REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

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AUTH. NAME AUTHOR AFFILIATION
MEDFORD, M. O. Southern California Edison Co.
RECIP. NAME RECIPIENT AFFILIATION
KNIGHTON, G. W. PWR Project Directorate 7

SUBJECT: Responds to 860313 request for addl info re SPDS Sys consists of qualified SPDS & critical function monitoring sys. All inputs to SPDS 1E qualified.

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NOTES: ELD Chandler 1cy. 05000361
ELD Chandler 1cy. 05000362

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Southern California Edison Company
P. O. BOX 800
2244 WALNUT GROVE AVENUE
ROSEMEAD, CALIFORNIA 91770

M. O. MEDFORD
MANAGER, NUCLEAR LICENSING

TELEPHONE
(818) 302-1749

May 8, 1986

Director, Office of Nuclear Reactor Regulation
Attention: Mr. George W. Knighton, Director
PWR Project Directorate No. 7
Division of PWR Licensing - B
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Gentlemen:

Subject: Docket Nos. 50-361 and 50-362
Safety Parameter Display System - Request for Additional Information
San Onofre Nuclear Generating Station
Units 2 and 3

Reference: NRC (H. Rood) to SCE (K. P. Baskin) letter dated March 13, 1986

The above referenced letter requested that SCE provide the NRC with additional information regarding the Safety Parameter Display System. Consistent with this request, the purpose of this letter is to provide the NRC with the requested information. The information provided is consistent with the original NRC approved design basis for San Onofre Units 2 and 3. Any additional information requests regarding isolation devices would be beyond the original design basis for San Onofre Units 2 and 3.

The San Onofre Units 2 and 3 Safety Parameter Display System (SPDS) consists of two systems: (1) the Qualified SPDS and (2) the Critical Functions Monitoring System (CFMS). All inputs to QSPDS are 1E qualified. Because the San Onofre Units 2 and 3 QSPDS supplies all the required NUREG-0737, Supplement 1 SPDS inputs, SCE has responded to the NRC electrical isolation device questions only for isolation devices between QSPDS and Non-1E systems. Inputs to CFMS originating from 1E circuits are isolated by Foxboro Spec. 200 isolation modules and meet the applicable IEEE standards as detailed in the San Onofre Units 2 and 3 FSAR Section 7, "Instrumentation and Controls."

If you have any questions or comments, please contact me.

Very truly yours,

M. O. Medford

Enclosure

cc: Mr. H. Rood, Project Manager, Licensing Branch 3
Mr. F. R. Huey, USNRC Senior Resident Inspector, Units 1, 2 and 3

A003
1/1

Response to Request for Additional Information
Concerning the
Safety Parameter Display System

NRC Question (a):

For the type of device used to accomplish electrical isolation, describe the specific testing performed to demonstrate that the device is acceptable for its application(s). This description should include elementary diagrams when necessary to indicate the test configuration and how the maximum credible faults were applied to the devices.

SCE Response:

The San Onofre Units 2 and 3 Safety Parameter Display System (SPDS) is comprised of two subsystem: (1) the Qualified SPDS and (2) the Critical functions Monitoring System (CFMS). The QSPDS provides a subset of parameters that are provided on the CFMS (see Attachment 2). The QSPDS is a 1E, seismically qualified system and completely isolated (input signals and electrical power) from the CFMS (Non-1E). Input signal isolation is provided by a fiber optic coupler. As stated in IEEE 384 (1977), paragraph 7.2.2.2, which is referenced by Regulatory Guide 1.75, fiber optic couplers are acceptable isolation devices. The rest of the 1E inputs to CFMS are isolated by the Foxboro Spec. 200 modules which meet the applicable 1E isolation standards. The standards are detailed in San Onofre Units 2 and 3 FSAR Section 7.

NRC Question (b):

Please provide data to verify that the maximum credible faults applied during the test were the maximum voltage/current to which the device could be exposed, and define how the maximum voltage/current was determined.

SCE Response:

The San Onofre Units 2 and 3 SPDS has been designed to preclude the use of electrical isolation devices between CFMS and QSPDS. Therefore, no testing of electrical isolation devices was necessary. The fiber optic isolation device used between the QSPDS and the CFMS, is an unpowered device and is not subject to this type of testing. See response to question (a) for the applicable standards for the other 1E inputs.

NRC Question (c):

Please provide data to verify that the maximum credible fault was applied to the output device in the transverse mode (between signal and return) and other faults were considered (i.e., open and short circuits).

SCE Response:

See response to question b.

NRC Question (d):

Define the pass/fail acceptance criteria for each type of device.

SCE Response:

The type of isolation device used in the San Onofre Units 2 and 3 SPDS is a fiber optic input signal isolator between the QSPDS (1E) and CFMS (Non-1E). The pass/fail acceptance criteria are not applicable as this is an unpowered device and not subject to electrical testing. See response to question (a) for applicable standards on the other 1E inputs.

NRC Question (e):

Provide a commitment that the isolation devices comply with the environmental qualifications (10 CFR 50.49) and with the seismic qualifications which were the basis for plant licensing.

SCE Response:

The QSPDS portion of the SPDS is a seismically qualified system. The QSPDS is not subject to 10 CFR 50.49 as it is located in a benign environment. The seismic testing is in accordance with IEEE Std. 344-1975. The QSPDS is included in FSAR Section 3.2, "Classification of Structures, Components, and Systems" (see Attachment 1). The rest of the 1E inputs to CFMS are isolated by Foxboro Spec. 200 modules which meet the applicable 1E isolation standards. The standards are detailed in the San Onofre Units 2 and 3 FSAR Section 7.

NRC Question (f)

Provide a description of the measures taken to protect the safety systems from electrical interference (i.e., Electrostatic Coupling, EMI, Common Mode, and Crosstalk) that may be generated by the SPDS.

SCE Response:

The isolation devices for the 1E systems meet the applicable IEEE standards as detailed in the San Onofre Units 2 and 3 FSAR Section 7.

NRC Question (g):

Provide information to verify that the Class 1E isolator is powered from a Class 1E source.

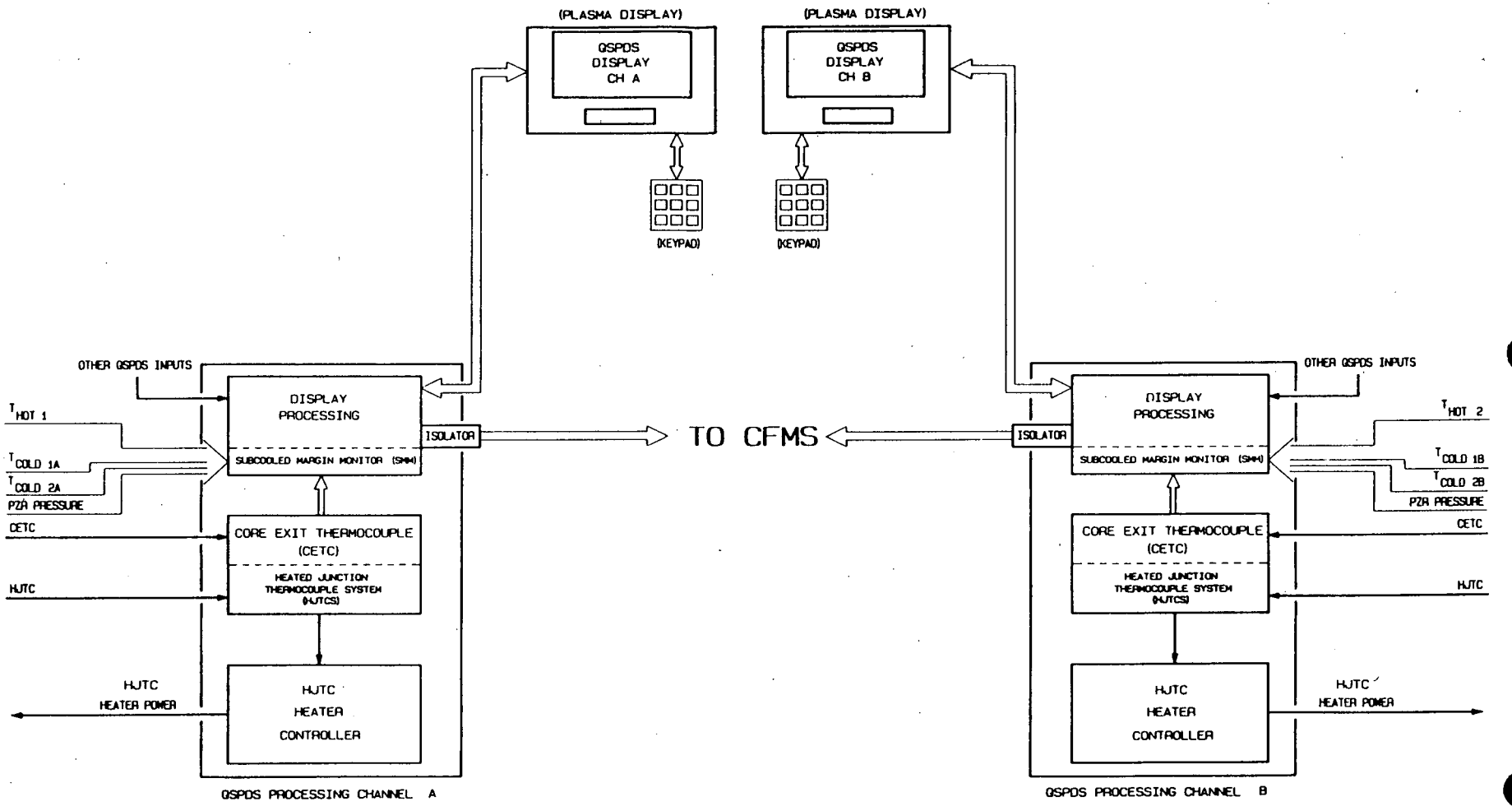
SCE Response:

The power supply diagrams for the QSPDS and CFMS are provided in Attachments 3 and 4. The Foxboro Spec. 200 modules are 1E qualified and meet the 1E standards as discussed in San Onofre Units 2 and 3, FSAR Section 7.

CEW:6469F

Table 3.2-1
EQUIPMENT CLASSIFICATION[a] (Sheet 15)

FSAR Section	Principal Component	Quality Group	Principal Design and Construction Code or Standard	Seismic Category	Quality Class	Location (Building)
7.5.1.8	Bypass and inoperable status indication instrumentation	NA	IEEE 279[m]	I	II	A/C/F/S
7.5.1.9	Subcooled margin monitor	NA	(m)	I	II	A
7.5.1.10	Pressurizer safety valve position monitors	NA	IEEE 279/383	I	II	A/C/F/S
7.5.3.3.2.1	Qualified Safety Parameter Display System[t]	NA	(m)	I	II	A/M
7.5.3	Inadequate Core Cooling System (including Reactor Vessel Level Monitoring System)	NA	(m)	I	II	A/C/P/S
7.6	All Other Instrumentation Systems Required for Safety					
7.6.1.1	Shutdown cooling interlocks	NA	IEEE 279(m)	I	II	A/C/S
7.6.1.2	Safety injection tank isolation valve interlocks	NA	IEEE 279[m]	I	II	A/C
7.6.1.3	Critical function monitoring system	NA	(m)	III	IV	A
7.6.1.4	Health physics computer	NA	(j)	III	IV	A
7.7	Control Systems Not Required for Safety					
7.7.1.1.1	Reactor regulating system	NA	(m)	II	III	A/C



QUALIFIED SAFETY PARAMETER DISPLAY SYSTEM (QSPDS)

FIGURE II-1
SD-S023-820-2-1

cc1000000

Attachment 2

FIGURE II-7: QSPDS POWER SUPPLIES

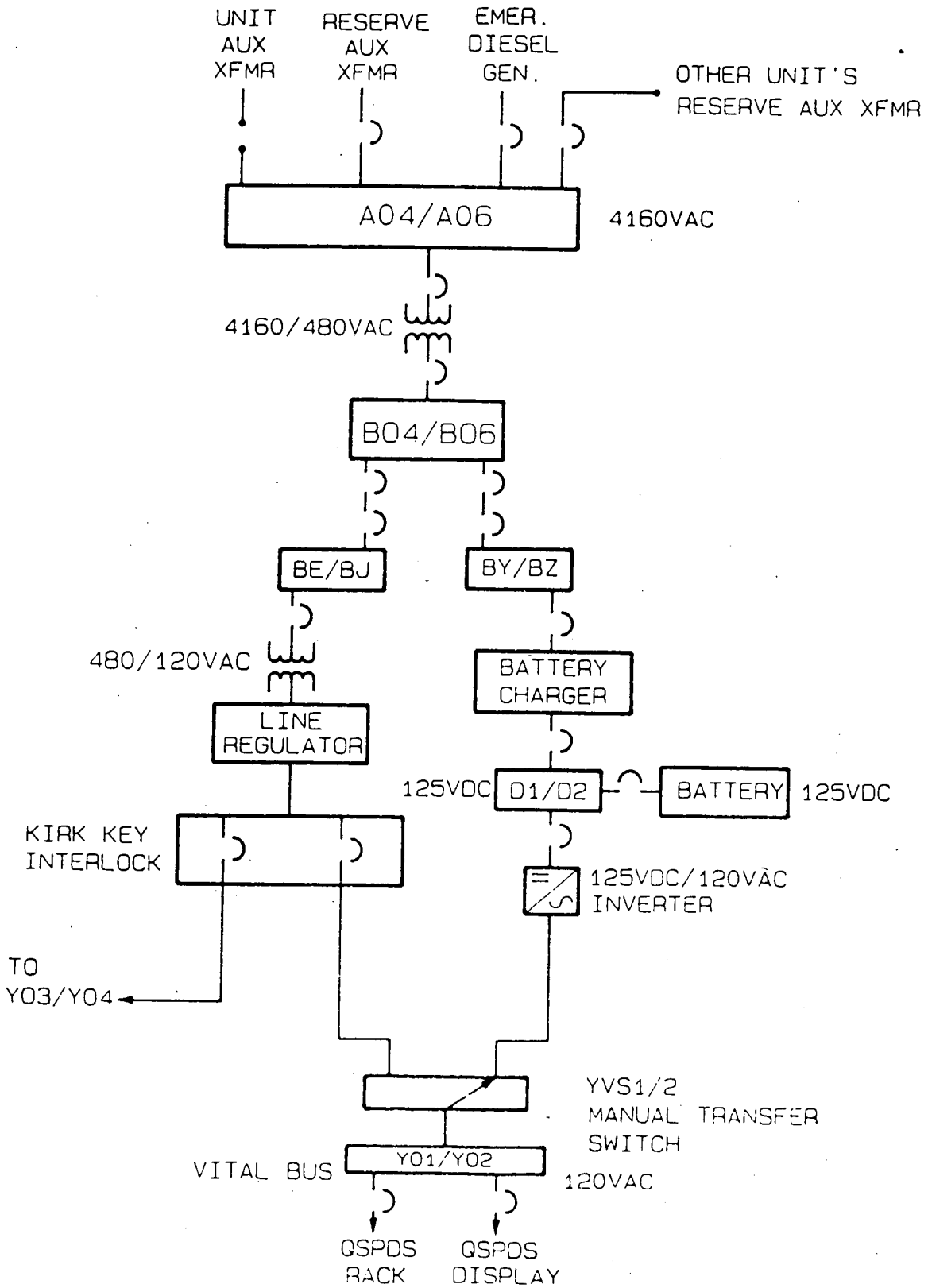


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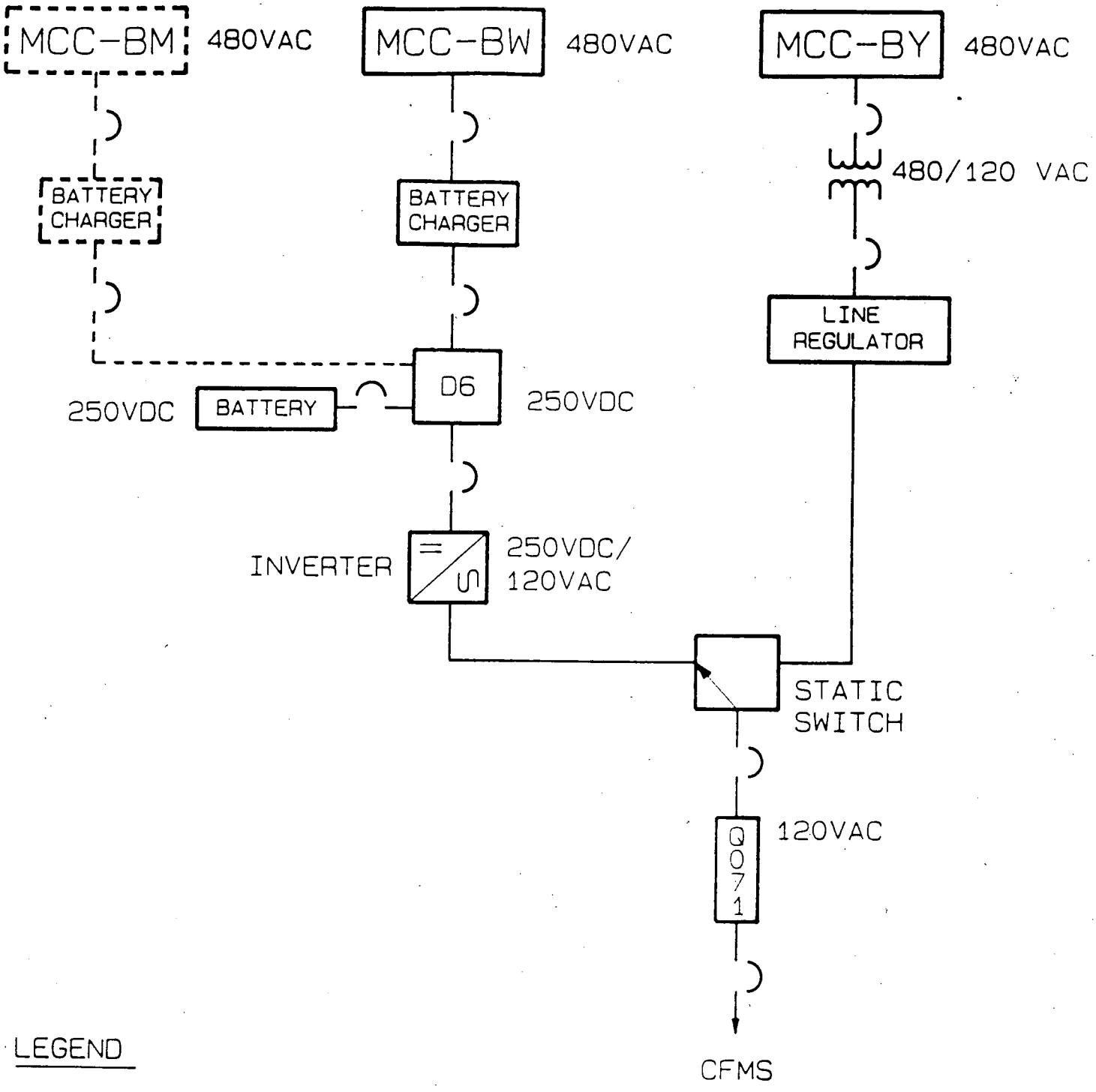
FIGURE I-12: CFMS POWER SUPPLIES



LEGEND

-------- DENOTES UNIT 2 ONLY