

NORTHEAST UTILITIES



THE CONNECTICUT LIGHT AND POWER COMPANY
WESTERN MASSACHUSETTS ELECTRIC COMPANY
HOLYOKE WATER POWER COMPANY
NORTHEAST UTILITIES SERVICE COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

General Offices • Selden Street, Berlin, Connecticut

P.O. BOX 270
HARTFORD, CONNECTICUT 06141-0270
(203) 665-5000

June 25, 1985

Docket No. 50-336

A04541

Director of Nuclear Reactor Regulation
Attn: Mr. Edward J. Butcher, Chief
Operating Reactors Branch #3
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

- References:
- (1) D. G. Eisenhower letter to All Licensees of Operating Reactors, Applicants for Operating Licenses, and Holders of Construction Permits, dated July 8, 1983.
 - (2) W. G. Council letter to D. G. Eisenhower, dated November 8, 1983.
 - (3) W. G. Council letter to D. G. Eisenhower, dated March 16, 1984.
 - (4) J. R. Miller letter to W. G. Council, dated December 11, 1984.

Gentlemen:

Millstone Nuclear Power Station, Unit No. 2
Response to Request for Additional Information
Generic Letter 83-28
Generic Implications of Salem ATWS Events

Reference (1) requested that licensees provide the status of their current conformance with the positions of Generic Letter 83-28 and their plans and schedules for any needed improvements required for conformance to these positions. Accordingly, Northeast Nuclear Energy Company (NNECO), on behalf of Millstone Unit No. 2, responded in References (2) and (3).

Reference (4) requested additional information be provided to the Staff with respect to periodic maintenance and trending programs (Items 4.2.1 and 4.2.2). Attachment 1 provides our response. Please contact us should you have any questions.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

8307020233 850625
PDR ADOCK 05000336
P PDR

A handwritten signature in dark ink, appearing to read 'J. F. Opeka'.
J. F. Opeka
Senior Vice President

Handwritten: 11/11

Attachment I

Generic Letter 83-28

Request for Additional Information

Millstone Unit No. 2

June, 1985

Millstone Unit No. 2

Generic Letter 83-28

Response to Request for Additional Information

1. Item 4.2.1 - Periodic Maintenance Program for Reactor Trip Breakers.

1.1 Criteria for Evaluating Compliance with Item 4.2.1

The Millstone Unit No. 2 Reactor Trip System utilizes General Electric AK-2A circuit breakers. The primary criteria for an acceptable maintenance program for this breaker are contained in Maintenance Instruction GEI-50299EI*, "Power Circuit Breakers, Types AK-2/2A-15, AK-2/3/2A3A-25, AKU-2/3/2A/3A-25," and Service Advice 9.3S and 9.20, by General Electric. The NRC Staff, Equipment Qualification Branch, has reviewed these items and endorsed the maintenance program they describe. More specifically, the criteria used to evaluate compliance include those items in the General Electric instructions and advisories that relate to the safety function of the breaker, supplemented by those measures that must be taken to accumulate data for trending. The acceptable maintenance activity interval is six months. The licensee is to provide a commitment to the six month interval for maintenance or justification for any other proposed maintenance interval.

1.2 Issues Relating to Item 4.2.1

The licensee response states that preventative maintenance on the Reactor Trip Breakers is performed at quarterly and refueling intervals, with torque measurements per MP 2701J-1 and test per PT 21249; The breakers are also subjected to monthly simultaneous actuation of shunt and undervoltage trips. The referenced procedures were not included with the submittal.

The Millstone Unit No. 2 periodic maintenance program for the reactor trip breakers should include, on a six month basis:

1. Verification of breaker cleanliness and insulation structure; all foreign materials, such as paint, dust, or oil, should be removed to prevent electrical breakdown between points of different potential;
2. Verification of breaker physical condition, including wiring insulation and termination, all retaining rings, pole bases, arc quencher, stationary and movable contacts, and tightness of nuts and bolts;
3. Verification of proper manual operation of the breaker, including checks for excessive friction, trip bar freedom, latch

engagement, operating mechanism alignment and freedom, and undervoltage trip (UVT) device armature freedom;

4. Verification of the optimum freedom of the armature as specified in General Electric Service Advice 175-9.3S, item #S1;
5. Verification of proper trip latch engagement as specified in Service Advice 175-9.3S, item #S2;
6. Verification of undervoltage pick-up setting, as specified in Service Advice 175-9.3S, item #S3, and dropout voltage;
7. Verification that the trip torque required on the trip shaft is less than 1.5 pound-inches, as specified in Service Advice 175-9.3S, item #S4; "Before" and "After" maintenance torque values should be recorded;
8. Verification of positive tripping by checking the adjustment between the UVT device and trip paddle as specified in Service Advice 175-9.3S, item #S5;
9. Verification of proper trip response time as specified in Service Advice 175-9.3S, item #S6;
10. Lubrication of trip shaft and latch roller bearings with Mobil 28 lubricant;
11. Shunt Trip Attachment (STA) operation verification;
12. Examination and cleaning of breaker enclosure;
13. Functional test of the breaker prior to returning it to service.

The licensee is to confirm that the periodic maintenance program includes these 13 items at the specified interval or commit to their inclusion and provide a date by which they will be included.

Response:

The Millstone Unit No. 2 maintenance program presently includes the following:

- a. Monthly functional test (matrix test), which actuates the UV and shunt trip simultaneously to trip the breaker.
- b. Quarterly verification of trip torque to be less than 1.5 inch-pounds.
- c. Each refueling cycle, removing the breaker from its cubicle for cleaning, and performance of all maintenance checks as required by vendor instructions and service advice.

NNECO believes this program, with the addition of items 9 and 11 above, to be acceptable based on the following:

1. There have been no failures of the Millstone Unit No. 2 reactor trip breakers to trip. This indicates the breakers have received proper maintenance under the above program.
2. The breakers are located in an extremely clean and dry environment. Previous breaker inspections conducted each refueling outage have found little or no buildup of any foreign materials. Based on this experience, removing the breakers for cleaning every six months is not warranted.
3. The service duty of the breakers is significantly less than their design capability. GE's recommended service interval is based on breakers which are operated near design conditions in an industrial environment.
4. Each refueling outage, a GE service engineer is on site to review maintenance practices and assist in breaker maintenance. Any recommended changes to maintenance procedures to reflect the most current experiences of the vendor and as-found breaker conditions would be incorporated as necessary. This has been the practice in the past and Millstone Unit No. 2 intends to continue it in the future.
5. Performing maintenance of the nature delineated in paragraph 1.2 in items 1, 2, 3, 4, 5, 6, 8, and 12, at frequencies greater than necessary have been shown to be instrumental in causing premature failures due to increased potential for human error and component fatigue. In addition, these items require either disassembly of portions of the breaker or removing the switchgear from service. This action would require the plant to operate in a less reliable mode with RPS breakers open for extended intervals. Therefore, NNECO will perform such maintenance during each refueling outage.
6. In addition, consistent with Combustion Engineering Owner's Group Reactor Trip Breaker Subcommittee recommendations, NNECO has replaced all trip shaft and latch roller bearings with Mobil 28 lubricated bearings. In regards to Item 10 (of Section 1.2 above), NNECO will inspect the bearings each refueling outage. If indicated, they would be replaced. These bearings are not designed to be relubricated, as the Mobil 28 lubricant has been shown by test to last longer than the expected lifetime of the breaker.
7. The checks performed in items 7, 9, 11 and 13, which Millstone Unit No. 2 will commit to perform on a six month basis, provide verification that the breakers have not undergone any unusual or unanticipated degradation.

8. The GE instruction applicable to Millstone Unit No. 2 Reactor Trip Switchgear is GEI-50299A. This manual recommends yearly breaker inspection. The average operating cycle at Millstone Unit No. 2 is approximately thirteen (13) months. Therefore, the breakers are only in service approximately one month longer than the recommended maintenance interval. We feel this is justified based on the above factors.

In paragraph 1.2, the licensee is requested to confirm that the periodic maintenance program includes the thirteen items listed at the specified interval of six months. The Millstone Unit No. 2 maintenance program includes or will include these items to the extent described in Attachment (2) and the preceding response discussion; however, only items 7, 9, 11, and 13 will be performed on a six month basis as previously discussed.

Current copies of MP 2701 J-1 and PT 21249 are provided in Attachment 2.

2. Item 4.2.2 - Trending of Reactor Trip Breaker Parameters to Forecast Degradation of Operability.

- 2.1 Criteria for Evaluating Compliance with Items 4.2.2

Four parameters have been identified as trendable and are included in the criteria for evaluation. These are (1) undervoltage trip attachment dropout voltage, (2) trip torque, (3) breaker response time for undervoltage trip, and (4) breaker insulation resistance.

- 2.2 Issues Relating to Item 4.2.2

The licensee submittal states that the licensee will trend trip shaft torque and undervoltage testing results and identifies the organization which will perform trend analyses.

The licensee is to commit to inclusion of breaker response time and dropout voltage for undervoltage trip and breaker insulation resistance as trending parameters. The licensee should also identify how often the analysis will be performed and how the information derived from the analysis will be used to affect periodic maintenance.

Response:

NNECO will trend the following parameters at the indicated frequencies:

1. Undervoltage (UV) trip attachment dropout voltage - every refueling.
2. Trip torque - every six months.
3. Breaker response time for UV trip - every six months.

The information derived from analyzing these trends will be compared to acceptance criteria each time data is taken. The plant will then perform any appropriate preventive or corrective maintenance.

However, NNECO sees no value to trending breaker insulation resistance, and does not plan to do so. This value is verified by procedure to be greater than 5 megohms, and is normally greater than 100 megohms. Any discernable drop in this value would normally be corrected prior to returning the breaker to service.

Docket No. 50-336

Attachment II

Generic Letter 83-28

Request for Additional Information

Millstone Unit No. 2

June, 1985

APPROVED:

John S. Kuman for

DATE: 11/08/84

PORC MTG. 2-84-84

480 VOLT BREAKERS

FREQ |

ITEM OF INSPECTION

| ACCEPTABLE VALUES

Q

1. *MEASURE TORQUE REQUIREMENTS ON THE TRIP SHAFT TO TRIP A CLOSED BREAKER.

1. LT 1.5 LBS/IN.

NOTE: FOR TRIP TEST ON TCB'S,
----- CHANGE FRACTIONS TO DECIMALS
BY THE FOLLOWING CHART;
AFTER GETTING DECIMAL
MULTIPLY BY .875 TO GET
LBS./IN. READING.

1/32=.03	2/32=.06	3/32=.09
4/32=.13	5/32=.16	6/32=.19
7/32=.22	8/32=.25	9/32=.28
10/32=.31	11/32=.34	12/32=.38
13/32=.41	14/32=.44	15/32=.47
16/32=.50	17/32=.53	18/32=.56
19/32=.59	20/32=.63	21/32=.66
22/32=.69	23/32=.72	24/32=.75
25/32=.78	26/32=.81	27/32=.84
28/32=.88	29/32=.91	30/32=.94
31/32=.97	32/32=1.00	

Q

2. RECORD THE TORQUE VALUE TO TRIP THE SHAFT ON THE PMMS PM SHEET.

2. TRIP TORQUE VALUE
RECORDED ON PMMS
PM SHEET.

Q

3. ENSURE UNDERVOLTAGE DEVICE ARMATURE IS FULLY SEATED UPON COMPLETION OF THE TEST.

3. UNDERVOLTAGE DEVICE
ARMATURE FULLY
SEATED.

R

1. INSPECT PRIMARY DISCONNECTS.

1. NO ARCING OR
OVERHEATING.

R

2. INSPECT SECONDARY DISCONNECTS.

2. NO ARCING OR
OVERHEATING.

R

3. INSPECT ARC QUENCHERS.

3. NO ARCING. NOT
BROKEN.

R

4. INSPECT CONTACT WIPE.

4. 1/8" TO 1/32".

R

5. INSPECT FOR LOOSE OR BROKEN PARTS.

5. ALL TIGHT.

---NOTE---

UPON COMPLETION OF THE PM, THE PERSON WHO
PERFORMED THE WORK WILL SIGN AND DATE THE
"PERFORMANCE OF WORK" SECTION OF THE PMMS
SHEET AND NOTE ANY DEVIATIONS FROM THE
ACCEPTABLE VALUES LISTED ABOVE. HE WILL ALSO
INITIATE ANY REQUIRED CORRECTIVE ACTIONS.

MAINT FORM: 2701J-1
REV : 09
DATE: 11/08/84
PAGE: 1 OF 2

480 VOLT BREAKERS

FREQ	ITEM OF INSPECTION	ACCEPTABLE VALUES
R	6. INSPECT FOR LUBRICATION NEED.	6. PROPER LUBRICATION.
R	7. CLEAN BREAKER AND CUBICAL.	7. NO DIRT OR DUST.
R	8. TEST THE OVER CURRENT TRIP DEVICE USING THE LATEST RELAY SETTING SHEET.	8. PER RELAY SETTING SHEET.
R	9. TEST MANUAL OPERATION OF BREAKER FOR STICKING.	9. OPERATES FREELY.
R	10. MEGGAR THE FOLLOWING: A. PHASE A TO GROUND. B. PHASE B TO GROUND. C. PHASE C TO GROUND. D. PHASE A LINE TO LEAD. E. PHASE B LINE TO LEAD. F. PHASE C LINE TO LEAD.	10. GT OR = 5 MEGOHM.
R	11. CHECK SBM SWITCHES.	11. STRONG SPRING
R	12. *CHECK (ADJUST IF NECESSARY) THE TRIP LATCH ENGAGEMENT.	12. ENGAGES PROPERLY.
R	13. *MEASURE THE TRAVEL OF THE TRIP SHAFT BETWEEN THE UNDERVOLTAGE TRIP DEVICE AND THE TRIP PADDLE TO HAVE AN ADDITIONAL 1/32" OVER-TRAVEL.	13. 1/32" OVERTRAVEL.
R	14. ENSURE ALL MECHANICAL STOPS HAVE BEEN REMOVED AND BREAKER IS OPERABLE PRIOR TO RELEASE TO OPERATIONS.	14. STOPS REMOVED & BKR OPERABLE.
R	15. UPON COMPLETION OF THIS PM, VERIFY THE BREAKER SERIAL NUMBER MATCHES THE NUMBER ENGRAVED ON THE DOOR OF THE CUBICLE IN WHICH THE BREAKER IS LOCATED.	15. SERIAL NUMBER OF THE BREAKER AND THE NUMBER ENGRAVED ON THE CUBICLE DOOR MATCH.
	* TEST TO BE PERFORMED ON RPS BREAKERS AND A BREAKER TRIPPED BY AN UNDER-VOLTAGE DEVICE ON AN AK BREAKER.	

---NOTE---

UPON COMPLETION OF THE PM, THE PERSON WHO PERFORMED THE WORK WILL SIGN AND DATE THE "PERFORMANCE OF WORK" SECTION OF THE PMMS SHEET AND NOTE ANY DEVIATIONS FROM THE ACCEPTABLE VALUES LISTED ABOVE. HE WILL ALSO INITIATE ANY REQUIRED CORRECTIVE ACTIONS.

MAINT FORM: 2701J-1
REV : 09
DATE: 11/08/84
PAGE: 2 OF 2