

P21 94040

Item 4077122

93/09/22

17:32

Page 1

From: CURL.KW CA SAN JOSE PD GE-NE PRN ENGR

To: INDUADMIN GE-NE INDU CAT CONTROL (Restricted)

cc: HWU.A NY LYCOMING PD GE-NE ENGR
 CINTAS.JR CA SAN JOSE PD GE-NE ENGR MGR
 VERCELES.UC CA San Jose PD GE-NE Eldon Eng

Subject: Fire in Aux Control Room-NMP1

@title: Fire in Aux Control Room-Nine Mile Point 1

bb=8.5.285

OE 6204 I JOSH (NMP) 22-SEP-93 15:35 EDT
 Subject: Fire in the Unit 1 Auxiliary Control Room

OPERATING EXPERIENCE REPORT:

Unit Name..... Nine Mile Point Unit 1
 Year Commercial..... December 14, 1969
 Reactor Type (Size)..... 625 MWe
 Reactor Manufacturer..... General Electric Company
 Plant Designer..... Niagara Mohawk Power Corporation
 Event Date..... September 17, 1993
 Docno/Lerno..... 50-220/

DESCRIPTION AND ANALYSIS:

On Friday, September 17, 1993 a fire was detected in the Auxiliary Control Room. The on-shift operators and firemen put out the fire. The emergency plan and special operating procedure were entered. The fire event was terminated in less than 10 minutes. Therefore, an Alert status was not entered. The Halon System was switched to alarm only to prevent discharge once the fire was under control.

The fire involved GE CR120 relays. A formal root cause is progressing. Preliminary information indicates that the 4K11 relay is the cause. Further investigation indicates that the relay was protected by a 20 amp fuse that should have been a 10 amp fuse (Engineering is evaluating). Also, several fuses were not in accordance with the drawing. This relay is normally energized and is used for the non-safety related Reactor Manual Control System (RMCS). As a result of the fire, operators de-energized the RMCS by turning off the control rod power. Further, a 20 amp fuse (F8) was then removed and a circuit breaker that de-energized the RMCS from its normal power source. As a result of this de-energized condition (as designed) all accumulator lights were illuminated on the full core display in the Control Room. An auxiliary operator was immediately dispatched to the Hydraulic Control Units (HCUs) to monitor Control Rod Drive (CRD) accumulator pressure.

Technical Specifications were reviewed for applicable Limiting

P21 94040
P.2

Item 4077122

93/09/22

17:32

Page 2

Conditions for Operations (LCOs) and surveillance requirements. The Resident Inspector was notified and a courtesy red phone call was made at 2120. Technical Specifications required a shiftly check of CRD accumulator conditions. An emergency temporary modification was initiated to power the accumulator indicating lights so that control indication was available on Reactor Building 237' and the annunciator made operable in the Control Room. Since control power to RMCS was removed, control rod exercising was not possible. The last performance of the weekly surveillance test was on 9/10/93 and 0120 hours. Therefore, recovery from the fire needed to be completed by 9/19/93 at 1920 hours. Electricians replaced the fire damaged RMCS relays and cables. Technical Specifications require that the "ALL RODS IN" light be operable on at least one of the two Remote Shutdown Panels. As a result of the fire, neither of the two lights were operable. This condition put the plant in a 24 hour LCO. An emergency temporary modification was initiated to power the "ALL RODS IN" circuitry.

The Site Operations Review Committee (SORC) evaluated whether continued operation would be prudent in light of the fire in the Auxiliary Control Room. SORC concluded based upon evidence provided, that safe and stable operation was preferable in this event. The Reactor Protection System (RPS) was available throughout the event and a reactor shutdown could have been initiated at any time the shift operating crew determined that such actions were appropriate. The operators on shift performed well and in conformance with station operating and administrative procedures. The health and safety of the public was not jeopardized by continuous operation of the plant.

Information Contact: Norm Rademacher (315) 349-2444

Auxiliary CR Fire-Nine Mile Point 1

Auxiliary CR Fire-Nine Mile Point 1

bb=8.5.374

OE 6334 I JOSH (NMP) 23-NOV-93 10:07 EST
Subject: Fire in the Unit 1 Auxiliary Room

THIS IS AN UPDATE TO OPERATING EXPERIENCE REPORT OE 6206

OPERATING EXPERIENCE REPORT:

Unit Name.....	Nine Mile Point Unit 1
Year Commercial.....	December 14, 1969
Reactor Type (Size).....	625 MWe
Reactor Manufacturer.....	General Electric Company
Plant Designer.....	Niagara Mohawk Power Corporation
Event Date.....	September 17, 1993
DOCno/LERno.....	50-220/

DESCRIPTION AND ANALYSIS:

On 9/17/93 a fire occurred in the Auxiliary Control Room. The fire was caused by a GE CR120A relay which caught fire. This relay (1966 vintage) was normally energized and used in the non-safety related Reactor Manual Control System (RMCS). As part of the Root Cause Evaluation (RCE), the relay was sent to the vendor for analysis.

The vendor concluded that the relay failed due to age and service conditions. As the coil aged, the insulation began to degrade causing shorts to develop between individual coil windings. The operating temperature increased as a function of increased current from the coil wire shorting. The increased temperatures caused coil encapsulant (insulation) degradation. As the insulation on the coil wire degraded, it outgassed the byproducts of degradation. These gases became trapped in the coil encapsulant and built up over a period of time. At some point, the gas pressure built up to the point where the encapsulant cracked, releasing the gases. When the hot gases came in contact with the air, they ignited. There was sufficient heat to ignite the plastic wire cover, relay casing, and associated wiring. Once the circuit was de-energized removing the heat source, the fire was extinguished because these sub-components were made of fire retardant materials. The vendor indicated that the expected service life of a normally energized CR120A relay is on the order of twenty years depending on duty cycle, rated voltage, and ambient temperature. However, the vendor does not publish a recommendation in its instruction or renewal parts manual. Since the CR120A relay is a commercial product purchased non-safety related, information regarding similar failures had not been formally provided to the nuclear or commercial industry.

The root cause of the fire was a failure of Written Communications and Managerial Methods barriers. A predictive/preventative maintenance schedule was not developed for normally energized CR120A relays because personnel were not cognizant of expected service life.

The vendor has stated that the two critical parameters that should be considered for relay operability are coil temperature and color. As the

Auxiliary CR Fire-Nine Mile Point 1

relay ages and the coil degrades, the insulation color may change from its original kelly green color to lighter shades of green and eventually to white and/or tan. The coil temperature should be monitored to ensure AC coils are operating at or below 195F. Nine Mile Point Unit 1 is using these criteria to form the basis of the corrective actions.

Information Contact: Tom McMahon(315)428-7324 John Driscoll(315)349-2681

Updated November 23,1993