



PUBLIC SERVICE COMPANY OF COLORADO

P. O. BOX 840 · DENVER, COLORADO 80201

OSCAR R. LEE
VICE PRESIDENT

April 14, 1983
Fort St. Vrain
Unit No. 1
P-83147

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

50-267

SUBJECT: U.S. NRC Generic Letter 82-33
NUREG-07307 Supplement 1
Emergency Response Capabilities

Dear Mr. Denton:

On January 3, 1983 Public Service Company of Colorado (PSC) received NRC Generic Letter 82-33, Supplement 1 to NUREG 0737, "Requirements for Emergency Response Capability." PSC is a participating member of the Nuclear Utility Task Action Committee (NUTAC) on Emergency Response Capabilities (ERC's), which represents over forty utilities and is supported by INPO. This NUTAC is developing guidance for an integrated approach to meeting the requirements of Generic Letter 82-33. This guidance is being used to meet the specific application PSC is presenting in this letter.

GOOD FAITH EFFORTS

PSC has been responsive to the NRC's POST TMI guidance on ERC's beginning with NUREG 0578 in 1979. In some cases PSC has purchased and installed equipment and systems for which NRC guidance was either preliminary or incomplete. As a result, there are some differences between our systems and the final guidance issued by the NRC. We rely on the Staff's commitment in Generic Letter 82-33 to make allowances for work done in a good faith effort to meet requirements as they were understood.

A003

ADD:
W. Paulson
R.A. Clark
C. Trammell

8304210428 830414
PDR ADOCK 05000267
F PDR

HTGR TECHNOLOGY

Having the only High Temperature Gas-Cooled Reactor (HTGR) in the country has compounded PSC's problems concerning ERC's. PSC is continually placed in the position of interpreting requirements issued on the basis of LWR Technology and trying to apply them to the Fort St. Vrain (FSV) HTGR Technology. Some of the requirements of Generic Letter 82-33 provide the same problem. These problem areas will be discussed in the following sections as appropriate.

CURRENT STATUS:

The following paragraphs describe the current status of the major items of Generic Letter 82-33. For convenience, the items are addressed in order of their appearance in the Generic Letter.

1.) SPDS

In early 1981 PSC proceeded (in good faith under the guidance of NUREG 0696) to develop, in house, a SPDS design applicable to the FSV HTGR. The following is a chronological summary of various events relevant to the current status of PSC's SPDS design:

- ° In April 1981 the NRC contracted Oak Ridge National Laboratories to review FSV NUREG 0737 applicability to FSV. One of the areas to be reviewed was the SPDS.
- ° On June 30, 1981 (P-81178 Brey to Eisenhut) PSC submitted a conceptual design for the FSV ERF's in response to NUREG 0696.
- ° In August 1981 PSC and ORNL met several times to discuss PSC's approach to the SPDS.
- ° On September 30, 1981 ORNL issued their report on the applicability of NUREG 0737 to FSV, including the SPDS.
- ° On October 22, 1981 PSC formally commented on this report (P-81263 Warembourg to Ball).
- ° On December 3, 1981 PSC, NRC and ORNL met to resolve the final issues concerning ORNL's NUREG 0737 review.
- ° March 11, 1982. NRC Issued Secy 82-111.
- ° September 20, 1982. PSC became a participating member of SPDS NUTAC.
- ° On January 3, 1983 PSC received Generic Letter 82-33.

In light of all of the above the SPDS has a status as follows:

- a) The guidance provided by NUREG 0696 was significantly changed by Generic Letter 82-33. The commitments previously made by PSC in response to NUREG 0696 (letter dated June 30, 1981, Brey to Eisenhut, P-81178) do not entirely reflect the Requirements of Generic Letter 82-33.
- b) Hardware orders have been placed for all SPDS equipment except 1 CRT monitor.
- c) Software design is in progress.
- d) See plant specific SPDS Plan later in this letter for further information.

2.) CRDR

PSC is a participating member of the NUTAC on control room design reviews (CRDR). This NUTAC is developing guidance for the performance of a control room design review. PSC is currently utilizing this draft guidance to prepare a CRDR program plan.

3.) ACCIDENT MONITORING INSTRUMENTATION (RG 1.97)

RG 1.97 provides an appropriate example of the problems PSC has in applying LWR guidance documents to the FSV HTGR. This Regulatory Guide provides a multitude of guidance to PWR's and BWR's but virtually none to an HTGR. PSC is currently developing a program plan to deal with this item, the details of which are discussed later in this letter.

4.) EMERGENCY OPERATING PROCEDURES

Based on the guidance of Item 1.C.1 of the original issue of NUREG 0737, PSC embarked on a program to upgrade the Emergency Procedures (EP's) for FSV (EOP in NRC terms). The development of these procedures was reviewed in detail by ORNL for the NRC. The results of the preliminary review are contained in a letter dated 9/30/81 from S.J. Ball (ORNL) to D.G. Eisenhut (NRC). The following is excerpted from ORNL summary of conclusions and recommendations for item 1.C.1:

"Safety analyses performed to date on FSV are sufficient to allow development of the procedures as required by Item 1.C.1. The set of operating procedures in place at FSV and the ongoing revision of the emergency procedures are responsive to the requirements of Item 1.C.1."

The Final Issue (November 1981) of the EP's were also reviewed by ORNL, the results of which (letter dated February 16, 1982 Ball to Eisenhut) indicated that the EP's were very well written. ORNL comments were subsequently considered and incorporated in

the May 1982 revision of the EP's where applicable. (letter dated August 24, 1982 Warembourg to Eisenhut, P-82344).

No further revisions to the EP's are anticipated unless necessitated by the implementation of other Generic Letter 82-33 requirements.

5.) EMERGENCY RESPONSE FACILITIES

The Emergency Response Facilities (ERFs) including the Technical Support Center (TSC), the Personnel Control Center (OSC in NRC terms) and the Forward Command Post (FCP in NRC terms) are designed, constructed and operational (See Table 1). However, the data systems in these facilities are not final at this time (See Figures 2 through 6). Descriptions of these facilities were documented to the NRC in the FSV Radiological Emergency Response Plan and in various letters. The TSC is capable of the acquisition, collection, evaluation and display of information on plant conditions, radiological releases and meteorology necessary to determine protective measures. The TSC and FCP are provided with up to date drawings, procedures, emergency plans, environmental information and other emergency information (such as FSAR, Evacuation Time assessments and Operating License documents) needed to perform TSC and FCP functions. The PSC ERFs provide sufficient working area to accommodate and support the Federal, State, Local and PSC emergency response personnel in the coordination, assessment and implementation of protective measures for the public. As we have stated in previous letters, the TSC does not meet the space requirements of the latest NRC Guidance, in that PSC proceeded "in good faith" with the construction of the TSC utilizing the guidance and requirements of NUREG 0578. Successful emergency drills have been conducted and accepted by the NRC. Additionally, PSC has been audited by Staff Emergency Planning Review Teams. Their reviews are documented in NRC Region IV Inspection Reports 50-267/82-14 and 50-267/83-03.

Based on our progress in addressing emergency response enhancements as described above and our successful accomplishment of the above mentioned items, PSC is already in an excellent position to handle emergencies.

PROGRAM PLAN

PSC is using the ERC NUTAC's draft Guidelines for an Integrated Implementation Plan as input for plant-specific integration planning. This draft guideline is the ERC NUTAC's method of ideal integration of Emergency Operating Procedures, Control Room Design Review, Regulatory Guide 1.97, Safety Parameter Display Systems, and Emergency Response Facilities. This guidance is being taken into consideration in the development of our plant-specific input and process criteria for the remaining work.

Guidelines prepared by industry groups will be evaluated in developing the plant-specific input and process criteria for the remaining work. A listing of the guidelines, input and process criteria that has been evaluated to support the integration shown in Figure 1 is as follows:

1. Control Room Design Review Program Plan
 - a. CRDR NUTAC Guidance
 - b. EPRI NP-2411 "Human Engineering Guide for Enhancing Nuclear Control Rooms"
 - c. ERDA 76-45-2 "Human Factor in Design"
 - d. NUREG 0700
 - e. NUREG 0801
2. Regulatory Guide 1.97
 - a. ERC NUTAC Guidance
 - b. IE Bulletin 79-01B "Environmental Qualification of Class 1E Equipment"
3. SPDS
 - a. INPO 83-003 "Guidelines for an Effective SPDS Implementation Program"
 - b. NUREG 0696
 - c. NUREG 0835

PLANT SPECIFIC PROGRAM FOR REMAINING WORK

Using the NUTAC on Emergency Response Capabilities' Guideline for An Implementation Plan, PSC developed a plant specific program which is shown in Figure 1. In developing this plan, PSC used the completed items discussed earlier in this letter as a "given". (That is, EP's and ERF's)

Figure 1 is divided into basic steps that will be considered in the development of an integrated plant-specific implementation plan. For the remaining work each step and its relation to previous and succeeding steps is discussed in the following plan descriptions.

1) SPDS PROGRAM PLAN

In light of the potential for significantly changed NRC criteria for the SPDS after Secy 82-111 was written, PSC became a

participating member of the SPDS NUTAC. PSC has considered the guidance of this group in revising our approach to the FSV SPDS design.

The Revised SPDS Program Plan will take credit for the "Good Faith" work completed to date, the previous NRC reviews via ORNL and will conclude with:

- | | |
|--|--|
| a) Draft SPDS Program Plan | September, 1983 |
| b) NRC SPDS Pre-Implementation Review | September, 1983 |
| c) Completion of NRC SPDS Pre-implementation Review | December, 1983 |
| d) Revise SPDS Program Plan if Necessary | February, 1984 |
| e) Submit SPDS Safety Analysis | March, 1984 |
| f) Install SPDS Equipment | July, 1984 |
| g) Initial V&V of SPDS Complete and Operators Trained | Prior to Plant Startup After 4th Refueling |
| h) Integrated Review and Integrated V&V of All Generic Letter 82-33 Activities | Prior to Plant Startup After 5th Refueling |

The target dates listed above are estimates based on the best information that is available at this time. It must be realized that these dates are contingent upon several factors, such as, equipment deliveries, NRC review time, and Building 10 construction.

2) CRDR PLAN

PSC is a participating member of The Industry-supported Nuclear Task Action Committee on CRDR. Working with technical assistance from INPO, this NUTAC is producing guidance designed to assist utilities in all aspects of the CRDR. This guidance is expected to be issued in May 1983. As a supporting member of INPO, it is PSC's position that the development and implementation of our CRDR program plan should consider the guidance of the industry documents.

Working from the draft version of the CRDR NUTAC documents it is anticipated that our program plan will consist of the following elements:

- ° Operating Experience Review - An operating experience review will be performed to identify operational problems resulting from design discrepancies or identifying changes to the Control Room which would improve the ability of an operator to respond to an emergency condition.
- ° Control Room Survey - This survey will primarily include an assessment of Control Room layout, the Control Room environment, the usefulness of audible and visual alarms, the readability of displays, the adequacy of instrumentation and information recording and recall capabilities.
- ° Task Analysis - A Task Analysis will be performed, utilizing the FSV EP's as an input, to determine the individual tasks that must be completed to allow successful emergency operation. This activity checks the Control Room match to the EP's. The results of the task analysis will provide an input to the RG 1.97 plan, will be an initial V&V of the EP's, and will provide an assessment of the human factors aspects of the EP's.
- ° Human Factors Principles - The Control Room will be reviewed for compliance to commonly accepted human engineering design criteria. The TSC and FCP will also be reviewed for human factors acceptability.
- ° Assessment and Prioritization of Human Engineering Discrepancies (HED's) - The above element will result in the determination of characteristics of the Control Room that do not comply with the human engineering criteria used in the CRDR. Deficiencies will be evaluated along with items identified from other programs such as RG 1.97, initial EP V&V and SPDS in an Integration of all Control Room Elements Program.

3) RG 1.97 PLAN

As previously discussed, this Regulatory Guide is written solely around LWR Technology. To address this Regulatory Guide, PSC is placed in the position of developing our own HTGR unique guidance. The intent will be to insure that FSV is equipped with instrumentation appropriate for the management of design basis accidents.

To complete this task PSC will develop a plant specific program plan utilizing the philosophical guidance of the ERC NUTAC's work on RG 1.97. This plant specific program will:

- a) Define the types of variables applicable to FSV,
- b) Define the design requirements that apply to FSV,
- c) Define the qualification requirements that apply to FSV.

This program will utilize data obtained from the CRDR Task Analysis and will be integrated with the other Generic Letter 82-33 programs.

4) EP UPGRADES

The existing FSV EP will be utilized as an input to The Task Analysis Portion of the CRDR effort. The results of this task analysis will provide three specific outputs.

- a. Determination of RG 1.97 Type A, Category 1 and Category II variables.
- b. Initial verification and validation (V&V) of the EP's.
- c. Assessment of Human Engineering Aspects of the EP's.

Revisions to the EP's will be made at this point only if a significant safety problem is discovered.

The final upgraded EP's will be provided, if necessary, following integration of all control room elements phase of PSC's integrated effort.

5) ERF UPGRADES

The existing FSV ERF's will be analyzed from a human factors standpoint. If any significant human factor problems are found with these facilities, they will be corrected following the assessment and prioritization of HED's Program.

Final Data systems will be operational in the ERF's after the implementation of RG 1.97 and the SPDS are complete. (See Figures 2 through 6)

6) INTEGRATION OF ALL CONTROL ROOM ELEMENTS

When the SPDS, CRDR and RG 1.97 Plans have been completed, the results will be evaluated along with the existing EP's and ERF's. A determination will be made with regard to how to correct identified deficiencies. This may be in the form of a revised EP, a modification to the Control Room or a new instrument to be installed.

Once this determination has been made, corrective actions as indicated above will be incorporated as required and a Training Program with appropriate objectives, performance evaluations and revision mechanisms will be developed.

SCHEDULE

Based on our current operating schedule, PSC projects that the process through the "integration of all control room elements" stage can be completed by the time the plant starts back into operation after the 4th refueling, which is projected to occur late in 1985. Because all the ingredients in this program are not entirely controllable by PSC, there is a possibility that this date may slip. With our current knowledge and understanding PSC believes the fourth refueling date is achievable. By April 15, 1984, PSC will confirm this schedule or provide a revised schedule and the reasons for any slippage.

The EPs training program and required design modifications will be implemented after the Verification and Validation process has been completed, anomalies resolved, and the appropriate procedures, training program or designs revised.

PSC currently projects this process will be accomplished before plant startup after the 5th refueling, which is projected to occur in mid-1987. This date obviously has many variables which are not controllable by PSC. Since hardware modifications may be included, design, procurement, assembly, testing, qualification, delivery and installation all become variables in this schedule. PSC will reconfirm this schedule or give a better estimate and the reasons for any slippage by April 15, 1984.

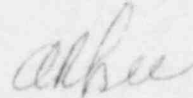
In addition to schedules discussed above, PSC expects to submit the information requested in Generic Letter 82-33 for NRC review in accordance with the following schedule:

Generic Letter 82-33

<u>Submittal</u>	<u>Reference</u>	<u>Estimated Schedule</u>
1. SPDS Safety Analysis	4.1a	<u>March 20, 1984</u>
2. CRDR Program Plan	5.2a	<u>July 15, 1983</u>
3. CRDR Summary Report	5.2b	<u>October 31, 1984</u>
4. RG 1.97 Report	6.2	<u>August 31, 1984</u>
5. EP Technical Guidelines (Generic)	7.2a	<u>Complete</u>
6. EP Procedures Generation Package	7.2b	<u>Complete</u>

PSC will work with your Project Manager in finalizing an acceptable schedule. If you have any questions, please call Mr. Michael Niehoff at (303) 571-8416.

Very truly yours,



O. R. Lee, Vice President
Electric Production

ORL/MEN:pa

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter

Public Service Company of Colorado
Fort St. Vrain Unit No. 1

)
)
) Docket No. 50-267
)

AFFIDAVIT

O. R. Lee, being duly sworn, hereby deposes and says that he is Vice President of Public Service Company of Colorado; that he is duly authorized to sign and file with the Nuclear Regulatory Commission the attached response to the Generic Letter 82-33; that he is familiar with the content thereof; and that the matters set forth therein are true and correct to the best of his knowledge, information and belief.

OR Lee
O. R. Lee
Vice President

STATE OF *Colorado*)
COUNTY OF *Denver*)

Subscribed and sworn to before me, a Notary Public in and for _____
_____ on this *15th* day of *April*, 1983.

Joa LeBlanc
Notary Public
*4026 E. 113th place
Denver, CO 80233*

My commission expires *August 19*, 1983.

TABLE 1

FACILITY	EXISTING FACILITY	LOCATION	HABITABILITY	COMMUNICATIONS	DATA SYSTEMS
Technical Support Center (TSC)	Yes	Meets requirements See PSC Letter P-81178 dated June 30, 1981 (Section 2.2)	Meets Habitability Requirements.	Voice communications: Systems per PSC letter P-81178 dated June 30, 1981 (Section 2.7) Complete. Upgrades as a result of NRC appraisal audit in progress.	Data System Hardware and Software Design/Implementation in Progress. See Figures 2-6.
Personnel Control Center (PCC) (NRC-OSC)	Yes	Meets requirements See FSV Radio-logical Emergency Response Plan Station (Section RERP-PCC)	Upgrades to ensure habitability in progress. See NRC letter Docket No. 50-267/83-03 dated March 31, 1983 (Appdx A, Item 7)	Voice Communication: N/A Systems per PSC letter P-81178 dated June 30, 1981 (Section 3.3) Complete. Upgrades as a result of NRC appraisal audit in progress.	
Forward Command Post (FCP) (NRC-EOF)	Yes	Meets requirements See PSC letter P-81178 dated June 30, 1981 (Section 4.2)	Meets Habitability requirements.	Voice Communications Systems per PSC letter P-81178 dated June 30, 1981 (Section 4.6). Complete.	Data System Hardware and software design/implementation in progress. See Figures 2-6.

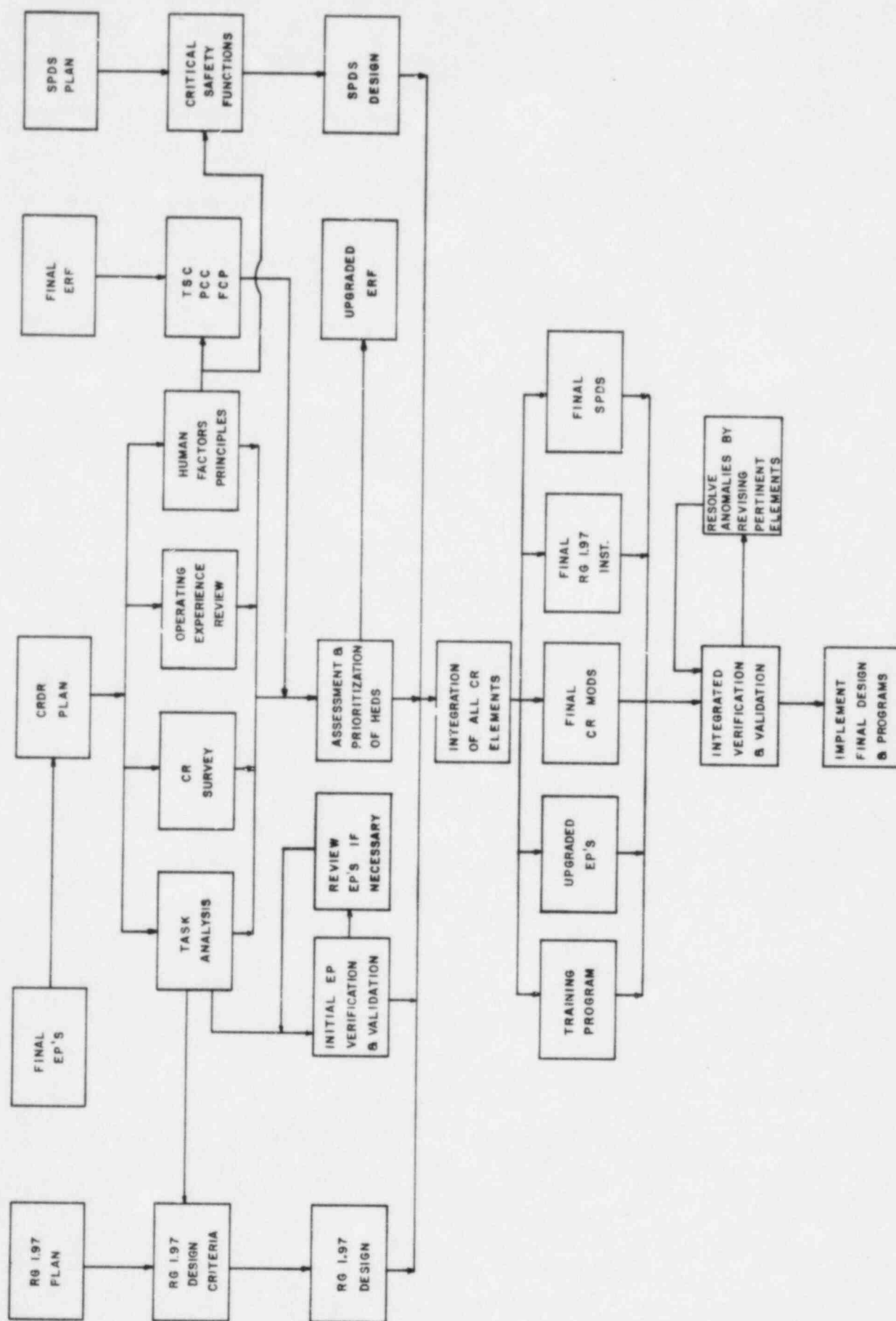
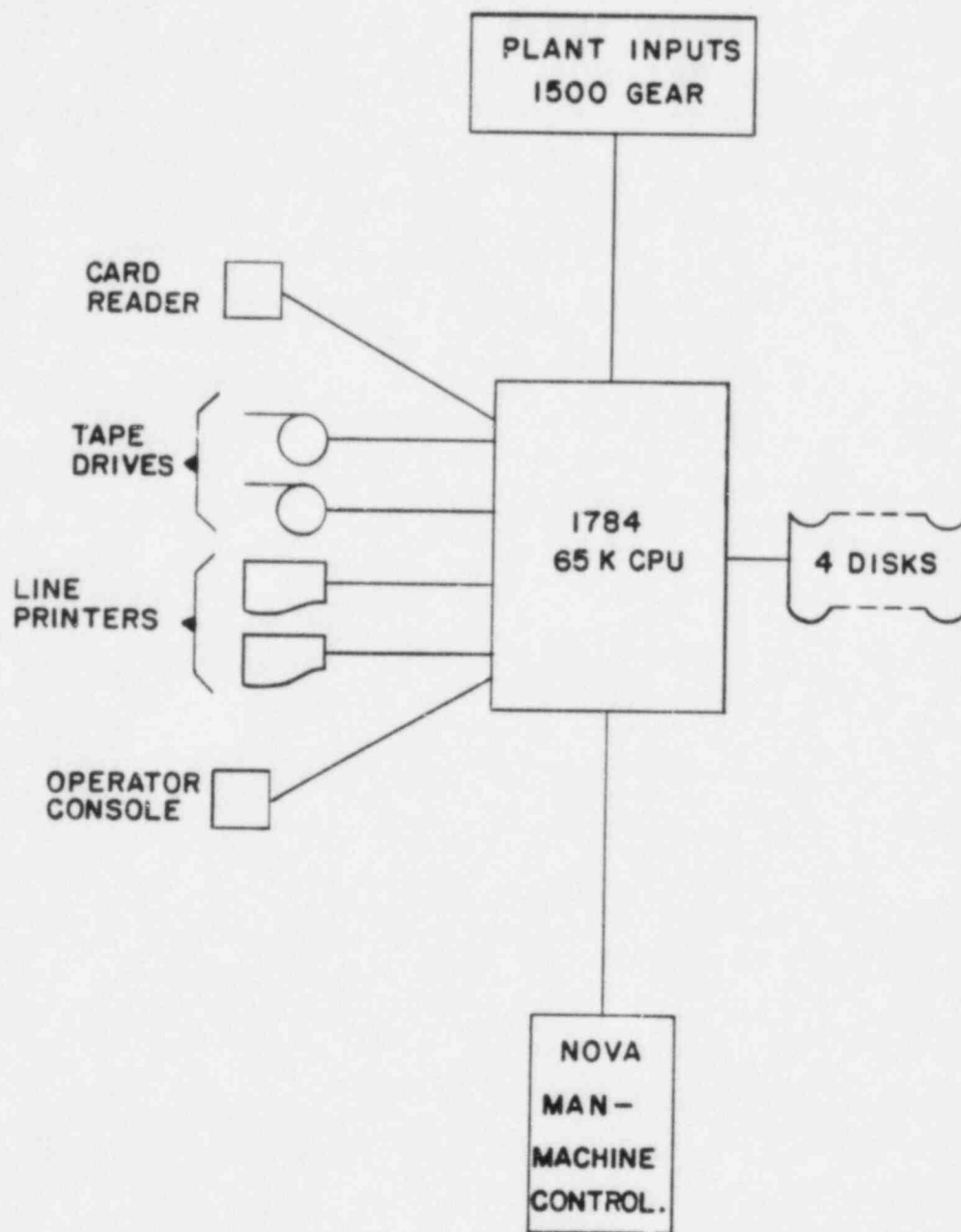


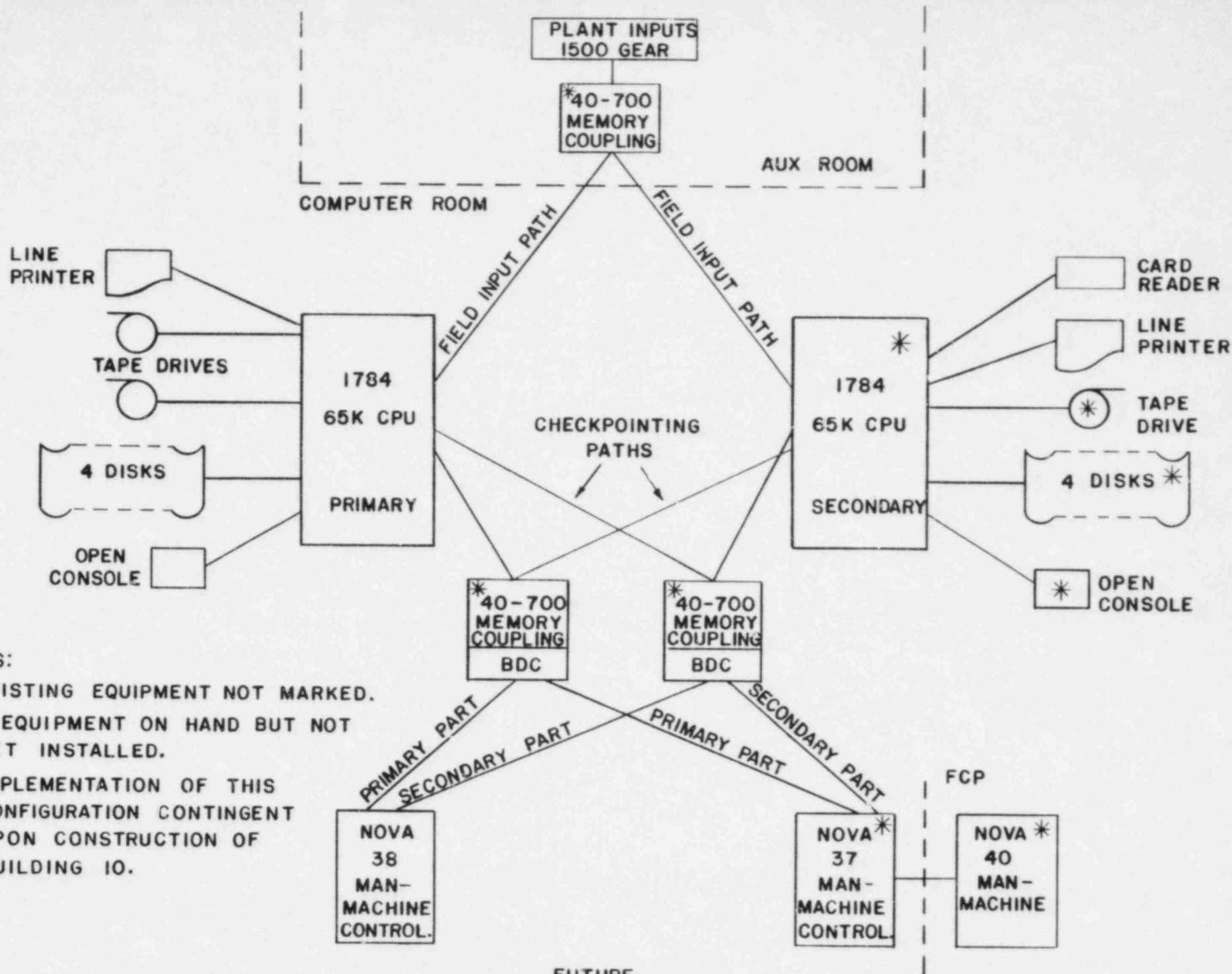
FIG. 1
3-30-83



AUX. ROOM

EXISTING PLANT COMPUTER CONFIGURATION

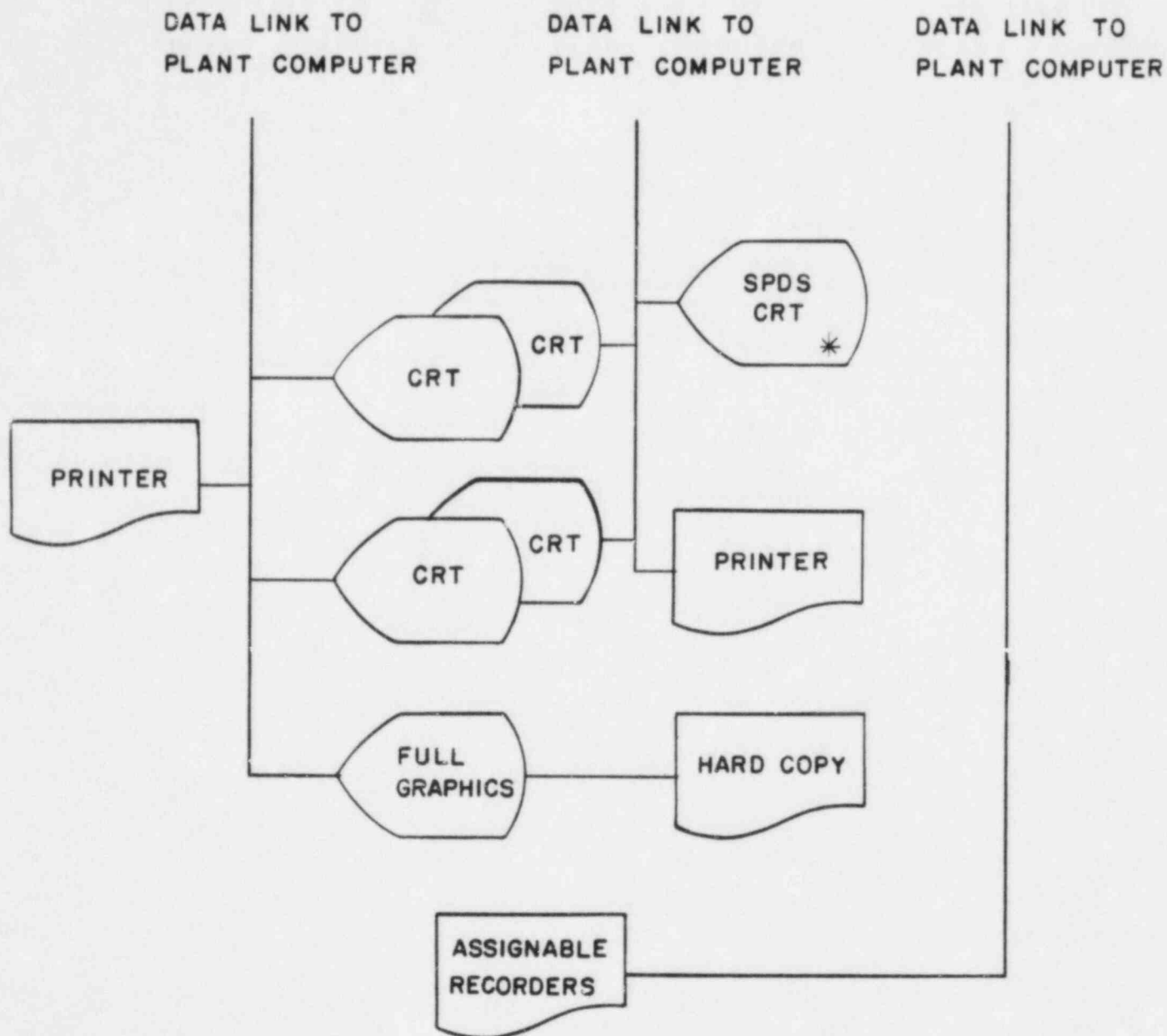
FIG.2



NOTES:

- 1) EXISTING EQUIPMENT NOT MARKED.
- 2) * = EQUIPMENT ON HAND BUT NOT YET INSTALLED.
- 3) IMPLEMENTATION OF THIS CONFIGURATION CONTINGENT UPON CONSTRUCTION OF BUILDING 10.

FUTURE
PLANT COMPUTER CONFIGURATION
FIG. 3

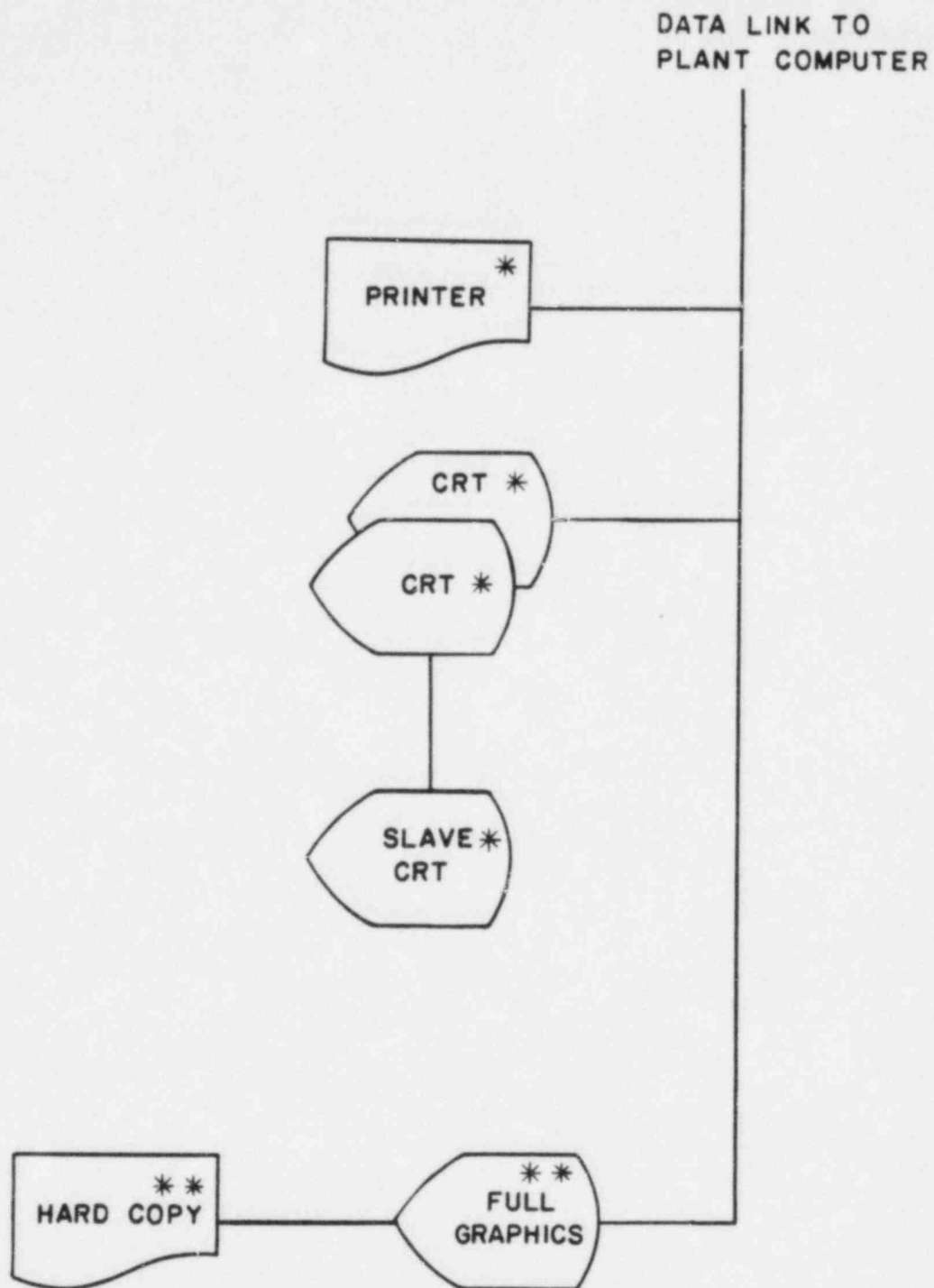


NOTES:

- 1) * = EQUIPMENT ON ORDER.
- 2) EQUIPMENT CURRENTLY IN SERVICE NOT MARKED.

CONTROL ROOM DATA SYSTEM EQUIPMENT

FIG. 4

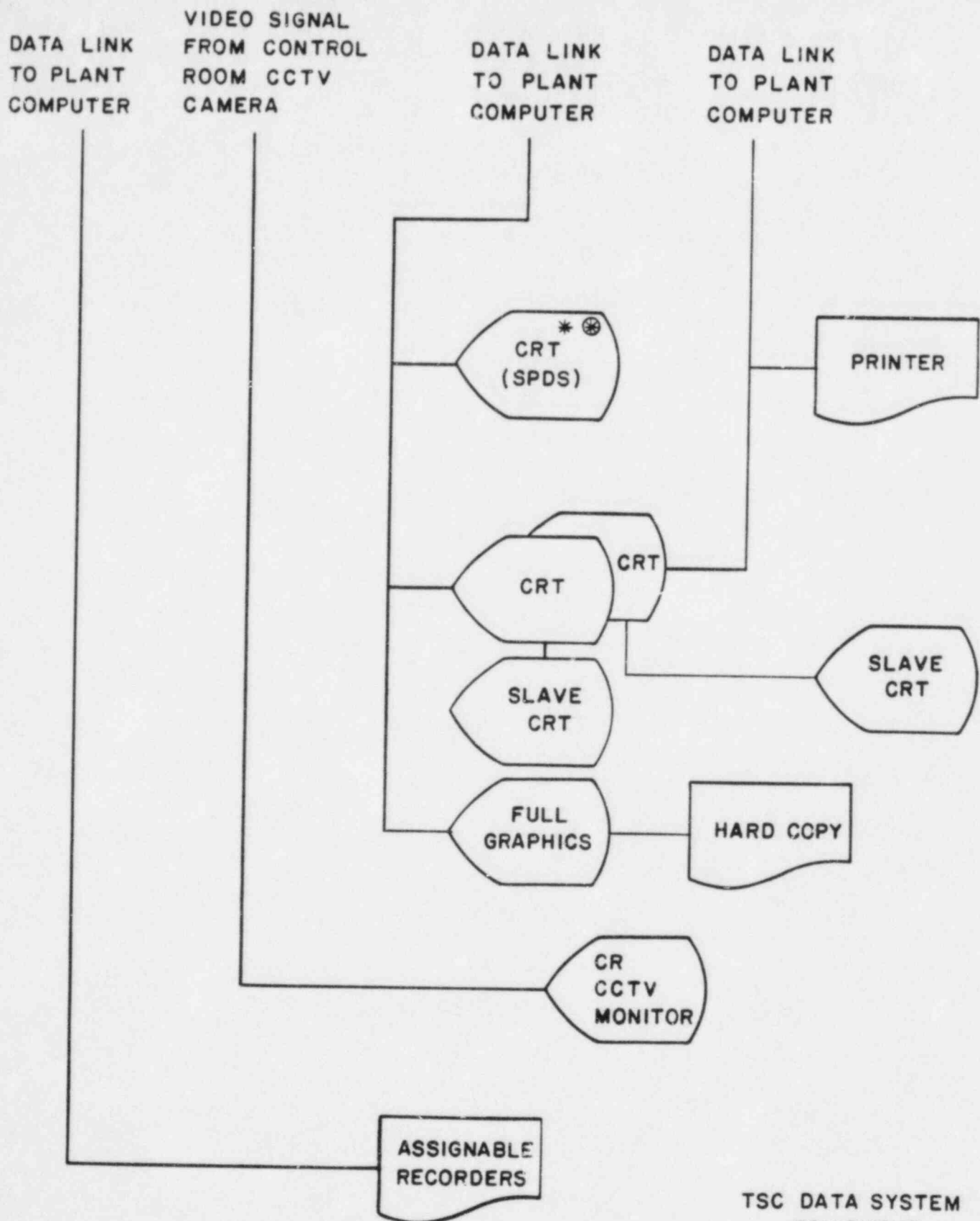


NOTES

- 1)* = EQUIPMENT ON HAND, BUT NOT YET INSTALLED.
- 2)** = EQUIPMENT ON ORDER.

FCP DATA SYSTEM EQUIPMENT

FIG. 5



TSC DATA SYSTEM
EQUIPMENT

FIG. 6

NOTES:

- 1) *NOT SPECIFICALLY DEDICATED TO SPDS.
- 2) *EQUIPMENT ON HAND, BUT NOT YET INSTALLED.
- 3) EQUIPMENT CURRENTLY IN SERVICE NOT MARKED.