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April 15, 1983
JPN-83-33

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Director of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Mr. Domenic B. Vassallo, Chief
Operating Reactors Branch No. 2
Division of Licensing

Subject: James A. FitzPatrick Nuclear Power Plant
Docket No. 50-333
Supplement No. 1 to NUREG-0737
Requirements for Emergency Response
Capability (Generic Letter No. 82-33)

- References: 1. NRC Generic Letter No. 82-33, D.G. Eisenhower
to All Licensees dated December 17, 1982.
2. PASNY letter, J.P. Bayne to D.B. Vassallo
dated April 12, 1983 (JPN-83-32).

Dear Sir:

Generic Letter No. 82-33 transmitted to the Authority Supplement No. 1 to NUREG-0737. The requirements and guidance contained in Supplement No. 1 replaced the corresponding requirements for five NUREG-0737 items. Generic Letter No. 82-33 requested, pursuant to 10 CFR 50.54 (f), that the Authority furnish a proposed schedule for completing each of the basic requirements for the items identified in Supplement No. 1 to NUREG-0737 not later than April 15, 1983. This generic letter also requested a description of our plans for phased implementation and integration of these emergency response activities. The two attachments to this letter are the Authority's response to your request.

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Add: W Paulson*

During the month of February 1983, the Commission conducted regional workshops to answer questions on these issues and on the implementation process. Several Authority staff members attended the first of these workshops in Arlington, Virginia. Distributed at that meeting was a sixty-one page handout which summarized the NRC's requirements for the April 15th response. Attachment I is the proposed schedule requested by Generic Letter No. 82-33 in a format similar to the workshop handout.

Attachment II "Supplement No. 1 to NUREG-0737 - Implementation and Integration Plan", is a description of our plans for the phased implementation and integration of the emergency response activities. This attachment also follows the format of the workshop handout.

As detailed in both of the Attachments, we have not been able to prepare a definitive schedule for each of the five Supplement No. 1 items. As a result, we cannot furnish all the dates requested. In most cases we have provided a date for the completion of the next phase of work. In some cases it is impossible to reliably specify even this date because of the lack of a vendor contract. In each case, our implementation and integration plan describes our current status and future plans.

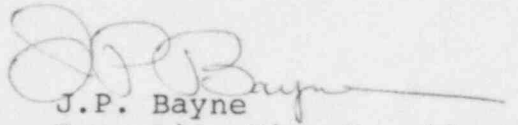
The dates included in Attachment I are formal Power Authority commitments; the supporting Implementation Plan (Attachment II) includes several schedules and time frame references which are provided only for information, are subject to change, and therefore are not formal Authority commitments.

Both attachments refer to BWROG efforts on Emergency Operating Procedures and Control Room Design Review. The Authority endorses both of these BWROG efforts as applicable to the FitzPatrick plant.

The Authority recently submitted Revision 6 of the FitzPatrick Integrated Schedule via Reference 2. The work described in the attached plan has not been fully incorporated into the Integrated Schedule. The schedule described in Attachment I together with the Integrated Schedule constitute our overall efforts to meet regulatory requirements in a timely manner without adversely affecting plant safety. We plan to issue an Integrated Schedule revision to fully incorporate these Supplement No. 1 items.

If you require additional information on either our schedules or implementation plan, please contact Mr. J.A. Gray, Jr. of my staff.

Very truly yours,


J.P. Bayne
Executive Vice President
Nuclear Generation

State of New York
County of Westchester

Subscribed and sworn to before

me this 15th day of April 1983


Linda Della Donna
Notary Public

LINDA DELLA DONNA
NOTARY PUBLIC, State of New York
No. 60-6669885
Qualified in Westchester County
Term Expires March 30, 1984

cc: Mr. J. Linville
Resident Inspector
U.S. Nuclear Regulatory Commission
P.O. Box 136
Lycoming, New York 13093

Supplement No. 1 to NUREG-0737

Proposed Basic Requirements Schedule

James A. FitzPatrick Nuclear Power Plant

This document describes a proposed schedule for each of the basic requirements of the items identified in Supplement No. 1 to NUREG-0737. (The format is similar to the agenda distributed at the NRC Region 1 workshop on Supplement No. 1 to NUREG-0737 held February 22, 1983 in Arlington, Virginia).

I.C.1 Guidance for the Evaluation and Development of Procedures for Transients and Accidents (Emergency Operating Procedures)

A. Current Status of Emergency Operating Procedures (EOPs) Upgrade Development

Refer to Section 2.1 of Attachment II for a description of the status of the FitzPatrick EOP upgrade program.

B. Submittal Date for (Generic) Technical Guidelines

The General Electric Topical Report NEDO-24934, "Emergency Procedure Guidelines, Revision 2", dated June 1982 and the erratta dated September 28, 1982 were submitted to the NRC by the BWR Owners Group on behalf of the Authority and the FitzPatrick plant. Via Generic Letter No. 83-05, dated February 8, 1983, the NRC issued their Safety Evaluation Report (SER) on these guidelines finding them to be suitable for implementation with minor changes. Therefore, this item is complete for the FitzPatrick plant.

C. Submittal date for Procedures Generation Package

A procedures generation package, including: plant-specific Technical Guidelines; plant-specific Writer's Guide; description of program for verification/validation; and, description of program for training on upgraded EOPs as part of integrated training plan, will be provided by June 30, 1983.

D. Date for Implementing EOPs

Upgraded EOPs, including classroom instruction and simulator training will be implemented no later than December 31, 1984.

I.D.1 Control Room Design Review (CRDR)

A. Current Status of CRDR

A description of the current status of the Detailed Control Room Design Review is included in Section 4.1 of Attachment II.

B. Date for Submittal of Program Plan

As detailed in Section 4 of Attachment II, the Authority has adopted the BWROG plan which was submitted in August, 1981. This plan covers the planning and review phases of the DCRDR. Formal development of a plan for the assessment, implementation and reporting phases will require approximately five months and is contingent upon receipt of the Commission's evaluation of the BWROG program.

The Authority will provide a date for the submittal of a DCRDR program plan for FitzPatrick one month after we receive approval of the BWROG plan.

C. Date for Submittal of Summary Report

A summary report of the CRDR (completed in April, 1981), is available now. This report does not include proposed control room changes to resolve identified HEDs. Completion of our program plan has been delayed pending receipt of the NRC approval of the BWROG CRDR program. When the Commission issues it's review of the BWROG CRDR Program Plan, a revised program plan will be prepared considering the NRC's review. This plan will include a schedule of additional survey or analysis work to be done. Following completion of these additional items, an assessment will be furnished to the NRC and will include justification for uncorrected or partially corrected human engineering deficiencies. This report will be available within six months of completion of any additional survey work.

I.D.2 Plant Safety Parameter Display Console

A. Current Status of SPDS Design

A description of the current status of the SPDS is included in Section 3.1 of Attachment II.

B. Date for Submittal of Safety Analysis

A safety analysis describing the basis for SPDS parameter selection and an SPDS implementation plan will be provided by December 1, 1984.

C. Date When SPDS will be Operable and Operators Trained

Because of the magnitude and duration of the SPDS/EPIC program, the Authority cannot confidently forecast the date when the SPDS/EPIC will be operable and operators trained.

The Authority will provide a date when the SPDS will be operable and operators trained as part of the SPDS Implementation Plan.

D. Indicate if Pre-Implementation Review is Desired

The Authority desires that the NRC conduct a pre-implementation review of the FitzPatrick SPDS program. As currently planned, this review would include an evaluation of the verification and validation program (how problems were identified, types of problems identified, problem resolution methods and use of human fact principles), and to verification and validation program.

Accordingly, we have tentatively scheduled the following dates for this review:

Completion of Verification and Validation
Program Plan - November 15, 1984.

Start of NRC review - December 1, 1984.

Completion of NRC review - February 1, 1985.

E. Integrated Implementation Schedule

A description of the SPDS Implementation Plan is including in Section 3.0 of Attachment II. For the reasons detailed there, a realistic schedule for the complete SPDS/EPIC program cannot be furnished at this time. The Authority will provide an integrated implementation schedule by December 1, 1984.

III.A.1.2 Upgrade Emergency Support Facilities including
Meteorological Data (II.A.2.2)

The Authority currently has an operational dose assessment system. This interim system was previously described to you in our letter of April 5, 1982 (J.P. Bayne to D.B. Vassallo; JPN-82-36). We plan to continue using this interim system until a new computer is installed and operational. The new computer will use the class A meteorological model described in NUREG-0654, Appendix 2. Meteorological conditions will be sensed via instrumentation on two meteorological towers and automatically transmitted to the new computer.

ATTACHMENT II TO JPN-83-33

SUPPLEMENT NO. 1 TO NUREG-0737

IMPLEMENTATION AND INTEGRATION PLAN

JAMES A. FITZPATRICK NUCLEAR POWER PLANT
POWER AUTHORITY OF THE STATE OF NEW YORK

DOCKET NO. 50-333

APRIL 15, 1983

GENERIC LETTER NO. 82-33
INTEGRATION PLAN - JAMES A. FITZPATRICK NUCLEAR POWER PLANT

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1.0 Introduction

The NRC issued Supplement No. 1 to NUREG-0737 via Generic Letter No. 82-33 on December 17, 1982 (Reference 21). This supplement provided addition clarification on five of the original NUREG-0737 items:

- I.C.1 - Guidance for the Evaluation and Development of Procedures for Transients and Accidents
- I.D.1 - Control Room Design Reviews
- I.D.2 - Plant Safety Parameter Display Console
- III.A.1.2 - Upgrade Emergency Support Facilities
- III.A.2.2 - Meteorological Data

The requirements and guidance contained in Supplement No. 1 replace the corresponding requirements in the original NUREG-0737. The supplement is a distillation of the basic requirements from the wide range of documents that the Commission has issued (principally NUREGs and Regulatory Guides).

Generic Letter No. 82-33 requested, that the Authority submit, not later than April 15, 1983, a description of our plans for the phased implementation and integration of the emergency response activities. It is the purpose of this document to provide a description of the Authority's implementation and integration plan for the James A. FitzPatrick Plant. This report differentiates between those portions or elements of the integration plan that are in progress or complete, and those which are planned for the future.

1.1 Scope of Integration Plan

This document is limited to describing how the five NUREG-0737 Supplement No. 1 items will be integrated to enhance the operator's ability to comprehend plant conditions and cope with emergencies.

These five areas will be combined to eliminate duplication of effort, use manpower to best advantage and balance fiscal responsibilities while assuring positive progress to the ultimate goal. Not specifically included in this plan are the scheduled dates associated with each of the steps described. While a schedule of this type will be established and maintained, this plan does not require that level of detail.

1.2 Integration Plan Format

An effective integrated implementation program requires a clear definition of each of the elements making up the plan and how these elements interact. In order to present this plan in a usable and logical format, the program has been divided into five sections; one section for each of the five NUREG-0737 Supplement No. 1 items. Each section details the elements of the specific item and how the elements interact. More importantly, each section discusses the interactions between the five items as they relate to an integrated plan.

The plan, as presented in this document, does not presume to describe every element or all possible interfaces. It is intended to highlight those essential elements and interfaces necessary for an effective integration program.

1.3 Industry Developments

There are many influences outside of the Authority and NRC which will affect this plan. These influences can have a significant impact on the quality and usefulness of the ultimate results. Industry groups, such as INPO, EPRI, the BWR Owners Group and standards organizations have been working for several years independently on many of the topics directly related to the Safety Parameter Display System, Emergency Operating Procedures, and human factors as it applies to nuclear power plants. With the impetus of NUREG-0737, and specifically Supplement No. 1, much of this work will result in state-of-the-art guidance during the coming months and years. This information benefits from extensive investigations performed by acknowledged experts and peer review. Much of this information will be specifically applicable to the FitzPatrick plant. The Authority considers this information an important part of our integration plan; its exclusion would limit the quality of the final product. Therefore, this integration plan includes provisions to incorporate the applicable results and guidance of these efforts, when we can foresee both the benefit and near future resolution. This plan attempts to minimize any resulting delays while assuring an effective product.

1.4 Implementation Priorities

The NRC, during a series of five regional meetings, distributed three diagrams illustrating the relative sequence of events for the SPDS, detailed control room design review and upgraded Emergency Operating Procedures. While these diagrams are useful to visualize how and when the NRC will conduct reviews of our progress, they do not reflect the Authority's integrated plan for the FitzPatrick plant. This document describes and justifies our alternate approach.

In general terms, the Authority finds these diagrams overly prescriptive because they do not consider outage scheduling, manpower requirements, the process of allocating funds, other related projects, and progress made in these specific five areas. The integration plant presented here does consider these areas to the extent that sufficient information is available to definitively address them.

The five areas addressed in Supplement No. 1 to NUREG-0737 are intimately interrelated. It is difficult to separate one issue from the other four. For example, the SPDS system is capable of displaying many of the variables required by Regulatory Guide 1.97, Revision 2. The SPDS system can also efficiently carry these signals to the EOF and TSC. Certain types of Human Engineering Deficiencies (HEDs) discovered during the Detailed Control Room Design Review could be corrected by an SPDS system if the HEDs are identified early. Emergency Operating Procedures must consider the availability (or unavailability) of SPDS.

Clearly, to maximize the benefits from these improvements they must be carefully and methodically combined, even if it requires a slightly longer development and implementation schedule. This is the overall philosophy of our implementation schedule. This approach also allows the Authority to take full advantage of our earlier efforts.

The Authority's FitzPatrick plant has established a history of considering three of these Supplement No. 1 items ahead of the SPDS program. As described in the current status sections, significant progress has been made in the areas of EOPs, Control Room Design Review and Emergency response facilities. For this reason, the SPDS program is not singled out as the primary motivating effort in this plan. (It should be noted that the issuance of Revision 3 to Regulatory Guide 1.97 and the uncertainty preceeding its issuance has caused substantial delays in our implementation plans.)

The SPDS/EPIC system we plan to install at FitzPatrick is a highly integrated computer system. While we intend to take full advantage of all available generic guidance (EPRI, INPO, NUTAC, BWROG etc), we must stress the magnitude of this project. As described in Section 3 of Attachment II, the SPDS/EPIC system is more than a free-standing data acquisition system and consequently requires more development time than a dedicated "SPDS-only" system.

Therefore, it is impractical and inefficient for the Authority to adopt an integration plan in which the SPDS effort motivates, or drives, other initiatives.

By taking advantage of previous efforts, specifically in the areas of EOPs and DCRDR, the Authority has prepared an integration plan which uses the combined SPDS/EPIC system as a means to draw together and optimize many of these requirements. In this plan we propose that the SPDS effort proceed along a path parallel with other Supplement No. 1 items, and be phased to permit these advance effort initiatives to be factored into the SPDS/EPIC.

2.0 Upgrade Emergency Operating Procedures

2.1 Current Status of Emergency Operating Procedures (EOPs) Upgrade Development

The Authority has participated in the development of upgraded EOPs through our participation in the BWR Owners Group. The General Electric Topical Report NEDO-24934, "Emergency Procedures Guidelines, Revision 2" dated June 1982 and the erratta dated September 28, 1982 was submitted to the NRC by the BWR Owners Group on behalf of the Authority and the FitzPatrick plant. Via Generic Letter No. 83-05, dated February 8, 1983, the NRC issued their Safety Evaluation Report (SER) on these guidelines finding them to be suitable for implementation with minor changes.

Since receiving approval of these Emergency Procedures Guidelines (EPGs), the Authority has been working to complete the calculations necessary to prepare the plant specific EOPs. At the same time, a draft EOPs Writer's Guide was started. The internal review and approval process for the EOP Writer's Guide is currently in progress with approval anticipated at the end of May 1983. Similarly, the balance of the Procedures Generation Package is also in preparation.

Figure 1, "EOP Development Schedule" shows our current schedule for the preparation and implementation of initial EOPs.

2.2 Maintenance of EOPs

The Authority's current plans and associated schedule adopt the recommendations of Generic Letter No. 83-05 for the implementation of EOPs, which suggests a two-step process. Step one will be the development and implementation of plant-specific procedures based on the Emergency Procedure Guidelines of NEDO-24934, Revision 2 with minor changes. The second step involves the preparation of supplements to the Guidelines to cover new equipment or knowledge, and to incorporate these supplements into plant procedures. This is essentially a maintenance function and therefore not described in this implementation plan.

3.0 Safety Parameter Display System (SPDS)

3.1 Current Status of SPDS/EPIC

In October of 1981, the Authority became aware of a group of three utilities forming under EPRI/NSAC leadership to cooperatively specify and purchase a SPDS. After attending a meeting of this group as an observer in December, the Authority officially committed to the NorthEast Utility Consortium's (NEUC) Charter and has remained an active participant since.

Based upon the guidance available in December of 1981, the group developed a general approach towards an SPDS consisting of a real-time data acquisition computer system and a set of color-CRT displays. In the fall of 1981, the NEUC prepared a list of companies having experience or interest in developing this type of SPDS. Each of these companies was sent a prequalification questionnaire to ascertain their general experience, ability and interest. About 20 companies responded to the questionnaire and made presentations to NEUC. After assessing these presentations, the list was cut to ten.

At this juncture, the NEUC proceeded along two parallel paths;

- o A detailed purchase specification was prepared, and;
- o The ten remaining companies were sent a fifteen page audit form. A NEUC audit team consisting of six to eight members spent two full days at the home office of each potential vendor auditing their technical capabilities. Special emphasis was placed on the vendors ability in the area of computer software.

After evaluating the audit finding, five vendors were selected to bid. A bidders conference was held in August of 1982. Final proposals were received in September. Presentations from each of the five bidders were made during November and December and a tentative successful bidder was selected late in January 1983.

The Authority is currently in the process of reevaluating these bids. Based on the current status of our reevaluation, we tentatively plan to reject the bids recieved and request new bids from prospective vendors.

In addition to the Authority's participation in NEUC, we have participated in nuclear-industry groups relating to SPDS. The Authority plans to make use of many of these efforts.

The fifteen month NEUC effort resulted in a totally integrated systems concept that combines SPDS, plant process computer functions (including NSSS and BOP), and supplementary operator aids, in a single system known collectively as the Emergency and Plant Information Computer (EPIC).

The NEUC scope includes the design, hardware and software specifications, integration, human factors engineering, and a verification and validation program for the EPIC system.

By integrating the process computer and SPDS, we will be able to provide a more useful and efficient system. Because the functions of the process computer are used daily, plant operators and staff will become very familiar with the SPDS/EPIC system and its capabilities.

Outside the scope of the NEUC effort are those items that are specific to the FitzPatrick plant.

Sections 3.3-3.6 describe the Authority's tentative plans for integrating the NEUC effort with the other four Supplement No. 1 items.

3.3 SPDS/Regulatory Guide 1.97 Interface

Because Regulatory Guide 1.97, Revision 2 specifically permits the display of certain variables or parameters by CRT, the Authority is exploring the possibility of including these variables as inputs to the SPDS/EPIC system. A study (described in Section 5.1) will provide two important documents to be incorporated into the SPDS/EPIC program: (1) a listing of those Regulatory Guide 1.97 variables to be provided (including deviations from Regulatory Guide 1.97 and justification or alternatives) and, (2) a summary information table (describing the environmental qualification, seismic qualification, quality assurance level, redundancy, range, power supply, and display location.) This information, along with other work required for completion of the SPDS, will be factored into the SPDS/EPIC design effort.

3.4 SPDS/Control Room Design Review-Interface

The preliminary results of the Detailed Control Room Design Review will be used during the SPDS/EPIC graphic display design in an attempt to resolve deficiencies identified in the DCRDR. The FitzPatrick control room will provide labeling and color conventions for incorporation in the SPDS/EPIC program.

3.5 SPDS/Emergency Response Facilities Interface

3.5.1 Technical Support Center (TSC)

Current Authority plans call for the installation of an SPDS/EPIC display console in the FitzPatrick TSC to provide access to essential Regulatory Guide 1.97 variables. (Meteorological variables will be available via a new computer system - refer to Section 6.4.8 for details.) The TSC plan will provide space, electrical power, telephone or communication connection(s), HVAC, furniture etc. as dictated by SPDS/EPIC requirements.

3.5.2 SPDS/Operational Support Center (OSC)

The Authority does not plan to provide an SPDS/EPIC display console in the OSC since it's primary function is to provide an assembly area for operations support personnel. Therefore, there is no interaction or interface between these tasks.

3.5.3 SPDS/Emergency Operations Facility (EOF)

The Authority does not plan to provide an SPDS/EPIC display console in the existing EOF.

3.6 SPDS/Emergency Operating Procedures (EOPs) Interface

Initial EOPs will be developed without considering the availability of an SPDS/EPIC system. These initial EOPs will be considered in the design of SPDS display formats and to determine what variables or parameters must be provided. SPDS displays will be reviewed for consistency with initial EOPs.

In preparation for actual operator training, the mature SPDS/EPIC displays and SPDS/EPIC users manual will be reviewed, and appropriate EOP changes made.

4.0 Detailed Control Room Design Review

4.1 Current Status

4.1.1 Background

Three years ago, the Authority voluntarily initiated action to meet the intent of Item I.D.1 "CRDR" by supporting the formation and work of

the BWR Owner's Group (BWROG) Control Room Improvements Committee. The committee completed development of a CRDR program by October 1980. The FitzPatrick survey was completed two years ago, in April 1981, using the Owner's Group program. The program design was completed by October 1980, prior to the publication of NUREG-0737 using available guidance documents such as: NUREG/CR-1278, NUREG/CR-1270, NUREG/CR-1580 and EPRI NP-1118.

There was no indication at that time that the NRC would publish additional and more specific guidelines such as NUREG-0700. Subsequent actions by the NRC caused us to place the program "on hold" (after the survey was complete) until requirements were finalized by Generic Letter No. 82-33.

The Authority has based its DCRDR work to date on the BWROG "Control Room Survey Program" as submitted to the NRC Human Factors Engineering Branch on August 25, 1981 (letter BWROG-8151 from W. Armstrong, Chairman of the BWROG Control Room Improvements Committee). Further work in meeting the intent of Item I.D.1 of NUREG-0660 will also be using portions of the programs developed by the INPO Nuclear Task Action Committee for Control Design Review. These programs were cooperatively developed by the representatives of more than 32 nuclear utilities.

We believe that these programs meet the intent of Item I.D.1 and provide acceptable alternatives to the guidance provided in NUREG-0700. Because the planning and review phases, as identified in NUREG-0700, were completed prior to its publication, the Authority maintains that this was a prompt and acceptable "good faith effort" and does not plan to repeat these portions of the program.

Despite repeated off-the-record assurances that the program was generally acceptable, the BWROG has yet to receive the formal results of the NRC review of this program. Most recently, Mr. H. Thompson, of the NRC, at the Regional Meeting in Washington, D.C. on February 22, 1983, in response to our question, publicly gave assurance that the NRC review of this program would be completed within two weeks. The Chairman of the BWROG has since requested that the NRC formally respond to this program (letter BWROG-8304 to Mr. D. Eisenhut dated March 4, 1983).

Until the NRC completes their review of the BWROG program plan, we find it difficult to proceed further with our DCRDR program.

4.1.2

Current Status of DCRDR Review Phase

The following paragraphs describe how the Authority plans to supplement it's prior DCRDR review phase efforts to consider the guidance of Supplement No. 1 to NUREG-0737. These plans take full credit for our efforts to date. The numbers in parentheses below are the applicable sections of Generic Letter No. 82-33.

1. Review Team (5.1.b.(i))

The Authority used the BWROG team to complete our survey in April 1981. This team met the requirements of this section of Generic Letter No. 82-33. To the extent that additional work maybe required, the Authority will establish a new team using plant staff and contracted human engineering consultants.

2. Function and Task Analysis (5-1.b (ii))

This analysis was completed, and incorporated in, the BWROG's Emergency Procedure Guidelines which were approved by the NRC on February 8, 1983 (Generic Letter No. 83-05). Specific task analysis and walk-throughs of three emergency operating procedures were completed by the BWROG Survey Team in April 1981 using current Emergency Procedure Guidelines.

We plan to document a walk-through of new Emergency Operating Procedures to insure that the instruments and controls required by these new procedures are available to the operator.

3. Control Room Inventory (5.1.b (iii))

It is the position of the BWROG, INPO NUTAC on CRDR and NUTAC on ERC, and their human factors consultants, that creating a list of more than one thousand instruments and controls in a typical control room serves no useful purpose for a human factor's evaluation and cannot be justified for that

purpose. Although many of the NTOLs or plants under construction have such a list, it was determined that creation of such a listing could not be justified for the DCRDR program.

The Authority agrees with this position which was discussed in detail with the NRC Human Factors Engineering Branch on January 28, 1983. The FitzPatrick plant inventory consists of the actual control surfaces in the control room. The BWROG survey team carefully examined every control board and its instruments in April 1981 and evaluated them against the criteria submitted to the NRC in August 1981. The Function and Task analysis, completed EOP walk-throughs and future EOP walk-throughs will identify any missing or poorly located instruments or controls.

EOPs establish instrument and control requirements; the actual control room is the inventory; and the EOP walk-throughs perform the comparison to find missing displays or controls.

4. Control Room Survey (5.1.b.(iv))

This survey was completed in April 1981 by the BWROG survey team. A supplemental check will be performed following receipt of USNRC response to the BWROG program.

5. Assessment (5.1.c)

A preliminary assessment of HEDs revealed during the FitzPatrick survey was performed by the survey team. This assessment used the evaluation methods described in the BWROG program submitted to the NRC in August 1981. Following USNRC response to the BWROG program, the Authority plans to further review these HEDs and develop solutions to significant HEDs.

6. Verification (5.1.d)

A consultant trained in human factors engineering will review proposed solutions to HEDs. Final engineering designs will also be reviewed in accordance with existing modification procedures.

5.0 REGULATORY GUIDE 1.97, REVISION 2

5.1 Current Status

The Authority's plans for implementing the guidance of Revision 2 of Regulatory Guide 1.97 calls for the initiation of a detailed design study in the near future. This study will have three primary goals:

- o A plant signal survey;
- o Preparation of a detailed report; and
- o An engineering design package.

5.1.1 Signal Survey

This portion of the Regulatory Guide 1.97 related work will catalog all of the existing variable signals in the FitzPatrick plant. The end result of this survey will be a list of all existing signals along with detailed information about each signal (such as type of signal, range, transmitter location, power source, environmental qualification, seismic qualification and redundancy.)

Because a similar list must be prepared as part of the SPDS/EPIC effort and to support the replacement of the existing plant process computer, that portion of the signal survey dealing with process computer signals will be done as part of the initial EPIC/SPDS work. These efforts will be closely coordinated so that the survey will be efficiently completed.

5.1.2 Regulatory Guide 1.97 Implementation Report

This portion of the program involves the preparation of a report describing how the guidance of Regulatory Guide 1.97 (Revision 2) will be implemented for the FitzPatrick plant. The report will explicitly call out any deviations from the guide's recommendations as well as justifying any alternate approaches or deviations. Included as part of this report will be a table of those variables or parameters that will be available in the control room. The report will provide all the information required by the Regulatory Guide in an appropriate format. This information will be submitted to the NRC in accordance with NUREG-0737 Supplement No. 1 and the regional meeting handouts.

5.1.3 Detailed Engineering/Installation Package

Thirdly, this study will prepare a detailed engineering design package suitable for installation.

5.2 Regulatory Guide 1.97/SPDS Interface

The relationship between the SPDS and Regulatory Guide 1.97 instrumentation is an intimate one. For some cases, the two requirements are indistinguishable. This close relationship requires that both programs be well coordinated.

As described in Section 5.1.1, both of these items require a knowledge of those signals already available within the plant; a signal survey.

In parallel with the signal survey, the Authority will be evaluating the guidance of Regulatory Guide, and comparing it against the specific needs of the FitzPatrick plant and other generic documents (such as the BWROG position on Regulatory Guide 1.97, INPO, and EPRI guidance). Initial EOPs will provide a checklist against which missing instruments can be identified.

From this preliminary work, the implementation report can be initiated.

A list of that instrumentation to be provided in the control room to meet the intent of Regulatory Guide 1.97, Revision 2 will be developed at this stage. Detailed justification for deviations from the guidance of Regulatory Guide 1.97 will also be developed at this point. A decision will be made after this list is completed as to which signals will be made available via the SPDS/EPIC systems.

From this point, detailed design efforts can proceed on each of these three programs.

5.3. Regulatory Guide 1.97/Control Room Design Review Interface

As a result of the Regulatory Guide 1.97 program, new display instruments may have to be added to existing control room panels. The type of display instrument (dial, strip chart, etc.), labeling conventions, coloring and their location within the control room will be evaluated to preclude adverse will impact on the control room.

At the point in the Regulatory Guide 1.97 program when a decision has been made as to which new instruments will be required, a detailed review similar to that conducted during the DCRDR will be performed. This review will assure that an optimal location is chosen, that it conforms to applicable human factors principles and that it will not degrade or contradict the results of the DCRDR.

5.4. Regulatory Guide 1.97/Emergency Response Facilities Interface

The Authority does not currently plan to install SPDS display consoles in either the OSC or EOF. Therefore, there is no direct interface between the Regulatory Guide 1.97 and Emergency Response Facilities.

5.5. Regulatory Guide 1.97/Emergency Operating Procedures Interface.

The Regulatory Guide 1.97 plan will not provide any information to the task of EOP development and/or maintenance. Rather, initial EOPs will be reviewed to assure that all variables or parameters referred to in the EOPs are available to the operator, either via panel-mounted instrument or SPDS/EPIC.

6.0 EMERGENCY RESPONSE FACILITIES

Table 1 depicts the relationship between the issues addressed in this Section and the ERF requirements of NUREG-0737, Supplement 1.

Table 1. Emergency Response Facility Matrix NUREG-0737, Supplement 1 requirements. (Matrix addresses Section 6.1, 6.2, and 6.3)

6.1 Technical Support Center

6.1.1 General Description

The TSC will be staffed by designated technical, engineering and management personnel when activated. During periods of activation, the TSC will provide management and technical support to the plant operations staff, and to relieve the operations staff of emergency duties not directly related to reactor system manipulations. The TSC performs EOF functions for Alert and events of higher emergency classification until the EOF is functional.

6.1.2 Location

The TSC is located within the FitzPatrick site protected area with easy access to the Control Room and OSC.

The TSC is located in the FitzPatrick Main Administration Building. Approximately 1,400 square feet are available for use as the TSC staging area. Adjacent office space adds approximately an additional 1,000 square feet.

6.1.3 Space

The TSC has sufficient room to accommodate five NRC personnel, associated equipment and documents. The TSC is divided into several administrative areas, one of which is assigned to NRC personnel.

6.1.4 Structural

The TSC has been constructed in accordance with the Uniform Building Code.

6.1.5 Environmental Control

The TSC is equipped with a controlled environment to assure appropriate room air temperature, humidity and cleanliness for personnel and equipment.

6.1.6 Radiological Monitoring

The TSC will be monitored to assure that persons working in the TSC will not receive in excess of five rem whole body to any part of the body for the duration of the accident. A procedure exists

that defines the means for controlling radiological exposures to emergency workers. The exposure guidelines are consistent with EPA emergency worker and Lifesaving Activity Protective Action Guides.

6.1.7 Communications

The TSC has reliable voice and data communications with the control room, OSC, and the EOF. Redundant telephone connections are provided for these locations. Communications are also provided to NRC operations center, and state and local operations centers.

6.1.8 Site Status Data

The TSC is capable of monitoring some parameters listed in Table 1 of Regulatory Guide 1.97 (Rev. 2) through the use of a plant process computer display terminal.

Meteorological variables as specified in Regulatory Guide 1.97 are available in the TSC via digital signal pathway, an analog signal pathway or by telephone communications. The TSC can also monitor National Weather Service radio transmission.

Current Authority plans call for the installation of an SPDS/EPIC display console in the TSC to provide further access to essential Regulatory Guide 1.97 variables.

6.1.9 Records

The TSC has essential plant records available for the evaluation of the plant under accident conditions. Drawings, diagrams and procedures needed for TSC functions will be available.

6.1.10 Staffing

The TSC will be staffed by Authority management, technical and engineering personnel. The TSC will be fully operational approximately one hour after initial callouts.

6.1.11 Human Factors

The TSC will be reviewed to assure that good human factors principles are considered.

6.2 Operational Support Center

6.2.1 General Description

The FitzPatrick OSC is an onsite area separate from the control room where designated operations support personnel assemble. A predesignated Authority official is responsible for coordinating and assigning tasks from control room, TSC and EOF personnel.

6.2.2 Location

The OSC is located on the FitzPatrick site and serves as an assembly point. The OSC is located in the maintenance shop area, adjacent hallway and radiation protection offices. Greater than 5,000 square feet are available within these areas for OSC functions.

Two separate areas exist within the OSC where personnel assemble to complete their tasks. An OSC coordinator coordinates activities in the OSC.

6.2.3 Communications

The OSC is equipped with reliable voice communications with the control room, TSC, and the EOF through the use of the plant telephone system. A dedicated telephone is provided between the TSC and OSC.

6.2.4 Staffing

The OSC will be staffed by Authority technical and engineering personnel. The OSC will be fully functional approximately one hour after initial callouts.

6.3 Emergency Operations Facility (Existing)

6.3.1 General Description

The Authority currently has a functional EOF. The EOF is controlled and operated by the Power Authority of the State of New York and Niagara Mohawk Power Corporation.

6.3.2 Location

The EOF is located at the Niagara Mohawk Energy Information Center (EIC); outside of the FitzPatrick security fence and within five minutes ground travel time from the TSC.

6.3.3 Space

There is adequate space (13,000 sq. ft.) for all responding agencies.

6.3.4 Structure

The structure was built in accordance with the Uniform Building Codes which existed at the time of construction.

6.3.5 Environmental Control

An HVAC system is provided to control room air temperature, humidity and cleanliness. The system will maintain an environment suitable for both personnel and equipment. The HVAC system does not include HEPA filters. The system is capable of operating in a recirculation mode thereby limiting outside air intake. The Power Authority has no immediate plans to install a HEPA filtration system in the existing EOF. (Refer to Section 6.4 for a description of a new EOF).

Several of the walls are glass which provide a protection factor less than five.

6.3.6 Radiological Monitors

Portable radiation monitors are available for use in the EOF.

6.3.7 Communications

The EOF is equipped with commercial telephone lines for both onsite and offsite communication. In addition, there are dedicated telephone lines to: Authority headquarters office; NRC; FitzPatrick Control Room; Radiological Emergency Communications System (RECS); Technical Support Center (RECS); County Emergency Operations Center (RECS); County Warning Points (RECS); State Warning Points (RECS); New York State of Disaster Preparedness (RECS); New York State Department of Health (RECS); Nine Mile Point Nuclear Power Plant, Control Room (RECS); and the Nine Mile Point Nuclear Plant Technical Support Center (RECS)

6.3.8 Site Status Data

When the new computer system is complete it will supply reliable collection, storage, analysis, display and communication of information on containment conditions, radiological releases and meteorology sufficient to determine site and offsite status, changes in status, and forecast status. The appropriate variables from table I of Regulatory Guide 1.97 (Rev. 2) and the meteorological variables in Regulatory Guide 1.97 (Rev. 2) for site vicinity and regional data from the National Weather Service will be available in the EOF.

6.3.9 Records

Stored in the EOF are plant records (drawings, schematic diagrams, etc.) procedures and emergency plans needed to perform EOF functions.

6.3.10 Staffing

The EOF will be staffed by Authority management, technical and engineering personnel. The EOF will be fully functional approximately one hour after initial callouts.

6.3.11 Security

Security will be provided by the FitzPatrick security staff or contracted security staff.

6.3.12 Human Factors Engineering

A human factors review of the existing EOF has not been performed.

6.4 Emergency Operations Facility (Future)

After careful analysis of the deficiencies and the requirement that an AEOF is necessary due to the 10 mile requirement in Supplement 1 to NUREG-0737, the Power Authority is investigating the feasibility of building a new EOF.

A Schedule of Services for the proposed EOF has been completed and submitted to the Power Authority's Contract Division to be issued for bids on the Design Specifications.

The plan described in this section would bring the new EOF operational in 22 months. Figure 2 graphically depicts a preliminary schedule for this new EOF facility.

6.4.1 General Description

The new EOF will consider the guidance of NUREG-0654, -0696, -0737, -0814, and Supplement No. 1 to NUREG-0737. The design process should be complete in four months. The contract to build will take an additional three months to five months.

6.4.2 Location

A site will be selected in accordance with Option 2 of Supplement 1 to NUREG-0737. Approximately six months will be required to lease or purchase the land and is expected to occur during the winter months of 1983-84 when construction would be delayed because of weather. Construction is expected to begin in early spring and take approximately seven months.

6.4.3 Space

There will be space for 60 people (approximately 75 sq. ft./person) including space for 10 NRC representatives. Additional space for State and local government representatives will also be provided.

6.4.4 Structural

The structure will conform to existing local Building Codes, Seismic Criteria for Standard Building Codes, ANSI A58.I Code, and National Fire Protection Agency Standards.

6.4.5 Environmental Control

An HVAC system will provide room air temperature, humidity and cleanliness controls appropriate for personnel, computer display terminals and other equipment.

6.4.6 Radiological Monitoring

Portable radiation monitors will be available for use in the EOF.

6.4.7 Communications

Dedicated phone lines and commercial telephone lines will be applied for approximately five months prior to the beginning of construction due to the difficulty in obtaining equipment from

the local telephone company. Telephone installation should be complete one month after construction is complete. This telephone system will include commercial telephone lines for the EOF staff, outside agency staff, data systems and commercial telecopiers, as well as dedicated lines to the TSC, Control Room, OSC, Radiation Protection, Authority headquarters office, New York State Radiological Emergency Communications System, NRC Health Physics Network, and NRC Emergency Notification System Line. Telephone lines outside the local central office will be available.

At the same time the telephones are being applied for, the radio license application will be processed. This process is expected to take twelve months. Radios will be ordered after construction begins and is expected to take six months. The radios will be for communications between Oswego County OEP, Sheriff's Department, EOF to FitzPatrick and the EOF to the Radiation Monitoring Teams. Office equipment will be ordered and is expected to arrive within one month of completion of the EOF.

Procedures for the operation of the EOF will be developed once a contract is let for bid. Procedures will be completed three months after construction is complete. Training will begin after procedures are complete and should take approximately five months.

6.4.8

Site Status Data

A computer system has been developed for acquisition, display and evaluation of radiological and meteorological data and containment conditions necessary to determine protective measures. This system will be used to evaluate the magnitude and effects of actual or potential radioactive releases from the plant and to determine dose projections. This new computer system should be installed and operational by April of 1984.

When construction of the new EOF is complete, a computer terminal will be installed in the EOF to display this information. The information will be sufficient to determine site and regional status, and changes in status, forecast status. The information provided will support the actions described in Regulatory Guide 1.23 and Supplement No. 1 to NUREG-0737.

6.4.9 Records

Specified plant documents, procedures, emergency plans and environmental information will be available in the EOF.

6.4.10 Staffing

The EOF will be staffed by Authority management, technical and engineering personnel. The EOF will functional approximately one hour initial callouts.

6.4.11 Industrial Security

Security will be provided by FitzPatrick security staff or contracted security staff.

6.4.12 Human Factors Engineering

The final EOF design will be reviewed to insure that human factors are taken into consideration.

VII. References

1. NUREG-0696, "Functional Criteria for Emergency Response Facilities"
2. NUREG-0700, "Guidelines for Control Room Design Review"
3. NUREG-0799, "Draft Criteria for Preparation of Emergency Operating Procedures" (Superceded by NUREG-0899)
4. NUREG-0801, "Evaluation Criteria for Detailed Control Room Design Reviews"
5. NUREG-0814, "Methodology for Evaluation of Emergency Response Facilities"
6. NUREG-0818, "Emergency Action Levels for Light Water Reactors"
7. NUREG-0835, "Human Factors Acceptance Criteria for SPDS"
8. NUREG-0899, "Guidelines for the Preparation of Emergency Operating Procedures: Resolution of Comments on NUREG-0799." (Supercedes NUREG-0799)
9. Regulatory Guide 1.23, "Meteorological Measurement Program for Nuclear Power Plants, " Revision 1

10. Regulatory Guide 1.97, "Instrumentation for Light-Water Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident," Revision 2
11. Regulatory Guide 1.101, "Emergency Planning for Nuclear Power Plants," Revision 2
12. Regulatory Guide 1.47, "Bypassed and Inoperable Status Indication for Nuclear Power Plant Safety Systems"
13. 10CFR50 Appendix E, "Emergency Preparedness Planning and Preparation for Production and Utilization Facilities"
14. NUREG-0660, "NRC Action Plan Developed as a Result of the TMI-2 Accident"
15. NUREG-0737, "Clarification of TMI Action Plan Requirements"
16. NUREG-0585, "TMI-2 Lessons Learned Task Force Final Report"
17. NUREG-0600, "Investigation Into the March 28, 1979 TMI Accident by Office of Inspection and Enforcement"
18. 10CFR50.47, "Emergency Plans"
19. 10CFR50.54, "Conditions of Licenses"
20. NUREG-0654, "Radiological Emergency Response Plans"
21. NRC December 17, 1982 Generic Letter No. 82-33 to all licensees of operating reactors; includes Supplement 1 to NUREG-0737
22. NRC February 8, 1983 Generic Letter No. 83-05 to all boiling water reactor licensees of operating reactors regarding safety evaluations of NEDO-24934, Revision 2
23. General Electric NEDO-24934, "Emergency Procedure Guidelines, Revision 2", June 1982
24. Erratta for NEDO-24934, Revision 2 dated September 28, 1982
25. NSAC/21. "Fundamental Safety Parameter Set for Boiling Water Reactors"; December 1980

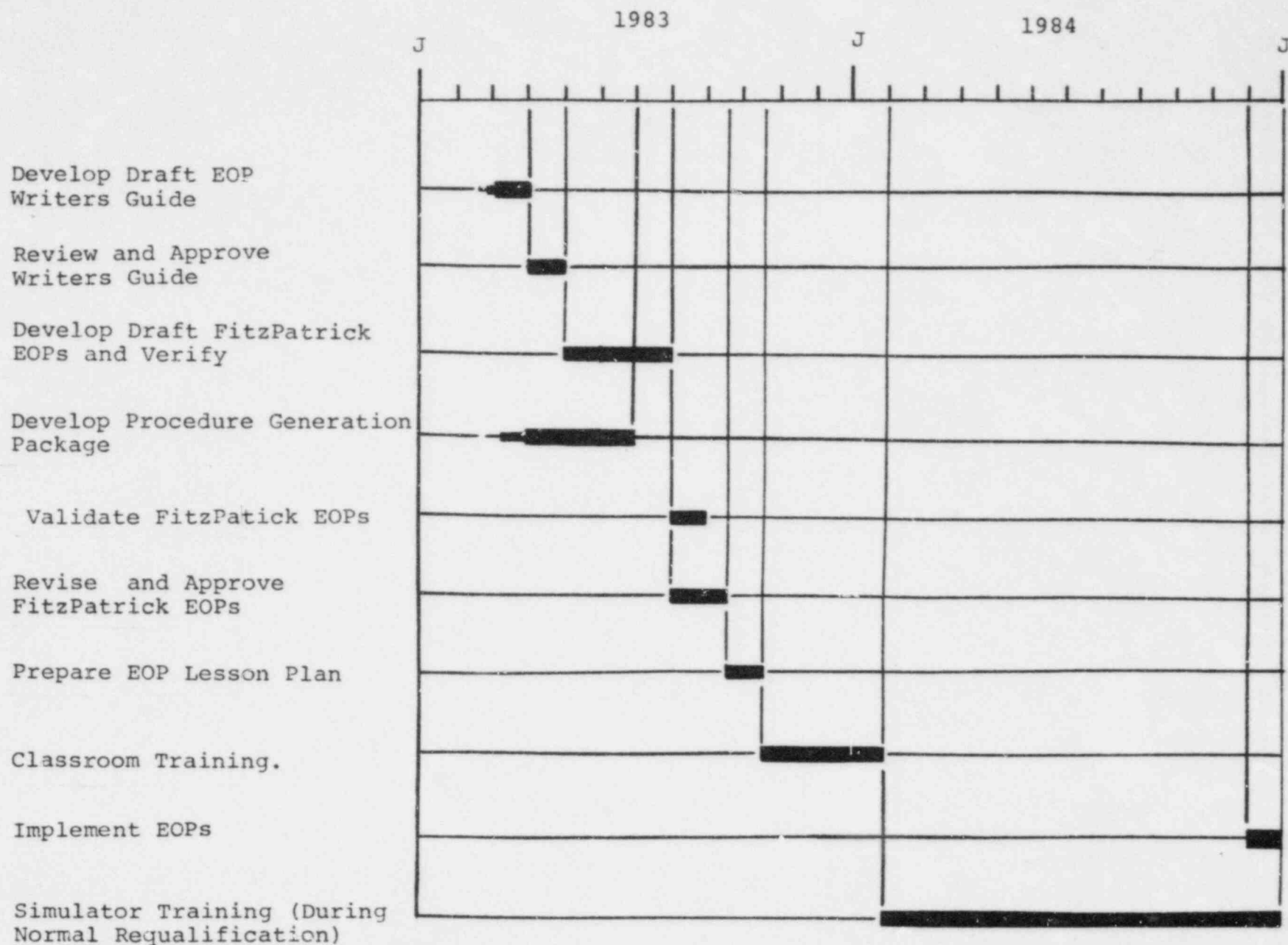


Figure 1. Emergency Operating Procedures Development Schedule (Preliminary)

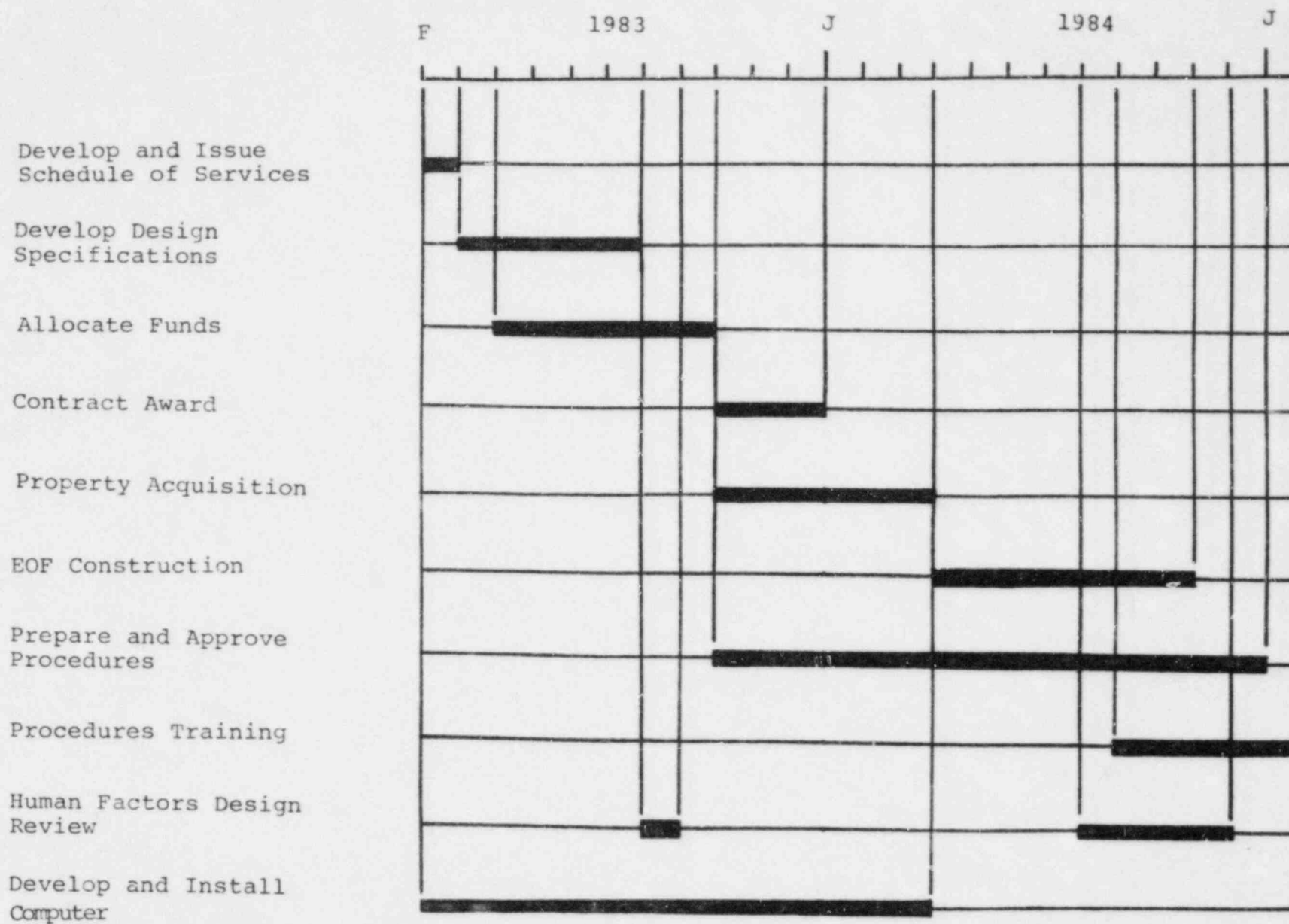


Figure 2. New FitzPatrick Emergency Operations Facility Schedule (Preliminary)