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SUBJECT: Forwards results of re-evaluation of normally lit alarms & nuisance alarms prior to start-up from first refueling outage,fulfilling License Condition 2.C.9(b).

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NIAGARA MOHAWK

NIAGARA MOHAWK POWER CORPORATION/301 PLAINFIELD ROAD, SYRACUSE, N.Y. 13212/TELEPHONE (315) 474-1511

January 9, 1991
NMP2L 1275

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 20555

Re: Nine Mile Point Unit 2
Docket No. 50-410
NPF-69

Gentlemen:

License Condition 2.C.9(b) for Nine Mile Point Unit 2 (NMP2) requires Niagara Mohawk Power Corporation (NMPC) to provide to the Nuclear Regulatory Commission (NRC) the results of a reevaluation of normally lit alarms and nuisance alarms prior to startup from the first refueling outage. The purpose of this letter is to provide the necessary information to the NRC to fulfill the requirements of license condition 2.C.9(b).

Attachment 1 provides a discussion of license condition 2.C.9(b). Attachment 2 is a tabulation of the normally lit alarms and nuisance alarms. This tabulation indicates the cause of the alarmed conditions and associated recommended corrective actions. In addition, Attachment 1 provides an implementation schedule for the recommended corrective actions identified in Attachment 2.

If you have any questions regarding this letter and its attachments, please feel free to contact David Baker (315) 428-7029 of my staff.

Very truly yours,

NIAGARA MOHAWK POWER CORPORATION

C. D. Terry
Vice President
Nuclear Engineering

KK/kms

Attachments

xc: Regional Administrator, Region I
Mr. R. A. Capra, Director
Mr. D. S. Brinkman, Project Manager
Mr. W. A. Cook, Senior Resident Inspector
Records Management

ATTACHMENT 1

Item I.D.1, "Control Room Design Reviews," of Task I.D., "Control Room Design," of the NRC Action Plan (NUREG-0660) states that licensees and applicants for operating licenses will be required to perform a detailed control room design review (DCRDR) to identify and correct design deficiencies. The objective, as stated in NUREG-0660, is to improve the ability of nuclear power plant control room operators to prevent or cope with accidents if they occur by improving the information provided to them. Supplement 1 to NUREG-0737 confirmed and clarified the DCRDR requirement in NUREG-0660. As a result of Supplement 1 to NUREG-0737, each applicant or licensee is required to conduct a DCRDR on a schedule negotiated with the NRC staff.

As a result of the DCRDR, various submittals were made to NRR consistent with the requirements stipulated in Item I.D.1 of NUREG-0660. The NRC's review of NMPC submittals, (see Supplemental Safety Evaluation Report [SSER 5], section 18.1, item 6d) resulted in the inclusion of section 2.C.9(b) in the NMP2 operating license. This license condition provides that:

> "Detailed Control Room Design Review (Section 18.1, SSERs 5 & 6"
>
> Prior to startup following the first refueling outage, Niagara Mohawk Power Corporation shall provide the results of the reevaluation of normally lit and nuisance alarms for NRC review in accordance with its August 21, 1986 letter.

The August 21, 1986 letter, referenced within license condition 2.C.9(b) provided a copy of Human Engineering Discrepancy (HED), 412.00, Rev. 1, which addresses nuisance alarms. The NRC's SSER 5 (see section 18.1), license condition 2.C.9(b), the August 21, 1986 letter, and its associated HED (412.00) identified various actions to be performed by NMPC. They are:

1. A study of alarmed annunciators will be performed when the unit has achieved normal operation and the nature of the problem has stabilized.

2. The study will identify annunciators which are continuously or frequently in the alarmed condition.

3. The study will specify the source of the alarms and the conditions which cause the annunciators to be alarmed.

4. The study will recommend corrective actions to alleviate the alarmed conditions.

5. Propose an implementation schedule for the recommended corrective actions in the study.

6. The results of items (1) through (5), inclusive, will be provided to the NRC prior to startup following the first refueling outage.

Attachment 2 to this letter provides the information required by items (1) through (4), inclusive. The attachment is a tabulation of 103 identified problems which have resulted in the continuous or frequent illumination of 153 annunciator windows. The items on the tabulation that are identified with an asterisk will have their associated recommended corrective actions implemented prior to restart from the first refueling outage. It is expected that this will result in the elimination of 97 frequently or continuously illuminated annunciators. The recommended corrective actions associated with the remaining 56 nuisance alarms will be implemented prior to restart from the third refueling outage. The substantial portion, approximately 70%, of the recommended corrective actions associated with the 56 nuisance alarms will be implemented prior to restart from the second refueling outage.

The recommended corrective actions are formulated to support NMPC's goal of achieving a black board annunciator panel. These corrective actions may be revised due to further evaluation that occurs during the development phase of the detailed modification package. As a result of this further evaluation, NMPC may decide not to eliminate one or more alarmed annunciator(s) due to the complexity and/or cost of the modification(s). In the unlikely event that this were to occur, NMPC would minimize the number of alarmed annunciator(s) such that there would be a negligible impact on the operator's ability to identify new alarmed conditions in the control room. If a decision were made not to eliminate one or more alarmed annunciators, NMPC would notify the NRC of this decision. NMPC would identify the annunciator(s) and the basis for its decision to the NRC in writing.

The nuisance alarms, which are addressed by HED 412.00 in the August 21, 1986 letter, are comprised of annunciators that alarm frequently or annunciators that are continuously illuminated. In addition, license condition 2.C.9(a) addresses numerous HEDs including HED 409.00. HED 409.00, which will be completed prior to restart from the first refueling outage, addresses normally lit annunciators. The normally lit annunciators addressed by HED 409.00 are continuously illuminated due to plant design whereas the normally lit annunciators addressed by HED 412.00 are continuously illuminated due to malfunctioning equipment or devices. NMPC interprets the intent of license condition 2.C.9(b) as being the identification of all annunciators in the control room for which corrective actions need to be implemented in order to support the black board operating concept of no illuminated annunciators during normal plant operating

conditions. Therefore, Attachment 2 is a tabulation of annunciators addressed by HED 409.00, license condition 2.C.9(a), and HED 412.00, Rev. 1, license condition 2.C.9(b).

The recommended corrective actions on Attachment 2 are formulated so as to provide black annunciator boards during normal plant conditions (100% power). The elimination of normally lit alarms and nuisance alarms associated with various annunciator windows in the control room will serve to enhance the ability of the operator to identify alarmed conditions that indicate abnormal plant parameters or conditions.

ATTACHMENT - 2
NUISANCE ANNUNCIATORS & ACTIONS TO RESOLVE

ITEM NUMBER	WINDOW NUMBER	WINDOW LEGEND	PROBLEM	CORRECTIVE ACTION
1*	601305 601431 601503 601504	RCIC Sys. Inop. RHR A Sys. Inop. Div. I ADS Sys Inop. Div. II ADS Sys. Inop.	Status annunciation of the associated instrument channel trip units was not changed when other logic changes were made.	Rewired the monitoring circuits to provide correct annunciation which reflects the status of the corresponding system instrument channel trip units.
2*	601124	Service Water System Trouble	The window legend is misleading in that only 2 of the 7 inputs are related directly to the service water system. The 5 inputs from the control logic for the screen wash system keep the window continuously lit during normal system operation, because the screenwash system runs frequently.	Changed the window legend to read "Traveling Screenwash System Trouble", rewire the 2 - nonscreenwash inputs to other windows, and rewire screenwash control logic at local panel 2SWT-PNL108 to eliminate alarms during normal operation.
3*	601537	ADS Valves/Safety Valves Leaking	Two of the inputs to this window come from steam drain temperature monitoring devices which are not related to ADS. The inputs from the main steam relief valve tail piece temperature monitors keep the window continuously lit due to actual tailpiece temperatures being above the alarm point.	Rewired the two steam drain inputs and raise the alarm setpoint for the SRV tail piece temperature monitors. This will compensate for the NMP2 Design which utilizes insulated tailpieces. Incorporated feedback from actual operating experience, with higher temperature due to insulation.

ITEM NUMBER	WINDOW NUMBER	WINDOW LEGEND	PROBLEM	CORRECTIVE ACTION
4*	601660	RHR Steam Trap Trouble	RHR steam trap level switches actuate and keep the window continuously lit when the associated steam traps are not in service.	Rewired the level switch circuits to inhibit the alarm unless the associated steam t is in service.
5*	601448 601460 601631 601648 601706 601729 602205	RHR A Sys. Valves Motor OVLD. RHR A/B Sys. Vlvs. Mot. OVLD. RHR B Sys. Inop. RHR B Sys. Vlvs./Wtr. Leg. Pmp Motor OVLD HPCS Sys. Inop. HPCS Press. Pmp. 2 Vlvs. Mot. OLVD. Div. I Main Stm. Drn. Valve Sys. Inop.	Inputs to these annunciators actuate and keep the windows continuously lit when the circuits are de-energized. The de-energization of these circuits is required in order to meet Appendix R requirements.	Rewired the circuits to inhibit the inputs to the annunciators when the plant is at power and the circuits are de-energized to meet App. R requirements.
6*	602218 602224	Div-I NS4 Isol. Signal Div-II NS4 Isol. Signal	The NS4 Group-5 isolation signal is actuated when reactor pressure is increased above 128 psig and keeps these windows continuously lit when the unit is operating.	Rewired the circuits to eliminate the Group-5 input, which is for intra system isolation and closes isolation valves between high/low pressure system interfaces.
7*	602314	RWCU Pump 1A/1B Auto Trip	When the breaker control switch is taken out of the pull to lock position, the alarm is actuated.	Replaced and rewired the breaker control switch such that this alarm only actuates on an auto trip.

ITEM NUMBER	WINDOW NUMBER	WINDOW LEGEND	PROBLEM	CORRECTIVE ACTION
8*	842324	Hypochlorite Generator System Trouble	The automatic mode of operation is not used and the equipment is left de-energized when not in use. This keeps the window continuously lit due to inputs from overload (OLVD) circuit monitoring contacts.	Rewired the local panel 2WTH-IPNL101 and the OLVD circuit input contacts to inhibit alarms from equipment which is maintained in a normally de-energized condition.
9*	852104 852204	EDG1 Brkr. 101-1 Auto Close EDG3 Brkr. 103-14 Auto Close	These alarms are actuated when the operator manually operates the associated diesel generator breaker control switch. Also the auto close alarm is redundant to other diesel generator alarms which actuate during an automatic start and load sequence.	Rewired the circuits to eliminate the breaker auto close alarm.
10*	851307	Air Ejector 2A/2B Aux. Stm. Supply Flow Low	The idle set of air ejectors actuates a low steam flow input and keeps this window continuously lit.	Rewired the circuit to clear the alarm unless low steam flow is sensed at both air ejectors.

ITEM NUMBER	WINDOW NUMBER	WINDOW LEGEND	PROBLEM	CORRECTIVE ACTION
11*	851110	Generator H_2 Storage Sys. Trouble	Low pressure sensed by switches in the H_2 storage piping keep this window continuously lit because the H_2 storage bottles are normally valved out. The only useful input to this window is the position of the generator H_2 dump valve.	Rewired the circuits to eliminate the pressure inputs and change the window legend to read "Gen H_2 Sys. Dump Vlv. AO 162 Open".
12*	851230	Breathing Air System Trouble	The Breathing Air System is normally valved out and the compressors are de-energized. The resultant low pressure activates an input which keeps this window continuously lit.	The Operating Procedure (N2-OP-20) has been revised to place the annunciator in and out of service with the system.
13*	851229	Instrument Air System Trouble	The IAS is operated with one of two 100% capacity air dryers inservice. The dryer that is not being used actuates an alarm input which keeps this window continuously lit.	Rewired the circuit to prevent the alarm unless both air dryers are out of service.

ITEM NUMBER		WINDOW NUMBER	WINDOW LEGEND	PROBLEM	CORRECTIVE ACTION
14*		851306	Off-Gas System Trouble	The Off-Gas System which has two 100% capacity trains is operated with one train, in service. The out-of-service train actuates inputs which keep this window continuously lit.	Rewired the circuits to inhibit actuation of alarm inputs unless the equipment is in service and a problem is detected in the operating train.
15*		851344	Control Bldg. Floor Drain System Trouble	Pump motor overload circuits actuate alarm inputs that are keeping the window continuously lit.	Rewired the circuits to correct the problem such that the alarm inputs are only actuated when an overload is detected.
16*	*	870208	Chiller 1A Compressor Auto Trip/Fail to Start	Alarm inputs are actuated when the equipment cycles as required during normal operation.	The control circuits were rewired such that alarm inputs are no longer actuated when the equipment cycles normally.
	*	870209	Chilled Water Circ. Pump 1A Auto Trip/Fail to Start	Alarm inputs are actuated when the equipment cycles as required during normal operation.	The control circuits were rewired such that alarm inputs are no longer actuated when the equipment cycles normally.
	*	870214	Chiller 1A Compressor Auto Start	Alarm inputs are actuated when the equipment cycles as required during normal operation.	The control circuits were rewired such that alarm inputs are no longer actuated when the equipment cycles normally, and this window was deleted.

ITEM NUMBER		WINDOW NUMBER	WINDOW LEGEND	PROBLEM	CORRECTIVE ACTION
*	*	870215	Chilled Water Circ. Pump 1A Auto Start	Alarm inputs are actuated when the equipment cycles as required during normal operation.	The control circuits were rewired such that alarm inputs are no longer actuated when the equipment cycles normally, and this window was deleted.
	*	871208	Chiller 1B Compressor Auto Trip/Fail to Start	Alarm inputs are actuated when the equipment cycles as required during normal operation.	The control circuits were rewired such that alarm inputs are no longer actuated when the equipment cycles normally.
	*	871209	Chilled Water Circ. Pump 1B Auto Trip/Fail to Start	Alarm inputs are actuated when the equipment cycles as required during normal operation.	The control circuits were rewired such that alarm inputs are no longer actuated when the equipment cycles normally.
	*	871214	Chiller 1B Compressor Auto Start	Alarm inputs are actuated when the equipment cycles as required during normal operation.	The control circuits were rewired such that alarm inputs are no longer actuated when the equipment cycles normally, and this window was deleted.
	*	871215	Chilled Water Circ. Pump 1B Auto Start	Alarm inputs are actuated when the equipment cycles as required during normal operation.	The control circuits were rewired such that alarm inputs are no longer actuated when the equipment cycles normally, and this window was deleted.

ITEM NUMBER	WINDOW NUMBER	WINDOW LEGEND	PROBLEM	CORRECTIVE ACTION
17*	601254	RBCLC Pump 1A/1B/1C Disch. Press. Low	With the major heat exchangers (HX's) in service and the associated parameters in spec. (i.e. flow, NPSH, motor amps) the Reactor Bldg. Closed Loop Cooling Water (RBCLC) pump discharge low pressure switch is actuating the alarm and starting the standby pump, when the fuel pool cooling HX's are valved in.	The pressure switch setpoint was lowered based upon an evaluation of actual pressures recorded during normal operation. The pressure switches were replaced and calibrated.
18*	601244	Turbine Bldg. Closed Loop Cooling System Trouble	Water quality information obtained from on stream monitors (conductivity & PH) does not agree with chemical analysis of grab samples. Also numerous work requests to clean and troubleshoot the instrumentation have not corrected the problems.	The annunciator and computer inputs from the conductivity and PH instruments were disabled, and local indicating instruments will remain in place for indication of conductivity and PH.
	601246	Reactor Bldg. Closed Loop Cooling System Trouble		
19*	601317	RCIC Turb. Lube Oil After Clr. Temp. High	Numerous work requests have been issued due to failure of temperature switch 2ICS-TC1003, causing actuation when the turbine lube oil after-cooler temperature was not high.	After replacing the temperature switch several times it was determined that the switch housing provided a convenient step for personnel making inspections. An equipment protection plate was installed to prevent switch damage and the false annunciation.

ITEM NUMBER	WINDOW NUMBER	WINDOW LEGEND	PROBLEM	CORRECTIVE ACTION
20	601505	Nitrogen System Trouble	Frequent alarms were actuated by pressure monitors on the liquid nitrogen storage tanks when the high and low pressure alarm setpoints were exceeded. The pressure regulators GSN-PCV 4A/B were found to be leaking by and operating at the upper limit of their range.	The allowable operating band is being expanded by reducing the low pressure alarm setpoint. New springs are being installed in pressure regulators GSN-PCV4A/B, so that they will now operate at the mid-range point.
21	601506	Primary Containment Nitrogen Gas Purge Temperature Low	This alarm is actuated during cold weather, by inputs from the nitrogen supply line temperature monitors, when the ambient conditions cause the piping temperature to drop below the monitoring circuit setpoint.	The nitrogen supply piping is being heat traced to ensure that piping temperature is maintained above the liquid nitrogen flash point.
22*	601560	Suppression Pool Water Temperature High	During hot weather this alarm is actuated and can not reset because the Delta-T between service water (heat sink) and suppression pool water (heat load) is small.	The alarm setpoint and associated reset point were increased to provide additional Delta-T between service water and suppression pool temperature. Pool temperature can now be reduced below the reset point and the alarm cleared.

ITEM NUMBER	WINDOW NUMBER	WINDOW LEGEND	PROBLEM	CORRECTIVE ACTION
23	602219	Recirc. Pump 1A/1B Motor Vibration High	Spiking outputs from the vibration monitors are actuating the alarm, but other parameters monitored (bearing temps., RPM, voltage, shaft vibration) are normal.	Discussions with G.E., EPRI, and Bingham Pumps indicated a problem with the sensor and method of monitoring vibration. The existing single plane equipment will be replaced with velocity sensors. Vibration will be monitored in two planes, and a new setpoint will be developed.
24*	602316	RWCU Filter Demin. Influent. Cond. High/Low	Normal Reactor Water Cleanup (RWCU) conductivity ranges from 0.08 to 0.09 umhos/cm and the downscale low alarm setpoint was 0.4 umhos/cm. This keeps the alarm continuously lit.	The downscale alarm setpoint was reevaluated and decreased to 0.064 umhos/cm.
25	602321	RWCU discharge pressure high/low	The alarm is continuously actuated during the normal recirculation mode of operation because the normally closed rejection line flow control valve (WCS-FCV 135) leaks by and allows pressure to build up at the pressure switch sensing line which is located upstream (reactor side) of the closed rejection line isolation valves.	Interlock the high pressure alarm with the rejection line isolation valves (WCS-MOV106 & 107) to inhibit the alarm when the rejection line is isolated from the condenser and radwaste. This will prevent an alarm when pressure between the FCV and isolation valves increases, with the isolation valves closed.

ITEM NUMBER	WINDOW NUMBER	WINDOW LEGEND	PROBLEM	CORRECTION ACTION
26*	842115	Loose Parts Monitor System Trouble	The Loose Parts Monitoring System (LPMS) was spuriously alarming but loose parts could not be located. The data produced by the LPMS was extremely difficult to interpret and the original vendor was no longer supplying LPMS equipment.	Another vendor was located to assist in modifying the LPMS to reduce false alarms, train personnel in the operation of the system and interpretation of the data obtained.
27*	851132	Turbine Lube Oil Conditioner Trouble	It is extremely difficult to adjust the supply and discharge flow to the Lube Oil Conditioner (LOC). After the LOC flow is balanced, level and flow alarms are spuriously actuated during normal cycling of the LOC circulating pump.	Time delays in the control circuits were adjusted to inhibit the alarms unless the monitored parameters experience sustained upsets beyond those expected during normal LOC operation.
28	851150	Turbine Bypass Valve Open .	The bypass valves position switches were failing to reset when the valves were closed after normal operation during plant startup.	The position switches will be adjusted to provide closed indication without driving the valves hard into the seats.
29*	851156	Main Generator Temperature Trouble	The alarm is being actuated by faulty temperature monitoring circuits.	The inputs from the faulty monitoring circuits were removed from the annunciator actuation logic.

ITEM NUMBER	WINDOW NUMBER	WINDOW LEGEND	PROBLEM	CORRECTIVE ACTION
30*	851160	Turbine Bypass Valve 89A through 89E Outlet Temp. High	The temperature monitors are actuating the alarm when the valves are shut. This is due to an acceptable amount of minor leakage and natural heat conduction in the piping downstream of the valves.	The temperature setpoint was increased to compensate for the actual conditions found during normal operation.
31*	851313	Circ. Water Pump 1A through 1F Seal Water Pressure Low	This alarm is continuously lit due to low seal water pressure at some of the circulating water pumps. The condition has not degraded (i.e. pressure is low but remains constant).	To clear the continuously lit alarms and provide a warning of any further decrease in seal water pressure, the low pressure setpoint was lowered.
32*	851322	Circ. Water Cooling Tower Flume Water Temp. High	This alarm warns operators of possible condenser vacuum problems. During the summer months (May-Sept.) the alarm is continuously lit due to the actual flume water temperature rising above the 90°F setpoint.	Since vacuum problems have not been experienced during sustained operation with flume water temperature >90°F, the setpoint was increased based on the actual operating conditions observed during 1988, 1989 & 1990.

ITEM NUMBER	WINDOW NUMBER	WINDOW LEGEND	PROBLEM	CORRECTIVE ACTION
33*	851431	Reactor Feed Pump 1A/1B/1C Trust/RDL BRG Vibration Hi	This has been a frequently alarming window due to high vibration, but the vibration data collected was extremely difficult to evaluate, because it did not agree with data obtained from portable vibration monitoring equipment.	The high vibration alarm setpoint was increased to allow detection and warning of any change in vibration levels. A vibration specialist, the pump vendor and NMPC personnel (System Engineer, Operations, Design, Maintenance) have formed a task force to correct the feedpump vibration problems.
34*	851446	Main Steam Reheater E1A/E1B Steam Flow High	This is a computer generated alarm with an original setpoint based on generic data provided by the vendor. Actual steam flow was found to be higher than predicted steam flow.	As instructed by the vendor manual, actual operating data was taken and used to determine a plant specific alarm setpoint.
35*	851518	Condensate Storage Tank 1A/1B Level Hi	This is a continuously lit annunciator due to the normal operating practice of maintaining CST level above the alarm setpoint.	Based on an engineering evaluation of the operating practice, the tank level maintained by normal control was increased. The high and low level alarm setpoints were also increased.
36*	851557	Condensate Booster Pumps 2A/2B/2C Lube Oil Filter Differential Press Hi	This annunciator is continuously lit because the Delta-P is sensed across the filter isolation valves instead of just the filter.	The alarm setpoint was increased to compensate for the Delta-P of the open isolation valves.

ITEM NUMBER	WINDOW NUMBER	WINDOW LEGEND	PROBLEM	CORRECTIVE ACTION
37*	852110	Division I EDG 1 Fuel System Trouble	The Division I alarm was only lit a few times. The Division II alarm was continuously lit due to a wiring problem in the level instrumentation circuitry.	Level circuitry for both alarms was tested and Division I was found to be correct. The wiring problems with Division II were corrected.
	852210	Division II EDG 3 Fuel System Trouble		
38*	852116	Division I UPS 2A System Trouble	UPS switching control circuit problems causes fuse to blow and the subsequent trouble alarm.	Install new Printed Circuit boards to correct control circuit problems and allow switching without blowing fuses.
	852216	Division II UPS 2B System Trouble		
	852553	UPS 3A System Trouble	"	"
	852555	UPS 3B System Trouble	"	"
39*	873305	Division I Suppression Chamber Temperature High	Suppression chamber temperature is often above the 83.5°F alarm point. Also cooling is not initiated until approximately 95°F is exceeded, and it is difficult to reduce the air temperature below the temperature switch reset point during hot summer periods due to elevated service water temperatures.	The high air space temperature setpoint of 83.5°F has been increased to 99.8°F.
	875105	Division II Suppression Chamber Temperature High		

ITEM NUMBER	WINDOW NUMBER	WINDOW LEGEND	PROBLEM	CORRECTIVE ACTION
40*	870204	Chilled Water Exp. Tank 1A Level High/Lo Lo	Tank level alarms are frequently lit due to the delicate hydraulic balance required to maintain tank level. When a tank excursion does occur, manual manipulation of the system is required to restore normal (non-alarming) level.	The operating procedure (N2-OP-53A) was revised to clarify the tank level which should be maintained and the actions required to restore normal level in the expansion tank. Engineering will evaluate the process after procedure changes have been made to determine if modifications may be required.
	871204	Chilled Water Exp. Tank 1B Level High/Lo Lo		

ITEM NUMBER	WINDOW NUMBER	WINDOW LEGEND	PROBLEM	CORRECTIVE ACTION
41*	842204	Reactor Bldg. Vent/Glycol System Trouble	Local Panel 2CES-IPNL101 The annunciators on the main Control Room panels do not clear when the local annunciators are acknowledged at the local panel. Most of these local panel annunciators are in alarm because one or more power supply breakers are open. The equipment powered from these breakers is deenergized for various reasons (i.e. testing and maintenance). Operators have responded and assessed the alarming condition but the Control Room alarm stays locked in even after the acknowledged button is depressed at the local panel. There are 992 local annunciator windows, which initiate 98 alarm inputs to 53 Control Room annunciator windows. Many of the annunciator windows on local panels located outside the Control Room have multiple alarm inputs.	Redesign the local panel annunciator reflash logic to clear the Control Room annunciator when the local pa annunciator acknowledge pushbutton is depressed. This logic change will not alter the local panel input and output wiring. The components and wiring affected by the change are local panel internal conditioning logic for the annunciators. The Control Room annunciators will still alarm when any local panel annunciator is actuated but will only remain lit until the condition is acknowledged both in the Control Room and locally. The local panel annunciator window will remain lit until the initiating condition is reset (problem corrected). If the local pan annunciator clears and then realarms the Control Room annunciator will also realarm.
42*	842318	Acid Chemical Feed System Trouble	Local Panel 2WTA-IPNL101 The problem and solution summaries are the same as Item #41	

ITEM NUMBER	WINDOW NUMBER	WINDOW LEGEND	PROBLEM	CORRECTIVE ACTION
43	842324	Hypochlorite Generator System Trouble	Local Panel 2WTH-IPNL101 The problem and corrective action summaries are the same as Item #41	
44*	601124	Traveling Screen Wash System Trouble	Local Panel 2SWT-PNL108 The problem and corrective action summaries are the same as Item #41	
45*	873311	Spent Fuel Cask Handling System Trouble	Local Panel 2SFC-PNL130 The problem and corrective action summaries are the same as Item #41	
46*	842223	Ventilation Chilled Water System Trouble	Local Panel 2HVN-IPNL135 The problem and corrective action summaries are the same as Item #41	
47	873319	Spent Fuel Pool Cleanup System Trouble	Local Panel 2SFC-PNL141 The problem and corrective action summaries are the same as Item #41	
48*	842317	Reactor Plant Sample System Trouble	Local Panel 2SSR-IPNL145 The problem and corrective action summaries are the same as Item #41	

ITEM NUMBER	WINDOW NUMBER	WINDOW LEGEND	PROBLEM	CORRECTIVE ACTION
49*	842203	Turbine Bldg. Vent/Glycol System Trouble	Local Panel 2CES-IPNL202 The problem and corrective action summaries are the same as Item #41	
50*	842207	Ventilation Hot Water Heating System Trouble	Local Panel 2CES-IPNL203 The problem and corrective action summaries are the same as Item #41	
51*	851132	Turbine Lube Oil Conditioner Trouble	Local Panel 2CES-IPNL207 The problem and corrective action summaries are the same as Item #41	
52*	842305	Turbine Plant Sample System Trouble	Local Panel 2SST-IPN285 The problem and corrective action summaries are the same as Item #41	
53	851514	Condensate Demin. System Trouble	Local Panel 2CND-IPNL287 The problem and corrective action summaries are the same as Item #41	Also a new annunciator window will be used so that a specific annunciator window will be used for alarm of low flow through cond. demins. 1A through 1J.

ITEM NUMBER	WINDOW NUMBER	WINDOW LEGEND	PROBLEM	CORRECTIVE ACTION
54	842323	Makeup Demin. Pre-Treatment Filter System Trouble	Local Panel 2WTS-IPNL300 The problem and corrective action summaries are the same as Item #41	
55*	842312	Makeup Demin. Treating System Trouble	Local Panel 2WTS-IPNL301 The problem and corrective action summaries are the same as Item #41	
56*	842312	Makeup Demin. Treating System Trouble	Local Panel 2WTS-IPNL327 The problem and corrective action summaries are the same as Item #41	
	842318	Acid Chemical Feed System Trouble		
	851510	Demin. Water Storage and Transfer System Trouble		
57*	851514	Condensate Demin. System Trouble	Local Panel 2CND-IPNL347 The problem and corrective action summaries are the same as Item #41	
58*	842210	Electrical Bay Area Ventilation System Trouble	Local Panel 2CES-IPNL402 The problem and corrective action summaries are the same as Item #41	
59*	842212	Control Bldg. Ventilation System Trouble	Local Panel 2CES-IPNL403 The problem and corrective action summaries are the same as Item #41	
	842202	Diesel Generator Room Normal Ventilation Trouble		

ITEM NUMBER	WINDOW NUMBER	WINDOW LEGEND	PROBLEM	CORRECTIVE ACTION
60*	842205 842209	Radwaste Bldg. Vent/Glycol System Trouble Condensate Storage Tank Bldg. Ventilation System Trouble	Local Panel 2CES-IPNL501 The problem and corrective action summaries are the same as Item #41	
61*	842206	Screenwell Bldg. Ventilation System Trouble	Local Panel 2CES-IPNL502 The problem and corrective action summaries are the same as Item #41	
62	851153	Auxiliary Boiler 1A/1B System Trouble	Local Panel 2CES-IPNL506 The problem and corrective action summaries are the same as Item #41	
63	851153	Auxiliary Boiler 1A/1B System Trouble	Local Panel 2CES-IPNL507 The problem and corrective action summaries are the same as Item #41	
64*	851153 842217	Auxiliary Boiler 1A/1B System Trouble Auxiliary Boiler Room Ventilation System Trouble	Local Panel 2CES-IPNL508 The problem and corrective action summaries are the same as Item #41	
65*	851342	Screenwell Bldg. Floor Drain System Trouble	Local Panel 2CES-IPNL514 The problem and corrective action summaries are the same as Item #41	

ITEM NUMBER	WINDOW NUMBER	WINDOW LEGEND	PROBLEM	CORRECTIVE ACTION
66*	851336	Main Stack Floor Drain Sump Tank 3 System Trouble	<u>Local Panel 2CES-PNL513</u> The problem and corrective action summaries are the same as Item #41 NOTE: This is the Radwaste Control Room Panel	
	851342	Screenwell Bldg. Floor Drain System Trouble		
	851346	Radwaste Bldg. Floor/Equipment Drain System Trouble		
	851451	Reactor Bldg. Equipment Drain System Trouble		
	851453	Reactor Bldg. Floor Drain System Trouble		
	851352	Auxiliary Boiler Bldg. Floor Drain System Trouble		
	851354	Condensate Storage Bldg. Floor Drain System Trouble		
	851356	Main Stack Floor Drain Sump Tank 2 System Trouble		
	851551	Turbine Bldg. Floor Drain System Trouble		
	851553	Turbine Bldg. Equipment Drain System Trouble		

ITEM NUMBER	WINDOW NUMBER	WINDOW LEGEND	PROBLEM	CORRECTIVE ACTION
67*	851334	Reactor Bldg. Mat. Drainage Sump 10A-10B Trouble	Various problems with the sumps have frequently actuated this annunciator. The problems have resulted from malfunctions with pumps, piping configuration, instrumentation, and other equipment.	A modification was issued to implement the design changes, which should correct the problems by improving the performance of the sump pumps, piping configuration, instrumentation, and other equipment.
68	851320	Condenser Air Removal Pumps Separator Tank 1A/1B Level High	The separator tank level control system would allow the level to rise and actuate the high level alarm. Operators would then drain the separator tank and actuate the low level alarm. If left alone, the tank overflow piping would not drain the tank below the high level alarm.	The operators have reduced the alarm frequency by only partially draining the tank and doing it more often. The overflow piping is being redesigned to maintain normal level below the high level alarm and above the low level alarm without operator action.
	851330	Condenser Air Removal Pumps Separator Tank 1A/1B Level Low		
69	851401	Reheater System Trouble	Improper temperature compensation of the level transmitters for reheater drain receiver tanks 6A & 6B is causing this annunciator to be actuated by level alarms.	The level transmitters will be recalibrated using revised criteria and, if possible, temperature measurements of the level sensing piping will be made to provide better temperature compensation information.

ITEM NUMBER	WINDOW NUMBER	WINDOW LEGEND	PROBLEM	CORRECTIVE ACTION
70	870329 871329	Division I Remote Shutdown Room A/C Unit 3A Trouble Division II Remote Shutdown Room A/C Unit 3B Trouble	The air conditioning units have an inlet filter differential pressure instrument which actuates this alarm on hi filter D/P. This D/P inst. has actuated the annunciator when actual filter D/P is normal (e.g. right after a clean filter is installed). The instrument sensing lines are not connected directly across the filter and the setpoint is too close to actual filter D/P. Also the hi D/P setpoint does not have adequate margin to compensate for inlet damper position changes.	Re-balancing of the system air flows will be performed and will provide improved performance. Data obtained from the re-balancing will be used to determine a new hi filter D/P setpoint. Based upon further evaluation of system performance after re-balancing, there may also be a need to modify the D/P instrument installation to sense directly across the filter.
71	873309 875109	Division I Primary Containment H2/O2 Concentration High Division II Primary Containment H2/O2 Concentration High	The high O_2 alarm setpoint is frequently exceeded and actuates this alarm. Oscillations of the gas analyzers and an overly conservative calibration method are the primary problems, but additional efforts to reduce the O_2 concentration after initial inerting may be needed.	After consulting with the manufacturer, the calibration method used for the analyzer was revised and this reduced the magnitude of the oscillations. Operations has increased efforts (additional feed and bleed) to reduce O_2 concentrations subsequent to initial primary containment inerting. These actions have reduced the alarm frequency and an evaluation to raise the high O_2 setpoint is being done. After additional evaluation, possible design changes may be required to stop the oscillations.

ITEM NUMBER	WINDOW NUMBER	WINDOW LEGEND	PROBLEM	CORRECTIVE ACTION
72	601320	RCIC Turbine Exhaust Drain Trap Level High	Normal leakage past the steam isolation valve produces sufficient condensation to frequently actuate this alarm. Also trap level is controlled via an open-closed solenoid valve which only allows about 1/2 inch of water to drain. The trap quickly refills and the high level alarm is again actuated.	The drain valve will be positioned to remain open and provide a continuous drain. This will prevent the high level alarms and not present a problem because the drain valve is interlocked to close when the steam supply valve opens. The P&ID drawing will be revised to show the drain valve normally open.
73	601115 601218	Service Water Pump 1A/1C/1E Suction Pressure Low Service Water Pump 1B/1D/1F Suction Pressure Low	These annunciators are lit when a service water pump isolation valve is closed due to routine surveillance and maintenance.	Modify the design to allow manual inhibit of the alarm when the isolation valve of a pump is closed to support maintenance. This will be controlled by procedure, safety tagging or both.
74	601134 601222	Service Water Strainer 4A/4C/4E Motor Overload Service Water Strainer 4B/4D/4F Motor Overload	These annunciators are lit when a service water strainer is de-energized to allow continuous backwash or for maintenance. Strainer backwash and maintenance is frequently required.	Modify the control circuits to inhibit the alarm when the strainer is de-energized or being continuously backwashed.

ITEM NUMBER	WINDOW NUMBER	WINDOW LEGEND	PROBLEM	CORRECTIVE ACTION
75	873201 873202	Drywell Unit Cooling Group-1 System Trouble Drywell Unit Cooling Group-2 System Trouble	The temperature and flow (differential pressure) instrumentation, designed to detect and alarm unit cooler malfunctions, are actuating these alarms when the unit coolers are functioning properly (i.e. moving and cooling the drywell atmosphere).	Evaluation of the instrumentation is in progress and modifications will be made to remove these alarm inputs or modify the instrumentation to provide reliable monitoring without frequently actuating alarms when the unit coolers are functioning properly.
76	602315 602317 602318	RWCU Filter Demin. Effluent Conductivity High/Low RWCU Filter Demin. 1 Trouble RWCU Filter Demin. 2 Trouble	High/low conductivity instrumentation is actuating these alarms when associated demineralizers are not in service. This occurs because the alarm inputs bypass the RWCU logic controller.	Rewire the alarm input circuits to eliminate the bypass and redirect the inputs through the RWCU logic controller. Reprogram the logic controller to inhibit conductivity alarms on demineralizers that are not in service.

ITEM NUMBER	WINDOW NUMBER	WINDOW LEGEND	PROBLEM	CORRECTIVE ACTION
77	601155	Differential Temperature Reactor Bldg. Exhaust Air/Service Water Low	This alarm is frequently lit during warm weather because a constant outside air temperature is used to determine the alarm setpoint. A difference in temperature (Delta-T) must be maintained between Reactor Bldg. Exhaust Air Temperature and service water temperature. This Delta-T varies with outside air temperature but the alarm setpoints assume a constant outside air temperature. When these alarms are lit, the required Delta-T must be hand calculated and compared to actual Delta-T to verify that actual is not less than required.	Add an outside air temperature input to the computer which calculates the required Delta-T, and reprogram the computer to calculate required Delta-T using the actual outside air temperature instead of assuming a constant value for outside air temperature.
	601156	Differential Temperature Reactor Bldg. Exhaust Air/Service Water Low/Low		
78*	851129	Turbine Generator Vibration High	The turbine manufacturer identified a problem with the vibration monitoring amplifier cards which allowed short duration vibration spikes to cause alarms. Also problems were identified with the vibration monitoring sensors and the turbine, which required bypassing supervisory instruments.	The amplifiers have been replaced with the correct type. Major maintenance was performed on the turbine. The vibration sensor problems have been corrected, so that the supervisory instruments will no longer be required to be bypassed.
	851139	Turbine Supervisory Instrument Power Failure		

ITEM NUMBER	WINDOW NUMBER	WINDOW LEGEND	PROBLEM	CORRECTIVE ACTION
79	601302	RCIC Turbine Steam Supply Drain Trap Level High	Condensation due to steam supply valve leakage causes this alarm to frequently actuate. The bistable level control valve does not allow the trap to drain very much.	This problem is still being evaluated because initial modifications to correct the condition did not work. A modification or operational administrative control will be used to resolve this problem.
80	603208 603442	APRM Trip System Upscale Control Rod Out Block	When operating at or near 100% power, the alarms are frequently actuated. The problem is due to inherent power oscillations in BWRs related to bistable flow phenomena in the recirculation system risers.	The time constants in the flow transmitters were increased, but frequent alarms still occur when operating at 100% power. This problem is still being evaluated and the solution will be based on the outcome of the NMPC/GE evaluation, which may require use of a different power to flow operating curve.
81	849109	Trouble Panel 113	This is one of many remote supervisory alarms received on the Fire Protection panel located in the Control Room. These alarms do not clear when the condition is assessed and acknowledged at the local panel. Also the local panel does not always identify the specific device which initiated the alarm and a walkdown may be required to locate the problem.	FP-PNL113 Redesign the local panel logi and install the wiring changes necessary to clear the alarm on the Control Room Fire Protection Panel when the local panel is acknowledged. Install the additional components necessary to allow identification of the problem sources (i.e. memory modules to record the initiating sensor).

ITEM NUMBER	WINDOW NUMBER	WINDOW LEGEND	PROBLEM	CORRECTIVE ACTION
82	849110	Trouble Panel 114		FP-PNL114 The problem and corrective action summaries are the same as Item #81.
83	849111	Trouble Panel 125		FP-PNL125 The problem and corrective action summaries are the same as Item #81.
84	849112	Trouble Panel 126		FP-PNL126 The problem and corrective action summaries are the same as Item #81.
85	849113	Trouble Panel 127		FP-PNL127 The problem and corrective action summaries are the same as Item #81.
86	849114	Trouble Panel 101		FP-PNL101 The problem and corrective action summaries are the same as Item #81.
87	849115	Trouble Panel 103		FP-PNL103 The problem and corrective action summaries are the same as Item #81.

ITEM NUMBER	WINDOW NUMBER	WINDOW LEGEND	PROBLEM	CORRECTIVE ACTION
88	849116	Trouble Panel 104		FP-PNL104 The problem and corrective action summaries are the same Item #81.
89	849133	Trouble Panel 117		FP-PNL117 The problem and corrective action summaries are the same as Item #81.
90	849134	Trouble Panel 119		FP-PNL119 The problem and corrective action summaries are the same as Item #81.
91	849135	Trouble Panel 128		FP-PNL128 The problem and corrective action summaries are the same as Item #81.
92	849136	Trouble Panel 129		FP-PNL129 The problem and corrective action summaries are the same as Item #81.
93	849138	Trouble Panel 105		FP-PNL105 The problem and corrective action summaries are the same as Item #81.

ITEM NUMBER	WINDOW NUMBER	WINDOW LEGEND	PROBLEM	CORRECTIVE ACTION
94	849139	Trouble Panel 106		FP-PNL106 The problem and corrective action summaries are the same Item #81.
95	849140	Trouble Panel 107		FP-PNL107 The problem and corrective action summaries are the same as Item #81.
96	849209	Trouble Panel 108		FP-PNL108 The problem and corrective action summaries are the same as Item #81.
97	849210	Trouble Panel 131		FP-PNL131 The problem and corrective action summaries are the same Item #81.
98	849211	Trouble Panel 120		FP-PNL120 The problem and corrective action summaries are the same as Item #81.
99	849233	Trouble Panel 123		FP-PNL123 The problem and corrective action summaries are the same as Item #81.

ITEM NUMBER	WINDOW NUMBER	WINDOW LEGEND	PROBLEM	CORRECTIVE ACTION
100	849235	Trouble Panel 121		FP-PNL121 The problem and corrective action summaries are the same Item #81.
101	851538	Condensate Storage Tank 1A/1B Level Low	Normal practice is to maintain a high level in the CST's and a modification (88-069) was implemented to raise the normal control band. This also raised the low level alarm setpoint. Operation subsequent to the modification has resulted in the low level alarm being frequently lit.	Return the CST low level alarm to some lower value between original setpoint and the current setpoint.
102	851306	Off-Gas System Trouble	The outlet temperature of the in-service dryer is frequently above the alarm setpoint.	An evaluation will be done and the alarm setpoint will be raised based on data obtained during normal operation.

ITEM NUMBER	WINDOW NUMBER	WINDOW LEGEND	PROBLEM	CORRECTIVE ACTION
103	824324	Hypochlorite Generator System Trouble	This window is actuated by alarm inputs from the hypochlorite dilution water pumps and the hypochlorite generator panel (2WTH-IPNL101). The problems associated with the panel were outlined in Items 8 & 43 but there is also a problem with the dilution water pumps. Since the pumps are only operated for short durations and monitored by a local operator during operation, they are normally left de-energized. This causes motor overload alarm inputs which actuate Control Room Window 842324.	Administrative Controls will be used to prevent this alarm until a design change is issued to rewire the pump control circuit so that the alarm will not be actuated unless an actual problem (i.e. motor overload) is detected.

* NOTE: The corrective action for the identified problem will be implemented prior to restart from the first refueling outage and it is expected that these windows will no longer be frequently or continuously lit during normal operation at 100% power.