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AUTH.NAME AUTHOR AFFILIATION
CURTIS,N.W. Pennsylvania Power & Light Co.
RECIP.NAME RECIPIENT AFFILIATION
SCHWENCER,A. Licensing Branch 2

SUBJECT: Forwards SQRT forms for balance of plant equipment in partial response to SER,Item 11. See RPT

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PP&L Pennsylvania Power & Light Company
Two North Ninth Street • Allentown, PA 18101 • 215 / 770-5151

Norman W. Curtis
Vice President-Engineering & Construction-Nuclear
215 / 770-5381

February 25, 1982

Mr. A. Schwencer, Chief
Licensing Branch No. 2
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Docket Nos. 50-387
50-388

SUSQUEHANNA STEAM ELECTRIC STATION
SQRT FORMS BOP EQUIPMENT (SER ITEM #11)
ER 100450 FILE 841-2
PLA-1024

Dear Mr. Schwencer:

In partial response to SER Item #11, attached are the 4-page SQRT forms for the BOP equipment which were not previously transmitted to you.

Also attached are two lists which identify the SQRT forms by their BOP Purchase Order Number. List A identifies those 4-page SQRT forms which were transmitted to you at the time of the Seismic Qualification Audit. List B identifies all of the remaining BOP SQRT forms which are being transmitted to you at this time.

Very truly yours,

R J Schwencer Jr

N. W. Curtis
Vice President-Engineering and Construction-Nuclear

CTC/mks

Attachments

B001
S
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LIST A

M-11	J-03A	E-109	P-10B
M-30	J-05A	E-152	P-14B
M-149	J-69		
M-159			

LIST B

M-12	J-03C	E-112	P-10A
M-22	J-05B	E-117	P-11A
M-55	J-17	E-118	P-12A
M-58	J-27	E-119	P-12B
M-60	J-31	E-119BC	P-14A
M-87	J-59	E-120	P-15A
M-90	J-65	E-121	P-15BC
M-151	J-65B	E-135	P-16A
M-156	J-69B	E-136	P-16BC
M-160	J-70	E-151	P-17A
M-164	J-92	E-155	P-17B
M-192	J-98		P-18A
M-302			P-31A
M-307			
M-308			
M-309			
M-310			
M-315			
M-317			
M-320			
M-321			
M-323C			
M-325			
M-327			
M-334			
M-336			
M-362			
M-365			

EXAMINATION AND INSPECTION (CLASS 1)
COMPONENTS, PARTS, METHOD OF EXAMINATION AND REMARKS

ITEM NO.	EXAMINATION CATEGORY TABLE IWB - 2500	COMPONENTS AND PARTS TO BE EXAMINED - REACTOR VESSEL -	METHOD	REMARKS[1]
B1.1	B-A Pressure-retaining welds in reactor vessel	Longitudinal and circumferential shell welds meridional and circumferential head welds vessel-to-flange and head-to-flange circumferential welds	Volumetric	(7)(8)
B1.4	B-D Full penetration welds of nozzle in vessel	Primary nozzle-to-vessel welds and nozzle inside radiused section	Volumetric	(7)(9)
B1.5	B-E Pressure-retaining partial penetration welds in vessels	Vessel penetration, including control rod drive and instrumentation penetration	Visual (IWA-5000)	(7)
B1.6	B-F Pressure-retaining dissimilar metal welds	Nozzle-to-safe end welds	Volumetric and surface	(7)
B1.7	B-G-1 Pressure-retaining bolting greater than 2 inches in diameter	Nuts	Surface	(7)
B1.8	B-G-1 Pressure-retaining bolting greater than 2 inches in diameter	Pressure-Retaining bolts and studs	Volumetric and surface	(7)
B1.9	B-G-1 Pressure-retaining bolting greater than 2 inches in diameter	Ligaments between threaded stud holes	Volumetric	(7)
B1.10	B-G-1 Pressure-retaining bolting, greater than 2 inches in diameter	Closure washers, bushings	Visual	(7)

1. Numbers listed designate applicable relief request.

ITEM NO.	EXAMINATION CATEGORY TABLE IWB - 2500	COMPONENTS AND PARTS TO BE EXAMINED	METHOD	REMARKS
B1.11	B-G-2 Pressure-retaining bolting, smaller than or equal to 2 inches in diameter	Pressure-retaining bolting	Visual	(7)
B1.12	B-H Vessel supports	Integrally welded vessel supports	Volumetric	(7)
B1.13	B-I-1 Interior clad surface of reactor vessel	Closure head cladding	1) Visual and surface or 2) Volumetric	(7)
B1.14	B-I-1 Interior clad surface of reactor vessel	Vessel cladding	Visual	(7)
B1.15	B-N-1 Interior of reactor vessel	Vessel interior	Visual	(7)
B1.16	B-N-2 Integrally welded core support structures and interior attachments to reactor vessel	Interior attachments and core support structures	Visual	(7)
B1.18	B-O Pressure-retaining welds in control rod drive housings	Control rod drive housings	Volumetric	(7)
B1.19	B-P Components exempted from examination by IWB-1220	Exempted components	Visual (IWA-5000)	(7)
		-PIPING PRESSURE BOUNDARY-		
B4.1	B-F Pressure-retaining dissimilar metal welds	Safe-end to piping welds and safe-end in branch piping welds	Volumetric	(1)
B4.2	B-G-1 Pressure-retaining bolting greater than 2 inches in diameter	Pressure-retaining bolting, in place	Volumetric and surface	(2)

ITEM NO.	EXAMINATION CATEGORY TABLE IWB - 2500	COMPONENTS AND PARTS TO BE EXAMINED	METHOD	REMARKS
B4.3	B-G-1 Pressure-retaining bolting greater than 2 inches in diameter	Pressure-retaining bolting, when removed	Volumetric and surface	(2)
B4.4	B-G-2 Pressure-retaining bolting, smaller than or equal to 2 inches in diameter	Pressure-Retaining bolting	Visual	(2)
B4.5	B-J Pressure-retaining welds in piping	Circumferential and longitudinal piping welds in nominal pipes size 4 inches and greater	Volumetric and surface	(1)
B4.6	B-J Pressure-retaining welds in piping	Branch pipe connection welds exceeding six inches in diameter	Volumetric	(1)
B4.7	B-J Pressure-retaining welds in piping	Branch pipe connection welds six inches diameter and smaller	Surface	(1)
B4.8	B-J Pressure-retaining welds piping	Socket welds	Surface.	(1)
B4.9	B-K-1 Support members for piping, valves and pumps	Integrally welded supports	Volumetric	(3)
B4.10	B-K-2 Support components for piping, valves and pumps	Support components	Visual	
B4.11	B-P Components exempted from examination by IWB-1220	Exempted components	Visual (IWA-5000)	

ITEM NO.	EXAMINATION CATEGORY TABLE IWB - 2500	COMPONENTS AND PARTS TO BE EXAMINED	METHOD	REMARKS
		- PUMP PRESSURE BOUNDARY -		
B5.1	B-G-1 Pressure-retaining bolting greater than 2 inches in diameter	Pressure-retaining bolting, in place	Volumetric	(2)
B5.2	B-G-1 Pressure-retaining bolting greater than 2 inches in diameter	Pressure-retaining bolting, when removed	Volumetric and surface	(2)
B5.3	B-G-2 Pressure-retaining bolting, smaller than or equal to 2 inches in diameter	Pressure-retaining bolting	Visual	(2)
B5.4	B-K-1 Support members for piping, valves and pumps	Integrally welded supports	Volumetric	(3)
B5.5	B-K-2 Support components for piping, valves and pumps	Support components	Visual	
B5.7	B-L-2 Pump casings	Pump casings	Visual	
B5.8	B-P Components exempted from examination by IWB-1220	Exempted components	Visual (IWA-5000)	
		- VALVE PRESSURE BOUNDARY -		
B6.1	B-G-1 Pressure-retaining bolting greater than 2 inches in diameter	Pressure-retaining bolts and studs	Volumetric and surface	(2)

ITEM NO.	EXAMINATION CATEGORY TABLE IWB - 2500	COMPONENTS AND PARTS TO BE EXAMINED	METHOD	REMARKS
B6.2	B-G-1 Pressure-retaining bolting greater than 2 inches in diameter	Pressure-retaining bolting	Visual	(2)
B6.3	B-G-2 Pressure-retaining bolting, smaller than or equal to 2 inches in diameter	Pressure-retaining bolting	Visual	(2)
B6.4	B-K-1 Support members for piping, valves and pumps	Integrally welded supports	Volumetric	(3)
B6.5	B-K-2 Support components for piping, valves and pumps	Support components	Visual	
B6.7	B-M-2 Valve bodies	Valve bodies	Visual	
B6.8	B-P Components exempted from examination by IWB-1220	Exempted components	Visual (IWA-5000)	

RP:pd
19-Q

ITEM NO.		EXAMINATION CATEGORY TABLE IWC-2520	COMPONENTS AND PARTS TO BE EXAMINED - PRESSURE VESSELS -	METHOD	REMARKS
C1.1	C-A	Pressure-retaining welds in pressure vessels	Circumferential butt welds	Volumetric	(1)
C1.2	C-B	Pressure-retaining nozzle welds in vessel	Nozzle-to-vessel welds	Volumetric	(1)
C1.3	C-C	Integrally welded support attachments to vessel	Integrally-welded supports	Surface	
C1.4	C-D	Pressure-retaining bolting exceeding 1 inch diameter	Pressure-retaining bolting	Visual and either surface or Volumetric	(2)
			- PIPING -		
C2.1	C-F	Pressure-retaining welds in piping, pumps and valves in system which circulate reactor coolant	Circumferential butt welds	Volumetric	(1)(4)(5)(6)
C2.1	C-G	Pressure-retaining welds in piping, pumps and valves in system which circulate other than reactor coolant	Circumferential butt welds	Volumetric	(1)(4)(5)(6)
C2.2	C-F	Pressure-retaining welds in piping, pumps and valves in system which circulate reactor coolant	Longitudinal weld joints in fittings	Volumetric	(1)(4)(5)(6)
C2.2	C-G	Pressure-retaining welds in piping, pumps and valves in system which circulate other than reactor coolant	Longitudinal weld joints in fittings	Volumetric	(1)(4)(5)(6)

EXAMINATION AND INSPECTION (CLASS 2)
(CONT'D)

ITEM NO.	EXAMINATION CATEGORY TABLE IWC-2520	COMPONENTS AND PARTS TO BE EXAMINED	METHOD	REMARKS
C2.3	C-F Pressure-retaining welds in piping, pumps and valves in system which circulate reactor coolant	Branch pipe-to-pipe weld joints	Volumetric	(1)(4)(5)(6)
C2.3	C-G Pressure-retaining welds in piping, pumps and valves in system which circulate other than reactor coolant	Branch pipe-to-pipe weld joints	Volumetric	(1)(4)(5)(6)
C2.4	C-D Pressure-retaining bolting exceeding 1 inch diameter	Pressure-retaining bolting	Visual and either surface or volumetric	(2)
C2.5	C-E-1 Support members for piping valves and pumps	Integrally-welded supports	Surface	(3)
C2.6	C-E-2 Support components for piping valves and pumps	Support components	Visual	
		- PUMPS -		
C3.2	C-D Pressure-retaining bolting exceeding 1 inch in diameter	Pressure-retaining bolting	Visual and either surface or volumetric	(2)

ITEM NO.	EXAMINATION CATEGORY TABLE IWC-2520	COMPONENTS AND PARTS TO BE EXAMINED	METHOD	REMARKS
C3.3	C-E-1 Support members for piping valves and pumps	Integrally-welded supports	Surface	(3)
C3.4	C-E-2 Support components for piping valves and pumps	Support components	Visual	
		- VALVES -		
C4.2	C-D Pressure-retaining bolting exceeding 1 inch in diameter	Pressure-retaining bolting	Visual and either surface volumetric	(2)
C4.3	C-E-1 Support members for piping valves and pumps	Integrally-welded supports	Surface	(3)
C4.4	C-E-2 Support components for piping valves and pumps	Support components	Visual	

RP:pd
19-Q

PRE-SERVICE INSPECTION

RELIEF REQUEST #1

I. IDENTIFICATION OF COMPONENTS:

All components in Class 1 and Class 2 piping systems requiring ultrasonic examination as the method of examination.

II. CODE REQUIREMENT:

The preservice inspection program for Susquehanna #1 was prepared in accordance with Section XI of the ASME Boiler and Pressure Vessel. Code, 1974 Edition to the Summer 1975. This Edition and Addenda does not specifically address volumetric examination of welds in piping systems but references the provisions of Article 5 of ASME Section V.

III. BASIS FOR RELIEF:

Relief is requested from utilizing the provisions of ASME Section V, Article 5, from the referencing code edition and addenda;in lieu of this requirement, PP&L proposes to use Appendix III, "Ultrasonic Examination Method for Class 1 and 2 piping systems made from Ferritic Steels" from the Winter 1975 Addenda.

Rev. 0 5/15/81

IV. JUSTIFICATION:

Appendix III, 1977 Edition to the Summer 1978 Addenda has been accepted for use by incorporation of this edition and addenda into 10 CFR 50.55a. Appendix III, Winter 1975 Addenda closely parallels the later Code except that the required examination volume is more conservative in the Winter '75 Addenda (i.e., Figure IWB-3514.1(a) of Winter '75 versus Figure IWB-2500-8 of the 1977 Edition).

V. ALTERNATE PROVISIONS:

Appendix III of ASME Winter 1975 Addenda will be used for piping system ultrasonic examination.

RELIEF REQUEST #2

I. IDENTIEICATION OF COMPONENTS:

All Class 1 and Class 2 bolting in piping, pumps, and valves.

II. CODE REQUIREMENTS:

ASME Section XI, 1974 Edition to the Summer 1975 Addenda requires the following examinations be performed:

ITEM NUMBER	EXAMINATION CATEGORY	COMPONENT	METHOD
B4.2, B5.1, B6.1	B-G-1	Pressure retaining bolting, 2 inches and larger, in place	Volumetric
B4.3, B5.2, B6.2	B-G-1	Pressure retaining bolting, 2 inches and larger, when removed.	Volumetric and Surface
B4.4, B5.3, B6.3	B-G-2	Pressure retaining bolting, smaller than 2 inches.	Visual
C1.4, C2.4, C3.2, C4.2	CD	Pressure retaining bolting exceeding 1 inch	Visual and either surface or volumetric

These examinations must be performed completely as a preservice examination requirement prior to initial plant start-up.

III. BASIS FOR RELIEF:

PP&L requests relief from the examination requirements of ASME Section XI 1974 Edition to Summer 1975 Addenda; examinations shall be performed in accordance with the more current requirements of ASME Section XI 1977 Edition to Summer 1978 Addenda as follows:

ITEM NUMBER	EXAMINATION CATEGORY	COMPONENT	METHOD
B6.150, B6.180, B6.210	B-G-1	Pressure retaining bolting larger than 2 inches in place	Volumetric
B6.160, B6.190, B6.220	B-G-1	Pressure retaining bolting larger than 2 inches, when removed.	Surface and Volumetric
B6.170, B6.200, B6.230	B-G-1	Pressure retaining bolting.*	Visual VT-1
B7.50, B7.60, B7.70	B-G-2	Pressure retaining bolting 2 inches and smaller	Visual VT-1
C4.10, C4.20, C4.30, C4.40	C-D	Pressure retaining bolting exceeding 2 inches	Volumetric

*Nuts, bushings, washers, threads, in base material and flange ligaments between threaded stud holes.

IV. JUSTIFICATION:

The justification for upgrading the 1977 Edition to Summer 1978 Addenda of ASME Section XI for piping system bolting examination,in lieu of the governing code edition and addenda,is to make the Class 2 requirements more closely parallel Class 1 requirements. It is impractical to inspect Class 2 components more stringently than Class 1 components and presents no adverse affect on the integrity of the component or upon overall plant safety.

V. ALTERNATE PROVISIONS:

The requirements of ASME Section XI 1977 Edition to the Summer 1978 Addenda will be used.

RELIEF REQUEST #3

I. IDENTIFICATION OF COMPONENTS:

All Class 1 and Class 2 integrally welded support members for piping, pumps, and valves.

II. CODE REQUIREMENT:

Category B-K-1 of ASME Section XI, 1974 Edition to Summer 1975 requires volumetric examination of welds to the pressure-retaining boundary and the base metal beneath the weld zone and along the support attachment member for a distance of two support thicknesses.

Category C-E-1 of ASME Section XI, 1974 Edition to Summer 1975, requires surface examination of welds to the pressure-retaining boundary and the base metal beneath the weld zone and along the support attachment member for a distance of two support thicknesses.

These examinations must be performed completely as a preservice examination requirement prior to initial plant start-up.

III. BASIS FOR RELIEF:

PP&L requests relief from the examination requirements of ASME Section XI 1974 Edition to Summer 1975 Addenda; examinations shall be performed in accordance with the more current requirements of ASME Section XI 1977 Edition to Summer 1978 Addenda as follows:

ITEM NUMBER	EXAMINATION CATEGORY	COMPONENT	METHOD	TEST REQUIREMENTS
B4.9, B6.5	B-K-1	Integrally welded support attachments	Volumetric or Surface*	Table IWB-2500-1
C3.10, C3.40, C3.70, C3.100	C-E-1	Integrally welded support attachments	Surface**	Table IWC-2500-1

*See Figures IWB-2500-13, 14, 15.

** See Figure IWC-2520-5.

IV. JUSTIFICATION:

The justification for requesting relief from the governing ASME Code Edition and Addenda and upgrading to the requirements of ASME Section XI 1977 Edition to Summer 1978 are as follows:

1) The weld geometries involved make a meaningful ultrasonic examination, with full coverage of the weld and required volume, questionable.

2) Surface examination of the weld and required surrounding base material is a more reliable and sensitive examination for detecting defects in these welds.

3) Upgrading makes Section XI examination requirements more consistent with Section III construction requirements and therefore, eliminates additional surface preparation and conflict between the Codes.

V. ALTERNATE PROVISIONS:

The requirements of ASME Section XI 1977 Edition to the Summer 1978 Addenda will be used.

RELIEF REQUEST #4

I. IDENTIFICATION OF COMPONENTS:

Class 1, Category BJ, pressure retaining welds in piping.

Class 2, Category CF and CG pressure retaining welds in piping.

II. CODE REQUIREMENT:

Category BJ - Table IWB-2600, Item Numbers B4.5, B4.6, B4.7 - of the ASME Code, 1974 Edition to Summer 1975 Addenda requires volumetric examination of 100%* of circumferential welds, longitudinal welds, and branch connections be performed completely as a preservice examination requirements prior to initial plant start-up.

Category CF - Table IWC-2600, Item Numbers C2.1, C2.2, C2.3 - of the ASME Code, 1974 Edition to Summer 1975 Addenda requires volumetric examination of 100% and 50%*, respectively, of circumferential discontinuity welds, longitudinal welds, and branch connection welds be performed completely as a preservice examination requirement prior to initial plant start-up.

*Excluding those exempt per IWB-1200, IWC-1220.

ASME Appendix III, Winter 1975 Addenda, requires an angle beam examination of the weld and required volume (the lesser of ½t or 1") be perfomred scanning both normal and parallel to the weld.

III. BASIS FOR RELIEF:

Relief is required from the ASME Section XI examination requirements on the basis of partial inaccessibility of the weld and required volume due to plant design.

WELD IDENTIFICATION NUMBER	CODE CATEGORY AND ITEM NUMBER	SYSTEM	CONFIGURATION	NATURE OF OBSTRUCTION	% OF SCAN OBSTRUCTED (APPROXIMATE)
DBB-114-1-9E	CF C2.1	HPCI	Pipe to Cap	Two (2) Weldolets	16%
DBB-115-1-7F	CF C2.1	RHR	Pipe to Cap	One (1) Weldolet	8%
DBB-115-1-5D	CF C2.1	RHR	Pipe to Tee	One (1) Weldolet	16%
DBB-115-1-5G	CF C2.1	RHR	Pipe to Cap	Three (3) Weldolets	34%
HBB-110-2-3C	CF C2.1	RHR	Elbow to Tee	Instrumentation Nozzle	3%
DLA-104-1-FW1	BJ B4.5	Feedwater	Pipe to Valve	Permanent Hanger	50%
DLA-102-1-FW7	BJ B4.5	Feedwater	Pipe to Valve	Permanent Hanger	50%
HBB-111-2-3D	CF C2.1	RHR	Pipe to Elbow	Hanger Saddle Weld	13%
DBB-118-1-1A	CF C2.3	Feedwater	Sweepolet to Pipe	Hanger Lug Attachment Weld	6%
GBB-106-1-FW6	CF C2.1	RHR	Pipe to Elbow	Welded Hanger	20%
GBB-109-1-2A	CG C2.1	RHR	Pipe to Elebow	Hanger Saddle	5%

WELD IDENTIFICATION NUMBER	CODE CATEGORY AND ITEM NUMBER	SYSTEM	CONFIGURATION	NATURE OF OBSTRUCTION	% OF SCAN OBSTRUCTED
VRR-B31-2-9G	BJ B4.5	Recirculation	Longitudinal Weld	Pipe Whip Restraint	7%

ASME SECTION III EXAMINATION	SAFETY IMPACT
RT	Leak detection systems detect weld leakage, resulting in either manual or automatic isolation of the leak. These lines are not required for normal safe shutdown, alternate safe shutdown methods are available.
RT	" " " " " "
RT	" " " " " "
RT	" " " " " "
RT	During normal plant power operation, weld is under approximately 20 feet of hydrostatic head. During normal system operation weld is under a maximum pressure of 165 psig. Leak detection systems can detect leakage during plant power or normal system operation. Weld can be isolated and alternate cooldown paths are available using redundant RHR loop or main condenser.
RT and PT	Reactor coolant pressure boundary leak detection system detect weld leakage; plant technical specifications require plant shutdown with unidentified leakage greater than 5 gpm.
RT and PT	" " " " " "
RT	During normal plant operation, weld is not pressurized. During normal system operation (maximum 165 psig), leakage is detected by leak detection systems. Alternate shutdown cooling path is unaffected and condenser is also available for cooldown.
RT	Leak detection system detects significant leakage; containment isolation valves (2) perform weld isolation function. HPCI performs back-up function for RPV water addition for safe shutdown.
RT	During normal plant power operation, welds are not under pressure. During normal system operation, significant leakage is detectable by leak detection system. Plant can be safely cooled down by unaffected RHR loop or main condenser.
RT	" " " " " "

SECTION III EXAMINATION	SAFETY IMPACT
RT and PT	Reactor coolant pressure boundary leak detection system detect leakage. Plant technical specification require plant shutdown with leakage greater than 5 gpm.

IV. JUSTIFICATION:

The justification for requesting relief from ASME Section XI examination requirements is as follows:

1) The structural integrity of the piping pressure boundary is not in question. All the affected Class 1 and 2 welds were subject to examination and testing requirements of ASME Section III.

2) Welds of similar configuration, welding technique, etc., in the same run of pipe, subject to similar operating pressures and temperatures are accessible for examination and, as such, provide adequate verification, by sampling, of the piping pressure boundary.

3) Visual examination of the weld during system pressure testing will be performed to detect for evidence of leakage.

4) Overall level of Plant Quality and safety is not affected by incomplete examination of welds.

V. ALTERNATE PROVISIONS:

A supplemental surface examination of the Class 2 welds will be performed for preservice examination; Class 1 welds have received surface examination to satisfy ASME Section III - retesting at this time is unnecessary.

Based on the most current accepted Edition and Addenda of ASME Section XI ('77 Edition to Summer '78), a surface examination of the welds will be required during subsequent inservice inspections, and will be more meaningful at that time.

RELIEF REQUEST #5

I. IDENTIFICATION OF COMPONENTS:

Class 1, Category BJ, pressure retaining welds in piping.

Class 2, Category CF and CG pressure retaining welds in piping.

II. CODE REQUIREMENT:

Category BJ - Table IWB-2600, Item Numbers B4.5, B4.6, B4.7 - of the ASME Code, 1974 Edition to Summer 1975 Addenda requires volumetric examination of 100%* of circumferential welds, longitudinal welds, and branch connections be performed completely as a preservice examination requirement prior to initial plant start-up.

Category CF - Table IWC-2600, Item Numbers C2.1, C2.2, C2.3 - of th4 ASME Code, 1974 Edition to Summer 1975 Addenda requires volumetric examination of 100% and 50%*, respectively, of circumferential discontinuity welds, longitudinal welds, and branch connection welds be performed completely as a preservice examination requirement prior to initial plant start-up.

*excluding those exempt per IWB-1220, IWC-1220.

ASME Appendix III, Winter 1975 Addenda, requires an angle beam examination of the weld and required volume (the lesser of ½t or 1") be performed scanning both normal and parallel to the weld.

III. BASIS FOR RELIEF:

Relief is required from the ASME Section XI examination requirements on the basis of complete inaccessibility of the weld and required volume due to plant design.

WELD IDENTIFICATION NUMBER	CODE CATEGORY AND ITEM NUMBER	SYSTEM	CONFIGURATION	NATURE OF OBSTRUCTION	% OF SCAN OBSTRUCTED
HBB-101-1-FW-7	CG C2.1	RCIC	Pipe to Sparger	Piping located in the wetwell	Totally Obstructed
HBB-101-1-1A	CG C2.1	RCIC	Pipe to reducing elbow	" "	"
HBB-101-1-1B	CG C2.1	RCIC	Pipe to Elbow	" "	"
HBB-101-1-FW6	CG C2.1	RCIC	Flued Head to Pipe	" "	"
HBB-108-2-3A	CG C2.1	HPCI	Pipe to Elbow	" "	"
HBB-108-2-FW10	CG C2.1	HPCI	Elbow to Reducer	" "	"
HBB-108-2-FW7	CG C2.1	HPCI	Reducer to Penetration	" "	"
HBB-108-2-FW1	CG C2.1	HPCI	Pipe to Elbow	" "	"
DCA-108-1-1B	BJ B4.5	RHR	Longitudinal Weld	Welded Hanger	Totally Obstructed
DCA-108-1-1C	BJ B4.5	RHR	Longitudinal Weld	Welded Hanger	Totally Obstructed
DCA-108-1-FW2	BJ B4.5	RHR	Valve to Pipe	Welded Hanger	Totally Obstructed

ASME SECTION III EXAMINATION	SAFETY IMPACT
RT	Weld is inaccessible and below approximately 20 feet of suppression pool water. Adequate steam condensation of any leakage is expected. System is not pressurized during power plant operation. During system operation, maximum pressure is less than 25 psig. System is not required for normal shutdown and backed up by either HPCI or feedwater.
RT	Leakage would be detected by wetwell temperature/pressure increase. Upon such signals RCIC system operation could be terminated. RCIC operation is backed up by HPCI or feedwater. Weld is not pressurized during plant power operation. Maximum pressure the weld could be subjected to is 25 psig.
RT	" " " "
RT	" " " "
RT	Leakage would be detected by wetwell temperature/pressure increase. Upon such signals HPCI system operation could be terminated. HPCI operation is backed up by the auto-depressurization system and RHR. Weld is not normally pressurized during plant power operation.
RT	" " " "
RT	" " " "
RT	Leak detection systems detect weld leakage, resulting in manual or automatic isolation of the leak. Line is not required for normal safe shutdowns. Alternate shutdown methods are available.
RT and PT	Reactor coolant leakage detection systems will detect leakage. Plant technical specifications require plan shutdown with leakage greater than 5 gpm.
RT and PT	" " " "
RT and PT	" " " "

IV. JUSTIFICATION:

The justification for requesting relief from ASME Section XI examination requirements is as follows:

1) The structural integrity of the welds is not in question. These Class 2 welds were subject to examination and testing requirements of ASME Section III.

2) Relief from examination of these welds do not affect overall plant quality or safety.

V. ALTERNATE PROVISIONS:

Welds are inaccessible to all methods of NDE.

V. ALTERNATE PROVISIONS:

The structural integrity of all Class 1 welds covered has been verified by satisfactory completion of all ASME Section III examination. Supplemental examination, such as a surface examination performed at this time is redundant and would not result in increasing levels of plnat quality or safety.

Based on the most current accepted Edition and Addenda of ASME Section XI ('77 Edition to Summer '78), a surface examination of the welds will be required during inservice inspections, and will be more meaningful at that time.

Class 2 piping welds will receive a supplemental surface examintion.

Welds requiring relief from examination requirements due to geometric configuration were evaluated for radiographic examination with specific attention to feasibility during an inservice examination. In most cases, current state-of-the-art prohibited this method due to configuration and environment. New or improved examination techniques may improve inspectability volumetrically during future inspection intervals; these techniques will be evaluated for applicability to SSES #1 and implemented as required.

RELIEF REQUEST #6

I. IDENTIFICATION OF COMPONENTS:

Class 1, Category BJ, pressure retaining welds in piping.

Class 2, Category CF and CG pressure retaining welds in piping.

II. CODE REQUIREMENT:

Category BJ - Table IWB-2600, Item Numbers B4.5, B4.6, B4.7 - of the ASME Code, 1974 Edition to Summer 1975 Addenda requires volumetric examination of 100%* of circumferential welds, longitudinal welds, and branch connections be performed completely as a preservice examination requirement prior to initial plant start-up.

Category CF - Table IWC-2600, Item Numbers C2.1, C2.2, C2.3 - of the ASME Code, 1974 Edition to Summer 1975 Addenda requires volumetric examination of 100% and 50%*, respectively of circumferential discontinuity welds, longitudinal welds, and branch connection welds be performed completely as a preservice examination requirement prior to initial plant start-up.

*excluding those exempt per IWB-1220, IWC-1220.

ASME Appendix III, Winter 1975 Addenda, requires an angle beam examination of the weld and required volume (the lesser of ½t or 1") be perfomred scanning both normal and parallel to the weld.

III. BASIS FOR RELIEF:

Relief is required from the ASME Section XI examination requirements on the basis of complete inaccessibility of the weld and required volume due to geometric configuration.

WELD IDENTIFICATION NUMBER	CODE CATEGORY AND ITEM NUMBER	SYSTEM	CONFIGURATION	NATURE OF OBSTRUCTION	% OF SCAN OBSTRUCTED
DCA-110-1-FW11	BJ B4.5	RHR	Valve to Tee	Part Geometry	Totally
DCA-110-2-FW11	BJ B4.5	RHR	Valve to Tee	Part Geometry	Totally
DCA-107-1-FW3	BJ B4.5	Core Spray	Valve to Valve	Part Geometry	Totally
DCA-107-2-FW7	BJ B4.5	Core Spray	Valve to Valve	Part Geometry	Totally
DBB-115-1-FW13	CF C2.1	RHR	Valve to Valve	Part Geometry	Totally
GBB-105-1-FW1	CF C2.1	RHR	Valve to Reducer	Part Geometry	Totally
DCA-110-1-FW2	BJ B4.5	RHR	Valve to Flued Head	Part Geometry	Totally
DCA-110-2-FW2	BJ B4.5	RHR	Valve to Flued Head	Part Geometry	Totally
DCA-108-1-FW10	BJ B4.5	RHR	Valve to Reducer	Part Geometry	Totally
GBB-108-1-FW4	BJ B4.5	RHR	Valve to Reducer	Part Geometry	Totally
VRR-B31-1-FWA24	BJ B4.5	Recirculation	Valve to Pipe	Part Geometry	Totally
VRR-B31-2-FWB24	BJ B4.5	Recirculation	Valve to Pipe	Part Geometry	Totally

ASME SECTION III EXAMINATION	SAFETY IMPACT
RT and PT	Reactor coolant pressure boundary leak detection system will detect weld leakage. Technical specifications require plant shutdown with unidentified leakage greater than 5 gpm.
RT and PT	" " " "
RT and PT	" " " "
RT and PT	" " " "
RT	During normal plant operation, welds are not under pressure. During normal system operation, any leakage is detectable by leak detection systems. Plant can be safely cooled down by unaffected RHR loop or main condenser.
RT	" " " "
RT and PT	Inside containment isolation valve perform reactor coolant pressure boundary inside function. Any significant leakage would be detected by leak detection system.
RT and PT	" " " "
RT and PT	During power plant operation, weld is not pressurized. During normal system operation, significant leakage detected by leak detection system. Alternate shutdown cooling is unaffected and condenser is also available for cool down.
RT	During normal plant operation, welds are not under pressure. During normal system operation, any leakage is detectable by leak detection systems. Plant can be safely cooled down by unaffected RHR loop or main condenser.
RT and PT	Reactor coolant pressure boundary leak detection system will detect weld leakage. Technical specifications require plant shutdown with unidentified leakage greater than 5 gpm.
RT and PT	" " " "

IV. JUSTIFICATION:

The justification for requesting relief from ASME Section XI examination requirements is as follows:

1) The structural integrity of the piping pressure boundary is not in question. The subject welds were inspected in accordance with examination nd testing requirements of ASME Section III.

2) Other welds in each of the respective systems are accessible and provide a basis for the integrity of the pressure boundary.

3) Visual examination of the weld during system pressure tests will be performed to detect for evidence of leakage.

4) Incomplete examination will not impact plant safety.

RELIEF REQUEST #7

I. IDENTIFICATION OF COMPONENTS:

Class 1 reactor pressure vessel examinations.

II. CODE REQUIREMENT:

The construction permit for SSES Unit #1 was issued on November 2, 1973. In accordance with the requirements set forth by 10 CFR 50.55a, SSES #1 must comply with the requirements of the 1971 Edition of Section XI up to and including the Summer 1972 Addenda, the code edition and addenda in effect six (6) months prior to the issuance of the construction permit. However, the preservice inspection program has been upgraded to comply with the 1974 edition to the Summer 1975 addenda.

III. BASIS FOR RELIEF:

Relief is requested to allow for the use of the Winter 1975 Addenda for reactor pressure vessel examinations.

IV. JUSTIFICATION:

Use of the Winter 1975 Edition of ASME Section XI for Reactor pressure vessel examination is justified for the following reasons:

1) The major differences applicable to the reactor pressure vessel between the Summer '75 Addenda and the Winter '75 Addenda are:

a) Table IWB-2500 Category BA revision; however, for preservice examination, this change has no impact.

b) Acceptance standards were added and/or changed; however, all changes were more conservative.

c) Changes were made to Appendix I, however, primary changes were made to correct typographical errors or to provide clarification.

d) Personnel qualification requirements were expanded and were made more conservative. (IWA-2300).

2) Areas forming the basis for not accepting the use of Winter '75 addenda are not applicable to SSES #1 RPV preservice examination.

V. ALTERNATE PROVISIONS:

ASME Section XI 1974 Edition to the Winter 1975 Addenda will be used for the SSES #1 reactor pressure vessel preservice examinations.

RELIEF REQUEST #8

I. IDENTIFICATION OF COMPONENTS:

Class 1 bottom head meridional weld seams (DA, DB, DC, DD, DE, DF)

II. CODE REQUIREMENTS:

Category B-A of ASME Section XI, 1974 Edition to Winter 1975 Addenda requires volumetric examination of essentially 100% of the accessible length of each meridional weld in vessel heads.

Appendix I, Article I-5000, requires the examinations be conducted using two beam angles from each direction (nominal angles of 45 degrees and 60 degrees.

These examinations must be performed completely as a preservice examination requirement prior to initial plant start-up.

III. BASIS FOR RELIEF:

Relief is required from the ASME Section XI examination requirements on the basis of partial coverage of the weld and required volume due to vessel configuration. Interference from the vessel skirt attachment weld buildup results in the unexamined volumes as follows:

0° Base Metal Exam	12% Missed
0° Weld Metal Exam	12% Missed
45° Exam	4% Missed
60° Exam	2% Missed

IV. JUSTIFICATION:

The justification for requesting relief from ASME Section XI examination requirements is as follows:

1) A composite of all examination angles show that a volume equal to two (2) percent of the required examination volumes for weld DA, DB, DC, DD, DE and DF are completely unexamined. All other areas have been covered by any or all of the 0°, 45°, and 60° scans.

2) The integrity of the welds have been verified by ultrasonic and magnetic particle testing during fabrication.

3) Welds were visually examined for leakage during RPV hydrotest.

V. ALTERNATE PROVISIONS:

Alternate NDE methods are not feasible for this examination.

RELIEF REQUEST #9

I. IDENTIFICATION OF COMPONENTS:

Class 1 feedwater inlet nozzles N4A and N4D.

II. CODE REQUIREMENTS:

Category B-D of ASME Section XI, 1974 Edition to Winter 1975 Addenda requires 100% volumetric examination of the nozzle to vessel weld and adjacent areas of nozzle and vessel. (Figure IWB-3512.1(a)).

These examinations must be performed completely as a preservice examination requirement prior to initial plant start-up.

III. BASIS FOR RELIEF:

Relief is required from ASME Section XI examination requirements on the basis of incomplete coverage of the weld and required volume due to vessel configuration. The proximity of nozzles N11A and B to the subject feedwater nozzles precludes complete examination of weld seams N4A and N4D as follows:

N4A

300°	-	completely examined (automatic)
60°	-	not examined due to interference from nozzle N11A.

N4D

300°	-	completely examined (automatic)
60°	-	not examined due to interference from nozzle N11B.

Spacing of only 4.5" between the nozzles allows only a best effort manual examination of the affected areas.

IV. JUSTIFICATION:

The justification for requesting relief from ASME Section XI examination requirements is as follows:

1) The excluded area is 16.67 percent of the weld seam; 83.33 percent has been completely examined.

2) Four (4) nozzles of the same configuration and service (N4B, N4C, N4E, N4F) have been completely examined.

3) The integrity of welds have been verified by ultrasonic and magnetic particle examination during fabrication.

4) All N4 nozzle to vessel welds were liquid penetrant testing following RPV hydrotest and accepted.

V. ALTERNATE PROVISIONS:

Due to extensive testing already performed during fabrication, no additional NDE is required to establish integrity of the welds.

RELIEF REQUEST #10

I. IDENTIFICATION OF COMPONENTS:

Bodies of Class 1 valves exceeding 4 inch nominal pipe size.

II. CODE REQUIREMENTS:

Category B-M-2 of ASME Section XI, 1974 Edition to Summer 1975 Addenda requires Visual Examination of the internal pressure boundary surfaces on valves exceeding 4 inches nominal pipe size.

III. BASIS FOR RELIEF:

Relief is requested from the ASME Section XI examination requirements on the basis of inaccessibility of the valve internal pressure boundary surfaces.

IV. JUSTIFICATION:

The justification for requesting relief from ASME Section XI Preservice Examination requirements is as follows:

1. The structural integrity of the piping pressure boundary has been verified by Construction Code testing requirements; therefore, the intent of ASME Section XI has been met.

2. Shop Surface Examinations, liquid penetrant and/or magnetic particle, have been performed on the body, bonnet, and disc. Radiography was also performed on the body.

3. All valve pressure retaining materials have met ASME Section II Specifications which require Visual Examination of the casting or forging, and surfaces free of injurious defects.

V. ALTERNATE PROVISIONS:

Should any of the subject valve internal surfaces become accessible during maintenance activities, a Visual Examination will be performed at that time.

SUMMARY OF THE MANUAL AND

REMOTE AUTOMATIC PRESERVICE EXAMINATIONS

FOR SUSQUEHANNA UNIT #1

CATEGORY BA
PRESSURE RETAINING WELDS IN REACTOR VESSEL
CIRCUMFERENTIAL SHELL WELDS

WELD SEAM AA

AA TOP SIDE

Remote Automatic Examination Coverage

There were five (5) interferences on weld seam AA top that caused missed areas during the remote automatic examination. These were:

Nozzle N1A	66" Missed
Nozzle N1B	66" Missed
Nozzle N8A	36" Missed
Nozzle N8B	36" Missed
Surface Gouge	4" Missed*
TOTAL	208" Missed

The circumference of weld seam AA is 837".

The interferences caused 24.85 percent of weld seam AA top to be missed during the remote automatic examination. *The 4" missed due to the surface gouge will be examined during the first ISI. The surface has been conditioned to allow examination. The missed area will at that time become 24.37 percent.

Manual Examination Coverage

The nozzle interferences listed for the automatic examination do not exist for the manual examination. The nozzles N1's and N8's are far enough from the weld centerline to allow a complete examination in accordance with Paragraph I-5121 of Section XI, Appendix I.

AA BOTTOM SIDE

Remote Automatic Examination - Not Performed

Manual Examination Coverage

No interferences. One hundred percent coverage.

SUMMARY WELD SEAM AA

One hundred percent of weld seam AA was manually examined in accordance with Appendix I of ASME Section XI. In addition, 75.15 percent of the top side of weld seam AA was examined using remote automatic equipment. Manual data exists for the 12.42 percent of the weld seam missed by the remote scanner and when combined with the remote examination data provides 100 percent coverage.

WELD SEAM AB

Remote Automatic Examination Coverage

Weld seam AB was examined 100 percent by the remote automatic equipment.

WELD SEAM AC

Remote Automatic Examination Coverage

Weld seam AC was examined 100 percent by the remote automatic equipment.

WELD SEAM AD

AD TOP SIDE

Remote Automatic Examination

Not performed.

Manual Examination Coverage

No interferences - 100 percent coverage.

AD BOTTOM SIDE

Remote Automatic Examination Coverage

There were two (2) interferences on weld seam AD bottom that caused missed areas during the remote automatic examination. These were:

Nozzle N11A	47" Missed
Nozzle N11B	41" Missed
TOTAL	88" Missed

The circumference of weld seam AD is 838". The interferences caused 10.5 percent of weld seam AD bottom to be missed during the remote automatic examination.

Manual Examination Coverage

No interferences - 100 percent coverage.

SUMMARY FOR WELD SEAM AD

One hundred percent of weld seam AD was manually examined in accordance with Appendix I of ASME Section XI. In addition, 89.5 percent of the bottom side of weld seam AD was examined using remote automatic equipment. Manual data exists for the 5.25 percent of the weld seam missed by the remote scanner and when combined with the remote examination data provides 100 percent coverage.

WELD SEAM AE

Manual Examination Coverage

Weld seam AE was examined 100 percent by manual techniques.

WELD SEAM AF

Manual Examination Coverage

Weld seam AF was examined 100 percent from one side in accordance with Paragraph I-5121 of ASME Section XI, Appendix I. In addition, a 0° only examination of weld AF was performed from the top surface of the vessel flange.

EXCLUSIONS

No exclusions are required for the reactor pressure vessel circumferential welds AA, AB, AC, AD, AE and AF.

CATEGORY BA
PRESSURE RETAINING WELDS IN REACTOR VESSEL
LONGITUDINAL SHELL WELDS

WELD SEAM BA

BA LEFT SIDE (CW)

Remote Automatic Examination Coverage

There was one (1) interference on weld seam BA left side that caused a missed area during the remote automatic examination. This was:

Nozzle N2K 43" Missed

The length of weld seam BA is 137".

The interference caused 31.38 percent of weld seam BA left side to be missed during the remote automatic examination.

Manual Examination Coverage

No interference. One hundred percent coverage.

SUMMARY WELD SEAM BA

Eighty-four and three-tenth percent of weld seam BA was examined in accordance with Appendix I of ASME Section XI using remote automatic techniques. Manual data exists for the 15.7 percent of the weld seam missed by the remote scanner and when combined with the remote examination data provides 100 percent coverage.

WELD SEAM BB

BB LEFT SIDE (CW)

Remote Automatic Examination Coverage

There was one (1) interference on weld seam BB left side that caused a missed area during the remote automatic examination. This was:

Nozzle N2C 46" Missed

The length of weld seam BB is 137".

The interference caused 33.57 percent of weld seam BB left side to be missed during the remote automatic examination.

Manual Examination Coverage

No interference. One hundred percent coverage.

BB RIGHT SIDE (CCW)

Remote Automatic Examination Coverage

No interference. One hundred percent coverage.

SUMMARY WELD SEAM BB

Eighty-three and two-tenth percent of weld seam BB was examined in accordance with Appendix I of ASME Section XI using remote automatic techniques. Manual data exists for the 16.8 percent of the weld seam missed by the remote scanner and when combined with the remote examination, data provides 100 percent coverage.

WELD SEAM BC

BC LEFT SIDE (CW)

Remote Automatic Examination Coverage

There was one (1) interference on weld seam BC left side that caused a missed area during the remote automatic examination. This was:

Nozzle N2F	44" Missed

The length of weld seam BC is 137".

The interference caused 32.12 percent of weld seam BC to be missed during the remote automatic examination.

Manual Examination Coverage

No interference. One hundred percent coverage.

BC RIGHT SIDE (CCW)

Remote Automatic Examination Coverage

There was (1) interference on weld seam BC right side that caused a missed area during the remote automatic examination. This was:

Nozzle N1B	69" Missed

The interference caused 50.36 percent of weld seam BC right side to be missed during the remote automatic examination.

Manual Examination Coverage

No interference. One hundred percent coverage.

SUMMARY WELD SEAM BC

Fifty-eight and eight-tenth percent of weld seam BC was examined in accordance with Appendix I of ASME Section XI using remote automatic techniques. Manual data exists for the 41.2 percent of the weld seam missed by the remote scanner and when combined with the remote examination, data provides 100 percent coverage.

WELD SEAM BD

Remote Automatic Examination Coverage

Weld seam BD was examined 100 percent by the remote automatic equipment.

WELD SEAM BE

Remote Automatic Examination Coverage

Weld seam BE was examined 100 percent by the remote automatic equipment.

WELD SEAM BF

BF LEFT SIDE (CW)

Remote Automatic Examination Coverage

There was one (1) interference on weld seam BF left side that caused a missed area during the remote automatic examination. This was:

Nozzle N16B	18" Missed

The length of weld seam BF is 137".

The interference caused 13.14 percent of weld seam BF left side to be missed during the remote automatic examination.

Manual Examination Coverage

No interference. One hundred percent coverage.

BF RIGHT SIDE (CCW)

Remote Automatic Examination Coverage

There was one (1) interference on weld seam BF right side that caused a missed area during the remote automatic examination. This was:

Nozzle N16B	44" Missed

The interference caused 32.12 percent of weld seam BF right side to be missed during the remote automatic examination.

Manual Examination Coverage

N16B interference. One hundred percent coverage*.

*NOTE: An area 15" long was examined in one direction only for parallel reflectors in accordance with the requirements of Paragraph I-5121 of ASME Section XI, Appendix I.

SUMMARY WELD SEAM BF

Seventy-seven and four-tenth percent of weld seam BF was examined in accordance with Appendix I of ASME Section XI using remote automatic techniques. Manual data exists for the 22.6 percent of the weld seam missed by the remote scanner and when combined with the remote examination data provides 100 percent coverage.

WELD SEAM BG

BG LEFT SIDE (CW)

Remote Automatic Examination Coverage

There was one (1) interference on weld seam BG left side that caused a missed area during the remote automatic examination. This was:

RPV Stabilizer Bracket	8" Missed

The length of weld seam BG is 137".

The interference caused 5.8 percent of weld seam BG left side to be missed during the remote automatic examination.

Manual Examination Coverage

No interference. One hundred percent coverage.

BG RIGHT SIDE (CCW)

Remote Automatic Examination Coverage

There was one (1) interference on weld seam BG right side that caused a missed area during the remote automatic examination. This was:

RPV Stabilizer Bracket	8" Missed

The interference caused 5.8 percent of weld seam BG right side to be missed during the remote automatic examination.

Manual Examination Coverage

No interference. One hundred percent coverage.

SUMMARY WELD SEAM BG

Ninety-four and two-tenth percent of weld seam BG was examined in accordance with Appendix I of ASME Section XI using remote automatic techniques. Manual data exists for the 5.8 percent of the weld seam missed by the remote scanner, and when combined with the remote examination data provides 100 percent coverage.

WELD SEAM BH

BH LEFT SIDE (CW)

Remote Automatic Examination Coverage

There was one (1) interference on weld seam BH left side that caused a missed area during the remote automatic examination. This was:

RPV Stabilizer Bracket	10" Missed

The length of weld seam BH is 137".

The interference caused 7.3 percent of weld seam BH left side to be missed during the remote automatic examination.

Manual Examination Coverage

No interference. One hundred percent coverage.

BH RIGHT SIDE (CCW)

Remote Automatic Examination Coverage

There was one (1) interference on weld seam BH right side that caused a missed area during the remote automatic examination. This was:

RPV Stabilizer Bracket 11" Missed

The interference caused 8.0 percent of weld seam BH right side to be missed during the remote automatic examination.

Manual Examination Coverage

No interference. One hundred percent coverage.

SUMMARY WELD SEAM BH

Ninety-two and four-tenth percent of weld seam BH was examined in accordance with Appendix I of ASME Section XI using remote automatic techniques. Manual data exists for the 7.6 percent of the weld seam missed by the remote scanner and when combined with the remote examination data provides 100 percent coverage.

WELD SEAM BJ

BJ LEFT SIDE (CW)

Remote Automatic Examination Coverage

There was one (1) interference on weld seam BJ left side that caused a missed area during the remote automatic examination. This was:

RPV Stabilizer Bracket 9" Missed

The length of weld seam BJ is 137".

The interference caused 6.6 percent of weld seam BJ left side to be missed during the remote automatic examination.

Manual Examination Coverage

No interference. One hundred percent coverage.

BJ RIGHT SIDE (CCW)

Remote Automatic Examination Coverage

There was one (1) interference on weld seam BJ right side that caused a missed area during the remote automatic examination. This was:

RPV Stabilizer Bracket 8" Missed

The interference caused 5.8 percent of weld seam BJ right side to be missed during the remote automatic examination.

Manual Examination Coverage

No interference. One hundred percent coverage.

SUMMARY WELD SEAM BJ

Ninety-three and eight-tenth percent of weld seam BJ was examined in accordance with Appendix I of ASME Section XI using remote automatic techniques. Manual data exists for the 6.2 percent of the weld seam missed by the remote scanner and when combined with the remote examination data provides 100 percent coverage.

WELD SEAM BK

Manual Examination Coverage

No interference. One hundred percent coverage.

WELD SEAM BM

Manual Examination Coverage

No interference. One hundred percent coverage.

WELD SEAM BN

Manual Examination Coverage

No interference. One hundred percent coverage.

WELD SEAM BP

Manual Examination Coverage

No interference. One hundred percent coverage.

CATEGORY BA

PRESSURE RETAINING WELDS IN REACTOR VESSEL

CIRCUMFERENTIAL AND MERIDIONAL WELDS
IN VESSEL HEADS

CLOSURE HEAD (TOP)

The following circumferential weld seams were examined manually with 100 percent coverage:

AG (Head to Flange)
AH (Dollar Plate to Side Plates)

The following meridional weld seams were examined manually with 100 percent coverage:

DJ (Side Plate to Side Plate)
DK (Side Plate to Side Plate)
DM (Side Plate to Side Plate)
DN (Side Plate to Side Plate)
DP (Side Plate to Side Plate)
DR (Side Plate to Side Plate)

SUMMARY FOR CLOSURE HEAD WELD SEAMS

All weld seams in the RPV closure head were examined in accordance with Appendix I of ASME Section XI using manual examination techniques. There were no interferences to the examination.

BOTTOM HEAD

The following circumferential weld seam was examined manually with 100 percent coverage:

AJ (Dollar Plate to Side Plates)

The following longitudinal weld seams were examined manually with 100 percent coverage:

DJ (Dollar Plate Longitudinal Seam)
DH (Dollar Plate Longitudinal Seam)

BOTTOM HEAD (Continued)

The following meridional weld seams were examined manually with partial coverage due to interference:

DA (Side Plate to Side Plate)
DB (Side Plate to Side Plate)
DC (Side Plate to Side Plate)
DD (Side Plate to Side Plate)
DE (Side Plate to Side Plate)
DF (Side Plate to Side Plate)

The weld buildup for the vessel skirt attachment caused an interference to the manual examination of weld seams DA - DF. The interference caused unexamined volumes as follows:

0° Base Metal Exam	12% Missed
0° Weld Metal Exam	12% Missed
45° Exam	4% Missed
60° Exam	2% Missed

A composite of all examination angles shows that a volume equal to 2 percent of the required examination volume for welds DA - DF is completely unexamined.

Per Relief Request #8, PP&L requests relief from ASME Section XI examination requirements for the unexamined volumes as indicated above.

CATEGORY BD

PRIMARY NOZZLE-TO-VESSEL WELDS AND
NOZZLE INSIDE RADIUSED SECTIONS

The following nozzle-to-vessel welds were examined 100 percent using remote automatic examination techniques:

N1A and B - Recirculation Outlet Nozzles

N2 A, B, E, F, G and K - Recirculation Inlet Nozzles

N3 A, B, C and D - Main Steam Outlet Nozzles

N4 B, C, E and F - Feedwater Inlet Nozzles

N5 A and B - Core Spray Inlet Nozzles

The following nozzle-to-vessel welds were examined partially using remote automatic examination techniques:

Recirculation Inlet (N2) Nozzles

N2C

288.8° - Completely examined

71.2° - Examined with a short scan due to interference from nozzle N8A

N2D

313.5° - Completely examined

46.5° - Examined with a short scan due to interference from nozzle N8A

N2H

314.9° - Completely examined

45.1° - Examined with a short scan due to interference from nozzle N8B

N2J

321.5° - Completely examined

38.5° - Examined with a short scan due to interference from nozzle N8B

SUMMARY OF N2 PARTIAL EXAMINATIONS

The interference from the N8 nozzles caused a short scan of the affected areas. A scan length of 16" from the weld centerline is needed to achieve a complete examination of the required examination volume. The N8 nozzle interference allowed only a 13.75" scan length. This caused a missed volume of 19 percent in the affected areas. (81 percent was examined)

Manual data exists for the 19 percent of the affected areas missed by the remote scanner and when combined with the remote examination data, provides 100 percent coverage.

FEEDWATER INLET (N4) NOZZLES

N4A

300° - Completely examined

60° - Not examined due to interference from nozzle N11A

N4D

300° - Completely examined

60° - Not examined due to interference from nozzle N11B.

SUMMARY OF N4 PARTIAL EXAMINATIONS

The proximity of nozzles N11 A and B to the affected feedwater nozzles precludes a complete Section XI examination of weld seams N4A and N4D. The spacing of 4.5" between the nozzles allows only a best effort manual examination of the areas. Partial manual data exists for the affected areas but does not provide 100 percent coverage. Per Relief Request #9, PP&L requests relief from ASME Section XI examination requirements for the unexamined volumes (16.67 percent of the weld seam).

MANUAL NOZZLE EXAMINATIONS

The following nozzle-to-vessel welds were examined 100 percent using manual examination techniques:

N6 A&B	Head Instrumentation Nozzles
N7	Head Vent Nozzle
N8 A&B	Jet Pump Instrumentation Nozzles
N9	CRD Hydraulic Return Nozzle

CATEGORY BE

PRESSURE RETAINING PARTIAL PENETRATION WELDS IN VESSELS

The following partial penetration welds were examined for evidence of leakage during the system hydrostatic test on Susquehanna Unit #1.

N10	Core ΔP and Liquid Control Nozzle
N11 A & B	Instrumentation Nozzles Shell Course #3
N12 A & B	Instrumentation Nozzles Shell Course #4
N13	Flange Seal Leak Detector Nozzle on Vessel Flange
N15	RPV Bottom Head Drain Nozzle
N16 A & B	Instrumentation Nozzles Shell Course #2
Control Rod Drive Penetrations	185
In-Core Penetrations	55

CATEGORY BF

PRESSURE RETAINING DISSIMILAR METAL WELDS

NOZZLE TO SAFE END WELDS

Nozzle to safe end welds were examined in accordance with Table IWB-2600 of ASME Section XI.

The volumetric examination was manual ultrasonic testing in accordance with Appendix III of ASME Section XI.

The surface examination was liquid penetrant testing in accordance with Article 6 of ASME Section V.

The following safe end welds were completely examined in accordance with ASME Section XI:

N1 A & B	Recirculation Outlet
N2 A - K	Recirculation Inlet
N3 A - D	Main Steam Outlet
N4 A - F	Feedwater Inlet
N5 A & B	(including extention) Core Spray Inlet
N6 A & B	Head Instrumentation
N7	Head Vent
N8 A & B	Jet Pump Instrumentation
*N9	CRD Hydraulic Return

*The N9 safe end has been removed and the nozzle has been capped. The nozzle-to-cap weld has not yet been examined, but it can be completely examined.

CATEGORY BG-1

PRESSURE RETAINING BOLTING TWO INCHES
AND LARGER IN DIAMETER

FLANGE CLOSURE NUTS

Nut #1 - N #76 were completely surface examined in accordance with Table IWB-2600 of ASME Section XI. The examination was a wet magnetic particle examination in acordance with Article 7 of ASME Section V.

FLANGE CLOSURE STUDS

Stud #1 - Stud #76 were completely examined by both volumetric and surface techniques. The volumetric examination was ultrasonic in accordance with the requirements of Article 5 of ASME Section V. The surface examination was a wet magnetic particle examination in accordance with Article 7 of ASME Section V.

LIGAMENTS BETWEEN FLANGE STUD HOLES

The ligaments between stud holes 1 - 76 were volumetrically examined in accordance with Table IWB-2600 of ASME Section XI. The volumetric examination was ultrasonic in accordance with General Electric Company specifications.

FLANGE CLOSURE WASHERS

Washer #1 - Washer #76 were visually examined in accordance with Table IWB-2600 of ASME Section XI. The visual examination was in accordance with Article 9 of ASME Section V.

CATEGORY BH

VESSEL SUPPORTS

Weld *CG, the support skirt to skirt knuckle attachment weld, was completely examined volumetrically in accordance with Table IWB-2600 of ASME Section XI. The volumetric examination was ultrasonic in accordance with Appendix I of ASME Section XI.

* NOTE:

The skirt knuckle was machined from a weld buildup designated as weld FR. Weld FR was examined to the maximum extent possible as an addition to weld CG. Approximately 59 percent of weld seam FR was ultrasonically examined. Weld FR is an ASME Section III NF integral attachment to the pressure boundary and as such is not within the examination scope of Section XI.

CATEGORY BI-1

INTERIOR CLAD SURFACES OF REACTOR VESSELS

VESSEL CLADDING

Six (6) cladding examination patches were visually examined in accordance with Table IWB-2600 of ASME Section XI. The visual examination was in accordance with Article 9 of ASME Section V.

CATEGORY BN-1

INTERIOR OF REACTOR VESSELS

VESSEL INTERIOR

All items and surfaces above and below the core support plate were visually examined in accordance with Table IWB-2600 of ASME Section XI. The visual examination was in accordance with Article 9 of ASME Section V. Items and surfaces normally accessible for ISI were also photographed to provide a comparison for ISI purposes.

CATEGORY BO

PRESSURE RETAINING WELDS IN CONTROL ROD HOUSINGS

CRD HOUSING WELDS

The welds in CRD housings were exempted from volumetric examination based upon plant makeup capacity. They were examined for leakage during the system hydro.

CATEGORY BP

COMPONENTS EXEMPTED FROM EXAMINATION BY IWB-1220

EXEMPTED COMPONENTS

All components exempted from examination were examined for leakage during the system hydro.

sjb/S-6

CATEGORY BN-2

INTEGRALLY WELDED CORE SUPPORT
STRUCTURES AND INTERIOR ATTACHMENTS
TO REACTOR VESSELS

All core support and attachment welds were visually examined in accordance with Table IWB-2600 of ASME Section XI. The visual examination was in accordance with Article 9 of ASME Section V.

160-768-0100
CONT ON SHEET 2

GENERAL ELECTRIC

160-768-0100 CONT ON SHEET 2 SH NO. 1

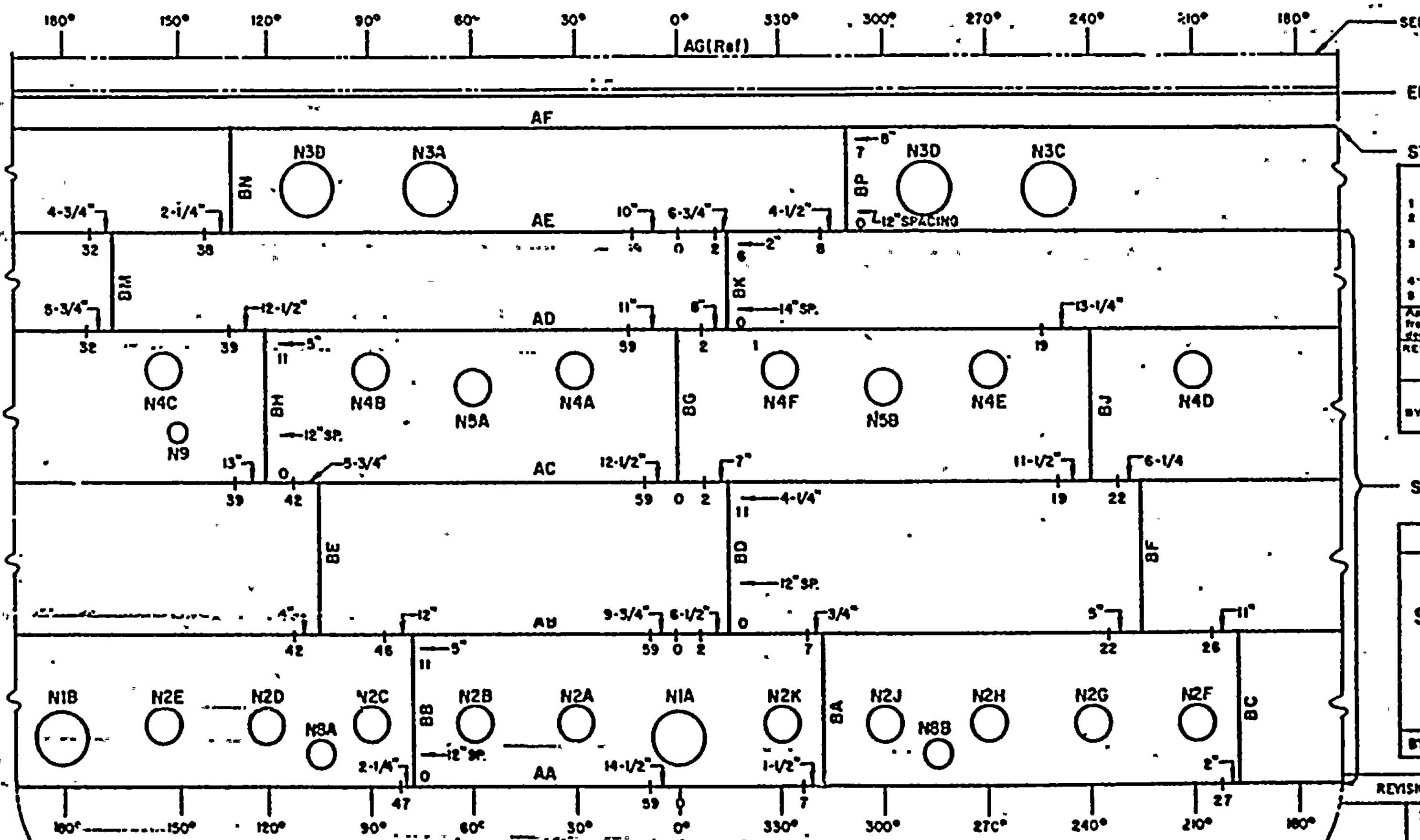
UNLESS OTHERWISE SPECIFIED USE THE FOLLOWING:-

APPLIED PRACTICES	SURFACES	TOLERANCES ON MACHINED DIMENSIONS: FRACTIONS	DECIMALS	ANGLES
	✓	± NA	± NA	± NA

REV NO 0 1 2

TITLE
WELD IDENTIFICATION (RPV)

FIRST MADE FOR SUSQUEHANNA



STD. No. 5 (SIDE 1) 12-19-77

VENDOR'S DRAWING REVIEW

1 ☒ Approved—Mfg. may proceed.
2 ☐ Approved—Submit final dwg.—Mfg. may proceed.
3 ☐ Approved except as noted—Make changes and submit final dwg.—Mfg. may proceed as approved.
4 ☐ Not Approved—Correct and resubmit.
5 ☐ Approval not required—Mfg. may proceed.

Approval of this drawing does not relieve supplier from full compliance with contract or purchase order requirements.

REVIEWED C E L M I A — JOB NO. 8856

BY [signature] BECHTEL DATE 12-20-77

CERTIFIED CORRECT FOR

SUSQUEHANNA
STEAM ELECTRIC STATION
UNIT 1
PP&L Co.
CONTRACT 8856-M-166

BY [signature] DATE 5/1/77

MF 5

REVISIONS		PRINTS TO
1	See Sheet No. 8 [signature] 12-3-76.	
2	Added: Radiographic Marks & Nos. Added: Sheet No. 8 Changed: View from Inside Vessel to Outside. [signature] 4-11-77	

OUTSIDE VIEW

EL. 0"(Ref)

NOTES:
1. SEE SHEET 2 FOR AZIMUTH & ELEVATION TABLES
2. SEE ISE-QAI-323 FOR WELD LOCATION DETAILS

RECEIVED
JAN 6 1978
SUSQUEHANNA PROJ.

FF107160
SH. 2301
Rev. 5
8856-M166-23(1)-5
FF107160

MADE BY R.W. NAGLE	APRIL 11, 1977	APPROVALS	ISSUED	ISE-NSO	160-768-0100
[signature]	4/14/77	[signature]		PHILA.	CONT ON SHEET 2 SH NO. 1

M166-23

DISTRIBUTION — DESCRIPTION-DRAWING — LOCATION
BECHTEL SAN FRANCISCO
VENDOR, CLIENT, FIELD, C.S., CIVIL, ELECT., PLT. DES., MECH., CON. SYS., ARCH., PURCH., EXPED., INSPECT, SCHED., START-UP, RECORD
NO. DATE 2 OPK 12-22-77 1A

GENERAL ELECTRIC

160-76B-0100

CONT ON SHEET 3 SH NO. 2

UNLESS OTHERWISE SPECIFIED USE THE FOLLOWING:--					REV NO 01
APPLIED PRACTICES	SURFACES	TOLERANCES ON MACHINED DIMENSIONS			
		FRACTIONS	DECIMALS	ANGLES	
	✓	± NA	± NA	± NA	CONT ON SHEET SH NO

TITLE

WELD IDENTIFICATION (RPV)

FIRST MADE FOR SUSQUEHANNA

12-19-77

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REVIEWED	C	E	L	M	I	A	JOB NO.
				X			8856

BY A Hart BECHTEL DATE 12-20-77

NOZZLE LOCATION

NOZZLE	AZIMUTH	ELEVATION	DESCRIPTION
N1A	0°	13'-5½"	Recirc. Outlet
N1B	180°	13'-5½"	Recirc. Outlet
N2A	30°	15'-1"	Recirc. Inlet
N2B	60°	15'-1"	" "
N2C	90°	15'-1"	" "
N2D	120°	15'-1"	" "
N2E	150°	15'-1"	" "
N2F	210°	15'-1"	" "
N2G	240°	15'-1"	" "
N2H	270°	15'-1"	" "
N2J	300°	15'-1"	" "
N2K	330°	15'-1"	" "
N3A	72°	54'-10½"	Main Steam
N3B	108°	54'-10½"	" " "
N3C	252°	54'-10½"	" "
N3D	288°	54'-10½"	" "
N4A	30°	41'-6½"	Feedwater
N4B	90°	41'-6½"	"
N4C	150°	41'-6½"	"
N4D	210°	41'-6½"	"
N4E	270°	41'-6½"	"
N4F	330°	41'-6½"	"
N5A	60°	40'-4½"	Core Spray
N5B	300°	40'-4½"	" "
N8A	105°	12'-8"	
N8B	285°	12'-8"	
N9A	146°	37'-4½"	CRD Return

VERTICAL WELD LOCATION

WC	AZIMUTH	SHELL COURSE
BA	317° 30'	1
BB	77° 30'	1
BC	197° 30'	1
BD	255°	2
BE	105°	2
BF	252°	2
BG	0°	3
BH	120°	3
BJ	240°	3
BK	345°	4
BM	165°	4
BN	130°	5
BP	310°	5

CIRCUMFERENTIAL WELD LOCATION

NO	ELEVATION
AA	10'-6½"
AB	21'-11½"
AC	33'-4½"
AD	44'-9½"
AE	51'-11½"
AF	59'-7 19/32"

DISTRIBUTION

	NO.	DATE
VENDOR	2	
CLIENT	0&M	
FIELD	2A	
G.E.		
CIVIL		
ELECT.		
PLT DES.		
MECH.	1	12-27-77
CON. SYS.		
ARCH.		
PURCH.		
EXPED.		
INSPECT		
SCHED.		
START-UP		
RECORD	1A	

BECHTEL SAN FRANCISCO

LOCATION — DESCRIPTION-DRAWING

RECEIVED
JAN 6 1970
SUSQUEHANNA PROJ.

FF107160 NF 4
SH 2 REV 4

CERTIFIED CORRECT FOR

SUSQUEHANNA
STEAM ELECTRIC STATION
UNIT 1
PP&L Co.
CONTRACT 8856-M-166

BY: [signature] DATE: 11/15/76

REVISIONS

PRINTS TO

FF107160 · 8856-M166-23(2)-4

MADE BY	DATE	APPROVALS	ENGR OR DEPT	LOCATION
R.W. NAGLE	NOV. 10, 1976		I&SE-NSO	PHILA.
TYPED [signature]	11/15/76			

160-76B-0100

CONT ON SHEET 3 SH NO. 2

160-76B-0100

GENERAL ELECTRIC

160-76B-0100 CONT ON SHEET 4 SH NO. 3

UNLESS OTHERWISE SPECIFIED USE THE FOLLOWING:—					REV NO. 0 & 2
APPLIED PRACTICES	SURFACES	TOLERANCES ON MACHINED DIMENSIONS			
		FRACTIONS	DECIMALS	ANGLES	
	✓	± NA	± NA	± NA	CONT ON SHEET SH NO.

TITLE

WELD IDENTIFICATION (RPV)

FIRST MADE FOR SUSQUEHANNA

12-19-77

VENDOR'S DRAWING REVIEW

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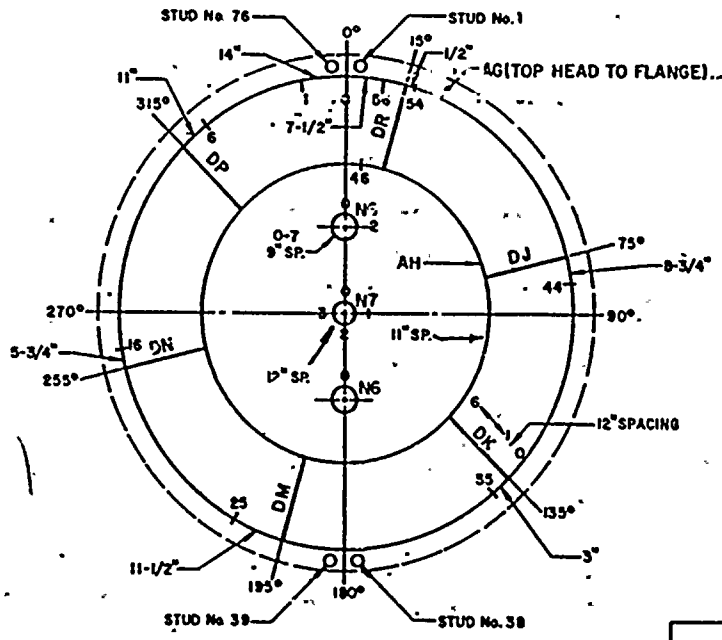
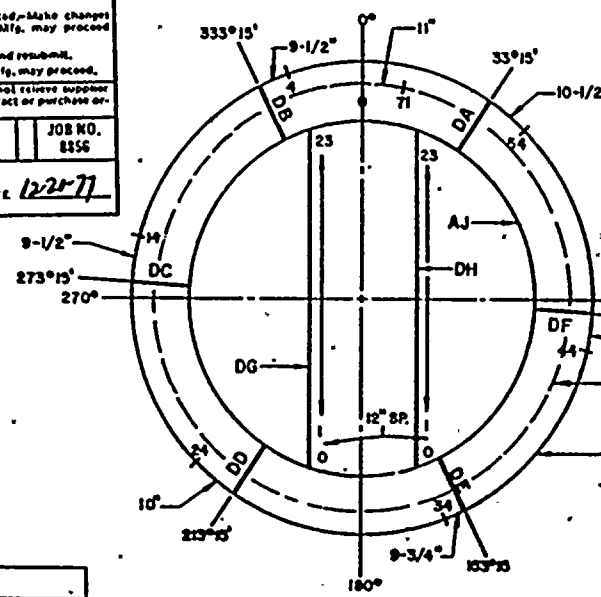
REVIEWED C E L M I A JOB NO. 8856

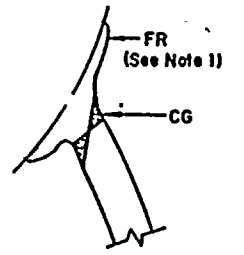
BY [signature] BECHTEL DATE 12-20-77



PLAN VIEW
(OUTSIDE—TOP HEAD ASSEMBLY)



PLAN VIEW
(INSIDE—BOTTOM HEAD ASSEMBLY)



DETAIL A

RECEIVED
JAN 6 1978
SUSQUEHANNA P20)

CERTIFIED CORRECT FOR

SUSQUEHANNA
STEAM ELECTRIC STATION
UNIT 1
PP&L Co.
CONTRACT 8856-M-166

BY: [signature] DATE: 5/11/77

NOTE 1.
Weld Build-up FR to be Examined Concurrent with Weld CG.

REVISIONS			PRINTS TO
	1	Added: CG Weld & Detail A. FR Weld & Note 1. Rev. 12-3-76	
	2	Added: Radiography Mark Locations & Ref. Rev. 3-29-77	

DISTRIBUTION	NO.	DATE
VENDOR	2	
CLIENT	24	
FIELD	1	
QE		
CIVIL		
ELECT.		
PLT. DES.		
MECH.		
CONT. SYS.		
ARCH.		
PURCH.		
EXPED.		
INSPECT		
SCHED.		
START-UP		
RECORD	14	

BECHTEL SAN FRANCISCO

LOCATION DESCRIPTION-DRAWING

8856-M166-23(3)-5

EE107160

MADE BY R.W. NAGLE NOV. 11, 1976

ISSUED [signature] 11/15/76

APPROVALS

I&SE-NSO DIV OR DEPT

PHILA. LOCATION

160-76B-0100 CONT ON SHEET 4 SH NO. 3

EE107160 SH. 2303 Rev. 5 MF 3/3