89

Southern California Edison Company
SAN ONOFRE NUCLEAR GENERATING STATION
P O BOX 128
SAN CLEMENTE, CALIFORNIA 92672

MICHAEL A WHARTON
DEPUTY STATION MANAGER

TELEPHONE
(714) 368 6141

December 4, 1985

U. S. Nuclear Regulatory Commission
4340 East West Highway, Room 460
Bethesda, Maryland 20817

Attention: Mr. Wayne Lanning

Gentlemen:

Subject: Follow-Up Activities Associated with NRC-IIT Investigation
San Onofre Nuclear Generating Station, Unit 1

Per our commitment to furnish daily transmittals of additional information concerning the San Onofre Nuclear Generating Station, Unit 1, trip of November 21, 1985, the enclosed material is being provided. A summary of the contents is outlined in the attachment.

This is the third transmittal to you; and as further information becomes available, it will be forwarded.

Sincerely,

M A Wharton

Enclosure

cc: F. R. Huey (USNRC Senior Resident Inspector, Units 1, 2, and 3)

8605150050 860306
PDR ADOCK 05000206
S PDR

ATTACHMENT
December 4, 1984

1. Westinghouse Nuclear Service Division, Technical Bulletin 75-7.

2. In-Service Valve Test Data for FWS 438, 439, 346, and 378.

3. Proposed Facility Change (PFC)/Design Change Package (DCP) 1-85-3052.OTJ. Rev. 0 (Main Control Room Indication of Main Feedwater Low Flow)

4. INPO Significant Event Report (SER): 52-85

085:jlc

89-1

Westinghouse Nuclear Service Division

WNSD

Technical Bulletin

An advisory notice of a recent technical development pertaining to the installation or operation of Westinghouse-supplied Nuclear Plant equipment. Recipients should evaluate the information and recommendation, and initiate action where appropriate.

P.O. Box 2728, Pittsburgh, PA 15230

During this period, many operating plants were surveyed to obtain information on reported "water hammer" problems. The resulting evidence indicated the problem to have been experienced on several plants, but not with damaging potential. With this information, it was determined that no set of unique circumstances existed at Indian Point. It was decided to concentrate on factors common to most operating systems which included the evidence that most severe feed line water hammer occurred with the feed ring at least partially uncovered after the low-low trips. The suggestion was made that if there was a low feedwater flow rate during this period, the feed ring and adjacent sections of level feed line would drain; thus, opening up a path for high velocity steam to move from the steam generator into the feed ring. This steam would then rush back through the "Tee" connection and thermal sleeve and condense on the free surface of the water in the feed line. Under certain conditions, surface waves might generate pressure pulses of significant amplitudes.

The conclusions reached as a result of our investigations reveal that water hammer can be generated following draining of the feedwater ring and feedwater line when water level drops below the feed ring. This allows steam to enter the feedwater ring and pipe. With the auxiliary feedwater system in operation to supply water to the steam generator, the flow rate is small, and the feed pipe and feed ring are only partially full. Thus, there is a steam and cold water interface in the feed pipe and ring. As the steam is condensed on the interface with the cold water, more steam is drawn into the feedwater ring and pipe from the steam generator. Thus, cold water is flowing in one direction, and steam is flowing in the other.

When the above conditions exist, simple model tests run at Westinghouse have shown that a disturbance in the level of the cold water in the feedwater line can form a water seal in the area of the feedwater ring inlet. When this water seal is formed, a bubble of steam is trapped in the feedwater line. Condensation of the steam at the cold water interface rapidly collapses the steam bubble. As the steam bubble collapses, a water slug is pushed down the feed line.

Tests run at Westinghouse and at an operating plant have demonstrated the following:

1. The potential water hammer force which can be generated by the above phenomenon is dependent on the length of feedwater line which can be drained.

2. The slug formation is dependent on water flow rate in the feed line. Water slugging was not observed at reduced flow rates.

3. Water slug formation is most likely to occur upon recovering of the feed ring.

4. Where feedwater flow is maintained below a threshold value, slug formation and the resulting water hammer has not occurred.

A maximum feedwater flow to preclude water hammer has been derived primarily from the data obtained from the Indian Point testing conducted in February 1974. This testing was conducted by uncovering the feed ring and then recovering it with a fixed measured auxiliary feedwater flow.

The test results showed that water hammer did not occur at or below 200 gpm in all the feed lines and did not occur at all in two of the feed lines with feedwater flows as high as 240 gpm. It should be noted that Indian Point 2 feedwater lines had been modified prior to the test so that the horizontal runs immediately upstream from the steam generator were less than ten feet long. Based on these tests, we have conservatively chosen 180 gpm as the auxiliary feedwater flow rate that should not be exceeded to minimize the occurrence of water hammer.

The suggested method of feedwater flow rate control consists of administratively limiting the auxiliary feedwater flow rate to any steam generator to 180 gpm maximum when either the level, during a decreasing transient, drops below the low-low level set point or the level is below 25% during a level recovery transient from below the low-low level.

Since the Auxiliary Feedwater System provides an essential safety function, it must be initially aligned to deliver full design flow when actuated by the protection system and without requiring additional operator action. Immediately after automatic actuation of the Auxiliary Feedwater System and after verification that at least 50% of the rods have dropped into the core, the operator is allowed to reduce the flow to the minimum requirement assumed for safe shutdown operation in the Safety Analysis Report. After the initial flow reduction, the operator will control the Auxiliary Feedwater Flow to stabilize temperature in the primary system.

It is judged that these administrative controls will minimize the potential for water hammer for the following reasons:

1. The low-low level set point is at the bottom of the tee section of the feed ring. Thus, the feed ring will not drain and admit steam until after this level is reached. Therefore, manual control of the main feedwater system above the low-low level will not result in water hammer unless the feed ring has been previously drained.

2. Conditions under which the level drops to the low-low level set point results in a reactor trip and will result in automatic initiation of auxiliary feed. Administrative control of the auxiliary feedwater flow can be achieved while the feed ring drains. The operator routinely is constrained to reduce auxiliary feedwater flow below 180 gpm in order to prevent plant temperatures from dropping below the operating range and necessitating a plant heat up.

An advisory notice of a recent technical development pertaining to the installation or operation of Westinghouse-supplied Nuclear Plant equipment. Recipients should evaluate the information and recommendation, and initiate action where appropriate.

P.O. Box [illegible], Pittsburgh, PA [illegible]

3. The auxiliary feedwater flow rate may be manually adjusted by setting pressure control or flow control for the auxiliary feedwater valves.

4. If a particular feedwater line has a feedwater hammer threshold below 150 gpm, the operator is allowed to immediately reduce the auxiliary feedwater flow below the threshold of that line provided that the total auxiliary feedwater flow delivered to the plant meets the minimum requirement assumed for safe shutdown in the Safety Analysis Report.

Steps may be taken which will reduce the magnitude of a water hammer slug, or to reduce the amplitude of the resulting pressure wave. This is accomplished by reducing to the minimum achievable length, the straight pipe connection to the feedwater pipe nozzle on the steam generator. Where it is possible, appropriate pipe modifications may be necessary to obtain a more desirable piping arrangement.

To date, our observations indicate that the probability of damage from water hammer can be kept to a minimum by elimination of long pipe runs at the inlet nozzle which can drain into the steam generator when water level in the generator drops below the feedwater inlet. This will not prevent the formation of water slugs but it has been demonstrated that this will ensure that the energy of the slug will be well below those values which could cause pipe damage. An analysis of the piping system including supports and restraints may be necessary by the Utility/A-E to show that major damage to the system will not result.

In particular, long horizontal feedwater pipe runs which can be drained into the steam generator if level drops below the inlet nozzle have been shown to be a significant factor in the formation of potentially damaging water hammer. Elimination of those horizontal runs which are longer than any of the examples on the attached sketch can effectively reduce the energy of water slugs and thus reduce the water hammer force. It is most preferable to make horizontal piping runs at the steam generator as short as possible by installing an elbow on the feedwater inlet nozzle so as to lower the feedwater pipe before it reaches the steam generator (see Figure 1 of the sketch). This will ensure that only a very short pipe segment will be drained if the steam generator water level falls below the feedwater inlet.

Westinghouse
Nuclear
Service
Division

Technical Bulletin

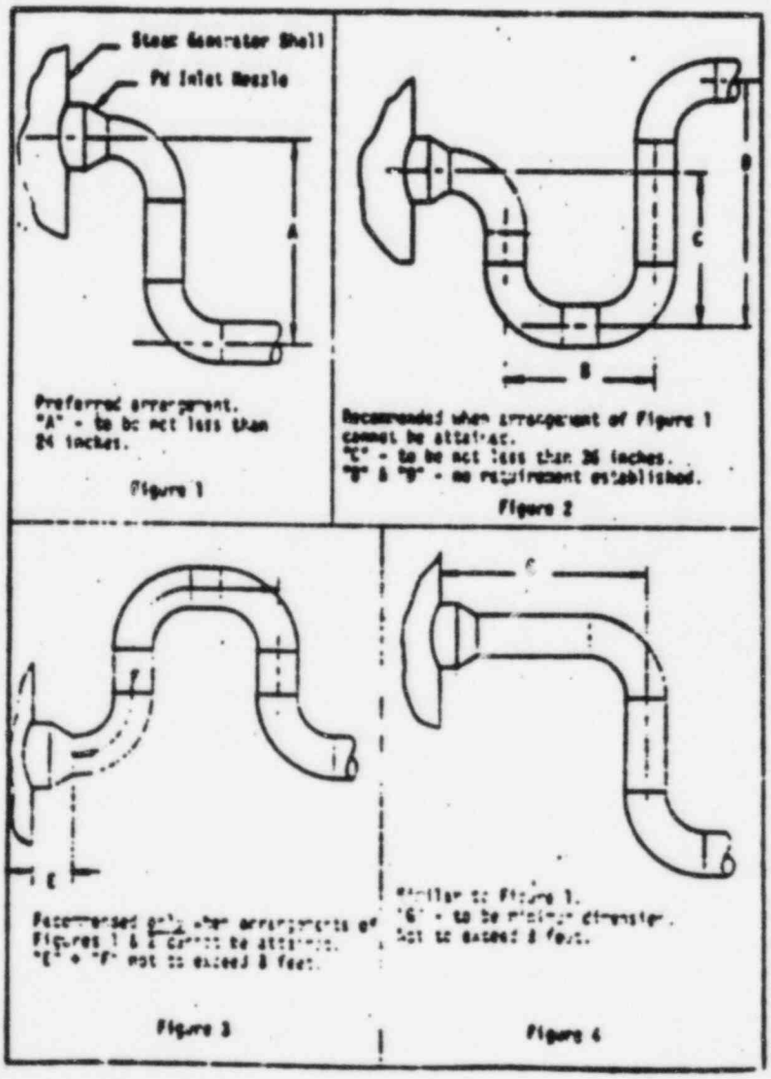
An advisory notice of a recent technical development pertaining to the installation or operation of Westinghouse Commercial Nuclear Plant equipment. Recipients should examine the information and recommendations, and initiate action where appropriate.

P.O. Box 2373, Pittsburgh, PA 15230

SKETCH SHEET

Attachment to NSD-TB-75-7

WESTINGHOUSE ELECTRIC CORPORATION



Preferred arrangement.
"A" - to be not less than 84 inches.

Figure 1

Recommended when arrangement of Figure 1 cannot be attained.
"C" - to be not less than 36 inches.
"B" & "B" - no requirement established.

Figure 2

Recommended only when arrangements of Figures 1 & 2 cannot be attained.
"E" + "F" not to exceed 8 feet.

Figure 3

Similar to Figure 1.
"G" - to be minimum diameter, not to exceed 8 feet.

Figure 4

SSC-1.5*

C8401036 2045

Westinghouse Nuclear Service Division

Technical Bulletin

An advisory notice of a recent technical development pertaining to the installation or operation of Westinghouse-supplied Nuclear Plant equipment. Recipients should evaluate the information and recommendation, and initiate action where appropriate.

P.O. Box 3233, Pittsburgh, PA 15230

Subject Water Hammer in Steam Generator Feedwater Lines	Number NSD-TB-75-7 Rev. 1
System(s) Feedwater - Steam Generator Secondary Side	Date March 9, 1977
Affected Plants All plants with feedring type steam generators	E.O. No. 800
References Sketch SSE-1287 (attached)	Sheet 1 of 4

Some Westinghouse operating plants have experienced a water hammer phenomenon in the feedwater lines to the steam generators. Because of the potential effects of this phenomenon, Westinghouse has initiated a comprehensive research effort to study the causes and possible remedies for the problem. This bulletin is to inform you of our progress to date and to advise you of feedwater layout requirements and other design and operating considerations we believe are important in minimizing the potential for hammer damage.

On November 13, 1973, Indian Point Unit No. 2 experienced a turbine trip from 7% power due to high level in one steam generator. Auxiliary feedwater flow was initiated and was able to maintain level above the low-low level point in three of the steam generators, but the level in the fourth steam generator decreased to the low-low level point causing a reactor trip. Immediately after the reactor trip, a rapid, but small level decrease occurred in all steam generators, apparently uncovering the feed ring in two of the steam generators. Some minutes after the reactor trip, as water level restoration in the steam generators was commencing, there was an audible indication of water hammer in the feedwater line connected to a steam generator in which the feed ring had uncovered. Within a quarter of an hour after reactor trip, it was noted that the moisture content of the containment atmosphere had increased. After further indications of rising temperature and humidity in the containment, following isolation of the steam generator, a plant cooldown was commenced. Containment entry was made, and a break in the feedwater line to one steam generator was found.

A study group was organized to investigate the mechanism behind this failure and make appropriate corrective recommendations. Various mechanisms were considered including simple water hammer, void formation and collapse in the feed line, rapid back draining of the feed line through a broken check valve until steam reached the auxiliary feed inlet, and rapid swelling of hot (back drained) feedwater during the steam generator pressure decay following shutdown.

Additional Information, If Required, may be Obtained from the Originator. Telephone 412 - 256-4731 or (FTS) 256-4731

Originator: W. E. Bennett, Mechanical Services

Approval: F. C. Wellhofer, Manager, Mechanical Services

RECEIVED DEC 27 1983 CDM/GO

* Changes are identified by vertical bars in both left and right hand margins.

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WESTINGHOUSE FORM 50070

QUARTERLY INSERVICE VALVE TESTING

CHECK OFF LIST # (3)

APPLICABLE MODES: 2-3

YEAR: 1984

	Valve Number	Sec. (Max)	FIRST QUARTER DATE: MODE: Data	%ΔT	Status	SECOND QUARTER DATE: 5-19-84 MODE: 5 Data	%ΔT	Status	THIRD QUARTER DATE: 8-19-84 MODE: 5 Data	%ΔT	Status	FOURTH QUARTER DATE: 11-27-84 MODE: Data	%ΔT	Status
-1 -115)	FWS-438	Open --	o --	--		o --	--		o --	--		o --	--	
		Close --	c --	--		c --	--	OOM	c --	--	CCM	c --	--	Pass
	Non-Routine Valve Testing		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
-2 -116)	FWS-439	Open --	o --	--		o --	--		o --	--		o --	--	
		Close --	c --	--		c --	--	OOM	c --	--	CCM	c --	--	Pass
	Non-Routine Valve Testing		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
-3	AFW-303	Open --	o --	--		o --	--		o --	--		o --	--	
		Close --	c --	--		c --	--	OOM	c --	--	CCM	c --	--	Pass
	Non-Routine Valve Testing		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
-4	AFW-312	Open --	o --	--		o --	--		o --	--		o --	--	
		Close --	c --	--		c --	--	OOM	c --	--	CCM	c --	--	Pass
	Non-Routine Valve Testing		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
-5	AFW-310	Open --	o --	--		o --	--		o --	--		o --	--	
		Close --	c --	--		c --	--	OOM	c --	--	CCM	c --	--	Pass
	Non-Routine Valve Testing		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
-6	AFW-309	Open --	o --	--		o --	--		o --	--		o --	--	
		Close --	c --	--		c --	--	OOM	c --	--	CCM	c --	--	Pass
	Non-Routine Valve Testing		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Valve Number	Sec. (Max)	Data	%ΔT	Status	Data	%ΔT	Status	Data	%ΔT	Status	Data	%ΔT	Status
		Open	o			o			o			o		
		Close	c			c			c			c		
	Non-Routine Valve Testing		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Valve Number	Sec. (Max)	Data	%ΔT	Status	Data	%ΔT	Status	Data	%ΔT	Status	Data	%ΔT	Status
		Open	o			o			o			o		
		Close	c			c			c			c		
	Non-Routine Valve Testing		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

MODES 2-3 IST OF VALVES

MODE 2 (2-3) DATE COMPLETED 11-27-84 TIME COMPLETED 1350

[X] Scheduled Surveillance [ ] Other Reason _____

[ ] Retest - Date of Initial Unsatisfactory Test _____

1.0 PREREQUISITES — INITIALS

1.1 Obtain the SRO Operations Supervisor's approval to perform this Check List. — SRO Ops. Supv.

1.2 All personnel performing this Check List have been advised to note all missing, incorrect or deteriorated component tags in the "Comments" section of this Check List.

2.0 INSTRUCTION

2.1 All Prerequisites and Precautions of the instruction have been reviewed. — [initials]

NOTE: All valves requiring Fail Safe Test shall be observed during cycling for proper operation in the direction indicated during Modes when access to the valve is available.

2.2 IST Valve

	SYSTEM VALVE NO.	VALVE DESCRIPTION	FAIL SAFE TEST/DIRECTION	INSTRUCTION	DATA	INITIALS
2.2.1	FWS-438	East Feedwater Pump Discharge Check	N.A.	(1) With West Feedwater Pump secured and HV-8528 closed, START the East Feedwater Pump and feed the S/G(S) per SO1-1-2, Startup from Hot Standby to Minimum Load.		
		AND				
2.2.2	FWS-439	West Feedwater Pump Discharge Check	N.A.	(2) Verify flow to the S/G(S).	FWS-438 OPENS	
				CAUTION If feed pump begins to rotate backwards during this test, immediately close discharge HV on pump.		
				(3) OPEN HV-8528, West Feedwater Pump Discharge.		
				(4) Verify west feedwater Pump discharge pressure does not increase.	FWS-439 CLOSES	
				(5) Shift to West Feedwater Pump running and East Feedwater Pump secured with HV-852A closed.		
				(6) Verify flow to the S/G(S).	FWS-439 OPENS	

NON-ROUTINE AND INCREASED FREQUENCY
INSERVICE VALVE TESTING

	Check Off List # (5-70)		Date: 2-24-85 Mode: 5			Date:		Mode:	Comments:
	Valve Number	Sec. (Max)	Data	%ΔT	Status	Data	%ΔT	Status	* 84-0332 * 84-09053
M19	FCV-458	Open —	o —	—		o —	—		
		Close 35	c 34.84	1.80↑	Pass	c			

	Check Off List # (5-76)		Date: 2-20-85 Mode: 5			Date:		Mode:	Comments:
	Valve Number	Sec. (Max)	Data	%ΔT	Status	Data	%ΔT	Status	EC 55-0556 MO 8502/328
M20	CV-305	Open 100	o 60.5	8.9↑		o			
		Close 80	c 45.1	26.↑	STI	c			

	Check Off List # (5-84)		Date: 2-26-85 Mode: 3			Date:		Mode:	Comments:
	Valve Number	Sec. (Max)	Data	%ΔT	Status	Data	%ΔT	Status	per night letter
M21	FWS-345	Open —	o —	—		o			
		Close —	c —	—	Pass	c			

	Check Off List # (5-87)		Date: 2-26-85 Mode: 3			Date:		Mode:	Comments:
	Valve Number	Sec. (Max)	Data	%ΔT	Status	Data	%ΔT	Status	per night letter
M22	FWS-346	Open —	o —	—		o			
		Close —	c —	—	Pass	c			

	Check Off List # ( )		Date:		Mode:	Date:		Mode:	Comments:
	Valve Number	Sec. (Max)	Data	%ΔT	Status	Data	%ΔT	Status	
		Open	o			o			
		Close	c			c			

	Check Off List # ( )		Date:		Mode:	Date:		Mode:	Comments:
	Valve Number	Sec. (Max)	Data	%ΔT	Status	Data	%ΔT	Status	
		Open	o			o			
		Close	c			c			

	Check Off List # ( )		Date:		Mode:	Date:		Mode:	Comments:
	Valve Number	Sec. (Max)	Data	%ΔT	Status	Data	%ΔT	Status	
		Open	o			o			
		Close	c			c			

	Check Off List # ( )		Date:		Mode:	Date:		Mode:	Comments:
	Valve Number	Sec. (Max)	Data	%ΔT	Status	Data	%ΔT	Status	
		Open	o			o			
		Close	c			c			

	Check Off List # ( )		Date:		Mode:	Date:		Mode:	Comments:
	Valve Number	Sec. (Max)	Data	%ΔT	Status	Data	%ΔT	Status	
		Open	o			o			
		Close	c			c			

REFERENCE: SO1-12.4-2
SO1-12.8-8

ENCODE: DN01-036-Z
SO 1
(When Form Filled Out)

NON-ROUTINE IN-SERVICE TESTING OF VALVES

1. Valve Identification Number: FWS-346 CWE #5-87 M22
2. Valve Name: FCV-457 discharge check
3. Reason for Nonroutine Test (include E.C.F. or M.O. number):
   Per "NIGHT LETTER" request
4. Test valve in accordance with SO1-12.4-2 for Cycle Test, Failsafe Test and Stroke Time - circle or record information below as applicable, include stroke time Acceptance Criteria;
   - 4.1 Stroke Time - OPEN (12sec) Max (120) Min (10sec)
     CLOSE (13sec) Max (130) Min (10sec)
     Stop watch: Serial Number (100) Cal. date (100)
   - 4.2 Failsafe Test - Sat / Unsat / (NA)
   - 4.3 Cycle Test - (Sat) / Unsat / NA
5. If valve test is being performed due to Position Indication Test failure, perform test per SO1-12.8-8.
   - 5.1 Position Indication Test - Sat / Unsat / (NA) mode 3
6. Comments (include D.T. or M.O. numbers generated):
   (1) Cycle Test of check valve - N/A

PERFORMED BY: Doug Ward Operator Date 2/26/85

REVIEWED BY: M Mazzuca SRO Operations Supervisor Date 2/26/85

7. Forward to NOA for Stroke Time Deviation Verification.
8. Stroke Time Deviation Verification - Sat / Unsat / (NA) - include test deviation % change if Unsat

PERFORMED BY: M. Ballard NOA Date ED FEB 27 1985

APPROVED BY: [signature] Shift Superintendent Date WED FEB 27 1985

CHECK-OFF LIST # (3)
APPLICABLE MODES:
YEAR:

	Valve Number	Sec. (Max)	FIRST QUARTER Date: 2-24-85 Mode: 5 Data	%Δ	Status	SECOND QUARTER Date: Mode: Data	%Δ	Status	THIRD QUARTER Date: Mode: Data	%Δ	Status	FOURTH QUARTER Date: Mode: Data	%Δ	Status
3-7	FWS-398	Open — Close 90	O — C —	—	PASS	O C		OOM	O C		OOM	O C		
	Non-Routine Valve Testing		Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sep	Oct	Nov	Dec
-8	FWS-417	Open — Close —	O C		OOM	O C		OOM	O C		OOM	O C		
	Non-Routine Valve Testing		Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sep	Oct	Nov	Dec
-9	MOV-32	Open — Close 90	O C 55.14	C →	PASS	O C		OOM	O C		OOM	O C		
	Non-Routine Valve Testing		Jan	Feb M18	Mar	Apr	May M	June	Jul	Aug	Sep	Oct	Nov	Dec
10	FWS-345	Open — Close —	O C		FAIL	O C		OOM	O C		OOM	O C		
	Non-Routine Valve Testing		Jan	Feb M31	Mar	Apr	May	June	Jul	Aug	Sep	Oct	Nov	Dec
-11	FWS-379	Open — Close —	O C		PASS	O C		OOM	O C		OOM	O C		
	Non-Routine Valve Testing		Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sep	Oct	Nov	Dec
12	MOV-31	Open — Close 90	O — C 51.6	— 1.77	PASS	O — C	—	OOM	O C		OOM	O C		
	Non-Routine Valve Testing		Jan	Feb M14	Mar	Apr	May M6	June	Jul	Aug	Sep	Oct	Nov	Dec
3-13	FWS-346	Open — Close —	O C		FAIL	O C		OOM	O C		OOM	O C		
	Non-Routine Valve Testing		Jan	Feb M33	Mar	Apr	May	June	Jul	Aug	Sep	Oct	Nov	Dec
-14	FWS-378	Open — Close —	O C		OOM	O C		OOM	O C		OOM	O C		
	Non-Routine Valve Testing		Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sep	Oct	Nov	Dec

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QUARTERLY INSERVICE VALVE TESTING

CHECK ... LIST # (3)

APPLICABLE MODES: 2-3

YEAR: 1985

	FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
	DATE: 3-2-85	DATE: 5/3/85	DATE: September	DATE:
	MODE: 1	MODE: 3 some but to make change	MODE: 3	MODE:

	Valve Number	Sec. (Max)	Data	%ΔT	Status	Data	%ΔT	Status	Data	%ΔT	Status	Data	%ΔT	Status
115	FWS-438	Open --	o --	--		o --	--	5/3 PASS	o --	--		o --	--	
		Close --	c --	--	COM	c --	--		c --	--	COM	c --	--	
	Non-Routine Valve Testing		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
116	FWS-439	Open --	o --	--		o --	--	Not Tested 5/3	o --	--		o --	--	
		Close --	c --	--	COM	c --	--		c --	--	COM	c --	--	
	Non-Routine Valve Testing		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3	AFW-303	Open --	o --	--		o --	--	5/3 PASS	o --	--		o --	--	
		Close --	c --	--	COM	c --	--		c --	--	PASS	c --	--	
	Non-Routine Valve Testing		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4	AFW-312	Open --	o --	--		o --	--	5/3 PASS	o --	--		o --	--	
		Close --	c --	--	COM	c --	--		c --	--	PASS	c --	--	
	Non-Routine Valve Testing		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
5	AFW-310	Open --	o --	--		o --	--	5/3 PASS	o --	--		o --	--	
		Close --	c --	--	COM	c --	--		c --	--	PASS	c --	--	
	Non-Routine Valve Testing		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
6	AFW-309	Open --	o --	--		o --	--	5/3 PASS	o --	--		o --	--	
		Close --	c --	--	COM	c --	--		c --	--	PASS	c --	--	
	Non-Routine Valve Testing		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Valve Number	Sec. (Max)	Data	%ΔT	Status	Data	%ΔT	Status	Data	%ΔT	Status	Data	%ΔT	Status
		Open	o			o			o			o		
		Close	c			c			c			c		
	Non-Routine Valve Testing		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Valve Number	Sec. (Max)	Data	%ΔT	Status	Data	%ΔT	Status	Data	%ΔT	Status	Data	%ΔT	Status
		Open	o			o			o			o		
		Close	c			c			c			c		
	Non-Routine Valve Testing		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

5/3 done as mode change

SAN ONOFRE NUCLEAR GENERATING STATION
UNIT 1

OPERATING INSTRUCTION SO1-12.8-2
SURVEILLANCE
REVISION 4
ATTACHMENT 9.3
CHECK LIST 3

TCN 4-10
Figs 39.6 11

MODES 2-3 IST OF VALVES

MODE 3 (2-3)

DATE COMPLETED 5/2/85 TIME COMPLETED _____

[ ] Scheduled Surveillance

[X] Other Reason Mode Change per SO1-12.0-4

[ ] Retest - Date of Initial Unsatisfactory Test _____

1.0 PREREQUISITES

INITIALS

1.1 Obtain the SRO Operations Supervisor's approval to perform this Check List. SRO Ops. Supv.

1.2 All personnel performing this Check List have been advised to note all missing, incorrect or deteriorated component tags in the "Comments" section of this Check List.

2.0 INSTRUCTION

2.1 All Prerequisites and Precautions of the Instruction have been reviewed.

NOTE: All valves requiring Fail Safe Test shall be observed during cycling for proper operation in the direction indicated during Modes when access to the valve is available.

2.2 IST Valve

	SYSTEM VALVE NO.	VALVE DESCRIPTION	FAIL SAFE TEST/DIRECTION	INSTRUCTION	DATA	INITIALS
2.2.1	FWS-438	East Feedwater Pump Discharge Check	N.A.	(1) With West Feedwater Pump secured and HV-8528 closed, START the East Feedwater Pump and feed the S/G(S) per SO1-3-2, Startup from Hot Standby to Minimum Load.		W
		AND				
2.2.2	FWS-439	West Feedwater Pump Discharge Check	N.A.	(2) Verify flow to the S/G(S).	FWS-438 OPENS	W
				CAUTION ======= If feed pump begins to rotate backwards during this test, immediately close discharge HV on pump.		
				(3) OPEN HV-8528, West Feedwater Pump Discharge.		A/C (12)
				(4) Verify west feedwater Pump discharge pressure does not increase.	FWS-439 CLOSES	A/C (OR)
				(5) Shift to West Feedwater Pump running and East Feedwater Pump secured with HV-852A closed.		A/C (12)
				(6) Verify flow to the S/G(S).	FWS-439 OPENS	A/C (OR)

RECEIVED
AUG 12 1985
COM DOCUMENTATION

	SYSTEM VALVE NO.	VALVE DESCRIPTION	FAIL SAFE TEST	INSTRUCTIONS	DATA		INITIALS
2.2.2 (Continued)				CAUTION ******* If feed pump begins to rotate backwards during this test, immediately close discharge HV on pump.			
				(7) OPEN HV-852A, East Feedwater Pump Discharge.			A/C (12)
				(8) Verify east feedwater Pump discharge pressure does not increase.	FWS-438 CLOSES		~~A/C (12)~~ OR
	NOTE:	The following four (4) valves shall be tested by adding water to the S/Gs using the steam driven auxiliary feedwater pump.					
2.2.3	AFW-303	Steam Driven AFW Pump Discharge Check	N.A.	(1) Add water to "C" S/G per SO1-7-3.			
2.2.4	AFW-312	AND Steam Driven AFW Pump Discharge to "C" S/G Check Valve	N.A.	(2) Verify "C" S/G level increases and/or flow to "C" S/G.	AFW-303	OPENS	~~✓~~
					AFW-312	OPENS	~~✓~~
2.2.5	AFW-310	Steam Driven AFW Pump Discharge to "B" S/G Check Valve	N.A.	(1) Add water to "B" S/G per SO1-7-3.			
				(2) Verify "B" S/G level increases and/or flow to "B" S/G.	AFW-310	OPENS	~~✓~~
2.2.6	AFW-309	Steam Driven AFW Pump Discharge to "A" S/G Check Valve	N.A.	(1) Add water to "A" S/G per SO1-7-3			
				(2) Verify "A" S/G level increases and/or flow to "A" S/G.	AFW-309	OPENS	~~✓~~

COMMENTS: ① W Feed Pump cleared # 4324 EC 85-1149, 1

TESTING PERFORMED BY: R Walker — Operator Signature — Initials W — Date 5-1-85

Operator Signature — Initials ✓ — Date 5/2/85

3.0 ACCEPTANCE CRITERIA

3.1 All valves tested cycle properly (see step 4.1 below) and meet the requirements listed in the data sections. All valves not tested shall be declared inoperable unless the criteria of Precaution 4.2 is met.

REVIEWED BY: E Echavarria — SRO Operations Supervisor — Date 5-2-85

QUARTERLY INSERVICE VALVE TESTING

CHECK OFF LIST # (3)

APPLICABLE MODES: 2-3

YEAR: 1984

	Valve Number	Sec. (Max)	FIRST QUARTER DATE: MODE: Data	%ΔT	Status	SECOND QUARTER DATE: 5-19-84 MODE: 5 Data	%ΔT	Status	THIRD QUARTER DATE: 8-19-84 MODE: 5 Data	%ΔT	Status	FOURTH QUARTER DATE: 11-27-84 MODE: Data	%ΔT	Status
-1 -116)	FWS-438	Open --	o --	--		o --	--	OOM	o --	--		o --	--	Pass
	Non-Routine Valve Testing	Close --	c --	--		c --	--		c --	--	OOM	c --	--	
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
-2 -116)	FWS-439	Open --	o --	--		o --	--	OOM	o --	--		o --	--	Pass
	Non-Routine Valve Testing	Close --	c --	--		c --	--		c --	--	OOM	c --	--	
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
-3	AFW-303	Open --	o --	--		o --	--	OOM	o --	--		o --	--	Pass
	Non-Routine Valve Testing	Close --	c --	--		c --	--		c --	--	OOM	c --	--	
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov Mar	Dec
-4	AFW-312	Open --	o --	--		o --	--	OOM	o --	--		o --	--	Pass
	Non-Routine Valve Testing	Close --	c --	--		c --	--		c --	--	OOM	c --	--	
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov Mar	Dec
-5	AFW-310	Open --	o --	--		o --	--	OOM	o --	--		o --	--	Pass
	Non-Routine Valve Testing	Close --	c --	--		c --	--		c --	--	OOM	c --	--	
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov Mar	Dec
-6	AFW-309	Open --	o --	--		o --	--	OOM	o --	--		o --	--	Pass
	Non-Routine Valve Testing	Close --	c --	--		c --	--		c --	--	OOM	c --	--	
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov Mar	Dec
		Open	o			o			o			o		
	Non-Routine Valve Testing	Close	c			c			c			c		
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		Open	o			o			o			o		
	Non-Routine Valve Testing	Close	c			c			c			c		
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

MODES 2-3 IST OF VALVES

MODE 2 (2-3) DATE COMPLETED 11-27-84 TIME COMPLETED 1350

[X] Scheduled Surveillance [ ] Other Reason _____

[ ] Retest - Date of Initial Unsatisfactory Test _____

1.0 PREREQUISITES

INITIALS

1.1 Obtain the SRO Operations Supervisor's approval to perform this Check List. EL
SRO Ops. Supv.

1.2 All personnel performing this Check List have been advised to note all missing, incorrect or deteriorated component tags in the "Comments" section of this Check List.

2.0 INSTRUCTION

2.1 All Prerequisites and Precautions of the instruction have been reviewed. EL

NOTE: All valves requiring Fail Safe Test shall be observed during cycling for proper operation in the direction indicated during Modes when access to the valve is available.

2.2 IST Valve

	SYSTEM VALVE NO.	VALVE DESCRIPTION	FAIL SAFE TEST/DIRECTION	INSTRUCTION	DATA	INITIALS
2.2.1	FWS-438	East Feedwater Pump Discharge Check	N.A.	(1) With West Feedwater Pump secured and HV-8528 closed, START the East Feedwater Pump and Feed the S/G(S) per SO1-3-2, Startup from Hot Standby to Minimum Load.		EL
		AND				
2.2.2	FWS-439	West Feedwater Pump Discharge Check	N.A.	(2) Verify flow to the S/G(S).	X FWS-438 OPENS	EL
				CAUTION If feed pump begins to rotate backwards during this test, immediately close discharge HV on pump.		
				(3) OPEN HV-8528, West Feedwater Pump Discharge.		
				(4) Verify west feedwater Pump discharge pressure does not increase.	FWS-439 CLOSES	EL
				(5) Shift to West Feedwater Pump running and East feedwater Pump secured with HV-8524 closed.		
				(6) Verify flow to the S/G(S).	FWS-439 OPENS	EL

	SYSTEM VALVE NO.	VALVE DESCRIPTION	FAIL SAFE TEST	INSTRUCTIONS	DATA		INITIALS
2.2.2 (Continued)				CAUTION ******* If feed pump begins to rotate backwards during this test, immediately close discharge HV on pump.			
				(7) OPEN HV-852A, East Feedwater Pump Discharge.			
				(8) Verify east feedwater Pump discharge pressure does not increase.	FWS-438	CLOSES	12
	NOTE:	The following four (4) valves shall be tested by adding water to the S/Gs using the steam driven auxiliary feedwater pump.					
2.2.3	AFW-303	Steam Driven AFW Pump Discharge Check AND	N.A.	(1) Add water to "C" S/G per SO1-7-3.			
2.2.4	AFW-312	Steam Driven AFW Pump Discharge to "C" S/G Check Valve	N.A.	(2) Verify "C" S/G level increases and/or flow to "C" S/G.	AFW-303	OPENS	12
					AFW-312	OPENS	12
2.2.5	AFW-310	Steam Driven AFW Pump Discharge to "B" S/G Check Valve	N.A.	(1) Add water to "B" S/G per SO1-7-3			
				(2) Verify "B" S/G level increases and/or flow to "B" S/G.	AFW-310	OPENS	12
2.2.6	AFW-309	Steam Driven AFW Pump Discharge to "A" S/G Check Valve	N.A.	(1) Add water to "A" S/G per SO1-7-3			
				(2) Verify "A" S/G level increases and/or flow to "A" S/G.	AFW-309	OPENS	12

COMMENTS: _____

TESTING PERFORMED BY: D. Dewitt — 12 — 11-27-84
Operator Signature — Initials — Date

_____ — _____ — _____
Operator Signature — Initials — Date

3.0 ACCEPTANCE CRITERIA

3.1 All valves tested cycle properly (see step 4.3 below) and meet the requirements listed in the data sections. All valves not tested shall be declared inoperable unless the criteria of Precaution 4.2 is met.

REVIEWED BY: _____
SRO Operations Supervisor

11-27-84
Date

CHECK OFF LIST # (5)
APPLICABLE MODES: 5-6
YEAR: 1984

	Valve Number	Sec. (Max)	FIRST QUARTER DATE: MODE: Data	%ΔT	Status	SECOND QUARTER DATE: 5-19-84 MODE: 5 Data	%ΔT	Status	THIRD QUARTER DATE: MODE: Data	%ΔT	Status	FOURTH QUARTER DATE: MODE: Data	%ΔT	Status
-81	FWS-398	Open --	o --	--		o --	--	S/G IA CWCU	o --	--	PASS	o --	--	CCM
		Close --	c --	--		c --	--		c --	--		c --	--	
	Non-Routine Valve Testing		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
-82	FWS-417	Open --	o --	--		o --	--	S/G A. CWCU	o --	--	PASS	o --	--	CCM
		Close --	c --	--		c --	--		c --	--		c --	--	
	Non-Routine Valve Testing		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
-83	MOV-022 FWS	Open --	o —	—		o —	—	STATUS	o —	—		o —	—	
		Close	c			c 47.4	N/D	PASS	c 46.89	1.45↑	Pass	c		CCM
	Non-Routine Valve Testing		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
-84	FWS-345	Open --	o --	--		o --	--	S/G A CW	o --	--	Pass	o --	--	CCM
		Close --	c --	--		c --	--		c --	--		c --	--	
	Non-Routine Valve Testing		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
-85	FWS-379	Open --	o --	--		o --	--	S/G A CW	o --	--	Pass	o --	--	CCM
		Close --	c --	--		c --	--		c --	--		c --	--	
	Non-Routine Valve Testing		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
-86	MOV-021 FWS	Open --	o —	—		o —	—	PASS	o —	—	Pass	o —	—	CCM
		Close	c			c 48.6	0.41↓		c 48.06	1.1↓		c		
	Non-Routine Valve Testing		Jan	Feb	Mar	Apr M-8	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
-87	FWS-346	Open --	o --	--		o --	--	S/G A CW	o --	--	Pass	o --	--	CCM
		Close --	c --	--		c --	--		c --	--		c --	--	
	Non-Routine Valve Testing		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
-88	FWS-378	Open --	o --	--		o --	--	S/G A CW	o --	--	Pass	o --	--	CCM
		Close --	c --	--		c --	--		c --	--		c --	--	
	Non-Routine Valve Testing		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

	SYSTEM VALVE NO.	VALVE DESCRIPTION	FAIL SAFE TEST/DIRECTION		INSTRUCTION	DATA	INITIALS	
2.2.83	MOV-22 FWS	Feedwater Isol. to "C" Stm. Gen.		(6)	Close FCV-458 and open CV-143.			
				(7)	OPEN MOV-22.		CDS	TCN
				(8)	Verify minimal or no flow.	FWS-417 CLOSES		
				(9)	CLOSE FWS-400, drain after MOV-22.		CDS	
				(10)	CLOSE CV-143.			
2.2.84	FWS-385	FCV-456 Discharge Check	N.A.	(1)	Verify "A" S/G level is above the feed ring.			
	AND			(2)	OPEN FCV-456, "A" S/G Feed Reg. Valve.			
2.2.85	FWS-379	CV-142 Discharge Check	N.A.	(3)	CLOSE MOV-21, FCV-456 Isol. →	Close Time 4.06 Sec (____ Sec. Max.)	✓	
				(4)	Open drain after MOV-21, FWS-351.			
	AND						AW	
2.2.86	MOV-21 FWS	Feedwater Isol. to "A" Stm. Gen.		(5)	After draining verify minimal or no flow.	FWS-385 CLOSES		
				(6)	Close FCV-456 and open CV-142.		AW	
				(7)	OPEN MOV-21.			TCN
				(8)	Verify minimal or no flow.	FWS-379 CLOSES	AW	
				(9)	CLOSE FWS-351, drain after MOV-21.			
				(10)	CLOSE CV-142.			
2.2.87	FWS-386	FCV-457 Discharge Check	N.A.	(1)	Verify "B" S/G level is above the feed ring.			
	AND			(2)	OPEN FCV-457, "B" S/G Feed Reg. Valve.			
2.2.88	FWS-378	CV-144 Discharge Check	N.A.	(3)	CLOSE MOV-20, FCV-457 Isol. →	Close Time 4.77 Sec (____ Sec. Max.)	✓	
				(4)	Open drain after MOV-20, FWS-348			
	AND			(5)	After draining verify minimal or no flow.	FWS-386 CLOSES	CDS	
2.2.89	MOV-20 FWS	Feedwater Isol. to "B" Stm. Gen.		(6)	Close FCV-457 and open CV-144.			
				(7)	OPEN MOV-20.		CDS	
				(8)	Verify minimal or no flow.	FWS-378 CLOSES		TCN
				(9)	CLOSE FWS-348, drain after MOV-20.		CDS	
				(10)	CLOSE CV-144.			

NOTE: The following seven (7) valves shall be tested by adding water to the S/Gs using the motor-driven auxiliary feedwater pump.

TCN 4-4

COMMENTS: (1) Erroneous values replace with Monroe type - no new acceptance data yet. Page 68 of 78
(2) Not performed due to plant operational conditions. Will run when conditions permit.

TESTING PERFORMED BY:

Dale Helwig — Operator Signature — DH — Initials — 8-25-84 — Date ← Data Transfered

Rick Watz — Operator Signature — RW — Initials — 8-26-84 — Date ←

THU OCT 11 1984

INDEPENDENT VERIFICATION PERFORMED BY:

Operator Signature — Initials — Date

Operator Signature — Initials — Date

3.0 ACCEPTANCE CRITERIA

3.1 All valves tested cycle properly (see step 4.3 below) and meet the requirements listed in the data sections. All valves not tested shall be declared inoperable unless the criteria of Precaution 4.2 is met.

REVIEWED BY: [signature] SAD Operations Supervisor — DR — Initials — 11-2-84 — Date

4.0 TEST EVALUATION

4.1 ~~Evaluate test results within limits delineated~~ in the procedure.

4.2 ~~If any portion of the test does not meet the required operability, proceed in accordance with SOI-12.0-2, "Operating Surveillance Implementation."~~

4.3 If a valve fails to perform in an acceptable manner (i.e., doesn't meet max. or min. stroke time, has abnormal or erratic action, fails to exhibit the required change of valve stem or disk position), the following is to be accomplished as soon as possible:

4.3.1 Evaluate any and all valves that fail to perform in an acceptable manner against applicable Technical Specification requirements.

4.3.2 If a valve fails to perform in an acceptable manner ~~and does not have a more time limiting applicability in Tech. Spec.~~, the valve will be declared inoperable, ~~if not corrected within twenty-four (24) hours of that valves test failure.~~ TCN 4-2

4.3.3 Initiate maintenance via a Deficiency Tag to have the valve fixed. Priority should be such as not to exceed procedure and Tech. Spec. time limits for inoperative conditions. Enter Deficiency Tag number(s) below.

4.3.4 Follow the maintenance with another test, then update latest Check List 7 in Shift Superintendent's Completed Compliance file.

4.3.5 Complete "Nonroutine ~~Pump and Valve~~ I-I SERVICE Testing of Valves" form SO(1) 355. TCN 4-1

4.3.6 Repeat step 4.0 if valve(s) still not acceptable.

Proposed Facility Change

Quadrex Corporation

Originator A. HERNANDEZ / D. GORG

1-85-3052.0 Unit(s) 1 89-3

Number REV. 0 Date NOVEMBER 22, 1985

1 Title Main Control Room Indication of Main Feedwater Low Flow

Description PROVIDE MFW LOW FLOW INDICATION IN THE MCR TO ENHANCE OPERATOR ADMINISTRATIVE CONTROL TO PREVENT WATER HAMMER WHEN THE FEEDRING IS UNCOVERED.

Quality Class SR Seismic Category A

2 Proposed Facility Change Package Contents

- [X] Engineering/Safety, Environmental, and ALARA Evaluation (short form)
- [ ] Engineering/Safety, Environmental, and ALARA Evaluation (long form)
- [X] Construction Safety Analysis
- [X] Configuration Document Checklist and Attachments (Form SO(123) 183, SO(1,3) 184, or 26.246)
- [ ] ALARA Design Review Checklist (Form 26.247), if required
- [X] Fire Protection Design Checklist (Form 26.292)
- [ ] FSAR, FSA and FHA Changes, if required
- [ ] License and/or Technical Specification changes
- [ ] Security Plan or Emergency Plan Changes
- [X] DCP ~~and/or Footprint Addendum~~ No. 3052.0T JREV.0
- [ ] Other (Specify)

3 Reviews

	REQ'D.	NOT REQ'D	
ALARA Review	[ ]	[X]	11/22/85 INITIAL/DATE
Fire Protection Review	[ ]	[X]	11/22/85 INITIAL/DATE
Security Review	[ ]	[X]	11/22/85 INITIAL/DATE
Station Review/Approval	[X]	[ ]	11/22/85 INITIAL/DATE

4 Project / E&C Approvals

Craig Zaker 11/29/85
ENVIRONMENTAL ENGINEER DATE

Steven Lee Weiss 11/24/85 q/s for R.O per telecon 11/29
NUCLEAR ENGINEER DATE

Jerry Stevens 11/26/85
PROJECT ENGINEER DATE

Station Approval Required Yes [X] No [ ]

5 Supervising Engineer

- [ ] Approved for Processing
- [ ] Involves Safety-Related Equipment
- [ ] Involves Equipment Governed by Technical Specifications
- [ ] This item must be reviewed by the Nuclear Safety Group prior to implementing since it appears to involve a change in the Technical Specifications or may involve an unreviewed safety question.

SIGNATURE SUPERVISING ENGINEER DATE

Station Interdisciplinary Review

REQUIRED		DATE ACCEPTED W/O CHANGE	DATE COMMENTS RESOLVED
[ ]	Maintenance		
[ ]	Operations		
[ ]	Security		
[ ]	I & C/Elec.		
[ ]	Emer. Prep.		
[ ]	HP/ALARA		
[ ]	Chemistry		
[ ]	Other (Specify)		

SIGNATURE COGNIZANT STATION ENGINEER DATE

6 Station Technical Manager

SIGNATURE DATE

7 Equipment Control [ ] Unit 1 [ ] Unit 2 [ ] Unit 3

Authorization is given to proceed during:

[ ] MODE ____ ONLY [ ] ALL MODES

[ ] MODES ____ ____ ____ ____ ____

Special Restrictions or Limitations

SIGNATURE DATE

8 Quality Assurance

SIGNATURE DATE

9 Nuclear Safety Group

SIGNATURE DATE

10 Final Review

Work completion has been reviewed. The proposed facility change is complete.

COGNIZANT STATION ENGINEER DATE

SUPERVISING ENGINEER DATE

11 Configuration Review

Affected design documents and procedures reflect this modification.

SUPERVISOR, CONFIGURATION CONTROL DATE

COPY DISTRIBUTION:

- Originator
- Station Opers. Mgr.
- Station Tech. Mgr.
- Supvr. Nuc. Sfty. Grp.
- Supvr. Config. Contr.
- Proj. Engr.
- Quality Assur.
- Supvr. of Shift Tech. Advs.
- Nuc. Train. Mgr.
- Health Phys. Mgr.
- Supr — Unit 1 ____ Units 2 & 3 ____
- Station Maint. Mgr.
- Cog. Station Engr.
- Dep. Station Mgr.
- Constr. Mgr. — Unit 1 ____ Units 2 & 3 ____
- Supvr. Maint. Plann.
- Supvr. I & C

26-251 NEW 5/84

PROPOSED FACILITY CHANGE
ENGINEERING/SAFETY EVALUATION
ATTACHMENT TO FORM 26-294, 8/84

I. DESCRIPTION

This design change results from SCE W.A. 3052. ~~and SCE P.O. No. Req. 3915M.~~ This change will either physically remove or utilize equipment installed by PFC 1-81-045 Rev. 1 dated August 23, 1983 but "Not Turned Over". GH 11/27/85

The existing equipment to be removed consists of:

1. Strap-on controlotron transmitters, FT-2004A, B and C along with their associated flow computers FC-2004 A, B, and C.

2. Annunciator window No. 19 labeled "FEEDWATER ~~LOSS~~ LOW FLOW INDICATION TROUBLE" located on the Reactor Plant First Out Panel. 11/27/85 SDC

The existing equipment to be utilized consists of:

1. Three Sigma Lumigraph Indicators (Model No. 9270) FI 2004 A, B, and C located in the operator's console.

2. Three 2/c AWG #16 shielded cables in one conduit installed between the transmitters and the Main Control Room (MCR).

3. Foxboro SPEC-200 racks in the Main Control Room (MCR) cabinet C-70.

This modification will also install the following new equipment:

1. Orifice plates downstream of the Feedwater Bypass Control Valves CV-142, CV-143, and CV-144.

2. Differential pressure transmitters adjacent to and associated with each orifice plate.

3. Electronic converter and signal conditioning equipment in the MCR panel C-70.

II. ENGINEERING EVALUATION

This modification provides the capability for plant operators to monitor accurately in the Main Control Room (MCR) the low flow conditions of the Main Feedwater System (MFW). The low flow indication in the Main feedwater lines will be used with administrative controls to minimize the probability of water hammer. Tests at the Indian Point Plant reactor have shown that in order to avoid feedwater ring bubble collapse the ring must either be maintained full or the flow of cold water must be low enough to prevent the water hammer event from occurring. Test results reveal that 200 gpm to each feedwater ring is the maximum flow rate of cold water achievable without experiencing the phenomenon of water hammer. Because of the differences between the two plants, a more conservative flow rate of 150 gpm was selected for operational use at SONGS 1. ~~This improved operator capability to prevent low MFW flow water hammer will over the lifetime of the plant improve its availability factor~~. This limit is too low for the main feedwater flow (wide range) indication to be useful. The range of the new low flow indication was selected, however, with this use in mind. This DCP has received an interdiscipline review and all comments have been resolved.

Engineering has reviewed DCP No. 3052.0TJ, Rev. O. Based on the above evaluation, the design change is deemed necessary, and will achieve its objective. complete, constructible, is operable and maintainable 11/27/85

III. SAFETY EVALUATION

A. The probability of occurrence of an accident or malfunction of any equipment previously evaluated in the FSA will not be increased as a result of this modification. This modification is to the bypass portion of the Main Feed Water System. As described in the Engineering Evaluation, this modification is made solely to provide Main Feedwater (MFW) low flow indication in the Main Control Room (MCR) to enhance administrative control of the MFW flow so as to enable prevention of water hammer associated with uncovering of the feedring. No adverse pressure boundary or system parameter effects result from this change. No safety related system capabilities are affected. As such, all analyzed accident scenarios, consequences and probabilities remain unchanged.

B. The consequences of an accident or malfunction of any equipment important to safety previously evaluated in the FSA will not be increased as a result of this modification. See Section IIIA.

C. This modification will not create the possibility for an accident or malfunction of a different type than any previously evaluated in the FSA. See Section IIIA.

D. The margin of safety as defined in the basis for any Technical Specification is not reduced. This modification has no effect on any limiting conditions, operation or surveillance requirements of the existing Technical Specifications. As such, no Technical Specification basis on associated margin of safety is affected.

IV. ENVIRONMENTAL EVALUATION

The work and associated nonradiological effects involved in this modification are confined to areas previously disturbed during site preparation and plant construction. As such, the Proposed Plant Modification does not involve an unreviewed environmental question.

V. IMPLEMENTATION SECTION

Based on the information contained in the ~~safety~~ engineering and ~~engineering~~ safety evaluations, Section II and III respectively: GH 11/27/85

A. This alteration does not involve a change to the Technical Specification incorporated into the station operating license.

B. This alteration does not involve an unreviewed safety question (as defined by 10CFR50.59).

C. This alteration does not constitute a change to the FSAR design basis or analysis. GH 11/27/85

D. This alteration does not decrease the effectiveness of the Security Plan or the Emergency Plan (as defined by 10CFR50.54 (p) and (q)).

E. This alteration does not adversely impact the fire protection system/program or violate the Fire Hazards Analysis (FHA). GH 11/27/85

VI. QUALITY AND SEISMIC CLASSIFICATION

The work associated with this change impacts the portion of the Main Feed Water system that is Quality Class SR, and Seismic Category A as defined in SONGS Unit 1 ~~Retrofit General Design Criteria Manual, Safety Related, M-37387 Revision 4, dated December 1984.~~ Q-LIST, M-37560 Revision.

VII. ALARA REVIEW:

A. This alteration will not modify facility, system or components which will collect, store, process or transport any radioactive materials.

B. This alteration will not modify facility, systems or components which are located in a Radiologically Controlled area (greater than or equal to 0.25mR/hr or greater than or equal to 1000 dpm/100CM^2 removable).

C. This alteration will not create routine maintenance, inspection or surveillance requirements in a Radiologically Controlled area (greater than or equal to 0.25 mR/hr or greater than or equal to 1000 dpm/100CM^2 removable).

D. This alteration will not involve construction activities which will cause personnel to come into close proximity with systems or components collecting, storing, processing or transporting radioactive materials, or which are located in a Radiologically Controlled area (greater than or equal to 0.25 mR/hr or contamination greater than or equal to 1000 dpm/100 CM^2 removable).

VIII. CONSTRUCTION PRECAUTIONS

This work shall be implemented in accordance with established and approved SCE Construction Management Policies and Procedures. The implementation will be performed by Bechtel Construction or Edison personnel as determined in the field.

The implementation process and sequences will not result in a violation of the Technical specifications, License, in an unreviewed safety question, or jeopardize other equipment in service. Additionally, no unique construction activities are involved, except or temporary modifications

11/27/85

that the project will install orifice plates, with corresponding differential pressure transmitters, downstream of the MFW bypass control valves to provide low flow indication on existing indicators located in the Main Control Room.

The personnel directing the work will be fully familiar with the work area and tasks to be accomplished. Safety precautions described in the attached Construction Safety Evaluation shall be taken to ensure safe completion of work.

SCE Engineering has reviewed the Construction Safety ~~Evaluation~~ Assessment attached hereto and concurs with the precautionary steps included therein as a minimum. This work should be implemented in accordance with the 1985 Work Plan. AH 11/27/85

IX. ATTACHMENTS

A. DCP 3052.0TJ, Rev. 0

B. CSA

C. Configuration Document Checklist ~~SO(123)183~~ AH 11/27/85

D. Configuration Documents Requiring Change ~~SO(123)184~~ AH 11/27/85

E. Fire Protection Design Checklist

X. IDENTIFICATION AND TRACING INFORMATION

A. PFC Number 85-3052.0, Rev. 0

B. Date of Preparation: November 22, 1985

A. A. Hernandez AH 11/27/85
Control Group Leader
SONGS 1
PAX 2-3299

JRY/QUADREX

FLUOR ENGINEERS, INC.
POWER DIVISION

7

DCP# 3052.0TJ REV 0 SHT 1 OF 210

REFERENCE:
SO123-XIV-3.1
SO123-XIV-4.1
SO123-XIV-4.2
SO123-V-4.14
SO123-VI-1.0

ENCODE: AC40AB-C
AC10AC-C

SO 1
(When Form Filled Out)

San Onofre Nuclear Generating Station

CONFIGURATION DOCUMENT CHECK LIST

DOCUMENT/SOURCE INITIATING CHANGE (PPC, DCP, NCR, STC — NUMBER)

DCP 3052.0TJ

SOURCE DOCUMENT DATE

9-12-85

CHANGE EFFECTIVE DATE

Change Req	Change Comp	Document Category
		GENERAL
		MEL Data Base
		Equipment Index
		Q List
		Supplemental Q List
		Authorized Consumables Man.
		Field Generated Dwgs.
		HELBA Dwgs.
		Radiation Zone Dwgs.
		Station Manual
		System Descriptions
	▨	Construction Specs
	▨	Nuclear Specs
	▨	Procurement Specs
	▨	Computer Program Specs
		Computer Program Descriptions
		Computer System Descriptions
	▨	Spare Parts Lists
	▨	Design Calculations
	▨	Design Criteria Manuals
		EQ Document Packages
		MECHANICAL
	▨	Code Class List
		Line Designation List
		Pipe Section Lists
X		Master Valve List
		Valve Designation List
		Fire Barrier Dwgs.
		Fire Detector Location Dwgs.
		General Arrangement Dwgs.
		HVAC Drawings
		Mech. Equip. Detail Dwgs.
		Piping Support Detail Dwgs.
X		P&ID's
X		Piping Dwgs. — Plan and Sect.
X		Piping Isometric Drawings
		Small Pipe Routing Drawings
		Vent and Drain Drawings
	▨	Piping Materials Specs
X	▨	Pipe Support Calculations
X	▨	Pipe Stress Analysis
		Supplier (Vendor) Drawings
		Supplier (Vendor) Manuals
		OTHER DESIGNATED DOCUMENTS
		Emergency Plans
		Environmental Protection Plan
		Fire Preplans
		Off-Site Dose Calculation Manual
		Security Plan
	▨	**TRAINING**
		Simulator Documentation

Change Req	Change Comp	Document Category
		CIVIL/STRUCTURAL/ARCHITECTURAL
		Architectural Drawings
		Civil and Yard Drawings
		Electrical Hanger Drawings
		Security Drawings
X		Structural Drawings/Details
		Utility and Underground Dwgs.
		Supplier (Vendor) Drawings
		Supplier (Vendor) Manuals
		Control Rm. Penetration Dwgs.
		ELECTRICAL
		Electrical EQ Index
		EQ Equip. Master List
		EQ Document Packages
		Cable Block Diagrams
		Cable Routing Drawings
		Conduit Routing Diagrams
X		Conduit and Tray Drawings
		Penetration Drawings/Schedule
		Physical Layout Drawings
X		Elementary Wiring Diagrams
		Grounding Dwgs. Layouts & Details
		Ltg., Comm. & Fire Protect Dwgs.
		One Line Diagrams
		Panel Loading Diagrams
		Telecommunications Drawings
X		Wiring Diagrams
X		Circuit & Raceway Schedules
	▨	Ckt. & Race Explanations/Rpts.
		Supplier (Vendor) Drawings
		Supplier (Vendor) Manuals
		INSTRUMENTATION AND CONTROL
		Annunciator Alarm List
X		Annunciator Window Engraving List
	▨	Computer I/O List
X		Inst. Data Sheets
		Instrument Indexes
	▨	Lens Engraving List
		Seismic Sensing Line Matrix (2) (3)
		Set Point Index
		Control Panel Layout Drawings
		Control Panel Ind. Scale Coding Dwg.
X		Control Panel Inst. Arrangement Dwgs.
		Control Room Layout Drawings
		Control Sw. Configuration Dwgs.
		Device Location Drawings
X		Functional Block Diagrams
X		Instrument Location Drawings
X		Inst. Installation Drawings
		Loop Diagrams
		Logic Diagrams
		Name Plate Drawings
		Panel Drawings
		Pattern Recognition Drawings
		Special Pneumatic Sys. Drawings
		Supplier (Vendor) Drawings
		Supplier (Vendor) Manuals
		LICENSING DOCUMENTS
		Operating Licenses (1) (2) (3)
		Tech. Specs (1) (2) (3)
		Environmental Tech. Spec (1)
		FSAR (1) (2) (3)
		Fire Hazard Analysis

Design Document Initial Assessment

PREPARED BY

T. Summers
ORIGINATING ENGINEER

9/12/85
DATE

FLUOR ENGINEERS, INC.
POWER DIVISION

REFERENCE:
SO123-XIV-3.1
SO123-XIV-4.1
SO123-XIV-4.2
SO123-V-4.14
SO123-VI-1.0

ENCODE: AC40AB-C
AC10AC-C

SO 1
(When Form Filled Out)

DCP# 3052.0TJ REV 0 SHT 2 OF 2

San Onofre Nuclear Generating Station

CONFIGURATION DOCUMENT CHECK LIST

DOCUMENT/SOURCE INITIATING CHANGE (PFC, DCP, NCR, ETC.—NUMBER)
DCP-3052.0TJ

SOURCE DOCUMENT DATE
9-12-85

CHANGE EFFECTIVE DATE

Change Rec.	Change Comp.	Document Category
		STATION ORDERS
		A Administrative
		BC Budget and Cost Control
		C Chemistry
		CO Compliance
		CC Configuration Control
		CF Common Facilities
		E Engineering
		EN Environmental Compliance
		EP Emergency Preparedness
		FP Fire Protection
		G General
		HP Health Physics
		IC Instr. and Control
		IF Information Systems
		IN Inservice Inspection
		MA Maintenance
		OP Operations
		PR Procurement
		PI Planning and Control
		SE Security
		SN Special Nuclear Mat'l. Safeguards
		TN Training
		STATION PROCEDURES
		I Maintenance
		II I & C
		III Chemical
		IV Security
		V Engineering
		VI Administrative
		VII Health Physics
		VIII Emergency
		IX Environmental
		X Spec. Nuc. Mat'l. Safeguards
		XI Material Control
		XII QC Inspection
		XIII Fire Protection
		XIV Configuration Control
		XV General
		XVI Safety
		XVII O & M Support
		XVIII
		XIX Budget and Cost Control
		XX Common Facilities
		XXI Training
		XXII Compliance
		XXIV Planning and Control
		LICENSING DOCUMENT
		Operating Licenses (1) (2) (3)
		Technical Specifications (1) (2) (3)
		Environmental Tech. Specs. (1)
		FSAR (1) (2) (3)
		Fire Hazards Analysis
		TRAINING
		Lesson Plans
		System Descriptions
		Audio Visual Aids
		Training Task Analysis
		Simulator Documentation

Change Req.	Change Comp.	Document Category
		OPERATING INSTRUCTIONS
		Unit 1
		1 Emergency Operating
		2 Abnormal Operating
		2.1 Primary
		2.2 Radiological
		2.3 Instr. & Control Systems
		2.4 Secondary
		2.5 Natural Phenomenom & Fire
		2.6 Electrical
		3 General Operating
		4 Pr. Plant & Containment
		5 Radwaste Treat & Handling
		6 Turbine/Generator
		7 Secondary Plant
		8 Chem. Gas Waste Treat & Handling (nonrad)
		9 Electrical
		10 Diesel Generator
		11 Fire Protection
		12 Surveillance
		13 Annunciator Response
		14 Administration
		Units 2 & 3
		0 Administration
		1 Air Systems
		2 Auxiliaries
		3 Reactor Systems
		3.5 Emergency Operating
		4 Chemical
		5 Combined Systems Operations
		6 Electrical Systems
		7 Fire Systems
		8 Radwaste System
		9 Condensate
		10 Turbine
		11 Water Systems
		12 General
		13 Open
		SPECIAL PROCEDURES
		E Engineering
		OP Operations
		M Maintenance
		I Instrumentation
		S Security
		C Chemistry
		T Test
		HP Health Physics
		OTHER DESIGNATED DOCUMENTS
		Emergency Plans
		Environmental Protection Plan
		Fire Preplans Schedule
		Off-Site Dose Calculation Man
		Safety Manual
		Security Plan
		MEL Data Base
		Authorized Consumables Manual
		SONGS Lubrication Manual
		Inst. Cal. Cards (1) (2) (3)

Station Document Initial Assessment

PREPARED BY

ORIGINATOR (STATION) _____ DATE _____

Close Out Assessment

PREPARED BY

CONFIGURATION CONTROL ENGINEER _____ DATE _____

DE 5009 5/85

REFERENCE: SO123-XIV-3.1, SO123-XIV-4.1, SO123-XIV-4.2, SO123-V-4.14, SO123-VI-1.0

DCP# 3052.0TJ REV 0 SHT 21 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

ENCODE: AC40AB-LE, AC10AC-LE

SO 1 (When Form Filled Out)

San Onofre Nuclear Generating Station

CONFIGURATION DOCUMENTS REQUIRING CHANGE

DOCUMENT/SOURCE INITIATING CHANGE (PFC, DCP, NCR, ETC. — NUMBER): DCP 3052.0TJ

COGNIZANT ORGANIZATION: FLUOR

DOCUMENT CATEGORY OR DISCIPLINE: INSTRUMENTS & CONTROL

CHANGE EFFECTIVE DATE/KEY EVENT:

Document Title (Optional)	Document Number (If Applicable)	Base Rev. No. (Optional)	Brief Description of Change or Impact	Required Chg. Date	In Pkg.	Change Completed: Rev/ TCN No.	Change Completed: Date	Change Completed: Signature
	N-3500	0	SEE IDCN # S-5		Y			
	451284	1	S-1		Y			
	451337	1	S-1		Y			
	5161281	0	S-1		Y			
	5178206	3	S-2		Y			
	5112392	30	S-1		Y			
	M-33754	3	S-1		Y			
	451283	0	S-1		Y			
	568725	16	S-1		Y			

CONFIGURATION DOCUMENT CHANGE ASSESSMENT

PREPARED BY J. Summers (INTERDISCIPLINE REVIEWER) 9/12/85 (DATE)

ALL REQUIRED CHANGES IDENTIFIED AND COMPLETED

APPROVED BY _____ (DIVISION MANAGER OR DESIGNEE) _____ (DATE)

AD/1 11 85

DE 5010 5/85

D

REFERENCE: SO123-XIV-3.1, SO123-XIV-4.1, SO123-XIV-4.2, SO123-V-4.14, SO123-VI-1.0

DCP# 3052.0TJ REV 0 SHT 22 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

ENCODE: AC40AB-LE, AC10AC-LE

SO 1 (When Form Filled Out)

San Onofre Nuclear Generating Station

CONFIGURATION DOCUMENTS REQUIRING CHANGE

DOCUMENT/SOURCE INITIATING CHANGE (PFC, DCP, NCR, ETC. — NUMBER): DCP 3052.0TJ

COGNIZANT ORGANIZATION: FLUOR

DOCUMENT CATEGORY OR DISCIPLINE: PIPING/MECHANICAL

CHANGE EFFECTIVE DATE/KEY EVENT:

Document Title (Optional)	Document Number (If Applicable)	Base Rev. No. (Optional)	Brief Description of Change or Impact		Required Chg. Date	In Pkg.	Change Completed: Rev/TCN No.	Date	Signature
	456499	0	SEE IDCN	S-1		Y			
	456498	0		S-1		Y			
	456497	0		S-1		Y			
	568588	6		S-2		Y			
	568586	11		S-2		Y			
	M-37770	0		S-18		Y			
AD 11-20-85	~~5174170~~	~~0~~		~~S-1~~		Y			
	~~714011~~	~~4~~		~~S-1~~		Y			
	335401	0		S-1		Y			
	335402	0		S-1		Y			
	335403	0		S-1		Y			
	230217	2		S-1		Y			

CONFIGURATION DOCUMENT CHANGE ASSESSMENT

PREPARED BY J. Summers (INTERDISCIPLINE REVIEWER) 11/20/85 (DATE)

ALL REQUIRED CHANGES IDENTIFIED AND COMPLETED

APPROVED BY _____ (DIVISION MANAGER OR DESIGNEE) _____ (DATE)

AD/n 11-85

DE 8010 5/85

REFERENCE: SO123-XIV-3.1, SO123-XIV-4.1, SO123-XIV-4.2, SO123-V-4.14, SO123-VI-1.0

DCP# 3052.0TJ REV 0 SHT 23 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

ENCODE: AC40AB-LE
AC10AC-LE

SO 1
(When Form Filled Out)

San Onofre Nuclear Generating Station

CONFIGURATION DOCUMENTS REQUIRING CHANGE

DOCUMENT/SOURCE INITIATING CHANGE (PFC, DCP, NCR, ETC. — NUMBER): DCP. 3052. OTJ

COGNIZANT ORGANIZATION: FLUOR POWER DIV.

DOCUMENT CATEGORY OR DISCIPLINE: ELectrical

CHANGE EFFECTIVE DATE/KEY EVENT:

Document Title (Optional)	Document Number (If Applicable)	Base Rev. No. (Optional)	Brief Description of Change or Impact	Required Chg. Date	In Pkg.	Change Completed: Rev/TCN No.	Change Completed: Date	Change Completed: Signature
WIRING DIAGRAM VERT. BOARD SECT. 3	568338	28	SEE IDCN. S-3		✓			
WIRING DIAGRAM CONSOLE LEFT HAND	5110881	7	S-1		✓			
WIRING DIAGRAM MISC. DEVICES AFW. ELEM. DIAGRAM	5159560	0	S-1		✓			
MAIN FEEDWTR. LOW FLOW WIRING DIAGRAM	5166613	0	S-1		✓			
REACTOR PLANT AUX. RACEWAYS SECT. 6 DET. AREA-2	568296	18	S-1		✓			
RACEWAY ARRANGA. UPPER CR AREA	5159782	1	S-11		✓			
RACEWAY ARRANGA. CONTROL ROOM.	5159787	1	S-11		✓			
Raceway Schedule	5159798	0	S-1		✓			
Circuit Schedule	M-30418	47	S-2F		✓			
WIRING DIAGRAM VERTICAL BOARD	M-30419	46	S-2G		✓			
CIRCUIT SCHEDULE "KC"	5149456	6	S-1		✓			
	N-3303	0	S-1		✓			

CONFIGURATION DOCUMENT CHANGE ASSESSMENT

PREPARED BY A. Donoghue 11/20/85
INTERDISCIPLINE REVIEWER — DATE

ALL REQUIRED CHANGES IDENTIFIED AND COMPLETED

APPROVED BY _____ _____
DIVISION MANAGER OR DESIGNEE — DATE

AD/11-11-85

DE-8010 8/85

REFERENCE: SO123-XIV-3.1, SO123-XIV-4.1, SO123-XIV-4.2, SO123-V-4.14, SO123-VI-1.0

DCP# 3052.0TJ REV 0 SHT 24 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

ENCODE: AC40AB-LE
AC10AC-LE

SO 1
(When Form Filled Out)

San Onofre Nuclear Generating Station

CONFIGURATION DOCUMENTS REQUIRING CHANGE

DOCUMENT/SOURCE INITIATING CHANGE (PPC, DCP, NCR, ETC. — NUMBER): DCP-3052.0TJ

COGNIZANT ORGANIZATION: Fluor Power Div

DOCUMENT CATEGORY OR DISCIPLINE: ELECTRICAL

CHANGE EFFECTIVE DATE/KEY EVENT:

Document Title (Optional)	Document Number (If Applicable)	Base Rev. No. (Optional)	Brief Description of Change or Impact	Required Chg. Date	In Pkg.	Change Completed		
						Rev/ TCN No.	Date	Signature
RACEWAY SCHEDULE "KC"	N-9302	0	SEE IDCN. 5-1		✓			

CONFIGURATION DOCUMENT CHANGE ASSESSMENT

PREPARED BY [signature] 11-20-85
INTERDISCIPLINE REVIEWER — DATE

ALL REQUIRED CHANGES IDENTIFIED AND COMPLETED

APPROVED BY _____ _____
DIVISION MANAGER OR DESIGNEE — DATE

DE-8010 8/85

UNIT NO. 1

FIRE PROTECTION DESIGN CHECKLIST

PFCP/DCP Number DCP-3052.OTJ Date: 11-20-85

Checklist Originator TOM SUMMERS TEL: 714-975-6119

PRELIMINARY ASSESSMENT

A. Identify any additions, removal, relocation or changes to any of the following:

1.	Combustible Material (oil, grease, charcoal, PVC, cable trays with greater than 30% fill, etc.)	YES ☐ NO ☑
2.	Active Fire Protection Systems (water supply, sprinklers, suppression, detection, etc.)	YES ☐ NO ☑
3.	Passive Fire Protection Systems (dampers, walls, floors, fire stops, fire doors, penetrations, etc.)	YES ☐ NO ☑
4.	Manual Fire Protection Systems (fire hose stations, hydrants, extinguishers, etc.)	YES ☐ NO ☑
5.	Ventilation Systems	YES ☐ NO ☑
6.	Exposure Fire Barriers, 8-hour Emergency Lights, RCP Lube Oil Collection System	YES ☐ NO ☑
7.	Safe and Auxiliary Shutdown Systems (piping, components, valves, etc.)	YES ☐ NO ☑
8.	Essential Electric Systems (MCCs, switchgear, etc.)	YES ☐ NO ☑
9.	Temporary Impairments to Fire Protection Systems	YES ☐ NO ☑
10.	Other FHA Commitments	YES ☐ NO ☑

B. Any items requiring a "YES" answer will be explained and evaluated in the PFCP. Any FHA changes resulting from the design change will be included in the PFCP and transmitted to Licensing as marked up pages from the FHA. Additionally, any "YES" answers above will result in a "YES" answer on Form DE-5007, Design Change Package Plant Hazards Requirements, Fire Effects Section.

DCP# 3052.OTJ REV 0 SHT 25 OF 210

PREPARED BY: [signature] 11/21/85

APPROVED BY: FL Carrillo
LEAD DISCIPLINE ENGINEER

CONSTRUCTION SAFETY ASSESSMENT

DCP 3052.0TJ DATE 10/8/85

A) List of Equipment being modified.

Listing of electrical circuits, line numbers, equipment numbers, support numbers, structural column numbers, etc.

FI-2004A, B, C ;
FC-2004A, B, C ; ASSOCIATED CONDUITS AND CABLES
FT-2004A, B, C ; ASSOCIATED CONDUITS AND CABLES
CABINET C70, C04, C09.
LINE # FWS-14104-4"-EG
LINE # FSW-14114-4"-EG
LINE # FSW-14109-4"-EG
FE 3064-A
FE 3064-B
FE 3064-C
FT 3064-A
FT-3064-B
FT 3064-C

B) List Safety Related Equipment in the area.

Listing shall include all equipment in the area whose accidental removal from service or damage could result in unnecessary challenges to safety systems, removal of safety systems from services, create a loss of redundance in safety systems, or reduce the required degree of protection in safety systems.

NONE

INFORMATION ONLY

DCP# 3052.0TJ REV 0 SHT 186 OF 210

C) Specific Construction Activities

List and description of Specific Unique Construction Activities not addressed in approved procedures. This would include (but not be limited to) such items as the transport of extraordinary heavy items to and within the construction area, removal or additional of missile protection, unusual radiation shielding, personnel or equipment protection requirements, etc.

NONE

D) Temporary Modifications or Temporary Changes.

List and description of Temporary modifications or temporary changes to the permanent plant necessary to facilitate construction

NONE

DCP# 3052.0TJ REV 0 SHT 187 OF 210

INFORMATION ONLY

Preparer SD Moore Date 10-8-85

Approved By [signature] Date 10-8-85

Southern California Edison Company

DRAWING/DOCUMENT RELEASE

TO: R.N. SCHWEINBERG
CONSTR SUPER

Date 11/29/85 J.O. W.R. 3052

Facility SO1/MFW LOW FLO CONTROLOTRON

TYPE OF ISSUE		DISCIPLINE		BILLS OF MATERIAL TYPE		BILLS OF MATERIAL JOB SECT. NO	TRANSMISSION LINES
X	New Issue for Construction		Mechanical		Elect.		Foundations
	Revised Issue for Construction		Electrical		Control		Profiles
	CCN/DCN		Civil/Structural		Civil		Data Sheets
	As Built	X	Controls		Mech.		Towers
	Record Revision		Architectural		Cable	J.S.I.	Insulators and Hardware
	Specification/Addendum		Nuclear Engineering				
	System Drawings						
	Operating One Lines						

N - None Required
H - Design Control Holds
P - Pencil Input of B/M
M - Approved Machine Issue of B/M
C - Completes Final Design
I - Incomplete Design
O - Issued Previously
L - Coming Later

THIS ISSUE COMPLETES FINAL DESIGN — Yes ☐ No ☐

Specification Number _____

Reference Number 85B11547

☐ DRAWINGS BEING TRANSMITTED ARE LISTED ON THE ATTACHED MASTER DRAWING LIST NUMBER M - _____

Sheet Numbers _____

DCP 3052.CTJ REV 0

Office Services Indicate Date Bluelines Released _____

DISTRIBUTION: CD

Design Supervisor _____

Designer FLUOR

Constructor _____

EDM BPC, QUADREX FLUOR, IMPELL, EBASCO, STEARNS

SCE 61-93 REV 3/79

FLUOR ENGINEERS, INC.
POWER DIVISION

DESIGN CHANGE PACKAGE

San Onofre Nuclear Generating Station Units 1, 2 & 3

PAGE 1 OF 5

PFC DCP 3052.07

DCP# 3052.07 REV 0 SHT 1 OF 210

Originating Discipline CONTROL SYSTEMS

Responsible Engineer TOM SUMMERS Date 9/12/85

Unit No. SONGS 1 Q-Class SR Seismic Class A

All Engineering Input Data Provided? ☑ Yes ☐ No

FSAR Change Required? ☐ Yes ☑ No

PFC Change Required? ☑ Yes ☐ No

Implementation Category 1985 WORK PLAN - PRIORITY 1

E-C Design Interface Review Required? ☑ Yes ☐ No

STARTUP SYSTEMS AFFECTED

FWS

Basis of Change: ☐ NCR No. ☐ SPR No. Startup Problem Report ☐ Licensing Commitment

☐ Supplier, Name & Date of Letter

☑ Other SCE W.A. No. 3052 & SCE P.O. No. Reg. 3915M

Change Category: ☑ Within Scope ☐ Scope Change ☐ Back Charge

☐ Trend No. ☐ Other

HAZARDS REQUIREMENTS MET AND APPROVED (SEE DCP HAZARDS REQUIREMENTS SHEET FORM DE-6007)

Lead Discipline Engineer Date

DESCRIPTION OF PROBLEM CHANGE

THIS DCP DESCRIBES THE MODIFICATIONS REQUIRED TO PROVIDE THE CONTROL ROOM OPERATOR WITH MAIN FEEDWATER (MFW) LOW FLOW INDICATION FOR ADMINISTRATIVE CONTROL TO PREVENT WATER HAMMER IN THE EVENT THE FEEDRING IS UNCOVERED.

INTERFACE APPROVALS (INDICATE AFFECTED DISCIPLINE) L(D)E'S

		DATE			DATE
1. Civil Eng	Moorthy P Alwis for M. G Nelson	11-21-85	5. Arch.		
2. I&C Eng.	A. J. Sanborn	11-21-85	6. Nuclear	A Rell	11/21/85
3. Elect. Eng.	M. Amerzadeh	11-21-85	7. Other		
4. Mech. Eng.	F Castle	11-21-85	8. Other		

APPROVALS

		DATE			DATE
Lead Discipline Engineer	A. J. Sanborn	11-21-85	Responsible Engineer	T Summers	11-20-85
Engineering Manager	H Bell	11/21/85	Reviewing Contractor	Morton Thiokol Wilson	11/22/85
Quality Assurance	[illegible]	11-26-85			
Independent Review Engineer	T. Summers	11/21/85	SCE Group Leader	A Hernandez	11/25/85

NOTIFICATION OF CHANGE COMPLETION

Responsible Construction Org. Supt. (E&C, DFC, OTHER) Date

DE 5004 1 5/85

FLUOR ENGINEERS, INC
POWER DIVISION

DESIGN CHANGE PACKAGE—Continuation Sheet

San Onofre Nuclear Generating Station Units 1, 2 & 3

PFC DCP: 3052.0TJ

DOCUMENTS ASSOCIATED W CHANGE			ENCLOSED IN PACKAGE		REMARKS
DOCUMENT NO & REV	IDCN	TITLE	YES	NO	
N-3500-0	S-5	CONTROL ROOM PANEL	✓		IDCN
" "		INSTRUMENT LIST			
451284-1	S-1	INSTALLATION DETAIL	✓		IDCN
		MAIN FEEDWATER LOW			
		FLOW INDICATION			
451337-1	S-1	LOOP DIAGRAM MFW	✓		IDCN
		LOW FLOW INDICATION			
5161281-0	S-1	AUX. FWS RACK	✓		IDCN
		MODULE ARRANGEMENT			
5178206-3	S-2	P&I DIAGRAM	✓		IDCN
		FEEDWATER SYSTEM			
5112392-30	S-1	ANNUNCIATOR WINDOW	✓		IDCN
		ENGRAVING			
M-33754-3	S-1	REMOTE INDICATOR	✓		IDCN
SH.1		FEEDWATER FLOW			
M-33754-3	S-1	REMOTE INDICATOR	✓		IDCN
SH.2		FEEDWATER FLOW			
451283-0	S-1	CONTROL BLOCK DIAG.	✓		IDCN
		AUX. FEEDWATER			
		AUTO. INITIATION			
568725-16	S-1	UNIT CONSOLE INSTR.	✓		IDCN
		ARRANGEMENT			

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FLUOR ENGINEERS, INC.
POWER DIVISION

DESIGN CHANGE PACKAGE—Continuation Sheet

San Onofre Nuclear Generating Station Units 1, 2 & 3

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DOCUMENTS ASSOCIATED W/CHANGE			ENCLOSED IN PACKAGE		REMARKS
DOCUMENT NO & REV	IDCN	TITLE	YES	NO	
456499 REV. 0	S-1	ISOMETRIC FROM CV-143 TO LINE 391-10"-EG	✓		IDCN
456498 REV. 0	S-1	ISOMETRIC FROM CV-144 TO LINE 392-10"-EG	✓		IDCN
456497 REV. 0	S-1	ISOMETRIC FROM CV-142 TO LINE 392-10"-EG	✓		IDCN
568588 REV. 6	S-2	TURBINE AREA 2, SECTIONS & DETAILS	✓		IDCN
568586 REV. 11	S-2	TURBINE AREA 2, PLAN EL. 42'0" TO 24'9"	✓		IDCN
M-377700	S-18	MASTER VALVE LIST	✓		IDCN
335401-0	S-1	ISOMETRIC - FWS-14104-4"-EG	✓		IDCN
335402-0	S-1	ISOMETRIC - FWS-14109-4"-EG	✓		IDCN
335403-0	S-1	ISOMETRIC - FWS-14114-4"-EG	✓		IDCN
230217-2 SH 1	S-1	WELDING & NDE TESTING REQM'T	✓		IDCN

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DF 8004.2 5/85

FLUOR ENGINEERS, INC.
POWER DIVISION

DESIGN CHANGE PACKAGE—Continuation Sheet

San Onofre Nuclear Generating Station Units 1, 2 & 3

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DOCUMENTS ASSOCIATED W/CHANGE			ENCLOSED IN PACKAGE		REMARKS
DOCUMENT NO & REV	IDCN	TITLE	YES	NO	
568338-28	S-3	WIRING DIAGRAM VERTC. BOARD SECT. 3	✓		1 DCN
5110881-7	S-1	WIRING DIAGRAM CONSOLE LEFT HAND SIDE	✓		
5159560-0	S-1	WIRING DIAGRM MISC. DEVICES AUX. FWTR.	✓		
5166613-0	S-1	ELEMENTARY DIAGRAM MAIN FWTR LOW FLOW ISLATION	✓		
568296-18	S-1	WIRING DIAGRAM REACTOR PLANT ANNUNCIATOR	✓		
5159782-1	S-4	RACEWAY SECTIONS AND DETAILS AREA-2	✓		
5159787-1	S-4	RACEWAY ARRENGEMENT LUBE OIL AREA	✓		
5159788-0	S-7	RACEWAY ARRENGEMENT CONTROL ROOM	✓		
M30418-9T	S-28	RACEWAY SCHEDULE "KC"	✓		
M30419-4C	S-29	CIRCUIT SCHEDULE "KC"	✓		
N-3303-0	S-1	CIRCUIT SCHEDULE "KC"	✓		
N-3302-0	S-1	RACEWAY SCHEDULE "KC"	✓		
5149456-6	S-1	WIRING DIAGRAM VERTICAL BOARD SECT-3 (UPPER PNL)	✓		

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FLUOR ENGINEERS, INC.
POWER DIVISION

DESIGN CHANGE PACKAGE—Continuation Sheet

San Onofre Nuclear Generating Station Units 1, 2 & 3

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DOCUMENTS ASSOCIATED W/CHANGE			ENCLOSED IN PACKAGE		REMARKS
DOCUMENT NO & REV	IDCN	TITLE	YES	NO	
M-81119-0		SYSTEM DESCRIPTION		✓	
M-82111-0		MAINT/SURV. GUIDELINES		✓	
M-83085-0		GUIDELINES SPARE PARTS		✓	
M-84144-0		TEST GUIDELINES		✓	
M-38690-0		DIFF. PRESS. INSTR.		✓	
M-38688-0		CURRENT TO VOLTAGE		✓	
		CONVERTER			
M-38689-0		REPLACEMENT METER		✓	
		SCALE			
M-38692-0		ORIFICE PLATE		✓	
DC-1915-7		ORIFICE PLATE CALC.		✓	INFO ONLY
DC-1909		INSTRUMENT SUPPORTS AT		✓	INFO ONLY
		TURBINE BUILDING, AREA 2			
DC-2032		INSTRUMENT SUPPORTS AT		✓	INFO ONLY
		TURBINE BUILDING, AREA 2			
DC-1908		PIPE STRESS CALC.		✓	INFO ONLY
—	—	CONSTRUCTION SAFETY	✓		INFO ONLY
		ASSESSMENT			
—	—	FLUOR IPOR's	✓		
—	—	BECHTEL IPOR's	✓		
335401-0		ISOMETRIC	✓		NEW DWG
		FWS-14104-4"-EG			
335402-0		ISOMETRIC	✓		NEW DWG
		FWS-14109-4"-EG			
335403-0		ISOMETRIC	✓		NEW DWG
		FWS-14114-4"-EG			

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FLUOR ENGINEERS INC
POWER DIVISION

SAN ONOFRE NUCLEAR GENERATING STATIONS UNIT 1, 2 & 3

DESIGN CHANGE PACKAGE

CONTENTS

		YES	NO
1.	Document Transmittal (Fluor Form DE-5002)		✓
2.	Design Change Package (Fluor Form DE-5004-1)	✓	
3.	Design Change Package Continuation Sheet (Fluor Form DE-5004-2)	✓	
4.	Design Change Basis	✓	
5.	Design Change Package Plant Hazards Requirements (Fluor Form DE-5007)	✓	
6.	Design Change Package Material Sheets (Fluor Form DE-5006)	✓	
7.	Configuration Document Checklist (Fluor Form DE-5009)	✓	
8.	Configuration Documents Requiring Change (Fluor Form DE-5010)	✓	
9.	Alara Design Review Checklist (Fluor Form DE-5013)		✓
10.	Fire Protection Design Checklist (Fluor Form DE-5015)	✓	
11.	Flow Diagram (For Information)		✓
12.	Block Diagram or Logic (For Information)		✓
13.	Engineering Safety Evaluation		✓
14.	Purchase Order Requisition		✓
15.	Test Procedure Guidelines	N/S	✓
16.	Guidelines for Construction Safety Evaluation		✓
17.	Electrical Design Checklist		✓

* Items marked "YES" make up primary contents of package.

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T. Summers 9/12/85
Responsible Engineer

A. Danburg 9-12-85
Lead Discipline Engineer

DE 5042 6 85

DESIGN CHANGE BASIS

1.0 DESCRIPTION OF CHANGE

This DCP provides the control room operator with Main Feedwater (MFW) Low Flow Indication for administrative control of the MFW system at flows below 450 gpm. Controlotron Model 240 strap-on transducers and flow computers installed upstream from each MFW control valve during TMI Phase 1 will be removed. The Sigma Model 9270 vertical meters installed in the Main Control Room (MCR) under PFC 1-81-045 will be utilized as part of the DCP modification. Both the Controlotron and Sigma equipment were installed but "not turned over." An orifice plate will be installed in each MFW bypass line downstream from control valves CV-142,143 and 144. A differential pressure transmitter will be installed local to each orifice plate. The current to voltage converters will be installed in the MCR cabinet C70. The three instrument flow loops will use the existing Sigma meters on the C04 operator's console in the MCR for flow indication.

2.0 TECHNICAL BASIS OF CHANGE

The modification is to provide MFW Low Flow Indication in the MCR for administrative control of the MFW to prevent water hammer in the event the feedring is uncovered. MFW Low Flow Indication will be added to the MCR by the installation of an orifice plate, differential pressure transmitter, signal converter and indicator to each MFW valve bypass line. Westinghouse testing referred to in Reference 5.0.a indicated water hammer would not occur with flow more than 200 gpm and temperatures above 250°F. Therefore, MFW low flow indication is required when the MFW temperature is less than 300°F ~~and flow is between 0-220 gpm~~ to maintain flow at or below 150 gpm 11/25/85

3.0 PHYSICAL MODIFICATION

a. Use the three existing Sigma meters, FI2004A, B and C in the operator's console as part of this modification.

b. Remove the existing strap-on Controlotron transducers, FT2004A, B and C, and flow computers FC2004A, B and C and send them to Mesa warehouse.

c. Use the existing three 2/C AWG #16 shielded cables, in one conduit, between the transmitters and the control room.

d. Install new orifice plates downstream of the FW Bypass Control Valves CV-142, CV-143 and CV-144.

e. Install a differential pressure transmitter to each orifice plate.

f. Use the existing Foxboro Specification 200 racks in the MCR to install current to voltage converters.

g. Delete the "Feedwater Low Flow Indication Trouble" annunciation on the Reactor Plant First Out Panel, window 19 and install a blank nameplate (window) instead.

4.0 SIGNIFICANT CRITERIA AND ASSUMPTIONS

a. The modification is classified as safety related and Seismic Category A.

b. Installation of the new orifice plates did not require moving the bypass or check valves. The orifice plate will be placed downstream of the feedwater bypass control valves CV-142, CV-143 and CV-144 with minimum 10 pipe diameters upstream and 4 pipe diameters downstream.

c. Current to voltage converters are installed in the MCR Specification 200 racks (C70 cabinet).

d. The MFW low flow indication loops will be tested/calibrated for accuracy at 150 gpm and ambient temperature.

e. An annunciator window is not provided to indicate any trouble (malfunction) condition with the low flow loops.

f. The use of existing shielded cable between the transmitters and the main control room will provide adequate electrical separation.

5.0 REFERENCES

a. Letter from K. P. Baskin to D. K. Nelson, dated April 7, 1981; Subject: Automation of the Auxiliary Feedwater System, SONGS 1, with attachment, Impact Review of AFWS Automation-Steam Generator Water Hammer.

b. PFC 1-81-045, Rev. 1, dated August 23, 1983, Main Feedwater Low Flow Measurement.

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6.0 ENGINEERING SAFETY EVALUATION

a. Does this change constitute a change to the FSA design basis: YES __ NO X

b. Does this change increase the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the FSA: YES __ NO X

c. Does this change create the probability for an accident or malfunction of a different type than any evaluated previously in the FSA: YES __ NO X

d. Does this change reduce the margin of safety as defined in the basis for any technical specification: YES __ NO X

If the answer to Items 6a, b, c, or d is "YES," an Engineering Safety Evaluation - long form must be created during development of PFC.

7.0 QUALITY AND SEISMIC CLASSIFICATIONS

Quality Class SR Seismic Category A

8.0 ALARA EVALUATION

a. Does the alteration modify facility, systems, or components which will collect, store, process, or transport radioactive materials? YES __ NO X

b. Does the alteration modify the facility, systems, or components which are located in radiation areas (0.25 mR/hr.)? This includes added equipment, cable routing, conduit, piping, and tubing relative to radiation areas affected and/or traversed. YES __ NO X

c. Does this alteration create routine maintenance, inspection, or surveillance requirements in a radiation area (0.25 mR/hr.)? YES __ NO X

d. Does this alteration involve construction activities which will cause personnel to come into close proximity with systems or components collecting, storing, processing or transporting radioactive materials, or which are located in a Radiologically Controlled area greater than or equal to 0.25 mR/hr or contamination greater than or equal to 1,000 dpm/100 CM^2 removable? YES __ NO X

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NOTE: If the answer to Items 8a, b, c and d is "YES," complete the ALARA Design Review Checklist.

11-12-85
Responsible Engineer

11-21-85
Lead Discipline Engineer

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FLUOR ENGINEERS, INC.
POWER DIVISION

DESIGN CHANGE PACKAGE PLANT HAZARDS REQUIREMENTS

San Onofre Nuclear Generating Station Units 1, 2 & 3

PPC | DCP: 3052.0TJ

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HELBA EFFECTS
☑ No Special Requirements
N.A. For Unit 1
☐ Yes. See Dwg s ☐ Other
FOR IMPLEMENTATION REQUIREMENTS

ALARA EFFECTS
☑ No Special Requirements
☐ Yes. See Dwg s ☐ Other
FOR IMPLEMENTATION REQUIREMENTS

TORNADO MISSILE EFFECTS
☑ No Special Requirements
N.A. For Unit 1
☐ Yes. See Dwg s ☐ Other
FOR IMPLEMENTATION REQUIREMENTS

NUCLEAR LDE

FLOODING EFFECTS
☑ No Special Requirements
☐ Yes. See Dwg s ☐ Other
FOR IMPLEMENTATION REQUIREMENTS

INTERNAL MISSILE EFFECTS
☑ No Special Requirements
☐ Yes. See Dwg s ☐ Other
FOR IMPLEMENTATION REQUIREMENTS

FIRE EFFECTS
☑ No Special Requirements
☐ Yes. See FHA & Dwg s ☐ Other
FOR IMPLEMENTATION REQUIREMENTS

PLANT EXTERNAL ENVIRONMENTAL EFFECTS
☑ No Requirements
☐ Yes. See Dwg s ☐ Other

MECHANICAL LDE

ELECTRICAL EQUIPMENT ENVIRONMENTAL EFFECTS
☑ No
☐ Yes. List Equipment ☐ Other
☐ Harsh Area
☐ Mild Area

NUCLEAR LDE

SEISMIC EFFECTS
☑ No Special Requirements
☒ Yes. See Ref. Documents
DC-1909
Q-E: SR, SC-A
☐ Other

CIVIL LDE

DE 5007 5/85

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FLUOR ENGINEERS, INC.
POWER DIVISION

Discipline CONTROLS

DESIGN CHANGE PACKAGE MATERIALS CONTINUATION

San Onofre Nuclear Generating Station Units 1, 2 & 3

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DESCRIPTION & MATERIAL TYPE	UNIT	SIZE / QTY	PROCUREMENT RESPONSIBILITY (ENG/CONST/BCE)	SPECIFICATION / MMS NO	SPECIFICATION / MMS ADD/REV	MATERIAL REQUISITION* (PURCHASE REQ/CPON) NO	MATERIAL REQUISITION* (PURCHASE REQ/CPON) REV	REQUESTED DELIVERY DATE*
CONNECTOR 3/8" x 1/2" T-MNPT	EA	3/8" x 1/2" 12	SCE ENGR			IPOR # E-4059		
3VALVE MANIFOLD GOULD	EA	3/8" 3	SCE ENGR	026	-40860			
TUBING 3/8" O.D. x 0.049 ASME SA213 GRADE 316	FT	3/8" 180'	SCE ENGR	026	-82375			
STEEL PLATE 24" x 18" x 1/4" ASTM A36	EA	24x18x1/4 3	SCE - CONST	025	-30509			
UNISTRUT P1000 CHANNEL	FT	1 5/8 x 1 5/8 20'	SCE - CONST	025	-62187			
SPRING NUT 1/4"-20 UNISTRUT P-1006	EA	1/4"-20 30	SCE - CONST	133	-00736			
CHANNEL C-3x6.0 CS ASTM A-36	FT	3	SCE. CONST REF 451284	025	-46984			
3/8"-24 UNF 2B THD. BOLT 3/4" LENGTH	IN	3/4" 6	SCE. CONST REF 451284	025	-86956			
[illegible]	EA	1/2" 6	SCE CONST	[illegible]				

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FLUOR ENGINEERS, INC.
POWER DIVISION

DESIGN CHANGE PACKAGE MATERIALS CONTINUATION

San Onofre Nuclear Generating Station Units 1, 2 & 3

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Discipline CONTROLS

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DESCRIPTION & MATERIAL TYPE	UNIT	SIZE / QTY.	PROCUREMENT RESPONSIBILITY (ENG/CONST/NCE)	SPECIFICATION* NO.	SPECIFICATION* ADD/REV.	MATERIAL REQUISITION* (PURCHASE REQ/CPON) NO.	MATERIAL REQUISITION* REV.	REQUESTED DELIVERY DATE*
ORIFICE PLATE	EA	3	SCE ENG	M-38692		IPOR # E-4059	4	
DIFFERENTIAL PRESS. INSTRUMENT MODEL# N-E13DM-IIM2-C		3	SCE ENG	M-38690		025-93556 025-80181		
CURRENT TO VOLTAGE CONVERTER MODEL #: N-2AI-I2V		2	SCE ENG	M-38688		025-25327		
REPLACEMENT METER SCALE		3	SCE ENG	M-38689		IPOR # E-4059		
TUBING CLAMP 3/8"-1/2" T-500 SS-2D	EA	3/8-1/2 6	SCE CONST.			026-79785		
TUBING CLAMP 3/8"-1/2" T-500 SS-3D	EA	3/8-1/2 22	SCE CONST.			026-79777		
NIPPLE 1/2"x3" SCRD SS	EA	1/2x3" 6	SCE CONST.			026-08610		
TEE 1/2" SCRD SS	EA	1/2" 6	SCE CONST.			026-08990		
TEE 3/8" TUBE SS	EA	3/8 6	SCE CONST.			024-19877		

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~~FLOOR ENGINEERING~~
POWER DIVISION

Discipline CONTROLS

DESIGN CHANGE PACKAGE MATERIALS CONTINUATION

San Onofre Nuclear Generating Station Units 1, 2 & 3

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DESCRIPTION & MATERIAL TYPE	UNIT	SIZE / QTY	PROCUREMENT RESPONSIBILITY (ENG/CONST/SCE)	SPECIFICATION / MMS NO	SPECIFICATION / MMS ADD/REV	MATERIAL REQUISITION* (PURCHASE MEMO/CPON) NO	MATERIAL REQUISITION* (PURCHASE MEMO/CPON) REV	REQUESTED DELIVERY DATE*
1/4-20 x 1½" THREAD BOLT SS	EA	1/4-20 / 12	SCE CONST	024	10918			
1/4-20 x 2" THREAD BOLT SS	EA	1/4-20 / 28	SCE CONST	026	19702			
INSTRUMENT VALVE 3/8 TUBE ENDS SS	EA	3/8" / 6	SCE ENG	025	27380			
3 VALVE MOUNTING BRACKET (M-35543 SHT 1) (FABRICATED)	EA	/ 3	SCE CONST	—	—			
TUBING UNION 3/8" T x 3/8" T SS	EA	3/8 / 12	SCE CONST	024	19968			
BANK ANNUNCIATOR WINDOW		/ 1	SCE ENG	—				
NUT 3/8"-24 UNF SS	EA	3/8-24 / 6	SCE CONST	026	41066			
LOCKWASHER 3/8" SS	EA	3/8 / 6	SCE CONST	026	31776			

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FLUOR ENGINEERS, INC.
POWER DIVISION

Discipline PIPING

DESIGN CHANGE PACKAGE MATERIALS CONTINUATION

San Onofre Nuclear Generating Station Units 1, 2 & 3

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ALL ITEMS ARE SAFETY RELATED

DESCRIPTION & MATERIAL TYPE	UNIT	SIZE / QTY	PROCUREMENT RESPONSIBILITY (ENG/CONSTR/SCE)	SPECIFICATION* NO.	SPECIFICATION* ADD/REV.	MATERIAL REQUISITION* (PURCHASE MEMO/CPON) NO.	MATERIAL REQUISITION* (PURCHASE MEMO/CPON) REV.	REQUESTED DELIVERY DATE*
ORIFICE FLANGE SET, 600# RF. WN., CONSISTING OF TWO FLANGES WITH JACKSCREWS, BOLTS AND NUTS, BUT WITHOUT GASKETS, SCH 80 BORE, FORGED CARBON STEEL, ASTM-A105.								
ITEM #1	SET	4" 3	SCE ENG.			CPOR E-4059		
GASKET, TO MATCH 600# RF. FLANGE, SPIRAL WOUND, 304 SS, NON-ASBESTOS FILLED, 1/8" THK. SOLID MILD STL. CENTERING GUIDE, PER API-601. REFERENCE: FLEXITALIC FLEXITE STYLE CG OR APPROVED SUB.								
ITEM #2	EA	4" 6	SCE ONLY MMS	# 013	-13576			

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FLUOR ENGINEERS, INC.
POWER DIVISION

Discipline PIPING

DESIGN CHANGE PACKAGE MATERIALS CONTINUATION

San Onofre Nuclear Generating Station Units 1, 2 & 3

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ALL ITEMS ARE SAFETY RELATED

DESCRIPTION & MATERIAL TYPE	UNIT	SIZE / QTY	PROCUREMENT RESPONSIBILITY (ENG/CONST/SCE)	SPECIFICATION* NO.	SPECIFICATION* ADD/REV	MATERIAL REQUISITION* (PURCHASE MEMO/CPO#) NO.	MATERIAL REQUISITION* REV	REQUESTED DELIVERY DATE*
GLOBE VALVE, OS&Y, BOLTED BONNET, 600# RATED, SOCKET WELD ENDS, FORGED CARBON STEEL, ASTM-A105, FG TRIM WITH STELLITED SEATS & DISC. REFERENCE: ROCKWELL FIG. 848Y (MARK NO. 135) VALVES TAGGED: FSW-355, FSW-357, FSW-358, FSW-360, FSW-361, FSW-363								
ITEM # 3	EA	1/2" 6	SCE			MMS # 196-01079		
PIPE NIPPLE, SEAMLESS, SCH. 160 FORGED CARBON STEEL, ASTM-A106 GR B. THREADED ONE END BY PLAIN ONE END (TOE x POE)								
ITEM # 4	EA.	1/2" x 3" LG. 3	SCE			MMS # 025-34485		
ITEM # 5	EA.	1/2" x 6" LG. 3	SCE			MMS # 025-34485		

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FLUOR ENGINEERS, INC.
POWER DIVISION

Discipline PIPING

DESIGN CHANGE PACKAGE MATERIALS CONTINUATION

San Onofre Nuclear Generating Station Units 1, 2 & 3

"SAFETY RELATED"

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DESCRIPTION & MATERIAL TYPE	UNIT	SIZE / QTY	PROCUREMENT RESPONSIBILITY (ENG/CONST/SCE)	SPECIFICATION* NO	SPECIFICATION* ADD/REV	MATERIAL REQUISITION* (PURCHASE MEMO/CPO#) NO	MATERIAL REQUISITION* (PURCHASE MEMO/CPO#) REV	REQUESTED DELIVERY DATE*
ADAPTOR, SOCKET WELD x FEMALE SCREWED, CARBON STEEL. REFERENCE: CAJON CAT. # S-8-TSW-1-8 OR APPROVED SUB								
ITEM # 6	EA	1/2" x 1/2" / 6	SCE-CONST.					
CR-MO STUD BOLT W/ 2 NUTS, ASTM-A193, GRADE B7, ASTM-A194, GRADE 2								
ITEM 7	EA	7/8" x 6" LG. / 24	SCE		IMMS	# 025-	12861	
PLUG, 3000#, ASTM-A105, THREADED, ANSI B16.11								
ITEM 8	EA	1/2" / 6	SCE-CONST.					

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FLUOR ENGINEERS, INC.
POWER DIVISION

Discipline ELECTRICAL

DESIGN CHANGE PACKAGE MATERIALS CONTINUATION

San Onofre Nuclear Generating Station Units 1, 2 & 3

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DESCRIPTION & MATERIAL TYPE	UNIT	SIZE	QTY	PROCUREMENT RESPONSIBILITY (ENG/CONSTR/SCE)	SPECIFICATION* NO	SPECIFICATION* ADD/REV	MATERIAL REQUISITION* (PURCHASE MEMO/CPOR) NO.	MATERIAL REQUISITION* REV.	REQUESTED DELIVERY DATE*
T-CONDULET FITTING	EA	2"	1	SCE	026-03462		IPOR# E4187		
LL-CONDULET FITTING		3/4"	6		024-98079				
CONDUIT-LIQUID-TIGHT-FLEX	FT	3/4"	20		024-62273				
CONDUIT-RIGID STEEL		3/4"	100		026-54689				
REDUCER-CONDUIT	EA	3/4 x 1/2	3		623-25303				
CONNECTOR-FLEX.		1/2"	6		024-62349				
TERMINAL BLOCK		8 POINT	1		025-50978				
CABLE-600V YELLOW STP	FT	#16	450		025-68178				
RING TONGUE TERMINALS PIDG	EA	16-14	50		024-90878				
16-14	—	—	—						
2" LOCK WASHERS	EA	2"	4	RECONSTR.					
2" BUSHING. w/GROUND.	EA	2"	1	SCE	026-58656				
2" UNIVERSAL UNIONS.	EA	2"	2	RECONSTR.					
2" RIGID STEEL CONDUIT	LF	2"	15	SCE	026-54648				

FLUOR ENGINEERS, INC
POWER DIVISION

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REFERENCE:
SO123-XIV-3.1
SO123-XIV-4.1
SO123-XIV-4.2
SO123-V-4.14
SO123-VI-1.0

ENCODE: AC40AB-C
AC10AC-C

SO 1
(When Form Filled Out)

San Onofre Nuclear Generating Station

CONFIGURATION DOCUMENT CHECK LIST

DOCUMENT/SOURCE INITIATING CHANGE (PFC, DCP, NCR, ETC —NUMBER)

DCP 3052.0TJ

SOURCE DOCUMENT DATE: 9-12-85

CHANGE EFFECTIVE DATE:

Change Req	Change Comp	Document Category
		GENERAL
		MEL Data Base
		Equipment Index
		Q List
		Supplemental Q List
		Authorized Consumables Man
		Field Generated Dwgs.
		HELBA Dwgs.
		Radiation Zone Dwgs.
		Station Manual
		System Descriptions
	▨	Construction Specs
	▨	Nuclear Specs
	▨	Procurement Specs
	▨	Computer Program Specs
		Computer Program Descriptions
		Computer System Descriptions
	▨	Spare Parts Lists
	▨	Design Calculations
	▨	Design Criteria Manuals
		EQ Document Packages
		MECHANICAL
	▨	Code Class List
		Line Designation List
		Pipe Section Lists
X		Master Valve List
		Valve Designation List
		Fire Barrier Dwgs.
		Fire Detector Location Dwgs.
		General Arrangement Dwgs.
		HVAC Drawings
		Mech. Equip. Detail Dwgs.
		Piping Support Detail Dwgs.
X		P&ID's
X		Piping Dwgs. — Plan and Sect.
		Piping Isometric Drawings
		Small Pipe Routing Drawings
		Vent and Drain Drawings
	▨	Piping Materials Specs
X	▨	Pipe Support Calculations
	▨	Pipe Stress Analysis
		Supplier (Vendor) Drawings
		Supplier (Vendor) Manuals
		OTHER DESIGNATED DOCUMENTS
		Emergency Plans
		Environmental Protection Plan
		Fire Prepians
		Off-Site Dose Calculation Manual
		Security Plan
	▨	**TRAINING**
	▨	Simulator Documentation

Change Req	Change Comp	Document Category
		CIVIL/STRUCTURAL/ARCHITECTURAL
		Architectural Drawings
		Civil and Yard Drawings
		Electrical Hanger Drawings
		Security Drawings
X		Structural Drawings/Details
		Utility and Underground Dwgs.
		Supplier (Vendor) Drawings
		Supplier (Vendor) Manuals
		Control Rm. Penetration Dwgs.
		ELECTRICAL
		Electrical EQ Index
		EQ Equip. Master List
		EQ Document Packages
		Cable Block Diagrams
		Cable Routing Drawings
		Conduit Routing Diagrams
X		Conduit and Tray Drawings
		Penetration Drawings/Schedule
		Physical Layout Drawings
X		Elementary Wiring Diagrams
		Grounding Dwgs. Layouts & Details
		Ltg., Comm. & Fire Protect Dwgs.
		One Line Diagrams
		Panel Loading Diagrams
		Telecommunications Drawings
X		Wiring Diagrams
X		Circuit & Raceway Schedules
	▨	Ckt. & Race Explanations/Rpts
		Supplier (Vendor) Drawings
		Supplier (Vendor) Manuals
		INSTRUMENTATION AND CONTROL
		Annunciator Alarm List
X		Annunciator Window Engraving List
	▨	Computer I/O List
X		Inst. Data Sheets
		Instrument Indexes
	▨	Lens Engraving List
		Seismic Sensing Line Matrix (2) (3)
		Set Point Index
		Control Panel Layout Drawings
		Control Panel Ind. Scale Coding Dwg.
X		Control Panel Inst. Arrangement Dwgs.
		Control Room Layout Drawings
		Control Sw Configuration Dwgs.
		Device Location Drawings
X		Functional Block Diagrams
X		Instrument Location Drawings
X		Inst. Installation Drawings
		Loop Diagrams
		Logic Diagrams
		Name Plate Drawings
		Panel Drawings
		Pattern Recognition Drawings
		Special Pneumatic Sys. Drawings
		Supplier (Vendor) Drawings
		Supplier (Vendor) Manuals
		LICENSING DOCUMENTS
		Operating Licenses (1) (2) (3)
		Tech. Specs (1) (2) (3)
		Environmental Tech. Spec (1)
		FSAR (1) (2) (3)
		Fire Hazard Analysis

Design Document Initial Assessment

PREPARED BY

T. Summers
ORIGINATING ENGINEER

9/12/85
DATE

DE 5009 5-85

FLUOR ENGINEERS, INC.
POWER DIVISION

REFERENCE:
SO123-XIV-3.1
SO123-XIV-4.1
SO123-XIV-4.2
SO123-V-4.14
SO123-VI-1.0

ENCODE: AC40AB-C
AC10AC-C

SO 1
(When Form Filled Out)

DCP# 3052.0TJ REV 0 SHT 2 OF 2

San Onofre Nuclear Generating Station

CONFIGURATION DOCUMENT CHECK LIST

DOCUMENT/SOURCE INITIATING CHANGE (PFC, DCP, NCR, ETC.—NUMBER)

DCP-3052.0TJ

SOURCE DOCUMENT DATE: 9-12-85

CHANGE EFFECTIVE DATE:

Change Req.	Change Comp.	Document Category	Change Req.	Change Comp.	Document Category
		STATION ORDERS			**OPERATING INSTRUCTIONS**
		A Administrative			Unit 1
		BC Budget and Cost Control			1 Emergency Operating
		C Chemistry			2 Abnormal Operating
		CQ Compliance			2.1 Primary
		CC Configuration Control			2.2 Radiological
		CF Common Facilities			2.3 Instr. & Control Systems
		E Engineering			2.4 Secondary
		EN Environmental Compliance			2.5 Natural Phenomenom & Fire
		EP Emergency Preparedness			2.6 Electrical
		FP Fire Protection			3 General Operating
		G General			4 Pri. Plant & Containment
		HP Health Physics			5 Radwaste Treat & Handling
		IC Instr. and Control			6 Turbine/Generator
		IF Information Systems			7 Secondary Plant
		IN Inservice Inspection			8 Chem. Gas Waste Treat & Handling (nonrad)
		MA Maintenance			9 Electrical
		OP Operations			10 Diesel Generator
		PR Procurement			11 Fire Protection
		PI Planning and Control			12 Surveillance
		SE Security			13 Annunciator Response
		SN Special Nuclear Mat'l. Safeguards			14 Administration
		TN Training			
		STATION PROCEDURES			Units 2 & 3
		I Maintenance			0 Administration
		II I & C			1 Air Systems
		III Chemical			2 Auxiliaries
		IV Security			3 Reactor Systems
		V Engineering			3.5 Emergency Operating
		VI Administrative			4 Chemical
		VII Health Physics			5 Combined Systems Operations
		VIII Emergency			6 Electrical Systems
		IX Environmental			7 Fire Systems
		X Spec. Nuc. Mat'l. Safeguards			8 Radwaste System
		XI Material Control			9 Condensate
		XII QC Inspection			10 Turbine
		XIII Fire Protection			11 Water Systems
		XIV Configuration Control			12 General
		XV General			13 Open
		XVI Safety			
		XVII O & M Support			
		XVIII			**SPECIAL PROCEDURES**
		XIX Budget and Cost Control			E Engineering
		XX Common Facilities			OP Operations
		XXI Training			M Maintenance
		XXII Compliance			I Instrumentation
		XXIV Planning and Control			S Security
					C Chemistry
					T Test
		LICENSING DOCUMENT			HP Health Physics
		Operating Licenses (1) (2) (3)			
		Technical Specifications (1) (2) (3)			
		Environmental Tech. Specs. (1)			**OTHER DESIGNATED DOCUMENTS**
		FSAR (1) (2) (3)			Emergency Plans
		Fire Hazards Analysis			Environmental Protection Plan
					Fire Preplans Schedule
		TRAINING			Off Site Dose Calculation Man
		Lesson Plans			Safety Manual
		System Descriptions			Security Plan
		Audio Visual Aids			MEL Data Base
		Training Task Analysis			Authorized Consumables Manual
		Simulator Documentation			SONGS Lubrication Manual
					Inst. Cal. Cards (1) (2) (3)

Station Document Initial Assessment

PREPARED BY

ORIGINATOR (STATION) _____ DATE _____

Close Out Assessment

PREPARED BY

CONFIGURATION CONTROL ENGINEER _____ DATE _____

DE 5009 5/85

REFERENCE: SO123-XIV-3.1, SO123-XIV-4.1, SO123-XIV-4.2, SO123-V-4.14, SO123-VI-1.0

DCP#3052.0TJ REV 0 SHT 21 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

ENCODE: AC40AB LE
AC10AC LE

SO 1
(When Form Filled Out)

San Onofre Nuclear Generating Station

CONFIGURATION DOCUMENTS REQUIRING CHANGE

DOCUMENT/SOURCE INITIATING CHANGE (PFC, DCP, NCR, ETC. — NUMBER): DCP 3052.0TJ

CONSTRUCTOR ORGANIZATION: FLUOR

DOCUMENT CATEGORY OR DISCIPLINE: INSTRUMENTS & CONTROL

CHANGE EFFECTIVE DATE/KEY EVENT:

Document Title (Optional)	Document Number (If Applicable)	Base Rev. No. (Optional)	Brief Description of Change or Impact	Required Chg. Date	In Pkg	Change Completed: Rev/ TCN No.	Change Completed: Date	Change Completed: Signature
	N-3500	0	SEE IDCN # S-5		Y			
	451284	1	S-1		Y			
	451337	1	S-1		Y			
	5161281	0	S-1		Y			
	5178206	3	S-2		Y			
	5112392	30	S-1		Y			
	M-33754	3	S-1		Y			
	451283	0	S-1		Y			
	568725	16	S-1		Y			

CONFIGURATION DOCUMENT CHANGE ASSESSMENT

PREPARED BY T. Summers (INTERDISCIPLINE REVIEWER) 9/12/85 (DATE)

ALL REQUIRED CHANGES IDENTIFIED AND COMPLETED

APPROVED BY _____ (DIVISION MANAGER OR DESIGNEE) _____ (DATE)

DE 5010 5/85

AD/ 11 85

REFERENCE: SO123-XIV-3.1, SO123-XIV-4.1, SO123-XIV-4.2, SO123-V-4.14, SO123-VI-1.0

DCP# 3052.0TJ REV 0 SHT 22 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

ENCODE: AC40AB LE
AC10AC LE

SO 1
(When Form Filled Out)

San Onofre Nuclear Generating Station

CONFIGURATION DOCUMENTS REQUIRING CHANGE

DOCUMENT/SOURCE INITIATING CHANGE (PFC, DCP, NCR, ETC - NUMBER): DCP 3052.0TJ

COGNIZANT ORGANIZATION: FLUOR

DOCUMENT CATEGORY OR DISCIPLINE: PIPING/MECHANICAL

CHANGE EFFECTIVE DATE/KEY EVENT:

Document Title (Optional)	Document Number (If Applicable)	Base Rev. No. (Optional)	Brief Description of Change or Impact	Required Chg. Date	In Pkg.	Change Completed: Rev/TCN No.	Change Completed: Date	Change Completed: Signature
	456499	0	SEE IDCN S-1		Y			
	456498	0	S-1		Y			
	456497	0	S-1		Y			
	568588	6	S-2		Y			
	568586	11	S-2		Y			
	M-37770	0	S-18		Y			
AD	~~5174170~~	~~0~~	~~S-1~~		~~Y~~			
4 of 4	~~714011~~	~~4~~	~~S-1~~		~~Y~~			
	335401	0	S-1		Y			
	335402	0	S-1		Y			
	335403	0	S-1		Y			
	230217	2	S-1		Y			

CONFIGURATION DOCUMENT CHANGE ASSESSMENT

PREPARED BY J. Summers 11/20/85
INTERDISCIPLINE REVIEWER — DATE

ALL REQUIRED CHANGES IDENTIFIED AND COMPLETED

APPROVED BY _____ _____
DIVISION MANAGER OR DESIGNEE — DATE

AD/11-85

DE 5010 5/85

REFERENCE: SO123-XIV-3.1, SO123-XIV-4.1, SO123-XIV-4.2, SO123-V-4.14, SO123-VI-1.0

DCP# 3052.0TJ REV 0 SHT 23 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

ENCODE: AC40AB-LE
AC10AC-LE

SO 1
(When Form Filled Out)

San Onofre Nuclear Generating Station

CONFIGURATION DOCUMENTS REQUIRING CHANGE

DOCUMENT/SOURCE INITIATING CHANGE (PFC, DCP, RCR, ETC. – NUMBER): DCP. 3052.0TJ

COGNIZANT ORGANIZATION: FLUOR POWER DIV.

DOCUMENT CATEGORY OR DISCIPLINE: Electrical

CHANGE EFFECTIVE DATE/KEY EVENT:

Document Title (Optional)	Document Number (If Applicable)	Base Rev. No. (Optional)	Brief Description of Change or Impact	Required Chg. Date	In Pkg.	Change Completed: Rev/TCN No.	Change Completed: Date	Change Completed: Signature
WIRING DIAGRAM VERT. BOARD SECT. 3	568338	28	SEE IDCN. S-3		✓			
WIRING DIAGRAM CONSOLE LEFT HAND	5110881	7	S-1		✓			
WIRING DIAGRAM MISC. PANEL AFW ELEM. DIAGRAM	5159560	0	S-1		✓			
MAIN FWTR. LOW FLOW WIRING DIAGRAM	5166613	0	S-1		✓			
REACTOR PLANT AUX RACEWAYS SECT. 6 DET. AREA-2	568296	18	S-1		✓			
RACEWAY ARRANGE UNIT OIL AREA	5159782	1	S-11		✓			
RACEWAY ARRANGE CONTROL ROOM	5159787	1	S-4		✓			
Raceway Schedule	5159798	0	S-7		✓			
Circuit Schedule	M-30418	47	S-18		✓			
WIRING DIAGRAM VERTICAL BOARD	M-30419	46	S-19		✓			
CIRCUIT SCHEDULE 'KC'	5149456	6	S-1		✓			
	N-3303	0	S-1		✓			

CONFIGURATION DOCUMENT CHANGE ASSESSMENT

PREPARED BY A Roeglin (INTERDISCIPLINE REVIEWER) 11/20/85 (DATE)

ALL REQUIRED CHANGES IDENTIFIED AND COMPLETED

APPROVED BY _____ (DIVISION MANAGER OR DESIGNEE) _____ (DATE)

AD/11-85

DE 6010 5/86

REFERENCE: SO123-XIV-3.1
SO123-XIV-4.1
SO123-XIV-4.2
SO123-V-4.14
SO123-VI-1.0

DCP# 3052.0TJ REV 0 SHT 24 OF 210

~~FLUOR ENGINEERS, INC.~~
POWER DIVISION

ENCODE: AC40AB-LE
AC10AC-LE

SO 1
(When Form Filled Out)

San Onofre Nuclear Generating Station

CONFIGURATION DOCUMENTS REQUIRING CHANGE

DOCUMENT/SOURCE INITIATING CHANGE (PFC, DCP, NCR, ETC. — NUMBER): DCP-3052.0TJ

CONSTRUCTOR ORGANIZATION: Fluor Power Div

DOCUMENT CATEGORY OR DISCIPLINE: ELECTRICAL

CHANGE EFFECTIVE DATE/KEY EVENT:

Document Title (Optional)	Document Number (If Applicable)	Base Rev. No. (Optional)	Brief Description of Change or Impact	Required Chg. Date	In Pkg.	Change Completed		
						Rev/ TCN No.	Date	Signature
RACEWAY SCHEDULE "KC"	N-9302	0	SEE IDCN. 5-1		✓			

CONFIGURATION DOCUMENT CHANGE ASSESSMENT

PREPARED BY _____ 11-20-85
INTERDISCIPLINE REVIEWER — DATE

ALL REQUIRED CHANGES IDENTIFIED AND COMPLETED

APPROVED BY _____ _____
DIVISION MANAGER OR DESIGNEE — DATE

AD/11-11-85

DE 5010 6/85

FLUOR ENGINEERS, INC.
POWER DIVISION

UNIT NO. 1

FIRE PROTECTION DESIGN CHECKLIST

PFCP/DCP Number DCP-3052.OTJ Date: 11-20-85

Checklist Originator TOM SUMMERS TEL: 714-975-4119

PRELIMINARY ASSESSMENT

A. Identify any additions, removal, relocation or changes to any of the following:

1.	Combustible Material (oil, grease, charcoal, PVC, cable trays with greater than 30% fill, etc.)	YES ☐	NO ☑
2.	Active Fire Protection Systems (water supply, sprinklers, suppression, detection, etc.)	YES ☐	NO ☑
3.	Passive Fire Protection Systems (dampers, walls, floors, fire stops, fire doors, penetrations, etc.)	YES ☐	NO ☑
4.	Manual Fire Protection Systems (fire hose stations, hydrants, extinguishers, etc.)	YES ☐	NO ☑
5.	Ventilation Systems	YES ☐	NO ☑
6.	Exposure Fire Barriers, 8-hour Emergency Lights, RCP Lube Oil Collection System	YES ☐	NO ☑
7.	Safe and Auxiliary Shutdown Systems (piping, components, valves, etc.)	YES ☐	NO ☑
8.	Essential Electric Systems (MCCs, switchgear, etc.)	YES ☐	NO ☑
9.	Temporary Impairments to Fire Protection Systems	YES ☐	NO ☑
10.	Other FHA Commitments	YES ☐	NO ☑

B. Any items requiring a "YES" answer will be explained and evaluated in the PFCP. Any FHA changes resulting from the design change will be included in the PFCP and transmitted to Licensing as marked up pages from the FHA. Additionally, any "YES" answers above will result in a "YES" answer on Form DE-5007 Design Change Package Plant Hazards Requirements, Fire Effects Section.

DCP# 3052.OTJ REV 0 SHT 25 OF 210

PREPARED BY: [signature] 11/21/85

APPROVED BY: FL Cavallo
LEAD DISCIPLINE ENGINEER

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

CDM/DDC USE ONLY
CIG DVB 11-8-85

IDCN NO. S-5 11-8

DOCUMENT N-3500 | SH. 18 | REV. 0

Page 1 of 3

PEC NO.

DCP NO. 3052-OTJ

DCN CONVERSION NO.

1. Originator T. SUMMERS Tel: 975-4119 Date 8-28-85

Document Title CONTROL ROOM PANEL INSTRU. LIST ORADM I.D. IC-10 QC NSR SC -

DESCRIPTION OF CHANGE

REVISE CONTROL ROOM PANEL INSTRUMENT LIST. FROM FI-2004A, B AND C TO FI-3064A, B AND C. SHEET 18

DCP# 3052.OTJ REV 0 SHT 26 OF 210

2. Other Affected Documents	3. Affected Systems	4. Design Approvals	
568725	NONE	CHECKER	DATE 9-12-85
451283		INDEPENDENT REVIEW ENGR	DATE 11-20-85
5178206		RESPONSIBLE ENGINEER T. Summers	DATE 9/10/85
		LEAD DISCIPLINE ENGINEER A.L. Santoro	DATE 11-21-85
		OTHER	DATE
		OTHER	DATE
		QUALITY ASSURANCE	DATE 11-20-85

5. SCE/Contractor Project Administration

Conversion to DCN Date

SCE/CONTRACTOR PROJECT ADMINISTRATOR

DE-8005-1 8/85

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For BONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER S-5					
DRAWING NO.	SHEET NO.	REV. NO.	DCN CONV DATE DWG. REV.	DCN CONV DATE SUB. NO.	QUALITY CLASS / SEISMIC CLASS
N-3500	18	0			NSR / –

Date 8-28-85 Page 2 of 3 Page

DESCRIPTION OF CHANGE **BEFORE** By R. GEDA

DCP# 3052.0TJ REV 0 SHT 2 OF 210

INSTRUMENT TAG NO.		SERVICE	SYS	PNL	DRAWING
EI	1780	Gen. Gnd. Volts Ind.		C04	568725
II	1785A	Press. Htr. Group "A" Ammeter	PZR	C05	568737
II	1785B	Press. Htr. Group "B" Ammeter	PZR	C05	568737
ER	1803	Generator Volts Recorder		C05	568736
IR	1804	Generator Field Amperes Recorder		C05	568736
QR	1817	Events Recorder		C05	568736
AIH_2	2001	Containment Hydrogen Monitor	GNI	C09	568737
LIS	2001	Sump Level	CHS	C09	568737
PIS	2001	Containment Wide Range Pressure	CVS	C09	568737
LIS	2002	Containment Level	CHS	C09	568737
FI	2004A	Main Feedwater Lo Flow	FWS	C04	568725
FI	2004B	Main Feedwater Lo Flow	FWS	C04	568725
FI	2004C	Main Feedwater Lo Flow	FWS	C04	568725
TI	2009	Subcooling Monitor Temp. Ind.	RCS	C71	451870
TI	2010	Subcooling Monitor Temp. Ind.	PZR	C71	451870
PI	2010A	Pump GIOS Suction Press. Ind.	AFW	C71	451870
PI	2011	Pump GIOS Disch. Press. Ind.	AFW	C71	451870

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For BONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER S-5					
DRAWING NO.	SHEET NO.	REV. NO.	DCN CONV. DATE DWG. REV.	SUB NO	QUALITY CLASS
N-3500	18	0			NSR
					SEISMIC CLASS
					--

Date 8-28-85 Page 3 of 3 Page

By R. GEDA

DESCRIPTION OF CHANGE **AFTER**

DCP# 3052.0TJ REV 0 SHT 28 OF 2[illegible]

INSTRUMENT TAG NO.		SERVICE	SYS	PNL	DRAWING
EI	1780	Gen. Gnd. Volts Ind.		CO4	568725
II	1789A	Press. Htr. Group "A" Ammeter	PZR	CO5	568737
II	1789B	Press. Htr. Group "B" Ammeter	PZR	CO5	568737
ER	1803	Generator Volts Recorder		CO5	568736
IR	1804	Generator Field Amperes Recorder		CO5	568736
QR	1817	Events Recorder		CO5	568736
AIH_2	2001	Containment Hydrogen Monitor	GNI	CO9	568737
LIS	2001	Sump Level	CRS	CO9	568737
PIS	2001	Containment Wide Range Pressure	CVS	CO9	568737
LIS	2002	Containment Level	CRS	CO9	568737
FI	3064A	Main Feedwater Lo Flow	FWS	CO4	568725
FI	3064B	Main Feedwater Lo Flow	FWS	CO4	568725
FI	3064C	Main Feedwater Lo Flow	FWS	CO4	568725
TI	2009	Subcooling Monitor Temp. Ind.	RCS	C71	451870
TI	2010	Subcooling Monitor Temp. Ind.	PZR	C71	451870
PI	2010A	Pump GIOS Suction Press. Ind.	AFW	C71	451870
PI	2011	Pump GIOS Disch. Press. Ind.	AFW	C71	451870

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

CDM/DDC USE ONLY
CIG

PPC NO

IDCN NO: 5-1

DCP NO: 3052.0TJ

DOCUMENT: 451284 | Sht: - | Rev: 1

DCN CONVERSION NO

Page 1 of 16

1. Originator H. BERTA Tel: (714) 975-9307 Date 11-12-85

Document Title INSTALLATION DETAIL MAIN FEEDWATER LOW FLOW INDICATION DRADM I.D. IC-08 QC SR SC A

DESCRIPTION OF CHANGE

DCP# 3052.0TJ REV 1 SHT 2 OF 2 10

1. PROVIDED FIELD NOTES (PAGE 2)
2. ADD LOCATION PLAN @ EL. 14'-0 (PAGE 3)
3. REVISE PLAN @ EL 30'-0 (BEFORE - PAGE 4; AFTER - PAGE 5)
4. REVISE DETAIL 1 (BEFORE - PAGE 6; AFTER - PAGE 7)
5. ADD DETAIL 3 (PAGE 8)
6. ADD DETAIL 4 (PAGE 9)
7. REVISE SECTION "B-B" (BEFORE - PAGE 10; AFTER - PAGE 11)
8. REVISE NOTES (BEFORE - PAGE 12; AFTER - PAGE 13)
9. REVISE REFERENCE DRAWING BLOCK (PAGE 14)
10. REVISE TITLE BLOCK (PAGE 15)
11. ADD BILL OF MATERIALS FOR DETAILS 1 & 3 (PAGE 16)

2. Other Affected Documents	3. Affected Systems	4. Design Approvals	
451337	FWS	CHECKER	DATE 11-19-85
		INDEPENDENT REVIEW ENGR	DATE 11-20-85
		RESPONSIBLE ENGINEER	DATE 11-19-85
		LEAD DISCIPLINE ENGINEER	DATE 11-21-85
		OTHER	DATE
		OTHER	DATE
		QUALITY ASSURANCE	DATE 11-25-85

5. SCE/Contractor Project Administration

Conversion to DCN Date

SCE/CONTRACTOR PROJECT ADMINISTRATOR

DE 5005.1 5/85

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER S-1					
DRAWING NO.	SHEET NO	REV NO	DCN CONV. DATE DWG REV	DCN CONV. DATE SUB NO	QUALITY CLASS
451284	–	1			SR
					SEISMIC CLASS
					A

Date 11-12-85 Page 2 of 16 Page

By H. BERTA

DESCRIPTION OF CHANGE

CONSTRUCTION NOTES

1. EXISTING STRAP-ON CONTROLOTRON TRANSDUCERS FT-2004 A, B & C AND FLOW COMPUTER FC-2004 A, B & C WILL BE REMOVED AND SENT TO MESA WAREHOUSE FOR USE AS SPARES.

DCP# 3052.0TJ REV 0 SHT 30 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For BONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

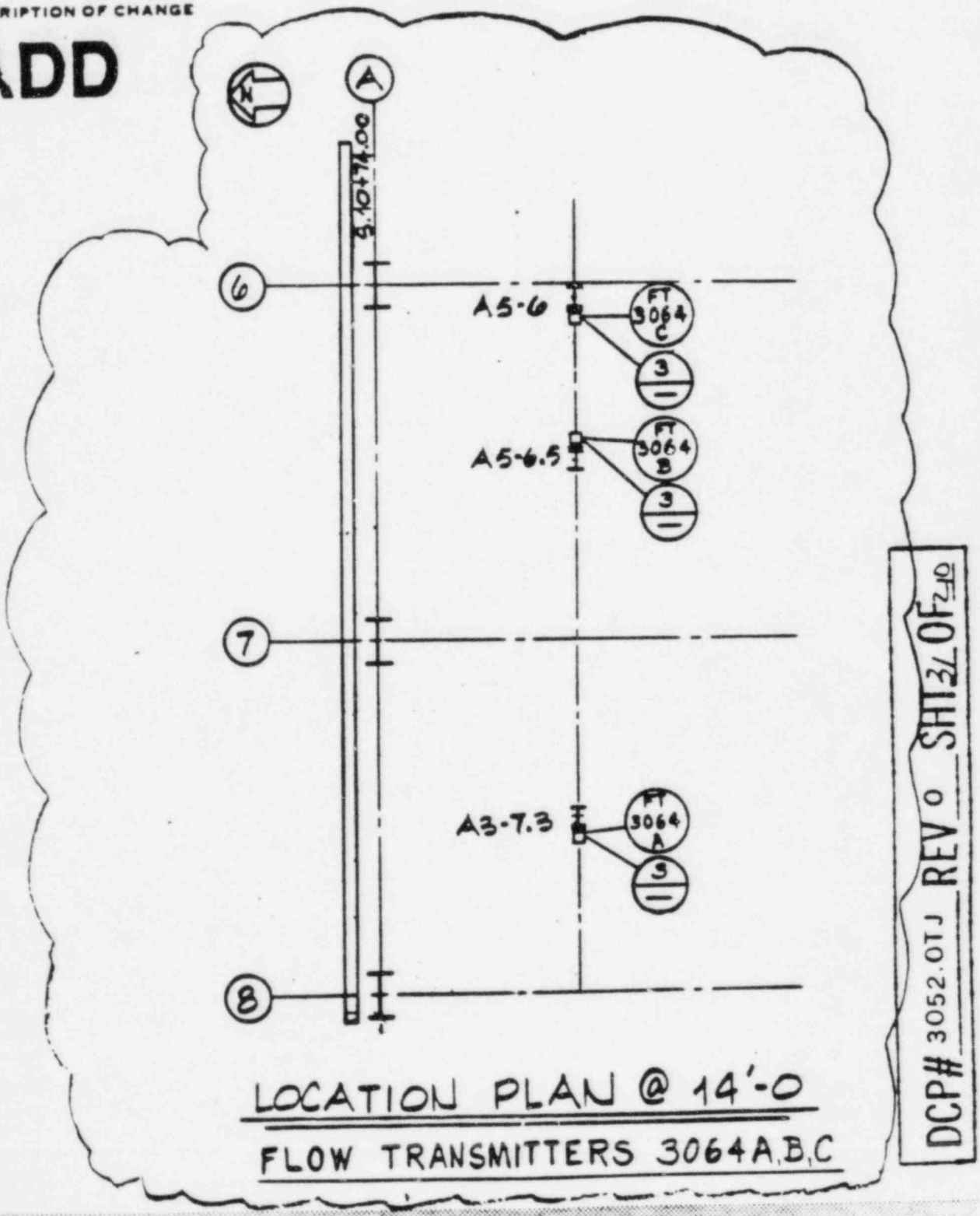
IDCN NUMBER S-1					
DRAWING NO.	SHEET NO.	REV. NO.	DCN CONV DATE	DCN CONV DWG. REV.	DCN CONV SUB. NO	QUALITY CLASS
451284	—	1			SR
					SEISMIC CLASS: A

Date 11-12-85 Page 3 of 16 Page

By H. BERTA

DESCRIPTION OF CHANGE

ADD



LOCATION PLAN @ 14'-0

FLOW TRANSMITTERS 3064A,B,C

DCP# 3052.01J REV 0 SHT 37 OF 40

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For BONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

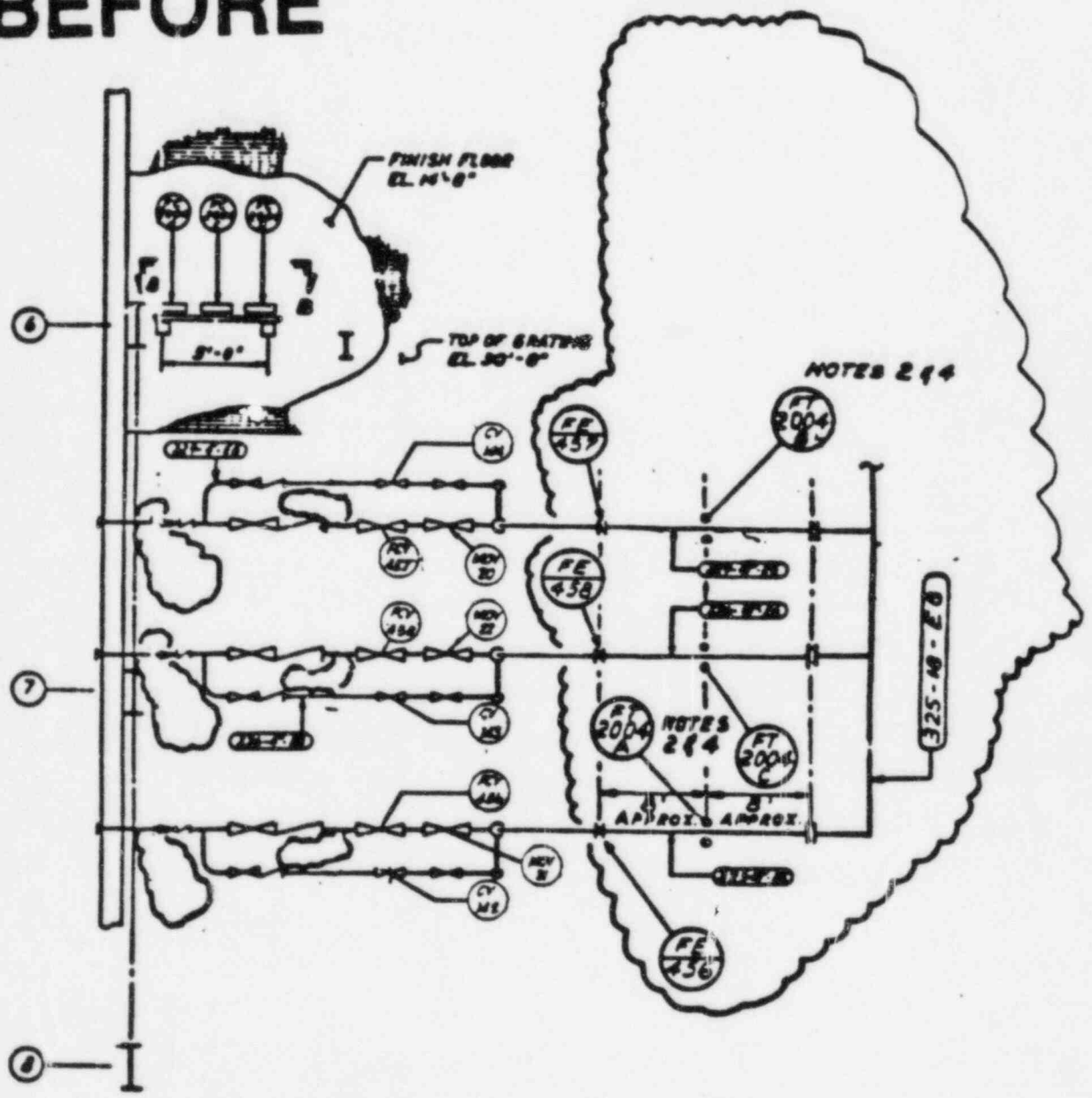
IDCN NUMBER S-1					
DRAWING NO.	SHEET NO.	REV. NO.	DCN CONV. DATE		QUALITY CLASS
			DWG. REV.	SUB. NO	
451284	-	1			SR
					SEISMIC CLASS
					A

Date 8-23-85 Page 4 of 16 Page

By T. CHOA

DESCRIPTION OF CHANGE

BEFORE



PLAN @ PLATF. EL. 30'-0

N.T.S.

DCP# 3052.0TJ REV 0 SHT 3 2 OF 2 10

DF-8005.2 A/85

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

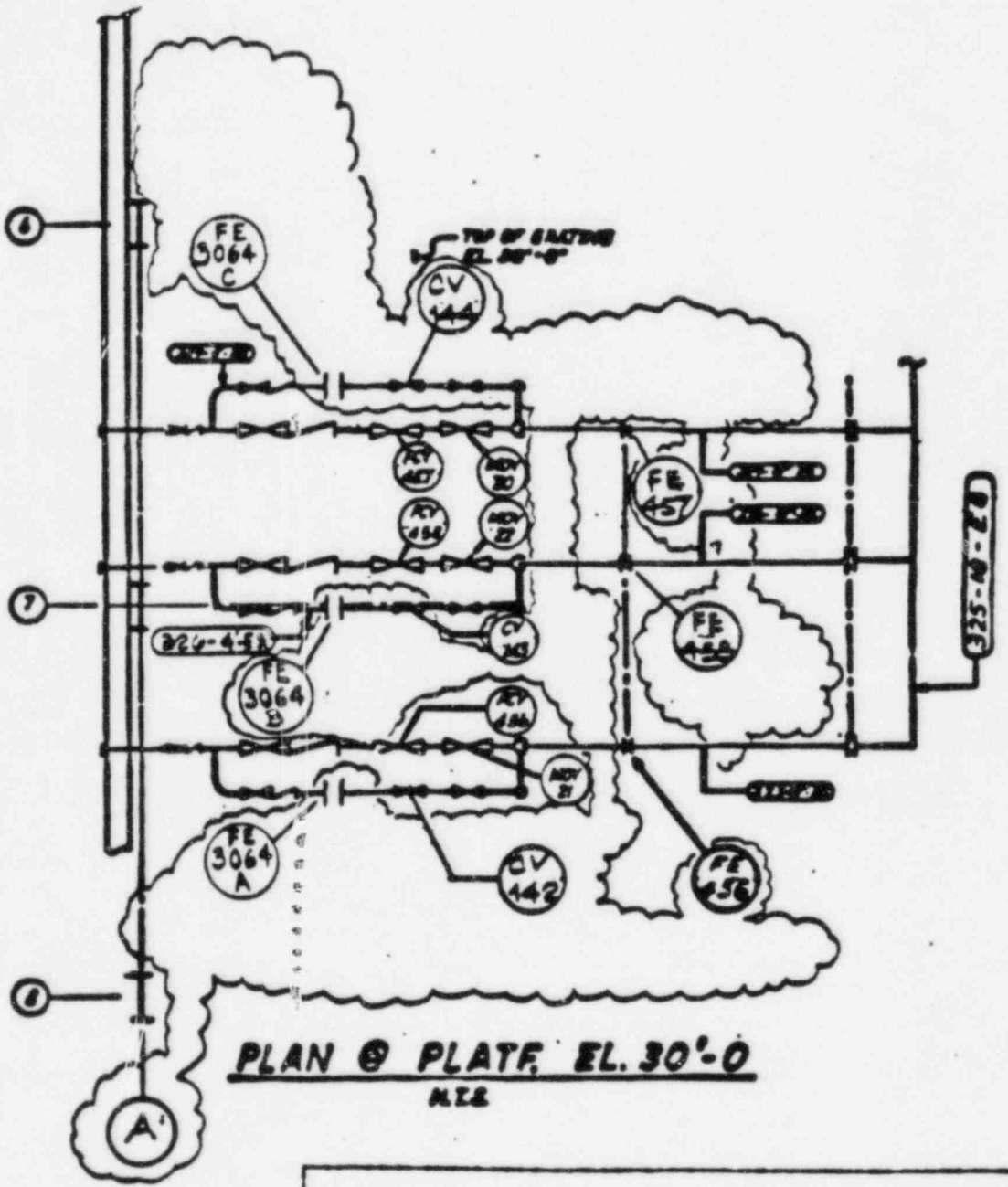
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DRAWING NO.	SHEET NO.	REV. NO.	DCN CONV DATE		QUALITY CLASS
			DWG. REV.	SUB. NO.	SR
451284	-	1			SEISMIC CLASS
					A

Date 11-12-85 Page 5 of 16 Page

By H. BERTA

DESCRIPTION OF CHANGE

AFTER



PLAN @ PLATF. EL. 30'-0

DCP# 3052.CTJ REV 0 SHT 33 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

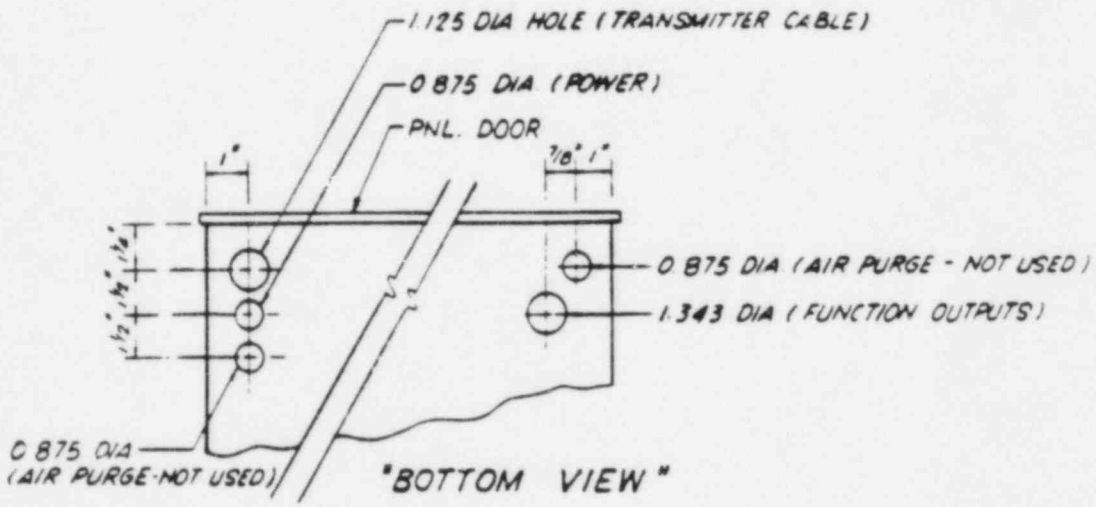
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451284	–	1			SR / A

Date 11-12-85 Page 6 of 16 Page

By H. BERTA

DESCRIPTION OF CHANGE

BEFORE



DETAIL 1 / –

CONDUIT ENTRY

(SEE NOTE 1)

DCP# 3052.CTJ REV 0 SHT 34 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

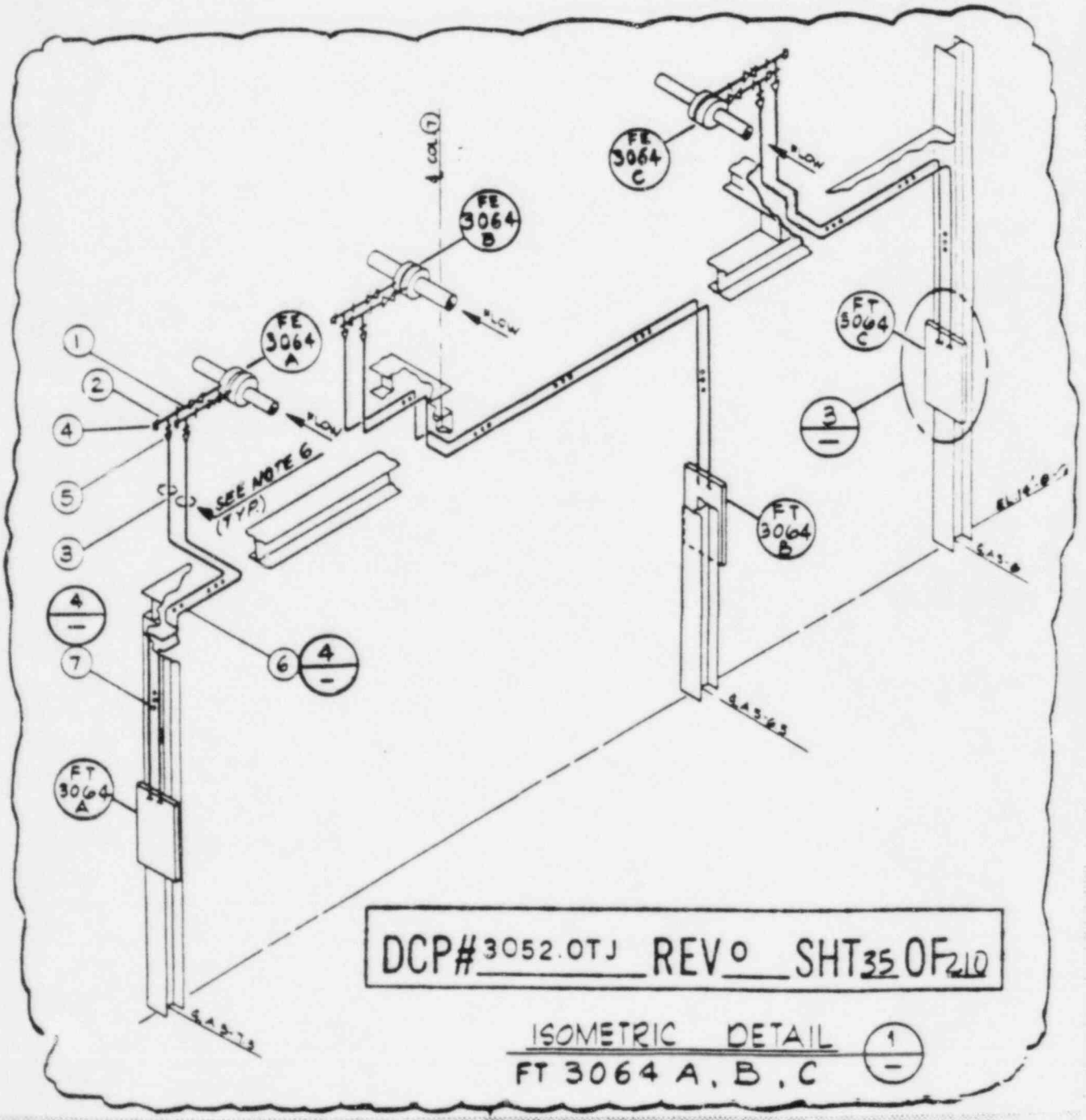
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DRAWING NO.	SHEET NO.	REV NO.	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	SR
451284	—	1			SEISMIC CLASS A

Date 11-12-85 Page 7 of 16 Page

By H. BERTA

DESCRIPTION OF CHANGE

AFTER



FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

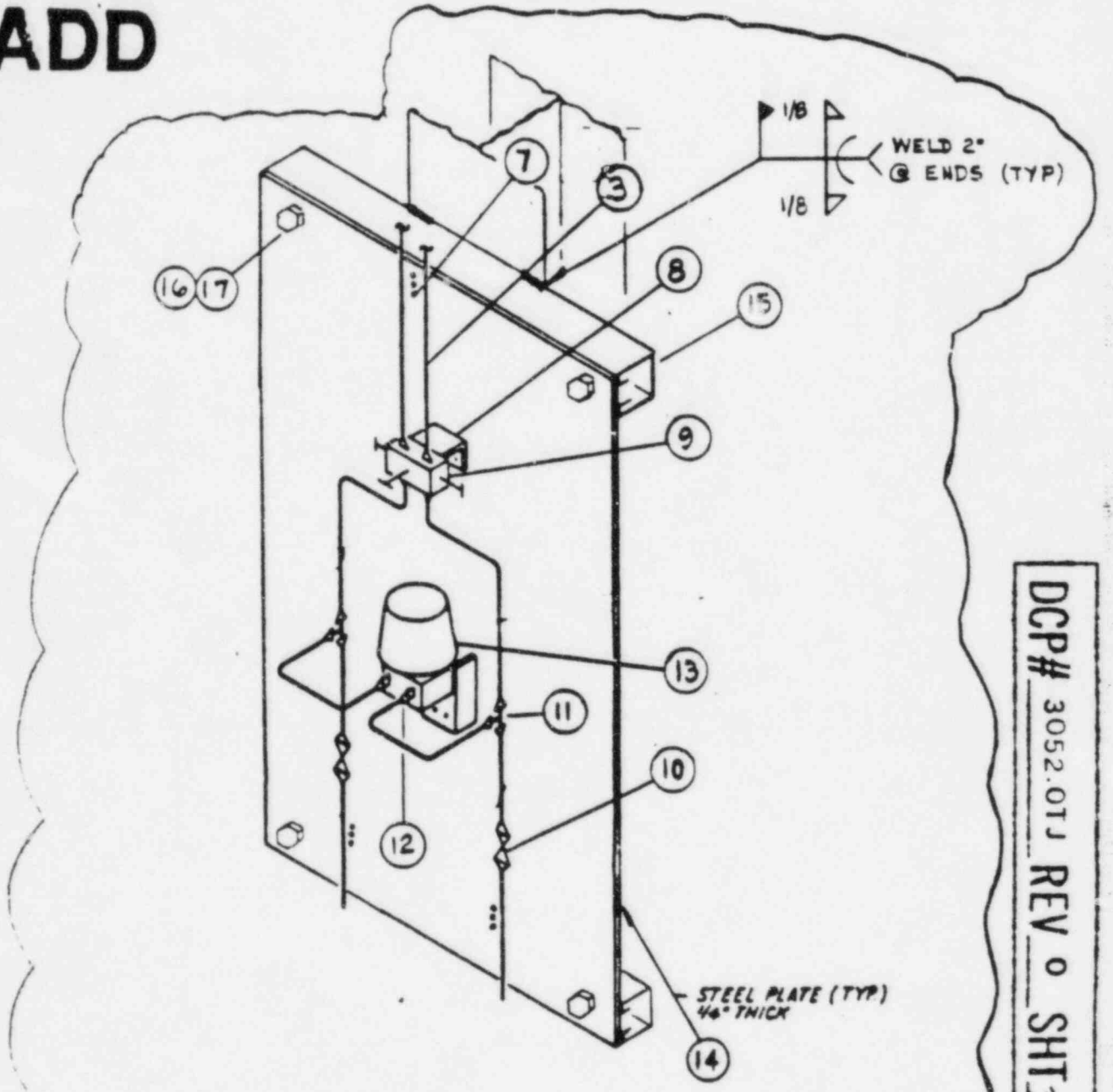
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DRAWING NO.	SHEET NO.	REV NO.	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	SR
451284	–	1			SEISMIC CLASS A

Date 11-12-85 Page 8 of 16 Page

By H. BERTA

DESCRIPTION OF CHANGE

ADD



ISOMETRIC DETAIL 3/1

TRANSMITTER TUBING & SUPPORT

TYPICAL FOR FT-3064 A.B.C

DCP# 3052.0TJ REV 0 SHT 2 OF 2

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

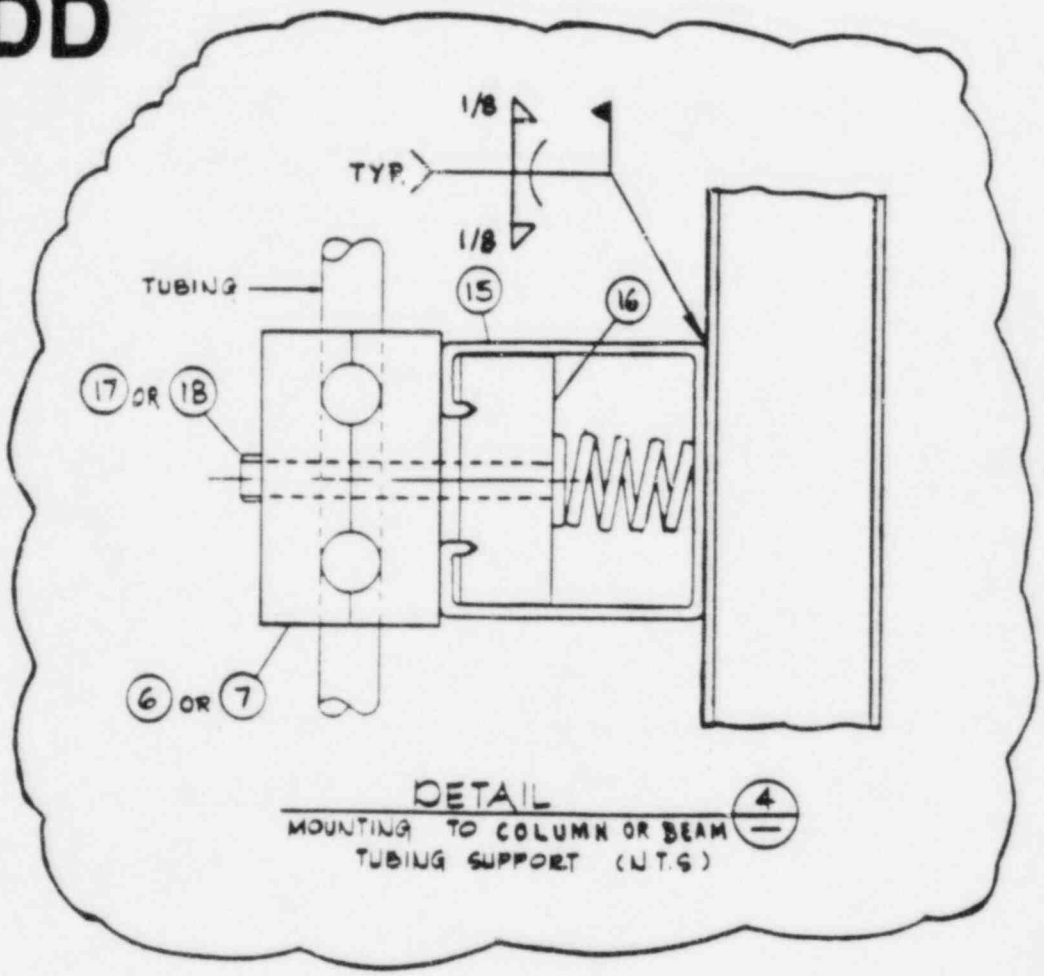
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DRAWING NO.	SHEET NO.	REV. NO.	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO.	SR
451284 -	1				SEISMIC CLASS
					A

Date 11-12-85 Page 9 of 16 Page

By H. BERTA

DESCRIPTION OF CHANGE

ADD



DETAIL 4
MOUNTING TO COLUMN OR BEAM
TUBING SUPPORT (N.T.S.)

DCP# 3052.0TJ REV 0 SHT 37 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

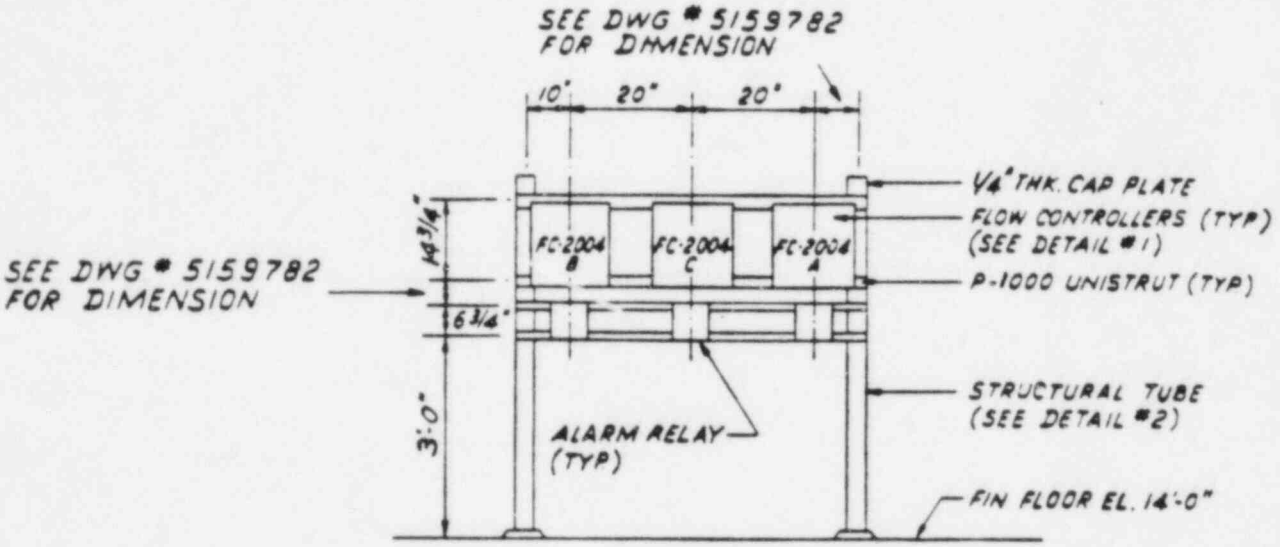
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DRAWING NO.	SHEET NO.	REV NO.	DCN CONV DATE		QUALITY CLASS
			DWG REV.	SUB NO.	SR
451284	–	1			SEISMIC CLASS
					A

Date 11-12-85 Page 10 of 16 Page

By H. BERTA

DESCRIPTION OF CHANGE

BEFORE



SECTION "B-B"

(NOT TO SCALE)

DCP# 3052.0TJ REV 0 SHT 35 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

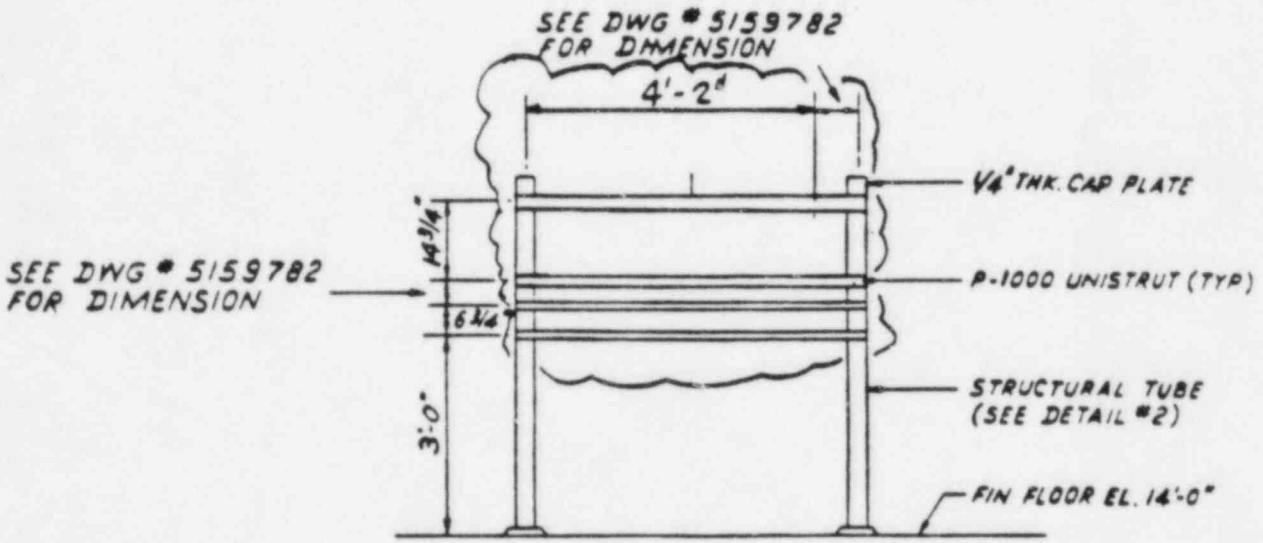
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DRAWING NO.	SHEET NO.	REV. NO.	DCN CONV DATE		QUALITY CLASS
			DWG. REV.	SUB. NO	SR
451284	-	1			SEISMIC CLASS A

Date 11-12-85 Page 11 of 16 Page

By H. BERTA

DESCRIPTION OF CHANGE

AFTER



SECTION "B-B"

(NOT TO SCALE)

DCP# 3052.0TJ REV 0 SHT 39 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER S-1					
DRAWING NO.	SHEET NO.	REV. NO.	DCN CONV DATE DWG. REV	DCN CONV DATE SUB. NO	QUALITY CLASS
451284	—	1			SR
					SEISMIC CLASS
					A

Date 11 - 12 - 85 Page 12 of 16 Page

By H. BERTA

DESCRIPTION OF CHANGE

BEFORE

POOR QUALITY DOCUMENT
BEST AVAILABLE COPY

NOTES:

1. CONDUIT ENTRY KNOCKOUTS ON FLOW CONTROLLER ARE SEALED WITH PLASTIC KNOCKOUT SEALS.

2. THE SET OF EXISTING 50 FT. VENDOR FURNISHED COAXIAL CABLES BETWEEN FT 2004 AND PC 2004 UNITS ARE TO REMAIN IN PLACE. THE INSTALLED CABLES HAVE SPADE LUGS AT THE TRANSDUCER (FT 2004) CONNECTIONS. WHEN THE TRANSDUCERS (WITH THEIR CONDULETS) ARE MOVED TO THEIR NEW LOCATIONS AS SHOWN, THE EXISTING CABLE SPADE LUGS ARE TO BE CONNECTED TO A NEW TERMINAL STRIP IN THE RESPECTIVE JUNCTION BOX AT THE TRANSDUCER END OF THE EXISTING CONDUIT THAT CARRIES THE EXISTING CABLE.

   A NEW VENDOR FURNISHED 60 FT COAXIAL CABLE WITH SPADE LUGS AT EACH END IS TO BE INSTALLED BETWEEN THE END OF THE EXISTING CABLE AND THE TRANSDUCERS NEW LOCATION. THE ONE END OF THE NEW CABLE IS TO BE CONNECTED TO THE SAME TERMINAL IN THE JUNCTION BOX TO WHICH THE EXISTING CABLE IS TO BE CONNECTED. EXCESS OF THE NEW COAXIAL CABLE IS TO BE COILED ADJACENT TO THE PIPE MOUNTED TRANSDUCERS AND TIE STRAPPED TO THE NEW JUNCTION BOX OR CONDUIT; IN NO CASE IS THE VENDOR PRE-FAB COAXIAL CABLE TO BE CUT/SPLICED.

3. DELETED

4. FOR RELOCATION OF TRANSDUCERS BY STARTUP SEE NOTE 2 OF 451337.

DCP# 3052.0TJ REV 0 SHT 40 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER S-1					
DRAWING NO.	SHEET NO.	REV NO.	DCN CONV DATE		QUALITY CLASS
			DWG REV.	SUB NO	SR
451284	—	1			SEISMIC CLASS A

Date 11-12-85 Page 13 of 16 Page

By H. BERTA

DESCRIPTION OF CHANGE

AFTER

NOTES

1. SLOPE PROCESS TUBING DOWN TO INSTRUMENT 1/2" PER FOOT MINIMUM
2. CONNECT H.P. SIDE OF INSTRUMENT TO UPSTREAM ORIFICE TAP
3. DIMENSIONAL TOLERANCE SHALL BE ± 6" UNLESS OTHERWISE NOTED.
4. FOR CIVIL/STRUCTURAL CALCULATIONS SEE DC-1909
5. ALL WELDING SHALL BE AS PER AWS D11-75 STRUCTURAL WELDING CODE
6. FIELD TO LOCATE AND DRILL 3/4" DIA. HOLE THROUGH FLOOR PLATE FOR PENETRATION OF TUBING

DCP# 3052.0TJ REV 0 SHT 41 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER S-1					
DRAWING NO.	SHEET NO.	REV NO.	DCN CONV DATE DWG REV	DCN CONV DATE SUB NO	QUALITY CLASS
451284	—	1			SR
					SEISMIC CLASS
					A

Date 11-12-85 Page 14 of 16 Page

By H. BERTA

DESCRIPTION OF CHANGE

BEFORE

M33910	2.1.7. BILL OF MAT'L
M33911	2.1.7. BILL OF MAT'L
M-33917	SPEC SHT. - FT/FC 2004 A, B & C
M-33754	SPEC SHT - REMOTE INDICATOR
451283	CONTROL BLOCK DIAGRAM
M-33702	SPEC SHT - TRANS/CONTROLLER
	Reference Drawings

AFTER

451337	LOOP DIAG. MFW FLOW IND.
5178206	P&I DIAG. FEEDWATER SYS.
M-38690	SPEC. SHT. FT3064 A, B & C
M-38689	SPEC SHT - REMOTE INDICATOR
451283	CONTROL BLOCK DIAGRAM
	Reference Drawings

DCP# 3052.0TJ REV 0 SHT 42 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER S-1					
DRAWING NO	SHEET NO	REV NO	DCN CONV DATE DWG REV	DCN CONV DATE SUB NO	QUALITY CLASS
451284		1			SR
					SEISMIC CLASS
					A

Date 11-12-85 Page 15 of 16 Page

By H. BERTA

DESCRIPTION OF CHANGE

BEFORE SAFETY RELATED

W.P.# 8177

Location SAN ONOFRE NUCLEAR GEN. STA.

INSTALLATION DETAIL
ULTRASONIC FLOW DEVICE
AUX. F.W. AUTO INITIATION

SCE EDISON
Rosemead California

Scale: NONE	451284	1
D/L:		

AFTER

DCP# 3052.0TJ REV 0 SHT 43 OF 210

SAFETY RELATED

Location SAN ONOFRE NUCLEAR GEN. STA.

INSTALLATION DETAIL
MAIN FEEDWATER
LOW FLOW INDICATION

SCE EDISON
Rosemead California

Scale: NONE	451284	1
D/L:		

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For BONDS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER	S-1				
DRAWING NO.	SHEET NO.	REV. NO.	DCN CONV DATE		QUALITY CLASS
			DWG. REV.	SUB NO	SR
451284		1			SEISMIC CLASS A

Date 11-12-85 Page 16 of 16 Page

By H. BERTA

DESCRIPTION OF CHANGE **ADD**

DETAILS 1 & 3 BILL OF MATERIALS

ITEM	QTY	DESCRIPTION	REMARKS
1	6	NIPPLE 1/2" x 3" SCRD SS	
2	6	TEE 1/2" SCRD SS	
3	180'	TUBING 3/8" O.D. x 0.049 SS ASME SA213 GRADE 316	
4	6	PLUG 1/2" SCRD PIPE SS	
5	6	CONNECTOR 3/8"T x 1/2" MNPT SS	
6	6	TUBING CLAMP 3/8"-1/2"T-500SS-2D	(GIRARD)
7	22	TUBING CLAMP 3/8"-1/2"T-500SS-3D	(GIRARD)
8	3	3 VALVE MOUNTING BRACKET (M-35543 SHT. 1)	
9	3	3 VALVE BYPASS MANIFOLD 3/8" TUBE CONN'S	(GOULD)
10	6	INSTRUMENT VALVE W/ 3/8" TUBE CONN'S SS	
11	6	TEE 3/8" TUBE SS	
12	6	CONNECTOR 3/8"T x 1/2" MNPT SS	
13	3	TRANSMITTER 4-20 MA FOXBORO D/P	N-E13DM-II M2-C
14	3	STEEL PLATE 24" x 18" x 1/4" ASTM A-36	
15	20'	P-1000 UNISTRUT CHANNEL	
16	30	SPRING NUT 1/4-20, UNISTRUT P-1006	
17	12	1/4"-20 x 1 1/2" THREAD BOLT PER ASTM A-307 GR A	
18	28	1/4"-20 x 2" THREAD BOLT PER ASTM A-307 GR A	
19	12	TUBING UNION 3/8"T x 3/8"T SS.	

DCP# 3052.CTJ REV 0 SHT 44 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

CDM/DDC USE ONLY
CIG

IDCN NO. S-1

DOCUMENT 451337 | SHT — | Rev. 1

Page 1 of 6

PPC NO.

DCP NO. 3052-OTJ

DCN CONVERSION NO.

1. Originator T. SUMMERS Tel: 975-4119 Date 8-24-85

Document Title LOOP DIAGRAM MAIN FEEDWATER LOW FLOW INDICATION DRADM I.D. IC-16 QC SR. SC A

DESCRIPTION OF CHANGE

REVISE DRAWING 451337 TO INCORPORATE MFW LOW FLOW INDICATION

DELETE THE FOLLOWING:
FT2004A, B AND C
FC2004A, B AND C
FI2004A, B AND C
ANNUNCIATOR "FEEDWATER LOW FLOW INDICATOR TROUBLE"
ALARM RELAY.

ADD THE FOLLOWING:
FT3064A, B AND C
FYV3064A, B AND C
FI3064A, B AND C

DCP# 3052.OTJ REV 0 SHT 45 OF 210

2. Other Affected Documents	3. Affected Systems	4. Design Approvals	
451284	NONE	CHECKER	DATE 9-12-85
		INDEPENDENT REVIEW ENGR	DATE 11-20-85
		RESPONSIBLE ENGINEER T. Summers	DATE 9/10/85
		LEAD DISCIPLINE ENGINEER	DATE 9-21-85
		OTHER	DATE
		OTHER	DATE
		QUALITY ASSURANCE	DATE 11-20-85

5. SCE/Contractor Project Administration

Conversion to DCN Date

SCE/CONTRACTOR PROJECT ADMINISTRATOR

DE-5005-1 8/85

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER S-1					
DRAWING NO.	SHEET NO.	REV. NO.	DCN CONV DATE		QUALITY CLASS
			DWG REV.	SUB NO	
45/337	—	1			SR
					SEISMIC CLASS
					A

Date 8-23-85 Page 2 of 6 Page

By R. GEDA

DESCRIPTION OF CHANGE

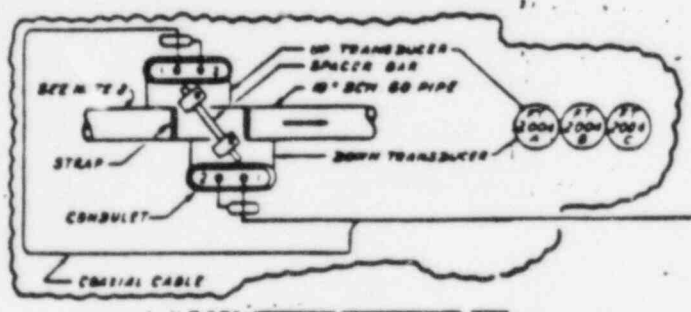
BEFORE

POOR QUALITY DOCUMENT
BEST AVAILABLE COPY

SYS. NO.	QTY	DESCRIPTION	MANUFACTURER'S NO.	BECHTEL NO.
—	3	ALARM RELAY	CONTROLOTRON MOD. 9	S/2000004 (NOTE 1)
—	6	TRANSMITTER CABLES	SPEC 4-60	
PT 2004 A&C	2	REMOTE INDICATOR	SPEC 4-60	S/2000009 (NOTE 1)
PT 2004 A&C	2	TRANSMITTER	CONTROLOTRON MOD. 1000 SERIES 80-4	S/2000008 (NOTE 1)
RETURN A&C	2	FLOW CONTROLLER	CONTROLOTRON MOD. 1000 SERIES 80-4	S/2000008 (NOTE 1)
—	3	TRANSMITTER CABLES	240 - 1 - 60 W/LUG ENDS	S66.000 B (NOTE 2)

NOTES:

1. OUTPUT CONTACTS OF ALARM RELAYS ASSOCIATED WITH PE SIGNALS, PE 2004 A AND PE 2004 C ARE TO BE WIRED IN SERIES AND SPDT TO THE ANNUNCIATOR.
2. SEE START-UP SHALL DISCONNECT THE COAXIAL CABLE AND REMOVE THE INSTALLED TRANSDUCERS, PT 2004 A & C FROM THEIR LOCATION DOWNSTREAM OF CV 142, 143 & 144 AND REINSTALL THEM ON LINES 825-10-EC, 826-10-86 AND 823-10-EC, AS SHOWN ON 45/284 PER CONTROLOTRON INSTALLATION BULLETIN 940-1M USING GE RED SILICONE RUBBER RTV/G OR EQUIVALENT CARE NEEDS TO BE TAKEN TO BE SURE THE PIPING SURFACE IS CLEAN, SMOOTH AND FREE OF RUST AND PITS BEFORE APPLYING THE RTV. (SEE NOTE 2 ON 45/284)
3. PREVIOUSLY INSTALLED UNDER THIS PHASE 1.



5 CONTINUED ON PAGE 3 OF 6

DCP# 3052.0TJ REV 0 SHT 46 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER S-1					
DRAWING NO.	SHEET NO.	REV NO.	DCN CONV DATE DWG REV	DCN CONV DATE SUB NO	QUALITY CLASS
451337	-	1			SR
					SEISMIC CLASS
					A

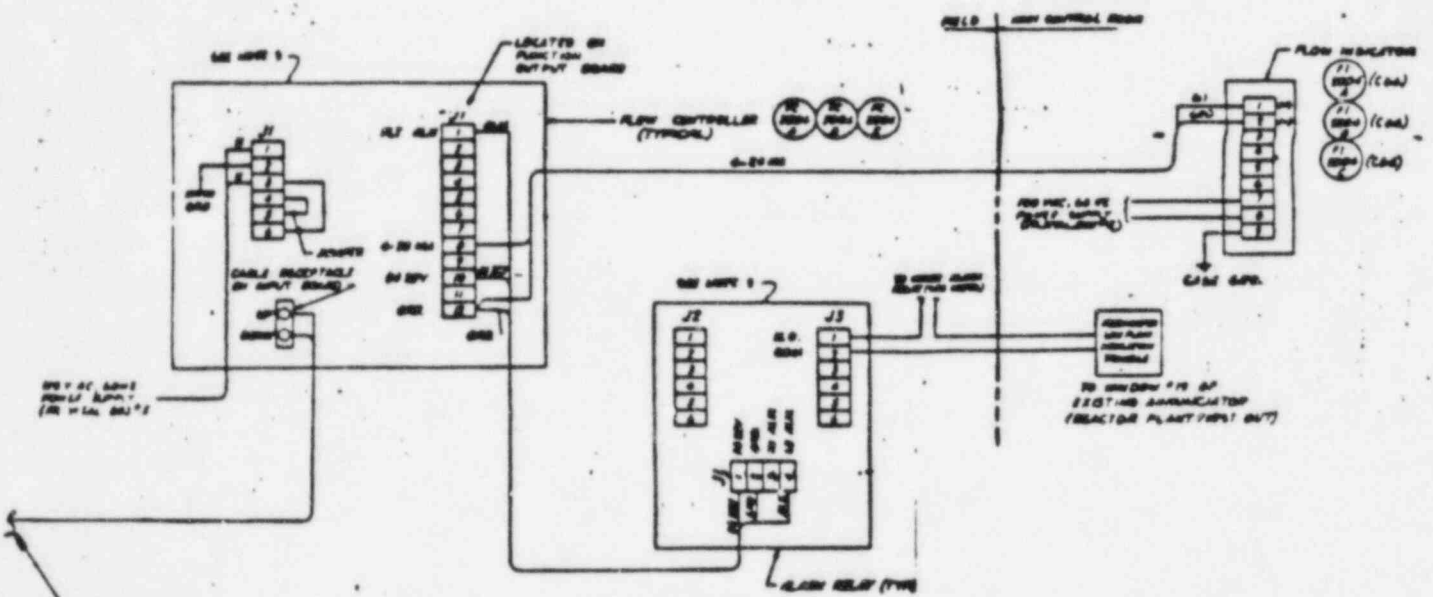
Date 8-23-85 Page 3 of 6 Page

By R. GEDA

DESCRIPTION OF CHANGE

BEFORE

POOR QUALITY DOCUMENT
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CONTINUED FROM PAGE 2 OF 6

DCP # 3052.0TJ REV 0 SHT 47 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

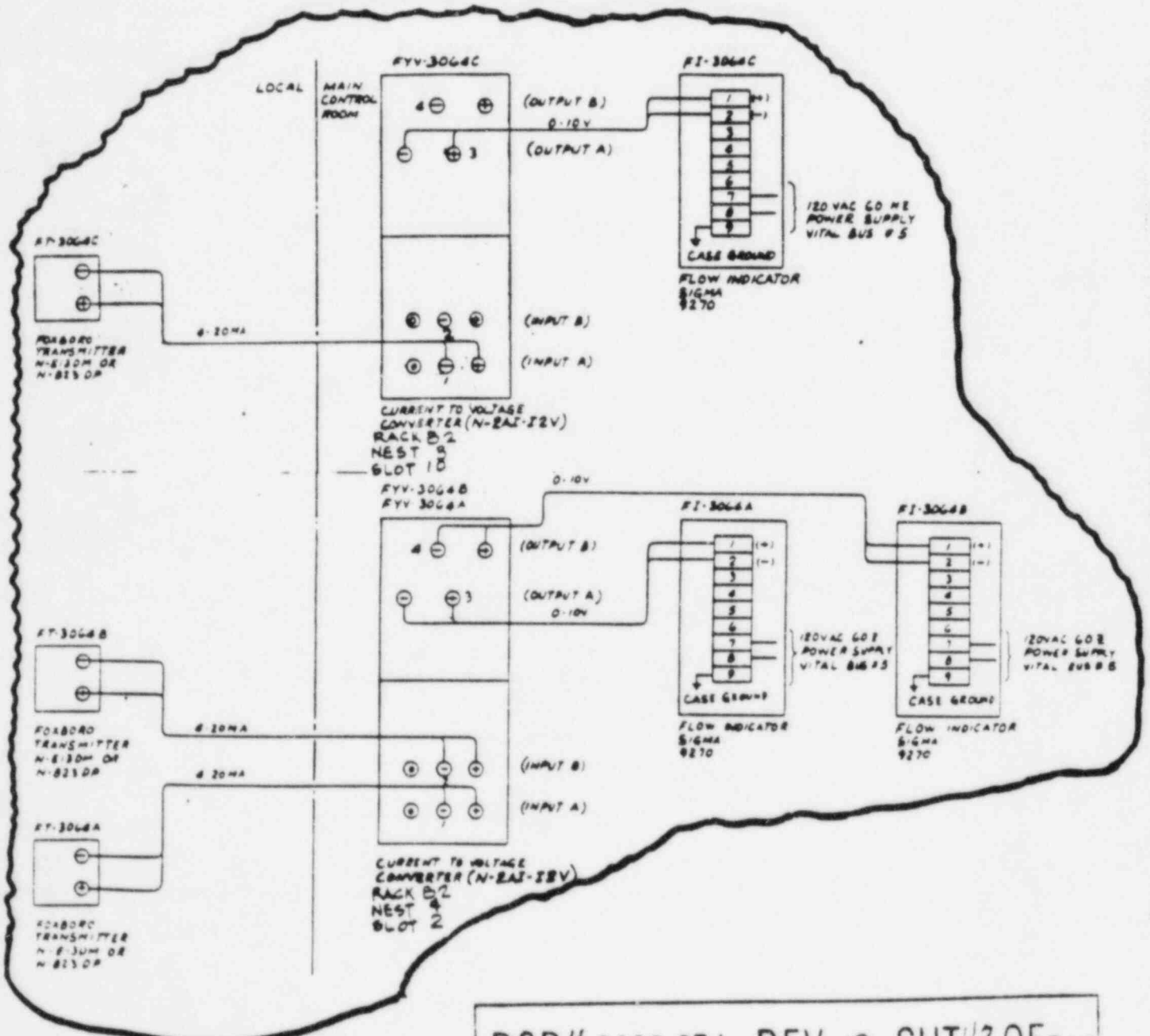
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			DWG REV.	SUB NO	SR
451337	—	1			SEISMIC CLASS
					A

Date 8-23-85 Page 4 of 6 Page

By R. GEDA

DESCRIPTION OF CHANGE

AFTER



DCP# 3052.0TJ REV 0 SHT 42 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

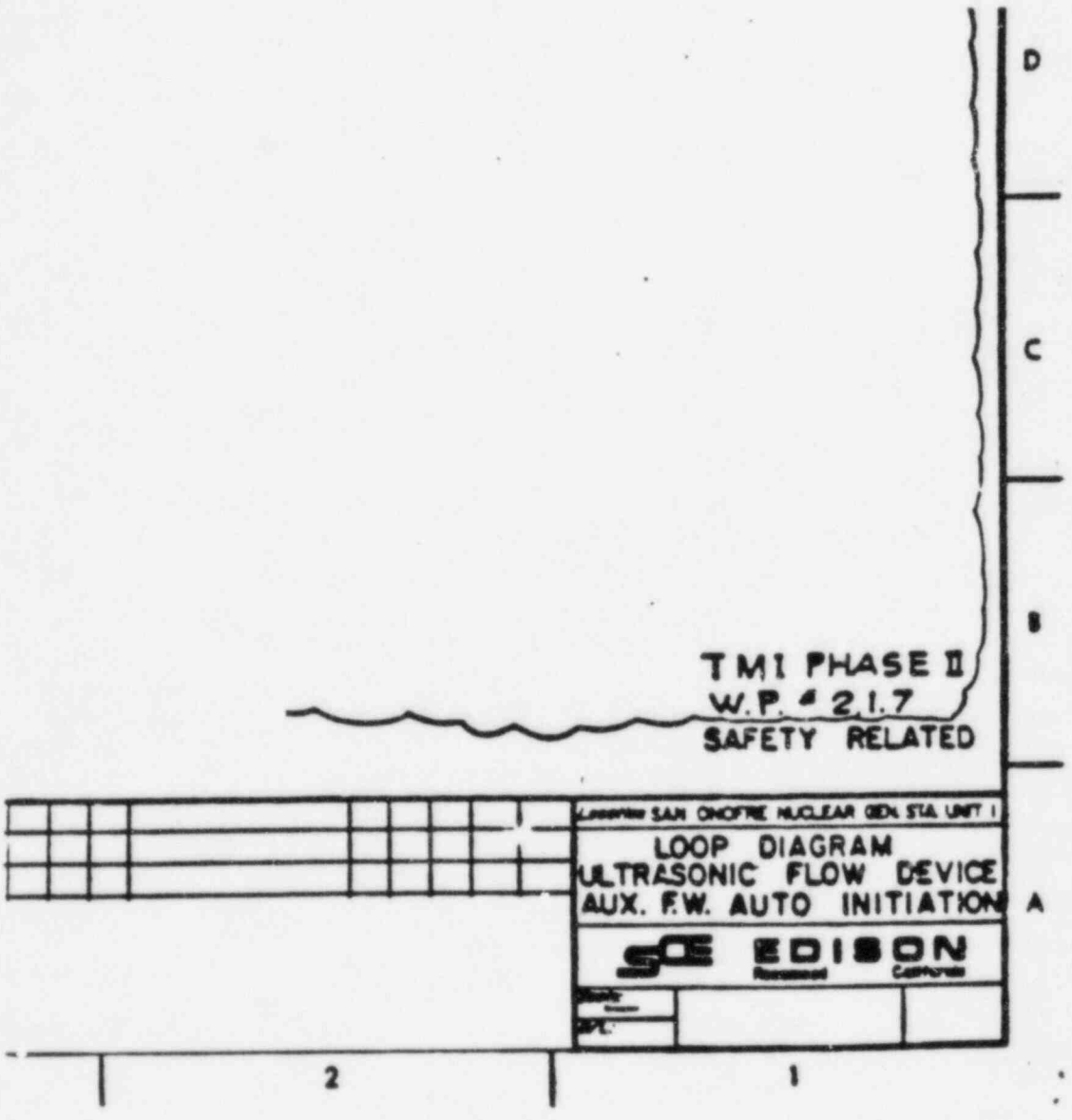
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DRAWING NO.	SHEET NO.	REV NO.	DCN CONV. DATE DWG. REV.	DCN CONV. DATE SUB NO	QUALITY CLASS: SR
451337	—	1			SEISMIC CLASS: A

Date 8-24-85 Page 5 of 6 Page

BEFORE

By R. GEDA

DESCRIPTION OF CHANGE



DCP# 3052.0TJ REV 0 SHT 5 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

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			DWG. REV.	SUB NO.	SR
451337	—	1			SEISMIC CLASS
					A

Date 8-24-85 Page 6 of 6 Page

By R. GEDA

DESCRIPTION OF CHANGE

AFTER

NOTE
SIGMA UNITS (FI-3064A, B & C) SHALL BE FIELD MODIFIED TO ACCEPT INPUTS OF 0-10V DC CURRENTLY THE UNITS ACCEPT 4-20MA

SAFETY RELATED

Location SAN ONOFRE NUCLEAR GEN. STA. UNIT 1

LOOP DIAGRAM
MAIN FEEDWATER
LOW FLOW INDICATION

SCE EDISON

DCP # 3052.0TJ REV 0 SHT 50 OF 210

DE 5005 2 6/8

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

CDM/DDC USE ONLY CIG	PPC NO.
IDCN NO. S-1	DCP NO. 3052.OTJ
SEQUENCE 516128 / SHT. – / REV. 0	DCN CONVERSION NO.
Page 1 of 5	

1. Originator T. SUMMERS Tel: 975-4119 Date 8-20-85

Document Title AUX. FEEDWATER SYS. RACK MOD. ARRGT. PRADM I.D. IC-11 QC SR SC A

DESCRIPTION OF CHANGE

ADDS MAIN FEEDWATER (MFW) LOW FLOW INDICATION TO THE MAIN CONTROL ROOM (MCR) FOR EACH OF THE THREE MFW VALVE BYPASS LINES. EACH LOOP REQUIRES INSTALLATION OF AN ORIFICE PLATE DIFFERENTIAL PRESSURE TRANSMITTER, CURRENT TO VOLTAGE CONVERTER INPUT TO AN EXISTING SIGMA INDICATING DEVICE IN THE MCR.

DELETES THE EXISTING STRAP ON FLOW TRANSDUCERS FLOW COMPUTERS AND LOW FLOW ANNUNCIATOR.

DCP# 3052.OTJ REV 0 SHT 5 OF 210

2. Other Affected Documents	3. Affected Systems	4. Design Approvals	
45/337	NONE	CHECKER	DATE 9-12-85
		INDEPENDENT REVIEW ENGR	DATE 11-20-85
		RESPONSIBLE ENGINEER T. Summers	DATE 9/10/85
		LEAD DISCIPLINE ENGINEER	DATE 11-26-85
		OTHER	DATE
		OTHER	DATE
		QUALITY ASSURANCE	DATE 11-25-85

5. SCE/Contractor Project Administration

Conversion to DCN Date _____ _____ SCE/CONTRACTOR PROJECT ADMINISTRATOR

DE-8005-1 8/85

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For BONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER	DRAWING NO	SHEET NO	REV NO	DCN CONV DWG REV	DCN CONV DATE	DCN CONV SUB NO	QUALITY CLASS	SEISMIC CLASS
S-1	516128I	—	0				SR	A

Page 2 of 5 Pages

Date 8-20-85 By R. GEDA

BEFORE

POOR QUALITY DOCUMENT
BEST AVAILABLE COPY

DESCRIPTION OF CHANGE

NEST

SLOT

	1	2	3	4	5	6	7	8	9	10	11
1	N 2A5 VAT (ECLP 9206) TYI-3411A (12) TYI-3402A (12)	N 2A5 VAT (ECLP 9206) FYI-3116A (8) TYI-3421A (12)	N 2A5 VAT (ECLP 9206) LYI-3020 (11) PYI-3001 (14)	N 2A5 VAT (ECLP 9206) LYI-3002 (13) LYI-3001 (13)	N 2A5 VAT (ECLP 9206) SPARE FYI-3453 (4)	N 2A5 VAT (ECLP 9206) FYI-3454 (4) FYI-3455 (4)	N 2A5 VAT (ECLP 9206) TYI-3002 (12) TYI-3001 (12)	N 2A5 VAT (ECLP 9206) TYI-3004 (12) TYI-3003 (12)	N 2A0 - LPC-P ZYC-3067 (10) TYC-3010 (12)	LYC-3020 (11) TYC-3001 (12)	N 2A1 - DP10 YE-3007
2	THIS SPACE TO BE LEFT OPEN										
3	N-2AE-T2PA-VAT TYY-3008 (12) TYY-3001 (12)	N-2AE-T2PA-VAT TYY-3004 (12) TYY-3003 (12)	N-2AP+SSL TYA-3008 (12)	N-2AP+DLS FYS-3453A (4) TYS-3008 (12)	N-2AI-PBV TYY-3411A (12) TYY-3402A (12)	N-2AI-PBV SPARE TYY-3421A (12)	N-2AP+SSL TYA-3009 (12)	N-2AP+SLIM TD-3009 (12)	N-2AP+ALW-AR LYB-3020 (11) TYB-3008 (12)	N-2AI-P2V SPARE (SEE NOTE 2)	N-2AI-DP10 YE-3008
4	N-2AI-12V FYV-3116A (8) PYY-3011 (5)	EMPTY	N-2AP+SDC PYB-3425X1 (12)	N-2AP+SDE FYD-3116A (8)	N-2AI-12V LYY-3002 (12) LYY-3001 (11)	N-2AI-12V FYY-3453B (4) FYY-3453A (4)	N-2AP+SDE FYD-3453A (4)	N-2AP+SDE (ECLP 8715) FYD-3453B (4)	N-2AI-CBL TYL-3001 (12) ZYL-3057 (10)	N-2AP+SSL FYA-3453 (4)	N-2AP-DP10 YE-3009
5	N-2AI-12V FYV-3454B (4) FYV-3454A (4)	N-2AP+SDE FYD-3454A (4)	N-2AP+SDE (ECLP 8715) FYD-3454B (4)	N-2AI-12V FYV-3455B (4) FYV-3455A (4)	N-2AP+SDE FYD-3455A (4)	N-2AP+SDE (ECLP 8715) FYD-3455B (4)	N-2AP+DLS FYS-3454 (4) FYS-3455 (4)	N-2AP+SSL FYA-3456 (4)	N-2AP+SSL FYA-3455 (4)	N-2AI-12V LYY-3010 (11) PYY-3001 (14)	N-2AH-DP10 YE-3010
6	SPACE FOR NEST										
7	N-2APS-AG YE-3002										

DCP#3052.01J REV 0 SHT 25 OF 212

RACK B2

DE 5005.2 6/82

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For BONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER S-1

DRAWING NO	SHEET NO	REV NO	DCN CONV DATE	DCN CONV DWG REV	DCN CONV SUB NO	QUALITY CLASS	SEISMIC CLASS
5/6128/	—	0				SR.	A

Date 8-20-85 Page 3 of 5 Pages

By R. GEDA

AFTER

DESCRIPTION OF CHANGE

NEST

SLOT

	1	2	3	4	5	6	7	8	9	10	11
1	N-2AO-VAT (ECLP 9206) TYI-3411A (12) TYI-3402A (12)	N-2AO-VAT (ECLP 9206) FYI-3464A (8) TYI-3464A (12)	N-2AO-VAT (ECLP 9206) LYI-3020 (11) FYI-3001 (14)	N-2AO-VAT (ECLP 9206) LYI-3002 (11) LYI-3001 (11)	N-2AO-VAT (ECLP 9206) SPARE FYI-3453 (4)	N-2AO-VAT (ECLP 9206) FYI-3454 (4) FYI-3455 (4)	N-2AO-VAT (ECLP 9206) TYI-3002 (12) TYI-3001 (12)	N-2AO-VAT (ECLP 9206) TYI-3004 (12) TYI-3003 (12)	N-2AO-LPC-P ZYC-3067 (10) TYC-3010 (12)	LYC-3020 (11) TYC-3001 (12)	N-2AI-DP10 YE-3007
2	THIS SPACE TO BE LEFT OPEN										
3	N-2AE-T2PA-VAK TYV-3008 (12) TYV-3001 (12)	N-2AI-T2PA-VAK TYV-3006 (12) TYV-3003 (12)	N-2AP-SSL TYA-3008 (12)	N-2AP-DLS FYS-3453A (4) TYS-3008 (12)	N-2AI-PRV TYV-3411A (12) TYV-3402A (12)	N-2AI-PRV SPARE FYV-3421A (12)	N-2AP-SSL TYA-3009 (12)	N-2AP-SUM TO-3009 (12)	N-2AP-AL M-AG LYB-3020 (11) TYB-3023 (12)	N-2AI-12V FYV-3064A (19) FYV-3064B (19)	N-2AI-DP10 YE-3010
4	N-2AI-12V FYV-3064A (4) FYV-3011 (5)	N-2AI-12V FYV-3064C (19) SPARE	N-2AP-SOE (ECLP 87SL) FYO-3425X1 (12)	N-2AP-SOE FYO-3114A (8)	N-2AI-12V LYV-3002 (11) LYV-3001 (11)	N-2AI-12V FYV-3453B (4) FYV-3453A (4)	N-2AP-SOE FYO-3453B (4)	N-2AP-SOE (ECLP 87SL) FYO-3453B (4)	N-2AI-C2L TYL-3001 (12) ZYL-3067 (10)	N-2AP-SSL FYA-3453 (4)	N-2AP-DP10 YE-3009
5	N-2AI-12V FYV-3454B (4) FYV-3454A (4)	N-2AP-SOE FYO-3454A (4)	N-2AP-SOE (ECLP 87SL) FYO-3454B (4)	N-2AI-12V FYV-3455B (4) FYV-3455A (4)	N-2AP-SOE FYO-3455A (4)	N-2AP-SOE (ECLP 87SL) FYO-3455B (4)	N-2AP-DLS FYS-3454 (4) FYS-3455 (4)	N-2AP-SSL FYA-3454 (4)	N-2AP-SSL FYA-3455 (4)	N-2AI-12V LYV-3020 (11) FYV-3001 (14)	N-2AP-DP10 YE-3010
6	SPACE FOR NEST										
7	N-2ARPS-A6 YE-3002										

DCP# 3052.01 REV 0 SHT 13 OF 22

RACK B2

DE 8005 2 6/81

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER S-1					
DRAWING NO	SHEET NO	REV NO	DCN CONV DATE: DWG REV	DCN CONV DATE: SUB NO	QUALITY CLASS
5161281	—	0			SR
					SEISMIC CLASS: A

Date 8-20-86 Page 4 of 5 Page

By R. GEIJA

DESCRIPTION OF CHANGE

POOR QUALITY DOCUMENT
BEST AVAILABLE COPY

BEFORE

RACK B1

REF (No.)	LOOP DIAGRAM DWG.	TITLE	WORK PACKAGE NUMBER
1	451776	AFWCS ACTUATION LOOP DIAGRAM	2.1.7
2	451869	CIO PUMP SUCTION PROTECTION LOOP DIAGRAM	2.1.7
3	451875	AFW FLOW CONTROL LOOP DIAGRAM	2.1.7
4	451876	AUX FEEDWATER FLOW INDICATION LOOP DIAGRAM	2.1.7
5	235863	AFW DISCHARGE PRESSURE INDICATION LOOP DIAG.	2.1.7
6	451408	CONTROL LOOP DIAG STM GEN NOR. PRESS/CHG. LINE FLOW	2.2.2.b
7			
8	451410	CONTROL LOOP DIAG RECIRC S.I. FLOW	2.2.2.b
9	451412	CONTROL LOOP DIAG. PORV V./BLOCK V. POSITION	2.2.2.b
10	451415	CONTROL LOOP DIAG. C.I.S./REAC. TRIP STATUS	2.2.2.b
11	451424	CONTROL LOOP DIAG REFUELING WATER STG TANK LEVEL	2.2.2.b
12	5161377	CONTROL LOOP DIAG. SUBCOOLING MONITORING SYSTEM	2.1.3.b+1, 2.2.2.b
13	451591	LOOP/BLOCK DIAG CONTAINMENT WATER LEVEL MON SYS	2.1.3 2.2.2.b
14	451592	LOOP/BLOCK DIAG CONTAIN WIDE RANGE PRESS MON SYS	2.1.1 2.2.2.b
15	451790	PRESSURIZER SAF RELIEF VALVE POS IND TRAIN B LOOP DIAG	2.1.3 2.2.2.b
16	451956	LOOP DIAGRAM PRESSURIZER PRESSURE	2.1.6
17	451961	LOOP DIAG. EMERG. PREP HI RANGE RAD. MON.	2.1.8.b.10 [illegible]
18	451963	LOOP DIAG EMERG PREP MAIN STM RAD MON	2.1.8.b.7 [illegible]

DCP# 3052.0TJ REV 0 SHT 54 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER S-1					
DRAWING NO	SHEET NO	REV NO	DCN CONV DATE DWG. REV.	DCN CONV DATE SUB NO	QUALITY CLASS: SR. / SEISMIC CLASS: A
5161281	—	0			

Date 8-20-85 Page 5 of 5 Page

By R. GEDA

DESCRIPTION OF CHANGE

POOR QUALITY DOCUMENT
BEST AVAILABLE COPY

AFTER

RACK 81

REF (No.)	LOOP DIAGRAM DWG.	TITLE	WORK PACKAGE NUMBER
1	451778	AFMS ACTUATION LOOP DIAGRAM	2.1.7
2	451869	CND PUMP SUCTION PROTECTION LOOP DIAGRAM	2.1.7
3	451875	AFW FLOW CONTROL LOOP DIAGRAM	2.1.7
4	451876	AUX FEEDWATER FLOW INDICATION LOOP DIAGRAM	2.1.7
5	235863	AFW DISCHARGE PRESSURE INDICATION LOOP DIAG.	2.1.7
6	451408	CONTROL LOOP DIAG STM GEN WDR PRESS CMS LEVEL FLOW	2.2.2.6
7			
8	451410	CONTROL LOOP DIAG RECIRC S.E. FLOW	2.2.2.6
9	451412	CONTROL LOOP DIAG PORV V/BLOCK V POSITION	2.2.2.6
10	451415	CONTROL LOOP DIAG C.I.S./REAC TRIP STATUS	2.2.2.6
11	451424	CONTROL LOOP DIAG REFUELING WATER STG TANK LEVEL	2.2.2.6
12	396/377	CONTROL LOOP DIAG SUBCOOLING MONITORING SYSTEM	2.13+2.2.2.6
13	451391	LOOP/BLOCK DIAG CONTAINMENT WATER LEVEL MON SYS	2.13 2.2.2.6
14	451392	LOOP/BLOCK DIAG CONTAIN WIDE RANGE PRESS MON SYS	2.11 2.2.2.6
15	451790	PRESSURIZER SAF RELIEF VALVE POS IND TRAIN B LOOP DIAG	2.13 2.2.2.6
16	451356	LOOP DIAGRAM PRESSURIZER PRESSURE	2.1.6
17	451961	LOOP DIAG. EMERG. FWCP HI RANGE RAD. MON.	2.1.84, 2.1.10
18	[illegible]	[illegible]	[illegible]
19	451337	MFW LOW FLOW INDICATION LOOP DIAGRAM	3052

DCP# 3052.0TJ REV 0 SHT 55 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

CDM/DDC USE ONLY
CIG

PEC NO.

IDCN NO. S-2

DCP NO. 3052.OTJ

DOCUMENT 5178206 | Sht. | Rev. 3

DCN CONVERSION NO

Page 1 of 7

1. Originator T. SUMMERS Tel: 54119 Date 8-16-85

Document Title P&I DIAGRAM FEEDWATER SYS. DRADM I.D. M-22 QCSREANSC A

DESCRIPTION OF CHANGE

ADDS MAIN FEEDWATER (MFW) LOW FLOW INDICATION TO THE MAIN CONTROL ROOM (MCR) FOR EACH OF THE THREE MFW VALVE BYPASS LINES. EACH LOOP REQUIRES INSTALLATION OF AN ORIFICE PLATE DIFFERENTIAL PRESSURE TRANSMITTER, CURRENT TO VOLTAGE ~~CONVERTER SQUARE ROOT EXTRACTOR AND VOLTAGE TO CURRENT~~ CONVERTER INPUT TO AN EXISTING SIGMA INDICATING DEVICE IN THE MCR.

AD 11-11-85

DELETED THE EXISTING STRAP ON FLOW TRANSDUCERS FLOW COMPUTERS AND LOW FLOW ANNUNCIATOR.

DCP# 3052.OTJ REV 0 SHT 5b OF 210

2. Other Affected Documents	3. Affected Systems	4. Design Approvals	
M-37770	FWS	CHECKER	DATE 11-19-85
		INDEPENDENT REVIEW ENGR	DATE 11-21-85
		RESPONSIBLE ENGINEER	DATE 11-19-85
		LEAD DISCIPLINE ENGINEER	DATE 11-21-85
		OTHER	DATE
		OTHER	DATE
		QUALITY ASSURANCE	DATE 11-21-85

5. SCE/Contractor Project Administration

Conversion to DCN Date

SCE/CONTRACTOR PROJECT ADMINISTRATOR

DE 8005 1 8/85

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

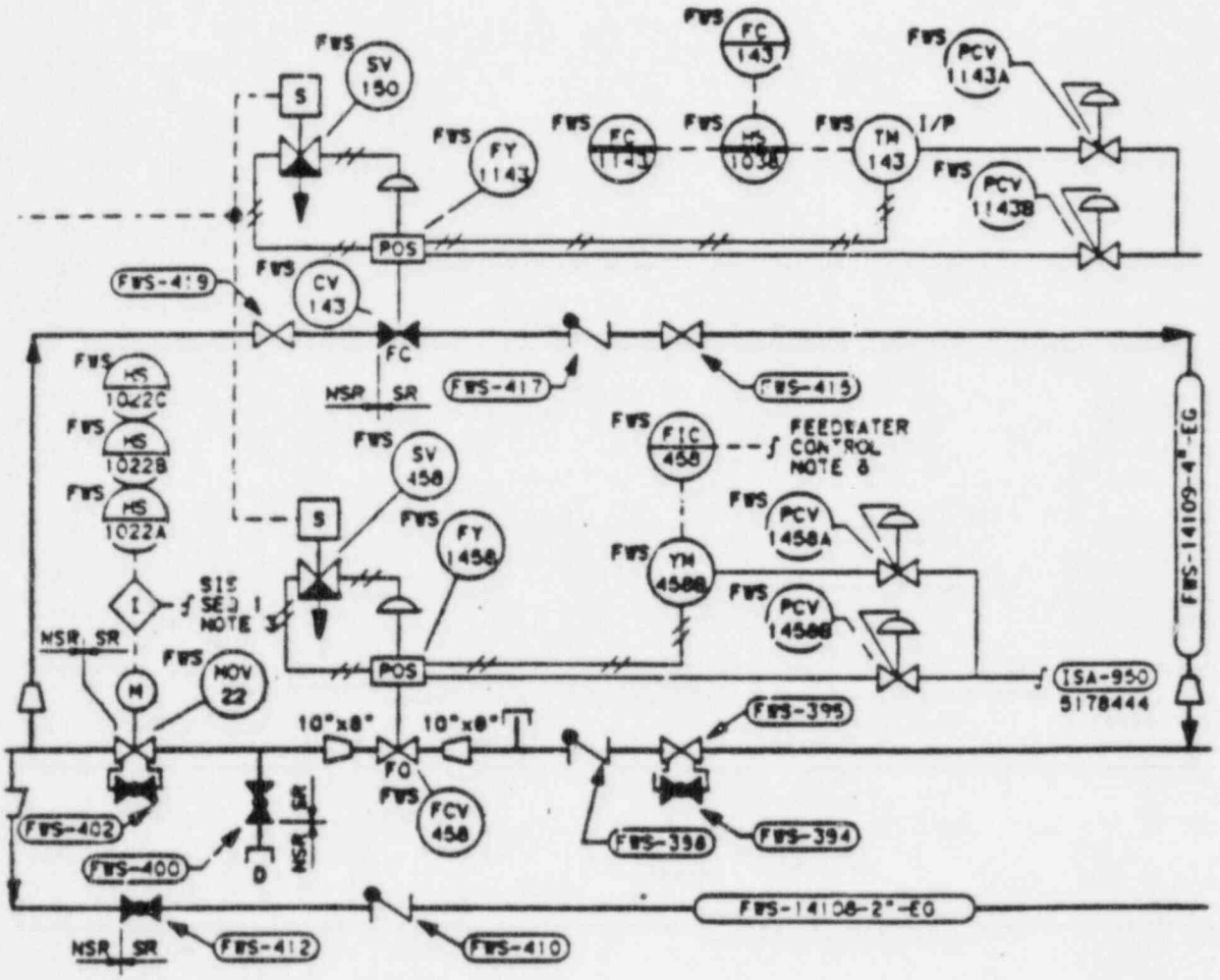
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DRAWING NO	SHEET NO	REV NO	DCN CONV DATE DWG REV	DCN CONV DATE SUB NO	QUALITY CLASS SRE
5178206	-	3			SEISMIC CLASS A

Date 10-28-85 Page 2 of 7 Page

By T. CHOA

DESCRIPTION OF CHANGE

BEFORE



DCP# 3052.0TJ REV 0 SHT 57 OF 240

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER	S-1				
DRAWING NO.	SHEET NO.	REV. NO.	DCN CONV. DATE / DWG. REV.	SUB. NO	QUALITY CLASS
M-33754	2	3			SR
					SEISMIC CLASS: A

Date 8-27-85 Page 2 of 3 Page

By Tom Summers

DESCRIPTION OF CHANGE

BEFORE

QUANTITY	THREE (3)
PART NO.	9870-80-EVB 0-300 GPM (DIN FRONT W/ZERO & SPAN ADJUSTMENTS IN BEZEL)
VENDOR	BERNARD & ASSOCIATES
MANUFACTURER	SIGMA INSTRUMENTS INC (PROCUREMENT LEVEL IV)

M-RA917	FLOW TRANS/CONTROLLER
568785	UNIT CONSOLE (MCR)
568779	P & I DIAGRAM
451337	CONTROL LOOP DIAGRAM

Reference Drawings

NOTES
#-REQUIRES SCE APPROVAL PRIOR TO DELIV

DCP# 3052.0TJ REV 0 SHT 72 OF 140

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

- (For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER	5-1				
DRAWING NO.	SHEET NO.	REV. NO.	DCN CONV. DATE DWG. REV.	DCN CONV. DATE SUB. NO.	QUALITY CLASS / SEISMIC CLASS
M-33754	2	3			SR / A

Date 8-27-85 Page 3 of 3 Page

By T. SUMMERS

DESCRIPTION OF CHANGE

AFTER

QUANTITY	THREE (3)
PART NO.	9270-20-DVB 0-220 GPM (1 DIN FRONT W/ ZERO & SPAN ADJUSTMENT IN BEZEL)
VENDOR	BERNARD & ASSOCIATES
MANUFACTURER	SIGMA INSTRUMENTS INC. (PROCUREMENT LEVEL IV)

Reference Drawings	
M-38690	DIFF. PRESS. INSTRUMENT
568725	UNIT CONSOLE (MCR)
5178206	P&ID
451337	CONTROL LOOP DIAGRAM
M-38688	I TO V CONVERTER

Notes
#- REQUIRES SCE APPROVAL PRIOR TO DELIV

SIGMA UNITS ARE FIELD MODIFIED TO ACCEPT 0-10VDC INPUTS FROM FYV-3064 A, B, C (I TO V CONVERTERS)

NOTE: FIELD will MODIFY SIGMA INDICATORS TO ACCEPT 0-10VDC SIGNAL INPUT. THEREFORE THE REPLACEMENT MODEL NO. is 9270-20-DVB.

DCP# 3052.0TJ REV 0 SHT 73 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

CDM/DDC USE ONLY
CIG

PFC NO.

IDCN NO. S1

DCP NO. 3052-OTJ

DOCUMENT 451283 | Sht. — | Rev. 0

DCN CONVERSION NO.

Page 1 of 5

1 Originator T. SUMMERS Tel: 975-4119 Date 8-27-85

Document Title CONTROL BLOCK DIAGRAM AUX. FEEDWATER AUTOMATIC INITIATION DRADM I.D. IC-15 QC SR SC A

DESCRIPTION OF CHANGE

REVISE DRAWING 451283 TO ADD MFW LOW FLOW INDICATION

DELETE THE FOLLOWING:
FT2004A, B AND C
FC2004A, B AND C
FI2004A, B AND C

ADD THE FOLLOWING:
FT3064A, B AND C
FYV3064A, B AND C
FI3064A, B AND C

* INDICATES NEW EQUIPMENT

DCP# 3052.0TJ REV 0 SHT 4 OF 20

2. Other Affected Documents	3. Affected Systems	4. Design Approvals	
N-3500 SH. 18	FWS	CHECKER	DATE 9-12-85
5178206		INDEPENDENT REVIEW ENGR	DATE 11-20-85
568725		RESPONSIBLE ENGINEER T. Summers	DATE 9/10/85
		LEAD DISCIPLINE ENGINEER A. L. Bamburg	DATE 11-21-85
		OTHER	DATE
		OTHER	DATE
		QUALITY ASSURANCE	DATE 11-26-85

5. SCE/Contractor Project Administration

Conversion to DCN Date

SCE/CONTRACTOR PROJECT ADMINISTRATOR

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For BONGS 1, 2 & 3)

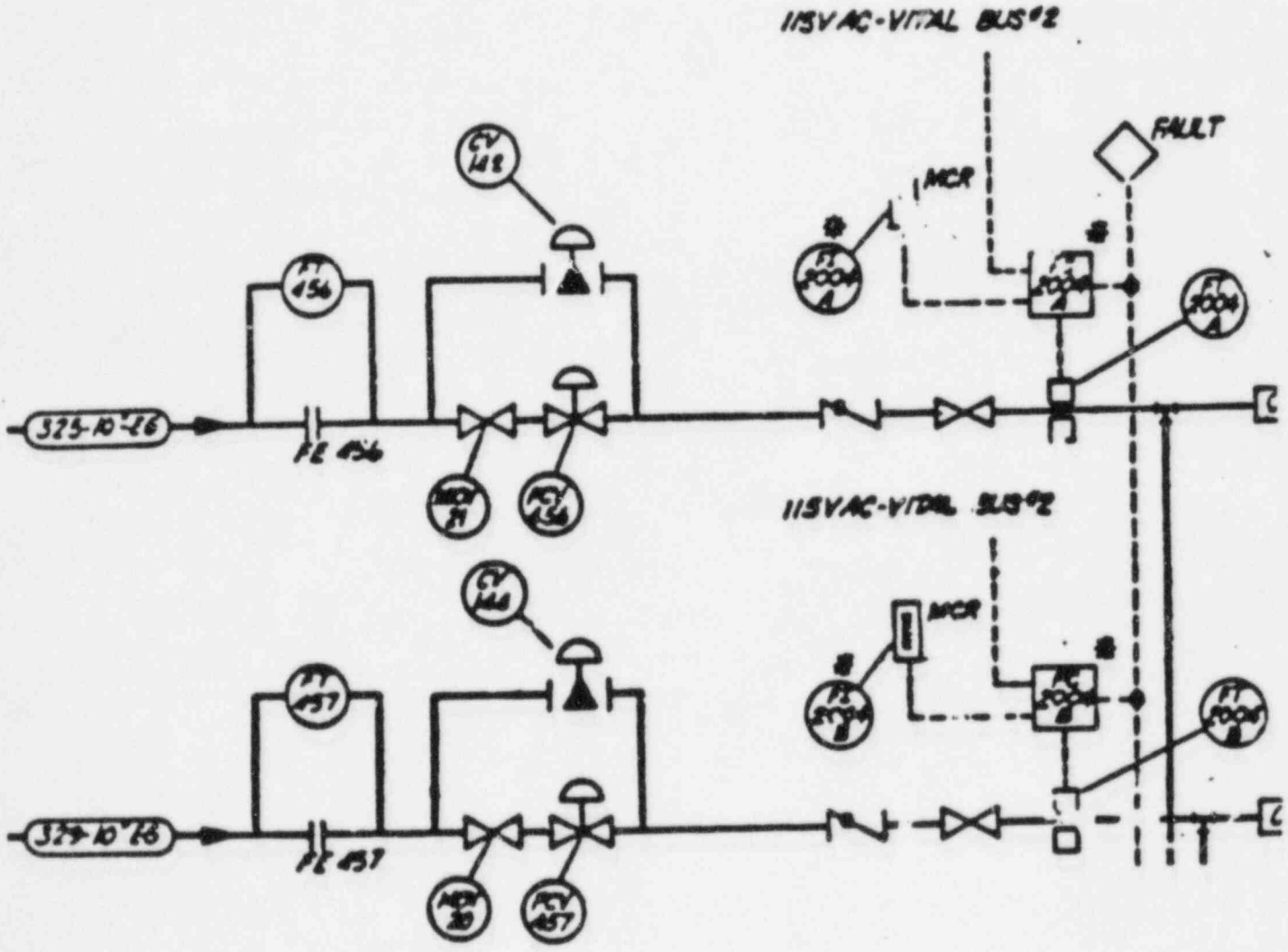
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IDCN NUMBER S-1					
DRAWING NO.	SHEET NO.	REV NO.	DCN CONV DATE DWG. REV.	DCN CONV DATE SUB. NO	QUALITY CLASS
451283	–	0			SR
					SEISMIC CLASS
					A

Date 8-27-85 Page 2 of 5 Page

DESCRIPTION OF CHANGE **BEFORE**

By R. GEDA



DCP# 3052.0TJ REV 0 SHT 75 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

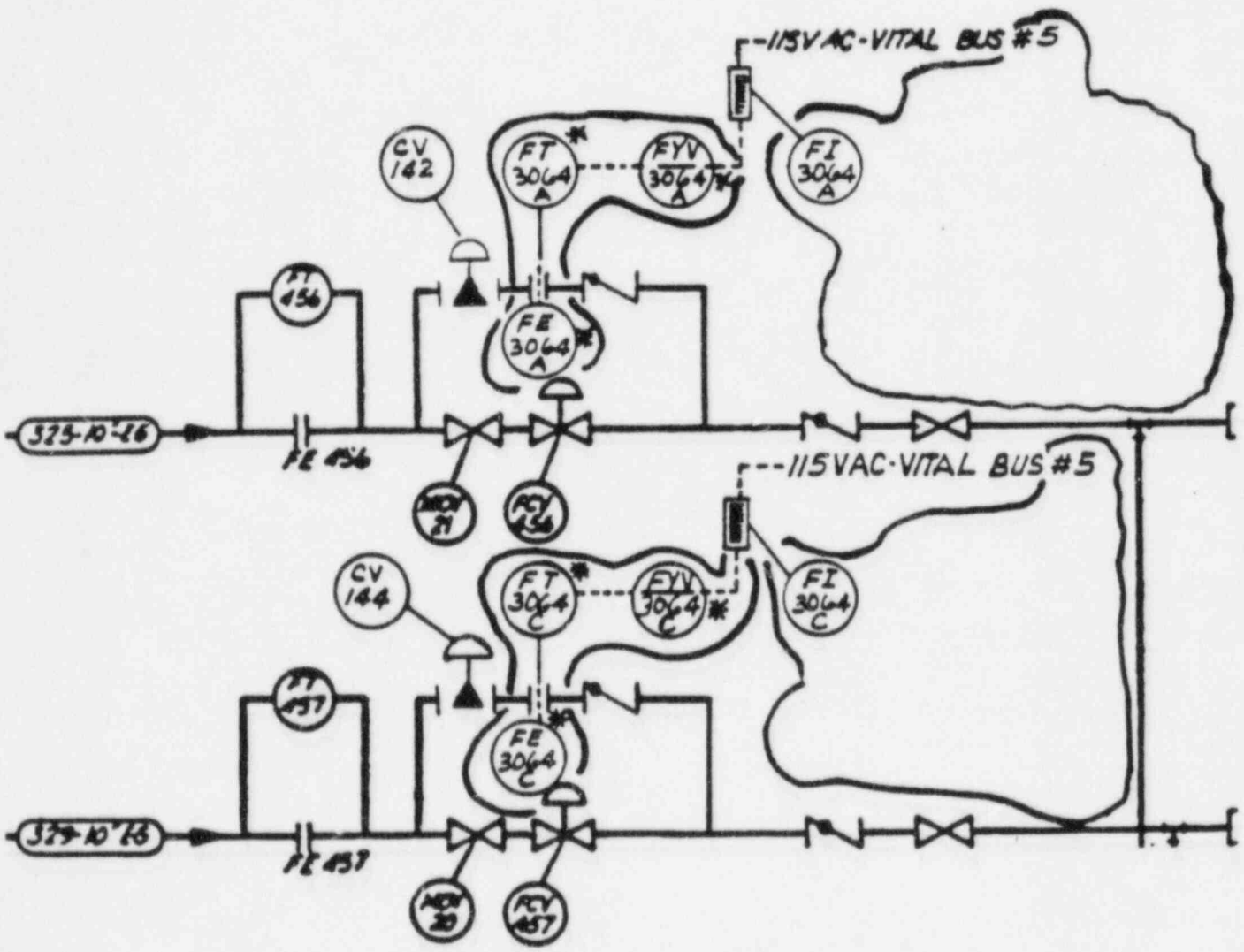
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DRAWING NO.	SHEET NO.	REV NO.	DCN CONV DATE / DWG REV	DCN CONV DATE / SUB NO.	QUALITY CLASS / SEISMIC CLASS
451283		0			SR / A

Date 8-27-85 Page 3 of 5 Page

By R. GEDA

DESCRIPTION OF CHANGE

AFTER



DCP# 3052.0TJ REV 0 SHT 76 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

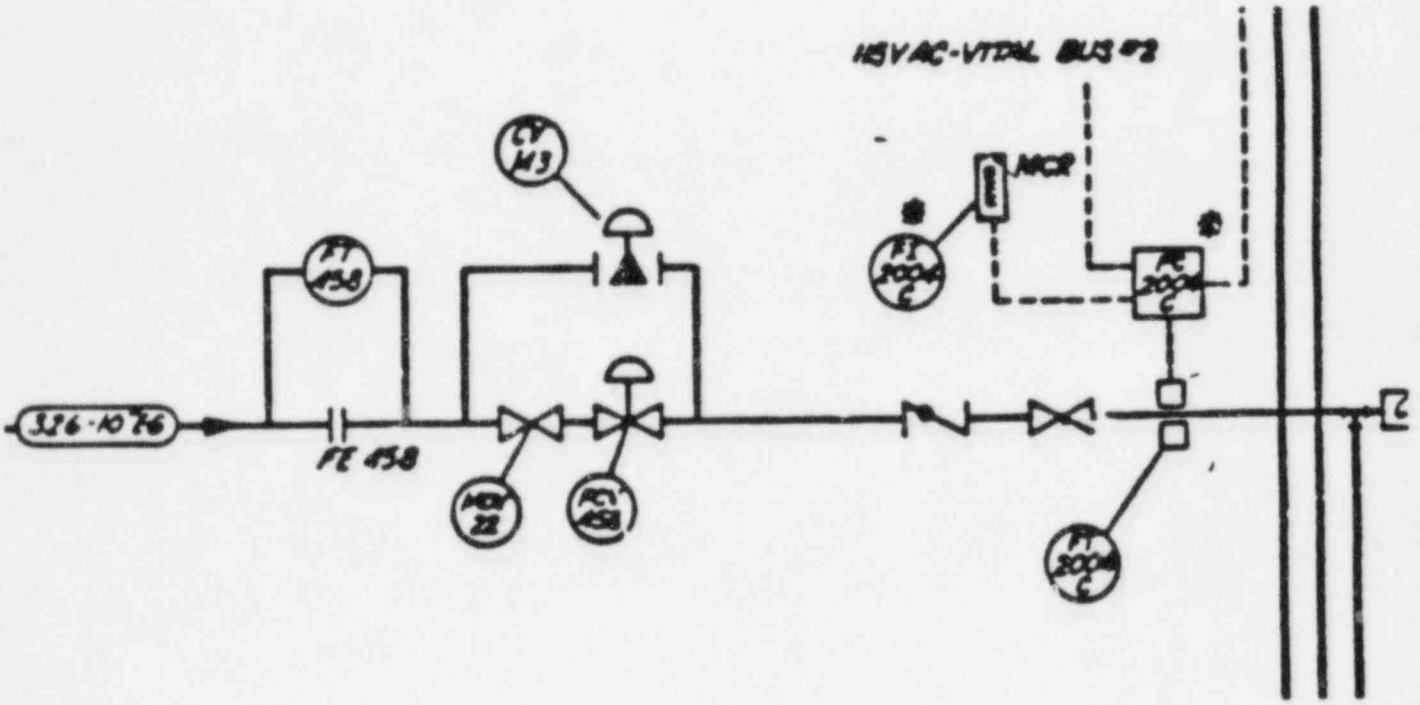
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DRAWING NO.	SHEET NO.	REV NO.	DCN CONV DATE DWG REV.	DCN CONV DATE SUB NO.	QUALITY CLASS: SR; SEISMIC CLASS: A
451283	–	0			

Date 8-27-85 Page 4 of 5 Page

By R. GEDA

DESCRIPTION OF CHANGE

BEFORE



DCP# 3052.0TJ REV 0 SHT 77 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

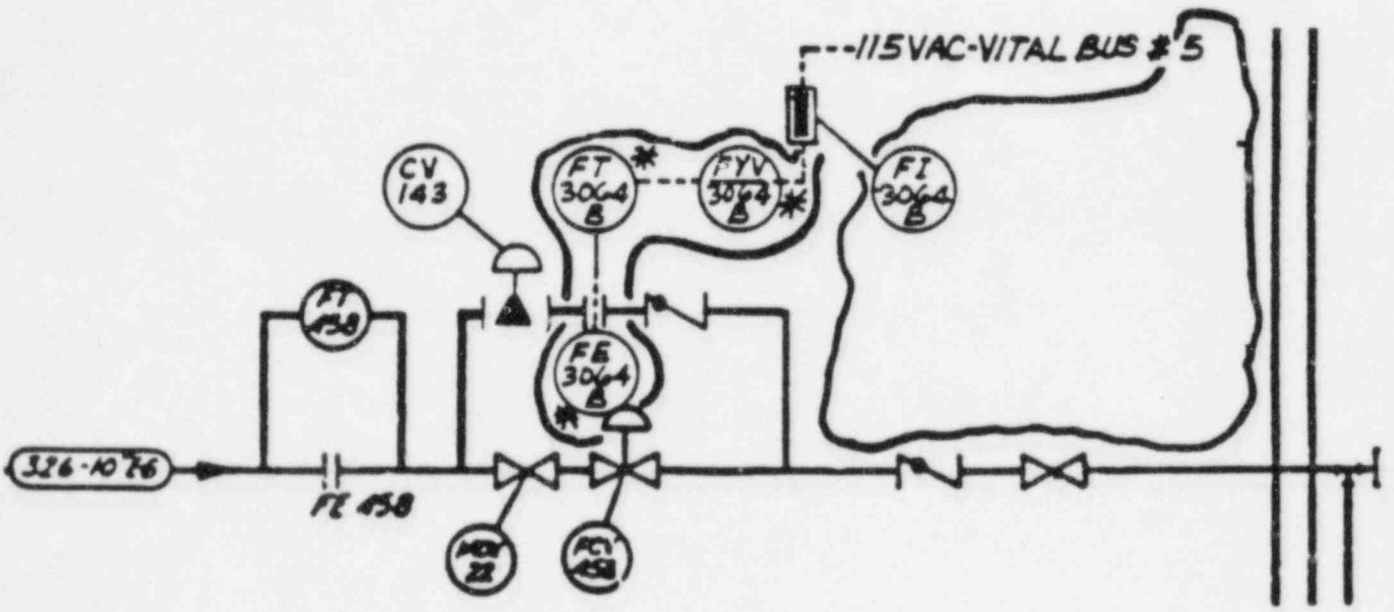
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IDCN NUMBER S-1					
DRAWING NO.	SHEET NO.	REV. NO.	DCN CONV DATE: DWG REV.	DCN CONV DATE: SUB NO.	QUALITY CLASS
451283	–	0			SR
					SEISMIC CLASS
					A

Date 8-27-85 Page 5 of 5 Page

By R·GEDA

DESCRIPTION OF CHANGE AFTER



DCP# 3052.0TJ REV 0 SHT 78 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

CDM/DDC USE ONLY
CIG

PPC NO

IDCN NO S-1

DCP NO 3052-OTJ

DOCUMENT 568725 | Sht. — | Rev. 16

DCN CONVERSION NO

Page 1 of 3

1. Originator T. SUMMERS Tel: 975-4119 Date 8-27-85

Document Title UNIT CONSOLE INSTRUMENT ARRANGEMENT DBADM I.D. IC-11 QC SR SC A

DESCRIPTION OF CHANGE

ADD MFW LOW FLOW INDICATION
REVISE FLOW INDICATORS TAG NO.'S
FROM FI-2004A, B AND C TO FI-3064A, B AND C.

DCP# 3052.0TJ REV 0 SHT 2 OF 2

2. Other Affected Documents	3. Affected Systems	4. Design Approvals	
N-3500 SH. 18	NONE	CHECKER	DATE 9-12-85
451283		INDEPENDENT REVIEW ENGR	DATE 11-20-85
5178206		RESPONSIBLE ENGINEER T. Summers	DATE 9/10/85
		LEAD DISCIPLINE ENGINEER A. L. Sanborg	DATE 11-26-85
		OTHER	DATE
		OTHER	DATE
		QUALITY ASSURANCE	DATE 11-26-85

5. SCE/Contractor Project Administration

Conversion to DCN Date

SCE/CONTRACTOR PROJECT ADMINISTRATOR

DE 5005-1 5/85

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For BONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER S-1					
DRAWING NO	SHEET NO	REV NO	DCN CONV DATE / DWG REV	SUB NO	QUALITY CLASS: SR; SEISMIC CLASS: A
568725	—	16			

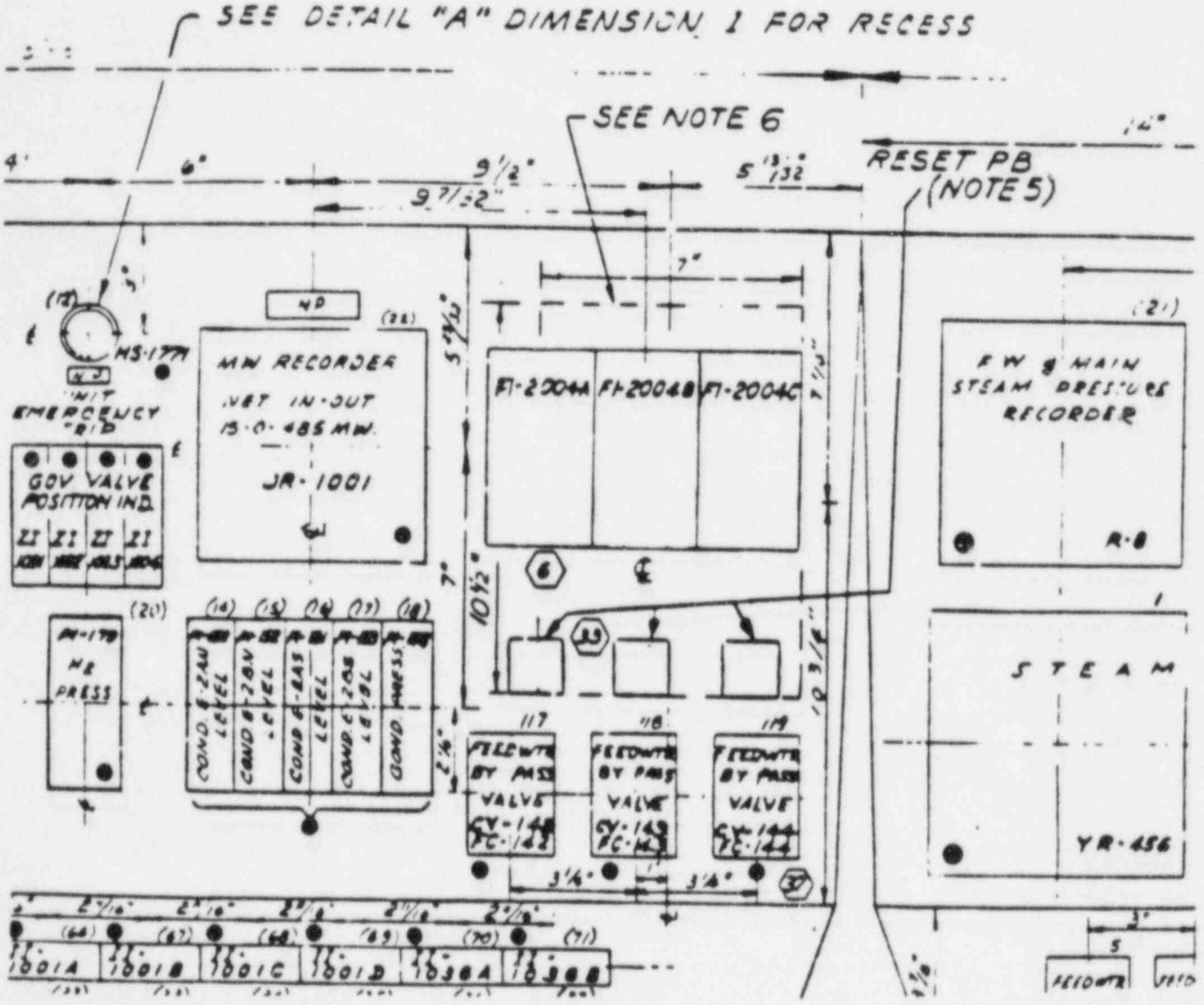
Date 8-27-85 Page 2 of 3 Page

DESCRIPTION OF CHANGE **BEFORE**

By R. GEDA

POOR QUALITY DOCUMENT
BEST AVAILABLE COPY

DCP# 3052.0TJ REV 0 SHT 60 OF 210



FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For BONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER S-1					
DRAWING NO	SHEET NO	REV NO	DCN CONV DATE / DWG REV	SUB NO	QUALITY CLASS
568725	—	16			SR
					SEISMIC CLASS: A

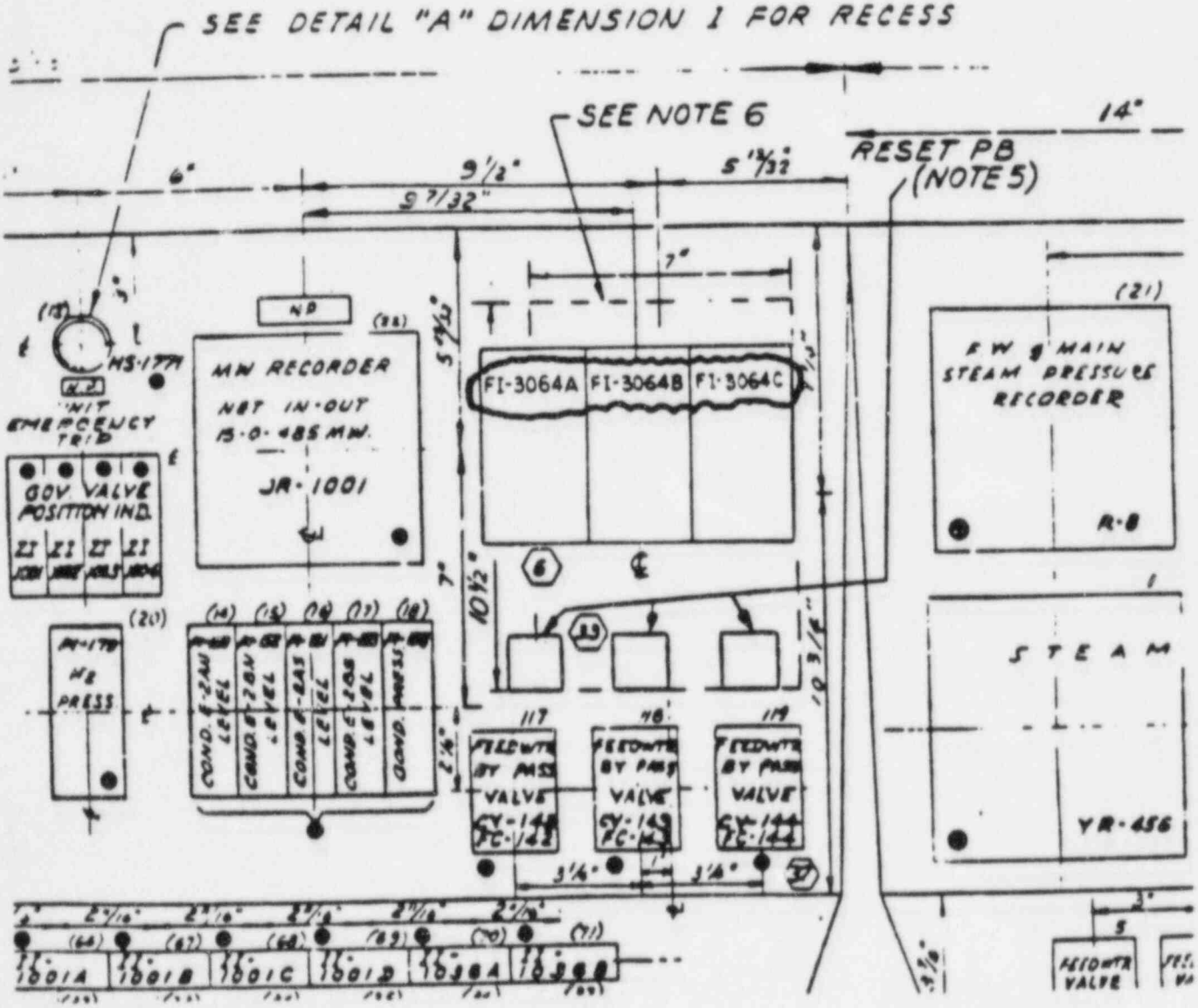
Date 8-27-85 Page 3 of 3 Page

DESCRIPTION OF CHANGE **AFTER**

By R. GEDA

POOR QUALITY DOCUMENT
BEST AVAILABLE COPY

DCP# 3052.0TJ REV 0 SHT 81 OF 210



FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

CDM/DDC USE ONLY
CIG

RFC NO

IDCN NO S-1

DCP NO 3052.0TJ

DOCUMENT 456499 | Sht. - | Rev. 0

DCN CONVERSION NO

Page 1 of 3

1. Originator W. RIEGER Tel: 975-4177 Date 8-19-85

Document Title ISOMETRIC FROM CV-143 TO LINE 391-10"EG DRADM I.D. M-10 QC S2 SC A

DESCRIPTION OF CHANGE

ADD ORIFICE FLANGES & ORIFICE PLATE
5'-2" DOWNSTREAM OF CENTERLINE
OF CV-143

DCP# 3052.0TJ REV 0 SHT 82 OF 210

2. Other Affected Documents	3. Affected Systems	4. Design Approvals	
568586	FWS	CHECKER M.D. Hall	DATE 11/8/85
		INDEPENDENT REVIEW ENGR	DATE 11-13-85
		RESPONSIBLE ENGINEER	DATE 11-8-85
		LEAD DISCIPLINE ENGINEER R.L. Ingle	DATE 11-13-85
		OTHER	DATE
		OTHER	DATE
		QUALITY ASSURANCE	DATE 11-20-85

5. SCE/Contractor Project Administration

Conversion to DCN Date

SCE/CONTRACTOR PROJECT ADMINISTRATOR

DE 5005.1 5/85

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER S-1					
DRAWING NO.	SHEET NO.	REV NO.	DCN CONV DATE		QUALITY CLASS
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456499	-	0			SEISMIC CLASS
					A

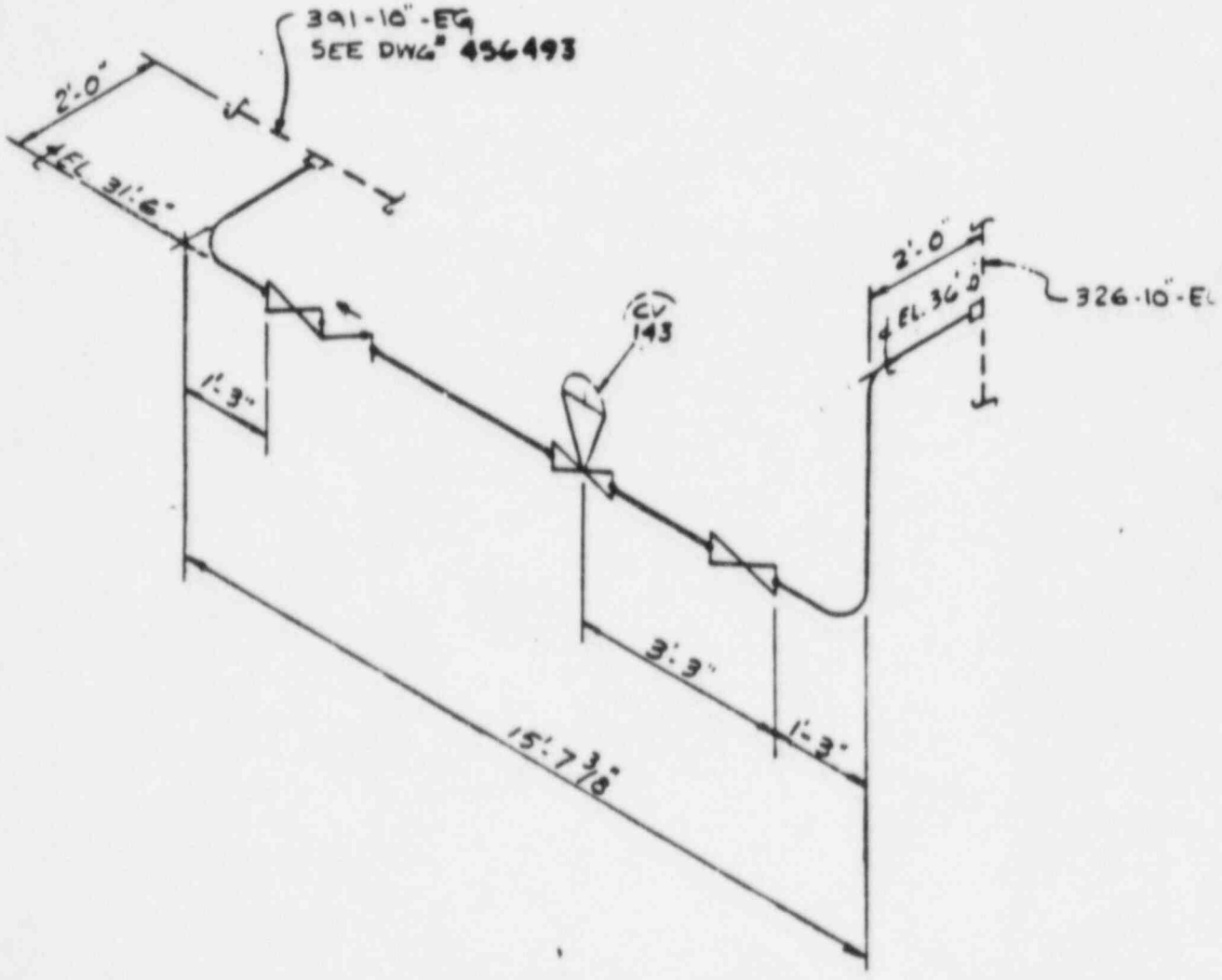
Date 8-19-85 Page 2 of 3 Page

By W RIEGER

DESCRIPTION OF CHANGE

BEFORE

DCP# 3052.0TJ REV 0 SH7830I-210



FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER	S-1				
DRAWING NO	SHEET NO	REV NO	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	SA
456499	-	0			SEISMIC CLASS A

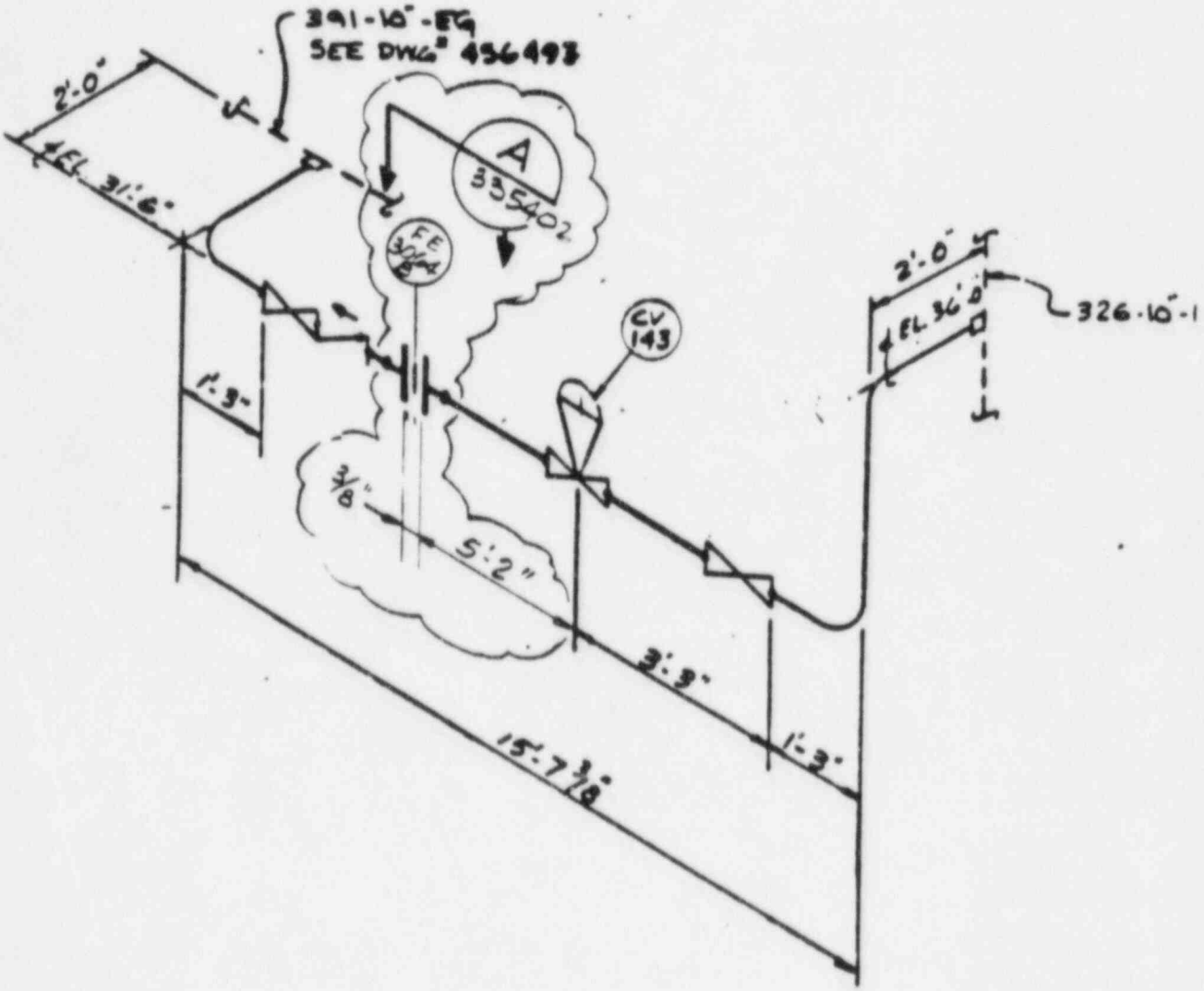
Date 8-19-85 Page 3 of 3 Page

DCP# 3052.CTJ REV 0 SHT 84 OF 210

By W. SIEGEL

DESCRIPTION OF CHANGE

AFTER



FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

COM/DDC USE ONLY
CIG

PPC NO

IDCN NO S-1

DCP NO 3052.0TJ

DOCUMENT 456498 | Sht - | Rev 0

DCN CONVERSION NO

Page 1 of 3

1 Originator W. RIEGER Tel: 975-4177 Date 8-19-85

Document Title ISOMETRIC FROM CV-144 TO LINE 392-10"EG DRADM I.D. M-10 QC S2 SC L

DESCRIPTION OF CHANGE

ADD ORIFICE FLANGES & ORIFICE PLATE
5'-2" DOWNSTREAM OF CENTERLINE
OF CV-144

DCP# 3C52.0TJ REV 0 SHT 65 OF 210

2. Other Affected Documents	3. Affected Systems	4. Design Approvals	
568586	FWS	CHECKER M.D. Hart	DATE 11/9/85
		INDEPENDENT REVIEW ENGR	DATE 11-13-85
		RESPONSIBLE ENGINEER	DATE 11-8-85
		LEAD DISCIPLINE ENGINEER R.L. Taylor	DATE 11-13-85
		OTHER	DATE
		OTHER	DATE
		QUALITY ASSURANCE	DATE 11-26-85

5. SCE/Contractor Project Administration

Conversion to DCN Date

SCE/CONTRACTOR PROJECT ADMINISTRATOR

DE 5005.1 5/85

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

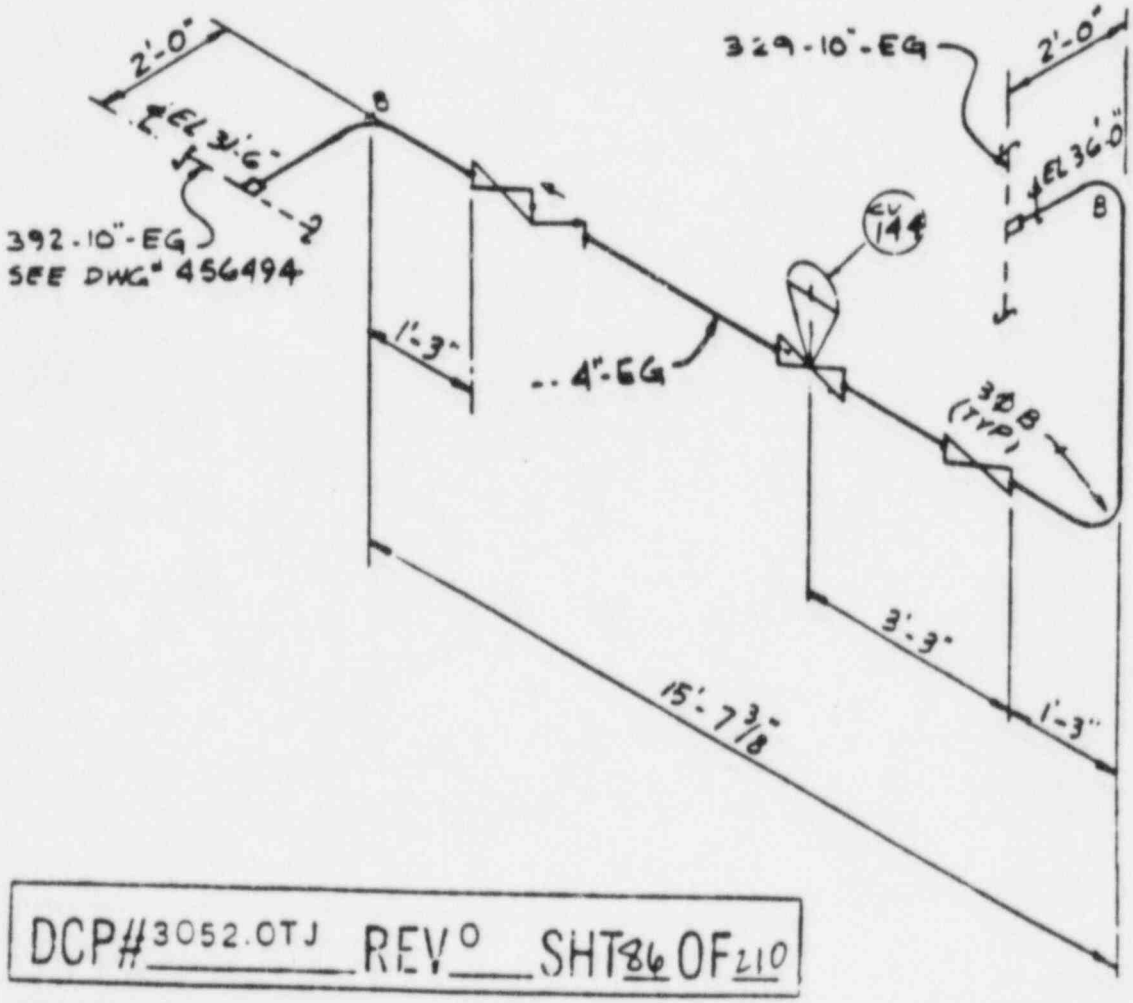
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			DWG REV	SUB NO	SR
456498	-	0			SEISMIC CLASS
					1

Date 8-19-85 Page 2 of 3 Page

By W. RIEGER

DESCRIPTION OF CHANGE

BEFORE



DCP# 3052.0TJ REV 0 SHT 86 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

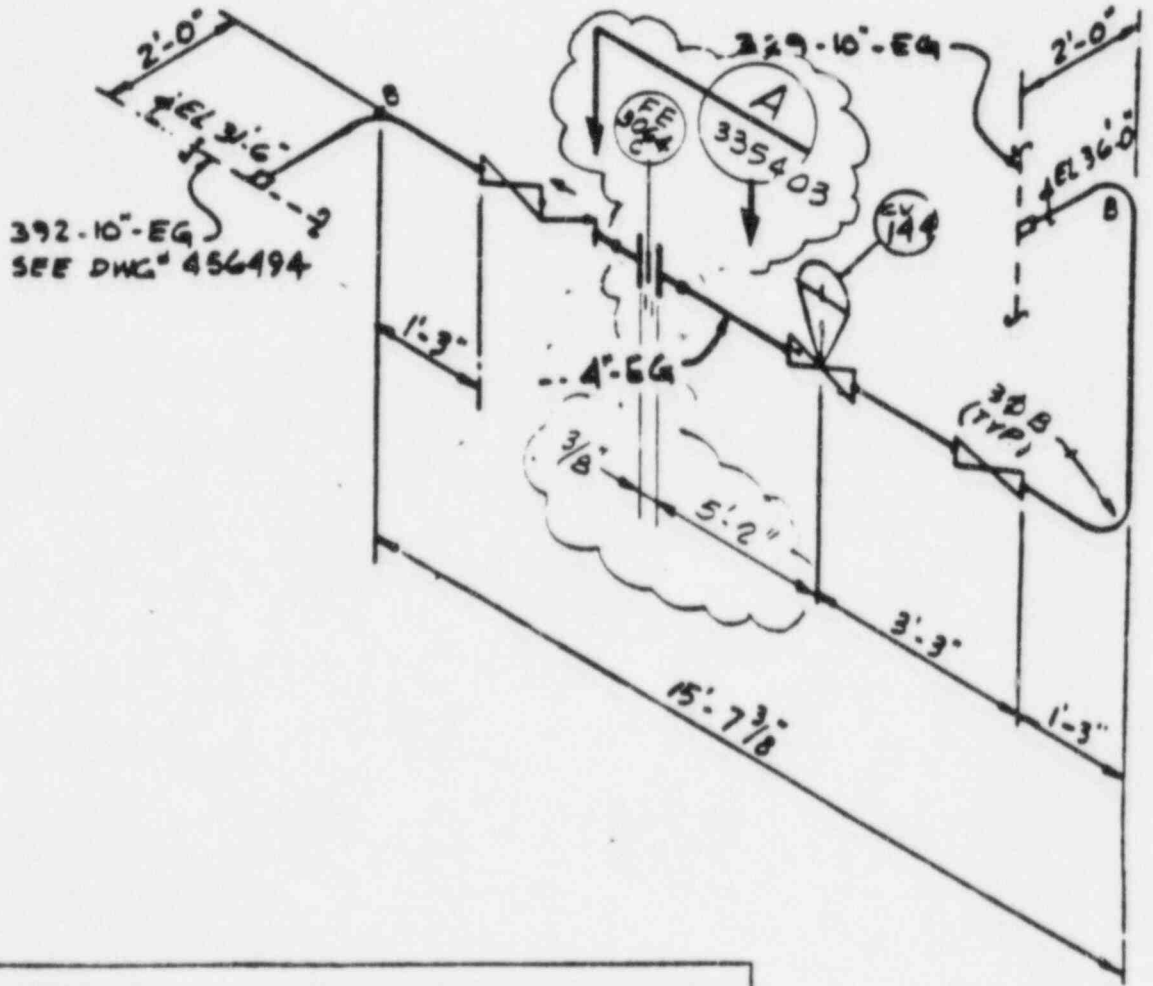
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DRAWING NO	SHEET NO	REV NO	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	SR
456498	-	0			SEISMIC CLASS
					I

Date 8-19-85 Page 3 of 3 Page

By W KIEFER

DESCRIPTION OF CHANGE

AFTER



DCP# 3052.0TJ REV 0 SHT 87 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

CDM/DDC USE ONLY
CIG

PPC NO

IDCN NO. S-1

DCP NO 3052.0TJ

DOCUMENT 456497 | Sht. - | Rev. 0

DCN CONVERSION NO

Page 1 of 3

1. Originator W. RIEGER Tel: 975-4177 Date 8-19-85

Document Title ISOMETRIC FROM CV-142 TO LINE 593-10"EG DRADM I.D. M-10 QC S2 SC A

DESCRIPTION OF CHANGE

ADD ORIFICE FLANGES & ORIFICE PLATE 5'-2" DOWNSTREAM OF CENTER LINE OF CV-142.

DCP# 3052.0TJ REV 0 SHT 88 OF 210

2. Other Affected Documents	3. Affected Systems	4. Design Approvals	
568586	FWS	CHECKER M.D. Hall	DATE 11/8/85
		INDEPENDENT REVIEW ENGR [illegible]	DATE 11-13-85
		RESPONSIBLE ENGINEER [illegible]	DATE 11-8-85
		LEAD DISCIPLIN ENGINEER R.C. Inglow	DATE 11-13-85
		OTHER	DATE
		OTHER	DATE
		QUALITY ASSURANCE [illegible]	DATE 11-20-85

5. SCE/Contractor Project Administration

Conversion to DCN Date

SCE/CONTRACTOR PROJECT ADMINISTRATOR

DE 5005.1 5/85

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

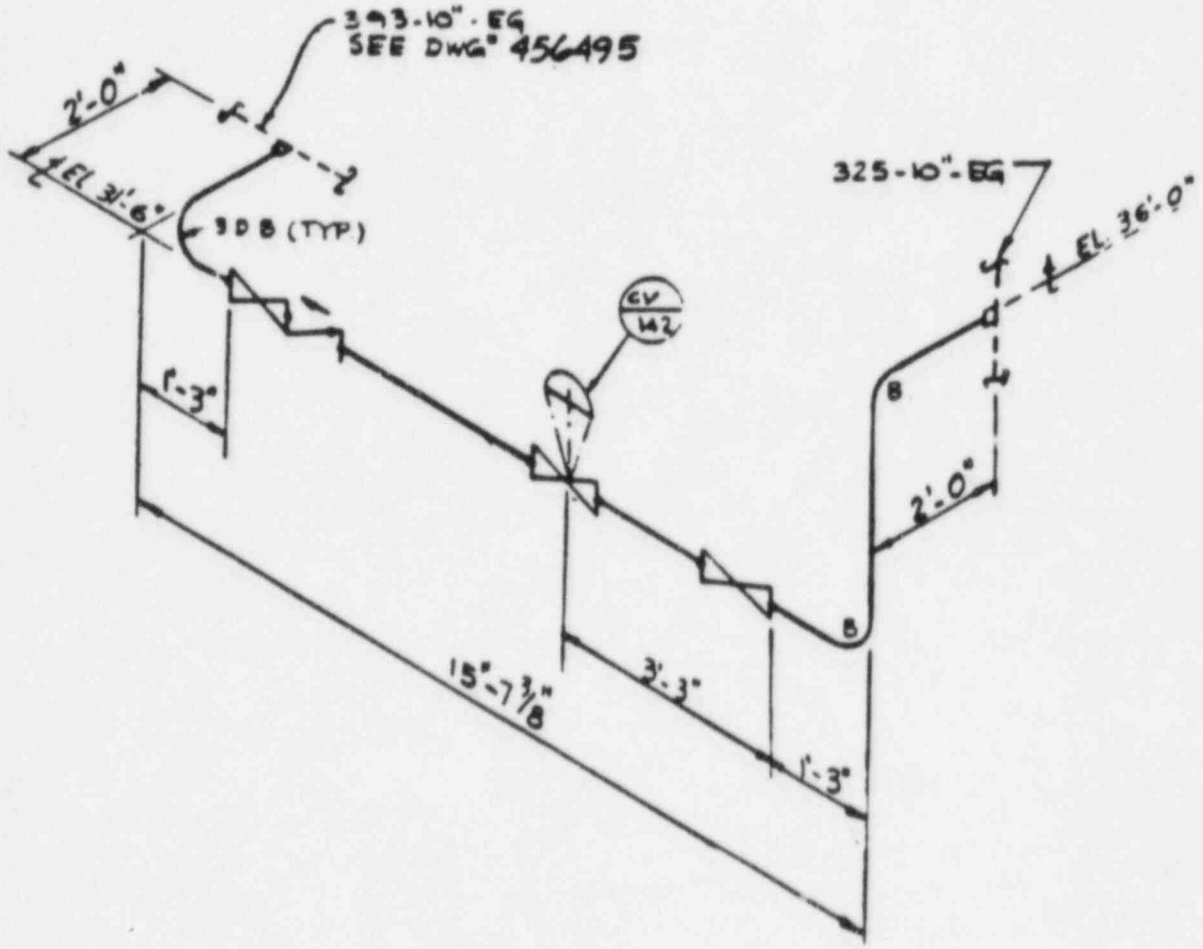
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DRAWING NO	SHEET NO	REV NO	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	SC
456497	-	0			SEISMIC CLASS
					1

Date 8-19-85 Page 2 of 3 Page

By W. RIEGER

DESCRIPTION OF CHANGE

BEFORE



DCP# 3052.0TJ REV 0 SHT 8 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

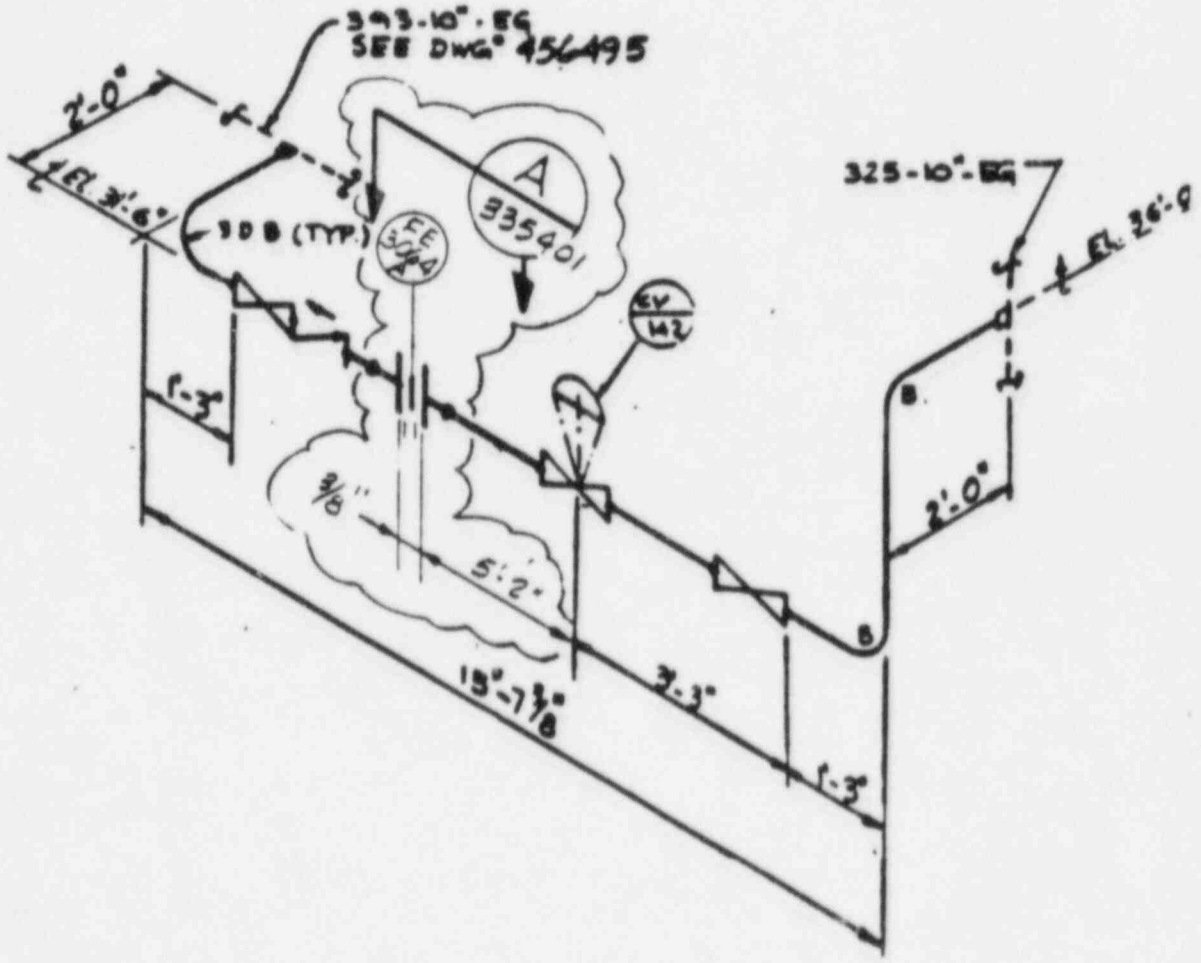
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DRAWING NO	SHEET NO	REV NO	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	SR
456497	-	0			SEISMIC CLASS
					4

Date 8-19-85 Page 2 of 3 Page

By W. K. EGER

DESCRIPTION OF CHANGE

AFTER



DCP# 3052 OTJ REV 0 SHT 9 OF 10

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

CDM/DDC USE ONLY
CIG

FPC NO

DCN NO S-2

DCP NO 3052.0TJ

DOCUMENT 568588 | Sht. - | Rev. 6

DCN CONVERSION NO

Page 1 of 3

1. Originator W. RIEGER Tel. 975-4177 Date 8-19-85

Document Title TURBINE AREA 2, SECTIONS & DETAILS DRADM I.D. M-19 QC SR EAN SC L

DESCRIPTION OF CHANGE

ADD FE-3064A TO LN.# 325-4"-EG
SEE SUPPLEMENTAL PAGES

DCP# 3052.0TJ REV 0 SHT 21 OF 40

2. Other Affected Documents	3. Affected Systems	4. Design Approvals	
568586	FWS	CHECKER M.D. Hart	DATE 11/8/85
		INDEPENDENT REVIEW ENGR	DATE 11-13-85
		RESPONSIBLE ENGINEER	DATE 11-8-85
		LEAD DISCIPLINE ENGINEER R.L. Leglar	DATE 11-13-85
		OTHER	DATE
		OTHER	DATE
		QUALITY ASSURANCE	DATE 11-20-85

5. SCE/Contractor Project Administration

Conversion to DCN Date

SCE/CONTRACTOR PROJECT ADMINISTRATOR

DE 5005-1 5.85

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

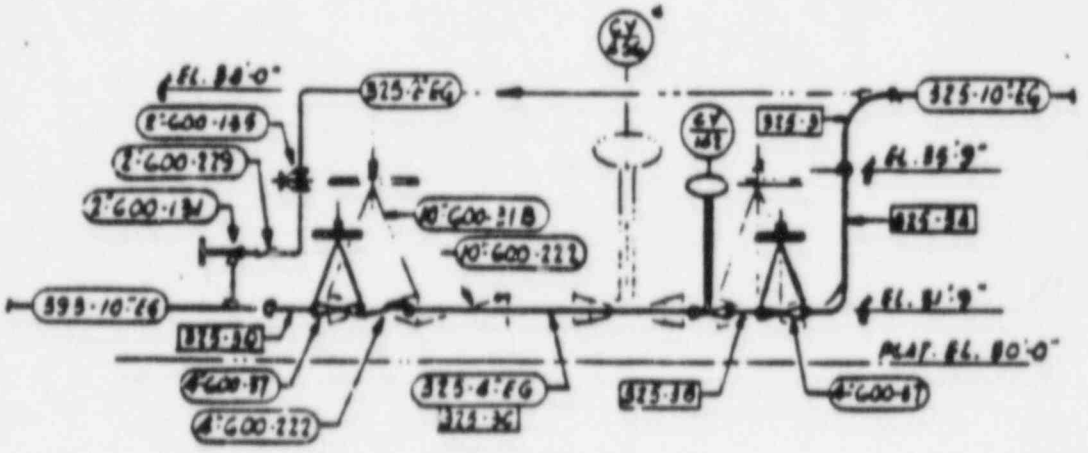
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DRAWING NO	SHEET NO	REV NO	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	E.A.
568532	-	6			SEISMIC CLASS A

Date 5-19-87 Page 2 of 3 Page

By W.D.A.

DESCRIPTION OF CHANGE

BEFORE



SECTION E-E

G

DCP# 3C52.0TJ REV 0 SHT 92 OF 210

DR 5005.2 A-1

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

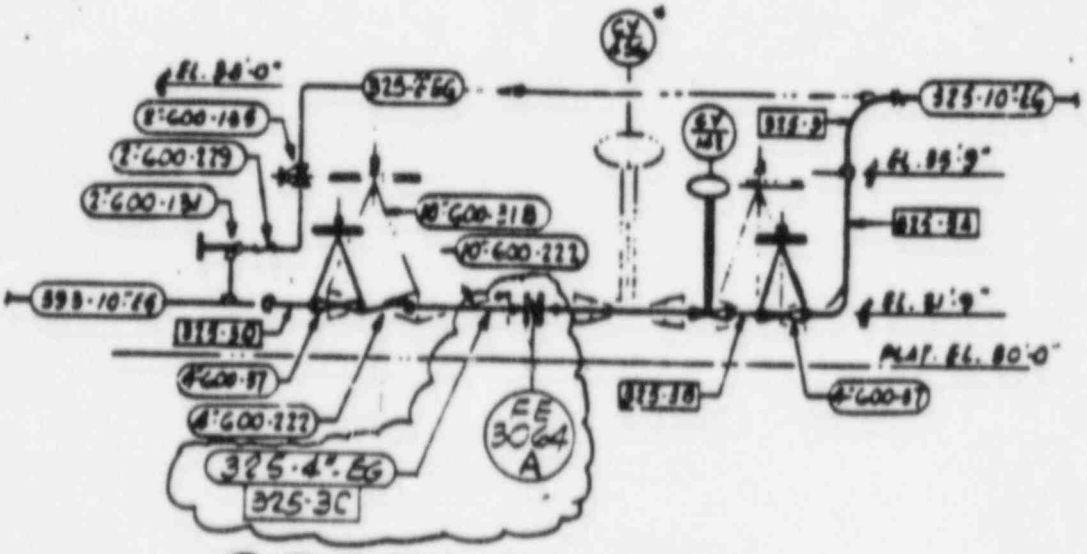
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DRAWING NO.	SHEET NO	REV NO	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	
565535	-	6			SEISMIC CLASS

Date 8-19-87 Page 3 of 3 Page

By

DESCRIPTION OF CHANGE

AFTER



SECTION E-E

DCP# 3C52.0TJ REV 0 SHT 93 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

CDM/DDC USE ONLY
CIG

IDCN NO: 5-2

DOCUMENT: 568586 | Sht: - | Rev: 11

Page 1 of 4

PEC NO:

DCP NO: 3052.0TJ

DCN CONVERSION NO:

1. Originator W RIEGER Tel: 975-4177 Date 8-19-85

Document Title TURBINE AREA 2, PLAN EL. 42'-0" DRADM I.D. M-19 QC SR EAN SC —

DESCRIPTION OF CHANGE

TO 24'-9"

ADD FE-3064A, B & C TO LINE #S 325-4"-EG, 326-4"-EG & 329-4"-EG RESPECTIVELY.
SEE SUPPLEMENTAL PAGES.

REVISE CALLOUTS CV-143 TO CV-144 AND CV-144 TO CV-143, AS FOUND.
SEE SUPPLEMENTAL PAGES.

DCP# 3052.0TJ REV 0 SHT 2 OF 4

2. Other Affected Documents	3. Affected Systems	4. Design Approvals	
456497	FWS	CHECKER: M.D. Hall	DATE: 11/8/85
456498		INDEPENDENT REVIEW ENGR: [signature]	DATE: 11-13-85
456499		RESPONSIBLE ENGINEER: [signature]	DATE: 11-8-85
568588		LEAD DISCIPLINE ENGINEER: R.L. Leyton	DATE: 11-13-85
		OTHER	DATE
		OTHER	DATE
		QUALITY ASSURANCE: [signature]	DATE: 11-20-85

5. SCE/Contractor Project Administration

Conversion to DCN Date

SCE CONTRACTOR PROJECT ADMINISTRATOR

DE 5005.1 5.85

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

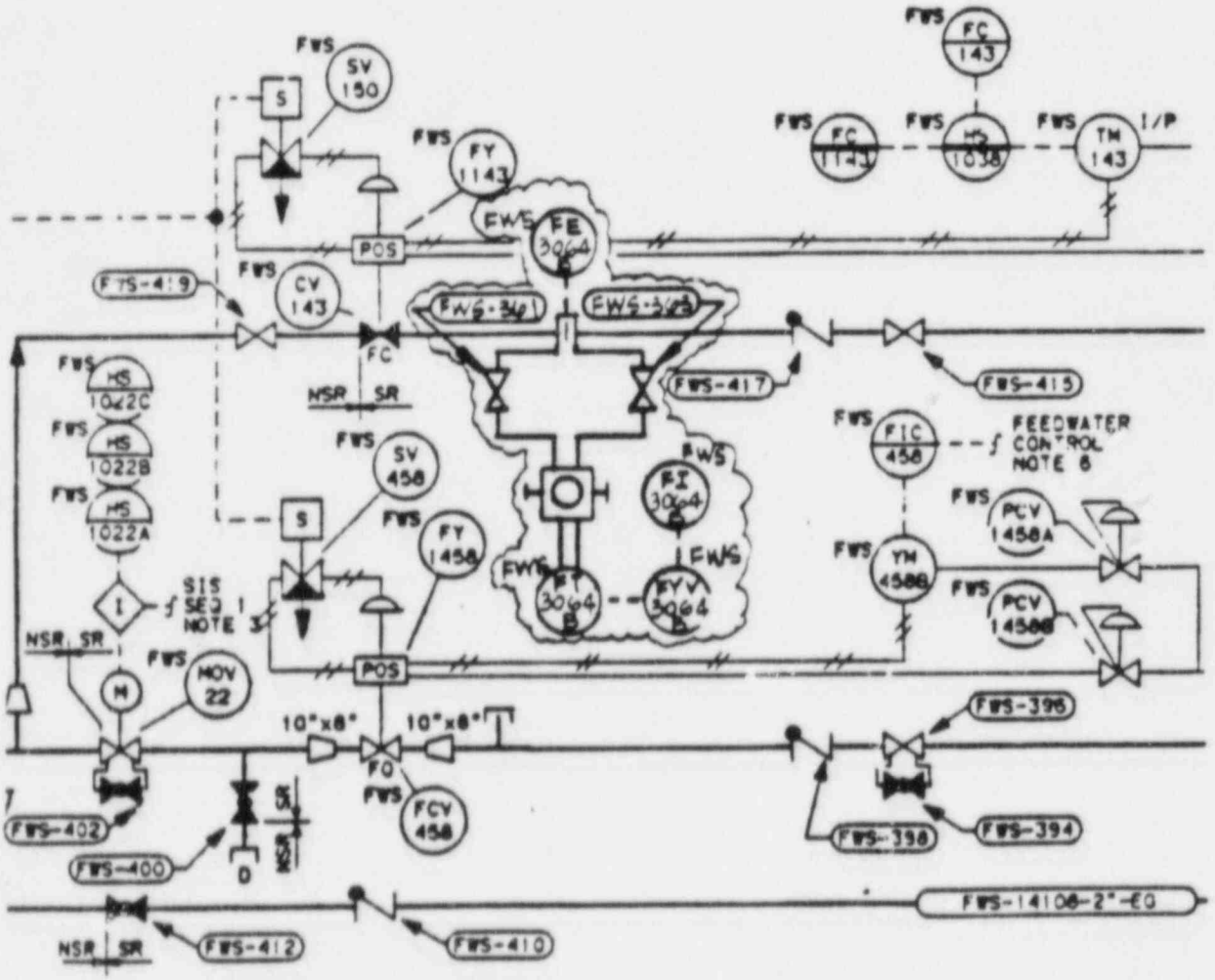
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DRAWING NO.	SHEET NO.	REV. NO.	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	SREN
5178206	-	3			SEISMIC CLASS
					A

Date 10-28-85 Page 3 of 7 Page

By T. CHOA

DESCRIPTION OF CHANGE

AFTER



DCP# 3052.0TJ REV 0 SHT 58 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

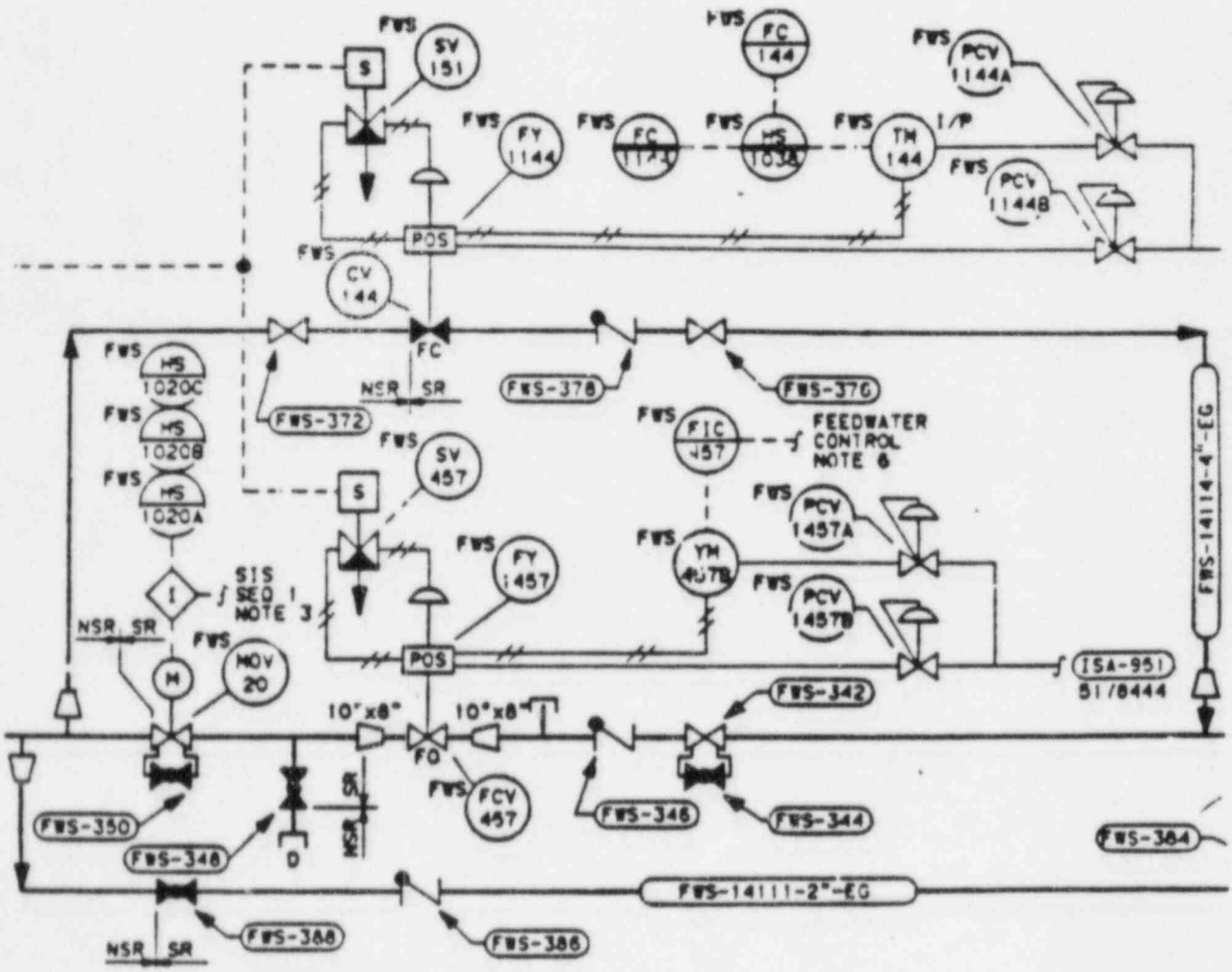
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			DWG REV	SUB NO	SREA
517820's	-	3			SEISMIC CLASS A

Date 10-28-85 Page 4 of 7 Page

By T. CHOA

DESCRIPTION OF CHANGE

BEFORE



DCP# 3052.0TJ REV 0 SHT 59 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For BONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

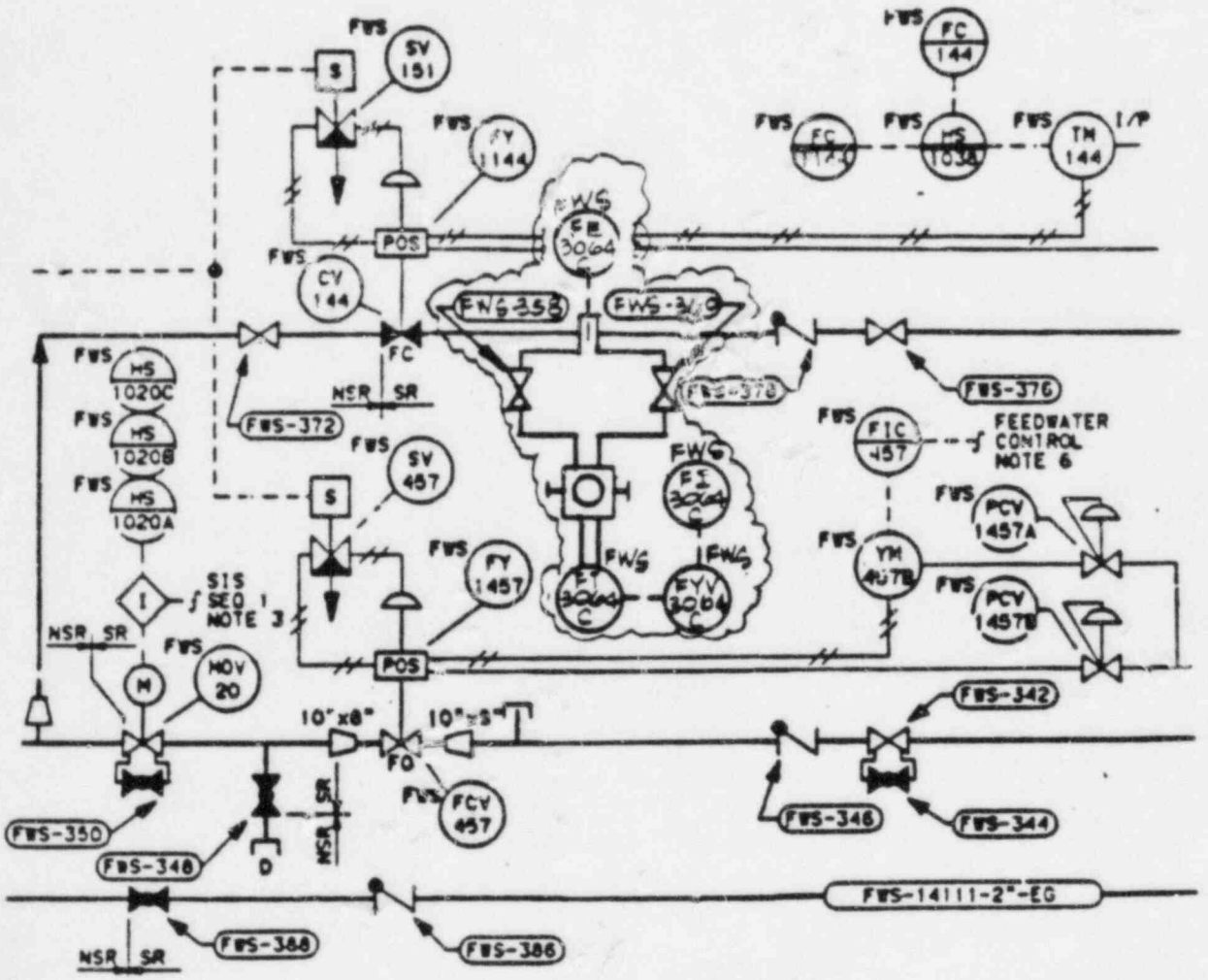
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DRAWING NO	SHEET NO	REV NO	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	SR&A
5178206	-	3			SEISMIC CLASS A

Date 10-25-85 Page 5 of 7 Page

By T. CHOA

DESCRIPTION OF CHANGE

AFTER



DCP# 3052.CTJ REV 0 SHT 60 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

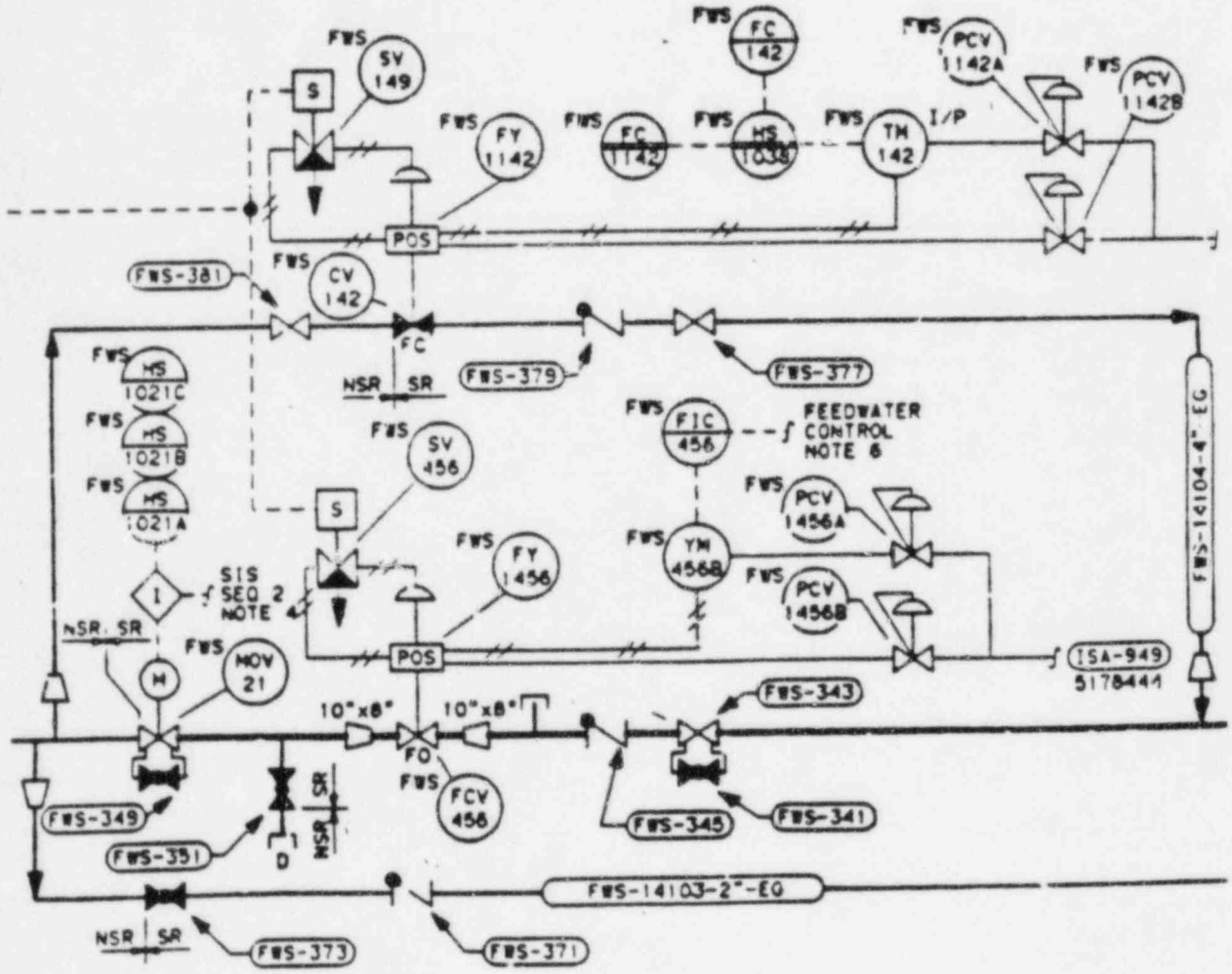
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			DWG REV	SUB NO	SRE AU
5178206	-	3			SEISMIC CLASS A

Date 10-28-85 Page 6 of 7 Page

By T. CHOA

DESCRIPTION OF CHANGE

BEFORE



DCP# 3052.CTJ REV 0 SHT 6 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For BONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

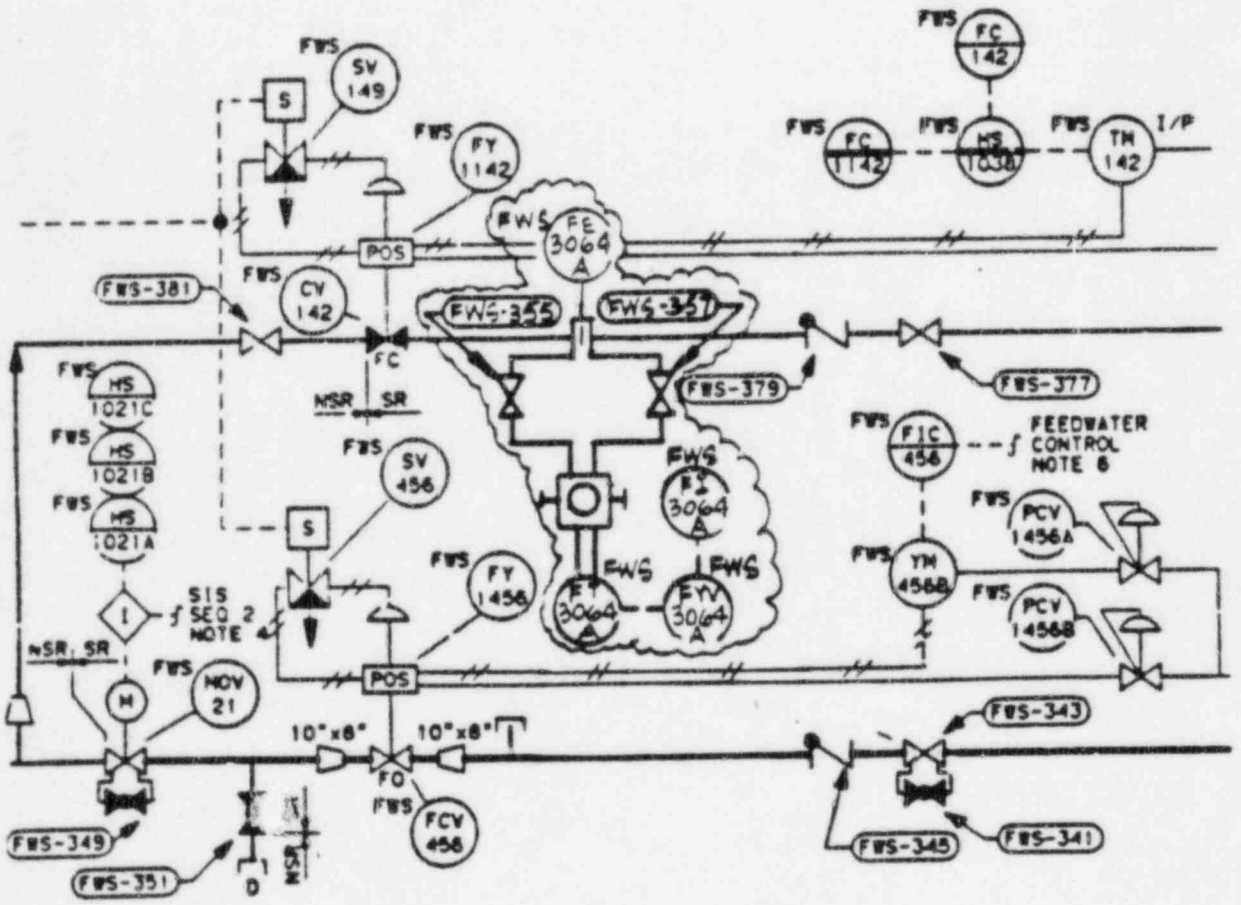
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517B206	-	3			SREAJ / A

Date 10-25-85 Page 7 of 7 Page

By T. CHOA

DESCRIPTION OF CHANGE

AFTER



DCP# 3052.0TJ REV 0 SHT 62 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

CDM/DDC USE ONLY
CIG

PFC NO.

IDCN NO. S-1

DCP NO. 3052-OTJ

DOCUMENT 5112392 | SHT. – | REV. 30

DCN CONVERSION NO.

Page 1 of 5

1. Originator T. SUMMERS Tel: 975-4119 Date 8-22-85

Document Title ANN. WINDOW ENGRAVING DRADM I.D. IC-11 QA SR. SC A B

DESCRIPTION OF CHANGE

DELETE FW LOW FLOW INDICATION ON FIRST OUT PANEL, WINDOW 19

DCP# 3052 OTJ REV 0 SHT 63 OF 210

2. Other Affected Documents	3. Affected Systems	4. Design Approvals	
N/A	NONE	CHECKER: Richard Gaddke	DATE 9/12/85
		INDEPENDENT REVIEW ENGR: [illegible]	DATE 11-20-85
		RESPONSIBLE ENGINEER: T. Summers	DATE 9/10/85
		LEAD DISCIPLINE ENGINEER: A L Dantzig	DATE 11-21-85
		OTHER	DATE
		OTHER	DATE
		QUALITY ASSURANCE: [illegible]	DATE 11-2-85

5. SCE/Contractor Project Administration

Conversion to DCN Date _____

SCE/CONTRACTOR PROJECT ADMINISTRATOR

FLUOR ENGINEERS, INC
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER	S-1				
DRAWING NO	SHEET NO	REV NO	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	NSR
5112392	-	30			SEISMIC CLASS
					A8

Date 9-24-85 Page 2 of 5 Page

By T. SUMMERS

DESCRIPTION OF CHANGE

BEFORE

POOR QUALITY DOCUMENT
BEST AVAILABLE COPY

(PRE-TRIP)

GROUPING

2. (PRE-TRIP)

PRESSURIZER HI LEVEL HEATERS ON 6	PRESSURIZER HI PRESS 7	REAC. COOL AVG TAVG DEVIATION 8	9	10	SUB BUS GROUPING 1
PRESSURIZER LO LEVEL 16	PRESSURIZER LO PRESS 17	POWER RANGE OVER POWER ROD STOP 18	FEEDWATER LOW FLOW INDICATION 19	CHARGING PUMP AUTO START BLOCKED 20	2
PRESSURIZER LO LO LEVEL HEATERS OFF 26	SHUTDOWN MARGIN BANK 1 LO-LO 27	SHUTDOWN MARGIN BANK 2 LO-LO 28	OMS HI PRESS 29	30	3
ALERT BLOCK AUTO SAFETY INJECT 36	OPEN PORV ISOLATION VALVES 37	ARM PORVS 38	STBY N_2 TO PORVS LOST 39	INST AIR TO PORVS LOST 40	4

DCP# 3052.0TJ REV 0 SHT 64 OF 210

FLUOR ENGINEERS, INC
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER	S-1				
DRAWING NO	SHEET NO	REV NO	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	NSR
5112392	-	30			SEISMIC CLASS
					A8

Date 9-24-85 Page 3 of 5 Page

By T. SUMMERS

DESCRIPTION OF CHANGE

POOR QUALITY DOCUMENT
BEST AVAILABLE COPY

AFTER

(PRE-TRIP)

GROUPING					
2. (PRE-TRIP)					
PRESSURIZER HI LEVEL HEATERS ON 6	PRESSURIZER HI PRESS 7	REAC. COOL AVG TAVG DEVIATION 8	9	10	
PRESSURIZER LO LEVEL 16	PRESSURIZER LO PRESS 17	POWER RANGE OVER POWER ROD STOP 18	19	CHARGING PUMP AUTO START BLOCKED 20	
PRESSURIZER LO LO LEVEL HEATERS OFF 26	SHUTDOWN MARGIN BANK 1 LO-LO 27	SHUTDOWN MARGIN BANK 2 LO-LO 28	OMS HI PRESS 29	30	
ALERT BLOCK AUTO SAFETY INJECT 36	OPEN PORV ISOLATION VALVES 37	ARM PORVS 38	STBY N_2 TO PORVS LOST 39	INST AIR TO PORVS LOST 40	

SUB BUS GROUPING	
	1
	2
	3
	4

DCP# 3052.OTJ REV 0 SHT 65 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For BOXES 1, 2 & 3)

SUPPLEMENTAL PAGE

BEFORE

IDCN NUMBER S-1					
DRAWING NO.	SHEET NO.	REV. NO.	DCN CONV. DATE DWG. REV.	DCN CONV. DATE SUB. NO.	QUALITY CLASS NSR
5112392	—	30			SEISMIC CLASS NSR

Date 8-22-85 Page 4 of 5 Page

By R. GEDA

DESCRIPTION OF CHANGE

POOR QUALITY DOCUMENT
BEST AVAILABLE COPY

DCP# 3052.0TJ REV 0 SHT 4 OF 5

REACTOR PLANT FIRST OUT

WINDOW NO	INITIATING DEVICES	LOCATION	WIRE NO.
1	LC-4304-X, LC-4314-X, LC-4324-X	C22	FN1-K11
2	SEQ 1 & SEQ 2	C01 C01	FN1-K12
3	PC-400-X1, PC-410-X1, PC-420-X1	C22	FN1-K13
4	K1809 THRU K1812	C10	FN1-K14
5	I/SPB1, I/SPB2	C03 C09	FN1-K15
6	LC-4308-X	C22	FN2-K16
7	PC-4[illegible]-X	C22	FN2-K17
8	TA-4084-X, TA-4088-X	C22	FN2-K18
9			
10			
11	PC-4[illegible]-X, PC-4318-X, PC-4328-X	C22	FN1-K11
12	(SPARE)		FN1-K12
13	PC-400-X2, PC-410-X2, PC-420-X2	C22	FN1-K13
14	K1801 THRU K1808	C10	FN1-K14
15	63X-1, 63X-2, 63X-3	C22	FN1-K15
16	LC-4306-X	C22	FN2-K16
17	PC-[illegible]-X	C22	FN2-K17
18	K1825 THRU K1828	C10	FN2-K18
19	AR-2004 A, B, C	LOC	
20	74-1 & 74-2 RELAY (1N3062B)	C06	FN2-K20

WINDOW NO.	INITIATING DEVICES	LOCATION	WIRE NO.
21			
22			
23	PM-4868-X, PM-4878-X, PM-4888-X	C22	FN1-K23
24	(SPARE)		FN1-K24
25	(SPARE)		FN1-K25
26	LC-4308-X, LC-4318-X	C22	FN2-K26
27	YC-4068-X	C32	FN2-K27
28	YC-4048-X	C22	FN2-K28
29	PRB-429-X1A, X4A, MB-126, 7	C37 C29	FN2-K29
30			
31	PC-4307-X, PC-4317-X, PC-4327-X	C22	FN1-K31
32	(SPARE)		FN1-K32
33	ZVC-2933C, ZVC-2938C	C03 C10	FN1-K33
34	RELAYS 74-1 & 74-2 CONTACT 7-4	C09	FN1-K34
35	PRB-429-PB-MB-200, PRB-429-X2A, MB-126	C37 C29	FN1-K35
36	PC-4316-X	C22	FN2-K36
37	PRB-429-X1B, X2B, MB-126, 7	C37 C29	FN2-K37
38	PRB-429-X1A, X2A, MB-126, 7	C37 C29	FN2-K38
39	PRB-429-X4B	C29	FN2-K39
40	PRB-429-X3B	C37	FN2-K40

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For BOXES 1, 2 & 3)

SUPPLEMENTAL PAGE

AFTER

IDCN NUMBER S-1					
DRAWING NO.	SHEET NO.	REV. NO.	DCN CONV. DATE: DWG. REV.	DCN CONV. DATE: SUB. NO.	QUALITY CLASS: NSR
5112392	—	30			SEISMIC CLASS: A8

Date 8-22-85 : Page 5 of 5 Pages

By R. GEDA

DESCRIPTION OF CHANGE

POOR QUALITY DOCUMENT
BEST AVAILABLE COPY

DCP# 3052.0TJ REV 0 SHT 12 OF 20

REACTOR PLANT FIRST OUT

WINDOW NO	INITIATING DEVICES	LOCATION	WIRE NO.
1	LC-4306-K, LC-4314-K, LC-4322-K	C22	PN1-K1
2	K16-1 & K16-2	301 302	PN1-K2
3	PC-400-K1, PC-410-K1, PC-420-K1	C22	PN1-K3
4	K1606 THRU K1612	C10	PN1-K4
5	I/SPD1, I/SPD2	C05 C09	PN1-K5
6	LC-4308-K	C22	PN2-K5
7	PC-4318-K	C22	PN2-K7
8	TA-4064-K, TA-4068-K	C22	PN2-K8
9			
10			
11	PC-4306-K, PC-4314-K, PC-4322-K	C22	PN1-K11
12	(SPARE)		PN1-K12
13	PC-400-K2, PC-410-K2, PC-420-K2	C22	PN1-K13
14	K1804 THRU K1808	C10	PN1-K14
15	63X-1, 63X-2, 63X-3	C22	PN1-K15
16	LC-4306-K	C22	PN2-K16
17	PC-4316-K	C22	PN2-K17
18	K1528 THRU K1532	C10	PN2-K18
19	[redacted]	[redacted]	
20	T4-1 & T4-2 RELAY (5430626)	C05	PN2-K20

WINDOW NO.	INITIATING DEVICES	LOCATION	WIRE NO.
21			
22			
23	PM-4068-K, PM-4078-K, PM-4088-K	C22	PN1-K23
24	(SPARE)		PN1-K24
25	(SPARE)		PN1-K25
26	LC-4308-K, LC-4318-K	C22	PN2-K26
27	YC-4068-K	C22	PN2-K27
28	YC-4048-K	C22	PN2-K28
29	PRD-429-K5A, K4A, M5-126, 7	C37 C29	PN2-K29
30			
31	PC-4304-K, PC-4312-K, PC-4320-K	C22	PN1-K31
32	(SPARE)		PN1-K32
33	ZYC-2933C, ZYC-3933C	C02 C10	PN1-K33
34	RELAYS T4-1 & T4-2 CONTACT 7-4	C09	PN1-K34
35	PRD-429-K6-126, PRD-429-K30, M5-126	C37 C29	PN1-K35
36	PC-4316-K	C22	PN2-K36
37	PRD-429-K6, K28, M5-126, 7	C37 C29	PN2-K37
38	PRD-429-K1A, K2A, M5-126, 7	C37 C29	PN2-K38
39	PRD-429-K48	C29	PN2-K39
40	PRD-429-K38	C37	PN2-K40

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

CDM/DDC USE ONLY
CIG

PRC NO

IDCN NO. S-1

DCP NO 3052.0TJ

DOCUMENT M-33754 | Sht. 1 | Rev. 3

DCN CONVERSION NO

Page 1 of 3

1. Originator T. SUMMERS Tel: 7149754119 Date 9/12/85

Document Title REMOTE IND FEEDWATER FLOW DRADM I.D. IC-07 QC: SR SC A

DESCRIPTION OF CHANGE

ADD MFW LOW FLOW INDICATION
REVISE TAG No.'S
REVISE SCALE

DCP# 3052.0TJ REV 0 SHT 68 OF 210

2. Other Affected Documents	3. Affected Systems	4. Design Approvals	
M-38690	NONE	CHECKER V.J. Swanson	DATE 9-13-85
568725		INDEPENDENT REVIEW ENGR [illegible]	DATE 11-20-85
6178206		RESPONSIBLE ENGINEER T. Summers	DATE 9/12/85
451337		LEAD DISCIPLINE ENGINEER A.L. Bamburg	DATE 11-21-85
M-37688		OTHER	DATE
		OTHER	DATE
		QUALITY ASSURANCE	DATE 11-25-85

5. SCE/Contractor Project Administration

Conversion to DCN Date

SCE/CONTRACTOR PROJECT ADMINISTRATOR

DCP# 3052.0TJ REV 0 SHT 62 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For BONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER	S-1				
DRAWING NO.	SHEET NO.	REV. NO.	DCN CONV. DATE		QUALITY CLASS
			DWG. REV.	SUB. NO.	SR
M-33754	1	3			SEISMIC CLASS A

Date 8-27-85 Page 2 of 3 Pages

By T. Summers

DESCRIPTION OF CHANGE

BEFORE

TAG NO.	FI-2004A, FI-2004B, FI-2004C
LOCATION	MAIN CONTROL ROOM @ OPERATORS CONSOLE
APPLICATION	FEEDWATER FLOW MONITORING
SAFETY FUNCTION	PROVIDE INDICATION IN THE MAIN CONTROL ROOM FOR:
FI-2004A, B, C	FEEDWATER FLOW THRU FEEDWATER LINES 391-10"EG, 329-10"EG & 393-10"EG.
SERVICE/ENVIRON.	
PRESSURE	1017 PSIA
TEMPERATURE	85°F TO 120°F
RELATIVE HUMIDITY	UP TO 90% HUMIDITY
INTEGRATED DOSE RATE	1×10^3 RADS
IEEE 323 & 344 QUALIFICATION	QUALIFIED, BY SIMILAR OR IDENTICAL CONFIGURATION TO THE TEST REQUIRE MET BY THE TYPE TEST 9270 MODEL DESCRIBED UNDER INTERNATION INSTRUMENTS ENVIRONMENTAL QUALIFICATION TEST REPORT QCTR-1C DATED APRIL 15, 1977, AND SEISMIC QUALIFICATION TEST REPORT #SBI-B DATED NOVEMBER 18, 1976.
INSTRUMENT DATA	
TYPE	ELECTRONIC
FUNCTION	INDICATION & ALARM
INDICATOR	SINGLE INDICATOR WITH DUAL SET POINTS
DISPLAY	ILLUMINATED PROCESS SIGNAL BAR & HIGH/LOW ALARM BAR
SCALE LENGTH	4 INCHES NOMINAL
MOUNTING	PANEL MOUNTED, VERTICAL READING (¼" THICK PNL)
SPECIAL FEATURE	ZERO & SPAN ADJUSTMENTS IN BEZEL
INPUT POWER	120V AC ± 10%, 60HZ. 14 VA MAX.
OUTPUT CONTACTS	DOUBLE POLE, DOUBLE THROW
CONTACT RATING	5 AMPS @ 120V AC - RESISTIVE LOAD & 0.200 AMPS INDUCTIVE
FLOW RATE SIGNAL SOURCE	FC-2004A, B, C RESPECTIVELY
SPECIFICATIONS	
RESOLUTION	0.5% OF SPAN
ACCURACY	1% OF SPAN
REPEATABILITY	0.5% OF SPAN
DEAD BAND	1% OF SPAN NOMINAL
RESPONSE TIME	0.5 SECONDS NOMINAL (ADJUSTABLE TO 3.0 SECONDS)
DC INPUT	4-20MA
SCALE	0-300 GPM, ZERO BOTTOM VERTICAL SCALE
SET POINT MODE	ADJUSTABLE HIGH/LOW FLOW ALARM
SET POINT	NOT REQUIRED AT THIS TIME

DCP# 3052.0TJ REV 0 SHT 2 OF 2 10

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For BONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER	5-1				
DRAWING NO.	SHEET NO.	REV. NO.	DCN CONV. DATE		QUALITY CLASS
			DWG. REV.	SUB. NO.	SR
M-33754	1	3			SEISMIC CLASS
					A

Date _____ Page 3 of 3 Page

By Tom Summers

DESCRIPTION OF CHANGE

AFTER

TAG NO.	{FI-3064A, FI-3064B AND FI-3064C}
LOCATION	MAIN CONTROL ROOM OPERATORS CONSOLE
APPLICATION	FEEDWATER FLOW MONITORING
SAFETY FUNCTION	PROVIDE INDICATION IN THE MAIN CONTROL ROOM FOR:
(FI-3064A,B,C)	FEEDWATER FLOW THRU FEEDWATER BY PASS LINES 14104-4"-EG,
	{14109-4"-EG AND M114-4"-EG.
SERVICE ENVIRON.	
PRESSURE	1417 PSIA
TEMPERATURE	95°F TO 120°F
RELATIVE HUMIDITY	UP TO 90% HUMIDITY
INTEGRATED DOSE RATE	1×10^3 RADS
IEEE 323 & 344 QUALIFICATION	QUALIFIED BY SIMILAR OR IDENTICAL CONFIGURATION TO THE TEST REQUIR
	MET BY THE TYPE TEST 9270 MODEL DESCRIBED UNDER INTERNATIONA
	INSTRUMENTS ENVIRONMENTAL QUALIFICATION TEST REPORT #CTR-1(
	DATED APRIL 15, 1977, AND SEISMIC QUALIFICATION TEST REPORT
	#SPI-8 DATED NOVEMBER 18, 1976.
INSTRUMENT DATA	
TYPE	ELECTRONIC
FUNCTION	INDICATION & ALARM
INDICATOR	SINGLE INDICATOR WITH DUAL SET POINTS
DISPLAY	ILLUMINATED PROCESS SIGNAL BAR & HIGH/LOW ALARM BAR
SCALE LENGTH	4 INCHES NOMINAL
MOUNTING	PANEL MOUNTED, VERTICAL READING (¼" THICK PNL)
SPECIAL FEATURE	ZERO & SPAN ADJUSTMENTS IN BEZEL
INPUT POWER	120V AC ± 10%, 60HZ. 14 VA MAX.
OUTPUT CONTACTS	DOUBLE POLE, DOUBLE THROW
CONTACT RATING	5 AMPS @ 120V AC - RESISTIVE LOAD & 0.200 AMPS INDUCTIVE
FLOW RATE SIGNAL SOURCE	{FYV-3064A,B,C} RESPECTIVELY
SPECIFICATIONS	
RESOLUTION	0.5% OF SPAN
ACCURACY	1% OF SPAN
REPEATABILITY	0.5% OF SPAN
DEAD BAND	1% OF SPAN NOMINAL
RESPONSE TIME	0.5 SECONDS NOMINAL (ADJUSTABLE TO 3.0 SECONDS)
DC INPUT	~~4-20mA~~ (0 - 10 VDC) RJ 1-1-85
SCALE	0 (220) GPM ZERO BOTTOM VERTICAL SCALE
SET POINT MODE	ADJUSTABLE HIGH/LOW FLOW ALARM
SET POINT	NOT REQUIRED AT THIS TIME

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

CDM DDC USE ONLY
CIG

FPC NO

IDCN NO 5-1

DCP NO 3052-0TJ

DOCUMENT M-33754 | Sht 2 | Rev 3

DCN CONVERSION NO

Page 1 of 3

1. Originator T. SUMMERS Tel: 714 975 4119 Date 9/12/85

Document Title REMOTE IND. FEEDWATER FLOW DRADM I.D. IC-07 QC SR SC A

DESCRIPTION OF CHANGE

ADD MFW LOW FLOW INDICATION

REVISE RANGE

REVISE REFERENCE DRAWINGS

ADD FIELD MODIFICATION STATEMENT

DCP#3052.0TJ REV 0 SHT 7 OF 240

2. Other Affected Documents	3. Affected Systems	4. Design Approvals	
M-38690	NONE	CHECKER V.J. Swanson	DATE 9-13-85
568725		INDEPENDENT REVIEW ENGR	DATE 11-20-85
5178206		RESPONSIBLE ENGINEER T. Summers	DATE 9/12/85
451337		LEAD DISCIPLINE ENGINEER A.L. Sandberg	DATE 11-21-85
M-38688		OTHER	DATE
		OTHER	DATE
		QUALITY ASSURANCE	DATE 11-20-85

5. SCE/Contractor Project Administration

Conversion to DCN Date

SCE/CONTRACTOR PROJECT ADMINISTRATOR

DE 5005.1 5/85

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER	S-2				
DRAWING NO	SHEET NO	REV NO	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	E2
568586	-	11			SEISMIC CLASS
					A

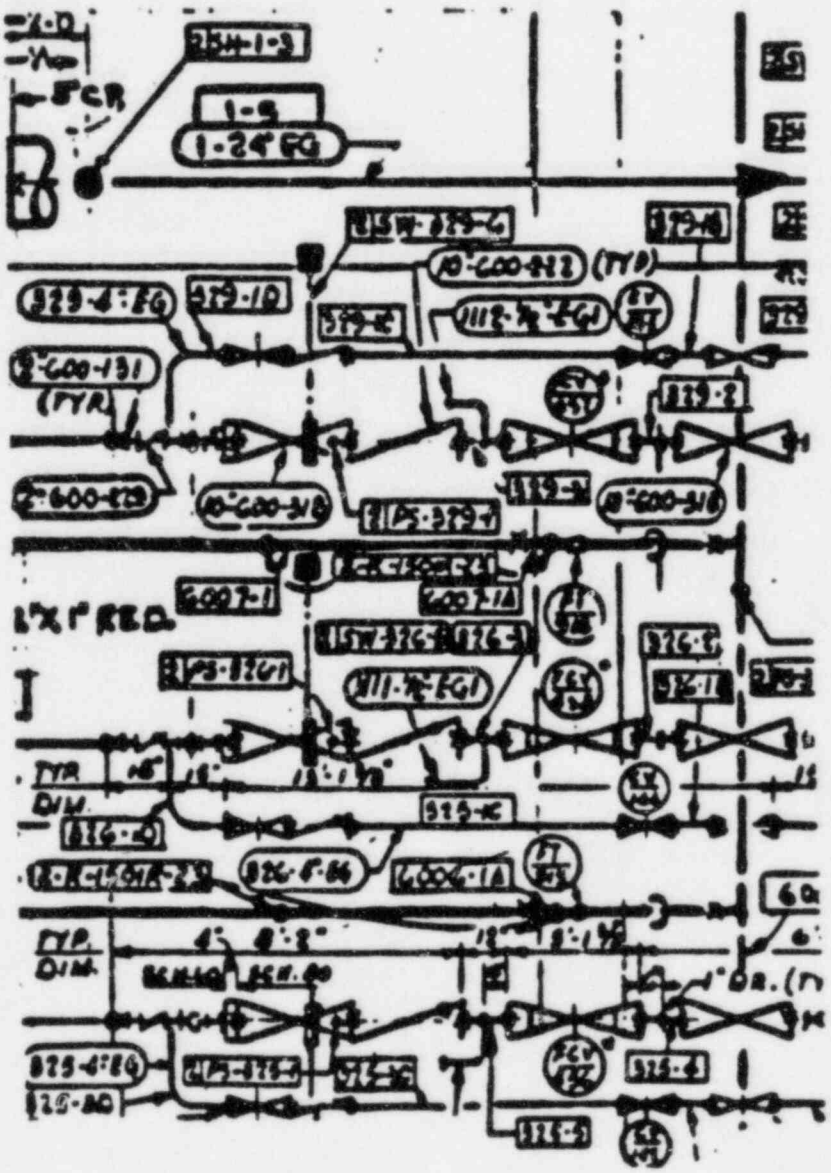
Date 8-19-85 Page 2 of 4 Page

By W. RIEGEL

POOR QUALITY DOCUMENT
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DESCRIPTION OF CHANGE

BEFORE (PLAN)



DCP# 3052.0TJ REV 0 SHT 95 OF 210

FLUOR ENGINEERS, INC
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER	S-2				
DRAWING NO	SHEET NO	REV NO	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	S EA
568586	-	11			SEISMIC CLASS
					A

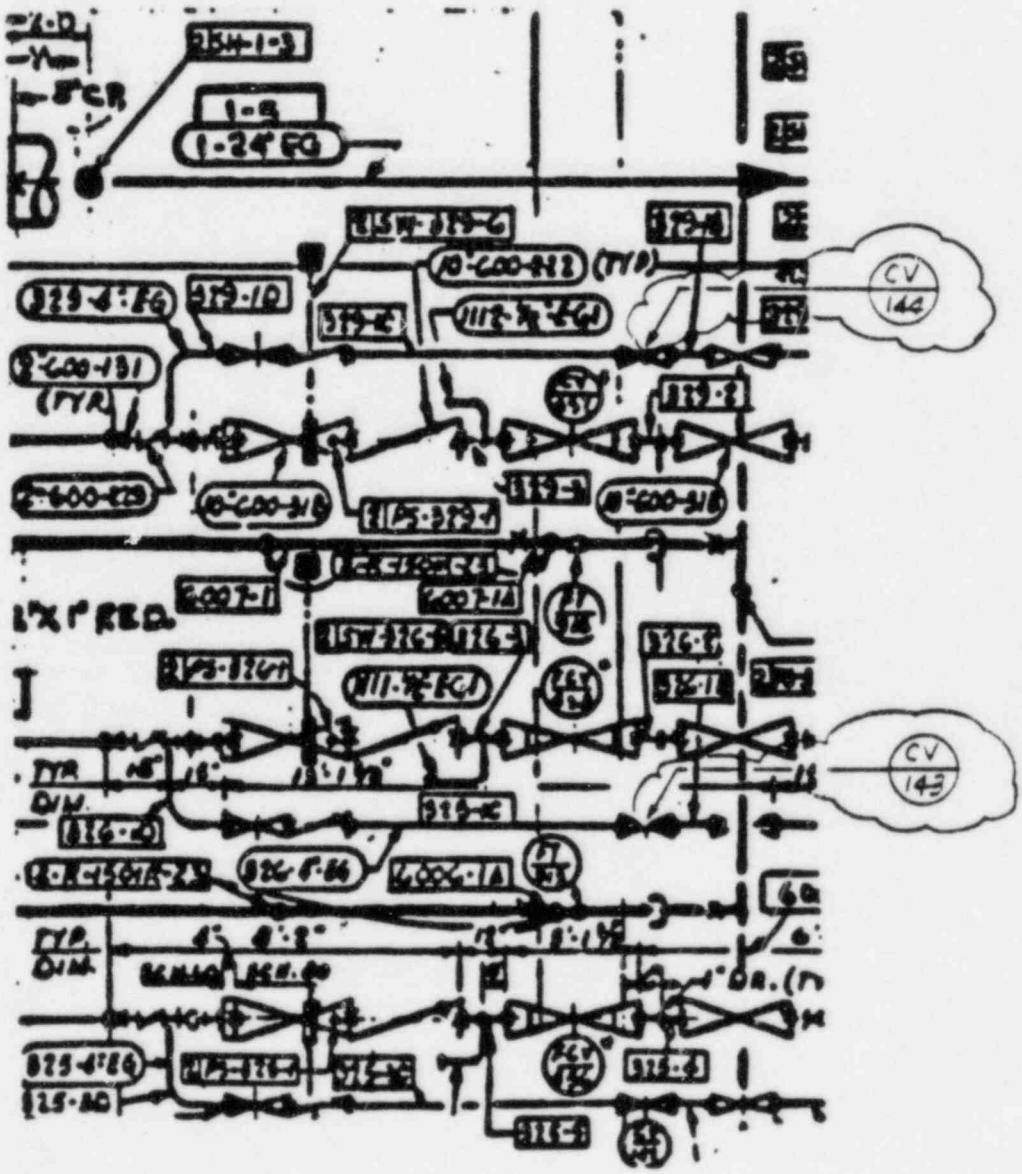
Date 8-19-85 Page 5 of 4 Page

By W. RIEGER

POOR QUALITY DOCUMENT
BEST AVAILABLE COPY

DESCRIPTION OF CHANGE

AS FOUND (PLAN)



DCP# 3052.OTJ REV 0 SHT 96 OF 240

FLUOR ENGINEERS INC
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER	5-2				
DRAWING NO	SHEET NO	REV NO	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	E
568586	-	11			SEISMIC CLASS
					1

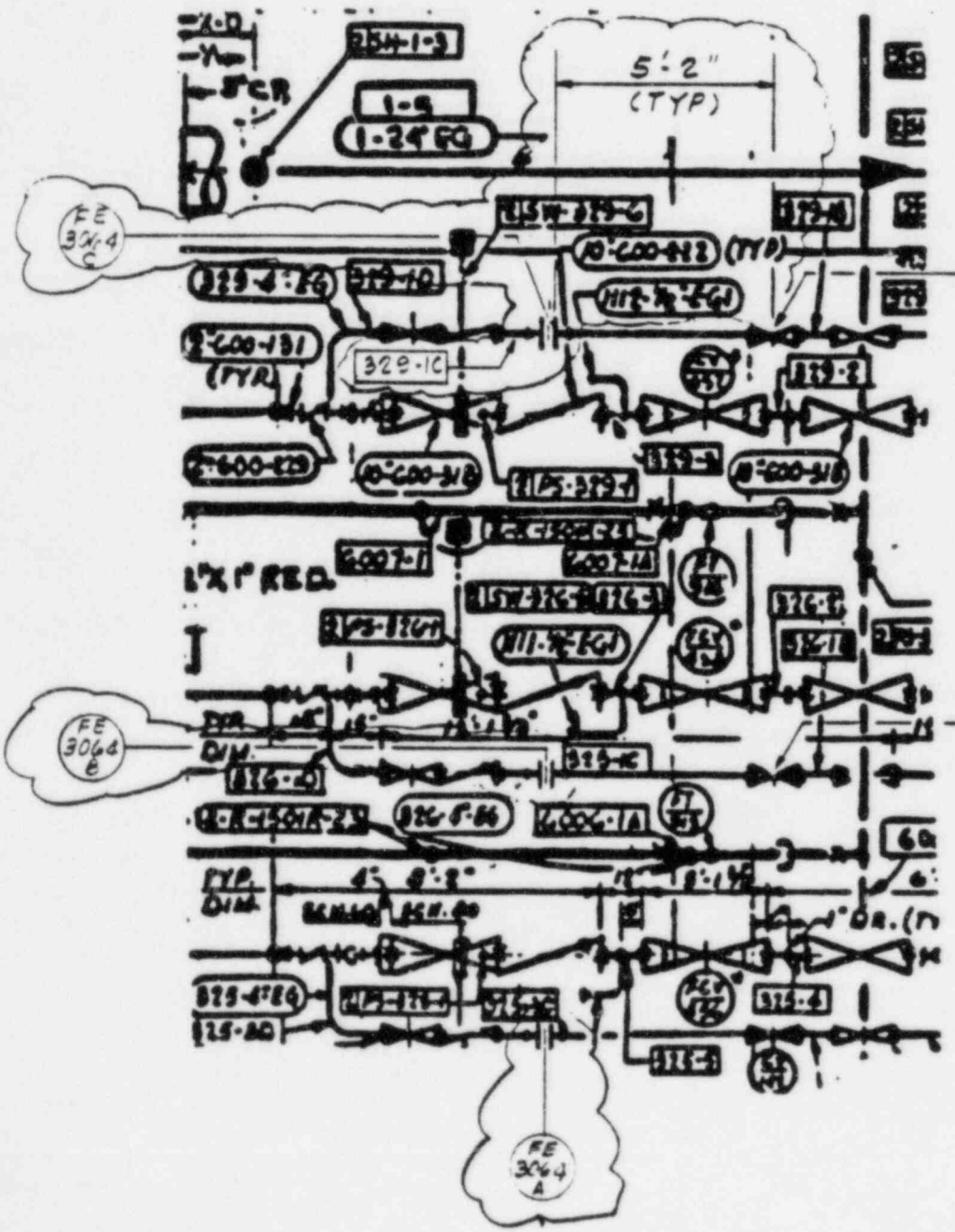
Date 8-19-85 Page 4 of 4 Page

By W. RIEGER

POOR QUALITY DOCUMENT
BEST AVAILABLE COPY

DESCRIPTION OF CHANGE

AFTER (PLAN)



DCP# 3052.CTJ REV 0 SHT 7 OF 10

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

CDM/DDC USE ONLY
CIG

PFC NO

IDCN NO 5-13

DCP NO 3052.0TJ

DOCUMENT M. 37770 | Sht. | Rev. 0

DCN CONVERSION NO

Page 1 of 2

1 Originator R. CAMBRE Tel: 975-3345 Date 11-5-85

Document Title MASTER VALVE LIST DRADM I.D. V-16 QC 5: SC A

DESCRIPTION OF CHANGE

ADD VALVE NUMBERS FNS-355, FNS-357, FNS-358, FNS-360, FNS-361 AND FNS-363 TO MASTER VALVE LIST.

DCP# 3052.0TJ REV 0 SHT 2 OF 2

2. Other Affected Documents	3. Affected Systems	4. Design Approvals	
5178206	NONE	CHECKER	DATE 11/13/85
-56497		INDEPENDENT REVIEW ENG.	DATE 11-13-85
56498		RESPONSIBLE ENGINEER	DATE 11-13-85
56493		LEAD DISCIPLINE ENGINEER	DATE 11-13-85
568536		OTHER	DATE
568538		OTHER	DATE
		QUALITY ASSURANCE	DATE 11-25-85

5. SCE/Contractor Project Administration

Conversion to DCN Date

SCE/CONTRACTOR PROJECT ADMINISTRATOR

DE 5005-1 5/85

ADD

SOUTHERN CALIFORNIA EDISON COMPANY

MASTER VALVE LIST

SAN ONOFRE NUCLEAR GENERATING STATION UNIT 1

DOCUMENT ID: M-37770
REPORT DATE:
PAGE:
REV:

TAG NUMBER	LINE NUMBER	P&ID NUMBER	MARK NUMBER	SIZE	TYPE	ANSI RATING & IBI	MANUFACTURER	REMARKS
FWS-355	14104	5178206	35	1/2"	GATE	800# Y	VOGT	
FWS-357	14104	5178206	35	1/2"	GATE	800# Y		
FWS-358	14114	5178206	35	1/2"	GATE	800# Y		
FWS-360	14114	5178206	35	1/2"	GATE	800# Y		
FWS-361	14109	5178206	35	1/2"	GATE	800# Y		
FWS-363	14109	5178206	35	1/2"	GATE	800# Y		

DCP# 3052.0TJ REV 0 SHT 99 OF 210

DESCRIPTION OF CHANGE

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER S-2

DRAWING NO.	SHEET NO.	REV NO.	DCN CONV DATE	DCN CONV DWG. REV	DCN CONV SUB NO.	QUALITY CLASS	SEISMIC CLASS
M-37770	-	0				SC	A

Date 9-7-85 Page 2 of 2 Page

By R. SAMSAM

DE 5005 2 87

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

CDM/DDC USE ONLY
CIG

PFC NO

IDCN NO S-1

DCP NO 3052.0TJ

DOCUMENT 335401 | Sht. – | Rev 0

DCN CONVERSION NO

Page 1 of 1

1 Originator M. LOPEZ Tel: 975-5278 Date 11.15.85

Document Title ISOMETRIC - FWS - 14104 - 4"-EG DRADM I.D. M-10 QC SR SC .

DESCRIPTION OF CHANGE

BEFORE

THIS NEW DRAWING IS PART OF DCP AND DESCRIBES PHYSICAL WORK TO BE ACCOMPLISHED UNDER THE DCP.

AFTER

REMOVE CLOUDED DCP NOTE FROM DRAWING.

DCP# 3052.0TJ REV 0 SHT 100 OF 210

2. Other Affected Documents	3. Affected Systems	4. Design Approvals
NONE	NONE	CHECKER [signature] DATE 11-16-85
		INDEPENDENT REVIEW ENGR [signature] DATE 11-18-85
		RESPONSIBLE ENGINEER [signature] DATE 11-16-85
		LEAD DISCIPLINE ENGINEER P.L. Leglau DATE 11-18-85
		OTHER DATE
		OTHER DATE
		QUALITY ASSURANCE [signature] DATE 11-20-85

5. SCE/Contractor Project Administration

Conversion to DCN Date

SCE/CONTRACTOR PROJECT ADMINISTRATOR

DE 5005.1 5.85

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

CDM/DDC USE ONLY
CIG

IDCN NO: S-1

DOCUMENT: 335402 | Sht: - | Rev: 0

Page 1 of 1

PPC NO:

DCP NO: 3052.0TJ

DCN CONVERSION NO:

1. Originator M. LOPEZ Tel: 575-5278 Date 11.15.85

Document Title ISOMETRIC - FWS - 14126 - 4" EG DRADM I.D. M-10 QC SR SC -

DESCRIPTION OF CHANGE

BEFORE

THIS NEW DRAWING IS PART OF DCP AND DESCRIBES PHYSICAL WORK TO BE ACCOMPLISHED UNDER THE DCP.

AFTER

REMOVE CLOUDED DCP NOTE FROM DRAWING.

DCP# 3052.0TJ REV 0 SHT 101 OF 210

2. Other Affected Documents	3. Affected Systems	4. Design Approvals
NONE	NONE	CHECKER [signature] DATE 11-16-85
		INDEPENDENT REVIEW ENGR [signature] DATE 11-18-85
		RESPONSIBLE ENGINEER [signature] DATE 11-16-85
		LEAD DISCIPLINE ENGINEER R. C. Taylor DATE 11-18-85
		OTHER DATE
		OTHER DATE
		QUALITY ASSURANCE [signature] DATE 11-25-85

5. SCE/Contractor Project Administration

Conversion to DCN Date

SCE/CONTRACTOR PROJECT ADMINISTRATOR

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

CDM/DDC USE ONLY
CIG

PFC NO

IDCN NO: S-1

DCP NO: 3052. OTJ

DOCUMENT: 335403 | Sht.: - | Rev.: 0

DCN CONVERSION NO

Page 1 of 1

1. Originator M. LOPEZ Tel: 975-5278 Date 11-15-85

Document Title ISOMETRIC - FWS. 14116 - 4"-EG DRADM I.D. M-10 QC SR SC —

DESCRIPTION OF CHANGE

BEFORE

THIS NEW DRAWING IS PART OF DCP AND DESCRIBES PHYSICAL WORK TO BE ACCOMPLISHED UNDER THE DCP.

AFTER

REMOVE CLOUDED DCP NOTE FROM DRAWING.

DCP# 3052.OT REV 0 SHT 102 OF 210

2. Other Affected Documents	3. Affected Systems	4. Design Approvals	
NONE	NONE	CHECKER	DATE 11-16-85
		INDEPENDENT REVIEW ENGR	DATE 11-18-85
		RESPONSIBLE ENGINEER	DATE 11-16-85
		LEAD DISCIPLINE ENGINEER	DATE 11-18-85
		OTHER	DATE
		OTHER	DATE
		QUALITY ASSURANCE	DATE 11-3-85

5. SCE/Contractor Project Administration

Conversion to DCN Date

SCE/CONTRACTOR PROJECT ADMINISTRATOR

DE 5005.1 5/85

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

CDM/DDC USE ONLY
CIG

IDCN NO: S-1

DOCUMENT: 230217 | Sht: 1 | Rev: 2

Page 1 of 12

RFC NO:

DCP NO: 3052.0TJ

DCN CONVERSION NO:

1. Originator R. CAMBARE Tel. (714) 975-3345 Date 11-18-85

Document Title WELDING & NDE TESTING REQMT DRADM I.D. M-14 QC SREASC A

DESCRIPTION OF CHANGE

DHB 11-19-85

1. ADD WELDING AND NON DESTRUCTIVE TESTING REQUIREMENTS FOR FIELD ERECTED PIPING

SEE SUPPLEMENTAL PAGES

DCP# 3052.0TJ REV 0 SHT 03 OF 010

2. Other Affected Documents	3. Affected Systems	4. Design Approvals	
456497	MFW	CHECKER	DATE 11-18-85
456498		INDEPENDENT REVIEW ENGR	DATE 11-18-85
456499		RESPONSIBLE ENGINEER	DATE 11-18-85
		LEAD DISCIPLINE ENGINEER R.L. Taylor	DATE 11-18-85
		OWNER	DATE
		OTHER	DATE
		QUALITY ASSURANCE	DATE 11-21-85

5. SCE/Contractor Project Administration

Conversion to DCN Date

SCE/CONTRACTOR PROJECT ADMINISTRATOR

DE 5005.1 5/85

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER	S-1				
DRAWING NO.	SHEET NO.	REV NO.	DCN CONV DATE DWG REV	DCN CONV DATE SUB NO.	QUALITY CLASS
230217	1	2			SR EAP
					SEISMIC CLASS
					A

DAB 11-19-85

Date 11-18-85 Page 2 of 2 Page

By R. CAMBARE

ADD

DESCRIPTION OF CHANGE

| | | | | |

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

CDM/DDC USE ONLY
CIG

PPC NO

IDCN NO. S-3

DCP NO. 3052.OTJ

DOCUMENT 568338 | SHT. | Rev. 28

BCN CONVERSION NO

Page 1 of 3

1. Originator Juan P. Fajos Tel: 925-9001 Date 8-30-85

Document Title WIRING DIAGRAM VERTICAL BOARD SECTION-3 SH 3 DRADM I.D. E-20 QC SR SC —

DESCRIPTION OF CHANGE

1- CHANGE CABLE SCHEME NUMBERS AS FOLLOWS:

1GY2910 P2 TO 1ABDN0918
1GY2910 P1 TO 1ABDN0914

DCP# 3052.OTJ REV 0 SHT 105 OF 210

2. Other Affected Documents	3. Affected Systems	4. Design Approvals	
5110881	NONE	CHECKER a.j Padilla	DATE 11-11-85
5149456		INDEPENDENT REVIEW ENGR Langthorn	DATE 11-11-85
N3202		RESPONSIBLE ENGINEER M. Anees uddin	DATE 11-11-85
5159560		LEAD DISCIPLINE ENGINEER M. Anees uddin	DATE 11-11-85
5166613		OTHER	DATE
568296		OTHER	DATE
		QUALITY ASSURANCE	DATE 11-22-85

5. SCE/Contractor Project Administration

Conversion to DCN Date

SCE/CONTRACTOR PROJECT ADMINISTRATOR

DE-5005 1 5/85

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER	5-3				
DRAWING NO.	SHEET NO.	REV NO.	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	SR
568338		28			SEISMIC CLASS
					—

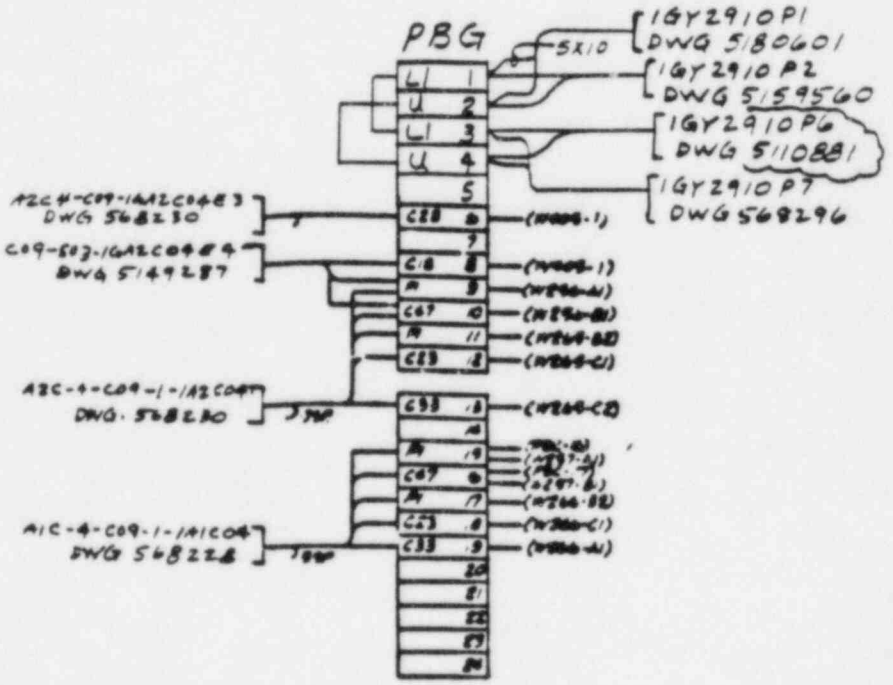
Date 8-30-85 Page 2 of 3 Page

By JP Faxas

DESCRIPTION OF CHANGE

POOR QUALITY DOCUMENT
BEST AVAILABLE COPY

BEFORE



DCP# 3052.0TJ REV 0 SHT 106 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER	5-3				
DRAWING NO.	SHEET NO.	REV NO.	DCN CONV. DATE		QUALITY CLASS
			DWG. REV.	SUB NO.	SR
568338		28			SEISMIC CLASS —

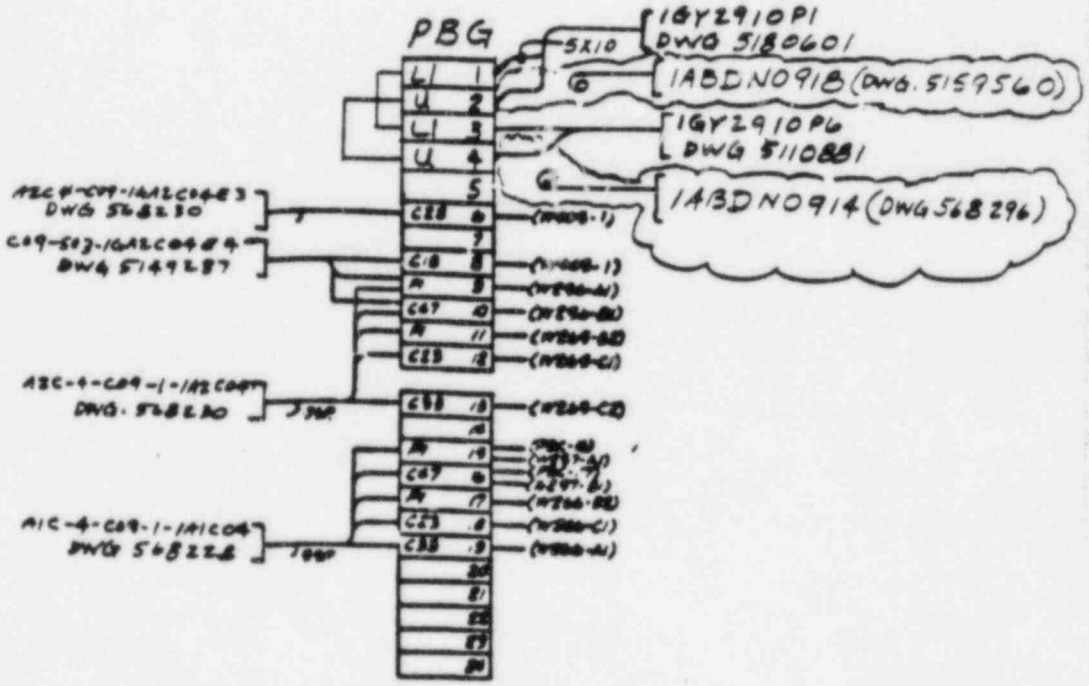
Date 8-30-85 Page 3 of 3 Page

By JP Faxas

DESCRIPTION OF CHANGE

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BEST AVAILABLE COPY

AFTER



DCP# 3052.0TJ REV 0 SHT 102 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

CDM/DDC USE ONLY
CIG

PFC NO

IDCN NO: S-1

DCP NO: 3052.OTJ

DOCUMENT: 5110881 | SHT | Rev: 7

DCN CONVERSION NO

Page 1 of 3

1. Originator: Juan P. Foxas Tel: 975-9001 Date: 8-30-85

Document Title: WIRING DIAGRAM CONSOLE (LEFT HAND SIDE). DRADM I.D.: E-20 QC SR SC —

DESCRIPTION OF CHANGE

1- CHANGE INDICATORS CALL-OUT AS FOLLOWS:

FI-2004A TO FI-3064A
FI-2004B TO FI-3064B
FI-2004C TO FI-3064C.

2- CHANGE CABLES CALL-OUT AS FOLLOWS:

FI-2004A-7	TO	FI-3064A-7
FI-2004A-8	TO	FI-3064A-8
FI-2004B-7	TO	FI-3064B-7
FI-2004B-8	TO	FI-3064B-8
FI-2004C-7	TO	FI-3064C-7
FI-2004C-8	TO	FI-3064C-8

DCP# 3052.OTJ REV 0 SHT 108 OF 210

2. Other Affected Documents	3. Affected Systems	4. Design Approvals	
568338	None.	CHECKER: A. Padilla	DATE: 11-11-85
5149456		INDEPENDENT REVIEW ENGR: [illegible]	DATE: 11-11-85
568296		RESPONSIBLE ENGINEER: M. Hueerwadin	DATE: 11-11-85
5166613		LEAD DISCIPLINE ENGINEER: M. Hueerwadin	DATE: 11-11-85
5159560		OTHER	DATE
		OTHER	DATE
		QUALITY ASSURANCE: [illegible]	DATE: 11-20-85

5. SCE/Contractor Project Administration

Conversion to DCN Date

SCE/CONTRACTOR PROJECT ADMINISTRATOR

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

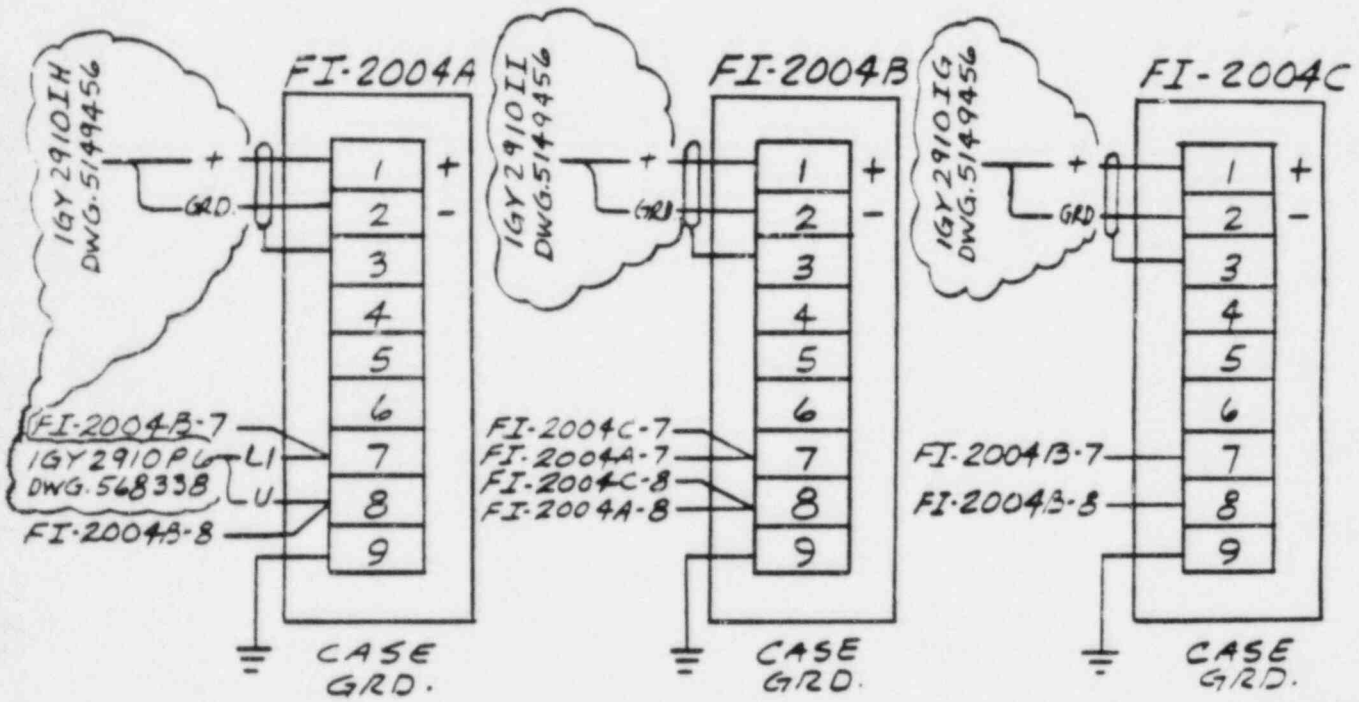
IDCN NUMBER	5-1				
DRAWING NO.	SHEET NO.	REV NO.	DCN CONV DATE		QUALITY CLASS
			DWG. REV.	SUB. NO.	SR
5110881		7			SEISMIC CLASS
					-

Date 8-30-85 Page 2 of 3 Page

By J.P. Faxas

DESCRIPTION OF CHANGE

BEFORE



RE-DRAWN FOR CLARITY ONLY

DCP# 3052.0TJ REV 0 SHT 102 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

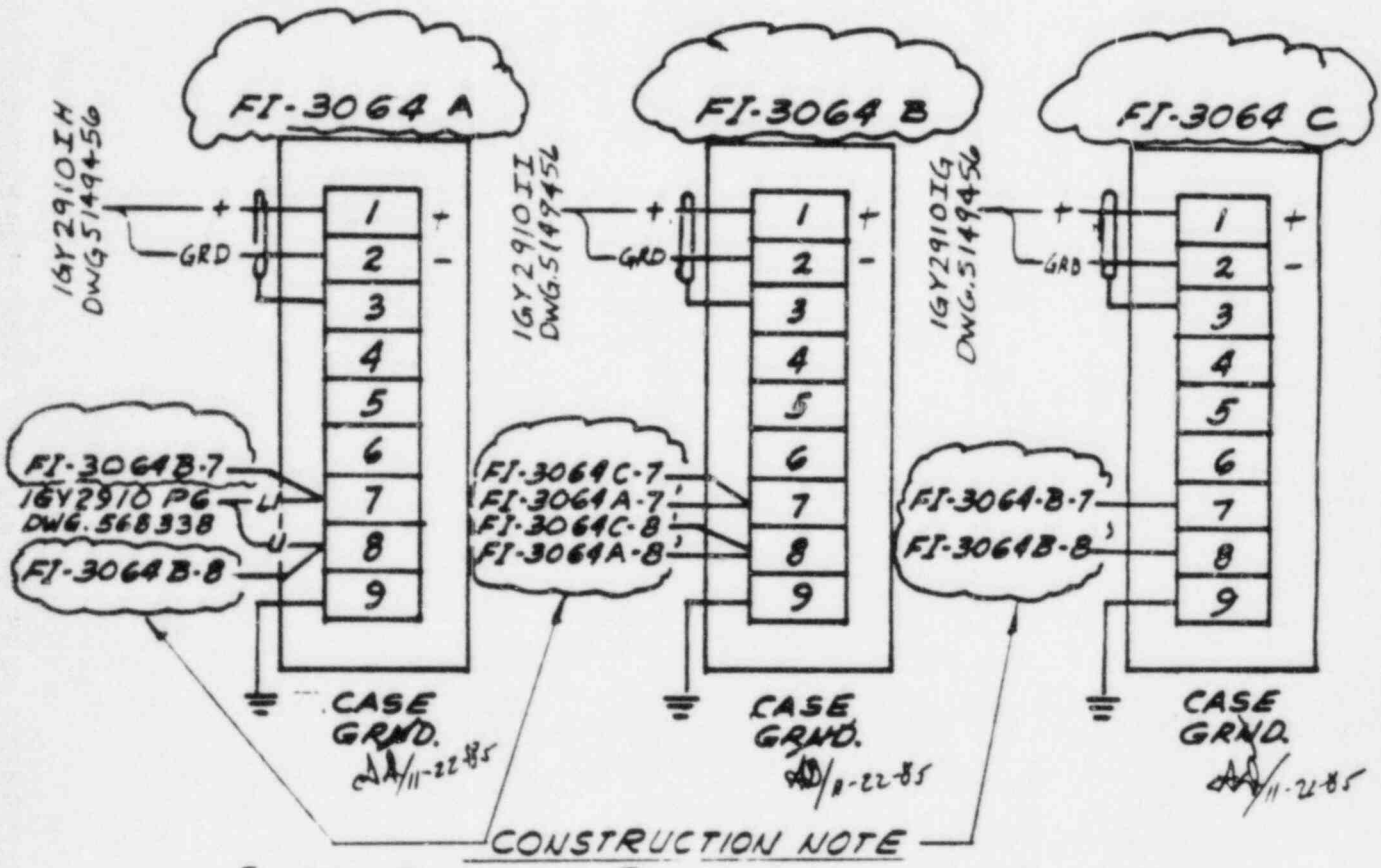
IDCN NUMBER S-1					
DRAWING NO.	SHEET NO.	REV. NO.	DCN CONV. DATE DWG. REV	DCN CONV. DATE SUB NO.	QUALITY CLASS SR.
5110881		7			SEISMIC CLASS –

Date 8-30-85 Page 3 of 3 Page

By J.P. Faxas

DESCRIPTION OF CHANGE

AFTER



RE-DRAWN FOR CLARITY ONLY

DCP# 3052.0TJ REV 0 SHT 110 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

CDM/DDC USE ONLY
CIG

PPC NO.

IDCN NO. S-1

DCP NO. 3052.OTJ

DOCUMENT 5159560 | SHT. | REV. C

PCN CONVERSION NO.

Page 1 of 3

1. Originator Juan P. Foxos. Tel: 92-9001 Date 8-30-85

Document Title WIRING DIAGRAM MISC. DEVICES. AUX. FEEDWATER SYSTEM. DRADM I.D. E-20 QC SR SC —

DESCRIPTION OF CHANGE

1- Delete FC-2004A, B & C, and AR-2004A, B & C. And all associated cables.

2-) Abandon in place and retag the following cables at box JB 756 G.

1GY2910 P2 = 1ABDN0918
1GY2910 K1 = 1ABDN0913

3) Replace 4 point terminal block at JB 751G for a. 8 point Terminal block.

4) Add FYV-3064 A, B & C

5) Add FT-3064 A, B & C.

DCP# 3052.OTJ REV 0 SHT III OF 210

2. Other Affected Documents	3. Affected Systems	4. Design Approvals	
5110881	NONE	CHECKER A. J. Padilla	DATE 11-11-85
568238		INDEPENDENT REVIEW ENGR Ramy Bok	DATE 11-11-85
5149456		RESPONSIBLE ENGINEER M. Bruceruddin	DATE 11-11-85
568296		LEAD DISCIPLINE ENGINEER M. Bruceruddin	DATE 11-11-85
5166613		OTHER	DATE
		OTHER	DATE
		QUALITY ASSURANCE	DATE 11-20-85

5. SCE/Contractor Project Administration

Conversion to DCN Date

SCE/CONTRACTOR PROJECT ADMINISTRATOR

DE-5005-1 5/85

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

IDCN NUMBER	S-1				
DRAWING NO	SHEET NO	REV NO	DCN CONV DATE DWG REV	DCN CONV DATE SUB NO	QUALITY CLASS
5159560		0			SR
					SEISMIC CLASS
					-

SUPPLEMENTAL PAGE

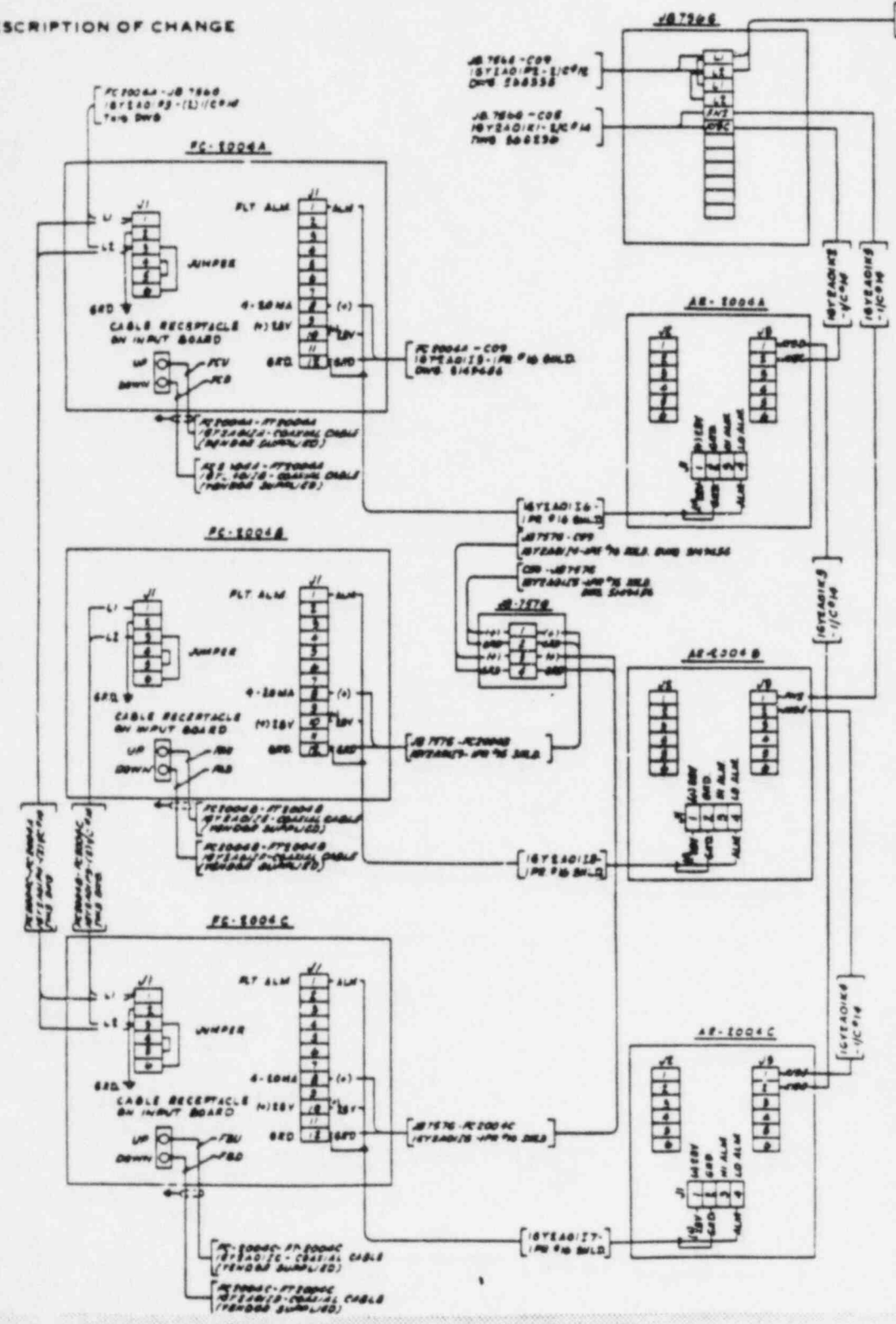
POOR QUALITY DOCUMENT
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Date 9-3-85 Page 2 of 3 Page

BEFORE

By J.P. Farias

DESCRIPTION OF CHANGE



DCP# 3052.01 REV 0 SHT 11 OF 21

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

DCP# 3052.0TJ REV 0 SHT 113 OF 210

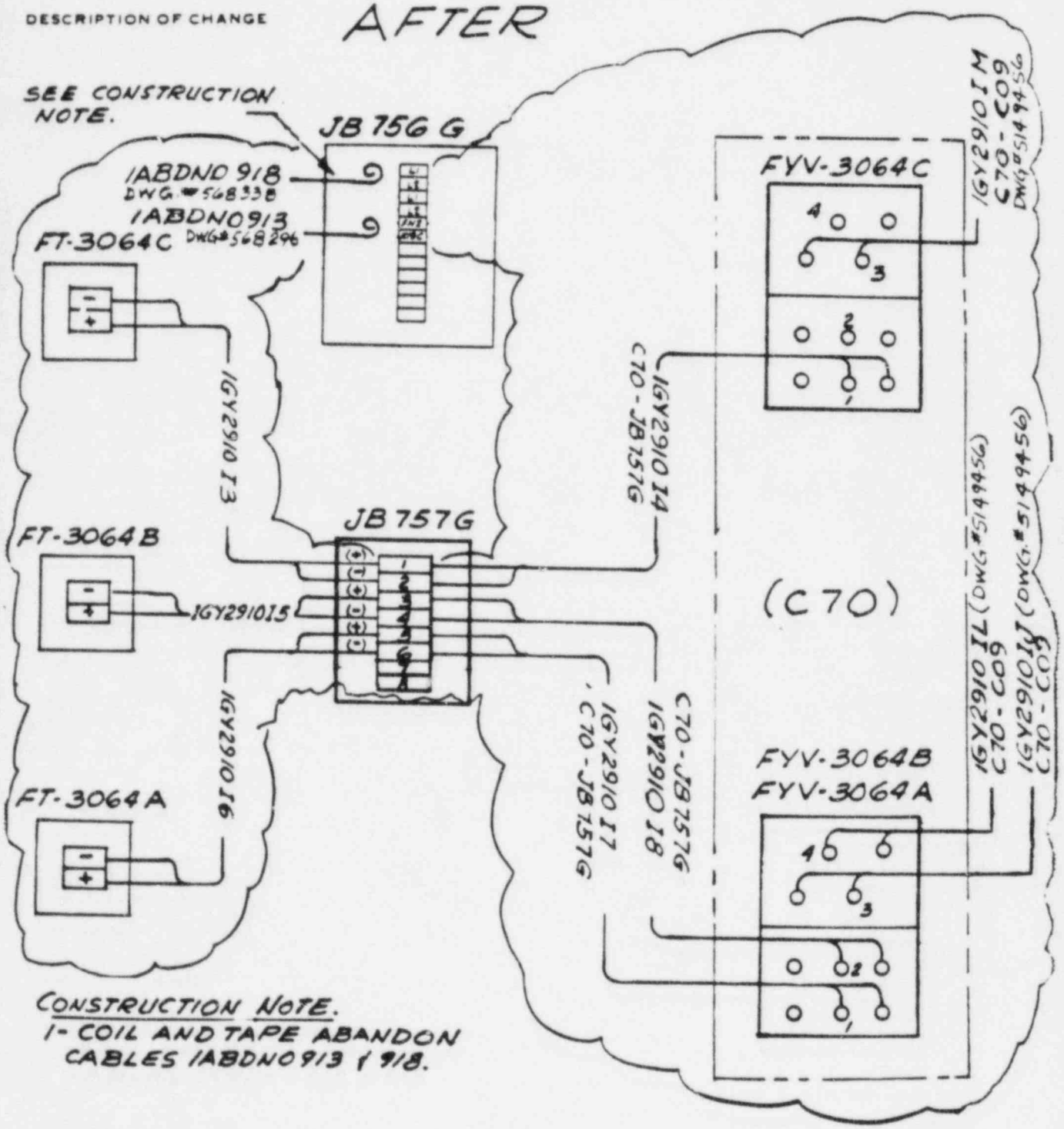
IDCN NUMBER S-1					
DRAWING NO	SHEET NO	REV NO	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	SR
5159560		0			SEISMIC CLASS —

Date 9-3-85 Page 3 of 3 Page

By J.P. Faros

DESCRIPTION OF CHANGE

AFTER



CONSTRUCTION NOTE.
1- COIL AND TAPE ABANDON CABLES 1ABDNO913 & 918.

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

CDM/DDC USE ONLY
CIG

PPC NO.

IDCN NO. S-1

DCP NO. 3052-OTJ

DOCUMENT 5166613 | SHT. - | REV. 0

DCN CONVERSION NO.

Page 1 of 4

1. Originator Juan P. Farias Tel: 975-9001 Date 9-3-85

Document Title E/D MAIN FEEDWATER LOW FLOW INSTRU PRADM I.D. E-09 QC SR&AN SC —

DESCRIPTION OF CHANGE

REVISE E/D DWG. 5166613 TO MAKE IT CONSISTENT WITH LOOP DIAGRAM DWG. 451337 AND TO COMPLY WITH ALL THE CHANGES NEEDED ON MAIN FEEDWATER LOW FLOW INDICATION AS MENTIONED ON SCE WORK ASSIGNMENT NO. 3052.

ADD THE FOLLOWING:
FI-3064A, FI-3064B, AND FI-3064C
FT-3064A, FT-3064B, AND FT-3064C
FYV-3064A, FYV-3064B AND FYV-3064C

DELETE THE FOLLOWING:
FC-2004A, FC-2004B, AND FC-2004C
FI-2004A, FI-2004B, AND FI-2004C
FT-2004A, FT-2004B, AND FT-2004C
ANNUNCIATOR "FEEDWATER LOW FLOW INDICATOR TROUBLE" ALARM RELAY.

PAGES 2 AND 3 OF THIS IDCN REPRESENT THE BEFORE SHEET, AND PAGE 4 REPRESENT THE AFTER SHEET.

DCP# 3052.OTJ REV 0 SHT 4 OF 10

2. Other Affected Documents	3. Affected Systems	4. Design Approvals	
451337	None	CHECKER A. Padilla	DATE 11-11-85
5149456		INDEPENDENT REVIEW ENGR Karan Hira	DATE 11-11-85
		RESPONSIBLE ENGINEER M. Ameeruddin	DATE 11-11-85
		LEAD DISCIPLINE ENGINEER M. Ameeruddin	DATE 11-11-85
		OTHER	DATE
		OTHER	DATE
		QUALITY ASSURANCE	DATE 11-20-85

5. SCE/Contractor Project Administration

Conversion to DCN Date

SCE/CONTRACTOR PROJECT ADMINISTRATOR

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER 5-1					
DRAWING NO.	SHEET NO.	REV. NO.	DCN CONV DATE DWG. REV.	SUB NO	QUALITY CLASS
5166613		0			SREAN
					SEISMIC CLASS
					—

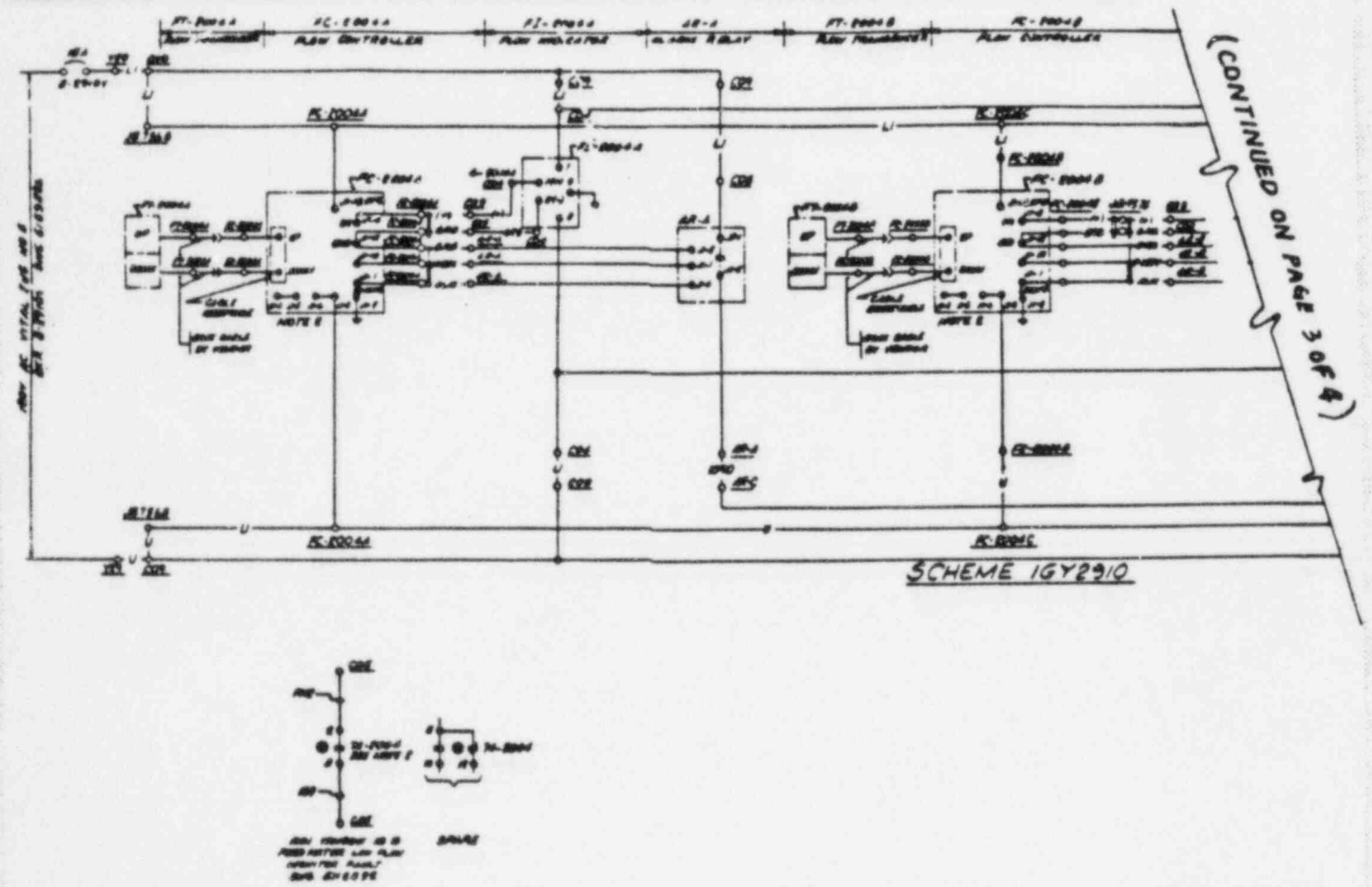
Date 9-3-85 Page 2 of 4 Page

DESCRIPTION OF CHANGE

BEFORE

By R. GEDA

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DCP# 3052.0TJ REV 0 SHT 15 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

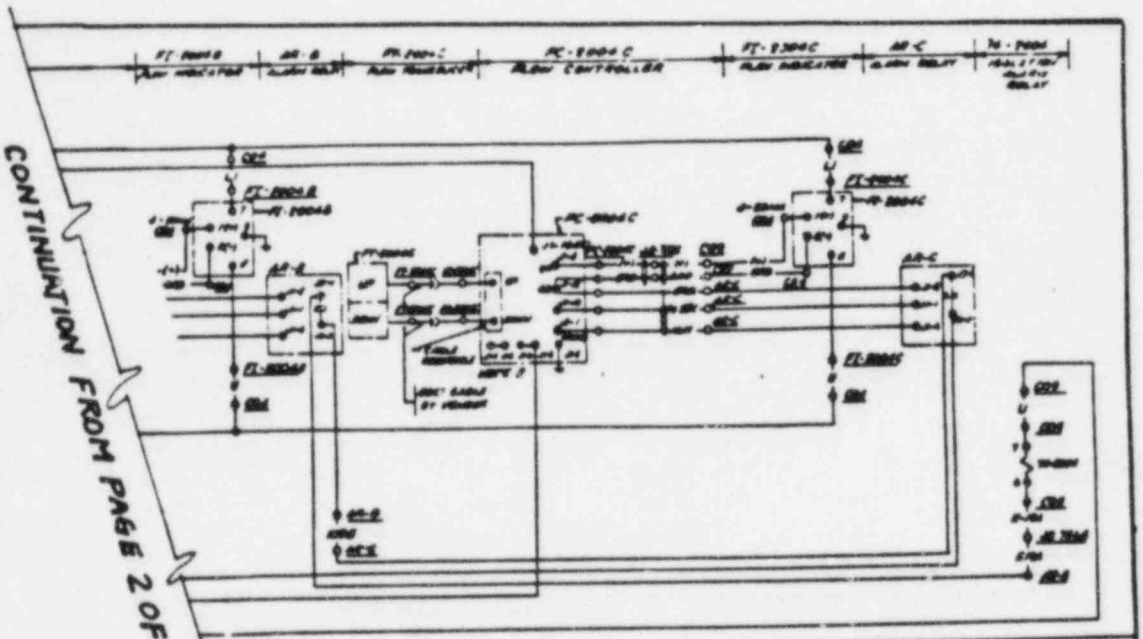
IDCN NUMBER 5-1					
DRAWING NO.	SHEET NO.	REV NO.	DCN CONV. DATE: DWG REV.	DCN CONV. DATE: SUB NO.	QUALITY CLASS: SREAN; SEISMIC CLASS: —
5166613		0			

Date 9-3-85 Page 3 of 4 Page

DESCRIPTION OF CHANGE **BEFORE**

By R.GEDA

POOR QUALITY DOCUMENT
BEST AVAILABLE COPY



CONTINUATION FROM PAGE 2 OF 4

LEGEND

TAG NO.	QUAN	DESCRIPTION	MANUF. MOD. NO.	SCE PO. NO.
AR-A,B,C	3	ALARM RELAY	CONTROLOTRON 242-2	81300004
PI 2004 A,B,C	3	REMOTE INDICATOR	SIGMA 1870-30-EV8	REQUISITION 7512J
FT 2004 A,B,C	3	TRANSDUCER	CONTROLOTRON 3804-10C540-A	81300004
——	3	TRANSDUCER CABLES (75')	242-1-15	81300004
FC 2004 A,B,C	3	FLOW CONTROLLER	CONTROLOTRON 3804-10C540MT	81800004
TA-2004	1	ISOLATION ALARM RELAY	CCC-BMS-1	81300111

NOTES:
1. FC-2004 A/B/C, FT-2004 A/B/C, AR-A/B/C ARE FIELD MOUNTED INSTRUMENTS.
2. FLOW CONTROLLERS FC-2004 A/B/C ARE SOLID STATE DEVICES WHICH ARE ABLE TO DETECT ANY ELECTRICAL MALFUNCTION WITHIN ELECTRONICS OF THE SYSTEM. IF ANY MALFUNCTION OCCURS & D.C. SIGNALS FROM TERMINAL J-1 TO ALARM RELAYS AR-A/B/C IS INTERRUPTED, CAUSING CONTACT OF RELAY AR TO OPEN. SAME CONTROLLER ALSO ARE SENDING 4-20 ma SIGNAL TO INDICATORS

DCP# 3052.0TJ REV 0 SHT 116 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For BONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

AFTER

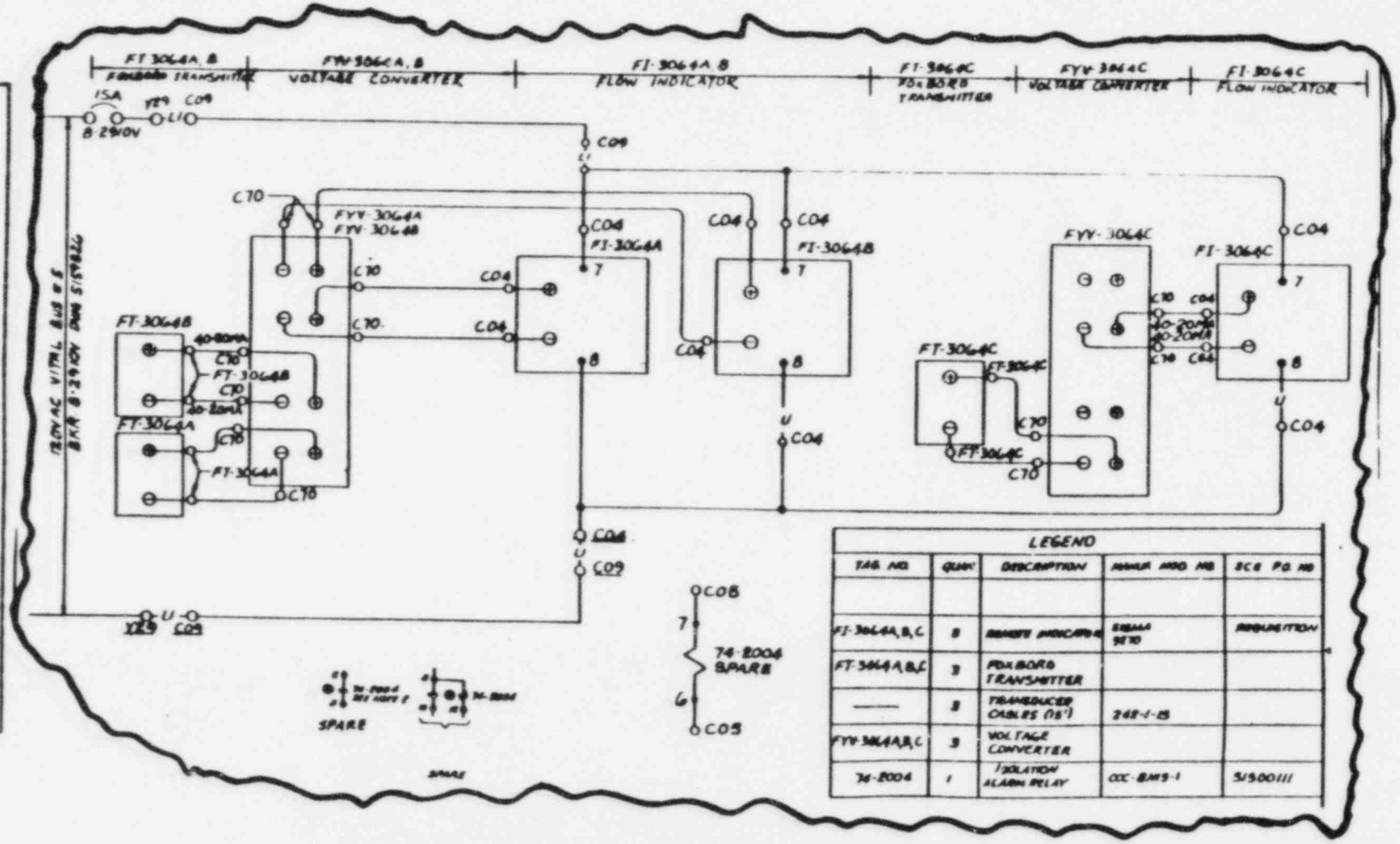
IDCN NUMBER	5-1				
DRAWING NO.	SHEET NO.	REV. NO.	DCN CONV. DATE DWG. REV.	DCN CONV. DATE SUB. NO.	QUALITY CLASS / SEISMIC CLASS
5166613		0			SREAN / —

Date 9-3-85 Page 4 of 4 Page

By R. GEDA

DESCRIPTION OF CHANGE

DCP# 3052.0TJ REV 0 SHT 12 OF 410



DE 5005.2 6/

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

CDM/DDC USE ONLY
CIG

PPC NO

IDCN NO S-1

DCP NO 3052.OTJ

DOCUMENT 568296 | Sht - | Rev 18

DCN CONVERSION NO

Page 1 of 3

1. Originator ROBERT TEH Tel: 975-4691 Date SEPT. 3, 1985

Document Title WIRING DIAGRAM REACTOR PLANT ANNUNCIATOR SH. 2 DRADM I.D. E-20 QC SREAN SC -

DESCRIPTION OF CHANGE

1-) DELETED SCHEME CABLE NUMBER 1NY2910K1

2: CHANGE THE FOLLOWING CIRCUIT NUMBERS:

1GY2910P7 TO 1ABDNO914

1GY2910K1 TO 1ABDNO913.

DCP# 3052.OTJ REV 0 SHT 11 OF 240

2. Other Affected Documents	3. Affected Systems	4. Design Approvals	
568338	NONE	CHECKER aj Padilla	DATE 11-11-85
5159560		INDEPENDENT REVIEW ENGR Razvi	DATE 11-11-85
M-30418		RESPONSIBLE ENGINEER M. Ameeruddin	DATE 11-11-85
N-3303		LEAD DISCIPLINE ENGINEER M. Ameeruddin	DATE 11-11-85
		OTHER	DATE
		OTHER	DATE
		QUALITY ASSURANCE	DATE 11-20-85

5. SCE/Contractor Project Administration

Conversion to DCN Date

SCE/CONTRACTOR PROJECT ADMINISTRATOR

DE-5005-1 5/85

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER	S-1				
DRAWING NO.	SHEET NO.	REV. NO.	DCN CONV. DATE DWG. REV.	DCN CONV. DATE SUB. NO.	QUALITY CLASS: SREAN
568296	-	18			SEISMIC CLASS: —

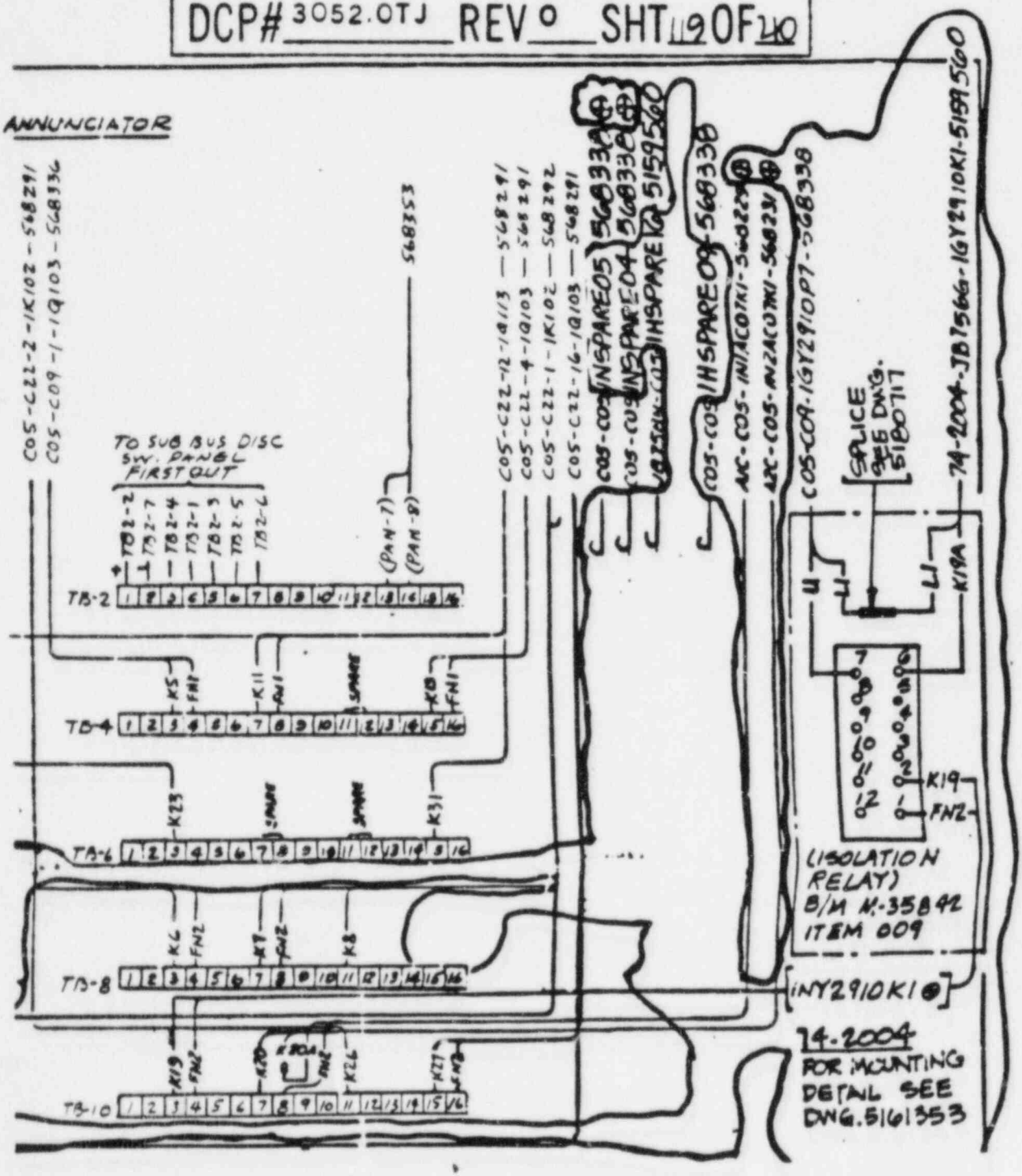
Date SEPT. 3, 1985 Page 2 of 3 Page

By ROBERT TEH

DESCRIPTION OF CHANGE

BEFORE

DCP# 3052.0TJ REV 0 SHT 129 OF 240



FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER S-1					
DRAWING NO.	SHEET NO.	REV NO.	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	SREAN
568296	-	18			SEISMIC CLASS —

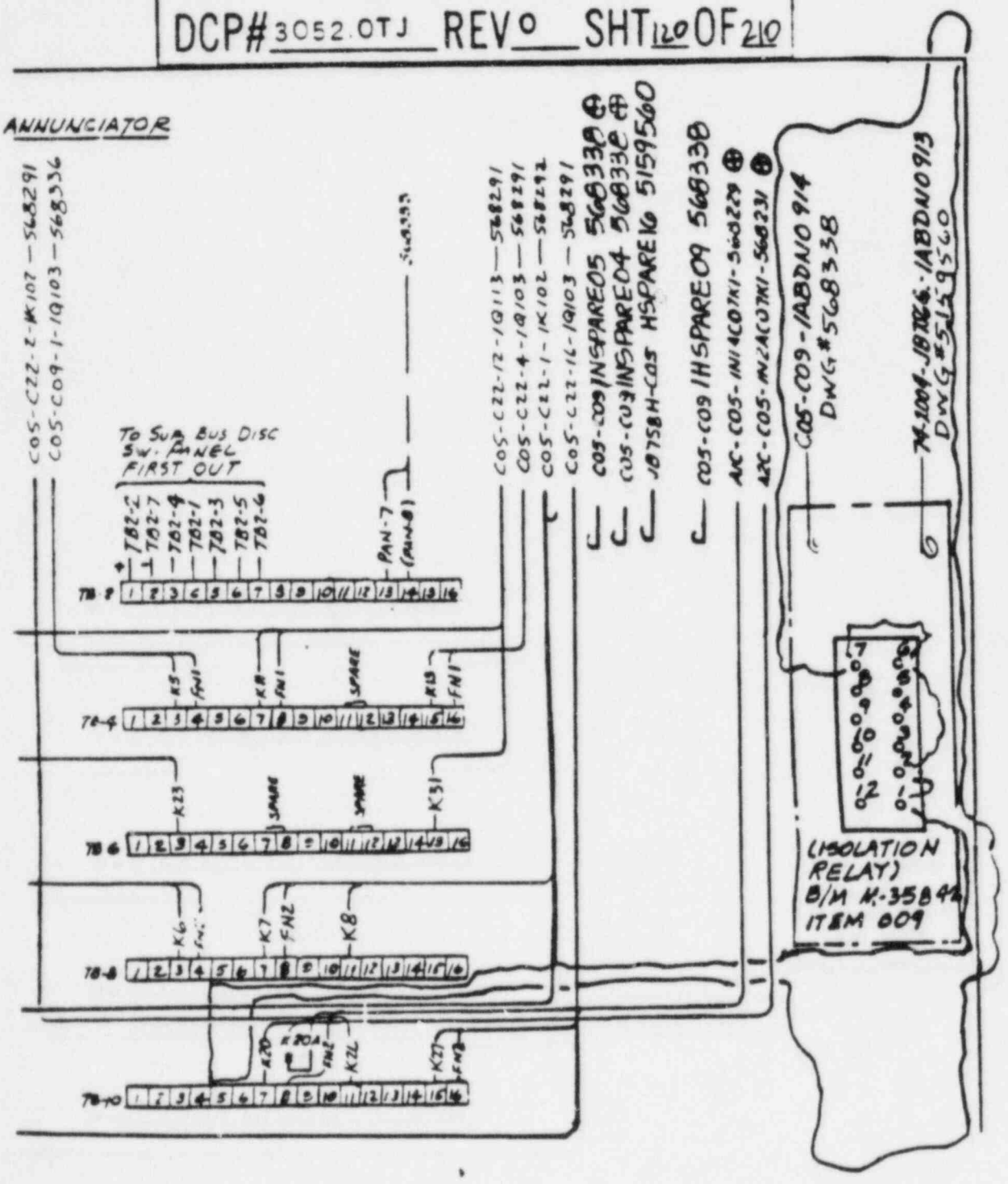
Date SEPT. 3, 1985 Page 3 of 3 Page

By ROBERT TEH

DESCRIPTION OF CHANGE

AFTER

DCP# 3052.0TJ REV 0 SHT 120 OF 210



FLUOR ENGINEERS, INC
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

CDM/DDC USE ONLY CIG	FFC NO
IDCN NO S-4	DCP NO 3052.0TJ
DOCUMENT 5159782 / Sht. / Rev 1	DCN CONVERSION NO
Page 1 of 5	

1. Originator Juan P. Faxas Tel: 925-9001 Date 9-3-85

Document Title RACEWAY SECTIONS & DETAILS AREA-2 DRADM I.D. E-16 QC SREAN SC A

DESCRIPTION OF CHANGE

1- DELETE THE FOLLOWING CONDUITS:
4686G, 4646G, 4645G, 4684G, 4690G, 4691G, 4689G, 4956G, 4957G, 4702G, 4701G, 4666G, 4700G, 4682G, 4693G, 4697G, 4681G, 4687G, 4688G, 4645G, 4696G, 4644G, 4703G, 4642G, 4685G, 4937G.

2- DELETE THE FOLLOWING DEVICES:

FC-2004 A, B & C
AR-2004 A, B & C.

3. Revise sections "N & M"

DCP# 3052.0TJ REV 0 SHT 12 OF 40

2. Other Affected Documents	3. Affected Systems	4. Design Approvals	
5159787 5159560	None	CHECKER a.f Padilla	DATE 11-11-85
M-30148 5166613		INDEPENDENT REVIEW ENGR RAMATHEN	DATE 11-11-85
5159798 568338		RESPONSIBLE ENGINEER M. Ameeruddin	DATE 11-11-85
5149456		LEAD DISCIPLINE ENGINEER M. Ameeruddin	DATE 11-11-85
		OTHER	DATE
		OTHER	DATE
		QUALITY ASSURANCE	DATE 11-30-85

5. SCE/Contractor Project Administration

Conversion to DCN Date

SCE/CONTRACTOR PROJECT ADMINISTRATOR

FLUOR ENGINEERS, INC
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER	S-4				
DRAWING NO	SHEET NO	REV NO	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	SR EAN
5159782		1			SEISMIC CLASS A

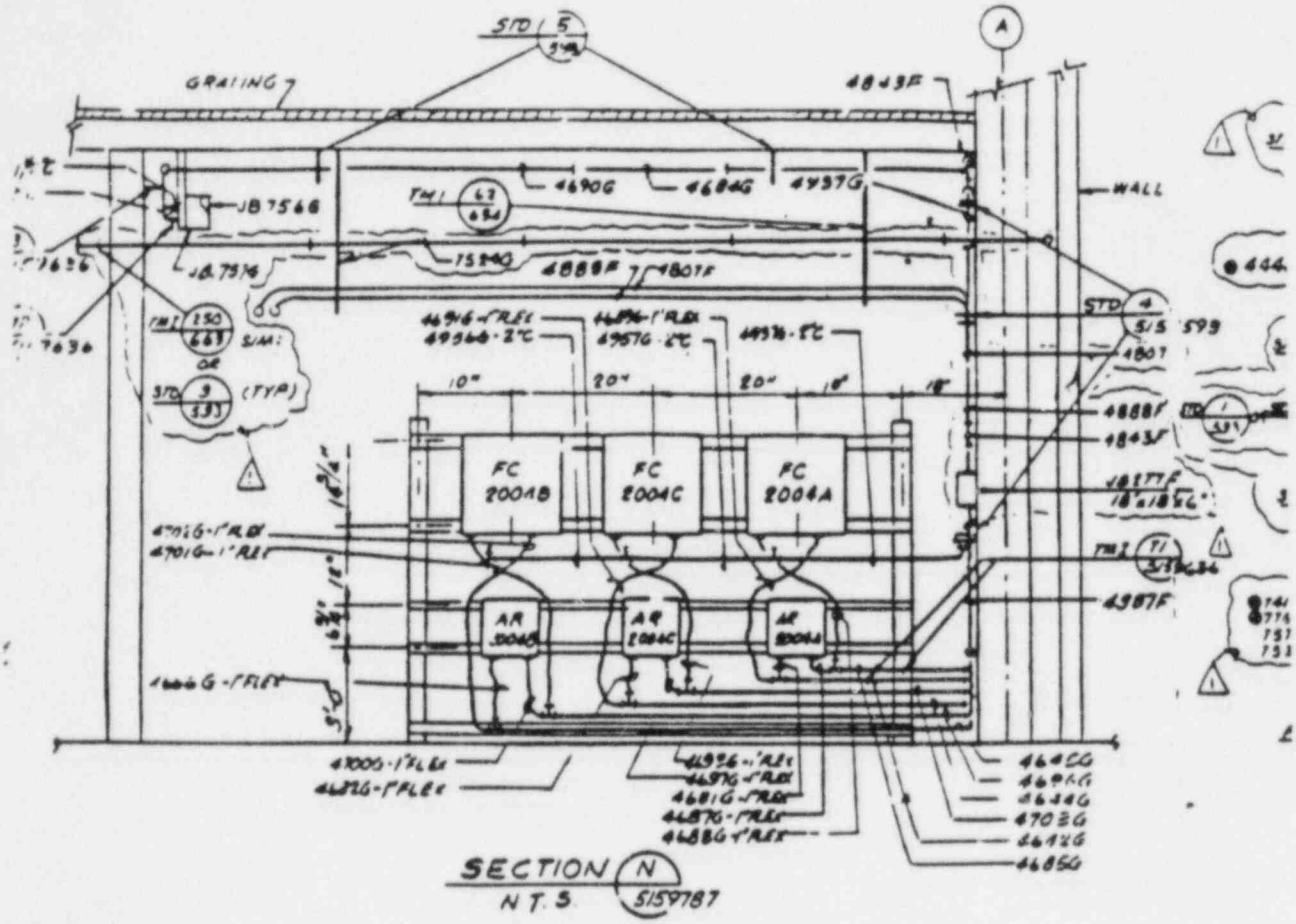
Date 9-3-85 Page 2 of 5 Page

By J.P. Faxos

DESCRIPTION OF CHANGE

BEFORE

POOR QUALITY DOCUMENT
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DCP# 3052.0TJ REV 0 SHT 122 OF 210

FLUOR ENGINEERS, INC
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

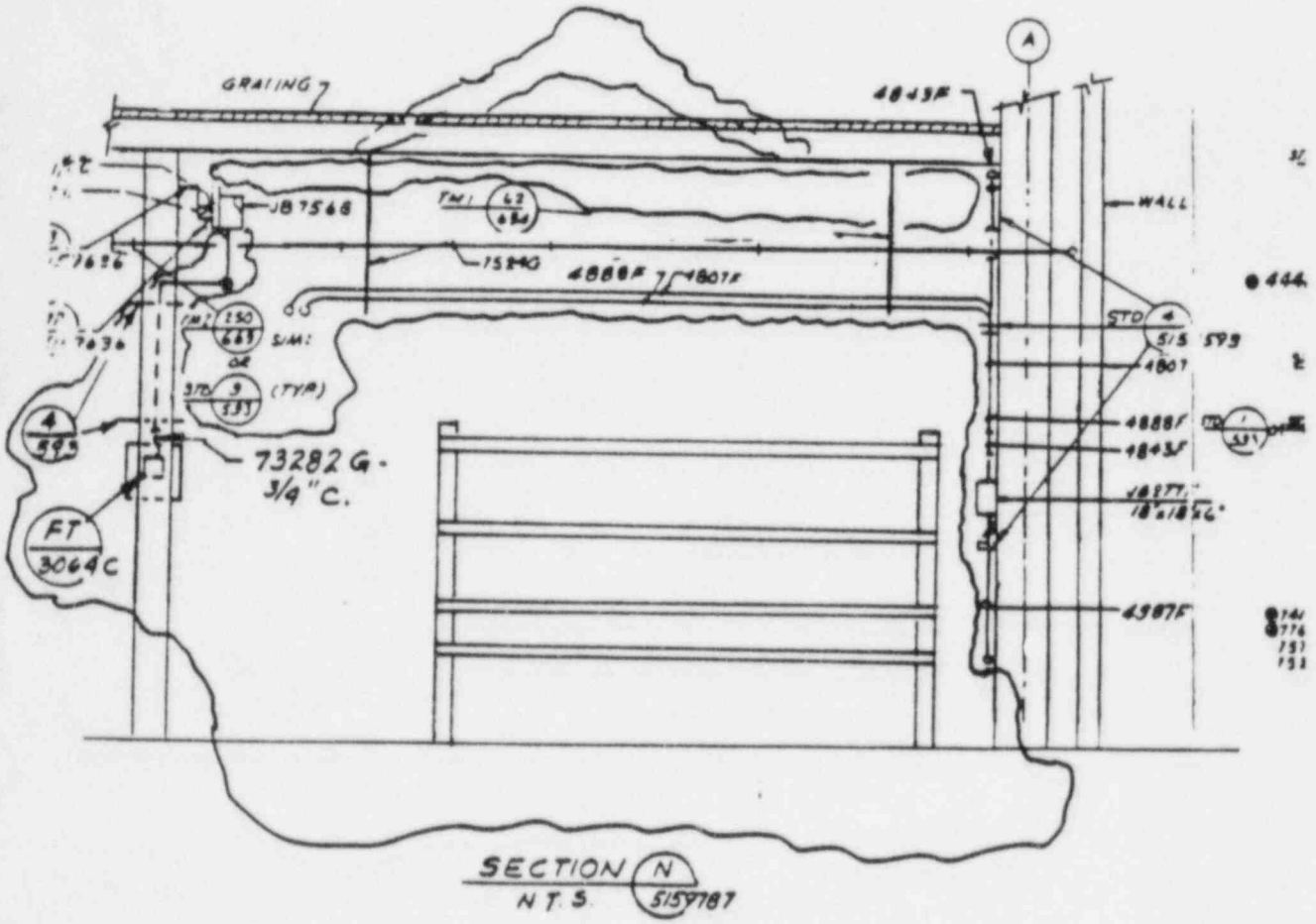
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DRAWING NO	SHEET NO	REV NO	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	SR EAN
5159782		1			SEISMIC CLASS A

Date 9-3-85 Page 3 of 5 Page

By J.P. Foxas

DESCRIPTION OF CHANGE

AFTER



DCP# 3052.0TJ REV 0 SHT 123 OF 210

FLUOR ENGINEERS, INC
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER	S-4				
DRAWING NO	SHEET NO	REV NO	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	SR EAN
5159782		1			SEISMIC CLASS A

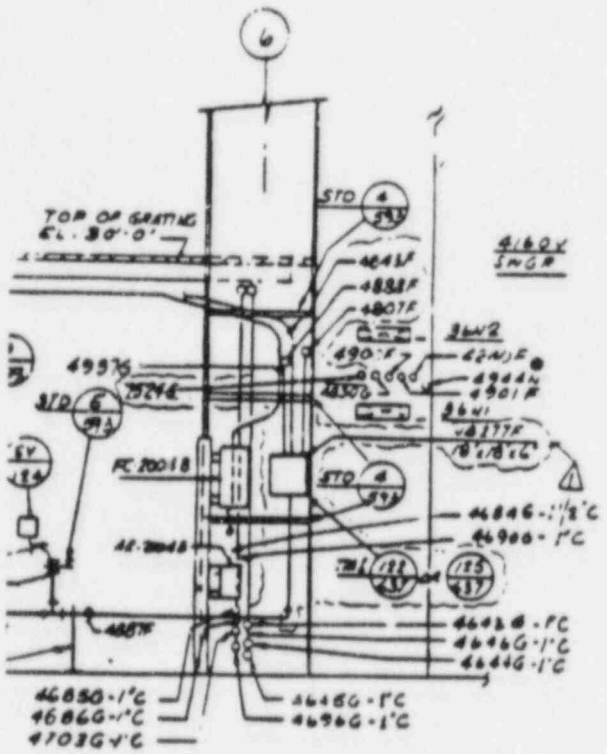
Date 9-3-85 Page 4 of 5 Page

By J.P. Foxos

POOR QUALITY DOCUMENT
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DESCRIPTION OF CHANGE

BEFORE



SECTION M
N.T.S 5159787

DCP# 3052.0TJ REV 0 SHT 124 OF 210

FLUOR ENGINEERS, INC
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER		S-4			
DRAWING NO	SHEET NO	REV NO	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	SR EAN
5159782		1			SEISMIC CLASS A

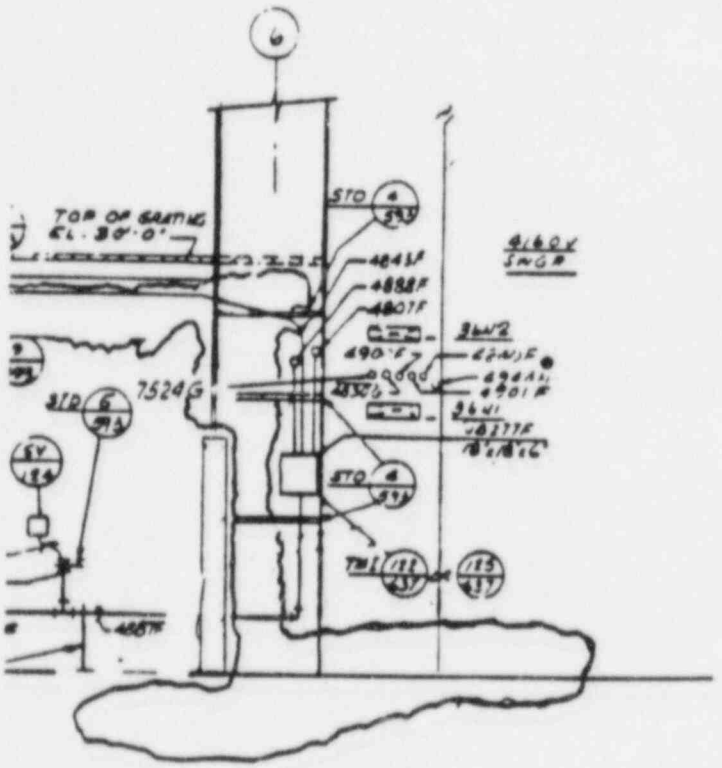
Date 9-3-85 Page 5 of 5 Page

By J.P. Faxas

DESCRIPTION OF CHANGE

AFTER

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BEST AVAILABLE COPY



SECTION (M)
N.T.S 5159787

DCP# 3052.CTJ REV 0 SHT 125 OF 240

FLUOR ENGINEERS, INC
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

CDM/DDC USE ONLY
CIG

IDCN NO: S-4

DOCUMENT: 5159781 | SHT: | REV: 1

Page 1 of 5

DCP NO: 3052.OTJ

DCN CONVERSION NO:

1 Originator: Juan P. Faxas Tel. 975-9001 Date 9-3-85

Document Title: RACEWAY ARRANGEMENT LUBE OIL AREA ELEV. 33'-0" AND BELOW AREA - I DRADM I.D. E.16 QC SREAVSC A

DESCRIPTION OF CHANGE

1 - DELETE EXISTING STRAP-ON TRANSDUCERS, FT-2004A, FT-2004B AND FT-2004C. (SEE CONSTRUCTION NOTE BELOW).
2 - ADD TRANSMITTERS, FT-3064A, FT-3064B AND FT-3064C
3 - REROUTE CONDUITS 73280G, 73281G & 73282G AS INDICATED.
4 - DELETE THE FOLLOWING BOXES AND CONDUITS:

PB 471G	73283G, 73284G
PB 472G	73285G, 73286G
PB 473G	73287G, 73288G.
PB 990G.	4964G, 4962G.
PB 768G.	4937G, 4690G
PB 774G	4684G.

CONSTRUCTION NOTE : CONTROLOTRON FLOW TRANSMITTERS ARE INSTALLED BUT NOT TURNED OVER TO STATION (PER SCE).

DCP# 3052.OTJ REV 0 SHT 126 OF 210

2. Other Affected Documents	3. Affected Systems	4. Design Approvals	
5159782 5159560	None.	CHECKER: aj Padilla	DATE: 11-11-85
M-30148 5166013		INDEPENDENT REVIEW ENGR: [illegible]	DATE: 11-11-85
5159798 568338		RESPONSIBLE ENGINEER: M. Ameeruddin	DATE: 11-11-85
5149456		LEAD DISCIPLINE ENGINEER: M. Ameeruddin	DATE: 11-11-85
		OTHER	DATE
		OTHER	DATE
		QUALITY ASSURANCE	DATE: 11-13-85

5. SCE/Contractor Project Administration

Conversion to DCN Date

SCE/CONTRACTOR PROJECT ADMINISTRATOR

DE 5005 1 5/85

DCP# 3052.GTJ REV 0 SHT 2 OF 9

FLUOR ENGINEERS INC
POWER DIVISION

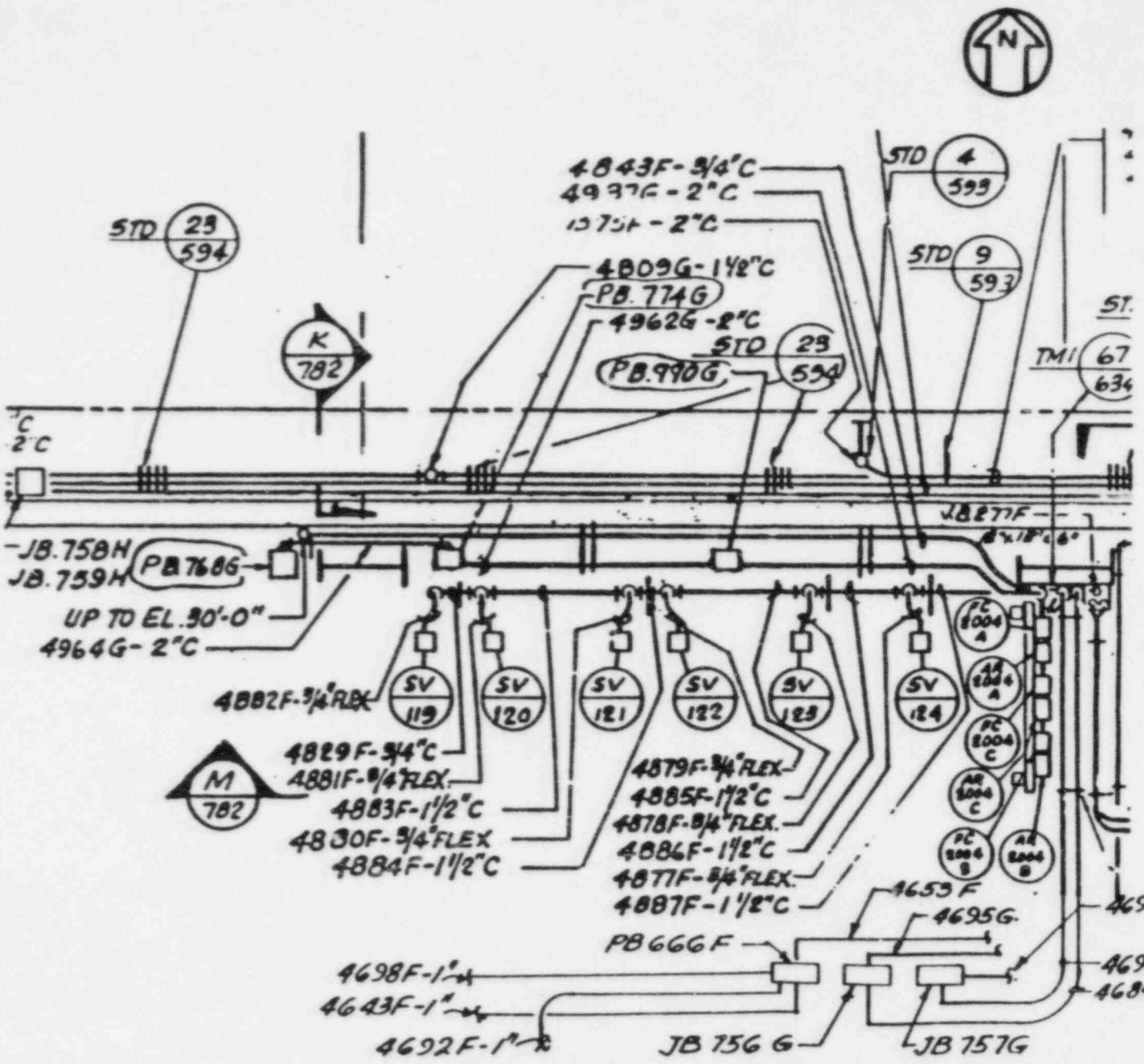
INTERIM DESIGN CHANGE
NOTICE (IDCN)/DESIGN
CHANGE NOTICE (DCN)

For SONGS 1, 2 & 3

SUPPLEMENTAL PAGE

DESCRIPTION OF CHANGE

BEFORE



						S-4
UNIT NO	SHEET REV NO	DCN CONV DATE	DWG REV	SUB NO		QUALITY CLASS
5159 787	1					
						SEISMIC CLASS
						4

Date 9-3-85 Page 2 of 5 Pages

By J.P. Fox

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

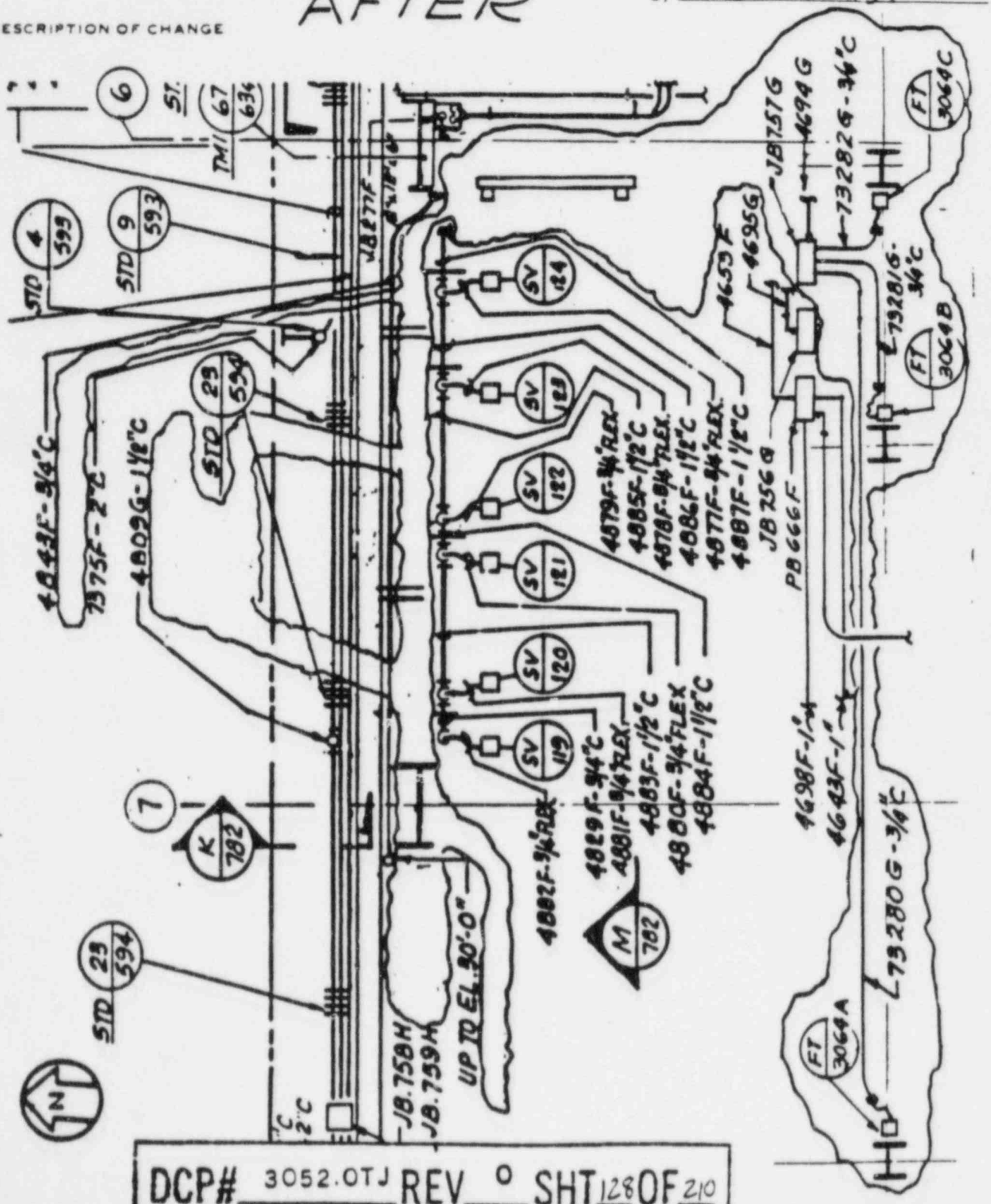
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DRAWING NO	SHEET NO	REV NO	DCN CONV DATE / DWG REV	SUB NO	QUALITY CLASS
5159787	–	1			SREAN
					SEISMIC CLASS
					A

Date 10/31/85 Page 3 of 5 Page

By J.P. Faxas

DESCRIPTION OF CHANGE

AFTER



DCP# 3052.0TJ REV 0 SHT 128 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER		S-4			
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			DWG REV	SUB NO	
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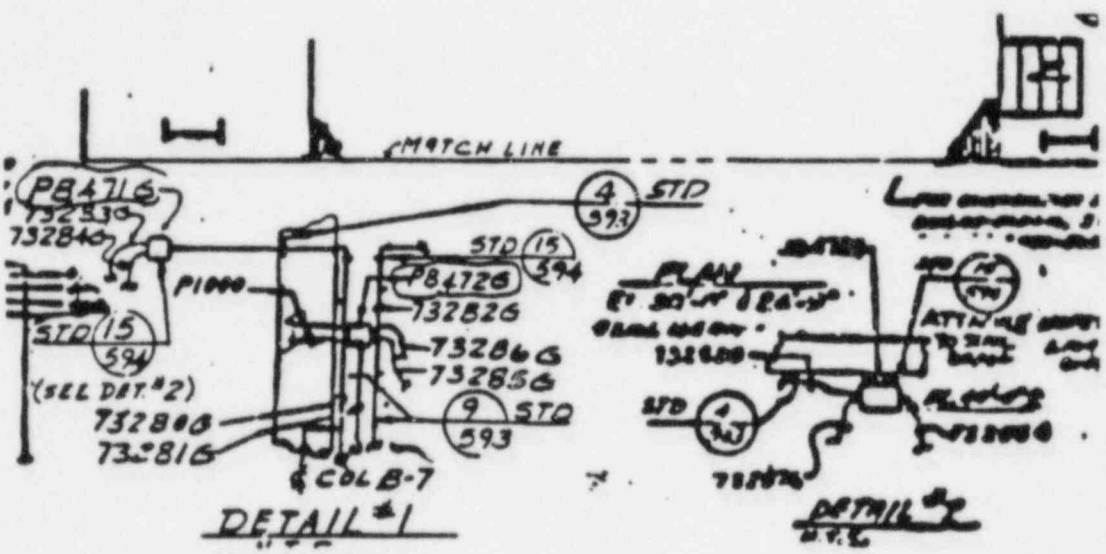
Date 9-3-85 Page 4 of 5 Page

By J.P. Foxos

DESCRIPTION OF CHANGE

BEFORE

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BEST AVAILABLE COPY



DCP# 3052.0TJ REV 0 SHT 129 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER		5-4			
DRAWING NO	SHEET NO	REV NO	DCN CONV DATE DWG REV	DCN CONV DATE SUB NO	QUALITY CLASS
5159187		1			SEISMIC CLASS A

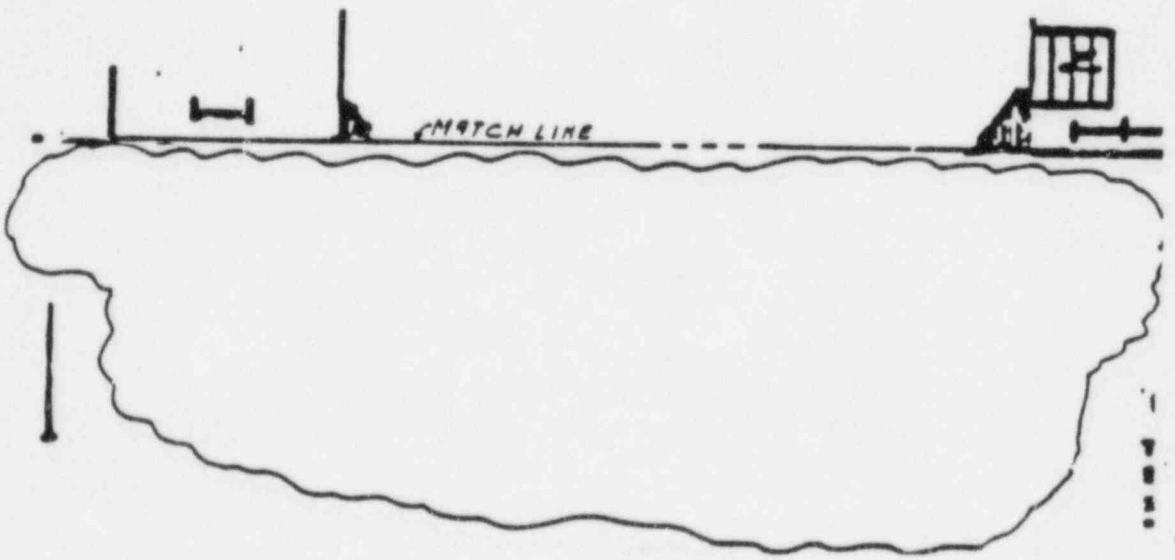
Date 9-3-85 Page 5 of 5 Page

By J.P. Foxos

DESCRIPTION OF CHANGE

AFTER





DCP# 3052.0TJ REV 0 SHT 130 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

CDM/DDC USE ONLY
CIG

PPC NO

IDCN NO: S-7

DCP NO: 3052.OTJ

DOCUMENT: 5159798 | Sht | Rev. 0

DCN CONVERSION NO

Page 1 of 6

1. Originator: Juan P. Foxos — Tel: 975-9001 — Date: 9-3-85

Document Title: RACEWAY ARRANGEMENT CONTROL ROOM AREA-10 — DRADM I.D.: E-16 — QC SREAN SC: A

DESCRIPTION OF CHANGE

1- Intercept conduit 4712G-2" as indicated. Instal a "TEE" condulet and run a new 2" conduit to cabinet C-70. Use existing supports.

2- Change conduit number at the section extending from the "TEE" condulet toward JB 775G, as follows:

Was: 4712G-2"C.

Is: 74354G-2"C

3) Add number to new conduit extending from the "TEE" condulet to cabinet C-70..

Is: 73353G-2"C

4) Add Detail-1. Conduit arrangement. Top of cabinet C-70.

DCP# 3052.OTJ REV 0 SHT 13L OF 240

2. Other Affected Documents	3. Affected Systems	4. Design Approvals	
M-30418	None.	CHECKER: A. J. Padilla	DATE: 11-11-85
5159787		INDEPENDENT REVIEW ENGR: [illegible]	DATE: 11-11-85
5159782		RESPONSIBLE ENGINEER: M. Ameeruddin	DATE: 11-11-85
5159560		LEAD DISCIPLINE ENGINEER: M. Ameeruddin	DATE: 11-11-85
5166613		OTHER	DATE
5149456		OTHER	DATE
568338		QUALITY ASSURANCE: [signature]	DATE: 11-20-85

5. SCE/Contractor Project Administration

Conversion to DCN Date

SCE/CONTRACTOR PROJECT ADMINISTRATOR

DF 6005-1 5 85

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER	S-7				
DRAWING NO	SHEET NO	REV NO	DCN CONV DATE / DWG REV	SUB NO	QUALITY CLASS
5159798		0			SR EAN
					SEISMIC CLASS: A

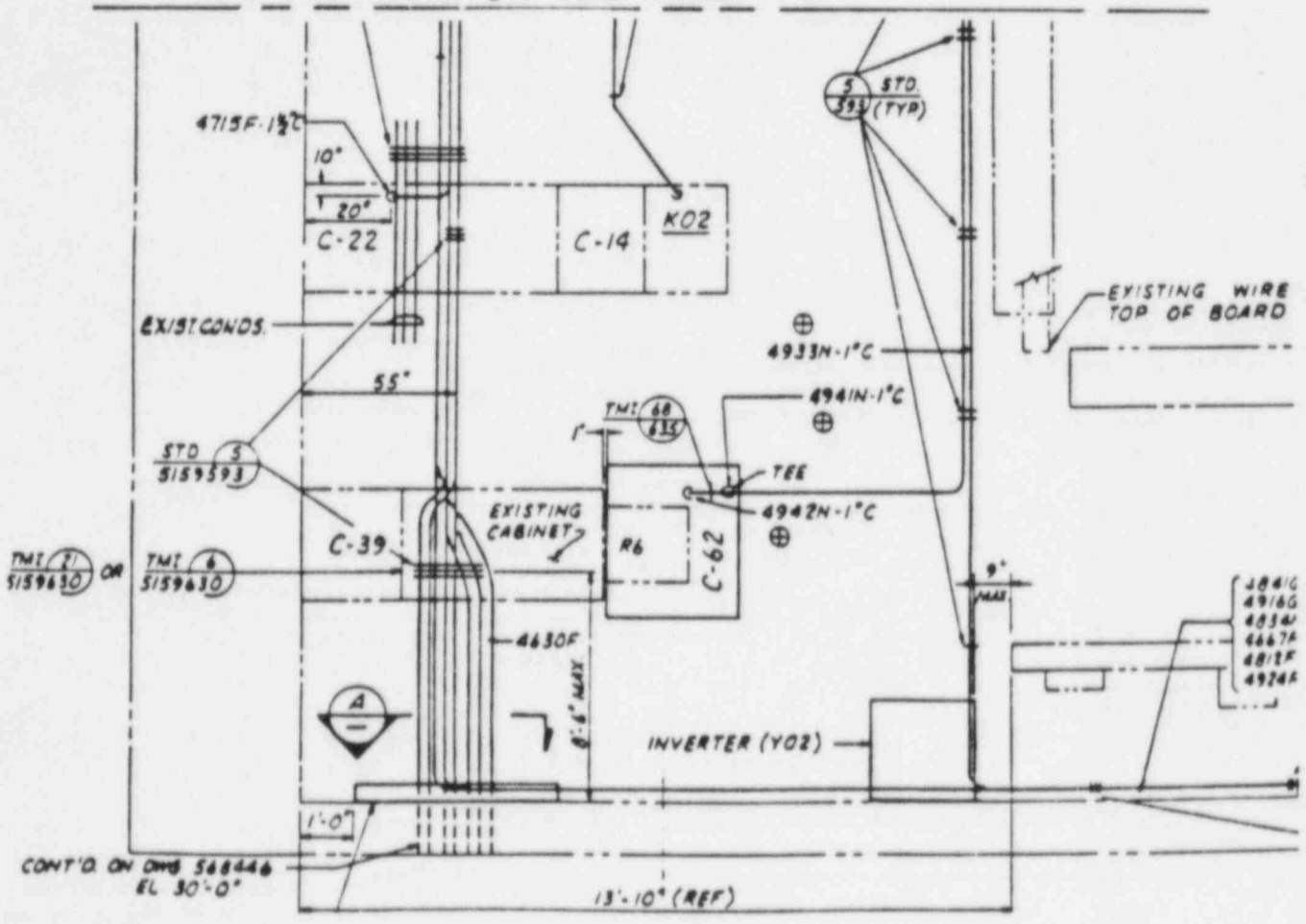
Date 9-3-85 Page 2 of 6 Page

By J.P. Foxos

DESCRIPTION OF CHANGE

BEFORE

FOR CONTINUATION SEE PAGE - 4



DCP# 3052-OTJ REV 0 SHT 132 OF 210

FLUOR ENGINEERS, INC
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER	S-7				
DRAWING NO	SHEET NO	REV NO	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	SR EAN
5159798		0			SEISMIC CLASS A

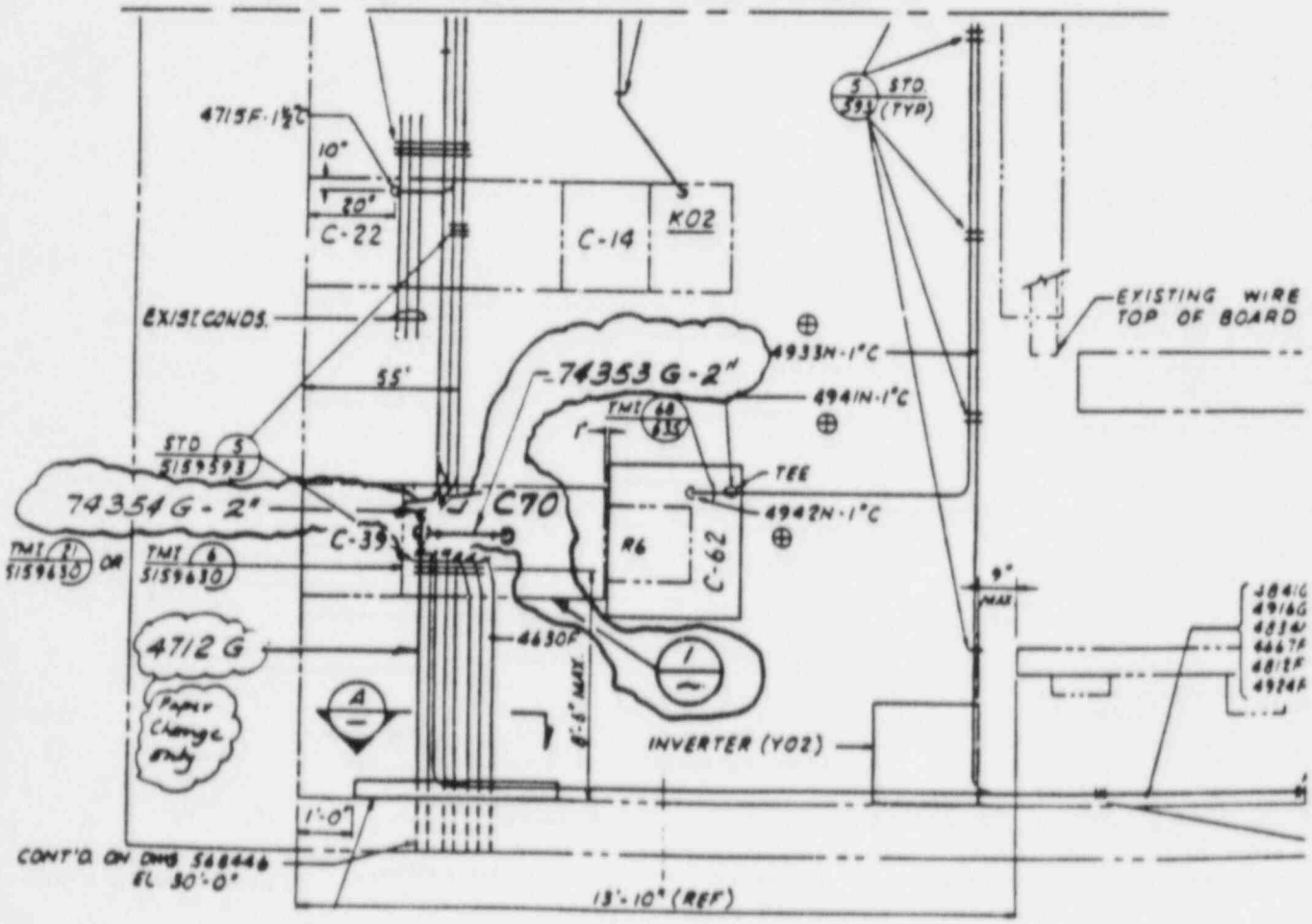
Date 9-3-85 Page 3 of 6 Page

By J.P. Foxos

DESCRIPTION OF CHANGE

AFTER

FOR CONTINUATION SEE PAGE-5



DCP# 3052.0TJ REV 0 SHT 133 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

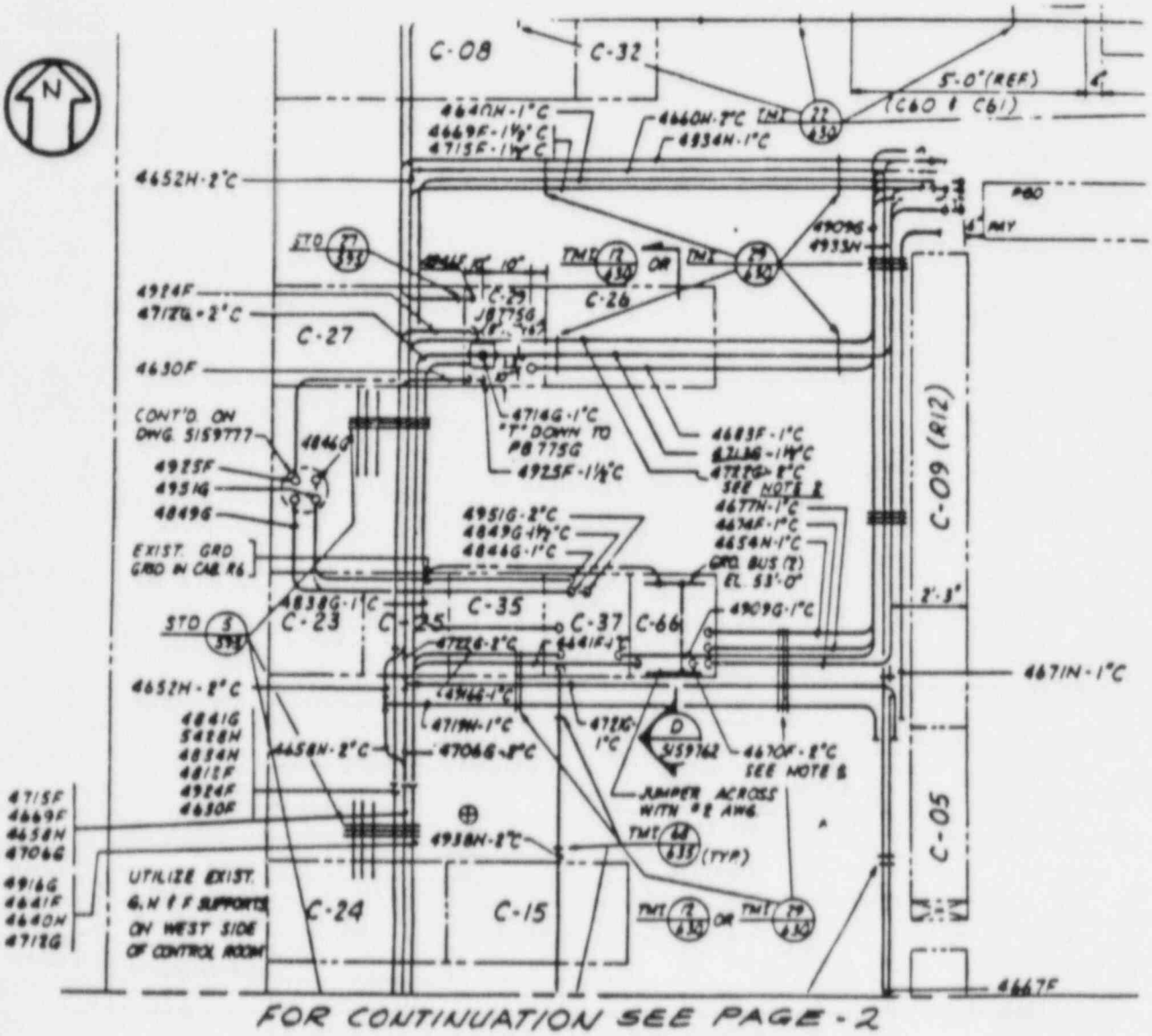
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DRAWING NO	SHEET NO	REV NO	DCN CONV DATE: DWG REV	DCN CONV DATE: SUB NO	QUALITY CLASS: SR EAN; SEISMIC CLASS: A
5159798		0			

Date 9-3-85 Page 4 of 6 Page

By J.P. Foxos

DESCRIPTION OF CHANGE

BEFORE



FOR CONTINUATION SEE PAGE-2

DCP# 3052.0TJ REV 0 SHT 134 OF 210

FLUOR ENGINEERS, INC
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

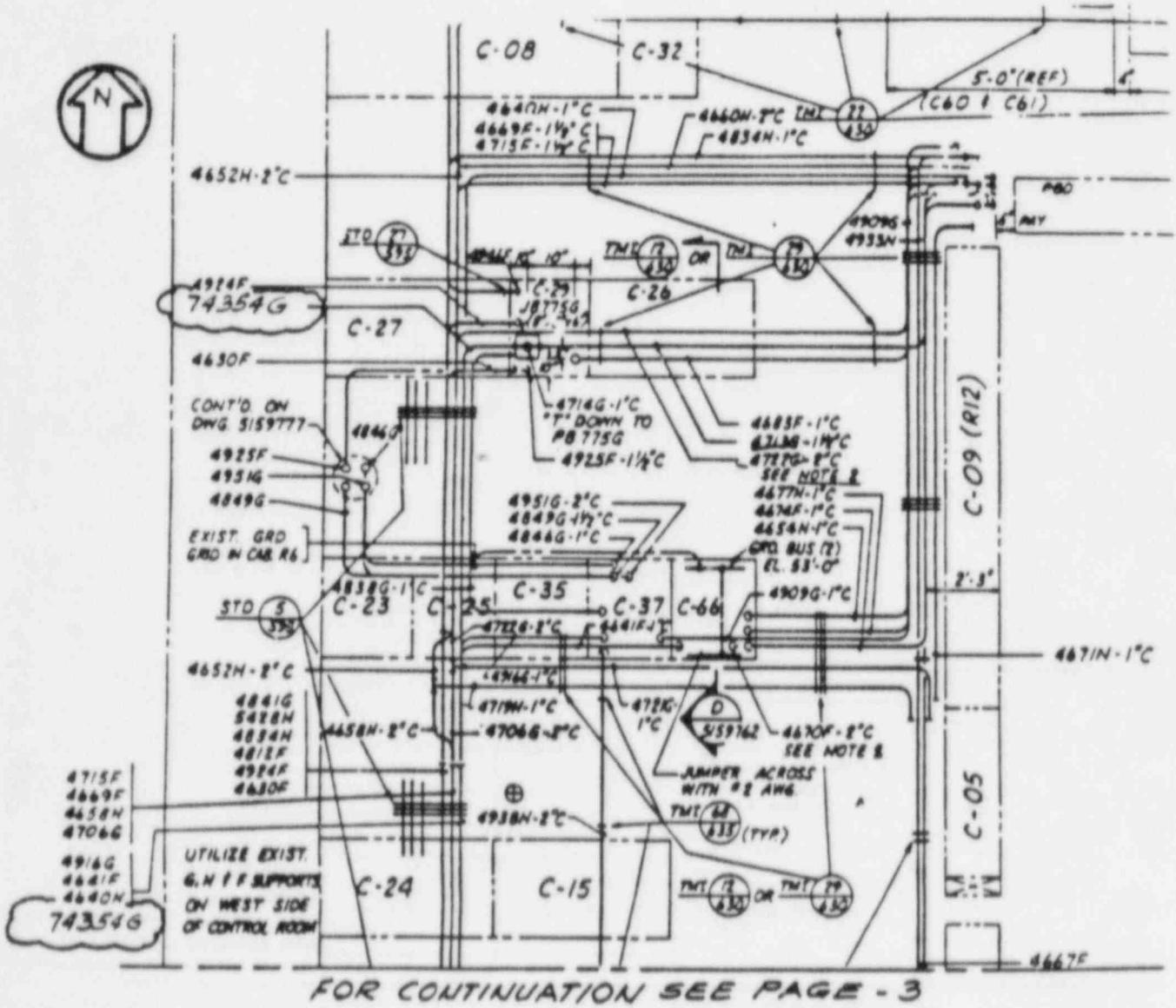
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DRAWING NO	SHEET NO	REV NO	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	SR EAN
5159798		0			SEISMIC CLASS A

Date 9-3-85 Page 5 of 6 Page

By J.P. Foxas

DESCRIPTION OF CHANGE

AFTER



DCP# 3052.0TJ REV 0 SHT 135 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

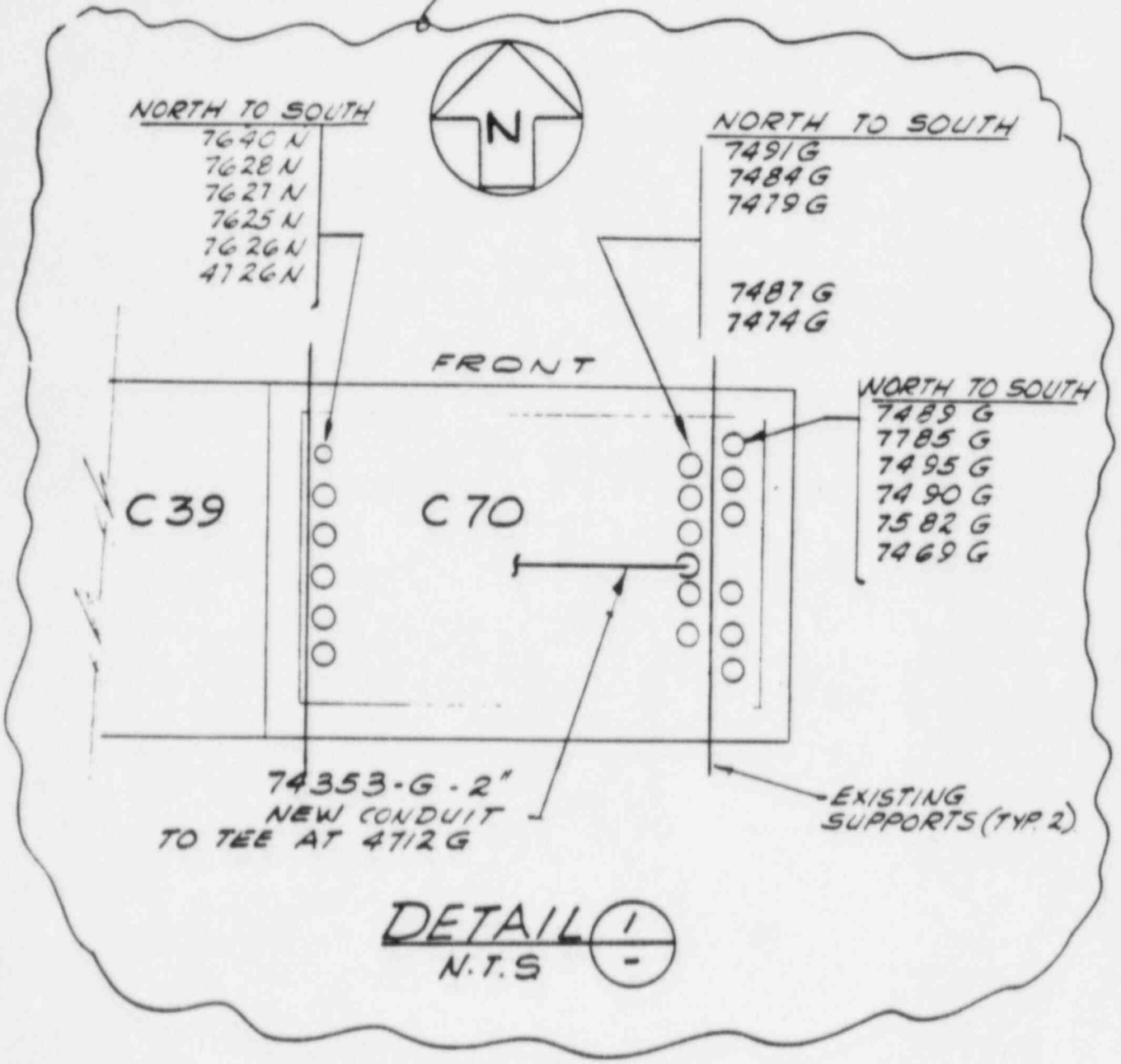
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DRAWING NO	SHEET NO	REV NO	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	SR EAN
5159798		0			SEISMIC CLASS A

Date 9-3-85 Page 6 of 6 Page

By J.P. Faxos

DESCRIPTION OF CHANGE

ADD



DETAIL 1 / N.T.S

DCP# 3052.0TJ REV 0 SHT 136 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

CDM/DDC USE ONLY
CIG

PFC NO

IDCN NO: S-28

DCP NO: 3052.OTJ

DOCUMENT: M-30418 | Sht. - | Rev. 47

DCN CONVERSION NO

Page 1 of 19

1. Originator: Juan P. Faxas Tel: 975-9245 Date: 9-3-85

Document Title: ELECT. RACEWAY SCHEDULE 'KC' DRADM I.D.: E-19 QC: SR SC: —

DESCRIPTION OF CHANGE

1- DELETE THE FOLLOWING RACEWAYS:

4642G, 4644G, 4645G, 4666G, 4681G, 4682G, 4684G, 4685G, 4687G, 4688G, 4689G, 4690G, 4691G, 4693G, 4696G, 4697G, 4700G, 4701G, 4702G, 4703G, 4937G, 4956G, 4957G, 4962G, 4964G, 4686G, 4646G.

PB768G, PB774G & PG990G.

2- ADD THE FOLLOWING RACEWAYS:

74353G & 74354G.

DCP# 3052.OTJ REV 0 SHT 137 OF 210

2. Other Affected Documents	3. Affected Systems	4. Design Approvals	
M-30419	None.	CHECKER: A. Padilla	DATE: 11-11-85
5159560		INDEPENDENT REVIEW ENGR: R. Hamilton	DATE: 11-11-85
568296		RESPONSIBLE ENGINEER: M. Fuerstenau	DATE: 11-11-85
568338		LEAD DISCIPLINE ENGINEER: M. Fuerstenau	DATE: 11-11-85
5149456		OTHER	DATE
		OTHER	DATE
		QUALITY ASSURANCE: [signature]	DATE: 11-20-85

5. SCE/Contractor Project Administration

Conversion to DCN Date

SCE/CONTRACTOR PROJECT ADMINISTRATOR

DCP# 3052.0TJ REV 0 SHT 13 OF 25

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

POOR QUALITY DOCUMENT
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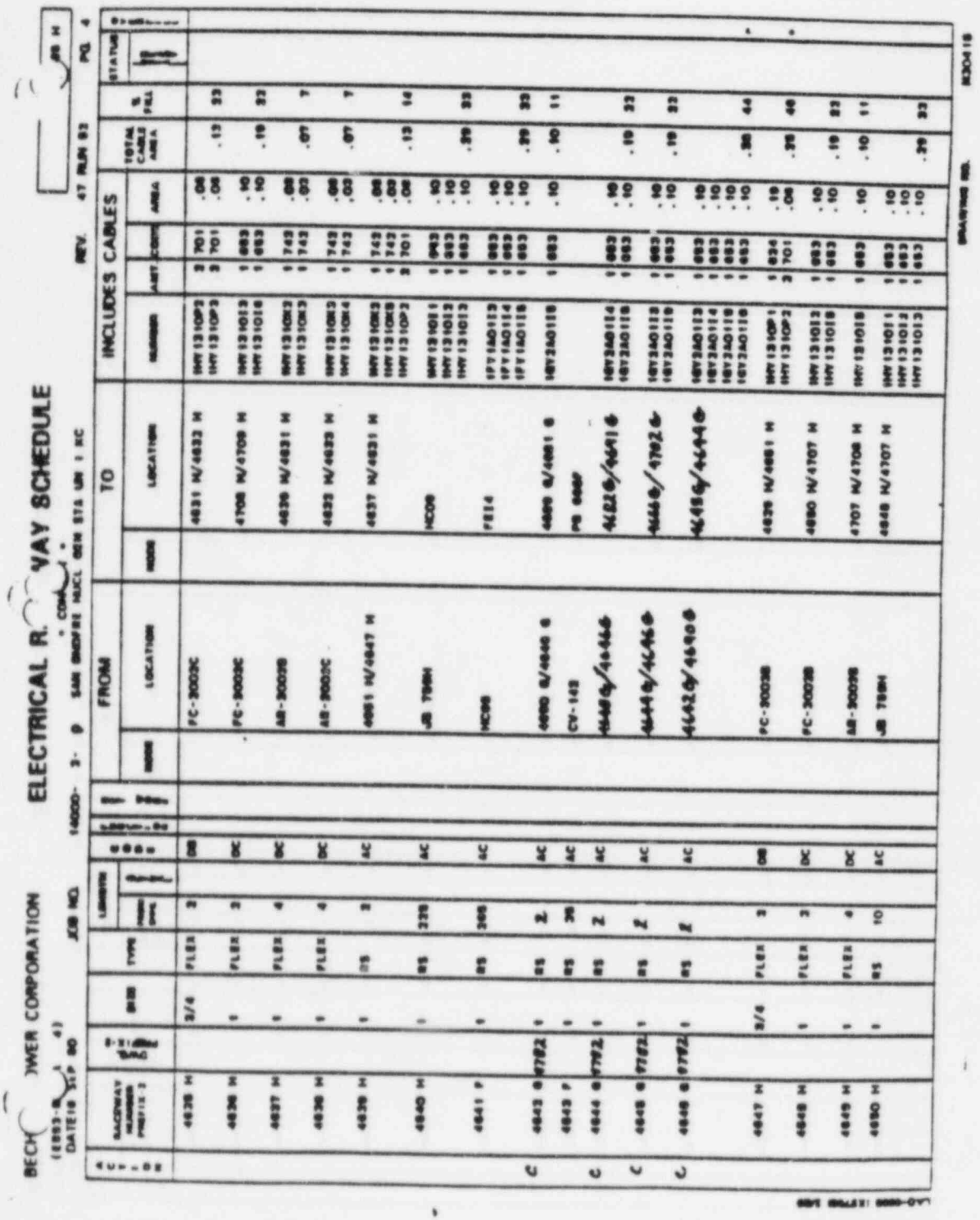
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DRAWING NO	SHEET NO	REV NO	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	
M-30418	-	47			SR
					SEISMIC CLASS
					4

Date SEPT. 3, 1985 Page 2 of 19 Page

By ROBERT TEH

DESCRIPTION OF CHANGE

BEFORE



DE 5003.2 6/85

DCP# 3052.0TJ REV 0 SHT 20 OF 21A

FLUOR ENGINEERS, INC
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

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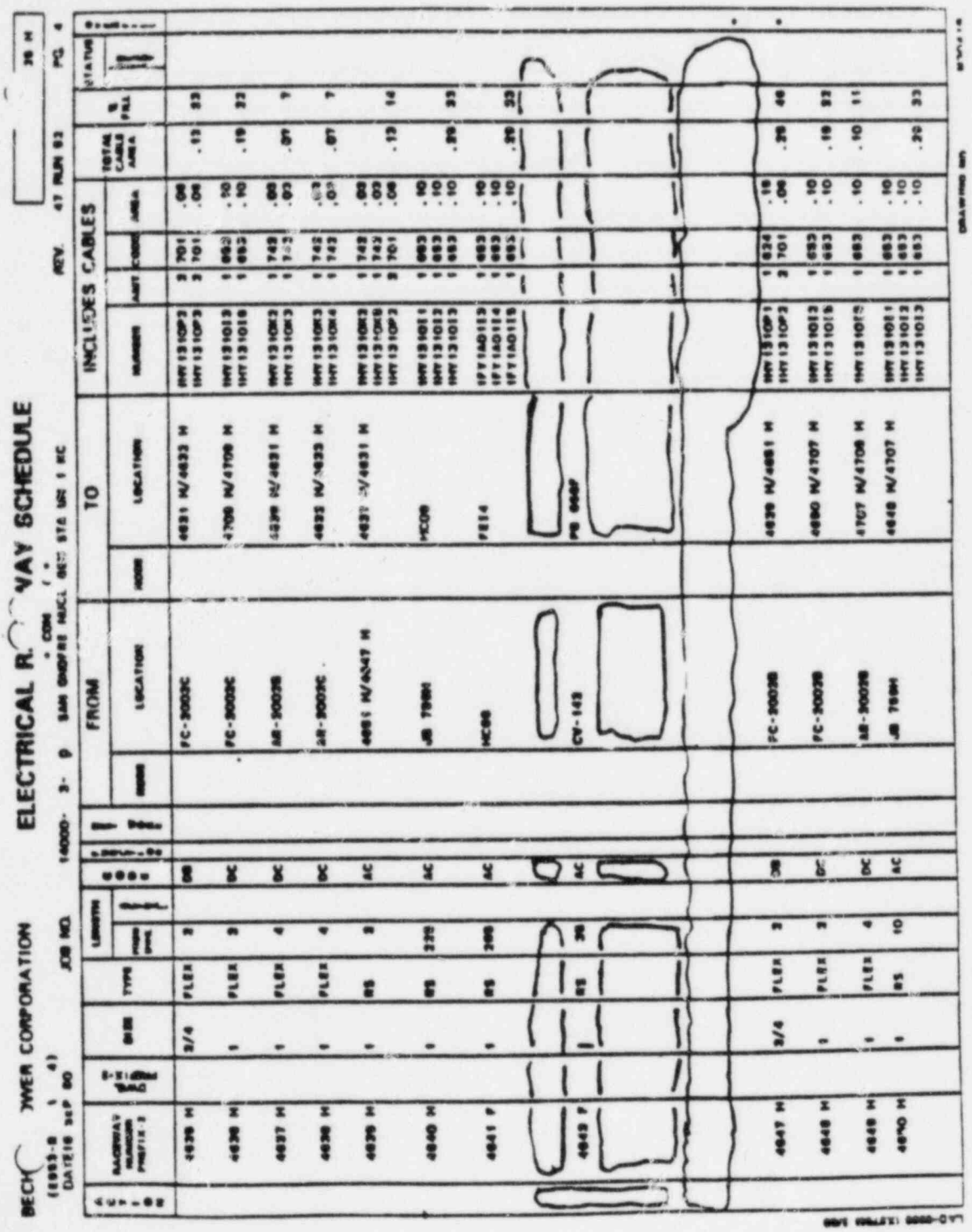
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DRAWING NO	SHEET NO	REV NO	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	SR
M-304'8 --		47			SEISMIC CLASS A

Date SEPT. 3, 1985 Page 3 of 19 Page

By ROBERT TEH

DESCRIPTION OF CHANGE

AFTER



DCP# 3052.0TJ REV 0 SHT 4 OF 219

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

POOR QUALITY DOCUMENT
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IDCN NUMBER S-28					
DRAWING NO	SHEET NO	REV NO	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	SR
M-30418	-	47			SEISMIC CLASS A

Date SEPT. 3, 1985 Page 4 of 19 Page

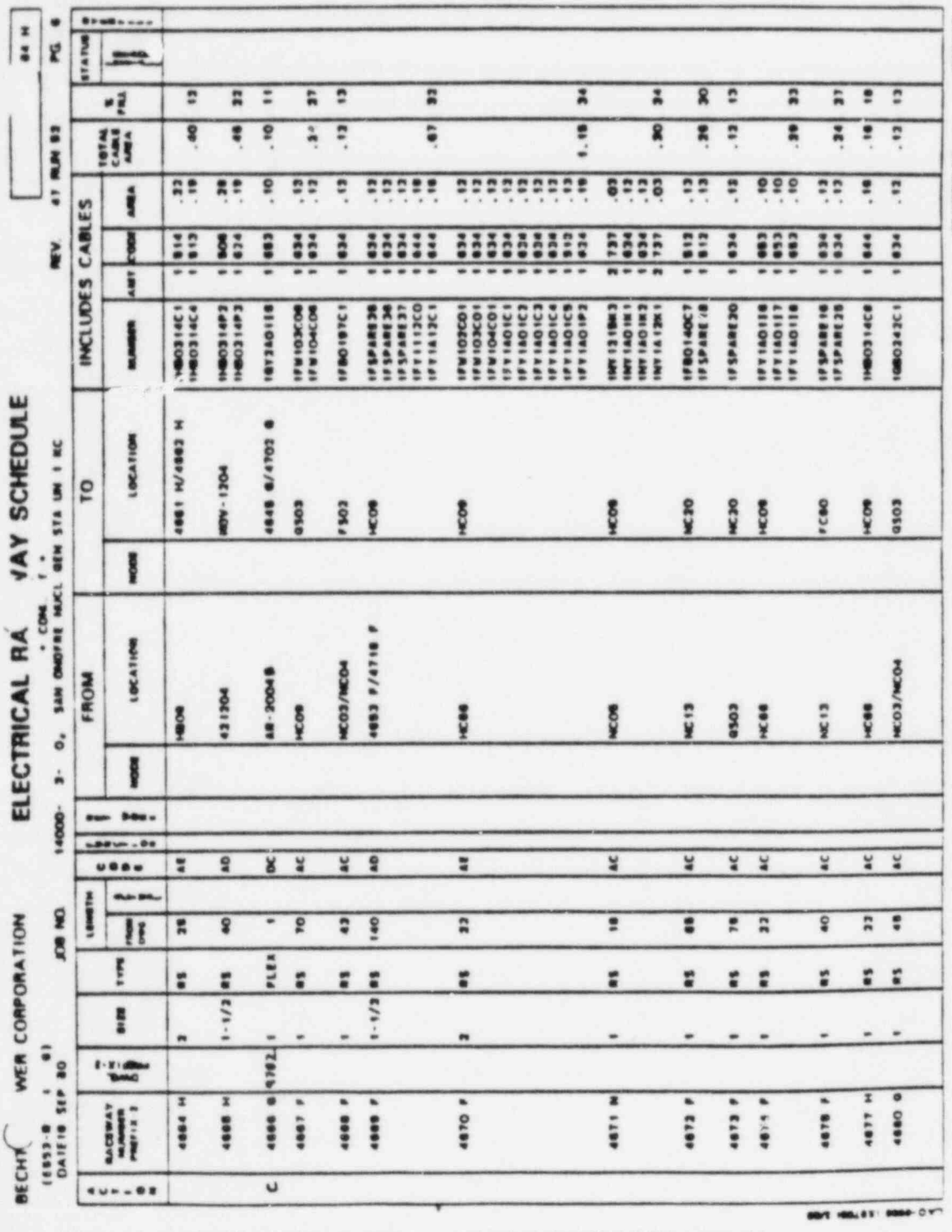
By ROBERT TEH

DESCRIPTION OF CHANGE

BEFORE

ELECTRICAL RACEWAY SCHEDULE

BECHTEL POWER CORPORATION



DCP# 3052 OTJ REV 0 SHT 14 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

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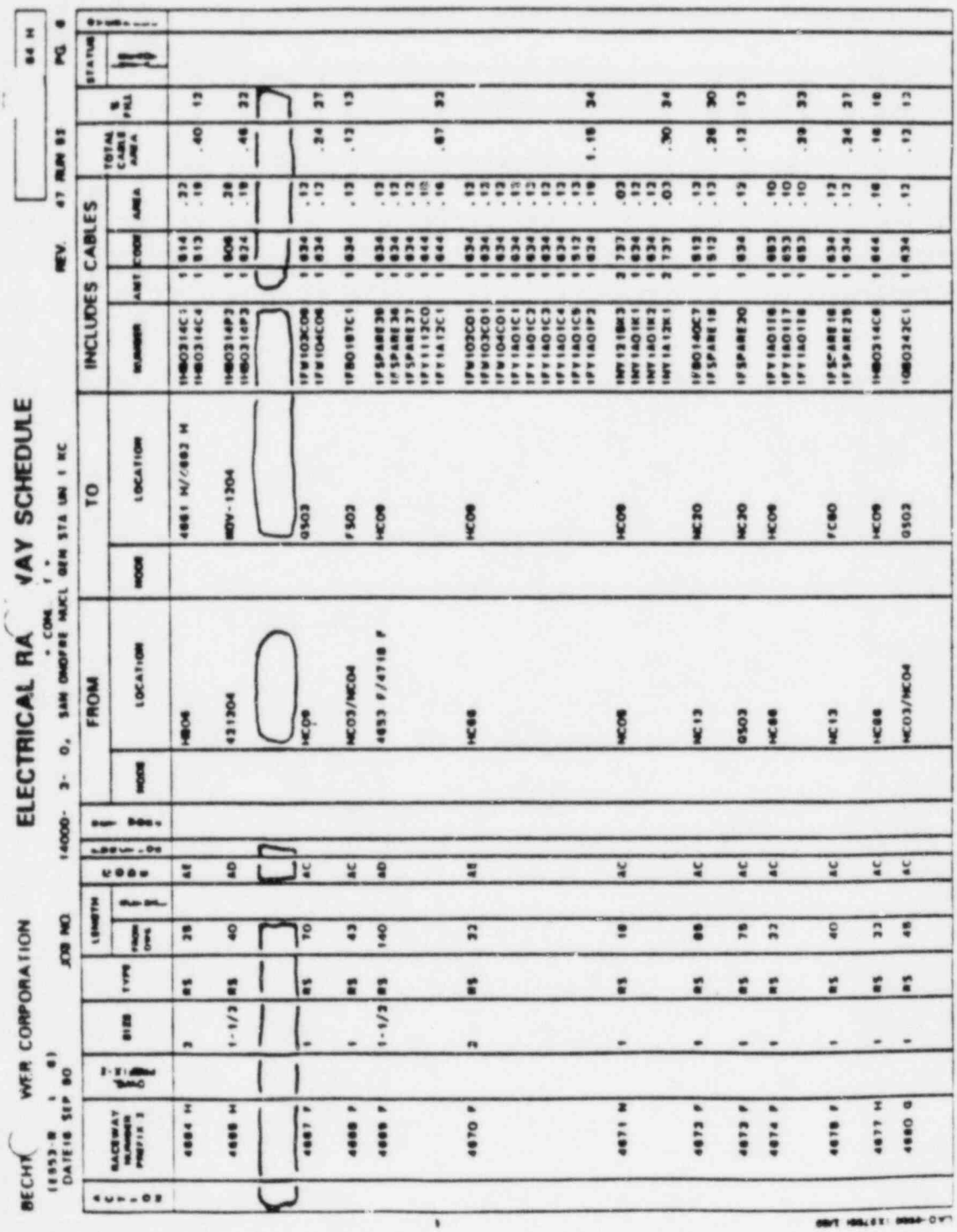
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DRAWING NO.	SHEET NO.	REV NO.	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO.	SR
M-30418 -	47				SEISMIC CLASS A

Date SEPT. 3, 1985 Page 5 of 19 Page

By ROBERT TEH

DESCRIPTION OF CHANGE

AFTER



DCP# 3052.0TJ REV 0 SHT 42 OF 212

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

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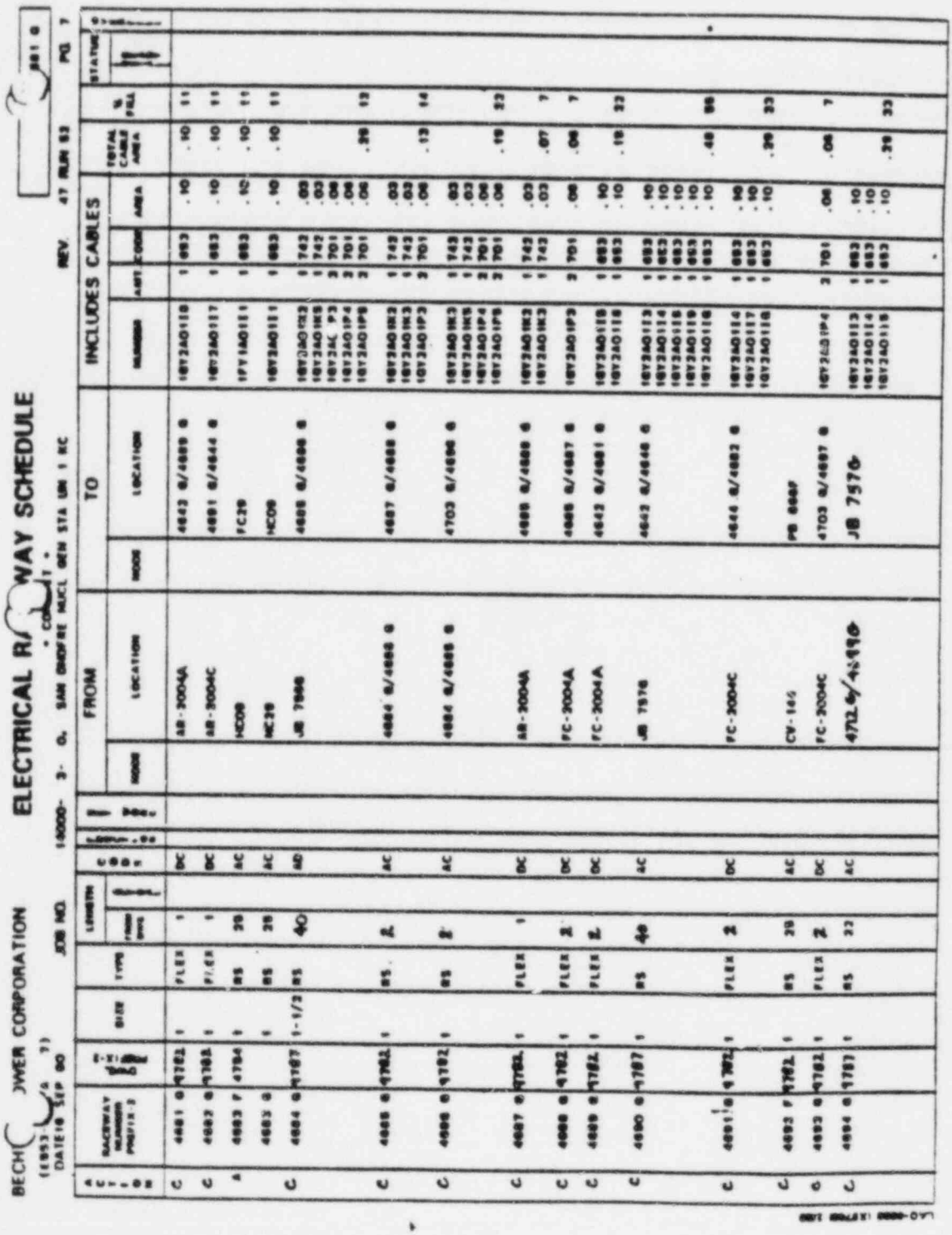
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DRAWING NO	SHEET NO	REV NO	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	SR
M-30418	-	47			SEISMIC CLASS A

Date SEPT. 3, 1985 Page 6 of 19 Page

By ROBERT TEH

DESCRIPTION OF CHANGE

BEFORE



FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

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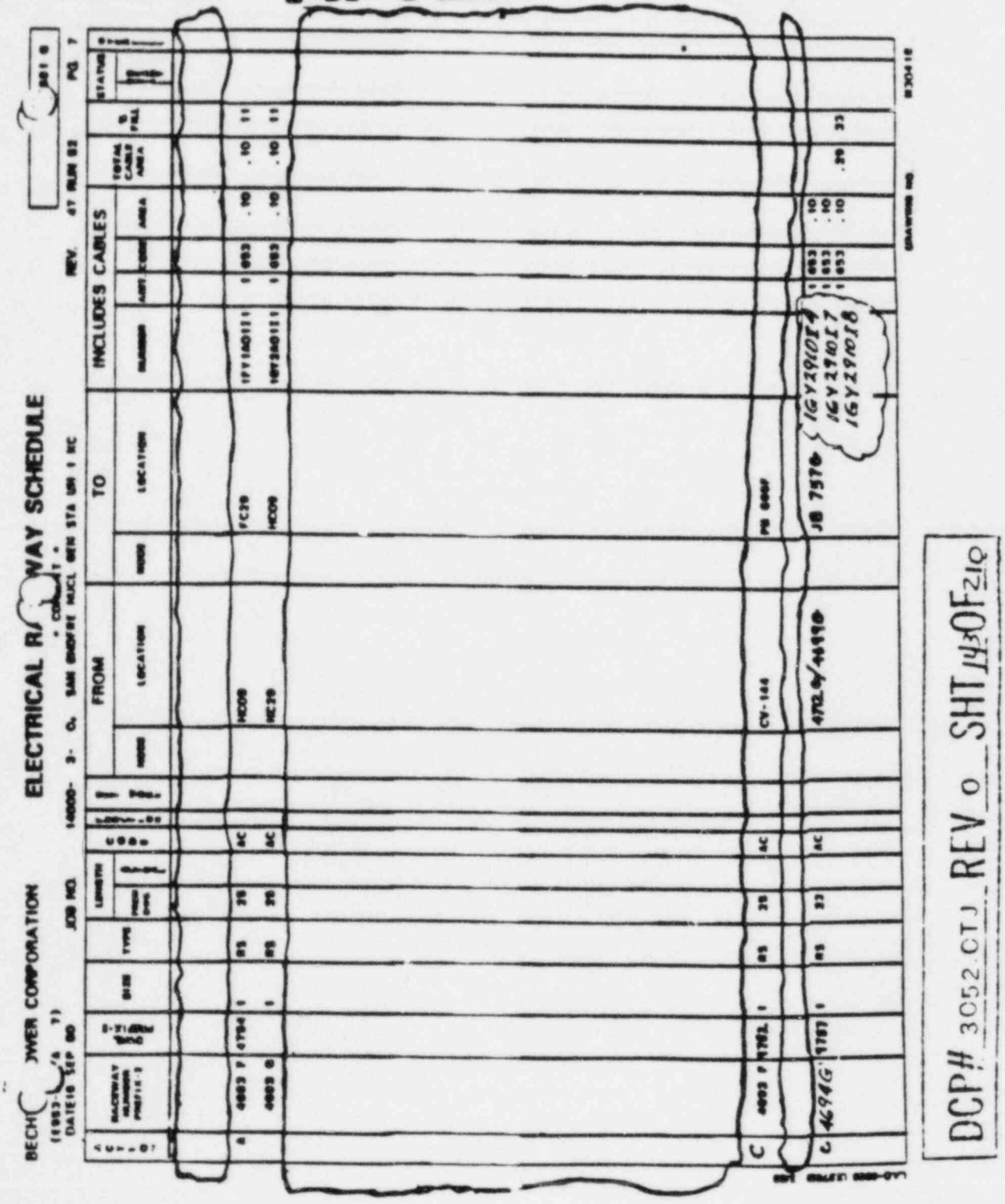
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DRAWING NO.	SHEET NO.	REV NO.	DCN CONV DATE / DWG. REV.	DCN CONV / SUB NO	QUALITY CLASS / SEISMIC CLASS
M-30418	-	47			SR / A

Date SEPT. 3, 1985 Page 7 of 19 Page

By ROBERT TEH

DESCRIPTION OF CHANGE

AFTER



DCP# 3052.0TJ REV 0 SHT 10 OF 212

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

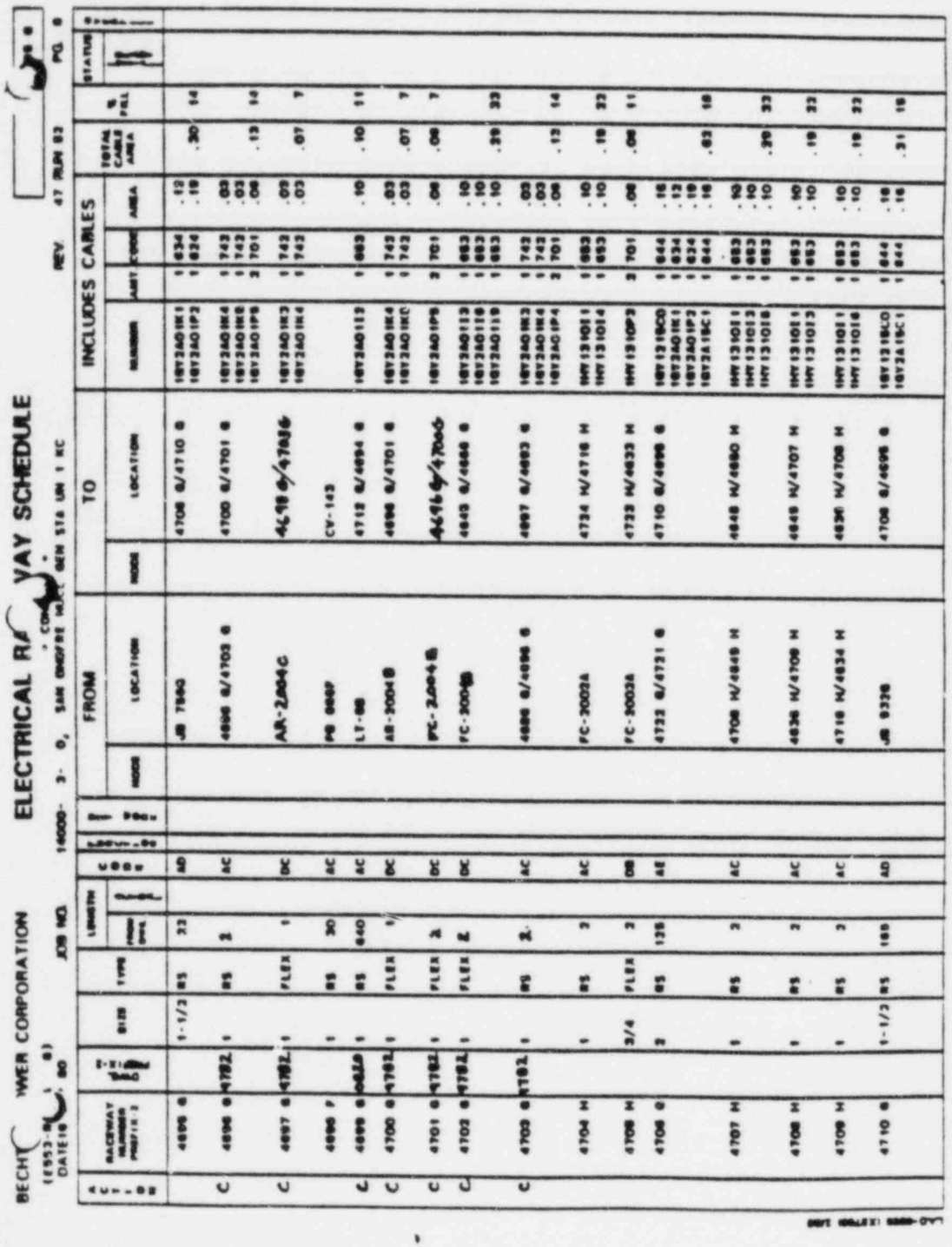
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BEST AVAILABLE COPY

IDCN NUMBER S-28					
DRAWING NO	SHEET NO	REV NO	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	
M-30418	- 47				SR
					SEISMIC CLASS
					A

Date SEPT. 3, 1985 Page 8 of 19 Page

By ROBERT TEH

DESCRIPTION OF CHANGE **BEFORE**



FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER S-28					
DRAWING NO	SHEET NO	REV NO	DCN CONV DATE / DWG REV	SUB NO	QUALITY CLASS
M-30418	-	47			SR
					SEISMIC CLASS
					A

Date SEPT. 3, 1985 Page 9 of 19 Page

By ROBERT TEH

DCP# 3052 OTJ REV 0 SHT 45 OF 52

POOR QUALITY DOCUMENT
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DESCRIPTION OF CHANGE

ELECTRICAL RACEWAY SCHEDULE

BECHTEL POWER CORPORATION

RACEWAY NUMBER PREFIX 3	SIZE	TYPE	FROM LOCATION	FROM ROOM	TO LOCATION	TO ROOM	INCLUDES CABLES NUMBER	CODE	TOTAL CABLE AREA	% FILL	STATUS
4595 G	1-1/2	RS	JB 7548		4706 G/4710 G		!ABNDON13! !ABNDON19!	834 834	.12 .19	.30	
4698 F	1	RS	PB 0687		CV-143			AC	.10	11	
4699 G	1	RS	LT-98		4712 G/4694 G		1SV240112	1683	.10	11	
4704 H	1	RS	FC-2003A		4724 H/4718 H		1HV131011 1HV131014	1883 1883	.10 .10	22	
4708 H	3/4	FLEX	FC-2003A		4723 H/4833 H		1HV131003	2701	.06	11	
4708 G	2	RS	4722 G/4731 G		4710 G/4695 G		!ABNDON19! !ABNDON19! 1HV131800 1SV241801	844 834 834 844	.10 .12 .10 .10	.18	
4707 H	1	RS	4708 H/4848 H		4848 H/4850 H		1HV131011 1HV131013 1HV131018	1883 1883 1883	.10 .10 .10	.33	
4708 H	1	RS	4838 H/4708 H		4848 H/4707 H		1HV131011 1HV131013	1883 1883	.10 .10	.22	
4709 H	1	RS	4716 H/4834 H		4838 H/4706 H		1HV131011 1HV131018	1883 1883	.10 .10	.22	
4710 G	1-1/2	RS	JB 9328		4708 G/4695 G		1SV131800 1SV241801	1844 1844	.10 .10	.18	

DRAWING NO. 30418

DCP# 3052.OTJ REV 0 SHT 140 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER	S-28				
DRAWING NO.	SHEET NO	REV NO.	DCN CONV. DATE DSG REV	DCN CONV. DATE SUB. NO	QUALITY CLASS
M-30418	–	47			SR
					SEISMIC CLASS
					A

Date 11-5-85 Page 10 of 19 Pages

By J.P. Faxas

DESCRIPTION OF CHANGE **BEFORE**

BEST QUALITY DOCUMENT
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BECHTEL CORPORATION

ELECTRICAL RACEWAY SCHEDULE

(F553-R09/A 40)
DATE 26 AUG 81 JOB NO. 14000- 0+ 0 SAN ONOFRE NUCL GEN STA UN 1 XC

= CONDUIT =

4931 G

REV. 49 RUN 54 PG. 40

ACT	RACEWAY NUMBER	DWG.	SIZE	TYPE	LENGTH		CODE	FUNCTION	NETWORK	FROM NODE	FROM LOCATION	TO NODE	TO LOCATION	INCLUDES CABLES NUMBER	AMT	CODE	AREA	TOTAL CABLE AREA	% FILL	STATUS	OVERFILL
	4931 G	8481	0/4	FLEX	10		DB				GCV857/NC-LIN SW		4B 7716	1QY1214C2	1	814	.22	.22	41		
	4932 G	8481	0/4	FLEX	10		DB				GCV857/NO-LIN SW		4B 7716	1QY1214C2	1	814	.22	.22	41		
	4933 N	4784	1	RS	30		AC				NC08		4941 N/4942 N								
	4934 G	8481	0/4	FLEX	10		DB				GCV849/SOL		4B 7716	1QY1214C1	1	814	.22	.22	41		
	4935 G	8481	0/4	FLEX	10		DB				GCV849/NC-LIN SW		4B 7716	1QY1214C1	1	814	.22	.22	41		
	4936 G	8481	0/4	FLEX	10		DB				GCV849/NO-LIN SW		4B 7716	1QY1214C1	1	814	.22	.22	41		
	4937 G	8787	2	RS	30		AE				JB 7706		4987 G/FC-2004A	1QY2A011A	1	741	.08				
														1QY2A011B	1	741	.05				
														1QY2A011C	1	741	.05				
														1QY2A011D	1	741	.05				
														1QY2A011E	1	741	.05				
														1QY2A011F	1	741	.05	.36	8		
	4938 N	4784	2	RS	30		AE				NC02		OC37	1NRAFR1I1	4	885	.37	.37	10		
	4941 N	4784	1	RS	30		AC				NC02		4933 N/4942 N								
	4942 N	4784	1	RS	30		AC				NC02		4933 N/4941 N								
	4943 F	8787	3/4	RS	2		AB				4929 FV4883 F		4881 F					12	22		

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER			5-2E		
DRAWING NO.	SHEET NO.	REV NO.	DCN CONV DATE DWG REV	DCN CONV SUB NO	QUALITY CLASS
M-30418	–	47			SR
					SEISMIC CLASS
					A

Date 11-5-85 Page 12 of 19 Page

BEFORE

By J.P. Faxas

DESCRIPTION OF CHANGE

POOR QUALITY DOCUMENT
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(E983-R10)

DATE 16 SEP 80 — LIST OF SPECIAL RACEWAYS — REV 47 RUN 82 PAGE 9

JOB NO. 14000- 3- 0 — SAN ONOFRE NUCL GEN STA UN 1 RC — DRAWING NO. M30418

ITEM REVISED THIS REVISION	RACEWAY NUMBER	LAYOUT DRAWING NUMBER	LOCATION FROM	LOCATION TO	DESCRIPTION TYPE	DESCRIPTION CODE	SIZE	LENGTH FROM DWG. (FEET)	ACTUAL LENGTH INSTALLED
	PB747M	8452	70899M/70899M	70702M/70703M	PB	FB		2	2
	PB748M	8452	70891M	70688M - 70691M	PB	FB		3	3
	PB749M	8452	70713M	70715M	PB	FB		2	2
	PB750M	8452	70714M	70718M	PB	FB		2	2
	PB751G	1818	M014	705916/722306	PB	FB		1	1
	PB752G	0324	705926	705896	PB	FB		1	2
	PB753F	0324	702686F	70272F	PB	FB		1	2
	PB754G	9356	705926	705936	PB	FB		2	2
	PB755F	9356	70272F	70273F	PB	FB		2	2
	PB756F	1818	70270F	70271F	PB	FB		2	2
	PB757F	9343	71613F	71531F/71822F	PB	FB		2	
	PB790F	0820	71108F	70682F	PB				
	PB791M	0820	71101M	70851M	PB				
	PB792M	4867	70824M - 70826M	70828M - 70831M	PB				
	PB793F	9337	70186F	70187F	PB				
	PB794F	9337	70022F	70849F/70890F	PB				
	PB795G	9337	792388 - 792408	703418 - 703478	PB				
	PB796F	2164	T70189F	T1080F - T1087F	PB				
	PB797G	1835	T70188	T10706 - T10778	PB				
	PB768G	9787	49648	73280G	PB	FB			
	PB774G	9787	49626/49646	73281G	PB	FB			
	PB990G	9787	49376/49626	73282G	PB	FB			

DCP# 3052.0TJ REV 0 SHT 48 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER			5-26		
DRAWING NO.	SHEET NO.	REV NO.	DCN CONV. DATE		QUALITY CLASS
			DWG REV	SUB NO	SR
M-30418	—	47			SEISMIC CLASS
					A

Date 11-5-85 Page 13 of 19 Page

By J.P. Faxas

DESCRIPTION OF CHANGE

AFTER

POOR QUALITY DOCUMENT
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(E983-R1U)

DATE 16 SEP 80 — LIST OF SPECIAL RACEWAYS — REV 47 RUN 82 PAGE 9

JOB NO. 14000- 3- 0 — SAN ONOFRE NUCL GEN STA UN 1 NC — DRAWING NO. M30418

ITEM REVISED THIS REVISION	RACEWAY NUMBER	LAYOUT DRAWING NUMBER	LOCATION FROM	LOCATION TO	DESCRIPTION TYPE	DESCRIPTION CODE	SIZE	LENGTH FROM DWG. (FEET)	ACTUAL LENGTH INSTALLED
	PB747M	8452	70898M/70899M	70702M/70703M	PB	FB		2	2
	PB748M	8453	70901M	70689M - 70691M	PB	FB		3	3
	PB749M	8452	70713M	70715M	PB	FB		3	3
	PB750M	8452	70714M	70716M	PB	FB		2	2
	PB751G	1818	MD14	705916/722308	PB	FB		1	5
	PB752G	0324	705926	705896	PB	FB		1	2
	PB753F	0324	70269F	70272F	PB	FB		1	3
	PB754G	9356	705926	705936	PB	FB		3	3
	PB755F	9356	70272F	70273F	PB	FB		2	2
	PB756F	1818	70270F	70271F	PB	FB		2	2
	PB757F	9343	71613F	71531F/71832F	PB	FB		2	-
	PB790F	0820	71108F	70682F	PB				
	PB791M	0820	71101M	70691M	PB				
	PB792M	4867	70824M - 70826M	70828M - 70831M	PB				
	PB793F	9337	70186F	70187F	PB				
	PB794F	9337	70022F	70649F/70890F	PB				
	PB795G	9337	702386 - 702406	703416 - 703476	PB				
	PB796F	2164	77018F	71050F - 71057F	PB				
	PB797G	1835	710186	710106 - 710776	PB				

DCP# 3052.0TJ REV 0 SHT 149 OF 210

DCP# 3052.0TJ REV 0 SHT 15 OF 19

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

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IDCN NUMBER S-28					
DRAWING NO	SHEET NO	REV NO	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	SR
M-3041B	-	47			SEISMIC CLASS A

Date SEPT. 3, 1985 Page 14 of 19 Page

By ROBERT TEH

DESCRIPTION OF CHANGE

BEFORE

ELECTRICAL RACEWAY SCHEDULE

BECHTEL POWER CORPORATION

DCP# 3052.0TJ REV 0 SHT 15 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

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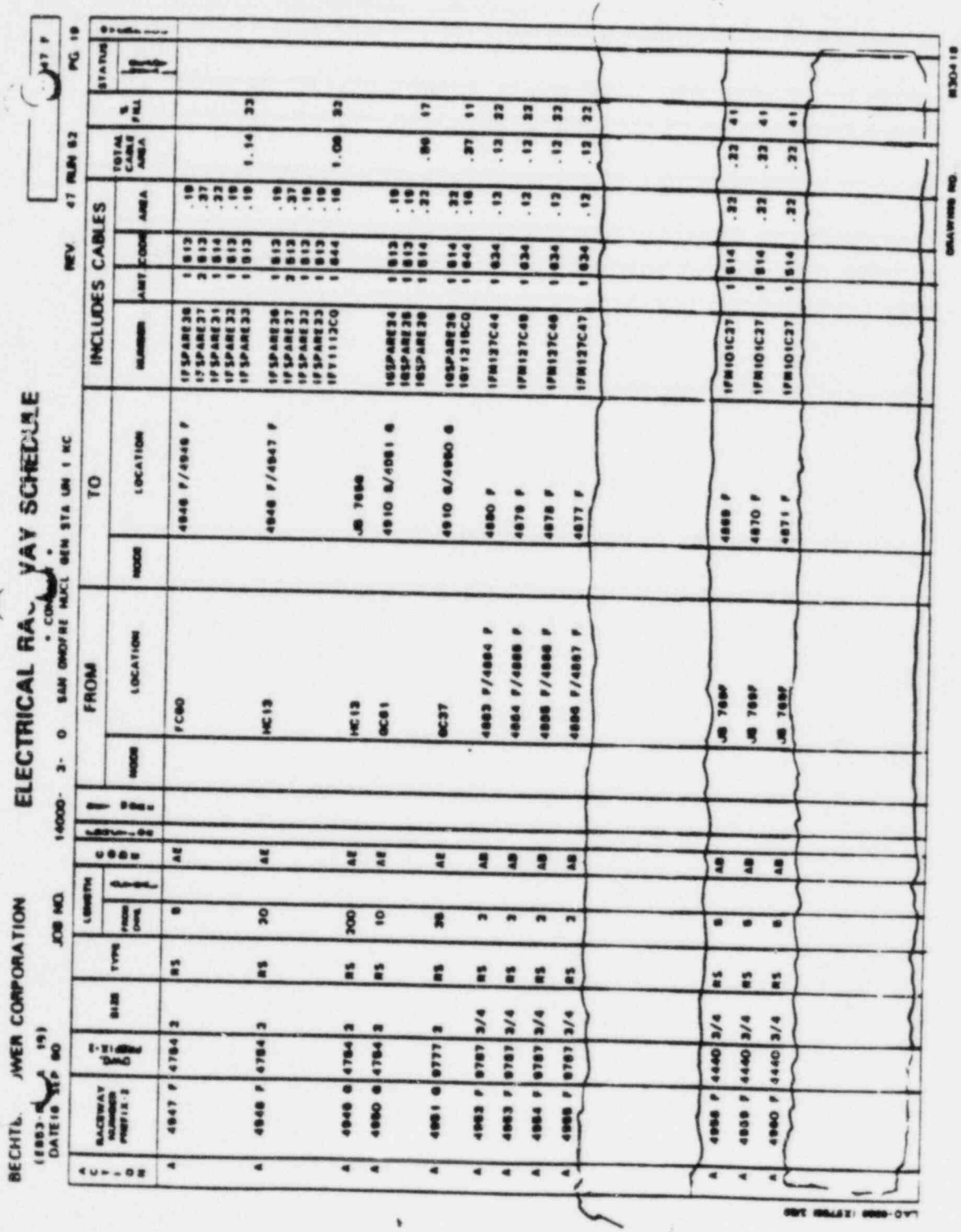
IDCN NUMBER S-28					
DRAWING NO	SHEET NO	REV NO	DCN CONV DATE / DWG REV	SUB NO	QUALITY CLASS
M-30418 -	47				SR
					SEISMIC CLASS: A

Date SEPT. 3, 1985 Page 15 of 19 Page

By ROBERT TEH

DESCRIPTION OF CHANGE

AFTER



DCP# 3052.0TJ REV 0 SHT 2 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

POOR QUALITY DOCUMENT
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BEFORE

Date 9-4-85 Page 16 of 19 Page

By JP Faxas

IDCN NUMBER	S-28				
DRAWING NO	SHEET NO	REV NO	DCN CONV DATE	DWG REV	SUB NO
M-3041B	-	47			S2

QUALITY CLASS: SEISMIC CLASS: A

BECHTEL POWER CORPORATION (ESSD Rel 91)

DATE 18 SEP 80

ELECTRICAL RACEWAY SCHEDULE

JOB NO. 14000- 3- 0, SAN ONOFRE NUCL GEN STA UN 1 MC

CONE

REV 47 RUN 52

PG 9

DESCRIPTION OF CHANGE

FUNC-TION	RACEWAY NUMBER PREFIX 3	CONDUIT CHG	SIZE	TYPE	LENGTH FROM DWG	LENGTH ADDITIONAL	CODE	FROM NODE	FROM LOCATION	TO NODE	TO LOCATION	INCLUDES CABLES NUMBER	AMT	CODE	AREA	TOTAL CABLE AREA	% FILL	STATUS	DESCRIPTION
	4711 G		1-1/2	FLEX	6		DD		JB 9320		GWPC-23	1GY121BC0	1	644	.18				
												1GY2A15C1	1	644	.18	.31	15		
C	4712 G		2	RS	118		AE		4713 G/4714 G		4899 G/4894 G	1GY2A0112	1	653	.10				
												1GY2A0113	1	653	.10				
												1GY2A0114	1	653	.10				
												1GY2A0115	1	653	.10	.38	11		
C	4713 G		1-1/2	RS	30		AD		HC09		4712G/4714G	1GY2A0113	1	653	.10				
												1GY2A0114	1	653	.10				
												1GY2A0115	1	653	.10	.29	14		
C	4714 G		1	RS	5		AC		JB 7750		4713 G/4712 G	1GY2A0112	1	653	.10	.10	11		
	4715 F		1-1/2	RS	42		AD		HC09		NC22	1FW102C02	1	634	.12				
												1FW102C04	1	634	.12				
												1FW103C02	1	634	.12				
												1FW103C04	1	634	.12				
												1FW104C02	1	634	.12				
												1FW104C04	1	634	.12	.71	34		
	4716 H		1	RS	2		AC		4704 H/4724 H		4708 H/4834 H	1HY131011	1	653	.10	.10	11		
	4717 H		1	RS	2		AC		421204		MDV-1204	1HB0314C2	1	518	.37	.37	42		
	4718 F		1-1/2	RS	110		AD		JB 933F		4869 F/4853 F	1FY1112C0	1	644	.18				
												1FY1A12C1	1	644	.18	.31	18		
	4719 H		1	RS	20		AC		NC05		4852 H/4858 H	1HY1310K1	1	634	.12				
												1YB0314K1	1	634	.12	.24	27		
	4721 G		1	RS	20		AC		NC05		4722 G/4708 G	1GY2A01K1	1	634	.12	.12	13		
	4722 G		2	RS	30		AE		4708 G/4721 G		HC09	1GY121BC0	1	644	.18				
												1GY2A01P2	1	634	.19				
												1GY2A15C1	1	644	.18	.80	14		
	4723 H		1	FLEX	4		DC		AB-2002A		4705 H/4833 H	1HY1310K4	1	742	.03				
												1HY1310K5	1	742	.03	.07	7		
	4724 H		1	FLEX	4		DC		AB-2002A		4704 H/4716 H	1HY131014	1	653	.10	.10	11		
	4725 N		3/4	RS	85		AB		NC09		NN01	1NY2A01K1	1	634	.12	.12	22		
A	4800 G	9788	2	RS	230		AE		QC68		GWPC-13	1GD0221C1	1	514	.22				
												1GD0221C2	1	514	.22				
												1GD0221C3	1	514	.22				
												1GD0221C4	1	514	.22				
												1GD0221C5	1	514	.22	1.08	33		

DRAWING NO M30418

DE 5005.2 8/5

DCP# 3052.OTJ REV 0 SHT 18 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

POOR QUALITY DOCUMENT
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DESCRIPTION OF CHANGE

IDCN NUMBER	S-28			
DRAWING NO.	SHEET NO	REV NO	DCN CONV DATE	QUALITY CLASS
M-30918 -	47		DWG REV SUB NO.	SR
			SEISMIC CLASS	A

Date 9-4-85 Page 17 of 19 Pages

By J.P. Fraser

BECHTEL POWER CORPORATION

ELECTRICAL RACEWAY SCHEDULE

(1553 R 9)
DATE 16 SEP 80 JOB NO 14000- 3- 0, SAN ONOFRE NUCL GEN STA UN 1 KC REV 47 RUN 52 PG 9

ACTION	RACEWAY NUMBER PREFIX 3	EXISTING DWG	SIZE	TYPE	LENGTH FROM DWG	LENGTH ADDED	CODE	SEPARATION	SPARE	FROM NODE	FROM LOCATION	TO NODE	TO LOCATION	INCLUDES CABLES NUMBER	AMT	CODE	AREA	TOTAL CABLE AREA	PCT FILL	STATUS	REMARKS
	4711 Q		1-1/2	FLEX	8		DD				JB 8320		GWPC-23	1GY1218CO	1	644	.18				
														1GY2A15C1	1	644	.18	.31	15		
U	4712 Q		2	RS	118		AE				4713 Q/4714 Q		4690 Q/4694 Q	1GY2A0112	1	683	.10				
														1GY2910I4	1	653	.10				
														1GY2910I7	1	653	.10				
														1GY2910IA	1	653	.10	.38	11		
U	4713 Q		1-1/2	RS	30		AD				HC09		4712 Q/4714 Q	1GY2910IJ	1	653	.10				
														1GY2910IL	1	653	.10				
														1GY2910IM	1	653	.10	.28	14		
U	4714 Q		1	RS	5		AC				JB 7750		4713 Q/4712 Q	1GY2A0113	1	683	.10	.10	11		
	4715 F		1-1/2	RS	42		AD				HC08		NC22	1FW103CO3	1	634	.12				
														1FW103CO4	1	634	.12				
														1FW103CO2	1	634	.12				
														1FW103CO4	1	634	.12				
														1FW104CO2	1	634	.12				
														1FW104CO4	1	634	.12	.71	34		
	4716 H		1	RS	2		AC				4704 H/4724 H		4708 H/4834 H	1HY1310I1	1	683	.10	.10	11		
	4717 H		1	RS	2		AC				421304		MOV-1304	1HB0314C2	1	518	.37	.37	42		
	4718 F		1-1/2	RS	110		AD				JB 9331		4689 F/4853 F	1FY1112CO	1	644	.18				
														1FY1A12C1	1	644	.18	.31	18		
	4719 H		1	RS	20		AC				HC08		4852 H/4858 H	1HY1310K1	1	634	.12				
														1TB0314K1	1	634	.12	.24	27		
	4721 Q		1	RS	20		AC				HC05		4722 Q/4708 Q	1ABND0193	1	634	.12	.12	13		
	4722 Q		2	RS	30		AE				4706 Q/4721 Q		HC09	1GY1218CO	1	644	.18				
														1ABND0194	1	624	.19				
														1GY2A15C1	1	644	.18	.80	14		
	4723 H		1	FLEX	4		DC				AR-2002A		4705 H/4833 H	1HY1310K4	1	742	.03				
														1HY1310K5	1	742	.03	.07	7		
	4724 H		1	FLEX	4		DC				AR-2002A		4704 H/4718 H	1HY1310I4	1	683	.10	.10	11		
	4725 N		3/4	RS	85		AB				HC06		NK01	1NY2A01K1	1	634	.12	.12	22		
A	4800 Q	9788	2	RS	230		AE				QC68		GWPC-13	1GD0221C1	1	514	.22				
														1GD0221C2	1	514	.22				
														1GD0221C3	1	514	.22				
														1GD0221C4	1	514	.22				
														1GD0221C5	1	514	.22	1.08	32		

NO NO N30418

IDCN 5.28
ADD

RACEWAY INPUT DATA DOCUMENT

APP CODE | KC | ACTION: A

DWG. NO. M304 18 REV. NO. 0 QUALITY CLASS. SR
DCN. SUB. NO. DCP. 3052.0TJ DWG. REV. PAGE 18 OF 19
REF. DOC. DCP. 3052.0TJ STARTUP SYS.

RACEWAY NUMBER			LAYOUT DRAWING NUMBER			LENGTH OF RACEWAY FROM DRAWING	NEXT WIDER RACEWAY REV	NEXT WIDER RACEWAY FAC	NEXT WIDER RACEWAY RACEWAY	FROM	TO NET WORK	TO NODE NUMBER
1 - 6	7 - 12	13	14 - 17	18	19	20	21 - 23	24	25 - 31	32 - 47	48 - 50	51 - 56
	14359G	C	9198			10				4712G/14354G		C70
	14354G	C	9198			55				4712G/14359G		4713G/4714G

DCP# 3052.0TJ REV 0 SHT 154 OF 210

IDCN 5-28
ADD

RACEWAY INPUT DATA DOCUMENT

RACEWAY NUMBER	RACEWAY	LAYOUT DRAWING NUMBER	RACEWAY CODE	LENGTH OF RACEWAY FROM DRAWING	NET WORK	TWIN NUMBER	RACEWAY	NET WORK	NODE NUMBER
							Raceways w/Included Cables		
	143536						1GY29101I7	1GY29101B	1GY29101I4
							1GY29101IJ	1GY29101IL	1GY29101IM
	1435AG						1GY2A01I2	1GY29101IJ	1GY29101IL
							1GY29101IM		

DWG NO. M-3010 REV NO. 07 QUALITY CLASS SR
DCN SUB NO. DRG REV PAGE 19 OF 19
REF DOC DCP-3052.0TJ START UP SYS

DCP# 3052.0TJ REV 0 SHT 155 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

CDM/DDC USE ONLY
CIG

PPC NO

IDCN NO 5-29

DCP NO 3052.0TJ

DOCUMENT M30419 | Sht. - | Rev. 46

DCN CONVERSION NO

Page 1 of 7

1. Originator Juan P. Foxas Tel: 975-9001 Date 8-31-85

Document Title ELECTRICAL CIRCUIT SCHEDULE DRADM I.D. E-18 QC SR SC A

DESCRIPTION OF CHANGE

1 - DELETE THE FOLLOWING CIRCUIT NUMBERS:

1GY2A01I3		1GY2A01IC		1GY2A01P2	
	I4		ID		P3
	I5		IE		P4
	I6		IF		P5
	I7		IG		
	I8		K1		
	I9		K2		
	IA		K3		
	IB		K4		
			K5		

DCP# 3052.0TJ REV 0 SHT 156 OF 210

2. Other Affected Documents	3. Affected Systems	4. Design Approvals	
5149456	NONE	CHECKER aj Padilla	DATE 11-11-85
N-3303		INDEPENDENT REVIEW ENGR [illegible]	DATE 11-11-85
M-30418		RESPONSIBLE ENGINEER M. Ameeruddin	DATE 11-11-85
N-3302		LEAD DISCIPLINE ENGINEER M Ameeruddin	DATE 11-11-85
		OTHER	DATE
		OTHER	DATE
		QUALITY ASSURANCE [illegible]	DATE 11-12-85

5. SCE/Contractor Project Administration

Conversion to DCN Date

SCE/CONTRACTOR PROJECT ADMINISTRATOR

DCP# 3052.0TJ REV 0 SHT 15 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

POOR QUALITY DOCUMENT
BEST AVAILABLE COPY

DESCRIPTION OF CHANGE

BEFORE

Date 8-6-85 Page 2 of 7 Page

By J.P. Fokos

IDCN NUMBER	S-29			
DRAWING NO.	SHEET NO.	REV NO.	DCN CONV DATE / DWG REV	QUALITY CLASS / SUB NO.
M30419	—	46		52
				SEISMIC CLASS: A

BECHTEL POWER CORPORATION

ELECTRICAL CIRCUIT SCHEDULE

1GV1211

(E853-R13/ 82)
DATE 16 SEP 80 JOB NO. 14000 3 0 SAN ONOFRE NUCL GEN STA UN 1 XC REV. 46 RUN 52 16 PG 40

ACTION	CABLE NUMBER	CABLE DESTINATION FROM / TO	WIRE	CABLE DESCRIPTION	WIRES	VIAS
A	1GV1218IC	JB 7726 PT-1121C	9878 TNI	1 741 / 31	P3+ P3-	4857 G
	1GV1218P1	FV12 HC09	6316	1 817 / 31	2X18 U	730808
A	1GV1218P2	GC68 HC09	9772 TNI	1 634 / 436	L U	4832 G JB7856 4844 G 4845 G
	1GV1218P1	HC18 GC81	4371	1 622 / 43	2X18 U	8424 G 8402 G 8403 G 8402 G 8423 G
	1GV1402C1	GCV-411 HC09	8437	1 813 / 828	C11 U C12 C13 C3	6306 G 6303 G PB8878 6301 G 0802 6271 G PB8108 6272 G 6274 G
	1GV1402C2	GRDV11000 HC09	8437	1 817 / 812	C1 C11	6278 G 6278 G PB8878 6301 G 0802 6271 G PB8108 6272 G 6274 G
	1GV1402P2	GV14 HC09	8437	1 817 / 31	4X2 U	730808
	1GV1419P3	GLT1100C HC28	7288	1 817 / 821	4X18 U	6828 G PB8868 6279 G PB8878 6301 G 0802 6271 G PB8108 6280 G PB8868 6281 G 6822 G
	1GV1818C1	HC09 GS03	1807 01	1 817 / 87	L9 L12	712838 778068 778068 780896
C	1GV2A0111	HC09 GC37	9956 TNI	1 883 / 41	+ -	4984 G
C	1GV2A0112	GC37 LT-68	8269 TNI	1 883 / 781	+ -	4838 G JB7758 4714 G 4712 G 4699 G
C	1GV2A0113	FC-2004A HC09	9580 TNI	1 883 / 221	+ GRD	4699 G 4692 G 4690 G JB7857 4694 G 4712 G 4713 G
C	1GV2A0114	HC09 JB 7576	9956 TNI	1 883 / 211	+ GRD	4713 G 4712 G 4694 G JB7578
C	1GV2A0115	HC09 JB 7576	9956 TNI	1 883 / 201	+ GRD	4713 G 4712 G 4699 G JB7576
V	1GV2A0116	AR-2004A FC-2004A	9580 TNI	1 883 / 18	+28V ALR	4681 G 4689 G
	1GV2A0117	AR-2004C FC-2004C	9580 TNI	1 883 / 18	+28V ALR	4682 G 4691 G

DRAWING NO. M30419

DE 5005 2 6/8

DCP# 3052.0TJ REV 0 SHT 2 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

POOR QUALITY DOCUMENT
BEST AVAILABLE COPY

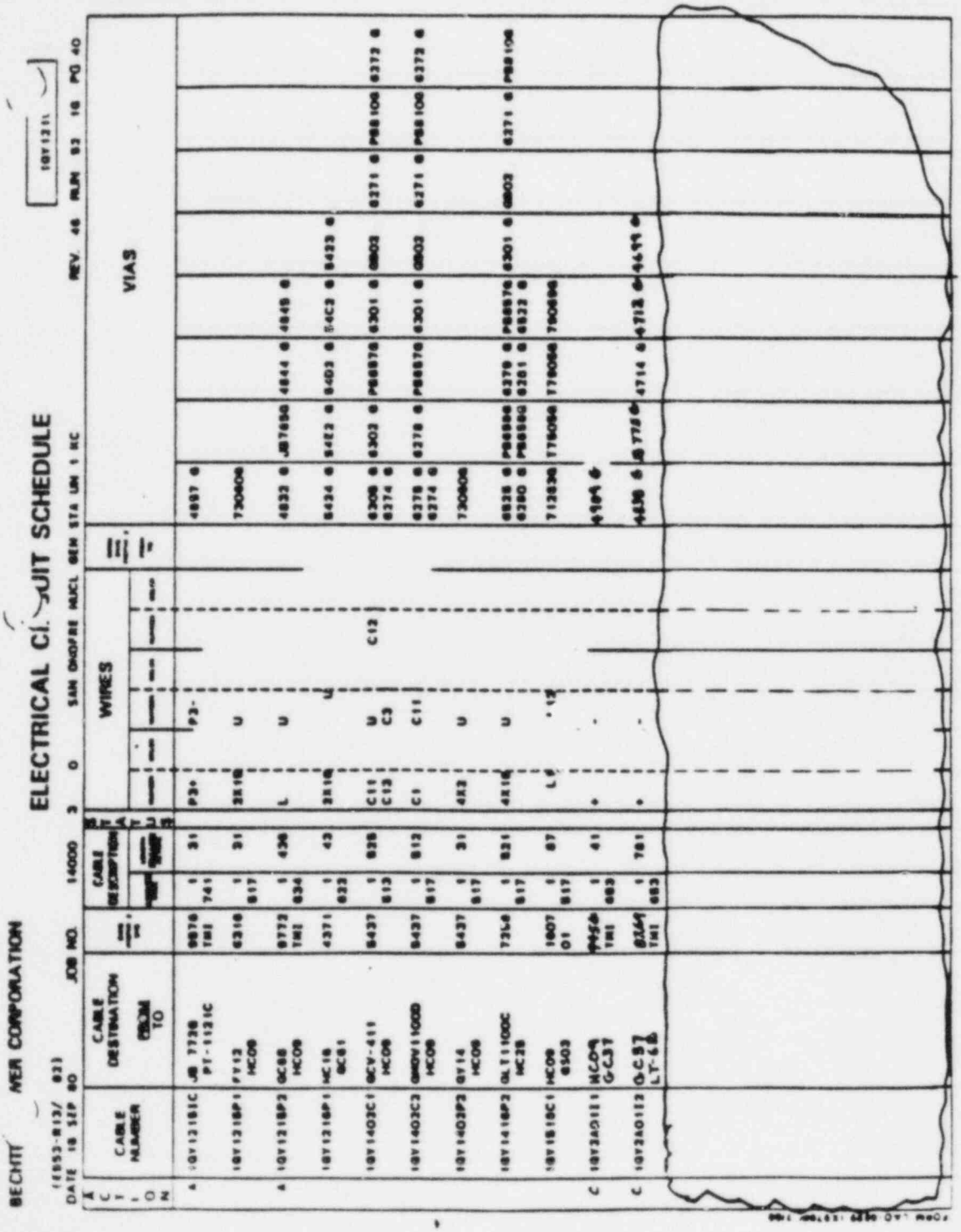
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DRAWING NO	SHEET NO	REV NO	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	SR
M30419		46			SEISMIC CLASS
					A

Date 9-6-85 Page 3 of 7 Page

By J.P. Foxas

DESCRIPTION OF CHANGE

AFTER



DCP#3052.0TJ REV0 SHT 5 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER	S-29				
DRAWING NO.	SHEET NO.	REV NO.	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	SR
M30419	—	46			SEISMIC CLASS A

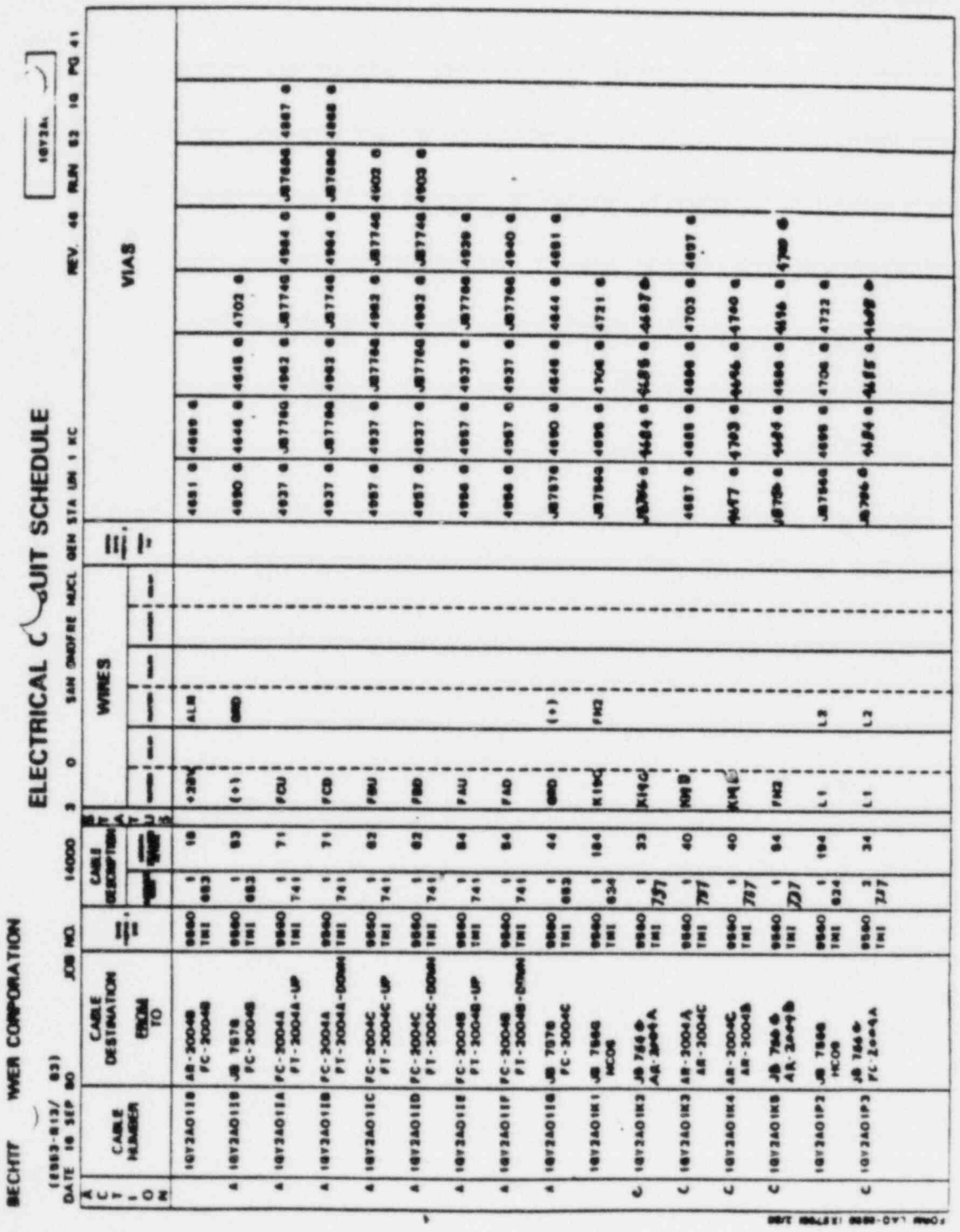
Date 9-6-85 Page 4 of 7 Page

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BEST AVAILABLE COPY

BEFORE

By J.P. Faxas.

DESCRIPTION OF CHANGE



DCP# 3052.0TJ REV 0 SHT 140 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

POOR QUALITY DOCUMENT
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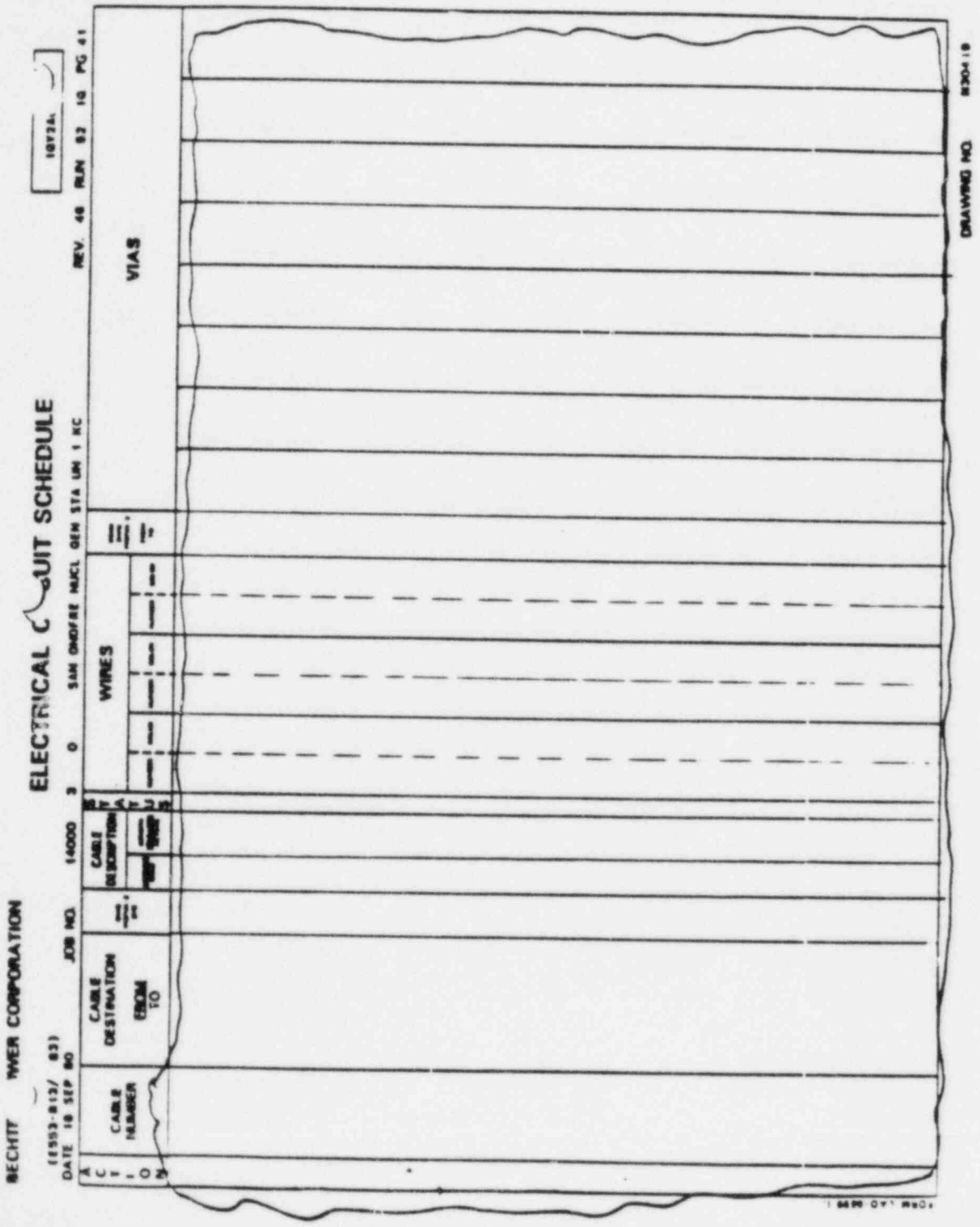
IDCN NUMBER	S-29				
DRAWING NO	SHEET NO	REV NO	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	SR
M30419		46			SEISMIC CLASS A

Date 9-6-85 Page 5 of 7 Page

By J.P. Faxas

DESCRIPTION OF CHANGE

AFTER



DCP# 3052.0TJ REV 0 SHT 6 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

POOR QUALITY DOCUMENT
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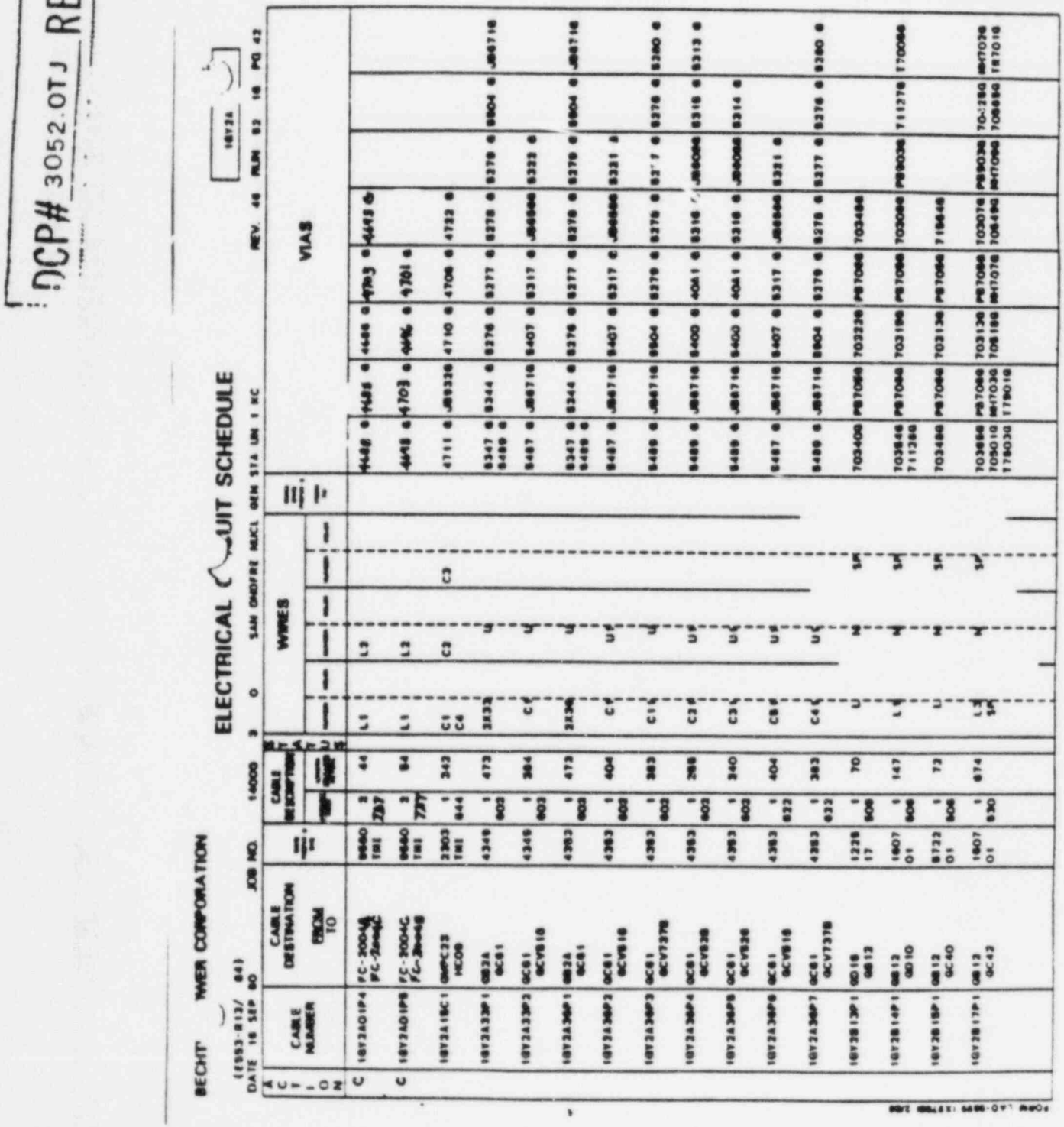
BEFORE

IDCN NUMBER	S-29				
DRAWING NO.	SHEET NO.	REV NO.	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO.	SR
M30419	-	46			SEISMIC CLASS A

Date 9-6-85 Page 6 of 7 Page

By J.P. Faxas

DESCRIPTION OF CHANGE



DCP# 3052.0TJ REV 0 SHT 2 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

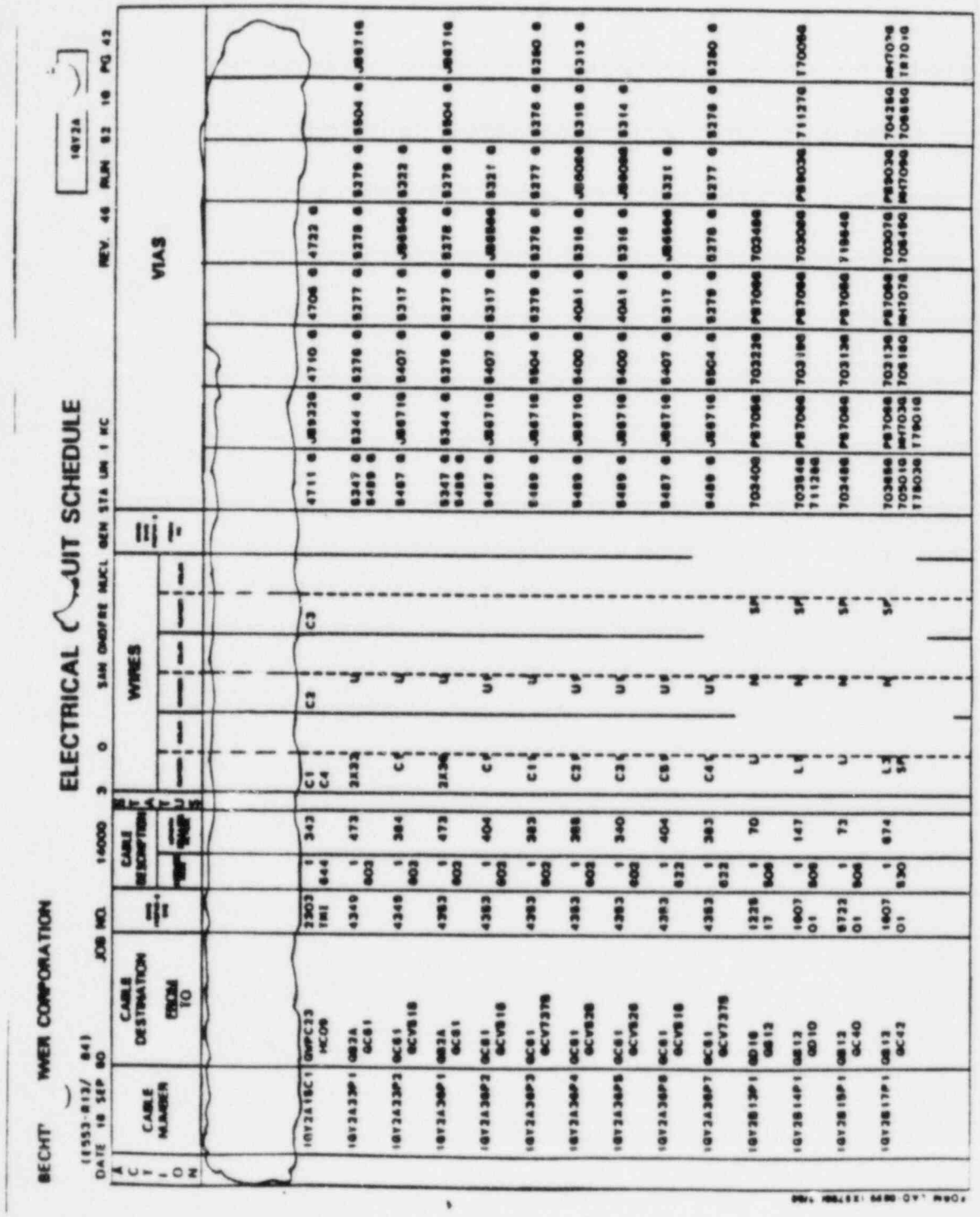
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BEST AVAILABLE COPY

IDCN NUMBER	S-29				
DRAWING NO	SHEET NO	REV NO	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	
M30419		46			SR
					SEISMIC CLASS
					A

Date 9-6-85 Page 1 of 1 Page

By J.P. Foxas

DESCRIPTION OF CHANGE AFTER



FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

CDM/DDC USE ONLY
CIG

PFC NO

IDCN NO S-1

DCP NO 3052.OTJ

DOCUMENT N-3303 | Sht. - | Rev. 0

DCN CONVERSION NO

Page 1 of 11

1. Originator Juan P Farias Tel: 975-9001 Date 9-4-85

Document Title CIRCUIT SCHEDULE 'KC' DRADM I.D. E-18 QC SR SC A

DESCRIPTION OF CHANGE

DCP# 3052.OTJ REV 0 SHT 163 OF 210

(1) DELETED THE FOLLOWING CIRCUIT NUMBER :
1GY2910I1, 1GY2910I2, 1GY2910IA,
1GY2910IB, 1GY2910IC, 1GY2910ID,
1GY2910IE, 1GY2910IF, 1GY2910K2,
1GY2910K3, 1GY2910K4, 1GY2910K5,
1GY2910P3, 1GY2910P4 & 1GY2910P5.
1GY2910IK, 1GY2910IN, 1GY2910IP
1NY2910K1

(2) CHANGED THE VIAS AND LOCATIONS FOR THE FOLLOWING CIRCUIT NUMBER :
1GY2910I3, 1GY2910I4, 1GY2910I5,
1GY2910I6, 1GY2910I7, 1GY2910I8.
1GY2910IJ, 1GY2910IL, 1GY2910IM

(3) CHANGE THE FOLLOWING CIRCUITS :

1GY2910K1	TO	1ABNDO913
1GY2910P2	TO	1ABNDO918
1GY2910P7	TO	1ABNDO914

2. Other Affected Documents	3. Affected Systems	4. Design Approvals	
N-3302	None.	CHECKER	DATE 11-11-85
5159560		INDEPENDENT REVIEW ENGR	DATE 11-11-85
5149456		RESPONSIBLE ENGINEER	DATE 11-11-85
		LEAD DISCIPLINE ENGINEER	DATE 11-11-85
		OTHER	DATE
		OTHER	DATE
		QUALITY ASSURANCE	DATE 11-12-85

5. SCE/Contractor Project Administration

Conversion to DCN Date

SCE/CONTRACTOR PROJECT ADMINISTRATOR

DCP# 3052 OTJ REV 0 SHT 16 OF 2D

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For BONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

POOR QUALITY DOCUMENT
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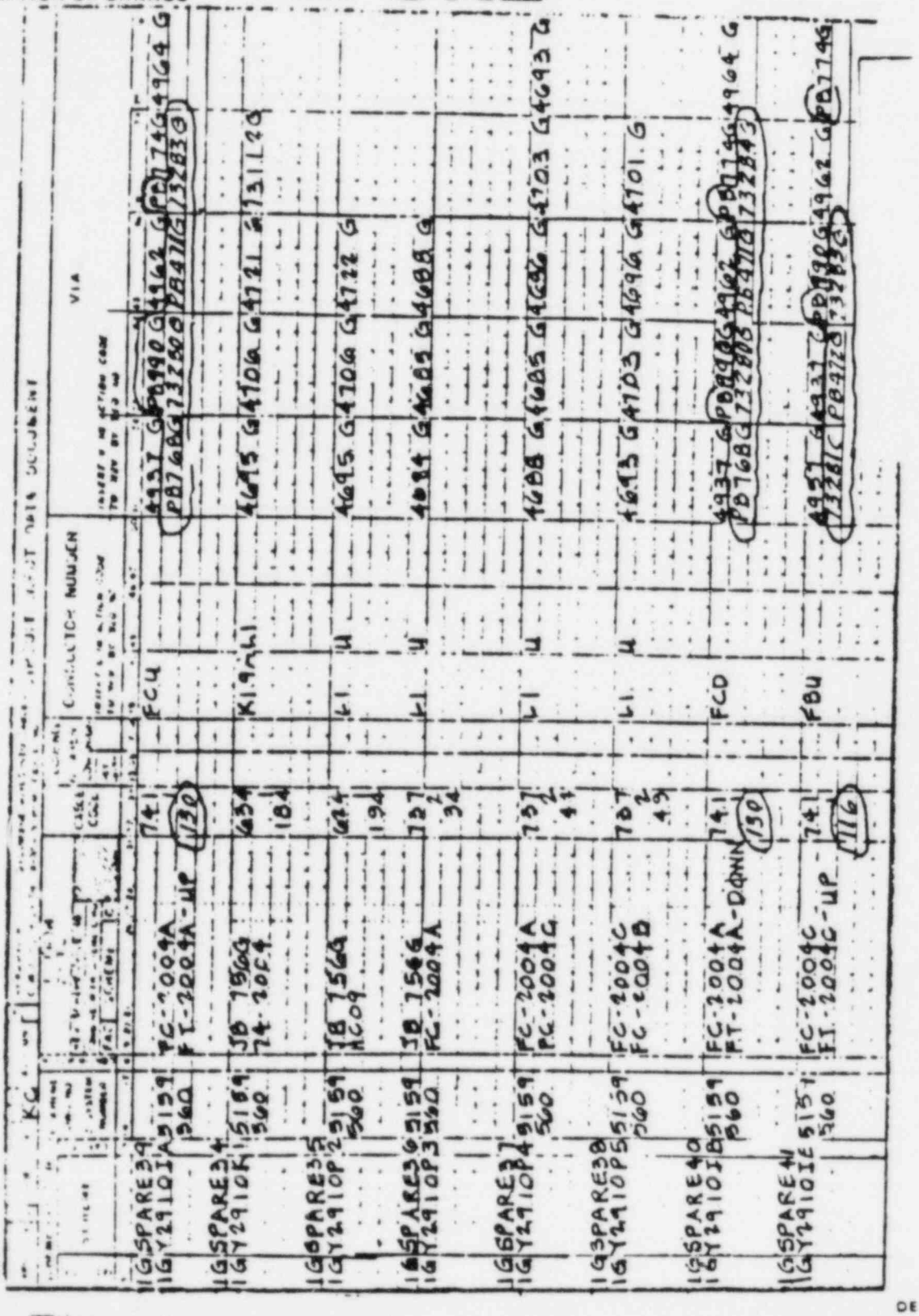
IDCN NUMBER	S-1				
DRAWING NO.	SHEET NO.	REV NO.	DCN CONV DATE	DWG REV.	SUB NO.	QUALITY CLASS
N-3303	-	0				SR
						SEISMIC CLASS
						A

Date SEPT. 4, 1985 Page 2 of 11 Page

By ROBERT TEH

DESCRIPTION OF CHANGE

BEFORE



DCP# 3052.0TJ REV 0 SHT 165 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For BONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

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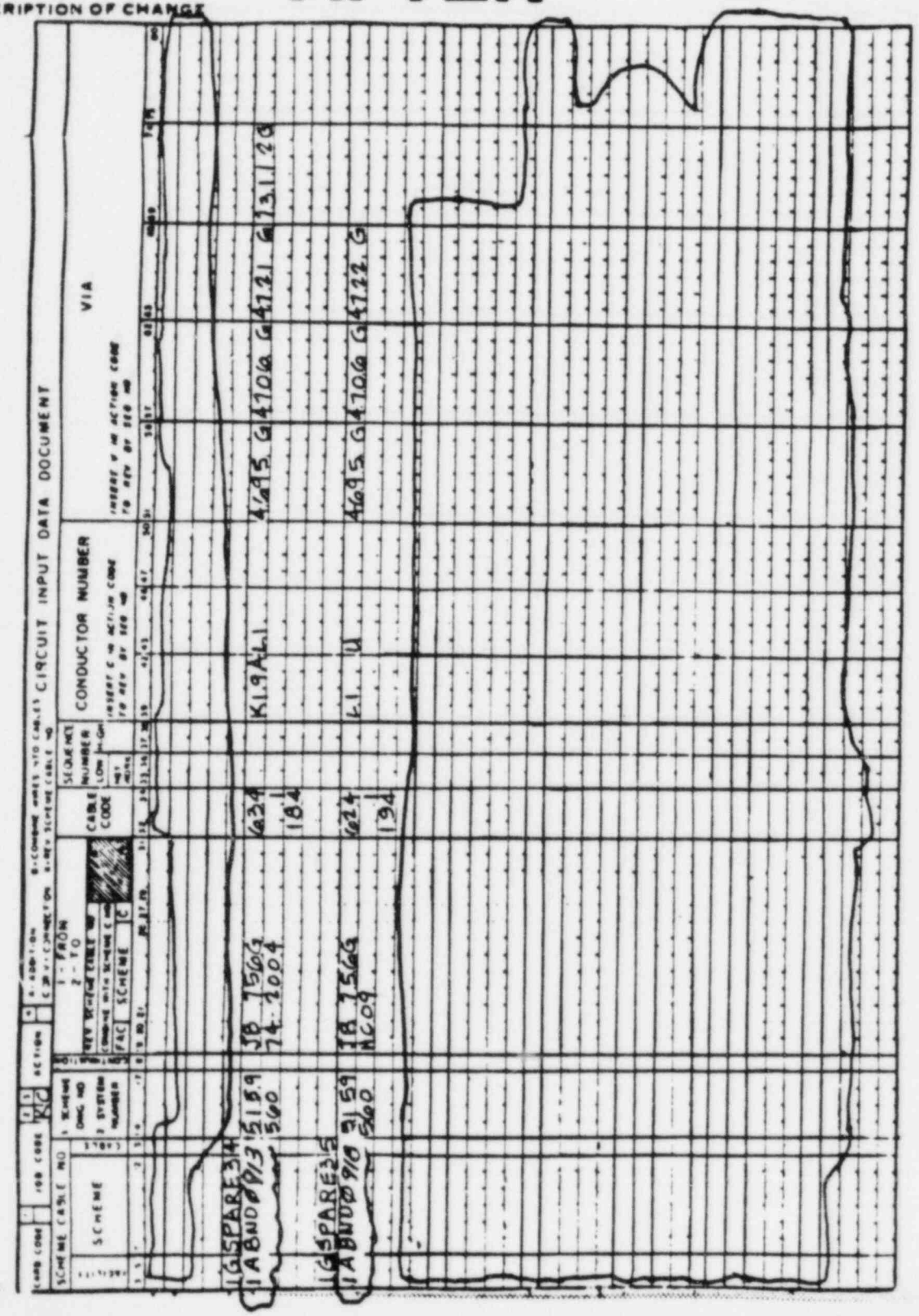
IDCN NUMBER S-1					
DRAWING NO.	SHEET NO.	REV. NO.	DCN CONV. DATE		QUALITY CLASS
			DWG. REV.	SUB. NO.	SR
N-3303	-	0			SEISMIC CLASS 4

Date SEPT. 4, 1985 Page 3 of 11 Page

By ROBERT TEH

AFTER

DESCRIPTION OF CHANGE



DCP# 3052.OTJ REV 0 SHT 66 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

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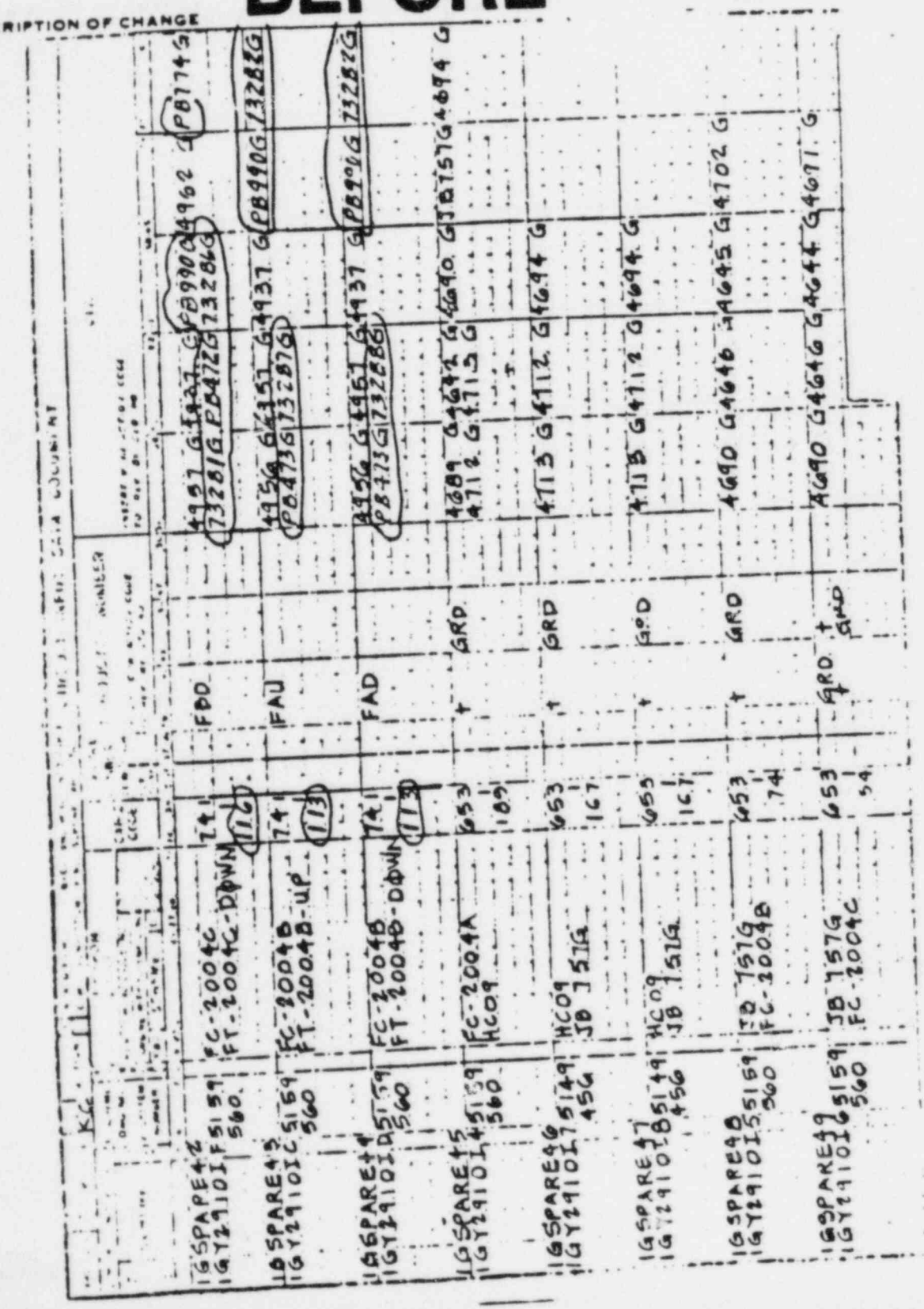
IDCN NUMBER S-1					
DRAWING NO.	SHEET NO.	REV NO.	DCN CONV DATE DWG REV	DCN CONV DATE SUB NO	QUALITY CLASS
N-3303	-	0			SR
					SEISMIC CLASS
					A

Date SEPT. 4, 1985 Page 4 of 11 Page

By ROBERT TEH

BEFORE

DESCRIPTION OF CHANGE



DE 5005 2 6/

DCP# 3052.0TJ REV 0 SHT 16 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

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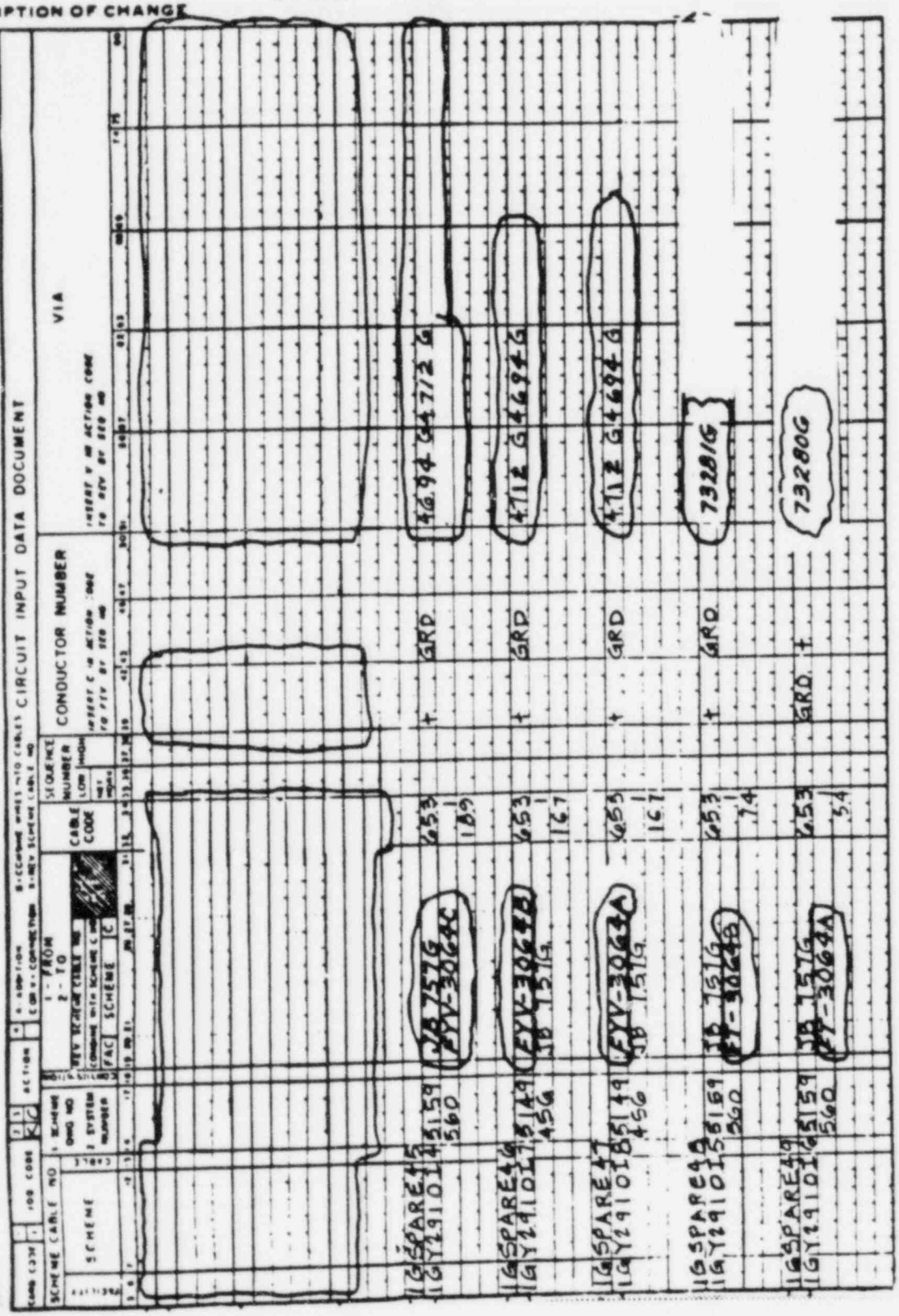
IDCN NUMBER S-1					
DRAWING NO.	SHEET NO.	REV. NO.	DCN CONV DATE / DWG. REV.	SUB. NO	QUALITY CLASS / SEISMIC CLASS
N-3303	-	0			SR / A

Date SEPT. 4, 1985 Page 5 of 11 Page

By ROBERT TEH

AFTER

DESCRIPTION OF CHANGE



DCP# 3052.0TJ REV 0 SHT 68 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SCNGS 1, 2 & 3)

POOR QUALITY ORIGINAL DOCUMENT
BEST AVAILABLE COPY

DESCRIPTION OF CHANGE

BEFORE

IDCN NUMBER S-1

DRAWING NO.	SHEET NO.	REV NO.	DCN CONV DATE	DWG REV	SUB NO.	QUALITY CLASS	SEISMIC CLASS
M-3303	-	0				SR	A

Date SEPT. 4, 1985 Page 6 of 11 Pages

By ROBERT TEH

CARD CODE | JOB CODE | ACTION: KC | A-ADDITION C OR V-CORRECTION B-COMBINE WIRES INTO CABLES B-REV SCHEME CABLE NO

CIRCUIT INPUT DATA DOCUMENT

SCHEME CABLE NO. SCHEME	CABLE	SCHEME DWG NO / SYSTEM NUMBER	1 - FROM 2 - TO / REV SCHEME CABLE NO / COMBINE WITH SCHEME C NO / FAC SCHEME C	CABLE CODE	SEQUENCE NUMBER LOW / HIGH / REV NUMBER	CONDUCTOR NUMBER (INSERT C IN ACTION CODE TO REV BY SEQ NO)	VIA (INSERT V IN ACTION CODE TO REV BY SEQ NO)
1GSPARE50							
1GY2910I	1	5159 / 560	AR-2004A / FC-2004A	65		+28V ALM	A681. G 4689 G
1GSPARE51							
1GY2910I	3	5159 / 560	AR-2004C / FC-2004C	6		+28V ALM	4682 G 4691. G
1GSPARE52							
1GY2910I	2	5159 / 560	AR-2004B / FC-2004B	653 / 18		+28V ALM	4666. G 4702 G
1GSPARE53							
1GY2910K	5	5159 / 560	JB 756G / AR-2004A	727 / 52		L1	4684 G 4685 G 4687. G
1GSPARE54							
1GY2910K	4	5159 / 560	AR-2004A / AR-2004C	727 / 40		K19D	4687 G 4685 G 4686 G 4703. G 4691. G
1GSPARE55							
1GY2910K	3	5159 / 560	AR-2004C / AR-2004B	737 / 40		K19B	4687 G 4703 G 4696 G 4700 G
1GSPARE56							
1GY2910K	2	5159 / 560	JB 756G / AR-2004B	727 / 54		K19A	4684 G 4686 G 4696 G 4702 G
1GY2910IG		5149 / 456	HC09 / GC04	5 / 45		+ GRD	4197 G GC03

DE 5005.2 6/85

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

IDCN NUMBER S-1					
DRAWING NO.	SHEET NO.	REV. NO.	DCN CONV. DATE DWG. REV.	SUB. NO.	QUALITY CLASS SR / SEISMIC CLASS A
N-3303	-	0			

SUPPLEMENTAL PAGE

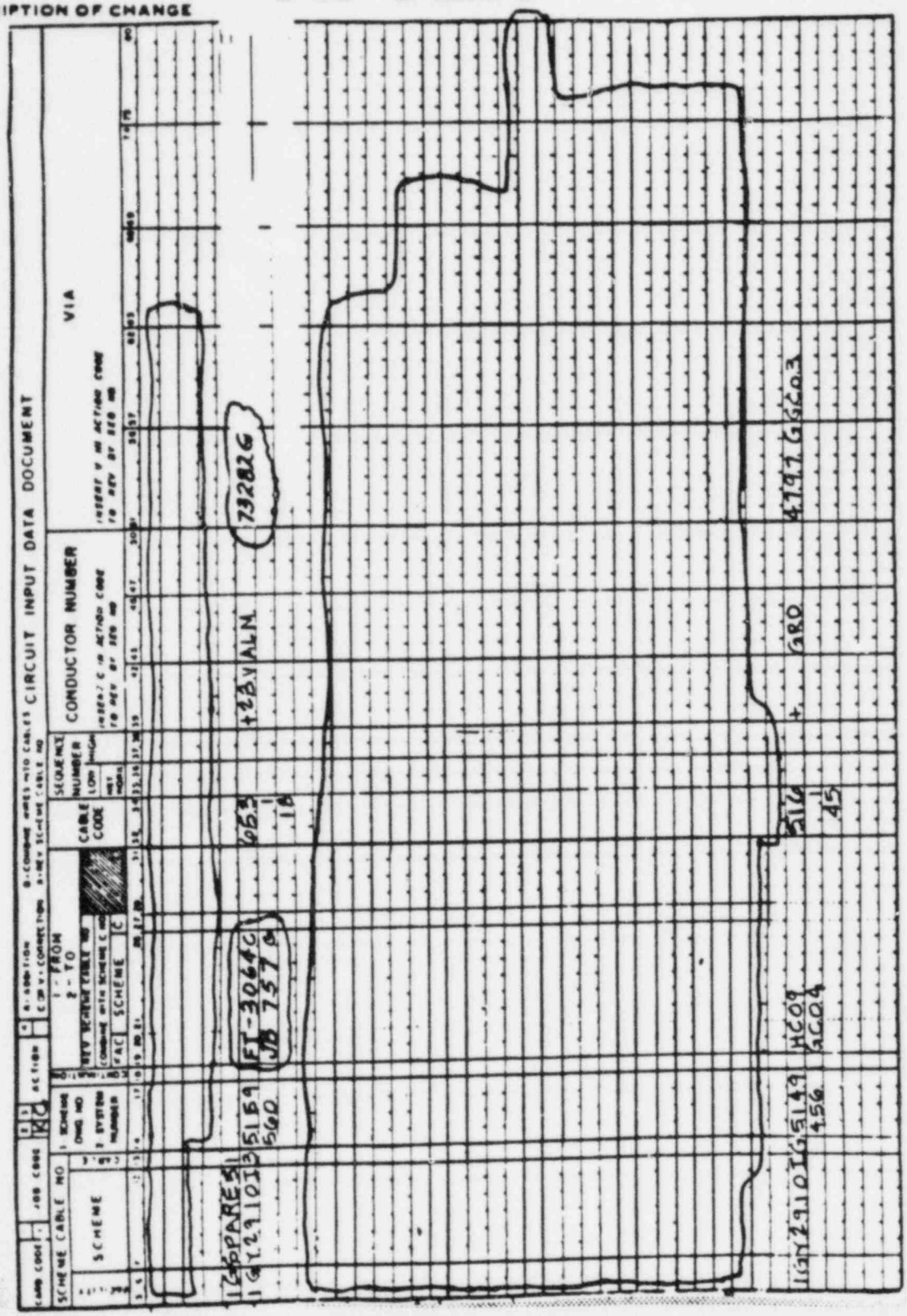
POOR QUALITY DOCUMENT
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Date SEPT. 4, 1985 Page 7 of 11 Page

By ROBERT TEH

AFTER

DESCRIPTION OF CHANGE



FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

IDCN NUMBER	3-1				
DRAWING NO.	SHEET NO.	REV. NO.	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	SR
N-3303	-	0			SEISMIC CLASS
					A

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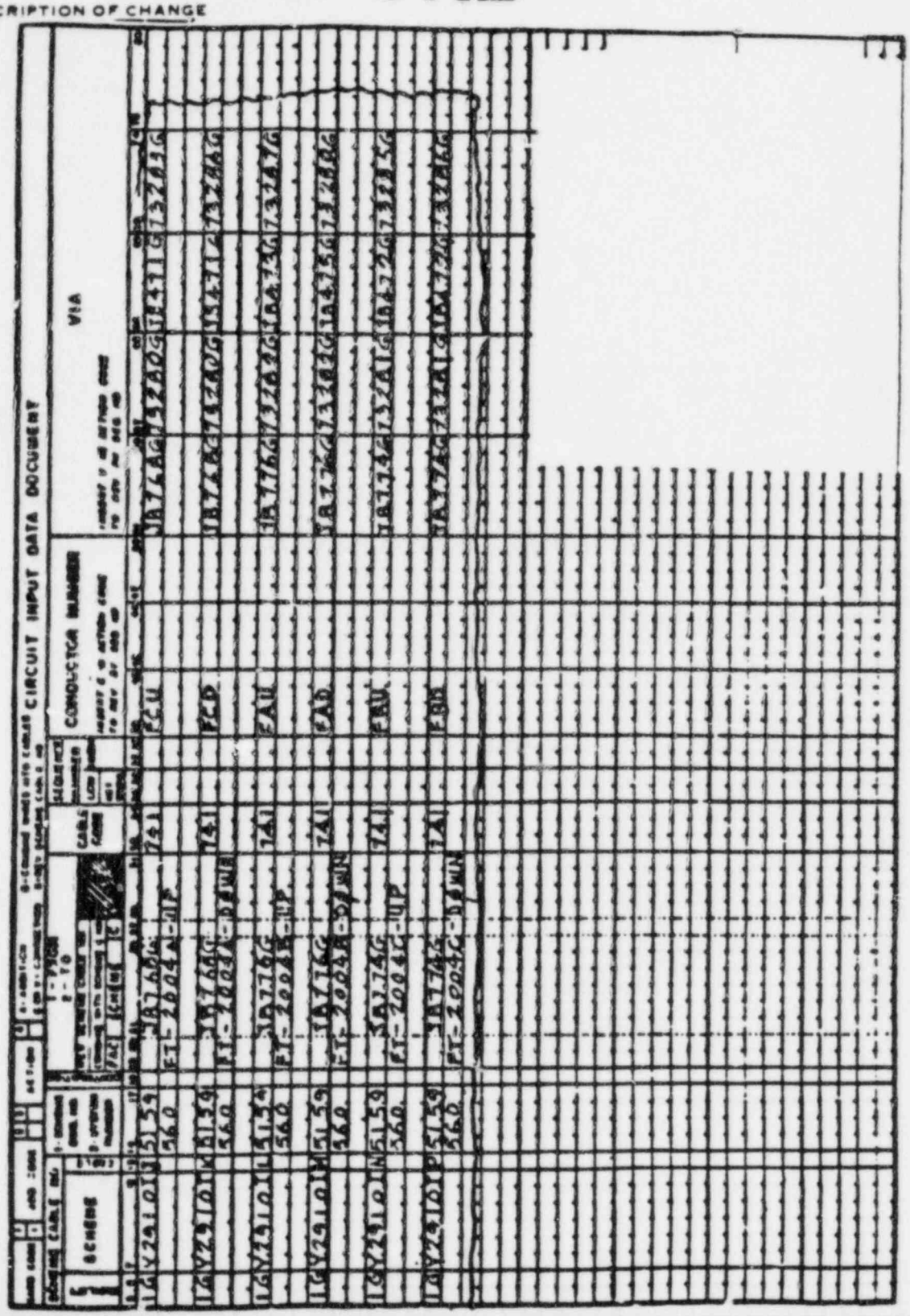
SUPPLEMENTAL PAGE

Date 9-9-85 Page 8 of 11 Page

By J.P. Foxas

BEFORE

DESCRIPTION OF CHANGE



DCP# 3052.0TJ REV 0 SHT 170 OF 240

DE 5000.2 9/83

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

IDCN NUMBER	3-1				
DRAWING NO.	SHEET NO.	REV NO.	DCN CONV DATE		QUALITY CLASS
			DWG. REV	SUB NO.	SR
N-3303	-	0			SEISMIC CLASS A

SUPPLEMENTAL PAGE

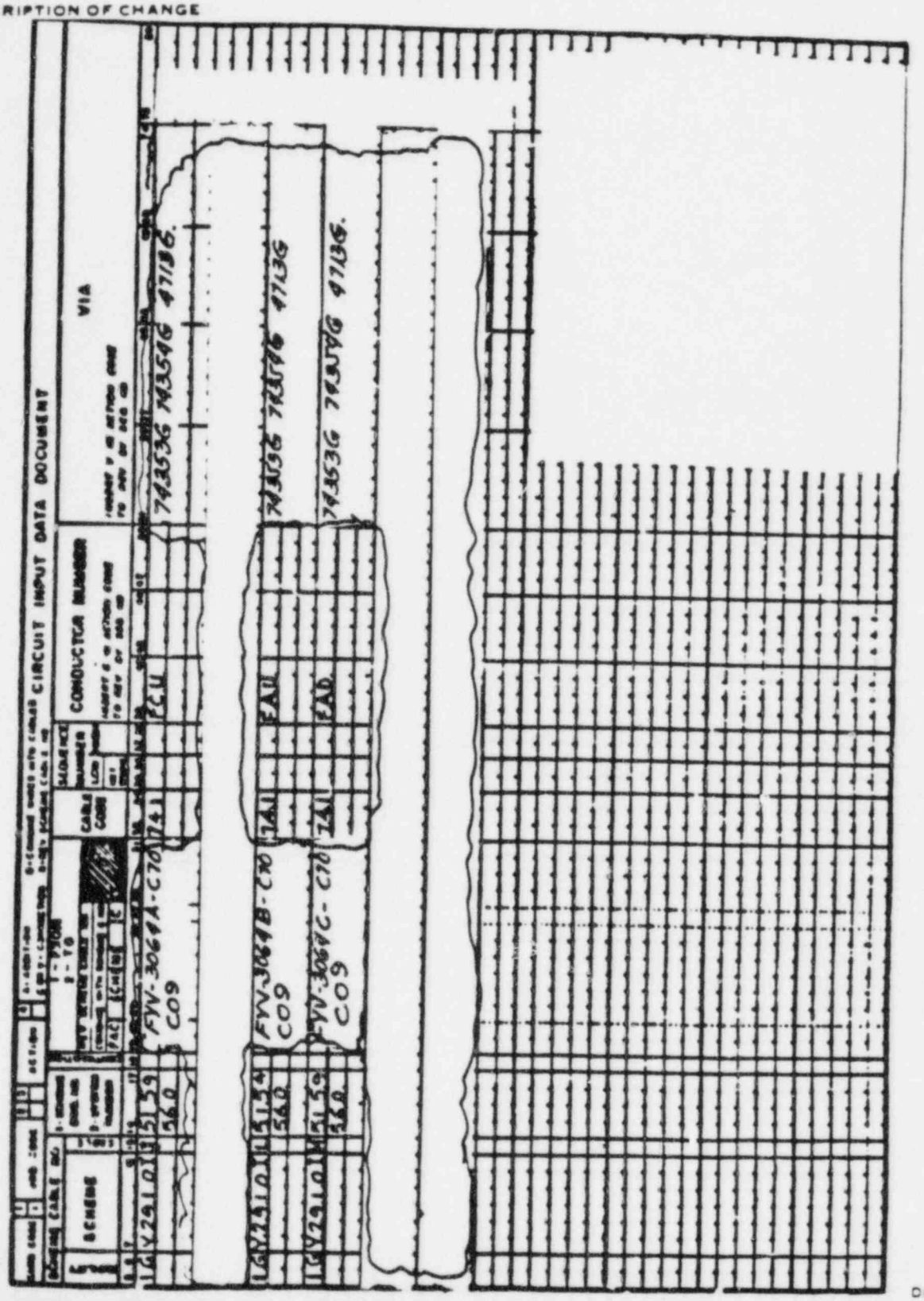
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Date 9-4-85 Page 9 of 11 Page

By J.P. Faxas

DESCRIPTION OF CHANGE



DCP# 3052.0TJ REV 0 SHT III OF 210

DE 5005 2 6/85

DCP# 3052.0TJ REV 0 SHT 172 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

POOR QUALITY DOCUMENT
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BEFORE

IDCN NUMBER	S-1				
DRAWING NO	SHEET NO	REV NO	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	3R
M-3303	-	0			SEISMIC CLASS A

Date 9-4-85 Page 10 of 11 Page

By J.P. Faxas

DESCRIPTION OF CHANGE

DE 5005.2 6/81

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

IDCN NUMBER	S-1				
DRAWING NO.	SHEET NO.	REV. NO.	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB. NO	SR
N-3303	–	0			SEISMIC CLASS A

DCP# 3052.0TJ REV 0 SHT 173 OF 210

SUPPLEMENTAL PAGE

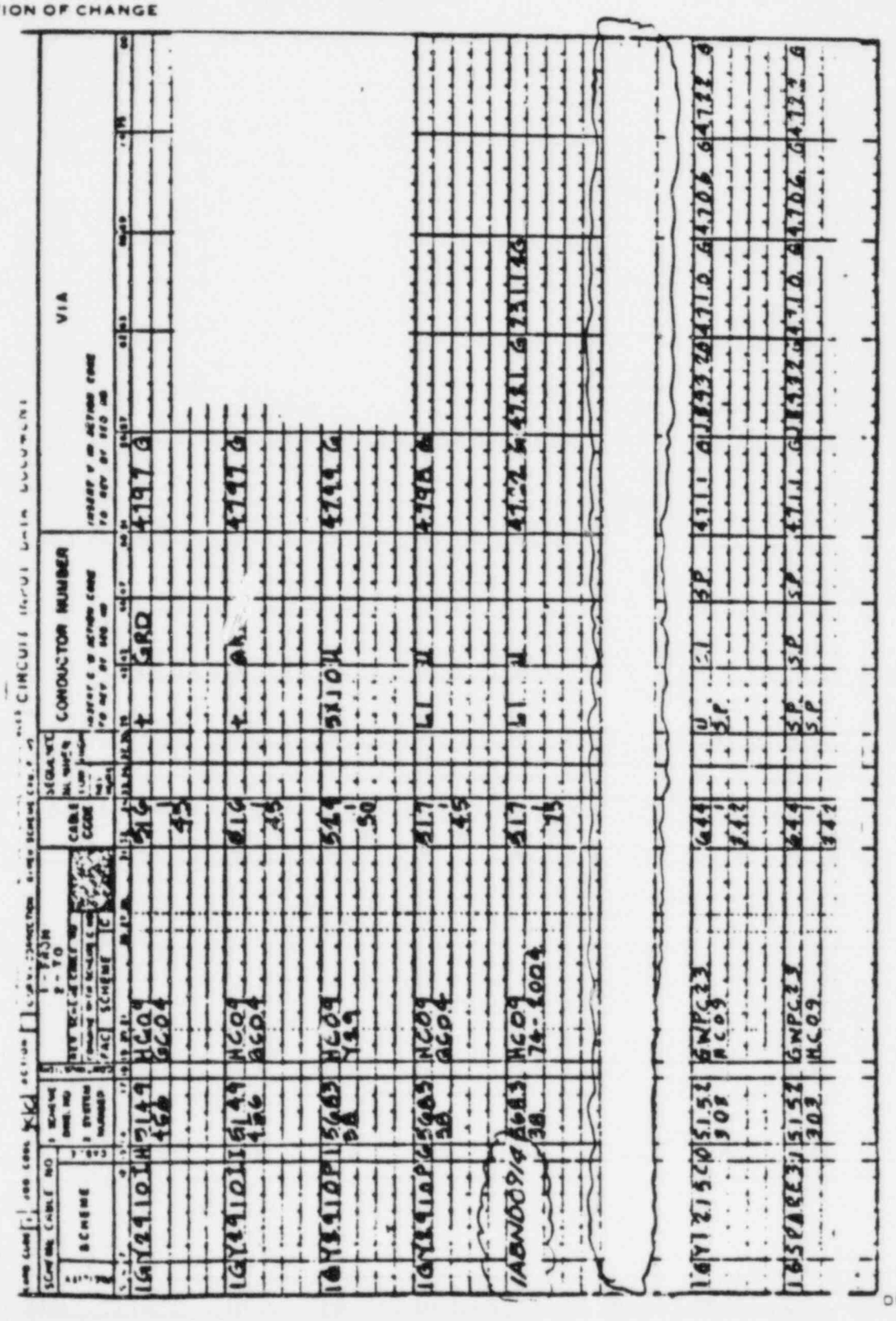
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AFTER

Date 9-9-85 Page 11 of 11 Page

By J.P. Foxas

DESCRIPTION OF CHANGE



FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

CDM/DDC USE ONLY
CIG

IDCN NO. S-1

DOCUMENT N-3302 | Sht. - | Rev. 0

Page 1 of 9

DCP NO. 3052.0TJ

DCR CONVERSION NO.

1. Originator Juan P. Farias Tel: 925-9001 Date 9-4-85

Document Title RACEWAY SCHEDULE-KC DRADM I.D. E-19 QC SR SC —

DESCRIPTION OF CHANGE

1- DELETED THE FOLLOWING RACEWAY NOS.:
4666G, 4681G, 4687G, 4688G, 4689G,
47006, 4701G & 47026, 73283G, 73284G,
73285G, 73286G, 73287G, 73288G.

2) DELETED THE FOLLOWING BOXES
PB 471G
PB 472G
PB 473G

DCP# 3052.0TJ REV 0 SHT 12 OF 210

2. Other Affected Documents	3. Affected Systems	4. Design Approvals	
N-3303	None	CHECKER A. Polella	DATE 11-11-85
5159782		INDEPENDENT REVIEW ENGR Lou Hoz	DATE 11-11-85
		RESPONSIBLE ENGINEER M. Anuerudden	DATE 11-11-85
		LEAD DISCIPLINE ENGINEER M. Anuerudden	DATE 11-11-85
		OTHER	DATE
		OTHER	DATE
		QUALITY ASSURANCE	DATE 11-12-85

5. SCE/Contractor Project Administration

Conversion to DCN Date

SCE/CONTRACTOR PROJECT ADMINISTRATOR

DE-5005-1 5/85

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER S-1					
DRAWING NO.	SHEET NO.	REV NO.	DCN CONV. DATE		QUALITY CLASS
			DWG. REV.	SUB. NO.	
N-3302	-	0			SR
					SEISMIC CLASS
					1

Date SEPT. 4, 1985 Page 2 of 9 Page

BEFORE

By ROBERT TEH

DESCRIPTION OF CHANGE

N-3302 SHT 2 REV 0

RACEWAY NUMBER		JOB CODE	ACTION	LAYOUT DRAWING NUMBER	CODE	LENGTH OF RACEWAY FROM DRAWING	FROM: NET WORK REV REVIEW BY	FROM: ROOM NUMBER	FROM: RACEWAY	TO: NET WORK	TO: ROOM NUMBER
4717 G				5159 AC 864		15			C03		C09
4718 G				5159 AB 864		15			C03		C09
4719 G				5159 AC 798		20			129		C09
13100N				5159 DB 762		6			C05		14-2004
4721 G				5159 AC 798		20			13112G		4722 G/4706 G
4666 G				5159 DC 782		1			AR-2004B		4645 G/4702 G
4681 G				5159 DC 782		1			AR-2004A		4646 G/4689 G
4687 G				5159 DC 782		1			AR-2004A		4695 G/4688 G
4652 G				5159 DC 782		1			FC-2004A		4695 G/4627 G
4681 G				5159 DC 782		1			FC-2004A		4642 G/4681 G
4700 G				5159 DC 782		1			FR-2004B		4696 G/4701 G
4701 G				5159 DC 782		1			4700 G/4696 G		FC-2004B
4702 G				5159 DC 782		1			FC-2004B		4645 G/4666 G
13112G				5159 DC 782		5			14-2004		4721 G

DCP# 3052.01J REV 0 SHT 2 OF 2

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For BONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

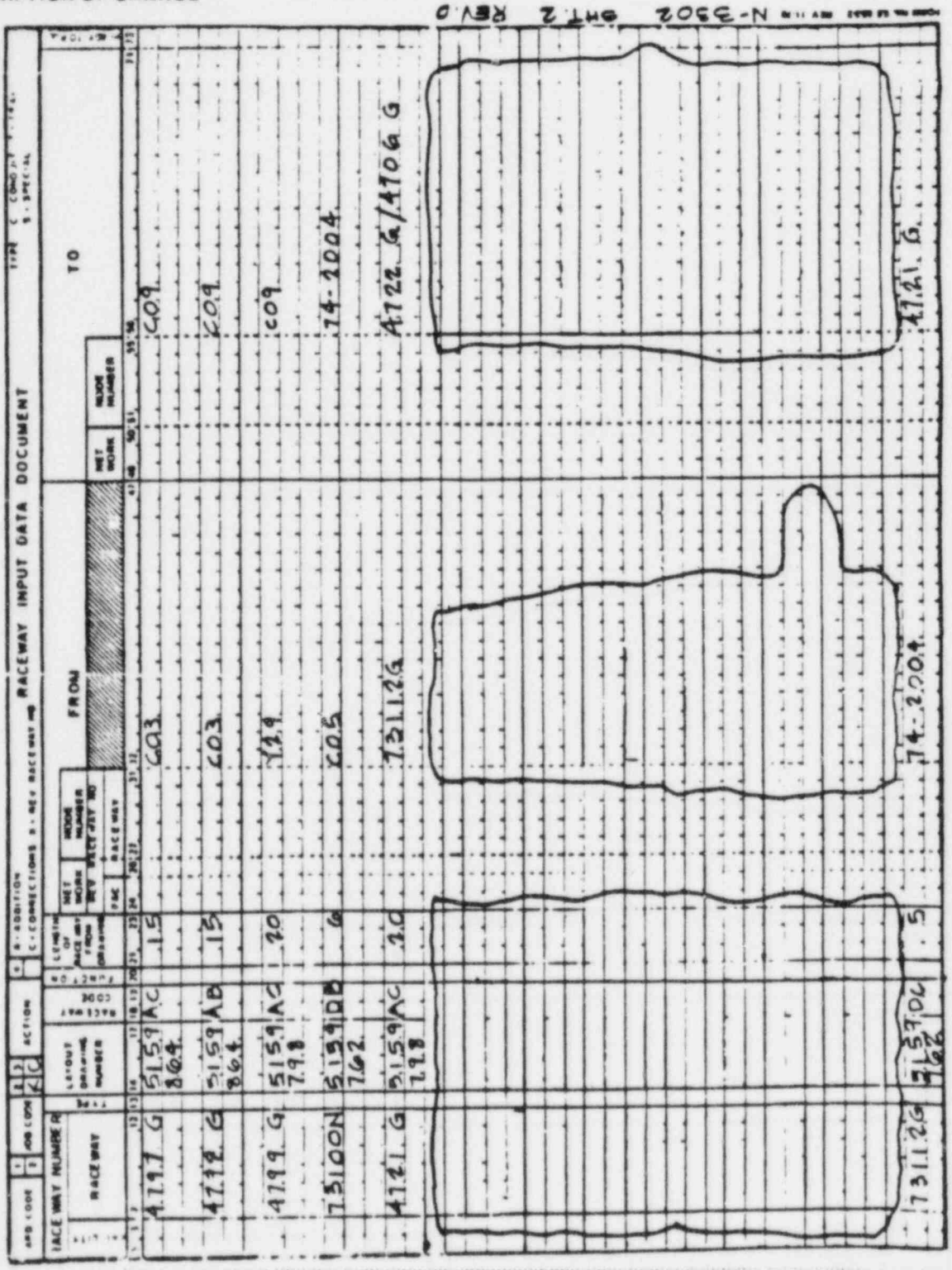
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DRAWING NO.	SHEET NO.	REV. NO.	DCN CONV. DATE DWG. REV.	DCN CONV. DATE SUB. NO.	QUALITY CLASS SR / SEISMIC CLASS 1
N-3302	-	0			

Date SEPT. 4, 1985 Page 3 of 9 Page

AFTER

By ROBERT TEH

DESCRIPTION OF CHANGE



FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

IDCN NUMBER	5-1				
DRAWING NO.	SHEET NO.	REV NO.	DCN CONV DATE		QUALITY CLASS
			DWG. REV.	SUB NO.	
N-3302	-	0			SR
					SEISMIC CLASS

Date SEPT. 4, 1985 Page 4 of 9 Page

BEFORE

By ROBERT TEH

DESCRIPTION OF CHANGE

N-3302 SHT 2A REV 0

RACEWAY W/ INCLUDED CABLES

RACEWAY NUMBER FROM	RACEWAY NUMBER TO	LAYOUT DRAWING NUMBER	RACEWAY CODE	LENGTH OF RACEWAY FROM DRAWING	NET WORK REV	NODE NUMBER RACEWAY NO. FAC	NODE NUMBER RACEWAY	NET WORK	NODE NUMBER
4797 G							1GY29.1.0IG	1GY29.1.0IH	1GY29.1.0II
4798 G							1GY29.1.0P6		
4799 G							1GY29.1.0P1		
13100N							1NY29.1.0K1		
4721 G							1GY29.1.0K1	1GY29.1.0P7	
4666 G							1GY29.1.0I2		
4681 G							1GY29.1.0I1		
4687 G							1GY29.1.0K4	1GY29.1.0K3	
4688 G							1GY29.1.0P3	1GY29.1.0P4	
4689 G							1GY29.1.0I1	1GY29.1.0I4	
4122 G							1GY29.1.0K2	1GY29.1.0K3	
4101 G							1GY29.1.0P5		
4102 G							1GY29.1.0I2	1GY29.1.0I5	
13122G							1GY29.1.0K1	1GY29.1.0P1	

DCP# 3052.0TJ REV 0 SHT 2A

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For RONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

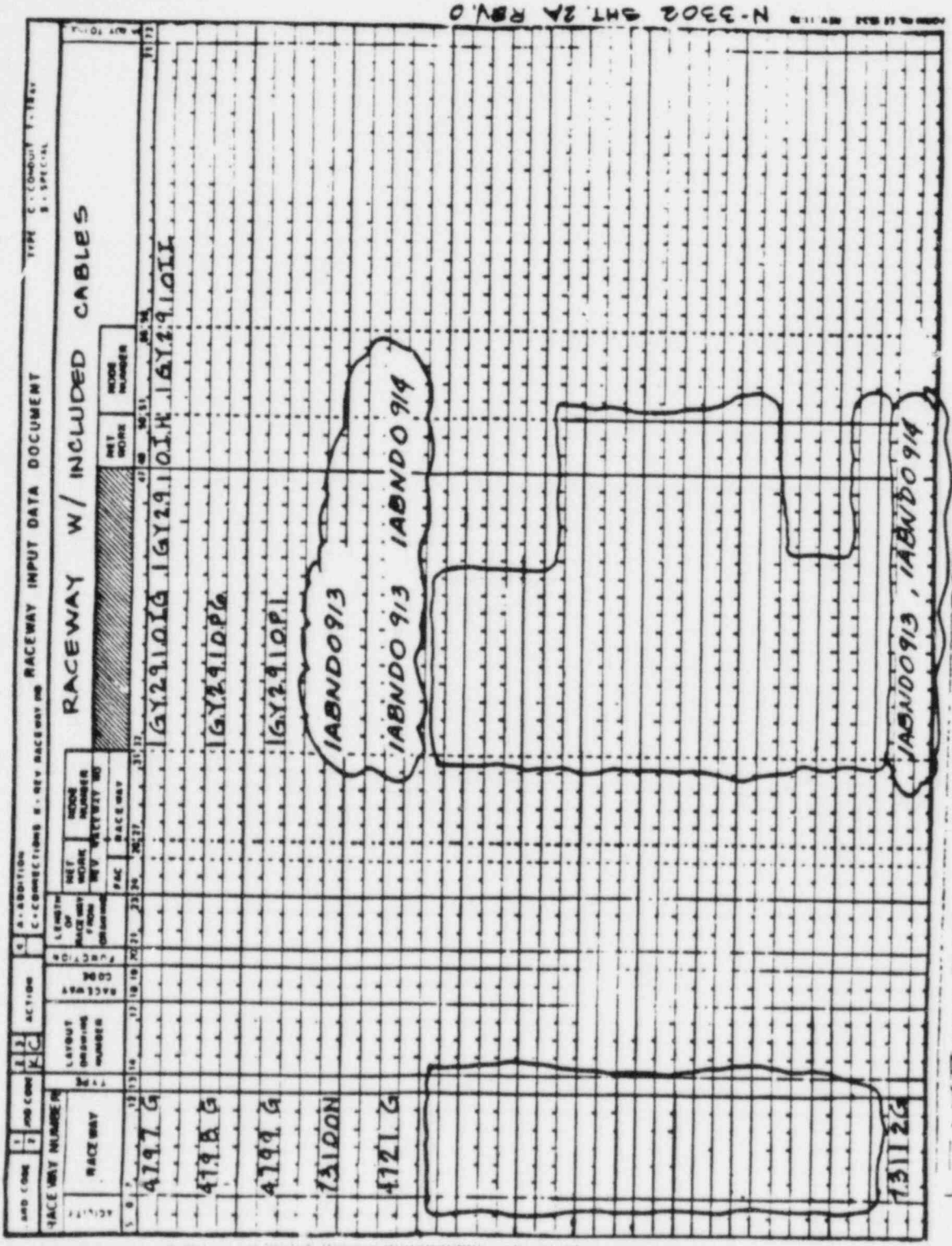
IDCN NUMBER S-1					
DRAWING NO.	SHEET NO.	REV. NO.	DCN CONV. DATE		QUALITY CLASS
			DWG. REV.	SUB. NO.	
N-3302	-	0			SR
					SEISMIC CLASS
					A

Date SEPT. 4, 1985 Page 5 of 9 Page

By ROBERT TEN

AFTER

DESCRIPTION OF CHANGE



DCP# 3002 REV 0 SHEET 2

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

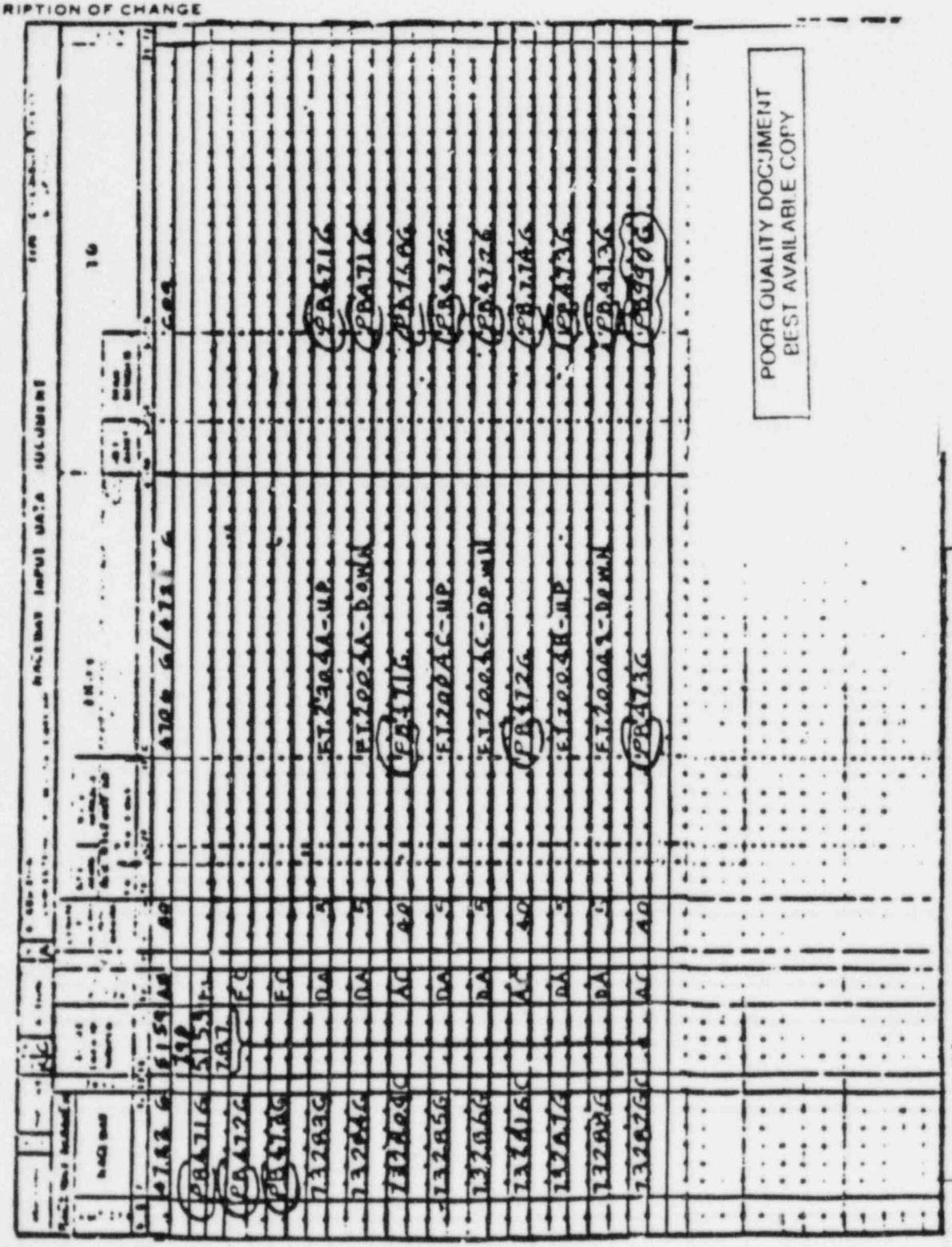
IDCN NUMBER	5-1				
DRAWING NO	SHEET NO	REV NO	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	SR
N-3302	-	0			SEISMIC CLASS

BEFORE

Date 9-4-85 Page 6 of 9 Page

By J.P. Foxas

DESCRIPTION OF CHANGE



POOR QUALITY DOCUMENT
BEST AVAILABLE COPY

DCP# 3052.0TJ REV 0 SHT 1 OF 2

FLUOR ENGINEERS, INC
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

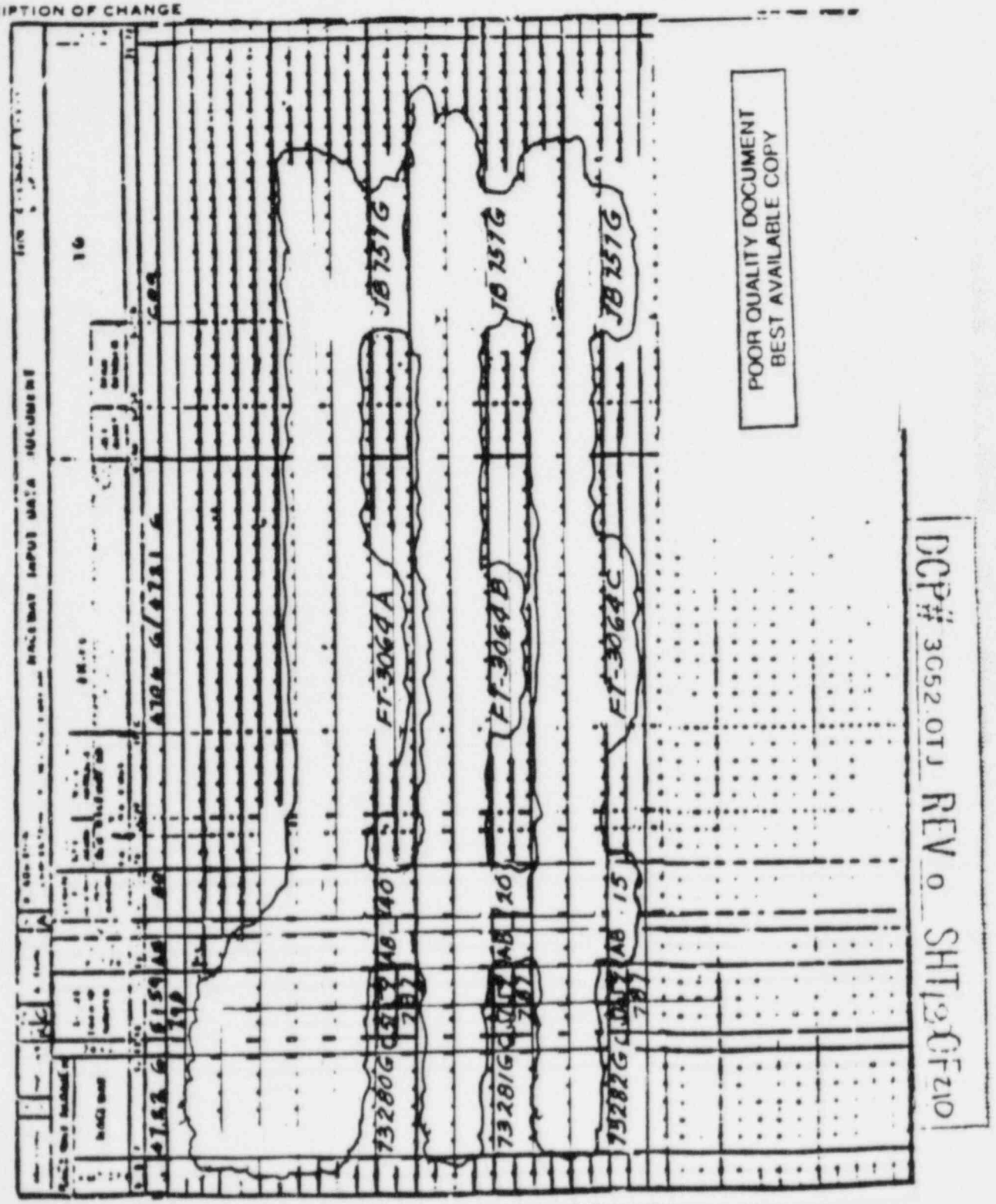
AFTER

IDCN NUMBER	S-1				
DRAWING NO	SHEET NO	REV NO	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	SR
N-3302	–	0			SEISMIC CLASS A

Date 9-4-85 Page 7 of 9 Page

By J.P. Faxos.

DESCRIPTION OF CHANGE



POOR QUALITY DOCUMENT
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DCP# 3052.0TJ REV 0 SHT 2 OF 10

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

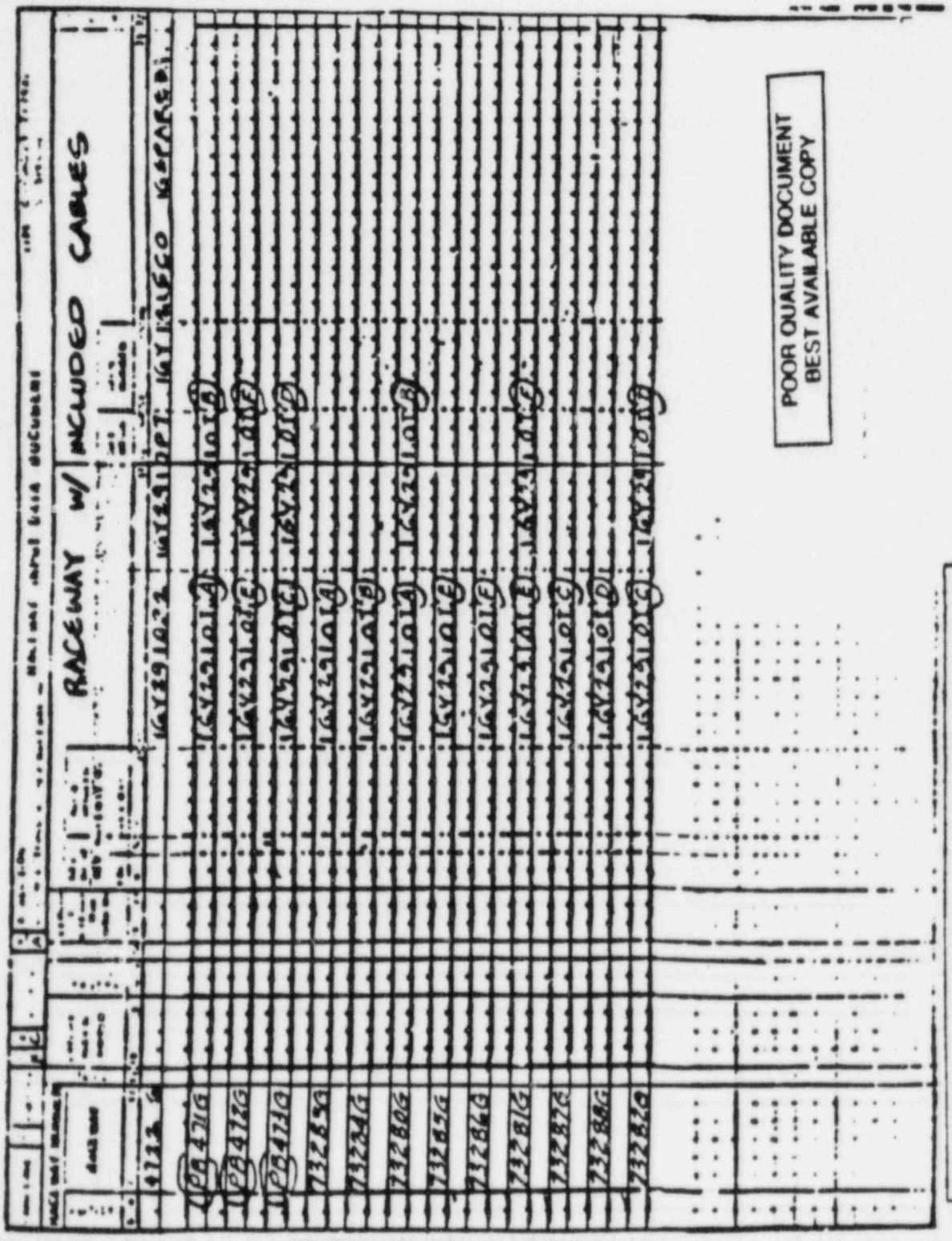
IDCN NUMBER	S-1				
DRAWING NO	SHEET NO	REV NO	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	SR
N-3302	–	0			SEISMIC CLASS A

Date 9-4-85 Page 8 of 9 Page

By J.P. Faxas

BEFORE

DESCRIPTION OF CHANGE



FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

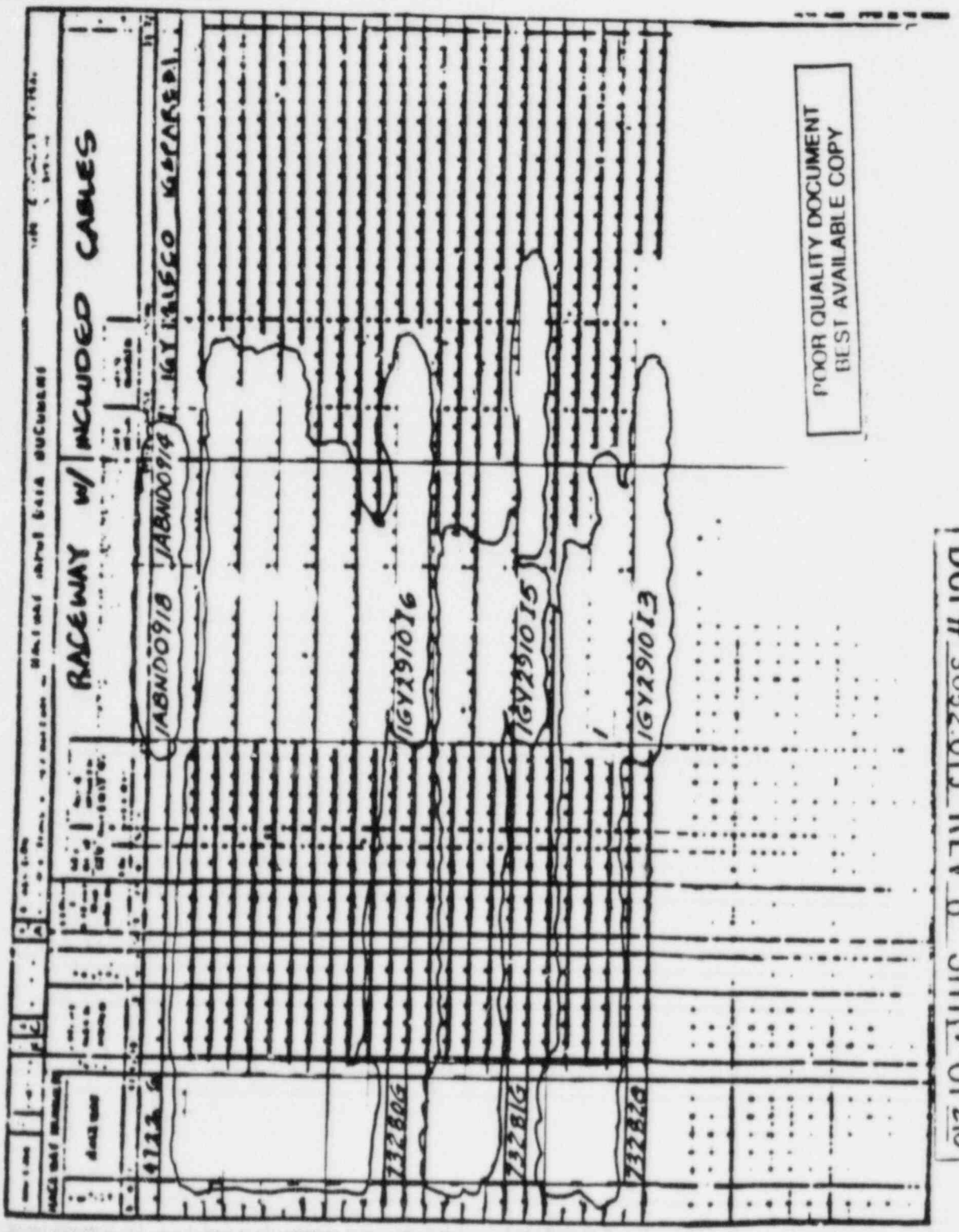
IDCN NUMBER	S-1				
DRAWING NO.	SHEET NO.	REV NO.	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	SR
N-3302	–	0			SEISMIC CLASS
					A

Date 9-4-85 Page 9 of 9 Page

By J.P. Faxas.

AFTER

DESCRIPTION OF CHANGE



POOR QUALITY DOCUMENT
BEST AVAILABLE COPY

DCP# 3052 QTJ REV 0 SHT 140F210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

CDM/DDC USE ONLY CIG			PFC NO.
IDCN NO. S-1			DCP NO. 3052.OTJ
DOCUMENT 5149456	SHT.	REV. 6	DCN CONVERSION NO.
Page 1 of 3			

1. Originator Juan P. Farias. Tel: 975-9001 Date 9-3-85

Document Title WIRING DIAGRAM VERTICAL BOARD C09 SECT-3 (UPPER PNL SECT.) DRADM I.D. E-20 QC SR SC —

DESCRIPTION OF CHANGE

1- REVISE SCHEME CABLE NUMBERS AS FOLLOWS:

WAS	SHALL BE
1GY2910I4	1GY2910IM
1GY2910I7	1GY2910IJ
1GY2910I8	1GY2910IL

CONSTRUCTION NOTES:

1-) Field to disconnect cables 1GY2910I4, I7 & I8 at terminal block X2G1 in C09. and Pull back enough cable to clear the area where conduit 4712G will be intercepted.

2-) Field to disconnect cable 1GY2A01I2 at C37 and pull back as indicated on note-1.

3-) After installation of new conduit 74353G-2"c. Re-pull cables 1GY2910I4, I7 & I8 to C70, and cable 1GY2A01I2 to C37.

4-) Field to pull new cables 1GY2910IM, IJ & IL From C70 to C09.

DCP# 3052.OTJ REV 0 SHT 183 OF 210

2. Other Affected Documents	3. Affected Systems	4. Design Approvals	
5159560	None.	CHECKER A. Padilla	DATE 11-11-85
N-3303		INDEPENDENT REVIEW ENGR Ramy Hsu	DATE 11-11-85
5166613		RESPONSIBLE ENGINEER M. Hussain	DATE 11-11-85
		LEAD DISCIPLINE ENGINEER M. Hussain	DATE 11-11-85
		OTHER	DATE
		OTHER	DATE
		QUALITY ASSURANCE	DATE 11-25-85

5. SCE/Contractor Project Administration

Conversion to DCN Date

SCE/CONTRACTOR PROJECT ADMINISTRATOR

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

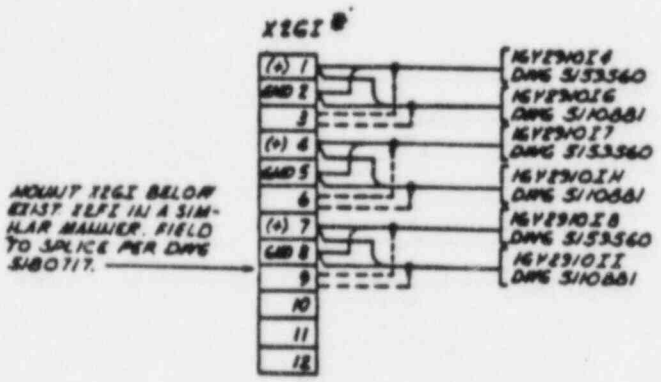
IDCN NUMBER	S-1				
DRAWING NO.	SHEET NO.	REV. NO.	DCN CONV DATE		QUALITY CLASS
			DWG REV	SUB NO	SR
5149456		6			SEISMIC CLASS
					-

Date 9-4-85 Page 2 of 3 Page

By J.P. Foxos

DESCRIPTION OF CHANGE

BEFORE



R TO BE INSTALLED BACK OF DEVICE OR FIELD PROBATION

PNL C09

DCP# 3052.0TJ REV 0 SHT 2 OF 210

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

SUPPLEMENTAL PAGE

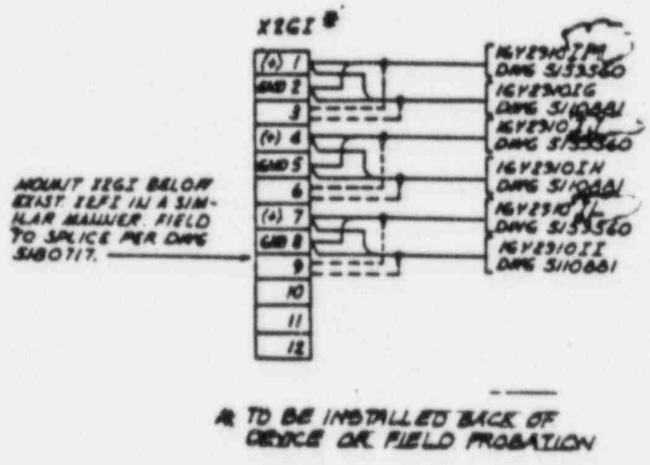
IDCN NUMBER	S-1				
DRAWING NO.	SHEET NO.	REV. NO.	DCN CONV DATE		QUALITY CLASS
			DWG. REV.	SUB NO	SR
5149456		6			SEISMIC CLASS
					–

Date 9-4-85 Page 3 of 3 Page

By J.P. Foxos.

DESCRIPTION OF CHANGE

AFTER.



R TO BE INSTALLED BACK OF DEVICE OR FIELD PROBATION

PNL. C09

DCP# 3052.0TJ REV 0 SHT 65 OF 270

CONSTRUCTION SAFETY ASSESSMENT

DCP 3052.0TJ DATE 10/8/85

A) List of Equipment being modified.

Listing of electrical circuits, line numbers, equipment numbers, support numbers, structural column numbers, etc.

FI-2004A, B, C &
FC-2004A, B, C & ASSOCIATED CONDUITS AND CABLES
FT-2004A, B, C & ASSOCIATED CONDUITS AND CABLES
CABINET C70, C04, C09.
LINE # FWS-14104-4"-EG
LINE # FSW-14114-4"-EG
LINE # FSW-14109-4"-EG
FE 3064-A
FC 3064-B
FE 3064-C
FT 3064-A
FT-3064-B
FT 3064-C

B) List Safety Related Equipment in the area.

Listing shall include all equipment in the area whose accidental removal from service or damage could result in unnecessary challenges to safety systems, removal of safety systems from services, create a loss of redundance in safety systems, or reduce the required degree of protection in safety systems.

NONE

INFORMATION ONLY

DCP# 3052.0TJ REV 0 SHT 186 OF 210

Page 1 of 2

C) Specific Construction Activities

List and description of Specific Unique Construction Activities not addressed in approved procedures. This would include (but not be limited to) such items as the transport of extraordinary heavy items to and within the construction area, removal or additional of missile protection, unusual radiation shielding, personnel or equipment protection requirements, etc.

NONE

D) Temporary Modifications or Temporary Changes.

List and description of Temporary modifications or temporary changes to the permanent plant necessary to facilitate construction

NONE

DCP# 3052.0TJ REV 0 SHT 187 OF 210

INFORMATION ONLY

Preparer SD Mantz Date 10-8-85

Approved By [signature] Date 10-8-85

REFERENCE: SO123-XI-1.0

Issue/Purchase Order Requisition

NEED DATE _____

Mech. Bom

IM688

ENCODE: AC21-V8

SO _____ (When Form Filled Out)

N 6484

Requisition No _____

PREPARED BY G MARTIN Date 10-9-95 Location K40 TEAM 3 Pax No. 87-282 APPROVED BY Chris Strickland

Purpose PALLETIZE MATERIAL for DCP Warehouse Contact ☐ MMS ☐ Tele/Name

System & Plant Tag No. 1-FWS Ref. No. 3052.OTJ Component NA

Maintenance Use ONLY — PRIORITY NO. _____ APPROVED _____

(MATERIAL SERVICES USE ONLY)

ITEM NO.	QTY.	UNIT	DESCRIPTION (PART NO., SIZE, MANUFACTURE, ETC.)	Q CLASS	ACCOUNTING INFORMATION: LOCATION	FUNCTION	ACCOUNT	MATERIAL CODE	UNIT COST	QTY. REC'D.	STOCKING LOCATION	RIP NUMBER	BACK ORDER DATA: ON LINE ISSUE NO.	BACK ORDER REQ. NO.
1	12	EA	CONNECTOR 3/8 x 1/2 T-MNPT	S.R.					AE					
			PARKER 6-8-FB2-55											
			IPOR* E-4059											
2	3	EA	3 VALVE MANIFOLD	S.R.				026 40960						
			GOULD 3/8" TUBE, S.S. G-316											
3	200	FT.	TUBING 3/8" X .049 ASME	S.R.				026 82375						
			SA213 GRADE 316											
			S.S., Seamless											

MATERIAL SERVICE USE ONLY

PURCHASE ORDER NO.	SUPPLIER NO.	COD./CCRD. CODE	SHIP TO LOC. NO.	F.O.B.	VIA	TERMS	CONTR ACCT.

START DATE MO.	DAY	YR.	EXPIRATION DATE MO.	DAY	YR.	PURCHASE ORDER VALUE	ACCTG. LOC. NO.

DELIVERY DATE MO.	DAY	YR.

INFORMATION ONLY

BPO No. _____ Release No. _____ LPO No. _____

Confirmed With _____ Date _____

Comments _____

DCP# 3052.OTJ REV 0 SHT 192 OF 210

WAREHOUSE USE ONLY

TRANS. NO.		
	Issue	✓
	Return	

Order Filled By _____

On-Line Completed By _____

Material Received By _____

REFERENCE: SO123-XI-1.0

San Onofre Nuclear Generating Station

Issue/Purchase Order Requisition

INFORMATION ONLY

DCP# 3052.0TJ REV 0 SHT A3 OF 210

1-3052.0TJ

ENCODE AC21 VG

SO _____ (When Form Filled Out)

Requisition No IM688

Page 2 of 8

ITEM NO	QTY	UNIT	DESCRIPTION (PART NO., SIZE, MANUFACTURER, ETC.)	Q CLASS	ACCOUNTING INFORMATION LOCATION	FUNCTION	ACCOUNT	MATERIAL CODE
4	6	EA.	ELBOW 3/8"T x 1/2" MNPT	SR.				025 19650
			SS. 90° PARKER 6-8 CBZ-SS					
5	6	EA.	UNION TEE 3/8"	SR.				~~025~~ 024 19977
			PARKER 6-6-6-JBZ-SS					
5a	12		TUBE END MALE ADAPTER 3/8" x 1/2"	SR				025 19843
			PARKER 6-8-T2HF-SS					
6	12	EA.	TUBE TO TUBE UNION 3/8"	SR.				025 89679
			PARKER 6-6-HBZ-SS					
7	6	EA.	TUBE PLUG 3/8" SS	SR.				024 19992
			PARKER 6-FNZ-SS					
8	12	EA.	TUBE NUT 3/8"	SR.				024 20032
			PARKER 6-BZ-SS					
9	12	EA.	FERRULES 3/8"	SR.				024 20057
			PARKER 6TZ-SS					
10	12	EA	3/8" TUBE NUT IMPERIAL	SR				026 03942
			HI-SEAL 761-FSS-06-3/8"					

(MATERIAL SERVICES USE ONLY)

UNIT COST	QTY. REC'D	STOCKING LOCATION	RIP NUMBER	BACK ORDER DATA ON LINE ISSUE NO.	BACK ORDER DATA COMMIT REQ. NO

REFERENCE: SO123-XI-1.0

DCP# 3052.OTJ REV 0 SHT 19 OF 210

1-3052.OTJ

ENCODE: AC21-VG

SO _____ (When Form Filled Out)

Requisition No 1M6

Page 3 of 8

San Onofre Nuclear Generating Station

Issue/Purchase Order Requisition

INFORMATION ONLY

ITEM NO.	QTY.	UNIT	DESCRIPTION (PART NO., SIZE, MANUFACTURE, ETC.)	Q CLASS	ACCOUNTING INFORMATION: LOCATION	FUNCTION	ACCOUNT	MATERIAL CODE	(MATERIAL SERVICES USE ONLY) UNIT COST	QTY. REC'D.	STOCKING LOCATION	RIP NUMBER	BACK ORDER: ON LINE ISSUE NO.	C: RE
11	12	EA	7/8" TUBE SLEEVE	SR.				026 03876						
			IMPERIAL HI-SEAL											
			760-F55-06-7/8"											
12	15	FT	PIPE 2" SCH. 40, CS	S.R.				✓						
			ASTM A53											
13	3	EA	~~Ø~~ 1/4" To Be Cut in ~~2~~ 4 2.375 ~~Ø~~ circle A MATL A36 CS	SR				•						
14	3	EA	CHANNEL MC3X7-1	SR.				✓						
			CS. ASTM A 36											
			TO BE CUT 3 1/2" LONG											
15	6	EA	3/8" X 24 UNF 2B THD, BOLT	SR.				✓						
			3" LONG ASTM A193, CS											
			WITH NUT AND LOCK											
			WASHER											
16	3	EA	ORIFICE PLATE	SR				A	AE					
			IDP E-4059											

REFERENCE: SO123-XI-1.0

DCP# 3052.0TJ REV 0 SHT 19 OF 210

1-3052.0TJ

ENCODE AC21 VG

SO _____ (When Form Filled Out)

Requisition No. Im688

Page 4 of 8

San Onofre Nuclear Generating Station

Issue/Purchase Order Requisition

INFORMATION ONLY

ITEM NO.	QTY	UNIT	DESCRIPTION (PART NO., SIZE, MANUFACTURE, ETC.)	Q CLASS	ACCOUNTING INFORMATION			MATERIAL CODE	(MATERIAL SERVICES USE ONLY)					
					LOCATION	FUNCTION	ACCOUNT		UNIT COST	QTY. REC'D.	STOCKING LOCATION	RIP NUMBER	BACK ORDER DATA: ON LINE ISSUE NO.	BACK ORDER DATA: CODED REQ. NO.
17	3	EA.	DIFFERENTIAL PRESS.	SR				025 93556 +						
			INSTRUMENT					025 90181						
			MODEL # N-E130M-11M2											
18	3	SET	ORIFICE FLANGE SET	SR					AE					
			4" 600# R.F. W.N.											
			CONSISTING OF TWO											
			FLANGES WITH JACKSCREWS											
			BOLTS AND NUTS BUT											
			WITHOUT GASKETS 80											
			BORE FORGED CARBON											
			STEEL ASTM A105											
			IPOR # E 4059											

REFERENCE: SO123-XI-1.0

San Onofre Nuclear Generating Station

Issue/Purchase Order Requisition

1-3052.0TJ

ENCODE AC21 VG
SO _____ (When Form Filled Out)
Requisition No 1M688

Page 5 of 8

INFORMATION ONLY

DCP# 3052.0TJ REV 0 SHT 9 OF 10

ITEM NO.	QTY.	UNIT	DESCRIPTION [PART NO., SIZE, MANUFACTURE, ETC.]	Q CLASS	ACCOUNTING INFORMATION: LOCATION	FUNCTION	ACCOUNT	MATERIAL CODE	(MATERIAL SERVICES USE ONLY): UNIT COST	QTY. REC'D.	STOCKING LOCATION	RIP NUMBER	BACK ORDER DATA: ON LINE ISSUE NO.	CODED REQ. NO.
19	6	EA.	4" GASKET TO MATCH 600#	S,R.				024 07625						
			RF. FLANGE SPIRAL											
			WOUND 304 SS NON-											
			ASBESTOS FILLED											
			1/8" THK SOLID MILD STL.											
			CENTERING GUIDE PER											
			API-601 REFERENCE											
			FLEXITALIC FLEXITE											
			STYLE CG OR APPROVED											
			SUB.											
20	6	EA.	1/2" GATE VALVE OS&Y	SR				029 12995						
			BOLTED BONNET 600 800#											
			RATED, SCREWED, 1000											
			SOCKET WELD ENDS											
			FORGED CARBON STEEL											
			ASTM-A105											

CDM No AC21-VG

Page 6 of 8

Requisition No 1M688

San Onofre Nuclear Generating Station

Issue/Purchase Order Requisition

1-3052.0TJ

INFORMATION ONLY

DCP# 3052.0TJ REV 0 SHT 197 OF 210

ITEM NO.	QTY.	UNIT	DESCRIPTION (PART NO., SIZE, MANUFACTURE, ETC.)	Q CLASS	ACCOUNTING INFORMATION LOCATION	FUNCTION	ACCOUNT	MATERIAL CODE
20	Lot		FC TRIM WITH					
			STELLITED SEATS #					
			DISC. REFERENCE VOGT					
			#TSW 12111 (MODIFIED)					
			OR APPROVED SUB.					
21	3	EA	PIPE NIPPLE ½" X 3" LG.	SR				025 34485
			SEAMLESS SCH. 160 FORGED					
			C.S. ASTM A106 GR. B					
			TOE X POE					
22	3	EA	PIPE NIPPLE ½" X 6" LG.	SR				025 34485
			SEAMLESS SCH 160 FORGED					
			C.S. ASTM A106 GR. B					
			TOE X POE					
23	6	EA	½" SCREW PIPE PLUG C.S.	SR				
			PARKER ½" HP-5					

MATERIALS SERVICES USE ONLY

UNIT COST	QTY. REC'D.	STOCKING LOCATION	RIP NUMBER	BACK ORDER DATA: ON LINE (ORDER NO.)	BACK ORDER DATA: ORDER REQ. NO.

CDM No AC21-VG

~~Unit No~~

Requisition No 1M688

San Onofre Nuclear Generating Station

Issue/Purchase Order Requisition

INFORMATION ONLY

1-3052.0TJ

DCP# 3052.0TJ REV 0 SHT 28 OF 210

ITEM NO	QTY.	UNIT	DESCRIPTION (PART NO., SIZE, MANUFACTURER, ETC.)	Q CLASS	ACCOUNTING INFORMATION: LOCATION	FUNCTION	ACCOUNT	MATERIAL CODE	MATERIAL SERVICES USE ONLY: UNIT COST	QTY. REC'D.	STOCKING LOCATION	RIP NUMBER	BACK ORDER DATA: ON LINE ISSUE NO.	ORDER REQ. NO.
24	3	EA.	MC 6 X 15.1 CHANNEL	SR				✓						
			ASTM A-36 6" LONG											
25	150	EA	TWO DIRECTIONAL TYPE					025 38247						
			I CLAMPS WITH HEX											
			HEAD BOLTS PER											
			DWG. 56267-2 (ATTACHED)											
26	40	FT.	ANGLE L 2"X2"X1/4"	SR				025 13661						
			ASTM A-36											
27	100	EA	HEX HEAD BOLTS 1/4"-20	SR				026 79702						
			~~ASTM~~ 2" LONG ASTM ~~A307~~ SA320 NUTS											
			~~EA 200~~ CRL 7 WITH A 4 WASHERS (FOR CIRCLE CLAMP)											
28	100	EA	~~HEX HEAD NUTS~~ NOW AND	SR				✓						
			HEX HEAD BOLTS											
			WITH NUTS 3/8" X 1" LONG											
			ASTM A307, Gr. B											
			(3/8" x 16 x 1")											

CDM No AC21-VG

~~Unit No~~ Page 8 of 8

San Onofre Nuclear Generating Station

Issue/Purchase Order Requisition DCP# 3052.0TJ REV 0 SHT/22 OF 418 Requisition No 1M688

1-3052.0TJ

INFORMATION ONLY

ITEM NO.	QTY.	UNIT	DESCRIPTION (PART NO., SIZE, MANUFACTURER, ETC.)	Q CLASS	ACCOUNTING INFORMATION			MATERIAL CODE
					LOCATION	FUNCTION	ACCOUNT	
29	12	ea	HEX HEAD BOLTS	SR				✓
			7/16" x 24 NF 1" LONG					
			ASTM A 307					

MATERIAL SERVICES USE ONLY					
UNIT COST	QTY. REC'D.	STOCKING LOCATION	BIN NUMBER	BASIC ORDER DATA	
				ON LINE ISSUE NO.	ORDER REQ. NO.

SO (123) 113-2 REV. 2 6/83

REFERENCE: S0123 XI 1.0

Issue/Purchase Order Requisition

NEEDS DATE _____

ELECTRICAL MATERIAL

ENCODE: AC21-VG

SO 1

(When Form Filled Out)

Page 1 of 7

1E688

Requisition No ~~N 6488~~

PREPARED BY RON KUDLA Date 10/10/85 Location K-40/BCI TEAM 3 Pax No 87259 APPROVED BY

Purpose MATERIAL FOR DCP 3052.OTJ (ELECTRICIAN) Warehouse Contact ☐ MMS ☐ Tele/Name

System & Plant Tag No. MFW Rel. No. 3052.OTJ Component NA

ITEM NO	QTY	UNIT	DESCRIPTION (PART NO., SIZE, MANUFACTURER, ETC.)	Q CLASS	ACCOUNTING INFORMATION LOCATION	FUNCTION	ACCOUNT	MATERIAL CODE
1	3	EA	MODULE, MODEL N-2AI-I2V (CURRENT TO VOLTAGE CONVERTER	SR				025-25327
2	3	EA	REPLACEMENT METER SCALE FOR SIGMA INDICATORS (REF IDR E 405A)	SR				
3	120	FT	CONDUIT, RIGID, GALV 1" (REF IDR E 418 ~~TYP~~) W/ COUPLING	SR				026-55538

UNIT COST	QTY REC'D	RECEIVING LOCATION	RIP NUMBER	BACK ORDER DATA: ON LINE ISSUE NO.	BACK ORDER DATA: BACK ORDER REQ. NO.
A-E					

MATERIAL SERVICE USE ONLY

PURCHASE ORDER NO.	SUPPLIER NO.	COST CENTER CODE	SHIP TO LOC. NO.	P.O.B.	VIA	TERMS	UPDATE ACCT

START DATE MO.	DAY	YR.	EXPIRATION DATE MO.	DAY	YR.	PURCHASE ORDER VALUE	ACCTG LOC. NO

DELIVERY DATE MO.	DAY	YR.

WAREHOUSE USE ONLY

TRANS. NO.	ISSUE	✓
	Return	

Order Filled By _____

On-Line Completed By _____

Material Received By _____

PO No. _____ Release No. _____ LPO No _____

Confirmed With _____

Comments Palletize for DCP **INFORMATION ONLY**

DCP# 3052.OTJ REV 0 SHT 200F210

San Onofre Nuclear Generating Station

Issue/Purchase Order Requisition

INFORMATION ONLY

DCP 3052.0TJ
ELECTRICAL MATERIAL

CDM No AC21-VG

Unit No 1

Requisition No 1E688

ITEM NO	QTY	UNIT	DESCRIPTION (PART NO., SIZE, MANUFACTURER, ETC.)	Q CLASS	ACCOUNTING INFORMATION LOCATION	FUNCTION	ACCOUNT	MATERIAL CODE	(MATERIAL SERVICES USE ONLY) UNIT COST	QTY. REC'D.	STOCKING LOCATION	RIP NUMBER	BASE ORDER DATA ON LINE ITEM NO.	BASE ORDER DATA CHANGE ORD. NO.
4	40	FT	CONDUIT, RIGID, GALV. 2" (IPOR = E 4187) W/ COUPLING	SR				026-54648						
5	1	EA	CONDUIT, THREADED, TYPE T, 2", FERRALOY (IPOR = E 4187)	SR				~~026-~~ 026-03462						
6	3	EA	CONDUIT, TYPE LL, 1" FORM 7, FERRALOY (IPOR = E 4187)	SR				026-12521						
7	1	EA	CONDUIT, TYPE LL, 2" FORM 35, ~~FERRALOY~~ MALLEABLE (IPOR = E 4187)	SR				024-18269						
8	2	EA	GASKET, CONDUIT, 2", NEOPRENE, OPEN TYPE	SR				026-58383						
9	3	EA	GASKET, CONDUIT, 1" NEOPRENE, OPEN TYPE	SR				026-58726						

CDM No AC21-VG

Unit No 1

Requisition No 1E688

San Onofre Nuclear Generating Station

Issue/Purchase Order Requisition DCP 3052.OTJ ELEC. MATERIAL

INFORMATION ONLY

ITEM NO.	QTY.	UNIT	DESCRIPTION (PART NO., SIZE, MANUFACTURER, ETC.)	Q CLASS	ACCOUNTING INFORMATION LOCATION	FUNCTION	ACCOUNT	MATERIAL CODE	(MATERIAL SERVICES USE ONLY) UNIT COST	QTY. REC'D	STOCKING LOCATION	DIP NUMBER	PAGE ORDER DATA DO LINE ITEM NO.	DOC. C
10	2	EA	COVER, CONDUIT, 2", MAL. IRON, GALV. W/SCREW	SR				026-58839						
11	3	EA	COVER, CONDUIT, 1", MAL. IRON, GALV. W/SCREW	SR				026-58888						
12	8	EA	LOCKNUT, CONDUIT RS, ELEC, 1"	SR										
13	4	EA	LOCKNUT, CONDUIT RS, ELEC 2"	SR										
14	6	EA	BUSHING, CONDUIT, 1" THREADED, INSULATED, GRD	SR				026-59522						
15	2	EA	BUSHING, CONDUIT, 2" THREADED, INSUL, GRD	SR										
16	4	EA	REDUCER, CONDUIT, THREAD, GALV., 1" x ½"	SR										
17	20	FT	CONDUIT, ½", LIQUID TIGHT, FLEX (IPOR II E-4187)	SR				025-15914						

FORM 80 (111) 11-84 REV. 1 DCP# 3052.OTJ REV 0 CUT OF

San Onofre Nuclear Generating Station

Issue/Purchase Order Requisition

INFORMATION ONLY

DCP 3052.0TJ
ELEC. MATERIAL

CDM No AC21-VG
Unit No 1
Requisition No 1E688

ITEM NO	QTY	UNIT	DESCRIPTION (PART NO., SIZE, MANUFACTURER, ETC.)	Q CLASS	ACCOUNTING INFORMATION LOCATION	FUNCTION	ACCOUNT	MATERIAL CODE	(MATERIAL SERVICES USE ONLY) UNIT COST	QTY REC'D	STOCKING LOCATION	RIP NUMBER	BACK ORDER DATA ON LINE ISSUE NO	BACK ORDER REQ. NO
18	6	EA	CONDUCTOR, STRAIGHT, 1/2",	SR				024-62341						
			LIQUID-TIGHT FLEX CONDUIT											
			W/GRD THIMBLE (FOR 1" EMT)											
19	20	EA	STRAP, PIPE, 1", (HOT DIPPED) GALV.	SR				026-61890						
			PN P2558-10, 2-HOLE											
20	20	EA	STRAP, 1", ONE-HOLE, STEEL	SR				026-60538						
			FOR EMT CONDUIT, GALV											
21	10	EA	STRAP, CONDUIT, 2",	SR				026-23361						
			RIGID OR EMT, SINGLE											
			BOLT, GALV											
22	10	EA	STRAP, PIPE, 2"	SR				026-61940						
			PN P2558-20											
			HOT-DIP GALVANIZED											
23	3	EA	BLOCK, TERMINAL, 6-POST	SR				026-35696						
			PN COTB20(5), POST											
			INSTALLATION TEST REQUIRED											

DCP# 3052.0TJ REV 0 SHT 23 OF 210

San Onofre Nuclear Generating Station

Issue/Purchase Order Requisition

DCP 3052.0TJ
ELEC. MATERIAL

CDM No AC21-VG
Unit No 1
Requisition No 1E688

PAGE 5 OF 7

INFORMATION ONLY

ITEM NO	QTY.	UNIT	DESCRIPTION (PART NO., SIZE, MANUFACTURER, ETC.)	Q CLASS	ACCOUNTING INFORMATION LOCATION	FUNCTION	ACCOUNT	MATERIAL CODE	(MATERIAL SERVICES USE ONLY) UNIT COST	QTY. REC'D	STOCKING LOCATION	RIP NUMBER	BASE ORDER DATA ON LINE ISSUE NO.	BASE ORDER DATA CONAM REQ. NO.
24	1	BX	TERMINAL, COMPRESSION, PN 53418-1, 16-14 AWG, #10 STUD, BLUE STRIPE, NYLON PVDC, 100/BOX.	SR				024-26559						
25	1	BX	TERMINAL, COMPRESSION, PN 53417-1, 16-14 AWG, #8 STUD, BLUE STRIPE, NYLON PVDC, 100/BOX	SR				024-26567						
26	50	EA	SPLICE, BUTT, COMPRESSION, TINNED COPPER, 16-14 AWG PN 53549-1.	SR				024-26617						
27	20	FT	CHANNEL, 12 GA, GALV, G5812A, ELEC.	SR										
28	20	FT	CHANNEL, 12 GA, GALV, G5812E, ELEC.	SR										

DCD# 3052.0TJ REV 0 SHT 7 OF 210

San Onofre Nuclear Generating Station

Issue/Purchase Order Requisition

DCP 3052.OTJ
ELEC. MATERIAL

CDM No AC21-VG

Unit No 1

Requisition No 1E688

PAGE 6 OF 7

INFORMATION ONLY

ITEM NO	QTY.	UNIT	DESCRIPTION (PART NO., SIZE, MANUFACTURER, ETC.)	Q CLASS	ACCOUNTING INFORMATION LOCATION	FUNCTION	ACCOUNT	MATERIAL CODE	(MATERIAL SERVICES USE ONLY) UNIT COST	QTY. REC'D	STOCKING LOCATION	RIP NUMBER	BASIC ORDER DATA ON LINE ITEM NO.	BASIC ORDER DATA ORDER REQ. NO.
29	5	EA	ADHESIVE RACEWAY MARKERS, ½" BLACK CHARACTERS ON 1" YELLOW BACKGROUND, CABLE MARKERS CO. PN SP-14.	SR										
30	2	EA	ADHESIVE RACEWAY MARKERS, 1" BLACK CHARACTERS ON 1½" YELLOW BACKGROUND, CABLE MARKERS CO. PN SP-16.	SR										
31	1	EA	BLANK LICENSE PLATE RX PLANT FIRST AID ANNUNCIATOR, WINDOW # 19	SR										
32	40	EA	CAP SCREW, BOLT HEX HD, ¼"x20 x1", CAD PLATED	SR										

DCP#3052.OTJ DEVO SHT 6 OF 10

San Onofre Nuclear Generating Station

Issue/Purchase Order Requisition

DCP 3052.OTJ
ELEC. MATERIAL

CDM No AC21-VG

Unit No 1

Requisition No 1E688

INFORMATION ONLY

PAGE 7 OF 7

ITEM NO.	QTY.	UNIT	DESCRIPTION (PART NO., SIZE, MANUFACTURER, ETC.)	Q CLASS	ACCOUNTING INFORMATION LOCATION	FUNCTION	ACCOUNT	MATERIAL CODE	(MATERIAL SERVICES USE ONLY) UNIT COST	QTY REC'D	STOCKING LOCATION	RIP NUMBER	BACK ORDER DATA PO LINE ITEM NO.	BACK ORDER REQ. #
33	20 ~~40~~	EA	CAP SCREW, SOCKET HEX HD, 3/8"-16 x 1", CAD PLATED	SR										
34	40 ~~24~~	EA	CHANNEL LOCKNUT W/SPRING, 1/4"-20, CAD PLATED	SR										
35	20	EA	CHANNEL LOCKNUT W/SPRING, 3/8"-16, CAD PLATED	SR										

DCP# 3052 OTJ REV 0 CUT OF

REFERENCE: SO123-XI-1.0

Issue/Purchase Order Requisition

NEED DATE _____
CABLE

1K688

ENCODE: AC21-VG
SO 1
(Unless Form Filled Out)
Page 1 of _____
Requisition No N 6486

PREPARED BY Rod Kubik Date 10/10/85 Location K-40/BG 1-2M3 Pax No. 87259 APPROVED BY J. Keller

Purpose CABLE FOR DCP 3052.0TJ Warehouse Contact ☐ MMS ☐ Tele/Name

System & Plant Tag No. MFW Ref. No. 3052.0TJ Component NA

ITEM NO	QTY.	UNIT	DESCRIPTION (PART NO., SIZE, MANUFACTURER, ETC.)	Q CLASS	ACCOUNTING INFORMATION LOCATION	FUNCTION	ACCOUNT	MATERIAL CODE
1	450	FT	CABLE, INSTRUMENTATION, 600 V, 2/C #16 AWG, COPPER, SHIELDED, YELLOW, CABLE CODE K26	SR				025-68178

INFORMATION ONLY

Maintenance Use ONLY
PRIORITY NO. APPROVED
(MATERIAL SERVICES USE ONLY)

UNIT COST	QTY REC'D	STOCKING LOCATION	RIP NUMBER	BACK ORDER DATA: ON LINE ISSUE NO.	BACK ORDER DATA: ORDER ADD. NO.

MATERIAL SERVICE USE ONLY

PURCHASE ORDER NO.	SUPPLIER NO.	COM./DIV. CODE	SHIP TO LOC. NO.	F.O.B.	VIA	FORCE	CONTR ACCT.

START DATE MO.	DAY	YR.	EXPIRATION DATE MO.	DAY	YR.	PURCHASE ORDER VALUE	ACCTG LOC. NO.	DELIVERY DATE MO.	DAY	YR.

PO No. _____ Release No. _____ DCP# 3052.0TJ REV No. 0 SHT 207 OF 210

Confirmed With _____ Date _____

Comments PALMETTO FOR DCP.

WAREHOUSE USE ONLY

TRANS. NO.		✓
	Issue	
	Return	

Order Filled By _____

On-Line Completed By _____

Material Received By _____

REFERENCE: SO123-XI-1.0

Issue/Purchase Order Requisition

SO 1 (When Form P

Requisition No E 405

PREPARED BY T. Summers Date 10/18/85 Location Fluor-Irvine Pax No (714) 975-4119 APPROVED BY

Purpose Incorporate MFW Low Flow Indication Warehouse Contact ☐ MMS ☒ Tele/Name 2-4168 R. Puentes

System & Plant Tag No. FWS-Lo Flow Ref. No. DCP 3052.0TJ Component Orifice Plate

Maintenance Use ONLY

PRIORITY NO. APPROVED

(MATERIAL SERVICES USE ONLY)

ITEM NO	QTY.	UNIT	DESCRIPTION (PART NO., SIZE, MANUFACTURER, ETC.)	Q CLASS	ACCOUNTING INFORMATION LOCATION	FUNCTION	ACCOUNT	MATERIAL CODE	UNIT COST	QTY. REC'D.	STOCKING LOCATION	RIP NUMBER	ORDER QTY. OR LINE GROUP NO.
1	3	ea	Orifice Plate and flange set per attached Specification M-38692, Supplier Document Requirement Form 41-281, Procurement Attachment Quality Assurance/Technical Requirements (PAQAT), Form 26-239-1 and Critical Characteristics Evaluation (Procurement Level III), Form SO (123) 253	SR									

INFORMATION ONLY

DCP# 3052.0TJ REV 0 SHT 22 OF 210

MATERIAL SERVICE USE ONLY

Vendor No.	Name	
	Person	

Order Filled By

On Line Completed By

Material Received By

BPO No. Release No. LPO No.

Confirmed With Date

Comments

REFERENCE: SO123-XI-1.0

San Onofre Nuclear Generating Station

Issue/Purchase Order Requisition

ENCODE AC21 VG
SO 1
(When Form Filled Out)

Requisition No E4059

ITEM NO	QTY.	UNIT	DESCRIPTION (PART NO., SIZE, MANUFACTURE, ETC.)	Q CLASS	ACCOUNTING INFORMATION: LOCATION	FUNCTION	ACCOUNT	MATERIAL CODE	(MATERIAL SERVICES USE ONLY): UNIT COST	QTY. REC'D.	STORAGE LOCATION	RIP NUMBER	CHARGE ORDER: ON LINE ISSUE NO.	
			NOTE: Engineering Data Submittal Instructions											
			Fluor Engineers, Inc. Power Division is											
			Southern California Edison's engineer for											
			this work. Seller is hereby instructed to											
			mail all engineering data requirements covered											
			herein to the following address:											
			Fluor Engineers, Inc. Power Division Irvine, CA 92730 Attn: Ms. A. B. Rust Reference: (SCE P.O. Number) Fluor Contract No. 492610											
			Because of the urgency of completing this project, Seller is requested to transmit data utilizing express courier services.											

INFORMATION ONLY

DCP# 3052.0TJ REV 0 SHT 1 OF 20

REFERE[illegible] SO123-XI-1.0

3052

ENCODE: AC21-

(When Form Fills)

Page ____ of ____

Issue/Purchase Order Requisition

Requisition No. 82504

PREPARED BY Don Gorg Date 8-21-85 Location 603 Pax No. 2-3281 APPROVED BY [illegible]

Purpose W.R. 3052

Warehouse Contact ☐ MMS ☐ Tele/Name

System & Plant Tag No. FWS Ref. No. Component CV 142, 143, 144 Disch. Flow

ITEM NO.	QTY.	UNIT	DESCRIPTION (PART NO., SIZE, MANUFACTURE, ETC.)	Q CLASS	ACCOUNTING INFORMATION LOCATION	FUNCTION	ACCOUNT	MATERIAL CODE
1	2	ea	N-E13DM-IIM2-C PRESS XMTR	SR				025-[illegible]
2	1	ea	N-E13DM-IIM2-C	SR				025-[illegible]
3	2	ea	N-2AI-I2V CURRENT TO VOLTAGE CONVERTER	SR				025-[illegible]

[redacted]

INFORMATION ONLY

DCP# 3052.0TJ REV 0 SHT 190 OF 210

MATERIAL SERVICE USE ONLY

PURCHASE ORDER NO.	SUPPLIER NO.	COM./SERV. CODE	SHIP TO LOC. NO.	F.O.B.	VIA	TERMS	CONTR ACCT.

START DATE MO.	DAY	YR.	EXPIRATION DATE MO.	DAY	YR.	PURCHASE ORDER VALUE	ACCTG. LOC. NO.	DELIVERY DATE MO.	DAY	YR.

WAREHOUSE USE ONLY

TRANS. NO.		
	Issue	
	Return	

Order Filled By ____

On-Line Completed By ____

Material Received By ____

BPO No. ____ Release No. ____ LPO No. ____

Confirmed With ____ Date ____

Comments ____

REFERENCE: SO123-XI-1.0

ENCODE: AC21-VG
SO 1 (When Form Filled Ou

Page 1 of 1

Issue/Purchase Order Requisition

Requisition No 82512

PREPARED BY DON GEORG Date 9-3-85 Location GO3 Pax No. 23231 APPROVED BY

Purpose W.R. 3052 Warehouse Contact ☐ MMS ☐ Tele/Name

System & Plant Tag No. MFW LO FLO Ref. No. DCP3052.0 Component TRANSMITTER LINES & VALVES

ITEM NO.	QTY	UNIT	DESCRIPTION (PART NO., SIZE, MANUFACTURE, ETC.)	Q CLASS	ACCOUNTING INFORMATION LOCATION	FUNCTION	ACCOUNT	MATERIAL CODE
1	3	EA	3-VALVE BYPASS MANIFOLD SS 6000 # 3/8" FLARELESS TUBE	SR				626-40860
2	180	FT	3/8" X .049 WALL TUBING ASME SA213GR316	SR				626-82375

Maintenance Use ONLY
PRIORITY NO. APPROVED
(MATERIAL SERVICES USE ONLY)

UNIT COST	QTY. REC'D.	STOCKING LOCATION	TRIP NUMBER	BACK ORDER DATA ON LINE REQ. NO.	BACK ORDER DATA CODE REQ. NO.

INFORMATION ONLY

DCP# 3052.0TJ REV 0 SHT 191 OF 210

MATERIAL SERVICE USE ONLY

PURCHASE ORDER NO.	SUPPLIER NO.	COM./SERV. CODE	SHIP TO LOC. NO.	F.O.B.	VIA	TERMS	CONTR ACCT.

START DATE MO.	DAY	YR.	EXPIRATION DATE MO.	DAY	YR.	PURCHASE ORDER VALUE	ACCTG LOC. NO.	DELIVERY DATE MO	DAY	YR.

WAREHOUSE USE ONLY

TRANS. NO.		
	Issue	
	Return	

BPO No. _____ Release No _____ LPO No _____

Confirmed With _____ Date _____

Comments _____

Order Filled By _____

On Line Completed By _____

Material Received By _____

FLUOR ENGINEERS, INC.
POWER DIVISION

INTERIM DESIGN CHANGE NOTICE (IDCN)/DESIGN CHANGE NOTICE (DCN)

(For SONGS 1, 2 & 3)

IDCN NUMBER	S-28				
DRAWING NO.	SHEET NO.	REV NO.	DCN CONV DATE DWG REV	DCN CONV DATE SUB. NO	QUALITY CLASS
M-30418	–	47			SR
					SEISMIC CLASS
					A

SUPPLEMENTAL PAGE

DCP# 3052 OTJ REV 0 SHT 47 OF 210

Date 11-5-85 Page 11 of 19 Page

By J.P. Faxas

DESCRIPTION OF CHANGE

AFTER

POOR QUALITY DOCUMENT
BEST AVAILABLE COPY

BECHTEL CORPORATION

ELECTRICAL RACEWAY SCHEDULE

4931 G

(E553-809/A 40)
DATE 26 AUG 81

JOB NO. 14000- 0+ 0 SAN ONOFRE NUCL GEN STA UN 1 KC

REV. 49 RUN 54 PG. 40

= CONDUIT =

ADD	RACEWAY NUMBER	DWG.	SIZE	TYPE	LENGTH		CODE	FUNCTION	REMARKS	FROM NODE	FROM LOCATION	TO NODE	TO LOCATION	INCLUDES CABLES NUMBER	AMT	CODE	AREA	TOTAL CABLE AREA	% FILL	STATUS	COMPLETE
	4931 G	8481	0/4	FLEX	10		DB				CCV957/NC-LIN SW		4B 7718	1QV1214C2	1	514	.22	.22	41		
	4932 G	8481	0/4	FLEX	10		DB				CCV957/NO-LIN SW		4B 7718	1QV1214C2	1	514	.22	.22	41		
	4933 N	4784	1	RS	20		AC				HC09		4941 N/4942 N								
	4934 G	8481	0/4	FLEX	10		DB				CCV949/SOL		4B 7718	1QV1214C1	1	514	.22	.22	41		
	4935 G	8481	0/4	FLEX	10		DB				CCV949/NC-LIN SW		4B 7718	1QV1214C1	1	514	.22	.22	41		
	4936 G	8481	0/4	FLEX	10		DB				CCV949/NO-LIN SW		4B 7718	1QV1214C1	1	514	.22	.22	41		
	4938 N	4784	2	RS	20		AE				HC02		OC37	1NRAFR1I1	4	553	.37	.37	0		
	4941 N	4784	1	RS	20		AC				HC82		4933 N/4942 N								
	4942 N	4784	1	RS	20		AC				HC82		4933 N/4941 N								
	4943 F	8787	3/4	RS	2		AB				4939 F/4883 F		4881 F	1R				12	32		

90

FISHER® Controls

COST: Sohio Petroleum Co.
P.O.: MMSW1-164-8211-1TPC
TAG: PV-02-8187,LV-51-8612,PV-03-8187,PV-51-8187,8453,8565A,TV-51-8687,8688,8435,PV-51-8511,8565,PV-57-8712
AGENT: 22P-6095-8211-A1

Instruction Manual

Type 657 Diaphragm Actuator Sizes 30-70 and 87

Form 1900, September 1980

INTRODUCTION

Scope of Manual

This instruction manual provides information on installation, adjustment, maintenance, and parts ordering for the Type 657 actuator in sizes 30 through 70 and size 87 and for the Type 657-4 actuator in sizes 70 and 87. Information for other equipment used with these actuators is found in separate manuals.

Description

The Type 657 actuator (figure 1) and the Type 657-4 actuator are direct-acting, spring-opposed diaphragm actuators used for automatic operation of control valves. The Type 657 actuator provides up to 3 inches (76 mm) maximum actuator travel while the Type 657-4 actuator provides 4 inches (102 mm) maximum actuator travel. Both actuators position the valve plug in response to varying pneumatic loading pressure on the diaphragm. Figure 2 schematically shows the operation of these actuators. Additionally, a Type 657 or 657-4 actuator can be furnished with either a top-mounted or side-mounted handwheel assembly. A top-mounted handwheel assembly is usually used as an adjustable up travel stop. A side-mounted handwheel assembly is usually used as an auxiliary manual actuator.

Specifications

Specifications for the Type 657 and 657-4 actuators are shown in table 1. Information for a specific actuator is also found on the nameplate (figure 3) of that actuator.



Figure 1. Type 657 Actuator Mounted on **easy-e®** *Valve Body*

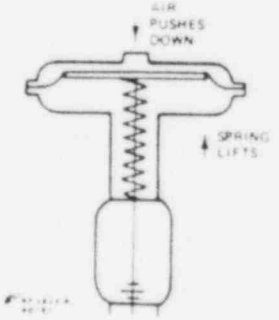


Figure 2. Schematic of Type 657 and 657-4 Actuators

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Key	Description	Part Number
8	Cap Screw, pl steel (Continued)	
	Push Down to Open Valve	
	Size 30 (3 req'd)	1D5298 24052
	Sizes 34 & 40	
	(3 req'd)	1A3684 24052
	Sizes 45, 46, 50 & 60	
	(4 req'd)	1A3684 24052
	Sizes 70 & 87	
	(9 req'd)	1N1293 28992
9	Yoke	
	Size 30	
	Cast iron	3E7926 19042
	Steel	3K8301 22012
	Size 34	
	Cast iron	2E8696 19042
	Steel	2H7865 22012
	Size 40	
	Cast iron	3E8070 19042
	Steel	3H7867 22012
	Sizes 45 & 46	
	Cast iron	2E9037 19042
	Steel	2H7869 22012
	Sizes 50 & 60	
	Cast iron	3E8323 19042
	Steel	3K8302 22012
	Size 70	
	Cast iron	3N1273 19042
	Steel	3N1276 22012
	Cast iron (for side mtd handwheel)	4N8901 19042
	Size 87	
	Cast iron	3N6639 19042
	Steel	3N7584 22012
	Cast iron (for side mtd handwheel)	4N8866 19042

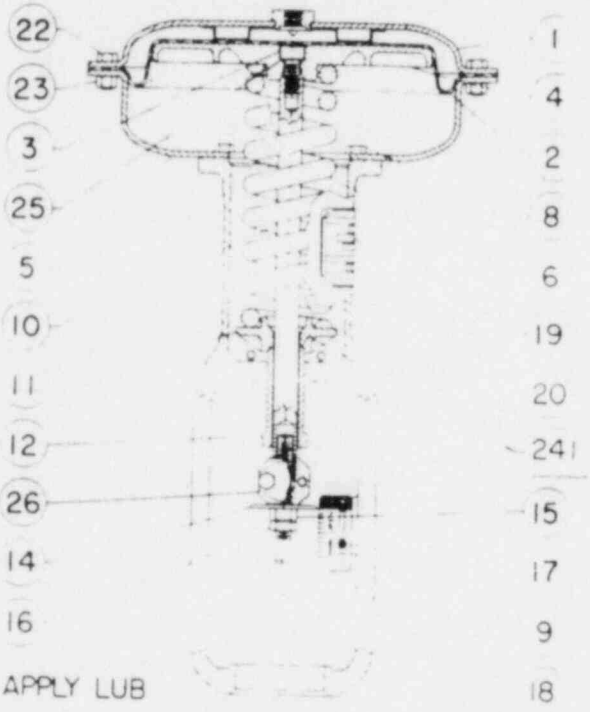


Figure 5. Type 657 Actuator Sizes 30 Through 60

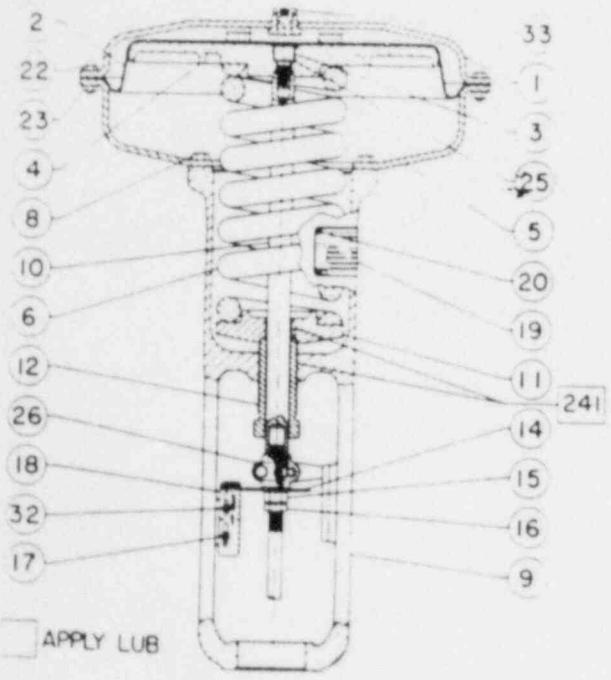


Figure 6. Type 657 Size 70 Actuator

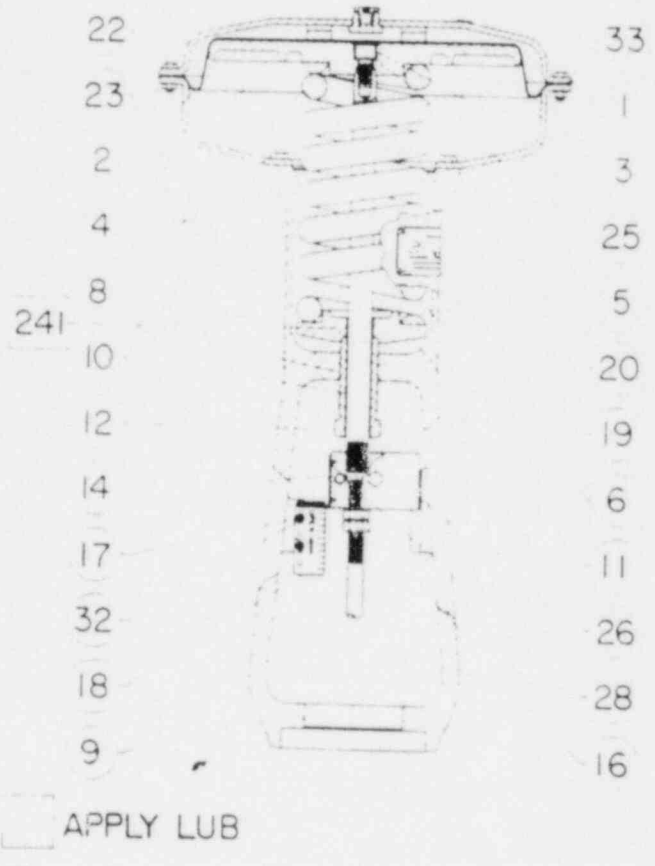
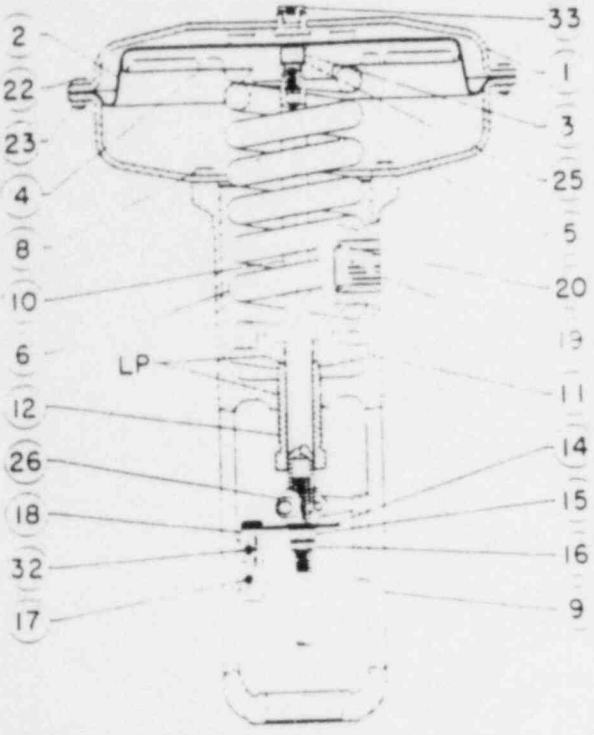
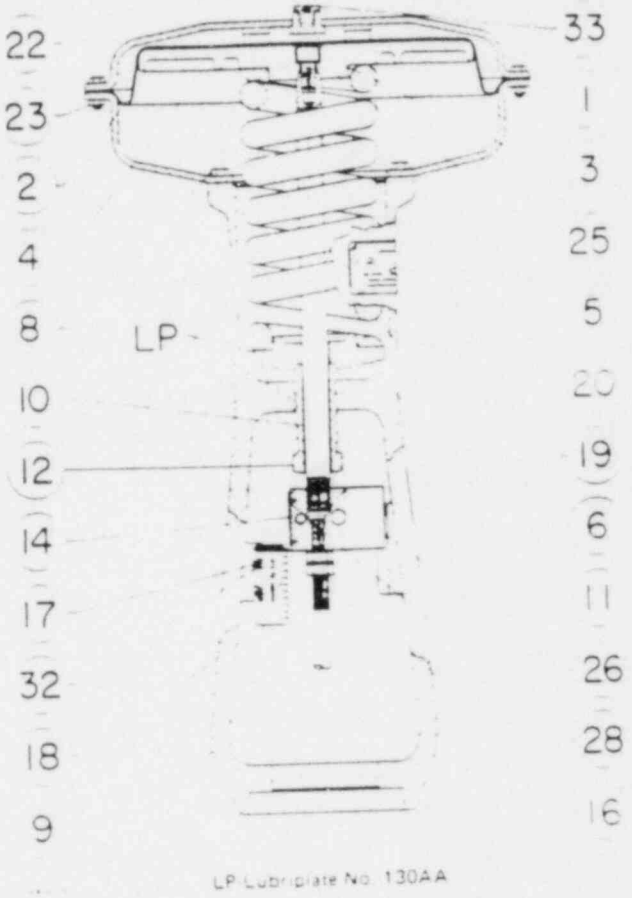


Figure 7. Type 657 Size 87 Actuator



LP-Lubriplate No. 130AA

Figure 6. Type 657 Size 70 Actuator



LP-Lubriplate No. 130AA

Figure 7. Type 657 Size 87 Actuator

Turning the handwheel clockwise into the diaphragm case forces the pusher plate assembly (key 10, figures 9 and 10) against the diaphragm and diaphragm plate. This compresses the spring and moves the actuator stem downward. Turning the handwheel counterclockwise allows the spring to move the actuator stem upward. If the valve body has a "push down to close" valve plug, full opening can be restricted by positioning the top mounted handwheel at the desired position. If the valve plug is of the "push down to open" type, closing of the valve can be restricted by use of the handwheel. A locknut (key 137, figures 9 and 10) holds the handwheel in position.

Disassembly and Maintenance

The key numbers in this section refer to both figures 9 and 10 unless otherwise specified.

1. Bypass the control valve. Reduce the loading pressure to atmospheric and remove the tubing or pipe from the handwheel body.

2. Turn the spring adjustor counterclockwise to relieve all spring compression.

3. Remove the diaphragm case cap screws and lift off the upper diaphragm case and handwheel assembly.

4. If necessary, the handwheel assembly can be separated from the diaphragm case by removing the cap screws (key 141). This may be necessary to replace the O-ring (key 139) or for ease of handling.

5. Loosen the locknut (key 137) and turn the handwheel (key 51) clockwise. Remove hex nut (key 54) and washer (key 134) and lift off the handwheel.

6. Then unscrew the locknut (key 137) from the handwheel stem (key 133), and remove the stem from the body (key 142). A screwdriver slot in the top of the stem is provided for this purpose.

7. If air has been leaking around the handwheel stem, the O-ring (key 138) probably needs replacing.

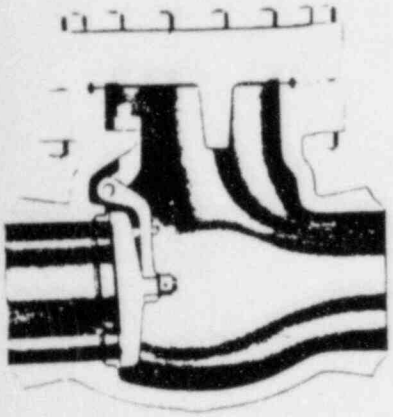
8. To complete disassembly, drive out the groove pin (key 140, figure 10) and slide the pusher plate (key 135) off the stem. The pusher plate of a handwheel assembly mounted on a size 70 or 87 actuator is held to the stem by a retaining screw (key 174, figure 9). Removing the retaining screw and pusher plate exposes the thrust bearing (key 175, figure 9).

MCC PACIFIC VALVES

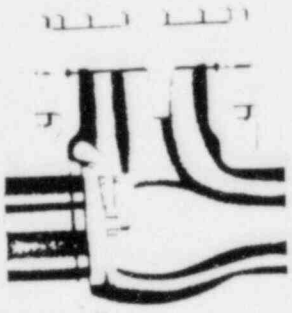
Cast Steel-Bolted Bonnet Swing Check Valves

ANSI Class 600
Sizes 1-1/2" to 20"

Fig. No. 680 external hinge pin 1/2" - 20"
Fig. No. 684 internal hinge pin 14" - 20"



20" Fig. 684-WE

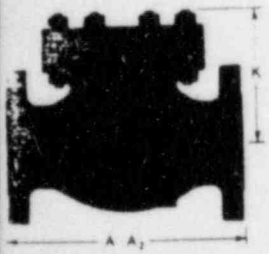


12" Fig. 680

FEATURES

- Full range of body/bonnet materials
- Full range of trim materials
- Anti-rotation Disc
- Flanged or butt weld ends
- Full port design — API wall thickness
- Renewable seat rings — also available seal welded
- Horizontal or vertical service
- Ring joint bonnet gasket
- Meet design requirements of ANSI B16.5 & B16.34

Dimensions and Weights FIGURE NUMBERS: 680 & 684





Dim.	Description		VALVE SIZE (inches)											
			1.5	2	2.5	3	4	6	8	10	12	14*	16*	20*
A	Face to Face Flanged Ends	in	9.50	11.50	13.00	14.00	17.00	22.00	26.00	31.00	33.00	35.00	39.00	47.00
		mm	241	292	330	356	432	559	660	787	838	889	991	1194
A_1	End to End Weld Ends	in	9.50	11.50	13.00	14.00	17.00	22.00	26.00	31.00	33.00	35.00	39.00	47.00
		mm	241	292	330	356	432	559	660	787	838	889	991	1194
A_2	Face to Face RTJ	in	9.50	11.62	13.12	14.12	17.12	22.12	26.12	31.12	33.12	35.12	39.12	47.25
		mm	241	295	333	359	435	562	664	791	841	892	994	1200
K	Center to Top Open	in	7.25	8.00	8.75	9.50	11.37	13.75	16.37	19.62	20.87	25.75	29.50	31.50
		mm	184	203	222	241	289	349	416	498	530	654	749	800
	Weight Flanged Ends	lbs	80	100	135	152	280	550	910	1435	1892	2640	3480	5260
		kg	36	45	61	69	127	249	413	651	858	1198	1575	2386
	Weight Weld Ends	lbs	60	86	120	125	225	486	783	1160	1570	2251	2890	4375
		kg	27	39	54	57	102	220	355	526	712	1021	1310	1985

RELATED DATA

Temperature/pressure ratings, see pages 56-63.
Available materials and trims, see page 50.
ANSI raised face flanges, see page 66.
Ring joint flange ends, include suffix RJ in figure number (i.e., 180-U-RJ), see pages 68 & 69.
Materials of construction, see page 53.

Butt weld ends, include suffix WE and bore schedule in figure number (i.e., 180-U-WE(40)).
Unless otherwise specified, weld ends will be supplied to ANSI B16.25 figure 2(a) or 2(b).
Flow calculations, see pages 80 & 81.
*Sizes available both Fig. 680 and 684.

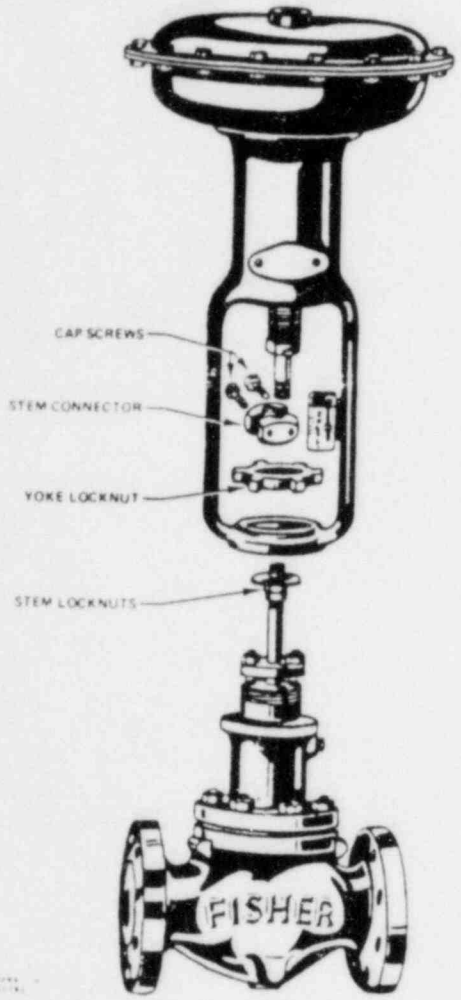


Figure 4. Actuator Mounting Components for Sizes 30 through 70 Actuators

2. **For direct-acting valves**, push the valve stem down to close the valve.

For reverse-acting valves, push the valve stem down to open the valve.

3. Place the actuator on the valve bonnet. For size 30 through 70 actuators, lift or hoist the actuator, if necessary, in order to slip the yoke locknut over the valve stem.

4. **For size 87 actuator**, insert the cap screws, and tighten the hex nuts, securing the actuator to the bonnet.

For all other sizes, screw the yoke locknut tightly onto the bonnet, securing the actuator to the bonnet.

5. Turn the spring adjustor (key 12, figures 5, 6, and 7) into the yoke several turns forcing the actuator stem to the top of its travel.

CAUTION

Do not clamp just the tip of either the valve stem or the actuator stem in the stem connector. Incomplete engagement of both valve stem and actuator stem in the stem connector may result in stripped threads or improper operation. Be sure that the length of each stem clamped in the stem connector is equal to or greater than the diameter of that stem.

6. Clamp the actuator and valve body stems between the two stem connector halves. Insert and tighten the two stem connector cap screws.

7. Raise the travel indicator disc to the stem connector and thread the stem locknuts against the stem connector.

8. Align the travel indicator scale to show valve position.

Loading Connection

1. Connect the loading pressure piping to the 1/4-inch connection in the top of the diaphragm casing.

2. For size 70 and 87 actuators, remove the 1/4-inch bushing in the 1/2-inch connection to increase connection size, if necessary. Either piping or tubing may be used.

3. Keep the length of tubing or piping as short as possible to avoid transmission lag in the control signal. If an accessory (such as a volume booster or valve positioner) is used, be sure that the accessory is properly connected to the actuator.

4. Cycle the actuator several times to check that the valve stem travel is correct and that the travel occurs when the correct pressure range is applied to the diaphragm.

5. If valve stem travel is incorrect, refer to the "Travel" procedure in the "Adjustments" section.

6. If the pressure range is incorrect, refer to the "Spring" procedure in the "Adjustments" section.

ADJUSTMENTS

Travel

Make travel adjustments when the motion observed during actuator travel is different from the travel stamped on the actuator nameplate (figure 3).

When adjusting travel of a reverse-acting valve, slightly pressure the actuator. This moves the valve plug off of the seat, reducing the chance of damaging the valve plug or seat during adjustments.

INFORMATION REQUESTED BY NRC

SAN ONOFRE UNIT 1

The following is Southern California Edison Company's response to a request for information telecopied by the NRC on May 4, 1979.

ITEM

Describe backup systems available (to auxiliary feedwater) for providing feedwater to steam generators. Discuss actions and time required to make these systems available. Are procedures available? If so, provide.

RESPONSE

The auxiliary feedwater system serves as a backup system to provide feedwater to the steam generators when the normal feedwater system is not available. In the unlikely event that both main feedwater pumps and both auxiliary feedwater pumps are inoperable, backup systems are available to provide feedwater to the steam generators. However, these systems were not intended for this purpose and procedures do not exist to accomplish it.

The condensate pumps can be used to provide flow through the normal feedwater lines and non-running main feedwater pumps to the steam generators (assuming safety injection has not occurred since this would realign the suction of the feedwater pumps). This mode of operation has been used during plant startup operations.

In addition, one train of the condensate pumps can be used to provide flow through the flushing line to the discharge of the auxiliary feedwater pumps. This mode of operation would require closing the suction valves to the auxiliary feedwater pumps as well as opening the discharge isolation valves.

The backup water sources to the auxiliary feedwater system (normal water source is the condensate storage tank) include the primary plant makeup tank and the service water reservoir. The condenser hotwell would also be available as a water source.

ITEM

Provide the following procedures:

Loss of Offsite Power
Loss of Feedwater
LOCA (small and large)
Steam Line Break

RESPONSE

The following San Onofre Unit 1 Operating Instructions will be forwarded separately:

S-3-5.5, Revision 14	Loss of Coolant
S-3-5.20, Revision 6	Steam Generator High Energy Pipe Break
S-3-5.30, Revision 9	Station Loss of Power

ITEM

Provide following information for PORV's:

a. number
b. capacity
c. setpoints (open and close)
d. manufacturer and model
e. indications of position
f. record of periods isolated (isolation valve shut)
g. challenges during life of plant (from plant records) including performance of valve, cause of challenge.
h. experience of two-phase or subcooled discharge of PORVs and safety valves with description of valve performance

RESPONSE

a. There are two PORVs (CV-545 and CV-546).

b. Each PORV has a capacity of 108,000 lb/hr.

c. CV-546 opens at a fixed pressure of 2190 psig and will reseat at a slightly lower pressure. CV-545 is controlled by Pressure Controller PC-430J which is a proportional plus rate plus reset controller. In auto, PC-430J will transmit a signal (10-50 milliamps), that is proportional to pressurizer pressure, the rate at which pressure is changing, and the length of time the pressure has been abnormal. PC-430J transmits an output signal of 10-50 milliamps that is used for various control functions. When an output signal of 47.5 milliamps is transmitted to bistable PC-430B, CV-545 will open. For stable conditions this signal corresponds to 2185 psig. However, the derivative function may cause the valve to open at a lower pressure under rapidly increasing pressure conditions. The valve recloses at 46.9 milliamps.

d. The PORVs were manufactured by BS&B (now WKM Valve Division of ACF Industries) and are model number 70-18-9 DRTX.

e. The PORVs have fully open and fully closed position indication in the control room.

f. It is estimated that one or the other of the PORVs has been isolated during operation due to leakage approximately 20% of the time over the plant life.

g. The PORVs have never lifted due to a pressure increase over the plant life. However, CV-546 lifted on one occasion due to an instrument malfunction (pressure transmitter). The operator was alerted by

temperature alarm on the discharge header, removed the valve from the automatic mode and closed it, and also closed the isolation valve. RCS pressure varied by ±30 psi and then returned to normal once the valve was closed. RCS temperature change was barely discernible.

h. There has been no relevant experience with the PORVs. Leakage or spurious opening (see above) of the PORVs has been detected by the high temperature alarm in the discharge header and the PORVs have been isolated prior to significant discharge.

ITEM

Provide indications of PORV isolation valve in the control room.

RESPONSE

Limit switches on the PORV isolation valves provide fully open and fully closed position indication in the control room.

ITEM

Provide the following information on ECCS:

a. initiation setpoints
b. system description
c. pump performance characteristics (head curves)

RESPONSE

a. The initiation setpoint for the San Onofre Unit 1 ECCS is low pressurizer pressure of 1685 psig. (Note: Although the system logic was designed to actuate ECCS on coincident low pressure and low level, the low level bistables have been placed in the trip position as described in our letter from J. H. Drake to R. H. Engelken dated May 3, 1979.)

b. The following description of the San Onofre Unit 1 ECCS is based on information provided to the NRC by letter from K. P. Baskin to A. Schwencer dated December 21, 1976.

The emergency core cooling systems available in the SONGS 1 plant are categorized as the safety injection system, the recirculation system, and the hot leg recirculation system. The functional objective of these systems is to maintain core coolant inventory and to remove the heat from the reactor in the event of a loss of coolant accident. The initial reactions in the event of a postulated LOCA are the reactor trip command and the actuation of the safety injection system (SIS).

Components of the safety injection system include the refueling water storage tank, two safety injection pumps (G50A & B), two feedwater pumps (G3A & B), two low pressure feedwater isolation valves (HV854A & B), two high pressure feedwater isolation valves (HV852A & B), four feedwater pump mini-flow valves (CV36 & 37 and CV875 A & B), four safety injection valves (HV851A & B and HV853A & B) and three safety injection to cold leg valves (850A, B & C).

The safety injection mode is initiated by the trip of any two of three pressurizer low pressure sensor channels. With concurrent loss of off-site power, the emergency diesel generators are sequentially loaded with engineered safety feature loads. At the start of the sequencer action, the reactor is tripped and the valve alignment for safety injection is accomplished (i.e., HV852A & B and HV854A & B are closed; HV851A & B, HV853A & B and MOV850A, B & C are opened; CV875A & B are opened and CV36 & 37 are closed). In addition, safety injection pumps G50A & B and feedwater pumps G3A & B start operation. The result of the aforementioned action is that the cold legs to the reactor core are supplied with borated water from the refueling water storage tank.

Although accident analyses presented in the San Onofre Unit 1 Final Safety Analysis Report and submittals to the NRC concerning compliance with the Interim Acceptance Criteria have shown that additional injection flow is not necessary, one centrifugal charging pump, G8A or B, augments safety injection flow. With the safety injection system actuation signal, valves LCV1100B & D are opened to transfer suction of the operating charging pump to the refueling water storage tank. MOV/LCV1100C is closed to isolate the volume control tank. This results in the flow of borated water from the refueling water storage tank to the loop A cold leg via the regenerative heat exchanger, E13. The nonoperating charging pump is locked out.

The recirculation system is manually activated after a sufficient quantity of water has accumulated in the containment sphere sump. The availability of sufficient water to begin recirculation is determined from the sump level indication LI951 or the level in the RWST from LI950. The recirculation mode is started by starting recirculation pumps G45A & B and opening recirculation pump discharge valves MOV866A & B. In addition, the RWST isolation valve MOV883 is closed. Valves MOV18, 19, 356, 357, & 358 are opened and the flow path to each of the legs is regulated by appropriate adjustment of FCV1115D, E & F. The charging pumps use the recirculation pump discharge and provide cold leg recirculation to the reactor coolant system. During the recirculation phase, the pH of the spray and recirculated water is maintained by the use of trisodium phosphate stored in the containment.

The hot leg recirculation system provides an additional means of adding borated water to the reactor coolant system by the use of the charging pumps and the pressurizer auxiliary spray header. Borated water is pumped from the sphere sump and supplied to the suction side of the charging pumps by means of the recirculation pumps G45A & B. The charging pump discharge is directed through the regenerative heat exchanger to the pressurizer auxiliary spray header by way of valve CV305. This provides access to the loop B hot leg of the reactor coolant system. The functional requirement of this system is to ensure the flow of borated water through the core by preventing the precipitation of the boron within the reactor when a cold leg LOCA is postulated.

c. The pump performance curves for the feedwater pumps (G3A & B), safety injection pumps (G50A & B) and recirculation pumps (G45A & B) are attached.

ITEM

Provide reactor protection system trip setpoints.

RESPONSE

As provided in specifiction 2.1 of the San Onofre Unit 1 Technical Specifications, the reactor protection system trip setpoints are as follows:

	Three Reactor Coolant Pumps Operating	Two Reactor Coolant Pumps Operating
1. Pressurizer High Level	$\leq$ 27.3 ft. above bottom of pressurizer	Same
2. Pressurizer Pressure: High	$\leq$ 2220 psig	Same
**3. Nuclear Overpower	$\leq$ 109% of indicated full power	$\leq$ 66% of indicated full power
*4. Variable Low Pressure	$\geq$ 14.45 (1.313 ΔT+T avg.) -7298.7	Same
*5. Coolant Flow	$\geq$ 85% of indicated full loop flow	Same

---

* May be bypassed at power levels below 10% of full power.

** The nuclear overpower trip is based upon a symmetrical power distribution. If an asymmetric power distribution greater than 10% should occur, the nuclear overpower trip on all channels shall be reduced one percent for each percent above 10%.

In addition, as described in FSAR Subsection 5.2.3 reactor trip is actuated by turbine-generator trip and steam feedwater flow mismatch.

Item

Provide information on charging pumps, how they relate to ECCS including:

a. number
b. flow vs. pressure
c. power sources and backup
d. water sources
e. seismic qualification

Response

a. There are two charging pumps, one of which is normally operated. As described above, in the event of a safety injection actuation signal, the suction of the operating charging pump is automatically aligned to the

refueling water storage tank. During the injection phase the charging flow enters a reactor coolant loop through the charging connection. The nonoperating charging pump is locked out.

b. The attached figure provides flow versus pressure for the charging pumps.

c. The charging pumps are normally powered from 4160-volt buses 1C and 2C which are supplied from the 138-kV offsite power system through auxiliary transformer C. In the event of a safety injection actuation signal concurrent with a loss of offsite power, two 6000 kW diesel generators are automatically started, connected to the corresponding 4160-volt bus, and the safety injection loads, including one charging pump, are applied sequentially.

d. The normal water source for the charging pumps during operation is the volume control tank of the Chemical and Volume Control System. Alternate water sources are the boric acid tank and the batching tank. As noted above, during the injection phase of safety injection, one charging pump takes suction from the refueling water storage tank.

e. The charging pumps are Seismic Category A as defined in Subsection 9.2.2 of the San Onofre Unit 1 FSAR.

Item

List all challenges (and causes) to ECCS as indicated on plant records.

Response

There have been two instances when the San Onofre Unit 1 ECCS has been actuated. In neither case was ECCS water actually delivered to the core. These events are described in the following letters from SCE to the NRC:

a. May 9, 1972 letter from Robert Coe to Peter Morris; Subject: Unit Trip and Subsequent Activation of Safety Injection Equipment.

b. October 22, 1973 letter from H. L. Ottoson to R. H. Engelken; Subject: Safety Injection Initiation, October 21, 1973.

Item

List and discuss all instances during which your plant has undergone natural circulation.

Response

A natural circulation test was performed as part of initial startup testing at San Onofre Unit 1. The results of the test are summarized in the San Onofre Unit 1 FSAR, Part I, Section 2.1. Following a reactor trip from full power on July 7, 1974, the plant experienced a natural circulation condition for approximately 30 minutes. Operating instructions restrict restart of reactor

coolant pumps following plant trip unless certain conditions are met. During the period of natural circulation, reactor coolant hot-to-cold leg ΔT was 22°F and reactor coolant average temperature stabilized at 535°F. Following restart of a reactor coolant pump, a normal cooldown was initiated.

Item

Describe all automatic and manual features which can stop the reactor coolant pumps.

Response

Manual trip of the reactor coolant pumps can be initiated from a control switch in the control room or a second manual control switch at the switchgear in the 4160V room.

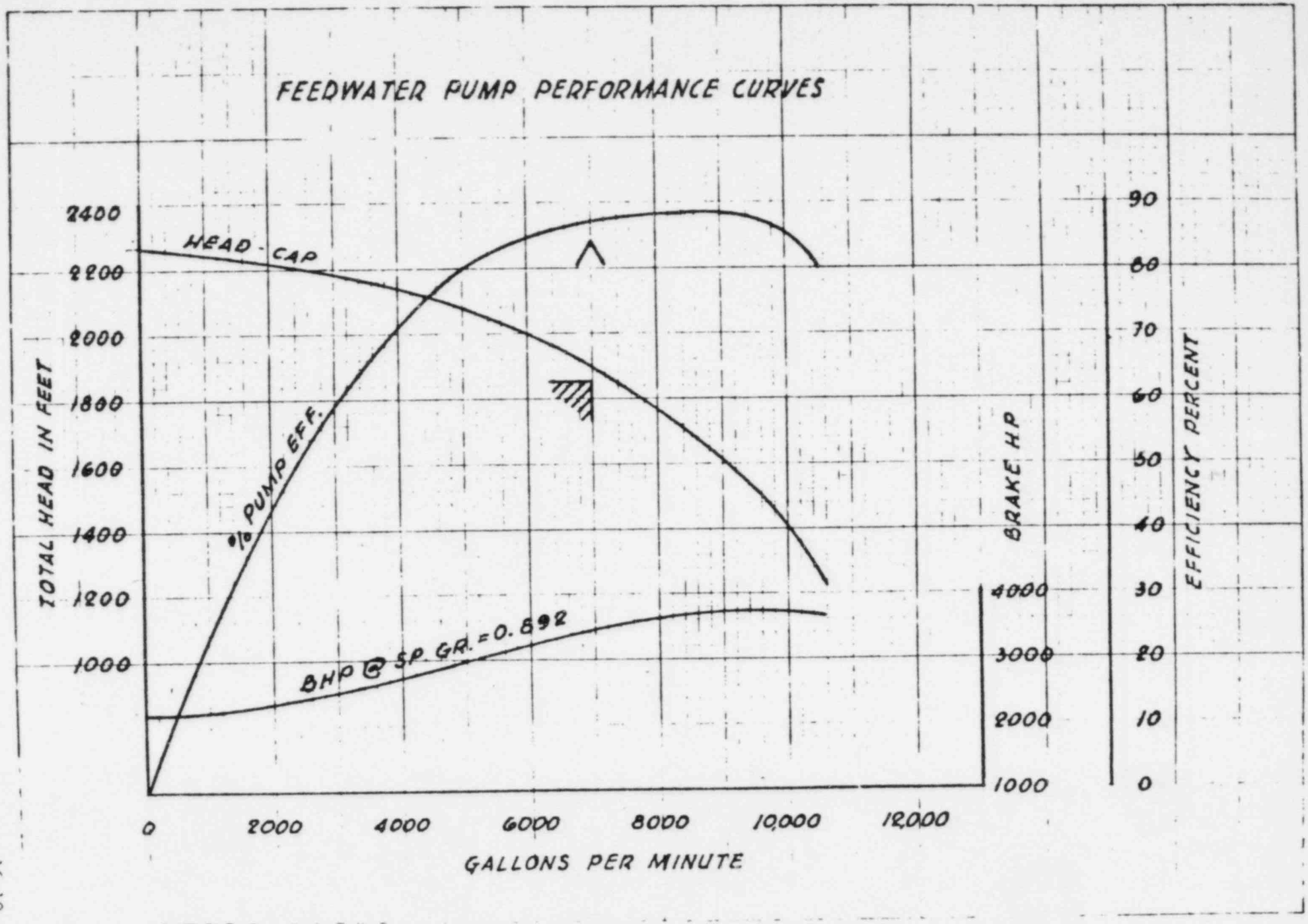
Automatic tripping of the reactor coolant pumps can be initiated from the following sources:

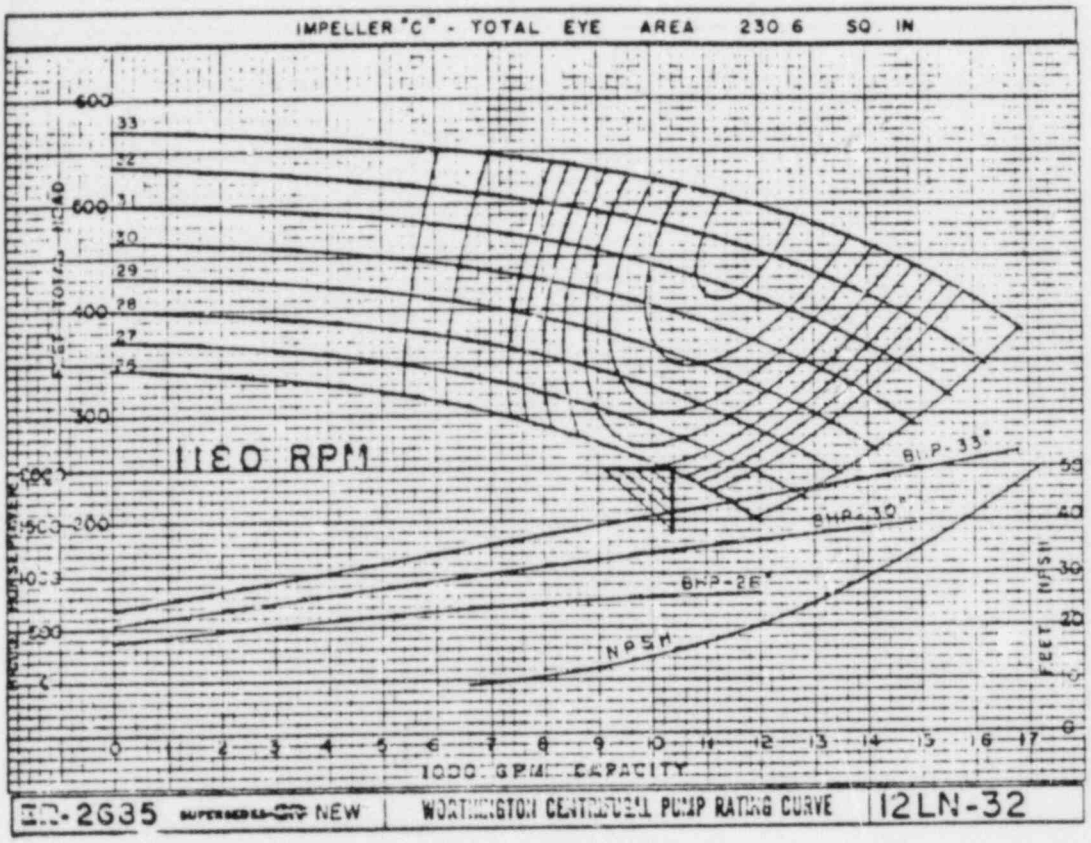
1. Overcurrent Trip - To protect from a short circuit in either 4160V bus 1A or 1B.

2. Normal Undervoltage Trip - To protect from operation with low voltage on either 4160V bus 1A or 1B.

3. Turbine Trip - In the event of a turbine trip the reactor coolant pumps, as well as generator exciter, would still be energized and coast down gradually with the frequency decay of the turbine generator. They trip below a frequency of 58 Hz coincident with an undervoltage below 40% (both signals are required to trip pumps).

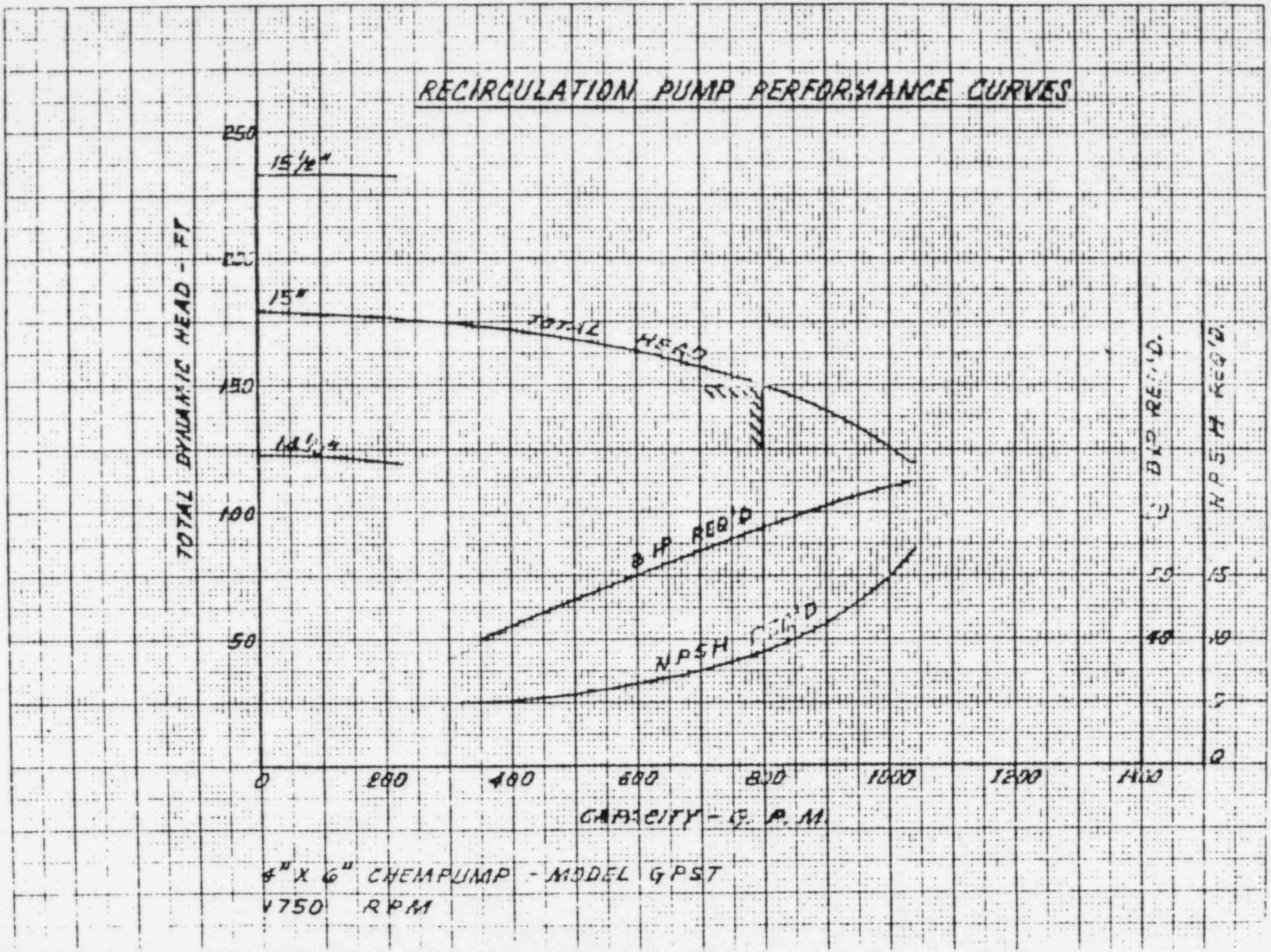
4. Safety Injection Coincident With Loss of Offsite Power - Under this condition the reactor coolant pumps will be tripped.


FEEDWATER PUMP PERFORMANCE CURVES
TOTAL HEAD IN FEET
2400
2200
2000
1800
1600
1400
1200
1000
HEAD - CAP
% PUMP EFF.
BHP @ SP. GR. = 0.892
BRAKE HP
4000
3000
2000
1000
EFFICIENCY PERCENT
90
80
70
60
50
40
30
20
10
0
0
2000
4000
6000
8000
10,000
12,000
GALLONS PER MINUTE



SAFETY INJECTION PUMP PERFORMANCE CURVES

CLEARPRINT CHARTS
PRINTED IN U.S.A. ON CLEARPRINT TECHNICAL PAPER NO. 1015



CONTRACTOR WESTINGHOUSE APD

CUSTOMER SOUTHERN CALIFORNIA EDISON

ITEM NO. 1 P.O. 54K41430

TEST PERFORMANCE CURVE NO. 3000-A

SIZE 2" TYPE Z STAGES 12

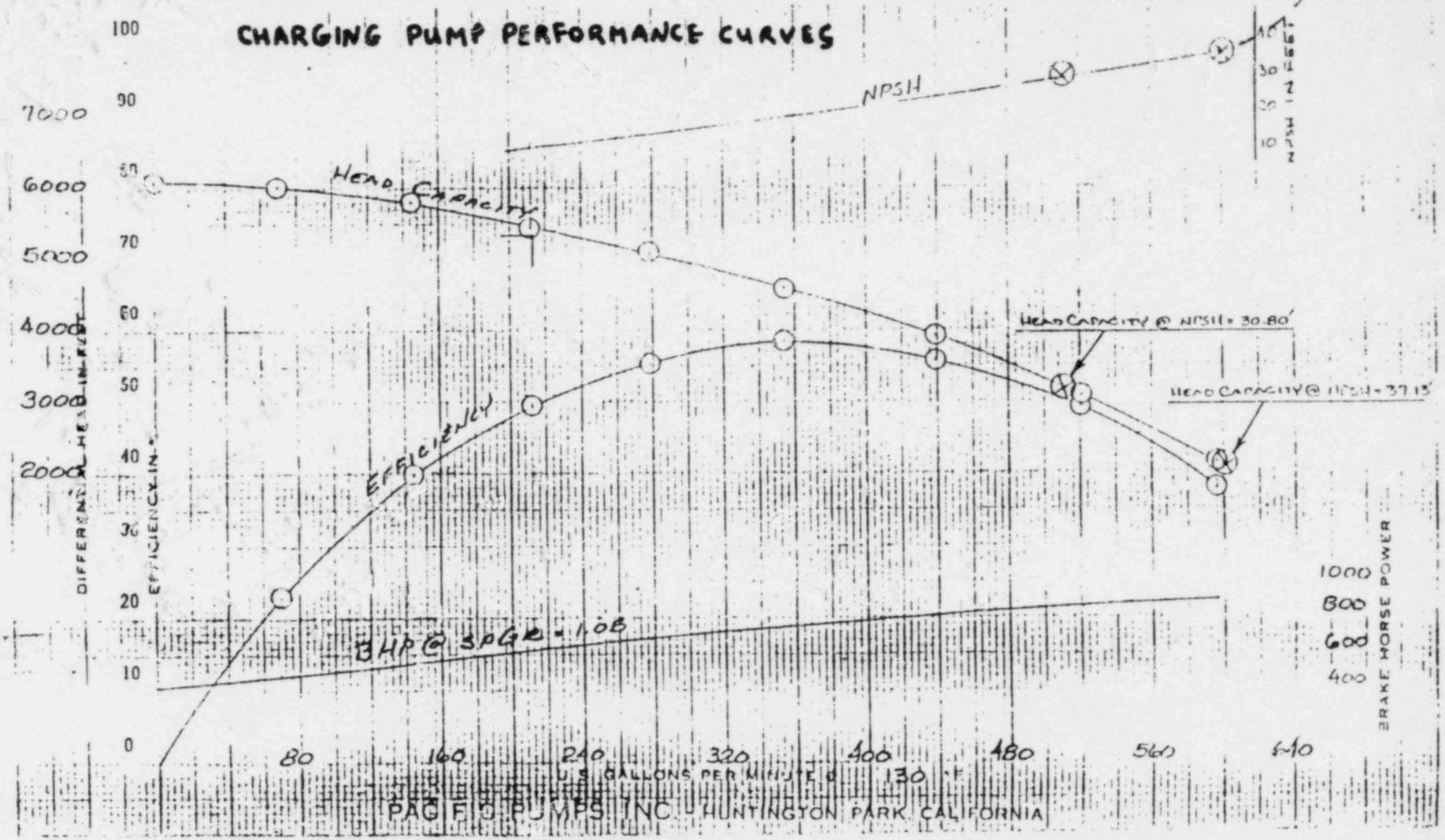
R.P.M. 3520 DATE 11-15-65

PUMP NUMBER 38771

PERFORMANCE ALSO APPLIES TO PUMP NUMBER /

IMPELLER PATTERN	M-5255	M-6113	M-5156
MAXIMUM DIAMETER	10 1/4	10 1/4	10 1/4
RATED DIAMETER	10 1/4	STAGE 2-7 10 1/4 STAGE 8 10	STAGE 9-10 10 1/4 STAGE 11-12 10
MINIMUM DIAMETER	9 1/4	9 1/4	9 1/4

CHARGING PUMP PERFORMANCE CURVES



PACIFIC PUMPS INC. HUNTINGTON PARK CALIFORNIA