This document was too large to scan as a single document. It has been divided into smaller sections.

Section 2 of 2

Document Information			
Document #	06-ESD-0087		
Title	CLASS 1 MOD TO THE HANFORD FACILITY RCRA PERMIT (QUARTER ENDING 03/31/2006)		
Date	04/06/2006		
Originator	KLEIN KA	Originator Co.	DOE-RL
Recipient	DAVIS GP	Recipient Co.	DOEC
References	WA7890008967		
Keywords			
Projects			
Structure	183H		

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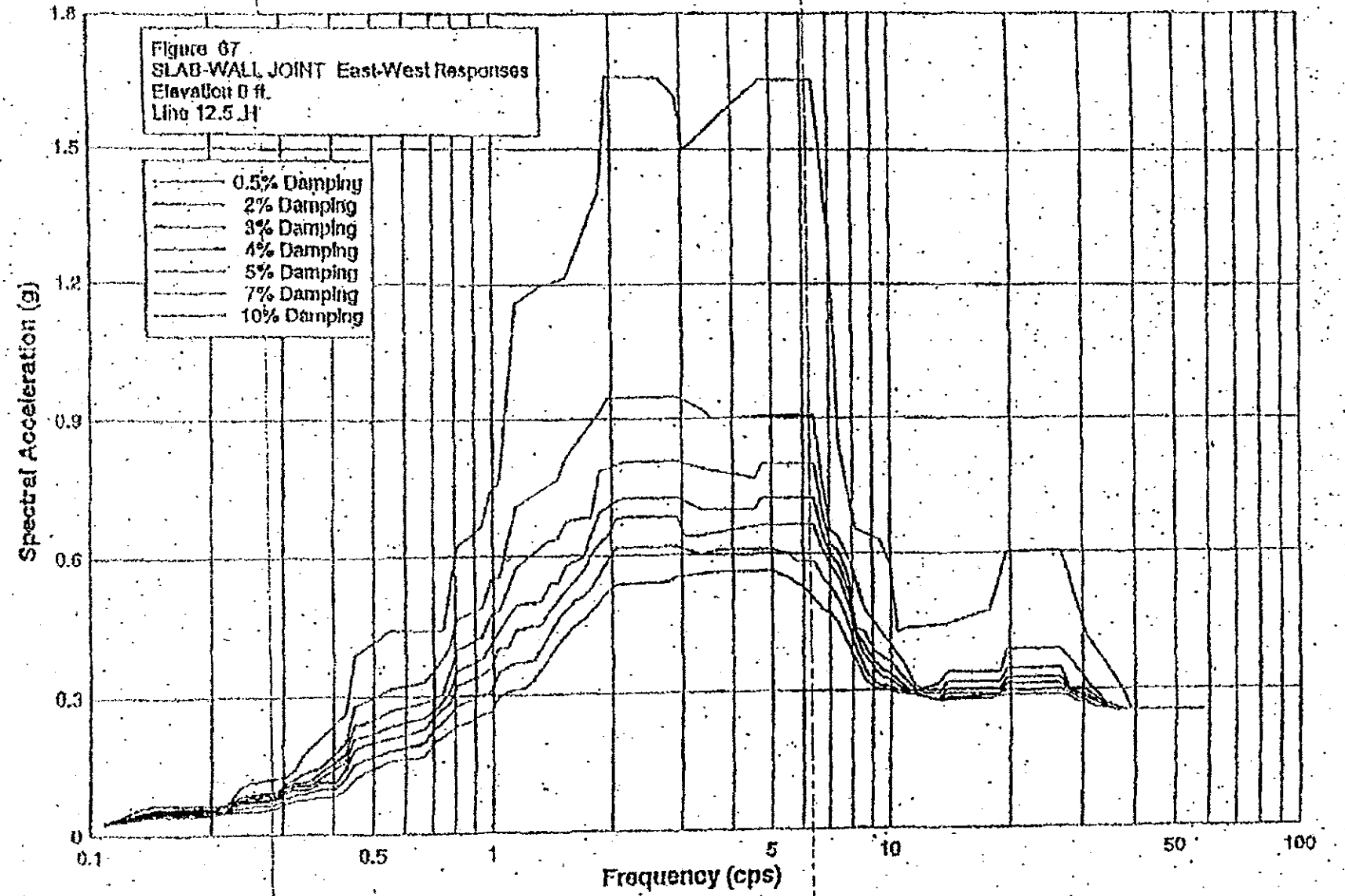

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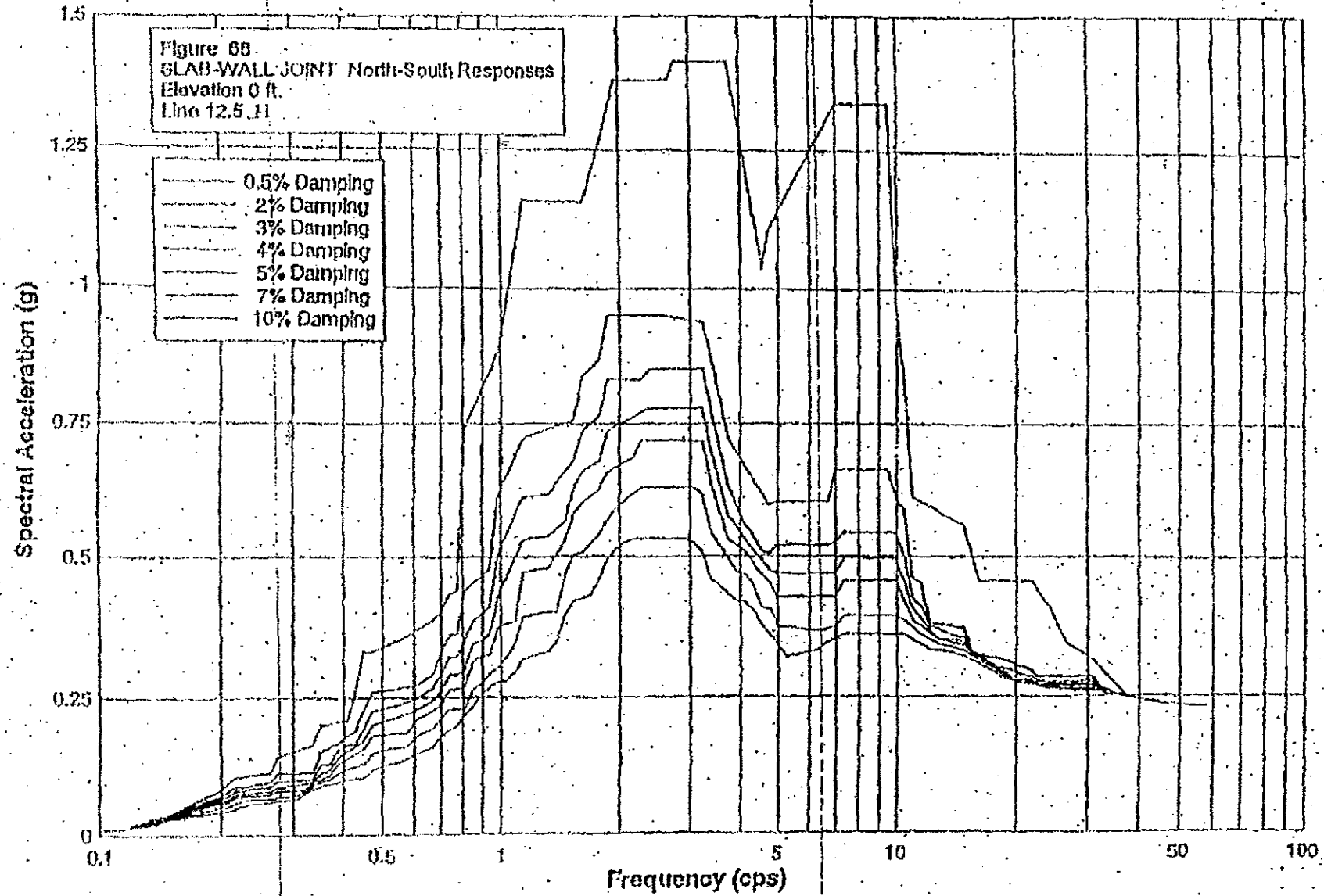

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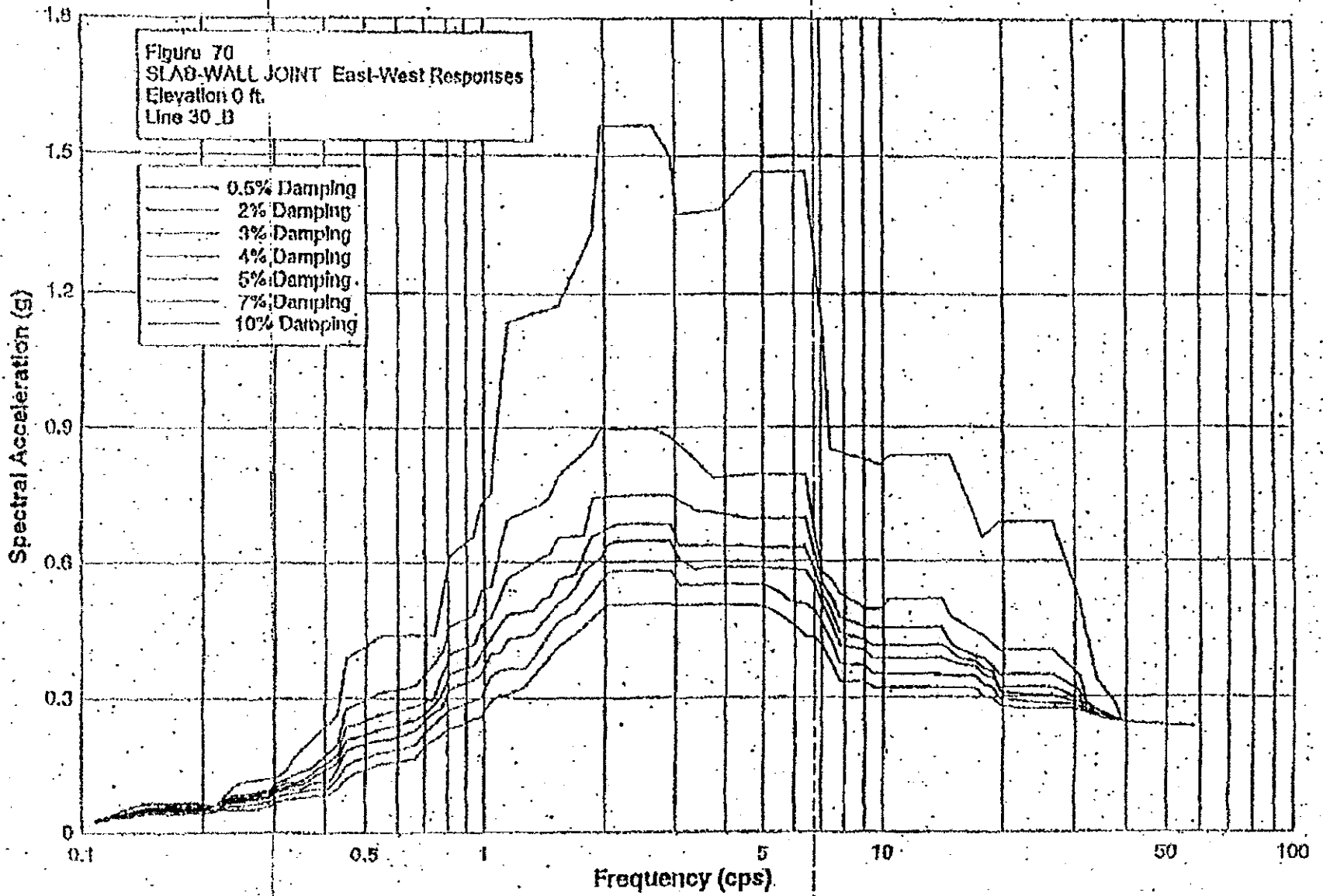

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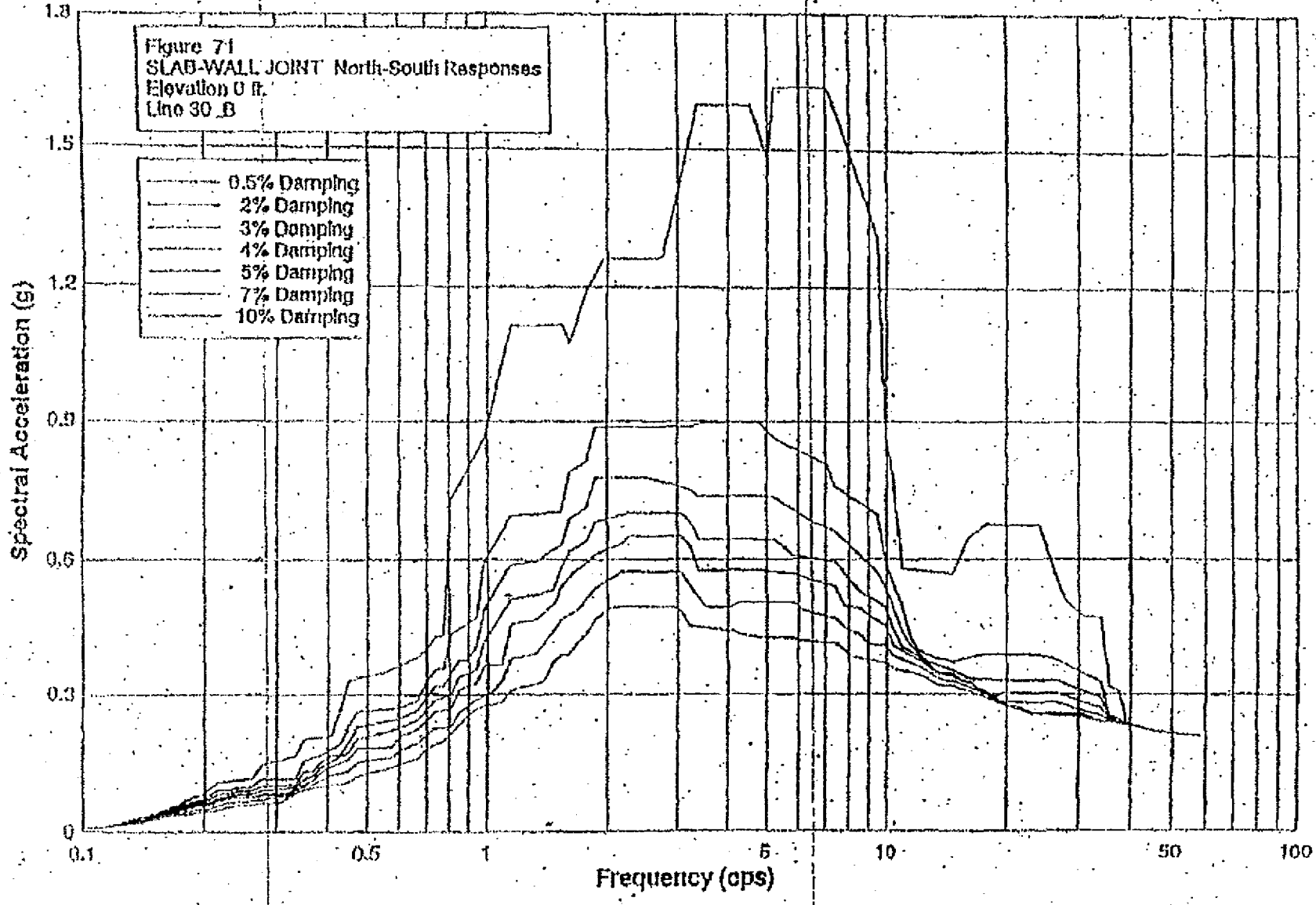

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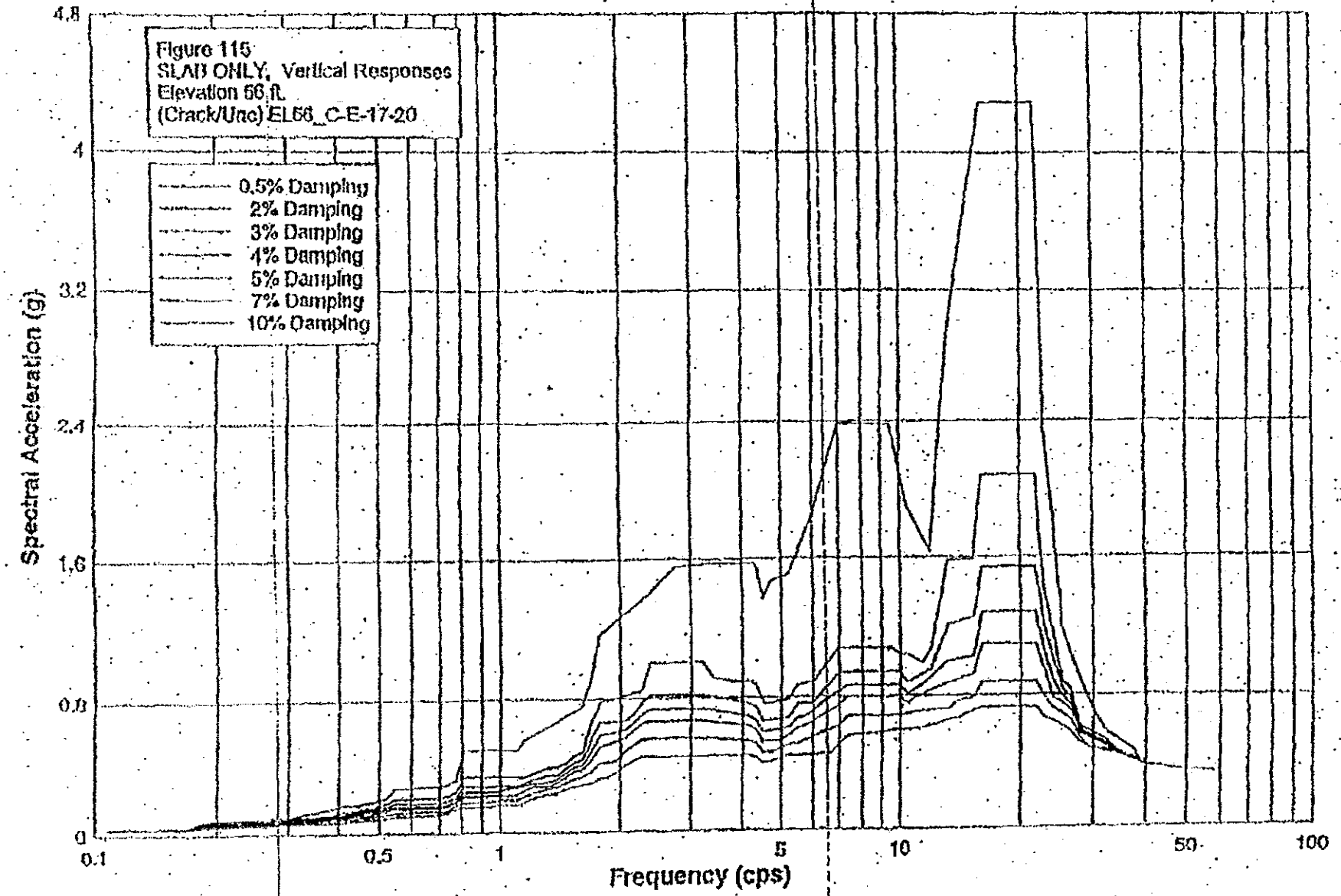

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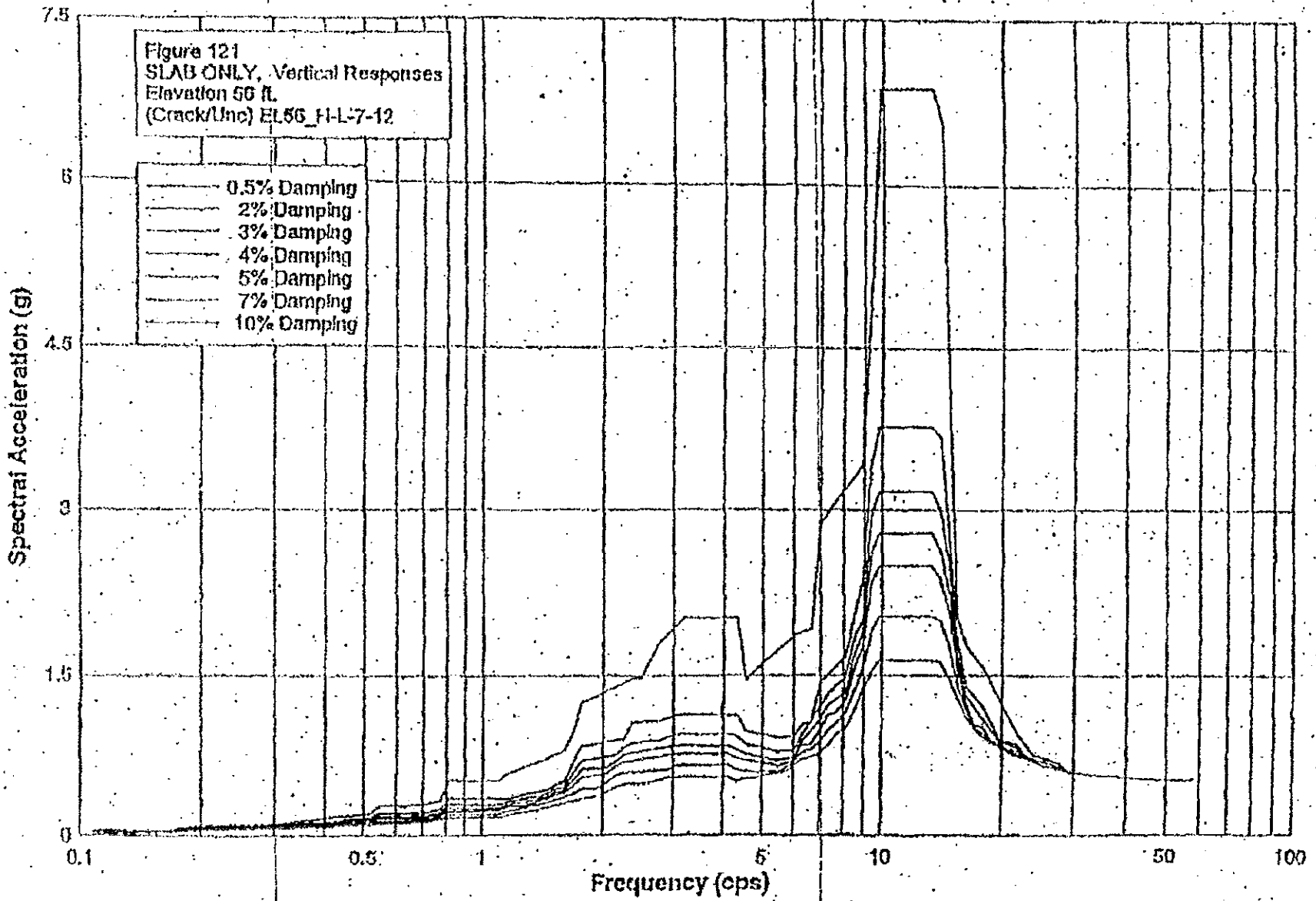

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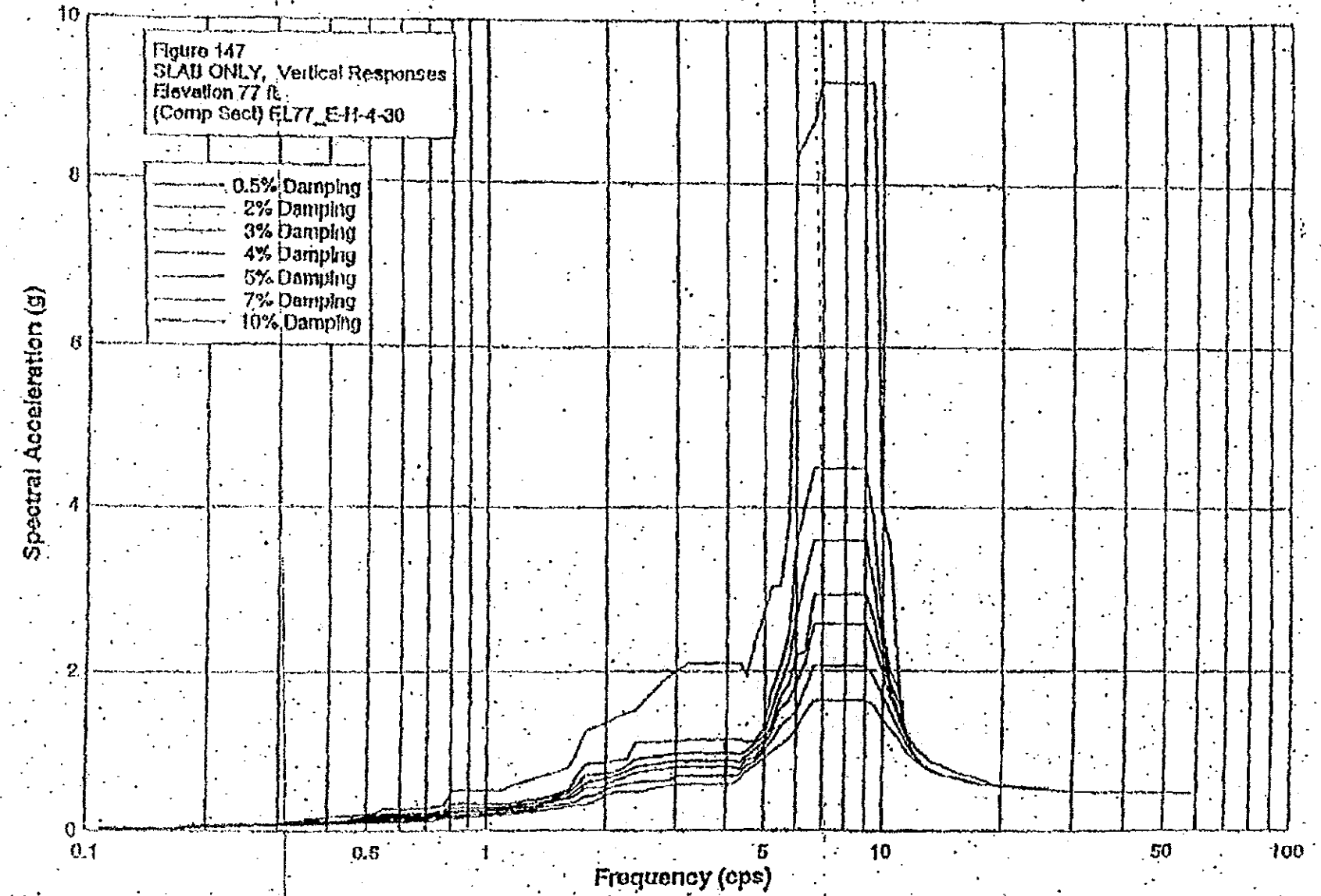

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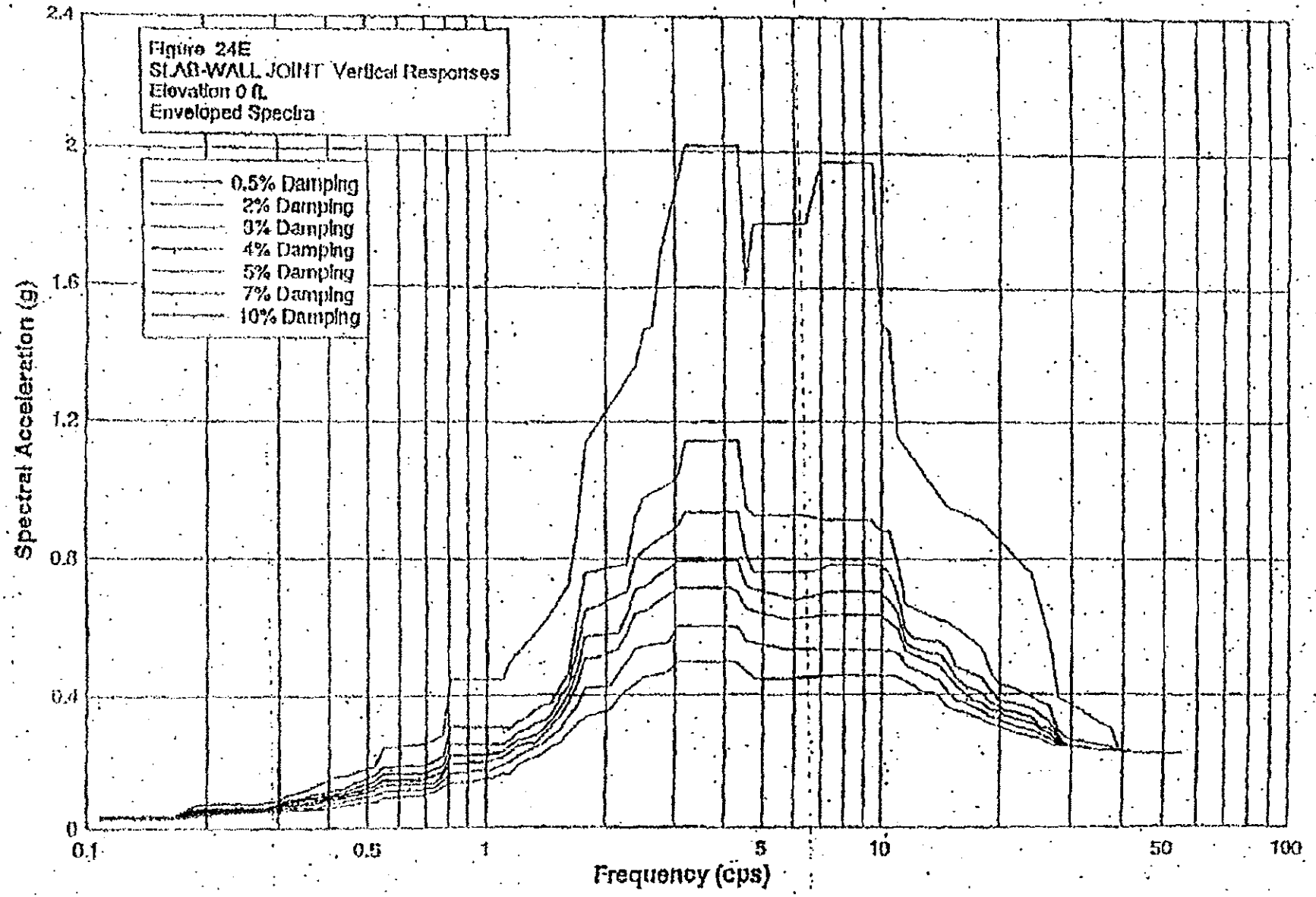

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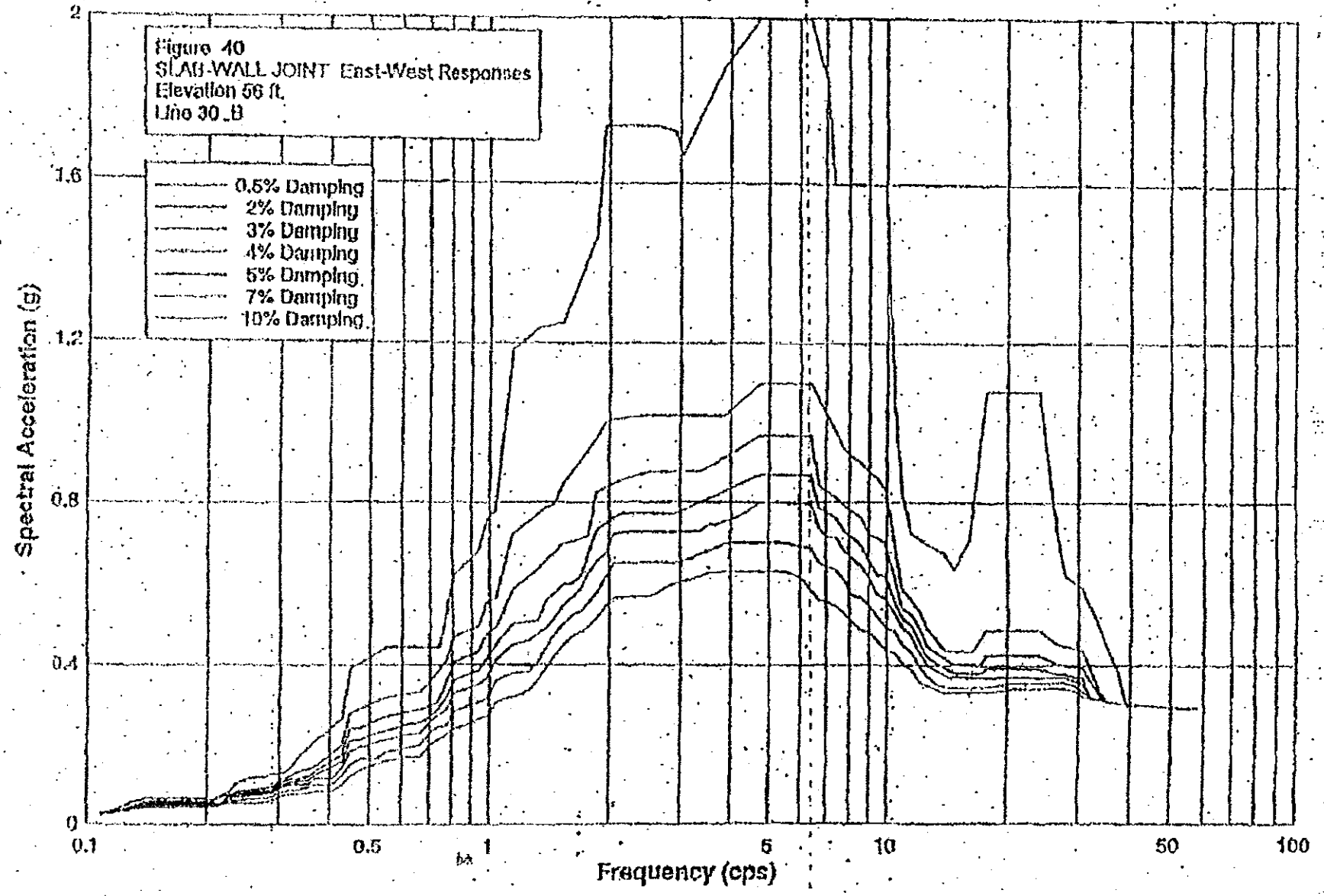

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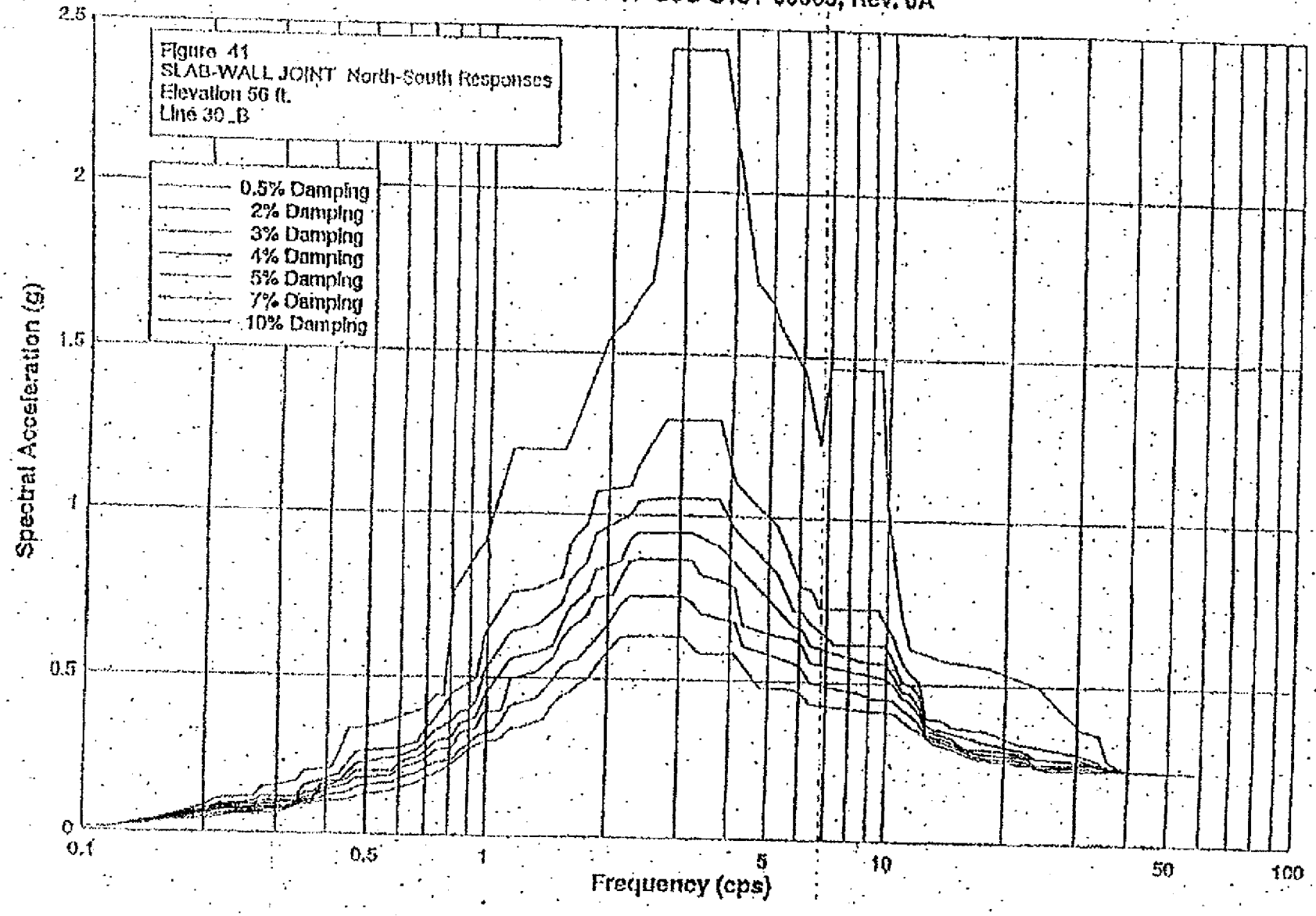

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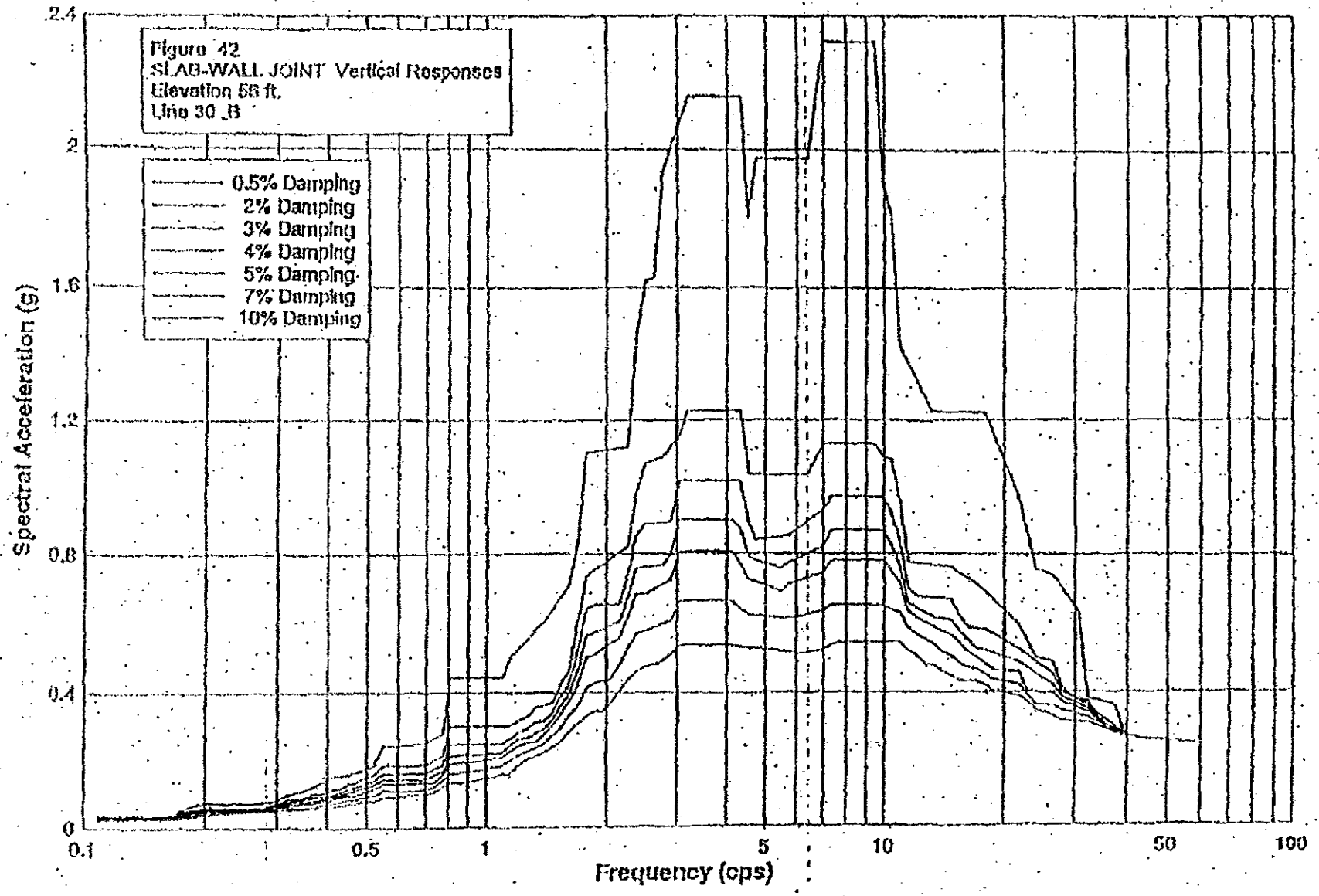

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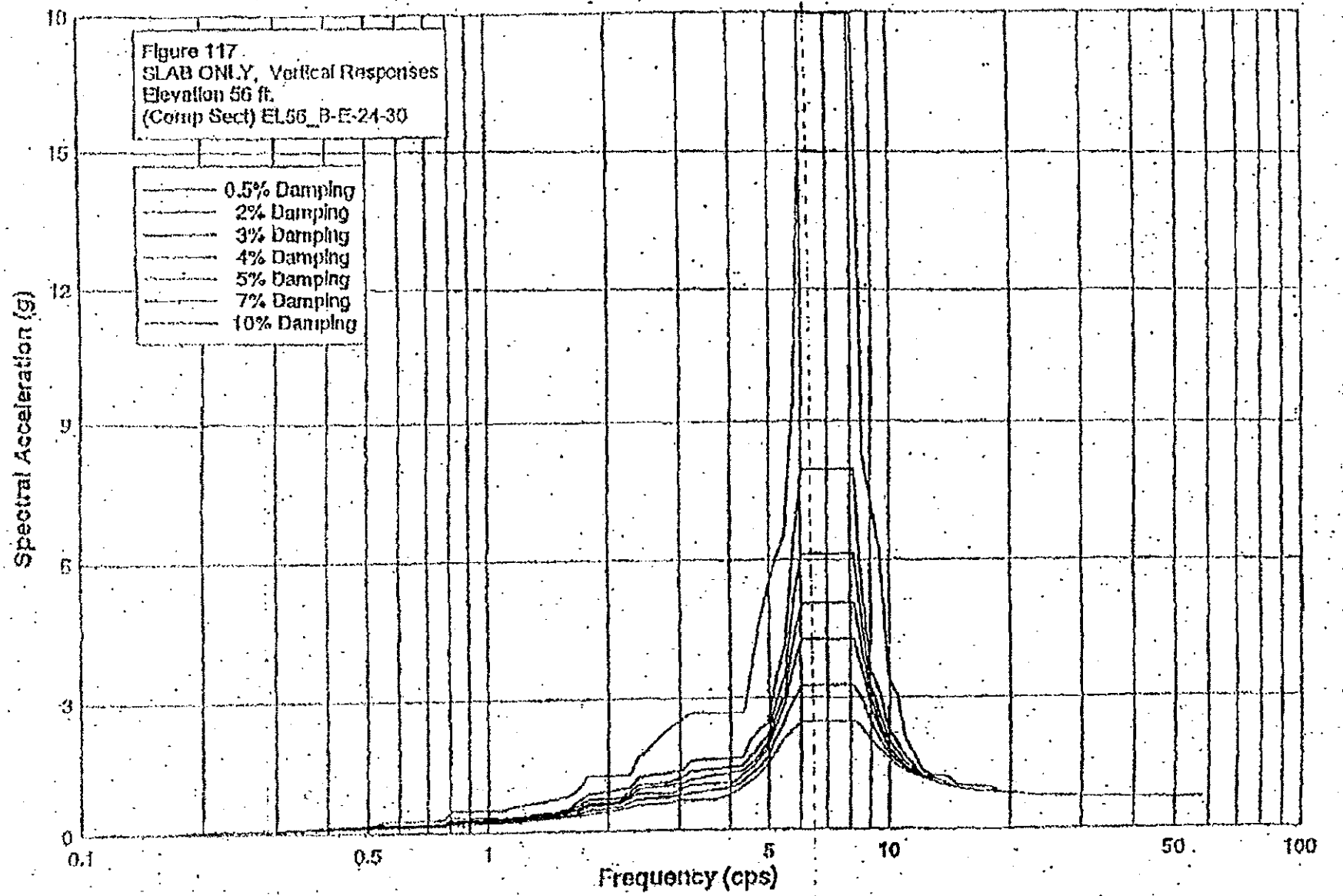

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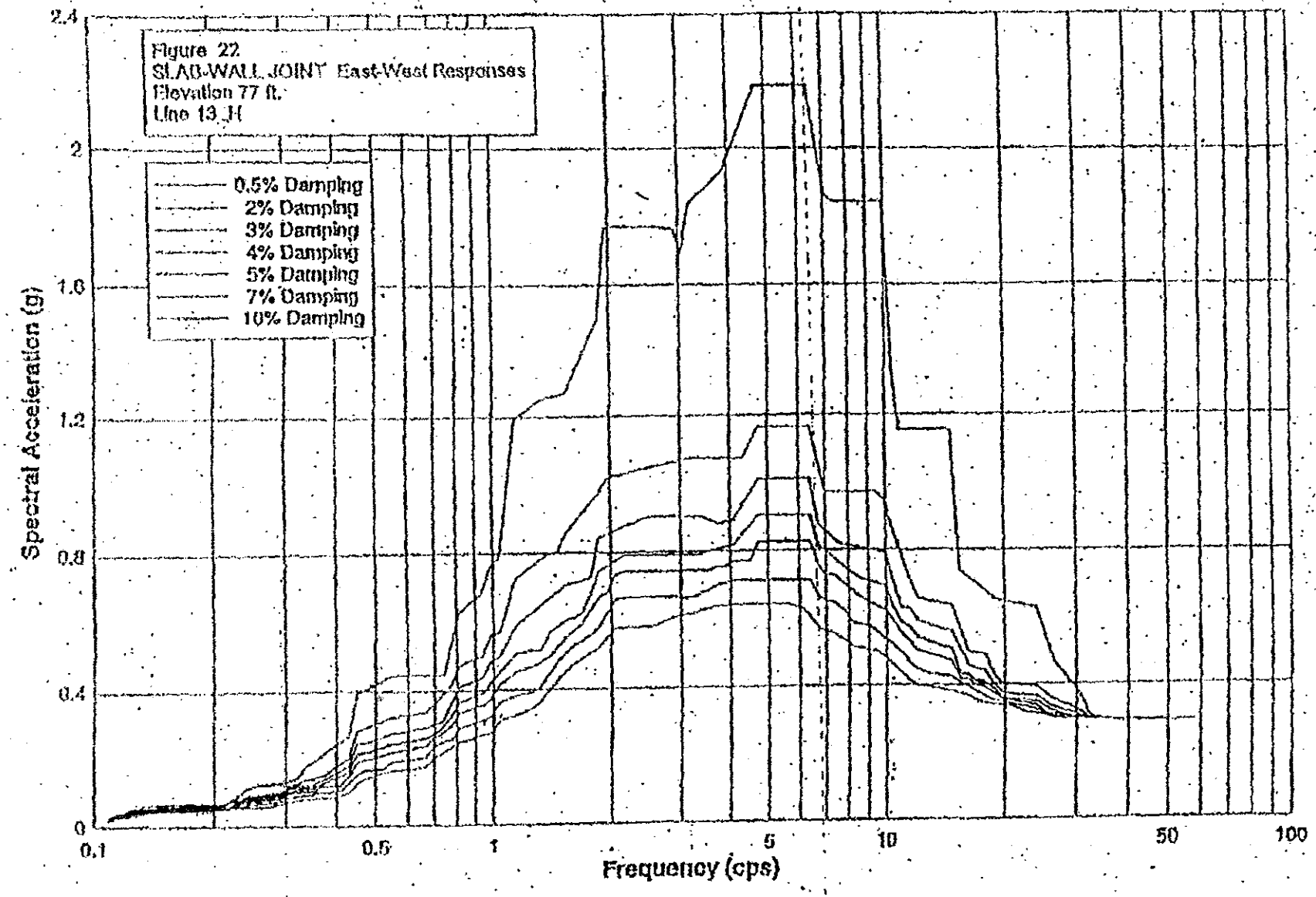

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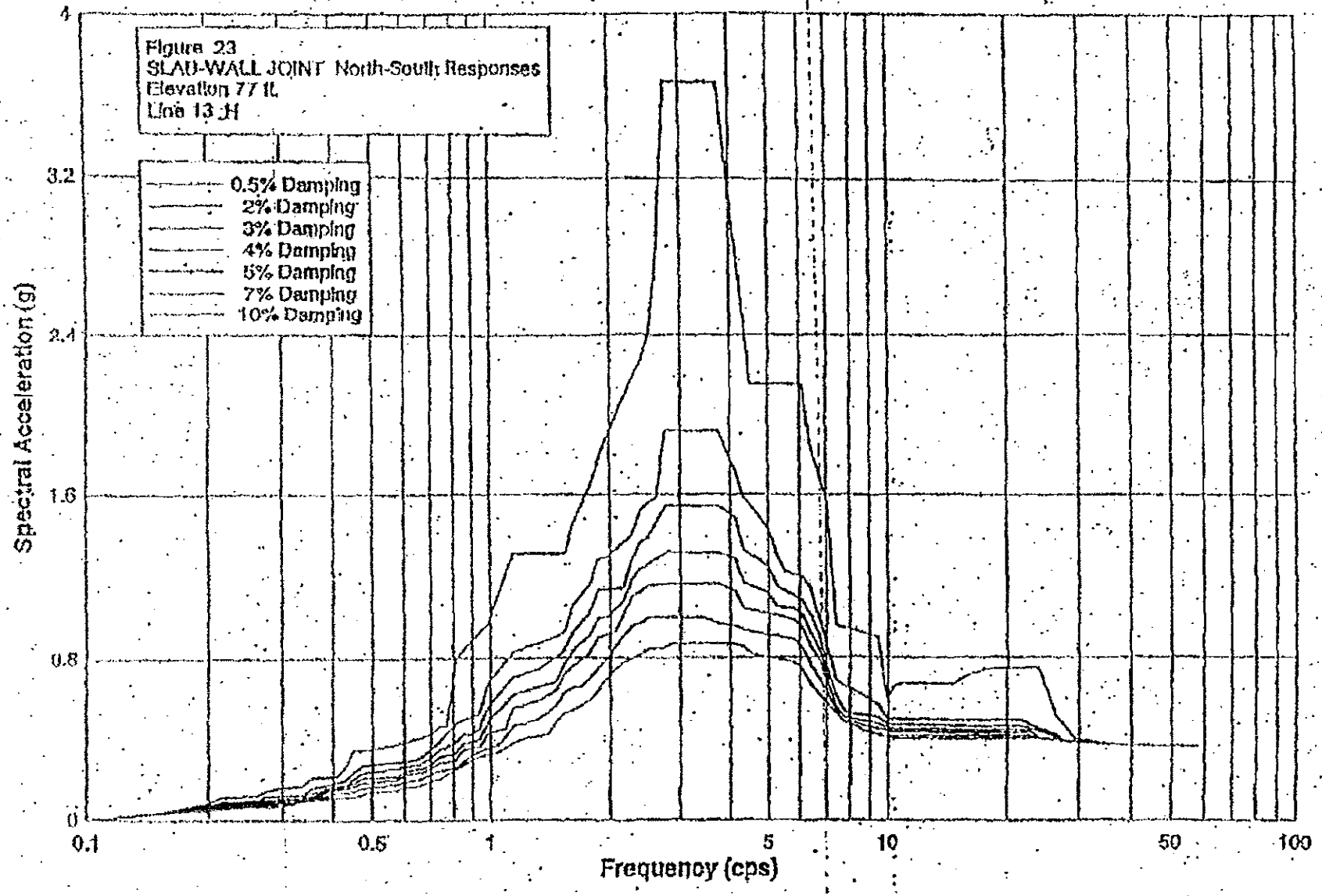

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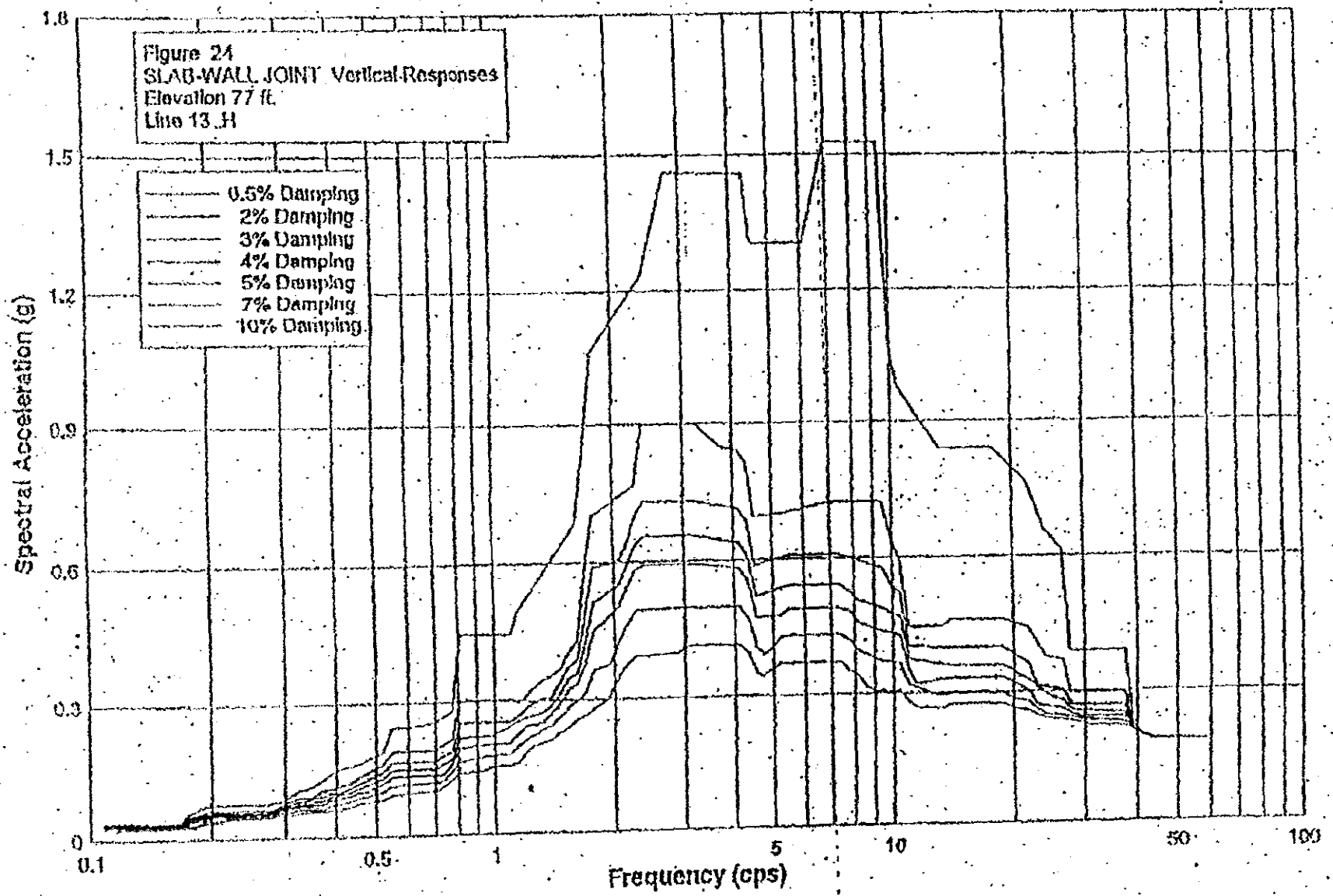

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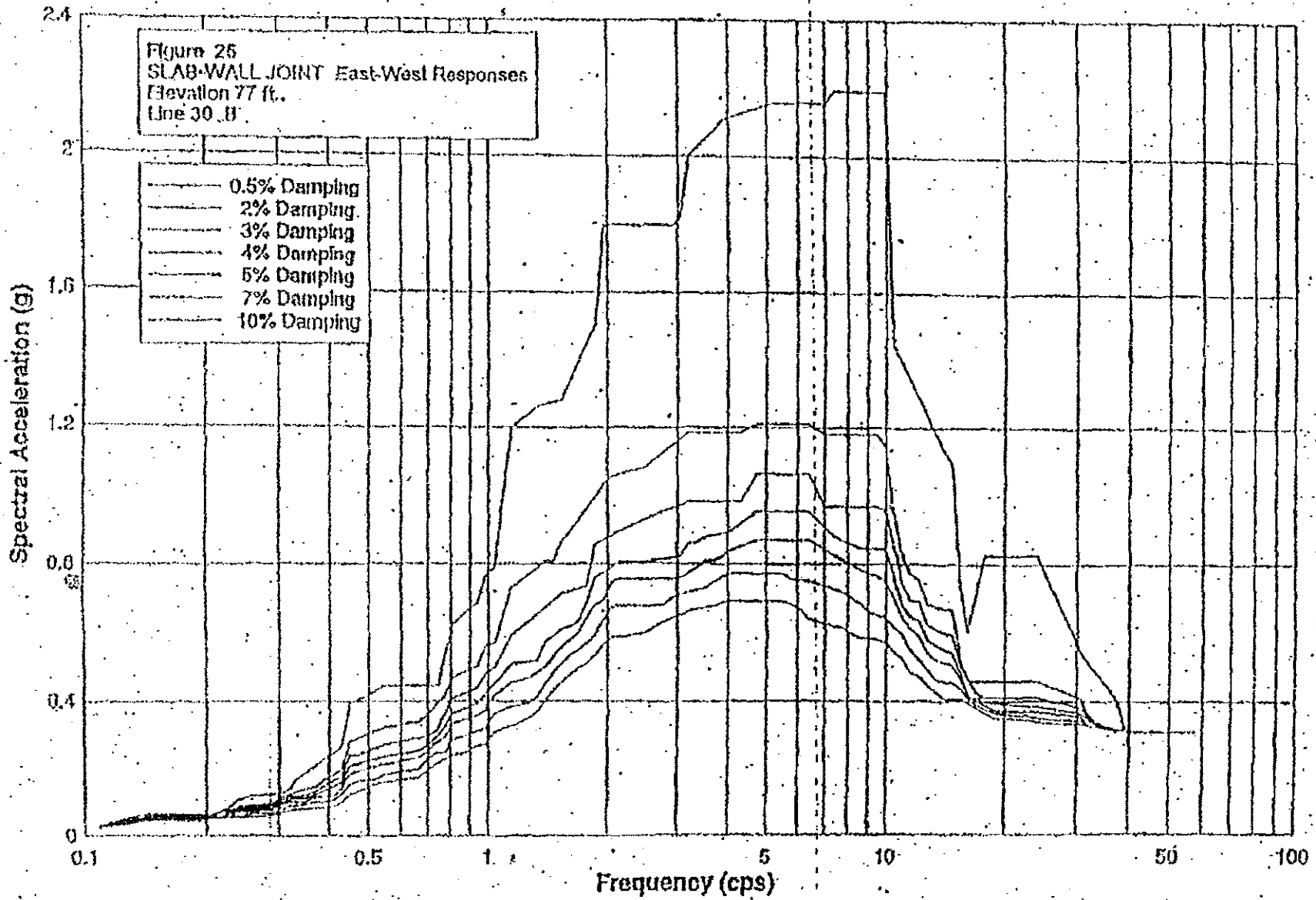

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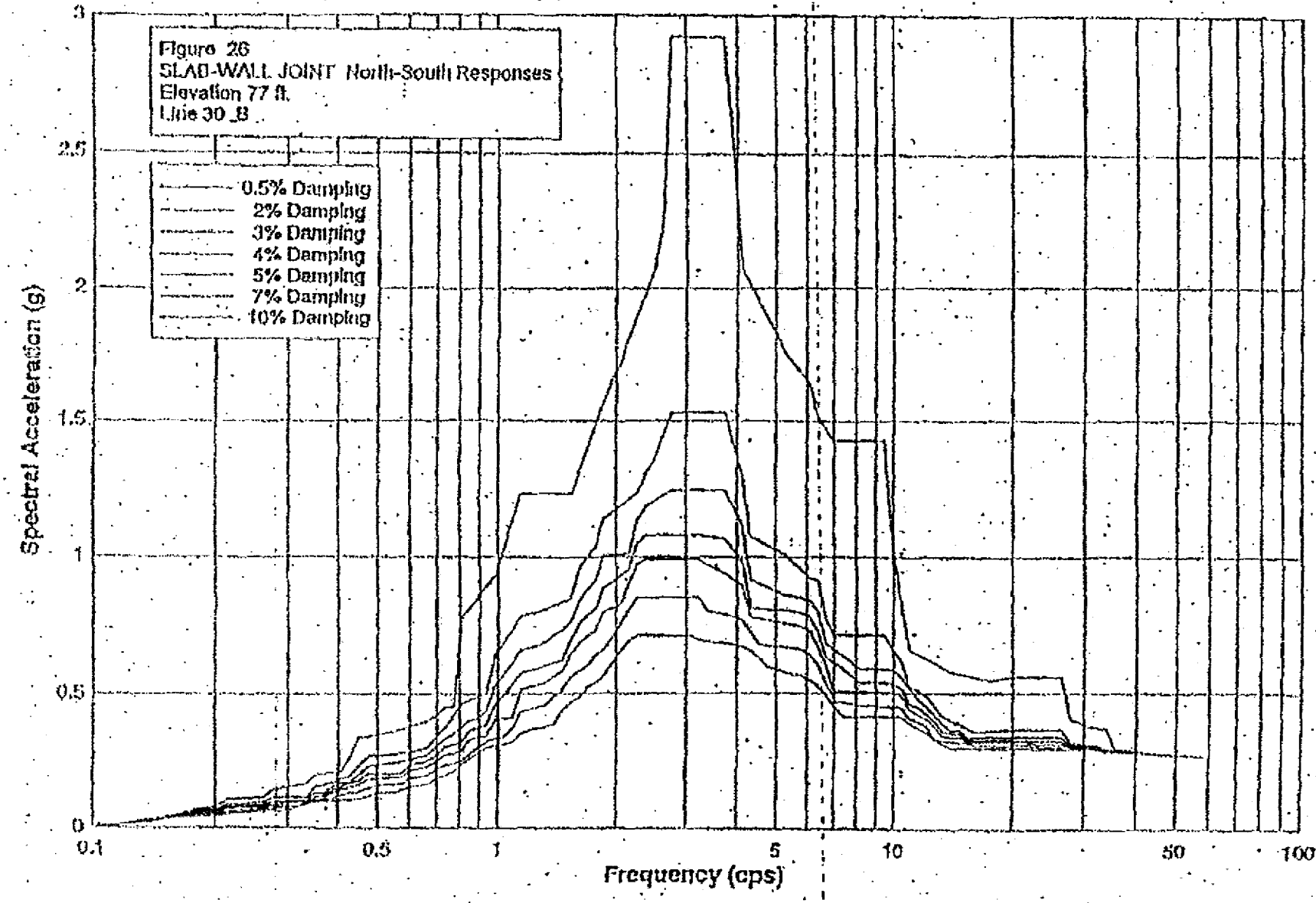

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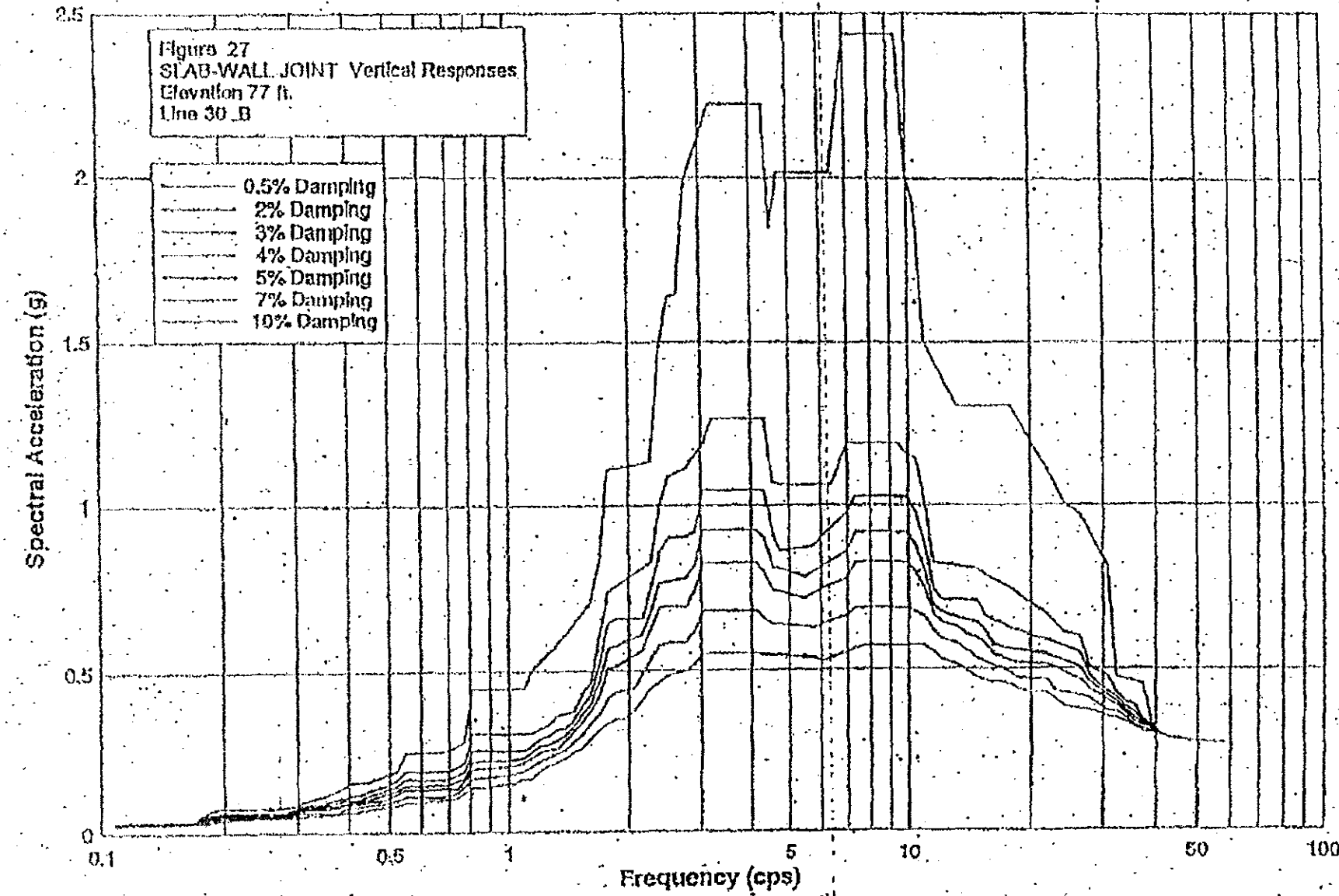

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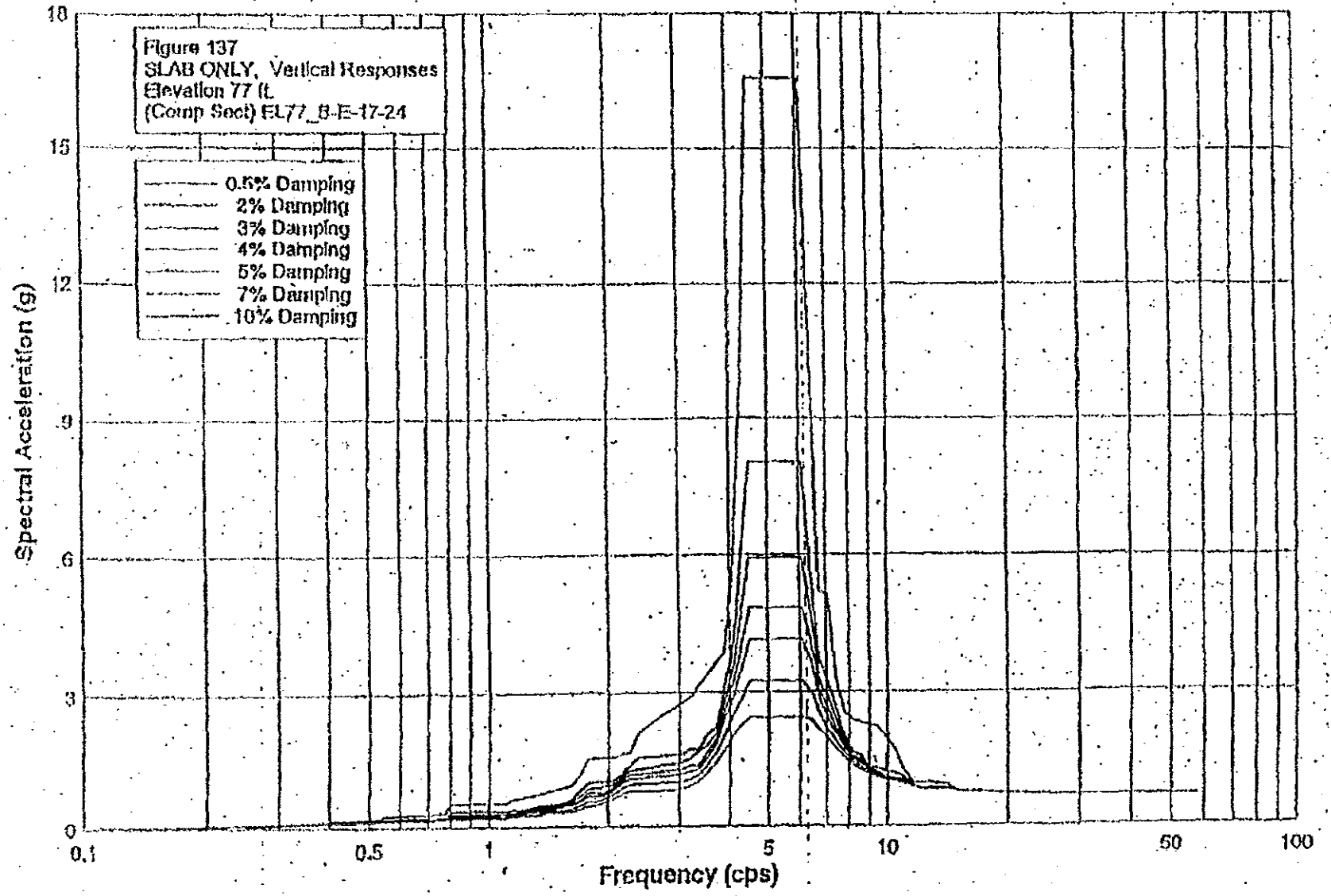


M-30

APPENDIX N

Deleted

APPENDIX O

Nondestructive Examination (NDE) of Fabricated Pipe Welds

Non-Destructive Examination (NDE) of Fabricated Pipe Welds

ASME B31.3 Process Piping

Type of Weld	Cat. D	Normal Fluid Service Less than Class 1500	Normal Fluid Service Class 1500 and Greater	Cat. M Black Cells	Cat. M Dual Containment Pipe		Cat. M All Others
					Inner Pipe	Jacket	
Girth and Miter Welds	100 % VT	100 % VT 5 % RT	100 % VT 100 % RT	100 % VT & RT (1)	100 % VT & RT (1)	100 % VT 5 % RT (3)	100 % VT 20 % PT/MT
Branch Connection Welds and Fillet Welds including Socket and Attachment Welds for Branch Reinforcement and Support Welds	100 % VT	100 % VT	100 % VT	100 % PT/MT (2)	100 % PT/MT (2)	100 % VT	100 % VT 20 % PT/MT

NOTES:

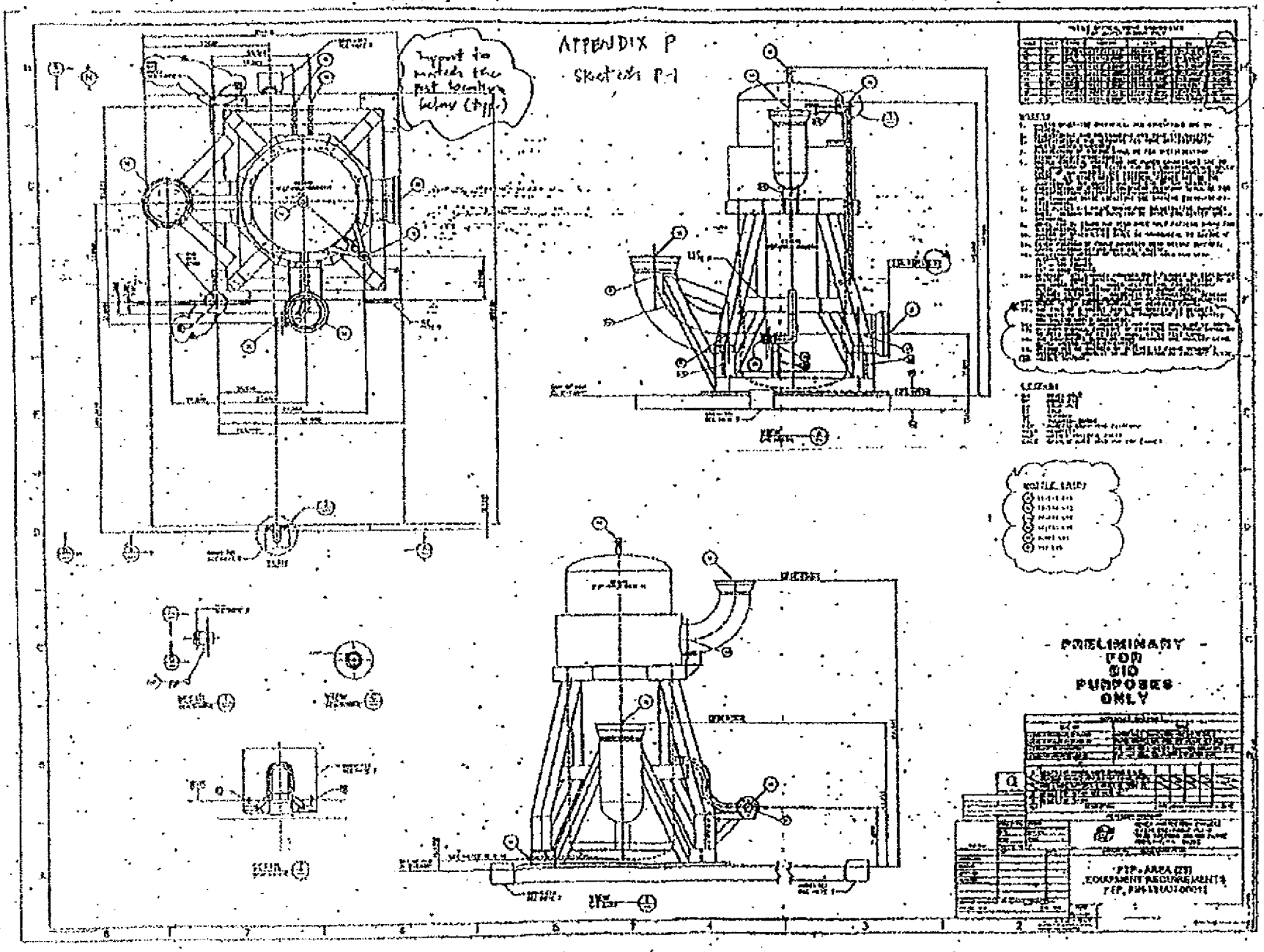
1. The radiographic acceptance criteria for normal fluid service applies except that incomplete penetration and undercut are not permitted.
2. The penetrant and magnetic particle test acceptance criteria shall be in accordance with B31.3 para. 344.4, except that no cracks are permitted.
3. A 5 % random in-process examination shall be performed in lieu of RT in accordance with ASME B31.3, Para. 341.4.1 & 344.7.
4. Black cells include Rm. No's. P-102, 104, 106, 108, 109, 111, 112, 113, 114 & 116 in the PT Building and Rm. No's. H-B005A, B032, B014, B021, B0005, B005A, B015, H-302 & H-308 in the HLW Building.

LEGEND:

RT – Radiographic Examination, PT/MT – Liquid Penetrant or Magnetic Particle Examination, VT – Visual Examination

APPENDIX P

REBOILER SKIDS AND PRELIMINARY NOZZLE LOADS AT GRAYLOC CONNECTIONS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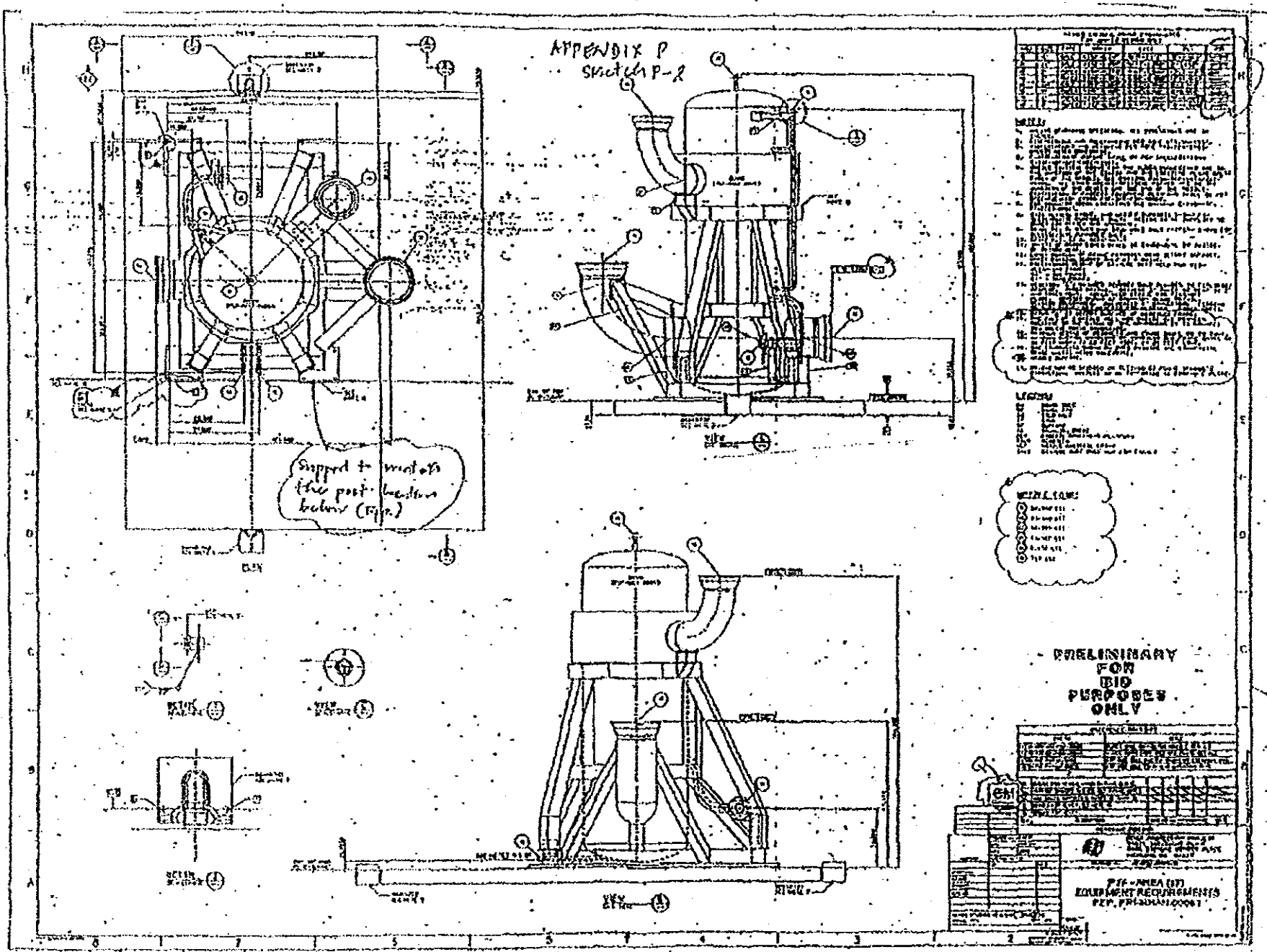
Sketch P-1
- PRELIMINARY -
FOR
DIO
PURPOSES
ONLY

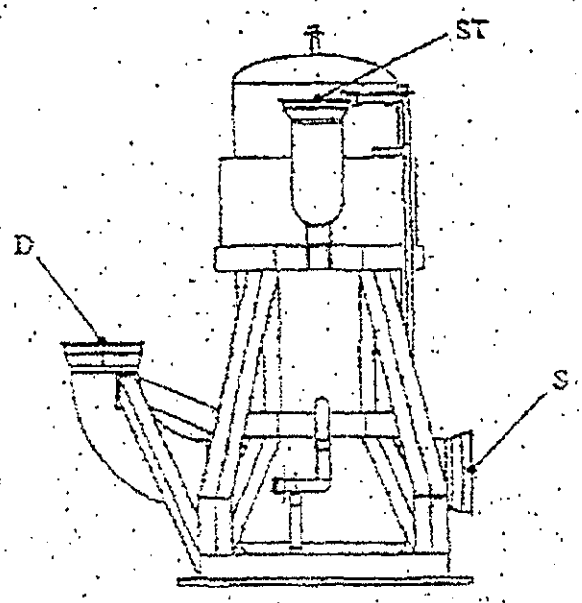

APPENDIX P
Sketch P-2
Shipped to mate to this part location below (Typ.)
PRELIMINARY
FOR
BID
PURPOSES
ONLY

APPENDIX P

FEP / TLP Large Bore Reboiler Connector Loads

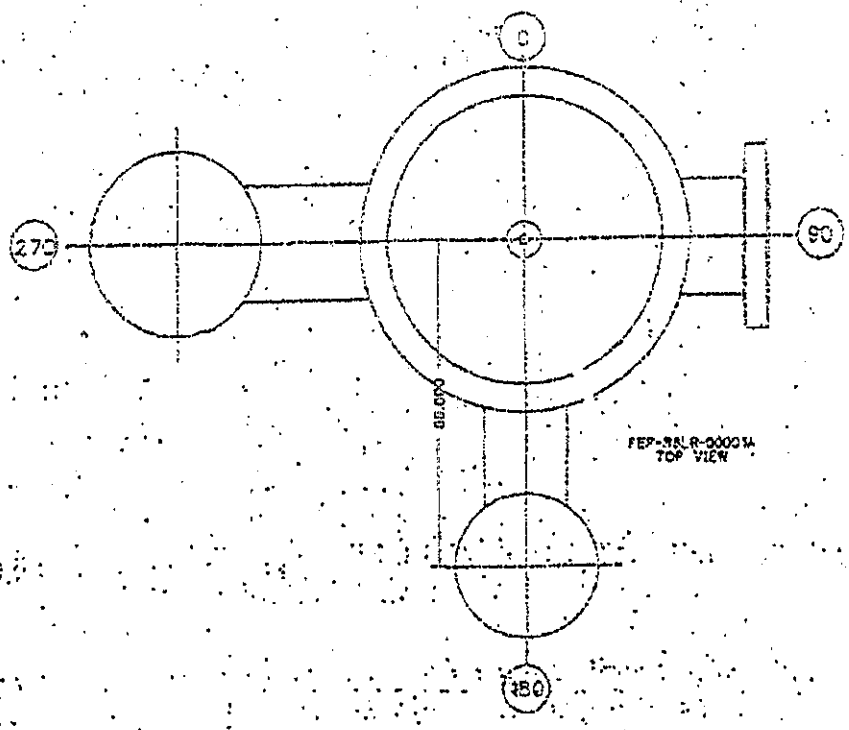
	System	Force		Moment	
		Axial	Resultant Shear	Torsion	Resultant Bending
		lbf	lbf	ft-lbf	ft-lbf
24-Inch					
AREA 17S	TLP	6400	15400	4300	33900
AREA 17D	TLP	11600	13900	31400	24000
AREA 26S	FEP	2100	8200	17100	30800
AREA 26D	FEP	14600	9900	19100	29300
AREA 27S	FEP	2100	8200	17100	30800
AREA 27D	FEP	14600	9900	19100	29300
18-Inch					
AREA 17ST	TLP	7600	3700	9000	6900
AREA 26ST	FEP	6700	4900	4600	11000
AREA 27ST	FEP	6700	4900	4600	11000

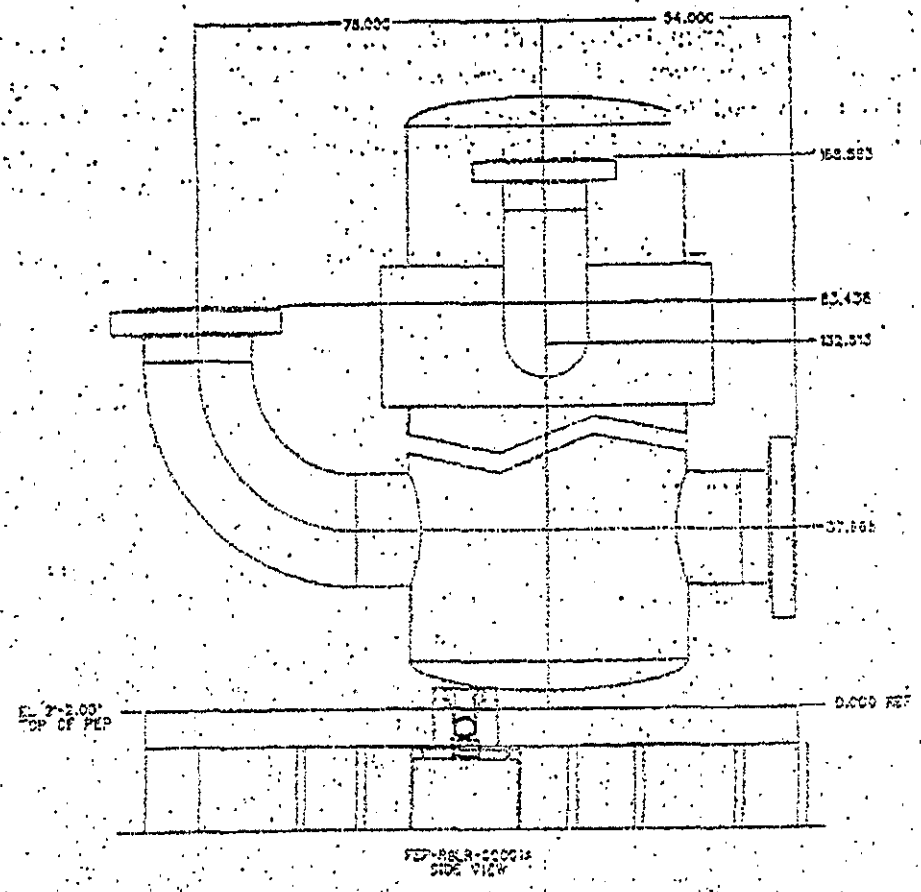
S - Suction D - Discharge ST - Steam



* The loads displayed in the table above are taken from unchecked / preliminary calculations. Loads occur at hub interface as shown in figure above.

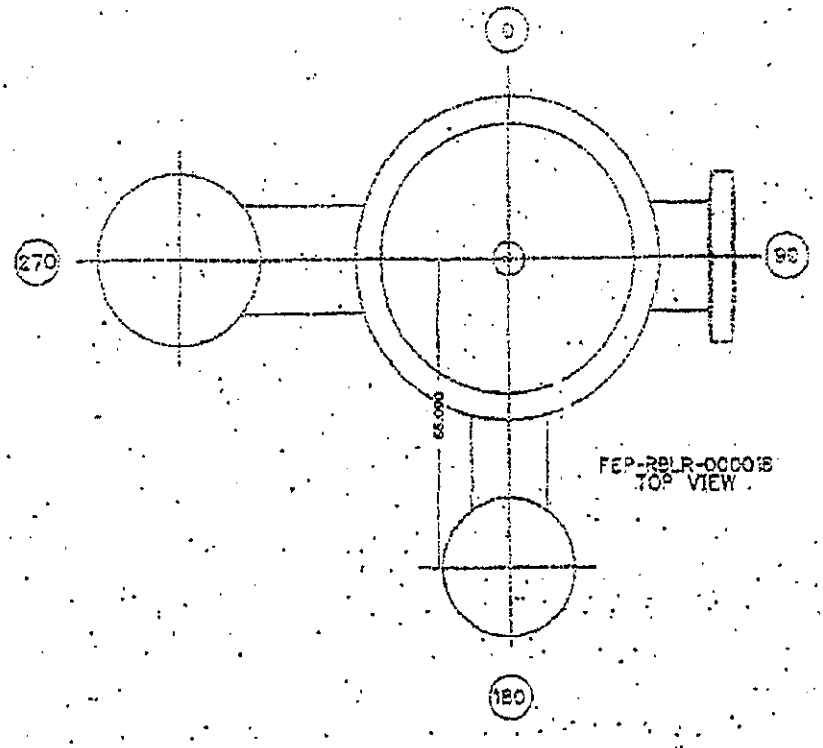
APPENDIX P

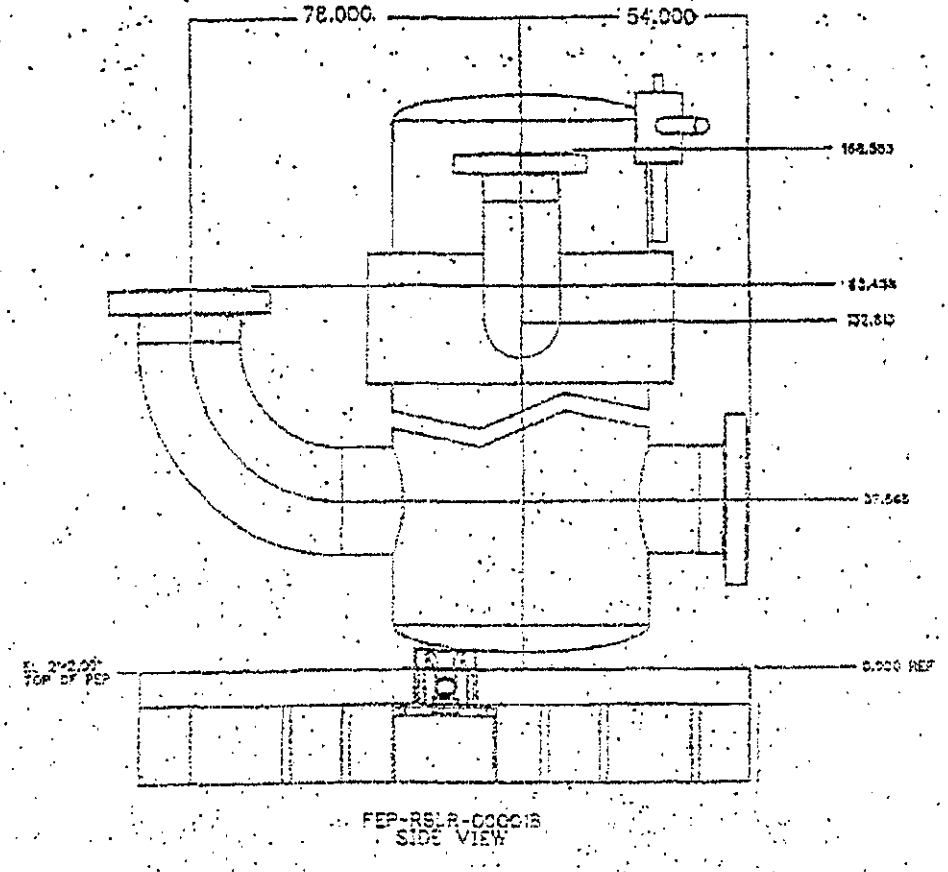




NOZZLE ORIENTATION, ELEVATION, AND DISTANCE FROM CENTERLINE
FEP-RBLR-00001A

APPENDIX P





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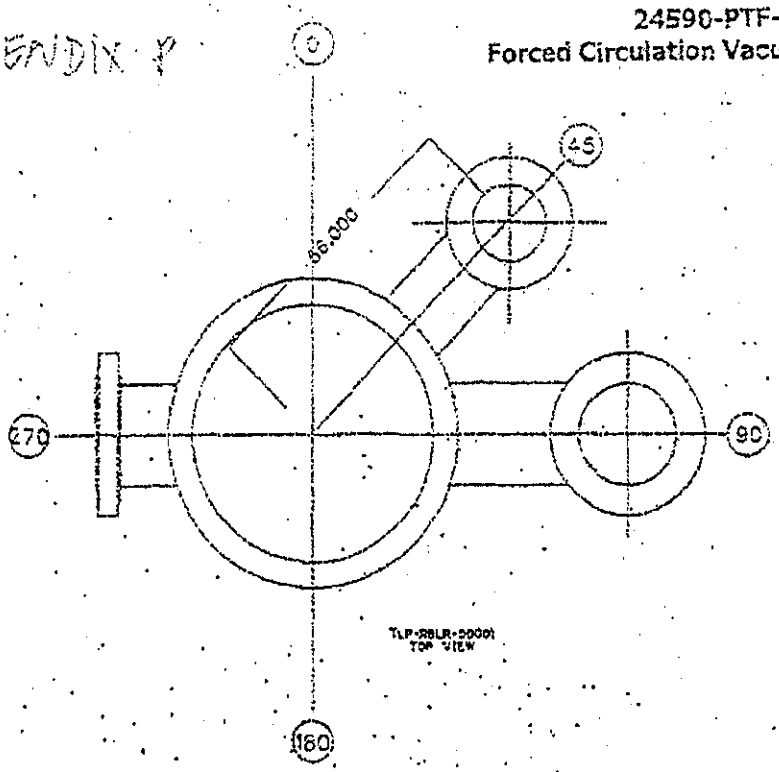

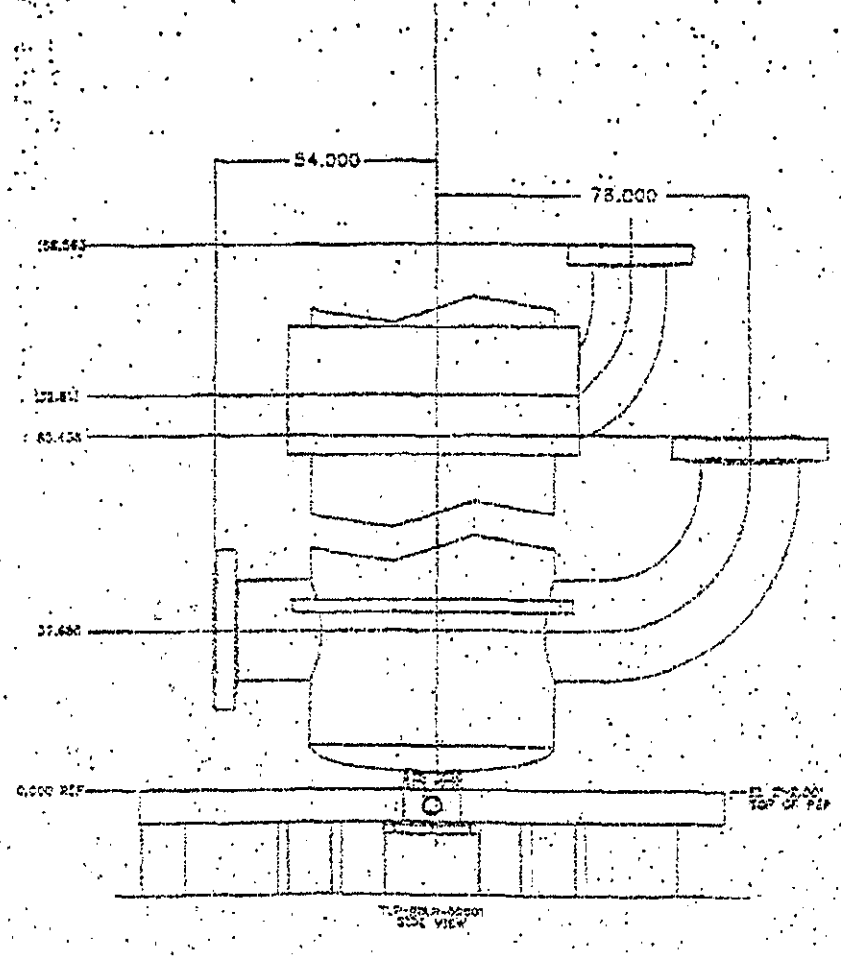

NOZZLE ORIENTATION, ELEVATION, AND DISTANCE FROM CENTERLINE
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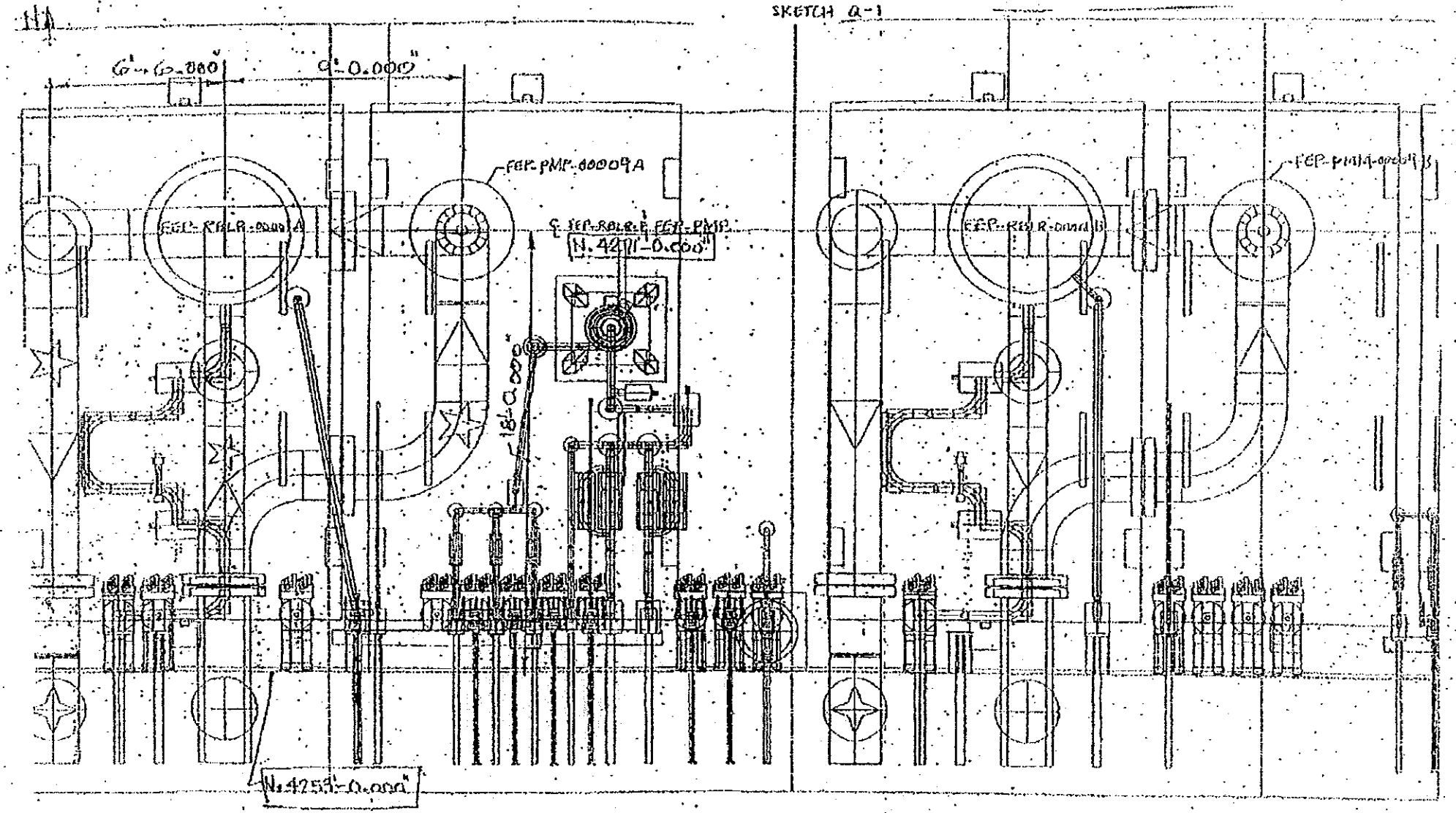
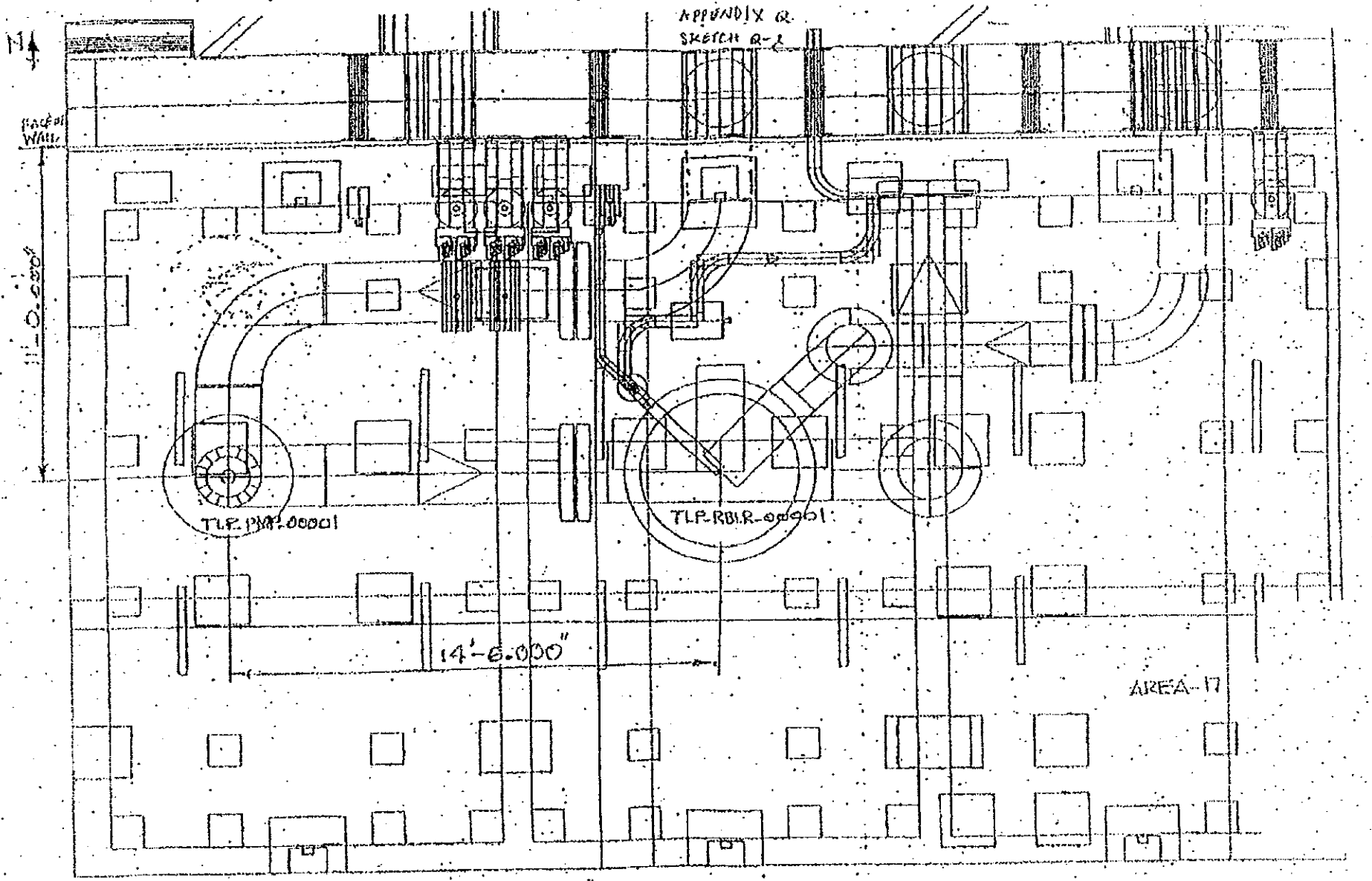
APPENDIX Q

REBOILERS AND RECIRCULATION PUMPS LAYOUT

APPENDIX Q
SKETCH Q-1




APPENDIX Q
SKETCH Q-2
N
FACE OF WALL
11'-0.000"
TLP-PMP-00001
TLP-RBLR-00001
14'-6.000"
AREA-17

APPENDIX R

ISRS FIGURES FOR REBOILERS AT THE STEEL FRAM SUPPORTS

RPP-WTP Pretreatment Facility ISRS

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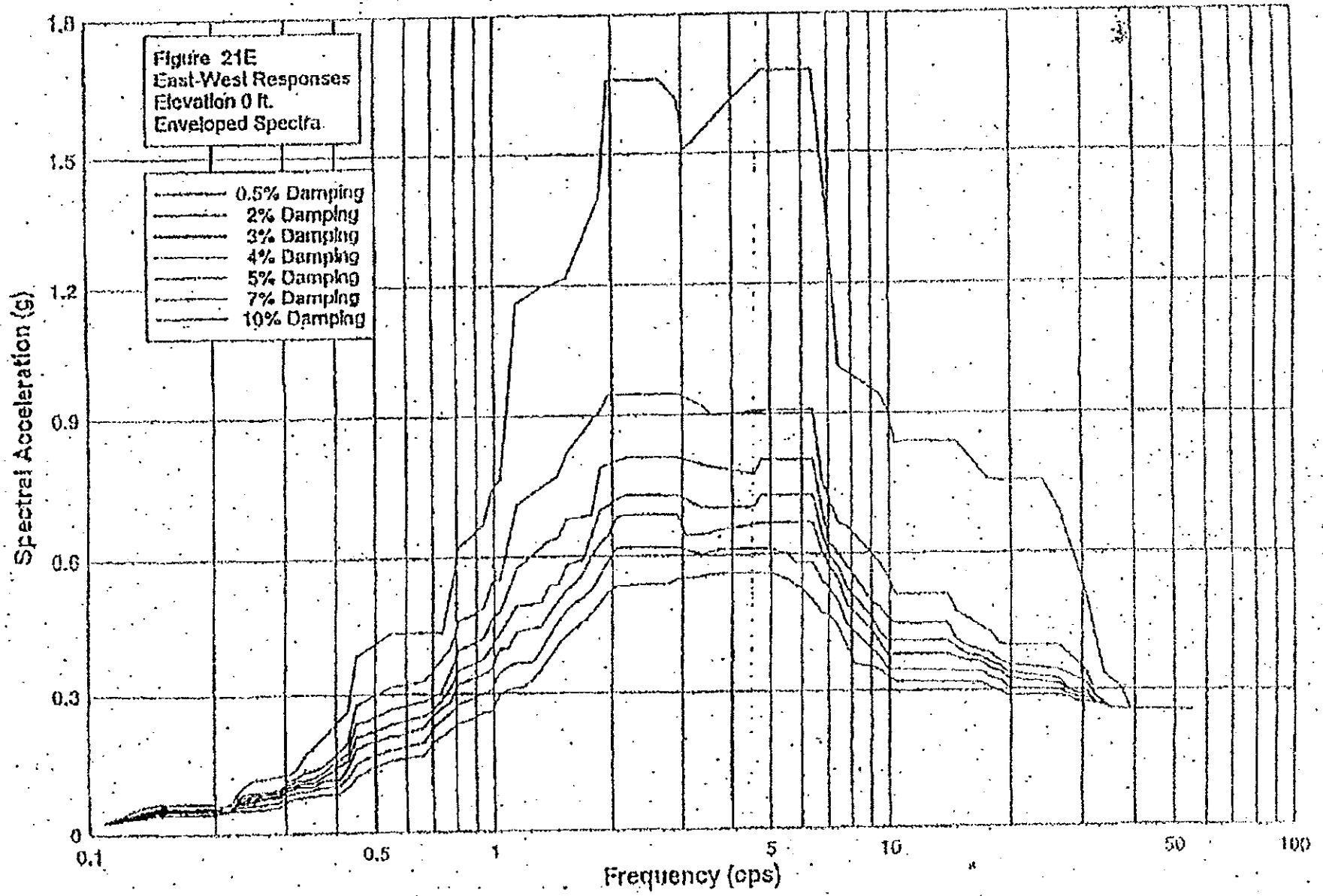

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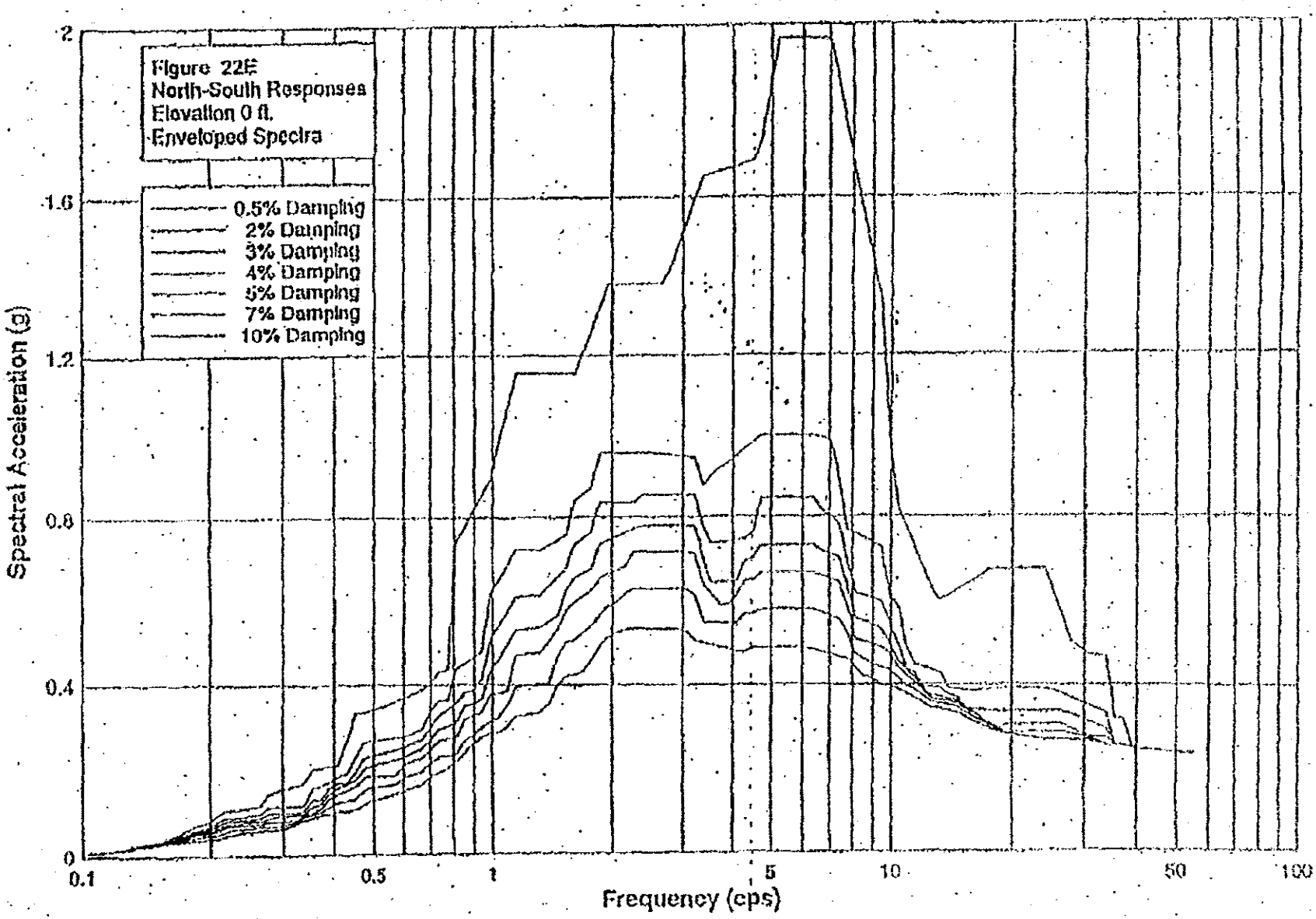

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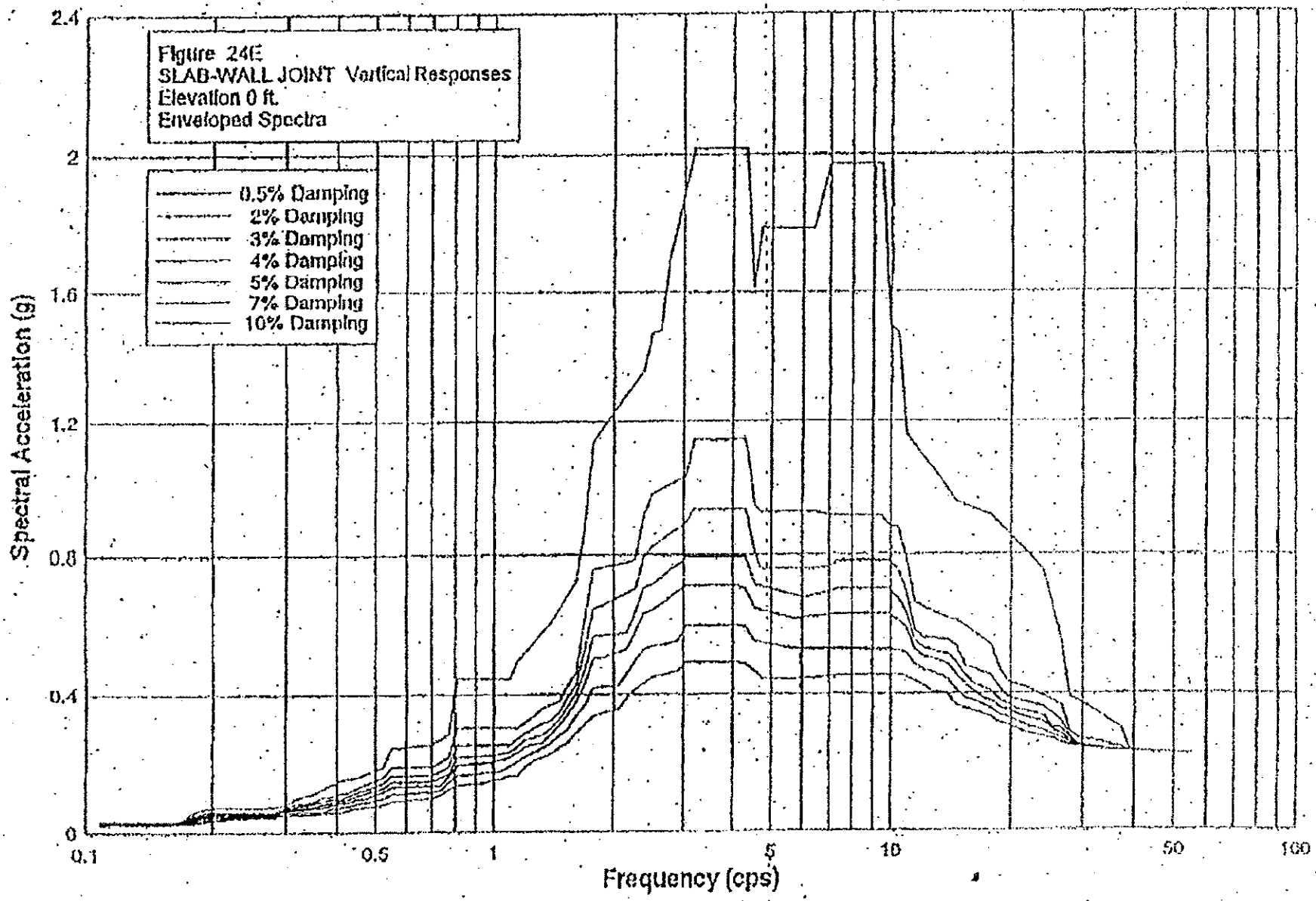


APPENDIX S

MANUFACTURERS STANDARD COATING DATA SHEET

Manufacturers Standard Coating Data Sheet

The SELLER proposes the following Manufacturers Standard (Mfg. Std.) or alternate coating system that is suitable for the exposure conditions of steel items and equipment in radiation and non-radiation areas.

1. **Equipment Description:** _____
   A. Tag Number _____
   B. Part(s) i.e. skirt, shell, channels, lugs, etc.* _____
   C. Design/Operating Temperatures, designate °F or °C..... _____ °F °C
   D. Does Equipment Receive Steam out (Yes/No), Temperature _____ °F °C
   E. Insulated/Uninsulated _____
   F. Fireproofing (Yes/No) _____
   G. Carbon Steel (CS), Stainless Steel (SS), other (List) _____
2. **Seller:** _____
3. **Surface Preparation:** SSPC No./Profile _____ / _____
4. **Coating System Designation:** (Code)

	First Coat	Second Coat	Third Coat
A. Type of Coating.....			
B. Coating Mfg./No.**			
C. Dry Film Thickness (Min/Max in mils)/(µm) ...			
D. Wet/Film Thickness (Min/Max in mils)/(µm)			
E. Curing Method.....			
F. Color.....			
G. Dry to Recoat			
H. Pot Life.....			
I. Thinner / %			

5. **Total DFT of System:** (Mils/µm)(Min/Max)..... _____ / Min. _____ /Max.
6. **Material Storage:** Temperature Requirements (Min/Max) _____ / _____
7. **Shelf Life:** ..... Months
8. **Application Environmental Limits:**
   A. Temperature Ambient and Surface (Min/Max) ..... _____ / _____ / _____
   B. Humidity (Min/Max)..... _____ / _____
   C. Dew Point ≥5°F above surface temp. (Yes/No)..... _____
9. **Protection of surfaces that will be inaccessible after equipment installation (such as underside of base plates, interior of fans, vessels or equipment housings)** _____
10. **Rust Preventative for machined faces:** (**Mfg./No.) _____
11. **Quantity of touch-up coating supplied:** _____
12. **Additional information:** (attach extra page as necessary) _____

* Use additional copies of this form for each part described in 1 above that requires a different coating system. A completed copy of this data sheet shall be submitted to CONTRACTOR/BUYER with the initial vendor data submittal.

** Include manufacturers technical data sheets and MSDS' for each proposed coating, preservative & solvent

APPENDIX T

Design Evolution Inputs

T.1 Recirculation Pump Remote Connector Design Inputs

Design Input #1: The Hanford connector loads are 2000 lbs resultant force and 2900 ft-lbs resultant moment.

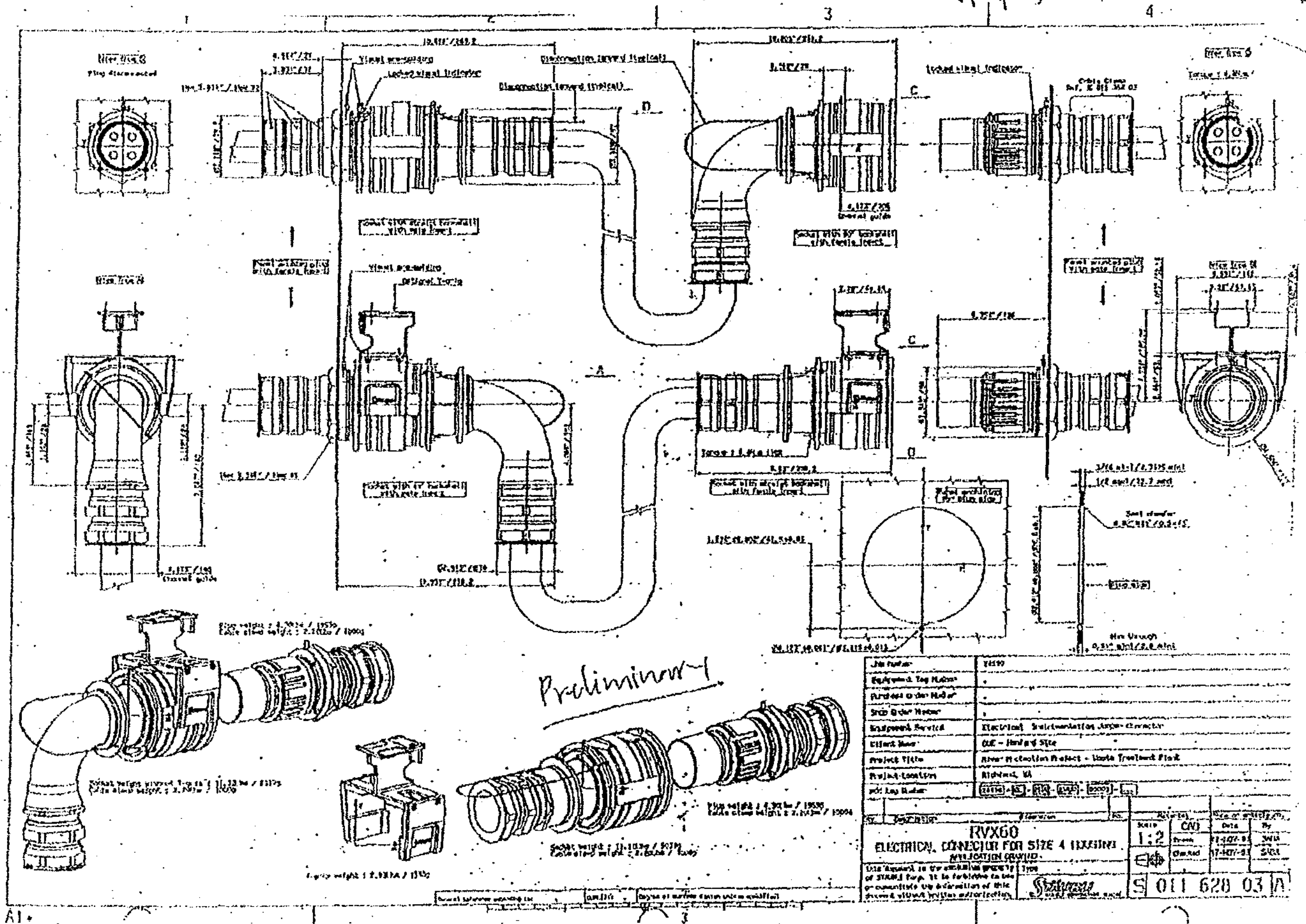
Design Input #2: See attached reference # 2 for Staubli connector drawings. It is recommended to use connector types as shown on drawings S-01162803-A and S-01142503-A for power and signal. Also see sketches provided in this section T.1 for additional design inputs. The Staubli connector force requirement is 400 lbf in any direction.

Design Input #3: For seal water and grease connections, the male plug located on the pump seals which has been called out as a Staubli part number RBE 19.6204/IC will change to Staubli part number N 011 612 04. See sketches # S-01249904-F, # S-00122805-A, # S-00119705-B, and S-111610-04-D provided in this section. The Staubli Fluids Connector shall use Keying #35 for for the seal water and grease connnection.

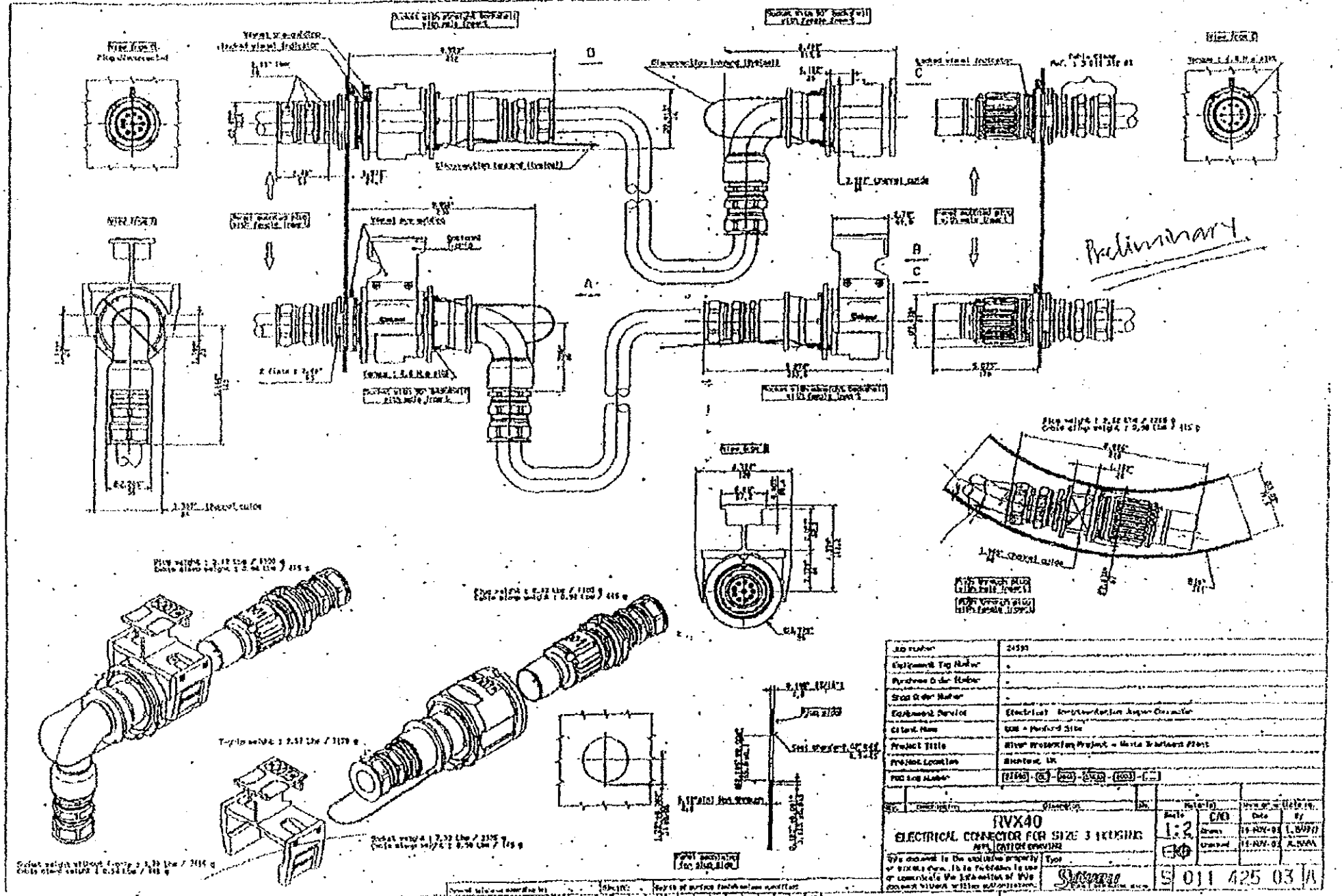
Design Input #4: Remote impact wrench specification on studs
a) Loosen 750 ft-lbs
b) Tighten 400 ± 25 ft-lbs
c) Range 100 - 400 ft-lbs

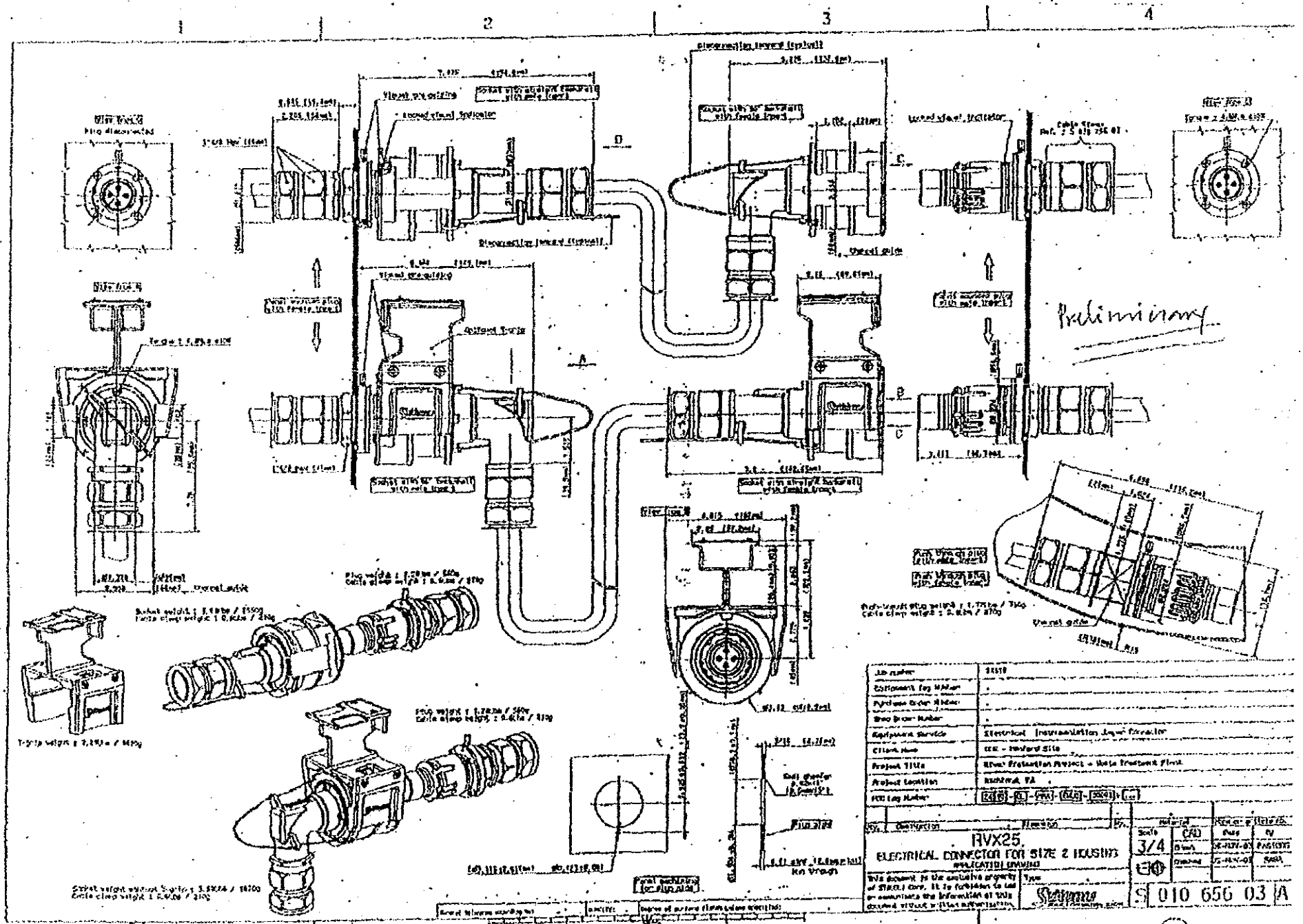
Design Input #5: Recirculation pump shall be designed to incorporate remote grease application to thrust bearing.

for power cable (prefer)



For signal cable (prefer)

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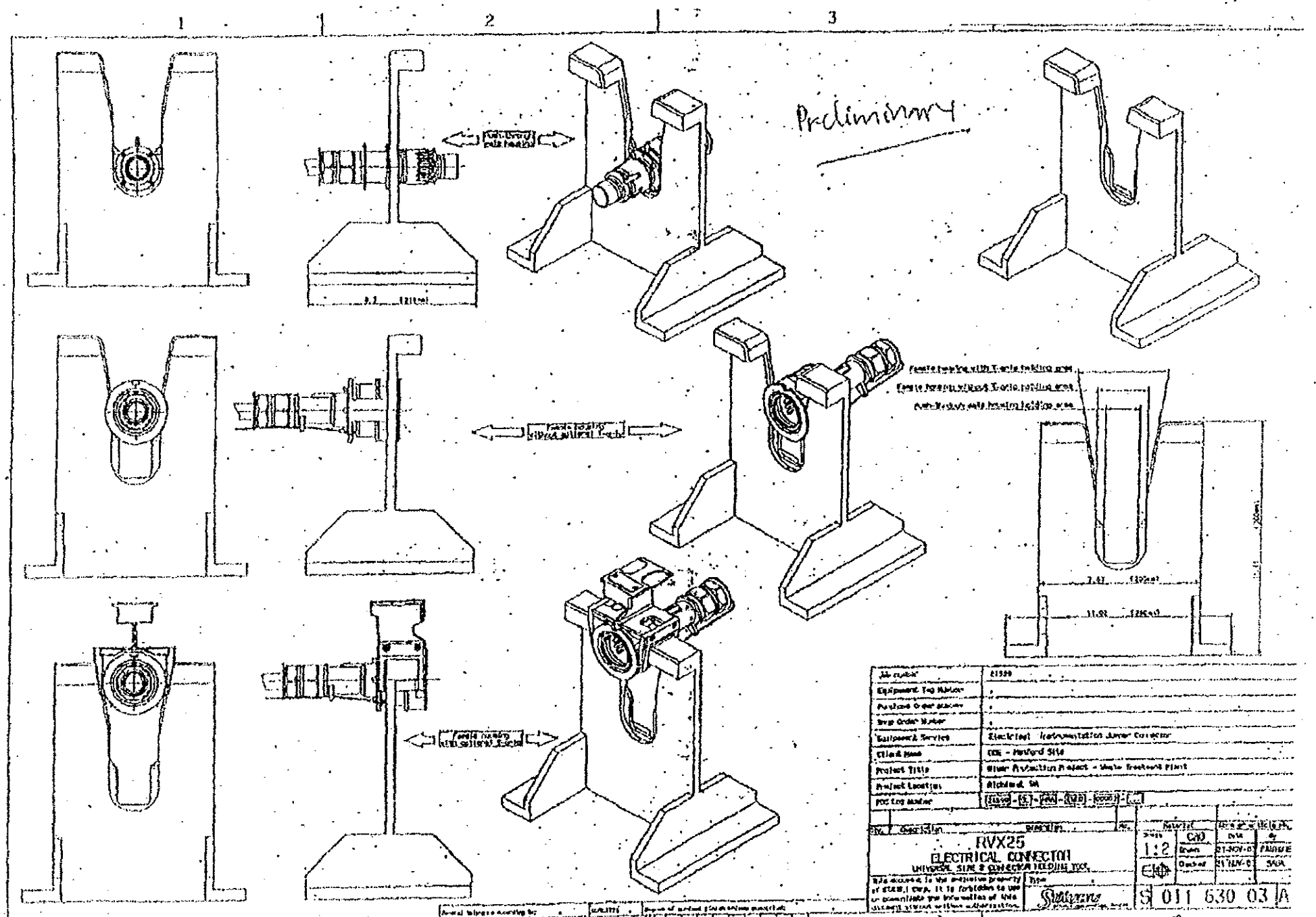
3/4
S 010 656 03 A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Siemens
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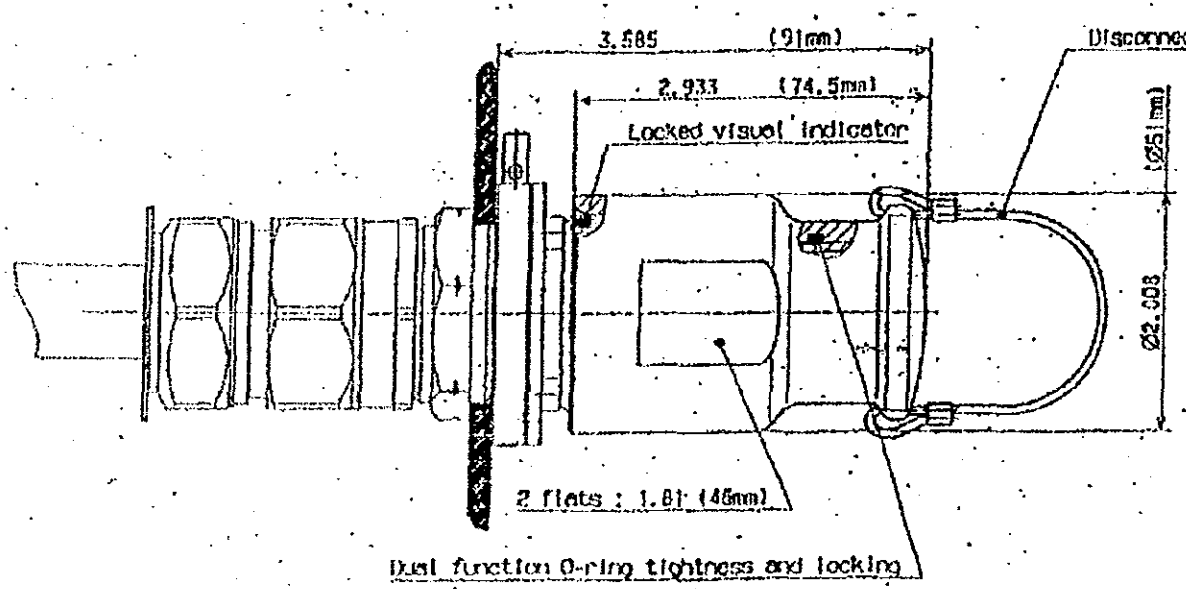
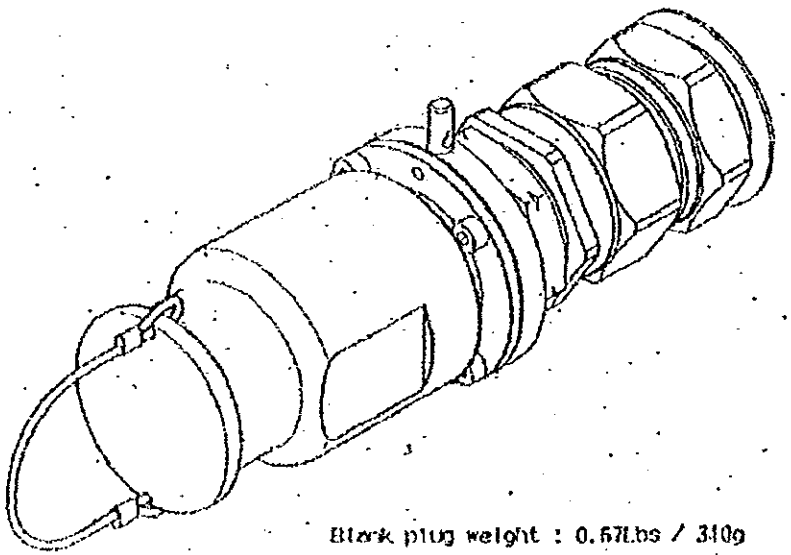


Preliminary



Blank plug weight : 0.67Lbs / 310g

Job number	24590.
Equipement Tag Number	.
Purchase Order Number	.
Shop Order Number	.
Equipement Service	Electrical Instrumentation Jumper Connector
Client Name	DOE - Hanford Site
Project Title	River Protection Project - Waste Treatment Plant
Project Location	Richland, WA
PDC Log Number	24590 - [illegible] - MRA - EM00 - 00003 - ...

Qty.	Description	Dimension	Ref.	Material	Mass or Article nb.
	RVX25			Scale 1	CAD
	ELECTRICAL CONNECTOR BLANK PLUG FOR SIZE 2 HOUSING			Drawn	19-NOV-03 PASTORE
	APPLICATION DRAWING			Checked	19-NOV-03 SAVA

This document is the exclusive property of SOURIAU Corp. It is forbidden to use or communicate the information of this document without written authorization.

Type

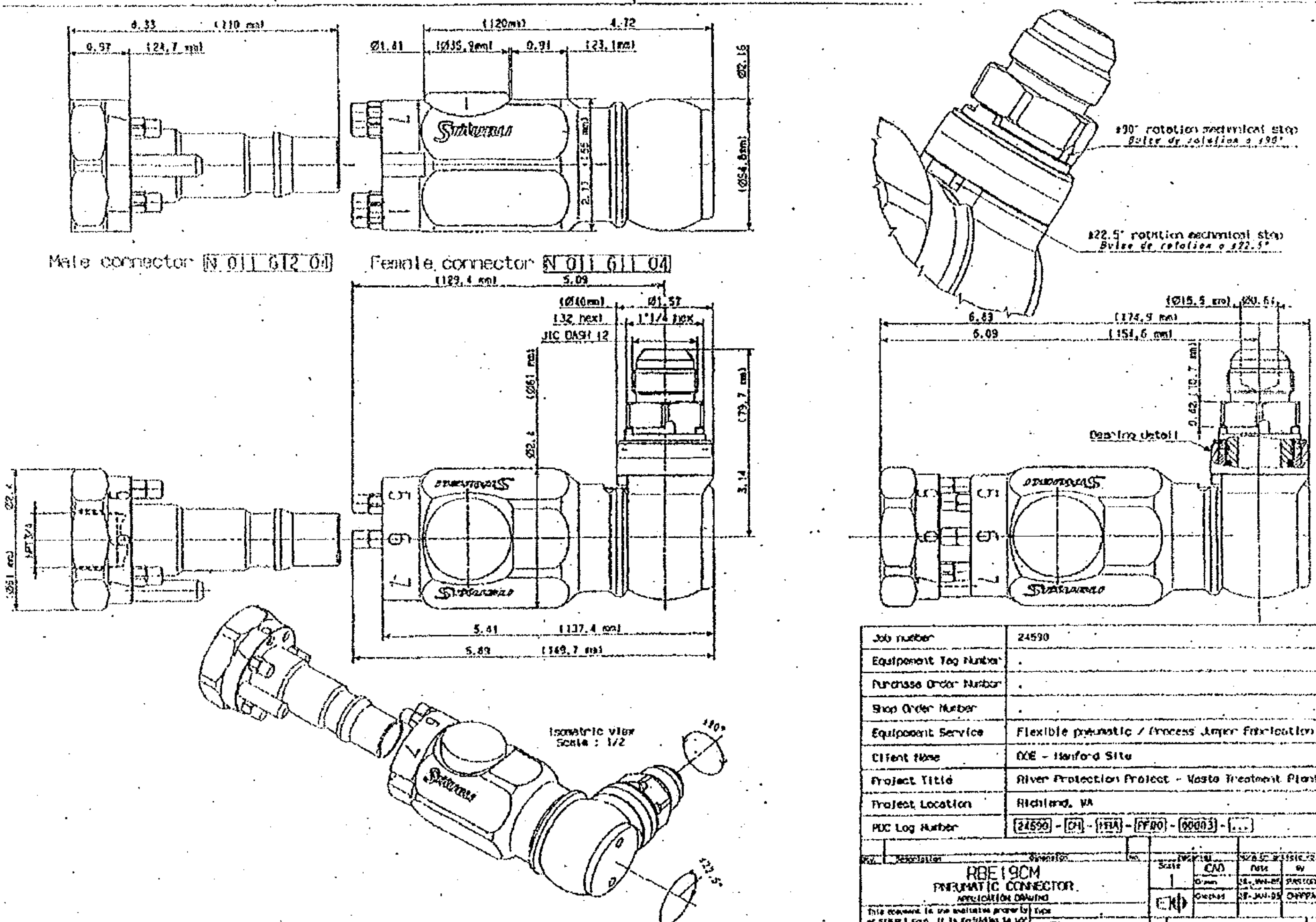
SOURIAU

S 011 494 03 A

General tolerance according to: QUALITY: Degree of surface finish unless specified:

A3

T-7



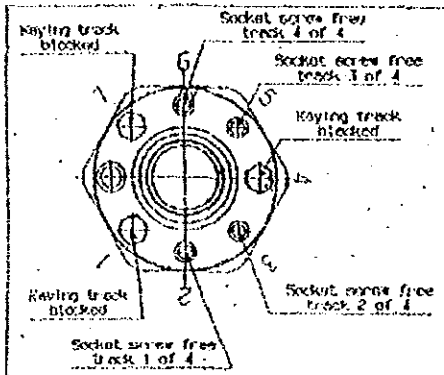
Job number	24590
Equipment Tag Number	.
Purchase Order Number	.
Shop Order Number	.
Equipment Service	Flexible pneumatic / Process Jumper Fabrication
Client Name	DOE - Hanford Site
Project Title	River Protection Project - Waste Treatment Plant
Project Location	Richland, WA
PDC Log Number	24590 - CM - HVA - PF00 - 00003 - ...

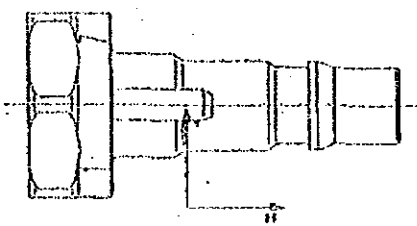
RBE19CM
PNEUMATIC CONNECTOR
APPLICATION DRAWING

Scale 1 | CAD | Drawn | Checked

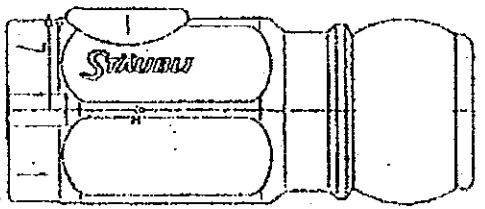
S 012 499 04 F

T

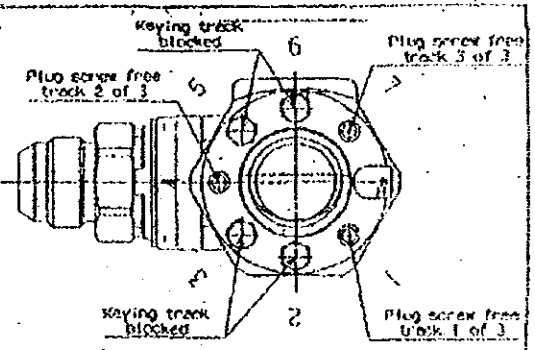


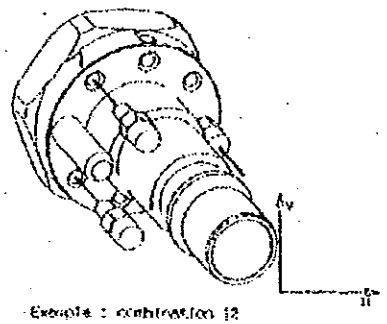


Plug



Socket

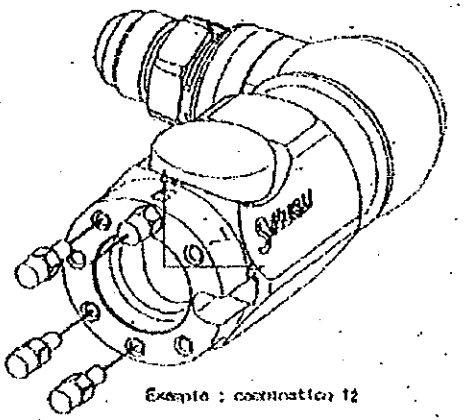




Exemple : combinaison 12

Card.	Screw 1	Screw 2	Screw 3
01	Track 1	Track 2	Track 3
02	Track 1	Track 2	Track 4
03	Track 1	Track 2	Track 5
04	Track 1	Track 2	Track 6
05	Track 1	Track 2	Track 7
06	Track 1	Track 3	Track 4
07	Track 1	Track 3	Track 5
08	Track 1	Track 3	Track 6
09	Track 1	Track 3	Track 7
10	Track 1	Track 4	Track 5
11	Track 1	Track 4	Track 6
12	Track 1	Track 4	Track 7
13	Track 1	Track 5	Track 6
14	Track 1	Track 5	Track 7
15	Track 1	Track 6	Track 7
16	Track 2	Track 3	Track 4
17	Track 2	Track 3	Track 5
18	Track 2	Track 3	Track 6
19	Track 2	Track 3	Track 7
20	Track 2	Track 4	Track 5
21	Track 2	Track 4	Track 6
22	Track 2	Track 4	Track 7
23	Track 2	Track 5	Track 6
24	Track 2	Track 5	Track 7
25	Track 2	Track 6	Track 7
26	Track 3	Track 4	Track 5
27	Track 3	Track 4	Track 6
28	Track 3	Track 4	Track 7
29	Track 3	Track 5	Track 6
30	Track 3	Track 5	Track 7
31	Track 3	Track 6	Track 7
32	Track 4	Track 5	Track 6
33	Track 4	Track 5	Track 7
34	Track 4	Track 6	Track 7
35	Track 5	Track 6	Track 7

Card.	Screw 1	Screw 2	Screw 3	Screw 4
01	Track 4	Track 5	Track 6	Track 7
02	Track 3	Track 5	Track 6	Track 7
03	Track 3	Track 4	Track 6	Track 7
04	Track 3	Track 4	Track 5	Track 7
05	Track 3	Track 4	Track 5	Track 6
06	Track 2	Track 5	Track 6	Track 7
07	Track 2	Track 4	Track 6	Track 7
08	Track 2	Track 4	Track 5	Track 7
09	Track 2	Track 4	Track 5	Track 6
10	Track 2	Track 3	Track 6	Track 7
11	Track 2	Track 3	Track 5	Track 7
12	Track 2	Track 3	Track 5	Track 6
13	Track 2	Track 3	Track 4	Track 7
14	Track 2	Track 3	Track 4	Track 6
15	Track 2	Track 3	Track 4	Track 5
16	Track 1	Track 5	Track 6	Track 7
17	Track 1	Track 4	Track 6	Track 7
18	Track 1	Track 4	Track 5	Track 7
19	Track 1	Track 4	Track 5	Track 6
20	Track 1	Track 3	Track 6	Track 7
21	Track 1	Track 3	Track 5	Track 7
22	Track 1	Track 3	Track 5	Track 6
23	Track 1	Track 3	Track 4	Track 7
24	Track 1	Track 3	Track 4	Track 6
25	Track 1	Track 3	Track 4	Track 5
26	Track 1	Track 2	Track 6	Track 7
27	Track 1	Track 2	Track 5	Track 7
28	Track 1	Track 2	Track 5	Track 6
29	Track 1	Track 2	Track 4	Track 7
30	Track 1	Track 2	Track 4	Track 6
31	Track 1	Track 2	Track 4	Track 5
32	Track 1	Track 2	Track 3	Track 7
33	Track 1	Track 2	Track 3	Track 6
34	Track 1	Track 2	Track 3	Track 5
35	Track 1	Track 2	Track 3	Track 4



Exemple : combinaison 12

- For each combination the 7 screws must be installed.
- Screws thread lock : Loctite F2432
- Torque : 9.5 N.m

Job number	24590
Equipment Tag Number	.
Purchase Order Number	.
Shop Order Number	.
Equipment Service	Flexible pneumatic / Process Jumper Fabrication
Client Area	DOE - Hanford Site
Project Title	River Protection Project - Waste Treatment Plant
Project Location	Richland, WA
PJC Log Number	24590 - CH - HOA - HOO - 00003 - [...]

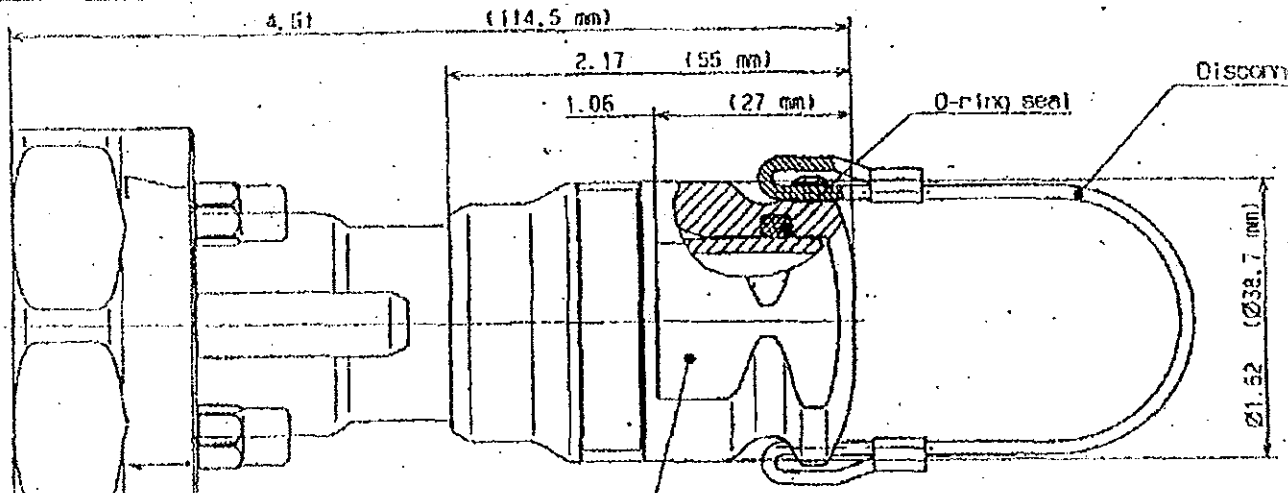
RBE19CM

Key combination sheet and assembly instructions

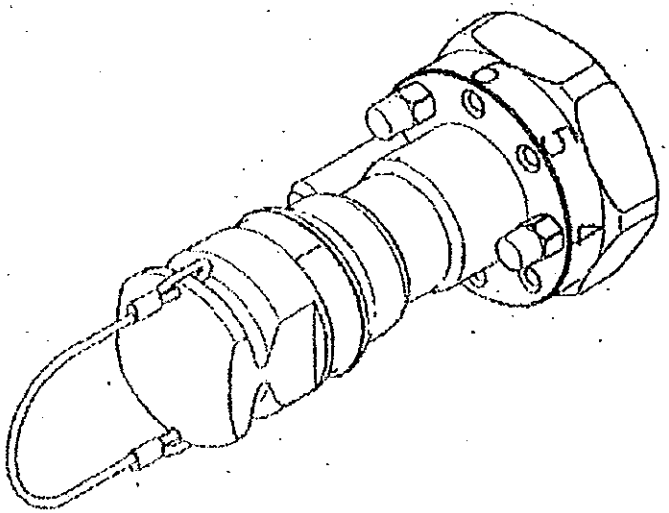
Straub

S 001 228 05 A

T-1



Male connector dust cap
N 001 130 05



Job number	24590
Equipement Tag Number	.
Purchase Order Number	.
Shop Order Number	.
Equipement Service	Flexible pneumatic / Process Jumper Fabrication
Client Name	DOE - Hanford Site
Project Title	River Protection Project - Waste Treatment Plant
Project Location	Richland, WA
PDC Log Number	24590 - CM - HAA - PF00 - 00003 - ...

Qty.	Description	Diversion	No.	Material	Item or article nb.
	RBE19CM PNEUMATIC CONNECTOR DUST CAP APPLICATION DRAWING				

Scale	CAD	Date	By
1	Drawn	28-JAN-05	PASTORE
	Checked	28-JAN-05	CRAPPAZ

Type

Staubli

S 001 197 05 B

QUALITY: Degree of surface finish unless specified :

A3

T-1D

T-11

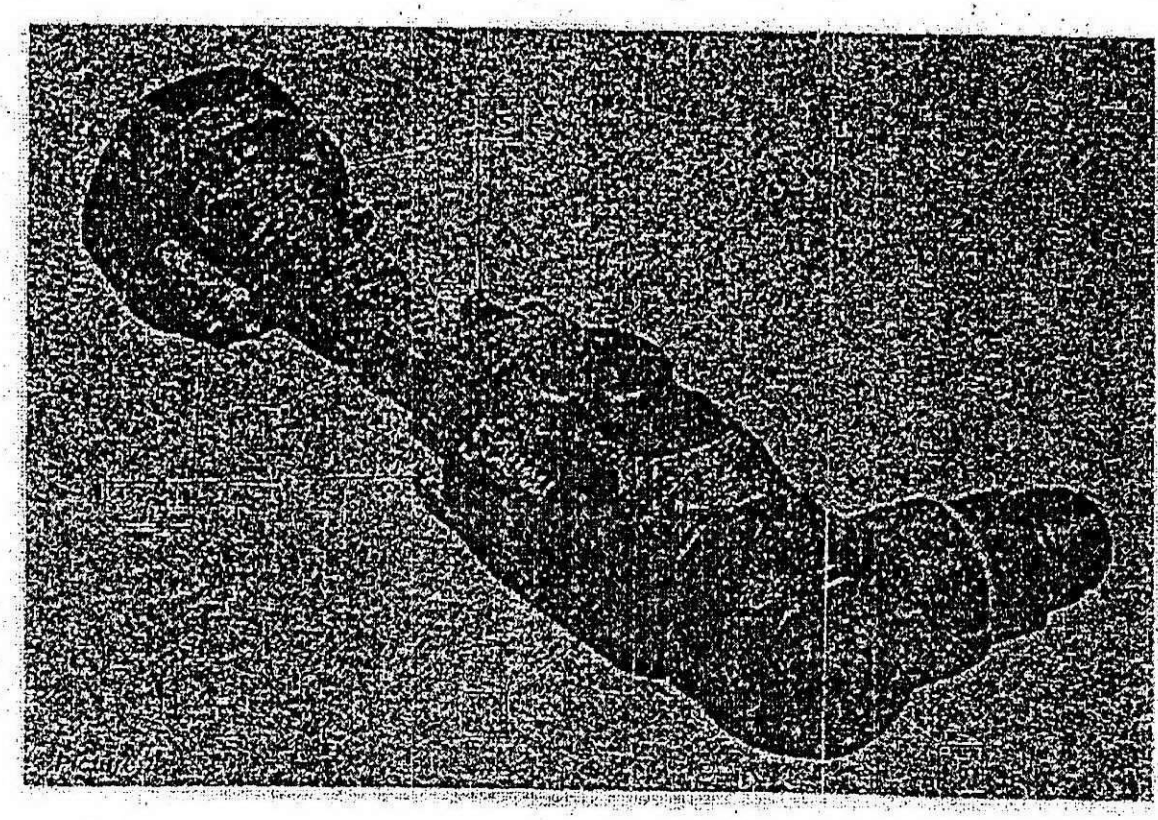
REF CM

APPLICATION

Remotely operated fluid connector for radioactive environment designed to allow a high number of keying possibilities set on site.

CONNECTION:

1. The three sets of opposed flats on the female housing allow the manipulator jaws to grab and index the connector during operation.
2. The staged guiding helps in addressing the misalignment between the male and female connector.
3. The visual pre-guiding helps the operator to position the indexation.
4. The indexation operates before the safety keys.
5. The safety keying will then allow connection only if the female connector configuration matches the male one. (*picture 2* : safety keying, *picture 3* : purple screw unmatches the gray one)
6. The connection can now be completed by the automatic locking mechanism (no need to operate the locking mechanism during connection). Once the indexing is made the connectors can be pushed using the flat area located on the elbow.



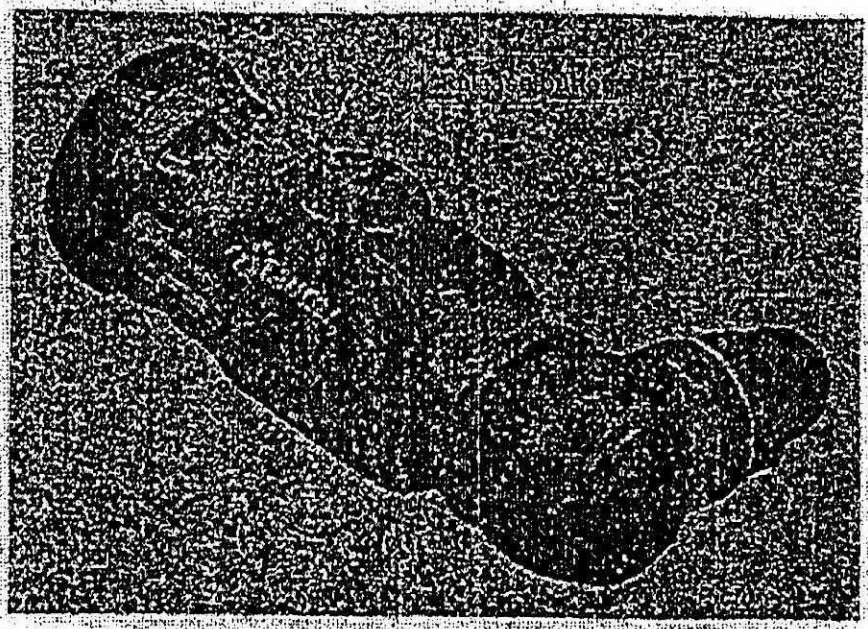
Written : Pastore	Le : 28/01/05	Checked : Chappaz	Le : 28/01/05

STÄUBLI S 111 610 04 D

T-18

DISCONNECTION:

Directly push the release button for disconnection.



KEYING:

The connector will supply a total number of 35 non-interchangeable keys. The operator assembling the male and female connector sets all keys on site.

- Male connector (plug) setting is described on *picture 1 and 3*. 3 screws take place among 7 possible locations (location number engraved on the body).
- Female connector (socket) setting works the opposite way using screws taking place in the remaining locations (location number engraved on the body).

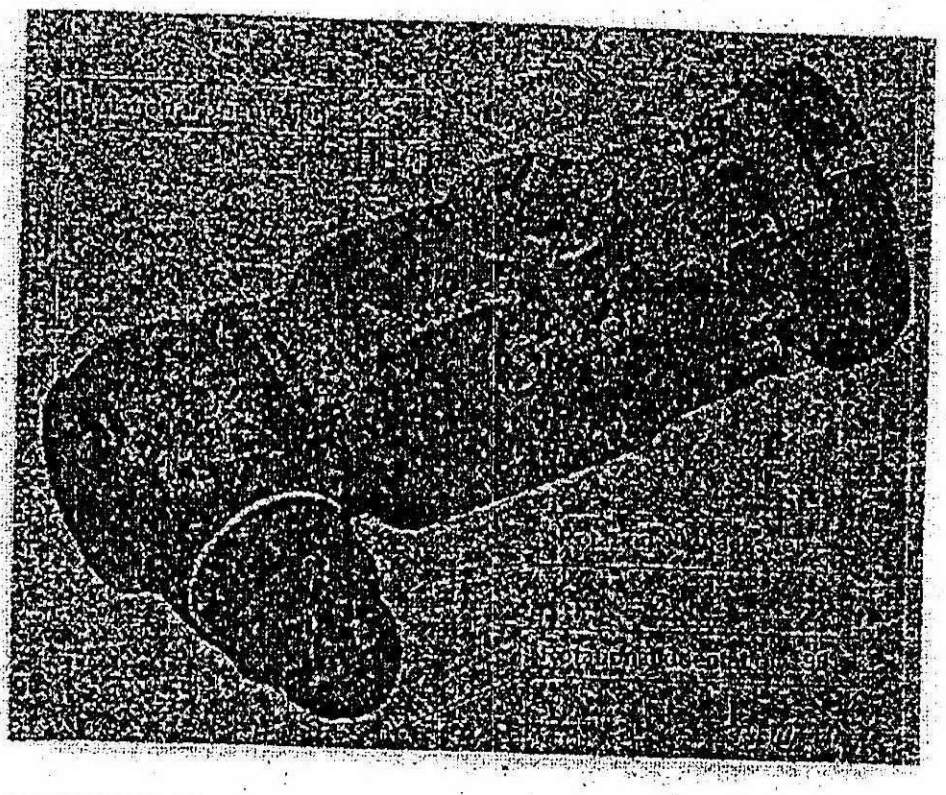
Written : Pastore	Le : 28/01/05	Checked : Chappaz	Le : 28/01/05

STAUBLI | S | 111 610 04 | D

T-13

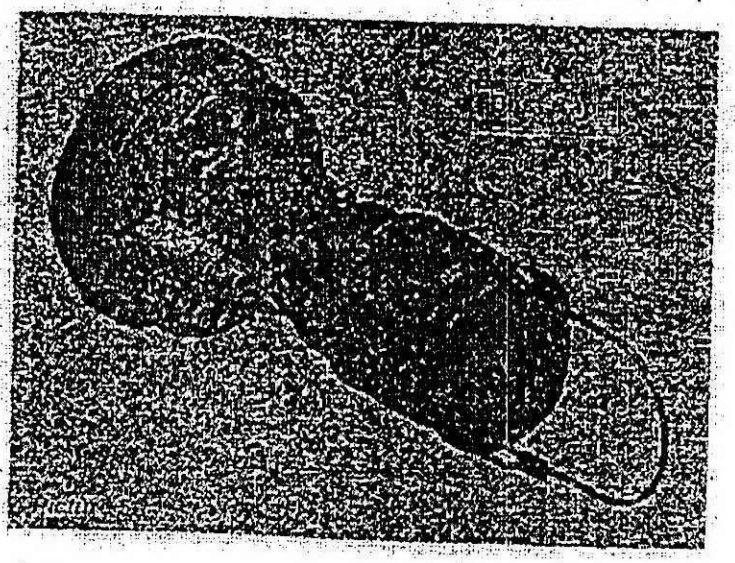
FITTINGS AND MOUNTING:

- **Female connector** (socket) has a male JIC DASH12 threaded end fitting. A rotating 90° backshell assembly allows a free angular positionning according to the 2 rotations axis *(See picture 4)*
- **Male connector** (plug) has a female threaded connection with a 3/4" NPT.



DUST CAPS:

Disconnected plug will be protected with a dust cap.



Written : Pastore	Le : 28/01/05	Checked : Chappaz	Le : 28/01/05

STÄUBLI | S | 111 610 04 | D

MATERIALS:

Mechanical connector is 316L stainless steel with ethylene propylene soft O-ring seals.

TECHNICAL FEATURES

• Working temperature	-25°C + 150°C (-4°F up to 302°F)
• Socket valving	unvalved
• Plug valving	unvalved (straight through bore)
• Seals lubrication	STÄUBLI G 0 lubricant (validated for use in nuclear environment by E.D.F)
• Plug weight	0.550 Kg (1.25 Lb)
• Socket weight	1.800Kg (3.97 Lb)
• Dust cap weight	0.300 Kg (0.66 Lb)
• Connection strength	80N (without pressure)
• Disconnection strength	90N (without pressure)
• Identification	Manufacturer's name, part number and week and year of manufacturing engraved on male and female connectors
• Packaging	Single unit in sealed plastic bag.

PARTNUMBERS

Part number	Description
N 011 611 04	Female connector
N 011 612 04	Male connector
N 001 130 05	Male connector dust cap

Written : Pastore	Le : 28/01/05	Checked : Chappaz	Le : 28/01/05

STÄUBLI S 111 610 04 D

T.2 Reboiler Grayloc Backing Plate

Design Input: It is acceptable design that the Grayloc backing plates for the 24" diameter process inlet of the reboilers FEP-RBLR-00001A/1B and TLP-RBLR-00001 can be installed after reboiler has after reboiler has been transported through airlock (inside hotcell). Furthermore, the Grayloc backing plate for the 18" diameter steam inlet of the reboiler TLP-RBLR-00001 can also be installed after the TLP reboiler has been through airlock.

T.3 Floor loading

Design Input: The uniform load is defined as floor loading transmitted by the skid to the floor without spreading of the load out through the supporting concrete slab. The floor loadings listed in the table below has been determined to be acceptable.

Allowable Uniform Floor Loading Directly Under Skid Footprint

Equipment	Location	Weight (Operating + Skid) (lbs)	Skid Foot Print Floor Area (ft^2)	Uniform Load (Operating) (lbs/ft^2)
FEP-SEP-00001A	J : 8-9 (0'-0")	134,500	400	336
FEP-SEP-00001B	J : 10-11 (0'-0")	134,500	400	336
TLP-SEP-00001	D : 18 (0'-0")	134,500	400	336
FEP Condenser Skid A	K-L : 8 (56'-0")	70,000	179	391
FEP Condenser Skid B	K-L : 10-11 (56'-0")	70,000	179	391
TLP Condenser Skid	D-E : 19-20 (56'-0")	70,000	179	391
FEP-VSL-00005	M : 7-8 (0'-0")	45,100	66	683
TLP-VSL-00002	B : 24-25 (0'-0")	24,000/4	1	6000
AFR-TK-00001	G-H : 9-10 (77'-0")	24,000	40	600
AFR Pump Skid	G-H : 9-10 (77'-0")	415	12	35

Note: Uniform load (lbs/ft^2) = Total Equipment Weight (lbs) / Foot Print Area (ft^2)

T.4 Surface Finish for Equipment in the Hot Cell

Design Input #1: A surface finish of 125 micro-inches is required for non-rotating parts such as reboiler, support stands, recirculation pump, recirculation piping, and lifting yokes. The surface finish of 125 micro inches shall be applied to machined surfaces not all surfaces

Design Input #2: A surface finish of 63 micro-inches is required for rotating parts such as pump shaft and impeller.

T.5 Manipulator Capability for Separator Vessel Head Crane

Design Input: There will be no manipulator capability for the crane on the 56-ft elevation for separator vessel head removal. The current plan is to install a monorail and hoist when there is a need to replace separator demister pads.

T.6 Axial Flow Pump ASDs

Design Input: The ASDs for FEP-PMP-00009A/9B will be installed in the MCC room P-417 on the 77'-0" elevation and the ASD for TLP-PMP-00009 will be installed in the MCC room P-0315 on the 56'-0" elevation. These MCC rooms are designed as R2/C2 as shown on the drawings 24590-PTF-P01T-00003 and 24590-PTF-P01T-00004. The temperature range for these MCC rooms is between 59-113 °F and the humidity range of 5 - 85 %.

T.7 Instrumentation

Design Input #1 - Final Instrument Location Drawings:

Seller is no longer required to provide instrument location and mounting information on the datasheet. Instrument location and mounting information will be completed by Buyer as required on the data sheets.

Design Input #2 - BNI Instrument Details:

Seller is no longer required to provide loop drawings that include schematic and wiring information. BNI will use Set Route and Intools for wiring information. For the 60% design stage, Seller is not required to provide environmental criteria, manufacturer or manufacturer's model number since they will be addressed at the 90% design milestone. Seller shall provide the following I&C information at 60% design:

1) An Instrument Index that includes the type of instrument, service description, calibration range, tag number, signal type, P&ID number and data sheet number.

2) Data Sheets as supplied with the contract package completed with as much information as is available, including tag numbers, calibration range, instrument range and specific process parameters, etc.

3) Logic diagrams which complement the system description.

T.8 Off-gas piping Condenser Intra-Skid Piping

Design Input: No insulation is required for off-gas piping and condenser intra-skid piping. These pipes are in restrictive rooms where no personnel enter during evaporator system operations.

T.9 Separator Vessels

Design Input #1: Separator Vessel Lower Frame:

No internal components are allowed except the use of Nelson studs on the lower ten inches of the inside surface. Seller shall provide minimum amount of grouting requirements to provide adequate stiffness for the lower frame of solid ring of 18-inches high and 19-feet square

Design Input #2: External Ring for Spray Nozzles:

Seller shall design and provide external rings for both the upper and lower demister pad spray nozzles. These external rings shall be connected together to provide an accessible connection at approximately 48'-0" plant elevation.

T.10 FEP Condensate vessel

Design Input: Seller shall provide a separate FEP condensate vessel support ring plate to interface properly with floor embeds. The ring plate will be field welded to embedded plates on both sides. Vessel skirt will be filed welded to ring plate at exterior face only with partial penetration and fillet welds.

T.11 Equivalent Lengths for Centrifugal Pumps

The piping equivalent length is provided on the table below for pump sizing calculation. Please be advised that the bounding values have incorporated the line size changes. However, the flow resistance due to flow restriction orifice, backpressure control valve, discharge spray nozzle has not incorporated into the bounding values because they are to be sized by Seller. Seller shall include these flow resistance in their pump sizing calculation.

For discharge lines from pumps TLP-PMP-00002A/B to separator vessel (TLP-SEP-00001) and from pumps FEP-PMP-00006A/B, FANP shall also add a flow resistance of 5 psi due to Millipore filter in the calculation. For discharge line from TLP-PMP-00005A/B to sampler, Seller shall also include sample delivery pressure of 5 psig.

	Description	From	To	Straight Runs	Elevation Change	Elbows (LR 90)	Eq. Length	Tees	Eq. Length	Valves	Eq. Length	Exits	Eq. Length	Entrances	Eq. Length	Other	Totals (ft) (EQL)	Totals (ft) (AEL)	Bounding Values (ft) (EQL)	Bounding Values (ft) (AEL)	Notes
TLP-PMP-00002A/B	Suction	TLP-VSL-00002	Pump	30	2	6	33	1	20	4	20	0	0	1	9	0	112	2	150	2	
	Discharge	Pump	TLP-VSL-00002	40	15	5	25	2	30	4	15	1	13	0	0	50	173	15	250	20	1
			RLD-TK-00006A/B	250	40	25	125	4	60	8	30	1	13	0	0	50	528	60	625	65	2
			TLP-VSL-00009A/B	250	60	25	125	4	60	8	30	1	13	0	0	50	528	60	625	65	2
			TLP-SEP-00001	250	60	25	125	3	45	10	38	0	0	0	0	50	508	60	650	65	3, 4
TLP-PMP-00011A/B	Suction	TLP-SEP-00001	Pump	100	6	6	25	1	15	3	11	0	0	1	7	0	158	6	200	5	
	Discharge	Pump	TCP-VSL-00002	300	60	15	50	1	10	3	8	1	9	0	0	0	376	60	450	65	
TLP-PMP-00005A/B	Suction	TLP-VSL-00009A/B	Pump	40	4	8	40	2	30	6	13	0	0	1	7	0	189	4	200	4	
	Discharge	Pump	TLP-SEP-00001	125	15	75	38	3	22.5	2	4	1	7	0	0	0	195	10	250	15	
			SAMPLER	180	70	15	50	2	20	3	8	0	0	0	0	0	259	70	300	70	6
FEP-PMP-00008A/B	Suction	FEP-VSL-00005	Pump	15	2	6	33	1	20	3	15	0	0	1	9	0	92	2	125	2	
	Discharge	Pump	FEP-VSL-00008	25	20	7	35	2	30	6	19	1	13	0	0	50	172	20	250	28	1
			RLD-TK-00006A/B	1100	50	60	250	6	90	8	30	1	13	0	0	50	1533	60	1750	65	2
			FEP-VSL-00017A/B	550	60	35	175	4	40	6	23	1	13	0	0	50	871	60	1000	65	3
			FEP-SEP-00001A/B	400	60	35	175	3	45	10	38	0	0	0	0	50	908	60	1100	85	3, 4

Notes: Framatome Needs to also consider flow resistances due to...
1. Flow Restriction Orifice (sized by FANP)
2. Back Pressure Control valve (sized by FANP)
3. Mill-pore filter (max dP = 5 psi)
4. Discharge spray nozzle pressure (specified by FANP)
5. Sample Delivery pressure of 5 psig.

T.12 Equivalent Lengths for Roth Transfer Station Pump

The equivalent length is provided in the table below:

Description	From	To	Bounding values (ft)	
			EQ. L	AEL
Discharge	FEP A SKID 9A Pump	SCW Storage Tank	2200	60
Discharge	FEP A SKID 9A Pump	Steam Cond. Skid 6A	600	80
Discharge	FEP B SKID 9B Pump	SCW Storage Tank	2000	60
Discharge	FEP B SKID 9A Pump	Steam Cond. Skid 6B	700	80
Discharge	TLP SKID Pump	SCW Storage Tank	720	60
Discharge	FEP B SKID 9A Pump	Steam Cond. Skid 8	1130	100

T.13 Standard Kick-Off Plate

Design Input: Buyer will provide Seller 2" and 4" PUREX nozzle with square standard kick-off plate per drawing 24590-WTP-M61-P23T-00040 for FEP/TLP reboilers.

Attachment 2
06-ED-009

Bechtel National, Inc. Certification Statements

Bechtel National, Inc. Certification

The following certification statement is provided consistent with Contract No. DE-AC27-01RV14136, Section H.26, Environmental Permits, paragraph (g) for the submittal of the Hanford Facility Resource Conservation and Recovery Act Permit Modification Notification Form 24590-PTF-PCN-ENV-05-014.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

J. P. Henschel
Project Director

1/30/06
Date

Quarter Ending 3/31/06 24590-PTF-PCN-ENV-05-024

Hanford Facility RCRA Permit Modification Notification Form
Part III, Chapter 10 and Attachment 51
Waste Treatment and Immobilization Plant

Index

Submitted by Co-Operator: Reviewed by ORP Program Office:

D. A. Klein — Date 2/16/06 — R. J. Schepens — Date 3/1/06

Quarter Ending 3/31/06

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Waste Treatment and Immobilization Plant	**Part III, Chapter 10 and Attachment 51**

Description of Modification:

This modification is being issued to update existing PTF Material Selection Data Sheet (MSDS) TCP-VSL-00001 information contained in Part III, Chapter 10, Attachment 51, Appendix 8.9.

The primary changes to this document include the following:

- provides updated corrosion data for this vessel
- provides updated erosion data for this vessel
- provides updated reference and bibliography information for this vessel

These changes do not substantially alter the permit conditions or reduce the capacity of the facility to protect human health or the environment.

Please replace the following MSDS in the DWP:

Appendix 8.9			
Replace:	24590-PTF-N1D-TCP-P0001, Rev 1	With:	24590-PTF-N1D-TCP-P0001, Rev 2

WAC 173-303-830 Modification Class: [1] [2]	Class 1	Class [1]1	Class 2	Class 3
Please mark the Modification Class:		X		

Enter Relevant WAC 173-303-830, Appendix I Modification citation number: N/A

Enter wording of WAC 173-303-830, Appendix I Modification citation:

In accordance with WAC 173-303-830(4)(d)(i), this modification notification is requested to be reviewed and approved as a Class [1]1 modification. WAC 173-303-830(4)(d)(ii)(A) states, "Class 1 modifications apply to minor changes that keep the permit current with routine changes to the facility or its operation. These changes do not substantially alter the permit conditions or reduce the capacity of the facility to protect human health or the environment. In the case of Class 1 modifications, the director may require prior approval."

Modification Approved: [✓] Yes [ ] No (state reason for denial)

Reason for denial:

Reviewed by Ecology:

S. Dahl 3/14/06

S. Dahl — Date

[1] Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

PLANT ITEM MATERIAL SELECTION DATA SHEET

R10664390

TCP-VSL-00001 (PTF)
Treated LAW Concentrate Storage Vessel

- Design Temperature (°F)(max/min): 237/40
- Design Pressure (psig) (max/min): 15/-8
- Location: incell
- PJM Discharge Velocity (fps): 40
- Drive Cycle: 17 % (at 40 fps)

Offspring items--
TCP-PJM-00001 – TCP-PJM-00008

ISSUED BY
RPP-WTP PDC

Contents of this document are Dangerous Waste Permit affecting

Operating conditions are as stated on sheets 6 and 7

Operating Modes Considered:
- Normal operating conditions

Materials Considered:

Material (UNS No.)	Relative Cost	Acceptable Material	Unacceptable Material
Carbon Steel	0.23		X
304L (S30403)	1.00		X
316L (S31603)	1.18	X	
6% Mo (N08367/N08926)	7.64	X	
Alloy 22 (N06022)	11.4	X	
Ti-2 (R50400)	10.1		X

Recommended Material: 316 (max 0.030% C; dual certified),

Recommended Corrosion Allowance: 0.040 inch (includes 0.024 inch corrosion allowance and 0.016 inch general erosion allowance; additional localized protection is required as discussed in section j)

Process & Operations Limitations:
- Develop flushing/rinsing procedure for acid and water

1/30/06

EXPIRES: 12/07/07

Please note that source, special nuclear and byproduct materials, as defined in the Atomic Energy Act of 1954 (AEA), are regulated at the U.S. Department of Energy (DOE) facilities exclusively by DOE acting pursuant to its AEA authority. DOE asserts, that pursuant to the AEA, it has sole and exclusive responsibility and authority to regulate source, special nuclear, and byproduct materials at DOE-owned nuclear facilities. Information contained herein on radionuclides is provided for process description purposes only.

This bound document contains a total of 7 sheets.

REV	DATE	REASON FOR REVISION	PREPARER	CHECKER	APPROVER
2	1/30/06	Issued for Permitting Use		HMK	MWH
1	1/13/05	Issued for Permitting Use	DLA	APR	MWH
0	9/25/03	Issued for Permitting Use	DLA	JRD	APR

PLANT ITEM MATERIAL SELECTION DATA SHEET

Corrosion Considerations:

This vessel receives a continuous feed from the treated LAW evaporator separator vessel. LAW concentrate is normally received at 122°F. Vessel is equipped with a steam injection system to maintain fluid temperature above the freezing point (77 to 100°F). TCP-VSL-00001 may also receive treated LAW from CXP-VSL-00026A/B/C or treated solids from UFP-VSL-00002A/B. This is expected to be an infrequent occurrence.

a General Corrosion
Based on Hamner's data (1981), 304 (and 304L) has a corrosion rate of less than 20 mpy (500 µm/y) in NaOH at 77°F and over 20 mpy at 122°F. He shows 316 (and 316L) has a rate of less than 2 mpy in 50% NaOH at up to 122°F. Dillon (2000) and Sedriks (1996) both state that the 300 series are acceptable in up to 50% NaOH at temperatures up to about 122°F. Davis (1994) is more precise and states the corrosion rate for 304L in NaOH will be less than about 0.1 mpy; Danielson & Pitman (2000), based on short term studies, suggest a corrosion rate of about 0.5 mpy for 316L in simulated LAW. These two references therefore corroborate Dillon and Sedriks. In addition, Divine (1992) showed that 304L corroded less than 316L in simulated complexant waste with fluorides and chlorides at 140°F. The corrosion rate of 304L after six months of testing was less than 0.2 mpy.

Ohl & Carlos (1994), in their review of the 242-A Evaporator, found that in waste similar to that expected in WTP, including the presence of radiation, the corrosion, of 304L after about 2 years of operation was less than the accepted variability of the plate. The NDE data are sufficiently uncertain to prevent definite conclusions from being drawn. However, a review by Zapp (1998) of the Savannah River evaporators showed the 304L shell had not been replaced after over 30 years of operation despite failure of the 304L evaporator tubes (which operate at higher temperature than the shell).

Conclusion:
At stated temperatures, 304L and 316L are expected to be sufficiently resistant to the waste solution with a probable general corrosion rate of less than 1 mpy.

b Pitting Corrosion
Chloride is well known for causing pitting in acid and neutral solutions. Dillon (2000) is of the opinion that in alkaline solutions, pH>12, chlorides are likely to promote pitting only in tight crevices. It is his opinion that 304L would probably be acceptable, but the use of 316L and especially a 6% Mo alloy would provide a benefit because of their better resistance to pitting by chlorides. Davis (1994) recommends the use of 316L over 304L. Dillon and Koch (1995) are of the opinion that fluoride will have little effect. In addition, Divine's work (1992) showed no hint of pitting after six months at 140°F under boiling heat transfer conditions. Revie (2000) notes that nitrate inhibits chloride corrosion. Therefore, the high nitrate concentrations in the waste are expected to be beneficial.

The apparent lack of pitting in the 242-A Evaporator suggests 304L is acceptable for the vessel. Based on Divine's work (1992), which was conducted in boiling waste at a bulk temperature of 140°F, 304L should be acceptable.

The vessel is equipped with wash rings capable of supplying water or acid. There is a possibility of neutral to acid conditions with halides present. Therefore, 316L is better than 304L.

Conclusion:
316L is recommended.

c End Grain Corrosion
End grain corrosion only occurs in metal with exposed end grains and in highly oxidizing acid conditions. This system is alkaline except possibly during cleaning. The temperature during cleaning must not be above 122°F.

Conclusion:
Not applicable to this system.

d Stress Corrosion Cracking
Several sources of cracking are present in this system: chloride and sodium hydroxide, both of which cause stress corrosion cracking of stainless steel.

The exact amount of chloride required to stress corrosion crack stainless steel is unknown. In part this is because the amount varies with temperature, metal sensitization, and the environment and also because chloride tends to concentrate under heat transfer conditions, by evaporation, and electrochemically during a corrosion process. Hence, even as little as

PLANT ITEM MATERIAL SELECTION DATA SHEET

10 ppm can lead to cracking under some conditions. Generally, as seen in Sedriks (1996) and Davis (1987), stress corrosion cracking does not usually occur below about 140°F. Further, the use of "L" grade stainless reduces the opportunity for sensitization. From the above references, it also observed that alkaline conditions reduce the probability of the initiation of stress corrosion cracking to essentially zero. However, should a pit or crevice, including a deposit, be present under which the environment can become acid, then the alkaline environment will no longer have an effect.

Caustic cracking, according to Jones (1992), is not expected to occur below about 140°F for stainless steel. Zapp (1998) suggests cracking in waste is not a concern below about 280°F.

Conclusion:
316L is recommended to offer greater protection against pitting and therefore reduce the likelihood of cracking.

e Crevice Corrosion
Essentially the same comments and conclusions obtained for pitting are valid here.

Conclusion:
Same as for pitting.

f Corrosion at Welds
Corrosion at welds is not considered a problem in the proposed environment.

Conclusion:
Corrosion at welds in the vessel is not a concern.

g Microbiologically Induced Corrosion (MIC)
MIC typically is not prevalent in high pH solutions. Borenstein (1988) states most microbes prefer a pH below 7 though some have been grown at above 9.5. Further, microbial growth is normally not a concern in tanks.

Conclusion:
MIC is not expected to be a concern in the vessels.

h Fatigue/Corrosion Fatigue
Corrosion fatigue does not appear to be a concern.

Conclusions:
Not a concern.

i Vapor Phase Corrosion
Because of the highly alkaline conditions, no free HF or HCl is expected to be present in the vapor phase and no uniform/general corrosion is expected. A rinsing procedure should be developed to prevent formation of deposits. The nitrate and hydroxide in the waste are also present in any deposits and should minimize pitting.

Conclusion:
General corrosion will not be a concern. Use of 316 is recommended as more pitting-resistant.

j Erosion
Based on past experiments by Smith & Elmort (1992), the solids are soft and erosion is not expected to be a concern for the vessel wall. Based on 24590-WTP-RPT-M-04-0008, a general erosion allowance of 0.016 inch is adequate for components with maximum solids content up to 27.3 wt%. Additional 316L stainless steel should be provided as localized protection for the applicable portions of the bottom head to accommodate PJM discharge velocities of up to 12 m/s with normal maximum solids concentrations of 3.4 wt% and maximum solids concentrations of 20 wt% with a usage of 77 % operation as documented in 24590-WTP-M0C-50-00004. TCP-VSL-00001 requires at least 0.164-inch additional protection. The 20 wt% is considered to be conservative. The fraction of time the solids concentration is expected to be at maximum is 10 %. During normal operation, 90 % of the time, the solids content of TCP-VSL-00001 is expected to be 3.4 wt%.

PLANT ITEM MATERIAL SELECTION DATA SHEET

The wear of the PJM nozzles can occur from flow for both the discharge and reflood cycles of operation. At least 0.113-inch of additional 316L stainless steel should be provided on the inner surface of the PJM nozzle to accommodate wear due to PJM discharge and suction velocities with normal solids concentrations of 3.4 wt% and a maximum solids concentration of 20 wt% with a usage of 77 % operation as documented in 24590-WTP-M0C-50-00004.

Conclusion:
The recommended corrosion allowance provides sufficient protection for erosion of the vessel wall. Additional localized protection for the bottom head will accommodate PJM discharge velocities and for the PJM nozzles will accommodate PJM discharge and reflood velocities.

k Galling of Moving Surfaces
There are no moving surfaces within the vessels.

Conclusion:
Galling is of no concern in these vessels.

l Fretting/Wear
There are no contacting surfaces that are part of the vessel.

Conclusion:
Fretting and wear are not of concern.

m Galvanic Corrosion
The vessel contains no dissimilar metals.

Conclusion:
Galvanic corrosion is not a concern.

n Cavitation
None expected.

Conclusion:
Cavitation is not a concern.

o Creep
Creep is a high temperature phenomenon, occurring at greater than about 932°F.

Conclusion:
Creep is of negligible concern.

p Inadvertent Nitric Acid Addition
Higher chloride contents and higher temperatures usually require higher alloy materials. Nitrate ions inhibit the pitting and crevice corrosion of stainless alloys. Furthermore, nitric acid passivates these alloys; therefore, lower pH values brought about by increases in the nitric acid content of process fluid will not cause higher corrosion rates for these alloys. The upset condition that was most likely to occur is lowering of the pH of the vessel content by inadvertent addition of 0.5 M nitric acid. Lowering of pH may make a chloride-containing solution more likely to cause pitting of stainless alloys. Increasing the nitric acid content of the process fluid adds more of the pitting-inhibiting nitrate ion to the process fluid. In addition, adding the nitric acid solution to the stream will dilute the chloride content of the process fluid.

Conclusion:
The recommended materials will be able to withstand a plausible inadvertent addition of 0.5 M nitric acid for a limited period.

PLANT ITEM MATERIAL SELECTION DATA SHEET

References:

1. 24590-WTP-M0C-50-00004, Rev. D, *Wear Allowance for WTP Waste Slurry Systems*
2. 24590-WTP-RPT-M-04-0008, Rev. 2, *Evaluation Of Stainless Steel Wear Rates In WTP Waste Streams At Low Velocities*
3. 24590-WTP-RPT-PR-04-0001, Rev. B, *WTP Process Corrosion Data*
4. CCN 130172, Divine, JR, 1986, Letter to A.J. Diliberto, Reports of Experimentation, Battelle, Pacific Northwest Laboratories, Richland, WA 99352
5. CCN 130174, Divine, J. R. and W. C. Carlos, 1992, *Assessment of Known Degradation and Existing Corrosion Studies on Steel*, Presented at the High-Level Waste Tank Systems Structural Integrity Workshop, February 19-20, 1992, Richland, Washington
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12. Koch, GH, 1995, Localized Corrosion in Halides Other Than Chlorides, MTI Pub No. 41, Materials Technology Institute of the Chemical Process Industries, Inc, St Louis, MO 63141
13. Ohl, PC & WC Carlos, 1994, Hanford High-Level Evaporator/Crystallizer Corrosion Evaluation, Presented at Corrosion 94, NACE International, Houston TX 77218
14. Revie, WW, 2000. Uhlig's Corrosion Handbook, 2nd Edition, Wiley-Interscience, New York, NY 10158
15. Sedriks, AJ, 1996, Corrosion of Stainless Steels, John Wiley & Sons, Inc., New York, NY.
16. Smith, H. D. and M. R. Elmore, 1992, *Corrosion Studies of Carbon Steel under Impinging Jets of Simulated Slurries of Neutralized Current Acid Waste (NCAW) and Neutralized Cladding Removal Waste (NCRW)*, PNL-7816, Pacific Northwest Laboratory, Richland, Washington.
17. Zapp, PE, 1998, *Preliminary Assessment of Evaporator Materials of Construction*, BNF—003-98-0029, Rev 0, Westinghouse Savannah River Co., Inc for BNFL Inc.

Bibliography:

1. CCN 130170, Blackburn, LD to PG Johnson, Internal Memo, Westinghouse Hanford Co, Evaluation of 240-AR Chloride Limit, August 15, 1991.
2. CCN 130171, Ohl, PC to PG Johnson, Internal Memo, Westinghouse Hanford Co, Technical Bases for Cl- and pH Limits for Liquid Waste Tank Cars, MA: PCO:90/01, January 16, 1990.
3. CCN 130173, Dillon, CP (Nickel Development Institute), Personal Communication to J R Divine (ChemMet, Ltd., PC), 3 Feb 2000.
4. Kirch, N. W., 1984, Technical Basis for Waste Tank Corrosion Specifications, SD-WM-TI-150, Rockwell Hanford Operations, Richland, Washington.

PLANT ITEM MATERIAL SELECTION DATA SHEET

PROCESS CORROSION DATA SHEET

Component(s) (Name/ID #): Treated LAW concentrate storage vessel (TCP-VSL-00001)

Facility: PTF

In Black Cell? Yes

Chemicals	Unit[1]	Contract Maximum		Non-Routine		Notes
		Leach	No leach	Leach	No Leach	
Aluminum	g/l	3.9E+01	3.5E+01			
Chloride	g/l	1.8E+01	2.0E+01			
Fluoride	g/l	1.8E+01	2.0E+01			
Iron	g/l	2.8E+00	2.9E+00			
Nitrate	g/l	2.7E+02	2.9E+02			
Nitrite	g/l	8.2E+01	8.9E+01			
Phosphate	g/l	5.9E+01	6.3E+01			
Sulfate	g/l	3.1E+01	3.4E+01			
Mercury	g/l	9.0E-01	3.1E-02			
Carbonate	g/l	1.3E+02	1.1E+02			
Undissolved solids	wt%					
Other (NaMnO4, Pb,...)	g/l					
Other	g/l					
pH	N/A					Note 3
Temperature	°F					Note 2

List of Organic Species:

References

System Description: 24590-PTF-3YD-TCP-00001, Rev 0
Mass Balance Document: 24590-WTP-M4C-V11T-00005, Rev A
Normal Input Stream #: TLP02, TCP03
Off Normal Input Stream # (e.g., overflow from other vessels): FRP03, UFP06
P&ID: 24590-PTF-M6-TCP-P0001, Rev 0
PFD: 24590-PTF-M5-V17T-P0006, Rev 0
Technical Reports:

Notes:

1. Concentrations less than 1x 10^{-4} g/l do not need to be reported; list values to two significant digits max.
2. T normal operation 122 °F to 150 °F (24590-PTF-MVC-TCP-00001, Rev 0)
3. pH approximately 12to 14

Assumptions:

PLANT ITEM MATERIAL SELECTION DATA SHEET

4.12.1 Treated LAW Concentrate Storage Vessel (TCP-VSL-00001)

Routine Operations

The treated LAW concentrate storage vessel (TCP-VSL-00001) is designed to receive a continuous feed from the treated LAW evaporator separator vessel (TLP-SEP-00001). The treated LAW concentrate is then transferred in batches to the LAW vitrification facility, as required for continuous glass production. A batch transfer (~9300 gal) will be required each time one of the concentrate receipt vessels (LCP-VSL-00001/2) in the LAW vitrification facility is empty. Capability is also maintained to transfer to a future LAW vitrification facility, per WTP contract requirements (DOE 2000). The batch transfer frequency may fluctuate, as it is based on a design feed rate of LAW fluid to the glass melters. The treated LAW concentrate storage vessel (TCP-VSL-00001) is designed to provide 7 days of lag storage in the event that the PT facility is not able to provide concentrate feed. The lag storage batch volume is based on the average treated LAW rate needed to support ILAW glass production of 80 t/day.

The normal influent temperature of the LAW concentrate is 122 °F. TCP-VSL-00001 is equipped with a high-pressure steam injection system (109 psig and 343 °F from the Basis of Design, 24590-WTP-DB-ENG-01-001) to maintain fluid temperature above the freezing point (77 to 100 °F), depending on envelope being processed. This is approximately the point at which crystallization or precipitation of solids occurs. Should solids form, or be transferred to TCP-VSL-00001, PJMs are available to aid in the suspension of particles and homogenize the LAW concentrate for transfer. Wash rings and a high-pressure steam ejector system are installed for cleaning or decontamination of the vessel and internals. TCP-VSL-00001 vents to a scrubber, PVP-SCB-00002, via a collection header.

The PJMs in TCP-VSL-00001 will be operated to suspend solids and maintain a homogeneous mixture. They can be active as long as the liquid level in the vessel is above the PJM low-level setpoint.

Non-Routine Operations that Could Affect Corrosion/Erosion

TCP-VSL-00001 may also receive treated LAW from the IX treated LAW collection vessels (CXP-VSL-00026-A/B/C), bypassing the treated LAW evaporator system. Under infrequent operating conditions, treated solids from the ultrafiltration feed vessels (UFP-VSL-00002A/B) may also be blended with the treated LAW concentrate in TCP-VSL-00001 if the solids meet the specifications for LAW vitrification.

This is not expected to occur very often and requires a jumper, not normally installed, on the provided transfer line.

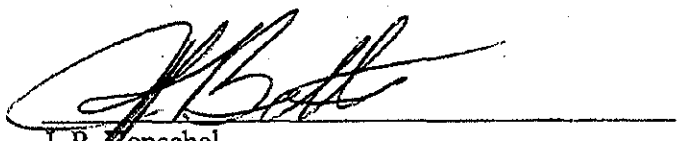
Attachment 2
06-ED-020

Bechtel National, Inc. Certification Statement

Bechtel National, Inc. Certification

The following certification statement is provided consistent with Contract No. DE-AC27-01RV14136, Section H.26, Environmental Permits, paragraph (g) for the submittal of the Hanford Facility Resource Conservation and Recovery Act Permit Modification Notification Form 24590-PTF-PCN-ENV-05-024.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



J. P. Menschel
Project Director

2/17/06
Date

Quarter Ending 03/31/2006 24590-LAB-PCN-ENV-05-002

Hanford Facility RCRA Permit Modification Notification Form

Part III, Chapter 10 and Attachment 51

Waste Treatment and Immobilization Plant

Index

Submitted by Co-Operator:

D. A. Klein 2/3/06
Date

Reviewed by ORP Program Office:

R. J. Schepens 2/23/06
Date

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Waste Treatment and Immobilization Plant	**Part III, Chapter 10 and Attachment 51**

Description of Modification:

The purpose of this modification is to update Analytical Laboratory Material Selection Data Sheet (MSDS) for the Hotcell Drain Collection Vessel (RLD-VSL-00165) currently in Appendix 11.9 of the Dangerous Waste Permit (DWP).

The following are the major changes to the above mentioned MSDS:

- Alloy C-276 (N10276) has been identified as an acceptable material
- 6% Mo alloy N08925 has been identified as a recommended material
- The corrosion and erosion components of the Recommended Corrosion Allowance have been identified
- Information on the inadvertent addition of nitric acid has been added
- One reference has been added
- One bibliography entry has been added
- Administrative information on the last page has been added

These changes do not substantially alter the permit conditions or reduce the capacity of the facility to protect human health or the environment.

Please replace the following MSDS in the DWP:

Appendix 11.9			
Replace:	24590-LAB-N1D-RLD-P0003, Rev. 0	With:	24590-LAB-N1D-RLD-P0003, Rev. 1

WAC 173-303-830 Modification Class: [1] [2]	Class 1	Class [1] 1	Class 2	Class 3
Please mark the Modification Class:		X		

Enter Relevant WAC 173-303-830, Appendix I Modification citation number: N/A BBK

Enter wording of WAC 173-303-830, Appendix I Modification citation: N/A

In accordance with WAC 173-303-830(4)(d)(i), this modification notification is requested to be reviewed and approved as a Class 1 modification. WAC 173-303-830(4)(d)(ii)(A) states, "Class 1 modifications apply to minor changes that keep the permit current with routine changes to facility or its operation. These changes do not substantially alter the permit conditions or reduce the capacity of the facility to protect human health or the environment. In the case of Class 1 modifications, the director may require prior approval."

Modification Approved: [X] Yes [ ] No (state reason for denial)

Reason for denial:

Reviewed by Ecology:

S. Dahl 3/15/06 Date

[1] Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1] 1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

Document title: **Component Information System (CIS) Project Plan**

Contract number: DE-AC27-01RV14136

Department: Engineering

ISSUED BY
RPP-WTP PDC

Author(s): Brian Busch

Principal author signature:

Document number: 24590-WTP-PL-ENG-05-0007, Rev 0

Reviewed by: Jeff Monahan

Reviewer signature:

Date of issue: 23 January 2006

Issue status: Approved

Approved by: Leon Lamm

Approver's position: Manager of Engineering

Approver signature:

River Protection Project
Waste Treatment Plant
2435 Stevens Center Place
Richland, WA 99354
United States of America
Tel: 509 371 2000

History Sheet

Rev	Date	Reason for revision	Revised by
0	Jan. 17, 2006	Initial Issue	B. Busch

Contents

Appendices

1 Purpose

The purpose of this plan is to establish the operating expectations for the Component Information System (CIS) Engineering Database. This plan will define the component types created and associated data managed by CIS, users of CIS information and deliverables produced by CIS

2 Scope

The scope of CIS is to uniquely assign component numbers and manage data for equipment, pipelines, valves and piping inline components as required by 24590-WTP-PL-MG-01-002, WTP Configuration Management Plan, 24590-WTP-3DP-G04B-00028, Identification of Items/Services Subject to Quality Assurance Programs, and 24590-WTP-3DP-G04B-00047, .

Examples of Component data that are not managed by CIS are Spools, Hangers, HVAC Duct, Electrical Raceway/Wiring, Instrumentation or non-process equipment items such as office computers, equipment/Plant software, plant vehicles, personnel safety equipment or furniture.

CIS is designed to accommodate EPC lifecycle through startup and commissioning.

CIS is not Quality Affecting Software per 24590-WTPGPP-IT-008.

3 Terms and Definitions

Bechtel Procurement System (BPS) - A Bechtel proprietary tool that manages the creation and status of MRs and POs.

Bulk Valve - A valve in CIS that is a standard valve that has a stock code associated with it in support of bulk orders.

Component Information System (CIS) - The engineering Component Information System (CIS) is a WTP database management tool for numbering equipment, pipelines, valves and inline components to accommodate engineering design, support procurement, facilitate construction planning, and integrate with the Computer Maintenance Management System (CMMS). Integration has been initiated to ensure data across EPC systems is synchronized. CIS is designed to accommodate EPC lifecycle through startup and commissioning.

CIS Controlled State - Storage within the database of component information that has been submitted after being checked, reviewed and approved.

CIS Working State - Storage within the database of component information unchecked and available for creation, modification or deletion.

Computerized Maintenance Management System (CMMS) - Commissioning database to assist with operations and maintenance to facilities equipment.

INtools - A commercial-of-the-shelf Instrumentation database to create instrumentation numbers and manage related design information.

Master Equipment List (MEL) - A list of permanent plant tagged equipment and components (both safety-related and non safety-related) requiring inspection, maintenance and operation during construction, startup, commissioning, and eventually turnover activities.

Originating Document - An issued design document that initiates the creation, modification or deletion of a component in the design.

Quality Affecting Software - For the definition, reference 24590-WTP-GPP-IT-008, section 3.3.

Source Document - An issued design document (e.g., data sheets, commodity list) that contributes detailed design data to a component to support EPC work processes.

TEAMworks - A Bechtel proprietary tool that receives engineering information for construction planning activities.

4 Responsibilities

4.1 CIS Organizational Manager (OM)

The Manager of Engineering is the CIS OM. The CIS OM is responsible for assigning the CIS Data Owner and providing senior level direction for CIS to satisfy the WTP project requirements, as applicable.

4.2 CIS Data Owner

The CIS OM has designated the WTP Production Engineering Manager as the CIS Data Owner. The CIS Data Owner will establish content requirements and schedule to produce equipment, pipeline, and valve reports that ensures data quality and meets project requirements. The CIS Data Owner approves all non-standard report and data export formats or data exchanges. The CIS Data Owner will direct the Engineering Automation Manager to produce metrics and other reports as required, to continuously ensure CIS work processes and data quality satisfies project needs.

4.3 Engineering Automation Manager

The Engineering Automation (EA) Manager is responsible for directing and scheduling CIS and BSAP development to augment the Project Execution Plan, Quality Assurance Manual, WTP IS&T Automation Plan and Configuration Management Plan.

4.4 CIS Responsible Manager (RM)

The CIS RM is responsible for:

- approving changes to CIS prior to design, testing or implementation
- reviewing and providing CIS technical input in support of references in section 11
- ensuring CIS is configured consistent with the references in section 10
- collaborating with Engineering Users to ensure work processes are supported correctly and software changes are effectively communicated
- being engaged in the EPC and CMMS data integration implementation
- providing direction and guidance to the CIS Project Program Sponsor

4.5 CIS Project Program Sponsor (PPS)

The CIS PPS is responsible for:

- monitoring the quality of the data in CIS
- monitoring the reliability/availability of CIS
- receiving and reviewing requests for software changes or additions to CIS
- supporting end users with support, training and resolution of software and data issues
- developing CIS requirements to align with WTP requirements

4.6 CIS Data Origination, Review, Checking and Approval

These activities are performed as directed in applicable EPDI's.

5 Requirements

Interfacing procedure requirements are referenced in section 10.0. Minimum essential sensitive fields that are common to all component types stored in CIS are specified in 24590-WTP-3DP-G04B-00028. CIS contains embedded rules to automate component assignment of quality level consistent with 24590-WTP-3DP-G04T-00905. These two procedures establish the criteria for minimum essential fields common to all component types stored and managed in CIS.

5.1 Configuration Management (CM) Requirements

CIS CM required features are:

- Assign unique Component Tag Number (CTN) for equipment, pipelines, valves and inline piping components
- Maintain and report parent-child relationships between components and subcomponents
- Establish relationships between the CTN and design documents
- Provide a means to maintain component information consistent with design (e.g. Electronic Change Notice)
- Protect data against loss - have provisions for backup and recovery
- Protect data against uncontrolled change

6 Input Requirements - Checking Data

The CIS input process has been designed to support the WTP Configuration Management Plan as noted in section 5.1. The component Plant Area, System, Component type/Sequence and Description coupled with the association with the originating document and its revision.

There are two input methods to create a new component tag number into CIS. The first is driven by the Bentley Schematic program where a CTN is acquired from CIS when a component is placed on a drawing. The second method is when an engineer opens the CIS user interface to acquire the next available CTN for equipment.

CIS provides two methods to revise a component. The first is to update the originating document (P&ID only) using the Bentley Schematic and process the originating document. The second method replicates the DCN work process (known as the Electronic Change Notice, ECN).

For CTNs removed (deleted) that are not longer required, the CTN will not be used again in CIS. If a CTN's detail design data is modified (but not removed), the CTN will continue to be used.

6.1 Supplier Provided Components

When a Supplier is responsible for developing a design, CTNs for supplier provided components are assigned per 24590-WTP-3DP-G04B-00058, section 3.4.5 and 3.8.

When a design that involves subcomponents are provided by others, the Subcontract Technical Representative (STR) or the Responsible Engineering (RE) must acquire component numbers through the CIS user interface, and associate the subcomponent with a parent component number.

For more detailed guidance, reference 24590-WTP-GPG-M-046, CIS Users Guide.

6.2 Checking and Approval Process

The checking and approval process developed in CIS replicates the originating document review and approval process as noted in 24590-WTP-3DP-G04B-00046. CIS is comprised of a Working State that allows engineers to refine design basis and Control State where approved component information is placed when the source document is issued. Requirements for this process are documented in 24590-WTP-3DP-G04B-00046 and the division of responsibilities in sections 4.5 - 4.8. For originating documents that support WTP commodity designators, reference appendix 1.

7 Output Requirements - Reports and Data Integration

7.1 Reports Generated by CIS

CIS provides the user with standard reports that are defined by variable user-defined criteria. Facility, System, Elevation, Room Number and/or Document are the basic choices to be used for standard reports. As CIS is the originating database for Equipment, Pipelines, Valves and In-Line components, all standard reports shall be capable of generating data sets for these component types and produced when an originating document is issued.

AdHoc Reports from CIS may select data from Working or Controlled states as specified by the user. For additional insight to correctly build adhoc report queries, contact the CIS RM.

Reports designed to support accurate information review and release by each engineering discipline are developed in formats that meet the specific needs of the commodity being reported. These will include, but not be limited to Equipment reports for C&I, Electrical, HVAC, Mechanical Handling and Mechanical Systems.

For additional guidance, see appendix 2 for the types of CIS data reports that support Engineering.

7.1.1 Sampling for Data Quality

Independent sampling of CIS data for data quality should be performed as directed by the CIS Data Owner. The following reports have been developed and will continue to be produced to ensure data completeness, synchronization and data quality is fulfilled.

- **Electrical/CIS Reconciliation Report** - The SETROUTE PPS will produce this report, review and issue results to EDMS. CIS RM will ensure this report is issued.
- **CIS Rollup Metric Reports** - Identify missing 00028 fields, duplicated CTNs, Multiple QLs and other data metric reports are produced as designated by the CIS Data owner for reconciliation.
- **Quality Level Implementation Task Team Report** - Reports if QLs are not synchronized across EPC database systems for CTNs to be delivered..

Reports are used by management to monitor data deficiencies.

7.1.2 Management Approach to Reconcile Data Discrepancies

Minimum data sets that are expected for each component within the Controlled State of CIS include SSC Characteristics, Seismic, Safety Class and Quality Level, CTN, Document Number and Description. Component descriptions are automatically assigned based on descriptions noted within 24590-WTP-RPT-ENG-02-010. A document will always be associated to a document in the Controlled state. Data correctness tolerance requirements for SSC Characteristics, Seismic, Safety Class and Quality Level in CIS Control State are managed through surveillance reporting guidelines. The thresholds provided below allow for engineering progression and design evolution for flow down of upper tier documents to lower tier design. The approach to resolve data correctness, accuracy and/or incompleteness will be administered as follows:

Weekly Reports - issued report of data discrepancies per 24590-WTP-3DP-G04B-00028 submitted to the Production Engineering Manager or designee.

Data discrepancy reports are provided to the Discipline Production Engineering Managers (DPEM) periodically. Data is tracked and reports issued to DPEMs when one of the following conditions occur:

1% or more of the total number of components in CIS Control State do not meet these minimum data requirements will be cause for corrective action .

or

6 months - component data that has persisted with problems for 6 months will be cause for corrective actions be assigned to revolve the CIS data in question.

7.2 CIS Data Integration

Information is received by CIS or posted from CIS Control State or Working State (if the component does not reside in Control) and subscribed by Procurement (BPS), Construction (TEAMworks), Electronic Document Management System (EDMS) and CMMS. For Procurement and Construction, CIS information shall be used for planning purposes only. INtools is the only other database system that sends information to CIS.

7.2.1 INTools Data to CIS

INtools data is delivered to CIS using Oracle triggers to insert the instrument tag number and CID (unique identifier) in the data tables. This is to enable accurate tagging of the instruments to the face of the intelligent P&IDs and controls the numbering and data insertion for instruments within INtools. When the C&I engineer assigns the safety related data, it is also delivered to the CIS tables. The instrument graphic is marked with the CID number by the instrument engineer during the redlining process. This CIS number is then keyed into the tagging dialogue box by the designer and the system extracts the instrument tag number onto the face of the P&ID. The final drawing is checked by the responsible C&I engineer before the P&ID is issued to confirm the proper tag number has been placed on the P&ID.

7.2.2 CIS to Model Control System (MCS)

A nightly extraction of Equipment, Valve, In-Line and Pipeline data is taken from the Controlled state of CIS and populated to temporary Equipment and Pipe data tables for use by the Plant Design team. This information is then populated to the EQUIP_BUD or PIPE_BUD tables as the items are placed in the model. This assures accurate transfer of CTNs across the systems and the assigned data from CIS. The Plant Design teams conduct their modeling activities using issued P&IDs as their guide to be able to determine the break flag points for any differences in Seismic or Quality designations.

7.2.3 CIS Equipment Data to BPS

The specific data transferred from CIS Equipment data to **BPS** is listed below. Note that the component tag number and document references are included, but quality level is not requested by Procurement.

Engineering Interface Sending Name	DataBroker Name	Data Example
1	Quantity Each	1
CIS: Cmpnt_Group MCS: Comp_Grp	Commodity Code	MAHC
ME	Material Code	ME
CIS:Datasheet_Num	Data Sheet	24590-LAW-MAD-C2V-00001
CIS:Desc1,2,3 MCS:Eqp_Desc Desc2,3	Description	LSM POWER SUPPLY ROOM FCU
Jobsite	Destination	JOBSITE
CIS:System MCS: Loc_Code	Engineering System	C2V
24590	Job Number	24590
CIS:Drawing_Number	Primary Document	24590-LAW-M8-C2V-00005
CIS:Revision	Primary Document Rev	4
M	Discipline	M
AREA	Package Type	AREA
CIS:Tag_Format MCS:CTN	Component Tag	C2V-FCU-00001
CIS:Facility_Name MCS:Sub_Div	Unit Identifier	LAW
EA	Unit of Measure	EA

This information is used to **plan** material requisitions (MR) and purchase orders (PO), primarily by relating components to these documents. Procedure 24590-WTP-3DP-G06B-00001 (Material Requisitions) requires use of issued documents and checking of information used in the MR.

7.2.4 CIS Equipment Data to TEAMworks

An example of the equipment data transferred from CIS to **TeamWorks** is illustrated by the following list.

Engineering Interface Sending Name CIS = Component Information System	DataBroker Common Name	DataExample
CIS:Hp_Kw	Heater Kilowatt Rating	3.00
CIS: Weight	Weight	650.00
1	Quantity Each	1
CIS:Cmpnt_Group MCS:Comp_Grp	Commodity Group Code	MA
CIS: Cmpnt_Group MCS: Comp_Grp	Commodity Code	MAHC
CIS: Cmpnt_Ident MCS: Comp_Id	Component Code	FCU
CIS:Dwpa_Regulated	Dangerous Waste Flag Y/N	N
CIS:Datasheet_Num	Data Sheet	24590-LAW-MAD-C2V-00001
CIS:Desc1,2,3 MCS:Eqp_Desc Desc2,3	Description	LSM POWER SUPPLY ROOM FCU
CIS:Tag_Format	Parent Relation Description	NULL
CIS:Dcn_Number	Secondary Document	NULL
CIS:Drive	Driver Horse Power	Standard
CIS:System MCS: Loc_Code	Engineering System	C2V
CIS:Pi_Size	Generic Size	
CIS:Drawing_Number	Primary Document	24590-LAW-M8-C2V-00005
CIS:Revision	Primary Document Rev	4
CIS:Quality_Level	Quality Level	CM
CIS:Remarks	Engineering Remark	NULL
CIS:Room_Number	Room Number	L-B002
CIS:Seismic_Category	Seismic Category	SC-IV
CIS:Sequence_Number MCS:CTN	Sequence Number	00001
CIS:C (Controlled) W (Working)	Data State	C
CIS:Suffix MCS:CTN	Suffix	NULL
CIS:Tag_Format MCS:CTN	Component Tag	C2V-FCU-00001
CIS:Facility_Name MCS:Sub_Div	Unit Identifier	LAW
CIS:El_Rating	Non Motor KVA Rating	NULL
CIS:Weight_UOM	Weight (UOM)	LB

Note: This information is used to identify, track and report Construction activities. The information is not used to perform the activities of construction or inspection. 24590-WTP-GPP-CON-7107 states *"No design documents shall be used for the construction of permanent plant facilities and equipment without being issued by PADC"*. It is also noted *"All technical documents (e.g., specifications, drawings) used for construction or inspection activities shall be "Issued For Construction" or equivalent wording at the current or previously approved revision..."*

7.2.5 CIS Pipeline Data to TEAMworks

An example of the Pipeline data transferred from CIS to **TeamWorks** is illustrated by the following list.

Engineering Interface Sending Name CIS = Component Information System	DataBroker Common Name	Example Data
CIS:Design_Pressure_UOM	Design Pressure	175.00
CIS:Design_Temperature	Design Temperature	145.00
CIS: Pipe_Size	Nominal Diameter	24.00
CIS:Normal_Pressure	Operating Pressure	50.00
CIS:Normal_Temperature	Operating Temperature	41.00
CIS:PP_Thickness	P P Thickness	0.00
CIS:Test_Pressure	Test Pressure	262.50
CIS:Test_Temperature	Test Temperature	60.00
CIS:Insul_Thick	Insulation Thickness	3.00
CIS:Cmpt_Group	Commodity Group Code	0.00
CIS: Cmpt_Identifier	Fluid Code	WL
CIS: Shop_Paint_Code	Paint Code	G
CIS: Dwpa_Regulated	Dangerous Waste Flag Y/N	N
CIS:Dcn_Number	Secondary Document	
CIS: Name	Engineering System	CHW
CIS: Insul_Code	Heat Tracing Media	N
CIS:HydroTest_Notes	Hydro Test Notes	
CIS:Insul_Notes	Insulation Notes	Personnel Protection not Required
CIS:Branch_Number	Line Section and Branch	00
CIS:Section_No	Line Section No	01
CIS:Mtl_Code	Material Specification (Line)	C12A
CIS:Drawing_Number	P&ID Drawing	24590-BOF-M6-CHW-00002
CIS: Revision	P&ID Drawing Revision	4
CIS:Schedule	Pipe Schedule	STD
CIS:Quality_Level	Quality Level	CM
CIS:Remarks	Engineering Remark	
CIS: Insul_Code	Insulation Purpose	CC
CIS:Seismic_Category	Seismic Category	SC-IV
CIS:Sequence_Number	Sequence Number	00012
CIS:C (Controlled) W (Working)	Data State	C
CIS:Tag_Format	Component Tag	BOF-CHW-WL-00012-C12A-24-01
CIS:Facility_Name,System_Name,Cmpt_Id	Component Tag (Line)	BOF-CHW-WL-00012-C12A
CIS:Test_Type	Test Type for Pipeline	H
CIS:Facility	Unit Identifier	BOF

Reference the Note in section 7.2.2 regarding how the data is used by Construction.

7.2.6 CIS Valve Data to TEAMworks

An example of the valve data transferred from CIS to **TeamWorks** is illustrated by the following list.

Engineering Interface Sending Name CIS = Component Information System	Name Data Exchange Column	Example Data
CIS:Design_Pressure	Design Pressure	150.00
CIS:Design_Temperature	Design Temperature	115.00
CIS:Valve_Size	Nominal Diameter	1.50
MCS:Insulat	Insulation Thickness	2.00
1	Quantity Each	1
CIS:Sequence_Number;MCS:Vlv_No	Commodity Group Code	PV
CIS:Cmpt_Identifier,MCS:FldCode	Fluid Code	WL
CIS:Dcn_Number	Secondary Document	
CIS:End_Prep:MCS:EPrep1,EPrep2,EPrep3	End Preparation	SW
CIS:System;MCS:Loc_Code	Engineering System	CHW
Field (F),Shop (S)	Fabrication Category	S
CIS:Insul_Code;MCS:InsulTyp	Heat Tracing Media	NI
CIS:Insulated;MCS:InsulTyp	Insulated (Y/N)	N
CIS:Mtl_Code	Material Specification (Line)	TV
CIS:Drawing_Number	Primary Document	24590-LAW-M6-CHW-00003
CIS:Revision	Primary Document Rev	2
CIS:Quality_Level	Quality Level	CM
CIS:Valve_Type;MCS:Vlv_Type	Valve Type	BALL VALVE
CIS:Safety_Classification	Safety Class	NON-ITS
CIS:Seismic_Category	Seismic Category	SC-IV
CIS:Sequence_Number;MCS:Vlv_No	Sequence Number	05452
CIS:C (Controlled) W (Working)	Data State	W
CIS:Facility,System/Area,Component_Iden	Component Tag	LAW-CHW-V-05452
CIS:Facility,System/Area,Component_Iden	Component Tag (Line)	LAW-CHW-WL-04090-C12A-011/2-01
CIS:Facility;MCS:Sub_Div	Unit Identifier	LAW

Reference the Note in section 7.2.2 regarding how the data is used by Construction.

7.2.7 CIS Specialty Items (Inline Components) to BPS

Engineering Interface Sending Name CIS = Component Information System	Common DataBroker Name Data Exchange Column	Example Data
CIS:Temp_Des	Design Temperature	115.00
CIS:System;MCS:Loc_Code	Engineering System	CHW
CIS:Mtl_Code	Material Specification (Line)	TV
CIS:Drawing_Number	Primary Document	24590-LAW-M6-CHW-00003
CIS:Revision	Revision Character	2
CIS:Descr_123	Description	
CIS:Facility,System/Area,Component_Iden	Component Tag	LAW-CHW-FLTR-05452
CIS:Facility,System/Area,Component_Iden	Component Tag (Line)	LAW-CHW-WL-04090-C12A-011/2-01
CIS:Facility	Unit Identifier	LAW

7.2.8 CIS Specialty Items (Inline Components) to TEAMworks

Engineering Interface Sending Name CIS = Component Information System	Common DataBroker Name Data Exchange Column	Example Data
CIS:Diameter	Nominal Diameter	150.00
CIS:Temp_Des	Design Temperature	115.00
CIS:Rating	Flange Rating	1.50
MCS:Insulat	Insulation Thickness	2.00
1	Quantity Each	1
CIS:Sequence_Number;MCS:Viv_No	Sequence Code	PV
CIS:Dcn_Number	Secondary Document	
CIS: CTL / WKG	Data State	C
CIS:System;MCS:Loc_Code	Engineering System	CHW
CIS:Mtl_Code	Material Specification (Line)	TV
CIS:Drawing_Number	Primary Document	24590-LAW-M6-CHW-00003
CIS:Revision	Revision Character	2
CIS:DataSheet	Data Sheet	
CIS:Descr_123	Description	
CIS:Quality_Level	Quality Level	CM
CIS:DWPA	Dangerous Waste Flag	
CIS:Comp_Type	Component Type	FILTER
CIS:Safety_Classification	Safety Class	NON-ITS
CIS:Seismic_Category	Seismic Category	SC-IV
CIS:Sequence_Number;MCS:Viv_No	Sequence Number	05452
CIS:C (Controlled) W (Working)	Data State	W
CIS:Facility,System/Area,Component_Iden	Component Tag	LAW-CHW-FLTR-05452
CIS:Comp_Group	Component Group Code	PY
CIS:Facility,System/Area,Component_Iden	Component Tag (Line)	LAW-CHW-WL-04090-C12A-011/2-01
CIS:Facility	Unit Identifier	LAW

7.2.9 CIS Data to EDMS (InfoWorks)

The specific data transferred from CIS to EDMS includes the following:

- Component ID
- Component Number
- Component Tag
- Component Status
- Component Type
- Facility
- System
- Descriptions (3 fields)

CIS Working State data is used in InfoWorks to establish relationship between supplier provided components and documents.

7.2.10 CIS Data to CMMS

CIS data will transfer the below noted fields that requires maintenance and storage prior to installation when it is received at the Marshalling Yard. Other CMMS required CIS component data will transfer to CMMS when the component is installed. The Control State data transferred from CIS to CMMS is:

- Equipment ID (visible tag)
- CTN
- Type
- Parent ID
- Quality Level
- DWP
- Seismic
- System
- Description
- Facility
- P&ID
- P&ID Rev
- Specification ID (Data Sheet)

Data for specific equipment item is electronically transferred to CMMS after the equipment is received at the marshalling yard. Initial transfer of data is evaluated. For the CIS data being exchanged to CMMS, reference 24590-WTP-SWLCD-IT-05-0025, section 2.3 and appendix A. Updated data is checked based on an exceptions report generated with the transfer per 24590-WTP-SWLCD-IT-05-0025.

For an upper level data CIS integration diagram, see appendix 3.

8 CIS Software Lifecycle Requirements

8.1 Major Software Upgrades (X.X)

For major software version releases of CIS (X.X), the format for Configuration Management lifecycle documentation shall be submitted for review, approval and release through PADC according to 24590-WTP-GPP-IT-008. Refer to appendix 4 for additional information.

8.2 Minor Software Upgrades (x.x.x)

For minor CIS software upgrades, refer to appendix 5.

9 Records

- Equipment Report
- Pipeline Report
- Valve Report
- Inline Component Report
- CIS Users Guide
- CIS Software Lifecycle Document

10 References

10.1 Interfacing References

24590-WTP-PL-MG-01-002, WTP Configuration Plan

24590-WTP-3DP-G04B-00028, Identification of Items/Services Subject to Quality Assurance Programs

24590-WTP-3DP-G03B-00044, Standard Component Numbering

24590-WTP-3DP-G04B-00046, Engineering Drawings

24590-WTP-3DP-G04B-00047, Engineering Deliverables to Construction and Startup/Commissioning

24590-WTP-3DP-G04B-00058, Supplier Engineering and Quality Verification Documents

24590-WTP-3DP-G04B-00902, System and Area Locators

24590-WTP-3DP-G04T-00905, Determination of Quality Levels

24590-WTP-RPT-IT-04-0053, CMMS Functional Requirements Document

24590-WTP-RPT-ENG.02-009, System and Area Locators List and System Division of Responsibility

24590-WTP-RPT-ENG-02-010, Component Identifier List

24590-WTP-GPG-M-030, P&ID Development

24590-WTP-GPG-M-046, Design Guide for Component Information System

10.2 Developmental References

24590-WTP-GPP-IT-008, Software Lifecycle Management

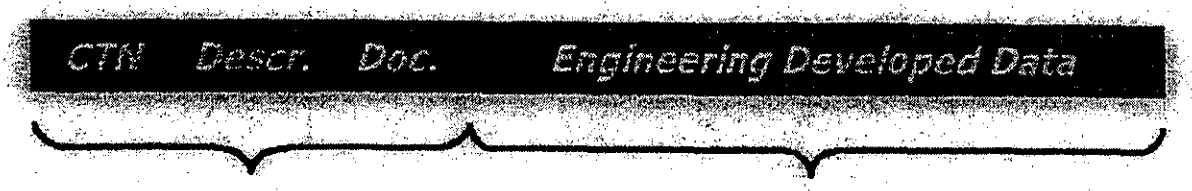
24590-WTP-GPP-IT-013, Protection and Management of Project Data

24590-WTP-SWLCD-IT-05-0025 - DTS Equipment for CMMS Exchange Configuration Lifecycle Documentation

24590-WTP-SWLCD-IT-05-0028 - CIS Software Lifecycle Document

Appendix 1: Component Originating and Source Documents

Provided below is a diagram that provides the requirements engineering is committed to fulfill. Clearly noted are the originating documents and the source documents that typically provides detailed information.



24590-WTP-3DP-G04B-00028	24590-WTP-3DP-G04B-00028 24590-WTP-3DP-G04B-00047
Originating Documents	Source Documents
P&ID	Equipment List
V&ID	Valve List
MHD	Line List
Single Line Diagram	Inline (Specialty) Item List
Block Diagram	Data Sheet
Data Sheet [1]	
MRP/PO [2]	

Notes:

1. When there are subcomponents involved (eg. electrical motor associated to a pump).
2. When a supplier identifies components.

Appendix 2: CIS Report Basis

The commodity tables provided below identify the procedure requiring the data to be populated in CIS and the field from CIS extracted to produce reports.

EQUIPMENT REPORT		REQUIREMENTS						
Project Common Name	Data Example	PL-MG-01-002 CM Plan	00028	00047	00044	Standard Report	Source Doc Rpt	Comments
Cap/Duty						X	X	
Commodity Code	MAHC				X		X	Commodity Code
Commodity Group Code	MA				X		X	Component Group
Component Code	FCU				X		X	Component Identifier
Component Tag Number	24590-LAW-MF-C2V-FCU-00001	X	X	X	X	X	X	Full Component Tag Number
Component Visible Tag	C2V-FCU-00001				X		X	Visible tag for component
Component Used	Yes					X	X	
Dangerous Waste Flag Y/N	N			X			X	
Data Sheet	24590-LAW-MAD-C2V-00001	A		X		X	X	
Data State	C						X	Report criteria defines as C or W
Description	LSM POWER SUPPLY ROOM FCU		X	X		X	X	
DPD						X	X	
Driver Horse Power	Standard			P			X	
ECN						X	X	
Engineering Remark	NULL					X	X	Optional for use.
Engineering System	C2V				X		X	
Facility	LAW				X	X	X	Facility identifier.
Generic Size					X	X	X	Dimensions or capacity.
Heater Kilowatt Rating	3.00			X			X	Equipment Rating
MR No		A		X		X	X	When applicable
Non Motor KVA Rating	NULL			X			X	When electrical motor present.
Parent Relation Description	C2V-FCU-00001			X			X	
Primary Document	24590-LAW-M8-C2V-00005	X	X	X		X	X	Section 5.3 in CM Plan
Primary Document Rev	4			P			X	
Quality Level	CM		X	X			X	
Reserve	No					X	X	
Room Number	L-B002			X			X	
Safety Class	Non-ITS		X			X	X	
Secondary Document	NULL	A					X	Spec Number
Seismic Category	SC-IV		X	X		X	X	
Sequence Number	00001				X		X	
SSC Characteristic			X				X	
Suffix	NULL				X	X	X	Assigned during tag creation.
Vendor Supplied	No						X	
Weight	650.00			P			X	

Legend

X - Required by procedure and/or is reported
P - Addition information requested for planning purposes
A - Minimum of one of the above document types requested to be populated if originating document is not present. If Data Sheet and MR number are not available, secondary document should be populated with a specification number.

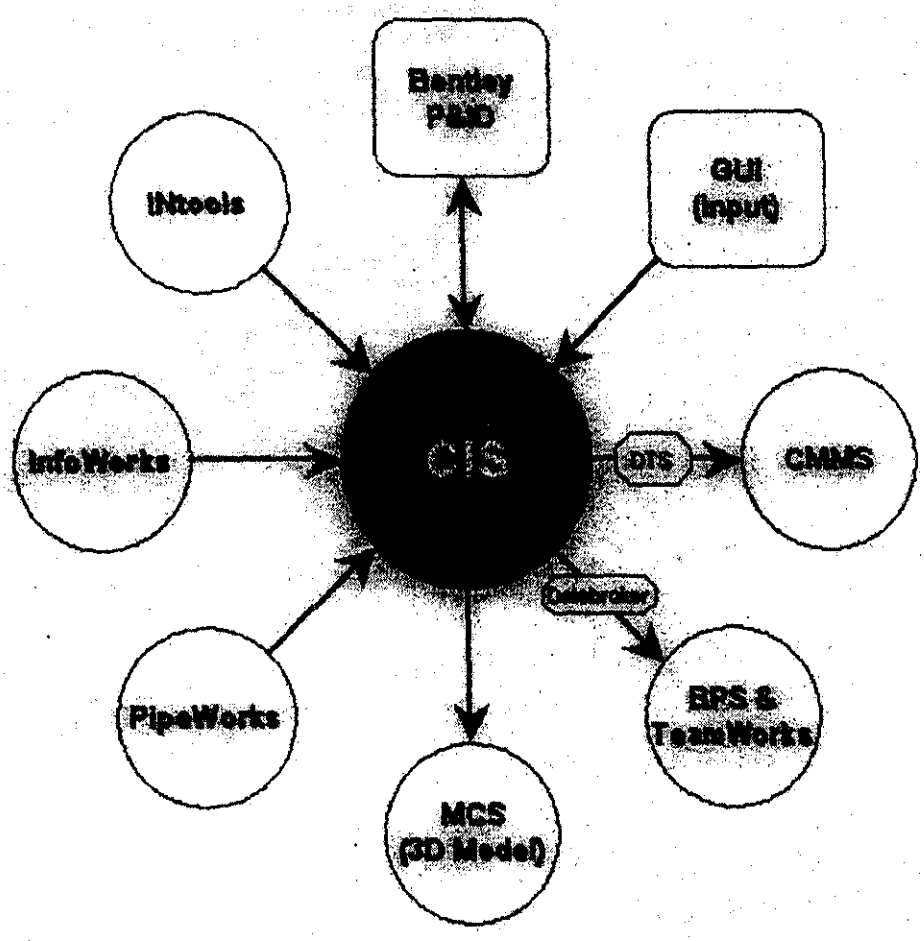
PIPELINES		REQUIREMENTS						
Project Common Name	Example Data	PL-MG-01-002 CM Plan	00028	00047	00044	Standard Report	Source Doc Rpt	Comments
Commodity Group Code	0.00				X		X	
Component Tag Number	24590-BOF-CHW-WL-00012-C12A-24-01	X	X	X	X	X	X	
Component Tag Visible	BOF-CHW-WL-00012-C12A-24-01				X		X	Visible Tag
Dangerous Waste Flag Y/N	N			X			X	
Data State	C						X	Report criteria defines as C or W
Design Pressure	175.00			P		X	X	
Design Temperature	145.00			P		X	X	
ECN								
Engineering Remark						X	X	Optional for use.
Engineering System	CHW				X	X	X	
Facility Identifier	BOF				X		X	
Fluid Code	WL				X		X	
Heat Tracing Media	N			X			X	
Hydro Test Notes				X			X	
Hydro Test Override						X	X	
Insulation Notes	Personnel Protection not Required			P		X	X	
Insulation Purpose	CC			P		X	X	
Insulation Thickness	3.00			X		X	X	
Line Section and Branch	00				X		X	
Line Section No	01				X		X	
Material Specification (Line)	C12A			X			X	
Maximum Pressure						X		
Maximum Temperature						X		
Nominal Diameter	24.00			X	X		X	
Operating Pressure	50.00			X			X	
Operating Temperature	41.00			X			X	
P P Thickness	0.00			P			X	Personnel Protection insulation
P&ID Drawing	24590-BOF-M6-CHW-00002	X	X				X	
P&ID Drawing Revision	4						X	
Paint Code	G					X	X	
Pipe Schedule	STD			X		X	X	
Quality Level	CM		X	X		X	X	
Safety Class			X			X	X	
Secondary Document						X	X	DCN Number
Seismic Category	SC-IV		X	X		X	X	
Sequence Number	00012						X	
SSC Characteristic			X			X	X	
Test Pressure (Hydro)	262.50			X		X	X	
Test Type for Pipeline	H					X	X	

VALVES		REQUIREMENTS						
Project Common Name	Example Data	-MG-01-002 CM Plan	028	047	044	andard Report	urce Doc Rpt	Comments
Commodity Group Code	PV						X	
Component Tag Number	24590-LAW-PV-CHW-V-05452	X	X	X	X		X	
Component Tag (Visible)	LAW-CHW-V-05452				X		X	Visible tag for component.
Component Tag (Line)	LAW-CHW-WL-04090-C12A-011/2-01	X		X		X	X	
Data State	W						X	
Design Pressure	150.00						X	
Design Temperature	115.00						X	
ECN Number						X	X	
End Preparation	SW						X	
Engineering Remarks						X	X	
Engineering System	CHW				X		X	
Facility Identifier	LAW						X	
Fluid Code	WL						X	
Heat Tracing Media	NI						X	
Insulated (Y/N)	N						X	
Insulation Thickness	2.00						X	
Material Specification (Line)	TV			X			X	
Nominal Diameter	1.50			X		X	X	
Primary Document	24590-LAW-M6-CHW-00003	X	X			X	X	
Primary Document Rev	2		X				X	
Quality Level	CM		X				X	
Safety Class	NON-ITS		X				X	
Secondary Document							X	DCN Number
Seismic Category	SC-IV		X				X	
Sequence Number	05452		X				X	
SSC Characteristic			X				X	Not exchanged
Valve Actuator				X			X	
Valve Type	BALL VALVE		X	X		X	X	

Specialty Items		REQUIREMENTS						
Project Common Name	Example Data	PL-MG-01-002 CM Plan	00028	00047	00044	Standard Report	Source Doc Rpt	Comments
Accessory Type	FLEXIBLE HOSE					X	X	
Commodity Group Code	PY				X		X	
Component Tag Number	24590-LAW-PY-CHW-HOSE-01558	X	X	X	X	X	X	
Component Tag (Visible)	LAW-CHW-HOSE-01558				X		X	Visible tag for component.
Component Tag (Line)	24590-LAW-PP-CHW-WL-50955-C12A-03-01	X		X		X	X	Attached To tag number.
Dangerous Waste Flag							X	
Data State	C						X	
Description	FLEXIBLE HOSE					X	X	
Design Pressure							X	
Design Temperature	115.00						X	
ECN Number	DSR_3122						X	
End Preparation						X	X	
Engineering Remarks						X	X	
Engineering System	CHW				X		X	
Facility Identifier	LAW				X		X	
Fluid Code	WL						X	
Heat Tracing Media	NI						X	
Insulated (Y/N)	N						X	
Insulation Thickness	2.00						X	
Material Specification (Line)	TV			X			X	
Mechanical Data Sheet	N/A	A				X	X	Data Sheet or Specification
MR Number	24590-CM-MRA-PY05-00001	A					X	Where applicable.
Nominal Diameter	1.50			X		X	X	
Primary Document	24590-LAW-M6-CHW-00007	X	X			X	X	
Quality Level	CM		X				X	
Safety Class	NON-ITS		X				X	
Secondary Document							X	DCN Number
Seismic Category	SC-IV		X				X	
Sequence Number	01558		X				X	
SSC Characteristic	NONE		X				X	
Flange Rating	1.50						X	

Note: Specialty Items (Inline Components) have not been incorporated into **24590-WTP-3DP-G04B-00047** at the issuance of this plan.

Appendix 3: Data Integration Diagrams

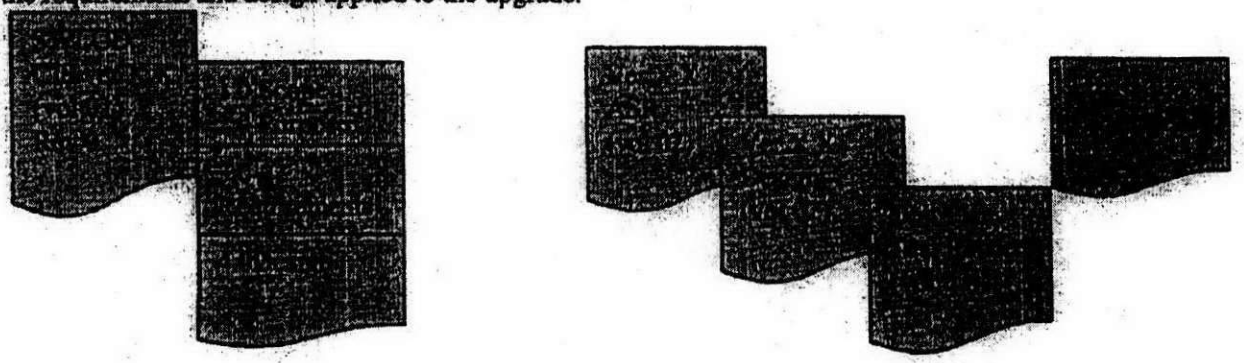


Legend
MCS – Model Control System
DTS – Data Transfer System

- Database
- Application
- Data Transfer

Appendix 4: Major CIS Software Upgrades

A document number will be assigned from WTP PDC with two volumes, one for the SWLCD containing the Scope, Purpose, Requirements, Design, Operations/Maintenance and the second for the Test Plan and Test Report for that version of CIS based on details found in the IS&T 008 procedure Appendix 9 template. These documents will be revised for reissue whenever a two-digit version release occurs (from 2.2 to 2.3, etc). The intention of the SWLCD is to describe the current build of CIS. Minimal detail will be written into Requirements and Design sections, however the vol 02 files will contain full traceability to the requirements and design applied to the upgrade.



History of revisions will be clearly documented to indicate what features were added, modified or deleted within CIS.

Major Version is intended to describe additional function or module incorporation. For instance, adding a new ASP would be considered major; modifying an existing ASP to add another field or flag would not.

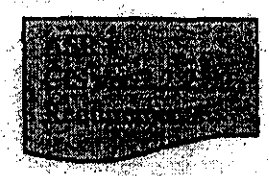
The current functions performed by CIS are

- **Security**
- **Number generation**
- **Discipline specific editing capability**
- **Component-Document Relationships**
- **History Management (Change of State)**
- **Controlled Data**
- **Report Generation**
- **Bulk Editing**
- **ECN Module**

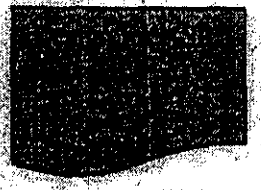
Appendix 5: Minor CIS Software Upgrades

For Minor version releases of CIS (x.x.x), the following format for Configuration Management lifecycle documentation shall be submitted for review, approval and release through PADC. With each Minor version release a new set of documents shall be generated shall be assigned as follows for volumes: ASR vol 01, Design description will be vol 02, and Test Plan/Test Report will be vol 03. Each volume of this file will be reviewed and approved separately before being issued to PADC. When the Test Plan section has been successfully completed, the files will be ready for review by the IT Change Manager and approval for release to production. The files (volumes) will then be issued through PADC. Following this method for maintaining traceability across minor changes (from version 2.2 to 2.2.1, 2.2.1 to 2.2.2, etc) will simplify the process of documentation and still allow for regression review when needed.

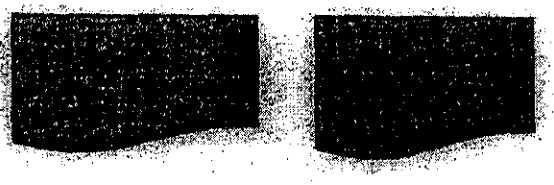
CIS Component Information System
(Non-QAS) Software Lifecycle
Document Requirements Ver 2.2.2
24590-WTP-SWLCD-ENG-05-0034-01
Rev 0



CIS Component Information System
(Non-QAS) Design Document Ver 2.2.2
24590-WTP-SWLCD-ENG-05-0034-02
Rev 0



CIS Component Information System
(Non-QAS) Test Plan and Test Report Ver 2.2.2
24590-WTP-SWLCD-ENG-05-0034-03
Rev 0



The IT Development team will continue to control the CIS code in MS Visual Source Safe and maintain the technical Design Documents within their document management systems.

Minor version changes, by definition, address existing functionality or modules within CIS. For instance, the recent QL designator change impacts the existing Edit pages by forwarding new values for selection to existing pick lists. Therefore, this is considered a minor change. Adding a new field to an existing ASP is also considered a minor change. When an entirely new ASP or module is required, a Major Change is invoked.

PLANT ITEM MATERIAL SELECTION DATA SHEET

R10664181

RLD-VSL-00165 (LAB)
Hotcell Drain Collection Vessel

ISSUED BY
RPP-WTP PDC

- Design Temperature (°F)(max/min): 240/-20
- Design Pressure (psig) (max/min): 15/7
- Location: Lab

Contents of this document are Dangerous Waste Permit affecting

Operating conditions as stated on attached Material Selection Data Sheet

Options Considered:

- Vessel contains contaminated liquid effluent at normal operating temperatures less than 92°F.
- Mixing will be provided by pumps and eductors. Solid accumulation at bottom of vessel is anticipated. Wash rings are available for flushing.
- Dilute acid is available for cleaning vessel internals.

Materials Considered:

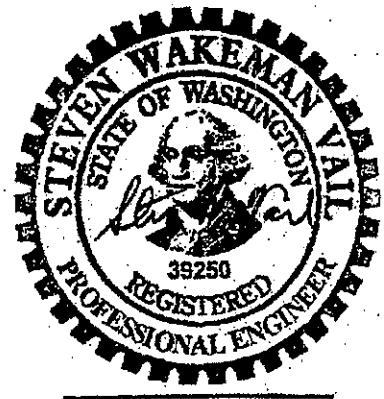
Material (UNS No.)	Relative Cost	Acceptable Material	Unacceptable Material
Carbon Steel	0.23		X
304L (S30403)	1.00		X
316L (S31603)	1.18		X
6% Mo (N08367/ N08925/N08926)	7.64	X	
Alloy C-276 (N10276)	~10	X	
Alloy C-22 (N06022)	11.4	X	
Ti-2 (R50400)	10.1		X

Recommended Material: UNS N08367, N08925 or N08926 (6% Mo alloys) or better

Recommended Corrosion Allowance: 0.040 inch (includes 0.024 inch corrosion allowance and 0.004 inch erosion allowance)

Process & Operations Limitations:

- Develop flushing/rinsing procedure



1/12/06

EXPIRES: 12/07/07

Please note that source, special nuclear and byproduct materials, as defined in the Atomic Energy Act of 1954 (AEA), are regulated at the U.S. Department of Energy (DOE) facilities exclusively by DOE acting pursuant to its AEA authority. DOE asserts, that pursuant to the AEA, it has sole and exclusive responsibility and authority to regulate source, special nuclear, and byproduct materials at DOE-owned nuclear facilities. Information contained herein on radionuclides is provided for process description purposes only.

This bound document contains a total of 5 sheets.

REV	DATE	REASON FOR REVISION	PREPARER	CHECKER	APPROVER
1	1/12/06	Issued for Permitting Use			
0	3/14/04	Issued for Permitting Use	DLA	JRD	APR

PLANT ITEM MATERIAL SELECTION DATA SHEET

Corrosion Considerations:

a General Corrosion
In this vessel, the normal pH conditions and temperatures are such that 316L stainless steel would be acceptable if no chlorides are present. However, because of the expected halide concentration, a 6% Mo alloy is recommended.

Conclusion:
A 6% Mo alloy is recommended.

b Pitting Corrosion
Chloride is known to cause pitting in acid and neutral solutions. At the lower end of the stated pH range, with the expected halide concentrations, 316L is a marginal choice. A 6% Mo alloy or better is needed.

Conclusion:
Localized corrosion, such as pitting, is common and would be a concern at the expected halide levels. Under the stated conditions, a 6% Mo alloy is the minimum recommended.

c End Grain Corrosion
End grain corrosion only occurs in metal with exposed end grains and in highly oxidizing acid conditions.

Conclusion:
Not likely in this system.

d Stress Corrosion Cracking
The exact amount of chloride required to cause stress corrosion cracking is unknown. In part this is because the amount varies with temperature, metal sensitization, and the environment. But it is also unknown because chloride tends to concentrate under heat transfer conditions, by evaporation, and electrochemically during a corrosion process. Hence, even as little as 10 ppm can lead to cracking under some conditions. Generally, as seen in Sedriks (1996) and Davis (1987), stress corrosion cracking does not usually occur below about 140°F. With the maximum fluid temperature stated at 92 °F and with a large concentration of chlorides, 316L is not recommended. A more resistant alloy such as 6% Mo alloys or better will be needed.

Conclusion:
A 6% Mo alloy or better is recommended.

e Crevice Corrosion
Non-negligible amounts of solids are expected to accumulate at the bottom of the vessel. With the proposed operating conditions, 304L and 316L are not acceptable. A 6% Mo alloy or better is recommended. In addition, see Pitting.

Conclusion:
A resistant alloy such as a 6% Mo is recommended.

f Corrosion at Welds
Other than pitting or crevice corrosion, corrosion at welds is not considered a problem in the proposed environment. 6% Mo alloys must be welded with a high molybdenum filler metal such as NiCrMo-3.

Conclusion:
Weld corrosion is not considered a problem for this system.

g Microbiologically Induced Corrosion (MIC)
The proposed operating conditions are suitable for microbial growth. However, liquids received should either be treated or DIW so the possibility of infection is small.

Conclusion:
MIC is not considered a problem.

h Fatigue/Corrosion Fatigue
Not expected to be a concern.

Conclusions
Not believed to be a concern.

i Vapor Phase Corrosion
Vapor phase corrosion is not expected to be a concern.

Conclusion:
Not a concern.

PLANT ITEM MATERIAL SELECTION DATA SHEET

j Erosion
Velocities within the vessel are expected to be low. Erosion allowance of 0.004 inch for components with low solids content (< 2 wt%) at low velocities is based on 24590-WTP-RPT-M-04-0008.

Conclusion:
Not a concern.

k Galling of Moving Surfaces
Not applicable.

Conclusion:
Not applicable.

l Fretting/Wear
No contacting surfaces expected.

Conclusion:
Not applicable.

m Galvanic Corrosion
No dissimilar metals are present.

Conclusion:
Not applicable.

n Cavitation
None expected.

Conclusion:
Not a concern.

o Creep
The temperatures are too low to be a concern for metallic vessels.

Conclusion:
Not applicable.

p Inadvertent Addition of Nitric Acid
Higher chloride contents and higher temperatures usually require higher alloy materials. Nitrate ions inhibit the pitting and crevice corrosion of stainless alloys. Furthermore, nitric acid passivates these alloys; therefore, lower pH values brought about by increases in the nitric acid content of process fluid will not cause higher corrosion rates for these alloys. The upset condition that was most likely to occur is lowering of the pH of the vessel content by inadvertent addition of 0.5 M nitric acid. Lowering of pH may make a chloride-containing solution more likely to cause pitting of stainless alloys. Increasing the nitric acid content of the process fluid adds more of the pitting-inhibiting nitrate ion to the process fluid. In addition, adding the nitric acid solution to the stream will dilute the chloride content of the process fluid.

Conclusion:
The recommended materials will be able to withstand a plausible inadvertent addition of 0.5 M nitric acid.

PLANT ITEM MATERIAL SELECTION DATA SHEET

References:

1. 24590-LAB-MVC-RLD-00003, Rev. A, *Material Selection Data Sheet*
2. 24590-WTP-RPT-M-04-0008, Rev. 2, *Evaluation Of Stainless Steel Wear Rates In WTP Waste Streams At Low Velocities*
3. Davis, JR (Ed), 1987, *Corrosion, Vol 13*, In "Metals Handbook", ASM International, Metals Park, OH 44073
4. Sedriks, AJ, 1996, *Corrosion of Stainless Steels*, John Wiley & Sons, Inc., New York, NY 10158

Bibliography:

1. 24590-LAB-3YD-RLD-00001, *System Description for the Radioactive Liquid Waste Disposal System (RLD) for the Analytical Laboratory.*
2. Davis, JR (Ed), 1994, *Stainless Steels*, In ASM Metals Handbook, ASM International, Metals Park, OH 44073
3. Hamner, NE, 1981, *Corrosion Data Survey*, Metals Section, 5th Ed, NACE International, Houston, TX 77218
4. Jones, RH (Ed.), 1992, *Stress-Corrosion Cracking*, ASM International, Metals Park, OH 44073
5. Koch, GH, 1995, *Localized Corrosion in Halides Other Than Chlorides*, MTI Pub No. 41, Materials Technology Institute of the Chemical Process Industries, Inc, St Louis, MO 63141
6. Phull, BS, WL Mathay, & RW Ross, 2000, *Corrosion Resistance of Duplex and 4-6% Mo-Containing Stainless Steels in FGD Scrubber Absorber Slurry Environments*, Presented at Corrosion 2000, Orlando, FL, March 26-31, 2000, NACE International, Houston TX 77218.
7. Uhlig, HH, 1948, *Corrosion Handbook*, John Wiley & Sons, New York, NY 10158
8. Van Delinder, LS (Ed), 1984, *Corrosion Basics*, NACE International, Houston, TX 77084

PLANT ITEM MATERIAL SELECTION DATA SHEET

OPERATING CONDITIONS

CALCULATION SHEET

BY: Bandi N. Kapoor
DATE: 04/16/2003
SUBJECT: Process and Material Selection Data for Hotcell Drain Collection Vessel (RLD-VSL-00165)

PROJECT: RPP-WTP
JOB NO: 24590
CALC NO: 24590-LAB-MVC-RLD-00003
SHEET REV: A
SHEET NO: 11 BNK 4/21/03

Materials Selection Data Document No 24590-LAB-MVC-RLD-00003, Rev A

Component (Name/ID) Radioactive Liquid Disposal Vessel (24590-LAB-MV-RLD-VSL-00165)

System RLD-VSL-00165

Fabrication/Construction	
Material	
Heat treatment	
Mechanical treatment	
Surface finish	
Cleaning	
Welding	
Corrosion allowance	

Transportation	
Protection	

External Environment	
Chemistry	
Relative Humidity	

		Operations				
Chemicals	Unit	Cold Startup	Normal Operation*	Standby/Idle	Cleaning	Accident
		Note 1		Note 2		
Aluminum	g/l		1.71E-02			
Bromide	g/l		1.45E-06			
Chloride	g/l		9.17E-01			
Fluoride	g/l		1.22E-01			
Hydroxide	g/l		1.83E-01			
Iron	g/l		8.42E-03			
Nitrate	g/l		1.68E+00			
Nitrite	g/l		9.36E-05			
Phosphate	g/l		1.82E-05			
TOC[1]	g/l		9.56E-02			
Sulfate	g/l		1.90E-01			
Undissolved solids	g/l		See comment (1)			
Particle size/hardness	µm (##)		NA			
Other ($NaMnO_4$, Hg, etc)	g/l		1.49E-05 (Hg)			
Carbonate	g/l		3.41E+00			
pH	-		6 to 8			
Dose rate, α, β/γ (inside)	Rad		See comment (2)			
Temperature	°F		See comment (3)			
Velocity	fps		NA			
Vibration			NA			
Time of exposure	#		NA			

* Based on Calc. No. 24590-LAB-MVC-RLD-00003, Rev A

- % of total; ## - use Mho scale

Assumptions:

Remarks:

Notes
Note 1: Assume same as normal operations minus radionuclides
Not 2: Same as normal operation

Comments:
(1) Total Solids accumulation per month at the bottom of the C5 vessel (RLD-VSL-00165) = 0.20 in
(2) Activity in C3 vessel: 137-Cs: 1.62E-03 Ci/gal and 90-Sr: 1.80E-03 Ci/gal
(3) The minimum, normal, and maximum fluid temperatures will be approximately 50°F, 78°F, and 92°F, respectively.

Prepared by: B. Kapoor BNK Checked by: S. Rueff Approved by: Abdul Dada
Dates 4/17/03 SR 4-17-03 4/22/03

☐ Black Cell

[1] List expected organic species. Potassium hydrogen phthalate, Ammonium hydrogen oxalate, Ethanol, Glacial acetic acid, Chloramine-T

☐ Flushing

* Use maximum of 2 significant figures

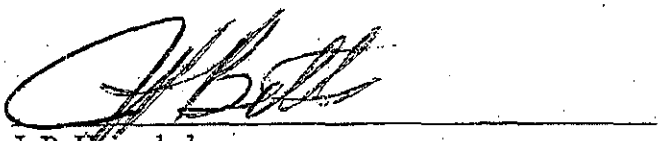
Attachment 2
06-ED-018

Bechtel National, Inc. Certification Statement

Bechtel National, Inc. Certification

The following certification statement is provided consistent with Contract No. DE-AC27-01RV14136, Section H.26, Environmental Permits, paragraph (g) for the submittal of the Hanford Facility Resource Conservation and Recovery Act Permit Modification Notification Form 24590-LAB-PCN-ENV-05-002.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



2/13/06

J. P. Henschel
Project Director

Date

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Hanford Facility RCRA Permit Modification Notification Forms

Part VI, Chapter 2
183-H Solar Evaporation Basins

Index

Submitted by Co-Operator:

M. B. Lackey — Date: 1/12/06

Reviewed by RL Program Office:

M. S. McCormick — Date: 1/17/06

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
183-H Solar Evaporation Basins	**Part VI, Chapter 2 and Attachment 37**

Description of Modification:

Hanford Facility RCRA Permit, VI.2:

CHAPTER 2
183-H Solar Evaporation Basins

The 183-H Solar Evaporation Basins comprise an inactive TSD unit that is undergoing postclosure activities. This TSD unit was operated as an evaporation treatment unit for dangerous wastes.

VI.2.A. COMPLIANCE WITH APPROVED MODIFIED CLOSURE PLAN

The Permittees shall comply with all requirements set forth in Attachment 37, including Conditions specified in VI.2.B. All sections, figures, and tables included in these portions are enforceable:

183-H Solar Evaporation Basins, Attachment 37:

Chapter 1.0	Part A Dangerous Waste Permit, Revision 6, from Class 1 modification dated May 2005
Chapter 2.0	Modified Postclosure Institutional Controls and Periodic Assessments, from Class 1 modification dated June 30, 2002
Chapter 3.0	Ground Water Monitoring During Postclosure, from Class 1 modification dated June 30, 2002
Chapter 4.0	Corrective Action Plan, from Class 1 modification dated June 30, 2002
Chapter 5.0	Personnel Training During Postclosure, from Class 1 modification dated June 30, 2002
Chapter 6.0	Security, from Class 1 modification dated February 2004
Chapter 7.0	Closure Contact, from Class 1 modification dated February 2004
Chapter 8.0	Certification of Postclosure, from Class 1 modification dated June 30, 2002

VI.2.B. AMENDMENTS TO THE APPROVED POST-CLOSURE PLAN

VI.2.B.1. The Permittee will review the modified closure option in five (5) years (February 28, 2008). The purpose of the review will be to determine if this TSD unit can be clean closed.

VI.2.B.2. Well 199-H4-7, is removed from the ground water monitoring network identified in Chapter 3.0 and replaced with well 199-H4-8.

WAC 173-303-830 Modification Class [1] [2]	Class 1	Class [1]1	Class 2	Class 3
Please mark the Modification Class:		X		

Enter relevant WAC 173-303-830, Appendix I Modification citation number: -830(4)(d) Other Modifications

Enter wording of WAC 173-303-830, Appendix I Modification citation:

Request department to review and approved as a Class [1]1.

Modification Approved: [X] Yes [ ] No (state reason for denial)

Reason for denial:

Reviewed by Ecology:

G.P. Davis 1/10/06

G. P Davis Date

[1] Class 1 modifications requiring prior Agency approval.

[2] If the proposed modification does not match any modification listed in WAC 173-303-830, Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Washington State Department of Ecology, or downgraded to a Class [1]1, if appropriate.