watts; repair if under 4.0 watts. PICCASO Ticket # \_\_\_\_\_

#### K. ( ) Reflected Power Testing -

Transceiver A -- Use watt meter to check reflected transmit power \_\_\_\_\_ watts; repair if over 10% of measured transmit power.  
PICCASO Ticket # \_\_\_\_\_

Transceiver B -- Use watt meter to check reflected transmit power \_\_\_\_\_ watts; repair if over 10% of measured transmit power.  
PICCASO Ticket # \_\_\_\_\_

#### L. ( ) Antenna and Feedline Testing - Required every 3rd year.

Using a Anritsu Site Master or equivalent Cable and Antenna Analyzer, perform SWR, return loss, and cable insertion loss test on RF cables and connectors (active and backup) to detect any problems.

- **IF** problems detected on exterior feedline, create a PICCASO ticket and obtain qualified climber personnel to troubleshoot and make repairs. PICCASO Ticket # \_\_\_\_\_ Post paper copy in local equipment manual.

3.3 Alert and Notification System (Siren Program)

- M. ( ) Verify spare parts are available (at repeater site, Toddville, or Greenville). Document needed actions and PICCASO Ticket number in Comments section
- N. ( ) House Keeping -- Verify repeater building housekeeping is clean and orderly. Document needed actions and PICCASO Ticket number in Comments section.
- O. ( ) Site Copy of PM -- Place a copy of this completed PM form in the repeater equipment manual. Compare measurements and any comments from previous years and document any changes that should be researched.
- P. ( ) Spare Repeater Verification -- If Spare repeater is installed, create a second form titled \_\_\_\_\_(site) Spare Siren Infrastructure. Clearly label repeater as a cold standby spare and complete steps H through K. Document needed actions and PICCASO Ticket number in Comments section.
- Q. ( ) Verify there are not any power or RF connections on the spare repeater.
- R. ( ) Spare Antenna Verification - **IF** spare antenna is installed, complete step L and include results on the Spare Siren Infrastructure form. Document needed actions and PICCASO Ticket number in Comments section.

S. ( ) Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

T. Checklist completed by: \_\_\_\_\_ Date: \_\_\_\_\_.

U. Forward the original copy of this form to EP.

V. ( ) EP Verification, ( ) EP database update by: \_\_\_\_\_ Date: \_\_\_\_\_.

**Annual Siren Repeater Preventive Maintenance Performance Verification**  
**\_\_\_\_\_ Nuclear Station**

<b>Repeater Location</b>	<b>Last PM Date</b>	<b>Earliest Due Date</b>	<b>Latest Due Date</b>	<b>Actual PM Date</b>

## **SIREN TROUBLE CALL GUIDANCE FOR EMERGENCY PREPAREDNESS AND SIREN COMPLAINT INFORMATION**

This guidance is provided for trouble calls regarding sirens and/or siren monitoring. Refer to Attachment 3.3.14.2 for monitor color codes.

### **Report of a Siren Actually Sounding:**

#### **A. During Normal Business Hours**

- Call the counties to determine their knowledge of the siren sounding and to gather any needed information.
- Contact Toddville (Telecom EHD at 9-704-382-4357, and/or TOC at 9-704-382-1961) to report the problem. Oconee will contact their on-site Telecom.
- Contact the Control Room and Corporate Communications and inform them of the situation. Update as appropriate.
- After the problem is resolved, contact the person reporting the problem and inform them of the resolution.

#### **B. Non-Business Hours**

- Call the counties to determine their knowledge of the siren sounding and to gather any needed information.
- Contact Toddville (Telecom EHD at 9-704-382-4357, and/or TOC at 9-704-382-1961) to report the problem. Oconee will contact their on-site Telecom.
- Contact the Control Room and Corporate Communications Duty Person (see contact list, Emergency Telephone Directory) and inform them of the situation. Update as appropriate.
- After the problem is resolved, contact the person reporting the problem and inform them of the resolution.

### **Indicated False Activation on Siren Monitor:**

#### **A. During Normal Business Hours - contact Toddville/Oconee (see contact list, Emergency Telephone Directory).**

#### **B. Non-Business Hours - counties have been instructed to evaluate the situation to determine if the site is actually sounding (911 calls, other law enforcement calls, etc.). If it IS actually sounding, contact Toddville/Oconee via phone. If it is NOT sounding, no action is necessary. Toddville/Oconee will evaluate and clear the next working day.**



**Siren Complaint Information to Switchboard Operator:**

- A. If a call comes into the switchboard during normal working hours concerning siren activation, put the call through to Emergency Preparedness. (Emergency Preparedness will collect the information below.)
- B. If a call comes into the switchboard after hours, holidays, or weekends concerning a siren activation and you have not been notified of an emergency situation at the station, assure the caller there is no emergency at the nuclear station. Then, note the following information:

Date \_\_\_\_\_ Time \_\_\_\_\_

Person Calling \_\_\_\_\_ Telephone \_\_\_\_\_

Address \_\_\_\_\_ Siren No. (if known) \_\_\_\_\_

City \_\_\_\_\_ County \_\_\_\_\_

Are you sure it is a Duke Energy siren? \_\_\_\_\_

How long did the siren run? \_\_\_\_\_

Is the siren running now? \_\_\_\_\_

Have you heard the siren before? \_\_\_\_\_

Landmarks near where you live: \_\_\_\_\_

Switchboard Operator: \_\_\_\_\_ Date: \_\_\_\_\_

Note: Caller must provide a name and a telephone number where they can be reached. A callback will be made by the EP Duty Person to verify the call is not a prank call.

- C. Contact the EP Duty Person to report the siren call.
- D. Forward this form to the Emergency Preparedness section.
- 

Comments/actions taken:

---

---

---

EP Duty Person: \_\_\_\_\_ Date: \_\_\_\_\_

### 3.3 Alert and Notification System (Siren Program)

## GENERAL GUIDANCE FOR SIREN INSTALLATION/RELOCATIONS

This attachment provides general guideline in the event a siren site needs to be relocated. It can also be used for new siren installation. Actions may vary.

1. A request is made to relocate a siren. Emergency Preparedness, Real Estate Services (RES) and Site Services are contacted to arrange for discussions with the requesting party concerning the relocation. (Note: Several trips to the site may be required for planning and scheduling purposes.)

Real Estate Services (RES)	Site Services (SS)	Telecom	Relocator (Site Services or Contractor)	Emergency Preparedness (EP)
<input type="checkbox"/> Meet at the Site with appropriate parties <input type="checkbox"/> Assess need to move the siren <input type="checkbox"/> Determine who will pay for the move <input type="checkbox"/> If Duke is paying, get accounting from EP <input type="checkbox"/> If Requester is paying, get accounting info <input type="checkbox"/> Determine appropriate relocation site based on: <input type="checkbox"/> Maintaining the Siren coverage area <input type="checkbox"/> Proximity to other structures/trees <input type="checkbox"/> Right of Way <input type="checkbox"/> Power accessibility <input type="checkbox"/> Maintenance Accessibility <input type="checkbox"/> Signal strength <input type="checkbox"/> Notify Telecom so site can be signal tested. <input type="checkbox"/> After new location is determined:  <input type="checkbox"/> Create a drawing to	<input type="checkbox"/> Meet at the Site with appropriate parties <input type="checkbox"/> Determine resources to be utilized to perform the move (Duke, Shaw, etc.) <input type="checkbox"/> Obtain necessary agreements and/or contracts <input type="checkbox"/> Coordinate the move with the Relocation group <input type="checkbox"/> Contact EP and Telecom when the relocation is complete. <input type="checkbox"/> Ensure or verify through contractor that qualifications are up to date (i.e. traffic control, bucket truck, crane, electrical)	<input type="checkbox"/> Perform an initial signal strength test at the proposed site to determine suitability. <input type="checkbox"/> Be available the day of the relocation to perform post relocation testing. <input type="checkbox"/> Coordinate Post relocation testing with Toddville and EP which should include a Full cycle Test coordinated with the County (EP will coordinate this with the respective County)	<input type="checkbox"/> Meet at the Site with appropriate parties <input type="checkbox"/> Make initial contact with the electrical service provider to inform them of the impending move and to evaluate: <input type="checkbox"/> transformer requirements <input type="checkbox"/> underground service <input type="checkbox"/> length of overhead cable <input type="checkbox"/> disconnection for move <input type="checkbox"/> reconnection after move <input type="checkbox"/> Permit/Inspections /schedule <input type="checkbox"/> Request underground relocation service to arrange for an underground survey of the proposed site. <input type="checkbox"/> Apply for electrical permits <input type="checkbox"/> Determine and schedule equipment, tools, and resources needed for the move (i.e., Bucket Truck, digger/derrick truck, Traffic Control, etc.) <input type="checkbox"/> Determine tool and resource checklists including contingencies. (Traffic control, Damaged cables, new ground rods, ground rod connectors, etc.) <input type="checkbox"/> Verify correct location with information provided by RES and SS. <input type="checkbox"/> Have electrical Service provider remove power. <input type="checkbox"/> Remove siren parts as needed to facilitate the move <input type="checkbox"/> Prep the relocation site if needed <input type="checkbox"/> Relocate the siren <input type="checkbox"/> Install ground rods <input type="checkbox"/> Install guy wires as needed <input type="checkbox"/> Reinstall any siren components that had been removed <input type="checkbox"/> Coordinate Inspection <input type="checkbox"/> Coordinate electrical Service reconnection	<input type="checkbox"/> Provide information regarding the Siren Power provider <input type="checkbox"/> Provide accounting information if Duke is paying for the move. <input type="checkbox"/> Notify the appropriate County and Corporate Communications of the impending outage and move. <input type="checkbox"/> If the siren will be out of service for an extended period of time, EP will notify the appropriate County so that alternate route alerting can be established. <input type="checkbox"/> Coordinate a sounding test with the County to assure operability. (Reverse 911) <input type="checkbox"/> Notify Corporate Communications of the testing and desired communications. <input type="checkbox"/> Update EP related siren records <input type="checkbox"/> Maps <input type="checkbox"/> Database  <input type="checkbox"/> If required, send a letter to

### 3.3 Alert and Notification System (Siren Program)

Real Estate Services (RES)	Site Services (SS)	Telecom	Relocator (Site Services or Contractor)	Emergency Preparedness (EP)
<p>survey and mapping proposed siren site:</p> <p>( ) Place a stake at the location.</p> <p>( ) Determine appropriate Right of Way agreements (DOT, Private Property)</p> <p>( ) Submit drawing and appropriate paper work to the respective authorities to obtain agreement documents (i.e. DOT,)</p> <p>( ) Notify SS to begin relocation coordination</p> <p>( ) Notify EP of the status of the move</p> <p>( ) After the move, provide EP with documentation associated with the relocation including Agreements, Permits, Drawings, and other Evaluation information</p>			<p>( ) Fill in hole from the removal site and repair as needed.</p> <p>( ) Repair and damaged yards, ruts, or etc. as necessary.</p> <p>( ) Contact Site Services (SS) when relocation is complete.</p>	<p>FEMA documenting the relocation including an updated map.</p>

**Annual Preventive Maintenance Checklist  
Siren Sites with a Tail-End Link**

Nuclear Station: \_\_\_\_\_ Repeater Site: \_\_\_\_\_ Remote Site: \_\_\_\_\_

PICCASO Ticket No. \_\_\_\_\_

**WARNING: OBSERVE ALL SAFETY RULES. USE HEARING PROTECTION WHEN APPROPRIATE.**( ☒ ) Indicates completed step.**REPEATER SITE:**

- A. ( ) Replace battery for MDS-9710 radio (minimum every year or earlier if needed). Mark date on battery. Date installed \_\_\_\_\_.
- B. ( ) Replace battery for TransNet radio (minimum every year or earlier if needed). Mark date on battery. Date installed \_\_\_\_\_.
- C. ( ) Verify wiring, wiring connectors, equipment, and enclosure boxes are in good condition and are firm.

**MDS-9710 Radio (Steps D thru I):**

- D. ( ) Check and record RSSI (received signal strength indicator) levels; if levels are not greater than -95dBm, troubleshoot and correct \_\_\_\_\_.
- E. ( ) Check and record azimuth of antenna to repeater on mountain; submit PICCASO ticket if correction required. \_\_\_\_\_.
- F. ( ) Check forward transmit power; repair if under 4.5 watts \_\_\_\_\_.
- G. ( ) Check reflected transmit power; repair if over 0.7 watts \_\_\_\_\_.
- H. ( ) Verify output voltage on the power supply to radio (13.5v +/- 0.5v): \_\_\_\_\_.
- I. ( ) Verify output voltage on the battery charger leads (13.2v +/- 0.5v): \_\_\_\_\_.

**MDS-Trans-Net Radio (Steps J thru N):**

- J. ( ) Check and record RSSI (received signal strength indicator) levels; if levels are not greater than -95dBm, troubleshoot and correct \_\_\_\_\_.
- K. ( ) Check and record azimuth of antenna; submit PICCASO ticket if correction required. \_\_\_\_\_.
- L. ( ) Verify voltage on the power supply to radio (13.5v +/- 0.5v): output voltage: \_\_\_\_\_.
- M. ( ) Verify voltage on the battery charger leads (13.2v +/- 0.5v): output voltage: \_\_\_\_\_.
- N. ( ) Connect laptop to TransNet diagnostic port and open TransNet Configuration Software. View log and verify transmit power is 30dBm.

**CAUTION:** The next step is critical before leaving the Tail-end Link Repeater Site.

- O. ( ) Perform remote polls of MDS-9710 radio from Telecom Shop using InSite software and poll siren at remote site using CentrAlert Guardian software.  
 ( ) Tests successful. ( ) Test unsuccessful.  
 • **IF** unsuccessful, troubleshoot, repair as necessary, and document in section V.

**REMOTE SITE:**

- P. ( ) Replace battery (minimum every year or earlier if needed). Mark date on battery. Date installed \_\_\_\_\_.
- Q. ( ) Verify wiring, wiring connectors, equipment, and enclosure boxes are in good condition and all RTU connections are firm.
- R. ( ) To calibrate the 12V section: a) Connect a calibrated DVM to J11. b) Take a reading, for example 13.04 VDC. C) Adjust the "12V CAL" pot to get a reading within a few hundredths of that reading. Volts DC output range: \_\_\_\_\_.
- S. ( ) Connect laptop to TransNet diagnostic port and open TransNet Configuration Software. View log and verify transmit power is 30dBm and RSSI (Receive Signal Level is greater than -85dBm.
- T. ( ) Check and record azimuth of antenna; submit PICCASO ticket if correction required.  
 \_\_\_\_\_.

**CAUTION:** The next step is critical before leaving the Tail-end Link Repeater Site.

- U. ( ) Perform a Silent Test from Telecom Shop using CentrAlert Guardian software.  
 ( ) Tests successful. ( ) Test unsuccessful.  
 • **IF** unsuccessful, troubleshoot, repair as necessary, and document in section V.

**POST-MAINTENANCE PROCEDURES:**

- V. ( ) Document any corrective actions taken/recommendations (create PICCASO ticket for documentation):

---



---



---

- W. Remarks:

---



---



---

- X. ( ) PICCASO Ticket work history completed to fully explain failures and corrective actions.

- Y. Checklist completed by: \_\_\_\_\_ Date: \_\_\_\_\_

### 3.3 Alert and Notification System (Siren Program)

Z. Forward the original copy of this form to EP.

AA. ( ) EP verification, ( ) EP database update by: \_\_\_\_\_ Date: \_\_\_\_\_

### 3.3 Alert and Notification System (Siren Program)

#### Local (Station) Activation of Emergency Sirens

**NOTE:** This attachment provides instructions for Operations to activate the sirens in the CNS, MNS, or ONS EPZ counties:  
**CNS** - Gaston, Mecklenburg, York  
**MNS** - Gaston, Iredell, Lincoln, Mecklenburg  
**ONS** - Pickens, Oconee

1. **IF** Operations receives a request from an EPZ County to activate the sirens other than through a dedicated communications network, **validate** request by having county contact Control Room via a dedicated communications network.
2. **Validate** that the county is requesting an audible siren activation ("Alert" button).

**NOTE:** [ONS] Siren keys are located in the EP office area on the Oconee Office Building (OOB) third floor. Keys to the key box are located in the EP Admin's office and the key box is located in the center office cubicle. Keys are labeled "Siren Keys."

3. **Locate** EPZ siren control cabinet:
  - [CNS] TSC in the Data Coordination Area near the TSC OAC Console near Column U-26 V-26.
  - [MNS] TSC in the Offsite Agency Communicators Area.
  - [ONS] Library on the sixth floor of the OOB.

**NOTE:** Operations should fully read the instructions before implementation as there are time requirements that affect operation. If an actual activation is requested, the Operator will be required to depress the "ALERT" button.

4. [ONS] Place smaller key in "Activate" and place larger key in "Reset" (as a precaution), but do **NOT** turn keys until ready to Activate.



5. **Activate** sirens as follows:
  - 6.1. **Turn** ARM knob clockwise to "ARM" (spring loaded switch)
  - 6.2. **Raise** spring-loaded flip cover **AND** **Depress** "ALERT" button (button will flash)
  - 6.3. **Turn** "ACTIVATE" key clockwise to activate within 15 seconds of depressing "ALERT" button (ALERT light should turn solid)
  - 6.4. **IF** an error light is received, **turn** "RESET" key (lights should go out)

## 3.3 Alert and Notification System (Siren Program)

Attachment 3.3.14.16

6. **Determine** success of audible siren activation by reviewing the computer screen and waiting for the printer located adjacent to the siren controller to produce a report.
7. **IF** attempt to activate sirens is **NOT** successful, **inform** requesting county (or counties) that activation attempt was **NOT** successful **AND** that they should establish "backup route alerting."
8. **IF** attempt to activate sirens is **NOT** successful, notify EP Duty Person ) that activation attempt was **NOT** successful.



3.3 Alert and Notification System (Siren Program)

**Siren Battery Replacement Checklist**

Nuclear Station: \_\_\_\_\_ Repeater Site: \_\_\_\_\_ Remote Site: \_\_\_\_\_

PICCASO Ticket No. \_\_\_\_\_

**NOTE:**

- System wide Battery Replacement **SHALL** occur every 3-5 years based on annual conductance readings.
- EP Specialist is to be made aware of any planned maintenance and general siren locations at least 24 hours in advance. EP Specialist may elect to notify appropriate Warning Points advising of possible route alerting in affected areas while site is inoperable due to maintenance.
- Link to Wiring Diagram: [Wiring Diagram DCTB-DUKE 20850000323 nov14.pdf](#)

**WARNING:**

- All personal metal items such as rings, bracelets, necklaces, watches, etc. **SHALL** be removed to avoid electrical shock.
- A face shield, goggles, acid resistant gloves, acid resistant apron, and an eyewash with a minimum 15 gallon capacity is required for Battery Replacement.

1. Contact Counties, Telecom, and Emergency Preparedness to advise that siren will be out of service during battery replacement and provide expected return to service date/time. \_\_\_\_\_
2. Notify Telecom to perform Silent Test (Circle one: Silent Test successful – Y or N) \_\_\_\_\_
3. **IF** test unsuccessful, **THEN** troubleshoot /repair as necessary. \_\_\_\_\_

**NOTE:**

**IF** material is released or spilled, the spill material should be contained, washed with water or neutralized with sodium carbonate or bicarbonate. The waste should be disposed of as general waste. A face shield, goggles, acid resistant gloves, acid resistant apron, and an eyewash with a minimum 15 gallon capacity is required for handling spill material.

4. **IF** corrosion or leakage is present, **THEN** ensure it is neutralized and dispose. \_\_\_\_\_
5. Place AC breaker to the OFF position and lock the breaker box. \_\_\_\_\_
6. **Verify zero ("0") AC energy.** \_\_\_\_\_
7. Place DC switch to the OFF position. \_\_\_\_\_
8. **Verify zero ("0") DC energy.** \_\_\_\_\_
9. Using insulated tools, unbolt negative lead (ground). \_\_\_\_\_

### 3.3 Alert and Notification System (Siren Program)

10. Tape negative lead with electrical tape. \_\_\_\_\_
11. Remove battery jumpers. \_\_\_\_\_
12. Using insulated tools, unbolt positive lead. \_\_\_\_\_
13. Tape positive lead with electrical tape. \_\_\_\_\_
14. Transfer terminal covers from new battery to used battery for removal. \_\_\_\_\_

**WARNING:**

- Ensure proper lifting techniques are used when removing batteries.
- Be aware of pinch point and body position.

15. Remove battery from enclosure. \_\_\_\_\_
16. Transfer straps, washers, and other required hardware to new battery. \_\_\_\_\_
17. Spray terminals with non-corrosive lubricant. \_\_\_\_\_
18. Perform the following to install the new battery:
  - 18.1 Using insulated tools, attach the positive lead. \_\_\_\_\_
  - 18.2 Install battery jumpers. \_\_\_\_\_
  - 18.3 Using insulated tools, attach the negative lead (ground). \_\_\_\_\_
19. Spray any exposed metallic connections with non-corrosive lubricant. \_\_\_\_\_
20. Unlock AC breaker box and place AC Breaker to ON. \_\_\_\_\_
21. Place DC switch to ON position. \_\_\_\_\_
22. Ensure Radio OFF. \_\_\_\_\_
23. Test AC Rotation (Circle one: Rotation Satisfactory Y or N). \_\_\_\_\_
24. **IF** test unsuccessful, **THEN** troubleshoot /repair as necessary. \_\_\_\_\_

**NOTE:**

BUMP; chopper is sounded for a short period of time so that it never produces full sound.  
Hold a minimum of two (2) seconds to avoid damage to relay.

25. Test AC Chopper for greater than two seconds. \_\_\_\_\_
26. Place AC Breaker to OFF. \_\_\_\_\_

3.3 Alert and Notification System (Siren Program)

27. **Verify zero ("0") AC energy** \_\_\_\_\_
28. Test DC Rotation (Circle one: Rotation Satisfactory Y or N) \_\_\_\_\_
29. **IF** test unsuccessful, **THEN** troubleshoot /repair as necessary. \_\_\_\_\_

**NOTE:**

BUMP; chopper is sounded for a short period of time so that it never produces full sound.  
Hold a minimum of two (2) seconds to avoid damage to relay.

30. Test DC Chopper for greater than two seconds. \_\_\_\_\_
31. Place AC Breaker to ON. \_\_\_\_\_
32. Ensure all switches to ON. \_\_\_\_\_
33. Notify Telecom to perform Silent Test (Circle one: Silent Test successful – Y or N). \_\_\_\_\_

**CAUTION:**

**IF** post-maintenance functional tests are not successful, EP must be notified so Warning Points can be notified. A siren must not be left in a non-functional state without notifying EP.

34. **IF** test unsuccessful, **THEN** troubleshoot /repair as necessary. \_\_\_\_\_
35. Lock and secure siren boxes. \_\_\_\_\_
36. Notify Counties, Telecom, and Emergency Preparedness that sirens have been returned to service. \_\_\_\_\_
37. **IF** battery replacement was required due to a failure, **THEN** document battery replacement in CAS. \_\_\_\_\_