

. TESTING AND REPAIR
of the
SIREN PORTION OF THE
ALERT AND NOTIFICATION SYSTEM
for the
INDIAN POINT
NUCLEAR POWER GENERATING PLANT

September 14, 1982

On March 3, 1982, a drill was held to test the Indian Point emergency preparedness procedures which had been established by the Power Authority and Consolidated Edison in conjunction with various County and state organizations. The sirens were tested as part of this drill.

The siren system covers parts of four Counties, namely, Westchester, Rockland, Putnam and Orange, with 43, 24, 9 and 12 sirens in each of those Counties, respectively. Operation of the sirens is by radio control based on transmission of coded radio signals in each of the four Counties. The Westchester and Orange County installations operate on a high-band, and the Rockland and Putnam County systems operate on a low band. The high band systems for Westchester and Orange Counties are a digital system which allows both the growl signal and the alert signal for each individual siren to be transmitted from the County EOC. The growl signal from the EOC operates the receiver, decoder and control equipment at a designated siren to allow the siren to operate for about five seconds and is intended for test purposes only. The actual alert signal is approximately three minutes in duration. In Orange County the control equipment is located in the EOC in Goshen, and in Westchester, the control equipment is located in the County Parkway Police Headquarters in Hawthorne. The equipment for the other two Counties, Putnam, and Rockland is a low-band system and is also operated from the County EOC's.

The March 3rd exercise indicated that some of the sirens had not been heard by residents living near those sirens. The utilities jointly conducted a complete re-test on the sirens. By completion of the testing program, all of the inoperative sirens had been repaired and were functional. The corrections were accomplished prior to June 1, 1982.

The re-test activity was organized by Power Authority and Con Edison. The tests included: circuit parameters such as received signal strength, receiver sensitivity and circuit voltages; they also included functional tests of controls, siren rotation, growl and alert functions; and components such as fuses, counters and relays.

Based on a survey conducted by the utilities, of all the 88 sirens tested on March 3rd, 1982 sixty eight were reported to have been heard. Nine were reported as not having been heard; these have been repaired and the remaining were in remote park locations. Of these eleven remote sirens only six required corrective action. Appendix 'A' provides details for the repairs to this total of 15 sirens.

The approach for this program, was to correct any observed questionable condition in any siren even though it was not confirmed that the condition could contribute to a malfunction of the siren. These actions included such conditions as crimped wire, weather tight fittings and adjustment of thermal relays.

Also as a result of the complete system re-test the analysis shows 15 additional sirens as having had corrections performed on parts that could have precluded operation. Appendix 'B' details the actions taken on these 15 sirens.

It is expected that periodic testing will be conducted in accordance with recommended guidance provided in NUREG 0654 Rev. 1.

APPENDIX 'A'
and
APPENDIX 'B'

NOTE: For descriptive purposes the siren system is subdivided into subsystems as follows:

1. The Communications subsystem consisting of radio transmitters and receivers, encoders and decoders, antennas and antenna cables.
2. The siren subsystem consisting of the siren itself, siren/motor couplings, motor, motor circuits, and motor control devices.
3. The Power subsystem including transformers, service entrances and interconnecting power lines.

APPENDIX A

TEST DETAILS

SIREN NO.	COMMUNICATIONS SUBSYSTEM	SIREN SUBSYSTEM	POWER SUBSYSTEM	OTHER
-2	Returned Rcvr- defective RG-8u replaced			
-27 *				
-46 *		Counter works on growl only - Repaired		
-56	Returned rcvr. RG-8/u replaced Defective			
-58		Replaced siren		
-60	Defective RG-8/u replaced.			
-61	Loose antenna connector. Cable and Connectors Replaced.			
-78 *				
-84		Starting capacitors replaced.		

*Denotes sirens that functioned properly during retest subsequent to March 3

APPENDIX A

TEST DETAILS

SIREN NO.	COMMUNICATIONS SUBSYSTEM	SIREN SUBSYSTEM	POWER SUBSYSTEM	OTHER
-3	Replaced Rcvr./ Decoder Boards RG-8/u and Connectors.			
-7	Rewired phono. conn. on Rcvr Board	Blown 100 A Fuse		
-9	Defective RG 8/u Antenna replaced..			
-10	Defective antenna connector repaired.			
-50	Wrong antenna replaced.			Corrected bulkhead fitting problem
-16		Open starter motor winding/siren replaced		

APPENDIX B

TEST DETAILS

SIREN NO.	COMMUNICATIONS SUBSYSTEM	SIREN SUBSYSTEM	POWER SUBSYSTEM	OTHER
-5	Inadequate signal level, installed new Yagi Antenna. Replace defective Rcvr. Board & RG-58/u.		AC Line crimped in Service Box Transformer 900 ft. from siren, excessive voltage drop, transformer relocated.	
-12	Defective RG-8/u replaced.	Thermal relay tripped. Improperly set, reset to 100%		
-21	No center pin on antenna. Defective RE-8/u replaced.			
-24		Replaced start capacitor relay		
-25	No received signal	Siren defective-1 open winding, one shorted. Thermal relay reset to 100%.		
-26	No center pin on antenna, antenna repaired.			
-30	Decoder inoperative repaired	Thermal relay adjusted to 100%		

APPENDIX B

TEST DETAILS

SIREN NO.	COMMUNICATIONS SUBSYSTEM	SIREN SUBSYSTEM	POWER SUBSYSTEM	OTHER
-32		Thermal relay which tripped breaker, at 25% was reset to 36%		
-35	Defective antenna pin released.	Thermal relay reset to 36%.		
-39	Rcvr. misaligned and repaired. Defective RG-58/u & connectors replaced incorrect antenna with MWH-150.	Repaired loose splice to motor		
-40	Defective RG-58/u replaced.			
-41	Defective RG-58/u replaced.			
-49		Run capacitors not connected.		
-65	Defective RG-8/u replaced. Defective RG-58/u replaced.			
-77	Re-soldered RF plug on PC Board. Wrong Antenna replaced.			

- NOTES:
1. After 4/20/82, the fuses were changed routinely to Slow-blow during the retest and maintenance program.
 2. All thermal relays set to 100% on single phase systems only.
 3. After 4/5/82 and performance of the initial growl test, all antenna cables were routinely replaced.