

ATTACHMENT

ACTION PLAN

FOR RESOLUTION OF

REGULATORY GUIDE 1.97

POST ACCIDENT MONITORING EQUIPMENT ISSUES

NINE MILE POINT UNIT 1

May 1989

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SECTION A

BACKGROUND

Niagara Mohawk provided three submittals to the NRC in response to the requirements of Supplement 1 to NUREG-0737, "Requirements For Emergency Response Capability" concerning Regulatory Guide 1.97. The dates of these submittals were April 2, 1984, October 18, 1985, and October 5, 1987. These responses to Supplement 1 to NUREG-0737 were preceded by other actions taken in response to earlier post-TMI requirements which anticipated certain of the NRC's guidance concerning display instrumentation. As a result of these actions and submittals, Niagara Mohawk believed that Nine Mile Point Unit 1 had a sufficient complement of instrumentation with appropriate characteristics to adequately respond to the NRC's requirements and guidance relative to Regulatory Guide 1.97. In addition, a Safety Evaluation Report was received from the NRC on November 19, 1986, which indicated that Niagara Mohawk's response contained in the first two submittals was satisfactory.

However, in two audits conducted November 14-18, 1988, and March 27-31, 1989, and at meetings with the NRC Staff on December 23, 1988 and February 21, 1989, it became evident that the display instrumentation information provided in the original submittals did not meet the Staff's expectations and that there were issues concerning this display instrumentation that would require further review. As a result of review and assessment activities carried out in conjunction with the audits and meetings listed above, the open issues are now reduced to the eight listed in the NRC Region I letter dated April 21, 1989.

The NRC letter of April 21, 1989 indicated that "several significant deficiencies in Category 1 instruments" had been identified, a finding presumably based on full compliance with the instrument design criteria detailed in Regulatory Guide 1.97 (Revision 2). However, Regulatory Guide 1.97 has not been part of the licensing basis for Nine Mile Point Unit 1, and Niagara Mohawk believes that full compliance with all of design criteria contained or referenced in Regulatory Guide 1.97 is not required to assure safe operation of the plant.

Niagara Mohawk recognizes that it is necessary to be satisfied that the plant is ready for safe operation prior to restart. To make this evaluation, three criteria were identified as follows:

- Conformance to the plant's design and licensing bases.
- Meeting prior NRC commitments pertaining to Regulatory Guide 1.97 issues.
- Safe operation as determined by conformance to the bases and assumptions used in the analyses of Design Basis Accidents and the development and execution of Emergency Operating Procedures.

The first two criteria were relatively straightforward to address through document reviews. The third element involves more judgment, and a more structured process was developed to address it. First, Niagara Mohawk utilized those most knowledgeable (expert) about the subjects involved to consider the associated risks on a qualitative basis. That is, these experts considered what might happen, how likely it is to happen and what the consequences might be, without doing any calculations. The results of this evaluation process were applied to those particulars constituting the bases and assumptions used in Nine Mile Point Unit 1's Design Basis Accidents and Emergency Operating Procedures as they are affected by the tasks described in the Action Plan.

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Thus, the three criteria listed above were utilized in determining those actions which needed to be completed prior to restart. The "Short Term Actions" listed in the Attachment reflect the results of Niagara Mohawk's collective judgments utilizing the process described above for the eight issues raised in the NRC's April 21, 1989 letter.

While not required by the results of the evaluations described above, "Long Term Actions" have been developed and characterized as those which could provide enhancements in the long term relative to Regulatory Guide 1.97 design criteria. This grouping of planned actions and schedules may be considered tentative because Niagara Mohawk expects to work closely with the NRC Staff in the coming months to resolve any additional questions or concerns that it may still have. Niagara Mohawk also intends to include periodic assessment of these actions as part of the Engineering Program Integration Plan that is currently being developed.

Section C of the Attachment provides a summary listing of commitments that have been made relative to Regulatory Guide 1.97, including those made in prior meetings with the NRC (referenced above) as well as those described in the following section.

Frequent reference is made throughout Sections B and C of this Attachment to "EOP Key Parameters". This designation applies to those principal parameters that have a series of explicit "monitor and control" actions specified in the Nine Mile Point Unit 1 Emergency Operating Procedures. Such actions either constitute a major path in a procedure, or are a procedure unto themselves. The list of EOP Key Parameters includes 10 of the 14 Category 1 parameters, not including Containment Isolation Valve Position. This list of parameters and its basis was presented to the NRC Staff during the meeting with Niagara Mohawk on February 21, 1989.



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SECTION B

ACTION PLAN

NRC ISSUE NO. 1

Conduct an evaluation of Regulatory Guide 1.97 cable separation deficiencies.

- a. Identify potential cable separation deficiencies.
- b. Evaluate the significance of the cable separation deficiencies.
- c. Provide plans for necessary short and long term resolution of the cable separation deficiencies.

NMPC RESPONSE

1.1 Short Term Action (to be completed prior to restart)

A one-line cable routing sketch has been constructed for each Regulatory Guide 1.97 Category 1 analog instrument loop (refer to the example provided as Figure 1 on Page 7). These sketches were produced based on reviews of applicable Elementary, Interconnection, and Cable Routing Diagrams.

The purpose of these sketches is to support an evaluation of the degree of separation that currently exists for independent sets of instrument loops. The redundant sets are designated as Channels 11 and 12, and each sketch is color coded to indicate the corresponding Channel 11 and Channel 12 cable trays and penetrations that are currently used for routing from the sensor to the display device(s).

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From the completed cable routing sketches, a matrix of instrument loops vs cable trays and penetrations is being constructed to identify routing that is inconsistent with the loop's channel designation. This matrix is also formatted to group separately the cable runs inside the Control Complex from those outside the Control Complex. This format is shown in Figure 2 on page 8.

Inconsistent channelization routing as identified on the one-line color coded sketches (e.g., an instrument loop that is energized by an RPS 11 power supply but routed in a tray that is designated Channel 12), cables of redundant instrument loops routed in the same tray or penetration, and cables for more than one non-redundant instrument loop routed in the same tray or penetration, will be designated as "potential cable separation discrepancies." Such discrepancies will be subject to further evaluation as described below and as part of the "Hazards Analysis" described in the response to Issue 8.

Each listed cable separation discrepancy will be walked down in the plant. To support this activity, specific inspection and evaluation criteria will be developed by an inter-disciplinary team of persons having knowledge and previous experience relevant to this subject. Team members will also carry out the walkdown.

The in-plant walkdowns will be conducted to:

- Identify any hazards present that could adversely affect continued availability of the subject cable run, tray, or penetration given the occurrence of a single event as defined in the inspection and evaluation criteria (e.g., from sources categorized as fires, flooding, high energy lines, electrical, mechanical, or chemical), and

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- Determine the features that are available for detecting and mitigating the consequences of the postulated event (e.g., smoke detectors, high temperature alarms, fire extinguishing systems, flooding alarms, and available personnel).

The results of the in-plant walkdowns will be documented and evaluated by the inter-disciplinary team per the established inspection and evaluation criteria. These evaluation results will likewise be documented. Where this inter-disciplinary team determines that a modification is required to eliminate a deficiency, such changes will be completed prior to restart. Completion of these short term actions will assure that the plant meets the restart criteria listed in Section A.

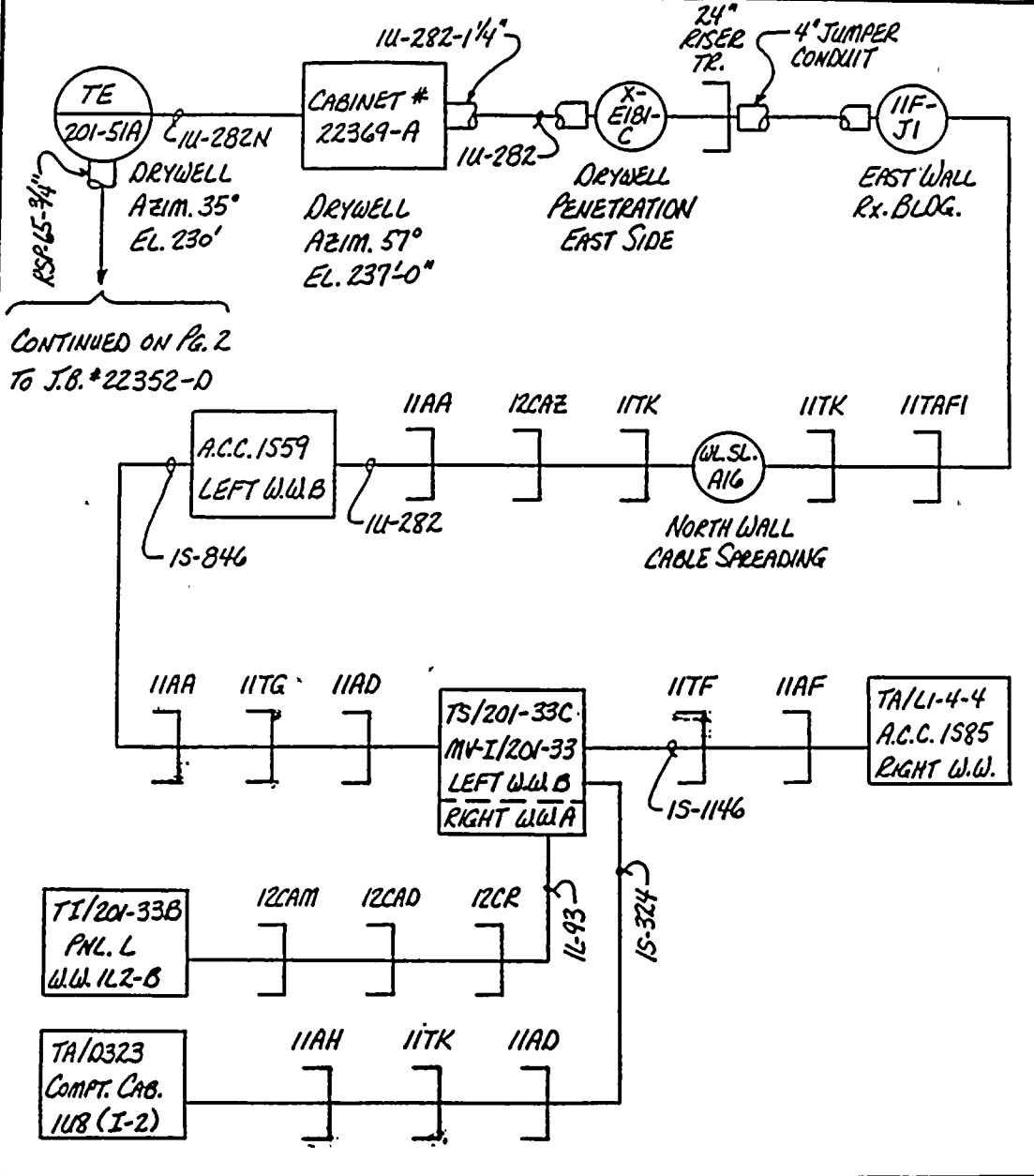
1.2 Long Term Action (Scheduling of actions described below will be carried out in conjunction with development of the Engineering Program Integration Plan.)

Category 1 Regulatory Guide 1.97 analog instrument loops will be walked down in the plant to confirm the correctness of the sketches previously constructed as part of the Short Term actions, and the results documented. Any cable separation discrepancies that may be identified will be evaluated and, if required, corrected. This will be done consistent with the criteria developed as part of the Short Term action described above, and on a schedule that is developed in conjunction with application of the Engineering Program Integration Plan.

Niagara Mohawk recognizes that cable separation is a long term design concern and, accordingly, will include cable separation in the Engineering Program Integration Plan which is currently under development. Development will involve integrating a number of programs to upgrade design bases and configuration management at Nine Mile Point Unit 1. A status discussion with the NRC staff on this subject is expected to occur in June of this year.

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PROJECT: NINE MILE POINT NUC. STA.-UNIT 1 CALC. NO. C-22020-C, SH.2 REV. C
 SUBJECT: DRYWELL ATMOSPHERE TEMP.-THERMOCOUPLE ORIG. Dave Robbins DATE: 2/14/89
 INDEX: 3-N2.1-E4 CAT. 1-2, TYPE A & D, VAR. CHK'D. F/C [Signature] DATE: 3/28/89



CONTINUED ON Pg. 2
 TO J.B. #22352-D

Figure 1: Cable Routing Sketch (Sample Format)

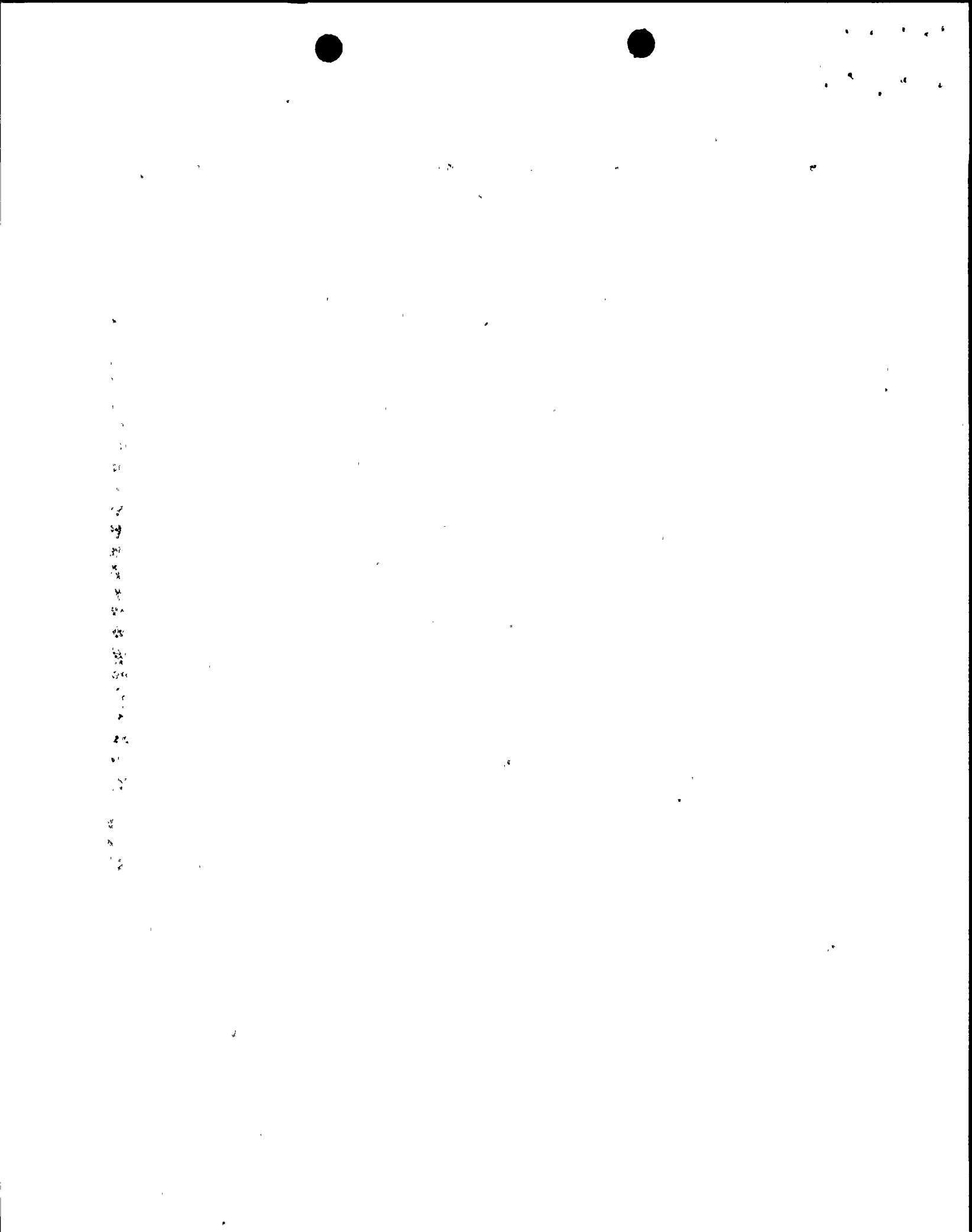


Figure 2: Cable Routing Matrix (Sample Format)

Page 1 of 2		RG 1.97 CATEGORY 1 INSTRUMENT CABLE ROUTING MATRIX												Page 2 of 2													
PARAMETER	CHANNEL	PRIMARY CONTAINMENT PENETRATIONS				REACTOR BUILDING FLOOR/WALL PENETRATIONS				CABLE TRAYS OUTSIDE CONTROL COMPLEX				CABLE TRAYS INSIDE CONTROL COMPLEX		WALL/FLOOR PENETRATIONS INSIDE CONTROL COMPLEX											
		X-E181-C	X-E181-G	X-E198-B	Etc. →	11F-J1	281-N4-A14	261-N4-B15	11C-A1	WL SL C35	Etc. →	11 TAF1	11TK	11TK1	11TV	Etc. →	11AA	11AD	11TG	11TK	12CAZ	Etc. →	WL SL A16	WL SL A10	Etc. →		
Suppression Pool Water Level	11																										
	12																										
Suppression Pool Water Temperature	11																										
	12																										
Drywell Water Level	11																										
	12																										
Containment O2 Concentration	11																										
	12																										

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NRC ISSUE NO. 2

Perform an evaluation of the Regulatory Guide 1.97 isolation deficiencies.

- a. Evaluate the significance of the isolation deficiencies on the availability of the important RG 1.97 monitoring instruments.
- b. Provide plans for necessary short and long term correction of the isolation deficiencies.

2.1 Short Term Action (to be completed prior to restart)

At the time of design and construction of Nine Mile Point Unit 1, Class 1E isolation devices were not available. However, electrical isolation was considered in the overall design approach. The isolation techniques that were applied included coil-to-contact separation, analog isolation through the process computer input/output buffer interfaces, and the use of fuses in control circuits.

Since the original design of the plant, the equipment available to perform isolation between non-safety related and safety-related interfaces has technologically advanced. As modifications were made to the plant, Class 1E isolation devices have been installed for various upgraded instrumentation on a case-by-case basis.

Class 1E isolation devices are not installed in the analog signal loop to the plant process computer for the following EOP Key Parameters:

- Wide Range Reactor Pressure Vessel (RPV) Water Level
- Wide Range Drywell Pressure
- Drywell Ambient Temperature
- Suppression Pool Water Level
- Drywell Water Level



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All of the other Category 1 EOP Key Parameter instrument loops either do not supply an analog signal to the computer, or the circuitry for the analog signal input to the computer includes a Class 1E isolation device.

Even though Class 1E isolation devices are not used uniformly, there is isolation between the computer and the safety related portions of the Regulatory Guide 1.97 Category 1 instruments identified above. This is achieved by other components and design features (e.g., contact separation, input signal filters/conditioners). A study (including relevant information obtained from the Failure Modes and Effects Analysis that is being completed as a Short Term Action in response to Issue No. 6) will be completed and documented to demonstrate the effectiveness of these other means of achieving isolation. Appropriate action will be taken, if needed, to satisfy the criteria listed in Section A.

2.2 Long Term Action

A Long Term action plan will be formulated based on the results of the Short Term action plan and provided to the NRC within 90 days after startup.

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NRC ISSUE NO. 3

Perform a review of the Regulatory Guide 1.97 instrument circuit loading and the adequacy of installed fuses.

- a. Complete a sample evaluation of two instrument circuits.
- b. Determine the need and provide a schedule for the further review of the other RG 1.97 instrument circuits.

NMPC RESPONSE

As used in this response, a circuit is defined to be a set of parallel loads (instruments and controls) that are directly powered, as one group, from an RPS Bus. Specifically, a circuit is not just the current loop of a single Regulatory Guide 1.97 instrument.

3.1 Short Term Action (to be completed prior to restart)

A simplified one-line sketch of circuit loads (refer to the example provided as Figure 3 on page 13) is being constructed for Circuits 7 and 12 of RPS Bus 12. These circuits were designated by the NRC during Inspection 89-12 (March 27-31, 1989). These sketches are being developed based on a review of applicable engineering diagrams. Each sketch will be sufficiently detailed to identify the physical location of fuses, fuse size (i.e., current rating in amperes), and all of the loads on the respective circuit.

For each of the two circuits identified above, fusing adequacy will be confirmed as follows:

- ° The maximum normal current draw for each load will be determined and verified to be no greater than the size of the existing fuse through which power to the load is supplied.



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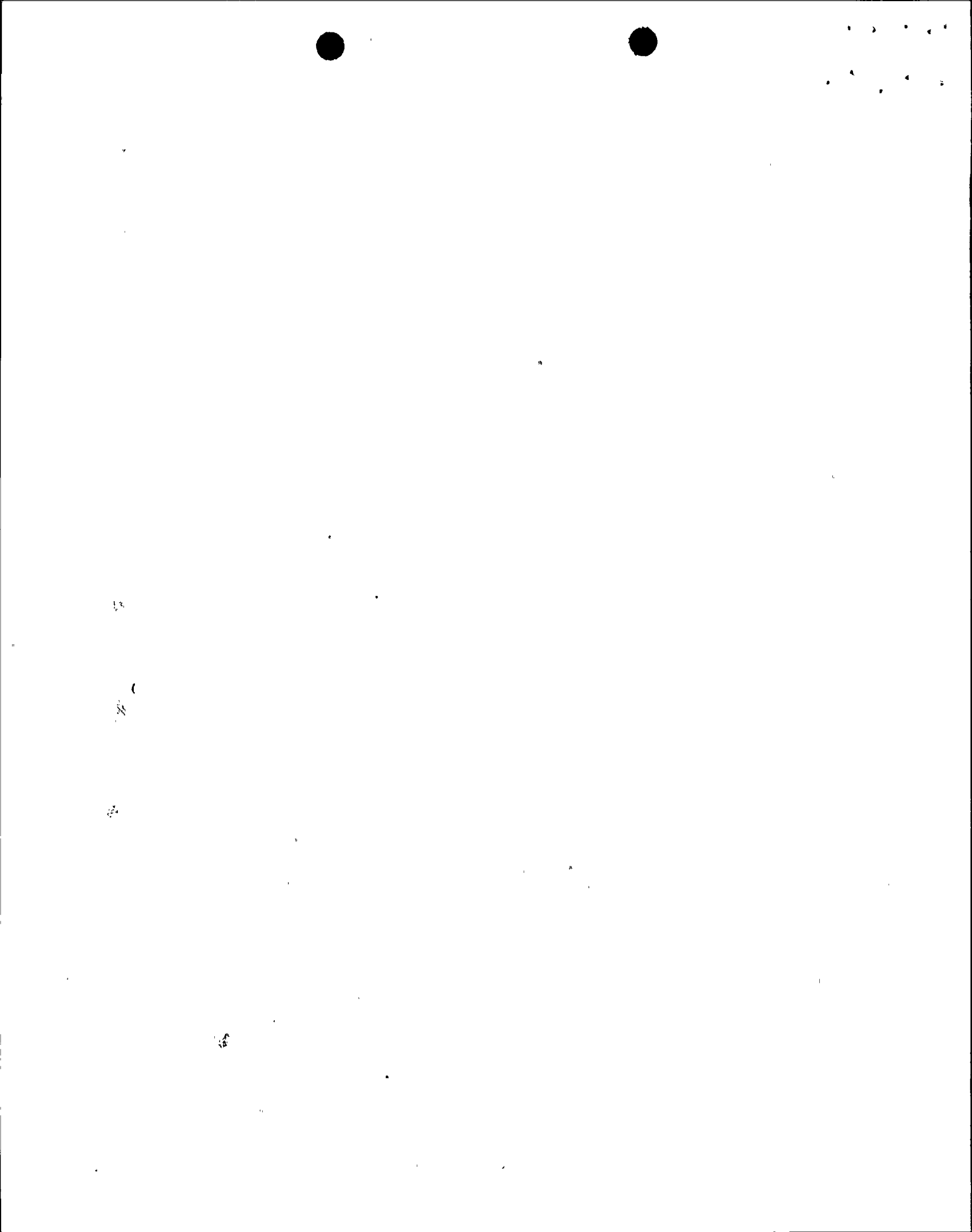
- The maximum normal combined current draw for all loads in the circuit will be determined and verified to be no greater than the size of the fusing that exists between the respective circuit and the RPS Bus.
- A study will be performed to verify that upstream fuses are properly coordinated with downstream fuses such that the fuse for the individual load will blow (open circuit) prior to the main RPS circuit fuse.

If any fusing deficiency is identified as a result of the analysis described above, appropriate action will be taken to correct the deficiency prior to restart. Likewise, the need to expand the review to cover additional Regulatory Guide 1.97 instrument circuits will be determined based on the results of the analysis.

Other related Short Term Action is described in the response to Issue 6 (Identification of Regulatory Guide 1.97 Instrument Power Sources).

3.2 Long Term Action (Scheduling of actions described below will be carried out in conjunction with planning for the Engineering Program Integration Plan.)

Analysis of fusing adequacy (fuse loading and coordination studies) as described under the Short Term Action for this issue will be completed for all other RPS Bus 11 and RPS Bus 12 circuits that supply power to the Regulatory Guide 1.97 Category 1 instruments for EOP Key Parameters.



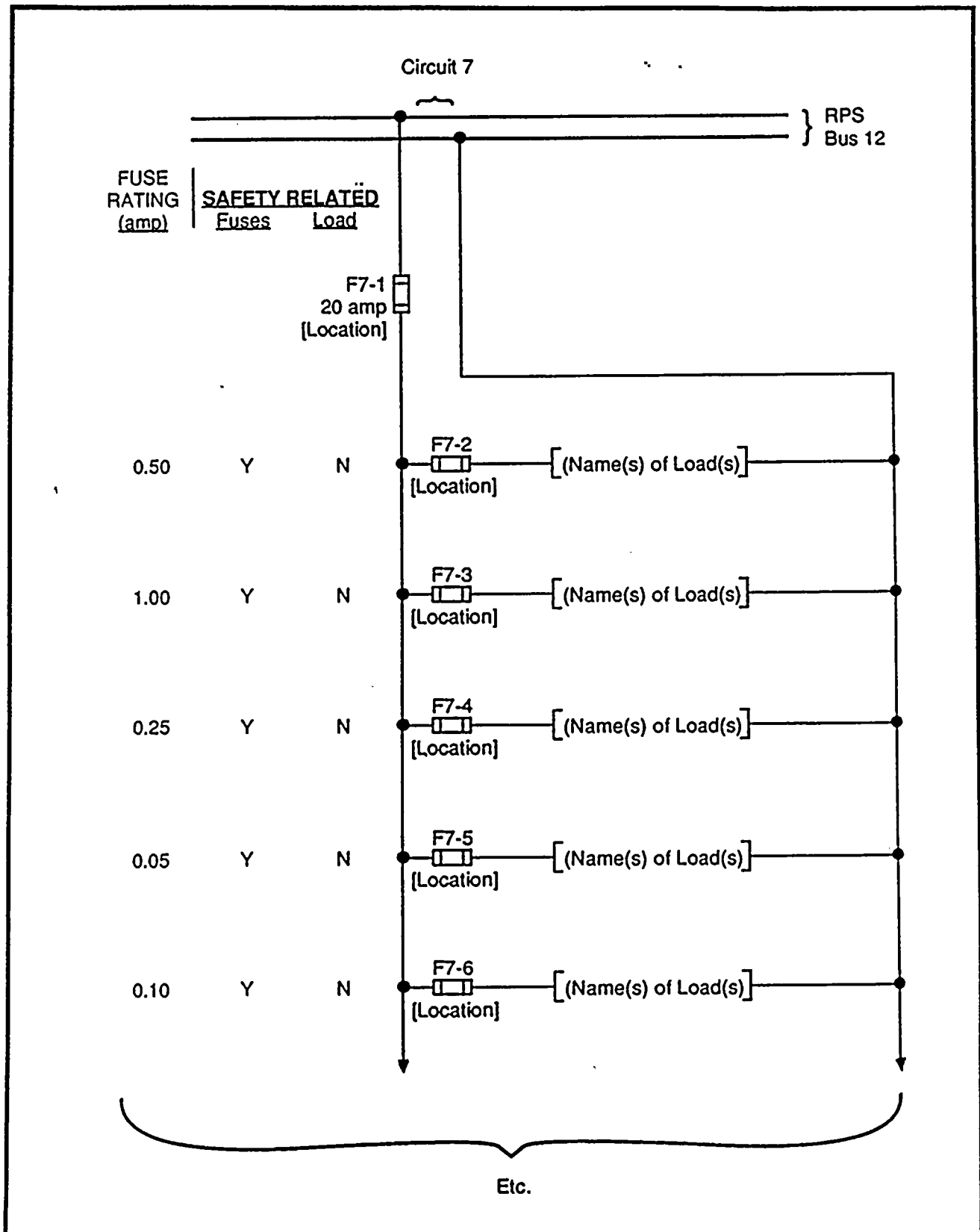


Figure 3: Circuit Load Sketch (Sample Format)



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NRC ISSUE NO. 4

Review alternatives to the Category 1 Regulatory Guide 1.97 instruments for which deficiencies exist.

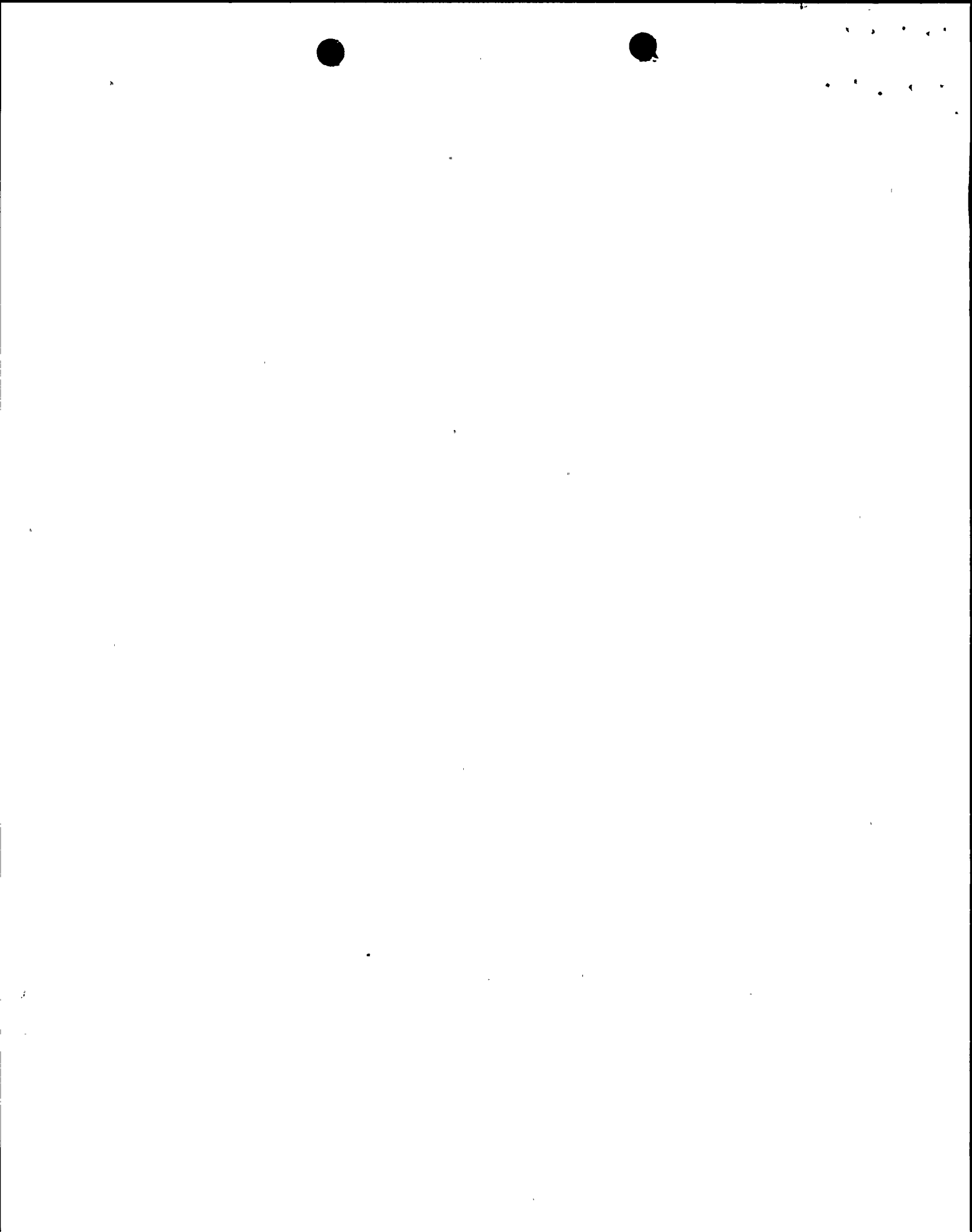
- a. Identify and document the usefulness of the alternatives to the Regulatory Guide 1.97 instruments for implementing the EOPs.
- b. Provide operator guidance and training as to when and how the alternative instruments would be used.

NMPC RESPONSE

4.1 Short-Term Action (to be completed prior to restart)

Supplemental instruments (other than those explicitly identified as the Regulatory Guide 1.97 Category 1 instruments) and alternate methods that could be used for determining the current status of EOP key parameters will be identified and documented. This listing will include applicable "Appendix R" instruments located on the Remote Shutdown Panel. This documentation will be prepared in tabular format similar to that illustrated in Figures 4 and 5 on pages 16 and 17.

A multi-disciplinary team comprised of at least one representative each from the NMP1 Training, Operations, and Engineering organizations will jointly review the assembled information, and develop an appropriate NMP1 Special Operating Procedure (SOP) and associated training materials for licensed plant operators. The SOP will specifically address use of the identified Regulatory Guide 1.97 Category 1 instruments, the identified supplemental instruments, and other viable alternate methods for determining current status of EOP key parameters.



Relevant classroom and in-plant training for control room operators will begin no later than Training Cycle 5 (Cycle 5 commences the week of July 10, 1989). Material to be covered in training will include the purpose and scope of Regulatory Guide 1.97, its implementation at NMP1, and specifics of the newly-developed SOP described above. The training will also address applicable actions specified in the EOPs under conditions where various individual instruments normally used for monitoring the status of EOP key parameters are assumed to be unavailable.

4.2 Long Term Action

There are no long term actions for this issue.



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Figure 4: Supplemental Instrumentation Table, Parts B and C (Sample Format)

PARAMETER _____

Part B - Supplemental Instrumentation

PAGE B __ OF B __

DISPLAY DEVICE					SENSOR					ADDITIONAL REMARKS
EPN	Indicating Range	Location	SR or NSR	Power Supply	EPN	Location	EQ	SR or NSR	Power Supply	

PARAMETER _____

Part C - Safety Parameter Display System

OUTPUT PID	INDICATING RANGE	DISPLAY	INPUTS			ADDITIONAL REMARKS
			PID	Sensor EPN	•	
						* Check if same as RG 1.97 Category 1; double check if also SR.



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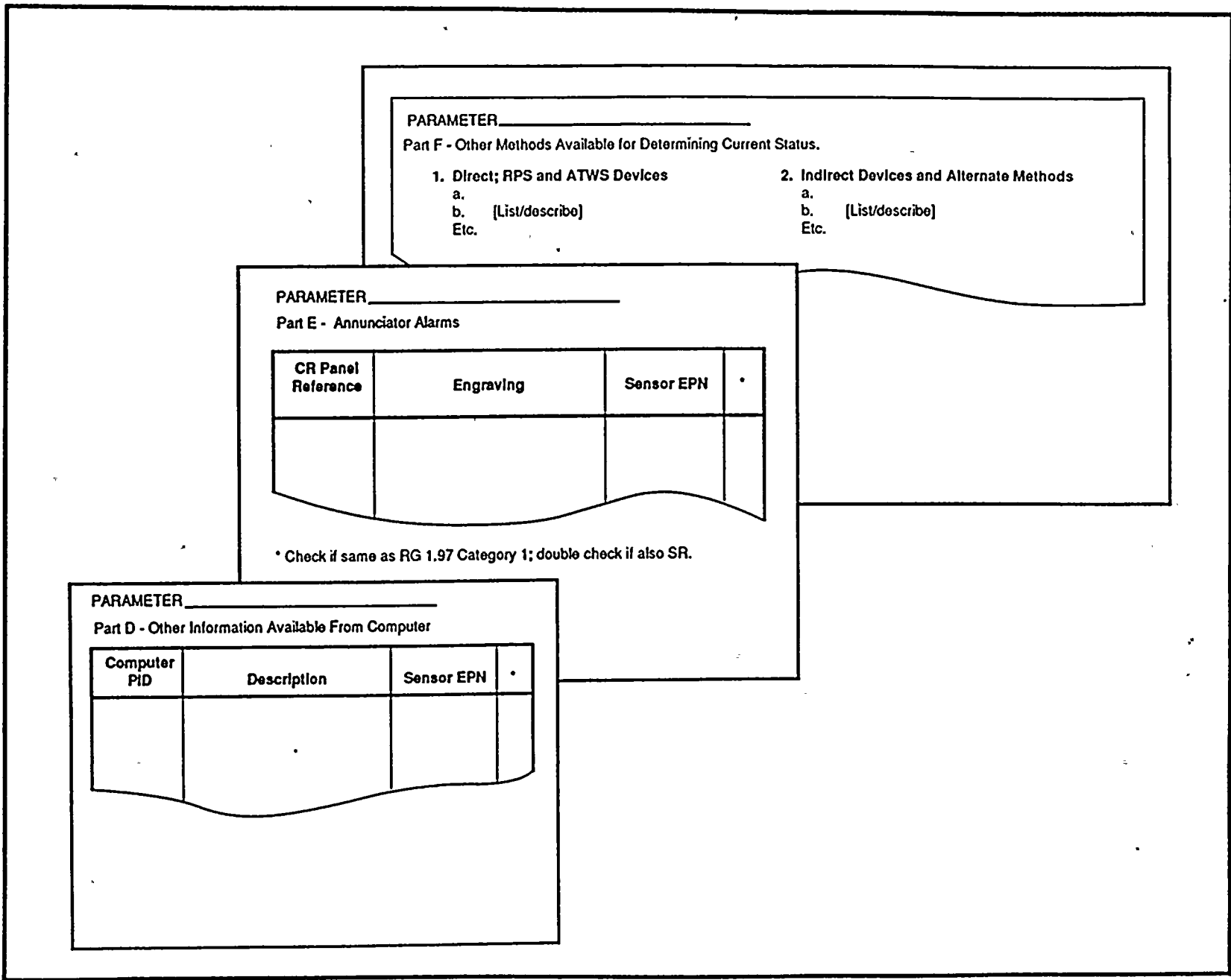
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Figure 5: Supplemental Instrumentation Table,
Parts D, E, and F (Sample Format)



NRC ISSUE NO. 5

Complete the failure modes and effects analysis for the APRM isolation deficiencies.

- a. Complete the evaluation of this deficiency and take corrective actions.
- b. Provide the bases that no other protective functions are compromised by isolation deficiencies.

NMPC RESPONSE

5.1 Short-Term Action (to be completed prior to restart)

The output signal from each reactor recirculation loop flow transmitter is supplied to: (1) the flow rate summer units of the APRM circuitry, and (2) the process computer. The instrument loop interface with the computer (a component that is not safety related) is not equipped with a Class 1E isolation device. Therefore, a Failure Modes and Effects Analysis (FMEA) will be performed to confirm that the present circuit design is adequate to preclude a failure of the APRM scram logic to perform its design safety function .

The FMEA will apply the single failure criteria specified in IEEE 279-1971, "Criteria for Protection Systems for Nuclear Power Generating Stations" and will be performed in accordance with the methods presented in IEEE 352-1975, "General Principles for Reliability Analysis of Nuclear Power Generating Station Protection Systems." This analysis will take into account the physical and electrical design features that exist at the interconnection to the computer in the determination of faults and failures that must be addressed.

If the FMEA results show that a failure of the APRM scram logic will not occur, then no further Short Term action will be taken. If the contrary is true, corrective action will be completed prior to restart.

The principal method of accomplishing plant protective functions is through automatic actions initiated by the Reactor Protection System. Reactor Protection System circuits have built-in isolation because of Analog Trip System Alarm Trip Units, coil-to-contact arrangements, or other similar components (including Class 1E devices). Circuits with analog connections to non-safety related devices such as the process computer will be reviewed to confirm that isolation is adequate. The evaluation criteria to be applied in making this determination for situations where Class 1E isolation devices do not exist will be consistent with those developed for use in the FMEA. Completion of these actions will provide adequate assurance that the plant meets the restart criteria listed in Section A.

5.2 Long Term Action

There are no long term actions for this issue.

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NRC ISSUE NO. 6

Identify Regulatory Guide 1.97 instrument power sources. Provide instrument power source information at the site in a form useful to the control room operators.

NMPC RESPONSE

6.1 Short-Term Action (to be completed prior to restart)

A simple one-line sketch of circuit loads, as described in the Short Term Action for Issue 3, will be constructed for each circuit of RPS Busses 11 and 12 that supplies power to the Regulatory Guide 1.97 Category 1 analog instruments. These sketches will be developed based on a review of applicable engineering diagrams.

In addition, a matrix of RPS circuits vs Regulatory Guide 1.97 Category 1 instrument loops will be developed, similar to that illustrated in Figure 6 on page 22, from the one-line load sketches. The design of this matrix provides a means of readily identifying the power source(s) for a particular instrument loop, and all of the instruments powered by any specific RPS circuit.

A Controlled copy of the completed package of information described above will be provided to the site for appropriate use by personnel of the Operations and Instrument and Controls Departments, including a copy in the Control Room for the control room operators.



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6.2 Long Term Action (Scheduling of actions described below will be carried out in conjunction with planning for the Engineering Program Integration Plan.)

Elementary Wiring Diagrams (EWDs) of standard format will be developed for each circuit of RPS Busses 11 and 12 that supplies power to indication loops of the RG 1.97 Category 1 analog instruments. Development, review, approval, issuance, and control of these EWDs will be performed in accordance with established Niagara Mohawk Nuclear Division procedures and instructions.

A controlled set of the completed EWDs will be placed in the NMP-1 Control Room.



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RG 1.97 CATEGORY 1 INSTRUMENT POWER SUPPLIES

INSTRUMENT LOOP	RPS BUS 11 Circuit #				RPS BUS 12 Circuit #			
	4	7	11	Etc. →	4	7	11	Etc. →
RPV Water Level - Hi/Lo Lo-Lo (Ch. 11)								
RPV Water Level - Hi/Lo Lo-Lo (Ch. 12)								
RPV Water Level - Fuel Zone (Ch. 11)								
RPV Water Level - Fuel Zone (Ch. 12)								
RPV Pressure (Ch. 11)								
RPV Pressure (Ch. 12)								

Figure 6: Power Supply Matrix (Sample Format)



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NRC ISSUE NO. 7

Evaluate the safety significance of the Reactor Pressure Vessel (RPV) common tap for the fuel zone water level instrument.

- a. Evaluate the safety significance of the common tap considering a single passive failure at the common line. Determine the operator's ability to follow the EOPs to assure adequate RPV water level and emergency coolant injection.
- b. Provide plans for resolution of this issue.

NMPC RESPONSE

7.1 Short-Term Action (to be completed prior to restart)

A evaluation will be performed to determine the effects on control room instrumentation displays resulting from a postulated break in the Fuel Zone RPV Water Level variable leg instrument line (the specific location of the common tap that is identified in the statement of the issue). A spectrum of initial plant conditions will be assumed in the evaluation (e.g., normal power operation, reactor shut down with RPV water level in the normal range, reactor shut down with RPV water level below the low-low setpoint). The assumed location of the break will also be varied (i.e., inside the drywell and outside the drywell).

The ability of the control room operating crew to adequately evaluate the resulting combinations of displayed information and to respond as necessary to continue to assure adequate core cooling, consistent with the applicable actions specified in the EOPs, will be assessed to verify that there is no safety significance associated with the common tap design. This will be accomplished by confirming that the EOP actions

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required by the displayed status of plant conditions continue to direct injection of water into the RPV as necessary to assure adequate core cooling. A list of sequential actions for each set of assumed initial conditions will be developed to evidence the correctness of the EOPs in this regard.

The results of this evaluation will be documented, and this information then used to provide appropriate training to control room operators. This training will be conducted in conjunction with the other training on Regulatory Guide 1.97 instrumentation as described in the response for Issue 4.

The Advisory Committee on Reactor Safeguards, in a letter to the NRC Executive Director for Operations dated April 11, 1989, presented the Committee's conclusion regarding the NRC staff's evaluation and resolution of Generic Issue 101, "BWR Water Level Redundancy." The actions described above are consistent with the Committee's conclusion.

7.2 Long Term Action

There are no Long Term actions for this issue.



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NRC ISSUE NO. 8

Document and Docket Nine Mile 1 Regulatory Guide 1.97 restart activities.

- a. Document the Niagara Mohawk (NM) Regulatory Guide 1.97 evaluation of the parameters important to the EOPs that was performed to support NRC inspection 89-12.
- b. Document the NMP Regulatory Guide 1.97 Hazards Analysis.
- c. Document planned Regulatory Guide 1.97 modifications. Include scope and schedule. Particular emphasis should be placed on modifications that address lack of redundancy for important parameters (torus pressure, drywell atmosphere temperature, and drywell water level).

NMPC RESPONSE

The documents identified above will be completed and formally submitted to the NRC on the Nine Mile Point Unit 1 Docket no later than July 31, 1989.

Specifically, this package will include:

- a. A tabular listing and associated summary in matrix format of the important design features of the Regulatory Guide 1.97 Category 1 instruments for the EOP Key Parameters (e.g. equipment part numbers, specific power supplies, physical location), from transmitter through display device, and a comparison of instrument design to the important attributes identified during the NRC meeting of February 21, 1989 (e.g., redundancy, separation, and isolation). These tables and the matrix will be an update of those presented and discussed at Niagara Mohawk during NRC Region I Inspection 89-12. The format of each of these will be similar to that illustrated in Figure 7 on page 28.



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- b. A narrative of the Regulatory Guide 1.97 Category 1 Instrument "Hazards Analysis" that was conducted and discussed during NRC Inspection 89-12. This narrative will include the identification of supplemental instruments that may be used to support execution of the EOPs (refer to the response for Issue 4).

- c. A description of the scope, important design features, and completion schedule for the following post restart modifications:
 - Installation of a new and redundant Wide-Range RPV Water Level indicator in the Control Room (existing redundant level transmitter 36-35 will be used to provide the analog signal to the new display device).

 - Installation of new and redundant Drywell Ambient Temperature instrument (sensors through display devices).

 - Installation of a new and redundant Drywell Water Level instrument (sensors through display device).

 - Installation of a new and redundant, Torus Airspace Pressure instrument (sensor through display device).

 - Extension of the indicating range of the current Torus Airspace Pressure instrument to beyond torus design pressure.

 - Extension of the indicating range of the current core spray flow monitors.

The following additional material will also be submitted on the Nine Mile Point Unit 1 Docket at the same time. (These items reflect commitments that were made by Niagara Mohawk during previous NRC meetings and not covered above.)

- A consolidated and updated response to Section 6.2 of Supplement 1 to NUREG-0737. This response will supersede all previous submittals on this subject (submittals dated April 2, 1984, October 18, 1985, and October 5, 1987).
- Documentation of the basis for the "no Type A Variables" determination.
- Documentation of the process for determining EOP Key Parameters.
- A supplement to the "Hazards Analysis" which documents the basis for being able to exclude Reactor Pressure Vessel and Primary Containment isolation valve position indication from the other analyses and evaluations of Regulatory Guide 1.97 Category 1 instruments described throughout this attachment.



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RG 1.97 CATEGORY 1 INSTRUMENT SUMMARY

Page of

PARAMETER	CHANNEL	DISPLAY INSTRUMENT				SENSOR					IN-LOOP COMPONENT				DEDICATED RECORDER		CABLE LAYOUT				REMARKS	
		1E Power	Electrical Independence	Q List as Safety Related	Normal Use	1E Power	Electrical Independence	Physical Separation	Physical Independence	EO'd	Q List as Safety Related	1E Power	Electrical Independence	EO'd	Q List as Safety Related	1E Power	Q List as Safety Related	OUT CC		IN CC		
																		Physical Separation	In Designated Ch. Trays	Physical Separation		In Designated Ch. Trays
Neutron Flux APRM	11																					
	12																					
RPV Water Level Hi/Lo Lo-Lo	11																					
	12																					
RPV Water Level Wide Range	11																					
	12																					

PARAMETER _____

EOP Key Parameter: Yes No

Part A - RG 1.97 Category 1 Instruments

DISPLAY INSTRUMENTS					SENSORS					IN-LOOP COMPONENTS					RECORDING DEVICE			
EPN (RANGE)	Power Supply	Location	Q LIST SR	Normal Use	EPN	Power Supply	Location	Q LIST SR	EO'd	EPN	Power Supply	Location	Q LIST SR	EO'd	EPN	Power Supply	Location	Q LIST SR

Figure 7: Category 1 Instrument Summary and Table of Design Features (Sample Format)



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SECTION C

SUMMARY OF REGULATORY GUIDE 1.97 COMMITMENTS

The following is a composite list of all current Niagara Mohawk commitments regarding Regulatory Guide 1.97 for Nine Mile Point 1. (Commitments detailed in Section B of this attachment are included.)

1. From NRC Inspection of November 14-18, 1988 and NRC Meeting of February 21, 1989:

- a. Respond to EQ Notice of Violation dated January 23, 1989.

Current Status: Complete. (Reference: NMPC letter to NRC dated March 6, 1989)

- b. Replace existing drywell ambient temperature elements 201-36A, 201-50A and 201-50B with new temperature elements that are qualified in accordance with EQ Program requirements.

Current Status: Design work is in progress.

Completion By: Plant restart.

- c. Update EQ Program coverage and associated records to include all Regulatory Guide 1.97 Category 1 instruments for EOP Key Parameters.

Current Status: Work is in progress.

Completion By: Plant restart.

- d. Upgrade the LPRM isolator rack to comply with design basis seismic requirements.

Current Status: Design package has been completed.

Completion By: Plant restart.

- e. Update Q List Safety Related coverage and associated records to include all Regulatory Guide 1.97 Category 1 instruments for EOP Key Parameters.

Current Status: Work is in progress to finalize the list of included components.

Completion By: Plant restart.

- f. Carry out Multi-Disciplinary Review for performing human factors evaluation of Control Room panel markings for Regulatory Guide 1.97 Category 1 instruments. (This activity is to be performed in conjunction with associated evaluations of EOP and Control Room changes that have been made in response to other requirements specified in Supplement 1 to NUREG-0737).

Current Status: Work is in progress.

Completion By: Plant restart.

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- g. Complete and docket a consolidated, updated response to Section 6.2 of Supplement 1 to NUREG-0737. (This new submittal will supersede all previous Niagara Mohawk submittals that have been made to the NRC on this subject (submittals dated April 2, 1989, October 18, 1985 and October 5, 1987)).

Current Status: Work is in progress.

Completion By: July 31, 1989.

- h. Complete and docket appropriate documentation of the basis for the "no Type A Variables" determination.

Current Status: Initial draft has been completed; reviews are in progress.

Completion By: July 31, 1989.

- i. Complete and docket appropriate documentation of the process that was followed and the evaluations that were performed in the selection of the identified EOP Key Parameters.

Current Status: Initial draft has been completed; second draft is being developed to address review comments that were received.

Completion By: July 31, 1989.

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2. From NRC Inspection of March 27-31, 1989 and Section B of This Attachment:

- a. Identify, and conduct an evaluation of, potential cable separation discrepancies. Take appropriate action to correct identified deficiencies. See Issue No. 1 in Section B.

Current Status: A preliminary list of potential discrepancies encompassing all instrument loops except those of the Neutron Monitoring Systems has been developed; appropriate in-plant inspection and evaluation criteria are being developed.

Completion By: Plant restart for Short Term Actions, and in conjunction with the Engineering Program Integration Plan for Long Term Actions.

- b. Identify, and conduct an evaluation of, isolation available at the interface between instrument loops of Regulatory Guide 1.97 EOP Key Parameters and associated non-safety circuits. Take appropriate action based on isolation study results. See Issue No. 2 in Section B.

Current Status: The evaluation of available isolation is in progress.

Completion By: Plant restart for Short Term Actions, and to be determined within 90 days of startup based on Short Term results for the Long Term Actions.

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- c. Perform a review of the Regulatory Guide 1.97 instrument circuit loading and the adequacy of installed fuses. See Issue No. 3 in Section B.

Current Status: The initial draft of a one-line sketch for each of the designated circuits has been completed.

Completion By: Plant restart for Short Term Actions, and in conjunction with Engineering Program Integration Plan for Long Term Actions.

- d. Identify and document the usefulness of the alternatives to the Regulatory Guide 1.97 instruments for implementing the EOPs; develop an associated Special Operating Procedure; provide appropriate training to control room operators. See Issue No. 4 in Section B.

Current Status: An initial list of alternatives has been developed; training period for control room operators has been allocated.

Completion By: Plant restart.

- e. Complete a Failure Modes and Effects Analysis (FMEA) for the lack of Class 1E isolation devices between the reactor recirculation flow instrument loops and the input to the computer; take appropriate action based on analysis results. Provide the bases for being able to conclude that no other protective functions are comprised by inadequate isolation between Safety Related circuits/components and non-safety circuits/components. See Issue No. 5 in Section B.

Current Status: The scope and approach for the FMEA has been defined; analysis is in progress.

Completion By: Plant restart.

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- f. Identify Regulatory Guide 1.97 Category 1 analog instrument power sources, and provide this information in a useful format to personnel at the site. See Issue No. 6 in Section B.

Current Status: The matrix of Regulatory Guide 1.97 analog instrument loops vs RPS Bus 11 and Bus 12 circuits has been developed; development of associated one-line sketches of RPS circuit loads is in progress.

Completion By: Plant restart for Short Term Actions, and in conjunction with the Engineering Program Integration Plan for Long Term Actions.

- g. Evaluate the safety significance of the Reactor Pressure Vessel (RPV) common tap for the fuel zone water level instrument; provide appropriate operator training. See Issue No. 7 in Section B.

Current Status: The review of safety significance is in progress; training period for control room operators has been allocated.

Completion By: Plant restart.

- h. Complete and docket an updated summary (tables and associated matrix) of the important design features of the Regulatory Guide 1.97 Category 1 analog instrument loops that was presented and discussed during NRC Region I Inspection 89-12. See Issue No. 8 in Section B.

Current Status: An initial draft has been completed; reviews and preparation of the next draft are in progress.

Completion By: July 31, 1989.

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- i. Complete and docket a narrative of the Regulatory Guide 1.97 Category 1 Instrument "Hazards Analysis" that was presented and discussed during NRC Region I Inspection 89-12. See Issue No. 8 in Section B.

Current Status: Development of initial draft will proceed when the list of supplemental instruments and associated Special Operating Procedure are in final draft.

Completion By: July 31, 1989.

- j. Develop and docket a summary description of planned Regulatory Guide 1.97 instrument modifications, including scope and schedule. See Issue No. 8 in Section B. The affected variables are:

- Wide-range RPV water level
- Drywell ambient temperature
- Drywell water level
- Torus airspace pressure
- Core spray flow

Current Status: Design work on drywell ambient temperature and core spray flow modifications is in progress.

Completion By: July 31, 1989. (This will only include a brief description of the modifications.)

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- k. Develop and docket a supplement to the "Hazards Analysis" which documents the basis for being able to exclude Reactor Pressure Vessel and Primary Containment Isolation Valve position indication from the other analyses and evaluations of Regulatory Guide 1.97 Category 1 instruments. See Issue No. 8 in Section B.

Current Status: Development of initial draft is in progress.

Completion By: July 31, 1989.

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