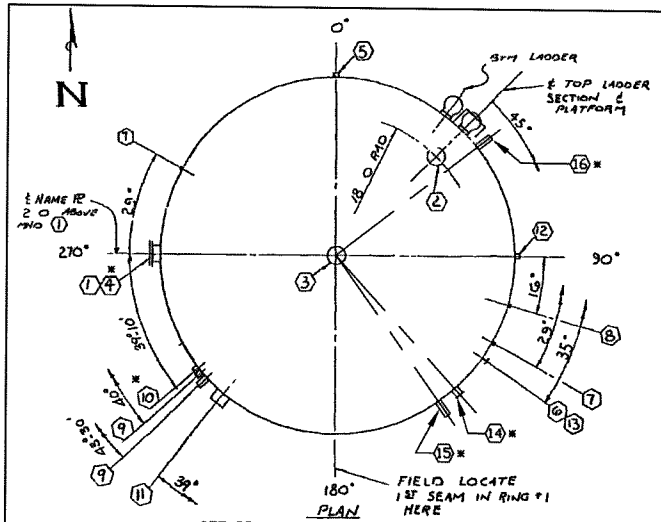
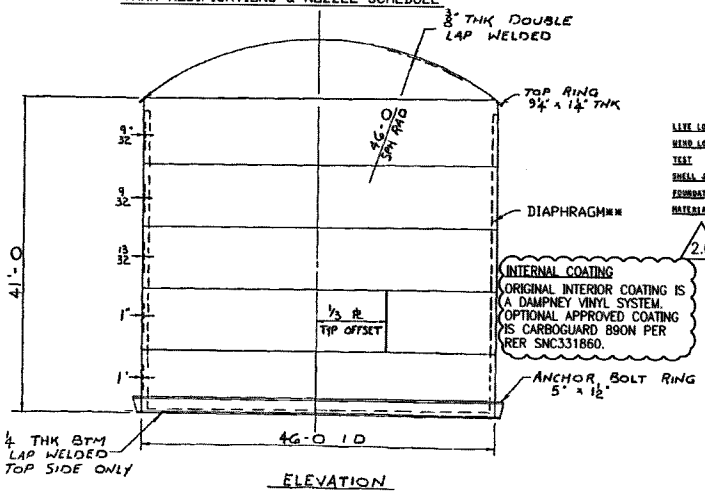


PLAN

✱ SEE DRAWING U-187218 FOR TANK MODIFICATIONS & NOZZLE SCHEDULE



ELEVATION

GENERAL NOTES

SERVICE CONDENSATE STORAGE TANK

SPECIFICATIONS 1 ALABAMA POWER CO PURCHASE ORDER NO FNP-303
SOUTHERN SERVICES, INC NO SS-1111-4 INCLUDING ADDENDUM NO 1

2 ASME CODE SECTION III, CLASS 3, ARTICLE NB-3800 - 1971 EDITION INCLUDING THE WINTER 1971 ADDENDA

DESIGN CONDITIONS
1 NOMINAL CAPACITY - 500 000 GALLONS
2 PRESSURE - ATMOSPHERIC + STATIC HEAD
3 SPECIFIC GRAVITY - 1 0
4 TEMPERATURE + 60°F (200°F MAX)
5 CORROSION ALLOWANCE - NONE
6 SEISMIC - CLASS 1

OBE GROUND ACCEL - 05 g Horizontal
033 g Vertical

DBE GROUND ACCEL - 10 g Horizontal
067 g Vertical

RESPONSE SPECTRA FURNISHED BY SOUTHERN SERVICES, INC ANALYZED IN ACCORDANCE WITH AEC BULLETIN TID-7024

EXTERNAL LOADS ON NOZZLES NONE SPECIFIED

RADIOACTIVITY SATISFIED THAT THE MATERIALS SPECIFIED ARE ADEQUATE FOR THE CONDITIONS

BASE SHEAR ASSUMED THAT FRICTION BETWEEN THE BOTTOM OF THE TANK AND THE FOUNDATION RESISTS HORIZONTAL SEISMIC SHEAR

TORNADO DESIGN CONDITIONS

1) AMBIENT PRESSURE DROP OF 3 PSI IN 3 SEC , CONTINUING FOR 2 SEC AND RETURNING TO NORMAL ATMOSPHERE IN 3 SEC

2) WIND OF 300 MPH VELOCITY USING

ASCE PAPER 3269 "WIND FORCES ON STRUCTURES"

Where q = 230 psf, P_z = (Cpe)q
Applied per Table 4(f)
and Cpe = +1 0 windward
Cpe = -0 4 leeward
Cpe = -1 7 perpendicular

+ sign = pressure toward tank center
and
concurrently A force of -1 0 q to be applied to the roof per table 4a

$$\frac{-1\ 0(230)}{144} = -1\ 6 \text{ psi}$$

Allowable Stresses

1) + 2) + Normal Oper Stresses $\frac{2}{3}$ 0 9 Fy

3) MISSILE IMPINGEMENT

THE LOWER 150 000 GAL MUST WITHSTAND FORCES RESULTING FROM MISSILE IMPACT THE FOLLOWING MISSILE CONDITIONS MUST BE CONSIDERED

1) 8 0 x 12' LONG TIMBER STRIKING ON END @ 300 MPH
2) 3" I D x 10' LONG PIPE STRIKING ON END @ 300 MPH
3) 4000 LB CAR, CONTACT AREA 20 FT², @ 50 MPH NOT MORE THAN 25 FT ABOVE GRADE

LIVE LOAD 25 PSF ON PROJECTED ROOF AREA

WIND LOAD 30 PSF ON PROJECTED TANK AREA, OR TORNADO

TEST HYDROSTATIC- PNEUMATIC

SHELL JOINT EFFICIENCY MT OR PT SHELL JOINTS - 70%

FOUNDATION BY OTHERS

MATERIALS
PLATE - SA285-C (MS-664)
FORGINGS - SA181-1 (MS-936) (MS 965)
PIPE - SA106-B (MS-722)
BOLTING - SA307-B (MS-829)
GASKETS - COMPRESSED ASBESTOS
STRUCTURAL- SA36 (MS 665)

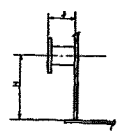
APPROVED PER NUCLEAR Q. A. MANUAL RELEASED FOR USE
B W McKeen 10/14/73
Cert Qual Rev — Date
UPDATED BY____ REV____ DATE____

2.0

INTERNAL COATING
ORIGINAL INTERIOR COATING IS A DAMPNEY VINYL SYSTEM. OPTIONAL APPROVED COATING IS CARBOGUARD 890N PER RER SNC331860.

TABLE OF ARCS

L	23 1 R40	23 0 3/32 R	23 0 5/32 R
16°	6 5/8		
29°	11 8 3/16		
30°	12-1 1/32		
35	14 1 7/32	14 1 1/32	
45°	18 1 7/16		18 1/4
39°10'			15' 9 3/32
39°	15' 8 9/16		
40°	16' 1 1/8		
43°30'	17' 6 5/16		



ELEVATION & PROJECTION OF FITTINGS
▶ INDICATES CHANGE FROM PREVIOUS ISSUE

FITTING FURNISHED & INSTALLED BY CBI

CUST MARK	NO REQ'D	CBI MARK	ELEVATION H	PROJECTION J	DESCRIPTION
1	1	7 A	2 6	1 0	24" ⌀ SHELL MANHOLE
2	1	6 A	—	—	24 ⌀ ROOF MANHOLE
3	1	14 A	—	—	24" ⌀ MUSHROOM VENT
4✱	1	9 B	10 0 1/2	0 9	8" ⌀ 150# OVERFLOW NOZZLE
5	1	9 C	0 5 3/4	0 9	6" ⌀ STUB NOZZLE DRAIN CONN
6	1	9 A	34 1 0	0 9	1" ⌀ 150# NOZ - LEVEL CONTROL CONN
7	2	9 3	10 6 3/4	—	1" ⌀ 6000# SCRD CPLG - LEVEL PRESS SWITCH
8	1	9 3	10 6 3/4	—	1 ⌀ 6000# SCRD CPLG - LEVEL TRANSMITTER
9	2	13 A	1' 3 3/4	0' 9	3" ⌀ STUB NOZ - AUX FEEDPUMP SUCT ON
10✱	1	12 A	38 10 1/2	0' 9	~~6" ⌀ STUB NOZ - MAIN FEEDPUMP RECIRCULATION~~
11	1	12 C	14 2 3/4	0' 9	24 ⌀ STUB NOZ - COND MAKE UP & RETURN
12✱	1	12 D	39 0	0' 9	4" ⌀ STUB NOZ - COND FILL FROM DEMIN
13	1	12 B	17 11 3/4	0' 9	1 ⌀ STUB NOZ - LEVEL ALARM
	1	8 A	—	—	DAVIT FOR 24 ⌀ SHELL MANHOLE
	2				LADDER, CAGE & PLATFORM
	3	11.1	40' 9 3/4		LIGHTNING PROTECTION
					1" ⌀ STUB CONDENSATE ABOVE DIAPHRAGM

NOTES:

✱ SEE DRAWING U-187218 FOR NOZZLE SCHEDULE
MAX. FLOW IN & OUT OF TANK: 12000 GPM
✱✱ DIAPHRAGM
SEE DRAWING U-419662 FOR DIAPHRAGM ASSEMBLY
AND DRAWING U-161927 FOR DIAPHRAGM EQUATOR/SUPPORT

NON-DESTRUCTIVE EXAMINATION SYMBOLS IDENTIFYING TYPE OF EXAMINATIONS ARE AS FOLLOWS

* MT - MAGNETIC PARTICLE EXAMINATION
PT - LIQUID PENETRANT EXAMINATION
RT - RADIOGRAPHIC EXAMINATION
VT - VISUAL EXAMINATION
VB - VACUUM BOX TESTING

* IN AREAS THAT ARE INACCESSIBLE TO MT EQUIPMENT, PT MAY BE SUBSTITUTED FOR MT

BOTTOM PLATES TOGETHER LAP WELDS TO BE VB AFTER WELDING

BOTTOM TO SIDEWALL DOUBLE-FILLET WELDS WITH FULL PENETRATION VB AFTER WELDING VT DURING TEST

SIDEWALL JOINTS BUTT WELDS MT OR PT AFTER WELDING VT DURING TEST

TOP STIFFENER TO SIDEWALL MT OR PT AFTER WELDING

TOP STIFFENER TOGETHER MT OR PT AFTER WELDING

ROOF TO TOP STIFFENER FILLET WELD VT AFTER WELDING

ROOF PLATES TOGETHER LAP WELDS VT & VB AFTER WELDING

NOZZLES TO SHELL MT OR PT AFTER WELDING VT DURING TEST.

SHELL NOZZLE WITH PAD

FILLET WELDS 1 SOLUTION FILM BEFORE TEST WITH PRESSURE UNDER PAD
2 MT OR PT AFTER WELDING

SHELL TO NOZZ - CORNER WELDS
1 SOLUTION FILM BEFORE TEST WITH PRESSURE UNDER PAD
2 MT OR PT AFTER WELDING

BASE SHIMS BY CBI, GROUT BY OTHERS BEFORE WATER IS PUT IN TANK

SURFACE DEFECTS AT TEMPORARY ATTACHMENTS — MT OR PT AFTER REMOVAL

PERMANENT ATTACHMENTS TO SHELL — MT OR PT AFTER WELDING

DURING HYDROSTATIC - PNEUMATIC TEST VT ALL JOINTS IN THE WALLS OF THE TANK AND ALL WELDING AROUND NOZZLES AND MANWAYS

TPNS NO 01P11T001

GENERAL | GENERAL

Chicago Bridge & Iron Company CBI

GENERAL PLAN

46 0 x 41 0 HIGH DOME ROOF TANK
CONDENSATE STORAGE TANK
FARLEY NUCLEAR PLANT UNIT #2

Purchaser's No FNP - 303 | Drawing No 72-4859
By TGV Chk'd AAR Date 7 12 73
Scale 1" = 1'-0" | Dwg 1 | Rev 2

THIS DRAWING IS THE PROPERTY OF CHICAGO BRIDGE & IRON COMPANY AND IS TO BE USED ONLY FOR INSPECTING WORK IN ACCORDANCE OF WORK BY THE CHICAGO BRIDGE & IRON COMPANY REPRODUCTION IN WHOLE OR IN PART FOR ANY OTHER PURPOSE IS STRICTLY PROHIBITED

CAD U161693
OVY2000 | JJB

THIS DWG. REFERENCED IN VENDOR MANUAL N/A
TAB/SECT. N/A
PAGE N/A
FIGURE N/A

VERSION 2.0 | DATE 11-14-11

REVISED BY SNC PER ABN-F02433, VERSION 1.0

SEE MICROFILM FOR PREVIOUS VER. SIGNATURES.

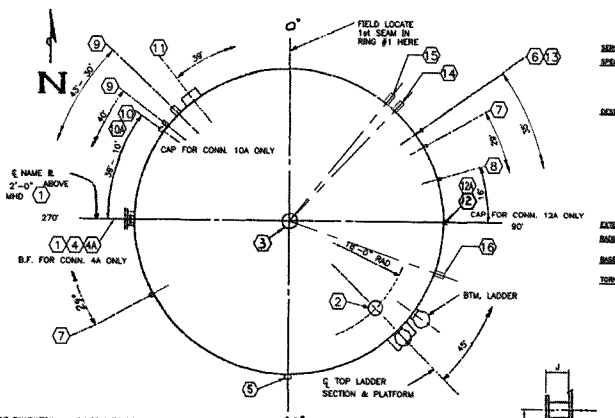
BY	CHK'D	APPR.1	APPR.2
JJB	RAW	AAN	X

Southern Nuclear Operating Company, Inc.
FOR
J.M. FARLEY NUCLEAR PLANT
UNIT 1

TITLE:
CONDENSATE STORAGE TANK
GENERAL PLAN

VENDOR: CBI | P.O.#: FNP-00000303

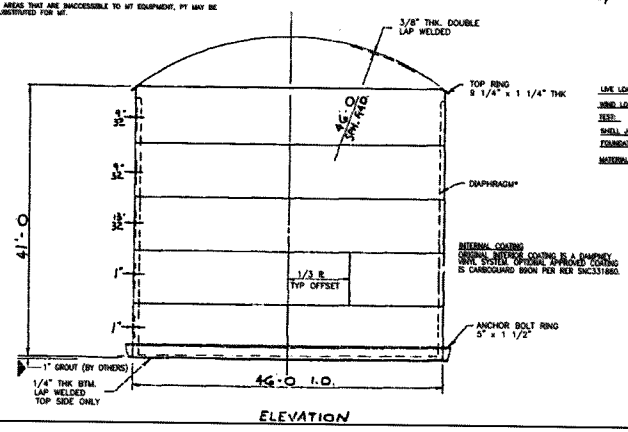
DRAWING NO. U-161693



NON-DESTRUCTIVE EXAMINATION: SYMBOLS IDENTIFYING TYPE OF EXAMINATIONS ARE AS FOLLOWS:

- MT – MAGNETIC PARTICLE EXAMINATION
- PT – LIQUID PENETRANT EXAMINATION
- RT – RADIOGRAPHIC EXAMINATION
- VT – VISUAL EXAMINATION
- VB – VACUUM BOX TESTING

* IN AREAS THAT ARE INACCESSIBLE TO MT EQUIPMENT, PT MAY BE SUBSTITUTED FOR MT.



GENERAL NOTES

SERVICE: CONDENSATE STORAGE TANK

SPECIFICATIONS:
1. ALABAMA POWER CO. PURCHASE ORDER NO. FNP-2-59 SOUTHERN SERVICES, INC. NO. SS-1111-4 INCLUDED ADDENDA NO. 1.
2. ASME CODE SECTION III (CLASS 3) ARTICLE NC-3800 – 1971 EDITION INCLUDED THE WINTER 1971 ADDENDA. (ATMOSPHERIC)

DESIGN CONDITIONS:
1. NOMINAL CAPACITY – 500,000 GALLONS
2. PRESSURE – ATMOSPHERIC + STATIC HEAD
3. SPECIFIC GRAVITY – 1.0
4. TEMPERATURE + 60° F (100° F MAX.)
5. CORROSION ALLOWANCE – NONE
6. SEISMIC – CLASS 1

OBE GROUND ACCEL. – .05 g HORIZONTAL, .035 g VERTICAL

DBE GROUND ACCEL. – .10 g HORIZONTAL, .067 g VERTICAL

RESPONSE SPECTRA FURNISHED BY SOUTHERN SERVICES, INC. ANALYSIS IN ACCORDANCE WITH ASC BULLETIN 710-7024.

EXTERNAL LOADS ON NOZZLES: NONE SPECIFIED

RADIOACTIVITY: ASSUMED THAT THE MATERIALS SPECIFIED ARE ADEQUATE FOR THE CONDITIONS.

BASE SHEAR: ASSUMED THAT FRICTION BETWEEN THE BOTTOM OF THE TANK AND THE FOUNDATION RESIST HORIZONTAL SEISMIC SHEAR.

TORNADO DESIGN CONDITIONS

1) Ambient pressure drop of 3 psi in 3 sec. continuing for 3 sec. and returning to normal atmospress in 3 sec.
2) Wind of 300 mph velocity using

ASCE PAPER 3269 "WIND FORCES ON STRUTURES"

WHERE q = 230 psf, pq = (Cpe) q
Applied per table 4(I) and
Cpe = +1.0 windward
Cpe = −0.4 leeward
Cpe = −1.7 perpendicular

+ sign = pressure toward tank center and
concurrently a force of −1.0 q to be applied to the roof per table 4a

$$\frac{-1.0(230)}{144} = -1.6 \text{ psi}$$

ALLOWABLE STRESSES:

1) + 2) + NORMAL OPER. STRESSES ≤ 0.9 FY

3) MISSILE IMPINGEMENT:

THE LOWER 150,000 GAL MUST WITHSTAND FORCES RESULTING FROM MISSILE IMPACT. THE FOLLOWING MISSILE CONDITIONS MUST BE CONSIDERED:

1) 8" ø 12' LONG TIMBER STRIKING ON END @ 300 MPH.
2) 3" I.D. x 10' LONG PIPE STRIKING ON END @100 MPH.
3) 5000 LB CAR, COMPACT AREA 20 FT2 @ 50 MPH NOT MORE THAN 35 FT. ABOVE GRADE.

LIVE LOAD: 2: PSF ON PROJECTED ROOF AREA.

WIND LOAD: 3: PSF ON PROJECTED TANK AREA, OR TORNADO.

TEST: HYDROSTATIC – PNEUMATIC

SHELL JOINT EFFICIENCY: HT OR PT SHELL JOINTS – 70%

FOUNDATION: BY OTHERS.

MATERIALS:
- PLATE – SA285-C (MS-654)
- FORGINGS – SA181-1 (MS-926) & (MS-965)
- PIPE – SA106-A (MS-722)
- BOLTING – SA307-B (MS-829)
- GASKETS – COMPRESSED ASBESTOS
- STRUCTURAL – SA36 (MS-665)

TABLE OF ARCS			
ANGLE	23'-1" RAD	23'-0 23/32"R	23'-0 5/8" R
18°	6'-5 3/8"		
29°	11'-8 3/16"		
30°	12'-1 1/32"		
35°	14'-1 7/32"	14'-1 1/32"	
45°	18'-1 9/16"		18'-1 1/4"
38-10'			15'-8 3/32"
39°	15'-8 9/16"		
40°	15'-8 9/16"		
43-30'	17'-6 5/16"		

ELEVATION & PROJECTION OF FITTINGS
▶ INDICATES CHANGE FROM PREVIOUS ISSUE

FITTINGS FURNISHED & INSTALLED BY CBI

QUIET MARK	NO. REQ'D	CBI MARK	ELEVATION H	PROJECTION J	DESCRIPTION
1	1	7-A	2'-6"	1'-0"	24" ø SHELL MANHOLE
2	1	6-4	——	——	24" ø ROOF MANHOLE
3	1	14-A	——	——	24" ø MUSHROOM VENT
4					SEE DETAILS "A" DWG. U-277315
4A	1	9-B	40'-0"	0'-9"	8" ø 150# OVERFLOW NOZZLE
					8" BLIND FLANGE. SEE DETAIL "F" DWG. U-277315
5	1	9-C	0'-5 3/4"	0'-9"	6" ø STUB NOZZLE DRAIN CONN.
6	1	9-A	34'-0"	0'-9"	1" ø 150# NOZ LEVEL CONTROL ROOM
7	2	9-B	0'-6 3/4"	——	1" ø 6000# SCRD CPL'G LEVEL PRESS SWITCH
8	1	9-B	0'-6 3/4"	——	1" ø 6000# SCR'D CPL'G LEVEL TRANSMITTER
9	2	13-A	1'-7 3/4"	0'-9"	8" ø STUB NOZ AUX. FEEDPUMP SUCTION
10					SEE DETAILS "B" DWG. U-277315
10A	1	12-A	38'-10 3/4"	0'-9"	6" ø STUB NOZ AUX. FEEDPUMP RECIRCULATION
					6" PIPE CAP. SEE DETAIL "E" DWG. U-277315.
11	1	12-C	14'-2 3/4"	0'-9"	24" ø STUB NOZ. COND MAKE UP & RETURN
12					SEE DETAILS "B" DWG. U-277315
12A	1	12-D	39'-0"	0'-9"	4" ø STUB NOZ. COND FILL FROM DEMIN.
					4" PIPE CAP. SEE DETAIL "E" DWG. U-277315.
13	1	12-B	17'-11 3/4"	0'-9"	1"ø STUB NOZ. LEVEL ALARM
	1	8-A	——	——	DAVIT FOR 24"ø SHELL MANHOLE
					LADDER, CAGE & PLATFORM
	2				LIGHTING PROTECTION
	3	11-1	40'-0 3/4"		1"ø STUB CONDENSATE ABOVE DIAPHRAGM
14					SEE DETAILS "D" DWG. U-277315
15					SEE DETAILS "C" DWG. U-277315
16					SEE DETAILS "B" DWG. U-277315

NOTES:

DIAPHRAGM* SEE DRAWING U-419662 FOR DIAPHRAGM ASSEMBLY AND DRAWING U-213491 FOR DIAPHRAGM EQUATOR/SUPPORT

MAX. FLOW IN & OUT OF TANK: 7050 GPM

BOTTOM PLATES TOGETHER: LAP WELDS TO BE VB AFTER WELDING.

BOTTOM TO SIDEWALL: DOUBLE-FILLET FIELDS WITH FULL PENETRATION VB AFTER WELDING. VT DURING TEST.

SIDEWALL JOINTS: BUTT WELDS MT OR PT AFTER WELDING. VT DURING TEST.

TOP STIFFENER TO SIDEWALL: MT OR PT AFTER WELDING.

TOP STIFFENER TOGETHER: MT OR PT AFTER WELDING.

ROOF TO TOP STIFFENER: FILLET WELD VT AFTER WELDING.

ROOF PLATES TOGETHER: LAP WELDS VT & VB AFTER WELDING.

NOZZLE TO SHELL: MT OR PT AFTER WELDING. VT DURING TEST.

SHELL NOZZLE WITH PAD:

FILLET WELDS 1 – SOLUTION FILM BEFORE TEST WITH PRESSURE UNDER PAD.
2 – MT OR PT AFTER WELDING.

SHELL TO NECK – CORNER WELDS
1 – SOLUTION FILM BEFORE TEST WITH PRESSURE UNDER PAD.
2 – MT OR PT AFTER WELDING.

BASE SHIMS BY CBI GROUT BY OTHERS BEFORE WATER IS PUT IN TANK.

SURFACE DEFECTS AT TEMPORARY ATTACHMENTS – MT OR PT AFTER REMOVAL

PERMANENT ATTACHMENTS TO SHELL – MT OR PT AFTER WELDING

DURING HYDROSTATIC – PNEUMATIC TEST VT ALL JOINTS IN THE WALLS OF THE TANK AND ALL WELDING AROUND NOZZLES AND MANWAYS.

APPROVED FOR NUCLEAR Q. A. MANUAL RELEASED FOR USE
Engineer by 1.8.75 Date
UPDATED BY: JAB REV. 2 DATE 1.3.75

TPNS NO. Q2P11T001

Chicago Bridge & Iron Company CBI

GENERAL PLAN
46'-0 x 41'-0 OVR. DOME ROOF TANK
CONDENSATE STORAGE TANK
FARLEY NUCLEAR PLANT UNIT NO. 2
Purchase No. FNP-2-59 Customer No. 72-4860
Rev. 1 No. 2

CAD U213481
OVY2000 PVK

THIS DWG. REFERENCED IN VENDOR MANUAL N/A
TAB/SECT. N/A
PAGE N/A
FIGURE N/A

VERSION 3.0 DATE 4/09/12

REVISED BY SNC PER ABN-F02570, VERSION 1.0

SEE MICROFILM FOR PREVIOUS VER. SIGNATURES.

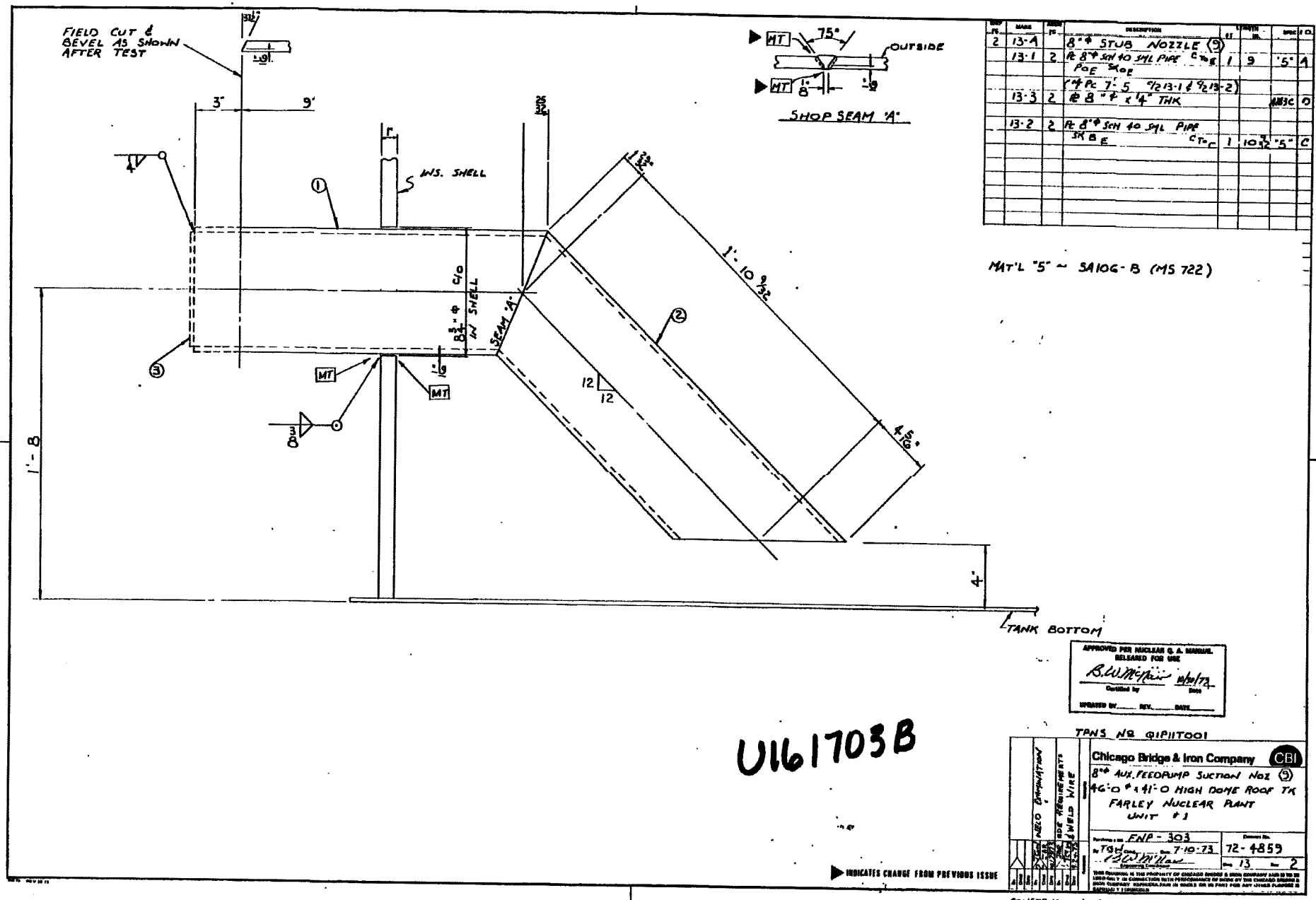
BY	CHK'D	APPR.1	APPR.2
PVK	CJK	AAN	X

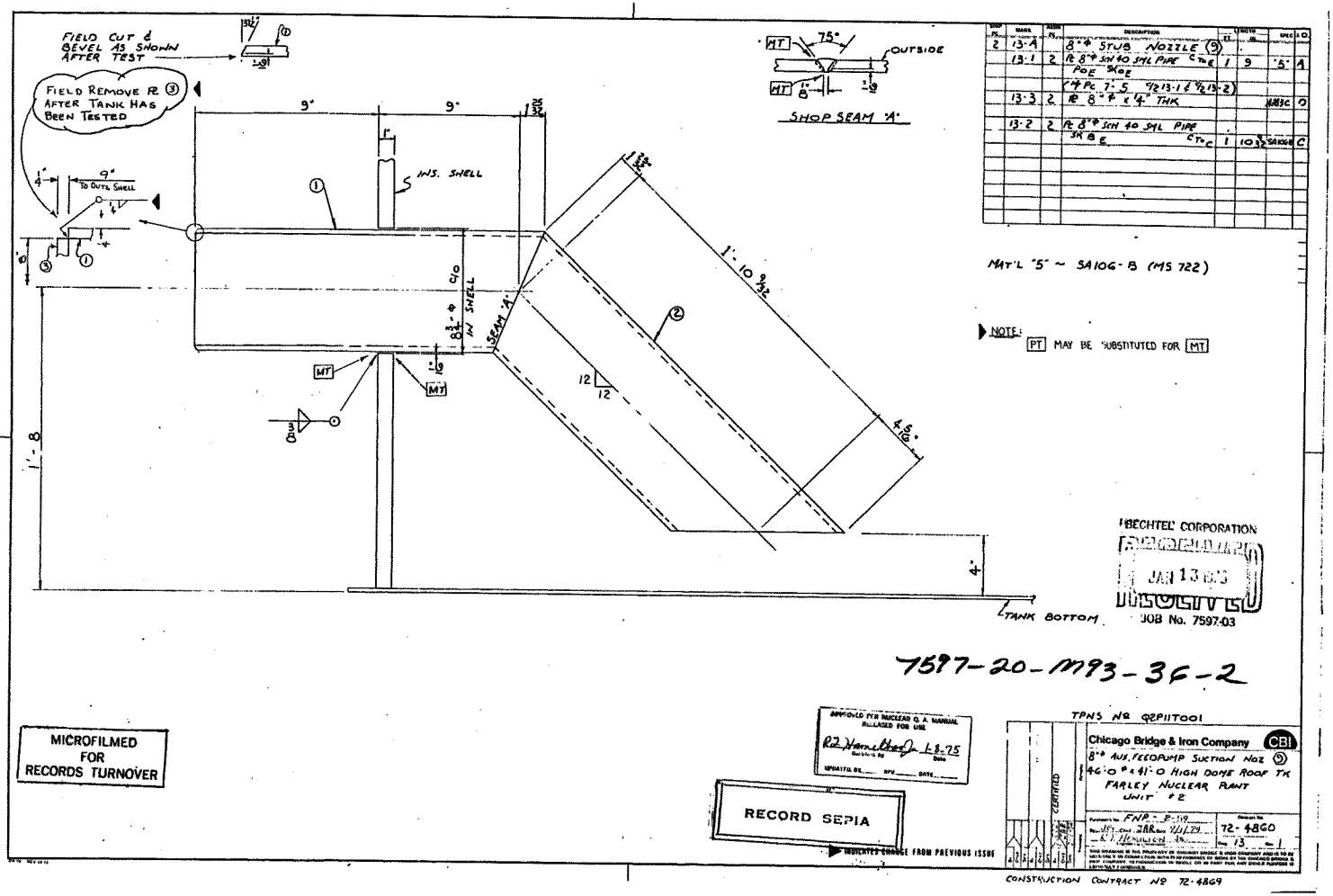
Southern Nuclear Operating Company, Inc.
FOR
J.M. FARLEY NUCLEAR PLANT
UNIT 2

TITLE:
CONDENSATE STORAGE TANK
GENERAL PLAN

VENDOR: CBI P.O.#: FNP2-0000059

DRAWING NO. U-213481


FIELD CUT & BEVEL AS SHOWN AFTER TEST
3"
9"
W.S. SHELL
C/O W SHELL
SEAM "A"
MT
75°
OUTSIDE
SHOP SEAM "A"
1'-10 9/32"
12
12
4 5/16"
1'-8
4"
TANK BOTTOM
MAT'L "5" ~ SA106-B (MS 722)
U161703B
APPROVED PER NUCLEAR Q. A. MANUAL RELEASED FOR USE
Certified by
Date
UPDATED BY REV. DATE
TPNS NO 01P11T001
Chicago Bridge & Iron Company CBI
8"ϕ AUX. FEEDPUMP SUCTION NOZ
46'-0"ϕ x 41'-0 HIGH DOME ROOF TK
FARLEY NUCLEAR PLANT
UNIT #1
ENP-303
72-4859
13
2
INDICATES CHANGE FROM PREVIOUS ISSUE
CONSTRUCTION CONTRACT NO 72-4868



7597-20		U- 213493A
TITLE: 8 in. Aux. FW PP Suct. Nozzles		
JOB: JOSEPH M. FARLEY NUCLEAR PLANT UNIT 2 ALABAMA POWER COMPANY		
MFR. Chicago Bridge & Iron	P.O. FNP 2-59 REQ. 46037-SS CLASS	

FA U 0213493 A R

VENDOR'S DRAWING REVIEW

1 ☒ Approved - Mfg. may proceed

2 ☐ Approved - Submit final dwg. - Mfg. may proceed

3 ☐ Approved except as noted - Make changes and submit final dwg. - Mfg. may proceed as approved.

4 ☐ Not approved - Correct and resubmit.

5 ☐ Review not required - Mfg. may proceed.

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

BY S. Dubin BECHTEL DATE 2-25-75

JOB NO.	BECHTEL POWER CORPORATION
7597-20	P. O. BOX 607 GAITHERSBURG, MD.