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RECIP.NAME RECIPIENT AFFILIATION
SCHWENCER,A. Licensing Branch 2

SUBJECT: Addresses concerns summarized in NRC 850206 ltr re detailed control room design review program,per Suppl 1 to NUREG-0737.

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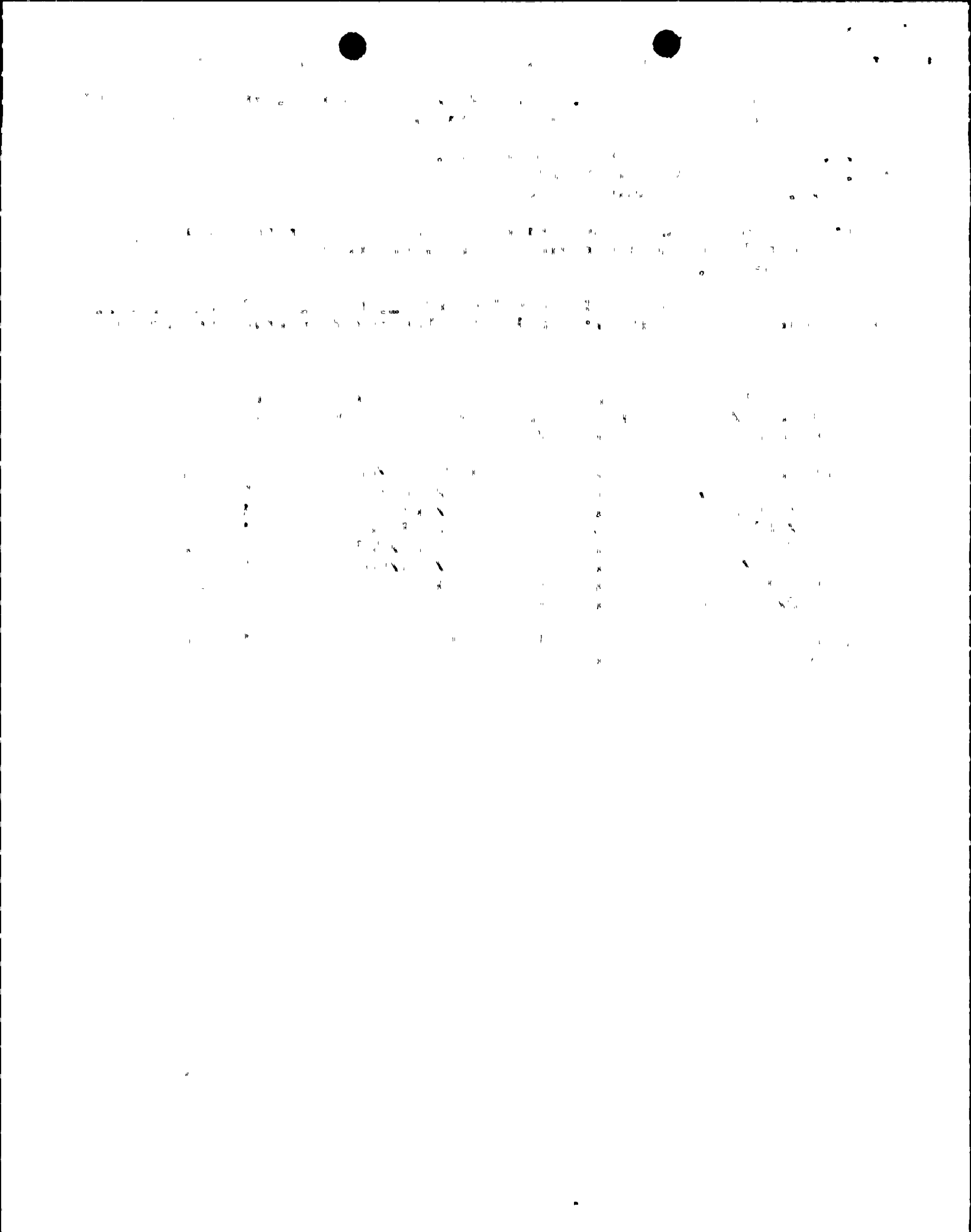


NIAGARA MOHAWK

NIAGARA MOHAWK POWER CORPORATION/300 ERIE BOULEVARD WEST, SYRACUSE, N.Y. 13202/TELEPHONE (315) 474-1511

March 5, 1985
(NMP2L 0361)

Mr. A. Schwencer, Chief
Licensing Branch No. 2
Division of Licensing
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Schwencer:

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

In accordance with the requirements of Supplement 1 to NUREG-0737, Niagara Mohawk Power Corporation submitted the Program Plan for conducting a Detailed Control Room Design Review at Nine Mile Point Nuclear Station, Unit 2.

The attached information addresses several concerns that were summarized by the Nuclear Regulatory Commission in a letter dated February 6, 1985.

Very truly yours,

C. V. Mangan
Vice President
Nuclear Engineering & Licensing

CVM/rla
Attachment

cc: Project File (2)

R. Gramm, NRC Resident Inspector

A003
1/1

Question 4

EOPs used as the basis for the task analysis may require revision to make them complete and technically adequate depending on the NRC review of the NMP-2 PGP.

Response

The task analysis will be revised if changes are required. There will be a coordination of the validation effort of the EOPs and the DCRDR.

Question 5

Task identifications and specification of control/display requirements may not be independent of the existing control room.

Response

Task identification was completely independent of the control room. It was performed in Maryland by ARD using the plant specific EPGs. The task specification is being conducted at the training center using NMP-2 operators. They are instructed to provide task needs and carefully directed to provide instrumentation and control requirements for the specific task under investigation. The same procedure was used for Nine Mile Point Unit #1.

Question 6

Appropriate equipment characteristics may not be included in the control room inventory.

Response

The program plan did not provide all equipment characteristics which will be provided. The following typical characteristics will be provided:

Instruments	Controls
Parameter Name	MODE
Units	S/R
Range	Pull to Lock
Divisions	Key
	Cover
	Status Lights
	Other Feedback

Question 7

The source of criteria to be used in determining the human factors suitability of equipment used during emergency operations was not provided.

Response

We will provide the needed characteristics to the current configuration. The mode, S/R, pull to lock, key, cover needs will determine the suitability of the type of control.

Question 8

Some areas of the control room survey may not be sufficiently complete.

Response

The Unit #2 Control Room survey will meet the requirements of NUREG-0700.

Question 9

Plant conventions, used as survey criteria, may not be consistent with accepted human factors criteria.

Response

A human factors design review manual will be developed to support the assessment and verification process during the DCRDR, as well as for future changes. Within the manual, plant conventions will be evaluated and integrated with human factors criteria.

Question 10

Some HEOs may be defined in terms of a particular enhancement solution rather than in terms of noncompliance with a guideline.

Response

The Nine Mile 2 survey will be a NUREG-0700 survey. Items will be defined in terms of nonconformances with a guideline.

Question 11

Complexity of the assessment process and subjectivity associated with some assessment techniques makes it difficult to evaluate the probable outcome.

Response

The apparent complexity results from addressing all of the potential factors in the assessment process. This removes a certain amount of "negative subjectivity" found in other programs' plans. At NMP-2, participants are "forced" to respond to individual factors in lieu of trying to integrate all of the factors in their head and then provide a response.

Question 12

There are inconsistencies in the logic for assigning categories and levels to HEOs during the assessment process.

For example:

A) Contrary to NMPC's statement, the combination of Category 1 with levels C and D does not appear legitimate, based on the definitions for the categories and levels.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
Niagara Mohawk Power Corporation	)	Docket No. 50-410
	)	
(Nine Mile Point Unit 2)	)	

AFFIDAVIT

C. V. Mangan, being duly sworn, states that he is Vice President of Niagara Mohawk Power Corporation; that he is authorized on the part of said Corporation to sign and file with the Nuclear Regulatory Commission the documents attached hereto; and that all such documents are true and correct to the best of his knowledge, information and belief.

C. V. Mangan

Subscribed and sworn to before me, a Notary Public in and for the State of New York and County of Onondaga, this 5th day of March, 1985.

Christine Austin
Notary Public in and for
Onondaga County, New York

My Commission expires:

CHRISTINE AUSTIN
Notary Public in the State of New York
Qualified in Onondaga Co. No. 4787687
My Commission Expires March 30, 1985

CHRISTINE AUSTIN
Notary Public in the State of New York
Qualified in Onondaga Co. No. 4707627
My Commission Expires March 30, 19__

Question 1

Qualifications of the human factors consultant were not provided.

Response

At the time of the Program Plan development, a Human Factors Engineering consultant was not chosen. Attachment "B" provides the appropriate qualifications.

Question 2

Technical task assignments by team member were not provided.

Response

Technical Task Assignments

Art Vierling	-	Review Team Leader
Don Taylor	-	Lead Human Factors Engineer Human Factors Specialist
Review Team Leader	-	Responsible for all tasks, coordination of efforts and providing support needs between ARD, NMPC, GE and Stone & Webster
Lead Human Factors Engineer	-	Responsible for conduct of all human factors data collection efforts ° Operator Survey ° Historical Review ° Checklist Survey ° Inventory ° Task Analysis ° Verification ° Validation
Human Factors Specialists	-	Responsible for particular data collection effort

Question 3

A plant orientation for team members unfamiliar with NMP-2 was not part of the orientation program.

Response

The Human Factors Consultant (ARD) performed the final DCRDR at Unit #1, obtaining familiarity with NMPC, as well as with operators who are now active with the Unit #2 effort. In addition, a Unit #2 kickoff meeting brought all affected parties together to discuss the plan. There will be an orientation program conducted prior to the assessment phase to familiarize all participants to the review effort, human factors criteria and assessment and verification procedure.

B) Category 3 is defined in terms of both probability of error and consequence -- the levels which can be associated with Category 3 are also defined in terms of consequence.

Response

A) We agree that the combination of Category 1 (HEOs associated with documented errors) with level C (HEOs which could result in unsafe operation) is not legitimate and should not be referenced in the plan. However, no change to the plan is required since by definition, no HEO will fall into this Category 1 level C combination.

There is an omission on page 5-11 of the Program Plan relative to the definition of level "D". It should read, "HEOs for which the related potential or documented error:..." This definition is consistent with figure 5-3 of the plan which for level "D" states "Resulted or could result in outage or significant loss." With this clarification, Category 1 and level "D" are a legitimate combination.

B) We agree that for Category 3 levels C and D "consequence" is addressed twice (once for the category and once for the level). Although this is somewhat inconsistent, it does not adversely affect the process outcome.

Question 13

The definition of HED is implicitly revised through use of the term HEO.

Response

We agree with this statement. However, using the term HEO has no adverse consequence to the plan.

Question 14

Choice of correction may be unduly biased toward enhancements.

Response

We do not understand the source of this concern. In our opinion, the most important factor is to resolve the problem in a complete and appropriate manner.

Question 15

Efforts described to verify that all HEDs are corrected and no new HEDs are introduced may not satisfy the DCRDR requirements.

Response

As discussed in our 1/30/85 telephone conversation with the NRC, we will perform a design verification, i.e., table top, mock-up, etc. for corrections which will be included in the final report. This design verification should not be confused with a final verification, which can only be performed after corrections have been implemented into the hardware, procedures, etc.

Question 16

There is no specific mechanism to ensure coordination with control room improvements from other programs.

Response

The SPDS, TSC and remote shutdown are incorporated into the DCRDR. Engineering Operating Procedures validation will be conducted in the same effort with the DCRDR validation. Training participation will be added to the assessment team.

Question 17

The potential need for revised operator training due to control room changes was not recognized.

Response

Training personnel will be added to the Review Team as well as the Management Team of the DCRDR.

Question 18

Compression of the DCRDR schedule into a seven month period is an ambitious undertaking.

Response

The revised schedule (Attachment A) addresses this concern. Included in this new schedule is time for the NRC audit and the design verification in the assessment phase.

Recommendations:

Question 1

Executive and Management Team inclusion in the orientation program

Response

The Executive and Management Teams will be included in the pre-assessment orientation.

Question 2

Inclusion of personnel responsible for other control room improvements (e.g., the SPDS) in the orientation program

Response

Appropriate personnel associated with the SPDS, TSC and remote shutdown will be included in the pre-assessment orientation.

Question 3

Use of a mock-up in the iterative process of selecting and verifying design improvements

Response

Use of mock-ups was identified in the plan.

Question 4

Ensuring sufficient resources to meet the compressed schedule

Response

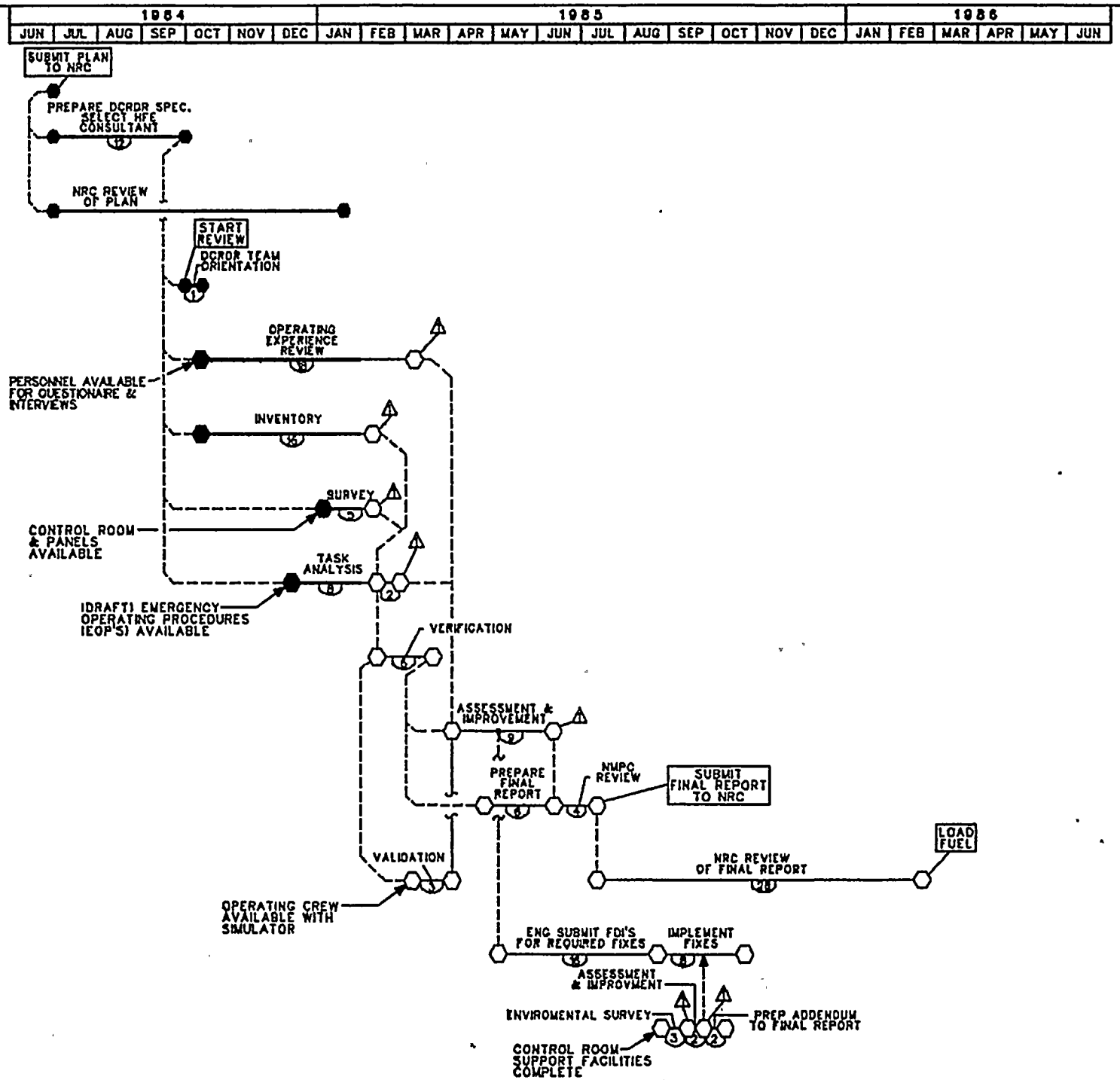
The revised schedule addresses this concern.

Question 5

Early identification of and decision making for HEDs for which correction may involve long lead times

Response

NMPC agrees.



LEGEND

⚠ HFE CONSULTANT SUBMIT TASK COMPLETION REPORT

(#) TIME INTERVALS IN WEEK (DATES TENTATIVE)

STATUS AS OF 2/1/85

FIGURE 1 - 1
ACTIVITY SCHEDULE
DETAILED CONTROL ROOM DESIGN REVIEW
NIAGARA MOHAWK POWER COORPORATION
NINE MILE POINT - UNIT 2

REVISIONS		
(3)	(2) JAN., 1985	(1) OCT., 1984

Attachment A

C.C. MODEL: NMZAVAS02

Human Factors Engineering

ARD Corporation will support NMPC in the area of human factors engineering and will ensure that human factors principles are not compromised during the DCRDR and provide assurance of the quality of results of each DCRDR conducted.

Lead Human Factors Specialist (LHFS)

Mr. Donald F. Taylor of ARD Corporation, the LHFS, will work closely with the Review Team Leader and other technical review leaders throughout each phase of the control room review and share with them the human factors technical leadership of the entire DCRDR project. The LHFS will coordinate all activities of the HFS(s) and verify that task performance quality is maintained at a level necessary for a valid and comprehensive review. In addition, it will be the responsibility of the LHFS to record dissenting opinions on methodology, technique, review findings, assessment and HED corrective actions that he has from the majority opinion of the DCRDR Review Team and report those opinions, in writing, to the Review Team Leader.

Mr. Taylor's qualifications for Lead Human Factors Specialist include:

- B.S. Industrial Engineering & Operations Research (I.E.O.R.), Virginia Polytechnic Institute and State University
- M.S. I.E.O.R. (Human Factors), Virginia Polytechnic Institute and State University
- Twelve years of experience in human factors engineering, five of which have been in nuclear control room review

Human Factors Specialists (HFS)

The HFS will work with the review team and will be involved directly in the operating history review, inventory, task analysis, control room survey, verification and validation processes. The HFS will provide support in the assessment and implementation phase and the writing of the final report.

Human Factors Specialists supporting the Nine Mile Point Unit 2 DCRDR area:

Richard L. Horst

- Ph.D. Experimental Psychology, Carnegie-Mellon University
- M.S. Experimental Psychology, Carnegie-Mellon University
- B.S. Biology-Psychology, Bucknell University
- Five years experience in human factors engineering, two of which have been in the nuclear power industry.

Robert C. Munson

- M.A. Experimental Psychology, Towson State University
- B.S. Psychology, University of Maryland
- Five years experience in human factors engineering, three of which have been in the nuclear power industry.

Cynthia F. Weiss

- M.S.E. Industrial Engineering, University of Michigan
- B.S. Industrial Engineering, University of Michigan
- Four years experience in human factors engineering, two of which have been in the nuclear power industry.

D. K. Barnes

- B.S. Nuclear Engineering, University of Missouri-Rolla, Rolla, Missouri

- One year experience in human factors engineering; has been in the nuclear power industry