



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D. C. 20555

December 7, 1988

Docket No. 50-302

LICENSEE: Florida Power Corporation (FPC)

FACILITY: Crystal River Unit 3 (CR-3)

SUBJECT: CRYSTAL RIVER UNIT 3 - SUMMARY OF NOVEMBER 29, 1988 MEETING ON
ANTICIPATED TRANSIENTS WITHOUT SCRAM (ATWS)

On November 29, 1988, representatives of FPC met with representatives of the NRC staff to discuss open ATWS issues at CR-3 in an attempt to reach agreement on the conceptual design. The list of attendees, agenda, and slides discussed during the meeting are enclosed.

FPC presented a brief description of the Emergency Feedwater Initiation and Control (EFIC) system to clarify its functions and interfaces with ATWS. In response to a question, FPC stated that bypassing EFIC with the ATWS Mitigation System Actuation Circuitry (AMSAC) signal to initiate Emergency Feedwater (EFW) flow would violate NUREG-0737 requirements for class 1E EFW initiation and control. Spurious AMSAC actuation could endanger EFW control, possibly resulting in serious overcooling events. In total, such a design would not represent an increase in overall plant safety.

The issue of independence of ATWS from the Reactor Trip Systems (RTS) was discussed only briefly since this aspect of the conceptual design was essentially resolved.

With regard to diversity, FPC stated that EFIC is separate and diverse from the Reactor Protection System (RPS). The ATWS logic (Bailey 820) was described as different from the RTS logic (Bailey 880). FPC agreed to submit additional schematics and descriptions to support this position as part of the final design submittal. For the conceptual design, presently submitted information is acceptable. FPC also noted that the reactor coolant pump input to AMSAC is picked up directly from the pump power monitor upstream of any EFIC logic. FPC will submit additional supporting information as part of the conceptual design.

Isolation of ATWS from other systems was said to be the same as the isolation used for the Safety Parameter Display System (SPDS) and Regulatory Guide 1.97 applications. As part of the conceptual design submittal, FPC will verify this, provide the model number and manufacturer of the isolators and state that their application in ATWS does not invalidate use of these isolators. Additional details will be presented with the final design package.

NRC representatives at the meeting stated that other than receipt of the information stated above, there were no apparent problems with the ATWS conceptual design as now documented.

NRC requested that FPC expedite submittal of the final design package now scheduled for June 1989. FPC stated that this schedule represents full construction design information, which NRC stated was not required for our review. NRC agreed to

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review the submittal of November 22, 1988 and the information pertaining to the three additional items discussed above when submitted, to determine what, if any, additional information is required for our final design review. FPC agreed to provide the information related to the three items specified above within 2 weeks.

FPC agreed that it will continue to proceed with design and implementation of ATWS equipment by the next refueling.

ORIGINAL SIGNED BY

Harley Silver, Project Manager
Project Directorate II-2
Division of Reactor Projects-I/II
Office of Nuclear Reactor Regulation

Enclosures:

1. Attendance List
2. Agenda
3. Slides

cc w/enclosures:

See next page

[MEETING SUMMARY/CRYSTAL RIVER]

LM:PDII-2
DWH/er
12/6/88

PM:PDII-2
HSilver/jd
12/7/88

NRR:SOIB
SNewberry
12/7/88

D:PDII-2
HBeckow
12/7/88

Mr. W. S. Wilgus
Florida Power Corporation

Crystal River Unit No. 3 Nuclear
Generating Plant

cc:

Mr. R. W. Neiser
Senior Vice President
and General Counsel
Florida Power Corporation
P. O. Box 14042
St. Petersburg, Florida 33733

State Planning and Development
Clearinghouse
Office of Planning and Budget
Executive Office of the Governor
The Capitol Building
Tallahassee, Florida 32301

Mr. P. F. McKee
Director, Nuclear Plant Operations
Florida Power Corporation
P. O. Box 219
Crystal River, Florida 32629

Mr. F. Alex Griffin, Chairman
Board of County Commissioners
Citrus County
110 North Apopka Avenue
Inverness, Florida 32650

Mr. Robert B. Borsum
Babcock & Wilcox
Nuclear Power Generation Division
1700 Rockville Pike, Suite 525
Rockville, Maryland 20852

Mr. E. C. Simpson
Director, Nuclear Site
Florida Power Corporation Support
P.O. Box 219
Crystal River, Florida 32629

Resident Inspector
U.S. Nuclear Regulatory Commission
15760 West Powerline Street
Crystal River, Florida 32629

Regional Administrator, Region II
U.S. Nuclear Regulatory Commission
101 Marietta Street N.W., Suite 2900
Atlanta, Georgia 30323

Jacob Daniel Nash
Office of Radiation Control
Department of Health and
Rehabilitative Services
1317 Winewood Blvd.
Tallahassee, Florida 32399-0700

Administrator
Department of Environmental Regulation
Power Plant Siting Section
State of Florida
2600 Blair Stone Road
Tallahassee, Florida 32301

Attorney General
Department of Legal Affairs
The Capitol
Tallahassee, Florida 32304

ENCLOSURE 1

NRC-FPC MEETING
ON ATWS FOR CR-3

November 29, 1988

<u>NAMES</u>	<u>ORGANIZATION</u>
Harley Silver	NRR/PM
Vincent Thomas	NRR/ICSB
Robert Collins	INEL
Jack Tunstall	FPC
Bert Simpson	FPC
Jerry L. Mauck	NRR/ICSB
Bob Stevens	NRR/ICSB
Richard Low	FPC
Ken Wilson	FPC
Carl C. Strempe	Gilbert Assoc. Inc.
Scott Newberry	NRR/SICB
Stu Long	ACRS

ENCLOSURE 2

AGENDA
NOVEMBER 29, 1988

NRC/FPC ATWS MEETING

The purpose of this meeting is to resolve all open ATWS mitigation design issues. Both NRC and FPC have benefit of 11/18 RAI and 11/22 FPC submittal and should be able to clearly understand any remaining differences or misunderstandings. Outcome should be means to document sufficient final closure to support FPC design and installation by Refuel 7.

- I. Introduction
- II. EFIC Design Overview
- III. Discussion of Key Issues
 - A. Independence
 - B. Diversity
 - C. Isolation
 - D. EFIC Interface
- IV. Resolution of key issues
 - A. Closed by FPC 11/22 Submittal
 - B. Closed by FPC 11/22 Submittal and Final Design
 - C. Closed by FPC 11/22 Submittal and Final Design
 - D. Resolved at meeting
- V. Discussion of Final Documentation of NRC Acceptance of Conceptual Design

EFIC OVERVIEW

I. INTRODUCTION

II. OVERVIEW OF CHANNELS

- a. channels A,B,C,&D ----slides 1,2,3,4,
 - 1. inputs
 - 2. initiate & trip outputs
 - 3. actuation logic

III. INITIATION MODULE

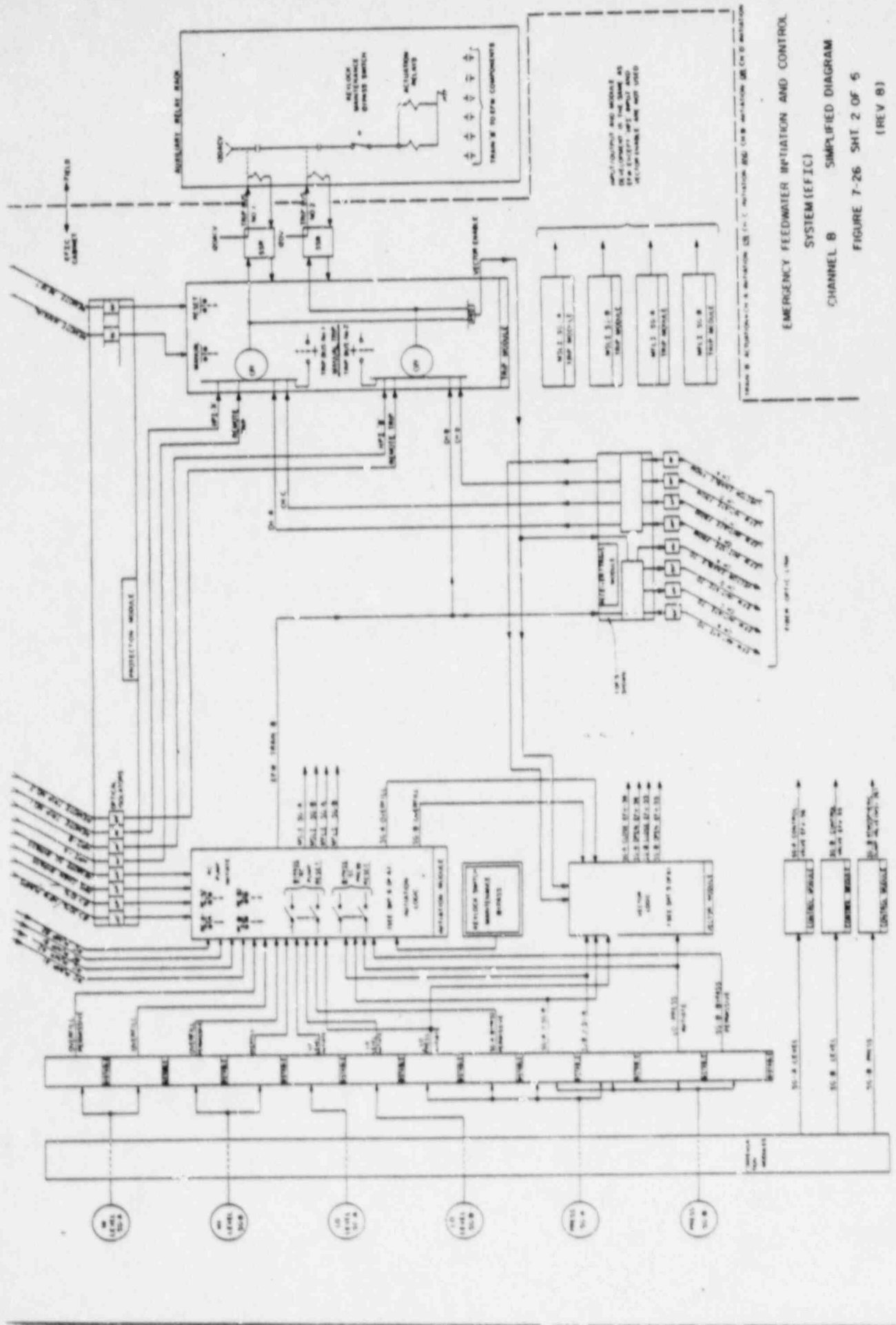
- a. logic----slide 5
- b. schematic (partial)-----slide 6
 - 1. RCP optic isolators
 - 2. FW inputs OR gates

IV. AMSAC INTERFACE

- a. A,B,C & D overview, GAI dwg -----slides 7,8,9,10
- b. FPD dwg -----slide 11
- c. protection module -----slide 12

V. QUESTIONS



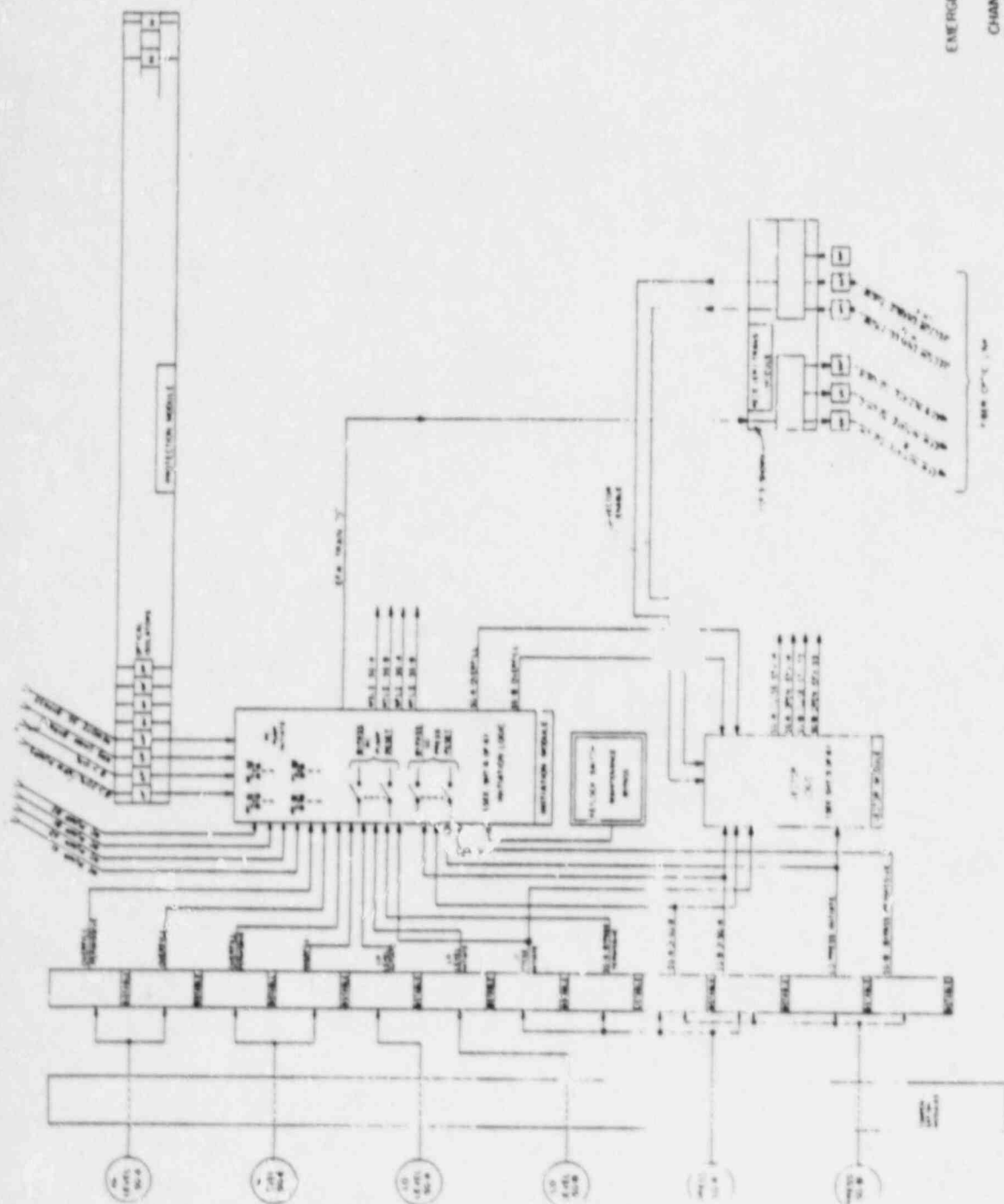


EMERGENCY FEEDWATER INITIATION AND CONTROL SYSTEM (EFICS)

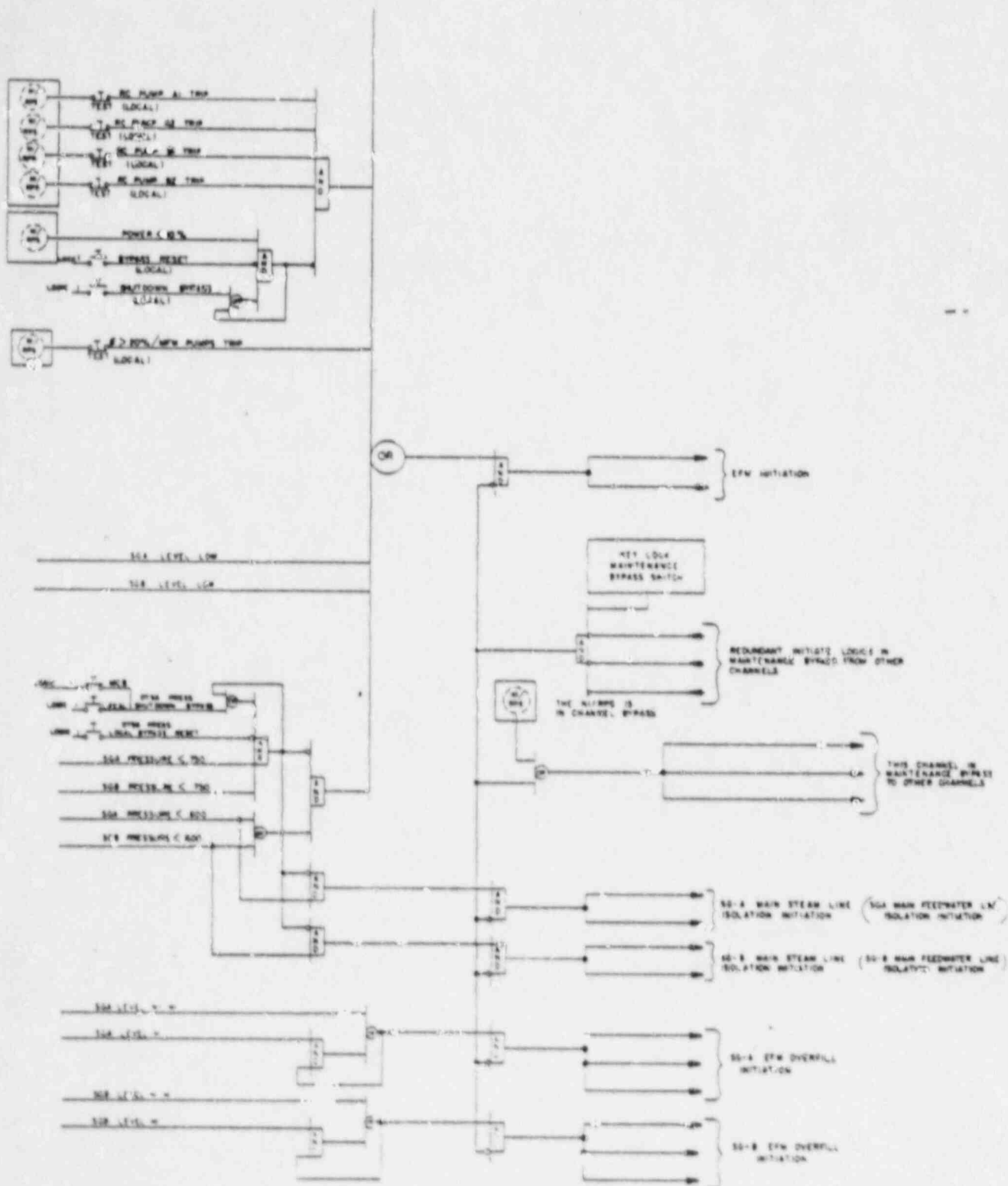
CHANNEL B SIMPLIFIED DIAGRAM

FIGURE 7-26 SHI 2 OF 5

(REV 8)



EMERGENCY FEEDWATER INITIATION AND CONTROL
SYSTEM (EFICS)
CHANNEL D SIMULATED DIAGRAM
FIGURE 7-26 SAT 4 OF 6
(REV 8)



EMERGENCY FEEDWATER INITIATION AND CONTROL
SYSTEM (EFIC)
INITIATION LOGIC
SIMPLIFIED DIAGRAM FIGURE 7-26 SH1 6 OF 6
(REV B)

THIS CHANNEL IS
MAINTAINED

56

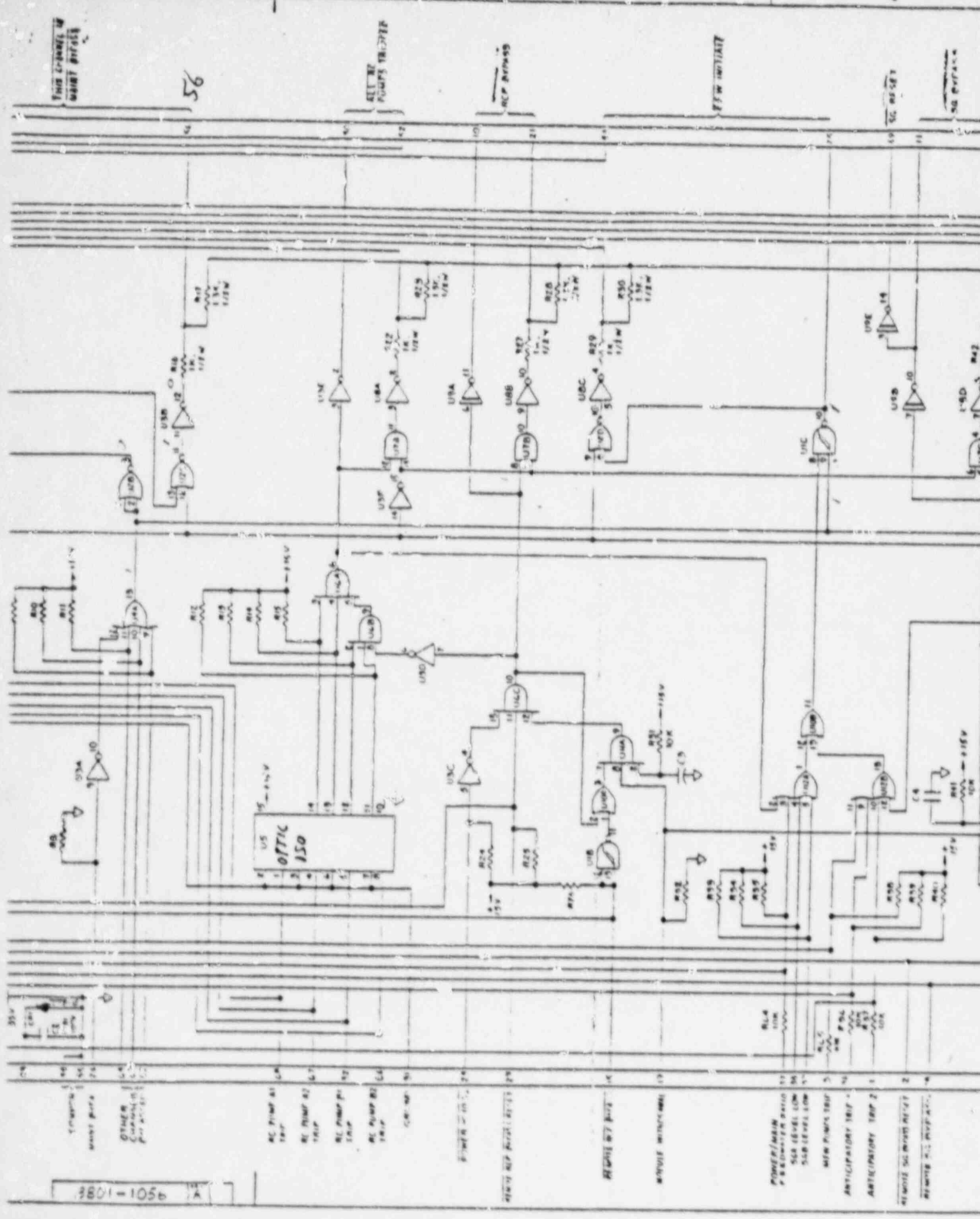
ALL RT
PUMPS TR-272P

RCP REFRESH

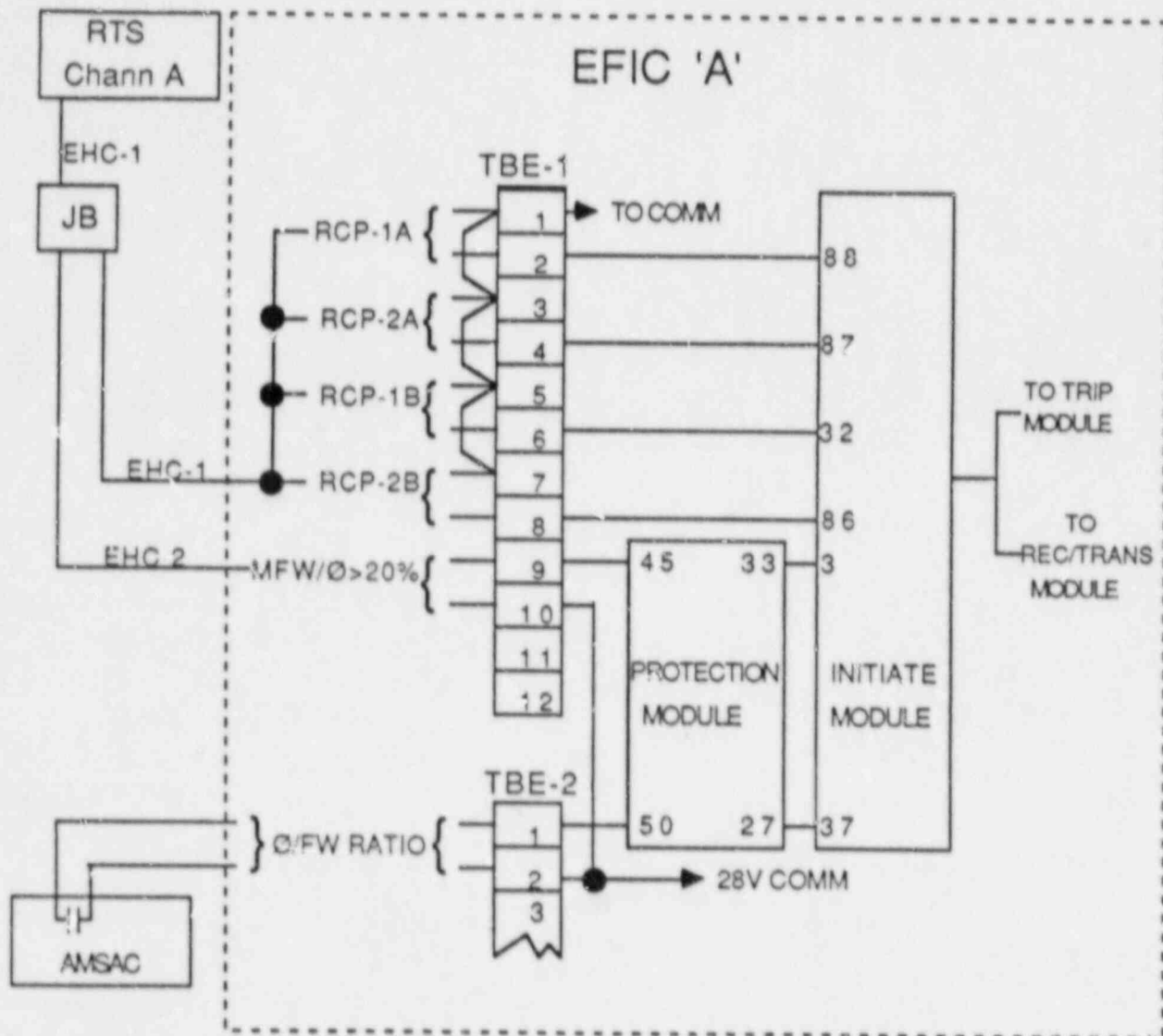
RFW INITIATE

SC REFRESH

SD REFRESH

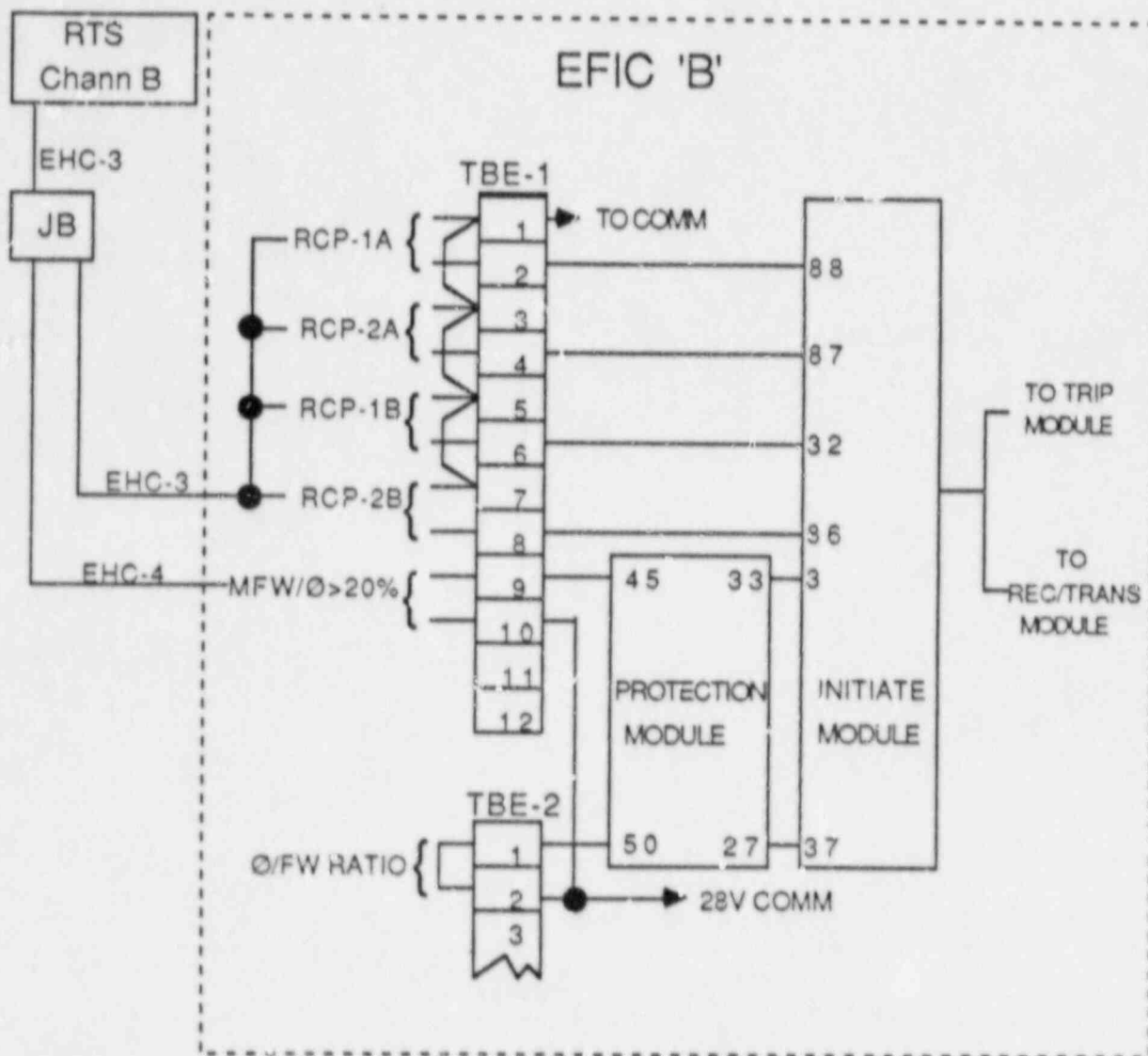


3001-1056



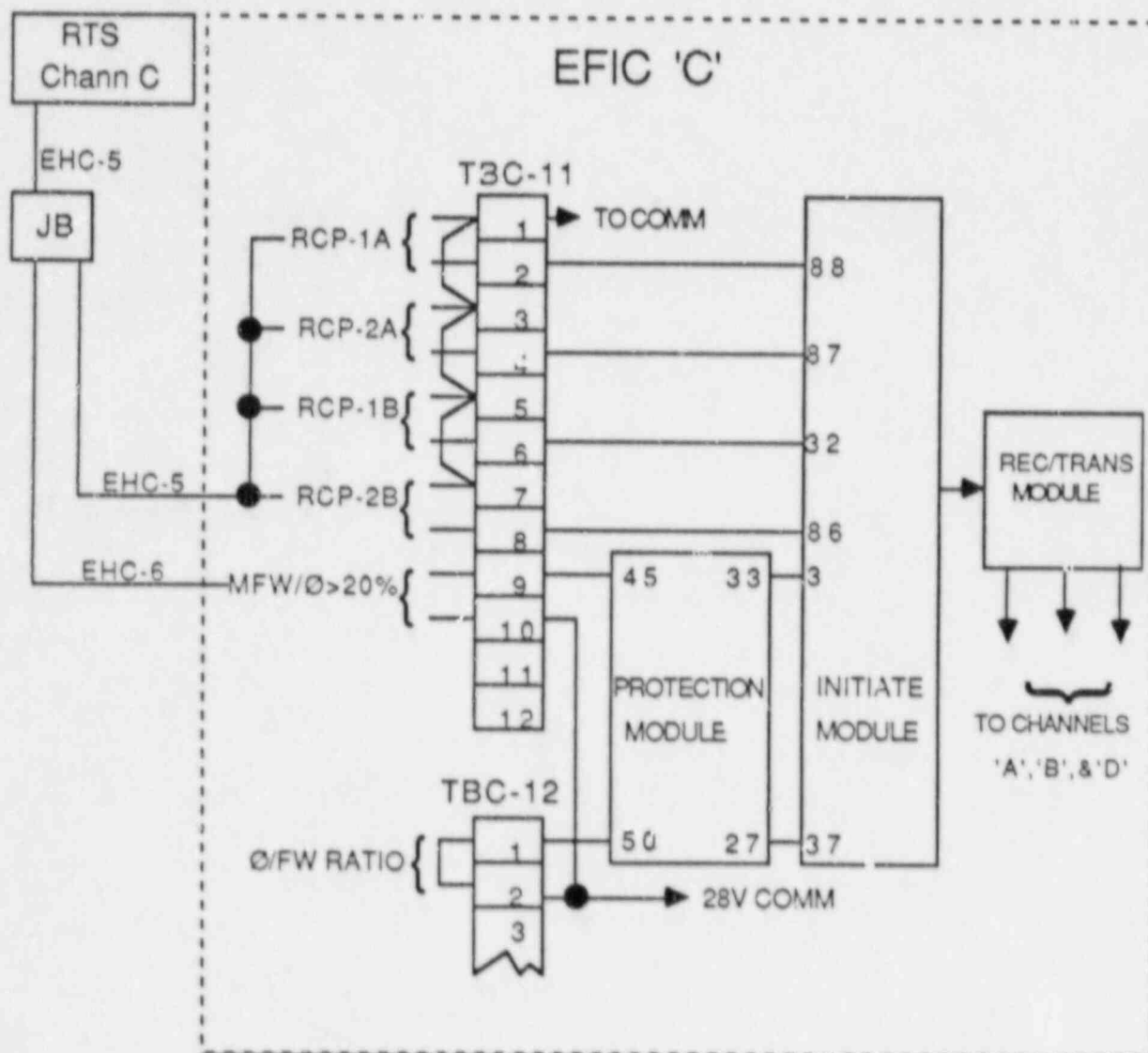
AMSAC IS ROUTED TO ONLY EFIC CHANNELS 'A' & 'D'.

ACTUATION LOGIC CHANNEL 'A' = AC+AD+BC+BD

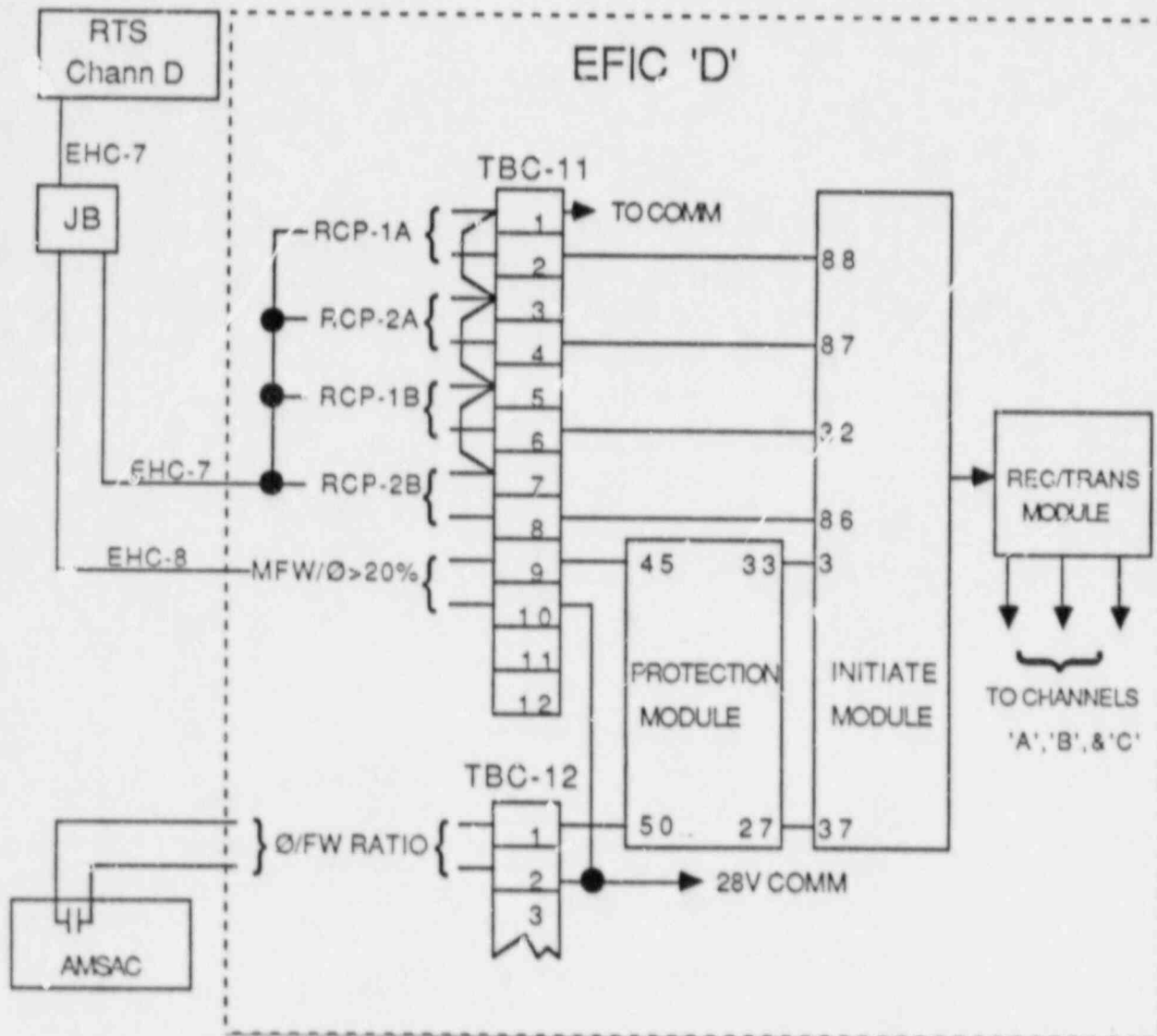


AMSAC IS ROUTED TO ONLY EFIC CHANNELS 'A' & 'D'.

ACTUATION LOGIC CHANNEL 'B' = $AB + AD + BC + \bar{C}D$



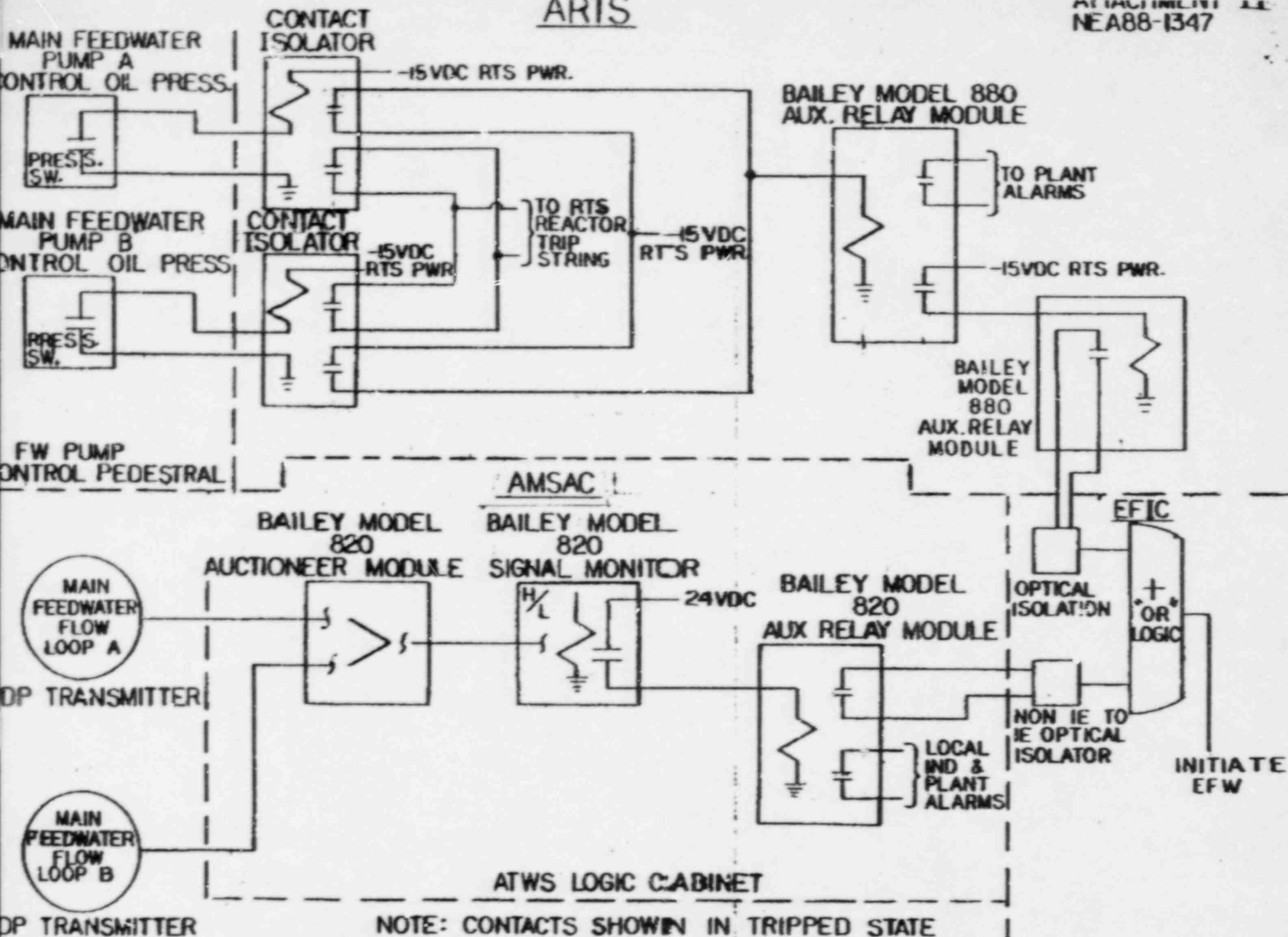
AMSAC IS ROUTED TO ONLY EFIC CHANNELS 'A' & 'D'.



AMSAC IS ROUTED TO ONLY EFIC CHANNELS 'A' & 'D'.

ARIS

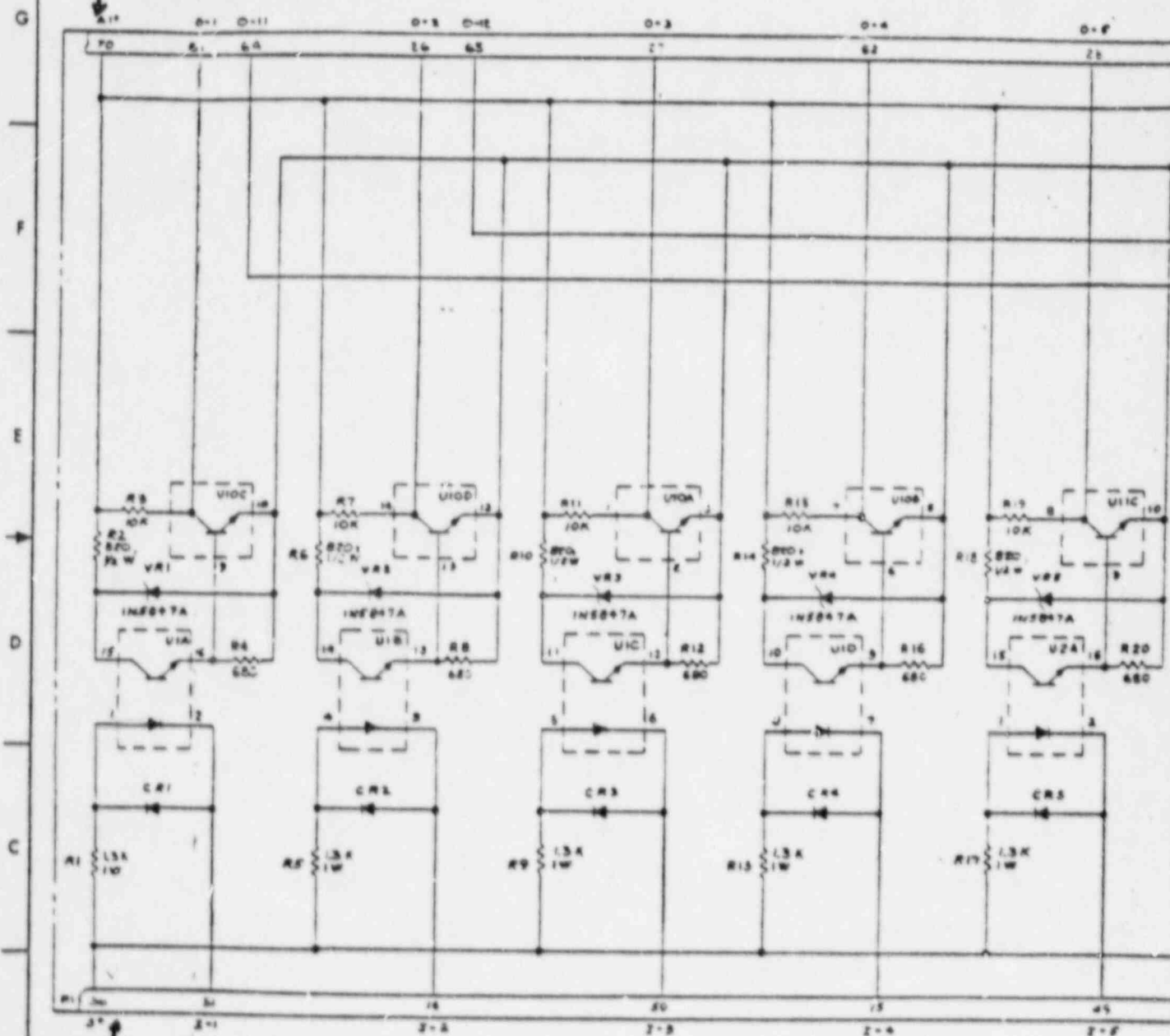
NEA88-1347



NOTES: UNLESS OTHERWISE SPECIFIED:

1. RESISTOR VALUES ARE IN OHMS 1/4 W ± 5%.
2. DIODES ARE 1N4148.
3. LOGIC AND ELECTRICAL SYMBOLS ARE IN ACCORDANCE WITH ANSI Y32.2-1975/ANSI Y32.14-1975.

**+15V DIGITAL
(PS-1)**



**+28V
(PS-2)**

DISTRIBUTION FOR MEETING SUMMARY DATED:

Facility: Crystal River Unit 3

Docket File

NRC & Local PDRs

PDII-2 Reading

S. Varga, 14-E-4

G. Lainas, 14-H-3

H. Berkow

D. Miller

H. Silver

OGC-WF

E. Jordan

NRC Participants

ACRS (10)

L. Reyes, RII

B. Wilson, RII

15-B-18

MNBB-3302

H-1016

DF01

1/1