ANALYSIS AND SYSTEM MODIFICATION

FOR

480 VOLT EMERGENCY POWER SYSTEM

SURRY POWER STATION

UNITS 1 AND 2

DOCKET NOS. 50-280
50-281

LICENSE NOS. DPR-32
DPR-37

ISSUED: May 3, 1979

VIRGINIA ELECTRIC AND POWER COMPANY

7905070657

I. BACKGROUND

Stone & Webster Engineering Corporation (S&W), while conducting an electrical load study of the Surry Power Station 480V Emergency Power System, discovered that maximum possible loading combinations on each of the redundant 480V emergency load centers would result in exceeding the capacity of the load center components. The load tabulations, upon which this conclusion was based included the following assumptions:

(a) Each bus was considered separately with no diversity factor included for the division of loads between buses.

(b) All loads were assumed to be operating simultaneously at full load with no factor included for duty cycling.

(c) Load was based on the equipment rated brake horsepowers rather than actual system conditions.

Summation of the load tabulations thus determined indicated overloads; which, if they occurred and remained constant, would result in tripping the incoming line breakers by the long-time element of the direct acting trip device. Virginia Electric and Power Company (VEPCO) was informed of these findings at a meeting held in the VEPCO Richmond offices on March 22, 1979, followed by S&W letter No. NUS-8199 dated March 29, 1979.

Because of the safety functions of the 480V emergency system, an investigation was initiated immediately following the March 22 meeting to determine a corrective action which would bring the system into conformance with design bases, including the conservative assumptions for loading listed above. Also, VEPCO; pursuant to Surry Power Station Technical Specifications, Section 6.6.2.A.9 reported the occurrance by phone to the Nuclear Regulatory Commission (NRC) on March 23, 1979. Licensee Event Report No. 79-008/01T was submitted to the NRC on April 5, 1979.

The corrective action which was subsequently ascertained to be most acceptable was the addition of a load center to each redundant train of the 480V system. This modification increases the 480V emergency power system capacity to easily accomodate the maximum connected load on each bus for all station conditions. In addition, this modification results in minimal disruption of existing circuits and minimal interruption of bus availability. The modified system conforms to the guidelines of IEEE 308 and to the design bases requirements of the Surry FSAR.

II. ELECTRICAL LOAD ANALYSIS OF PRESENT SYSTEM

A. Description of Existing 480V Emergency Power System

The 480V emergency power system for each unit presently consists of two redundant buses ("H" and "J") powered from their respective 4160V emergency buses through a 4160V/480V, 1000/1333KVA transformer. The transformer secondary is connected to the 480V bus through a 1600A incoming line breaker. Each 480V load center bus powers the following safety-related loads:

(a) One containment spray pump
(b) One low head safety injection pump
(c) Two recirculating spray pumps
(d) Two 480V motor control centers

A one-line diagram of the Unit 1 480V emergency power system is included as Sketch 12846.23 EKS-1. A tabulation of the equipment connected to the 480V emergency power system is included in Appendix A of this report.

B. Load Analysis

1. Method of Analysis

This analysis examines the capability of the Surry 480V emergency power supply system to meet design basis electrical loading requirements. Each component of this system was analyzed under the following unit conditions.

a. Normal unit operation - 100% power
b. Loss of coolant accident (LOCA)
c. Loss of station power (hot standby)
d. Loss of coolant accident concurrent with loss of offsite power.

A detailed study of the controls for each load was undertaken using the station elementary and logic diagrams. This study determined which loads would be connected to the 480V buses for each of the above conditions.

To calculate bus loadings, the following guidelines were established:

a. All loads which cycle under automatic control (sump pump, air compressors, etc.) were assumed running when analyzing a bus. This approach is highly conservative since it does not consider load duty cycling or diversity factor.

b. Where available, drive equipment brake-horsepower was used for load tabulation. If brake-horsepower was not available, motor nameplate horsepower was used.

c. Where the control room operator has a choice of equipment providing redundant services (i.e., control room chillers) it was assumed that the equipment connected to the bus under analysis was in service.

d. All motor operated valves on these buses were considered short term loads of relatively low demand. The majority of these valves have operating times of less than 30 seconds. They were not listed as continuous loads on the bus.

e. The breaker trip points were determined from the time vs. current trip characteristic curves for the device. Because of manufacturing tolerances this curve is a band. The lower bound of this band was used to determine the earliest possible time at which the breaker could trip.

Each load on the 480V emergency bus was also reviewed with station operating supervisors to establish which are connected for various unit conditions. This review established which loads ran only for refueling or were started by manual control (such as hydrogen recombiner). In addition, some loads were determined to be automatically shed by a consequence limiting safeguard (CLS) signal.

To assure the adequacy of the remainder of the 480V emergency power system, additional checks were made. Using the results of the Load Tabulation of Part 2, the feeder cables from 4160V switchgear to load centers and from load center to motor control center were examined. Each was checked for required capacity and allowable voltage drop. Also 4160V and 480V feeder breakers to the 480V emergency power system were analyzed for load carrying capacity.

2. Tabulation of Results

The bus loadings for Surry's 480V emergency buses have been compiled using the guidelines of Part 1 of this section. The various unit conditions have been abbreviated in the tabulation as:

Normal Unit Operation - 100% power - Normal
Loss of Coolant Accident - LOCA
Loss of Station Power - (hot standby) - LOSP
Loss of Coolant Accident With Loss of Offsite Power - LOCA w/LOOP

	LOAD IN KVA				
	EQUIP. RATING	NORMAL	LOCA	LOOP	LOCA W/LOOP
MCC 1H1-1	500	118	384	365	384
MCC 1H1-2	500	121	275	293	275
MCC 1H1-1A	250	35	25	25	25
Load Center "1H"	1333	607	1661	1026	1661
MCC 1J1-1	500	270	368	348	368
MCC 1J1-2	500	278	367	393	367
MCC 1J1-1A	500	35	29	29	29
Load Center "1J"	1333	866	1737	1059	1737

Ampacity and voltage drop for feeder cables are tabulated below.

CABLE	AMPACITY	MAXIMUM LOADING-AMPS	PERCENT VOLTAGE DROP
4KV Feeder-Load Center 1H	330	241	0.03
4KV Feeder-Load Center 1J	330	230	0.02
480V Feeders MCC 1H1-1	660	481	0.49
480V Feeders MCC 1H1-2	660	367	0.92
480V Feeders MCC 1H1-1A	143	48	1.10
480V Feeders MCC 1J1-1	660	461	0.27
480V Feeders MCC 1J1-2	660	493	1.00
480V Feeders MCC 1J1-1A	185	60	1.10

3. Analysis of Results

Results of the load analysis are best examined from the tabulation section in Part 2.

a. All 480V motor control centers and their feeder cables are capable of meeting load demand for the various plant conditions postulated. Voltage drop for all MCC feeders are within the normal allowable of 3 percent total drop for the entire feeder.

b. 480V load centers 1H and 1J and their feeder cables will supply loads for normal plant operation and for a loss of station power condition. During LOCA conditions these buses would experience an overload condition for the worst case loading. This worse case loading does not include load diversity or utilization factors.

The overload on bus 1H could represent 125% of the load center rating.

The overload on bus 1J could represent 130% of the load center rating.

The design capacity of the following components would be exceeded.

a. 1000/1333 KVA, load center transformers
b. 1600, 480V incoming line breakers
c. 1600 AMP, main bus work within the switchgear

Of these components the one immediately affected by the overload is the 1600A load center incoming line breaker. The breaker would sense the overload on its long time adjustable overcurrent trip elements, and based on the trip curves should trip anytime between 120 and 300 seconds.

The transformer is capable of carrying overload currents as given in ANSI Guideline C57.96 (dry type transformers). The 4KV cables feeding the load centers are capable of handling these overloads.

In summary, the components of the Surry 480V emergency buses are capable of handling loads of normal operation, and loss of station power (hot standby). Under worst cases conditions, the load centers could be overloaded during a loss of coolant accident and during a loss of coolant accident coincident with a loss of offsite power. However, the load center would not be subjected to any electrical damage or failure due to this overload. The 480V incoming line breaker for the "J" bus could trip as early as 320 secs following a LOCA and the "H" bus could trip as early as 520 secs following a LOCA. These trip times are also pessimistic, since the upper bound of the trip characteristics indicate that the "H" bus may never trip and the "J" bus may trip as late as 700 secs.

III. SYSTEM MODIFICATION

A. System Description

A 480V load center will be added to each train of the emergency power system. The equipment to be used will be Class IE load centers purchased for North Anna Units 3 and 4 and transferred from storage there. The load center transformer primaries will be connected in parallel with the primaries of the existing load center transformers to the 4160V feeder breakers presently in use. Feeder cables to the existing motor control centers (MCC) (i.e., two MCC's per load center) will be disconnected from the existing load centers and connected to the new load center of the associated redundant train of emergency power. The modification for Unit 1 is diagrammed on Sketch 12846.23 EKS-2, and Unit 2 will be modified similarily.

B. Design Basis

The design of the modified system is in full conformance with the design basis for emergency power systems as stated in the Surry Power Station FSAR, Section 8.5. In addition, the design meets requirements as detailed below:

1. Performance Requirements

   A 480V load center is being added to each train of the emergency power system to increase capacity for accommodation of the most conservatively determined load (i.e., maximum connected load for each bus). The modified system, in accordance with IEEE Standard 308-1974, Section 5.2.2 will be capable of transmitting sufficient energy to start and operate all required loads.

2. Codes and Standards

   This modification has been designed in accordance with and meets the requirements of IEEE Standard 308-1974 for Class IE distribution system capacity, independence, auxiliary devices, and feeders.

   The new load centers meet the seismic qualification requirements for Class IE equipment of IEEE Standard 344-1971.

3. Redundancy, Diversity, and Separation

   The modified system is consistent with the existing system design and with the design bases stated in the FSAR, as concerns redundancy, diversity, and separation, and meets the requirements of IEEE Standard 308-1974 for distribution system redundancy and separation.

C. Schedule for Implementation

The modification to Unit 1 is essentially complete. The modification to Unit 2 is expected to be complete by July 15, 1979.

IV. TEST PROGRAM

A. Installation Testing

Specific electrical tests are required in steps of the Final Design Controlling Procedure for this modification. These tests involved:

1. All insulated cables were tested for insulation resistance prior to terminating in accordance with current Vepco Electrical Installation Specifications, which are consistent with current industry standards and practices.

2. The load center transformers (4160V to 480V) were Doble tested under the supervision of an ITE factory technician prior to shipment. The transformers also were Doble tested in place prior to being energized.

3. High potential dielectric withstand tests were performed on all 4,160 volt cables prior to termination.

4. Phase rotation sequence for the load centers and motor control centers were recorded before any bus outages. After completion of the modification phase rotation was again taken to verify that it had not been altered.

5. The 480V breakers for the new load center were electrically tested and inspected in accordance with the vendors instruction manuals and the station's periodic tests for 480V breakers.

B. Functional Testing of the Load Centers

1. A functional test of the existing and new load center will be performed by operating as many of the connected loads as possible, using station procedures. As many loads as practical will be maintained on the load centers at the same time as an additional check of operability. Appropriate system voltage checks will be recorded.

APPENDIX A

TABULATION OF LOADS

480V EMERGENCY POWER SYSTEM

SURRY - UNIT 1

480V UNIT SUBSTATION "1H"

TABULATION OF LOADS

BREAKER NO.	UNIT SUBSTATION 1H DESCRIPTION OF LOAD
14H1	Incoming Line, 1600A
14H2	Pressurizer Heater; 250 Kw
14H3	LHSI Pp, 1-SI-P-1A; 250 Hp
14H4	Inside Recirc Spray Pp, 1-RS-P-1A; 300 Hp
14H5	Containment Spray Pp, 1-CS-P-1A, 250 Hp
14H6	MCC 1H1-1
14H7	Outside Recirc Spray Pp, 1-RS-P-2A; 300 Hp
14H8	Containment Recirc Fan, 1-VS-F-1A; 125 Hp
14H9	Future
14H10	MCC 1H1-2

480V UNIT SUBSTATION "1H"

TABULATION OF LOADS

SECTION NO.	MOTOR CONTROL CENTER 1H1-1 DESCRIPTION OF LOAD
1-C	Feeder to MCC 1H1-1A (See Page 4)
1-D	Control Room Emerg Supply Fan 1-VS-F-41
1-E	Charging Pump Service Wtr Pp 1-SW-P-10A
1-F	Computer Feeder Back-up
1-F	480V Pwr Receptacle
2-D	Radiation Monitoring (2-5KVA XFMRS)
2-D	Vital Bus (1-10KVA XFMR)
3-D	Control and Relay Room A/C Cond. Pp
4-A	Chilled Wtr A/C 1-VS-AC-1
4-A	Chilled Wtr A/C 1-VS-AC-7
4-B	Chilled Wtr A/C 2-VS-AC-7
4-B	Chilled Wtr A/C 2-VS-AC-9
4-E	A/C Chiller Pp 1-VS-P-2A
5-A	Control and Relay Room Wtr Chiller 1-VS-E-4A
5-B	Battery Charger 1A-1
5-B	Battery Charger 1A-2
5-C	Charging Pp Cooling Wtr Pp 1-CC-P-2A
5-D	Emerg Generator Fuel Oil Pp 1-EE-P-1A
5-E	Heat Tracing (1-30 KVA XFMR)
6-A	Safeguards Cond Pp 1-HS-P-3B
6-E	Relay Room Emerg Supply Fan 1-VS-F-42
7-D	Seal Oil Back-up Pp
8-C	Heat Tracing (1-15KVA XFMR)
8-C	Heat Tracing (1-30KVA XFMR)
8-D	Turning Gear

480V UNIT SUBSTATION "1H"

TABULATION OF LOADS

SECTION NO.	MOTOR CONTROL CENTER 1H1-2 DESCRIPTION OF LOAD
SOUTH	
2-D	Boron Inj Tank Heater 1-SI-TK-2
4-D	Control and Relay Room Group No. 2
5-D1	480V Power Receptacle
5-D2	Aux Bldg Elevator
6-D	Hydrogen Recombiner A
9-A	Gaseous Waste Blower 1-GW-C-3A
10-A	Boric Acid Trans Pp 1-CH-P-2A
10-B	Aux Bldg Centra Area Exhaust Fan, 1-VS-F-8A
NORTH	
1-D	Charging Pp Aux Oil Pp 1-CH-P-1A
2-A	Aux Feedwater Pp Motor Heater
2-D	Containment Vacuum Pp 1-CV-P-1A
3-A	Emerg Generator Fuel Oil Pp 1-EE-P-1D
3-B	Gaseous Waste Blower 1-GW-C-2A
3-D	Containment I.A. Comp 1-IA-C-3A
4-A	Safeguard Area Sump Pp 1-DA-P-1A
4-D	Recirc Spray Pp Motor Htr
5-A	Cont Spray Pp Motor Htr
5-D	Safeguards Area Exh Fan 1-VS-F-40A
6-A	LHSI Pp Motor Htr
6-D	Recirc Spray Pp Motor Htr
7-A	Boric Acid Tank A Htr
7-D	Boric Acid Tank B Htr
8-D1	4KV Bus 1J Heater
8-D2	Incore Instrument Drive D
10-D	Emerg F.W. Make-up Pp 1-FW-P-4A
11-B	Control Rod Cooling Fan 1-VS-F-60A
1-C	Control Rod Cooling Fan 1-VS-F-60F

480V UNIT SUBSTATION "1H"

TABULATION OF LOADS

SECTION NO.	MOTOR CONTROL CENTER 1H1-1A DESCRIPTION OF LOAD
1-A	Incoming Line Section
1-B	Space
1-C	Air Compressor No. 1
1-D	Air Compressor No. 2
1-E1	Battery Charger
1-E2	Diesel Generator Control Cab.
1-D2	480V Power Receptacle
1-F1	Lighting Cabinet (1-7.5 KVA XFMR)

480V UNIT SUBSTATION "1J"

TABULATION OF LOADS

BREAKER NO.	UNIT SUBSTATION 1J DESCRIPTION OF LOAD
14J1	Incoming Line, 1600A
14J2	Spare
14J3	LHSI Pp, 1-SI-P-1B; 250 Hp
14J4	Inside Recirc Spray Pp, 1-RS-P-1B; 300 Hp
14J5	Containment Spray Pp, 1-CS-P-1B, 250 Hp
14J6	MCC 1J1-1 (See Page 2)
14J7	Outside Recirc Spray Pp, 1-RS-P-2B; 300 Hp
14J8	Containment Recirc Fan, 1-VS-F-1B; 125 Hp
14J9	Pressurizer Heater, 200Kw
14J10	MCC 1J1-2 (See Page 3)

480V UNIT SUBSTATION "1J"

TABULATION OF LOADS

SECTION NO.	MOTOR CONTROL CENTER 1J1-1 DESCRIPTION OF LOAD
1-C	Turning Gear Motor
2-A1	Vepco Test Equip Recp
2-A2	Heat Tracing XFMR Cab 2, 30 KVA
2-B	Roadway Lighting
3-A1	Rad Monitoring
3-A2	Vital Bus 1-IV FDR
3-B1	Low Pressure CO_2 Sys Refrig
3-B2	RSS Trans Cooling Fans
4-B	Gen Brg Lift Pump
4-C	Charging Pp Service Wtr Pump
4-D	Emer Gen F.O. Pump 1-EE-P-1C
4-E	Charging Pp Cooling Wtr Pump
5-C1	Batt Chgr 1B-1
5-C2	Batt Chgr 1B-2
5-D	Spare
5-E	Safeguards Duplex Cond Pump 1-HS-P-3B
6-A	Cont and Rel Rm A/C Cond Pp 1-VS-P-1B
6-B	A/C Chiller Pump 1-VS-P-2B
6-C	Cont and Rel Rm Wtr Chlr
6-D	Charging Pp Aux Oil Pp 1-CH-P-1B
6-E	MCC 1J1-1A Gen Rm No. 3
7-D1	Semi-Vital Bus Feeder
7-D2	FDR 30 KVA Heat Trace XFMR Cab 9
8-D2	FDR 15 KVA Heat Trace XFMR Cab 4

480V UNIT SUBSTATION "1J"

TABULATION OF LOADS

SECTION NO.	MOTOR CONTROL CENTER 1J2-2 DESCRIPTION OF LOAD
EAST	
1-D	Cont Air Compressor
2-A	Inst Air Compressor
3-B	Cont Vac Pp 1-CV-P-1B
3-C	Cont Spray Pp Mtr Htr 1-CS-P-1B
3-D	Safeguards Area Sump Pp 1-DA-P-1B
3-E	Stm Gen Aux Fd Pump Mot Htr 1-FW-P-3A
4-D	Recirc Spray Pp Mtr Htr 1-RS-P-1B
5-D	Recirc Spray Pp Mtr Htr 1-SI-P-1B
6-D	Hydrogen Rec B
7-D	Lo Hd Saf Inj Mot Htr 1-SI-P-1B
8-D	Recirc Spray Pp Mot Htr 1-RS-P-2B
9-C	Boric Acid Tk Htr 1-CH-E-6C
9-D1	4Kv Swgr Bus H Htr FDR
9-D2	Incore Inst Drive "E"
10-C	Control Rod Drive Cooling Fan 1-VS-F-60C
WEST	
1-D1	Personnel Hatch
1-D2	Mn Air Dryer 1-IA-D-1
2-D	Charging Pp Aux Oil Pump 1-CH-P-1C
3-D	Boron Inj Tank Htr 1-SI-TK-2
4-D2	Cont Air Compressor Dryer 1-IA-D-2
6-B	Emer Make-Up Pp 1-FW-P-4B
8-D	Control Rod Drive Cooling Fan 1-VS-F-60D
9-D	Blower 1-GW-C-3B
9-E	Safeguards Supply HV Unit 1-VS-HV-4
10-B	Boric Acid XFER Pump
10-C	Aux Bldg Central Exh Fan 1-VS-F-8B

480V UNIT SUBSTATION "1J"

TABULATION OF LOADS

SECTION NO.	MOTOR CONTROL CENTER 1J1-1A DESCRIPTION OF LOAD
1-A	Incoming Line
1-B	Filler
1-C	Space
1-D	Air Compressor No. 1
1-E1	Diesel Generator Control Cab.
1-E2	Spare
1-F1	Battery Charger
1-F2	480V Power Receptacle
2-A	Space
2-B	Air Compressor No. 2
2-C	Space
2-D1	Lighting Cabinet 1S9
2-D2	Lighting Cabinet 1S10

Appendix B

Loading Sequence Post LOCA

LOCA

CASE I HALF OF OPERATOR SELECTED LOAD ON EACH BUS (1H, 1J)

BUS 1H LOAD IN KVA

	15 Sec	120 Sec.	300 Sec.	Loads
MCC 1H1-1	169	169	169	
MCC 1H1-2	275	275	275	C
LHSI 1A	223	223	223	
Cont Spray	225	225	225	
Inside RS	-	277	277	
Outside RS	-		277	
Total Load	892 KVA	1169 KVA	1446 KVA	
Corres. Current	1120 AMPS	1467 AMPS	1814 AMSP	

From ITE Breaker Trip Curve: Min Trip - 520 sec; Max Trip - ∞

BUS 1J LOAD IN KVA

	15 Sec.	120 Sec.	300 Sec +	Loads
MCC 1J1-1	310	310	310	-
MCC 1J1-2	220	220	220	B
LHSI 1B	223	223	223	
Cont Spray	225	225	225	
Inside RS	-	277	277	
Outside RS	-	-	277	
Total Load	978 KVA	1255 KVA	1532 KVA	
Corres. Current	1227 AMPS	1575 AMPS	1922 AMPS	

From ITE Bkr Trip Curve; Min Trip 320 sec; Max Trip 700 sec.

LOCA

CASE II MAXIUM LOAD ON BUS 1H
MINIMUM LOAD ON BUS 1J

BUS 1H LOAD IN KVA

	15 Sec	120 Sec	300 Sec	Loads*
MCC 1H1-1	299	299	299	A
MCC 1H1-2	275	275	275	C
LHSI	223	223	223	
Cont Spray	225	225	225	
Inside RS	-	277	277	
Outside RS	-	-	277	
Total	1022 KVA	1299 KVA	1576 KVA	
Corres. Current	1282 AMPS	1630 AMPS	1978 AMPS	

From ITE Bkr Curve: Min Trip 290 sec; Max Trip 550 sec

BUS 1J LOAD IN KVA

	15 Sec	120 Sec	300 Sec+	Loads*
MCC 1J1-1	180	180	180	-
MCC 1J1-2	220	220	220	-
LHSI	223	223	223	
Cont Spray	225	225	225	
Inside RS	-	277	277	
Outside RS	-	-	277	
Total	848 KVA	1125 KVA	1402 KVA	
Corres. Current	1064 AMPS	1411 AMPS	1759 AMPS	

From ITE Bkr Curve: Min Trip 400 sec; Max Trip ∞sec.

(1) Load current based on equip. nampeplate volt = 460 volts

* A = 1-VS-E-4A, 1-VS-P-2A, 1-VS-P-1A
B = Control Rod Cooling Fans 60C, 60D
C = Control Rod Cooling Fans 60A, 60F
D = 1-VS-E-4B, 1-VS-P-2B, 1-VS-P-1B

LOCA

CASE III — MAXIMUM LOAD ON BUS 1J
MINIMUM LOAD ON BUS 1H

BUS 1H LOAD IN KVA

	15 Sec		120 Sec		300 Sec+		Loads
MCC 1H1-1	169		169		169		-
MCC 1H1-2	128		128		128		
LHSI	223		223		223		
Cont Spray	225		225		225		
Inside RS	-		277		277		
Outsider RS	-		-		277		
Total KVA	745	KVA	1022	KVA	1299	KVA	
Corres. Current	935	AMPS	1282	AMPS	1630	AMPS	

From ITE Bkr Trip Curve: Min Trip 470 sec; Max Trip - ∞

BUS 1J LOAD IN KVA

	15 Sec		120 Sec		300 Sec+		Loads
MCC 1J1-1	310		310		310		D
MCC 1J1-2	367		367		367		B
LHSI	223		223		223		
Cont Spray	225		225		225		
Inside RS	-		277		277		
Outside RS	-		-		277		
Total Load	1125	KVA	1402	KVA	1679	KVA	
Corres. Current	1412	AMP	1760	AMPS	2107	AMPS	

From ITE Bkr Trip Curve: Min Trip 250 sec; Macx Trip 500 sec

▲ 5036.74 A

STONE & WEBSTER ENGINEERING CORPORATION

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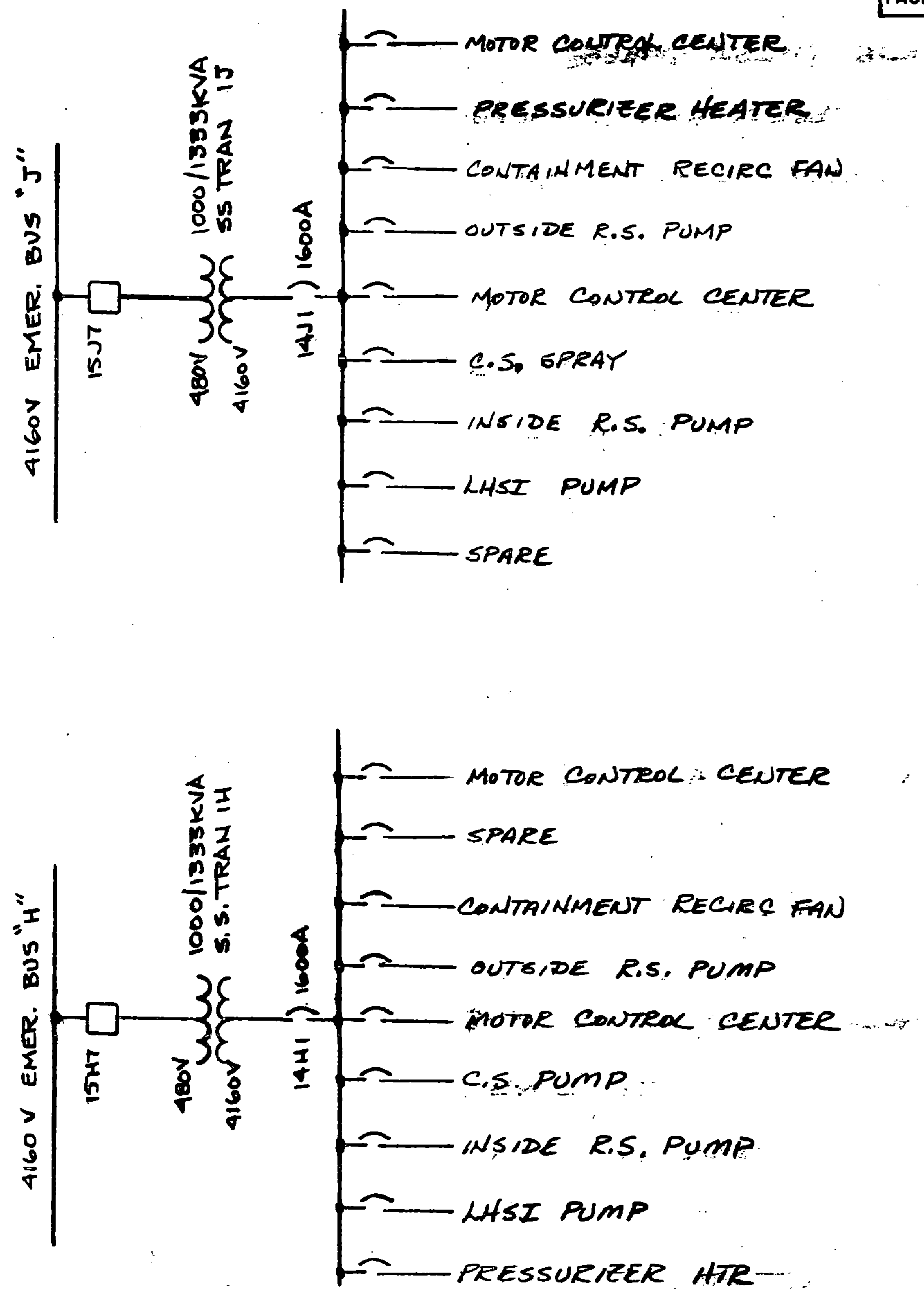
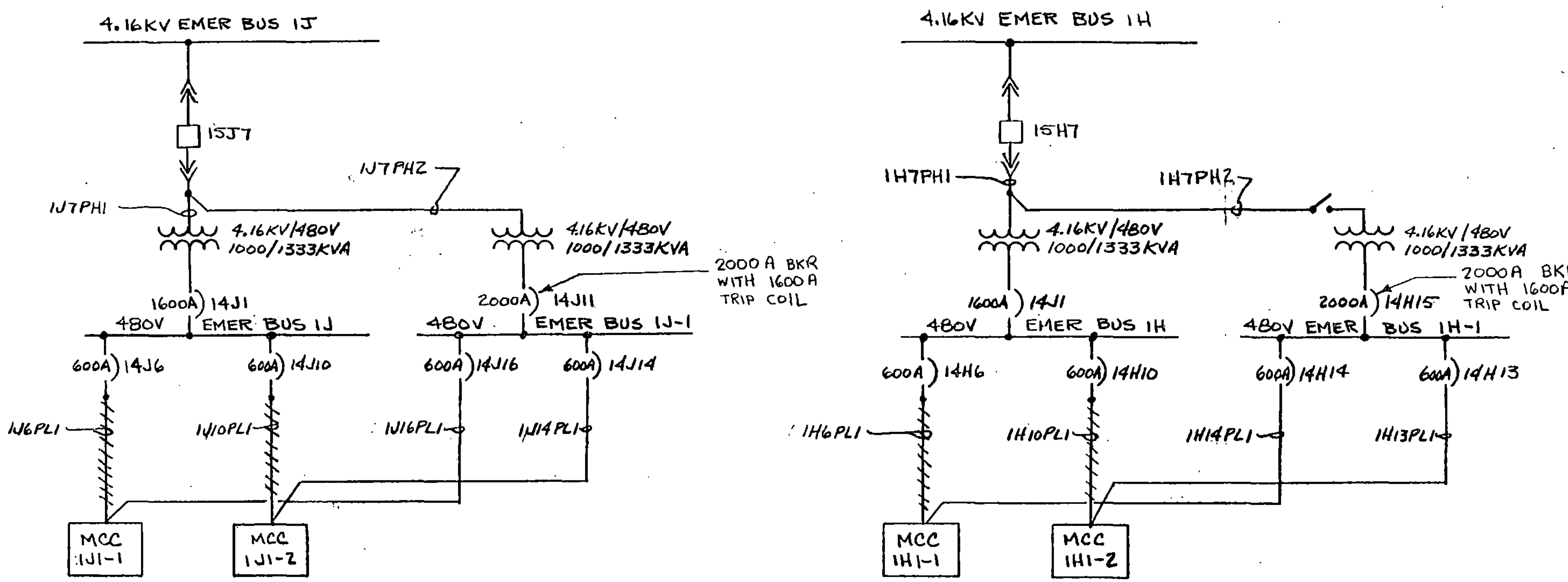


POWER INDUSTRY GROUP			TITLE	CLIENT VEPCO
	BY	DATE	EXISTING UNIT ONE	PROJECT SURRY #1
PREPARED	DP	4-30-79	480V EMERGENCY POWER	J.O. NO. 12846.23
CHECKED			SYSTEM	① ISSUED BY
APPROVED				DATE 4-30-79

REVISIONS BY	②	③	④	⑤	⑥	NUMBER
DATE						12846.23-EKS-1



NOTES

(1) EXISTING CABLES 1J6PL1, 1H6PL1, 1J10PL1, & 1H10PL1 TO BE REROUTED AND RETAGGED AS SHOWN

QA. CAT. I

POWER INDUSTRY GROUP		TITLE ONE LINE DIAGRAM 480V EMER. POWER SYSTEM	SCALE: NONE
CHECKED	ADH 4/9/79		DATE: 4/9/79
CORRECT	8779 4/9/79		SKETCH NUMBER
APPROVED	DAP 4/9/79		12846.23-EKS-2-2
REVISIONS	② ③ ④ ⑤		

AGENDA

Meeting with NRC and VEPCO May 3, 1979 on 480V Emergency Power System Analysis and Modification for Surry Power Station Units 1 and 2.

A. Background

B. Description of Existing 480V Emergency Power System

C. Description of Modification

D. Test Program

E. Classification of Modification

NRC

D. Neighbors
A. Schwencer
D. Burke
M. Kutchen
P. Fitzpatrick
Tonde
Amed

Vepco

J. T. Rhodes
J. Davis
J. Bastwood
S. McKay
T. Peeples