CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-024A SHEET 1 OF 5

DATE:	10/28/2003	AREA:	INSTRUMENT ROOM	RWP NO.:	8010
		ELEV:	716'		

INSPECTORS:	C. G. WALLS, MIKE SOLLIE

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	590955-072C, SH. 1, REV. C *	
Tools:	590955-072C, SH. 2, REV. C *	
Drawings	590955-071C, REV. B *	
Flashlights	1-47W406-328A, REV. 0	
Ladders	1-47W406-328B, REV. 0	
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	**Verify installation of insulation** as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any **undocumented** insulation.
3	Inspect and determine longitudinal **seam location** and **band spacing** if necessary.
4	Document any **irregularities** of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any **undocumented fibrous insulation (e.g., within rupture restraints)**.
6	Inspect and mark up cable tray drawings to show location of **fire barriers** (vertical and horizontal).
7	Inspect the area for any **weak components** that could be dislodged by jet and that could be transported to sump.
8	Inspect any **equipment insulation** in the area.
9	Inspect and document the general **cleanliness** of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	3" LETDOWN LINE/REGENERATIVE HEAT EXCHANGER TO RC LOOP 3 INTERIM LEG
	CONTINUED TO WALKDOWN PACKAGE NO's. WB1-DWD-007E & -024B.
	R 11/12/03
	* TVA CONTRACT NO. 93NNS-75645C

Prepared By: C. G. WALLS Date: 10/28/03

Checked By: MIKE SOLLIE Date: 11/5/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-024A SHEET 2 OF 5

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
0600200-08-10	INSTRUMENT ROOM	716'	24	LETDOWN LINE	3.50	16.67	RMI	3.25	7.98	S.S.	STD	N/A	N/A

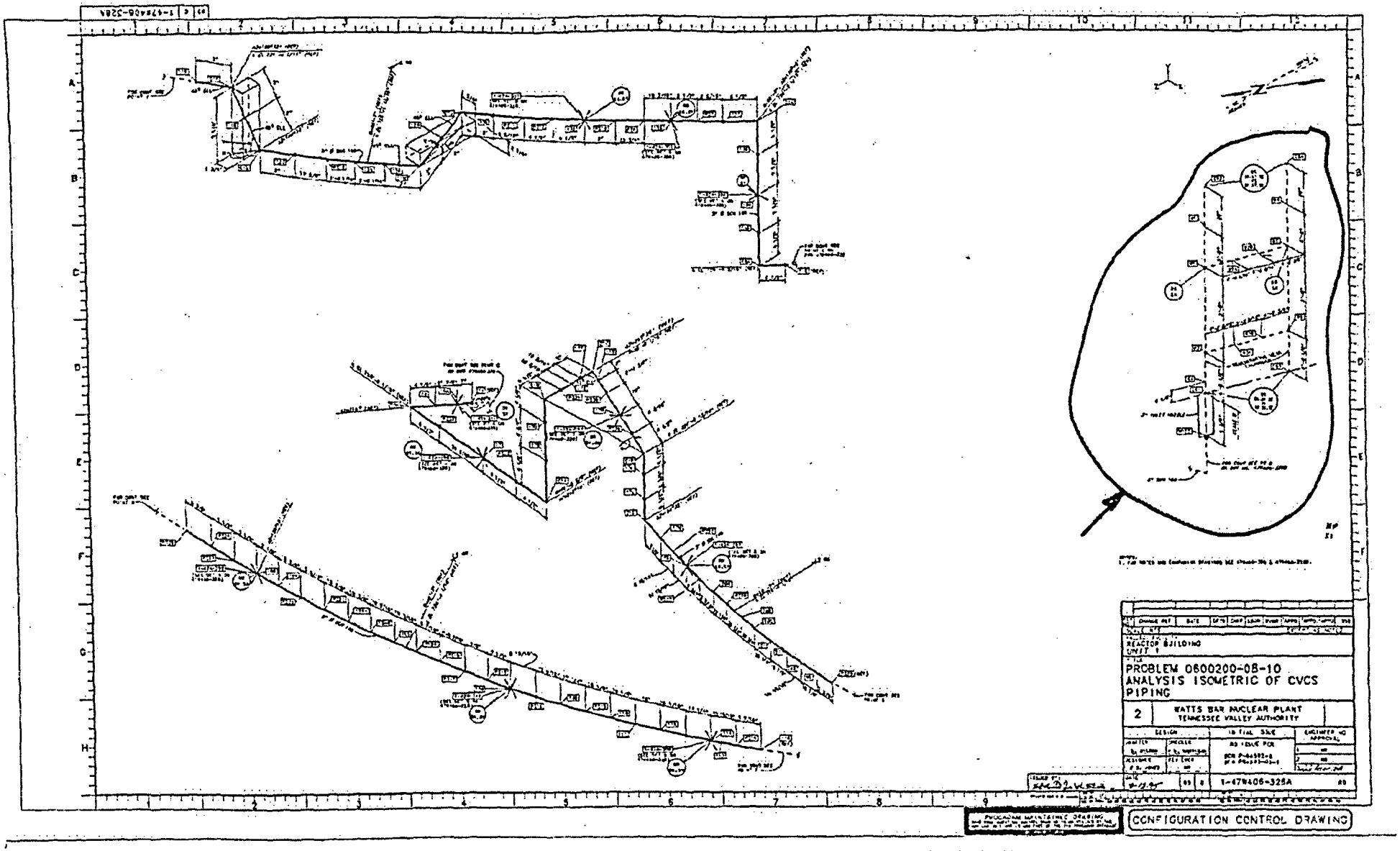
APPROXIMATE INSULATION LENGTH:

AT 10" OD INSULATION (3.5" OD PIPE):

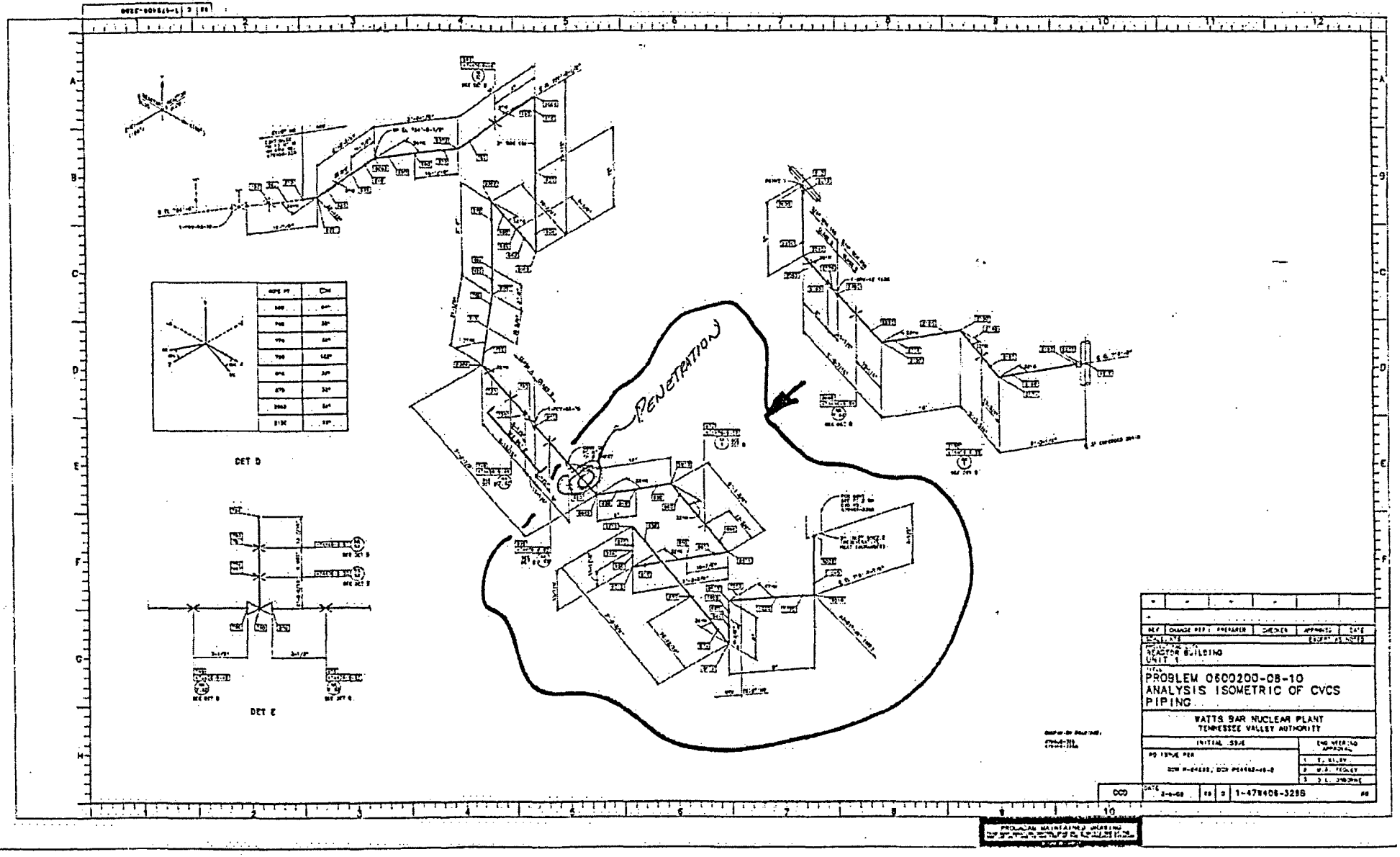
LENGTH = $3 + \pi(4.5)(90°/180°) + 8.75 + \pi(4.5)(90°/180°) + 59.38 + \pi(4.5)(90°/180°)$

$+ 30 + \pi(4.5)(90°/180°) + 13.38 + \pi(4.5)(90°/180°) + 24 + \pi(4.5)(90°/180°) + 19$

$= 200(1/12) = 16.67$ FT



WB1-DWD-024A
PG. 4 OF 5



WB1-DWD-024A
PG 5 OF 5

CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-024B SHEET 1 OF 3

DATE:	10/28/2003	AREA:	INSTRUMENT ROOM	RWP NO.:	8010
		ELEV:	716'		

INSPECTORS:	C. G. WALLS, MIKE SOLLIE

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	590955-071C, REV. B *	
Tools:		
Drawings		
Flashlights		
Ladders		
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	REGENERATIVE HEAT EXCHANGER
	* TVA CONTRACT NO. 93NNS-75645C

Prepared By: C. G. WALLS CGWalls Date: 10/28/03

Checked By: MIKE SOLLIE Mike Sollie Date: 11/9/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-024B SHEET 2 OF 3

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
N/A	INSTRUMENT ROOM	716'	24	LETDOWN LINE	3.50	30.84	RMI	3.25	14.76	S.S.	STD	N/A	N/A
N/A	INSTRUMENT ROOM	716'	24	REGENERATIVE HEAT EXCHANGER	10.90	SEE CALC	RMI	3.05	45.63	S.S.	STD	N/A	N/A

APPROXIMATE INSULATION LENGTH & VOLUME:

AT 17" OD INSULATION (10.09" OD HEAT EXCHANGER):

VOLUME = $3[\pi(17^2 - 10.9^2)/4 \times (22.31 + 36.12 + 17.38 + 36.12 + 36.12 + 27.12 + 17.25)]$

$+ 6[\pi(10.9^2)/4 \times 3] = 78840(1/12)^3 = 45.63 FT^3$

AT 10" OD INSULATION (3.5" OD PIPE):

LENGTH = $19.75 + 19.25 + 4[\pi(9)(90°/180°)] + (2 \times 137.12) = 370(1/12) = 30.84 FT$

CONTAINMENT DEBRIS WALKDOWN PACKAGE WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-024C SHEET 1 OF 35 10/28/03

DATE:	10/28/2003	AREA:	INSTRUMENT ROOM	RWP NO.:	8010
		ELEV:	716'		

INSPECTORS:	C. G. WALLS, MIKE SOLLIE

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	590955-075C, SH. 1, REV. C *	
Tools:	590955-075C, SH. 5, REV. B *	
Drawings	590955-071C, REV. B *	
Flashlights	47W406-320, REV. F	
Ladders	1-47W406-320A, REV. 0	
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	3" LETDOWN LINE/REGENERATIVE HEAT EXCHANGER TO PEN. X15
	CONTINUED TO WALKDOWN PACKAGE NO. WB1-DWD-001G.
	* TVA CONTRACT NO. 93NNS-75645C

Prepared By: C. G. WALLS Date: 10/28/03

Checked By: MIKE SOLLIE Date: 11/9/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

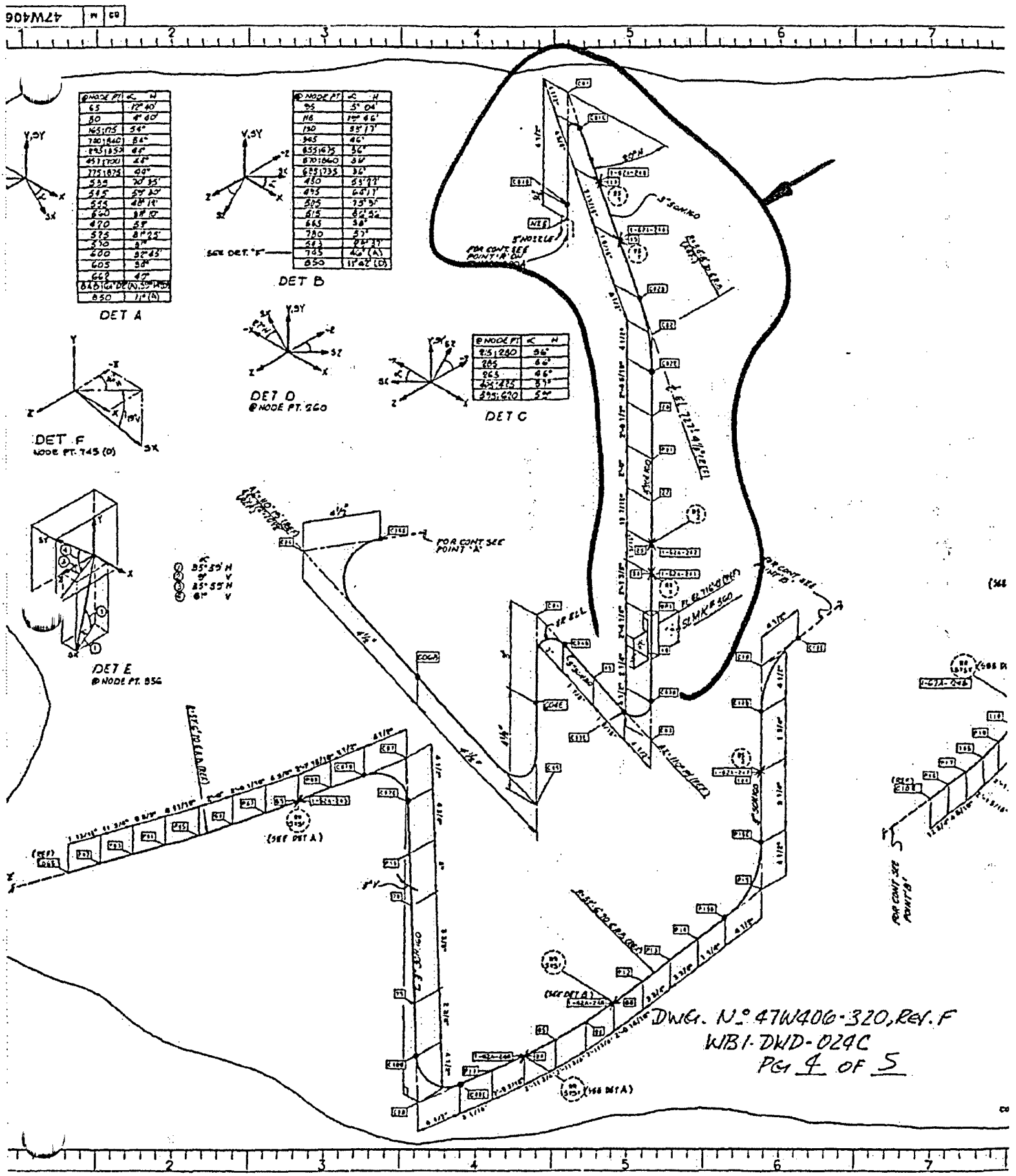
WALKDOWN PACKAGE#: WB1-DWD-024C SHEET 2 OF 5

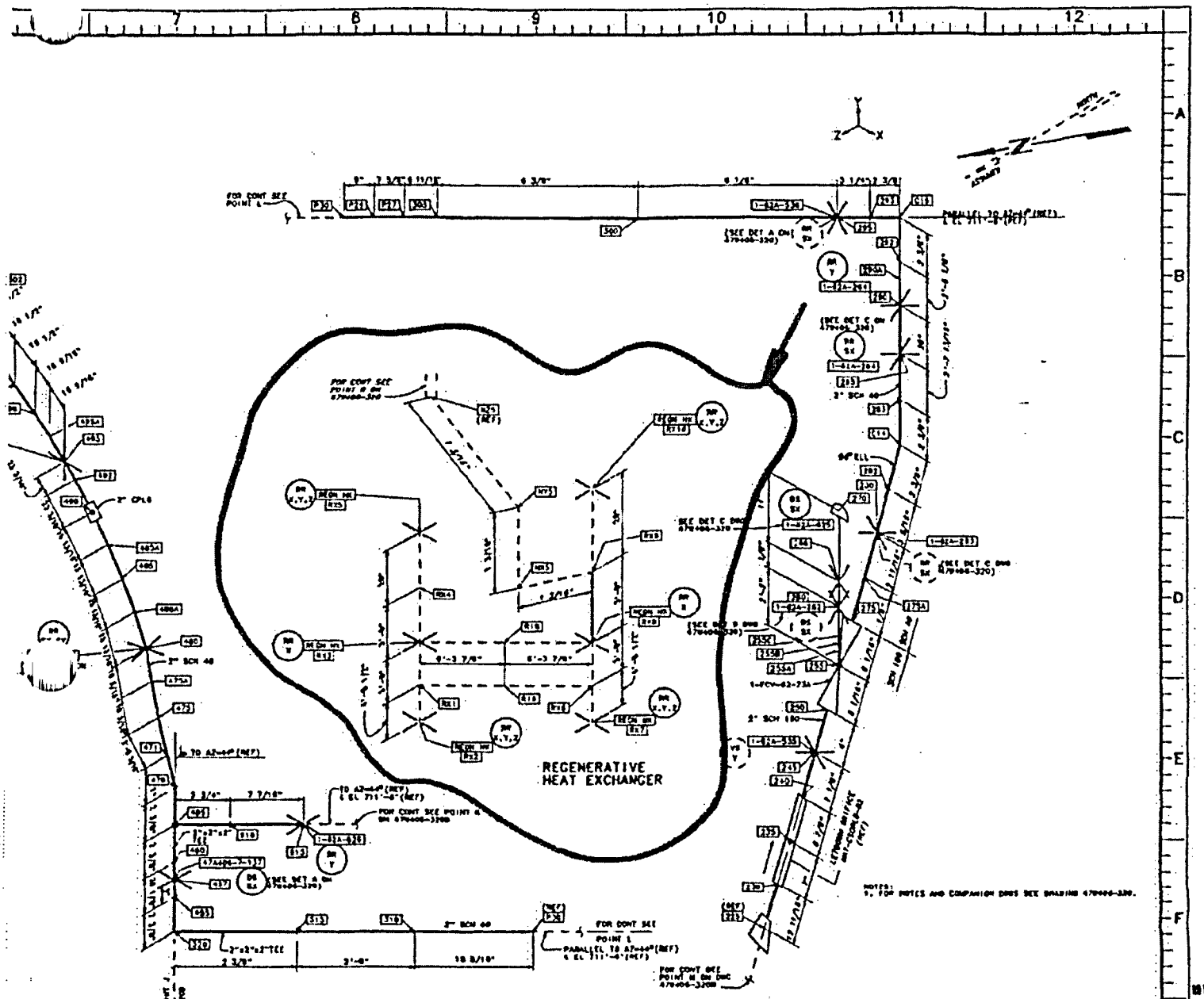
PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
0500200-08-09	INSTRUMENT ROOM	716'	24	LETDOWN LINE	3.50	15.34	RMI	1.74	3.05	S.S.	STD	N/A	N/A

APPROXIMATE INSULATION LENGTH:

AT 7" OD INSULATION:

LENGTH = 9.75 + 6.5 + π(4.5)(90°/180°) + 106.12 + 54.38 = 184(1/12) = 15.34FT


DET A
DET B
DET C
DET D
@ NODE PT. 260
DET E
@ NODE PT. 856
DET F
NODE PT. 745 (D)
SEE DET. "F"
FOR CONT. SEE POINT "A"
FOR CONT. SEE POINT "B"
(SEE DET A)
DWG. N° 47W406-320, REV. F
WB1-DWD-024C
PG 4 OF 5



DWG. Nº 47W406-320A,
REV. 0

WBI-DWD-024C
PG 5 OF 5

REV NO.	CHANGE REF	DATE	DFTR	CHKR	DSGN	RVWR	APPD	APPD	APPD	ISSD

SCALE: NTS — EXCEPT AS NOTED

PROJECT FACILITY
REACTOR BUILDING
UNIT 1

TITLE
PROBLEM 0600200-08-09
ANALYSIS ISOMETRIC OF CVCS
PIPING

2 — WATTS BAR NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY

DESIGN		INITIAL ISSUE	ENGINEERING APPROVAL
DRAFTER: DL BILSON	CHECKER: P.D. HARTIGAN	RO ISSUE PER DCN P-04581-B, DCA P04581-02-1, DCA P04581-164-0, DCA P04581-166-0	1
DESIGNER: E.S. JONES	REVIEWER: NA		2

ISSUED BY: | DATE 9-27-95 | 85 | C | 1-47W406-320A | RO

PROCADAM MAINTAINED DRAWING

CONFIGURATION CONTROL DRAWING

CONTAINMENT DEBRIS WALKDOWN PACKAGE WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-024D SHEET 1 OF 6

DATE:	10/28/2003	AREA:	INSTRUMENT ROOM	RWP NO.:	8010
		ELEV:	716'		

INSPECTORS:	C. G. WALLS, FRANK C. YAO

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	590955-069C, SH. 1, REV. D *	
Tools:	590955-069C, SH. 3, REV. D *	
Drawings	590955-071C, SH. 1, REV. B *	
Flashlights	590955-073C, SH. 1, REV. E *	
Ladders	590955-073C, SH. 3, REV. D *	
Cameras	590955-073C, SH. 4, REV. A *	
Binoculars	590955-074C, SH. 3, REV. C *	
Tape measure	47W406-321, REV. E	
Sample bags	1-47W406-321A, REV. 0	
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

COMMENTS

3" NORMAL CHARGING, 3" ALTERNATE CHARGING, ¾" NORMAL CHARGING BYPASS, 2"/3" AUX. SPRAY LINES AT REGENERATIVE HEAT EXCHANGER

CONTINUED TO WALKDOWN PACKAGE NO's. WB1-DWD-017A & - 017F.

* TVA CONTRACT NO. 93NNS-75645C

Prepared By: C. G. WALLS Date: 10/28/03

Checked By: FRANK C. YAO Date: 10/28/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-024D SHEET 2 OF 6

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
0600200-08-11	INSTRUMENT ROOM	716'	24	NORMAL CHARGING LINE	3.50	23.67	RMI	2.75	8.88	S.S.	STD	N/A	AT 9" OD INSULATION
0600200-08-11	INSTRUMENT ROOM	716'	24	NORMAL CHARGING LINE	3.50	1.24	RMI	1.25	0.16	S.S.	STD	N/A	AT 6" OD INSULATION
0600200-08-11	INSTRUMENT ROOM	716'	24	NORMAL CHARGING LINE	3.50	2.82	RMI	1.75	0.57	S.S.	STD	N/A	AT 7" OD INSULATION
0600200-08-11	INSTRUMENT ROOM	716'	24	ALTERNATE CHARGING LINE	3.50	1.18	RMI	2.75	0.44	S.S.	STD	N/A	AT 9" OD INSULATION
0600200-08-11	INSTRUMENT ROOM	716'	24	ALTERNATE CHARGING LINE	3.50	1.69	RMI	2.25	0.48	S.S.	STD	N/A	AT 8" OD INSULATION
0600200-08-11	INSTRUMENT ROOM	716'	24	NORMAL CHARGING BYPASS LINE	1.05	3.34	RMI	1.975	0.44	S.S.	STD	N/A	AT 5" OD INSULATION
0600200-08-11	INSTRUMENT ROOM	716'	24	NORMAL CHARGING BYPASS LINE	1.05	1.80	RMI	0.975	0.08	S.S.	STD	N/A	AT 4" OD INSULATION
0600200-08-11	INSTRUMENT ROOM	716'	24	AUXILIARY SPRAY LINE	2.38	10.84	RMI	2.81	3.45	S.S.	STD	N/A	AT 8" OD INSULATION
0600200-13-02	INSTRUMENT ROOM	716'	24	AUXILIARY SPRAY LINE	3.50	1.05	RMI	2.75	0.39	S.S.	STD	N/A	AT 9" OD INSULATION
0600200-13-02	INSTRUMENT ROOM	716'	24	AUXILIARY SPRAY LINE	3.50	0.84	RMI	0.25	0.02	S.S.	STD	N/A	AT 4" OD INSULATION
0600200-13-02	INSTRUMENT ROOM	716'	24	AUXILIARY SPRAY LINE	3.50	0.59	RMI	0.75	0.04	S.S.	STD	N/A	AT 5" OD INSULATION
0600200-13-02	INSTRUMENT ROOM	716'	24	AUXILIARY SPRAY LINE	3.50	2.21	RMI	0.5	0.10	S.S.	N/A	STD	AT 4.5" OD INSULATION

APPROXIMATE INSULATION LENGTH:

STARTING FROM REGENERATIVE HEAT EXCHANGER:

3" NORMAL CHARGING LINE

AT 9" OD INSULATION:

LENGTH = $\pi(4.5)(90°/180°) + \pi(4.5)(90°/180°) + 5.72 + 36.03 + 3.5 + 4$

$+ \pi(4.5)(90°/180°) + 22.38 + 3 + 26.85 + 36.03 + 13.16 + 36.09 + 2.25$

$+ \pi(4.5)(90°/180°) + 1.5 + 13.63 + 15.12 + 11 + 8.88 + 2 + \pi(4.5)(90°/180°)$

$+ 7 = 284(1/12) = 23.67$FT

AT 6" OD INSULATION: LENGTH = $14.88(1/12) = 1.24$FT

AT 7" OD INSULATION: LENGTH = $10.25 + 11.75 + 11.75 = 33.75(1/12) = 2.82$FT

3" ALTERNATE CHARGING LINE:

AT 9" OD INSULATION: LENGTH = $\pi(4.5)(90°/180°) + 7 = 14.1(1/12) = 1.18$FT

AT 8" OD INSULATION: LENGTH = $2 \times 10.12 = 20.24(1/12) = 1.69$FT

3/4" NORMAL CHARGING BYPASS LINE:

AT 5" OD INSULATION: LENGTH = $24.12 + 6 + 9.88 = 40(1/12) = 3.34$FT

AT 3" OD INSULATION: LENGTH = $7.5 + 6.56 + 7.5 = 22(1/12) = 1.80$FT

2"/3" AUXILIARY SPRAY LINE:

AT 8" OD INSULATION (2.38" OD PIPING):

LENGTH = $7 + 8 + 1 + 5 + 54 + 5 + 49.12 = 130(1/12) = 10.84$FT

AT 9" OD INSULATION (3.5" OD PIPING): LENGTH = $12.5(1/12) = 1.05$FT

AT 4" OD INSULATION (3.5" OD PIPING):

LENGTH = $2.62 + \pi(4.5)(90°/180°) = 10(1/12) = 0.84$FT

AT 5" OD INSULATION (3.5" OD PIPING): LENGTH = $\pi(4.5)(90°/180°)(1/12) = 0.59$FT

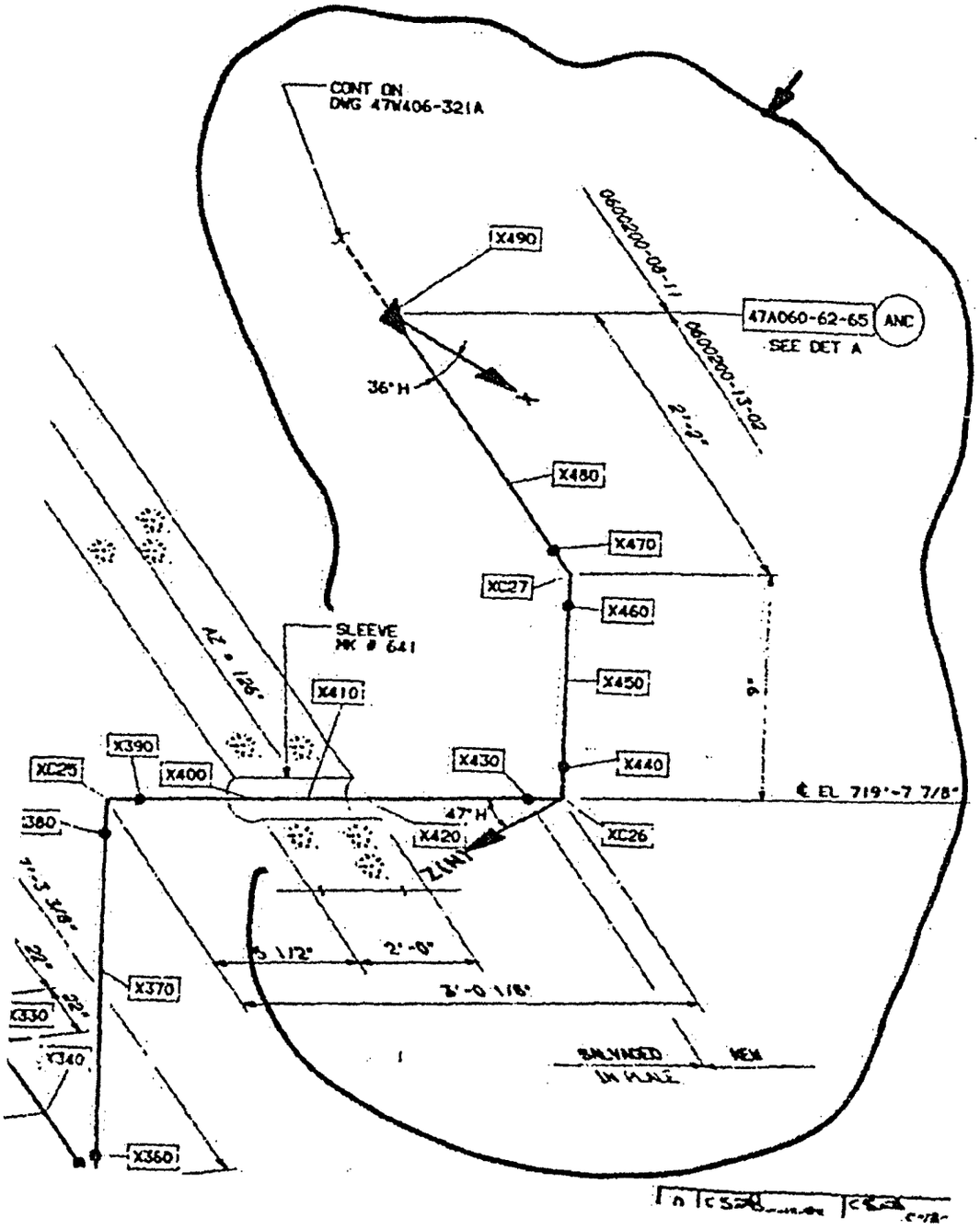
AT 4.5" OD BANDED INSULATION (3.5" OD PIPING):

LENGTH = $(7 \times 3.25) + 3.75 = 26.5(1/12) = 2.21$FT

CONTAINMENT DEBRIS WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-024D
EXCERPT FROM DRAWING 47W465-206D

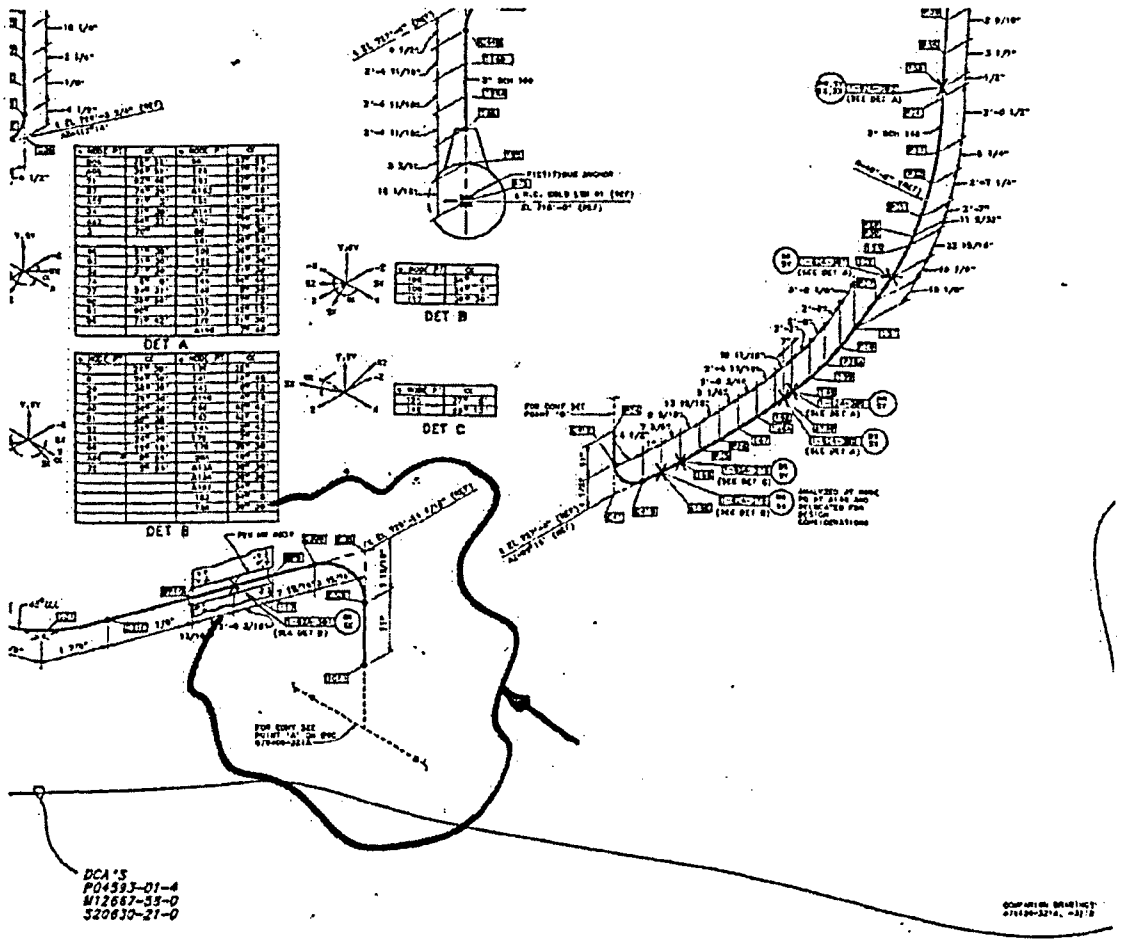
47W465-206D



CONTAINMENT DEBRIS WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-024D

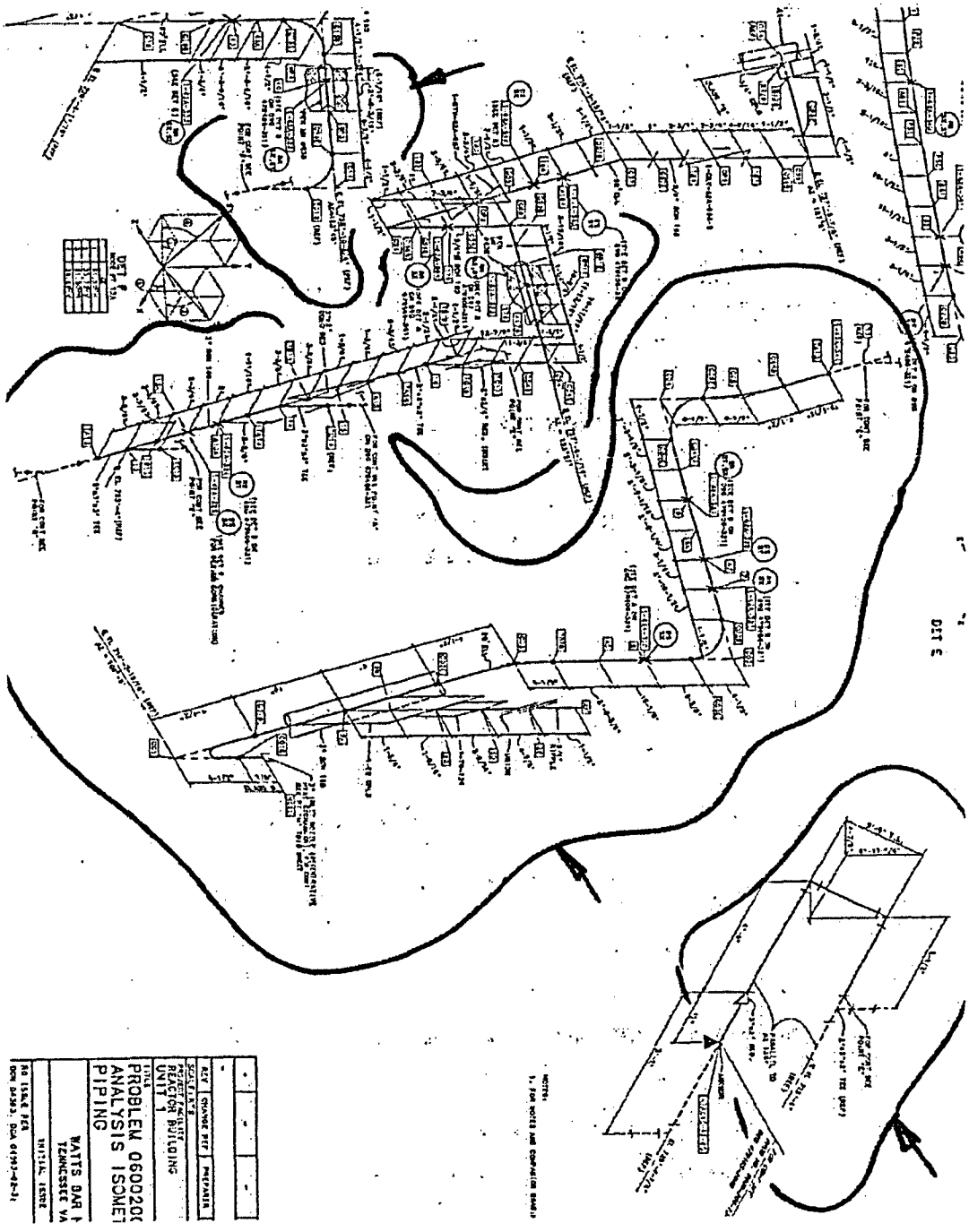
EXCERPT FROM DRAWING 47W406-321



CONTAINMENT DEBRIS WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-024D

EXCERPT FROM DRAWING 1-47W406-321A



CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-024E SHEET 1 OF 3

DATE:	11/04/2003	AREA:	INSTRUMENT ROOM	RWP NO.:	8010
		ELEV:	716'		

INSPECTORS:	C. G. WALLS, FRANK C. YAO

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	590955-064C, SH. 3, REV. D *	
Tools:	590955-064C, SH. 6, REV. B *	
Drawings		
Flashlights		
Ladders		
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	8" RESIDUAL HEAT REMOVAL
	CONTINUED ON WALKDOWN PACKAGE NO's. WB1-DWD-016F & -017C.
	* TVA CONTRACT NO. 93NNS-75645C

Prepared By: C. G. WALLS Date: 11/4/03

Checked By: FRANK C. YAO Date: 11/4/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-024E SHEET 2 OF 3

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
N/A	INSTRUMENT ROOM	716'	24	RESIDUAL HEAT REMOVAL	5.63	55.34	RMI	1.1875	14.07	S.S.	STD	N/A	11" OD INSULATION

APPROXIMATE INSULATION LENGTH:

AT 11" OD INSULATION (8" PIPING): LENGTH = 11.25 + (15 X 33.40) + 22.27 + 7.5 + 17.15 + 15.9 + 27.44 + 27.44 + 6.5 + 26.9 = 664(1/12) = 55.34FT

CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-024F SHEET 1 OF 3

DATE:	11/05/2003	AREA:	INSTRUMENT ROOM	RWP NO.:	8010
		ELEV:	716'		

INSPECTORS:	C. G. WALLS, FRANK C. YAO

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	590955-048C, SH. 1, REV. C *	
Tools:	590955-048C, SH. 6, REV. C *	
Drawings	590955-048C, SH. 7, REV. C *	
Flashlights	47W435-220, REV. D	
Ladders	1-47W435-220A, REV. 0	
Cameras	1-47W435-220B, REV. 0	
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify **installation of insulation** as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any **undocumented** insulation.
3	Inspect and determine longitudinal **seam location** and **band spacing** if necessary.
4	Document any **irregularities** of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any **undocumented fibrous insulation (e.g., within rupture restraints).**
6	Inspect and mark up cable tray drawings to show location of **fire barriers** (vertical and horizontal).
7	Inspect the area for any **weak components** that could be dislodged by jet and that could be transported to sump.
8	Inspect any **equipment insulation** in the area.
9	Inspect and document the general **cleanliness** of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	8" LOWHEAD SAFETY INJECTION
	CONTINUED ON WALKDOWN PACKAGE NO's WB1-DWD-017B & -016G.
	* TVA CONTRACT NO. 93NNS-75645C

Prepared By: C. G. WALLS Date: 11/05/03

Checked By: FRANK C. YAO Date: 11/05/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-024F SHEET 2 OF 3

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
0600200-09-02	INSTRUMENT ROOM	716'	24	LOWHEAD SAFETY INJECTION	8.63	72.67	RMI	1.1875	18.47	S.S.	STD	N/A	11" OD INSULATION

APPROXIMATE INSULATION LENGTH:

AT 11" OD INSULATION (8" PIPING):

LENGTH = 15.12 + 8 + 27.32 + 20.5 + 32.67 + (10 X 35.88) + 23.62 + 23.28

+ 36.5 + 12.91 + 12.5 = 572(1/12) = 47.67FT

CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-024G SHEET 1 OF 4

DATE:	11/05/2003	AREA:	INSTRUMENT ROOM	RWP NO.:	8010
		ELEV:	716'		

INSPECTORS:	C. G. WALLS, FRANK C. YAO

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	590955-077C, SH. 1, REV. B *	
Tools:	590955-077C, SH. 4, REV. C *	
Drawings	1-47W406-322A, REV. 0	
Flashlights		
Ladders		
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	1" EXCESS LETDOWN LINE
	CONTINUED ON WALKDOWN PACKAGE NO. WB1-DWD-017E.
	* TVA CONTRACT NO. 93NNS-75645C

Prepared By: C. G. WALLS Date: 11/05/03

Checked By: FRANK C. YAO Date: 11/05/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-024G SHEET _2_ OF _4_

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
0600200-08-12	INSTRUMENT ROOM	716'	24	EXCESS LETDOWN	1.32	16.67	RMI	2.34	3.11	S.S.	STD	N/A	6" OD INSULATION
0600200-08-12	INSTRUMENT ROOM	716'	24	EXCESS LETDOWN	1.32	1.17	MIN-K	1.34	0.09	S.S.	STD	N/A	4" OD INSULATION
0600200-08-12	INSTRUMENT ROOM	716'	24	EXCESS LETDOWN	1.32	0.72	RMI	1.84	0.09	S.S.	STD	N/A	5" OD INSULATION
0600200-08-12	INSTRUMENT ROOM	716'	24	EXCESS LETDOWN	1.05	0.93	RMI	2.84	0.22	S.S.	STD	N/A	7" OD INSULATION

APPROXIMATE INSULATION LENGTH:

STARTING FROM ACCUMULATOR ROOM 2 WALL:

AT 6" OD INSULATION: LENGTH = 32 + 3 + 2 + 4.5 + (87.88 - 4 - 4 - 3.38*) + 6 + 19.39 + 4 + (34 - 4) + 3 + 4 + 4.62 + 7 + 3 = 200(1/121) = 16.67FT

AT 4" OD MIN-K INSULATION: LENGTH = 4 + 3.38 + 6.62 = 14(1/12) = 1.17FT

AT 5" OD INSULATION: LENGTH = 8.62(1/12) = 0.72FT

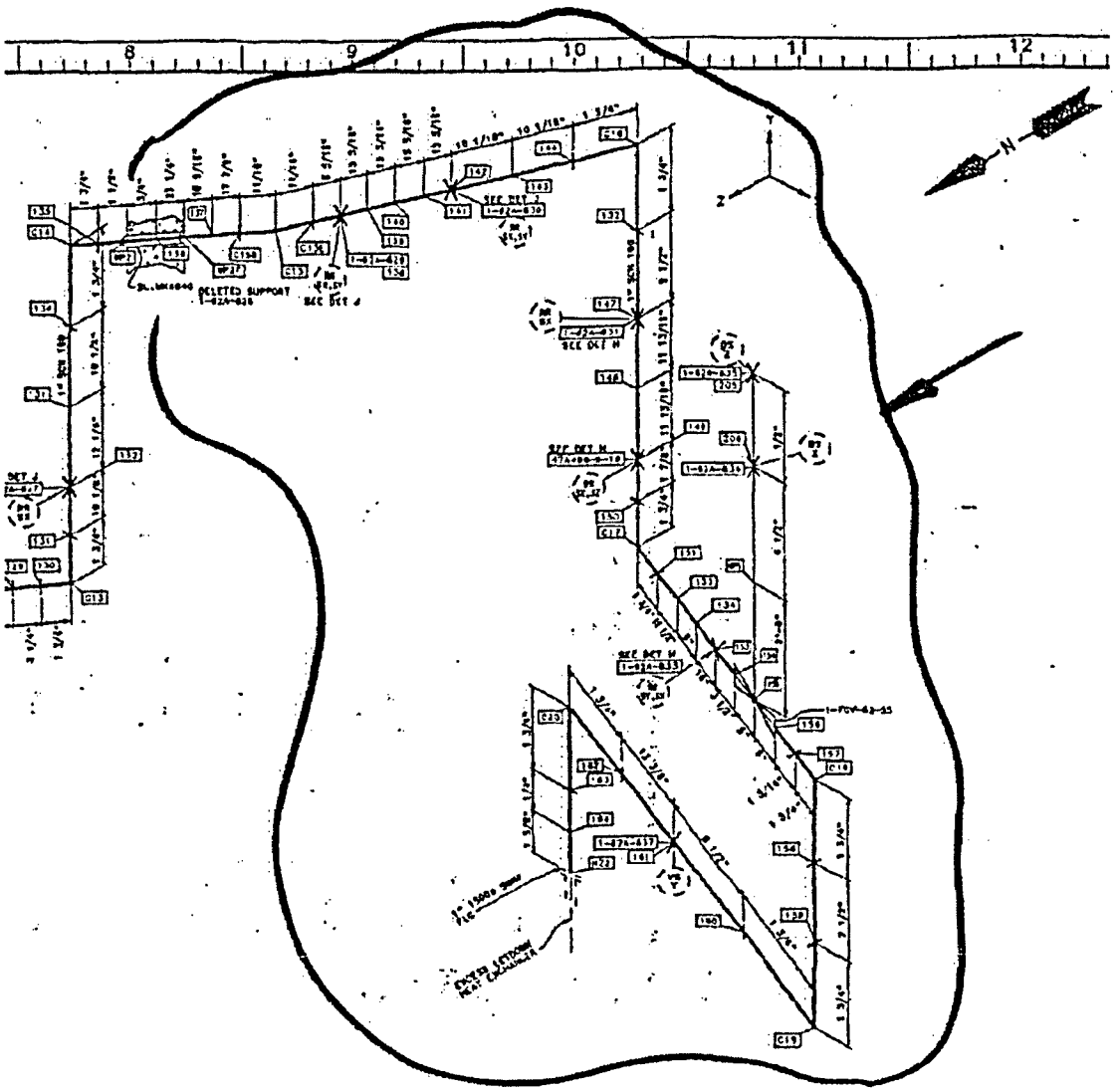
AT 7" OD INSULATION: LENGTH = 11.12(1/12) = 0.93FT

*MIN-K INSULATED

CONTAINMENT DEBRIS WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-024G

EXCERPT FROM DRAWING 1-47W406-322A



NOTES:
1. FOR NOTES AND COMPANION DRAWINGS SEE DRAWING 47W406-322.

REV NO.	CHANGE REF	DATE	DFTR	CHKR	DSGN	RVWR	APPD	APPD	APPD

SCALE: NTS — EXCEPT AS NOTED

PROJECT FACILITY
REACTOR BUILDING
UNIT 1

TITLE
PROBLEM 0600200-08-12

CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-024H SHEET 1 OF 10

DATE:	10/20/2003	AREA:	024	RWP NO.:	8010
		ELEV:	APPROX. 740		

INSPECTORS:	FRANK C YAO, MIKE CALDWELL

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	47W2500-9 & 47W2500-10	1-FOR-304-1
Tools:		45N862-7
Drawings		45N862-8
Flashlights		47N600-331
Ladders		47N600-332
Cameras		DCN 11727-D
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	CONDUIT 1PM7580F
	1-SEN-68-442A
	MIN-K SGB SAMPLE LINE

Prepared By: FRANK C YAO Date: 10/27/03

Checked By: MIKE CALDWELL Date: 10/27/03

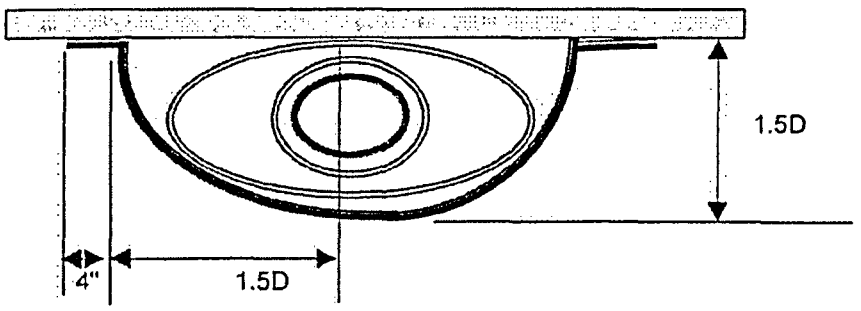
WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-024H SHEET 2 OF 10

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
N/A	INSTRUMENT ROOM	720-737	24	CONDUIT 3M-M20C INSULATION	1.900	50.00	3M-M20C	0.1875	2.192	NA	NA	NA	SEE CALCULATION
N/A	INSTRUMENT ROOM	720-737	24	CONDUIT 3M-M20C INSULATION	0.675	50.00	3M-M20C	0.1875	0.996	NA	NA	NA	SEE CALCULATION
N/A	INSTRUMENT ROOM	720-737	24	CONDUIT 3M-M20C INSULATION	NA	NA	3M-M20C	0.1875	1.540	NA	NA	NA	SUPPORT INSULATION SEE CALCULATION
N/A	INSTRUMENT ROOM	720-737	24	MIN-K INSULATION	0.675	20.00	MIN-K	0.75	1.064	NA	NA	NA	SEE CALCULATION

AREA 24 3M-M20C RADIANT SHIELD CALCULATION

0.25" DIAMETER CONDUIT (OUTSIDE DIA = 1.315")
1 1/2" DIA. CONDUIT (OUTSIDE DIA = 1.9")
2" DIAMETER CONDUIT (OUTSIDE DIA. = 2.375")
3 LAYERS 3M-M20C FOR CONDUIT PER NOTE 1A DRAWING 1-47W243-6
DETAIL C-8 AND NOTE 6 DRAWING 1-47W243-8 SPECIFIES 3 LAYERS WRAP.



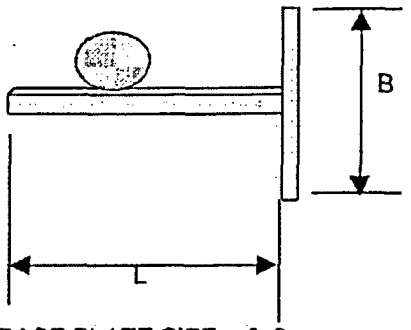
D=DIAMETER OF CONDUIT IN IN"
FIRST LAYER TIGHTLY AROUND CONDUIT
SECOND LAYER IS 1.5D DIAMTER CIRCLEX1.2
THIRD LAYER IS 1.5D RADIUS HALF CIRCLE + 8"

1 1/2" LENGTH = 50'				0.25" CONDUIT LENGTH=50			
1 1/2" DIA. CONDUIT PER LIN FT	D(IN)	PERIMTER (IN)	A(SQ IN) PER LIN FT	0.25" DIA. SENSING PER LIN FT	D(IN)	PERIMTER (IN)	A(SQ IN) PER LIN FT
1ST LAYER	1.9	5.97	71.63	1ST LAYER	0.54	1.70	20.36
2ND LAYER	2.85	10.74	128.93	2ND LAYER	0.81	3.05	36.64
3RD LAYER	5.7	16.95	203.44	3RD LAYER	1.62	10.54	126.54
TOTAL SQ IN PER LIN FT			404.00	TOTAL SQ IN PER LIN FT			183.54
CU FT OF 3M-M20C (3/16" THICK)			0.0438	CU FT OF 3M-M20C (3/16" THICK)			0.0199
CONDUIT LENGTH IN THIS AREA =			50	CONDUIT LENGTH IN THIS AREA =			50
TOTAL CU FT OF INSULATION =			2.192	TOTAL CU FT OF INSULATION =			0.996

MIN-K CALC-OUTSIDE DIAMETER 4" WITH 3/4" THICKNESS

OD	MIN-K THICK	AREA OF INSULATION	LENGTH	VOL(CU IN)	VOL(CU FT)
4	0.75	7.658	20	1837.88	1.064

AREA 07 3M-M20C RADIANT SHIELD CALCULATION

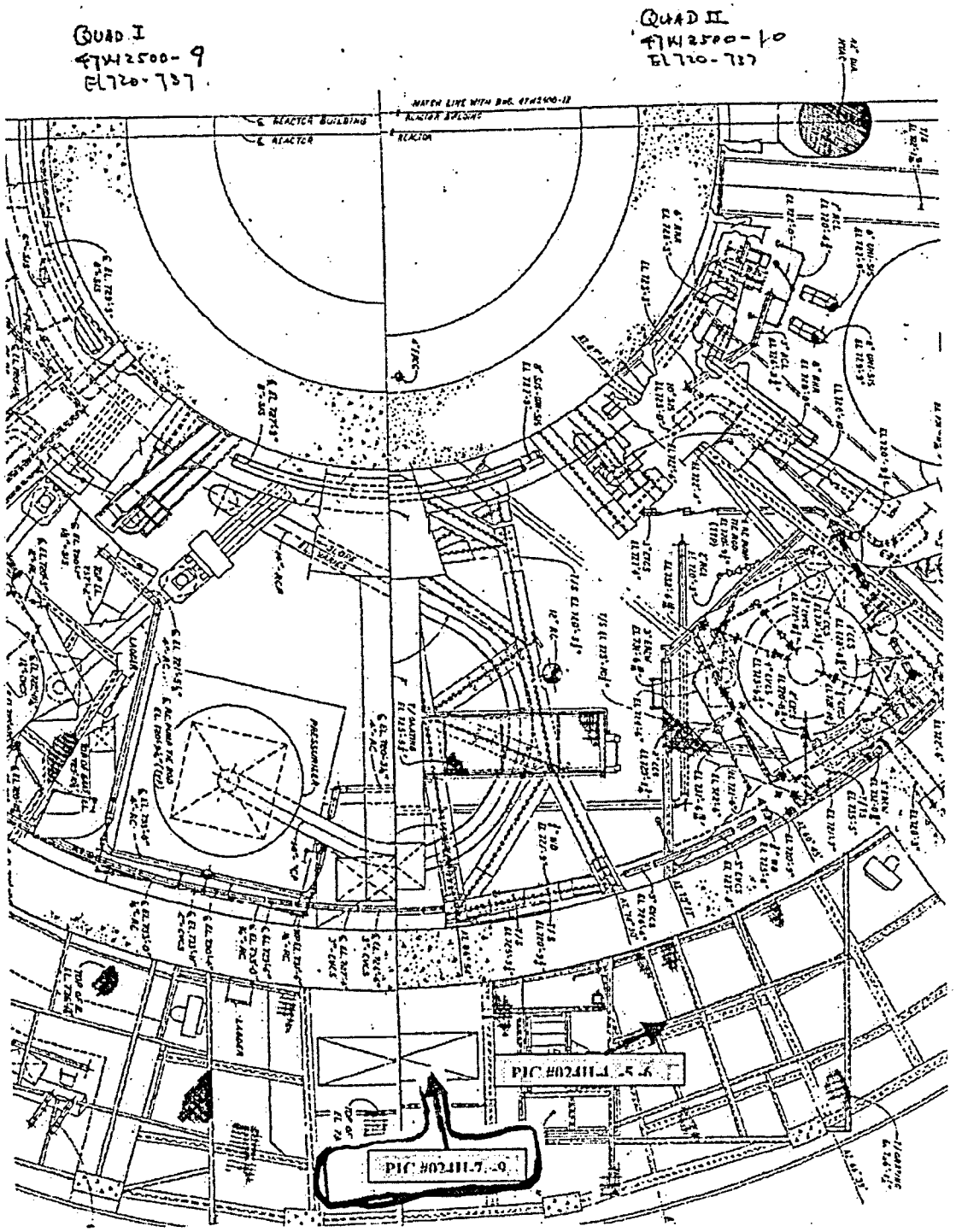


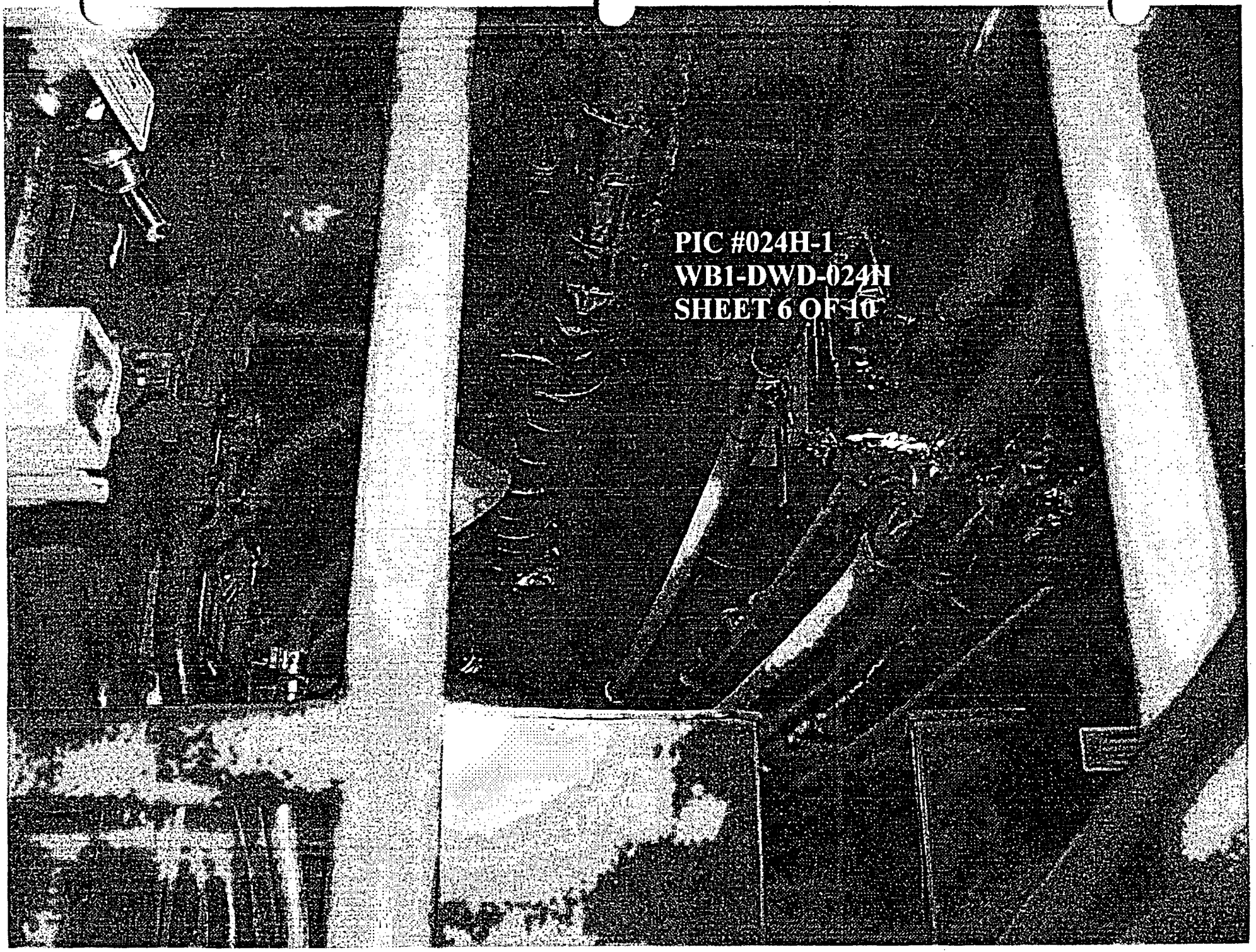
ASSUME A=12" WITH 2x2 SQ TUBE, BASE PLATE SIZE = 9x9
TWO LAYERS OF 3M FIRE BARRIER M20C FOR SUPPORT
COVER BASE PLATE 6" ALL AROUND.

COVERED AREA (ONE LAYER)

	B+6+6	B+6+6	A (IN)	A (SQ FT)
BASE PLATE =	21	21	441	3.06
	L	4xWIDTH		
CANTILEVER MEM =	12	8	96	0.67
SUB TOTAL				3.73
PLUS ENDS ETC 10%				0.373
ONE LAYER TOTAL=				4.10
TWO LAYERS = 2XTOTAL =				8.20
EACH SUPPORT M20C FOR 3/16" THICK IN CU FT =				0.128

ASSUME SUPPORT SPACING IS 10 FT CONDUIT
NUMBER OF SUPPORTS FOR 1 1/2" DIA. CONDUIT=50/10 + 1= 6
NUMBER OF SUPPORTS FOR 2" DIA. CONDUIT=50/10 + 1= 6
NUMBER OF SUPPORTS TOTAL = 12
TOTAL CU FT OF 3M-M20C FOR SUPPORTS = 1.54


QUAD I
47W2500-9
EL720-737
QUAD II
47W2500-10
EL720-737
MATCH LINE WITH DWG. 47W2500-12
℄ REACTOR BUILDING
REACTOR SPLOPE
℄ REACTOR
REACTOR
PRESSURIZER
PIC #024H-7-9
PIC #024H-7-8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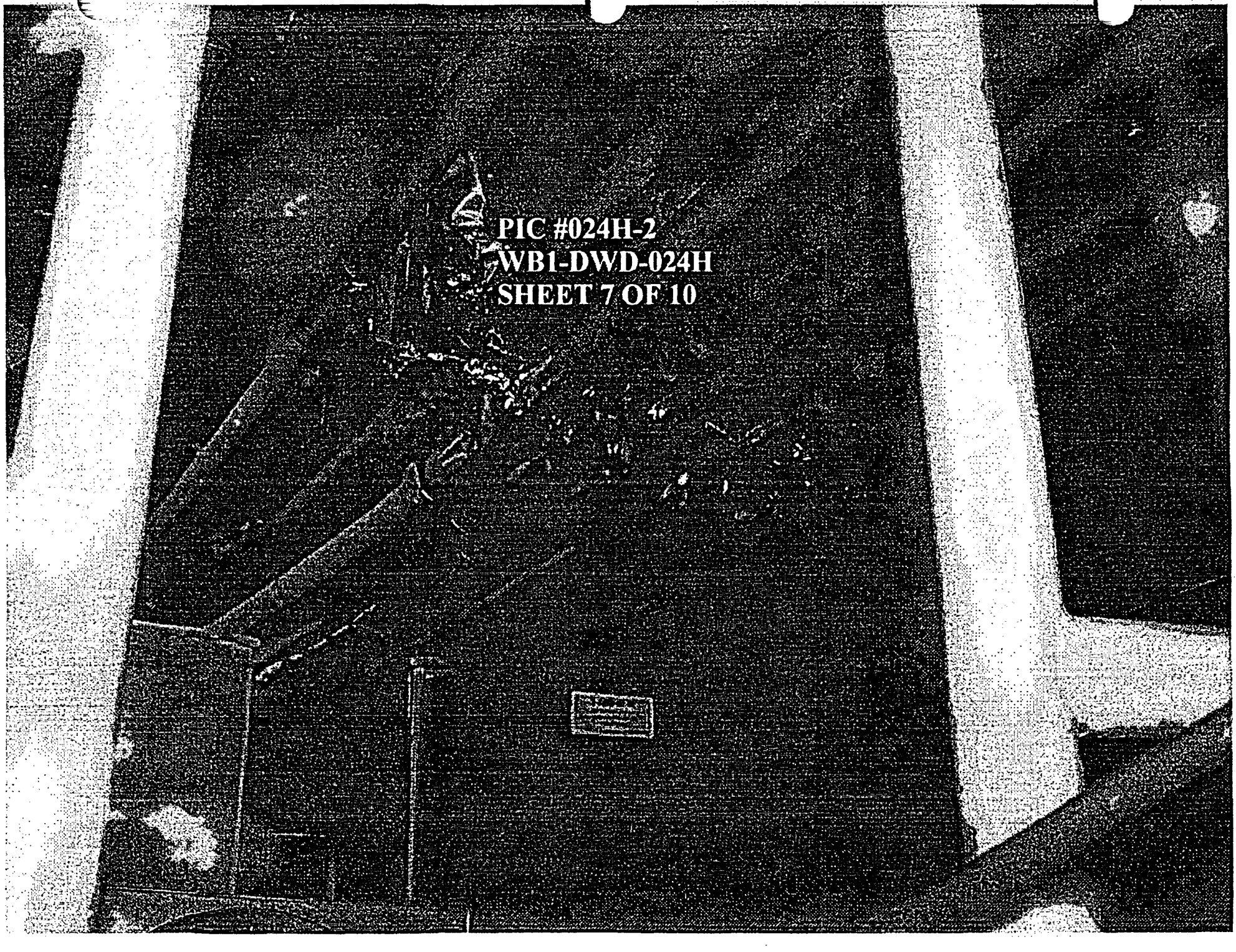
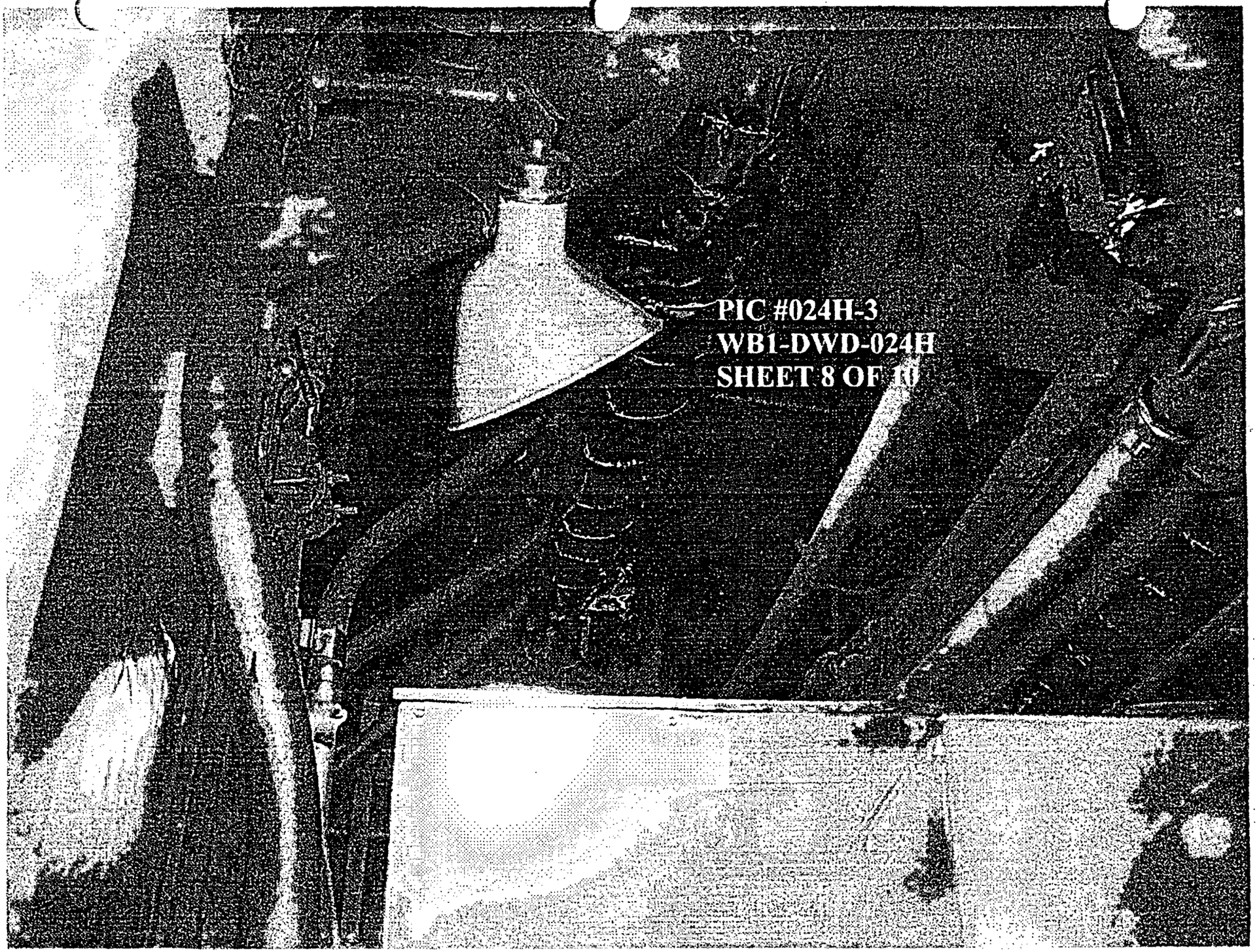
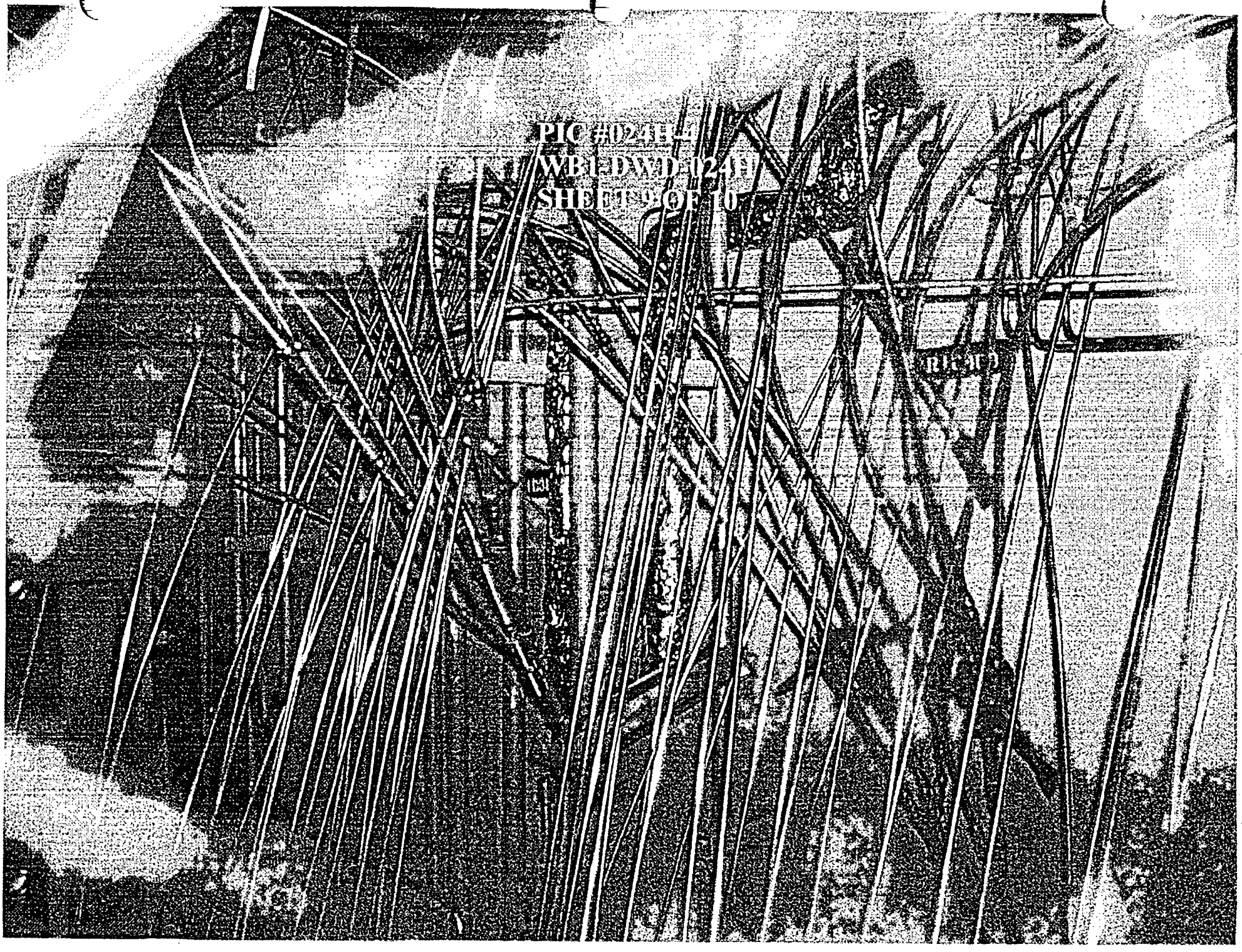
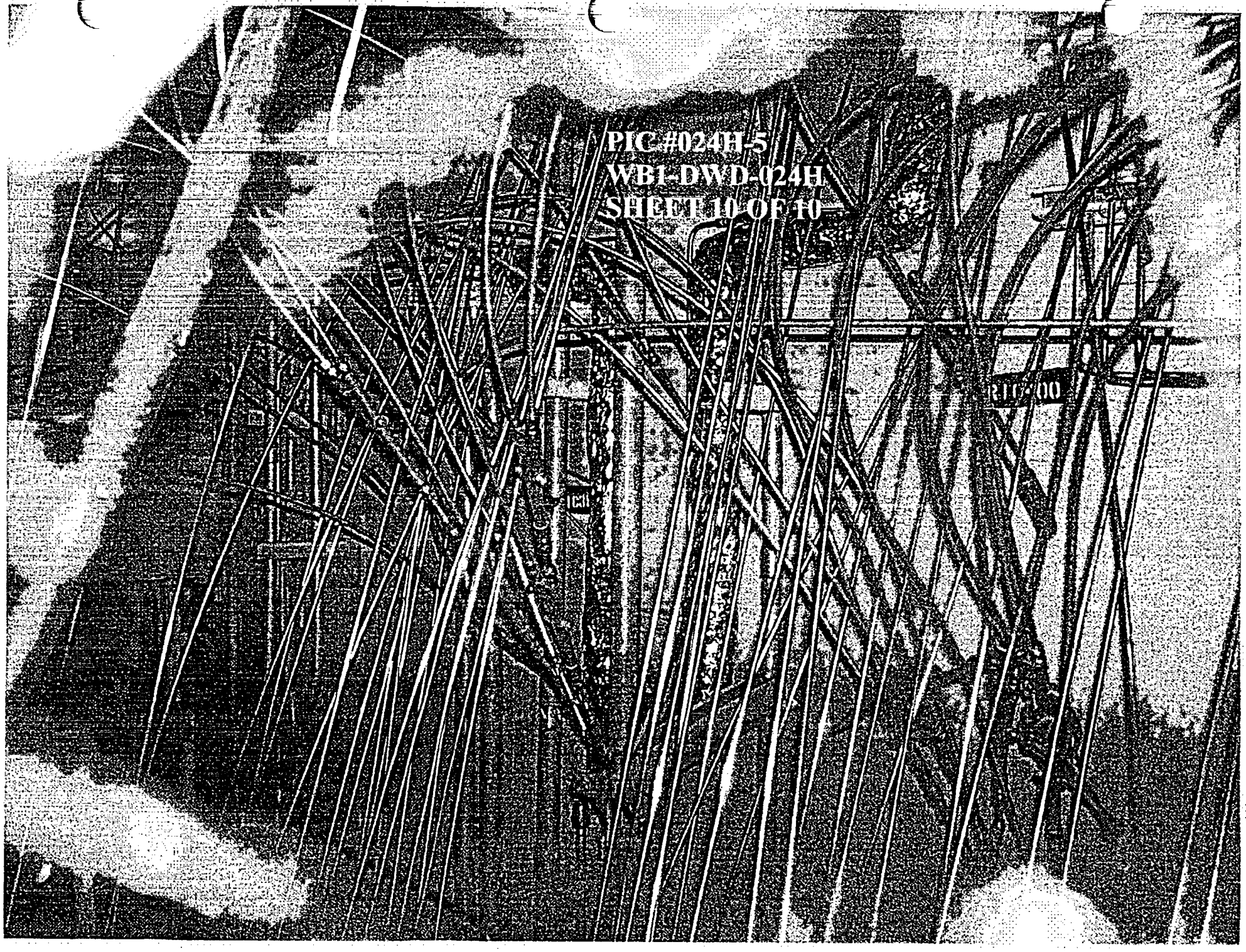
WB1-DWD-024H
SHEET 6 OF 10


PIC #024H-2
WB1-DWD-024H
SHEET 7 OF 10


PIC #024H-3
WB1-DWD-024H
SHEET 8 OF 10


PIC #02414
WB1-DWD-1241
SHEET 9 OF 10


PIC #024H-5
WB1-DWD-024H
SHEET 10 OF 10
210+00

CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-024J SHEET 1 OF 3

DATE:	11/18/2003	AREA:	INSTRUMENT ROOM	RWP NO.:	8010
		ELEV:	716'		

INSPECTORS:	C. G. WALLS, FRANK C. YAO

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	590955-076C, SH. 1, REV. 0 *	
Tools:		
Drawings		
Flashlights		
Ladders		
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	EXCESS LETDOWN HEAT EXCHANGER
	* TVA CONTRACT NO. 93NNS-75645C

Prepared By: C. G. WALLS Date: 11/18/03

Checked By: FRANK C. YAO Date: 11/18/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-024J SHEET _2__ OF _3__

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
N/A	INSTRUMENT ROOM	716'	24	EXCESS LETDOWN HEAT EXCHANGER	18.75	SEE CALC	RMI	SEE CALC	4.00	S.S.	STD	N/A	25" OD INSULATION

APPROXIMATE INSULATION VOLUME:

CONSIDER 3" THK INSULATIONS AT BOTH ENDS:

$$\text{VOLUME} = (1/12^3)[\pi(25^2 - 18.75^2)/4 \times (6.88 + 18.38)]$$

$$+ (1/12^3)[\pi 18.75^2/4 \times 3] + (1/12^3)[\pi(18.75^2 - 8.75^2)/4 \times 3] = 4.00\text{FT}^3$$

CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-024K SHEET 1 OF 3

DATE:	11/18/2003	AREA:	INSTRUMENT ROOM	RWP NO.:	8010
		ELEV:	716'		

INSPECTORS:	C. G. WALLS, FRANK C. YAO

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	590955-077C, SH. 1, REV. B *	
Tools:	590955-077C, SH. 5, REV. C *	
Drawings		
Flashlights		
Ladders		
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	**Verify installation of insulation** as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any **undocumented** insulation.
3	Inspect and determine longitudinal **seam location** and **band spacing** if necessary.
4	Document any **irregularities** of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any **undocumented fibrous insulation (e.g., within rupture restraints).**
6	Inspect and mark up cable tray drawings to show location of **fire barriers** (vertical and horizontal).
7	Inspect the area for any **weak components** that could be dislodged by jet and that could be transported to sump.
8	Inspect any **equipment insulation** in the area.
9	Inspect and document the general **cleanliness** of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	1" EXCESS LETDOWN LINE
	(FROM EXCESS LETDOWN HEAT EXCHANGER TO 4" SEAL WATER RETURN LINE)
	CONTINUED ON WALKDOWN PACKAGE NO. WB1-DWD-001J.
	* TVA CONTRACT NO. 93NNS-75645C

Prepared By: C. G. WALLS Date: 11/18/03

Checked By: FRANK C. YAO Date: 11/18/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-024K SHEET 2 OF 3

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
N/A	INSTRUMENT ROOM	716'	24	EXCESS LETDOWN	1.32	6.00	RMI	2.34	1.12	S.S.	STD	N/A	6" OD INSULATION
N/A	INSTRUMENT ROOM	716'	24	EXCESS LETDOWN	1.32	1.32	RMI	2.84	0.34	S.S.	STD	N/A	7" OD INSULATION
N/A	INSTRUMENT ROOM	716'	24	EXCESS LETDOWN	1.32	0.84	RMI	4.34	0.45	S.S.	STD	N/A	10" OD INSULATION

APPROXIMATE INSULATION LENGTH:

START FROM EXCESS LETDOWN HEAT EXCHANGER:

AT 6" OD INSULATION:

LENGTH = 13.5 + 9.75 + 7.5 + 5 + 18.09 + 18.09 = 71.93(1/12) = 6.00FT

AT 7" OD INSULATION:

LENGTH = 10.38 + 5.5 = 15.88(1/12) = 1.32FT

AT 10" OD INSULATION:

LENGTH = 10(1/12) = 0.84FT

ATTACHMENT K:

SAMPLE PACKAGE CHANGE NOTICE

Originator _____ 8-20-04
Glenn Walls Date

Checker _____ 8/20/04
Michael Caldwell Date

CONTAINMENT DEBRIS
PACKAGE CHANGE NOTICE
WATTS BAR UNIT 1

DATE:	**AREA:**	**ELEV:**
Package Number:	**REV:**	**PROBLEM NUMBER:**

CHECK BOX IF ANY OF THE FOLLOWING PROPERTIES WERE CHANGED

	PROPERTY	IF CHANGED ENTER NEW DATA HERE
☐	Description	
☐	Outside Diameter	
☐	Length	
☐	Insulation Type	
☐	Insulation Thickness	
☐	Insulation Volume	
☐	Jacket Material	
☐	Buckle Type	
☐	Strap Type	
☐	Comments	

DESCRIPTION OF CHANGE:

REFERENCES:

Prepared By: _____ Date: _____

Checked By: _____ Date: _____

CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-009A SHEET 1 OF 9

DATE:	10/22/2003	AREA:	LOOP 4	RWP NO.:	8010
		ELEV:	716'		

INSPECTORS:	C. G. WALLS, MIKE SOLLIE

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	590955-001C, SH. 1, REV. C *	
Tools:	590955-001C, SH. 2, REV. B *	
Drawings	590955-002C, SH. 4 REV. C *	
Flashlights	590955-003C, SH. 4 REV. B *	
Ladders	590955-004C, SH. 4 REV. C *	
Cameras	590955-005C, SH. 4 REV. A *	
Binoculars	590955-006C, SH. 4 REV. C *	
Tape measure	590955-104C, SH. 1, REV. A *	
Sample bags	590955-104C, SH. 2, REV. A *	
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	STEAM GENERATOR
	* TVA CONTRACT NO. 93NNS-75645C
	NOTE: THIS WALKDOWN PACAKAGE COVERS INSULATIONS AREA OF STEAM GENERATOR UP TO ELEVATION 745'-0". SEE WALKDOWN PACKAGE NO. WB1-DWD-013C FOR UPPER AREA.

Prepared By: C. G. WALLS [signature] Date: 10/22/03

Checked By: MIKE SOLLIE [signature] Date: 10/3/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-009A SHEET 2 OF 9

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
N/A	LOOP 4	716'	9	STEAM GENERATOR	SEE CALC	SEE CALC	RMI	SEE CALC	215.60	S.S.	STD	N/A	N/A
N/A	LOOP 4	716'	9	STEAM GENERATOR	SEE CALC	SEE CALC	RMI	SEE CALC	0.58	S.S.	STD	N/A	AT ROOT VALVES

APPROXIMATE INSULATION VOLUME:

AT BOTTOM PORTION:
$V = \pi(71.5^2 - 68.83^2) \times (35 + 17.4)$

$+ (1/3)\pi 41.54[71.5^2 + 22^2 + (71.5)(22)] - (1/3)\pi 41.54[68.83^2 + 19.33^2 + (68.83)(19.33)]$

$+ [\pi(22/2)^2 \times 2.67] - (2)[\pi(53/2)^2 \times 2.67] - (2)[\pi(36.62/2)^2 \times 2.67]$

$- (4)[20 \times (18.75 + 15.5/\cos 40°) \times 2.67] = 68612(1/12^3) = 39.7 FT^3$

AT COOLANT INLET/OUTLET NOZZLE COVERS:
$V = (2)[\pi(28^2 - 21^2) \times 2.67] + (2)[\pi(28^2 - 25.33^2) \times 3.77] = 8828(1/12^3) = 5.11 FT^3$

AT MANHOLE COVERS:
$V = (2)[\pi 19.33^2 \times 2.67] + (2)[\pi(22^2 - 19.33^2) \times 11] = 13911(1/12^3) = 8.05 FT^3$

AT UPPER PORTION:
$V = [\pi(73.045^2 - 70.375^2)] \times 228.69] - [\pi(51.5/2)^2 \times 2.67]$

$- (2)[22 \times 61.5 \times 2.67] = 262331(1/12^3) = 151.82\ FT^3$

AT HANDHOLE/SLUDGE LANCE/BLOWDOWN LINE COVERS:
$= (2)[66.23 \times 27.33 \times 2.67] + (4)[66.23 \times 4.33 \times 2.67]$

$+ (4)[21.99 \times 4.33 \times 2.67] = 13746(1/12^3) = 7.96 FT^3$

AT FEEDWATER NOZZLE COVER:
$V = \pi(17.75^2 - 15.08^2) \times 18.55 = 5109(1/12^3) = 2.96 FT^3$

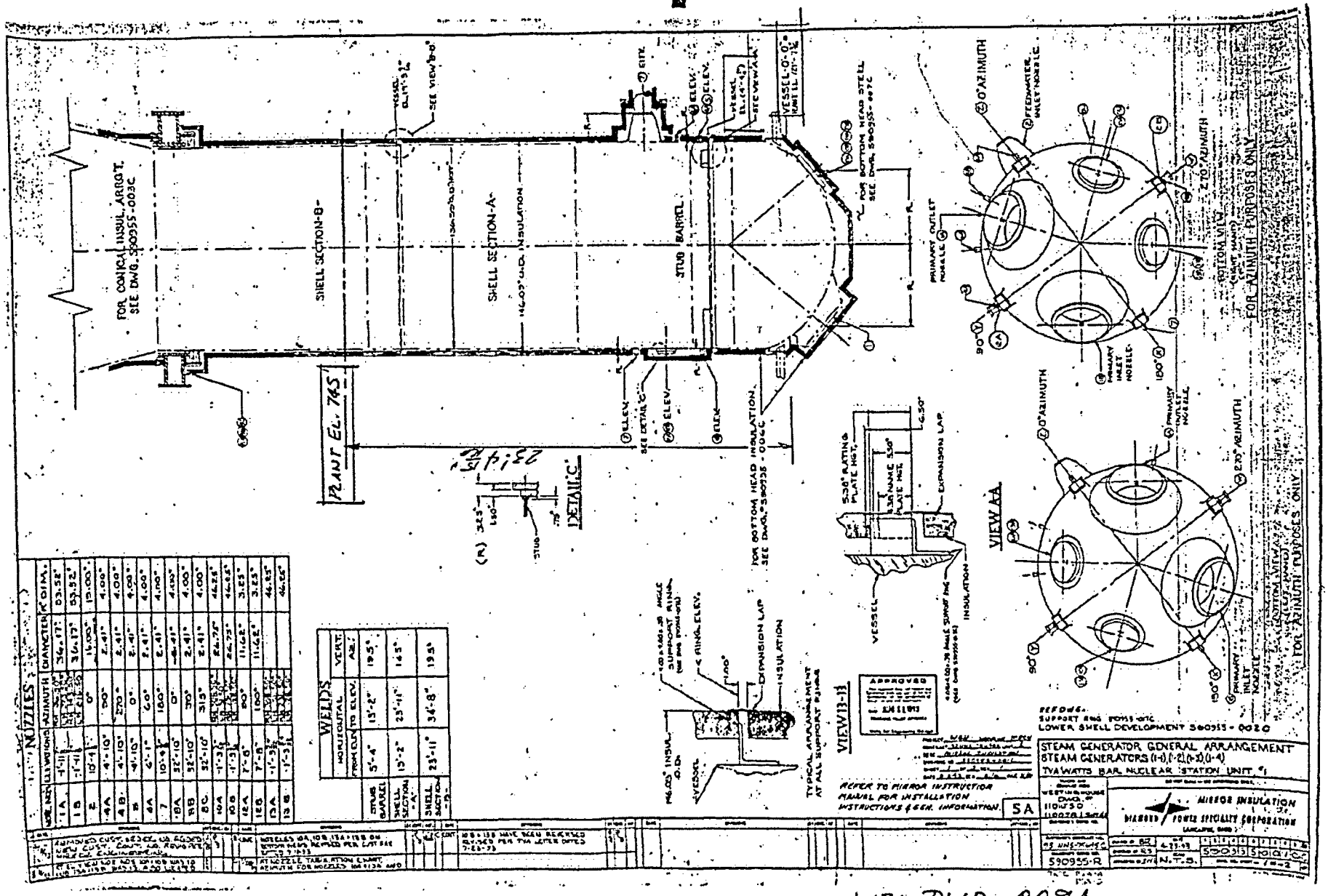
TOTAL VOLUME AT SG = 39.7 + 5.11 + 8.05 + 151.82 + 7.96 + 2.96 = $215.6 FT^3$

AT 3/4" ROOT VALVE:
$V = \pi(5^2 - 1.06^2)/4 \times 4.45 = 122(1/12^3) = 0.1 FT^3$

AT 1" ROOT VALVE (SEE DWG 590955-104C, SH. 1):
$V = [\pi(5^2 - 1.32^2)/4 \times 10.75] + [\pi(7^2 - 1.32^2)/4 \times 7] = 457(1/12^3) = 0.27 FT^3$

AT 1" ROOT VALVE (SEE DWG 590955-104C, SH. 2):
$V = [\pi(5^2 - 1.32^2)/4 \times 4.7] + [\pi(7^2 - 1.32^2)/4 \times 7] = 346(1/12^3) = 0.21 FT^3$

TOTAL VOLUME AT VALVES = 0.1 + 0.27 + 0.21 = $0.58 FT^3$



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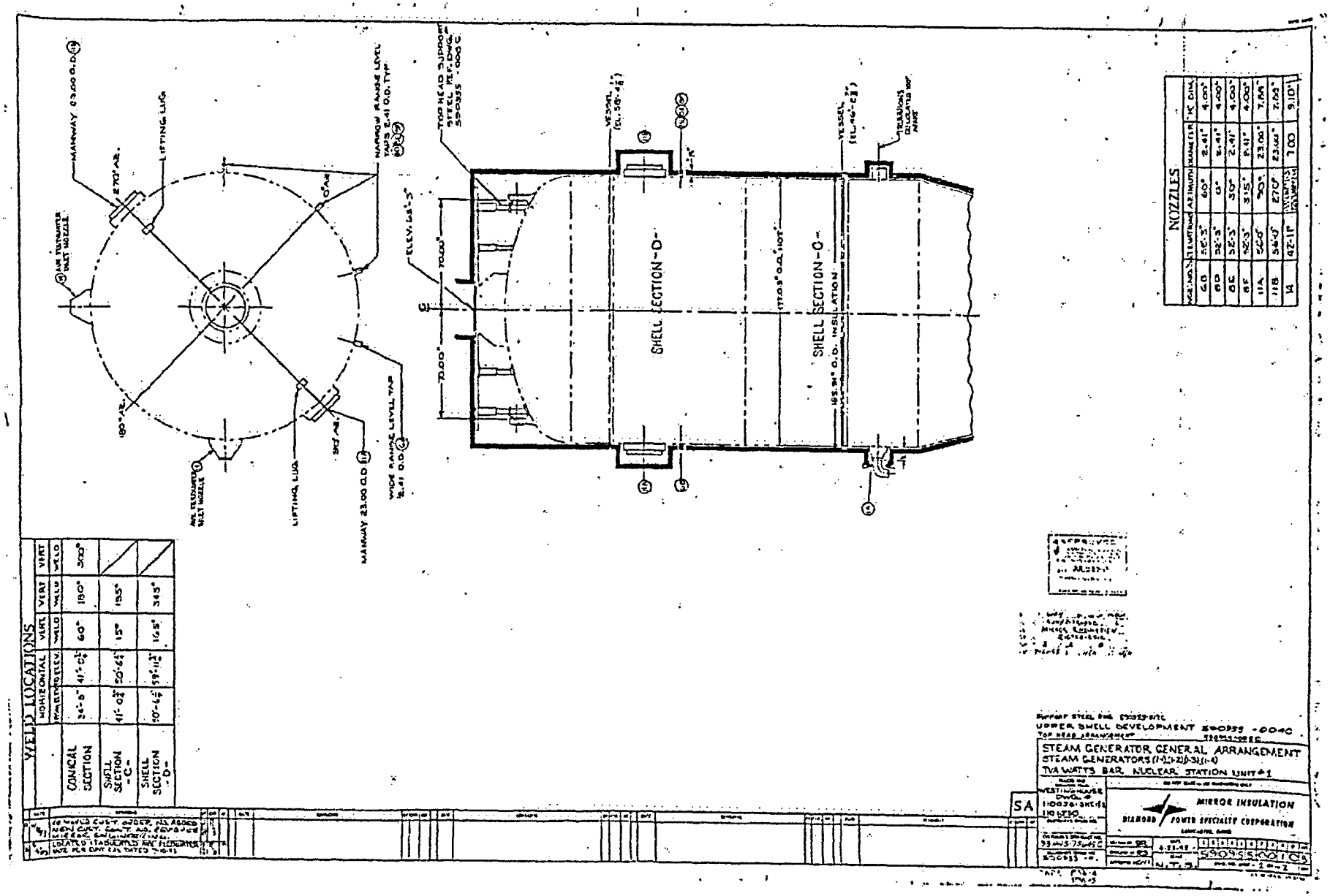

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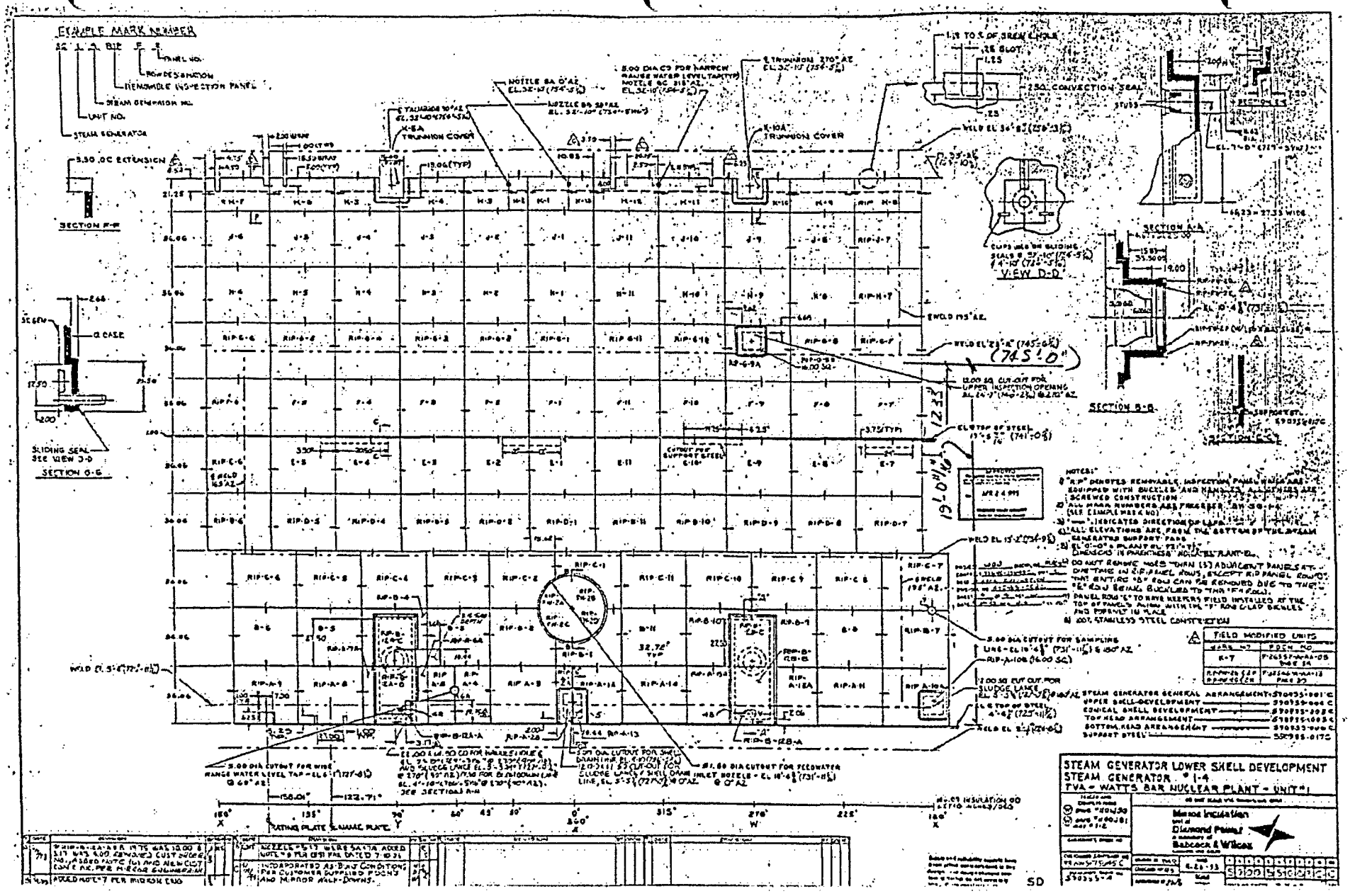

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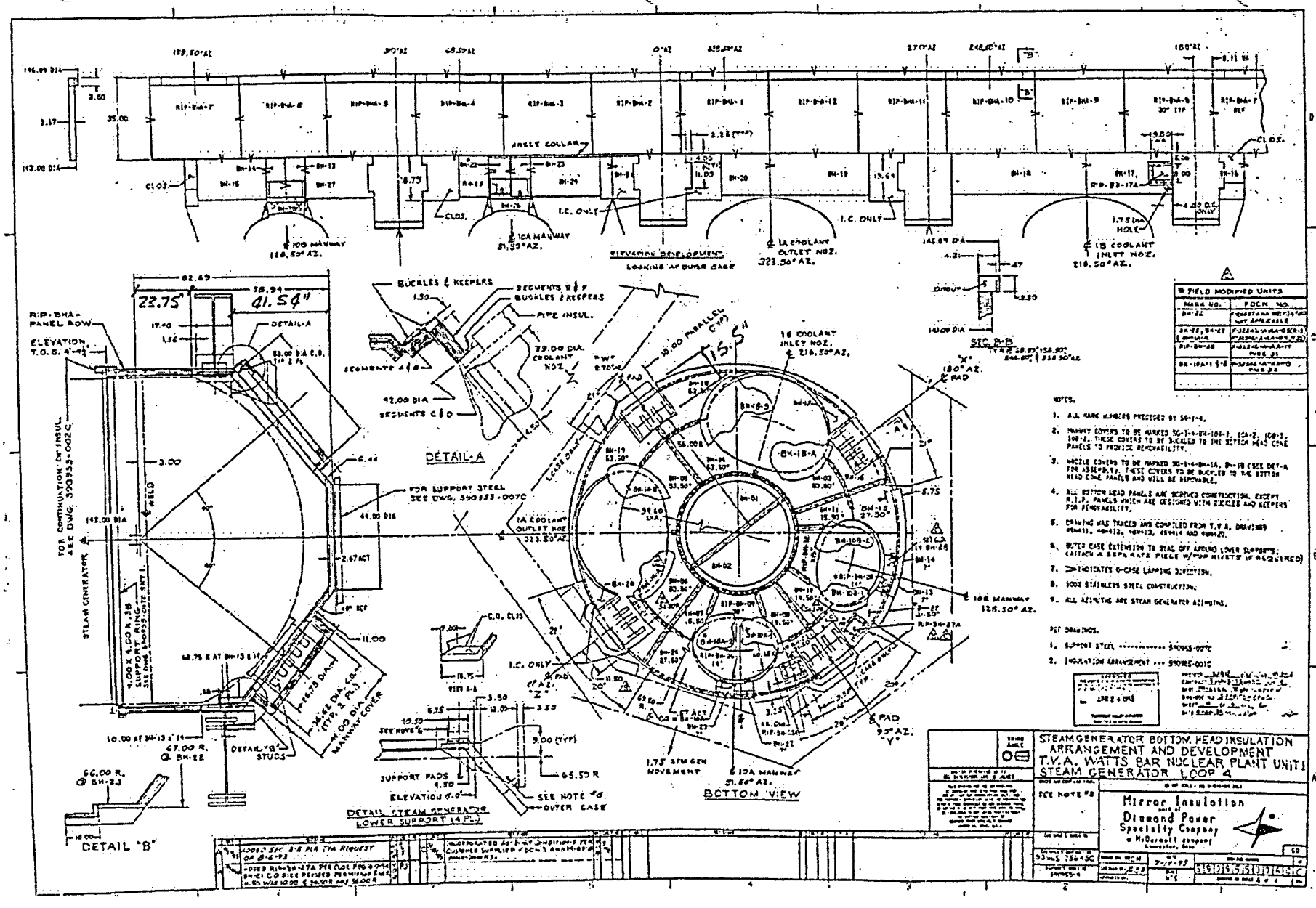

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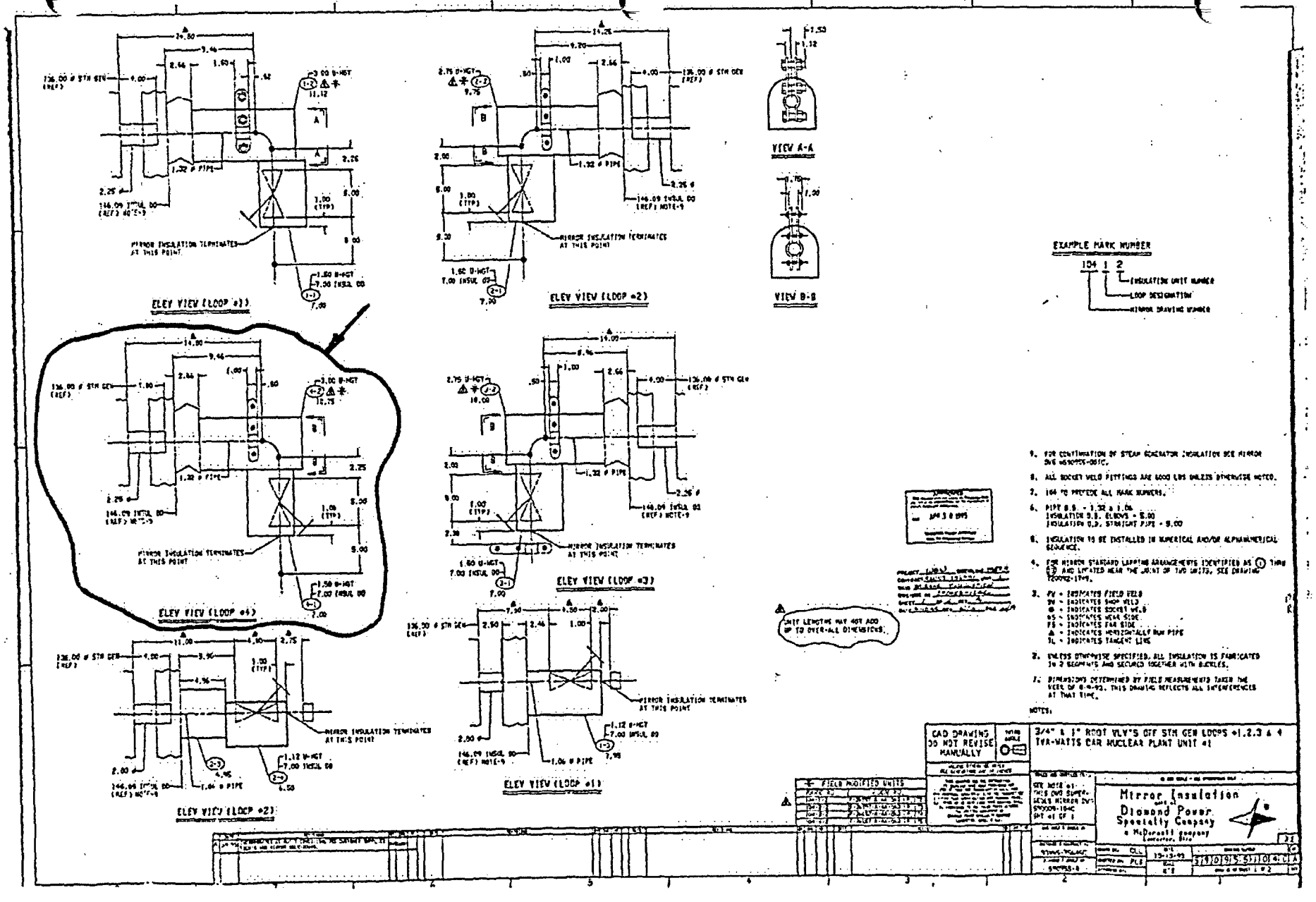

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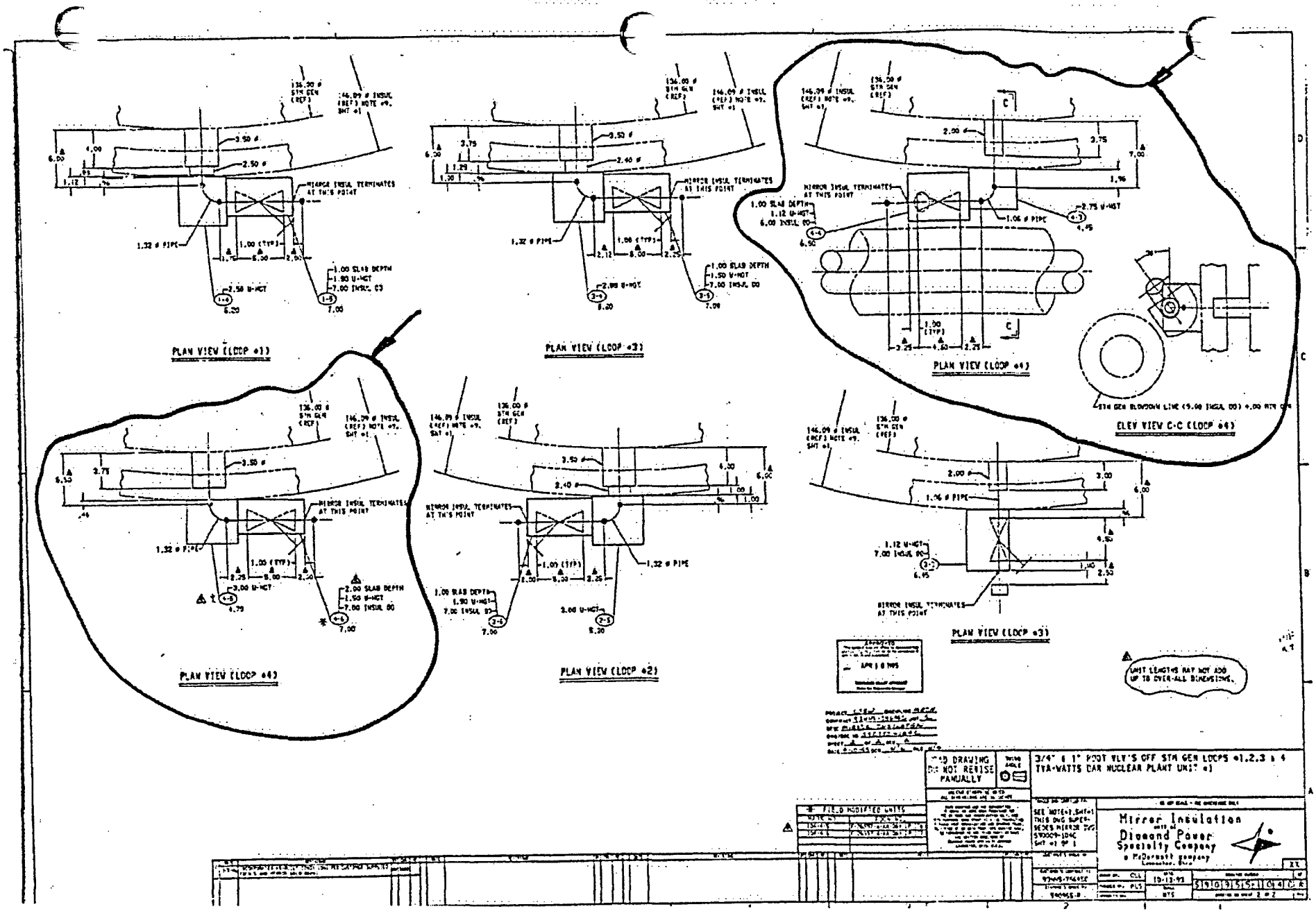

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CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-009B SHEET 1 OF 34 10/23/03

DATE:	10/23/2003	AREA:	LOOP 4	RWP NO.:	8010
		ELEV:	716'		

INSPECTORS:	C. G. WALLS, MIKE SOLLIE

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	590955-058C, SH. 1, REV. D *	
Tools:	590955-058C, SH. 4, REV. C *	
Drawings	590955-059C, REV. B *	
Flashlights	47W401-211, REV. E	
Ladders		
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	16" FEEDWATER PIPING
	* TVA CONTRACT NO. 93NNS-75645C

Prepared By: C. G. WALLS *CGWalls* Date: 10/23/02

Checked By: MIKE SOLLIE *Mike Sollie* Date: 10/23/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-009B SHEET 2 OF 4

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
0600200-02-04	LOOP 4	716'	9	FEEDWATER	16.00	20.07	RMI	2.5	20.25	S.S.	STD	N/A	21" OD INSULATION
0600200-02-04	LOOP 4	716'	9	FEEDWATER	16.00	6.78	RMI	0.5	1.22	S.S.	STD	N/A	17" OD INSULATION
0600200-02-04	LOOP 4	716'	9	FEEDWATER	SEE CALC	SEE CALC	RMI	SEE CALC	0.35	S.S.	STD	N/A	AT 1.88" OD LINE
0600200-02-04	LOOP 4	716'	9	FEEDWATER	SEE CALC	SEE CALC	RMI	SEE CALC	0.14	S.S.	STD	N/A	AT 1" LINE
0600200-02-04	LOOP 4	716'	9	FEEDWATER	30.25	0.50	MINERAL WOOL	2	0.70	N/A	STD	N/A	AT PENETRATION # X-12D

APPROXIMATE INSULATION LENGTH:

STARTING FROM LOOP 3 STEAM GENERATOR:

AT 21" OD INSULATION:

LENGTH = $(1/2)[\pi(24)(60°/180°)] + (1/2)[\pi(24)(90°/180°)] + (22.75 - 7.5 - 3)$

$+ \pi(24)(90°/180°) + 73.25 + \pi(24)(90°/180°) + 11 + (1/4)[\pi(24)(90°/180°)] + (15 + 13)$

$= 241(1/12) = 20.07$FT

AT 17" OD INSULATION:

LENGTH = $(1/2)[\pi(24)(60°/180°)] + (1/2)[\pi(24)(90°/180°)] + 7.5$

$+ (3/4)[\pi(24)(90°/180°)] + 7.87 = 81.35(1/12) = 6.78$FT

AT 1.88" OD LINE:

VOLUME = $[\pi(6^2 - 1.88^2)/4 \times (6 + 6)] + [\pi(7^2 - 1.88^2)/4 \times 8.25]$

$= 601(1/12)^3 = 0.35$FT^3

AT 1" LINE (SEE DWG. 590955-059C):

VOLUME = $[\pi(5^2 - 1.32^2)/4 \times 2.5] + [\pi(6^2 - 1.32^2)/4 \times 7]$

$= 235(1/12)^3 = 0.14$FT^3

AT PENETRATION #X-12D (MINERAL WOOL INSULATION) (SEE DWG. 590955-082C):

LENGHT = $(2 \times 3") = 6(1/12) = 0.5$FT

DWG. No. 47W401-211, REV. E

WBI-DWD-009B

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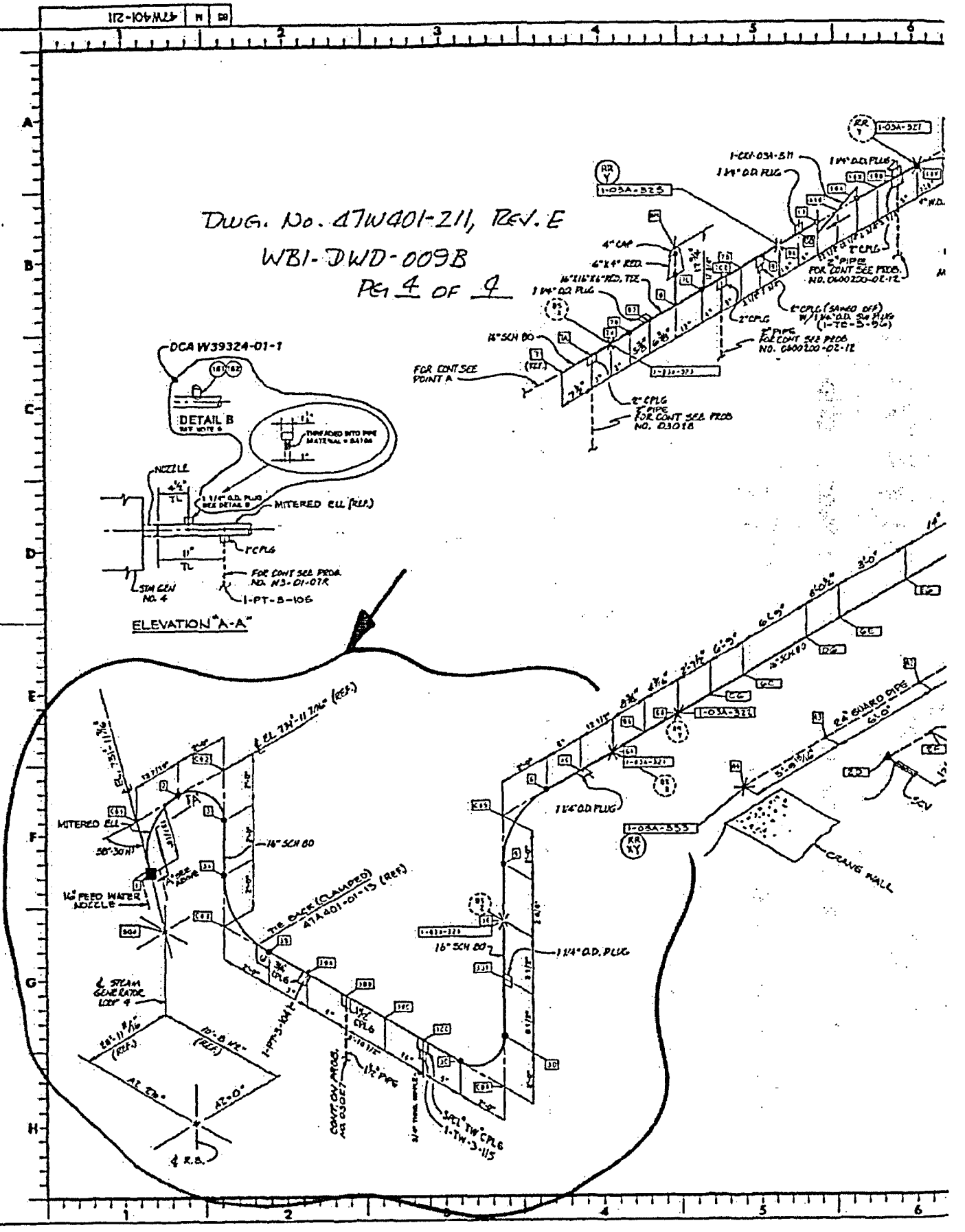

CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-009C SHEET 1 OF 3

DATE:	11/20/2003	AREA:	LOOP 4	RWP NO.:	8010
		ELEV:	716'		

INSPECTORS:	C. G. WALLS, FRANK C. YAO

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	590955-041C, SH. 1 (NOTES ONLY), REV. C *	
Tools:	590955-041C, SH. 4, REV. C *	
Drawings	47W2500-8, REV. 2	
Flashlights		
Ladders		
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	REACTOR COOLANT HOT LEG
	* TVA CONTRACT NO. 93NNS-75645C

Prepared By: C. G. WALLS Date: 11/20/03

Checked By: FRANK C. YAO Date: 11/20/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-009C SHEET 2 OF 3

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
N/A	LOOP 4	716'	9	HOT LEG	SEE CALC	SEE CALC	RMI	SEE CALC	72.51	S.S.	STD	N/A	N/A

APPROXIMATE INSULATION VOLUME:

AT LOOP: (START FROM STEAM GENERATOR NOZZLE)

$V = [\pi(42^2 - 34^2)/4 \times 4.5] + [\pi(46^2 - 36.5^2)/4 \times 3]$

$+ [\pi(46^2 - 36.5^2)/4 \times \pi(54)(50°)/180°] + [\pi(46^2 - 34^2)/4 \times (2 + 2.12)]$

$+ [\pi(43^2 - 34^2)/4 \times (155.81 - 2.12 + 1.66)] = 120665(1/12^3) = 69.83 FT^3$

AT RHR LINE:

$V = [\pi(27^2 - 14^2)/4 \times 11.06] = 4630(1/12^3) = 2.68 FT^3$

TOTAL VOLUME = $69.83 + 2.68 = 72.51 FT^3$

CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-009D SHEET 1 OF 3

DATE:	10/09/2003	AREA:	LOOP 4	RWP NO.:	8010
		ELEV:	716'		

INSPECTORS:	C. G. WALLS, FRANK C. YAO

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	590955-042C, SH. 1, REV. C (NOTES ONLY) *	
Tools:	590955-042C, SH. 4, REV. E *	
Drawings	47W2500-8, REV. 2	
Flashlights		
Ladders		
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	REACTOR COOLANT COLD LEG
	* TVA CONTRACT NO. 93NNS-75645C

Prepared By: C. G. WALLS Date: 10/9/03

Checked By: FRANK C. YAO Date: 10/9/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-009D SHEET 2 OF 3

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
N/A	LOOP 4	716'	9	COLD LEG	SEE CALC	SEE CALC	RMI	SEE CALC	54.86	S.S.	STD	N/A	N/A

APPROXIMATE INSULATION VOLUME:

AT LOOP: (START FROM REACTOR COOLANT PUMP NOZZLE)

$V = [\pi(39^2 - 32.25^2)/4 \times (222.56 - 3.05-3)] + [\pi(40^2 - 33^2)/4 \times (3 + 1.97)]$

$+ [\pi(40^2 - 33^2)/4 \times \pi(40)(22°)/180°] + [\pi(40^2 - 33^2)/4 \times 4.19]$

$= 91569(1/12^3) = 53.00 FT^3$

AT ACCUMULATOR INJECTION LINE:

$V = [\pi(27^2 - 15.9^2)/4 \times (44.75 - (39/2 \cos 45°)]/2 = 3212(1/12)^3 = 1.86 FT^3$

TOTAL VOLUME = 53.00 + 1.86 = $54.86 FT^3$

CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-009E SHEET 1 OF 34 10/30/03

DATE:	10/30/2003	AREA:	LOOP 4	RWP NO.:	8010
		ELEV:	716'		

INSPECTORS:	C. G. WALLS, MIKE SOLLIE

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	590955-047C, SH. 1, REV. A *	
Tools:	590955-047C, SH. 2, REV. A *	
Drawings	1-47W435-217A, REV. 0	
Flashlights		
Ladders		
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	1 ½" BORON INJECTION AT RC COLD LEG LOOP 4
	* TVA CONTRACT NO. 93NNS-75645C

Prepared By: C. G. WALLS Date: 10/30/03

Checked By: MIKE SOLLIE Date: 11/5/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-009E SHEET 2 OF 4

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
0600200-09-05	LOOP 4	716'	9	BORON INJECTION	1.90	4.45	RMI	2.55	1.10	S.S	STD	N/A	7" OD INSULATION
0600200-09-05	LOOP 4	716'	9	BORON INJECTION	1.90	0.90	RMI	7.6	1.42	S.S.	STD	N/A	9.5" OD INSULATION

APPROXIMATE INSULATION LENGTH:

START FROM RC COLD LEG:

AT 7" OD INSULATION: LENGTH = 14.38 + 21.5 + 8.5 + 5 + 3.94 = 53.4(1/12) = 4.45FT

AT 9.5" OD INSULATION: LENGTH = 10.75(1/12) = 0.90FT

DWG. NO. 1-47W435-217A
WBI-DWD-009E
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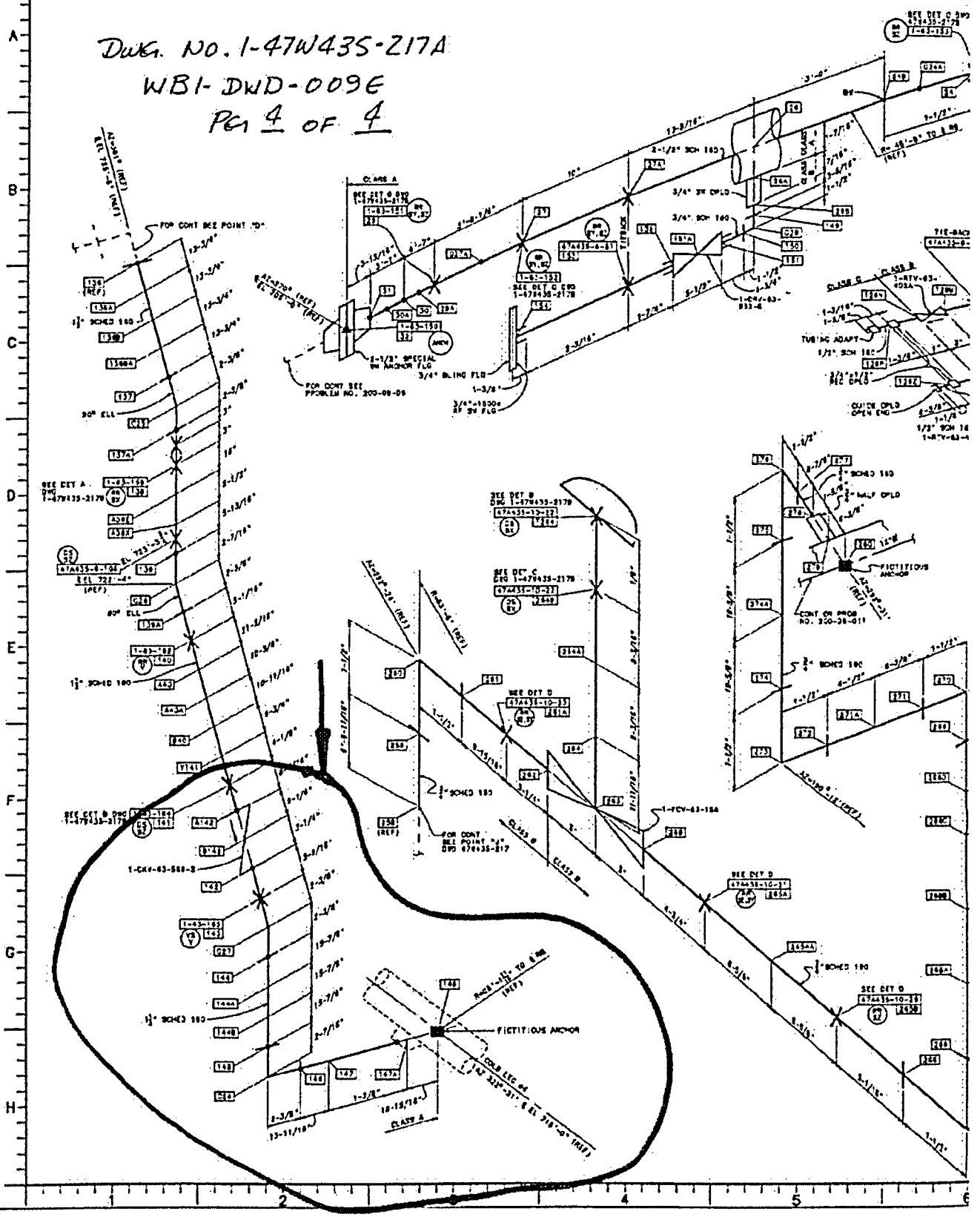


CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-009F SHEET 1 OF 3

DATE:	10/31/2003	AREA:	LOOP 4	RWP NO.:	8010
		ELEV:	716'		

INSPECTORS:	C. G. WALLS, FRANK C. YAO

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	590955-046C, SH. 1, REV. D *	
Tools:	590955-046C, SH. 4, REV. C *	
Drawings	47W435-260, REV. F	
Flashlights		
Ladders		
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	**Verify installation of insulation** as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any **undocumented** insulation.
3	Inspect and determine longitudinal **seam location** and **band spacing** if necessary.
4	Document any **irregularities** of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any **undocumented fibrous insulation (e.g., within rupture restraints).**
6	Inspect and mark up cable tray drawings to show location of **fire barriers** (vertical and horizontal).
7	Inspect the area for any **weak components** that could be dislodged by jet and that could be transported to sump.
8	Inspect any **equipment insulation** in the area.
9	Inspect and document the general **cleanliness** of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	10" ACCUMULATOR INJECTION (SIS) LINE AT COLD LEG LOOP 4
	* TVA CONTRACT NO. 93NNS-75645C

Prepared By: C. G. WALLS Date: 10/31/03

Checked By: FRANK C. YAO Date: 10/31/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-009F SHEET 2 OF 3

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
0600200-09-01	LOOP 4	716'	9	ACCUMULATOR INJECTION	10.75	26.25	RMI	3.125	24.83	S.S.	STD	N/A	17" OD INSULATION
0600200-09-01	LOOP 4	716'	9	ACCUMULATOR INJECTION	10.75	5.42	RMI	9.625	23.19	S.S.	STD	N/A	30" OD INSULATION

APPROXIMATE INSULATION LENGTH:

START FROM RC COLD LEG:

AT 17" OD INSULATION:

LENGTH = 2.25 + π(15)(45°/180°) + 26.5 + + π(15)(90°/180°) + 37.62 +

+ π(15)(61.5°/180°) + 180.5 + 16 = 315(1/12) = 26.25FT

AT 30" OD INSULATION (VALVE #'S 8948D & 8956D): LENGTH = 33 + 32 = 65(1/12) = 5.42FT

CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-009G SHEET 1 OF 4

DATE:	10/31/2003	AREA:	LOOP 4	RWP NO.:	8010
		ELEV:	716'		

INSPECTORS:	C. G. WALLS, FRANK C. YAO

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	590955-046C, SH. 1, REV. D *	
Tools:	590955-046C, SH. 9, REV. C *	
Drawings	47W435-260, REV. F	
Flashlights		
Ladders		
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	6" LOWHEAD SAFETY INJECTION
	CONTINUED ON WALKDOWN PACKAGE NO's WB1-DWD-009F & -019F.
	* TVA CONTRACT NO. 93NNS-75645C

Prepared By: C. G. WALLS Date: 10/31/03

Checked By: FRANK C. YAO Date: 10/31/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-009G SHEET 2 OF 4

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
0600200-09-01	LOOP 4	716'	9	LOWHEAD SAFETY INJECTION	6 63	7.04	RMI	1.1875	1 43	S S.	STD	N/A	9" OD INSULATION

APPROXIMATE INSULATION LENGTH:

START FROM CRANE WALL:

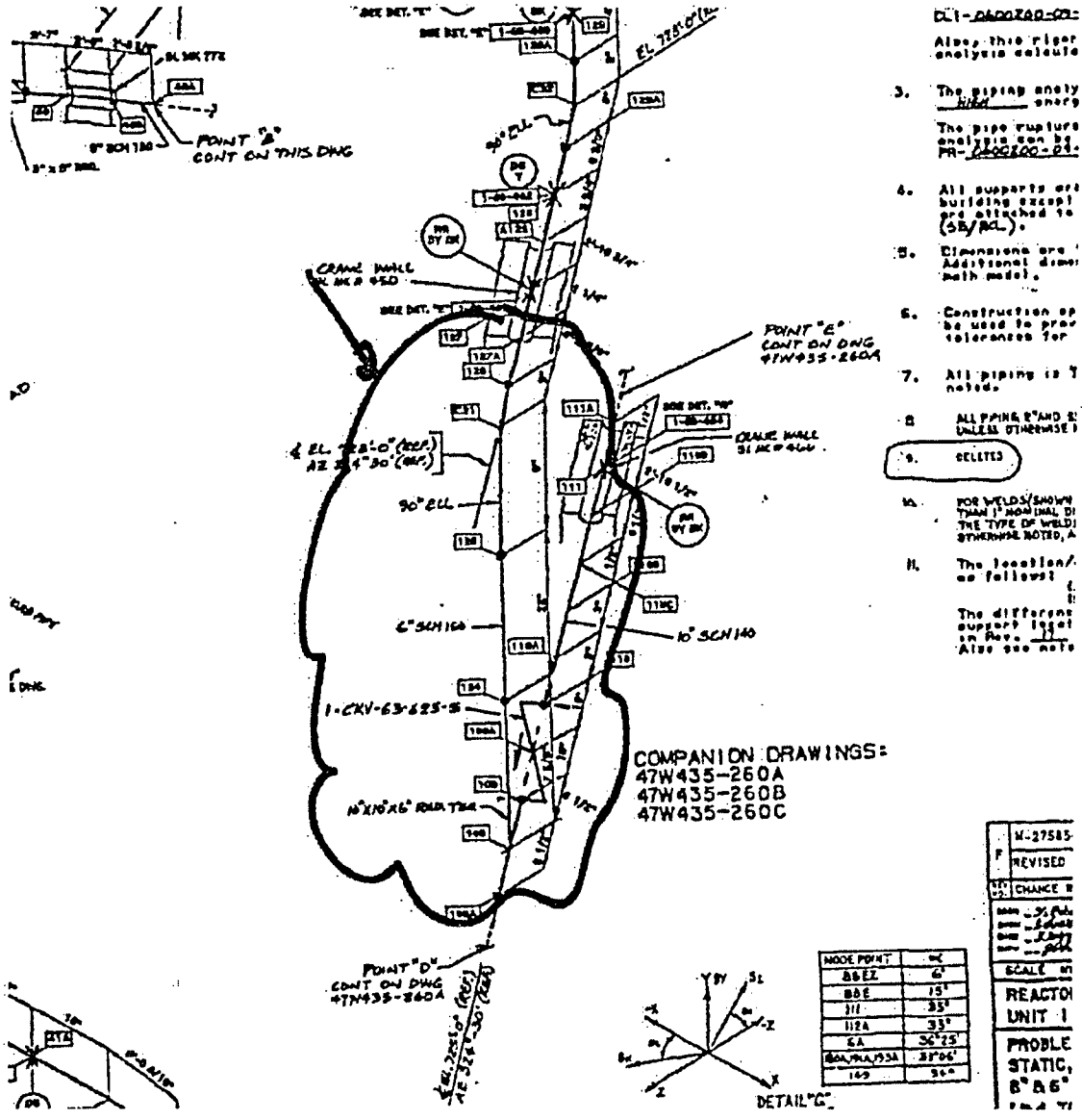
AT 9" OD INSULATION:

$$\text{LENGTH} = 49.25 + \pi(9)(90°/180°) + 21 = 84.39(1/12) = 7.04\text{FT}$$

CONTAINMENT DEBRIS WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-009G

EXCERPT FROM DRAWING 47W435-260



CONTAINMENT DEBRIS WALKDOWN PACKAGE WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-09H SHEET 1 OF 12

DATE:	11/04/2003	AREA:	LOOP 4 (AZ270°-0°)	RWP NO.:	8010
		ELEV:	720-737		

INSPECTORS:	FRANK C YAO, MIKE CALDWELL

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	47W2500-12	
Tools:		
Drawings		
Flashlights		
Ladders		
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	**Verify installation of insulation** as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any **undocumented** insulation.
3	Inspect and determine longitudinal **seam location** and **band spacing** if necessary.
4	Document any **irregularities** of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any **undocumented fibrous insulation (e.g., within rupture restraints)**.
6	Inspect and mark up cable tray drawings to show location of **fire barriers** (vertical and horizontal).
7	Inspect the area for any **weak components** that could be dislodged by jet and that could be transported to sump.
8	Inspect any **equipment insulation** in the area.
9	Inspect and document the general **cleanliness** of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	LABELS AND TAGS
	PICTURE #09H-1
	PICTURE #09H-2
	PICTURE #09H-3
	PICTURE #09H-4
	PICTURE #09H-5
	PICTURE #09H-6-RCP POWER SUPPLY JB.
	PICTURE #09H-7
	PICTURE #09H-8

Prepared By: FRANK C YAO Date: 11/4/03

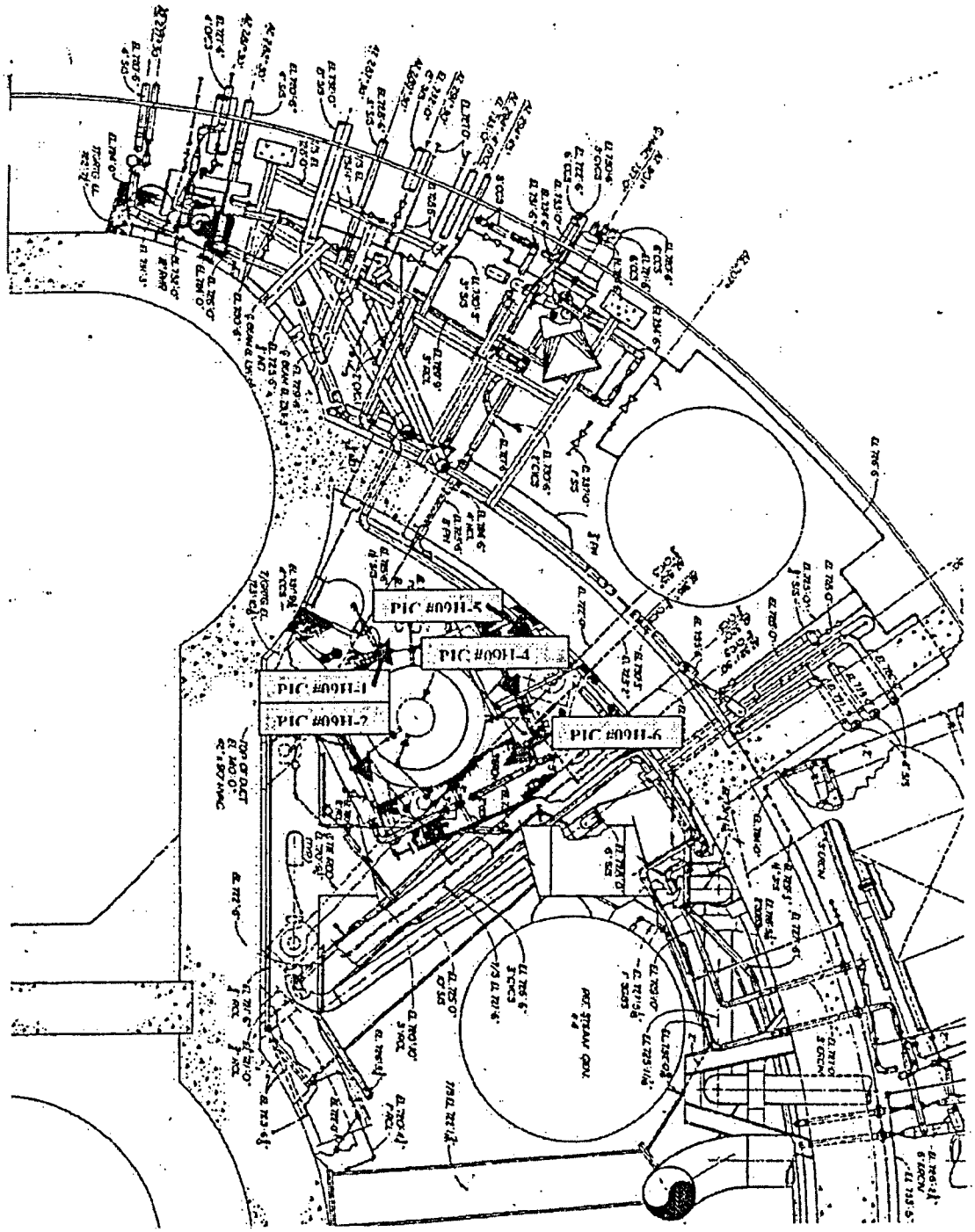
Checked By: MIKE CALDWELL Date: 11/4/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

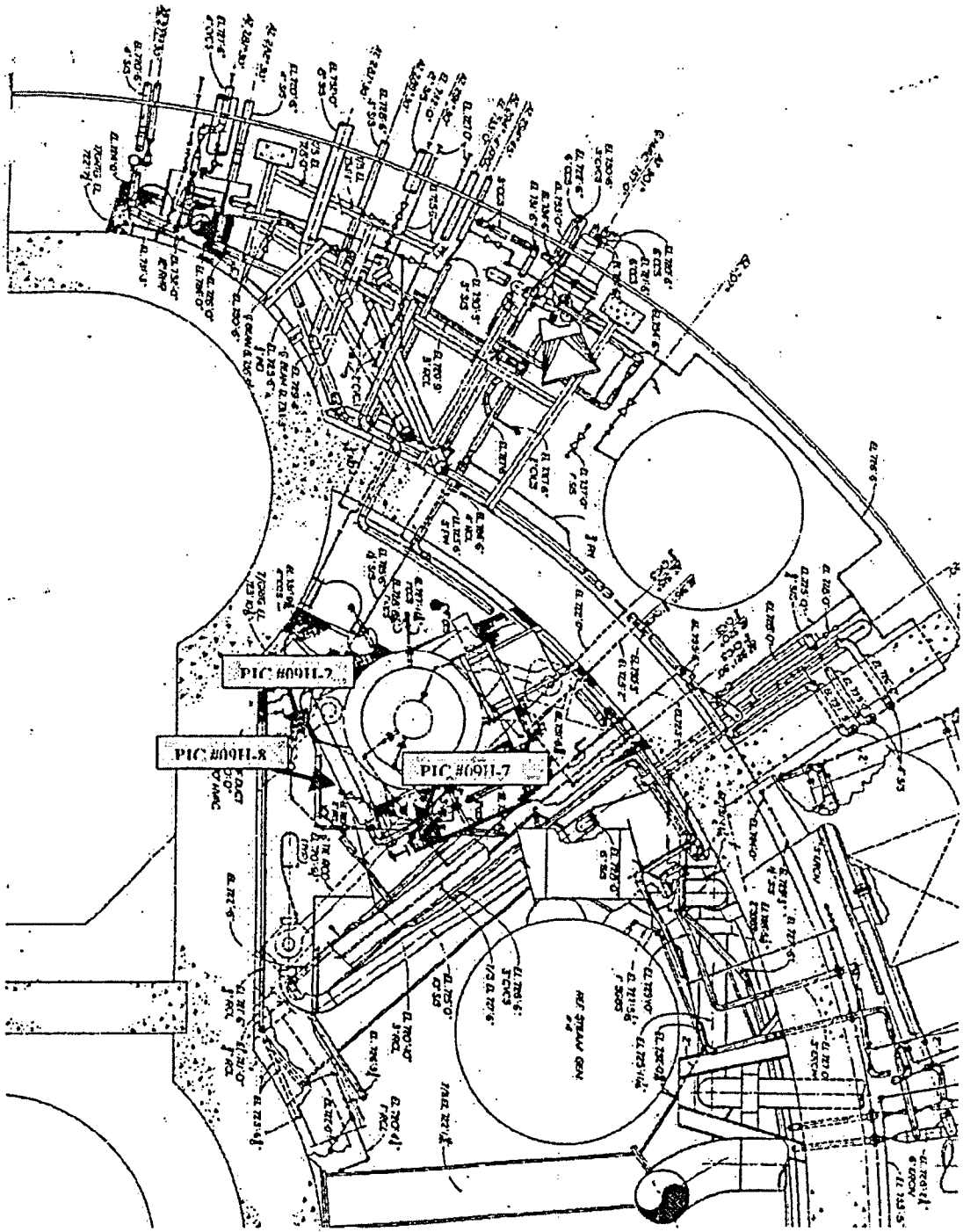
WALKDOWN PACKAGE#: WB1-DWD-009H SHEET 2 OF 12

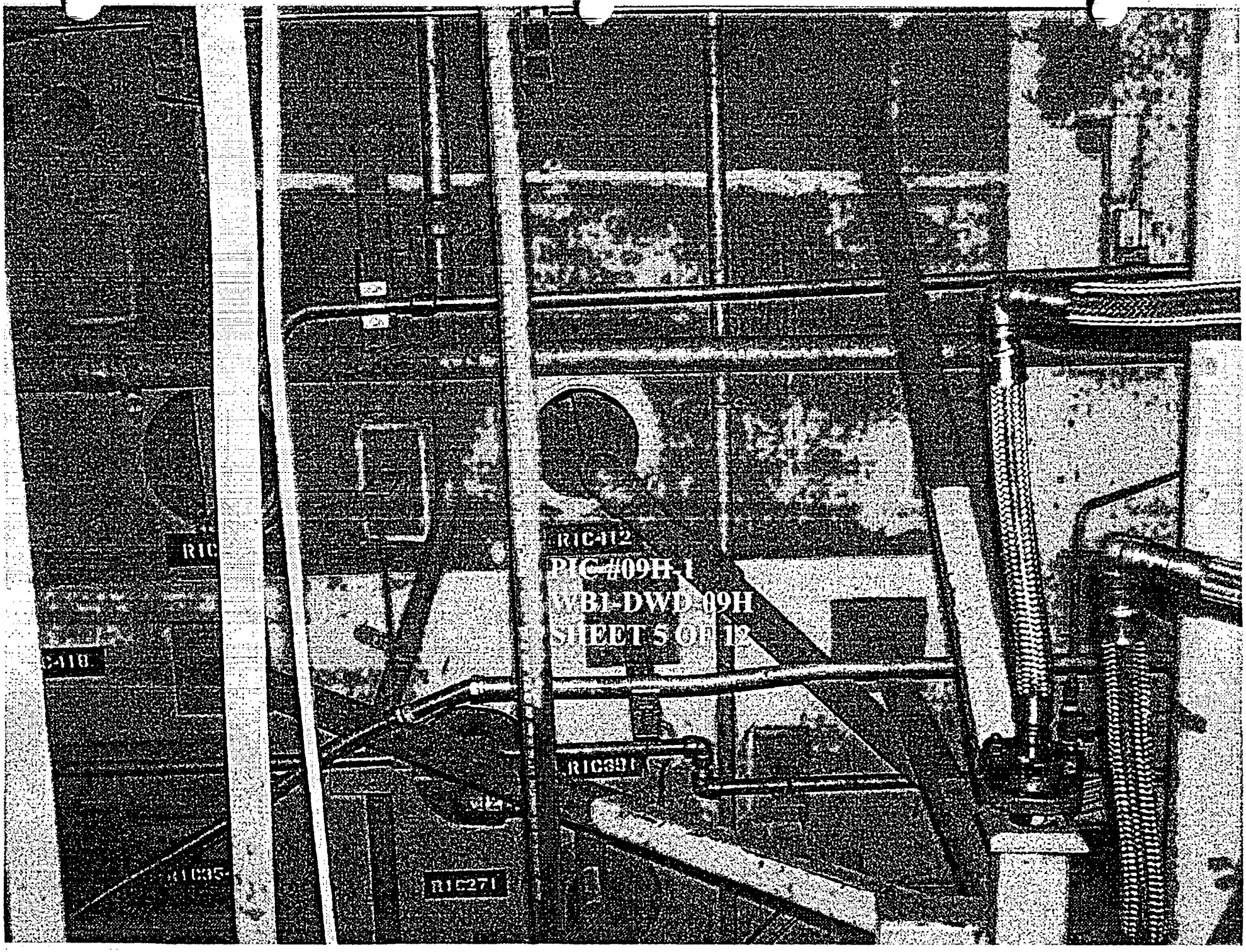
PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
N/A	LOOP 4	720-737	9	LABELS AND TIE WRAPS	NA	NA	NA	NA	NA	NA	NA	NA	SEE REPORT FOR COMMENTS

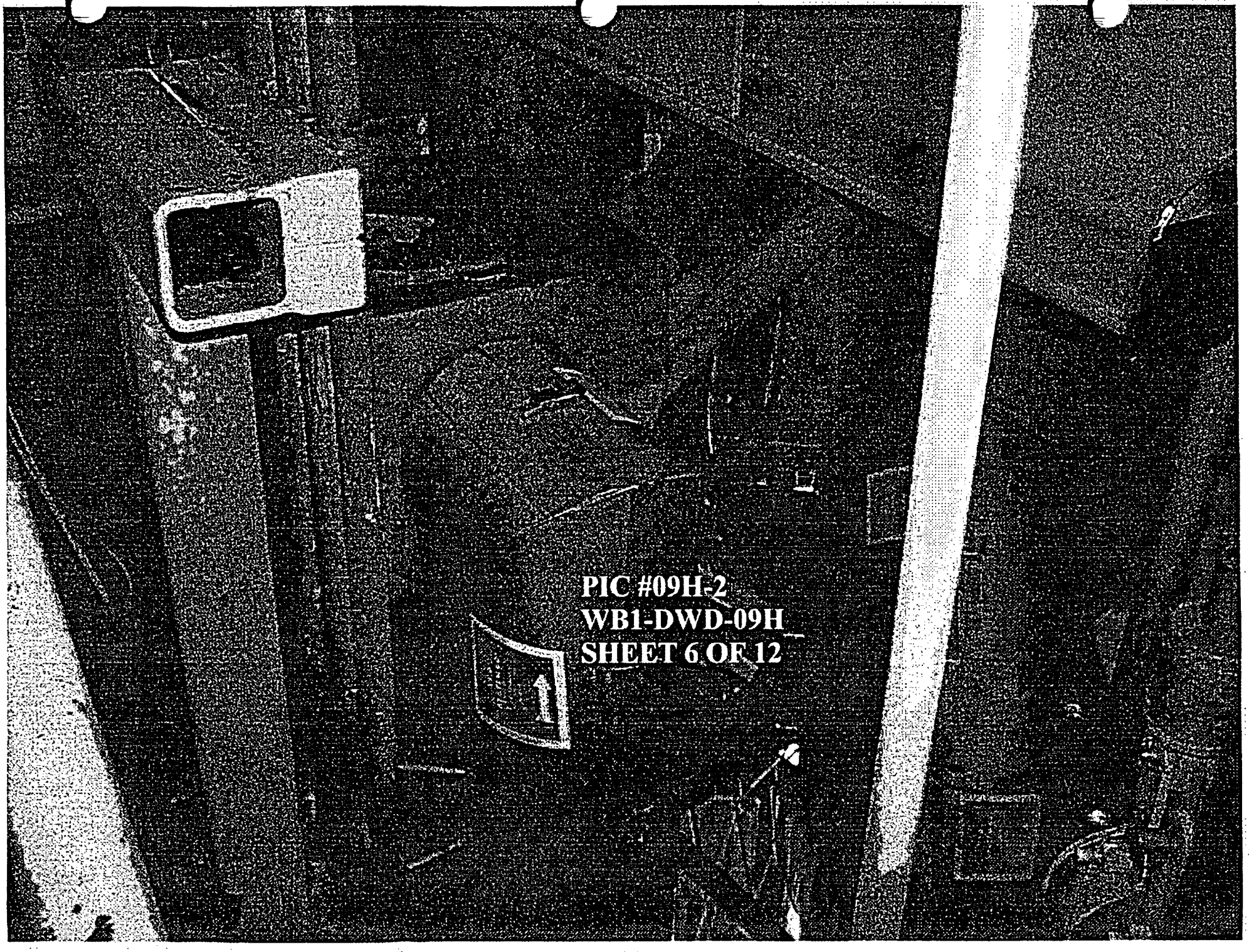
47W2500-12
QUAD 4
EL 720-735



47W2500-12
QUAD 4
EL 720-737




RIC-112
RIC#09H-1
WB1-DWD-09H
SHEET 5 OF 12
RIC-110
RIC-271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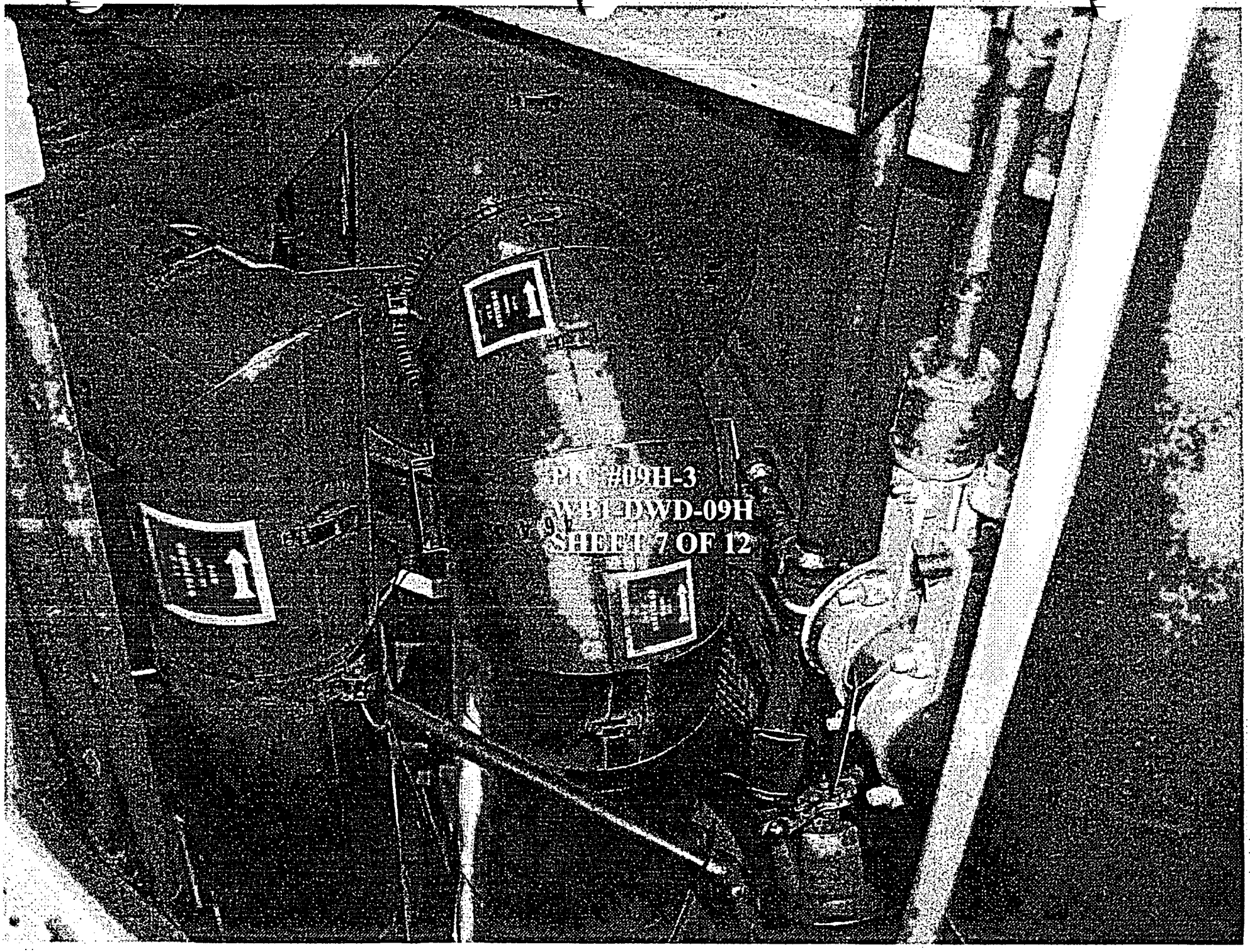
WB1-DWD-09H
SHEET 6 OF 12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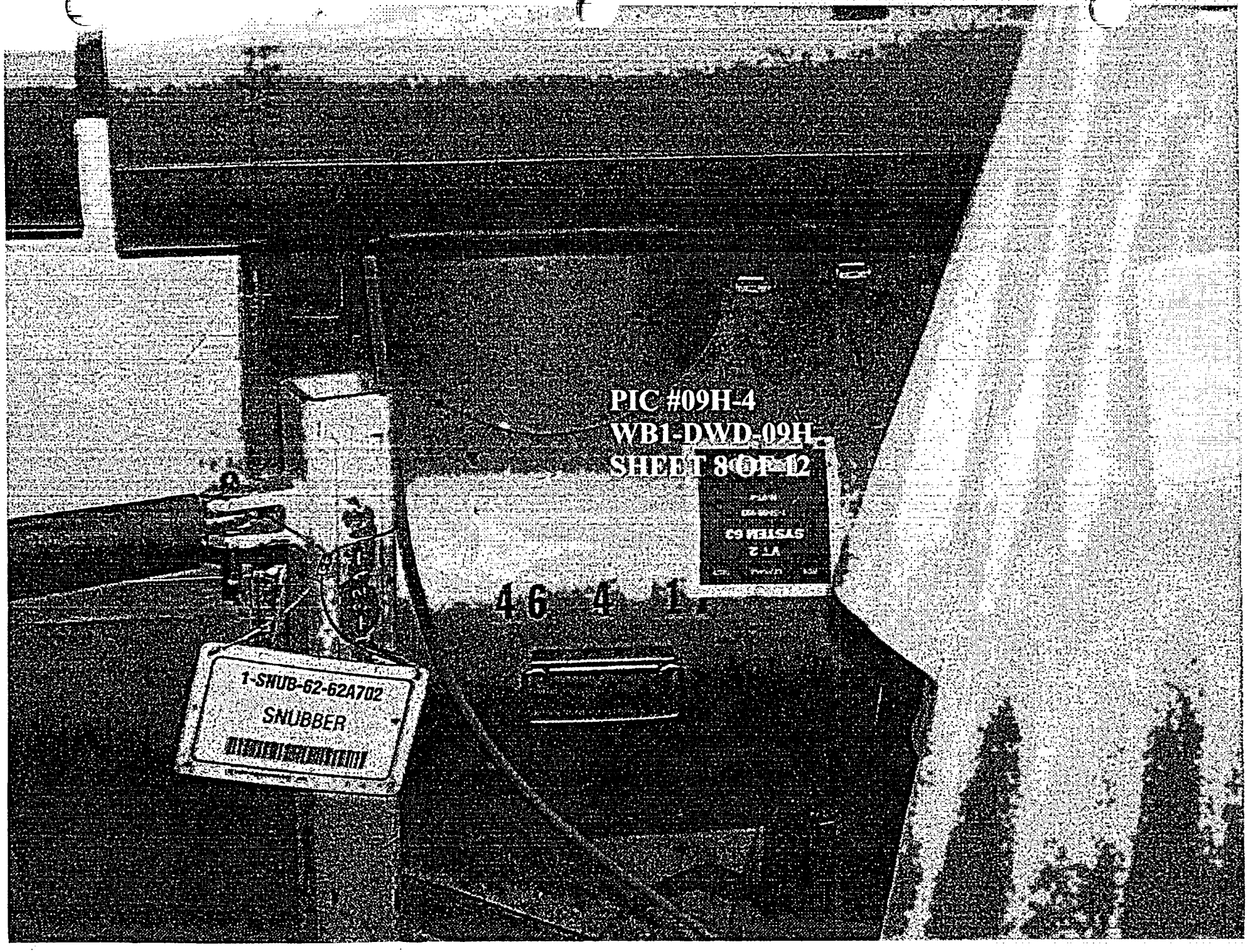
DWD-09H
SHEET 7 OF 12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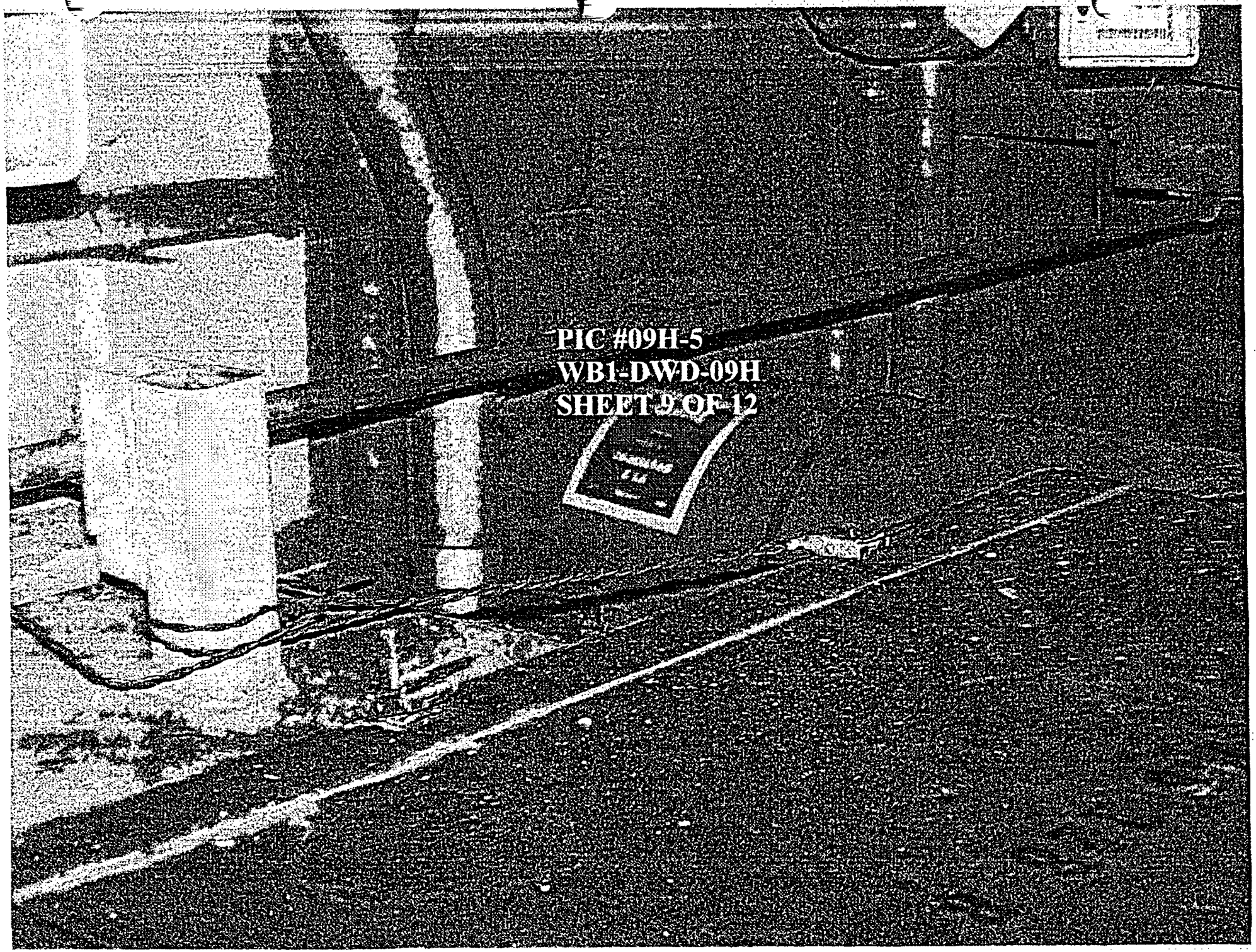
WB1-DWD-09H
SHEET 8 OF 12
4 6 4 1
1-SNUB-62-62A702
SNUBBER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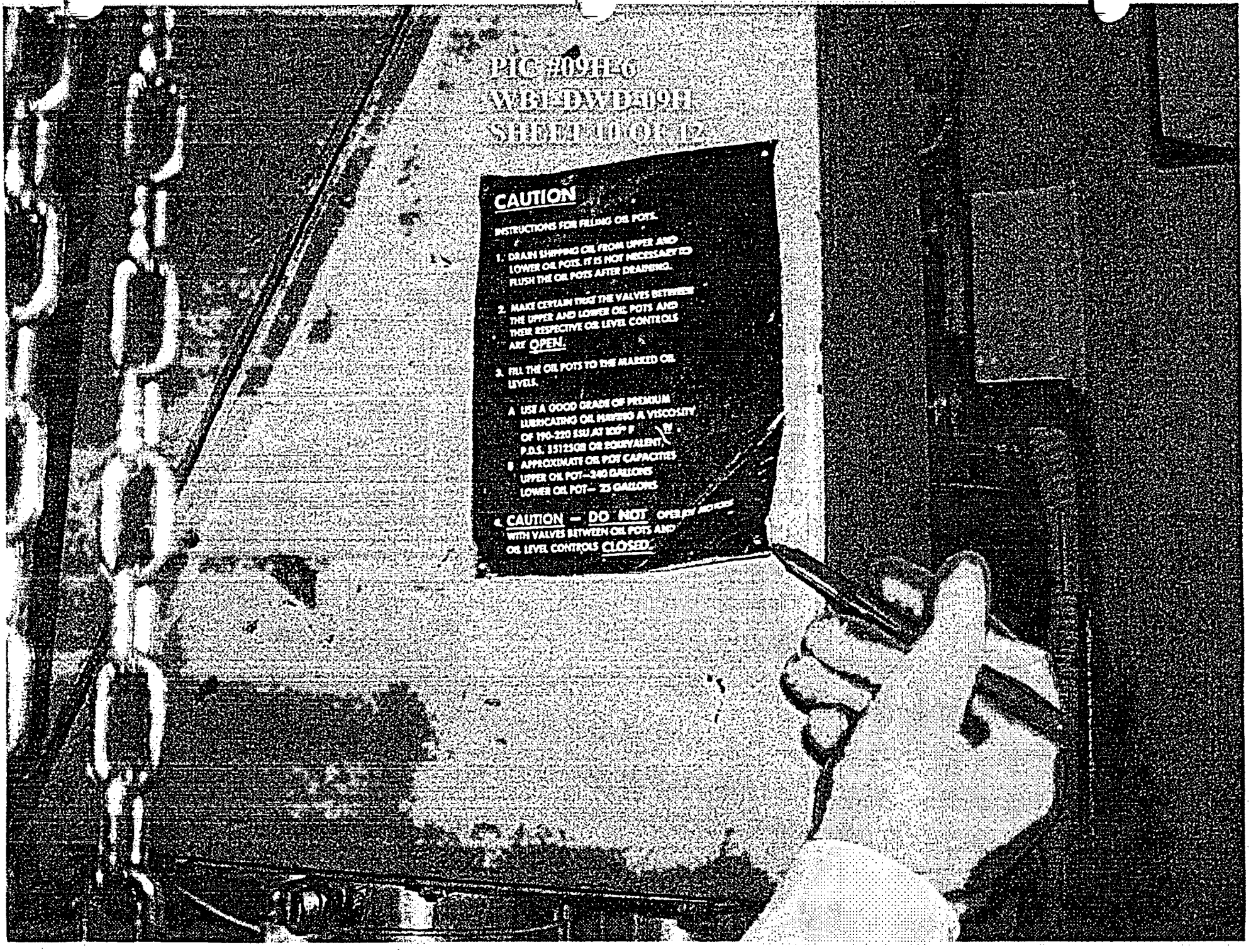
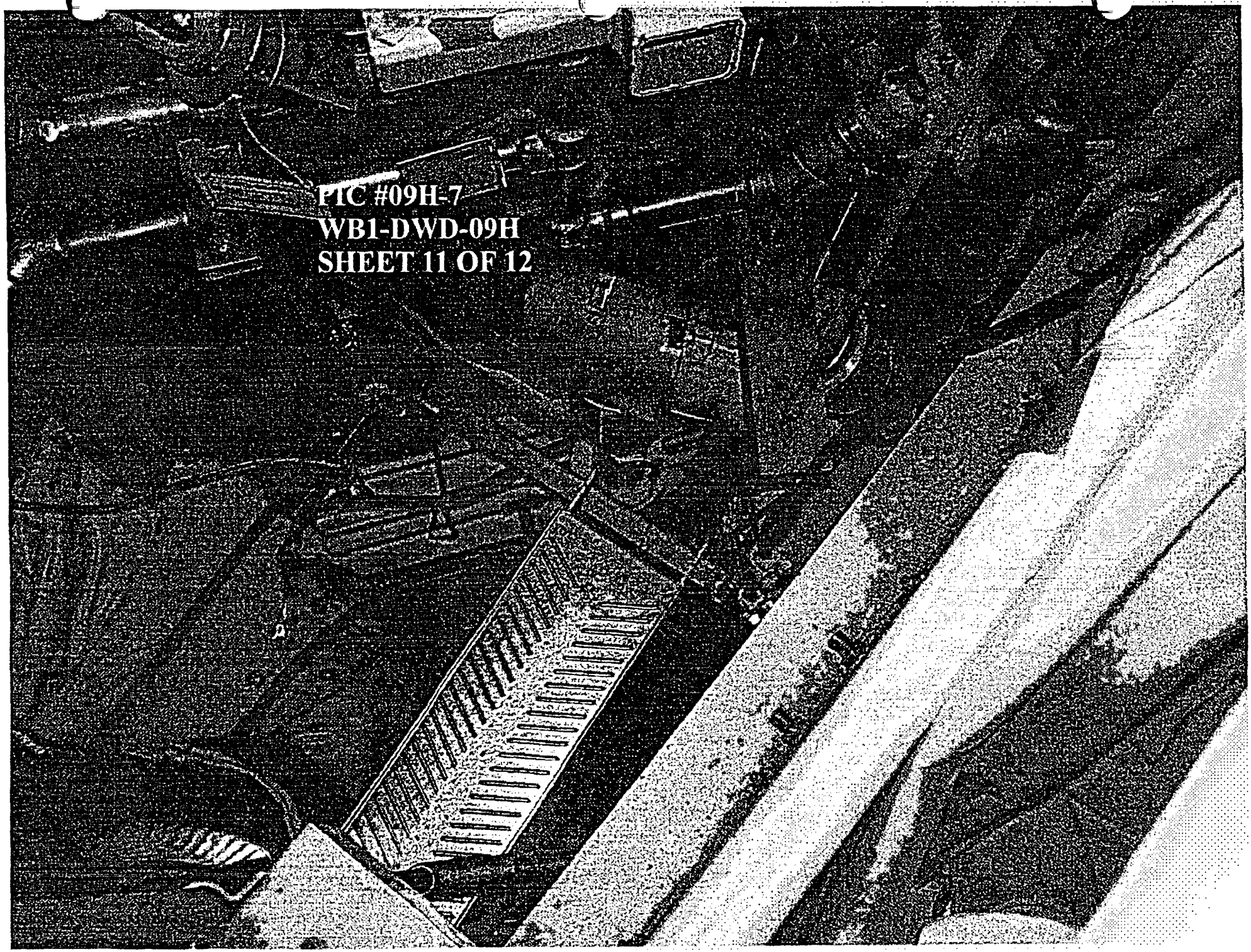
WB1-DWD-09H
SHEET 9 OF 12


PIC #03H-6
WBI-DAVIDSON
SHEET 10 OF 12
CAUTION
INSTRUCTIONS FOR FILLING OIL POTS.
1. DRAIN SHIPPING OIL FROM UPPER AND LOWER OIL POTS. IT IS NOT NECESSARY TO FLUSH THE OIL POTS AFTER DRAINING.
2. MAKE CERTAIN THAT THE VALVES BETWEEN THE UPPER AND LOWER OIL POTS AND THEIR RESPECTIVE OIL LEVEL CONTROLS ARE OPEN.
3. FILL THE OIL POTS TO THE MARKED OIL LEVELS.
A USE A GOOD GRADE OF PREMIUM LUBRICATING OIL HAVING A VISCOSITY OF 190-220 SSU AT 100° F
P.D.S. 351250B OR EQUIVALENT.
B APPROXIMATE OIL POT CAPACITIES
UPPER OIL POT—240 GALLONS
LOWER OIL POT— 25 GALLONS
4. CAUTION — DO NOT OPERATE MOTORS WITH VALVES BETWEEN OIL POTS AND OIL LEVEL CONTROLS CLOSED.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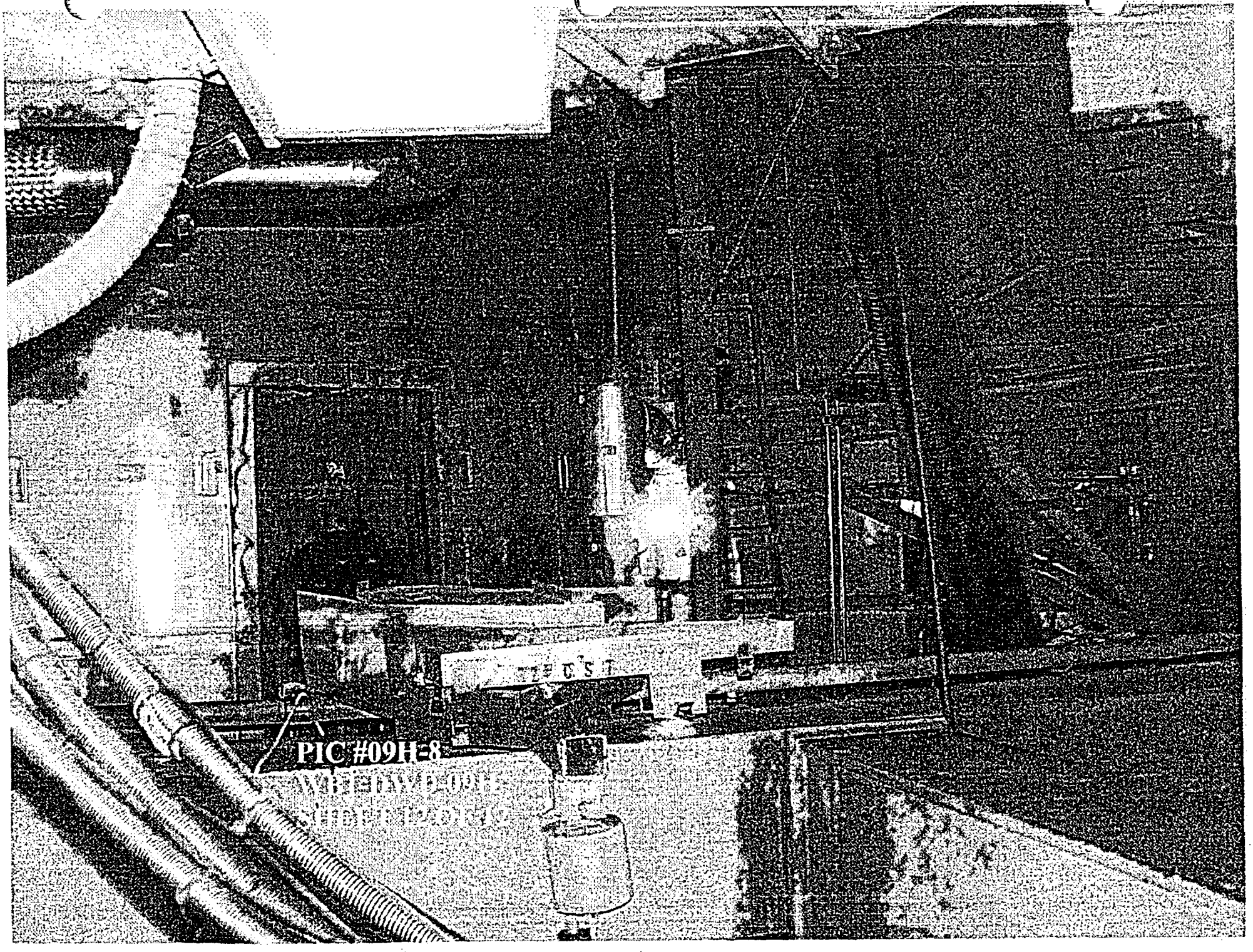
WB1-DWD-09H
SHEET 11 OF 12


PIC #09H-8

CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-09J SHEET 1 OF 4

DATE:	11/04/2003	AREA:	LOOP 4 (AZ270°-0°)	RWP NO.:	8010
		ELEV:	720-737		

INSPECTORS:	FRANK C YAO, MIKE CALDWELL

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	47W2500-12	
Tools:		
Drawings		
Flashlights		
Ladders		
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	RTV ON DUCT SURFACE-NEGLIGIBLE AMOUNT.
	PICTURE 9J-1

Prepared By: FRANK C YAO Date: 11/4/03

Checked By: MIKE CALDWELL Date: 11/4/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

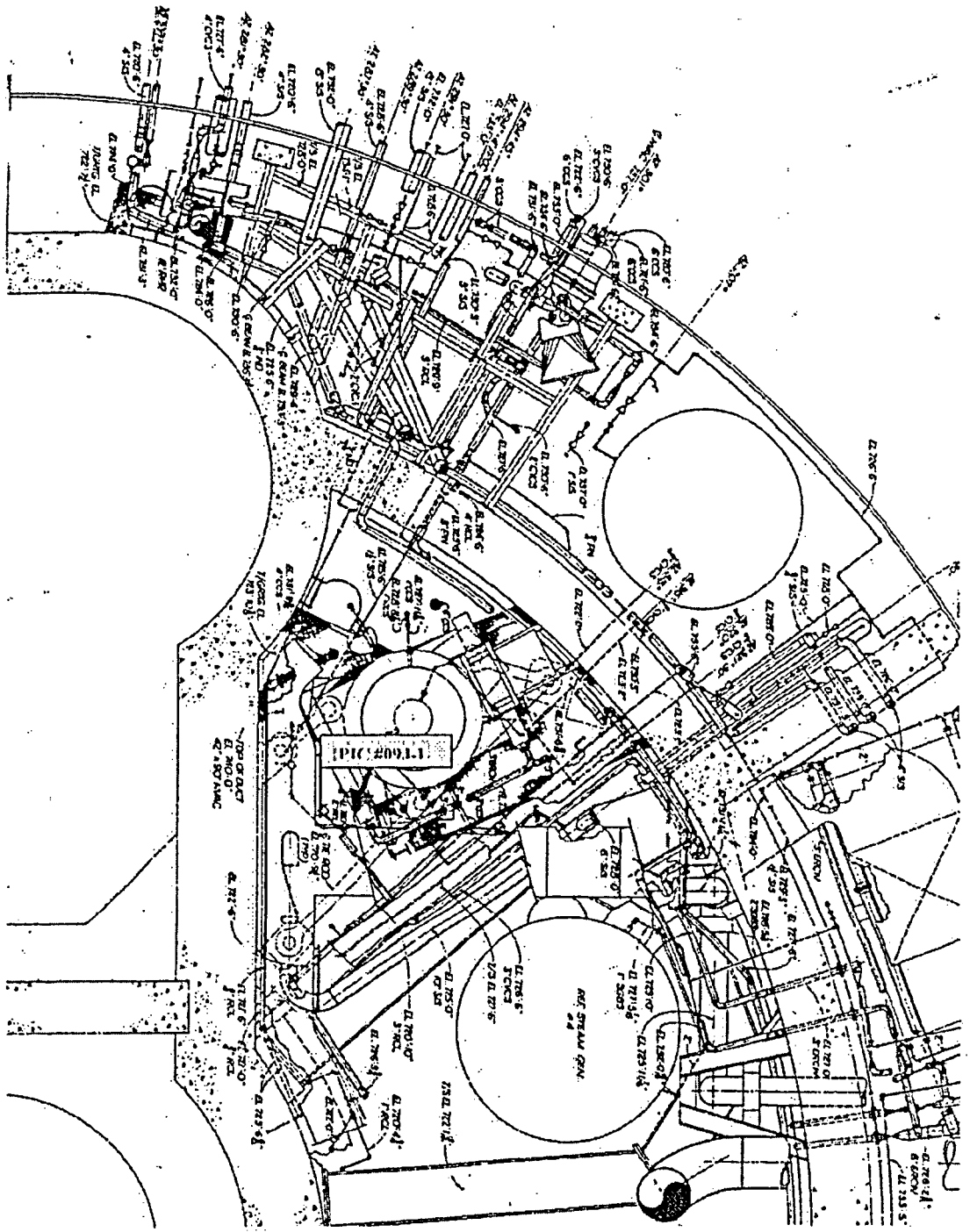
WALKDOWN PACKAGE#: WB1-DWD-009J SHEET 2 OF 4

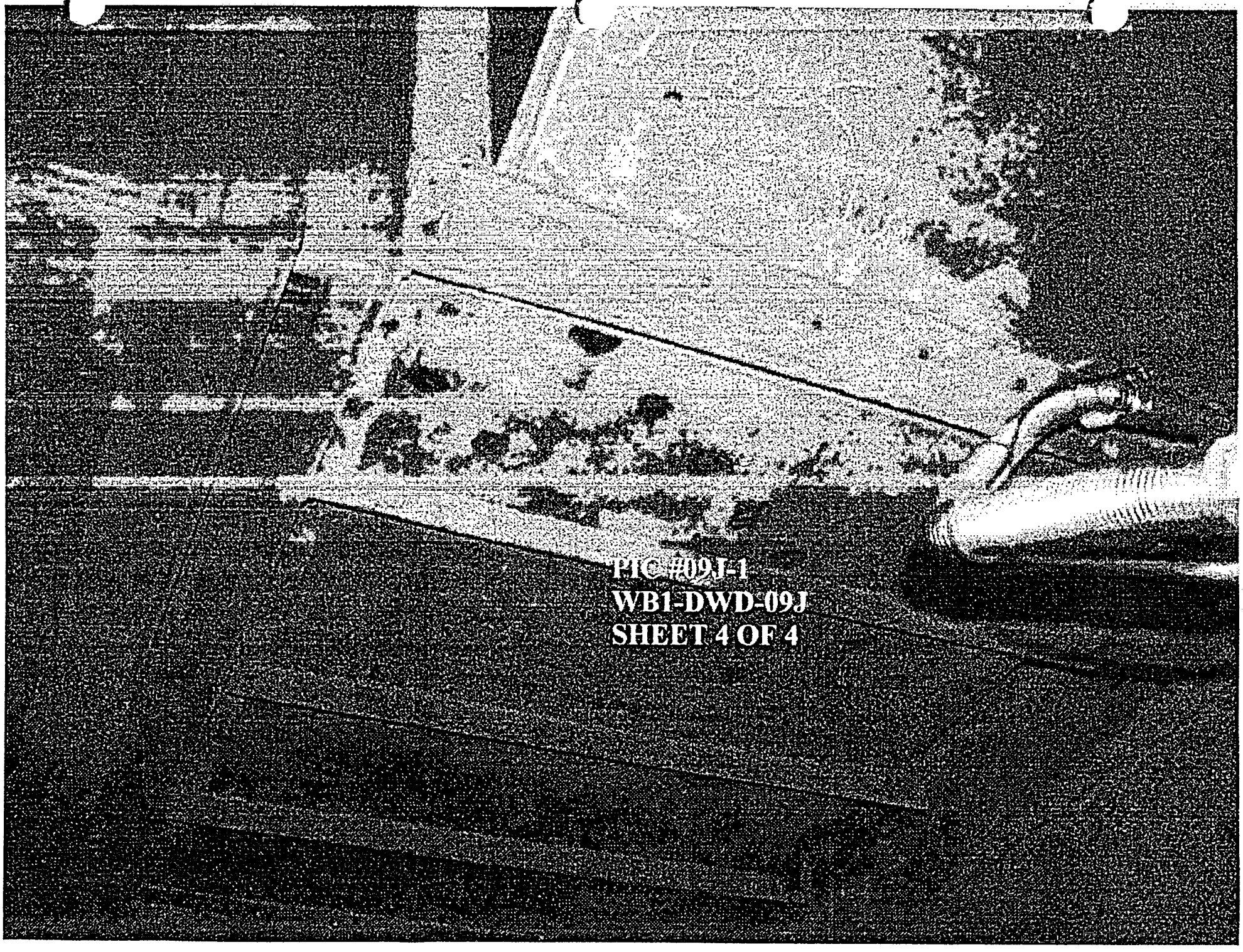
PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	RTV VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
N/A	LOOP 4	720-737	9	RTV SEALANT	NA	NA	NA	NA	NA	NA	NA	NA	

47W2500-12
QUAD 4
EL 720-735

WB1-DWD-09J

SHEET 3 OF 4




PIC #09J-1
WB1-DWD-09J
SHEET 4 OF 4

CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-009K SHEET 1 OF 6

DATE:	11/19/2003	AREA:	LOOP 4	RWP NO.:	8010
		ELEV:	716'		

INSPECTORS:	C. G. WALLS, FRANK C. YAO

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	590955-088C, SH. 1, REV. B *	
Tools:	590955-088C, SH. 17, REV. B *	
Drawings	590955-088C, SH. 18, REV. B *	
Flashlights	47W400-211, REV. D	
Ladders	1-47W400-211A, REV. 0	
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

COMMENTS

1"/2"/3"/4" STEAM GENERATOR BLOWDOWN LINE (LOOP 4)

CONTINUED ON WALKDOWN PACKAGE NO. WB1-DWD-0148. 11/19/03

* TVA CONTRACT NO. 93NNS-75645C

Prepared By: C. G. WALLS Date: 11/19/03

Checked By: FRNAK C YAO Date: 11/19/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-009K SHEET 2 OF 6

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
0600200-07-04	LOOP 4	716'	9	STEAM GENERATOR BLOWDOWN	3.50	35.25	RMI	2.25	9.95	S.S.	STD	N/A	8" OD INSULATION
0600200-07-04	LOOP 4	716'	9	STEAM GENERATOR BLOWDOWN	4.50	36.84	RMI	2.25	12.21	S.S.	STD	N/A	9" OD INSULATION
0600200-07-04	LOOP 4	716'	9	STEAM GENERATOR BLOWDOWN	4.50	0.79	RMI	1.25	0.12	S.S.	STD	N/A	7" OD INSULATION
0600200-07-04	LOOP 4	716'	9	STEAM GENERATOR BLOWDOWN	1.32	1.63	RMI	2.84	0.42	S.S.	STD	N/A	7" OD INSULATION
0600200-07-04	LOOP 4	716'	9	STEAM GENERATOR BLOWDOWN	1.32	0.75	RMI	2.34	0.14	S.S.	STD	N/A	6" OD INSULATION
0600200-07-04	LOOP 4	716'	9	STEAM GENERATOR BLOWDOWN	1.32	0.59	RMI	3.34	0.20	S.S.	STD	N/A	8" OD INSULATION
0600200-07-03	LOOP 4	716'	9	STEAM GENERATOR BLOWDOWN	2.88	0.34	RMI	2.56	0.10	S.S.	STD	N/A	8" OD INSULATION

APPROXIMATE INSULATION LENGTH:

START FROM STEAM GENERATOR NOZZLE:

AT 8" OD INSULATION (3" PIPING): LENGTH = 3.25 + 12 + 8[π(4.5)(90°/180°)] + 46 + 55.75 + 55.38 + 1.75 + 21.63 + (8.25 - 1.63) + 55 + 43.62 + 45.88 + [π(4.5)(45°/180°)] + 14.62 + 1 = 423(1/12) = 35.25FT

AT 9" OD INSULATION (4" PIPING): LENGTH = 18.25 + 28.53 + 36.09 + 4.88 + 6[π(6)(90°/180°)] + 10.58 + 5[π(6)(45°/180°)] + 56 + 51 + 18.75 + [π(4.5)(37.5°/180°)] + 15.75 + 8 + 12.5 + 29.25 + 31.5 + 8(4.68) = 442(1/12) = 36.84FT

AT 7" OD INSULATION (4" PIPING): LENGTH = [π(6)(90°/180°)](1/12) = 0.79FT

AT 7" OD INSULATION (1.32" OD PIPING/VLV): LENGTH = 3(6.5)(1/12) = 1.63FT

AT 6" OD INSULATION (1" PIPING): LENGTH = 8.75(1/12) = 0.73FT

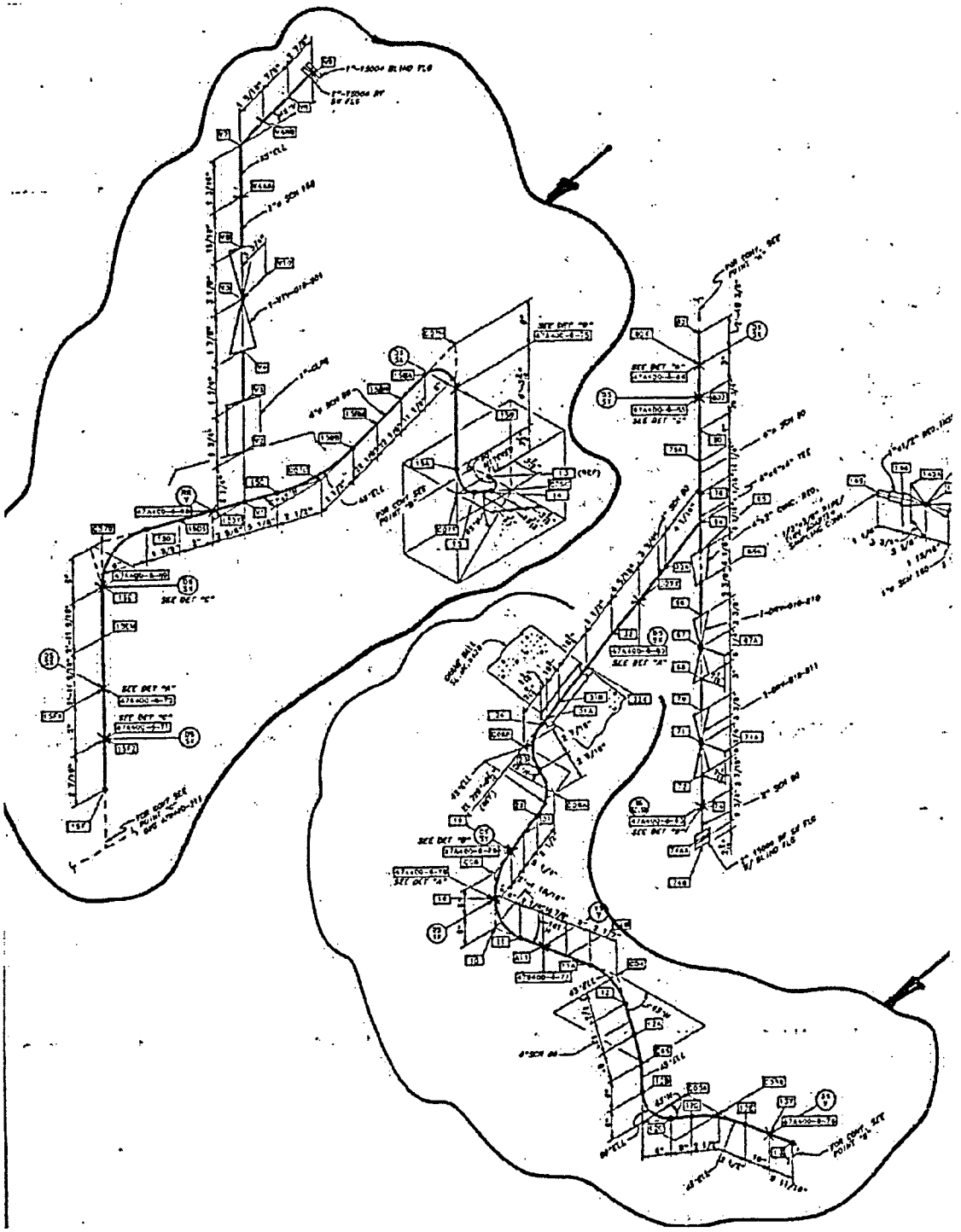
AT 8" OD INSULATION (1" PIPING/VLV): LENGTH = 7(1/12) = 0.59FT

AT 8" OD INSULATION (2.88" OD TIEBACK SUPPORT): LENGTH = 4(1/12) = 0.34FT

CONTAINMENT DEBRIS WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-009K

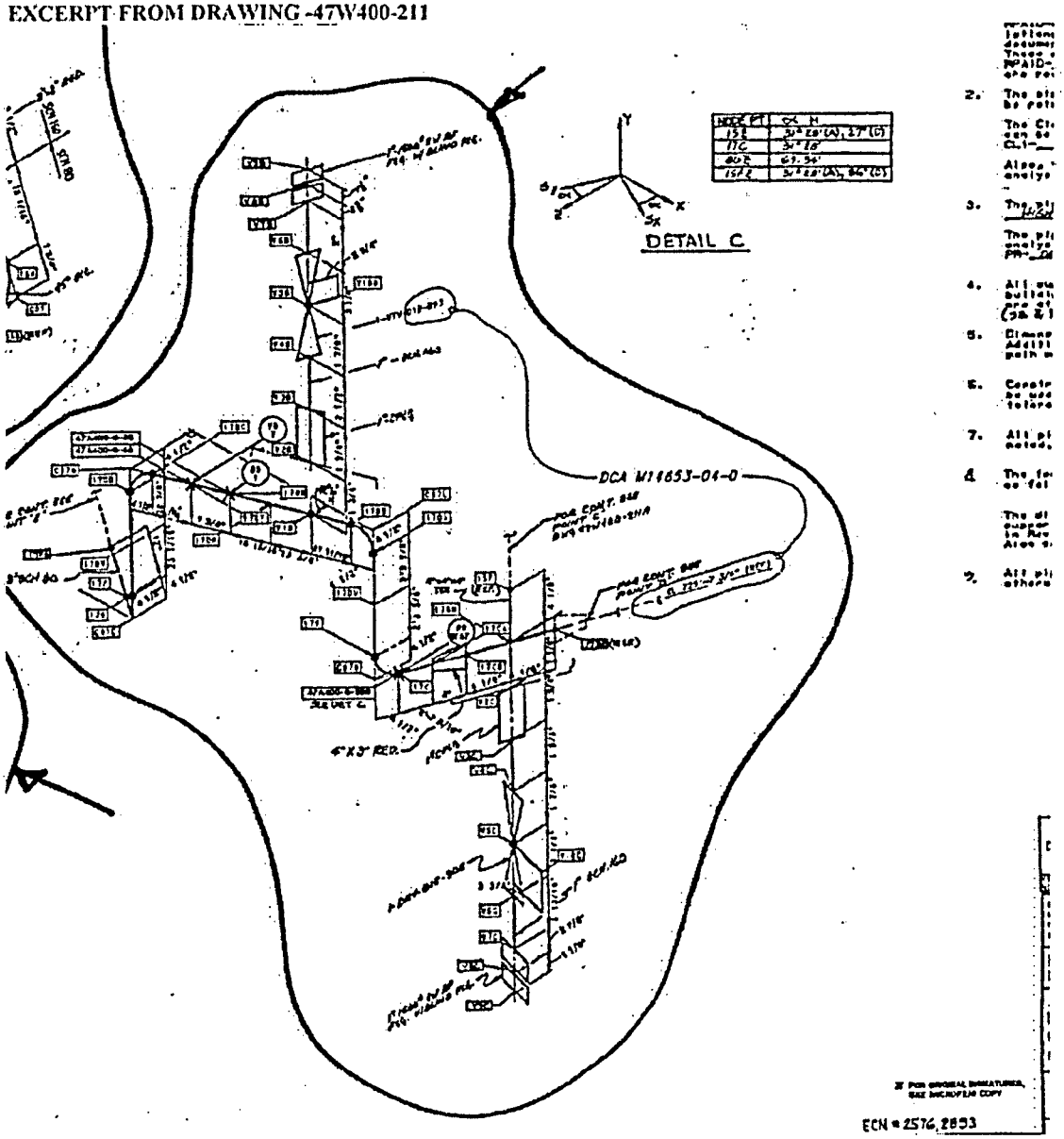
EXCERPT FROM DRAWING 1-47W400-211A



CONTAINMENT DEBRIS WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-009K

EXCERPT FROM DRAWING -47W400-211

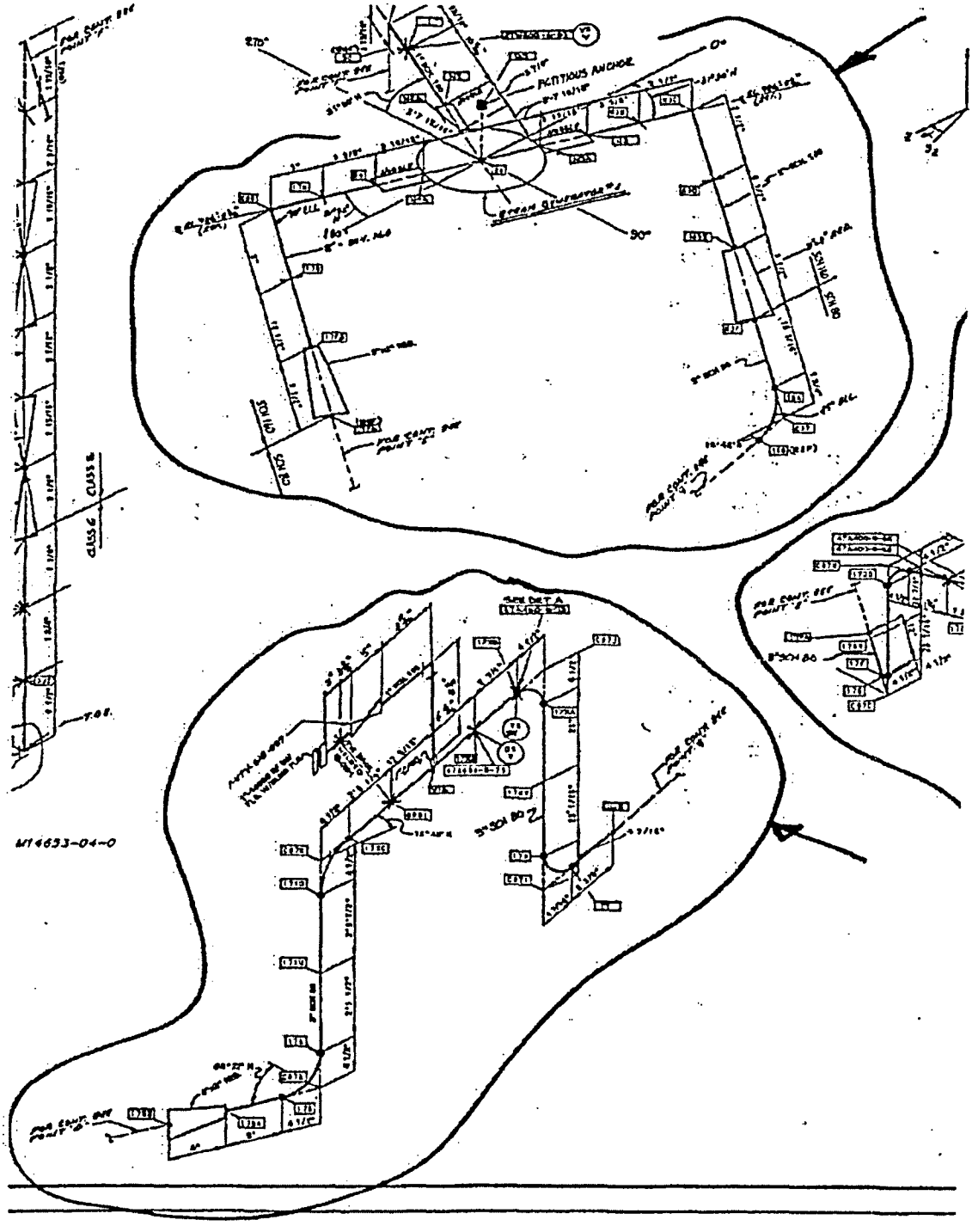


CONTAINMENT DEBRIS WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-009K

SHEET 6 OF 6

EXCERPT FROM DRAWING 47W400-211



CONTAINMENT DEBRIS WALKDOWN PACKAGE WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-009L SHEET 1 OF 5

DATE:	01/06/2004	AREA:	LOOP 4	RWP NO.:	8010
		ELEV:	716'		

INSPECTORS:	C. G. WALLS, FRANK C. YAO

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	590955-074C, SH. 1, REV. C *	
Tools:	590955-074C, SH. 2, REV. D *	
Drawings	47W406-321B, REV. 0	
Flashlights		
Ladders		
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	3" ALTERNATE CHARGING LINE
	CONTINUED ON WALKDOWN PACKAGE NO. WB1-DWD-006R.
	* TVA CONTRACT NO. 93NNS-75645C

Prepared By: C. G. WALLS Date: 01/06/04

Checked By: FRANK C YAO Date: 01/06/04

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-009L SHEET 2 OF 3

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
0600200-08-11	LOOP 4	716'	9	3" ALTERNATE CHARGING	3.50	65 75	RMI	2.75	24.65	S.S.	STD	N/A	9" OD INSULATION
0600200-08-11	LOOP 4	716'	9	3" ALTERNATE CHARGING	3.50	2.34	RMI	2.25	0.66	S.S.	STD	N/A	8" OD INSULATION
0500200-08-11	LOOP 4	716'	9	3" ALTERNATE CHARGING	3.50	2.91	RMI	6.75	4.39	S.S.	STD	N/A	17" OD INSULATION AT VALVES

APPROXIMATE INSULATION LENGTH:

FROM LOOP 4 RC COLD LEG TO HGR. 1-62A-354:

AT 9" OD INSULATION (3" PIPING): LENGTH = 75.38 + 7[π(4.5)(90°/180°)] + 3.75

+ 31.75 + (2 X 36.03) + 13.97 + 30.72 + (58 - 7) + 3 + 37

+ [π(4.5)(45°/180°)] + 48 + 3 + 15 + 10.25 + (4 X 24.88) + 20.75

+ 24.84 + (2 X 26.22) + 22.08 + 31.19 + 20 + (3 X 23.29) = 789(1/12) = 65.75FT

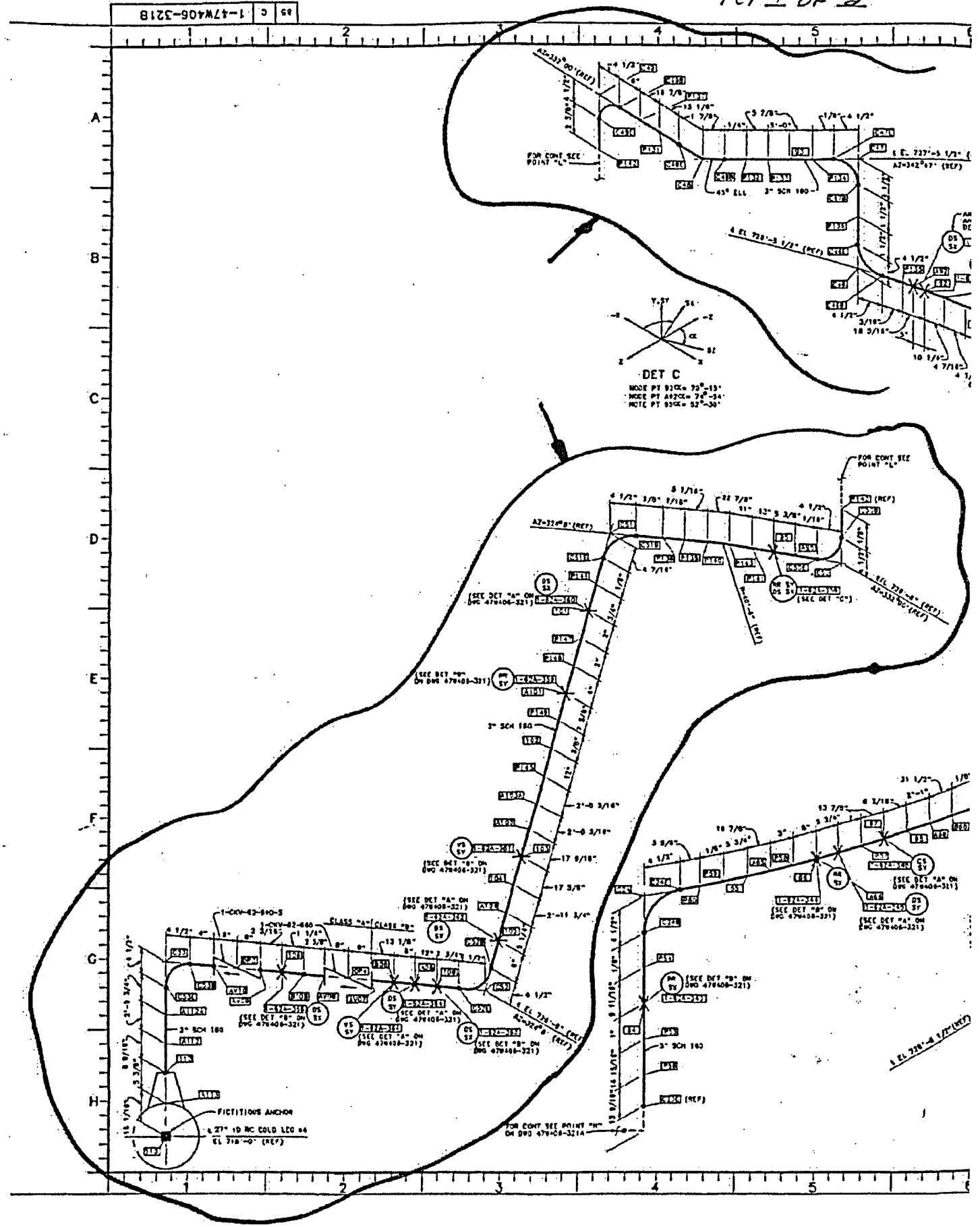
AT 17" OD INSULATION (VALVES 1-CKV-62-640-S & -660):

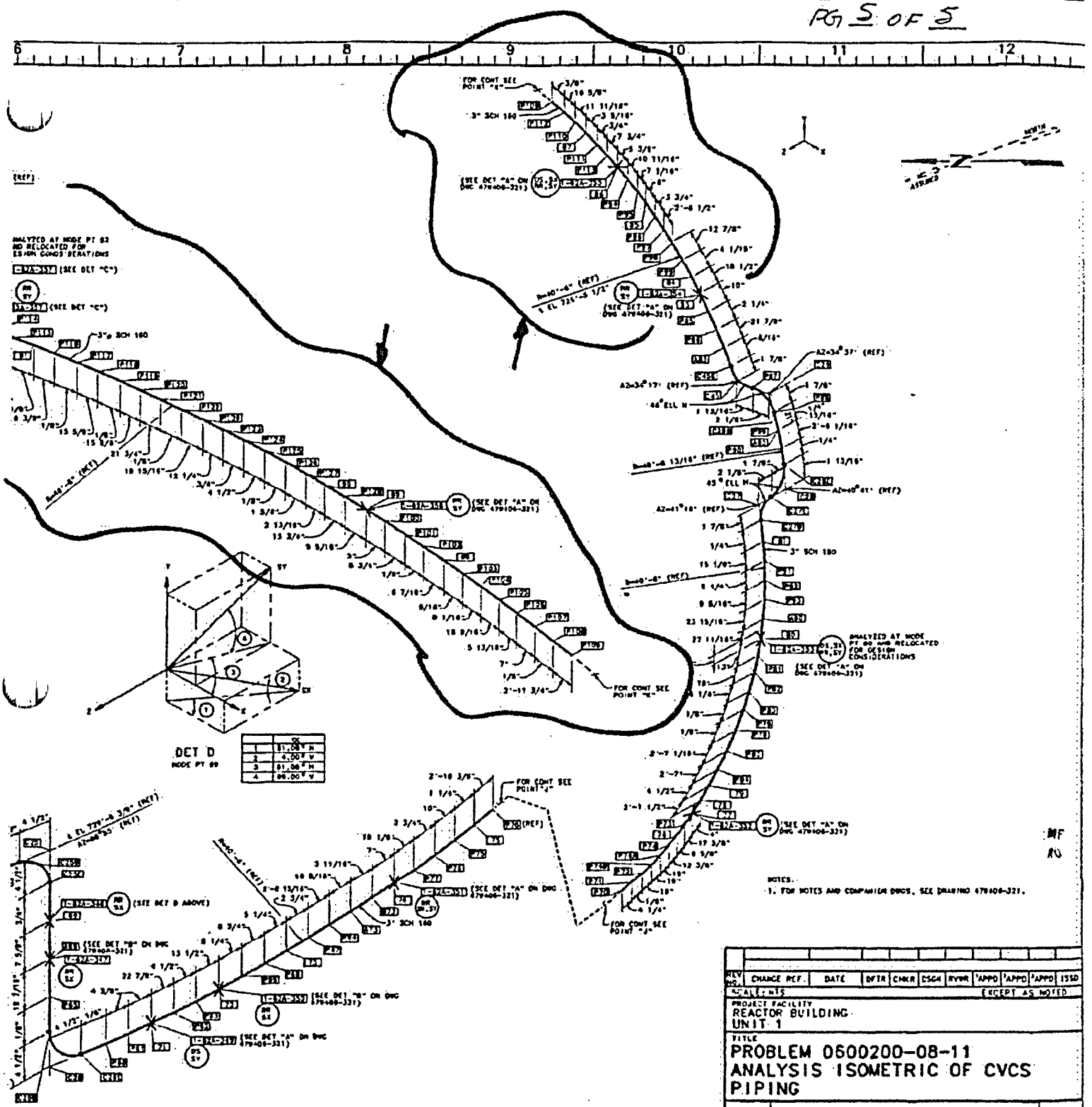
LENGTH = 18 + 16.88 = 34.88(1/12) = 2.91FT

AT 8" OD INSULATION (3" PIPING): LENGTH = 28.03(1/12) = 2.34FT

DWG. No. 47W406-321R, REV. 0 WBI-DWD-0091

PG 4 OF 5





REV NO.	CHANGE REF.	DATE	DFTR	CHKR	DSGN	RVWR	APPD	APPD	APPD	ISSD

SCALE: NTS EXCEPT AS NOTED

PROJECT FACILITY
REACTOR BUILDING
UNIT 1

TITLE
PROBLEM 0600200-08-11
ANALYSIS ISOMETRIC OF CVCS PIPING

2 WATTS BAR NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY

DESIGN		INITIAL ISSUE	ENGINEERING APPROVAL
DRAFTER P.B. DANIELS	CHECKER P.D. MARTIRAN	RO ISSUE PER: DCN P-06593-8 DCA P04593-03-3 DCN S-20630-A DCA S20630-23-0	1 MR 2 MR 3 JG
DESIGNER E.S. JONES	REVIEWER MR		

ISSUED BY: DATE 10-12-95 BS C 1-47W406-321B RO

PROCADAM MAINTAINED DRAWING

CONFIGURATION CONTROL DRAWING

CONTAINMENT DEBRIS WALKDOWN PACKAGE WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-010A SHEET 1 OF 5 6 10/21/03

DATE:	10/21/2003	AREA:	LOOP 1	RWP NO.:	8010
		ELEV:	745'		

INSPECTORS:	C. G. WALLS, MIKE SOLLIE

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	47W400-1, REV. P	
Tools:	47W400-2, REV. J	
Drawings	47W400-213, REV. G	
Flashlights	590955-049C, SH. 1, REV. E *	
Ladders	590955-049C, SH. 2, REV. E *	
Cameras	590955-050C, REV. B *	
Binoculars	590955-051C, SH. 1, REV. A *	
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	MAIN STEAM LINE (FROM PENETRATION X-13A TO STEAM GENERATOR)
	* TVA CONTRACT NO. 93NNS-75645C

Prepared By: C. G. WALLS C G Walls Date: 10/21/03

Checked By: MIKE SOLLIE Mike Sollie Date: 10/23/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-010A SHEET 2 OF 6

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
0600200-06-01	LOOP 1	745'	10	MAIN STEAM	32.00	63.17	RMI	3.5	171.24	S.S.	STD	N/A	N/A
0600200-06-01	LOOP 1	745'	10	MAIN STEAM	32.00	3.55	MIN-K	6	17.66	S.S.	N/A	N/A	NEAR PENETRATION
0600200-06-01	LOOP 1	745'	10	MAIN STEAM	32.00	2.83	MIN-K	1.5	3.10	S.S.	N/A	N/A	NEAR TOP OF SG
0600200-06-01	LOOP 1	745'	10	MAIN STEAM	SEE CALC	SEE CALC	RMI	SEE CALC	1.48	S.S.	STD	N/A	AT 1" VENT LINE
0600200-06-01	LOOP 1	745'	10	MAIN STEAM	SEE CALC	SEE CALC	RMI	SEE CALC	0.34	S.S.	STD	N/A	AT 1" INSTRUMENT TEST LINE
0600200-06-01	LOOP 1	745'	10	MAIN STEAM	SEE CALC	SEE CALC	RMI	SEE CALC	1.34	S.S.	STD	N/A	AT 3/4" INSTRUMENT TEST LINES

APPROXIMATE INSULATION VOLUME:

AT RMI: (START FROM PENETRATION)

LENGTH = $(41.5 - 3 - 14.38) + (2/3)[\pi(32 \times 1.5)(90°/180°)] + 550.81 + [\pi(32 \times 1.5)(90°/180°)]$

$+ (3/4)[\pi(32 \times 1.5)(90°/180°)] = 758(1/12) = 63.17$FT

AT MIN-K NEAR PENETRATION:

LENGTH = $(1/3)[\pi(32 \times 1.5)(90°/180°)] + 14.38 + 3 = 42.6(1/12) = 3.55$FT

AT MIN-K NEAR TOP OF SG:

LENGTH = $(1/4)[\pi(32 \times 1.5)(90°/180°)] + 15 = 34(1/12) = 2.83$FT

AT 1" VENT LINE:

VOLUME = $[\pi(6^2 - 1.315^2)/4 \times 5.83] + [\pi(6^2 - 1.315^2)/4 \times 36.03]$

$+ [\pi(6^2 - 1.315^2)/4 \times (5.44 + 6 + 4 + 6)] + [\pi(9^2 - 2.88^2)/4 \times 14.91]$

$= 2556(1/12^3) = 1.48$FT^3

AT 1" INSTRUMENT TEST LINE:

VOLUME = $[\pi(3.88^2 - 1.32^2)/4 \times 8] + [\pi(8^2 - 1.32^2)/4 \times 7] + [\pi(6^2 - 2.88^2)/4 \times 7.25]$

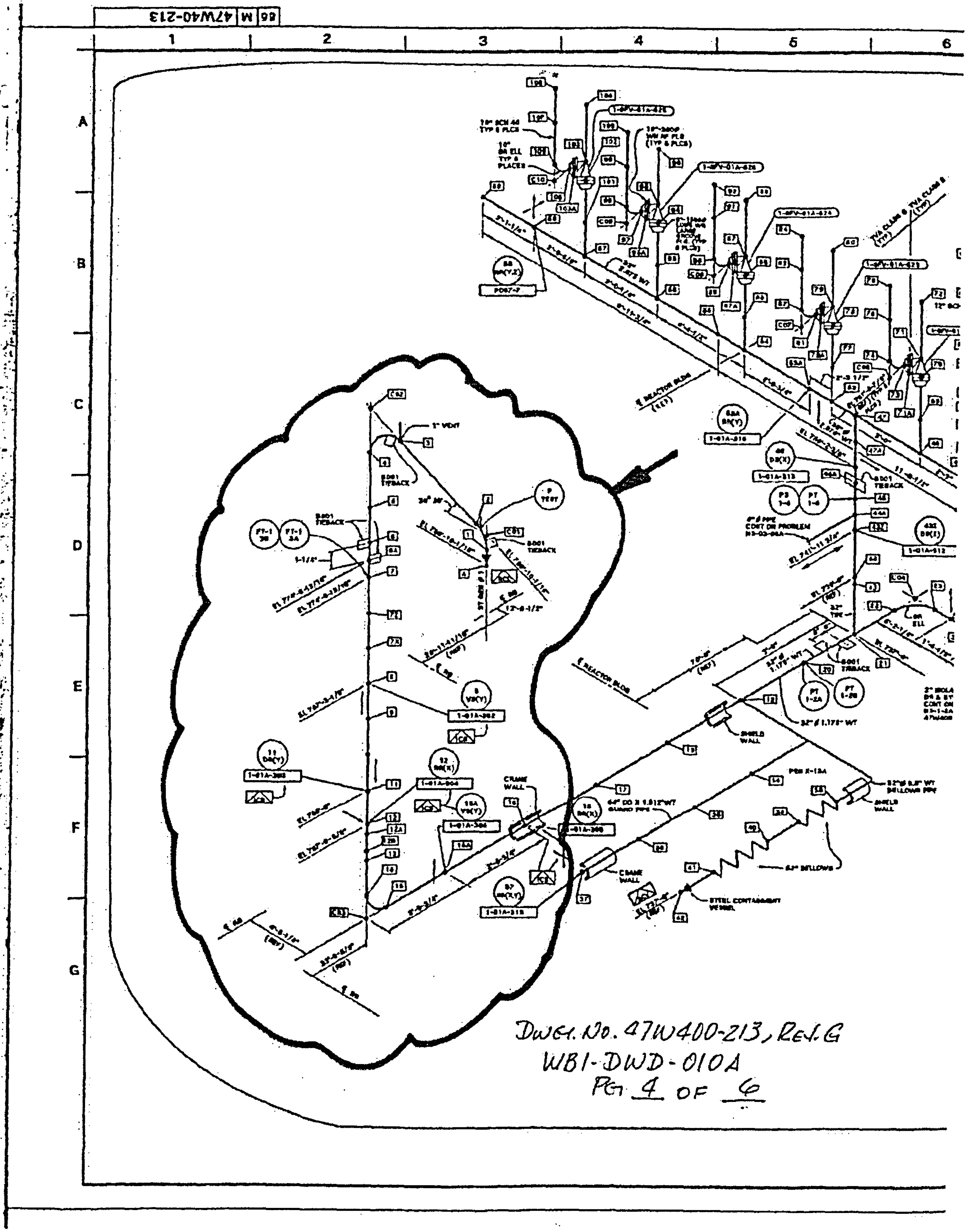
$= 584(1/12^3) = 0.34$FT^3

AT 3/4" INSTRUMENT TEST LINES:

VOLUME = $[\pi(5^2 - 1.06^2)/4 \times 9] + [\pi(7^2 - 1.06^2)/4 \times 5.75] + [\pi(7^2 - 0.86^2)/4 \times 4.62]$

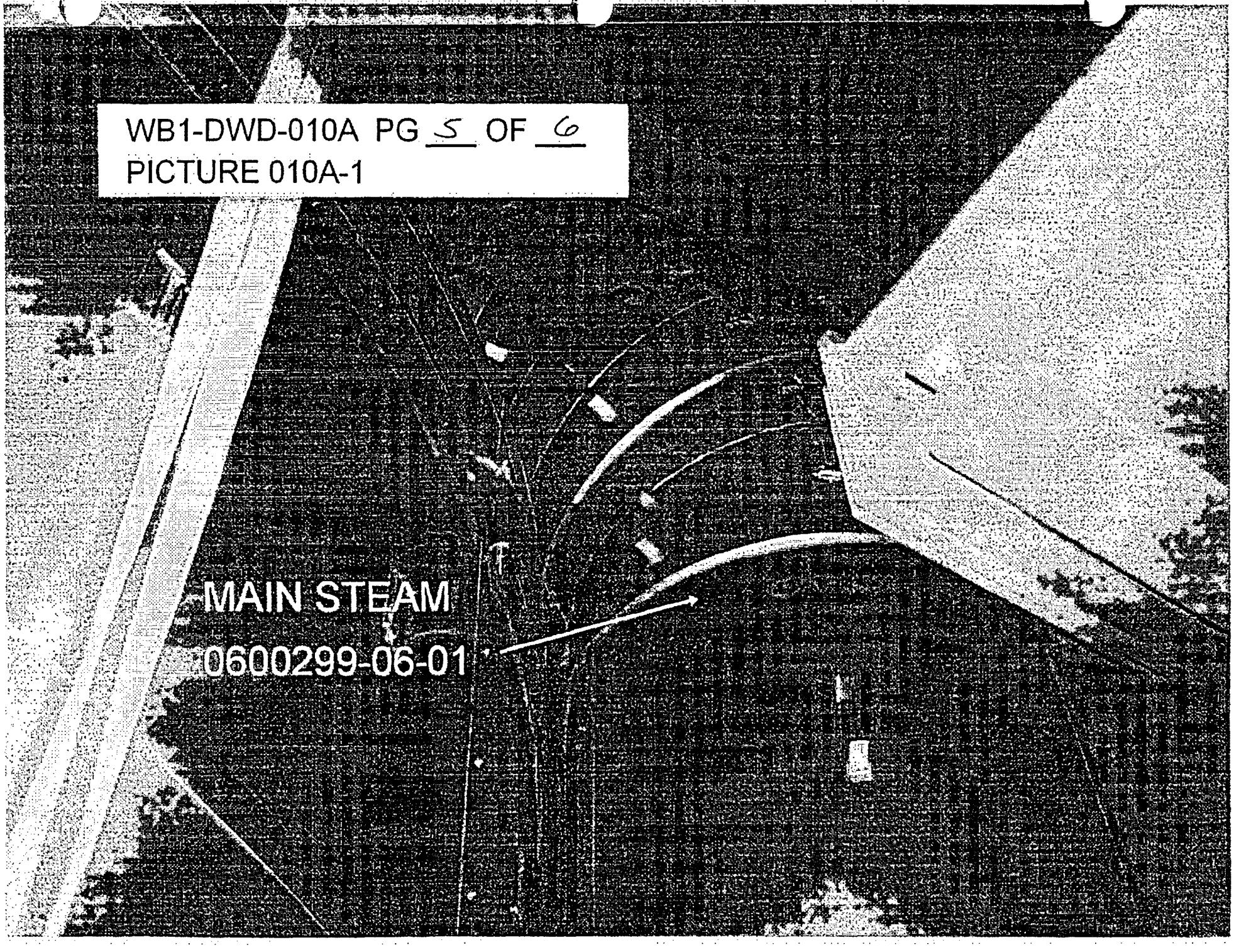
$+ [\pi(8.38^2 - 3.5^2)/4 \times 13.5] + [\pi(5^2 - 1.06^2)/4 \times 8] + [\pi(7^2 - 1.06^2)/4 \times 5.75]$

$+ [\pi(7^2 - 0.86^2)/4 \times 5.12] + [\pi(8.38^2 - 3.5^2)/4 \times 12.72] = 2315(1/12^3) = 1.34$FT^3



DWG. No. 47W400-213, Rev. G
WBI-DWD-010A
PG 4 OF 6

WB1-DWD-010A PG 5 OF 6
PICTURE 010A-1



WB1-DWD-010A PG 6 OF 6
PICTURE 010A-2

CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-010B SHEET 1 OF 3

DATE:	10/22/2003	AREA:	LOOP 1	RWP NO.:	8010
		ELEV:	745'		

INSPECTORS:	C. G. WALLS, MIKE SOLLIE

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	590955-001C, SH. 1, REV. C *	
Tools:	590955-001C, SH. 2, REV. B *	
Drawings	590955-002C, SH. 1, REV. C *	
Flashlights	590955-003C, SH. 1, REV. B *	
Ladders	590955-004C, SH. 1, REV. C *	
Cameras	590955-005C, SH. 1, REV. A *	
Binoculars	590955-006C, SH. 1, REV. D *	
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	STEAM GENERATOR
	* TVA CONTRACT NO. 93NNS-75645C
	NOTE: SEE WALKDOWN PACKAGE NO. WB1-DWD-006A FOR LOWER AREA OF SG.

Prepared By: C. G. WALLS Date: 10/22/03

Checked By: MIKE SOLLIE Date: 10/21/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-010B SHEET 2 OF 2

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
N/A	LOOP 1	745'	10	STEAM GENERATOR	SEE CALC	SEE CALC	RMI	SEE CALC	451.03	S.S.	STD	N/A	N/A

APPROXIMATE INSULATION VOLUME:

AT STEAM GENERATOR (FROM EL. 745'-0" TO TOP):

$$V = [\pi(73.05^2 - 70.38^2) \times 118.13] + [\pi(76^2 - 73.33^2)] \times (17.53 + 3.72)]$$

$$+ (1/3)\pi 59.22[91.5^2 + 76^2 + (91.5)(76)] - (1/3)\pi 59.22[88.83^2 + 73.33^2 + (88.83)(73.33)]$$

$$+ [\pi(91.5^2 - 88.83^2) \times 5] + [\pi(92.96^2 - 90.28^2)] \times (274.72 + 13.75)]$$

$$+ [\pi(92.96^2 - 17^2) \times 2.67] - (4)[\pi 5^2/4 \times 2.67] - (2 \times 33^2)$$

$$- [\pi 18^2/4 \times 2.67] - (12 \times 50.12 \times 2.66) - (9 \times 11 \times 1) = 768524(1/12^3) = 444.75 FT^3$$

AT MANWAY COVERS:

$$V = 2[(38.31^2 \times 2.67) + (2 \times 38.31 \times 7.16) + (2 \times 32.97 \times 7.16)] = 9879(1/12^3) = 5.72 FT^3$$

AT 18" AUX. FEEDWATER INLET NOZZLE:

$$V = [\pi(20^2 - 10^2)/4 \times 2.67] + [\pi(20^2 - 14.66^2)/4 \times 2.39] = 977(1/12^3) = 0.56 FT^3$$

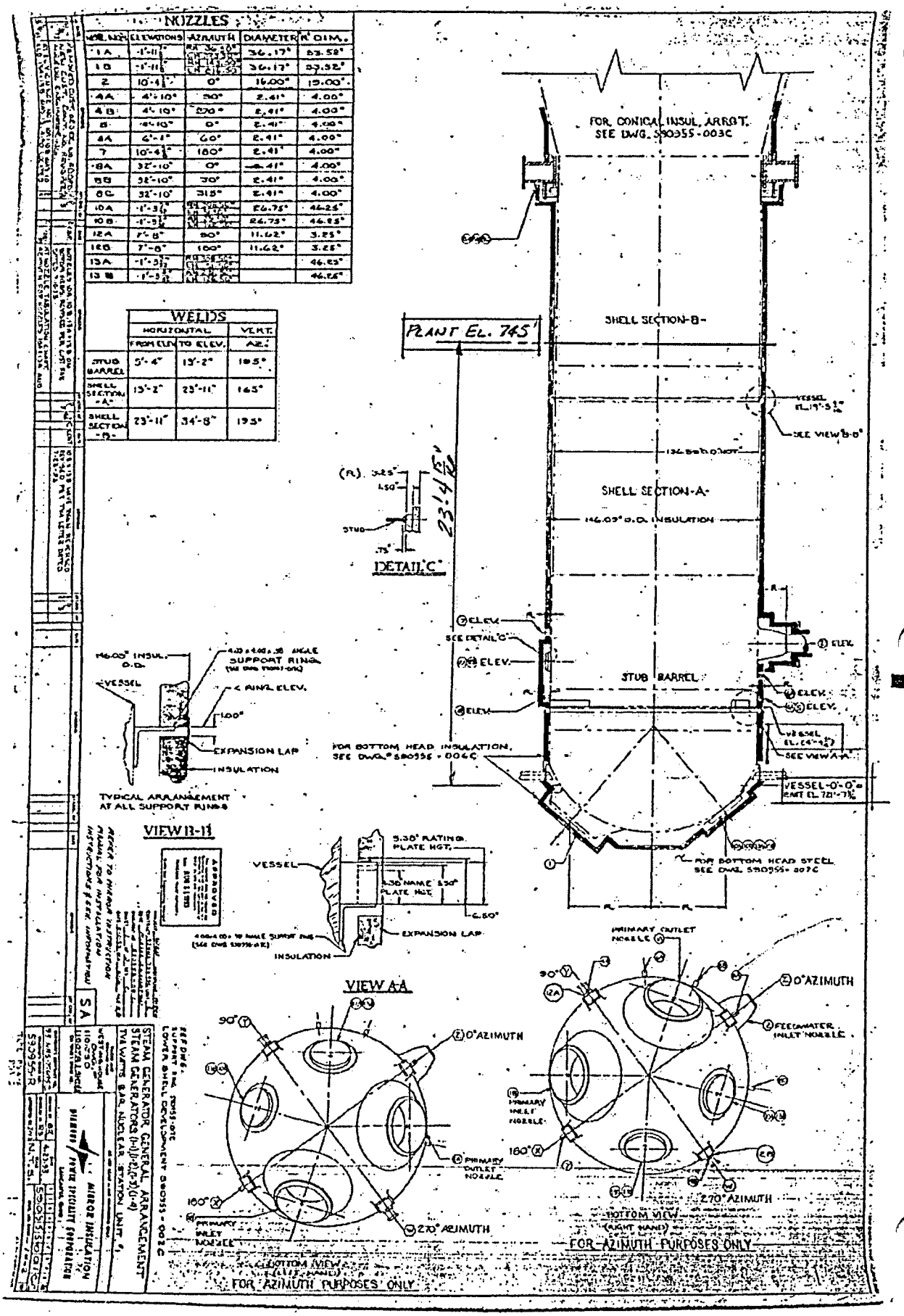
TOTAL VOLUME = 444.75 + 5.72 + 0.56 = 451.03 FT^3

NOZZLES

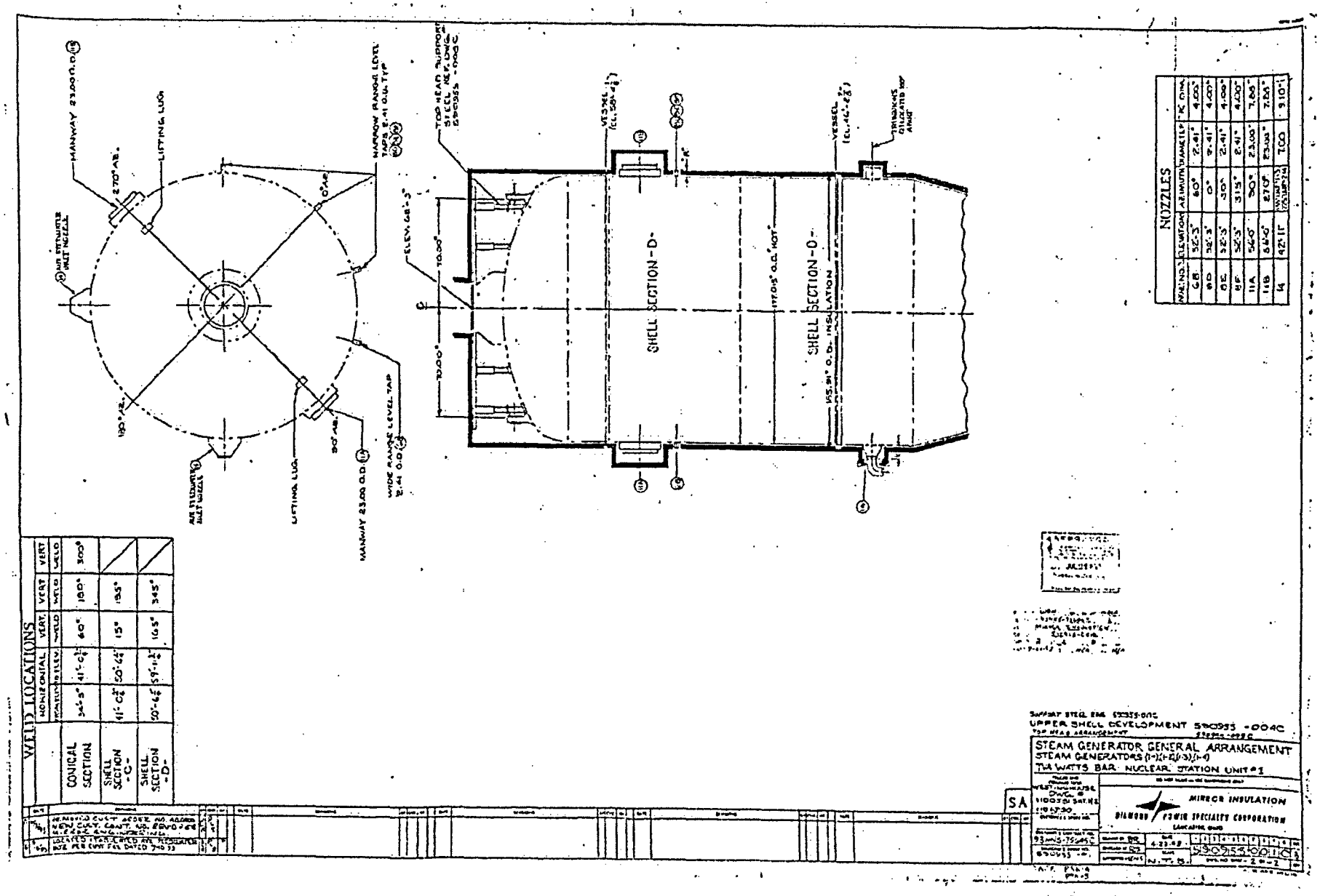
NOZ. NO.	ELEVATIONS	AZIMUTH	DIAMETER	N' DIM.
1A	-1'-11"	RA 36.10° LA 216.10°	36.17"	53.52"
1B	-1'-11"	RA 36.10° LA 216.10°	36.17"	53.52"
2	10'-4"	0°	16.00"	19.00"
4A	4'-10"	30°	2.41"	4.00"
4B	4'-10"	270°	2.41"	4.00"
5	4'-10"	0°	2.41"	4.00"
6A	6'-4"	60°	2.41"	4.00"
7	10'-4"	180°	2.41"	4.00"
8A	32'-10"	0°	2.41"	4.00"
8B	32'-10"	30°	2.41"	4.00"
8C	32'-10"	315°	2.41"	4.00"
10A	-1'-3 1/2"	RA 90.25° LA 270.25°	26.75"	46.25"
10B	-1'-3 1/2"	RA 90.25° LA 270.25°	26.75"	46.25"
12A	7'-8"	90°	11.62"	3.25"
12B	7'-8"	180°	11.62"	3.25"
13A	-1'-3 1/2"	RA 90.25° LA 270.25°		46.25"
13B	-1'-3 1/2"	RA 90.25° LA 270.25°		46.25"

WELDS

	HORIZONTAL FROM ELEV.	HORIZONTAL TO ELEV.	VERT. AZ.
STUB BARREL	5'-4"	13'-2"	195°
SHELL SECTION -A-	13'-2"	23'-11"	165°
SHELL SECTION -B-	23'-11"	34'-8"	195°



WBI-DWD-0108
Pg 4 of 9



NOZZLES				
NO.	ELEVATION	AZIMUTH	DIAMETER	K DIM.
6B	52'-3"	60°	2.41"	4.00"
6D	52'-3"	0°	2.41"	4.00"
6E	52'-3"	30°	2.41"	4.00"
6F	52'-3"	315°	2.41"	4.00"
11A	54'-0"	90°	23.00"	7.00"
11B	64'-0"	270°	23.00"	7.00"
14	92'-11"	INSULATION		9.10"

WELD LOCATIONS						
	HORIZONTAL WELD	VERT. WELD	VERT. WELD	VERT. WELD	VERT. WELD	
	MATCH-LINE ELEV.					
CONICAL SECTION	34'-5 3/4"	41'-0 1/4"	60°	180°	195°	300°
SHELL SECTION -C-	41'-0 1/4"	50'-6 1/4"	15°	195°	345°	
SHELL SECTION -D-	50'-6 1/4"	59'-11 1/2"	10.5°	345°		

SUPPORT STEEL DWG 590935-005
UPPER SHELL DEVELOPMENT 590935 -004C
TOP HEAD ARRANGEMENT 590935-002C

STEAM GENERATOR GENERAL ARRANGEMENT
STEAM GENERATORS (1-)(-2)(-3)(-4)
TVA WATTS BAR NUCLEAR STATION UNIT #1

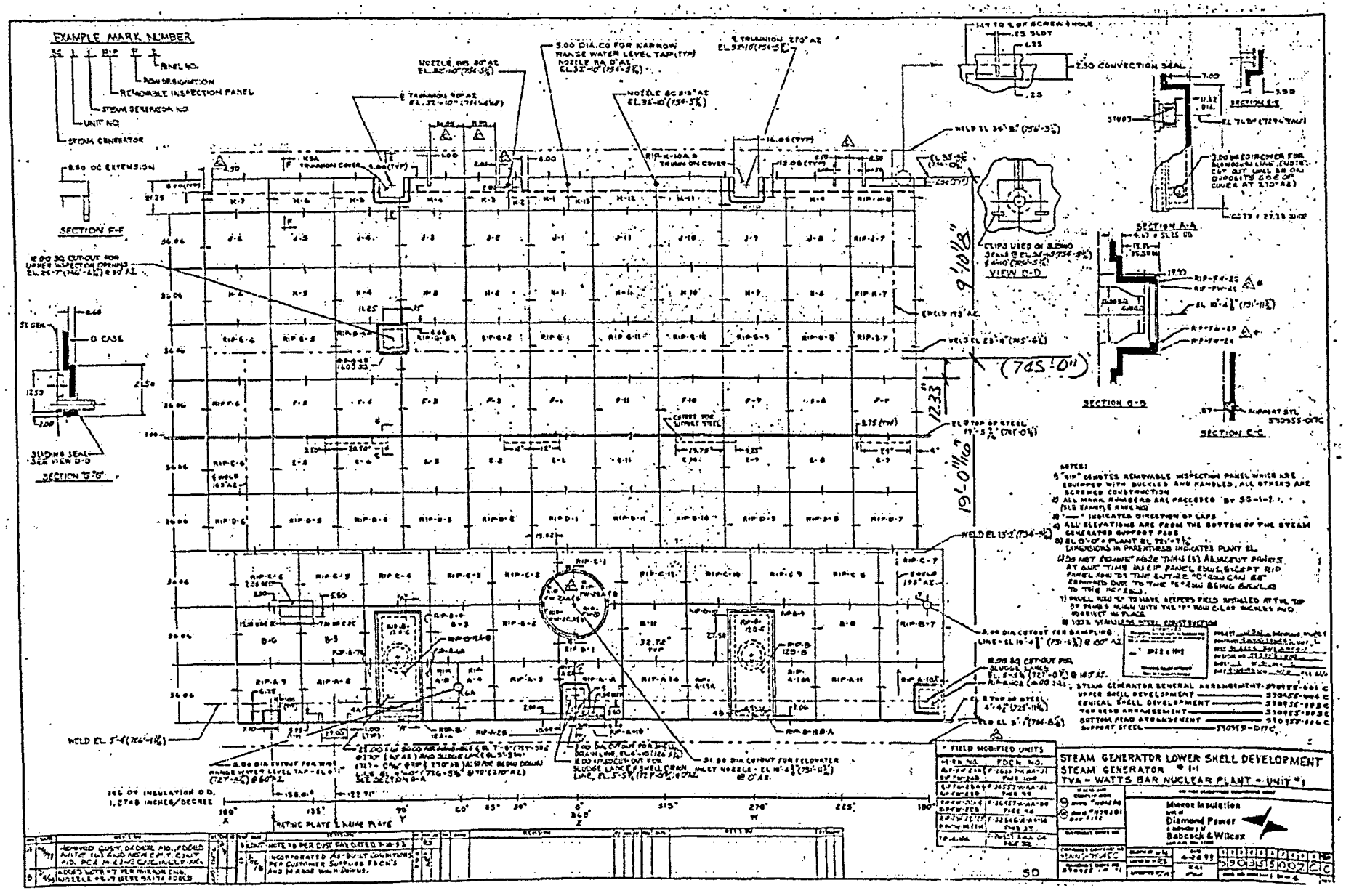
SA

MIRROR INSULATION
DIAMOND POWER SPECIALTY CORPORATION
LANCASTER, OHIO

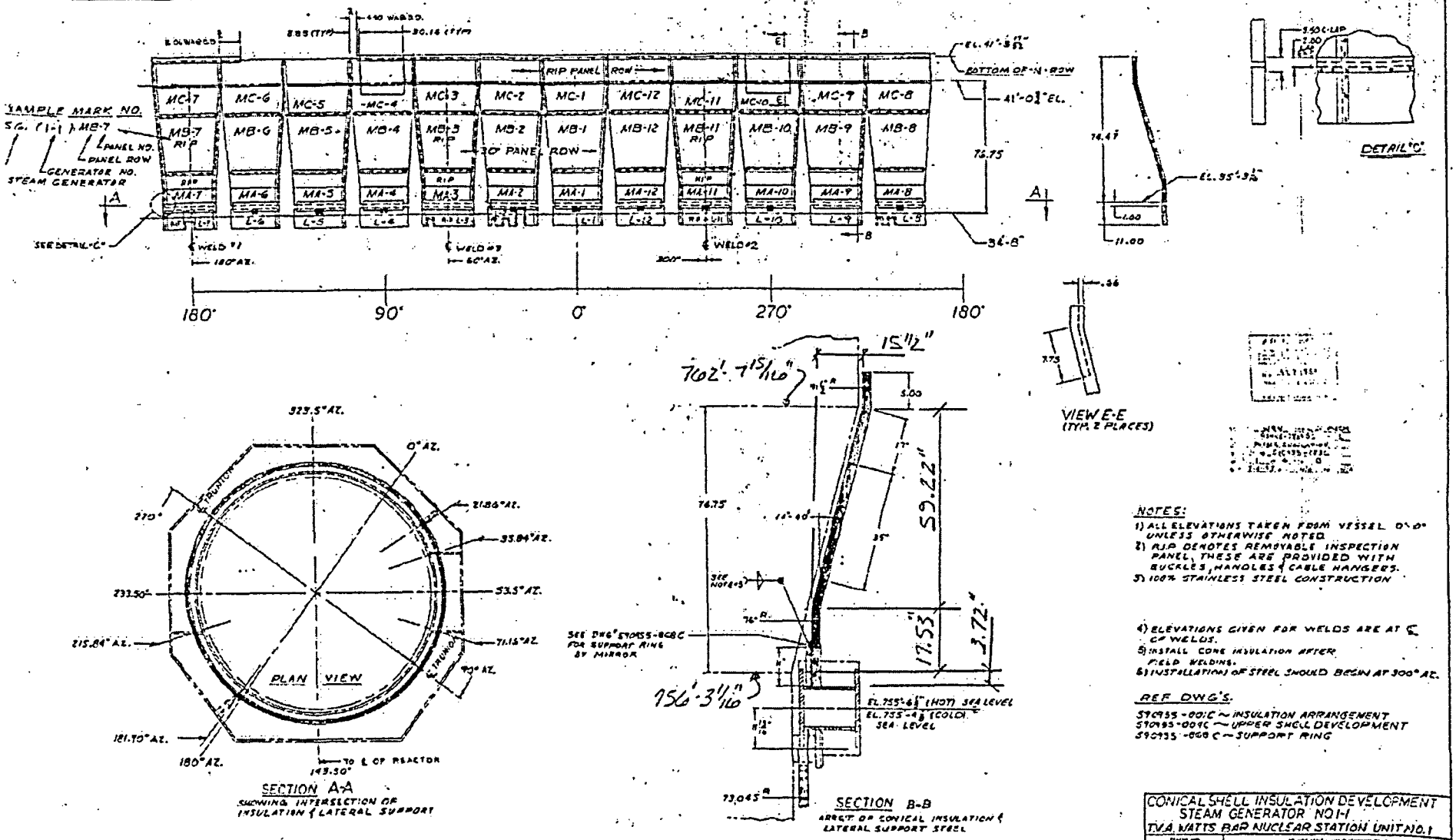
4-23-73

590935-004C

WBI-DWD-010B
Pg. 5 of 9



WBI-DWD-010B
PG 6 OF 9



NOTES:

1) ALL ELEVATIONS TAKEN FROM VESSEL 0'-0" UNLESS OTHERWISE NOTED.
2) RIP DENOTES REMOVABLE INSPECTION PANEL, THESE ARE PROVIDED WITH BUCKLES, HANDLES & CABLE HANGERS.
3) 100% STAINLESS STEEL CONSTRUCTION
4) ELEVATIONS GIVEN FOR WELDS ARE AT ℄ OF WELDS.
5) INSTALL CONE INSULATION AFTER FIELD WELDING.
6) INSTALLATION OF STEEL SHOULD BEGIN AT 300° AZ.

REF DWG'S.

590955-001C ~ INSULATION ARRANGEMENT
590955-009C ~ UPPER SHELL DEVELOPMENT
590955-008C ~ SUPPORT RING

CONICAL SHELL INSULATION DEVELOPMENT
STEAM GENERATOR NO 1-1
TVA WATTS BAR NUCLEAR STATION UNIT NO. 1

TVA WATTS BAR
489 427 RS
489 431 AT

MIRROR INSULATION
DIAMOND POWER SPECIALTY CORPORATION
LUNCASTLE, OHIO

93 ANS-75 MS C
590955-2
4-27-89
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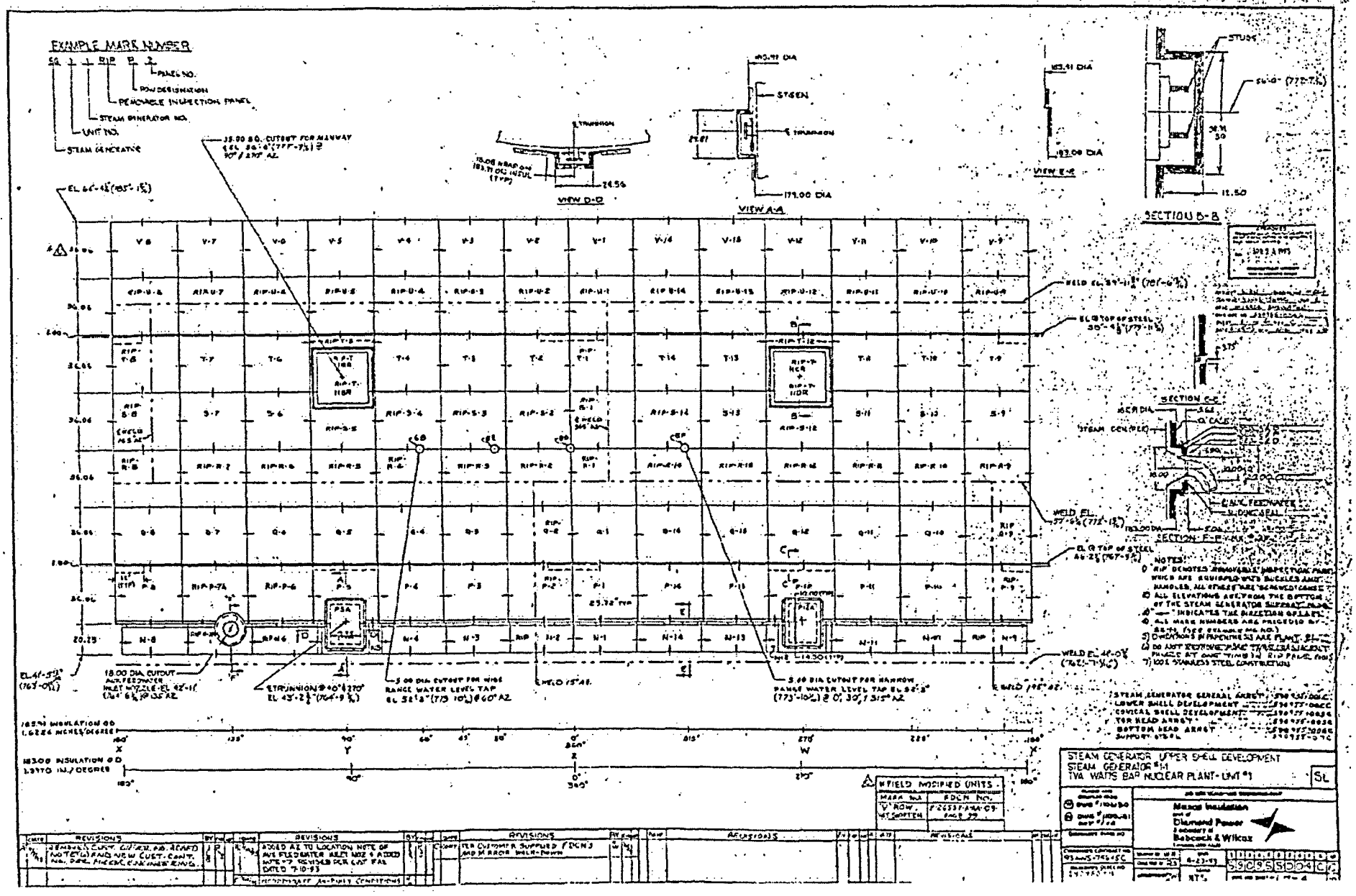
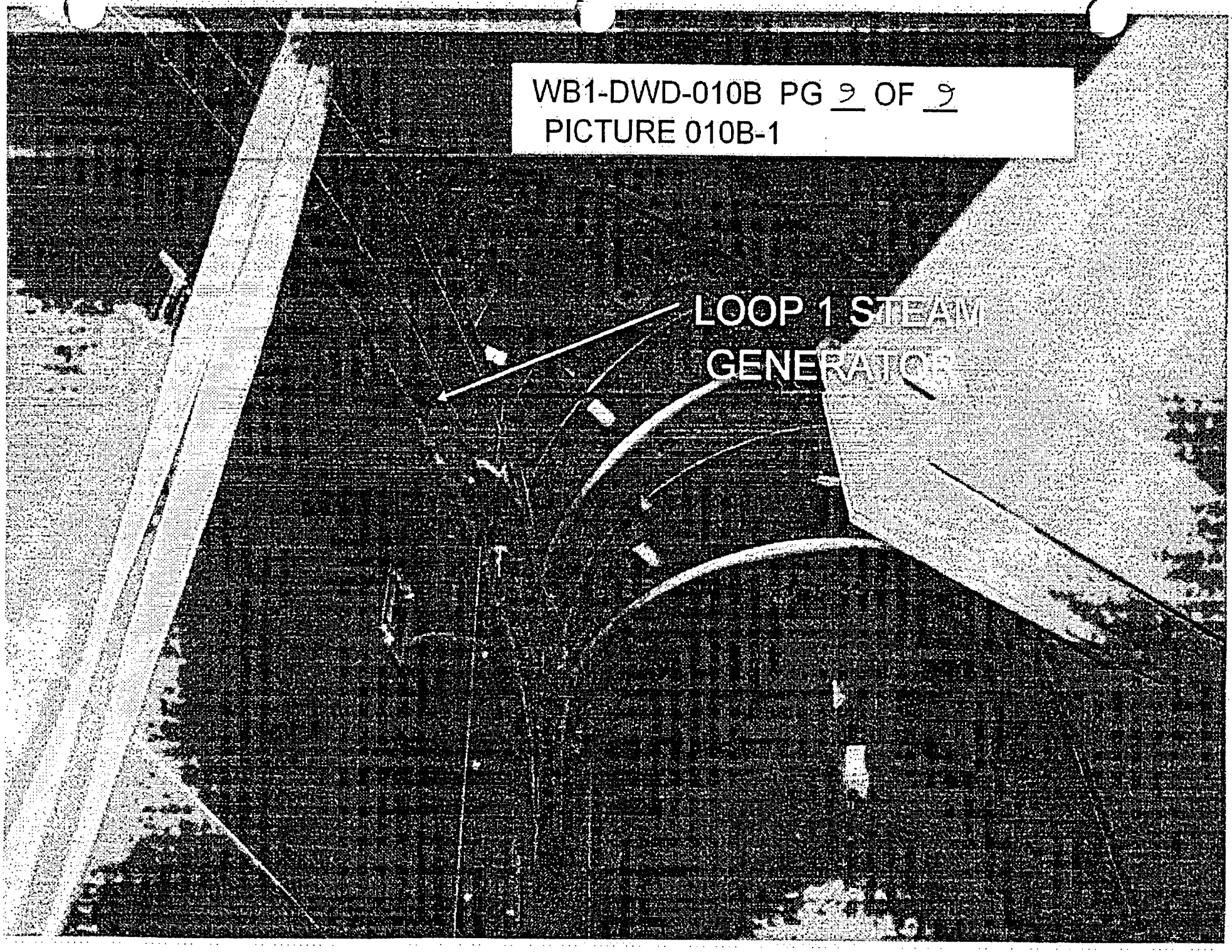
WB1-DWD-010B
PG 7 OF 9



WBI-DWD-010B
DG 8 OF 9

WB1-DWD-010B PG 9 OF 9
PICTURE 010B-1



CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-010C SHEET 1 OF 4

DATE:	10/24/2003	AREA:	LOOP 1	RWP NO.:	8010
		ELEV:	745'		

INSPECTORS:	C. G. WALLS, MIKE SOLLIE

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	590955-085C, SH. 1, REV. E *	
Tools:	47W401-212, REV. D	
Drawings	47W401-212A	
Flashlights	47W401-212B	
Ladders		
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	6" AUXILIARY FEEDWATER PIPING
	* TVA CONTRACT NO. 93NNS-75645C
	NOTE: THIS INCLUDES PIPING BELOW THE EL. 745'-0" AREA.

Prepared By: C. G. WALLS Date: 10/24/03

Checked By: MIKE SOLLIE Date: 10/9/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-010C SHEET 2 OF 4

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
0600200-02-05	LOOP 1	745'	10	AUXLILIARY FEEDWATER	6.63	3.17	RMI	5.1875	4.24	S.S.	STD	N/A	17" OD INSULATION
0600200-02-05	LOOP 1	745'	10	AUXLILIARY FEEDWATER	6.63	59.00	RMI	2.6875	32.21	S.S.	STD	N/A	12" OD INSULATION
0600200-02-05	LOOP 1	745'	10	AUXLILIARY FEEDWATER	6.63	3.01	MIN-K	2.8125	1.74	S.S.	STD	N/A	12.25" OD INSULATION
0600200-02-05	LOOP 1	745'	10	AUXLILIARY FEEDWATER	6.63	1.43	RMI	1.6875	0.44	S.S.	STD	N/A	10" OD INSULATION
0600200-02-05	LOOP 1	745'	10	AUXLILIARY FEEDWATER	1.31	1.20	RMI	2.845	0.31	S.S.	STD	N/A	AT 1.31" OD LINE

APPROXIMATE INSULATION LENGTH:

START FROM STEAM GENERATOR:

AT 17" OD INSULATION:

LENGTH = 21 + 17 = 38(1/12) = 3.17FT

AT 12" OD INSULATION:

LENGTH = 34 + π(9)(90°/180°) + 15.59 + 222.28 + 30.35 + 56.50 + 89.25

+ π(9)(90°/180°) + (168.97 - 6) + 18.06 + 13.25 + π(9)(90°/180°) + 23.25

= 708(1/12) = 59FT

AT 12.25 " OD INSULATION W/MIN-K INSULATION:

LENGTH = 36.09(1/12) = 3.01FT

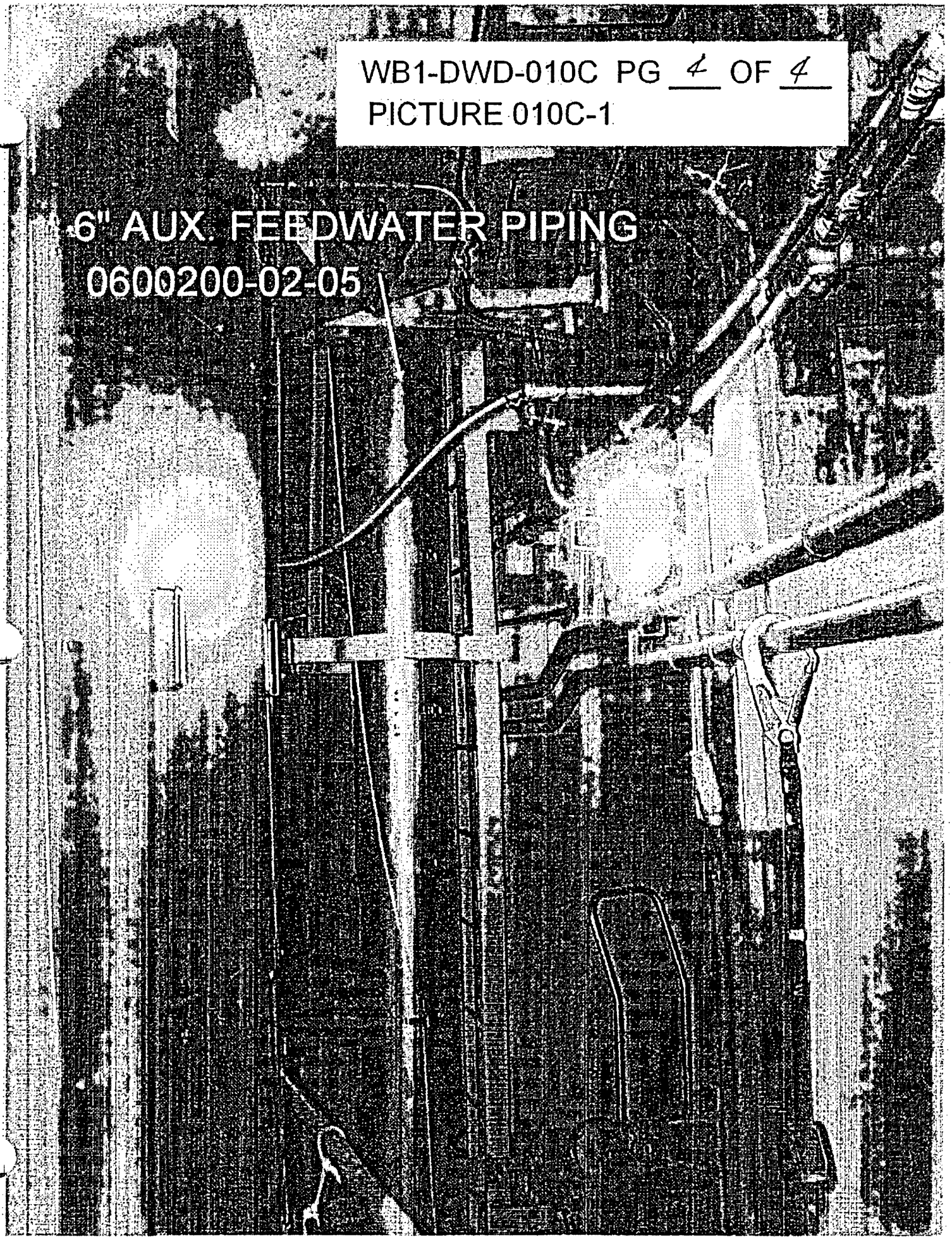
AT 10" OD INSULATION:

LENGTH = 3 + π(9)(90°/180°) = 17.14(1/12) = 1.43FT

AT 1.31" OD LINE (7" OD INSULATION):

LENGTH = 7.38 + 7 = 14.38(1/12) = 1.2FT

WB1-DWD-010C PG 4 OF 4
PICTURE 010C-1



CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-010D SHEET 1 OF 7

DATE:	10/29/2003	AREA:	LOOP 1 (AZ 0°-90°)	RWP NO.:	8010
		ELEV:	745'		

INSPECTORS:	FRANK C YAO, MIKE CALDWELL

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	47W2500-9	
Tools:	47W915-2 REV. M	
Drawings	47W915-3 REV. P	
Flashlights		
Ladders		
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	SEAL AROUND DIFFUSERS
	PICTURE #10D-1
	PICTURE #10D-2
	PICTURE #10D-3
	TYPICAL ALL DIFFUSERS

Prepared By: C. G. WALLS Date: 10/29/03

Checked By: MIKE CALDWELL Date: 10/29/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-010D SHEET 2 OF 7

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
N/A	LOOP 1	745'	10	SEAL AROUND HVAC DIFFUSER	NA	NA	NA	NA	NA	NA	NA	NA	

SEALANT CROSS SECTION = 0.25"X0.25" RIGHT ANGLE SHAPE
THIS APPLIED TWO SIDES OF DIFFUSER

PICTURE #010D-1
PICTURE #010D-2
PICTURE #010D-3

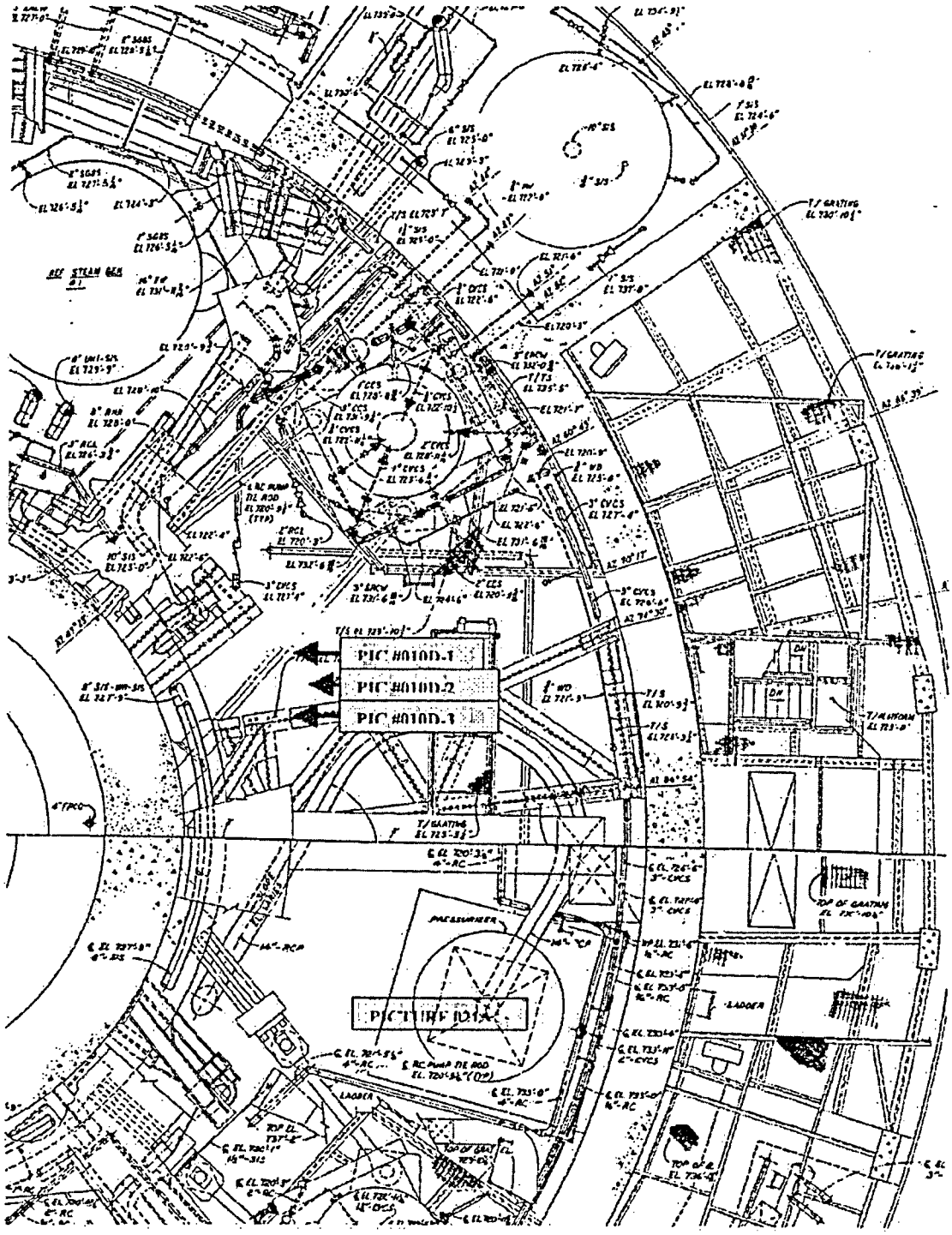
DIFFUSER SIZE	NO. OF DIFF	LENGTH EACH	LENGTH TOTAL	AREA PER IN	VOL (CU IN)	VOL (CU FT)
24X24	4	48	192	0.03125	6	0.0035
36X36	7	72	504	0.03125	15.75	0.0091
26X76	2	152	304	0.03125	9.5	0.0055
36X32	1	64	64	0.03125	2	0.0012
TOTAL					33.25	0.0192

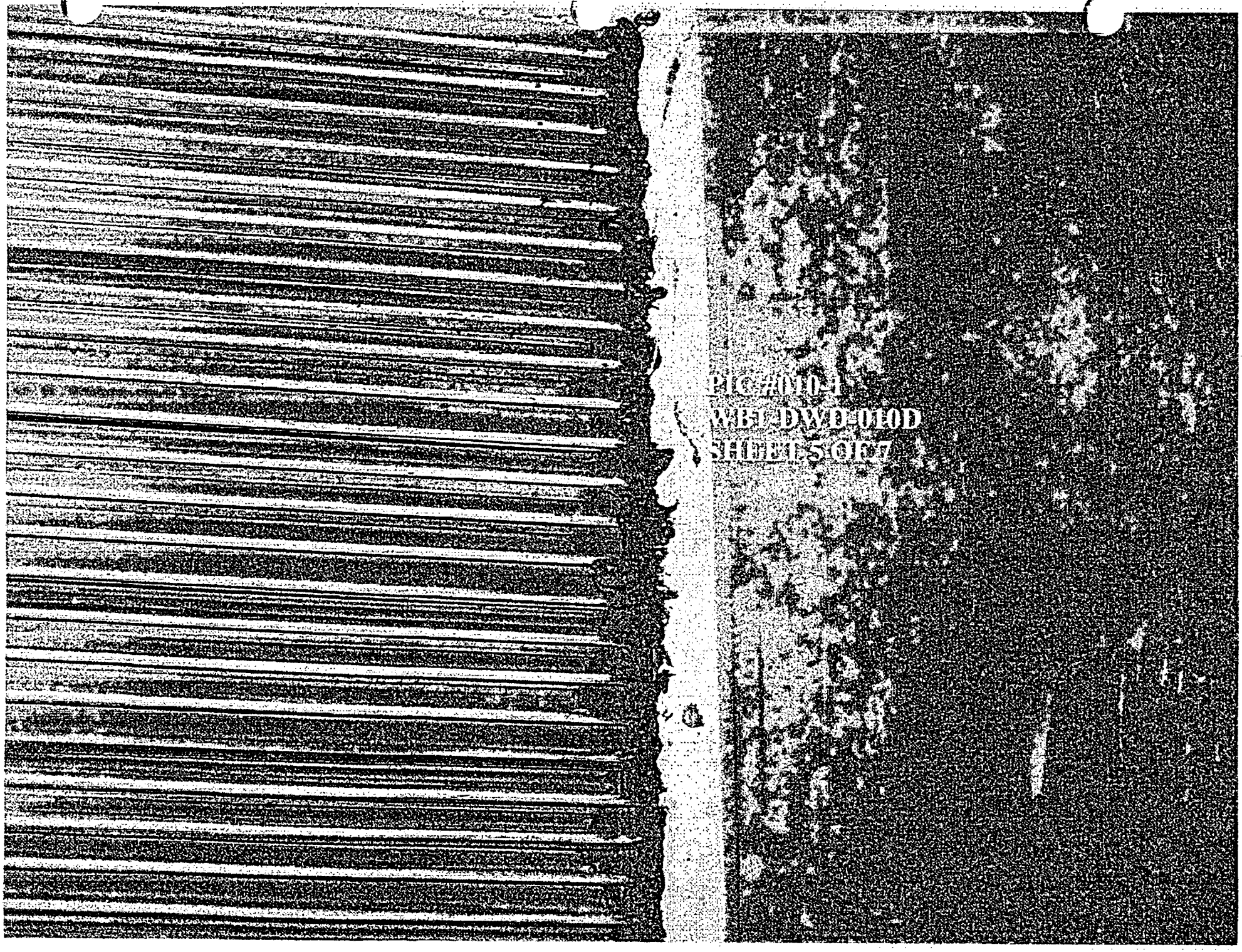
FOR INFORMATION ONLY

47W2500-9
QUAD I
EL 720 TO 737.0

WB1-DWD-010D

SHEET 4 OF 7

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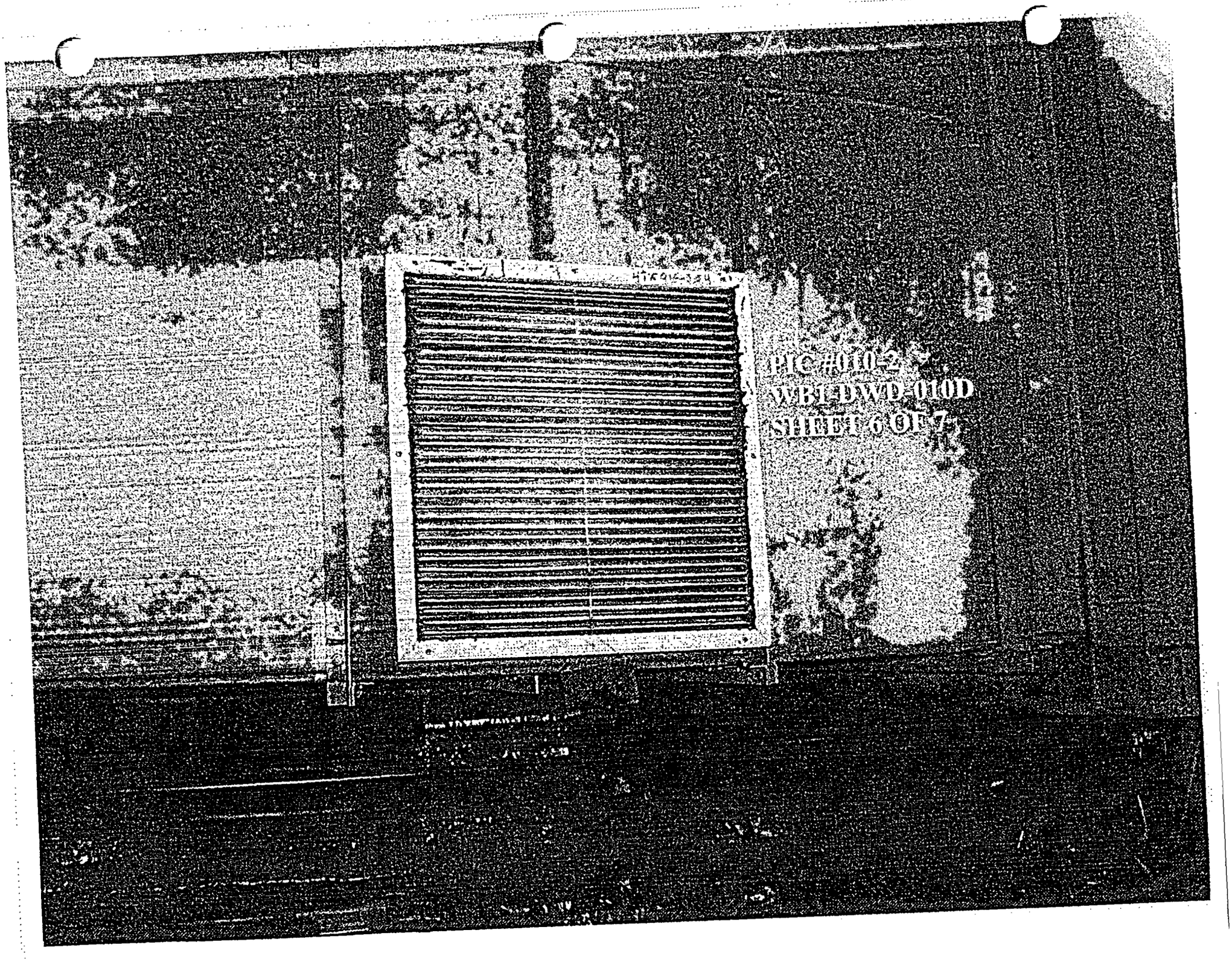
SHEET 5 OF 7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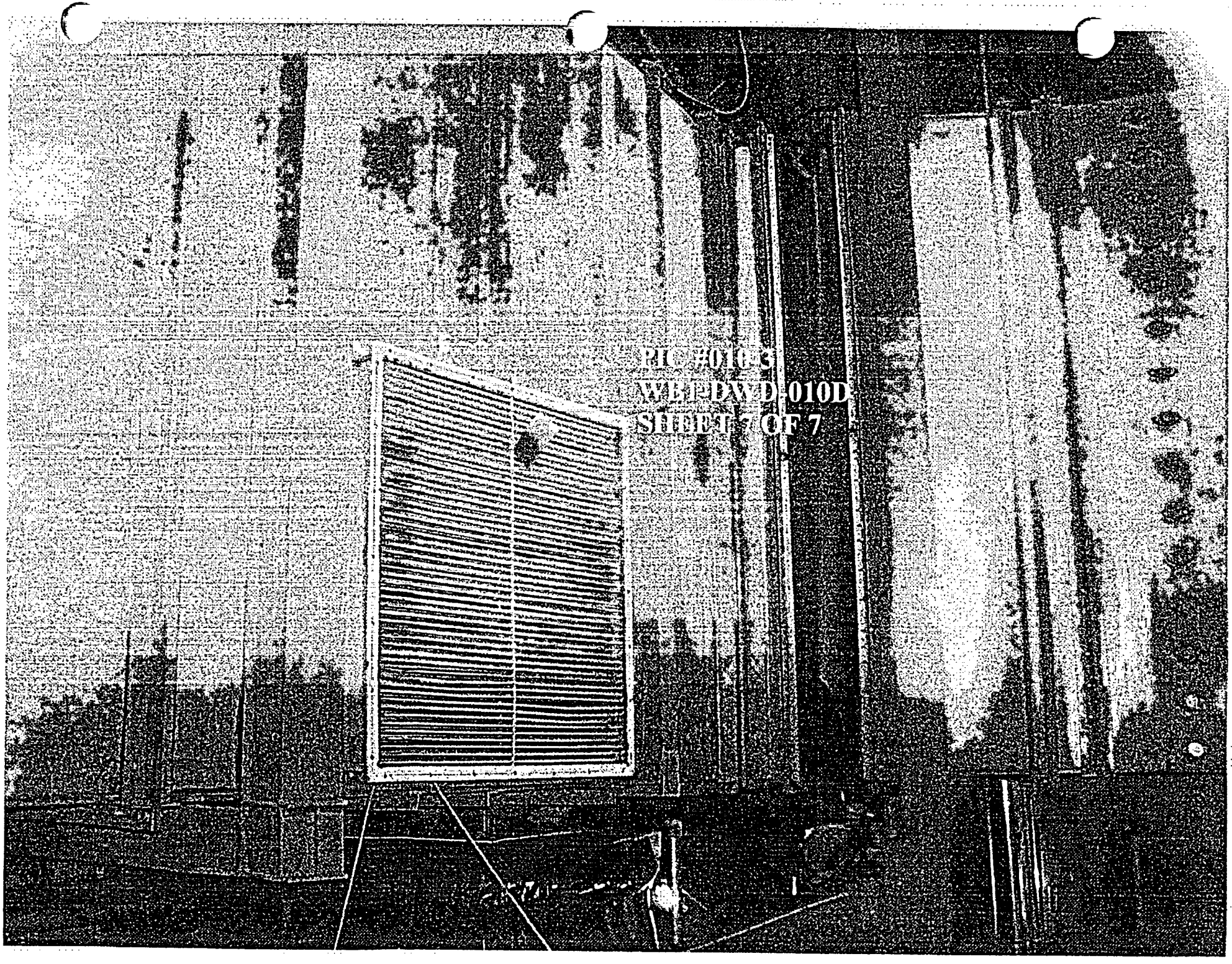
SHEET 6 OF 7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WBPDXD-010D
SHEET 7 OF 7

CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-010E SHEET 1 OF 8

DATE:	11/04/2003	AREA:	LOOP 1 (AZ 0°-90°)	RWP NO.:	8010
		ELEV:	745		

INSPECTORS:	FRANK C YAO, MIKE CALDWELL

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	47W2500-9	45N862-10
Tools:		DCN 11727-D
Drawings		1-FOR-304-1
Flashlights		45N866-1
Ladders		
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify **installation of insulation** as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any **undocumented** insulation.
3	Inspect and determine longitudinal **seam location** and **band spacing** if necessary.
4	Document any **irregularities** of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any **undocumented fibrous insulation (e.g., within rupture restraints)**.
6	Inspect and mark up cable tray drawings to show location of **fire barriers** (vertical and horizontal).
7	Inspect the area for any **weak components** that could be dislodged by jet and that could be transported to sump.
8	Inspect any **equipment insulation** in the area.
9	Inspect and document the general **cleanliness** of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	CONDUIT 1VC4063B
	PICTURE 021E
	PICTURE 026E
	JB-293-6346-B

Prepared By: FRANK C YAO Date: 11/4/03

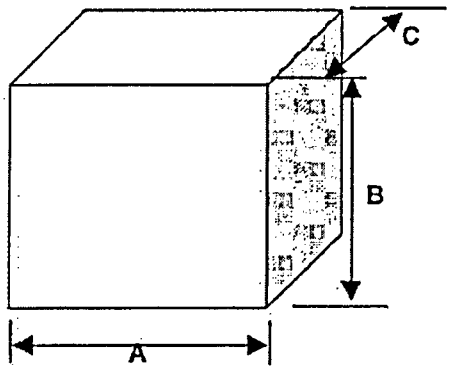
Checked By: MIKE CALDWELL Date: 11/4/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-010E SHEET 2 OF 8

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
N/A	LOOP 1	745	10	CONDUIT INSULATION 3M RADIANT	1.90	5.00	3M20C	SEE CALC	0.219	NA	NA	NA	SEE CALCULATION
N/A	LOOP 1	745	10	JUNCTION BOX	NA	NA	3M20C	SEE CALC	0.263	NA	NA	NA	SEE CALCULATION
N/A	LOOP 1	745	10	SUPPORT	NA	NA	3M20C	SEE CALC	0.260	NA	NA	NA	SEE CALCULATION

AREA 010 3M-M20C RADIANT SHIELD CALCULATION
JB-293-6346-B



SURFACE AREA CALCULATION OF JUNCTION BOX JB-293-6347-A (SIZE: 12X12X8)

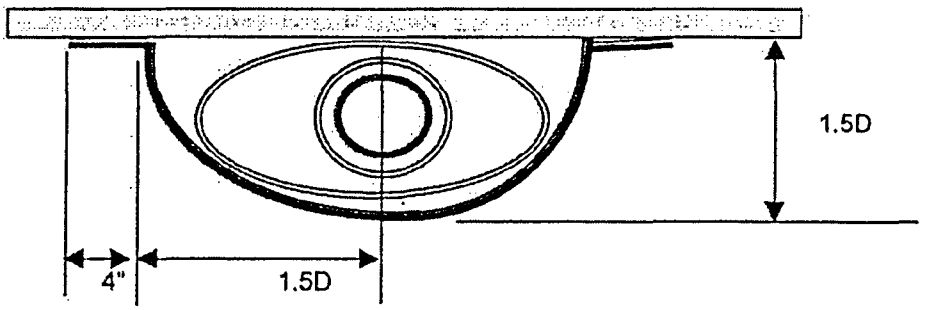
FOR ONE LAYER JB-293-6346-B (SIZE: 18X12X6)

A (IN)	B(IN)	C(IN)	2(AxB+AxC+BxC) SQ IN	SQ FT	ADD 20% WRAP
12	12	8	672	4.67	5.6

PER NOTE 1A OF DRAWING 1-47W243-6, 3 LAYERS OF M20C SHALL BE PROVIDED.

TOTAL AREA FOR 3 LAYERS	SQ FT	THICKNES	TOTAL VOL (CU FT)
	16.8	0.188	0.263

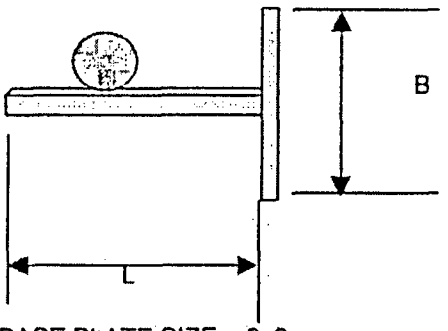
AREA 10 3M-M20C RADIANT SHIELD CALCULATION
1 1/2" DIA. CONDUIT (OUTSIDE DIA = 1.9")
3 LAYERS 3M-M20C FOR CONDUIT PER NOTE 1A DRAWING 1-47W243-6
DETAIL C-8 AND NOTE 6 DRAWING 1-47W243-8 SPECIFIES 3 LAYERS WRAP.



D=DIAMETER OF CONDUIT IN IN"
FIRST LAYER TIGHTLY AROUND CONDUIT
SECOND LAYER IS 1.5D DIAMTER CIRCLEX1.2
THIRD LAYER IS 1.5D RADIUS HALF CIRCLE + 8"

1 1/2" LENGTH = 5'			
1 1/2" DIA. CONDUIT PER LIN FT	D(IN)	PERIMTER (IN)	A(SQ IN) PER LIN FT
1ST LAYEF	1.9	5.97	71.63
2ND LAYE	2.85	10.74	128.93
3RD LAYE	5.7	16.95	203.44
TOTAL SQ IN PER LIN FT			404.00
CU FT OF 3M-M20C (3/16" THICK)			0.0438
CONDUIT LENGTH IN THIS AREA =			5
TOTAL CU FT OF INSULATION =			0.219

AREA 10 3M-M20C RADIANT SHIELD CALCULATION



ASSUME A=12" WITH 2x2 SQ TUBE, BASE PLATE SIZE = 9x9
TWO LAYERS OF 3M FIRE BARRIER M20C FOR SUPPORT
COVER BASE PLATE 6" ALL AROUND.

COVERED AREA (ONE LAYER)

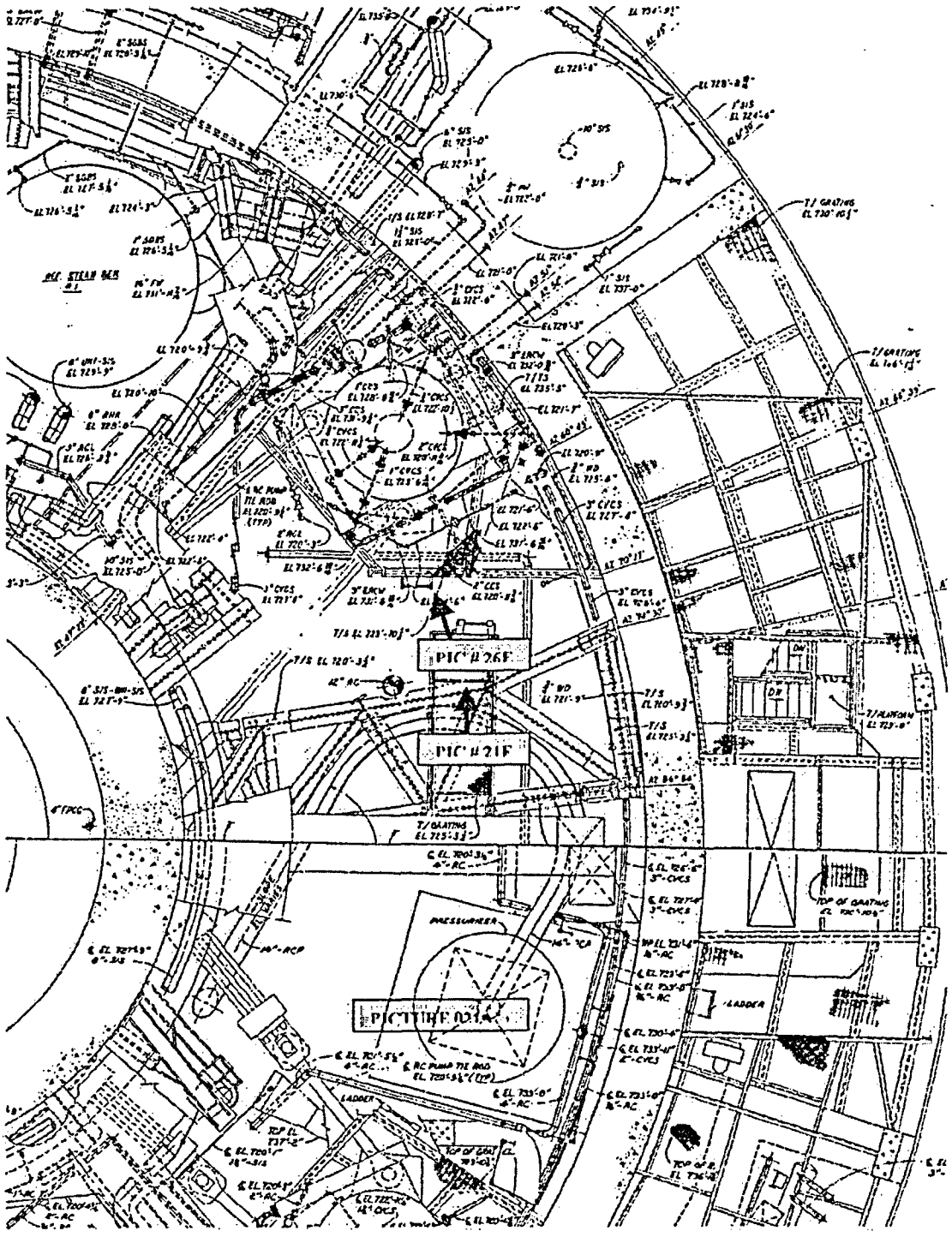
	B+6+6	B+6+6	A (IN)	A (SQ FT)
BASE PLATE =	21	21	441	3.06
	L	4xWIDTH		
CANTILEVER MEM =	12	8	96	0.67
SUB TOTAL				3.73
PLUS ENDS ETC 10%				0.373
ONE LAYER TOTAL=				4.10
TWO LAYERS = 2XTOTAL =				8.20
EACH SUPPORT M20C FOR 3/16" THICK IN CU FT =				0.128

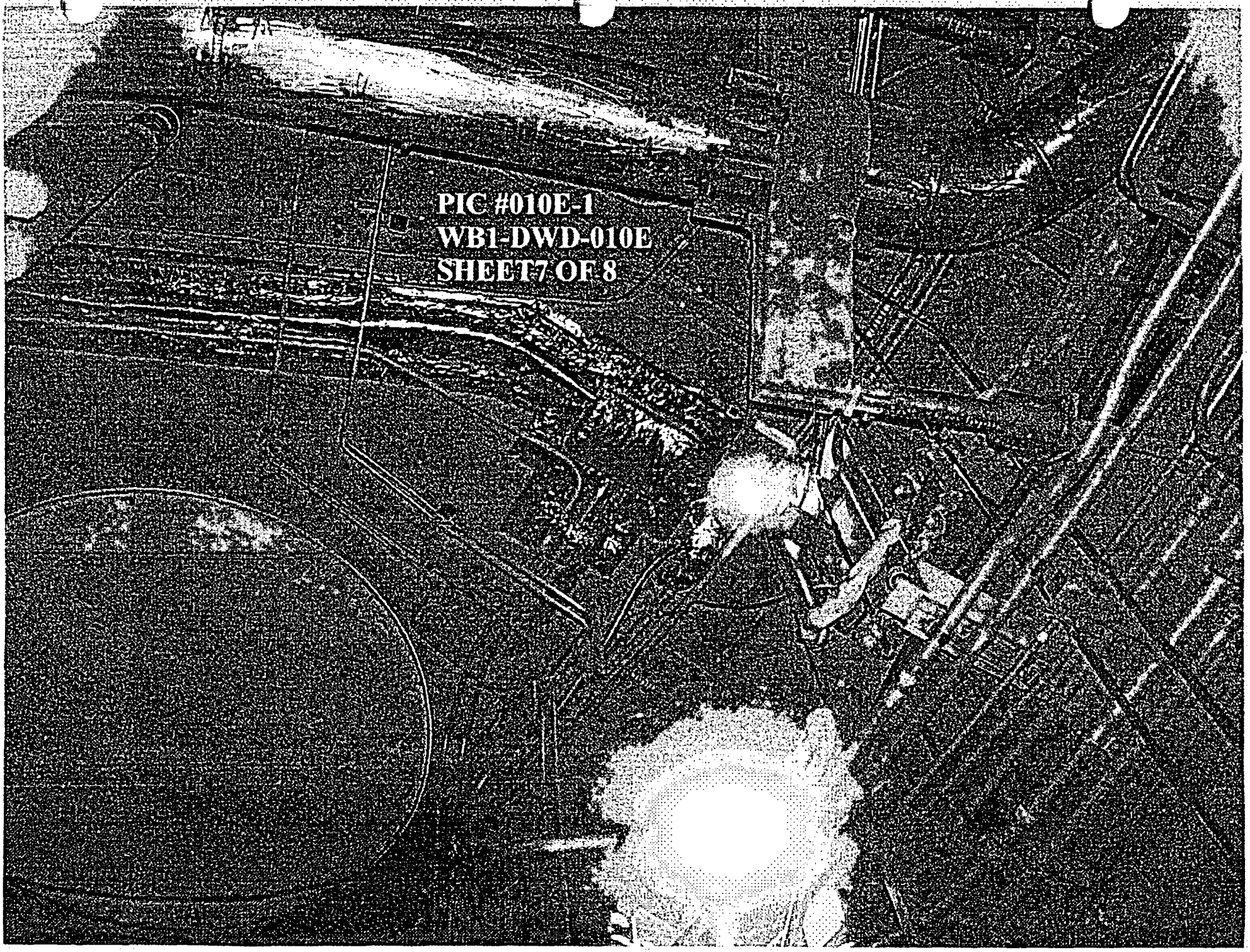
ASSUME SUPPORT SPACING IS 10 FT CONDUIT
NUMBER OF SUPPORTS FOR 1 1/2" DIA. CONDUIT=5/10 + 1= 2
NUMBER OF SUPPORTS TOTAL = 2
TOTAL CU FT OF 3M-M20C FOR SUPPORTS = 0.26

47W2500-9
QUAD I
EL 720 TO 737.0

WB1-DWD-010E

SHEET 6 OF 8

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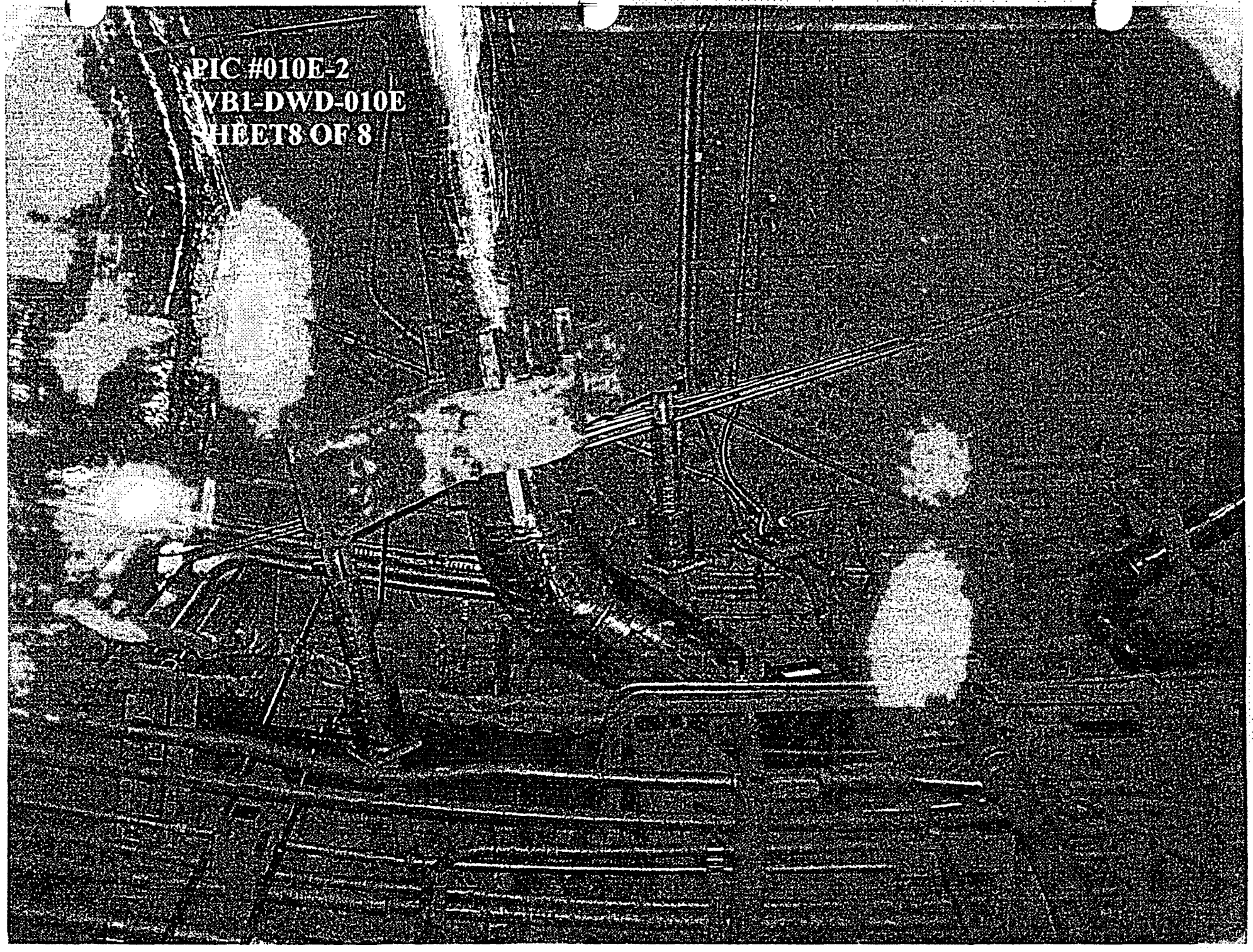
WB1-DWD-010E
SHEET 7 OF 8


PIC #010E-2
WB1-DWD-010E
SHEET8 OF 8

CONTAINMENT DEBRIS WALKDOWN PACKAGE WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-011A SHEET 1 OF 8

DATE:	10/21/2003	AREA:	LOOP 2	RWP NO.:	8010
		ELEV:	745'		

INSPECTORS:	C. G. WALLS, MIKE SOLLIE

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	47W400-1, REV. P	
Tools:	47W400-2, REV. J	
Drawings	47W400-214, REV. E	
Flashlights	590955-049C, SH. 1, REV. E *	
Ladders	590955-049C, SH. 2, REV. E *	
Cameras	590955-050C, REV. B *	
Binoculars	590955-051C, SH. 1, REV. A *	
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

COMMENTS
MAIN STEAM LINE (FROM PENETRATION X-13B TO STEAM GENERATOR)
* TVA CONTRACT NO. 93NNS-75645C

Prepared By: C. G. WALLS CGWalls Date: 10/21/03

Checked By: MIKE SOLLIE Mike Sollie Date: 10/23/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-011A SHEET 2 OF 8

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
0600200-06-02	LOOP 2	745'	11	MAIN STEAM	32.00	67.50	RMI	3.5	182.97	S.S.	STD	N/A	N/A
0600200-06-02	LOOP 2	745'	11	MAIN STEAM	32.00	2.75	MIN-K	1.5	3.01	S.S.	N/A	N/A	NEAR TOP OF SG
0600200-06-02	LOOP 2	745'	11	MAIN STEAM	SEE CALC	SEE CALC	RMI	SEE CALC	1.63	S.S.	STD	N/A	AT 1" VENT LINE
0600200-06-02	LOOP 2	745'	11	MAIN STEAM	SEE CALC	SEE CALC	RMI	SEE CALC	0.37	S.S.	STD	N/A	AT 1" INSTRUMENT TEST LINE
0600200-06-02	LOOP 2	745'	11	MAIN STEAM	SEE CALC	SEE CALC	RMI	SEE CALC	1.41	S.S.	STD	N/A	AT 3/4" INSTRUMENT TEST LINES

APPROXIMATE INSULATION VOLUME:

AT RMI: (START FROM PENETRATION)

LENGTH = 42 + [π(32 X 1.5)(90°/180°)] + 560 + [π(32 X 1.5)(90°/180°)]

+ (3/4)[π(32 X 1.5)(90°/180°)] = 810(1/12) = 67.5FT

AT MIN-K NEAR TOP OF SG:

LENGTH = (1/4)[π(32 X 1.5)(90°/180°)] + 14 = 33(1/12) = 2.75FT

AT 1" VENT LINE:

VOLUME = [π(6^2 - 1.315^2)/4 X 5.83] + [π(6^2 - 1.315^2)/4 X 36.03]

+ [π(6^2 - 1.315^2)/4 X (5.36 + 6 + 4 +6)] + [π(9^2 - 2.88^2)/4 X 11.2]

= 2812($1/12^3$) = 1.63FT^3

AT 1" INSTRUMENT TEST LINE:

VOLUME = [π(5^2 - 1.32^2)/4 X 8] + [π(8^2 - 1.32^2)/4 X 7] + [π(6^2 - 2.88^2)/4 X 7.25]

= 647($1/12^3$) = 0.37FT^3

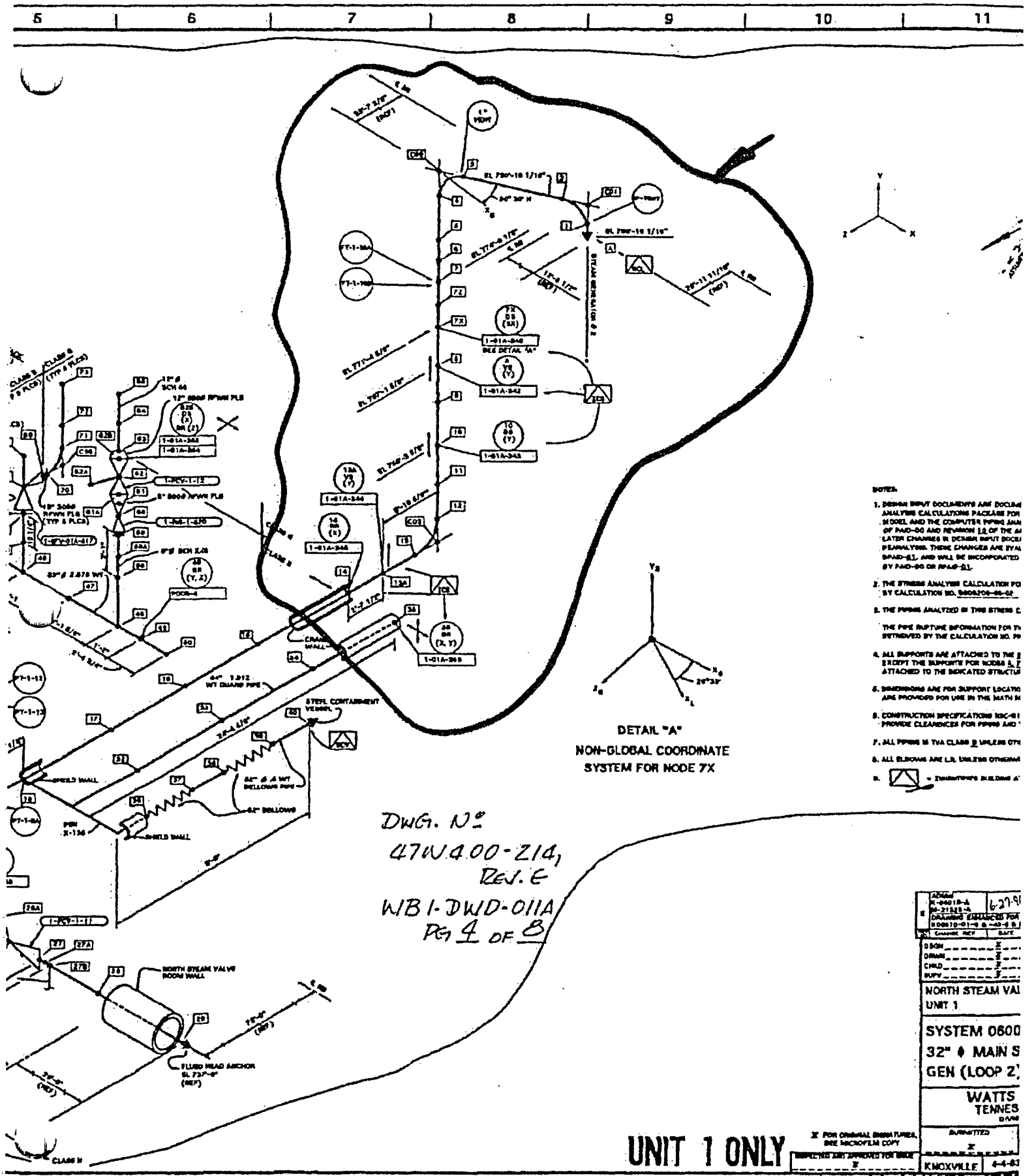
AT 3/4" INSTRUMENT TEST LINES:

VOLUME = [π(5^2 - 1.06^2)/4 X π(5.89)(69.25°/180°)] + [π(7^2 - 1.06^2)/4 X 5.75]

+ [π(7^2 - 0.86^2)/4 X 10.12] + [π(8^2 - 3.5^2)/4 X 13.19] + [π(5^2 - 1.06^2)/4 X 9]

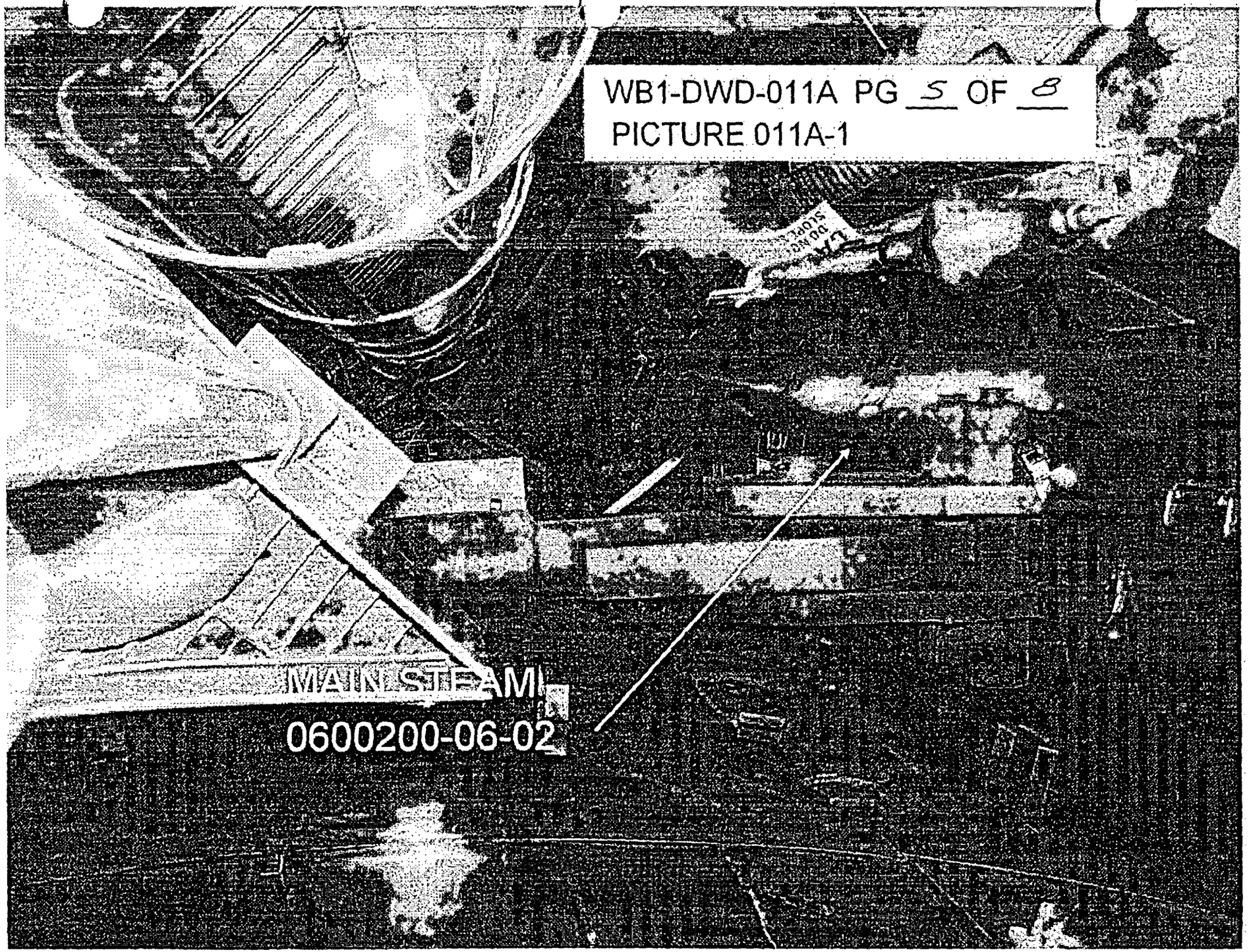
+ [π(7^2 - 1.06^2)/4 X 5.75] + [π(7^2 - 0.86^2)/4 X 5.25] + [π(8.25^2 - 3.5^2)/4 X 13.28]

= 2436($1/12^3$) = 1.41FT^3

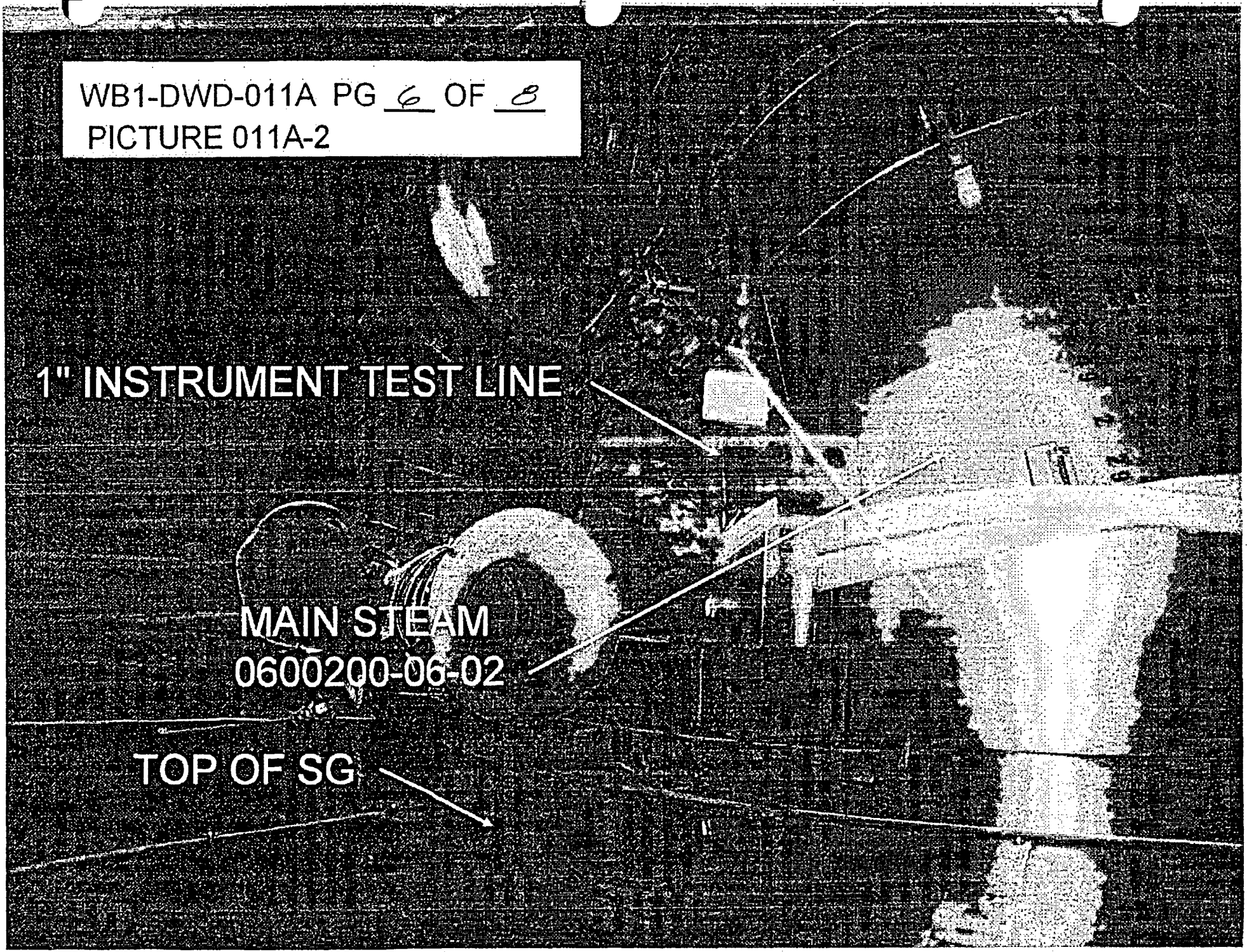

5
6
7
8
9
10
11
DETAIL "A"
NON-GLOBAL COORDINATE
SYSTEM FOR NODE 7X
STEAM CONTAINMENT VESSEL
SHIELD WALL
NORTH STEAM VALVE ROOM WALL
FLUID HEAD ANCHOR
CLASS II
DWG. Nº
47W400-214,
REV. E
WB1-DWD-011A
PG 4 OF 8
NORTH STEAM VA
UNIT 1
SYSTEM 0600
32" ϕ MAIN S
GEN (LOOP 2
WATTS
TENNES
KNOXVILLE
UNIT 1 ONLY
SCANNED DOCUMENT
AS CONSTRUCTE

WB1-DWD-011A PG 5 OF 8

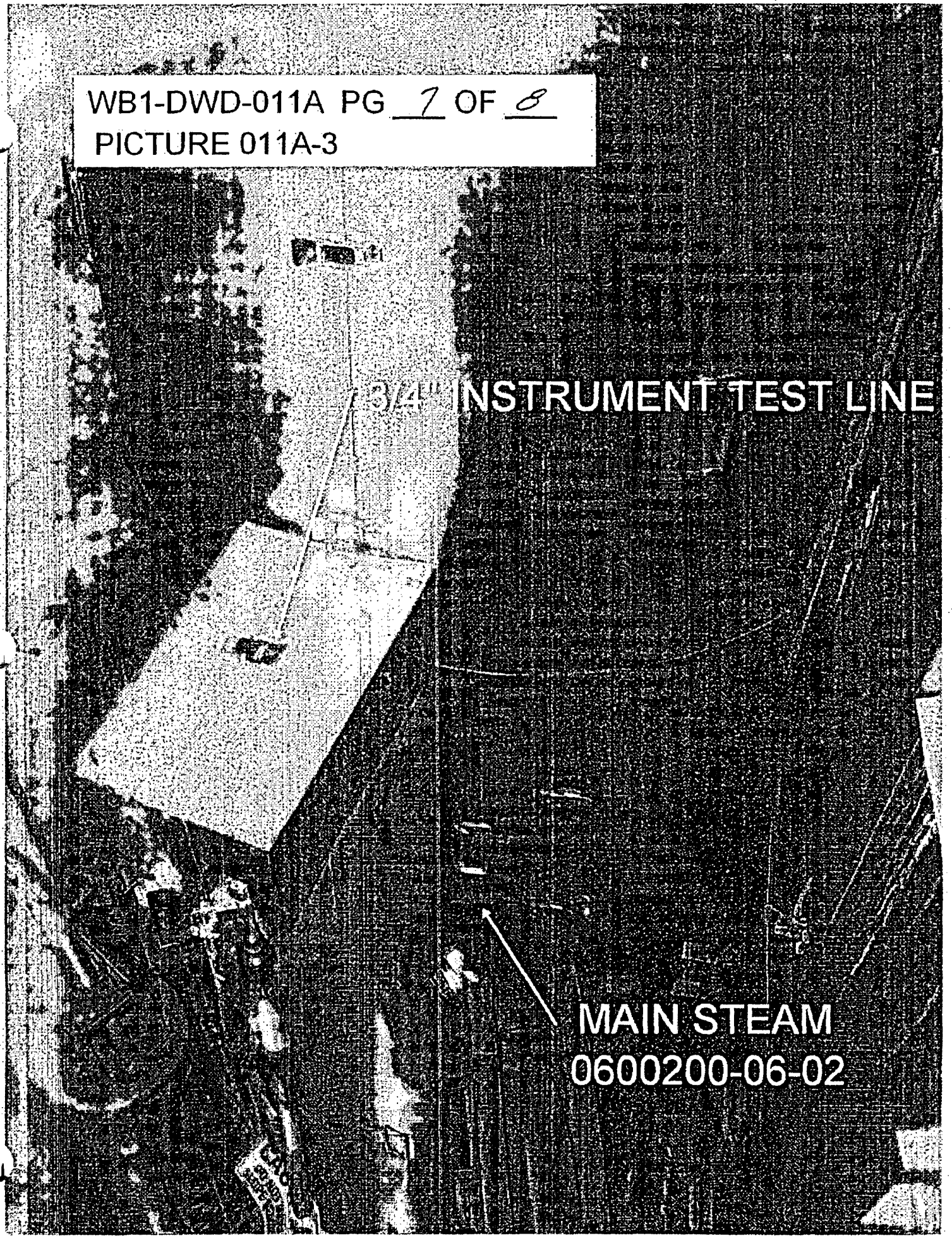
PICTURE 011A-1



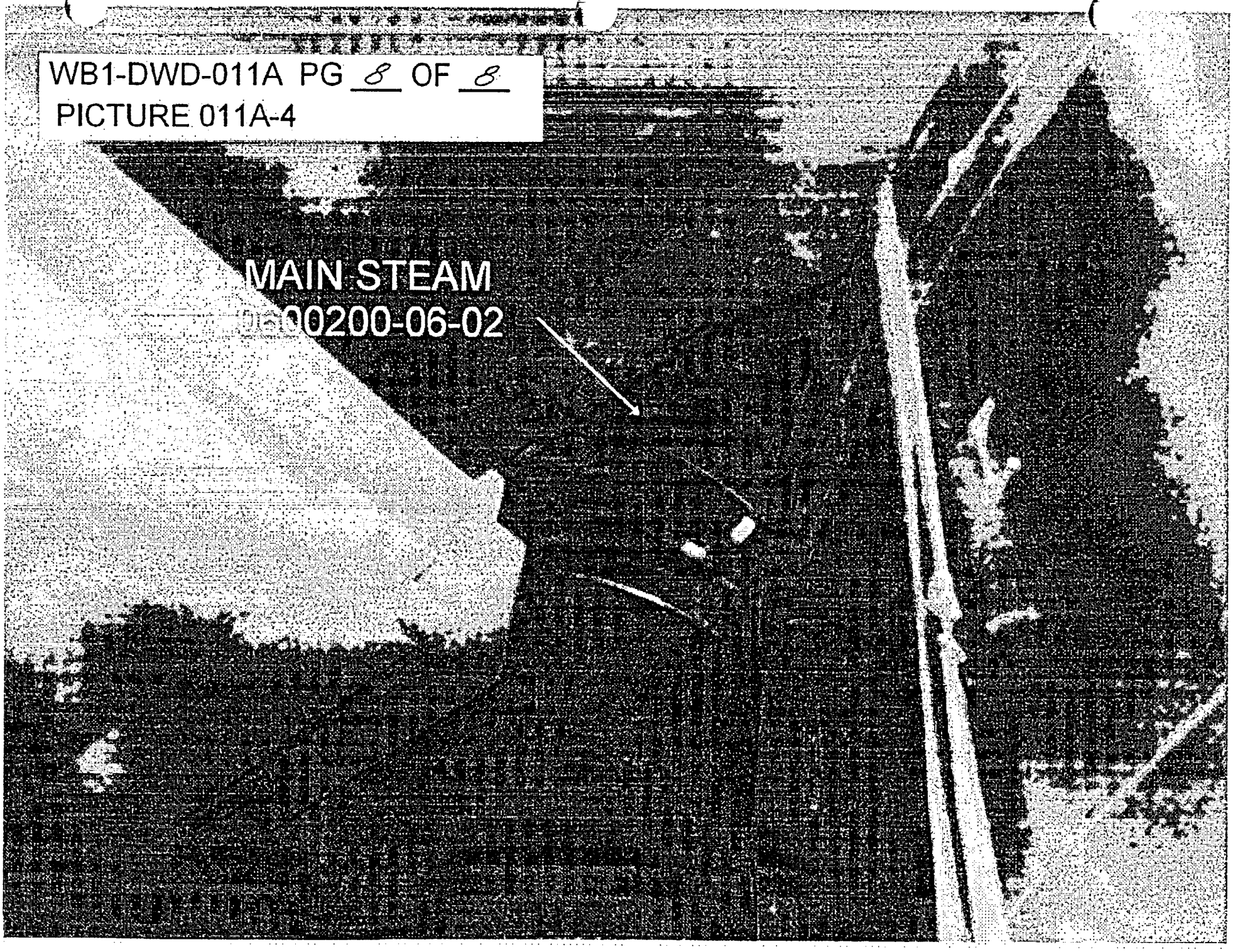
WB1-DWD-011A PG 6 OF 8
PICTURE 011A-2



WB1-DWD-011A PG 7 OF 8
PICTURE 011A-3



WB1-DWD-011A PG 8 OF 8
PICTURE 011A-4



CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-011C SHEET 1 OF 56 10/24/03

DATE:	10/24/2003	AREA:	LOOP 2	RWP NO.:	8010
		ELEV:	745'		

INSPECTORS:	C. G. WALLS, MIKE SOLLIE

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	590955-085C, SH. 1, REV. E *	
Tools:	590955-085C, SH. 2, REV. D *	
Drawings	590955-085C, SH. 3, REV. E *	
Flashlights	47W401-219, REV. E	
Ladders	1-47W401-219A, REV. 1	
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	6" AUXILIARY FEEDWATER PIPING
	* TVA CONTRACT NO. 93NNS-75645C
	NOTE: THIS INCLUDES PIPING BELOW THE EL. 745'-0" AREA.

Prepared By: C. G. WALLS Date: 10/24/03

Checked By: MIKE SOLLIE Date: 11/4/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-011C SHEET 2 OF 6

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
0600200-05-02	LOOP 2	745'	11	AUXLILIARY FEEDWATER	6.63	3.50	RMI	5.1875	4.68	S.S.	STD	N/A	17" OD INSULATION
0600200-05-02	LOOP 2	745'	11	AUXLILIARY FEEDWATER	6.63	2.28	RMI	3.6875	1.89	S.S.	STD	N/A	14" OD INSULATION
0600200-05-02	LOOP 2	745'	11	AUXLILIARY FEEDWATER	6.63	50.72	RMI	2.6875	27.69	S.S.	STD	N/A	12" OD INSULATION
0600200-05-02	LOOP 2	745'	11	AUXLILIARY FEEDWATER	6.63	2.10	RMI	1.6875	0.64	S.S.	STD	N/A	10" OD INSULATION
0600200-05-02	LOOP 2	745'	11	AUXLILIARY FEEDWATER	6.63	2.44	MIN-K	0.3775	0.14	S.S.	STD	N/A	7.38" OD INSULATION

APPROXIMATE INSULATION LENGTH:

START FROM STEAM GENERATOR:

AT 17" OD INSULATION:

LENGTH = 21 + 21 = 42(1/12) = 3.5FT

AT 14" OD INSULATION:

LENGTH = 24.05 + 3.25 = 27.3(1/12) = 2.28FT

AT 12" OD INSULATION:

LENGTH = $\pi(9)(45°/180°) + \pi(9)(45°/180°) + 16.25 + 223.25 + 28.89$

$+ 30.62 + 33.5 + 8.75 + 3 + \pi(9)(90°/180°) + (3 \times 39.06) + 31.92$

$+ 6.25 + 8.88 + 10.5 + 15 + \pi(9)(45°/180°) + 4.38 + \pi(9)(90°/180°)$

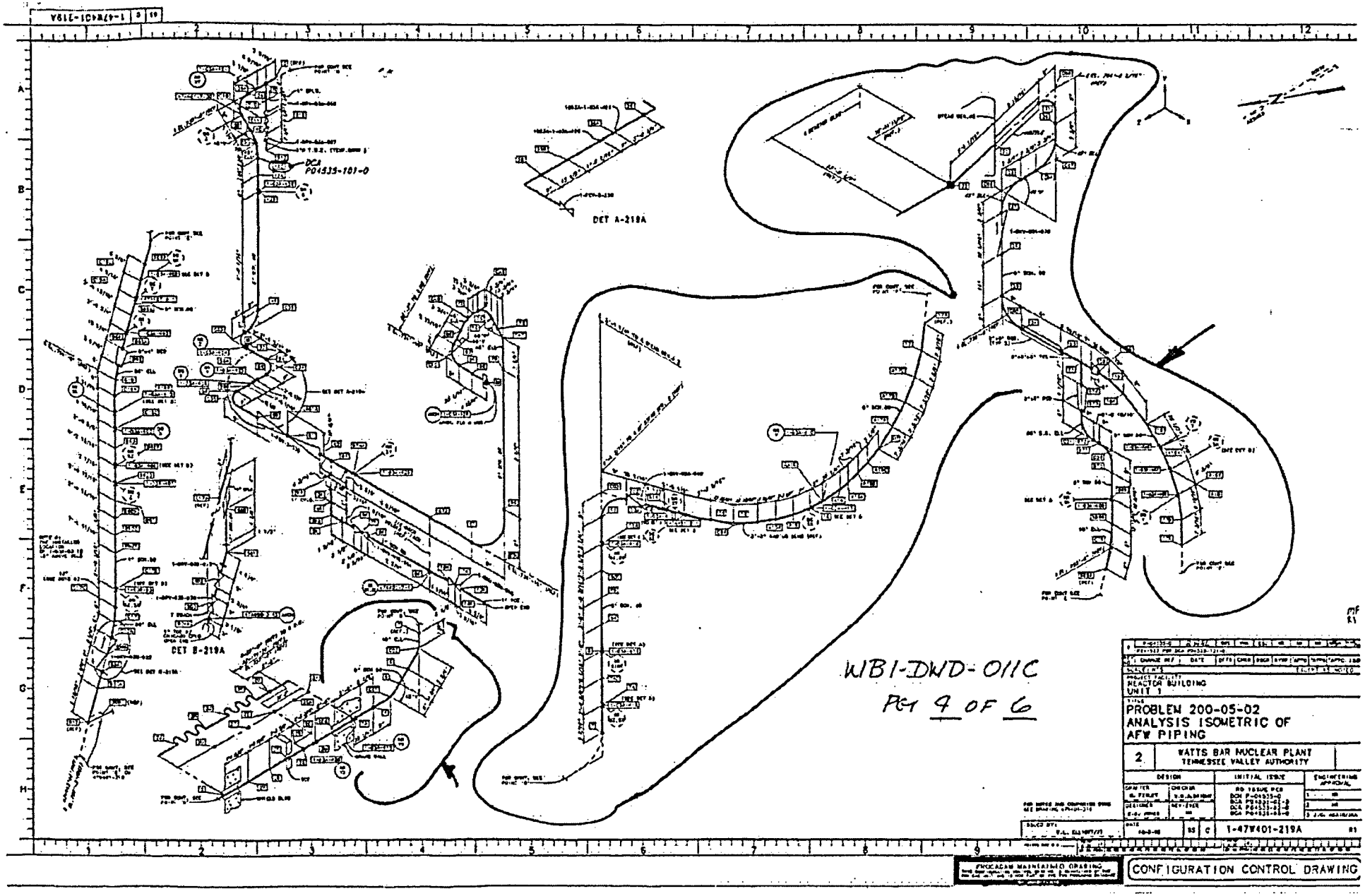
$+ 3 + 17.75 = 609(1/12) = 50.72$FT

AT 10" OD INSULATION:

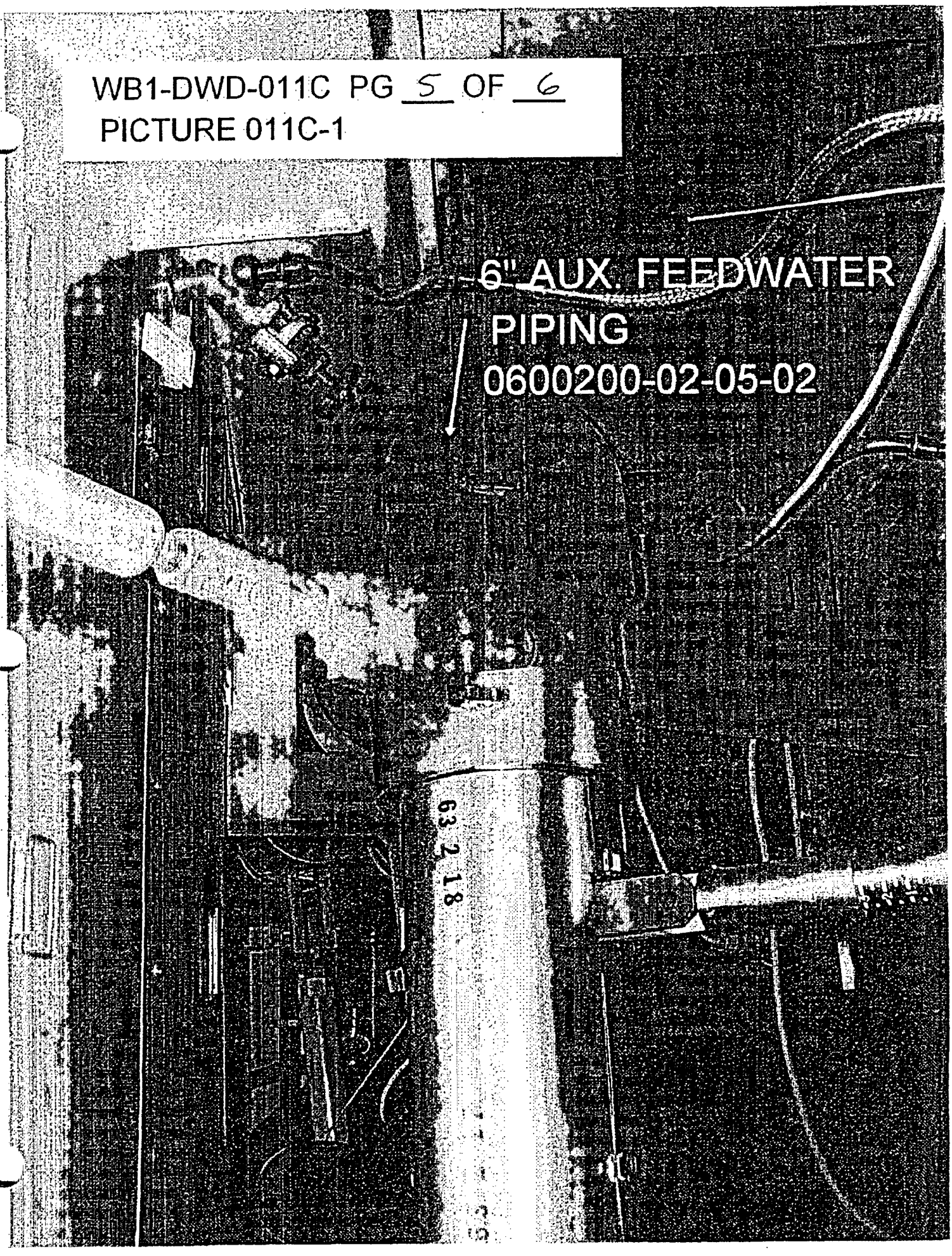
LENGTH = $3.75 + \pi(9)(90°/180°) + 7.25 = 25.14(1/12) = 2.10$FT

AT 7.38 OD INSULATION W/ MIN-K INSULATION:

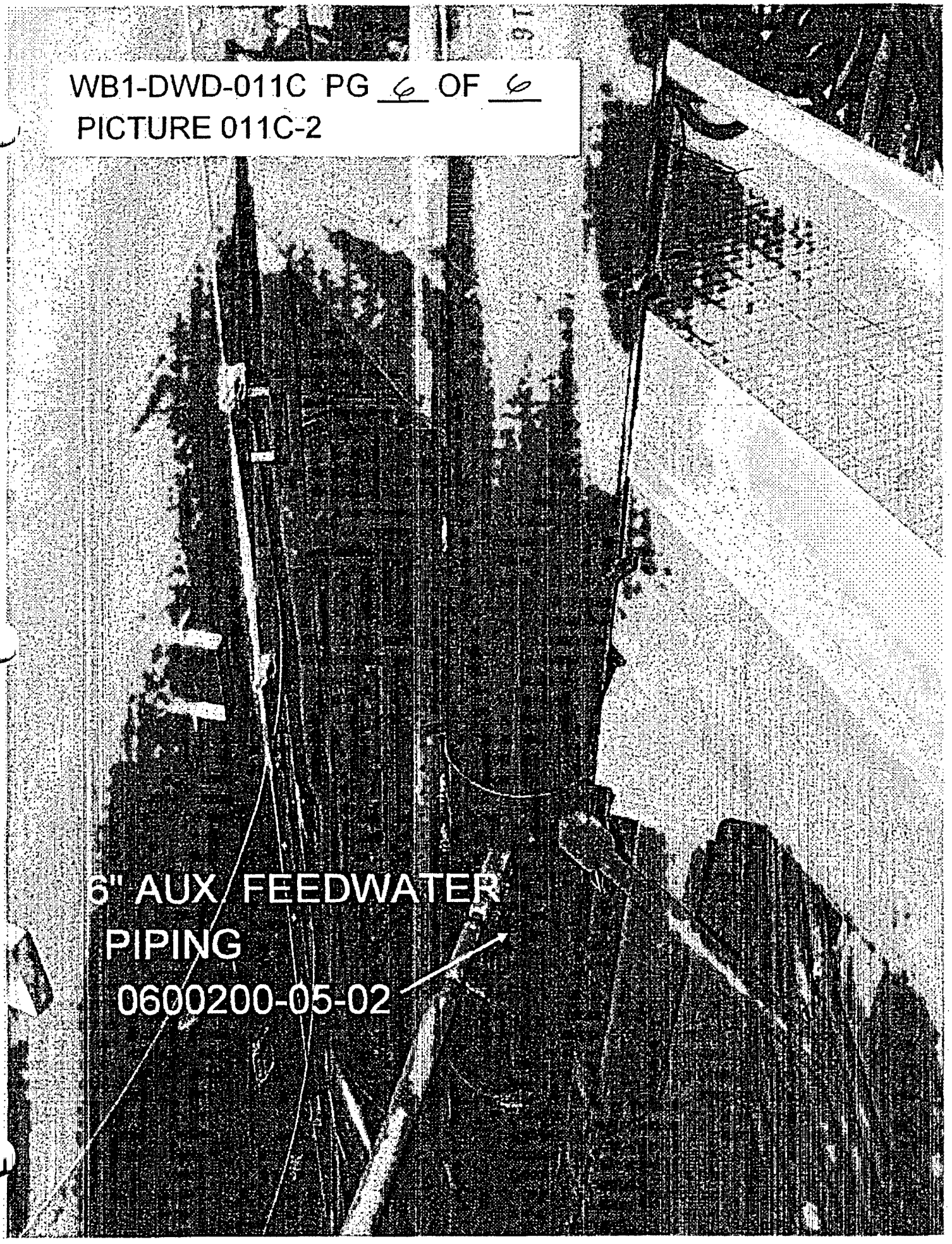
LENGTH = 29.25(1/12) = 2.44FT


DCA P04535-101-0
DET A-219A
DET B-219A
WBI-DWD-011C
PG 4 OF 6
REACTOR BUILDING
UNIT 1
PROBLEM 200-05-02
ANALYSIS ISOMETRIC OF
AFW PIPING
WATTS BAR NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY
1-47W401-219A
CONFIGURATION CONTROL DRAWING

WB1-DWD-011C PG 5 OF 6
PICTURE 011C-1



WB1-DWD-011C PG 6 OF 6
PICTURE 011C-2



CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-011E SHEET 1 OF 6

DATE:	11/20/2003	AREA:	LOOP 2	RWP NO.:	8010
		ELEV:	745'		

INSPECTORS:	C. G. WALLS, FRANK C. YAO

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	590955-063C, SH. 1, REV. B *	
Tools:	590955-063C, SH. 3, REV. 0 *	
Drawings	47W401-219, REV. E	
Flashlights	1-47W401-219A, REV. 1	
Ladders		
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
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7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	4"/6" FEEDWATER BYPASS
	* TVA CONTRACT NO. 93NNS-75645C
	NOTE: THIS INCLUDES PIPING BELOW THE EL. 745'-0" AREA.

Prepared By: C. G. WALLS Date: 11/20/03

Checked By: FRANK C YAO Date: 11/20/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-011E SHEET 2 OF 6

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
0600200-05-02	LOOP 2	745'	11	AUXLILIARY FEEDWATER	6.63	15.09	RMI	2.6875	8.24	S.S.	STD	N/A	12" OD INSULATION
0600200-05-02	LOOP 2	745'	11	AUXLILIARY FEEDWATER	4.50	26.09	RMI	2.75	11.35	S.S.	STD	N/A	10" OD INSULATION
0600200-05-02	LOOP 2	745'	11	AUXLILIARY FEEDWATER	4.50	2.84	RMI	6.75	4.71	S.S.	STD	N/A	18" OD INSULATION
0600200-05-02	LOOP 2	745'	11	AUXLILIARY FEEDWATER	1.31	0.45	RMI	2.345	0.09	S.S.	STD	N/A	6" OD INSULATION
0600200-05-02	LOOP 2	745'	11	AUXLILIARY FEEDWATER	1.31	1.11	RMI	2.847	0.29	S.S.	STD	N/A	7" OD INSULATION

APPROXIMATE INSULATION LENGTH:

START FROM AUX. FEEDWATER LINE:

AT 12" OD INSULATION (6" PIPING):

LENGTH = .75 + 3[π(9)(90°/180°)] + 25 + (25 - 6) + 76.38 + 16.5

= 181(1/12) = 15.09FT

AT 10" OD INSULATION (4" PIPING):

LENGTH = (20 - 4) + 231.66 + (51.34 - 5) + π(6)(90°/180°) + 9 = 313(1/12) = 26.09FT

AT 18" OD INSULATION (4" PIPING):

LENGTH = 2(17)(1/12) = 2.84FT

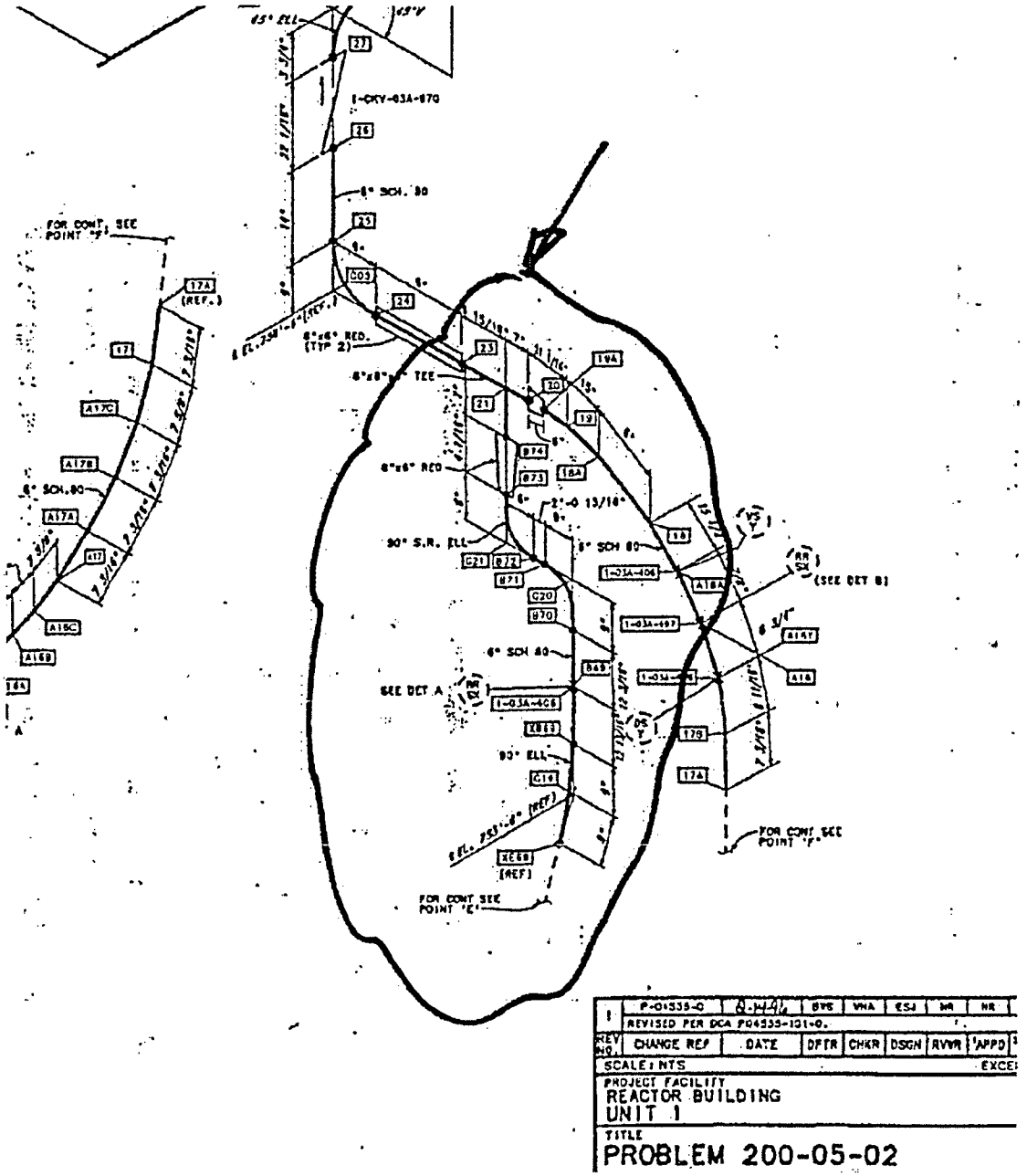
AT 6" OD INSULATION (1.31" OD PIPING): LENGTH = 5.38(1/12) = 0.45FT

AT 7" OD INSULATION (1.31" OD PIPING/VALVES): LENGTH = 7 + 6.25 = 13.25(1/12) = 1.11FT

CONTAINMENT DEBRIS WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-011E

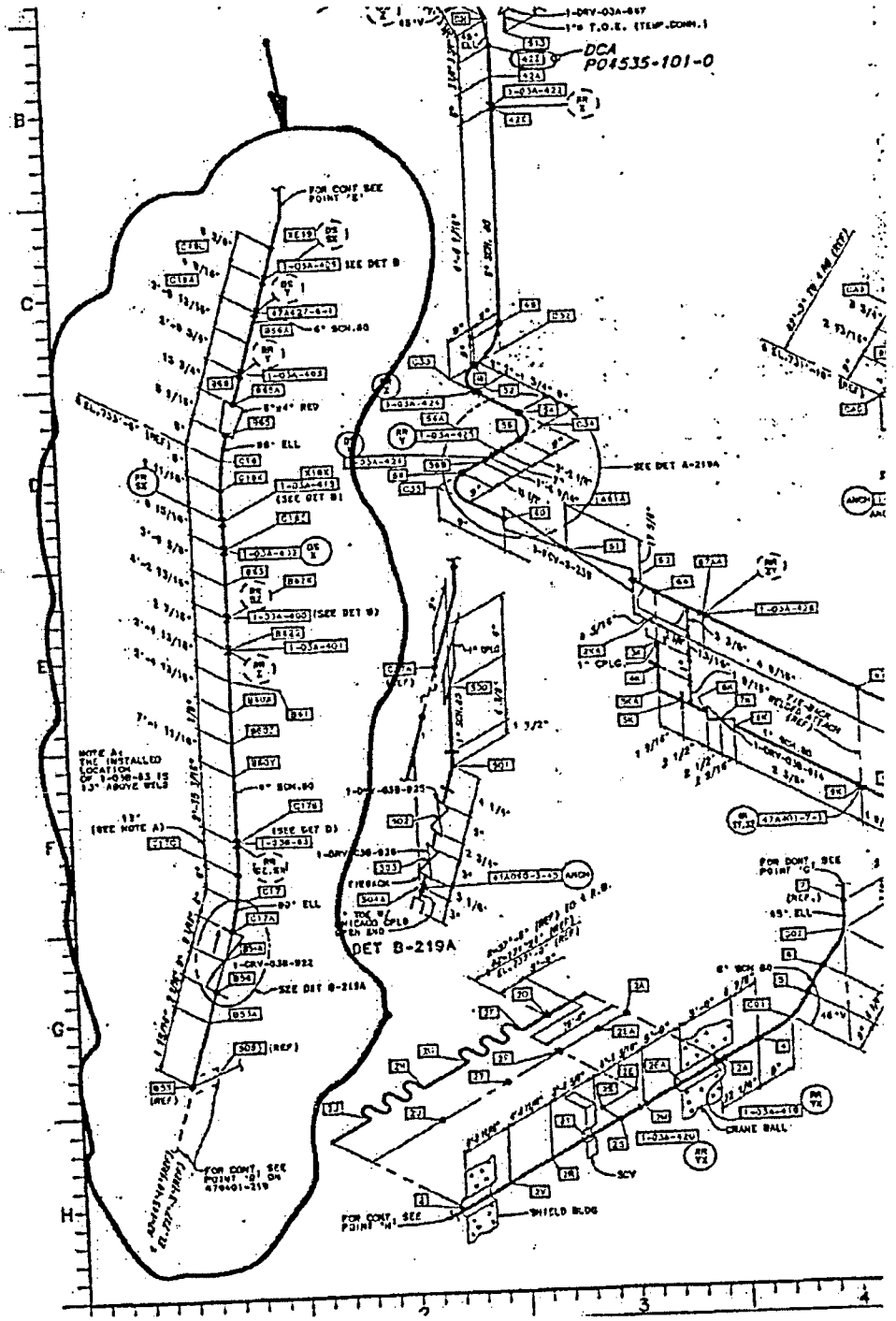
EXCERPT FROM DRAWING 1-47W401-219A



CONTAINMENT DEBRIS WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-011E **SHEET 5 OF 6**

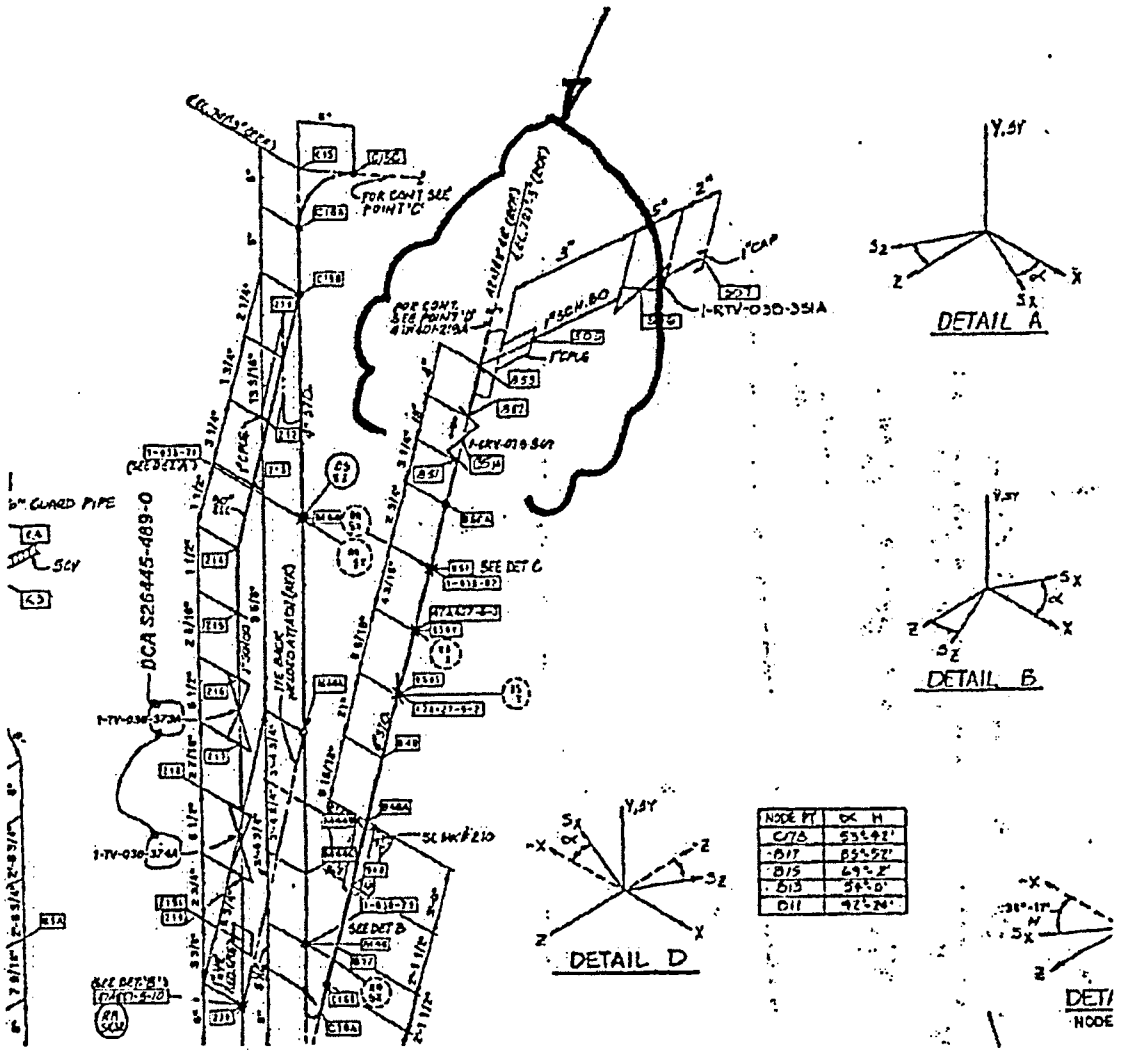
EXCERPT FROM DRAWING 1-47W401-219A



CONTAINMENT DEBRIS WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-011E

EXCERPT FROM DRAWING 1-47W401-219A



NODE PT	α	H
C/78	53°42'	
B17	85°57'	
B15	69°2'	
B13	56°0'	
B11	42°24'	

CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-012A SHEET 1 OF 7

DATE:	10/21/2003	AREA:	LOOP 3	RWP NO.:	8010
		ELEV:	745'		

INSPECTORS:	C. G. WALLS, MIKE SOLLIE

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	47W400-1, REV. P	
Tools:	47W400-2, REV. J	
Drawings	47W400-215, REV. D	
Flashlights	590955-049C, SH. 1, REV. E *	
Ladders	590955-049C, SH. 2, REV. E *	
Cameras	590955-050C, REV. B *	
Binoculars	590955-051C, SH. 2 REV. A *	
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

COMMENTS

MAIN STEAM LINE (FROM PENETRATION X-13C TO STEAM GENERATOR)

* TVA CONTRACT NO. 93NNS-75645C

Prepared By: C. G. WALLS *CWalls* Date: 10/21/03

Checked By: MIKE SOLLIE *Mike Sollie* Date: 10/23/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-012A SHEET 2 OF 2

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
0600200-05-03	LOOP 3	745'	12	MAIN STEAM	32.00	66.70	RMI	3.5	180.80	S.S.	STD	N/A	N/A
0600200-06-03	LOOP 3	745'	12	MAIN STEAM	32.00	3.10	MIN-K	1.5	3.40	S.S.	N/A	N/A	NEAR TOP OF SG
0600200-06-03	LOOP 3	745'	12	MAIN STEAM	SEE CALC	SEE CALC	RMI	SEE CALC	1.42	S.S.	STD	N/A	AT 1" VENT LINE
0600200-06-03	LOOP 3	745'	12	MAIN STEAM	SEE CALC	SEE CALC	RMI	SEE CALC	0.38	S.S.	STD	N/A	AT 1" INSTRUMENT TEST LINE
0600200-06-03	LOOP 3	745'	12	MAIN STEAM	SEE CALC	SEE CALC	RMI	SEE CALC	1.35	S.S.	STD	N/A	AT 3/4" INSTRUMENT TEST LINES

APPROXIMATE INSULATION VOLUME:

AT RMI: (START FROM PENETRATION)

LENGTH = $42.62 + [\pi(32 \times 1.5)(90°/180°)] + [\pi(32 \times 1.5)(20.18°/180°)]$

$+ 533.51 + [\pi(32 \times 1.5)(90°/180°)] + (3/4)[\pi(32 \times 1.5)(90°/180°)] = 800.4(1/12) = 66.7$FT

AT MIN-K NEAR TOP OF SG:

LENGTH = $(1/4)[\pi(32 \times 1.5)(90°/180°)] + 18 = 36.9(1/12) = 3.1$FT

AT 1" VENT LINE:

VOLUME = $[\pi(6^2 - 1.315^2)/4 \times 5.33] + [\pi(6^2 - 1.315^2)/4 \times 36.03]$

$+ [\pi(6^2 - 1.315^2)/4 \times (5.57 + 6 + 4 + 6)] + [\pi(9^2 - 2.88^2)/4 \times 13.25]$

$= 2451(1/12^3) = 1.42$FT^3

AT 1" INSTRUMENT TEST LINE:

VOLUME = $[\pi(5^2 - 1.32^2)/4 \times 8.5] + [\pi(8^2 - 1.32^2)/4 \times 7] + [\pi(6^2 - 2.88^2)/4 \times 7.25]$

$= 656(1/12^3) = 0.38$FT^3

AT 3/4" INSTRUMENT TEST LINES:

VOLUME = $[\pi(5^2 - 1.06^2)/4 \times \pi(4.78)(74.25°/180°)] + [\pi(7^2 - 1.06^2)/4 \times 5.75]$

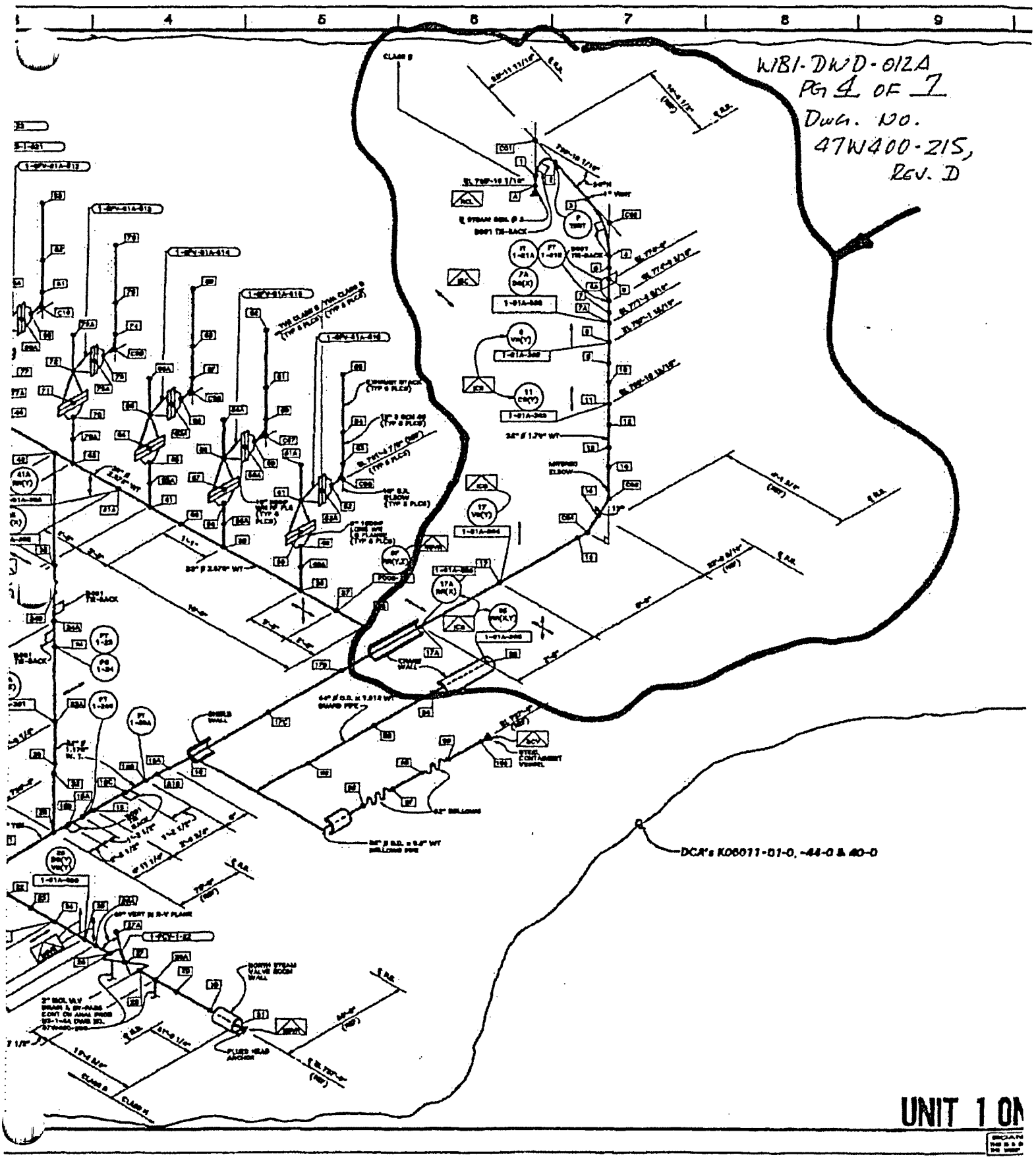
$+ [\pi(7^2 - 0.86^2)/4 \times 5.62] + [\pi(8.12^2 - 3.5^2)/4 \times 14.79]$

$+ [\pi(5^2 - 1.06^2)/4 \times \pi(5.66)(72°/180°)] + [\pi(7^2 - 1.06^2)/4 \times 5.75]$

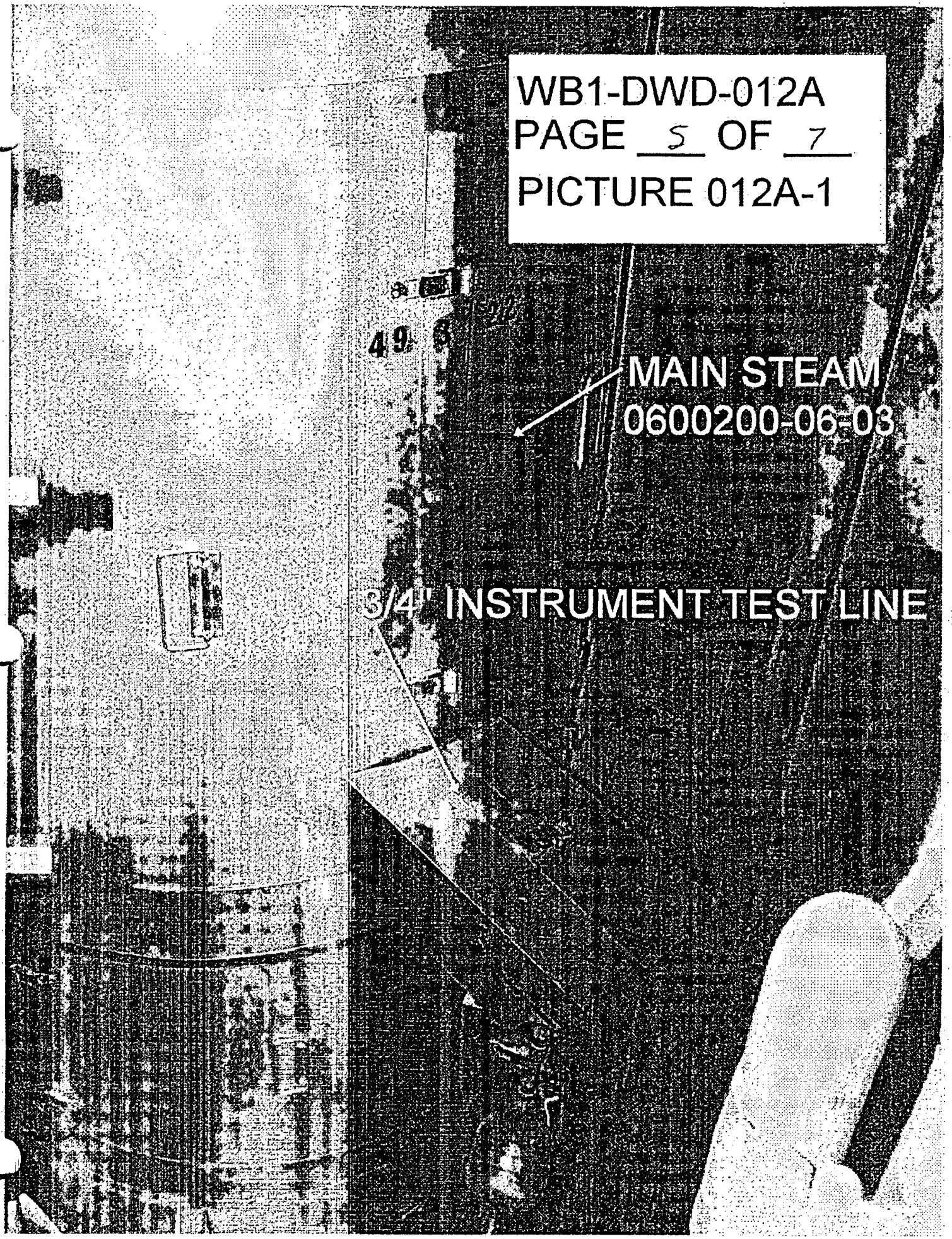
$+ [\pi(7^2 - 0.86^2)/4 \times 5.25] + [\pi(8^2 - 3.5^2)/4 \times 15.1]$

$= 2332(1/12^3) = 1.35$FT^3

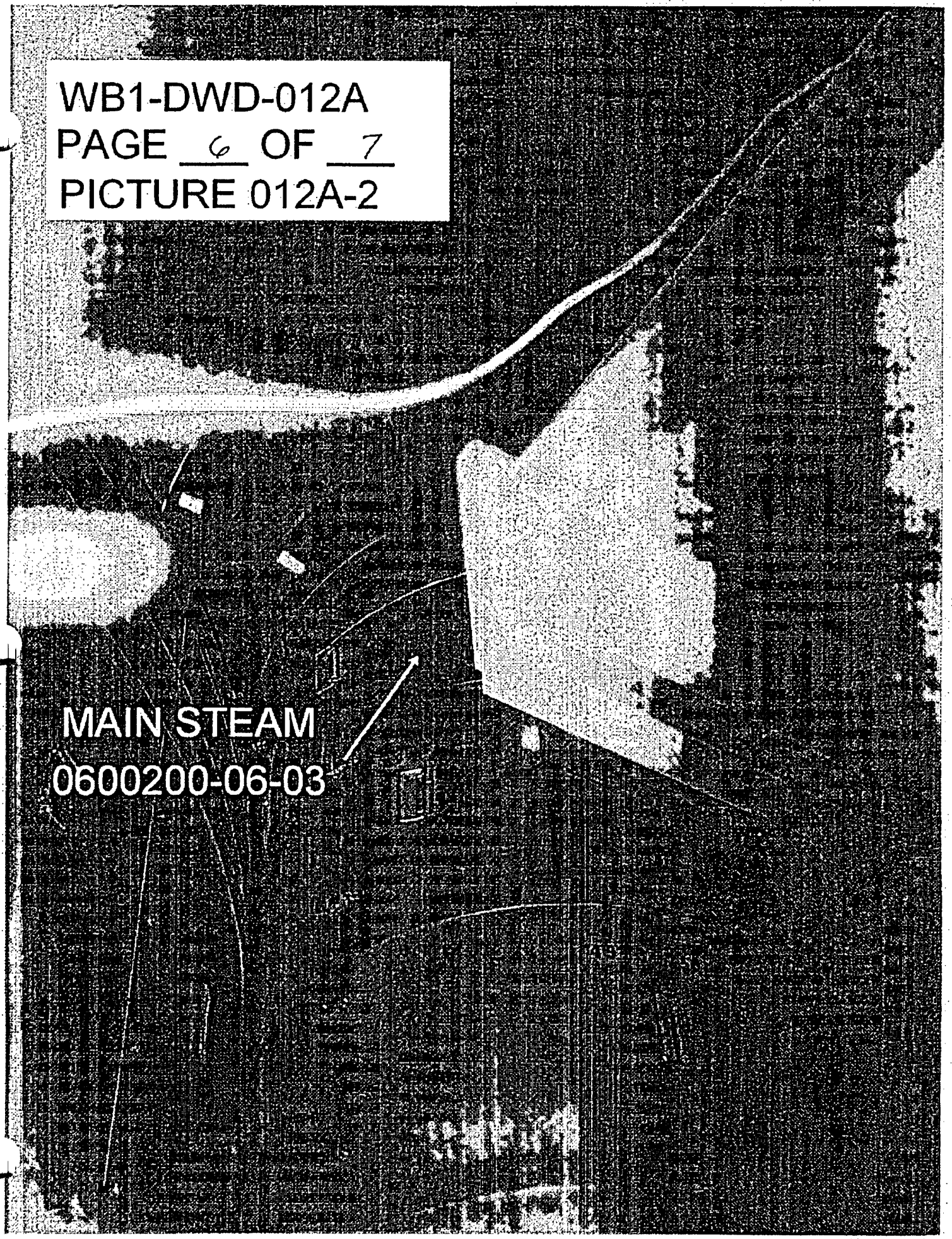
WBI-DWD-012A
PG 4 OF 7
Dwg. No.
47W400-215,
Rev. D



WB1-DWD-012A
PAGE 5 OF 7
PICTURE 012A-1

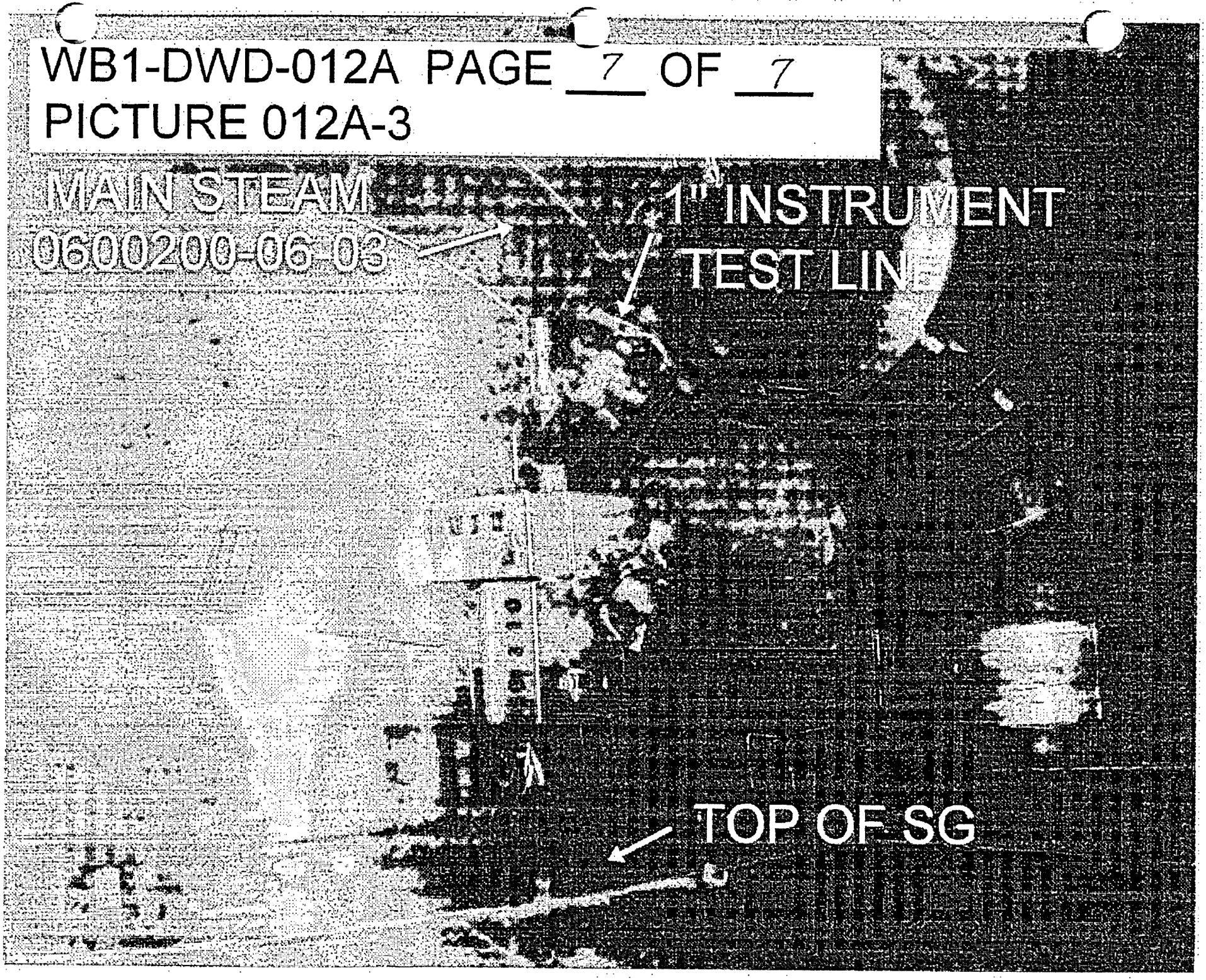


WB1-DWD-012A
PAGE 6 OF 7
PICTURE 012A-2



WB1-DWD-012A PAGE 7 OF 7

PICTURE 012A-3



CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-012B SHEET 1 OF 9

DATE:	10/22/2003	AREA:	LOOP 3	RWP NO.:	8010
		ELEV:	745'		

INSPECTORS:	C. G. WALLS, MIKE SOLLIE

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	590955-001C, SH. 1, REV. C *	
Tools:	590955-001C, SH. 2, REV. B *	
Drawings	590955-002C, SH. 3, REV. C *	
Flashlights	590955-003C, SH. 3, REV. B *	
Ladders	590955-004C, SH. 3, REV. B *	
Cameras	590955-005C, SH. 3, REV. A *	
Binoculars	590955-006C, SH. 3, REV. C *	
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	**Verify installation of insulation** as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any **undocumented** insulation.
3	Inspect and determine longitudinal **seam location** and **band spacing** if necessary.
4	Document any **irregularities** of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any **undocumented fibrous insulation (e.g., within rupture restraints)**.
6	Inspect and mark up cable tray drawings to show location of **fire barriers** (vertical and horizontal).
7	Inspect the area for any **weak components** that could be dislodged by jet and that could be transported to sump.
8	Inspect any **equipment insulation** in the area.
9	Inspect and document the general **cleanliness** of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	STEAM GENERATOR
	* TVA CONTRACT NO. 93NNS-75645C
	NOTE: SEE WALKDOWN PACKAGE NO. WB1-DWD-008A FOR LOWER AREA OF SG.

Prepared By: C. G. WALLS CGWalls Date: 10/22/03

Checked By: MIKE SOLLIE Mike Sollie Date: 10/31/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-012B SHEET 2 OF 9

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
N/A	LOOP 3	745'	12	STEAM GENERATOR	SEE CALC	SEE CALC	RMI	SEE CALC	451.03	S.S.	STD	N/A	N/A

APPROXIMATE INSULATION VOLUME:

AT STEAM GENERATOR (FROM EL. 745'-0" TO TOP):

$$V = [\pi(73.05^2 - 70.38^2) \times 118.13] + [\pi(76^2 - 73.33^2)] \times (17.53 + 3.72)]$$

$$+ (1/3)\pi 59.22[91.5^2 + 76^2 + (91.5)(76)] - (1/3)\pi 59.22[88.83^2 + 73.33^2 + (88.83)(73.33)]$$

$$+ [\pi(91.5^2 - 88.83^2) \times 5] + [\pi(92.96^2 - 90.28^2)] \times (274.72 + 13.75)]$$

$$+ [\pi(92.96^2 - 17^2) \times 2.67] - (4)[\pi 5^2/4 \times 2.67] - (2 \times 33^2)$$

$$- [\pi 18^2/4 \times 2.67] - (12 \times 50.12 \times 2.66) - (9 \times 11 \times 1) = 768524(1/12^3) = 444.75 FT^3$$

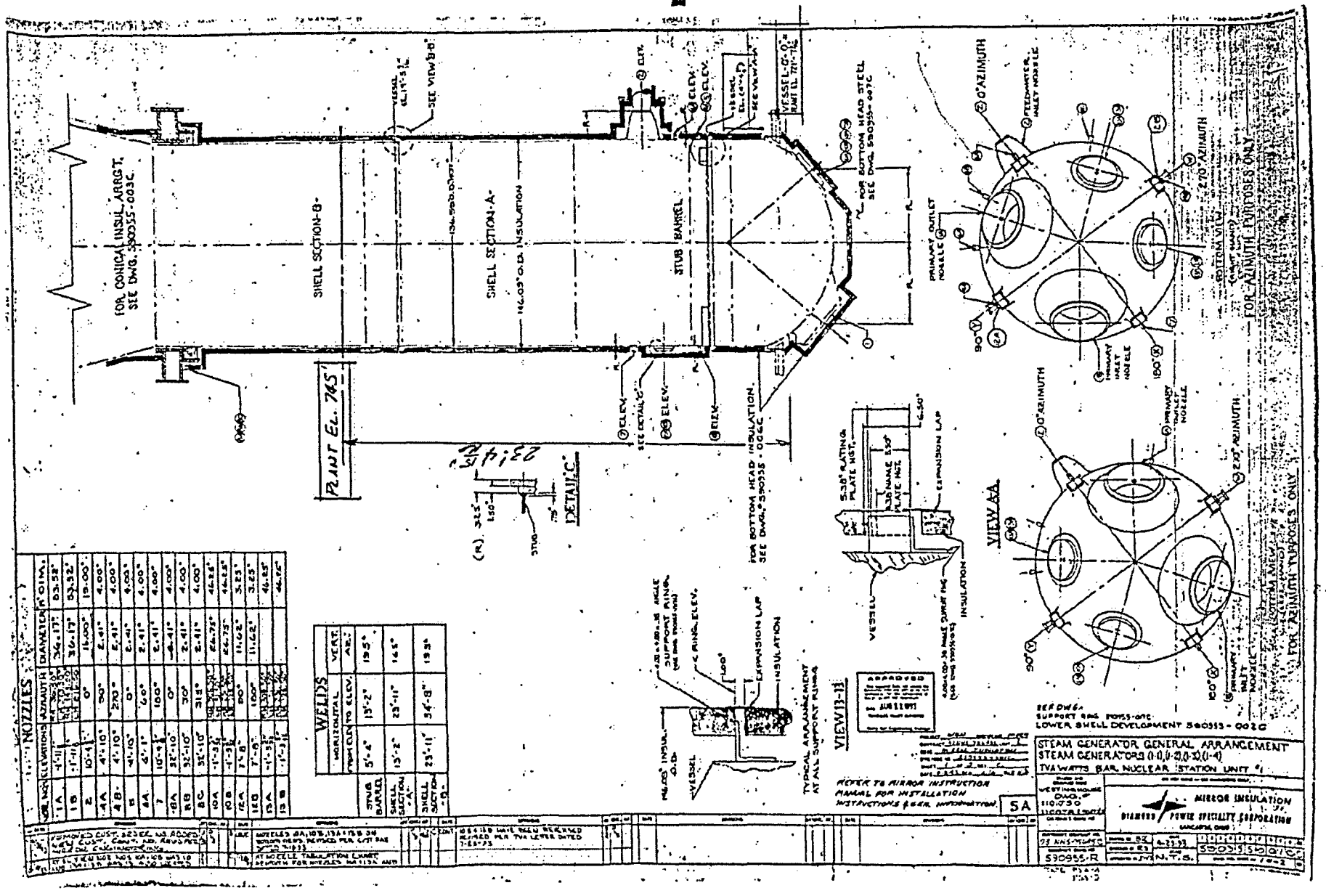
AT MANWAY COVERS:

$$V = 2[(38.31^2 \times 2.67) + (2 \times 38.31 \times 7.16) + (2 \times 32.97 \times 7.16)] = 9879(1/12^3) = 5.72 FT^3$$

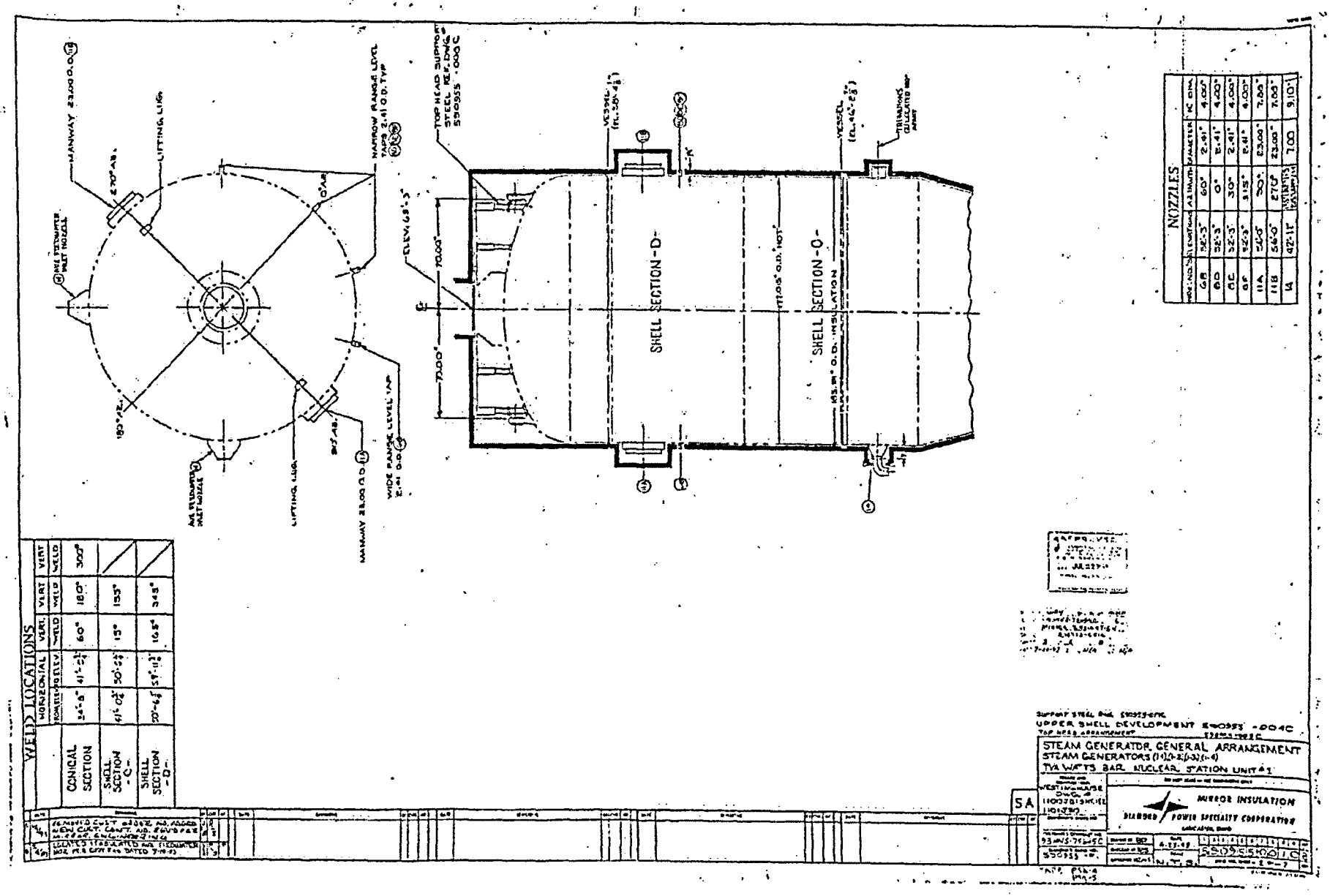
AT 18" AUX. FEEDWATER INLET NOZZLE:

$$V = [\pi(20^2 - 10^2)/4 \times 2.67] + [\pi(20^2 - 14.66^2)/4 \times 2.39] = 977(1/12^3) = 0.56 FT^3$$

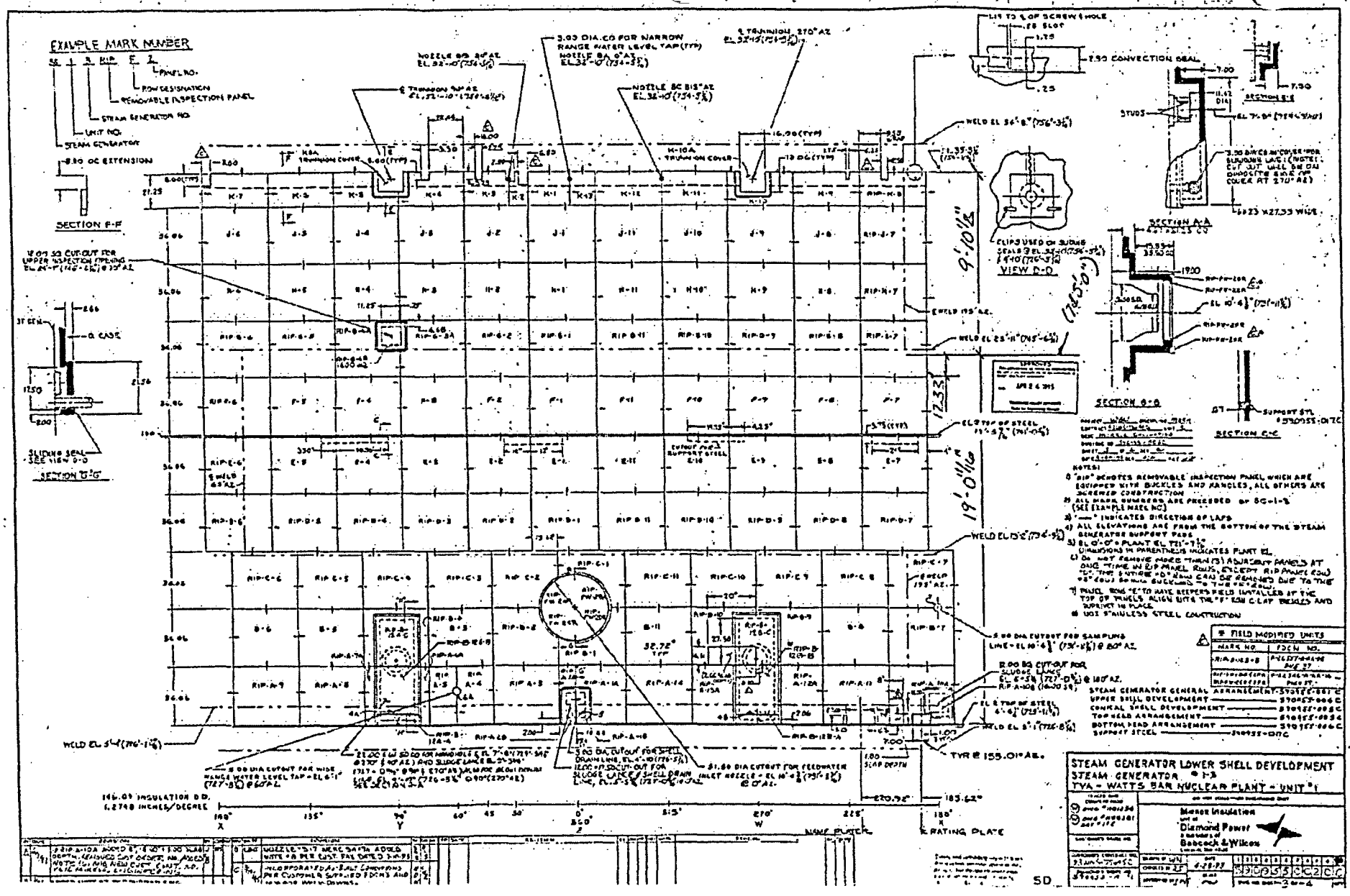
TOTAL VOLUME = 444.75 + 5.72 + 0.56 = 451.03 FT^3



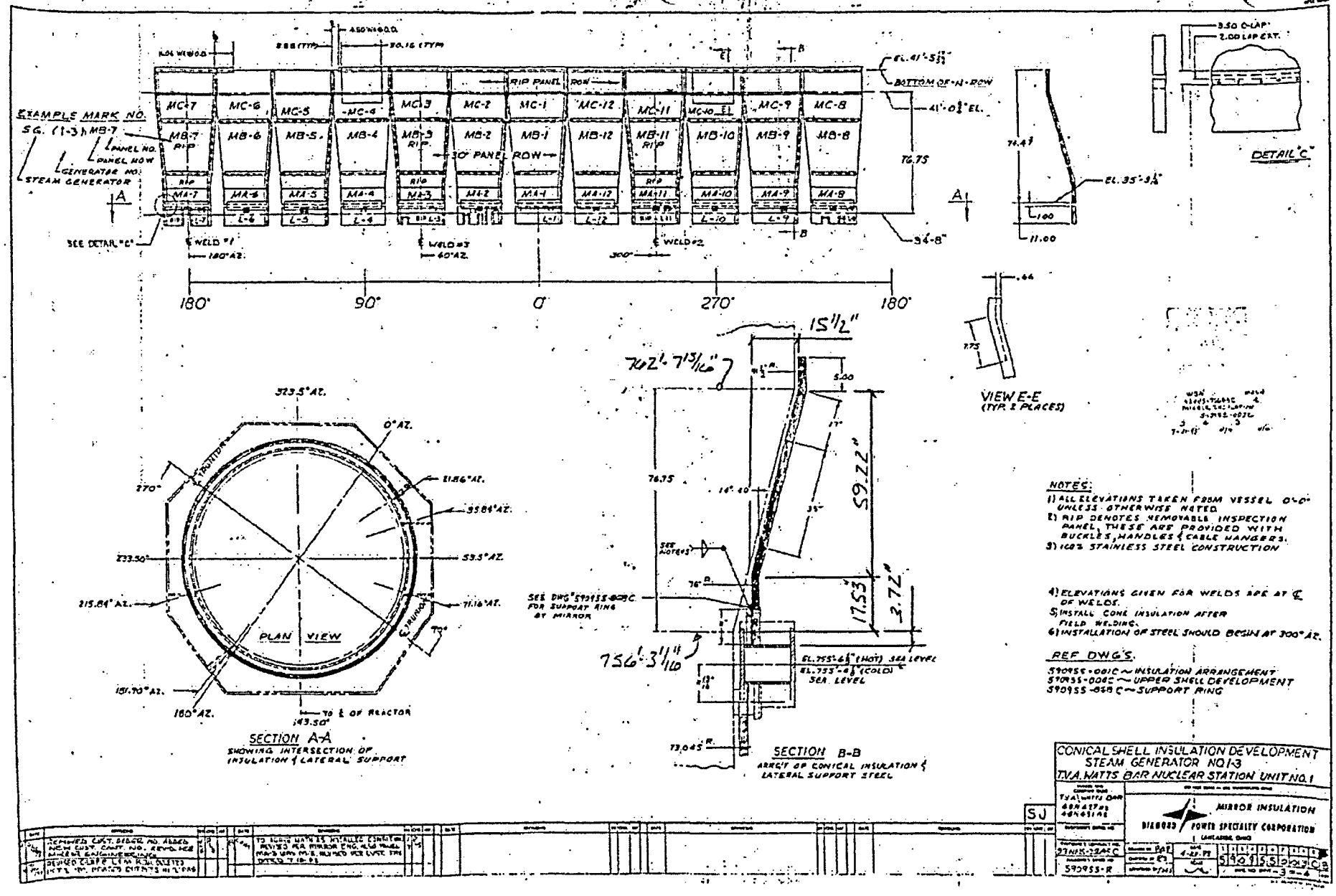
WIB1-DWD-012B
PG 4 OF 9



WB1-DWD-012B
PG. 5 OF 9

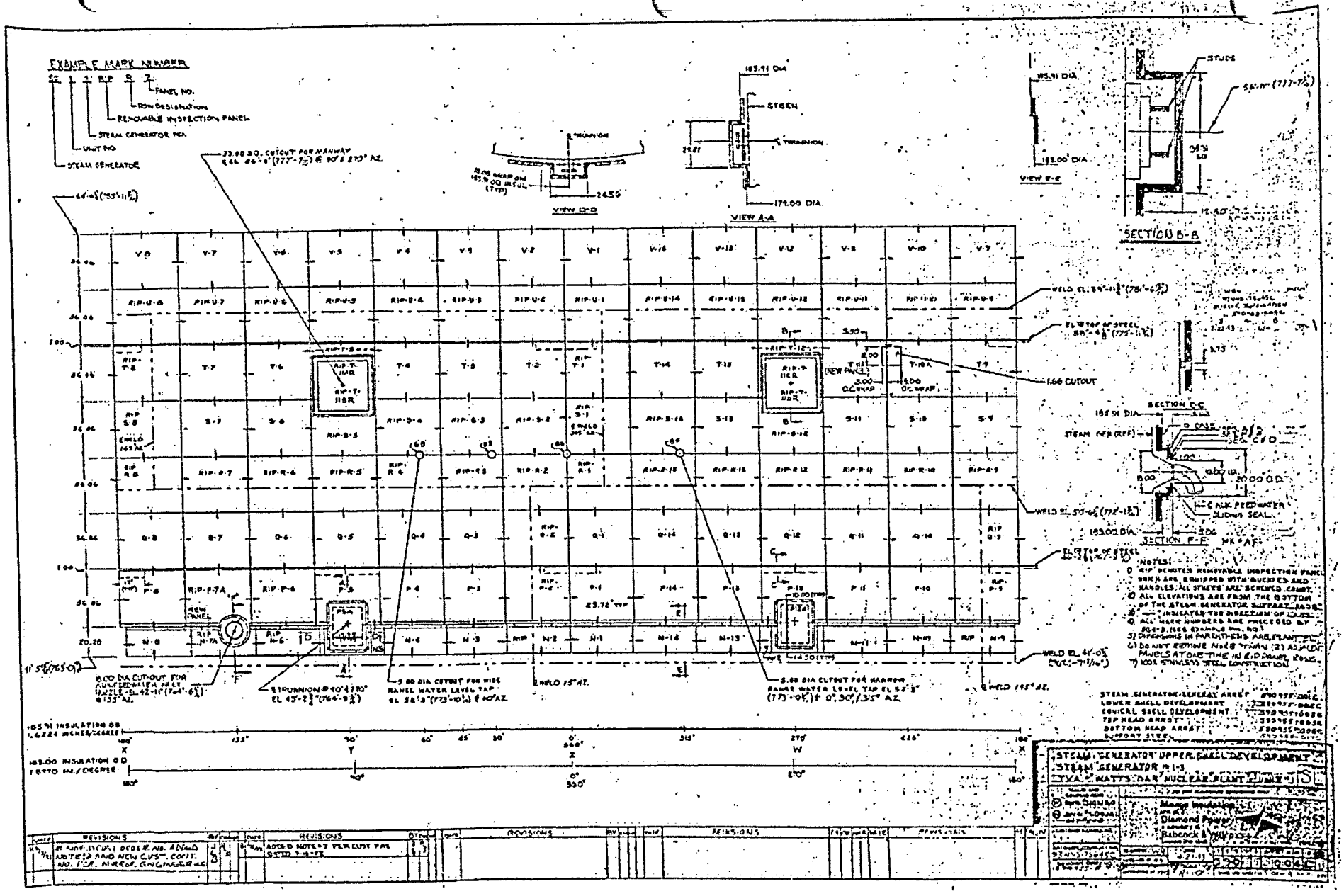


WB1-DWD-012B
PG 6 OF 9



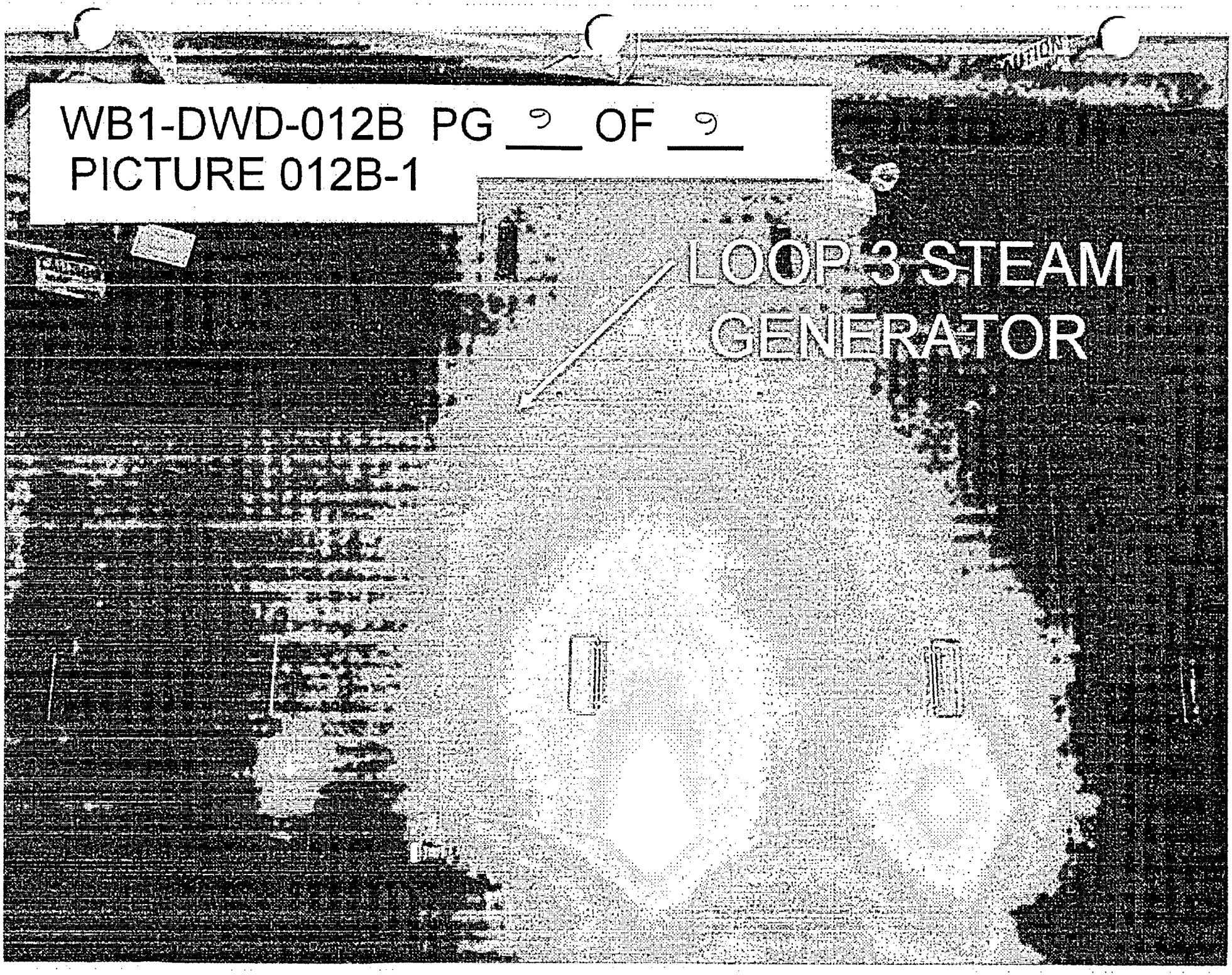
WBI-DWD-012B

PG 7 OF 9



WB1-DWD-D12B
PG 8 OF 9

WB1-DWD-012B PG 9 OF 9
PICTURE 012B-1



CONTAINMENT DEBRIS WALKDOWN PACKAGE WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-012C SHEET 1 OF 56 10/24/03

DATE:	10/24/2003	AREA:	LOOP 3	RWP NO.:	8010
		ELEV:	745'		

INSPECTORS:	C. G. WALLS, MIKE SOLLIE

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	590955-085C, SH. 1, REV. E *	
Tools:	590955-085C, SH. 4, REV. D *	
Drawings	47W401-218, REV. C	
Flashlights	1-47W401-218A, REV. 0	
Ladders		
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

COMMENTS

6" AUXILIARY FEEDWATER PIPING

* TVA CONTRACT NO. 93NNS-75645C

NOTE: THIS INCLUDES PIPING BELOW THE EL. 745'-0" AREA.

Prepared By: C. G. WALLS Date: 10-24-03

Checked By: MIKE SOLLIE Date: 11/8/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-012C SHEET 2 OF 60

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
0600200-05-01	LOOP 3	745'	12	AUXLILIARY FEEDWATER	6.63	3.50	RMI	5.1875	4.68	S.S.	STD	N/A	17" OD INSULATION
0600200-05-01	LOOP 3	745'	12	AUXLILIARY FEEDWATER	6.63	2.67	RMI	3.6875	2.22	S.S.	STD	N/A	14" OD INSULATION
0600200-05-01	LOOP 3	745'	12	AUXLILIARY FEEDWATER	6.63	48.70	RMI	2.6875	26.59	S.S.	STD	N/A	12" OD INSULATION
0600200-05-01	LOOP 3	745'	12	AUXLILIARY FEEDWATER	6.63	3.00	RMI	1.6875	0.92	S.S.	STD	N/A	10" OD INSULATION
0600200-05-01	LOOP 3	745'	12	AUXLILIARY FEEDWATER	6.63	1.92	RMI	0.6875	0.21	S.S.	STD	N/A	8" OD INSULATION

APPROXIMATE INSULATION LENGTH:

START FROM STEAM GENERATOR:

AT 17" OD INSULATION:

LENGTH = 21 + 21 = 42(1/12) = 3.5FT

AT 14" OD INSULATION:

LENGTH = 28 + 4 = 32(1/12) = 2.67FT

AT 12" OD INSULATION:

LENGTH = $\pi(9)(45°/180°) + \pi(9)(45°/180°) + 16 + \pi(9)(45°/180°) + 224.12 + 25.03$

$+ (66 - 3.75) + \pi(9)(90°/180°) + (140.25 - 4 - 1.25) + 9.62 + 7.5 + 8.29$

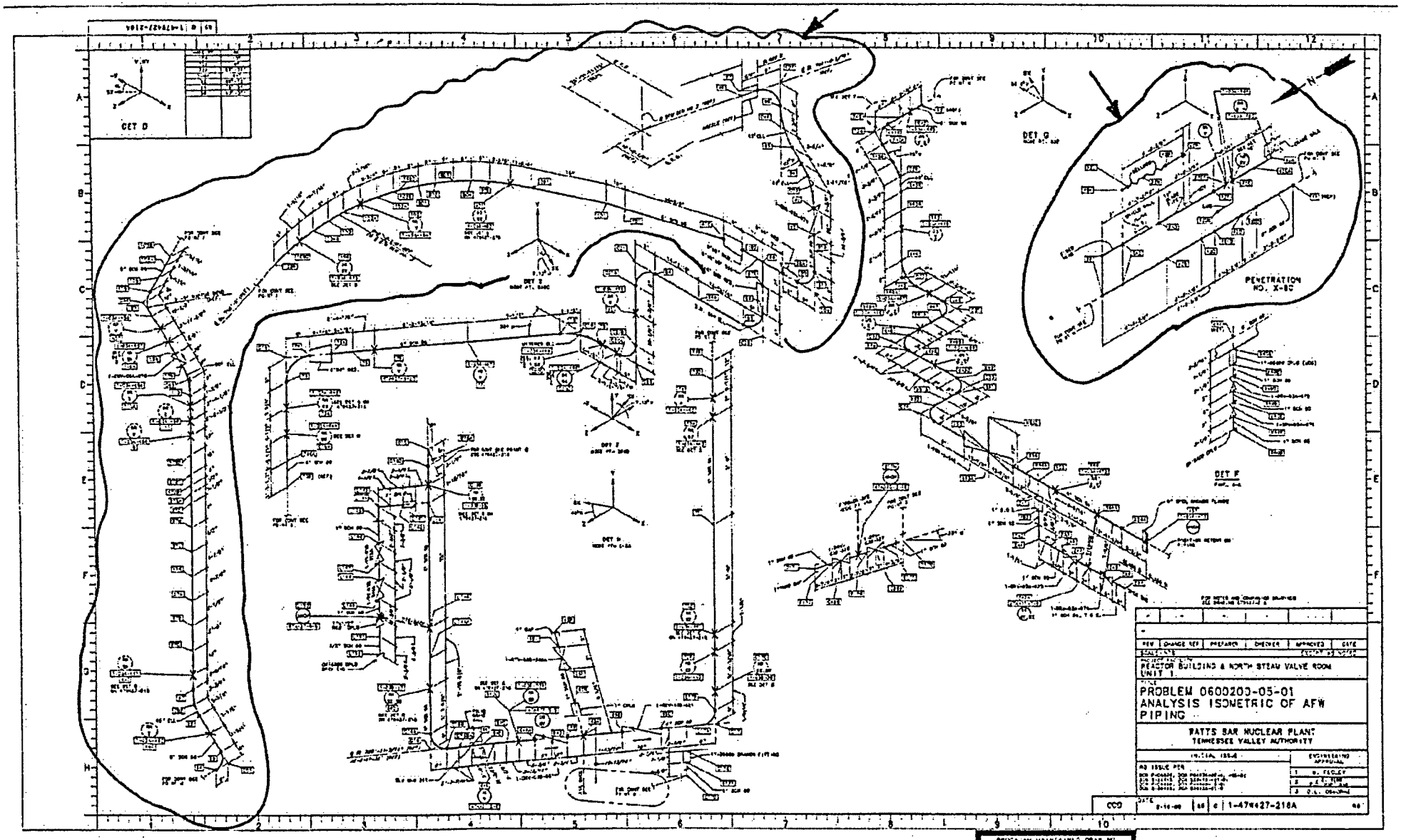
$+ 36.09 + \pi(9)(45°/180°) + 18.06 = 585(1/12) = 48.7$FT

AT 10" OD INSULATION:

LENGTH = $3.75 + \pi(9)(90°/180°) + \pi(9)(90°/180°) + 3 = 36(1/12) = 3.0$FT

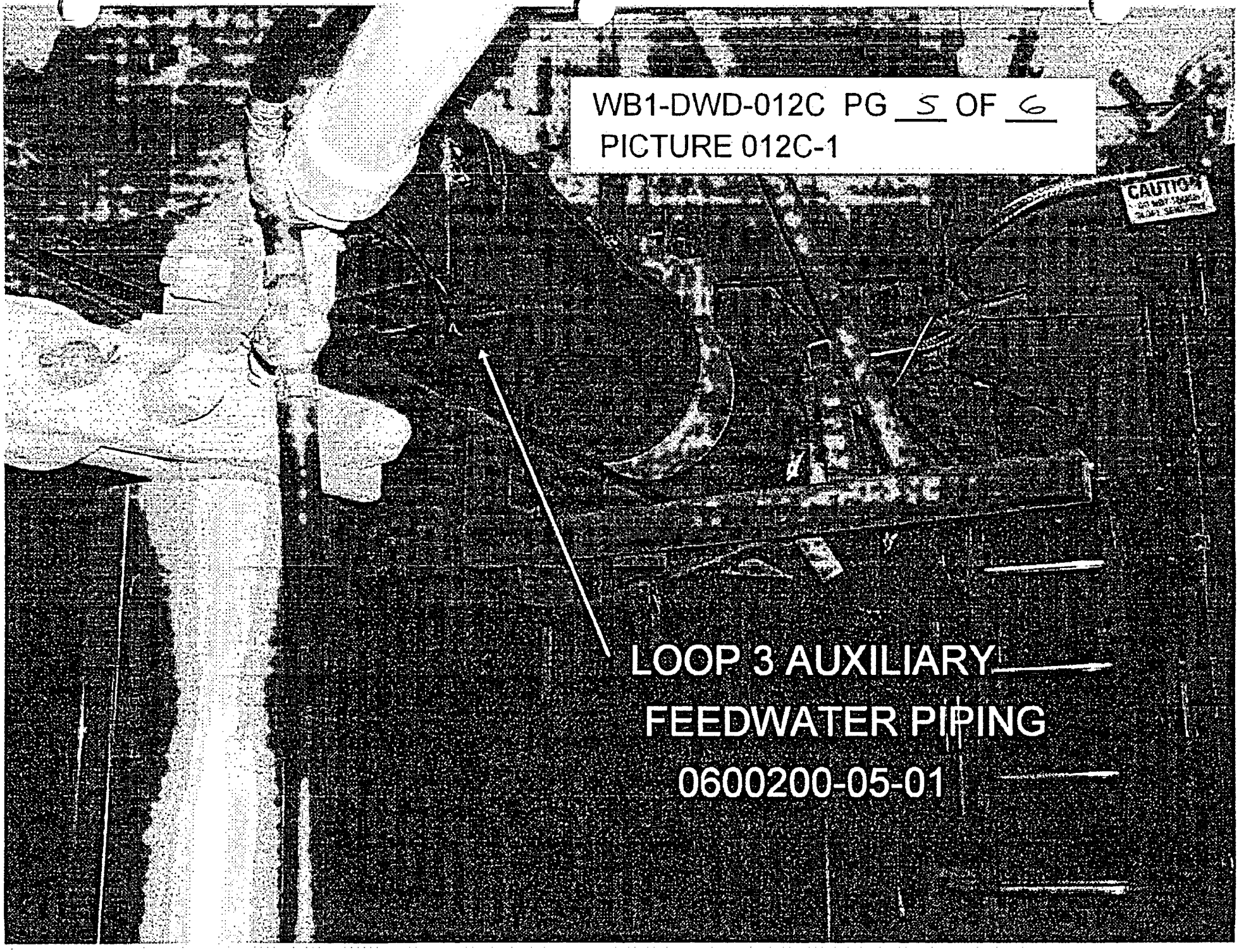
AT 8" OD INSULATION:

LENGTH = 23(1/12) = 1.92FT

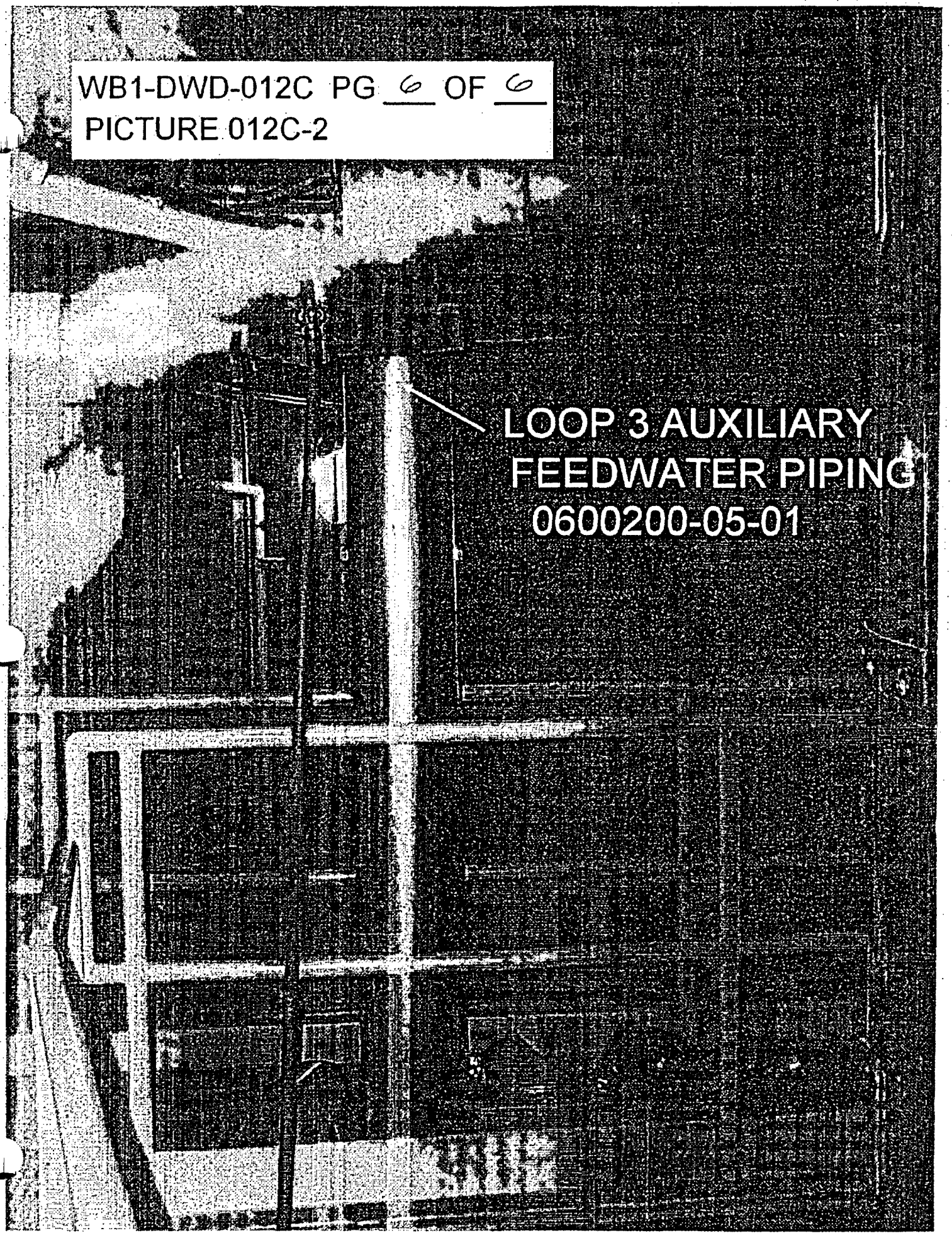


WBI-DWD-012C

PG 4 OF 6


WB1-DWD-012C PG 5 OF 6
PICTURE 012C-1
CAUTION
LOOP 3 AUXILIARY
FEEDWATER PIPING
0600200-05-01

WB1-DWD-012C PG 6 OF 6
PICTURE 012C-2



CONTAINMENT DEBRIS WALKDOWN PACKAGE WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-012D SHEET 1 OF 4

DATE:	11/20/2003	AREA:	LOOP 3	RWP NO.:	8010
		ELEV:	745'		

INSPECTORS:	C. G. WALLS, FRANK C. YAO

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	590955-063C, SH. 1, REV. B *	
Tools:	590955-063C, SH. 4, REV. A *	
Drawings	1-47W401-218A, REV. 0	
Flashlights		
Ladders		
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	4"/6" FEEDWATER BYPASS
	* TVA CONTRACT NO. 93NNS-75645C
	NOTE: THIS INCLUDES PIPING BELOW THE EL. 745'-0" AREA.

Prepared By: C. G. WALLS Date: 11/20/03

Checked By: FRANK C YAO Date: 11/20/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-012D SHEET 2 OF 3

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
0600200-05-01	LOOP 3	745'	12	AUXLILIARY FEEDWATER	6.63	18.50	RMI	2.6875	10.10	S.S.	STD	N/A	12" OD INSULATION
0600200-05-01	LOOP 3	745'	12	AUXLILIARY FEEDWATER	4.50	20.50	RMI	2.75	8.92	S.S.	STD	N/A	10" OD INSULATION
0600200-05-01	LOOP 3	745'	12	AUXLILIARY FEEDWATER	4.50	1.72	RMI	1.75	0.41	S.S.	STD	N/A	8" OD INSULATION
0600200-05-01	LOOP 3	745'	12	AUXLILIARY FEEDWATER	4.50	3.32	RMI	7.25	6.17	S.S.	STD	N/A	19" OD INSULATION
0600200-05-01	LOOP 3	745'	12	AUXLILIARY FEEDWATER	1.31	2.18	RMI	2.345	0.41	S.S.	STD	N/A	6" OD INSULATION

APPROXIMATE INSULATION LENGTH:

START FROM AUX. FEEDWATER LINE:

AT 12" OD INSULATION (6" PIPING):

LENGTH = 1 + 3[π(9)(90°/180°)] + 30 + 17.5 + [π(9)(45°/180°)] + (113.25 - 6 - .25)

+ 16.62 = 222(1/12) = 18.5FT

AT 10" OD INSULATION (4" PIPING):

LENGTH = (5 X 36.09) + (2 X 5.62) + 16.08 + 27.2 + 10.75 = 246(1/12) = 20.50FT

AT 8" OD INSULATION (4" PIPING): LENGTH = 20.57(1/12) = 1.72FT

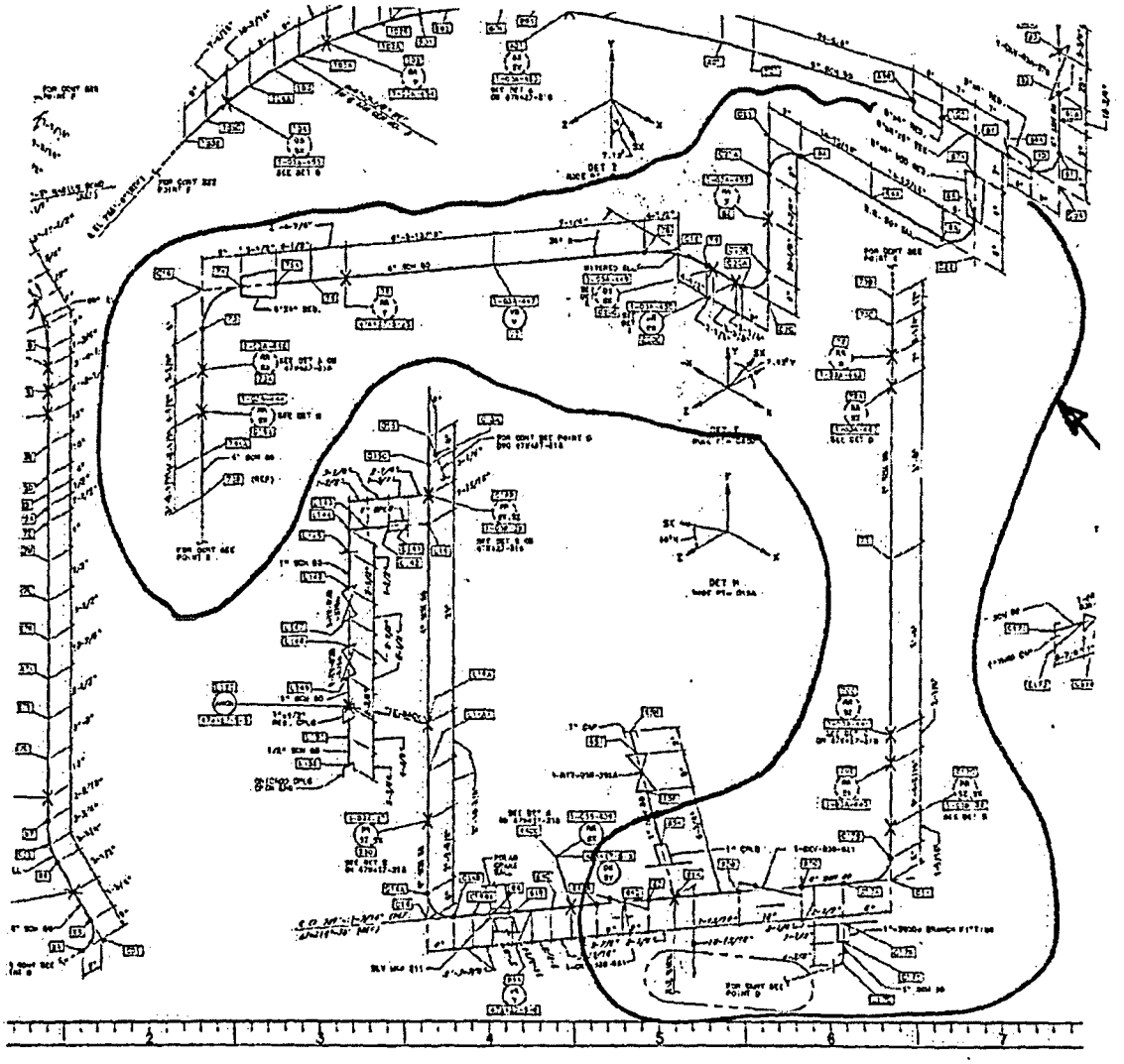
AT 19" OD INSULATION (4" PIPING):

LENGTH = 17.75 + 22 = 39.75(1/12) = 3.32FT

AT 6" OD INSULATION (1.31" OD PIPING): LENGTH = 6.25 + 6.38 + 6.5 + 7 = 26.13(1/12) = 2.18FT

CONTAINMENT DEBRIS WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-012D
EXCERPT FROM DRAWING 1-47W401-218A



CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-013A SHEET 1 OF 5

DATE:	11/04/2003	AREA:	LOOP 4 (AZ 270°-0°)	RWP NO.:	8010
		ELEV:	745		

INSPECTORS:	FRANK C YAO, MIKE CALDWELL

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	47W2500-12	
Tools:		
Drawings		
Flashlights		
Ladders		
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any **undocumented** insulation.
3	Inspect and determine longitudinal **seam location** and **band spacing** if necessary.
4	Document any **irregularities** of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any **undocumented fibrous insulation (e.g., within rupture restraints).**
6	Inspect and mark up cable tray drawings to show location of **fire barriers** (vertical and horizontal).
7	Inspect the area for any **weak components** that could be dislodged by jet and that could be transported to sump.
8	Inspect any **equipment insulation** in the area.
9	Inspect and document the general **cleanliness** of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	DUST CUMULATION BETWEEN GRATING
	PICTURE 013A-1
	PICTURE 013A-2
	GREEN DEBRIS ARE SHREDS OF NYLON FABRIC.
	GRATING RESTS ON PLATFORM ABOVE RCP MOTOR.

Prepared By: FRANK C YAO Date: 11/4/03

Checked By: MIKE CALDWELL Date: 11/4/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-013A SHEET 2 OF 5

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	DUST CU FT	COMMENTS
N/A	LOOP 4	745	13	DUST BETWEEN GRATING	NA	NA	NA	NA	NA	NA	NA	NA	

CALCULATION

DUST BETWEEN GRATING

APPROXIMATELY DIMENSION OF GRATING =2.5'x9'=
ASSUME DUST COLLECT EQUIVALENT TO 1/8" THICK

SQ FT.	60% NET
22.5	13.5

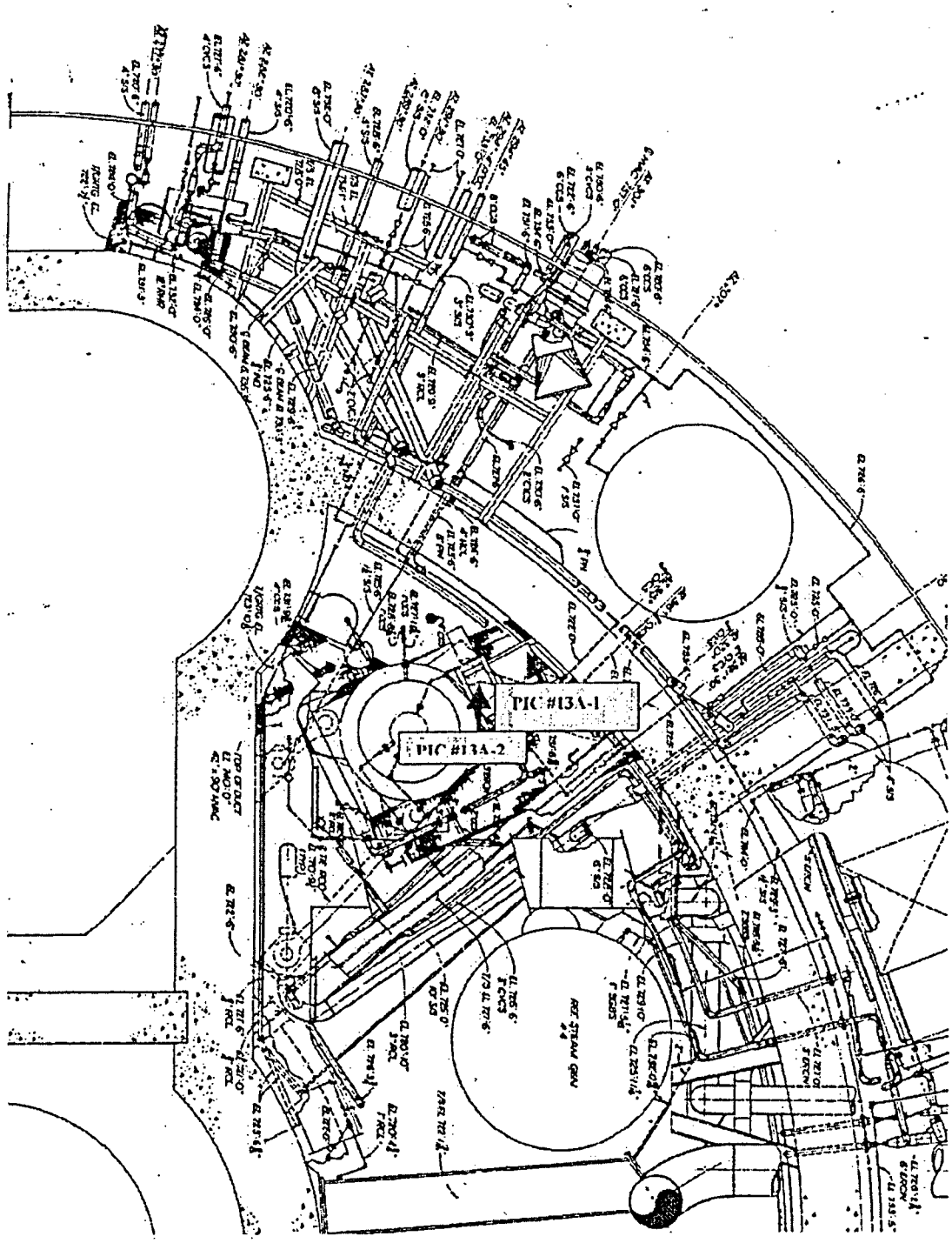
TOTAL VOLUME OF DUST =13.5X0.125"(144)=

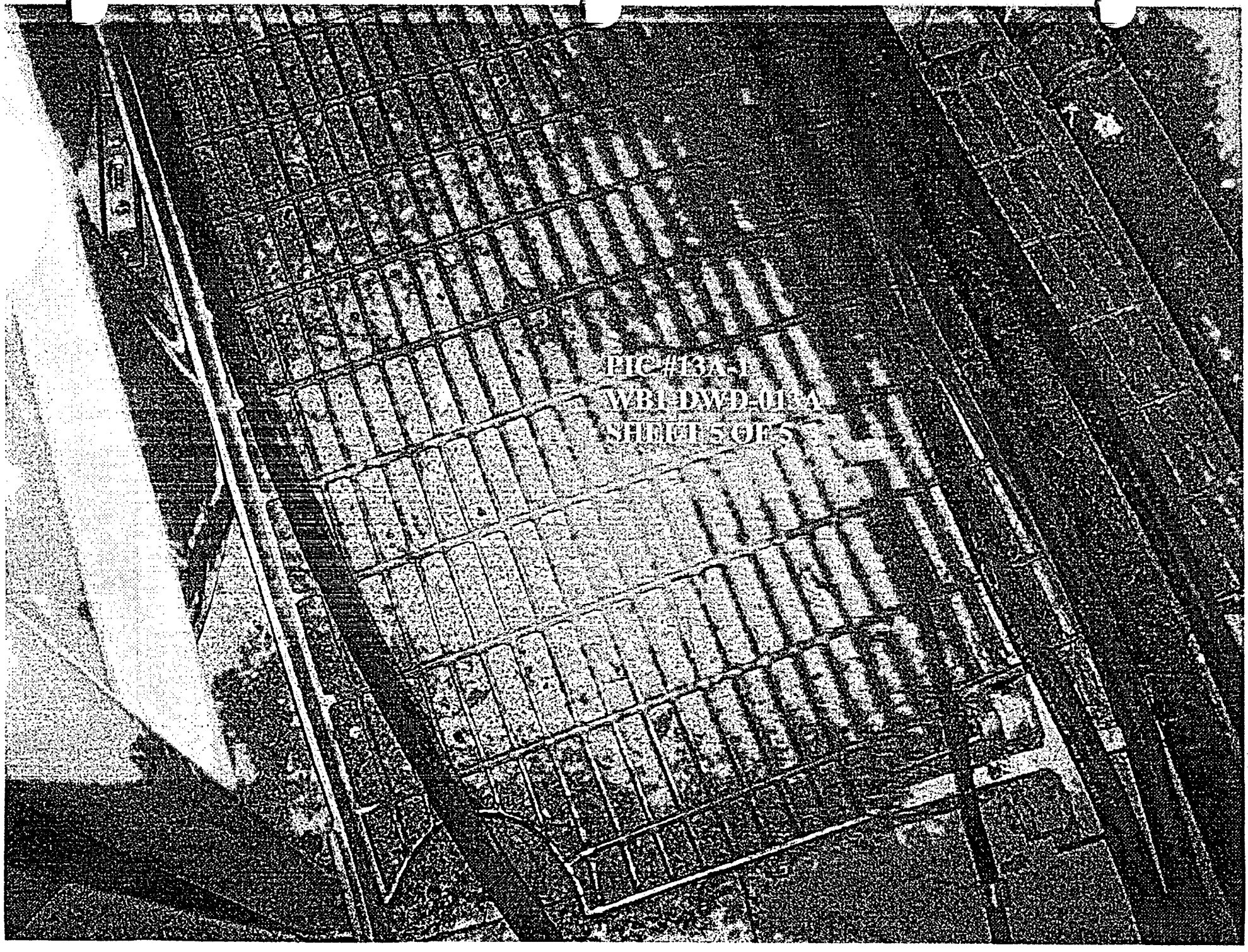
CU IN	CU FT
243.00	0.141

FOR INFORMATION ONLY

47W2500-12
QUAD 4
EL 745

WB1-DWD-13A




PIC #13A-1
WBI-DWD-01A
SHEET 5 OF 5

CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-013B SHEET 1 OF 56 CGW 10/21/03

DATE:	10/21/2003	AREA:	LOOP 4	RWP NO.:	8010
		ELEV:	745'		

INSPECTORS:	C. G. WALLS, MIKE SOLLIE

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	47W400-1, REV. P	
Tools:	47W400-2, REV. J	
Drawings	47W400-216, REV. E	
Flashlights	590955-049C, SH. 1, REV. E *	
Ladders	590955-049C, SH. 2, REV. E *	
Cameras	590955-050C, REV. B *	
Binoculars	590955-051C, SH. 2, REV. A *	
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	MAIN STEAM LINE (FROM PENETRATION X-13D TO STEAM GENERATOR)
	* TVA CONTRACT NO. 93NNS-75645C

Prepared By: C. G. WALLS CGWalls Date: 10/21/03

Checked By: MIKE SOLLIE [illegible] Date: 10/23/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-013B SHEET 2 OF 6

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
0600200-06-04	LOOP 4	745'	13	MAIN STEAM	32.00	63.09	RMI	3.5	171.02	S.S.	STD	N/A	N/A
0600200-06-04	LOOP 4	745'	13	MAIN STEAM	32.00	3.51	MIN-K	6	17.46	S.S.	N/A	N/A	NEAR PENETRATION
0600200-06-04	LOOP 4	745'	13	MAIN STEAM	32.00	3.17	MIN-K	1.5	3.48	S.S.	N/A	N/A	NEAR TOP OF SG
0600200-06-04	LOOP 4	745'	13	MAIN STEAM	SEE CALC	SEE CALC	RMI	SEE CALC	1.45	S.S.	STD	N/A	AT 1" VENT LINE
0600200-06-04	LOOP 4	745'	13	MAIN STEAM	SEE CALC	SEE CALC	RMI	SEE CALC	0.35	S.S.	STD	N/A	AT 1" INSTRUMENT TEST LINE
0600200-06-04	LOOP 4	745'	13	MAIN STEAM	SEE CALC	SEE CALC	RMI	SEE CALC	1.13	S.S.	STD	N/A	AT 3/4" INSTRUMENT TEST LINES

APPROXIMATE INSULATION VOLUME:

AT RMI: (START FROM PENETRATION)

LENGTH = (42.25 - 3 - 13.88) + (2/3)[π(32 x 1.5)(90°/180°)] + [π(32 x 1.5)(20.18°/180°)]

+ 532.55 + [π(32 x 1.5)(90°/180°)]

+ (3/4)[π(32 x 1.5)(90°/180°)] = 757(1/12) = 63.09FT

AT MIN-K NEAR PENETRATION:

LENGTH = (1/3)[π(32 x 1.5)(90°/180°)] + 13.88 + 3= 42(1/12) = 3.51FT

AT MIN-K NEAR TOP OF SG:

LENGTH = (1/4)[π(32 x 1.5)(90°/180°)] + 18.5 = 38(1/12) = 3.17FT

AT 1" VENT LINE:

VOLUME = [π(6^2 - 1.315^2)/4 x 5.83] + [π(6^2 - 1.315^2)/4 x 36.03]

+ [π(6^2 - 1.315^2)/4 x (5.69 + 6 + 4 +6)] + [π(9^2 - 2.88^2)/4 x 13.69]

= 2493(1/12^3) = 1.45FT^3

AT 1" INSTRUMENT TEST LINE:

VOLUME = [π(3.88^2 - 1.32^2)/4 x 8.25] + [π(8^2 - 1.32^2)/4 x 7] + [π(6^2 - 2.88^2)/4 x 7.5]

= 592(1/12^3) = 0.35FT^3

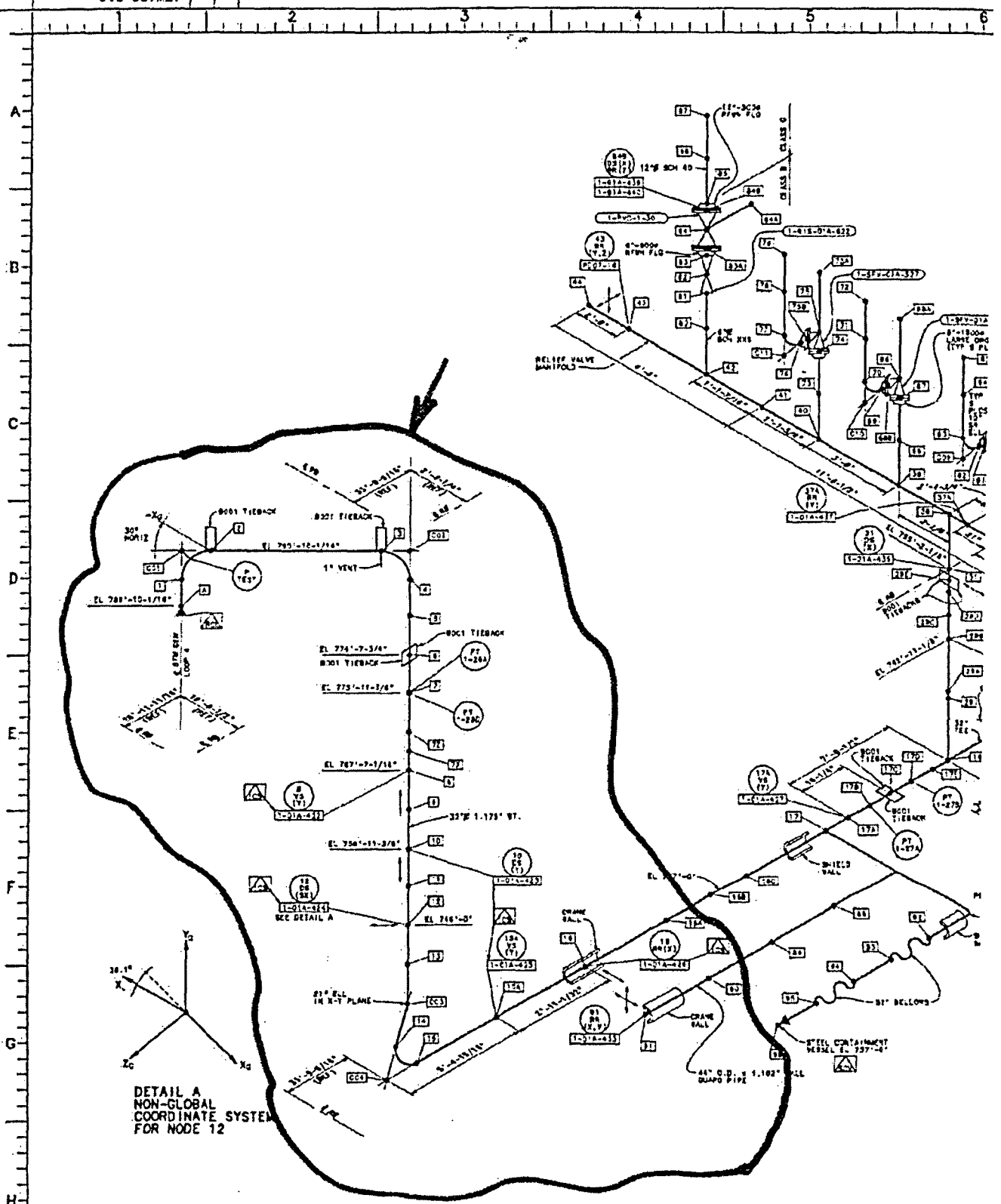
AT 3/4" INSTRUMENT TEST LINES:

VOLUME = [π(5^2 - 1.06^2)/4 x π(5.46)(71.25°/180°)] + [π(7^2 - 1.06^2)/4 x 5.75]

+ [π(7^2 - 0.86^2)/4 x 5] + [π(6.12^2 - 3.5^2)/4 x 14.61] + [π(5^2 - 1.06^2)/4 x 9.76]

+ [π(7^2 - 1.06^2)/4 x 5.75] + [π(7^2 - 0.86^2)/4 x 5] + [π(8^2 - 3.5^2)/4 x 13.27]

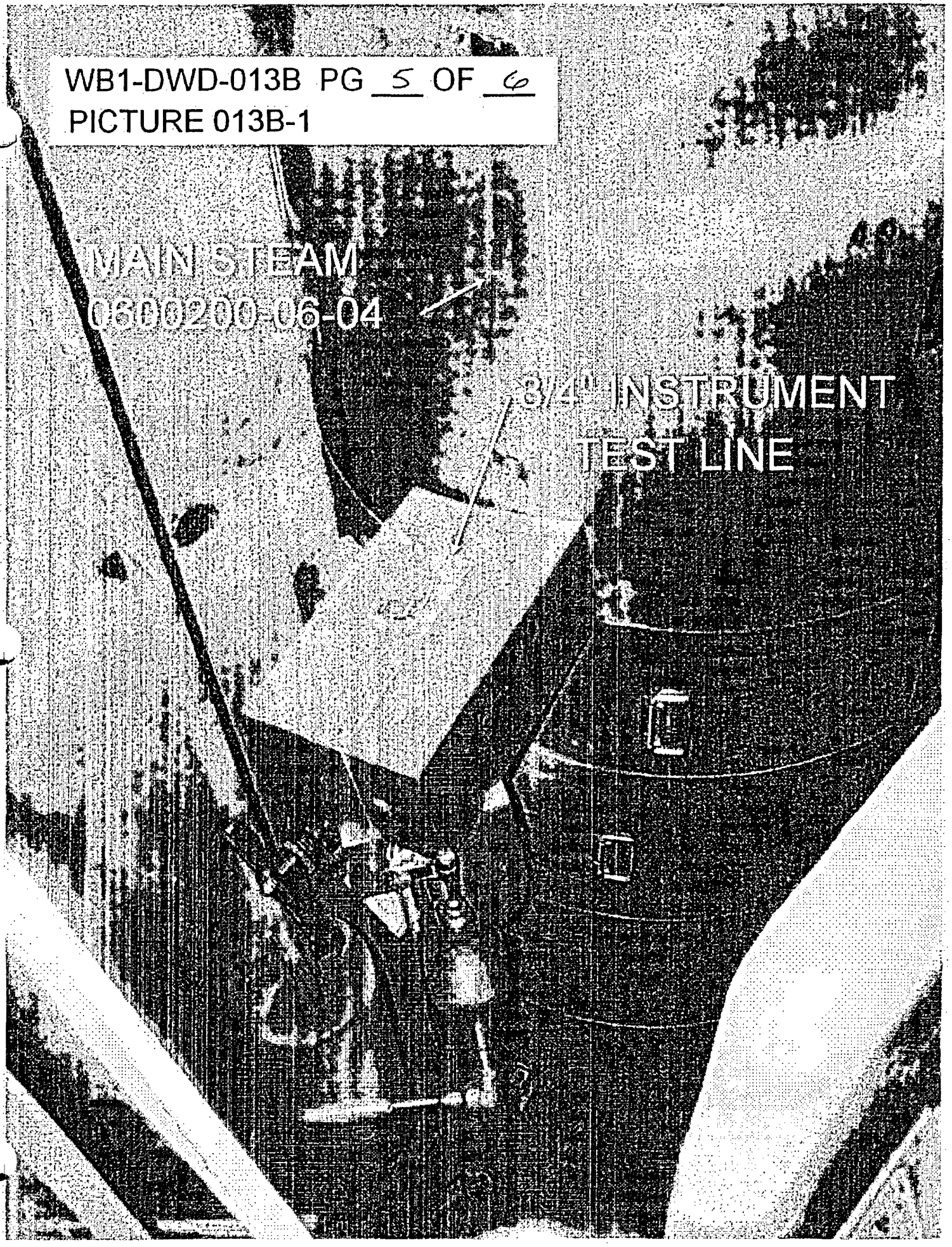
= 1951(1/12^3) = 1.13FT^3



DWG. NO. 47W400-216, REV. E
WB1-DWD-013B PG 4 OF 6

WB1-DWD-013B PG 5 OF 6

PICTURE 013B-1



WB1-DWD-013B PG 6 OF 6
PICTURE 013B-2

CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-013C SHEET 1 OF 9

DATE:	10/22/2003	AREA:	LOOP 4	RWP NO.:	8010
		ELEV:	745'		

INSPECTORS:	C. G. WALLS, MIKE SOLLIE

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	590955-001C, SH. 1, REV. C *	
Tools:	590955-001C, SH. 2, REV. B *	
Drawings	590955-002C, SH. 4, REV. C *	
Flashlights	590955-003C, SH. 4, REV. B *	
Ladders	590955-004C, SH. 4, REV. C *	
Cameras	590955-005C, SH. 4, REV. A *	
Binoculars	590955-006C, SH. 4, REV. C *	
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

COMMENTS

STEAM GENERATOR

* TVA CONTRACT NO. 93NNS-75645C

NOTE: SEE WALKDOWN PACKAGE NO. WB1-DWD-009A FOR LOWER AREA OF SG.

Prepared By: C. G. WALLS Date: 10/31/03

Checked By: MIKE SOLLIE Date: 10/31/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-013C SHEET 2 OF 9

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
N/A	LOOP 4	745'	13	STEAM GENERATOR	SEE CALC	SEE CALC	RMI	SEE CALC	451.03	S.S.	STD	N/A	N/A

APPROXIMATE INSULATION VOLUME:

AT STEAM GENERATOR (FROM EL. 745'-0" TO TOP):

$$V = [\pi(73.05^2 - 70.38^2) \times 118.13] + [\pi(76^2 - 73.33^2)] \times (17.53 + 3.72)]$$

$$+ (1/3)\pi 59.22[91.5^2 + 76^2 + (91.5)(76)] - (1/3)\pi 59.22[88.83^2 + 73.33^2 + (88.83)(73.33)]$$

$$+ [\pi(91.5^2 - 88.83^2) \times 5] + [\pi(92.96^2 - 90.28^2)] \times (274.72 + 13.75)]$$

$$+ [\pi(92.96^2 - 17^2) \times 2.67] - (4)[\pi 5^2/4 \times 2.67] - (2 \times 33^2)$$

$$- [\pi 18^2/4 \times 2.67] - (12 \times 50.12 \times 2.66) - (9 \times 11 \times 1) = 768524(1/12^3) = 444.75 FT^3$$

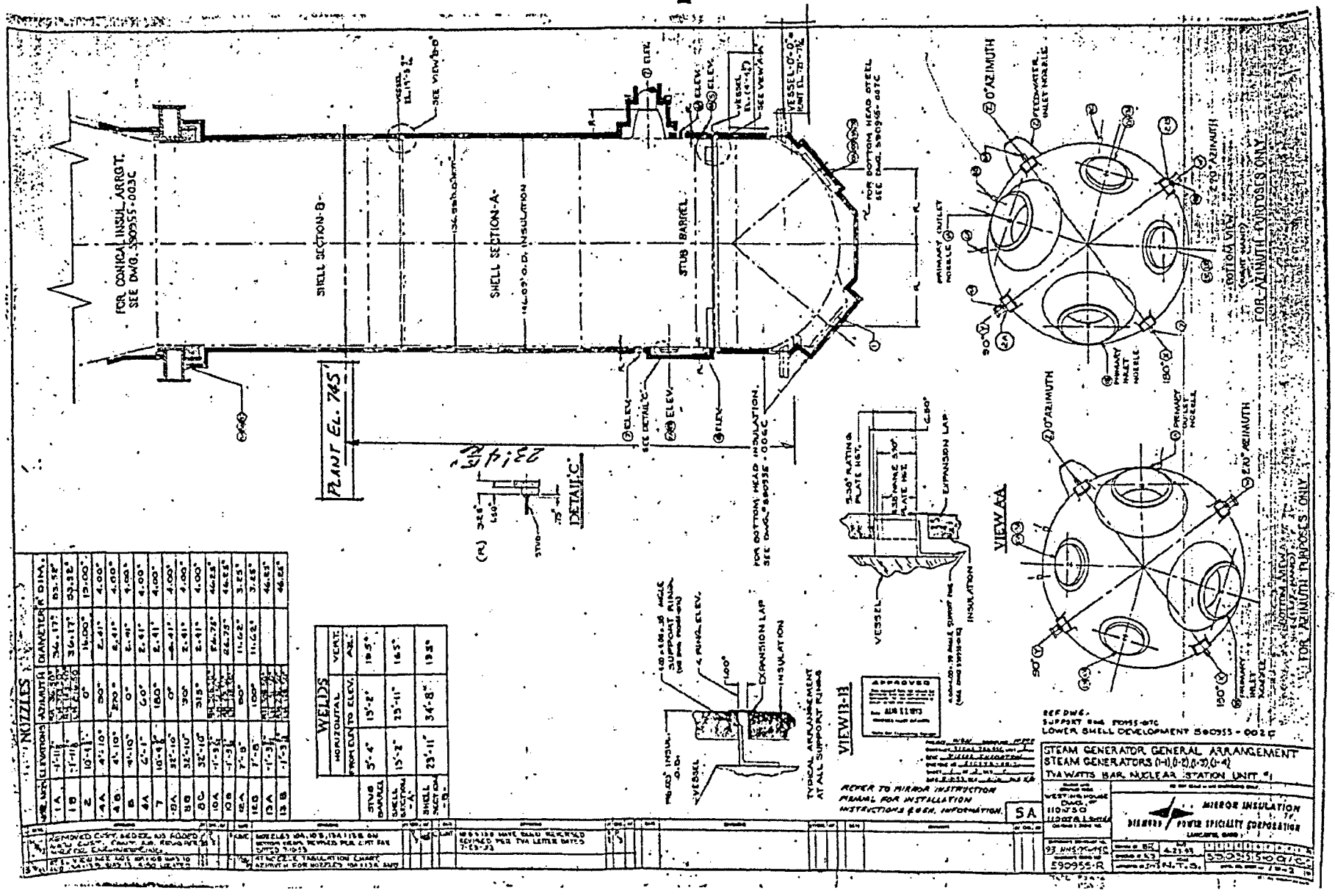
AT MANWAY COVERS:

$$V = 2[(38.31^2 \times 2.67) + (2 \times 38.31 \times 7.16) + (2 \times 32.97 \times 7.16)] = 9879(1/12^3) = 5.72 FT^3$$

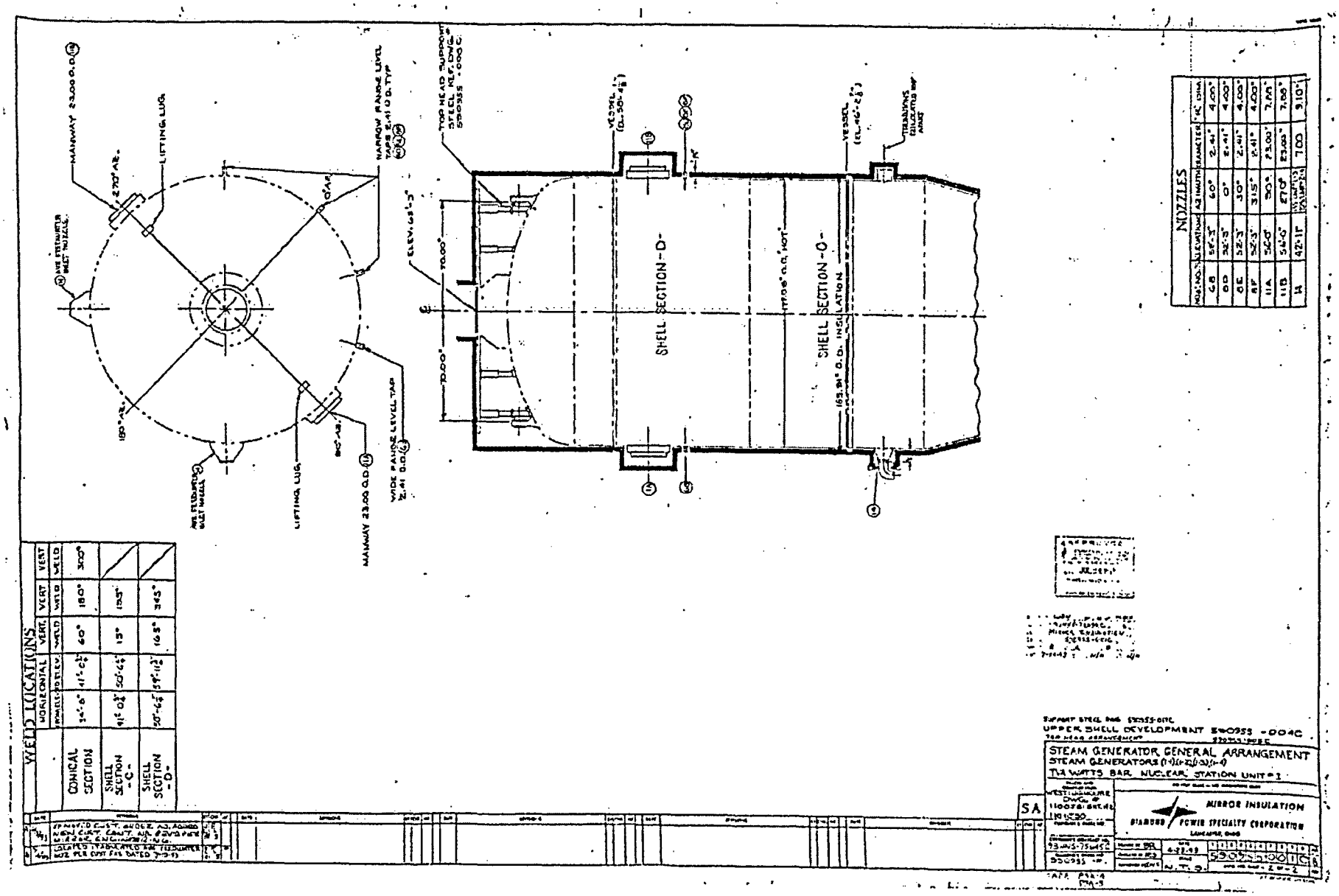
AT 18" AUX. FEEDWATER INLET NOZZLE:

$$V = [\pi(20^2 - 10^2)/4 \times 2.67] + [\pi(20^2 - 14.66^2)/4 \times 2.39] = 977(1/12^3) = 0.56 FT^3$$

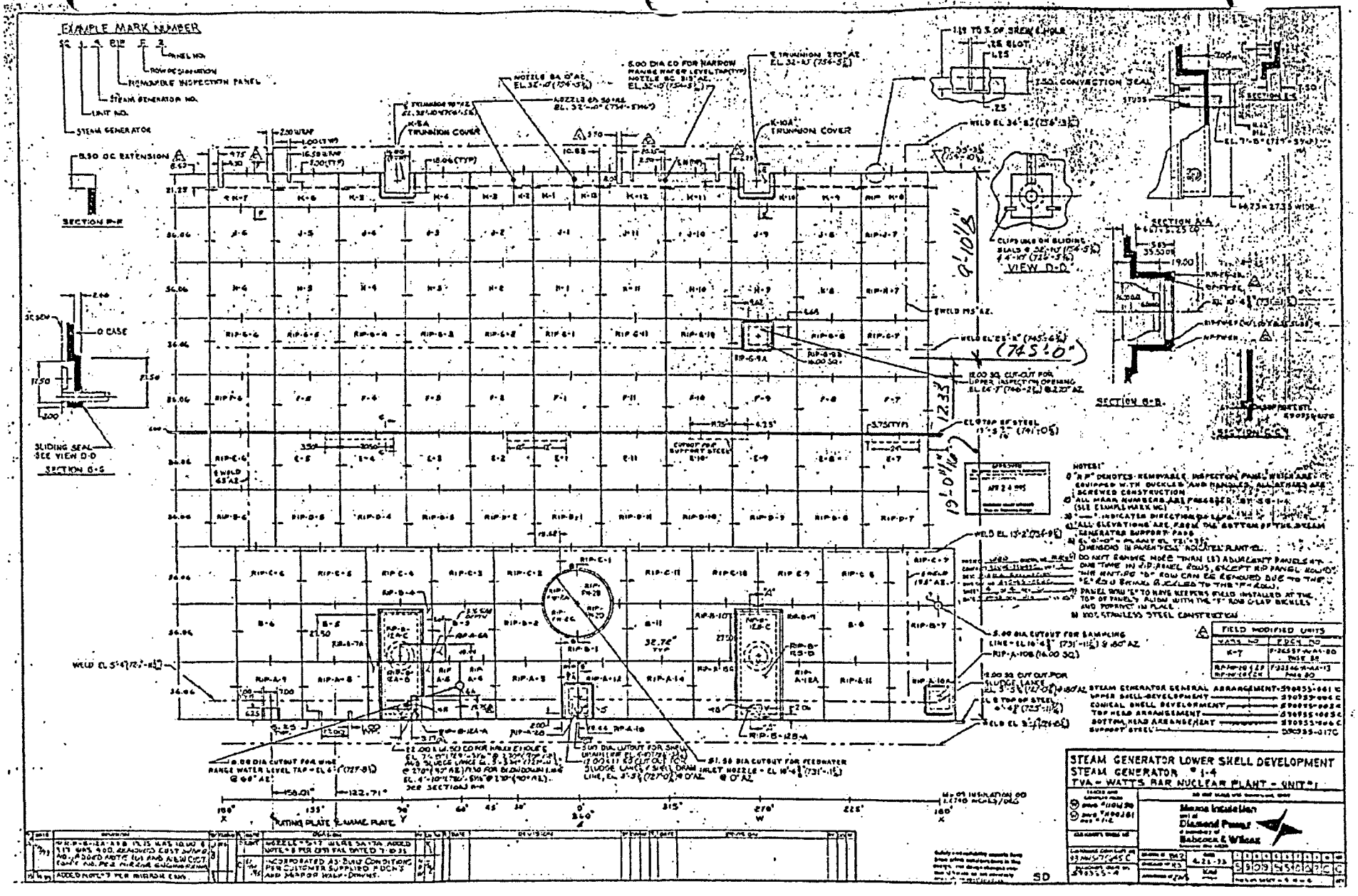
TOTAL VOLUME = 444.75 + 5.72 + 0.56 = 451.03 FT^3



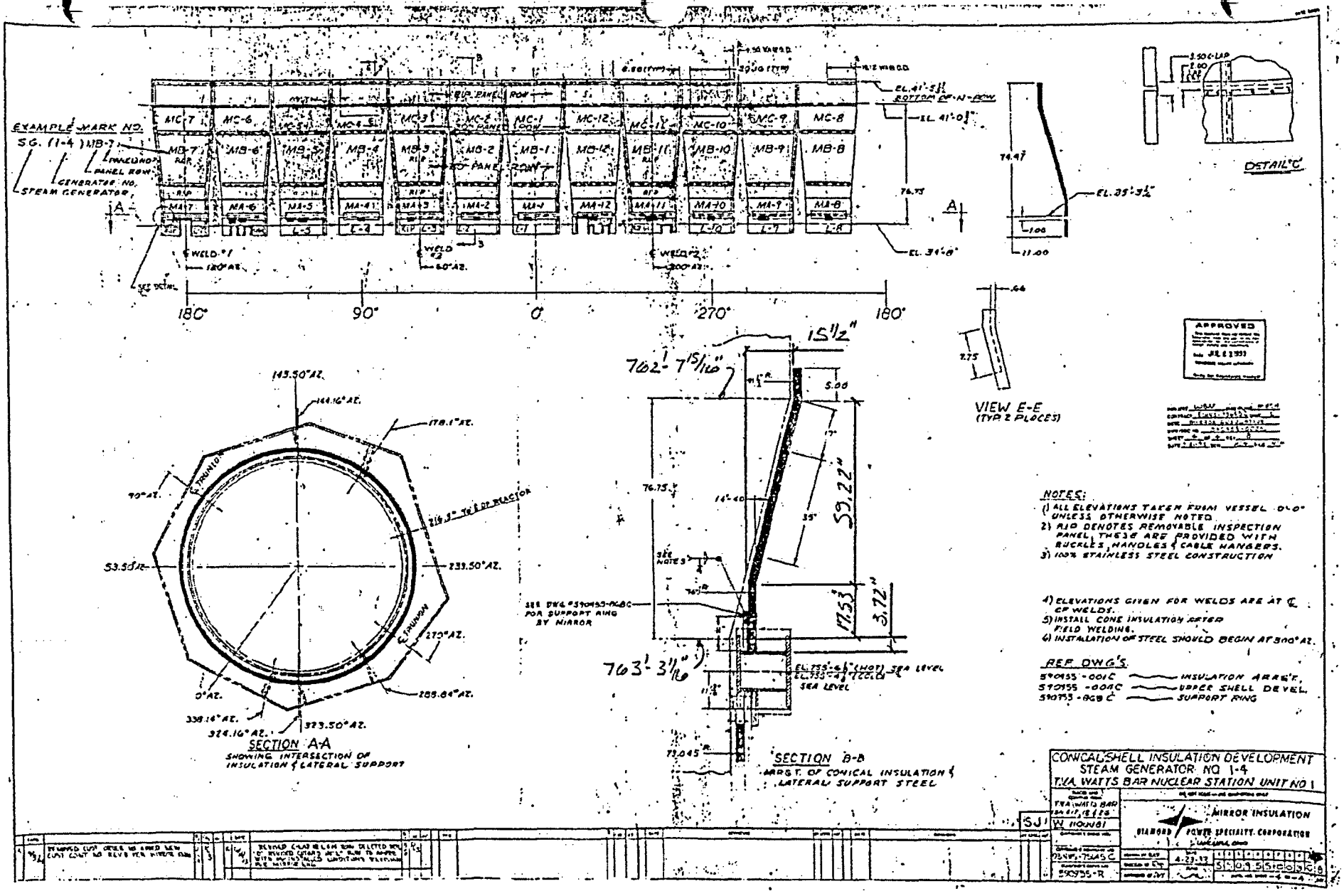
WBI-DWD-013C
PG 9 OF 9



WB1-DWD-013C
PG 5 OF 9

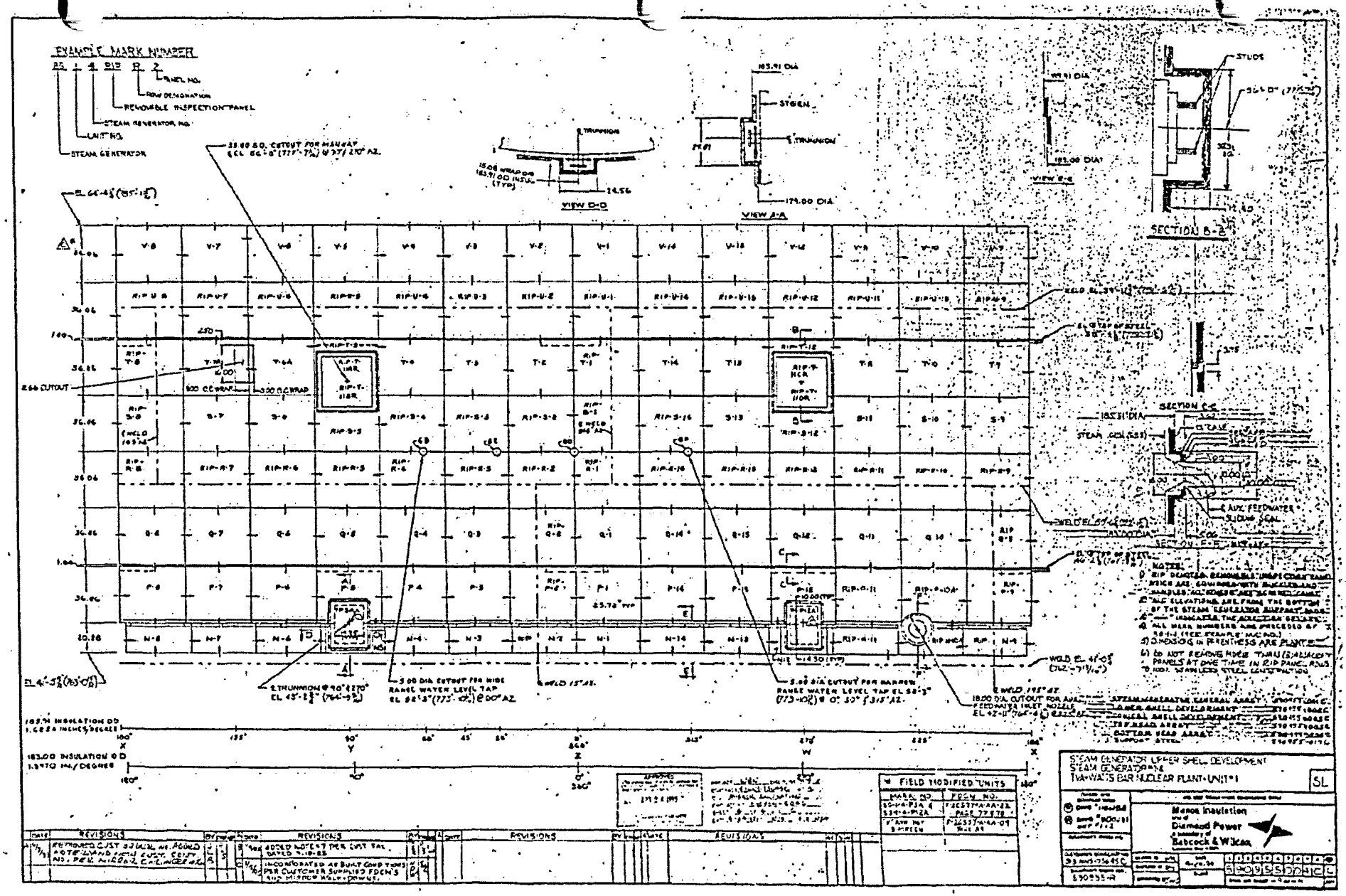


WB1-DWD-013C
PG 6 OF 9



WB1-DWD-013C

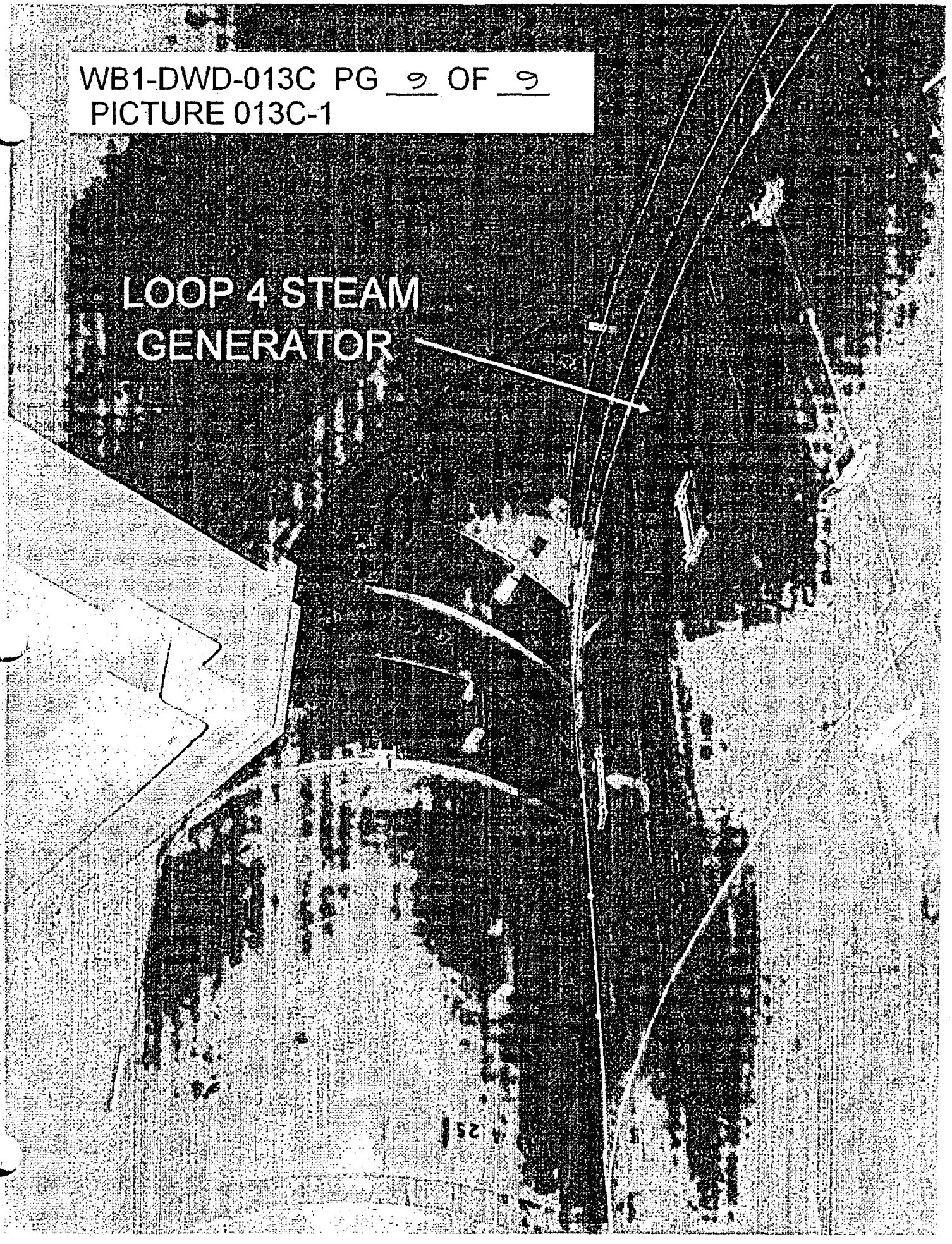
PG 7 OF 9



WBI-DWD-013C

PG 8 OF 9

WB1-DWD-013C PG 9 OF 9
PICTURE 013C-1



CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-013D SHEET 1 OF ~~4~~ 5 10/27/03

DATE:	10/27/2003	AREA:	LOOP 4	RWP NO.:	8010
		ELEV:	745'		

INSPECTORS:	C. G. WALLS, MIKE SOLLIE

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	590955-085C, SH. 1, REV. E *	
Tools:	590955-085C, SH. 5, REV. E *	
Drawings	47W401-215, REV. C	
Flashlights		
Ladders		
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	6" AUXILIARY FEEDWATER PIPING
	* TVA CONTRACT NO. 93NNS-75645C
	NOTE: THIS INCLUDES PIPING BELOW THE EL. 745'-0" AREA.

Prepared By: C. G. WALLS CGWalls Date: 10/27/03

Checked By: MIKE SOLLIE Mike Sollie Date: 11/9/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-013D SHEET 2 OF 5

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
0600200-02-08	LOOP 4	745'	13	AUXLILIARY FEEDWATER	6.63	3.34	RMI	5.1875	4.47	S.S.	STD	N/A	17" OD INSULATION
0600200-02-08	LOOP 4	745'	13	AUXLILIARY FEEDWATER	6.63	49.20	RMI	2.6875	26.86	S.S.	STD	N/A	12" OD INSULATION
0600200-02-08	LOOP 4	745'	13	AUXLILIARY FEEDWATER	6.63	3.01	MIN-K	2.8125	1.74	S.S.	STD	N/A	12.25" OD INSULATION
0600200-02-08	LOOP 4	745'	13	AUXLILIARY FEEDWATER	6.63	1.18	RMI	1.6875	0.36	S.S.	STD	N/A	10" OD INSULATION
0600200-02-08	LOOP 4	745'	13	AUXLILIARY FEEDWATER	SEE CALC	SEE CALC	RMI	SEE CALC	0.43	S.S.	STD	N/A	AT 1" PIPE.

WALKDOWN PACKAGE NO. WBI-DWD-013D SHEET 3 OF 5

APPROXIMATE INSULATION LENGTH:

START FROM STEAM GENERATOR:

AT 17" OD INSULATION:

LENGTH = 20 + 20 = 40(1/12) = 3.34FT

AT 12" OD INSULATION:

LENGTH = 30 + π(9)(90°/180°) + 15.75 + 75.75 + 7 + 6.5 + 93.25 + 28.38 + 27.15

+ 76.56 + π(9)(90°/180°) + 13.25 + 29.37 + 6 + (2 X 36.09) + 9.08

+ 17.55 + 21.48 + 4 + π(9)(90°/180°)+ 14 = 590(1/12) = 49.2FT

AT MIN-K INSULATION : (12.25" OD)

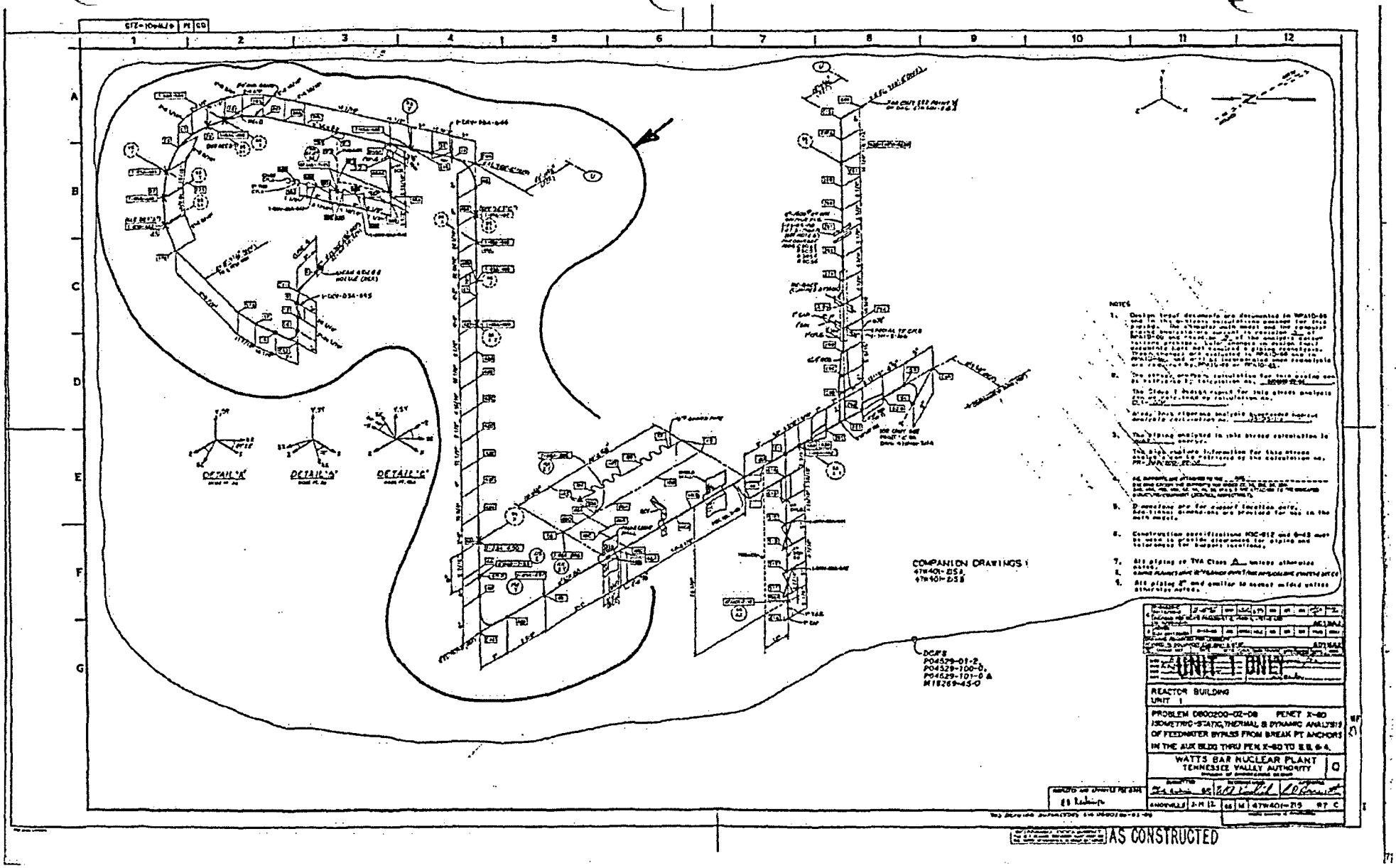
LENGTH = 36.09(1/12) = 3.01FT

AT 10" OD INSULATION:

LENGTH = π(9)(90°/180°) = 14.13(1/12) = 1.18FT

AT 1" PIPE:

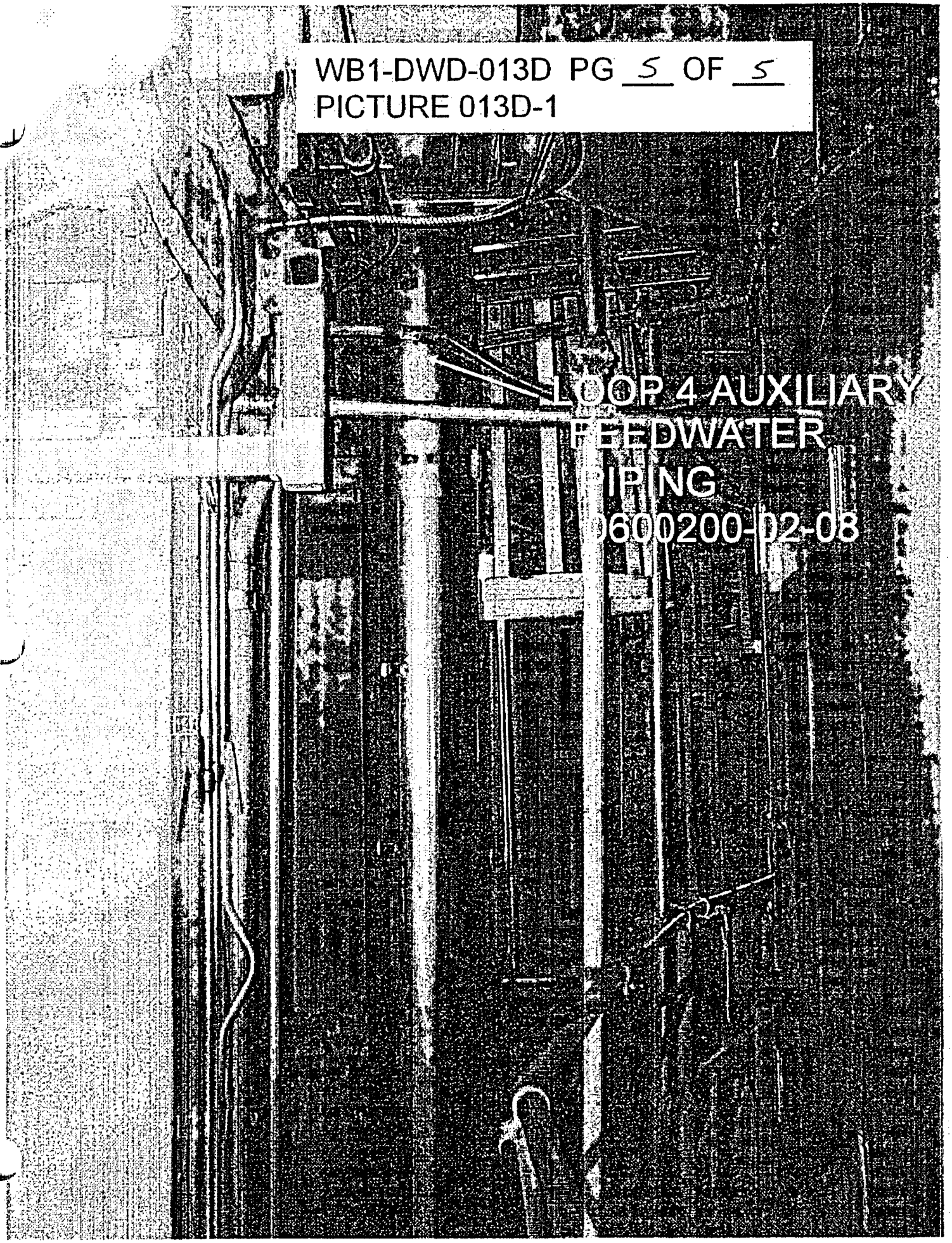
VOLUME = [π(8^2 - 1.32^2)/4 X 9.48] + [π(7^2 - 1.32^2)/4 X 7.5] = 742($1/12^3$) = 0.43FT^3



WB1-DWD-013D

PG 4 OF 5

WB1-DWD-013D PG 5 OF 5
PICTURE 013D-1



CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-013E SHEET 1 OF 5

DATE:	11/04/2003	AREA:	LOOP ~~X~~ 4 (AZ270°-0°)	RWP NO.:	8010
		ELEV:	745		

INSPECTORS:	FRANK C YAO, MIKE CALDWELL

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	47W2500-12	
Tools:		
Drawings		
Flashlights		
Ladders		
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify **installation of insulation** as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any **undocumented** insulation.
3	Inspect and determine longitudinal **seam location** and **band spacing** if necessary.
4	Document any **irregularities** of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any **undocumented fibrous insulation (e.g., within rupture restraints)**.
6	Inspect and mark up cable tray drawings to show location of **fire barriers** (vertical and horizontal).
7	Inspect the area for any **weak components** that could be dislodged by jet and that could be transported to sump.
8	Inspect any **equipment insulation** in the area.
9	Inspect and document the general **cleanliness** of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	LABELS AND TAGS
	PICTURE 013E-1
	PICTURE 013E-2

Prepared By: FRANK C YAO Date: 11/4/03

Checked By: MIKE CALDWELL Date: 11/4/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

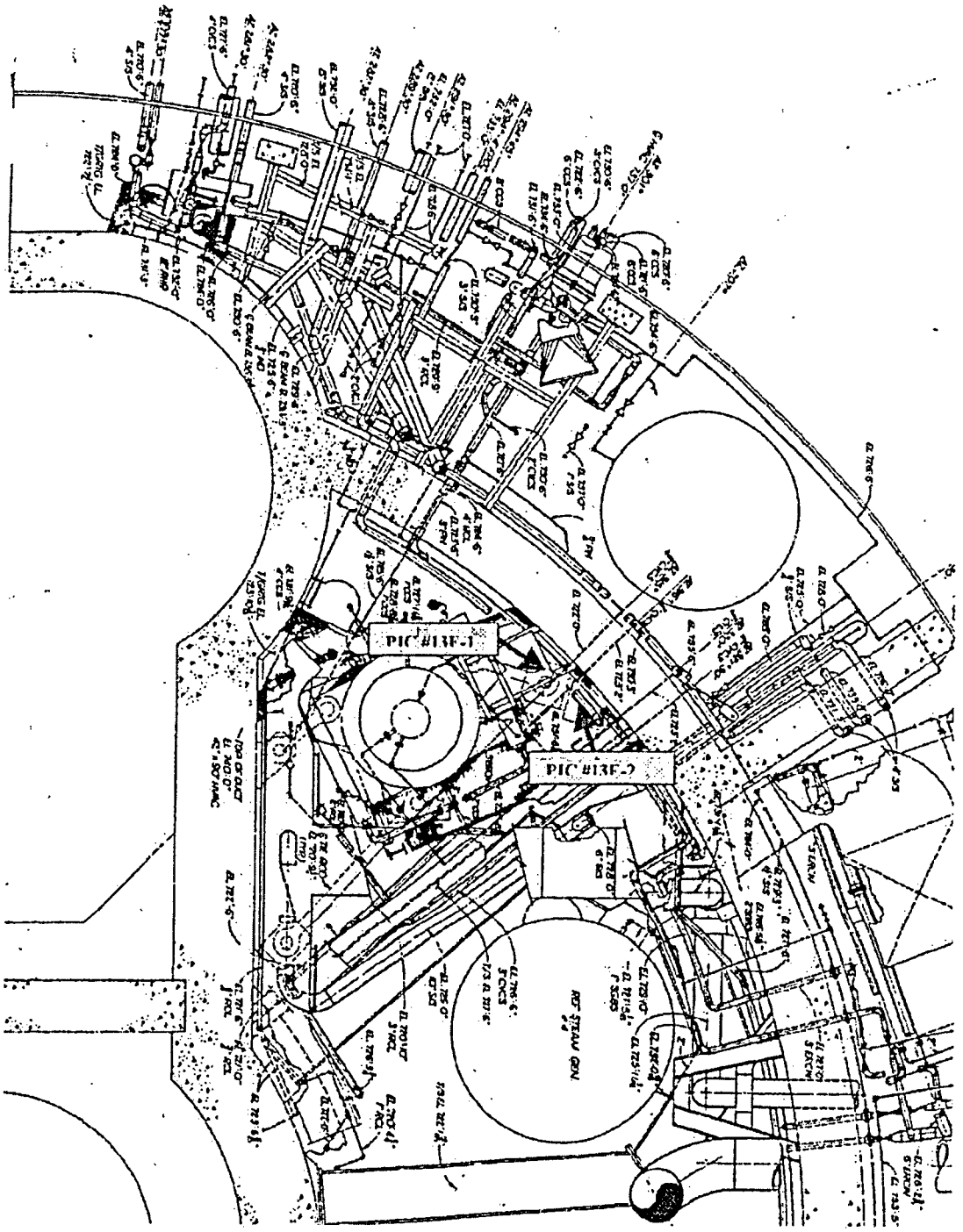
WALKDOWN PACKAGE#: WB1-DWD-013E SHEET 2 OF 5

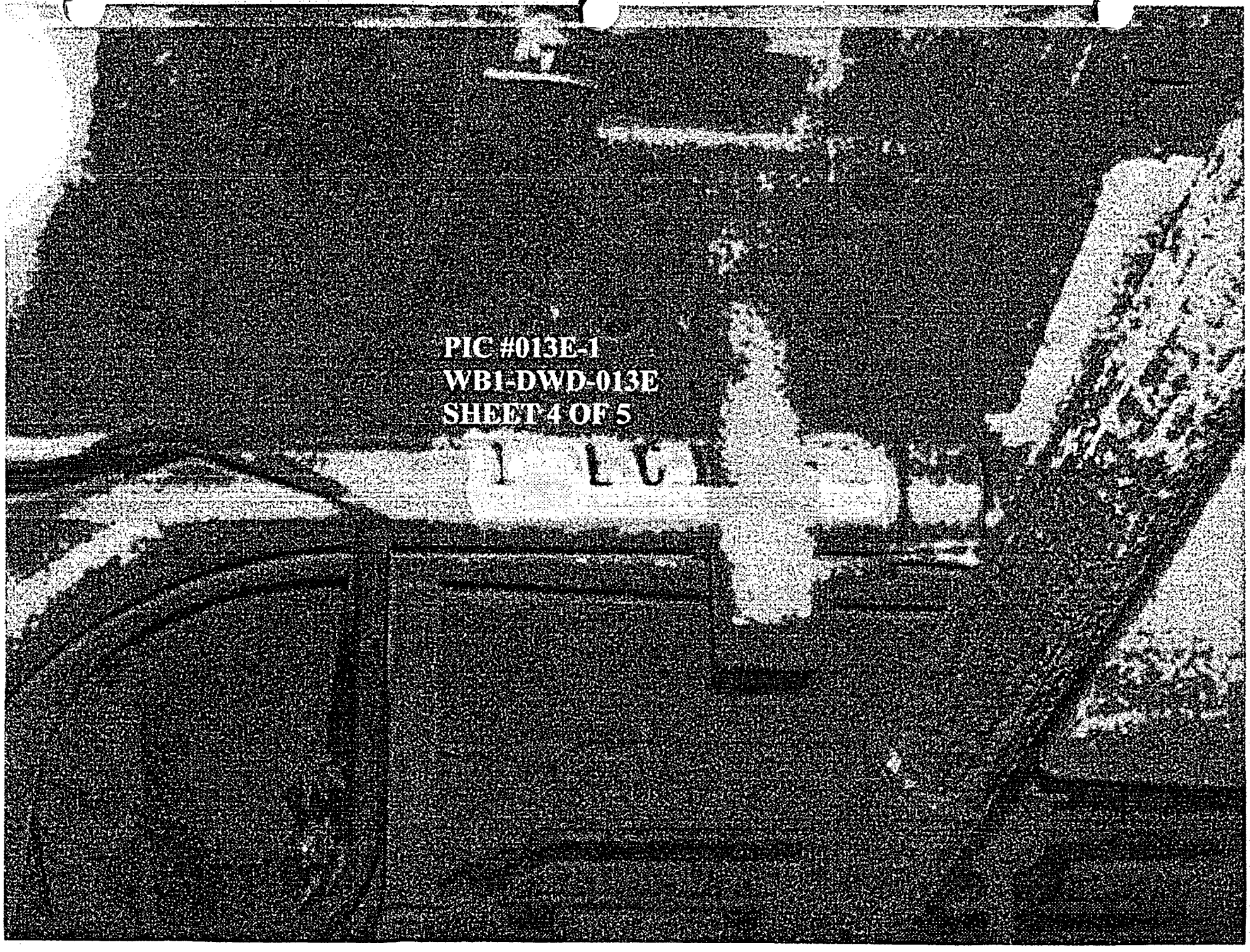
PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
N/A	LOOP 4	745	13	LABELS AND TIE WRAPS	NA	NA	NA	NA	NA	NA	NA	NA	SEE REPORT FOR COMMENTS

47W2500-12
QUAD 4
EL 745

WB1-DWD-013E

SHEET 3 OF 5




PIC #013E-1
WB1-DWD-013E
SHEET 4 OF 5

SHEET 5 OF 5

CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-013F SHEET 1 OF 4

DATE:	11/12/2003	AREA:	LOOP 4 (AZ 270°-0°)	RWP NO.:	8010
		ELEV:	745		

INSPECTORS:	FRANK C YAO, MIKE CALDWELL

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	47W2500-12	45N862-9
Tools:		45N862-10
Drawings		DCN 11727-D
Flashlights		1-FOR-304-1
Ladders		
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	CONDUIT 1VC4062B

Prepared By: FRANK C YAO Date: 11/12/03

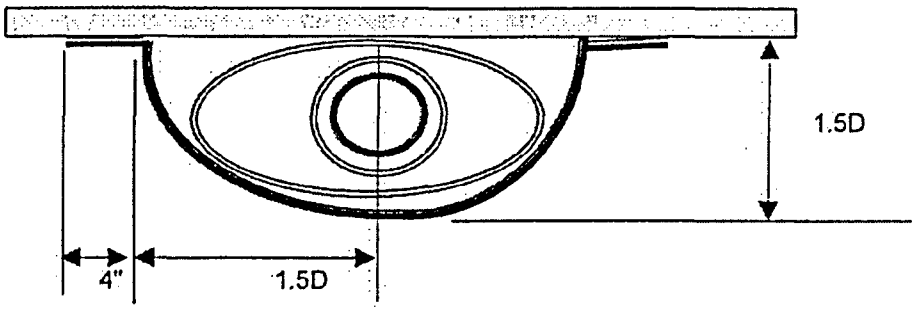
Checked By: MIKE CALDWELL Date: 11/12/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-013F SHEET 2 OF 4

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
N/A	LOOP 4	745	13	CONDUIT INSULATION 3M RADIANT	1.900	2.50	3M20C	SEE CALC	0.083	NA	NA	NA	SEE CALCULATION
N/A	LOOP 4	745	13	SUPPORT	NA	NA	3M20C	SEE CALC	0.260	NA	NA	NA	SEE CALCULATION

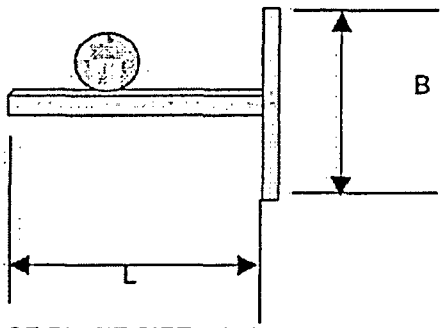
AREA 13 3M-M20C RADIANT SHIELD CALCULATION
1 1/2" DIA. CONDUIT (OUTSIDE DIA = 1.90")
3 LAYERS 3M-M20C FOR CONDUIT PER NOTE 1A DRAWING 1-47W243-6
DETAIL C-8 AND NOTE 6 DRAWING 1-47W243-8 SPECIFIES 3 LAYERS WRAP.



D=DIAMETER OF CONDUIT IN IN"
FIRST LAYER TIGHTLY AROUND CONDUIT
SECOND LAYER IS 1.5D DIAMTER CIRCLEX1.2
THIRD LAYER IS 1.5D RADIUS HALF CIRCLE + 8"

1 1/2" LENGTH = 5/2 =2.5'			
1 1/2" DIA. CONDUIT PER LIN FT	D(IN)	PERIMTER (IN)	A(SQ IN) PER LIN FT
1ST LAYER	1.9	5.97	71.63
2ND LAYER	2.85	2.69	32.23
3RD LAYER	5.7	16.95	203.44
TOTAL SQ IN PER LIN FT			307.30
CU FT OF 3M-M20C (3/16" THICK)			0.0333
CONDUIT LENGTH IN THIS AREA =			2.5
TOTAL CU FT OF INSULATION =			0.083

AREA 13 3M-M20C RADIANT SHIELD CALCULATION



ASSUME A=12" WITH 2x2 SQ TUBE, BASE PLATE SIZE = 9x9
TWO LAYERS OF 3M FIRE BARRIER M20C FOR SUPPORT
COVER BASE PLATE 6" ALL AROUND.

COVERED AREA (ONE LAYER)

	B+6+6	B+6+6	A (IN)	A (SQ FT)
BASE PLATE =	21	21	441	3.06
	L	4xWIDTH		
CANTILEVER MEM =	12	8	96	0.67
SUB TOTAL				3.73
PLUS ENDS ETC 10%				0.373
ONE LAYER TOTAL=				4.10
TWO LAYERS = 2XTOTAL =				8.20
EACH SUPPORT M20C FOR 3/16" THICK IN CU FT =				0.128

ASSUME SUPPORT SPACING IS 10 FT CONDUIT
NUMBER OF SUPPORTS FOR 1 1/2" DIA. CONDUIT=5/10 + 1= 2
NUMBER OF SUPPORTS TOTAL = 2
TOTAL CU FT OF 3M-M20C FOR SUPPORTS = 0.26

ATTACHMENT J:

WALKDOWN PACKAGES

BINDER 3

AREAS 14 - 19

CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-014A SHEET 1 OF 5

DATE:	10/15/2003	AREA:	14	RWP NO.:	8010
		ELEV:	716		

INSPECTORS:	FRANK C YAO, MIKE CALDWELL

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	47W2500-5	
Tools:		
Drawings		
Flashlights		
Ladders		
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	MIN-K-WR, PIPE IDENTIFIER: 1VC1289B
	APPROXIMATELY AT AZIMUTH ≈ 2°
	THICKNESS OF MIN-K = 0.25"
	ELEVATION 720'
	AT RADIUS OF 45' FORM CENTER OF REACTOR.BUILDING
	HORIZONTAL CONDUIT

Prepared By: FRANK C YAO Date: 10/15/03

Checked By: MIKE CALDWELL Date: 10/15/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-014A SHEET 2 OF 5

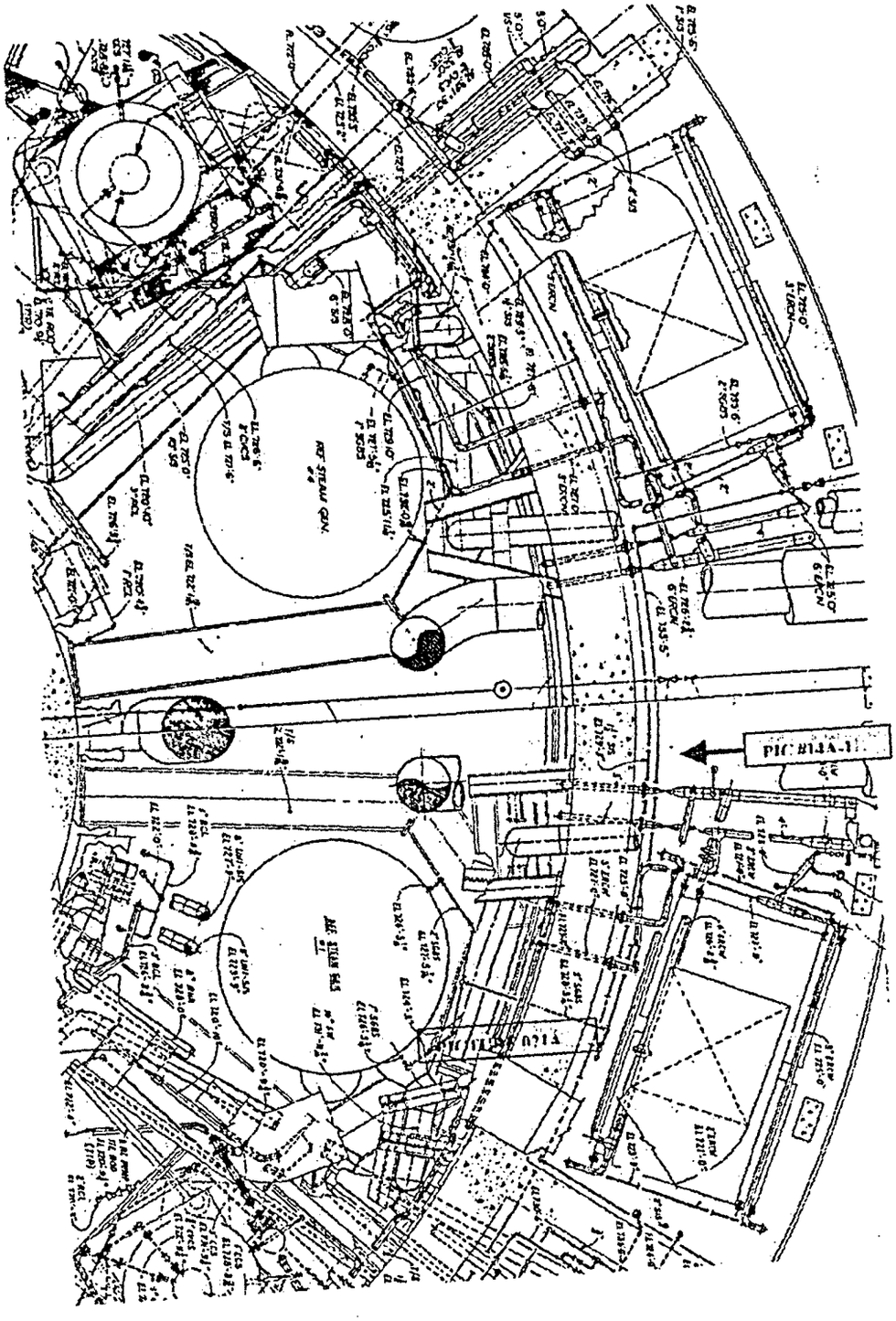
PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
N/A	FAN ROOM 1	716	14	MIN-K-WR	NA	SEE CALC	MIN-K-WR	0.250	0.016	NA	NA	NA	ENCAPSULATED IN STAINLESS FOIL

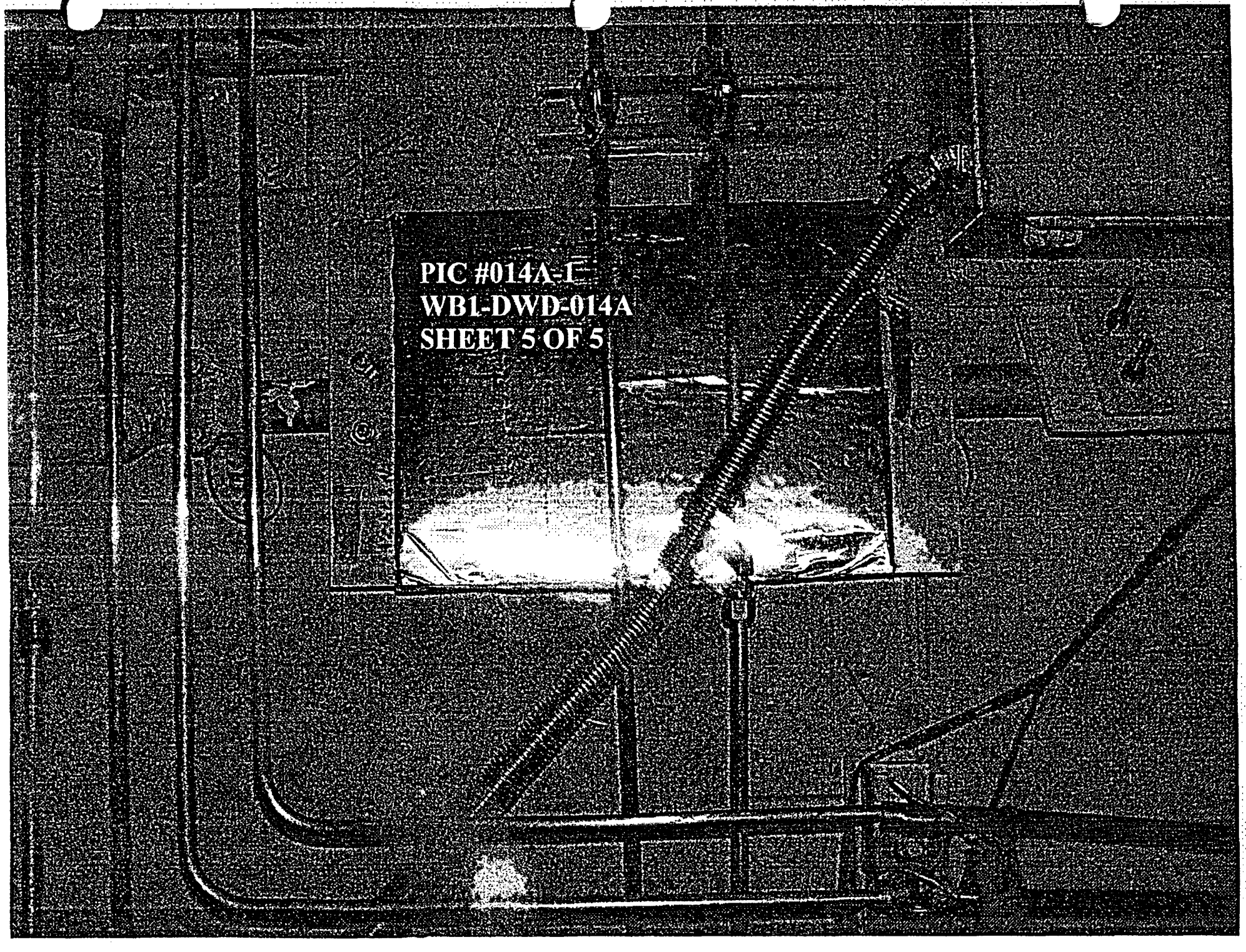
INSULATION CALCULATION

	WIDTH	LENGTH	THICKNESS	VOL (IN)	VOL (CU F)
SIZE =	9.000	12.000	0.250	27.000	0.016

47W2500-9 & 12
QUAD I & IV
EL 720 TO 737.0

WB1-DWD-014A




PIC #014A-1
WB1-DWD-014A
SHEET 5 OF 5

CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-014B SHEET 1 OF 5

DATE:	10/17/2003	AREA:	14	RWP NO.:	8010
		ELEV:	716		

INSPECTORS:	FRANK C YAO, MIKE CALDWELL

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	47W2500-9	
Tools:	47W2500-12	
Drawings		
Flashlights		
Ladders		
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any **undocumented** insulation.
3	Inspect and determine longitudinal **seam location** and **band spacing** if necessary.
4	Document any **irregularities** of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any **undocumented fibrous insulation (e.g., within rupture restraints)**.
6	Inspect and mark up cable tray drawings to show location of **fire barriers** (vertical and horizontal).
7	Inspect the area for any **weak components** that could be dislodged by jet and that could be transported to sump.
8	Inspect any **equipment insulation** in the area.
9	Inspect and document the general **cleanliness** of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	MIN-K-WR, PIPE IDENTIFIER: 1PM7453A
	APPROXIMATELY AT AZIMUTH ≈ 6^0
	THICKNESS OF MIN-K = 0.375"
	ELEVATION 730'
	AT RADIUS OF 44' FORM CENTER OF REACTOR.BUILDING
	HORIZONTAL CONDUIT

Prepared By: FRANK C YAO Date: 10/17/03

Checked By: MIKE CALDWELL Date: 10/17/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-014B SHEET 2 OF 5

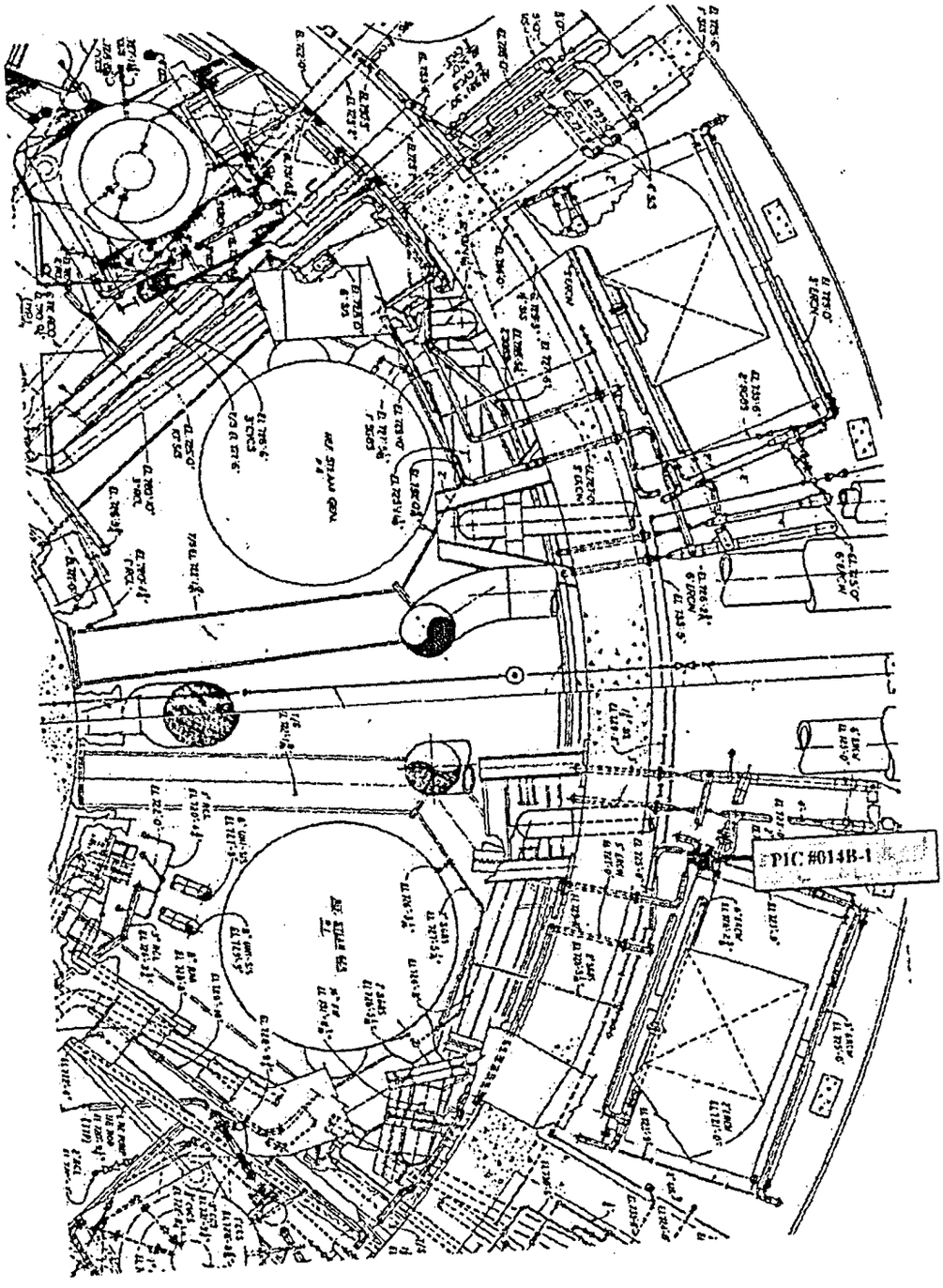
PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
N/A	FAN ROOM 1	716	14	MIN-K-WR	NA	SEE CALC	MIN-K-WR	0.375	0.023	NA	NA	NA	ENCAPSULATED IN STAINLESS FOIL

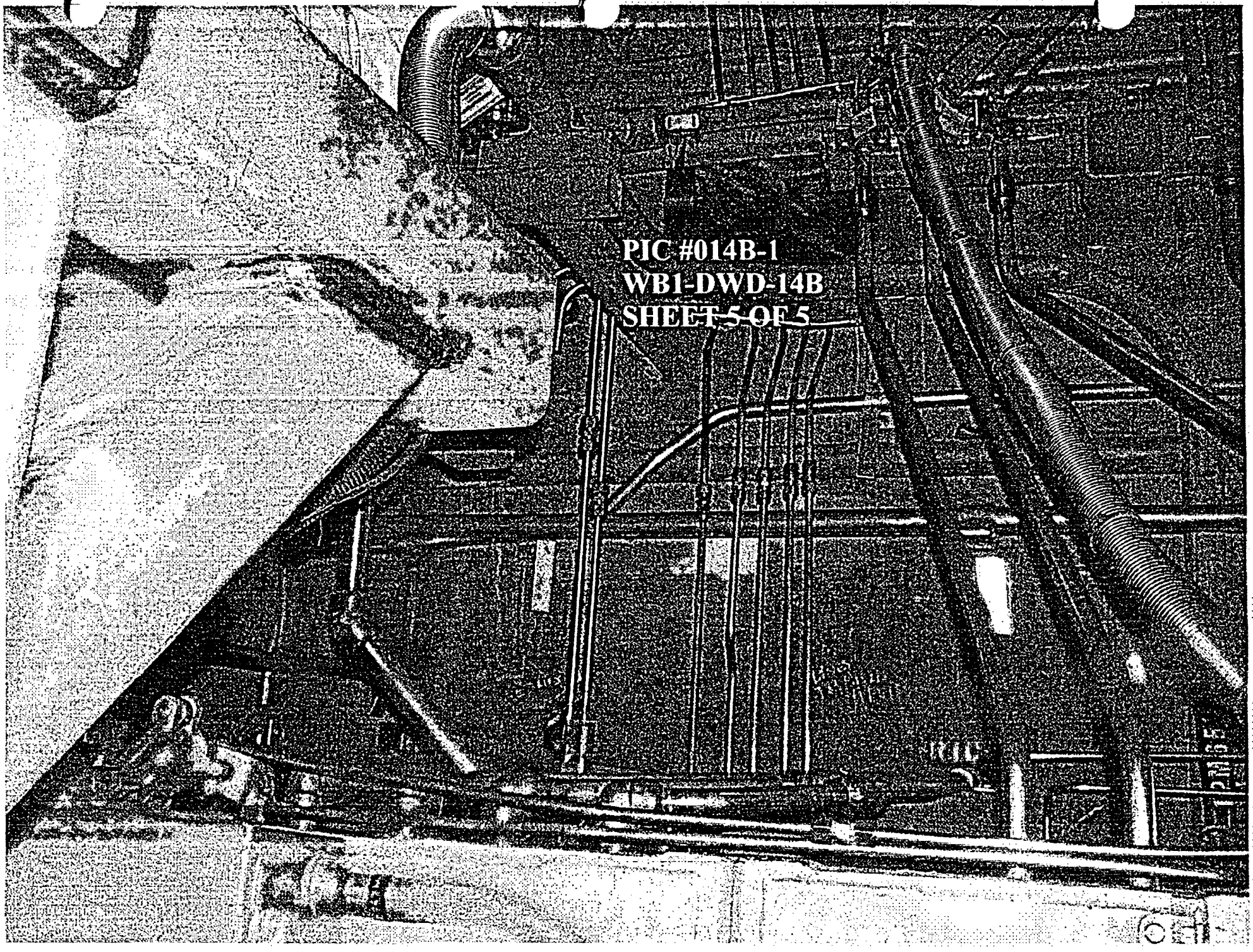
INSULATION CALCULATION

	WIDTH	LENGTH	THICKNESS	VOL (IN)	VOL (CU F)
SIZE =	9.000	12.000	0.375	40.500	0.023

47W2500-9 & 12
QUAD I & IV
EL 720 TO 737.0

WB1-DWD-014B

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WB1-DWD-14B
SHEET 5 OF 5

CONTAINMENT DEBRIS WALKDOWN PACKAGE WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-014C SHEET 1 OF 5

DATE:	10/15/2003	AREA:	14	RWP NO.:	8010
		ELEV:	716		

INSPECTORS:	FRANK C YAO, MIKE CALDWELL

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	47W2500-9	
Tools:	47W2500-12	
Drawings		
Flashlights		
Ladders		
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	**Verify installation of insulation** as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any **undocumented** insulation.
3	Inspect and determine longitudinal **seam location** and **band spacing** if necessary.
4	Document any **irregularities** of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any **undocumented fibrous insulation (e.g., within rupture restraints)**.
6	Inspect and mark up cable tray drawings to show location of **fire barriers** (vertical and horizontal).
7	Inspect the area for any **weak components** that could be dislodged by jet and that could be transported to sump.
8	Inspect any **equipment insulation** in the area.
9	Inspect and document the general **cleanliness** of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	MIN-K-WR, PIPE IDENTIFIER: 1PM6599E & 1PM6597E
	APPROXIMATELY AT AZIMUTH = 6°
	THICKNESS OF MIN-K = 0.375"
	ELEVATION 726'
	AT RADIUS OF 44' FORM CENTER OF REACTOR BUILDING
	HORIZONTAL CONDUIT

Prepared By: FRANK C YAO Date: 10/15/03

Checked By: MIKE CALDWELL Date: 10/15/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-014C SHEET 2 OF 5

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
N/A	FAN ROOM 1	716	14	MIN-K-WR	NA	SEE CALC	MIN-K-WR	0.375	0.036	NA	NA	NA	ENCAPSULATED IN STAINLESS FOIL

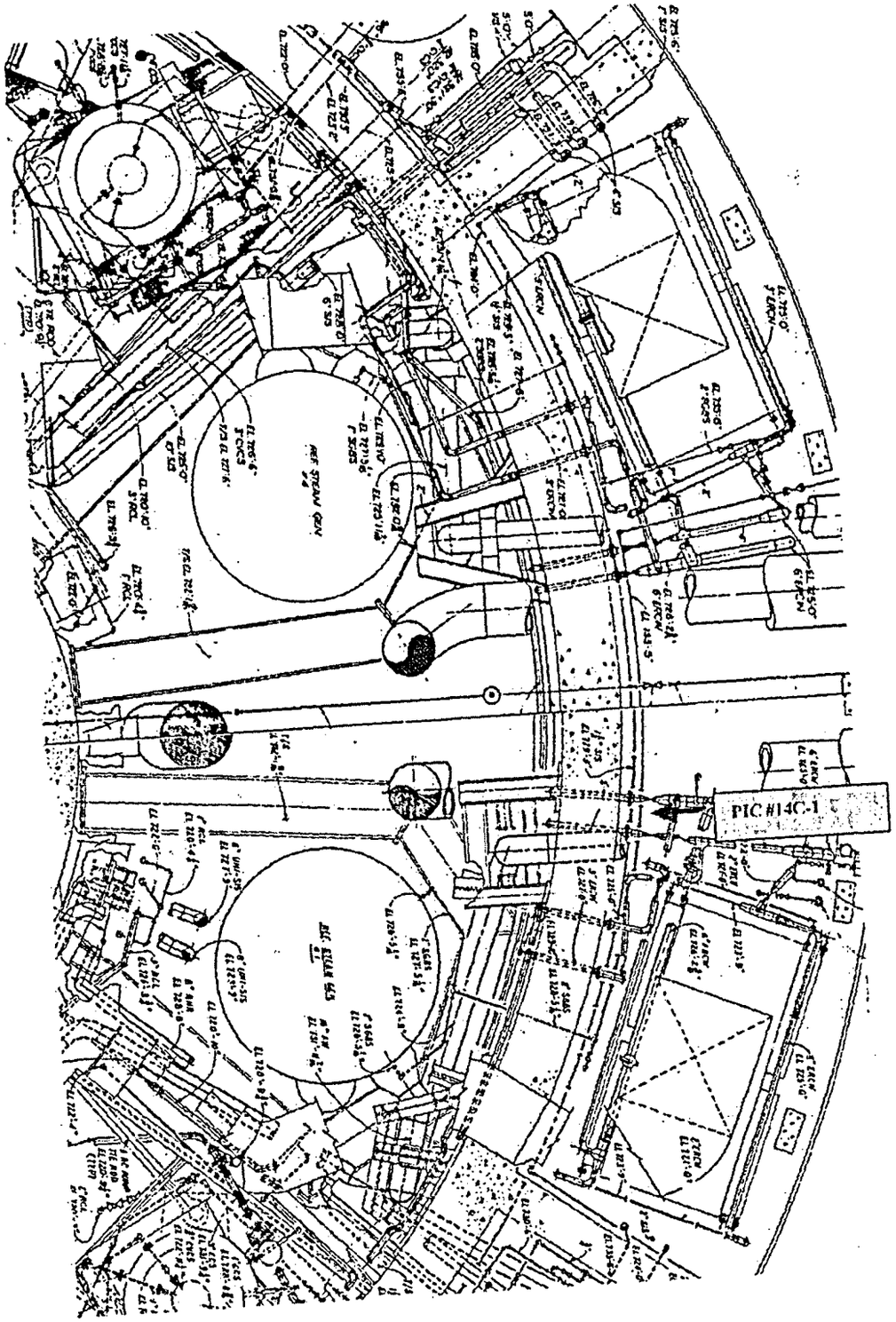
INSULATION CALCULATION

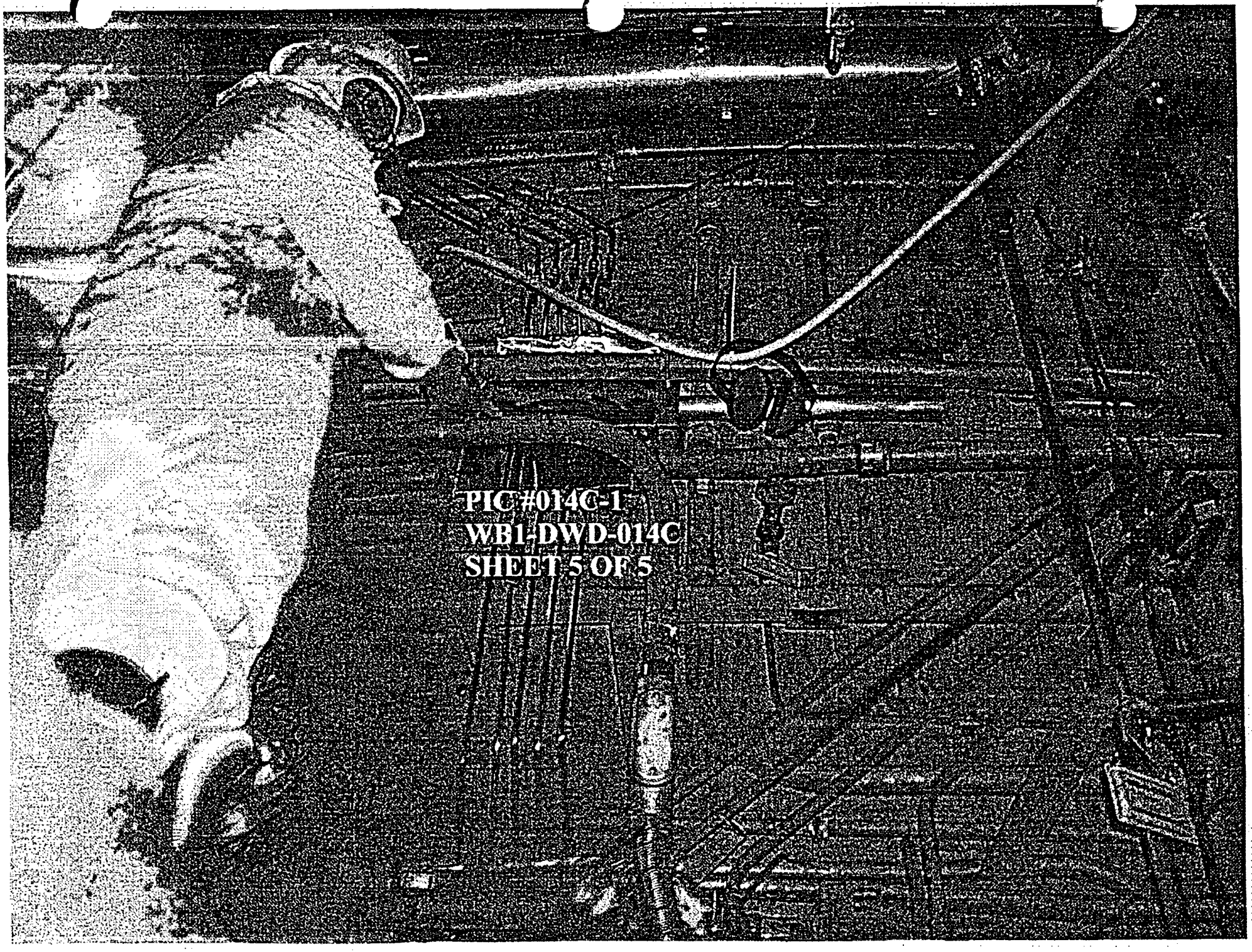
	WIDTH	LENGTH	THICKNESS	VOL (IN)	VOL (CU F)
SIZE =	10.500	15.750	0.375	62.016	0.036

47W2500-9 & 12
QUAD I & IV
EL 720 TO 737.0

WB1-DWD-014C

SHEET 4 OF 5




PIC #014C-1
WB1-DWD-014C
SHEET 5 OF 5

CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-014D SHEET 1 OF 5

DATE:	10/15/2003	AREA:	14	RWP NO.:	8010
		ELEV:	716		

INSPECTORS:	FRANK C YAO, MIKE CALDWELL

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	47W2500-9	
Tools:	47W2500-12	
Drawings		
Flashlights		
Ladders		
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	**Verify installation of insulation** as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any **undocumented** insulation.
3	Inspect and determine longitudinal **seam location** and **band spacing** if necessary.
4	Document any **irregularities** of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any **undocumented fibrous insulation (e.g., within rupture restraints).**
6	Inspect and mark up cable tray drawings to show location of **fire barriers** (vertical and horizontal).
7	Inspect the area for any **weak components** that could be dislodged by jet and that could be transported to sump.
8	Inspect any **equipment insulation** in the area.
9	Inspect and document the general **cleanliness** of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	MIN-K-WR, PIPE IDENTIFIER: 1PM6689F
	APPROXIMATELY AT AZIMUTH = 6°
	THICKNESS OF MIN-K = 0.5"
	ELEVATION 729'
	AT RADIUS OF 44' FORM CENTER OF REACTOR.BUILDING
	HORIZONTAL CONDUIT

Prepared By: FRANK C YAO Date: 10/15/03

Checked By: MIKE CALDWELL Date: 10/15/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-014D SHEET 2 OF 5

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
N/A	FAN ROOM 1	716	14	MIN-K-WR	NA	SEE CALC	MIN-K-WR	0.500	0.031	NA	NA	NA	ENCAPSULATED IN STAINLESS FOIL

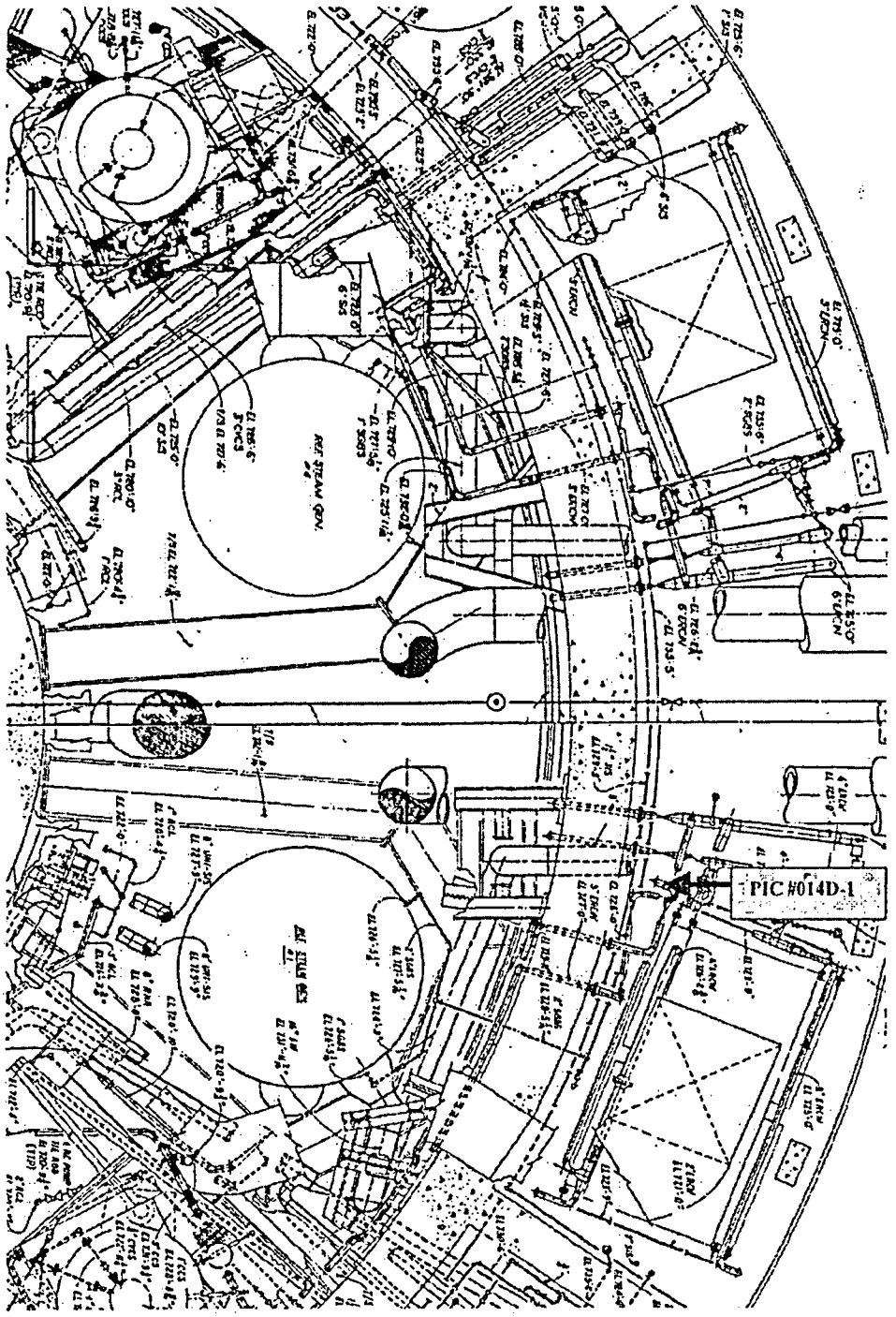
INSULATION CALCULATION

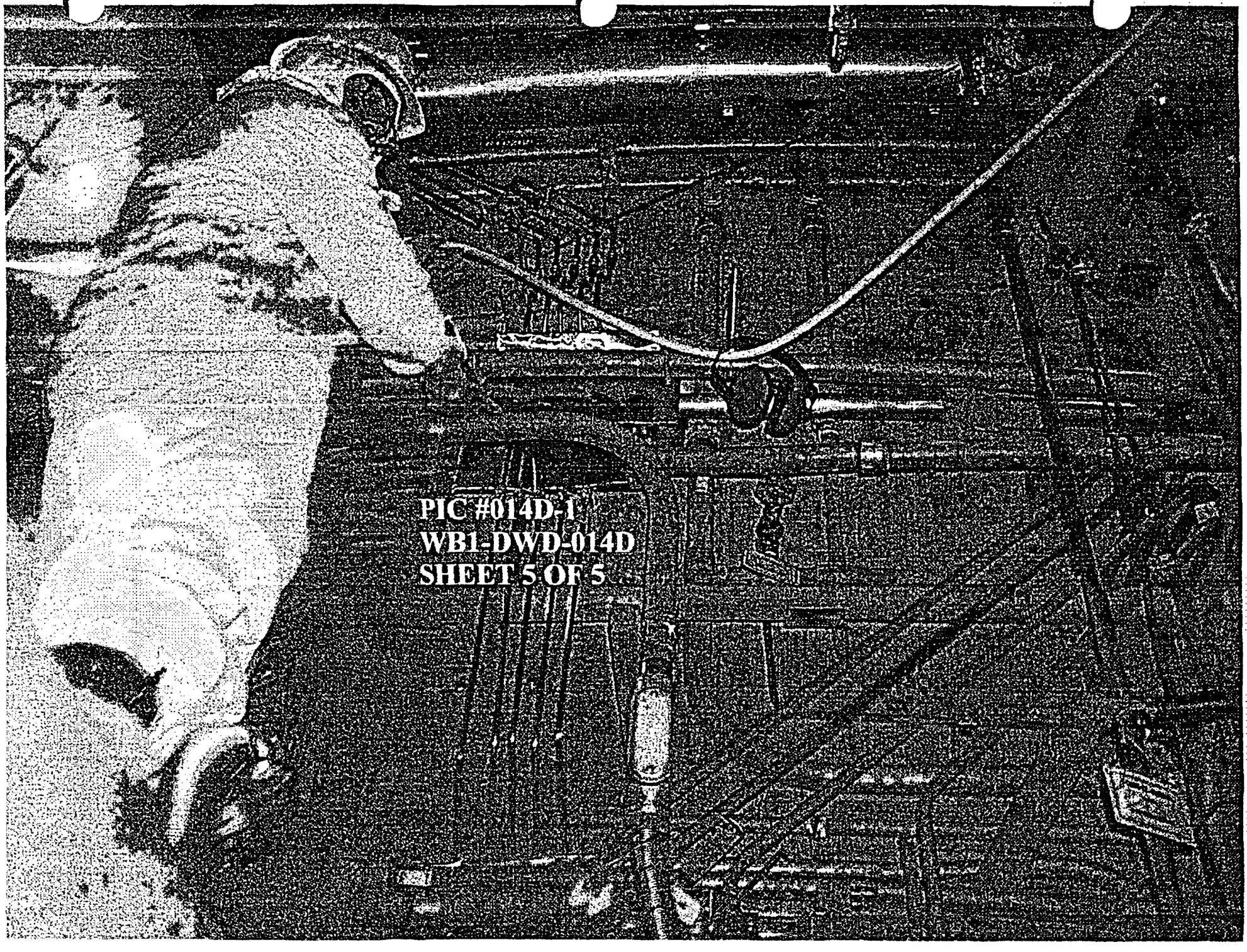
	WIDTH	LENGTH	THICKNESS	VOL (IN)	VOL (CU F)
SIZE =	9.000	12.000	0 500	54.000	0.031

47W2500-9 & 12
QUAD I & IV
EL 720 TO 737.0

WB1-DWD-014D

SHEET 4 OF 5

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WB1-DWD-014D
SHEET 5 OF 5

CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-014E SHEET 1 OF 6

DATE:	10/15/2003	AREA:	16	RWP NO.:	8010
		ELEV:	716		

INSPECTORS:	FRANK C YAO, MIKE CALDWELL

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	47W2500-9 & 12	
Tools:		
Drawings		
Flashlights		
Ladders		
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

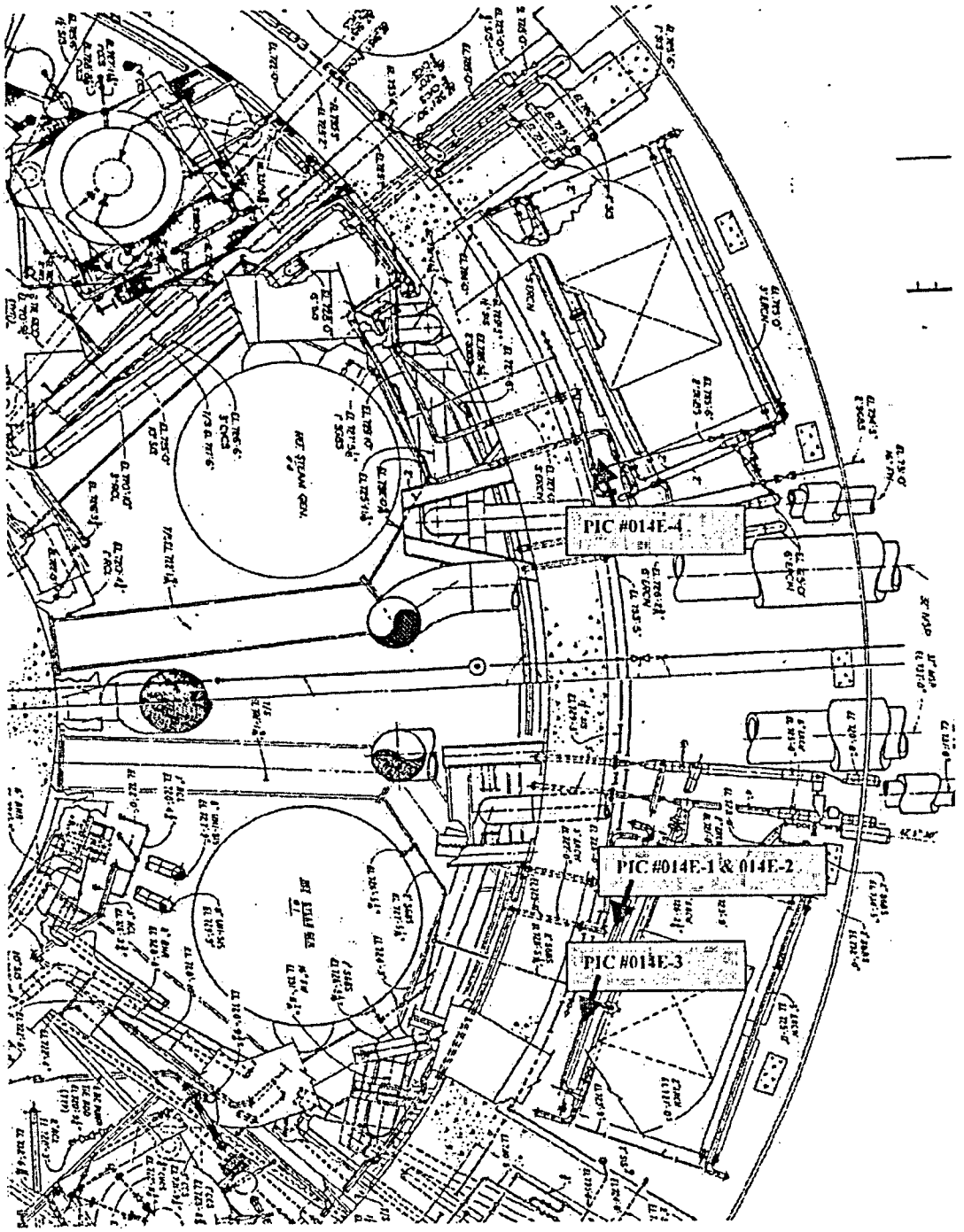
	COMMENTS
	TEMPORARY FIBERGLASS FILTERS DURING OUTAGES. REMOVED DURING WALK-THROUGH 10/13/03.

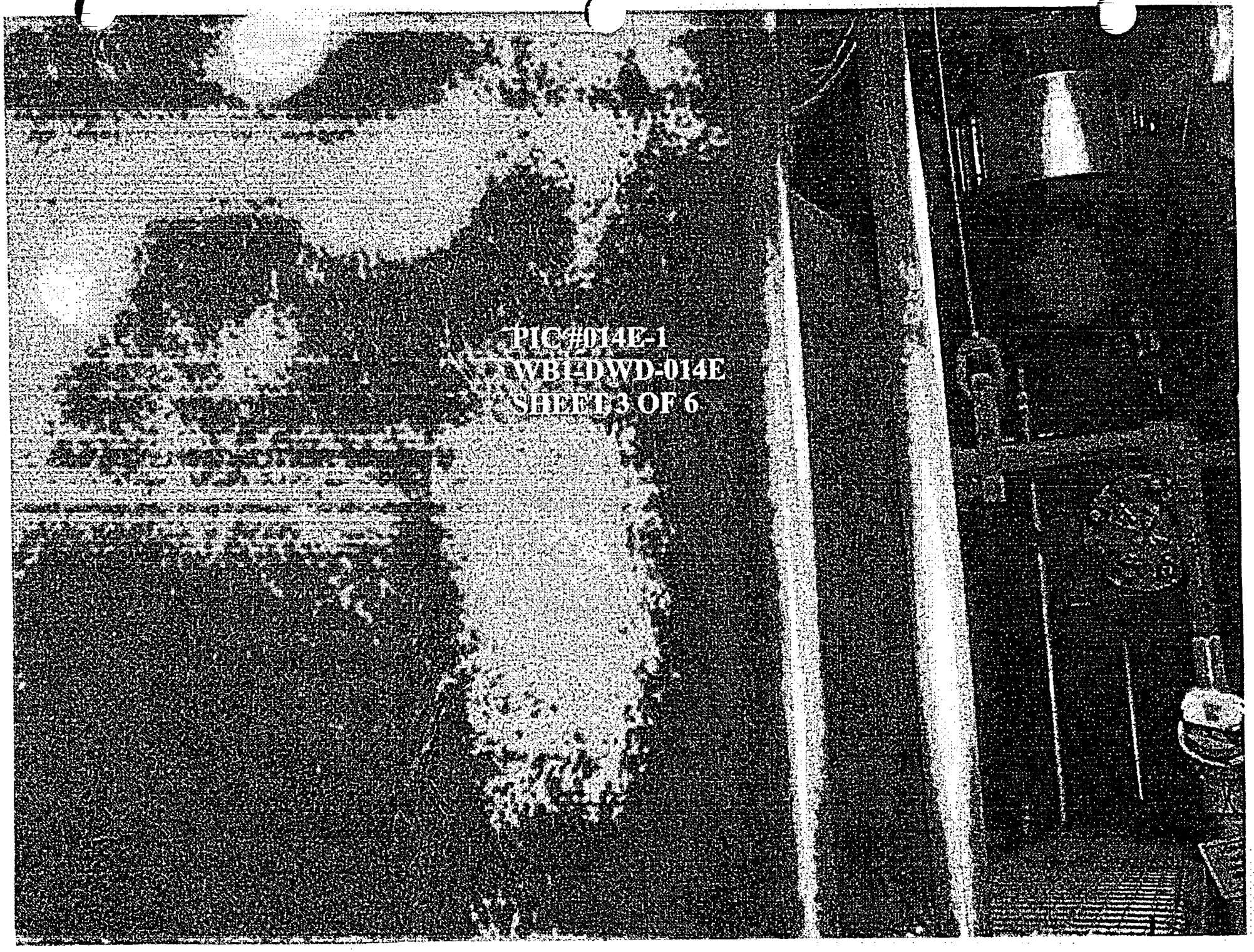
Prepared By: FRANK C YAO Date: 10/15/03

Checked By: MIKE CALDWELL Date: 10/15/03

47W2500-9 & 12
QUAD I & IV
EL 720 TO 737.0

WB1-DWD-014E

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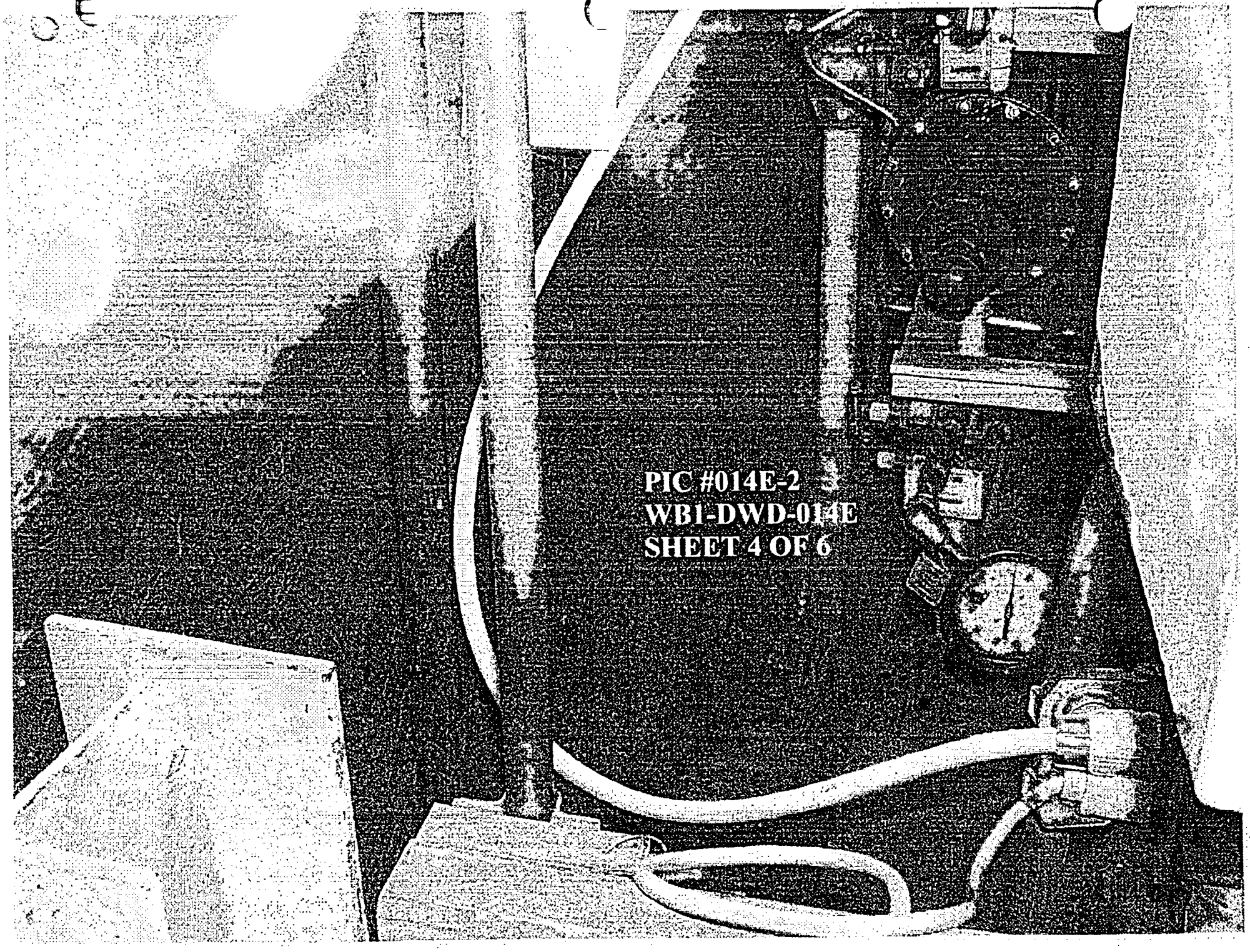
SHEET 3 OF 6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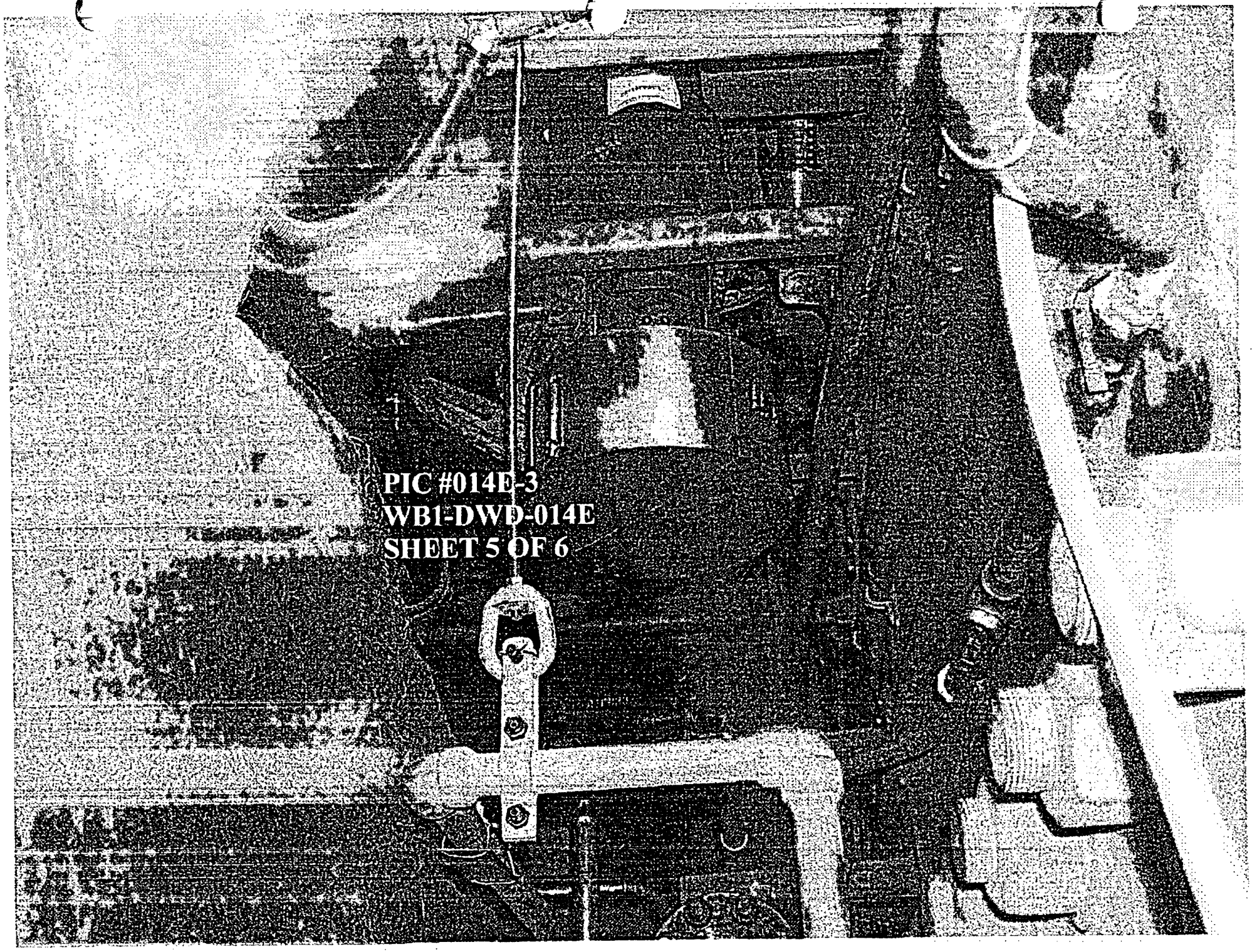
SHEET 4 OF 6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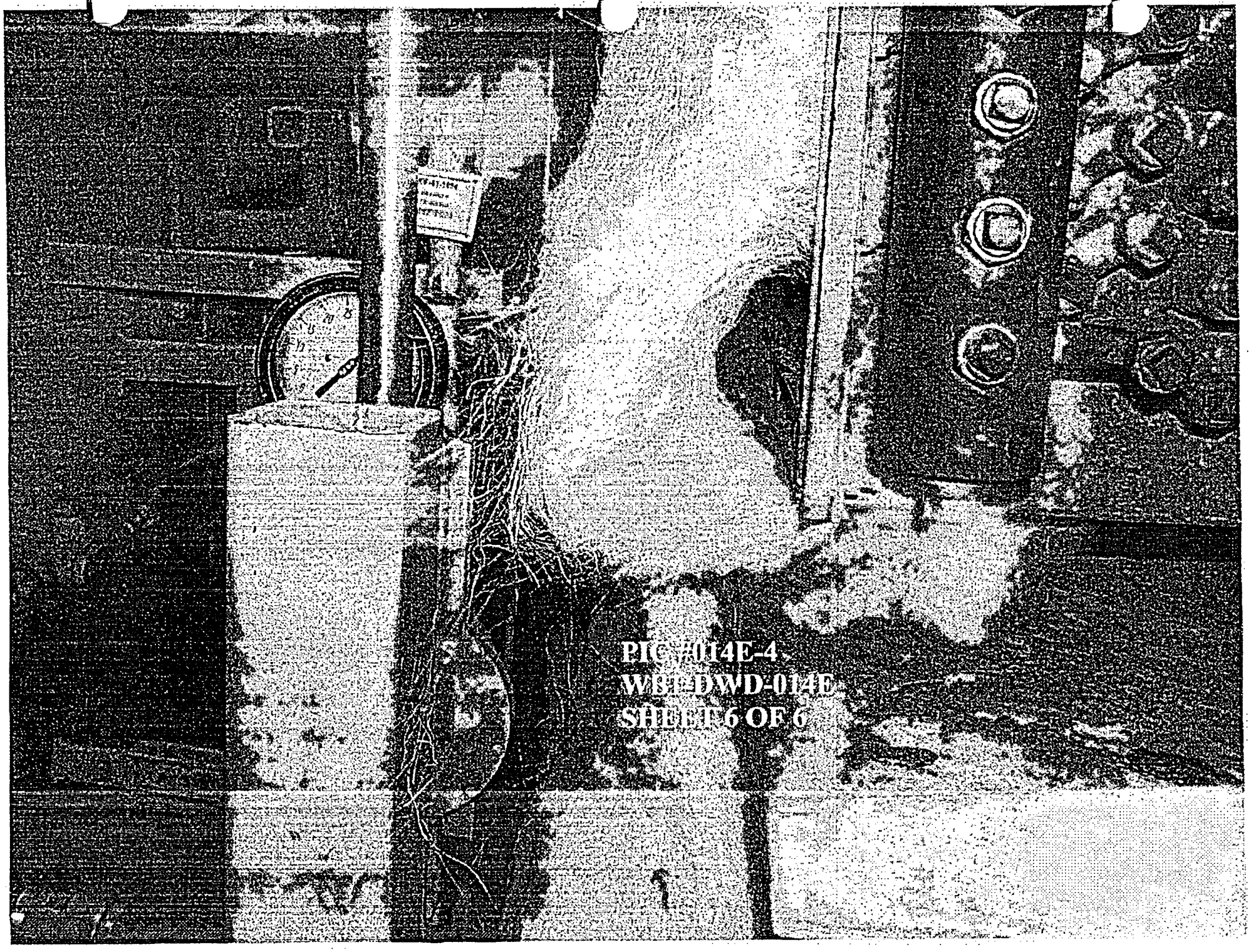
WB1-DWD-014E
SHEET 5 OF 6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WBEDWD-014E
SHEET 6 OF 6

CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-014F SHEET 1 OF 12

DATE:	10/15/2003	AREA:	14 (FAN ROOM 1)	RWP NO.:	8010
		ELEV:	716		

INSPECTORS:	FRANK C YAO, MIKE CALDWELL

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	47W2500-9 & 12	
Tools:	CONTRACT 93NNS-75645C DWG 590955-110C REV. A	
Drawings	RB FAN ROOM NO. 1 AZ 355°	
Flashlights	PICTURE 033D	
Ladders	CONDUIT 7989-1	
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any **undocumented** insulation.
3	Inspect and determine longitudinal **seam location** and **band spacing** if necessary.
4	Document any **irregularities** of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any **undocumented fibrous insulation (e.g., within rupture restraints)**.
6	Inspect and mark up cable tray drawings to show location of **fire barriers** (vertical and horizontal).
7	Inspect the area for any **weak components** that could be dislodged by jet and that could be transported to sump.
8	Inspect any **equipment insulation** in the area.
9	Inspect and document the general **cleanliness** of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	MIN-K INSULATION

Prepared By: FRANK C YAO Date: 10/15/03

Checked By: MIKE CALDWELL Date: 10/15/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-014F SHEET 2 OF 12

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
N/A	FAN ROOM 1	716	14	MIN-K-WR	NA	SEE CALC	MIN-K-WR	SEE CALC	0.244	NA	NA	NA	ENCAPSULATED IN STAINLESS

Pipe size	0.125	0.250	0.375	0.500	0.750	1.000	1.250	1.500	2.000	2.500	3.000
Pipe OD in	0.405	0.540	0.675	0.840	1.050	1.315	1.660	1.900	2.375	2.875	3.500

Picture 014F-6-Conduit Insulation 7989-1 AZ 355

PipeOD	A aq in	Insul OD	A Insul	Net Area	Insul. Lgth	Vol. Insul	In cu ft.
1.9	2.835	4	12.566	9.731	24	233.547	0.135

Insulation 7989-2-AZ 4 degree Elev. 740'

PipeOD	A aq in	Insul OD	A Insul	Net Area	Insul. Lgth	Vol. Insul	In cu ft.
1.05	0.866	3.69	10.694	9.828	13	127.766	0.074

Insulation 1561-1-AZ 4 degree Elev. 740'

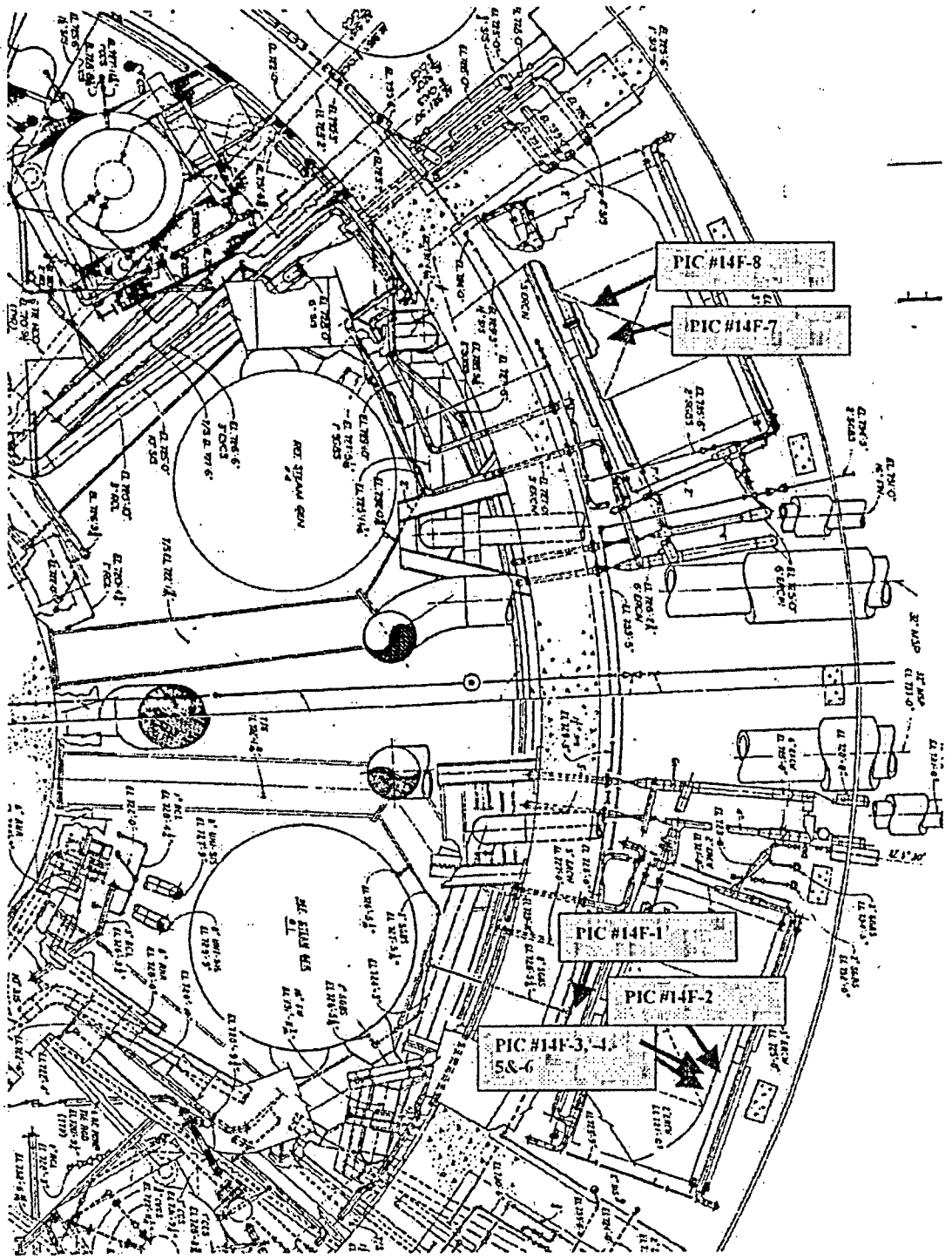
PipeOD	A aq in	Insul OD	A Insul	Net Area	Insul. Lgth	Vol. Insul	In cu ft.
1.05	0.866	3.12	7.645	6.779	9	61.0154	0.035

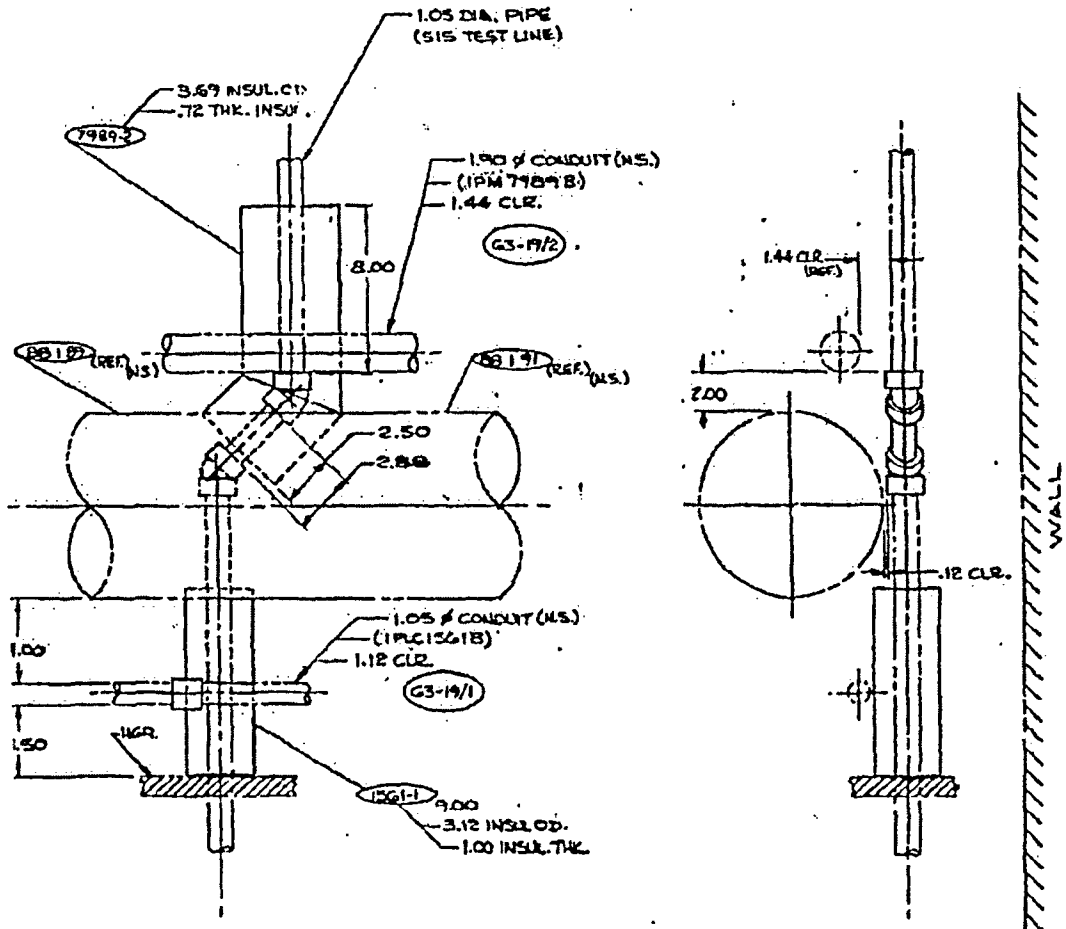
Total =	0.244

47W2500-9 & 12
QUAD I & IV
EL 720 TO 737.0

WB1-DWD-014F

SHEET 4 OF 12

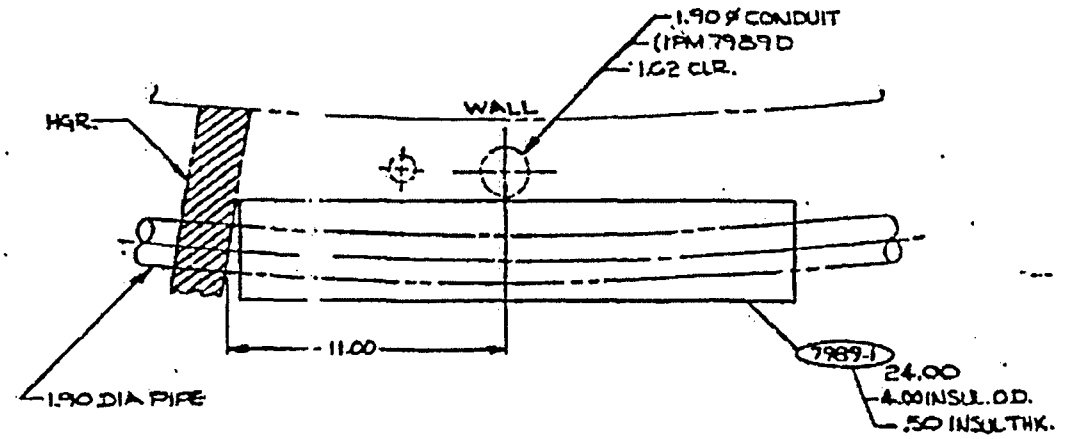




ELEVATION VIEW

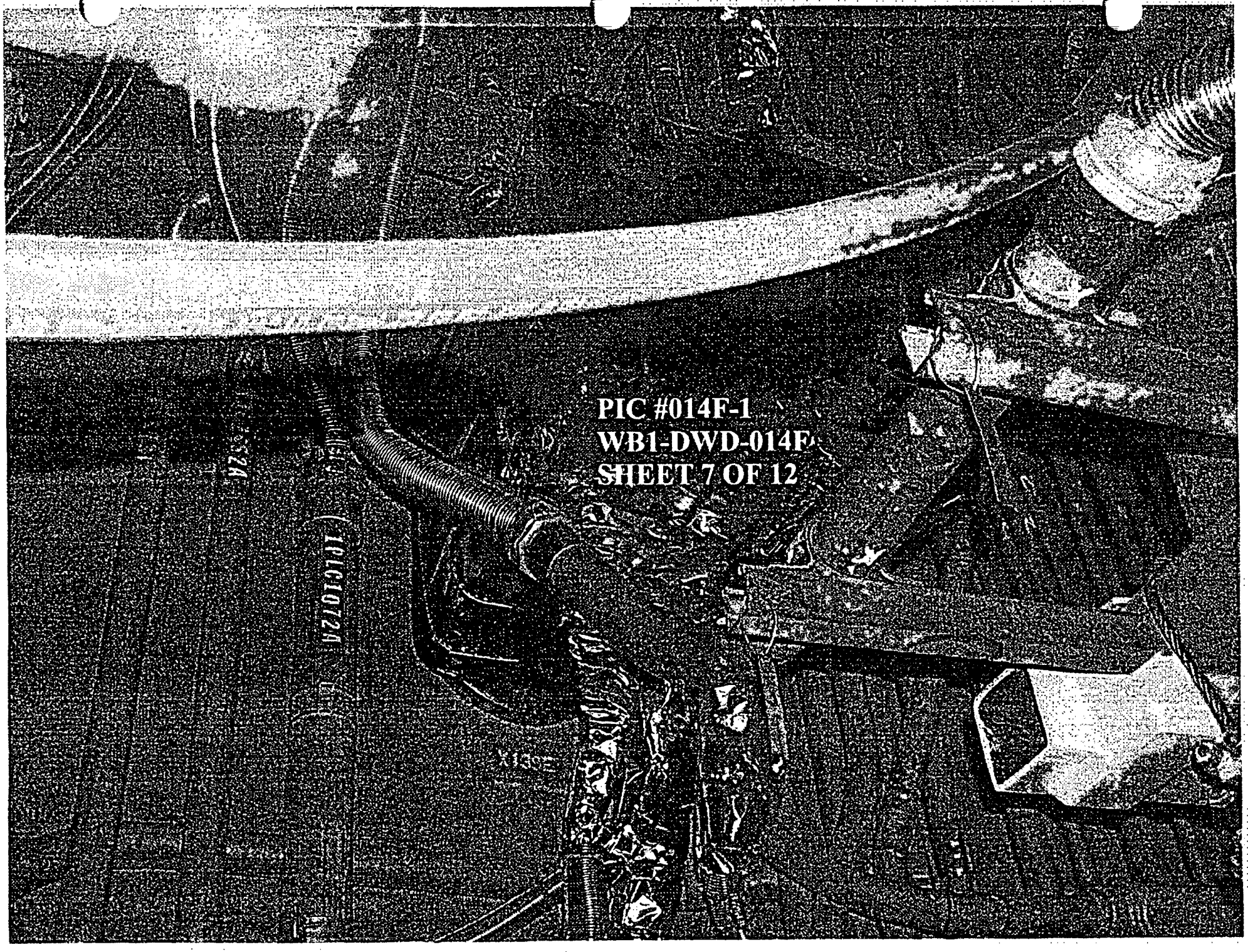
R.B. FAN ROOM #1 AZ. 4° ELEV. 740'

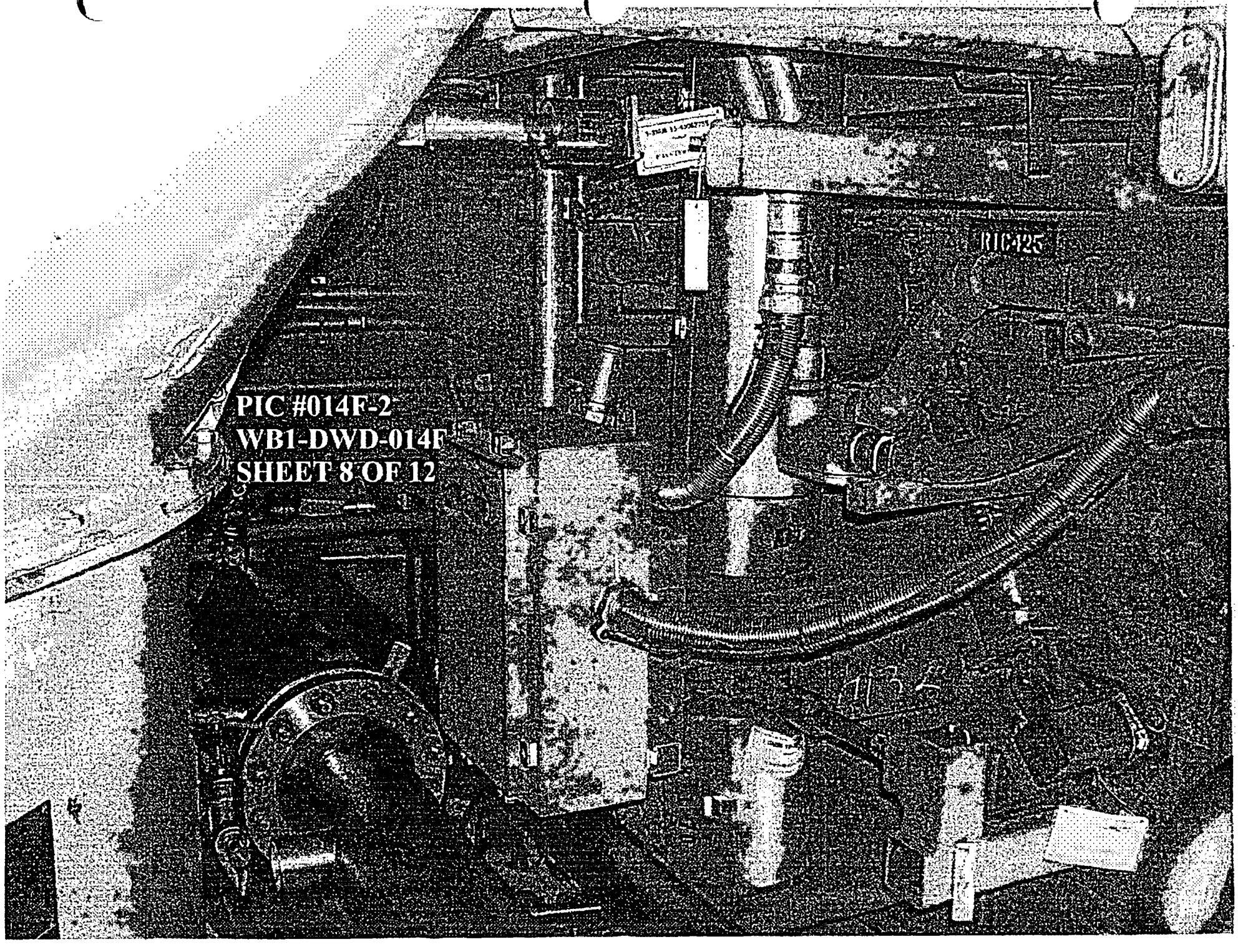
4



PLAN VIEW

R.B. FAN ROOM #1 AZ. 355° ELEV. 789'


PIC #014F-1
WB1-DWD-014F
SHEET 7 OF 12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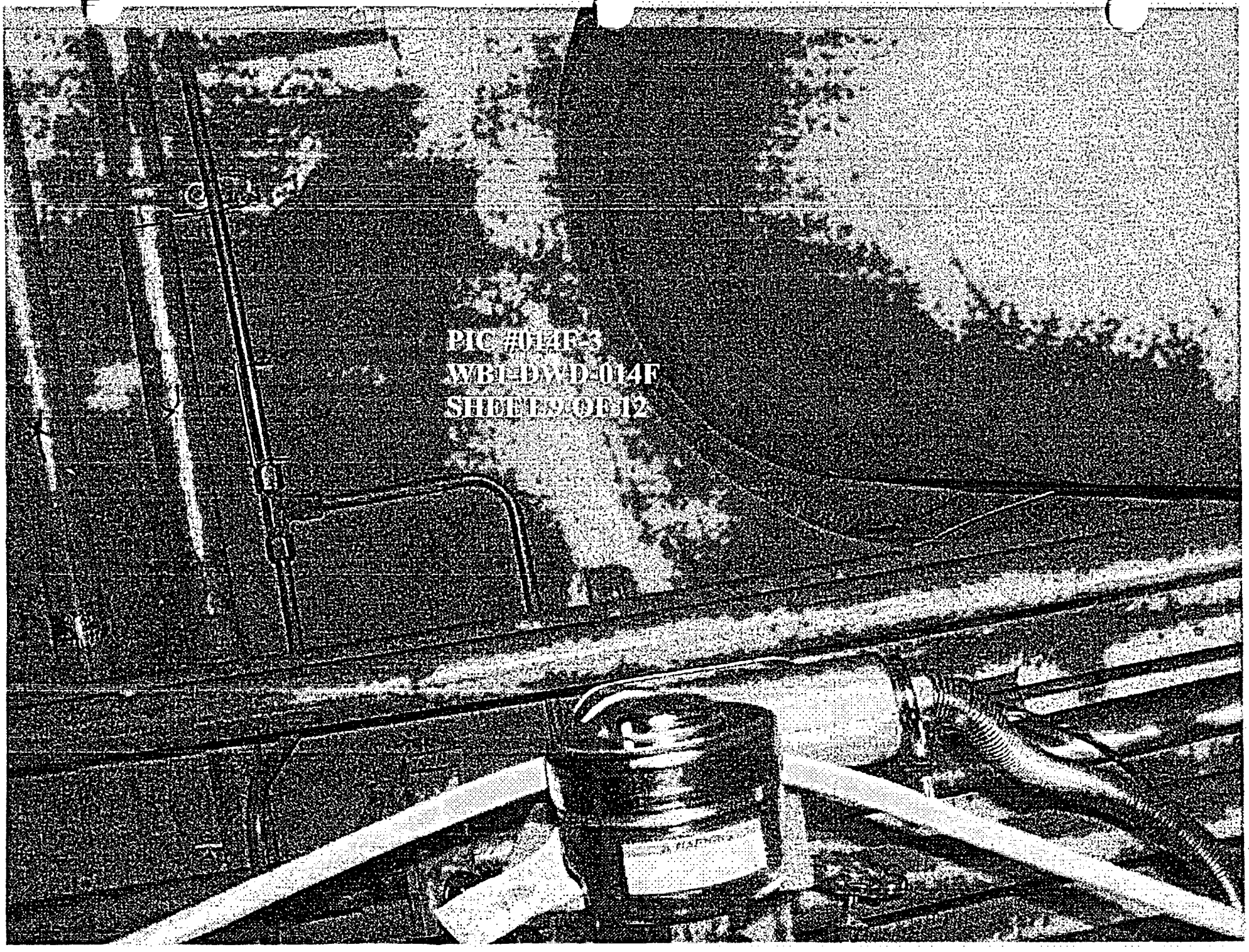
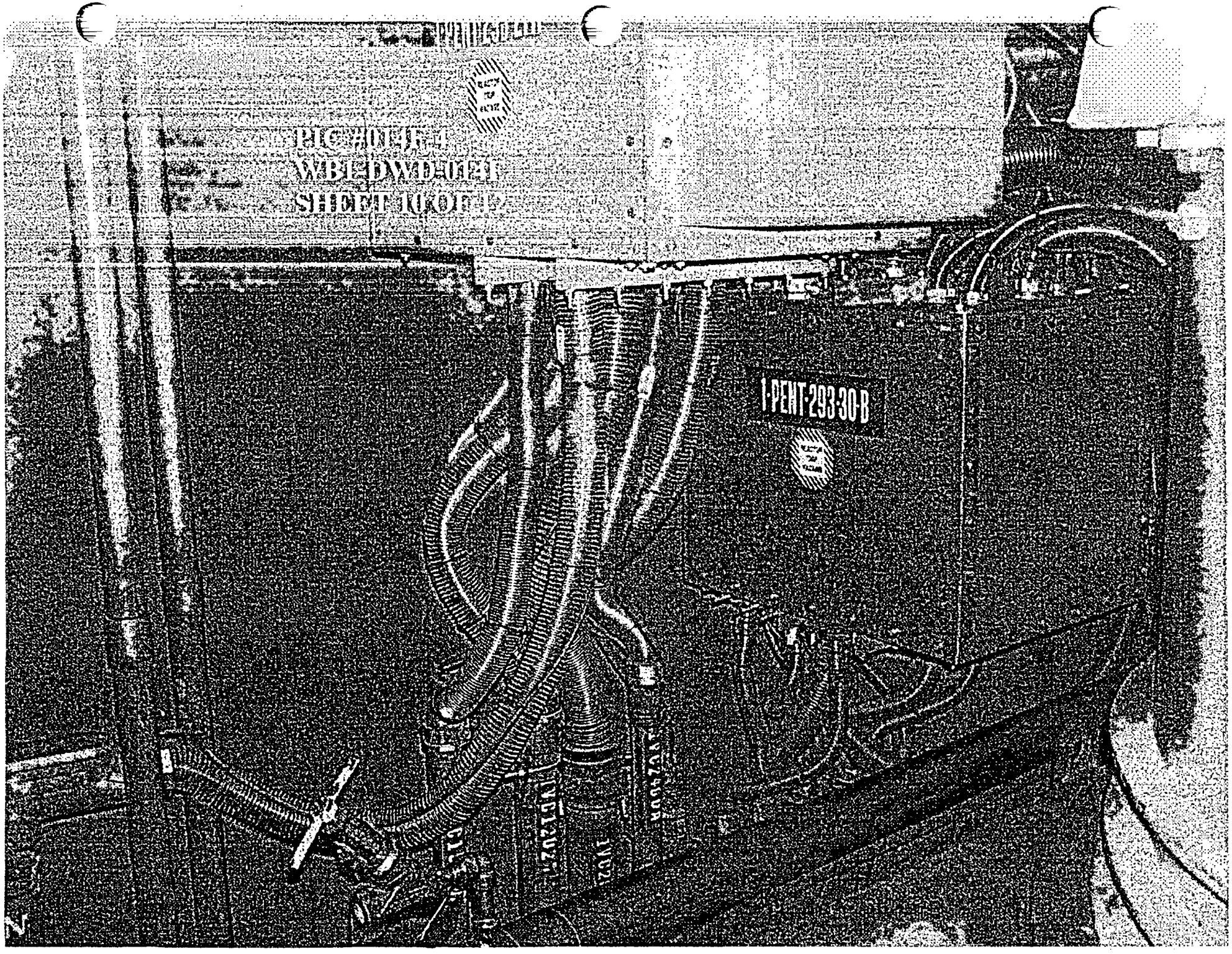
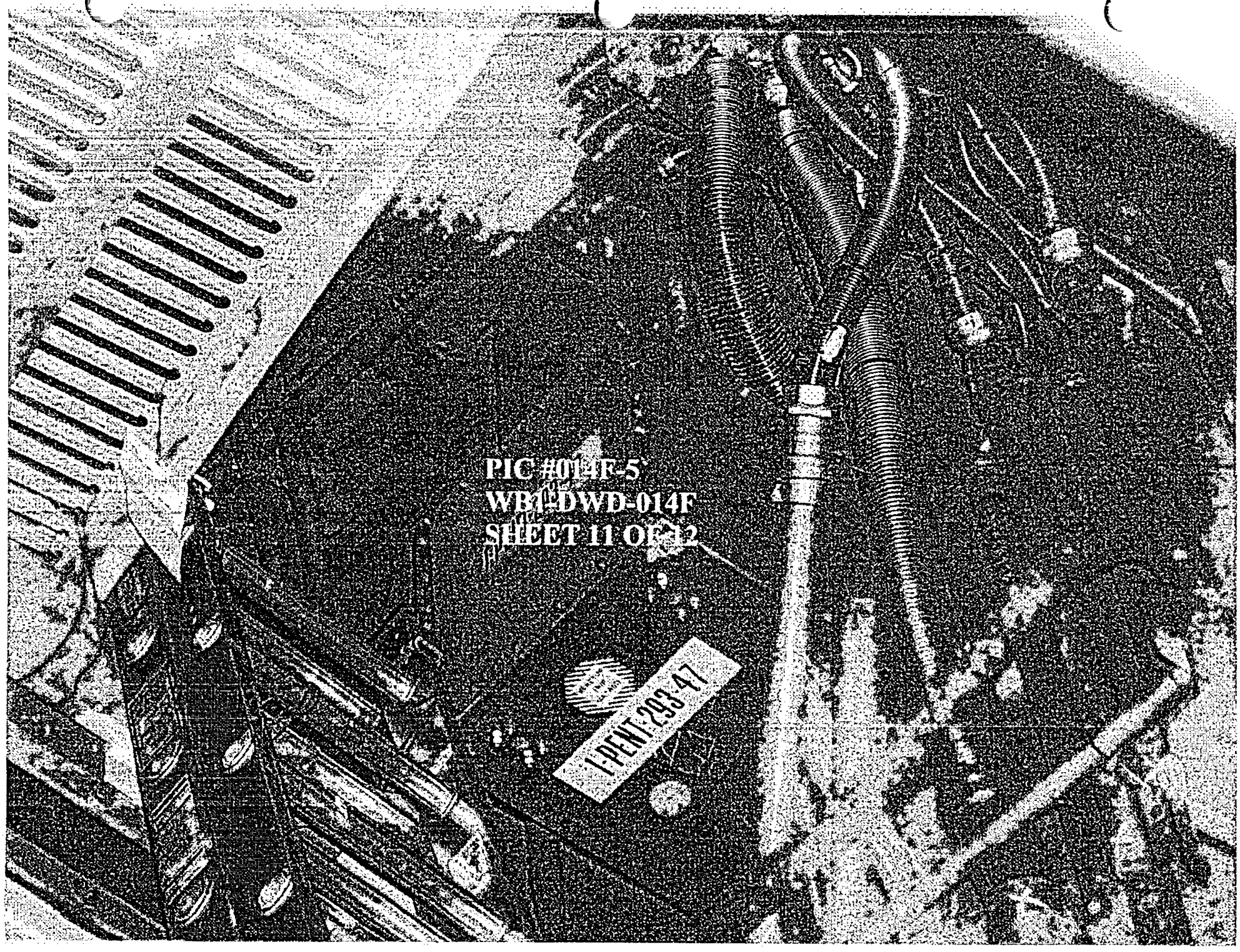
WB1-DWD-014F
SHEET 8 OF 12
RIC-125


PIC #014F-3
WBFD WD-014F
SHEET 9 OF 12


BIG HOLE 4
WELDWD-0141
SHEET 10 OF 15
I-PENT-293-30-B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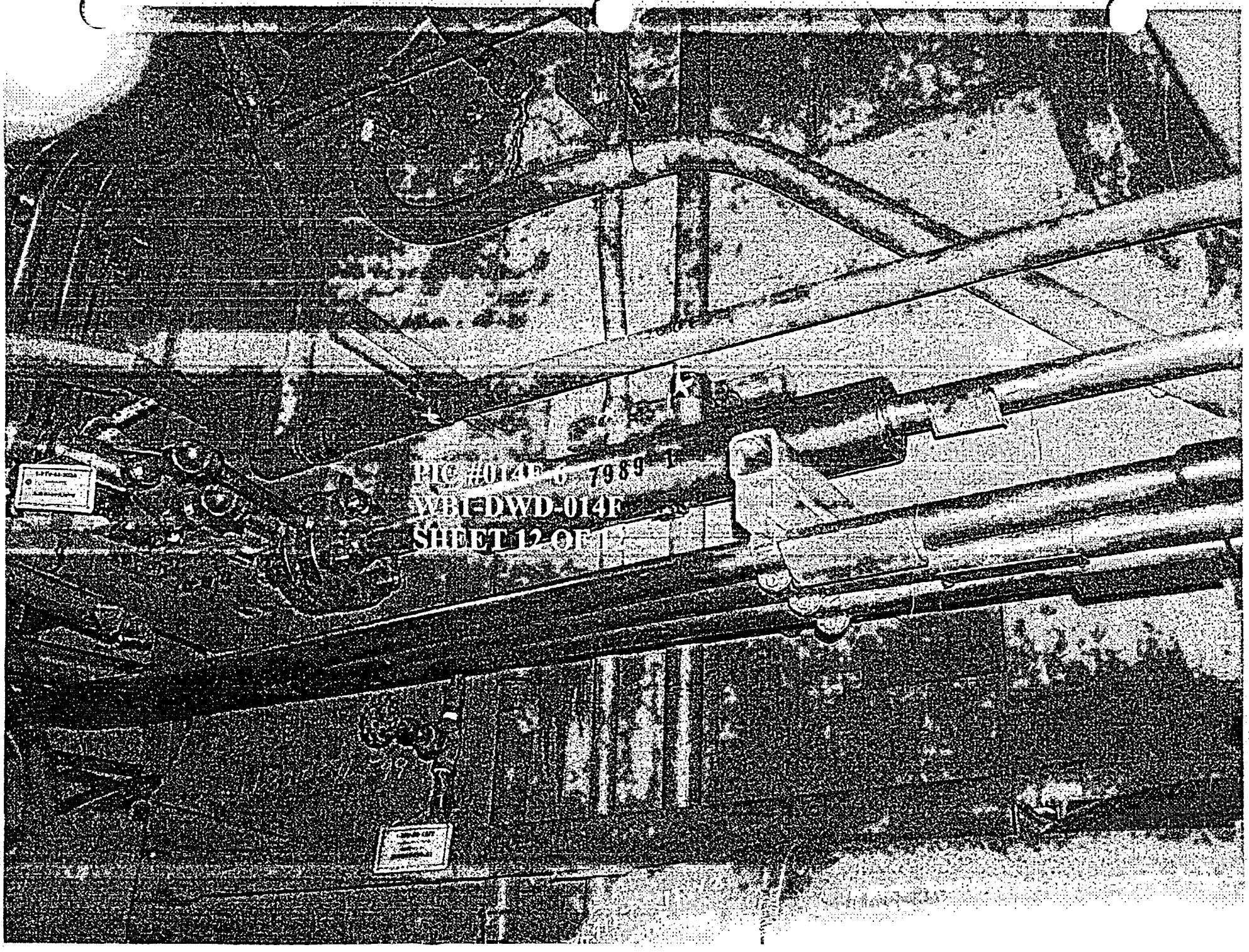
SHEET 11 OF 12
1-PENT-293-47


PIC #014F-6-7989-1
WB1-DWD-014F
SHEET 12 OF 12

CONTAINMENT DEBRIS WALKDOWN PACKAGE WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-014G SHEET 1 OF 4

DATE:	11/20/2003	AREA:	FAN ROOM 1	RWP NO.:	8010
		ELEV:	716'		

INSPECTORS:	C. G. WALLS, FRANK C. YAO

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	590955-088C, SH. 1, REV. B *	
Tools:	590955-088C, SH. 18, REV. B *	
Drawings	590955-088C, SH. 19, REV. B *	
Flashlights	1-47W400-211A, REV. 0	
Ladders		
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	1"/2"/3"/4" STEAM GENERATOR BLOWDOWN LINE (LOOP 4)
	CONTINUED ON WALKDOWN PACKAGE NO. WB1-DWD-009K.
	* TVA CONTRACT NO. 93NNS-75645C

Prepared By: C. G. WALLS Date: 11/20/03

Checked By: FRNAK C YAO Date: 11/20/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-014G SHEET 2 OF 4

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
0600200-07-04	FAN ROOM 1	716'	14	STEAM GENERATOR BLOWDOWN	4.50	23.92	RMI	2.25	7.93	S.S.	STD	N/A	9" OD INSULATION
0600200-07-04	FAN ROOM 1	716'	14	STEAM GENERATOR BLOWDOWN	4.50	1.34	RMI	4.75	1.28	S.S.	STD	N/A	14" OD INSULATION (VALVE)
0600200-07-04	FAN ROOM 1	716'	14	STEAM GENERATOR BLOWDOWN	11.75	1.59	RMI	2.125	1.02	S.S.	STD	N/A	16" OD INSULATION (FLANGE)
0600200-07-04	FAN ROOM 1	716'	14	STEAM GENERATOR BLOWDOWN	4.50	1.55	RMI	4.25	1.26	S.S.	STD	N/A	13" OD INSULATION (VALVE)
0600200-07-04	FAN ROOM 1	716'	14	STEAM GENERATOR BLOWDOWN	2.38	1.96	RMI	3.31	0.81	S.S.	STD	N/A	9" OD INSULATION (VALVE)
0600200-07-04	FAN ROOM 1	716'	14	STEAM GENERATOR BLOWDOWN	2.38	0.40	RMI	12.5	1.62	S.S.	STD	N/A	7" OD INSULATION
0600200-07-04	FAN ROOM 1	716'	14	STEAM GENERATOR BLOWDOWN	8.62	0.64	RMI	2.19	0.33	S.S.	STD	N/A	13" OD INSULATION (FLANGE)
0600200-07-04	FAN ROOM 1	716'	14	STEAM GENERATOR BLOWDOWN	4.50	2.85	MIN-K	1.5	0.56	S.S.	STD	N/A	7.5" OD INSULATION

APPROXIMATE INSULATION LENGTH:

START FROM WALL SLEEVE:

AT 9" OD INSULATION (4" PIPING): LENGTH = 9.09 + 22.56 + 32.5 + 3.56 + 31.37 + 22.75 + 9.62 + 31.25 + 4.5 + 4[π(6)(90°/180°)] + 4.12 + 15.88 + 5.25 + 35.38 + 21.23 + = 287(1/12) = 23.92FT

AT 14" OD INSULATION (4" PIPING/VALVES): LENGTH = 16(1/12) = 1.34FT

AT 16" OD INSULATION (11.75" OD FLANGES): LENGTH = 2(9.5)(1/12) = 1.59FT

AT 13" OD INSULATION (4" PIPING/VALVE): LENGTH = 18.5(1/12) = 1.55FT

AT 9" OD INSULATION (2" PIPING/VALVES): LENGHT = 12.75 + 10.75 = 23.5(1/12) = 1.96FT

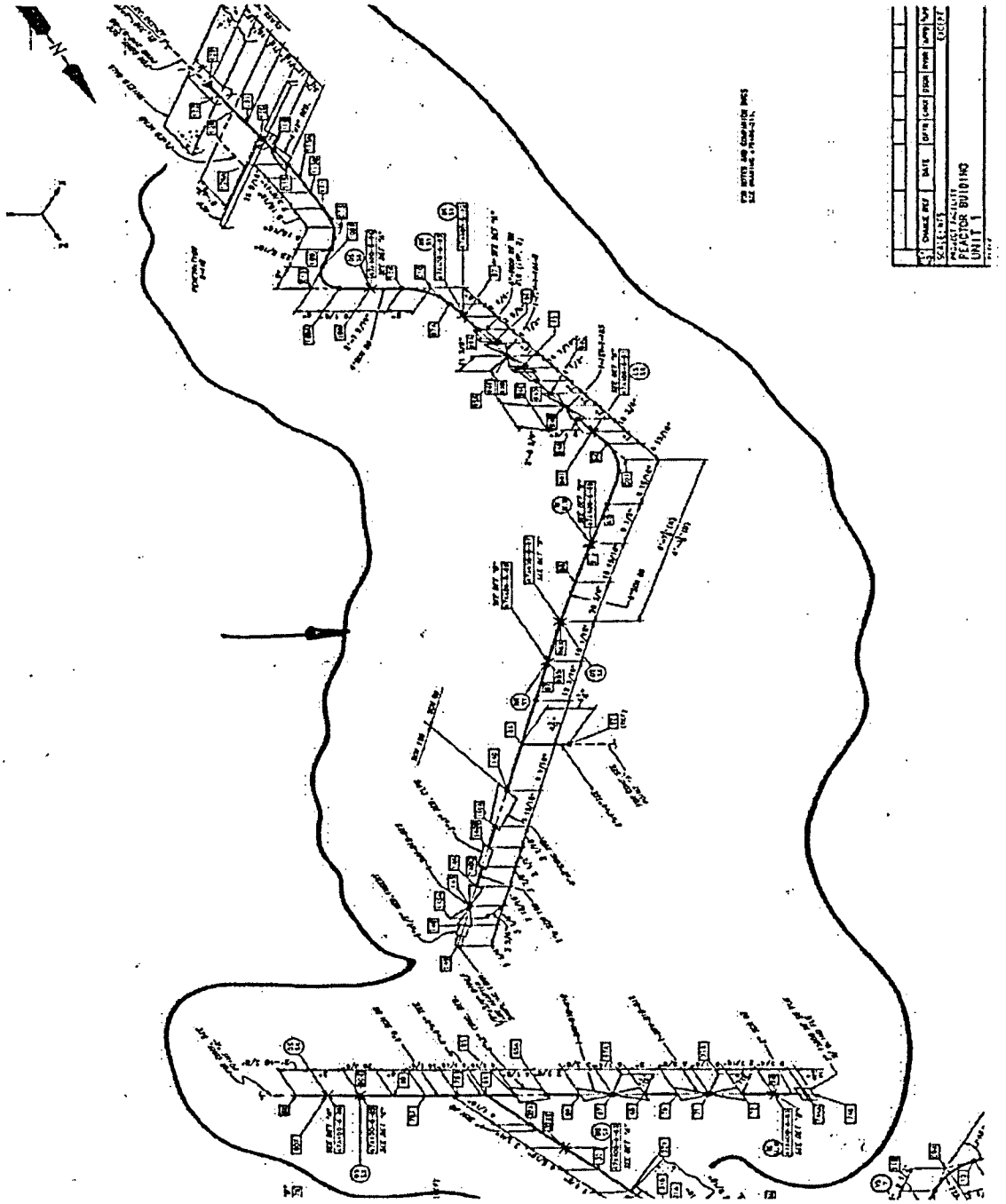
AT 7" OD INSULATION (2" PIPING): LENGTH = 4.75(1/12) = 0.40FT

AT 13" OD INSULATION (8.62" OD FLANGE): LENGTH = 7.62(1/12) = 0.64FT

AT 7.5" OD MIN-K INSULATION (4" PIPING): LENGTH = 34.12(1/12) = 2.85FT

CONTAINMENT DEBRIS WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-014G **SHEET 4 OF 4**
EXCERPT FROM DRAWING 1-47W400-211A



CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-014H SHEET 1 OF 10

DATE:	11/12/2003	AREA:	FAN ROOM 1	RWP NO.:	8010
		ELEV:	716		

INSPECTORS:	FRANK C YAO, MIKE CALDWELL

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	47W2500-5	45N862-10
Tools:	47W2500-8	45N862-12
Drawings		DCN 11727-D
Flashlights		1-FOR-304-1
Ladders		
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	CONDUIT 1PM8062E
	1-PENT-293-19-E

Prepared By: FRANK C YAO Date: 11/12/03

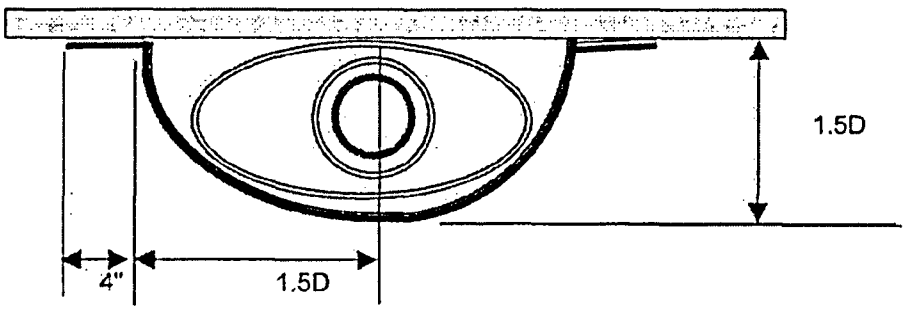
Checked By: MIKE CALDWELL Date: 11/12/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-014H SHEET 2 OF 10

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
N/A	FAN ROOM 1	716	14	CONDUIT INSULATION 3M RADIANT	1.315	40.00	3M20C	SEE CALC	1.342	NA	NA	NA	SEE CALCULATION
N/A	FAN ROOM 1	716	14	SUPPORT	NA	NA	3M20C	SEE CALC	0.640	NA	NA	NA	SEE CALCULATION
N/A	FAN ROOM 1	716	14	BOX	NA	NA	3M20C	SEE CALC	2.051	NA	NA	NA	SEE CALCULATION

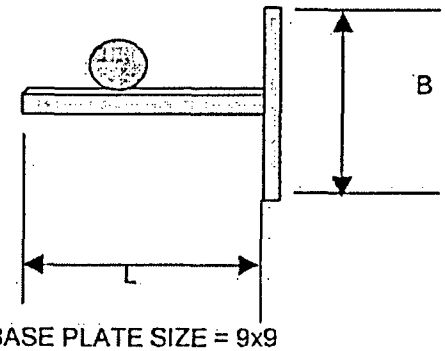
AREA 14 3M-M20C RADIANT SHIELD CALCULATION
1" DIA. CONDUIT (OUTSIDE DIA = 1.90")
3 LAYERS 3M-M20C FOR CONDUIT PER NOTE 1A DRAWING 1-47W243-6
DETAIL C-8 AND NOTE 6 DRAWING 1-47W243-8 SPECIFIES 3 LAYERS WRAP.



D=DIAMETER OF CONDUIT IN IN"
FIRST LAYER TIGHTLY AROUND CONDUIT
SECOND LAYER IS 1.5D DIAMTER CIRCLEX1.2
THIRD LAYER IS 1.5D RADIUS HALF CIRCLE + 8"

1" LENGTH = 20+20 = 40'			
1" DIA. CONDUIT PER LIN FT	D(IN)	PERIMTER (IN)	A(SQ IN) PER LIN FT
1ST LAYER	1.315	4.13	49.57
2ND LAYER	1.9725	7.44	89.23
3RD LAYER	3.945	14.20	170.36
TOTAL SQ IN PER LIN FT			309.17
CU FT OF 3M-M20C (3/16" THICK)			0.0335
CONDUIT LENGTH IN THIS AREA =			40
TOTAL CU FT OF INSULATION =			1.342

AREA 14 3M-M20C RADIANT SHIELD CALCULATION



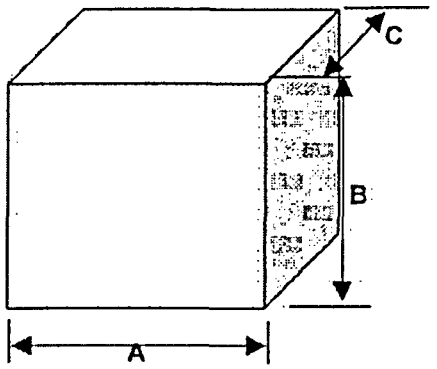
ASSUME A=12" WITH 2x2 SQ TUBE, BASE PLATE SIZE = 9x9
TWO LAYERS OF 3M FIRE BARRIER M20C FOR SUPPORT
COVER BASE PLATE 6" ALL AROUND.

COVERED AREA (ONE LAYER)

	B+6+6	B+6+6	A (IN)	A (SQ FT)
BASE PLATE =	21	21	441	3.06
	L	4xWIDTH		
CANTILEVER MEM =	12	8	96	0.67
SUB TOTAL				3.73
PLUS ENDS ETC 10%				0.373
ONE LAYER TOTAL=				4.10
TWO LAYERS = 2XTOTAL =				8.20
EACH SUPPORT M20C FOR 3/16" THICK IN CU FT =				0.128

ASSUME SUPPORT SPACING IS 10 FT CONDUIT
NUMBER OF SUPPORTS FOR 1" DIA. CONDUIT=4/10 + 1= 5
NUMBER OF SUPPORTS TOTAL = 5
TOTAL CU FT OF 3M-M20C FOR SUPPORTS = 0.64

AREA 14 3M-M20C RADIANT SHIELD CALCULATION



SURFACE AREA CALCULATION OF JUNCTION BOX

FOR ONE LAYER:

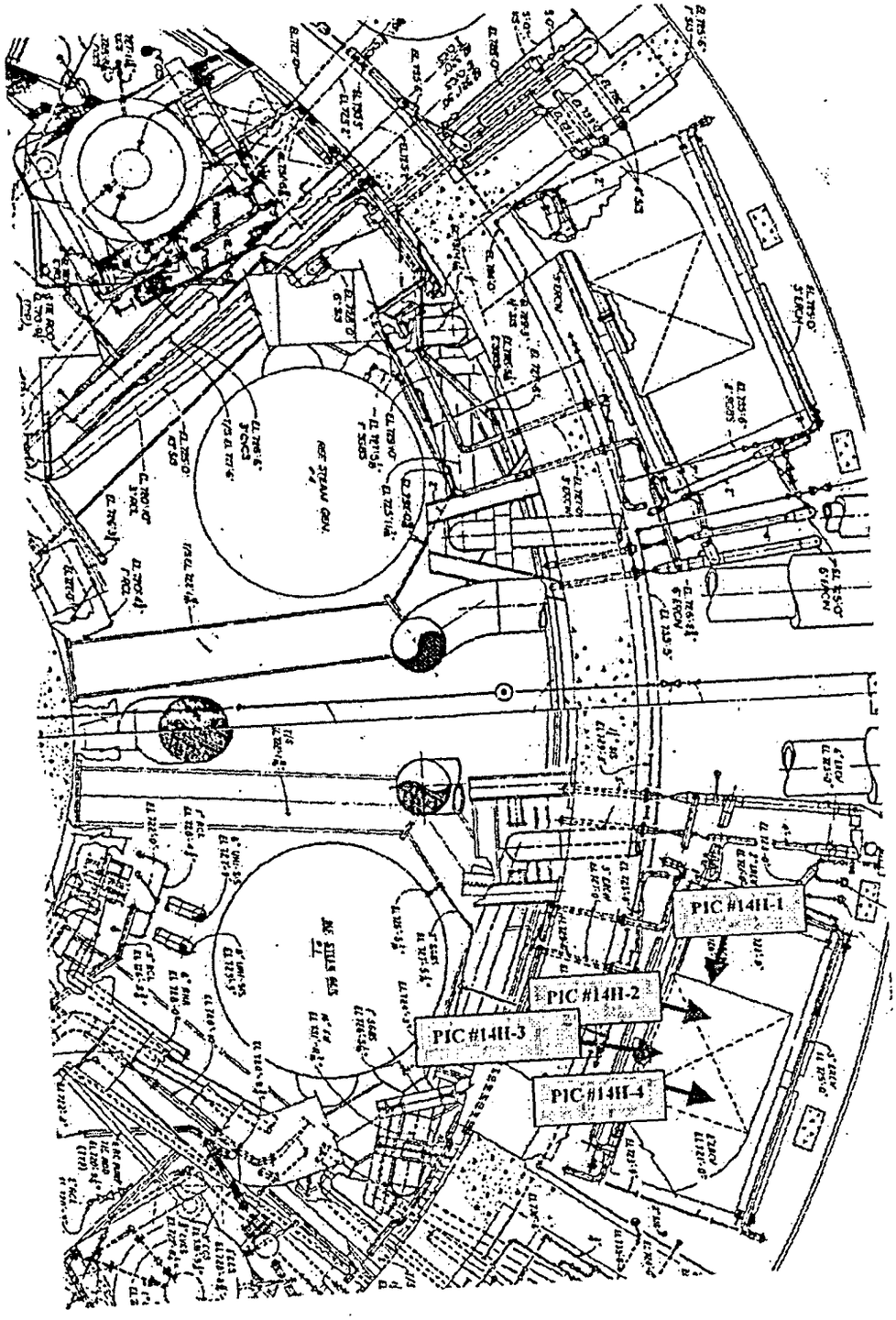
A (IN)	B(IN)	C(IN)	+AxC+BxC)	SQ FT	ADD 20% WRAP
36	30	24	5328	37	44.4

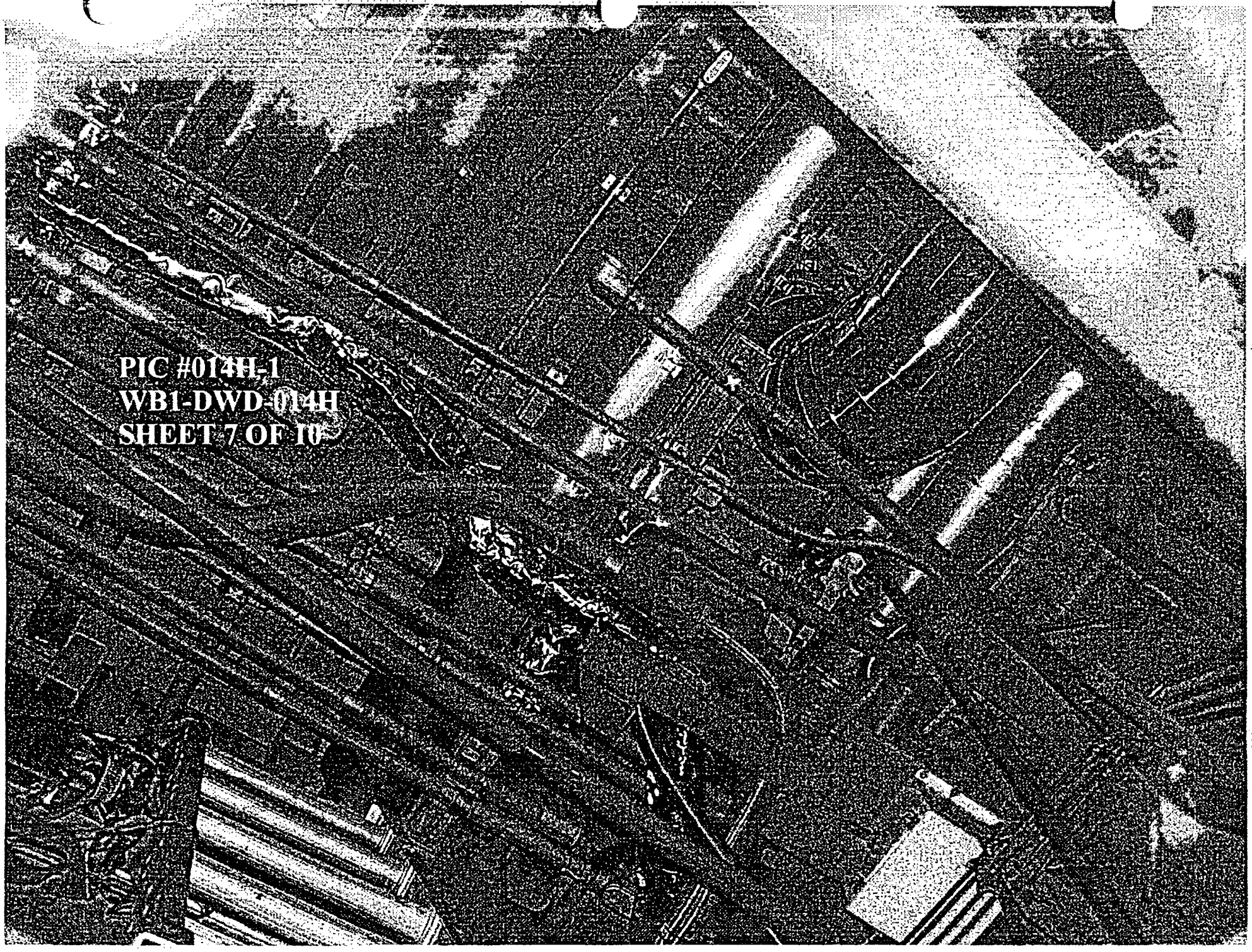
PER NOTE 1A OF DRAWING 1-47W243-6, 3 LAYERS OF M20C SHALL BE PROVIDED.

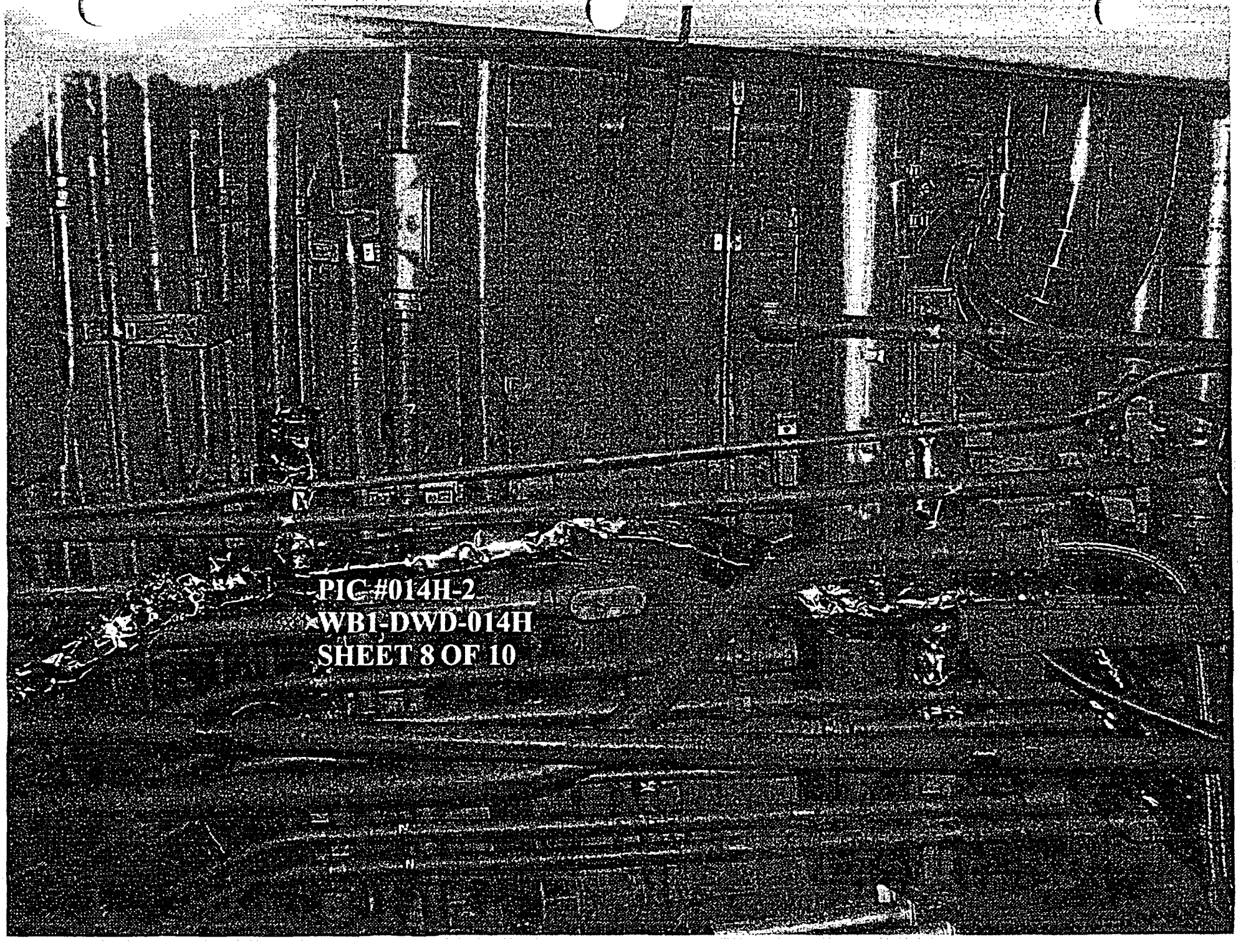
TOTAL AREA FOR 3 LAYERS	SQ FT	THICKNESS(IN)	TOTAL VOL (CU FT)
	133.2	0.1875	2.081

47W2500-9 & 12
QUAD I & IV
EL 720 TO 737.0

WB1-DWD-014H




PIC #014H-1
WB1-DWD-014H
SHEET 7 OF 10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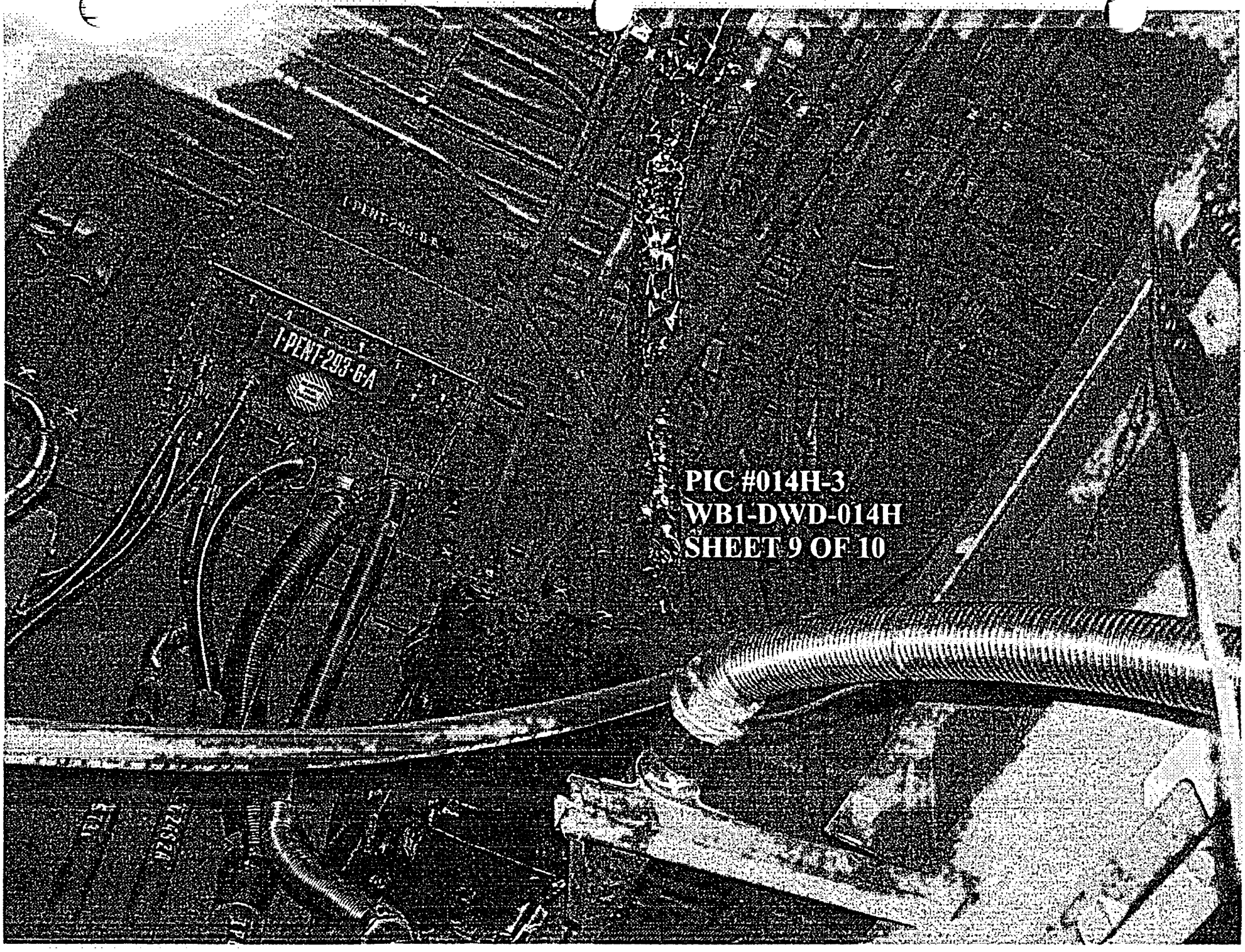
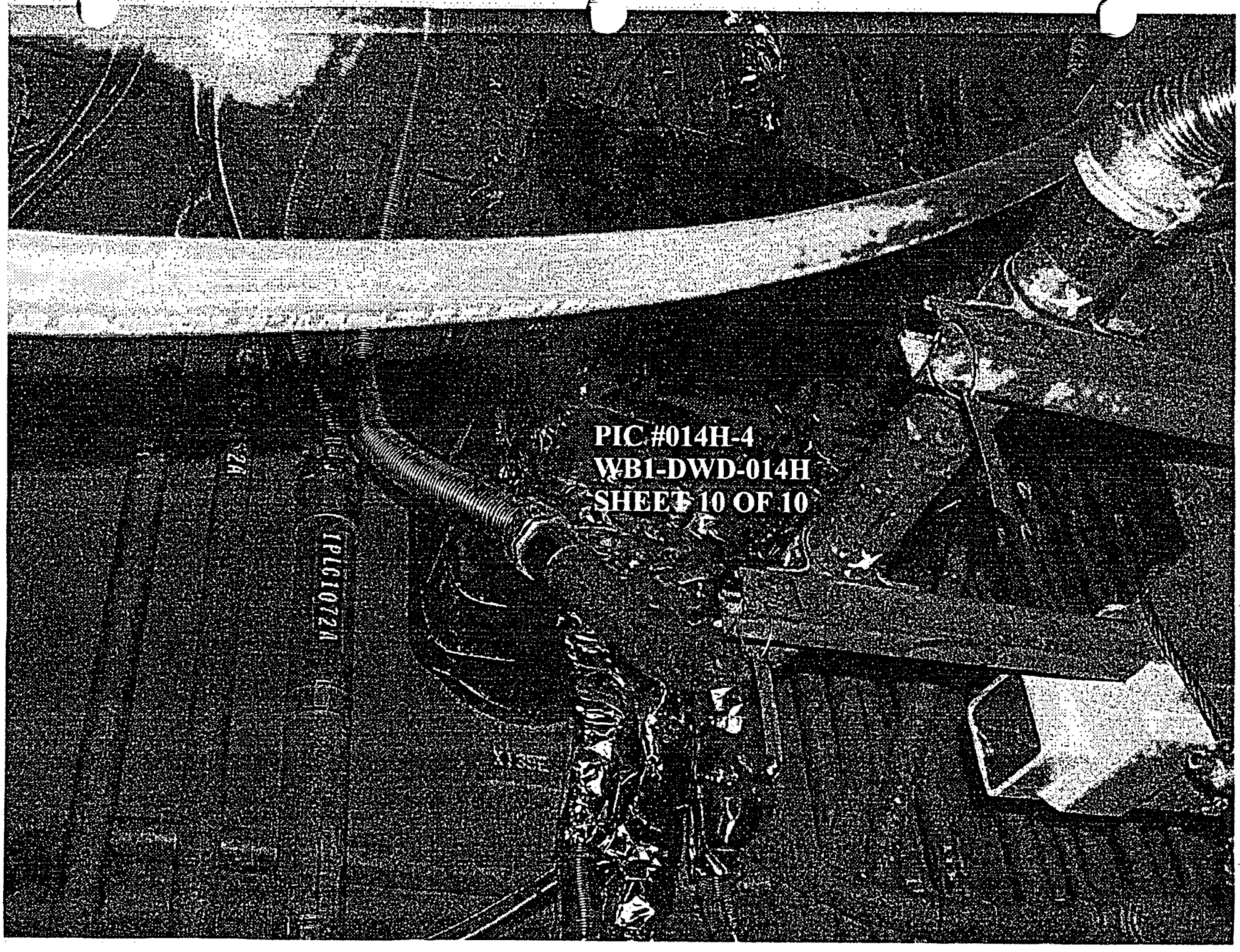
WB1-DWD-014H
SHEET 8 OF 10


1-PENT-293-6A
PIC #014H-3
WB1-DWD-014H
SHEET 9 OF 10


PIC #014H-4
WB1-DWD-014H
SHEET 10 OF 10
24
IPLC1012A

CONTAINMENT DEBRIS WALKDOWN PACKAGE WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-014J SHEET 1 OF 4

DATE:	10/31/2003	AREA:	FAN ROOM 1	RWP NO.:	8010
		ELEV:	716'		

INSPECTORS:	C. G. WALLS, FRANK C. YAO

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	590955-048C, SH. 1, REV. C *	
Tools:	590955-048C, SH. 2, REV. C *	
Drawings	590955-048C, SH. 3, REV. D *	
Flashlights	47W435-260, REV. F	
Ladders	1-47W435-260B	
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify **installation of insulation** as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any **undocumented** insulation.
3	Inspect and determine longitudinal **seam location** and **band spacing** if necessary.
4	Document any **irregularities** of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any **undocumented fibrous insulation (e.g., within rupture restraints)**.
6	Inspect and mark up cable tray drawings to show location of **fire barriers** (vertical and horizontal).
7	Inspect the area for any **weak components** that could be dislodged by jet and that could be transported to sump.
8	Inspect any **equipment insulation** in the area.
9	Inspect and document the general **cleanliness** of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	6" LOWHEAD SAFETY INJECTION
	CONTINUED ON WALKDOWN PACKAGE NO's WB1-DWD-016D & -019F.
	* TVA CONTRACT NO. 93NNS-75645C

Prepared By: C. G. WALLS Date: 10/31/03

Checked By: FRANK C. YAO Date: 10/31/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-014J SHEET 2 OF 4

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
0600200-09-01	FAN ROOM 1	716'	14	LOWHEAD SAFETY INJECTION	6.63	54.00	RMI	2.6875	29.48	S.S.	STD	N/A	12" OD INSULATION
0600200-09-01	FAN ROOM 1	716'	14	LOWHEAD SAFETY INJECTION	1.05	0.43	RMI	0.975	0.02	S.S.	STD	N/A	3" OD INSULATION
0600200-09-01	FAN ROOM 1	716'	14	LOWHEAD SAFETY INJECTION	1.05	0.34	RMI	1.475	0.03	S.S.	STD	N/A	4" OD INSULATION
0600200-09-01	FAN ROOM 1	716'	14	LOWHEAD SAFETY INJECTION	2.38	0.63	RMI	0.81	0.04	S.S.	STD	N/A	4" OD INSULATION

APPROXIMATE INSULATION LENGTH:

START FROM ACCUMULATOR ROOM I:

AT 12" OD INSULATION: LENGTH = 114.81 + π(9)(90°/180°) + 16 + π(9)(90°/180°) + 347.81

+ π(9)(90°/180°) + 15 + π(9)(90°/180°) + (105 - 8) = 648(1/12) = 54.00FT

AT 1.05" OD LINE:

AT 3" OD INSULATION: LENGTH = 1.75 + 2.5 + 1 = 5.08(1/12) = 0.43FT

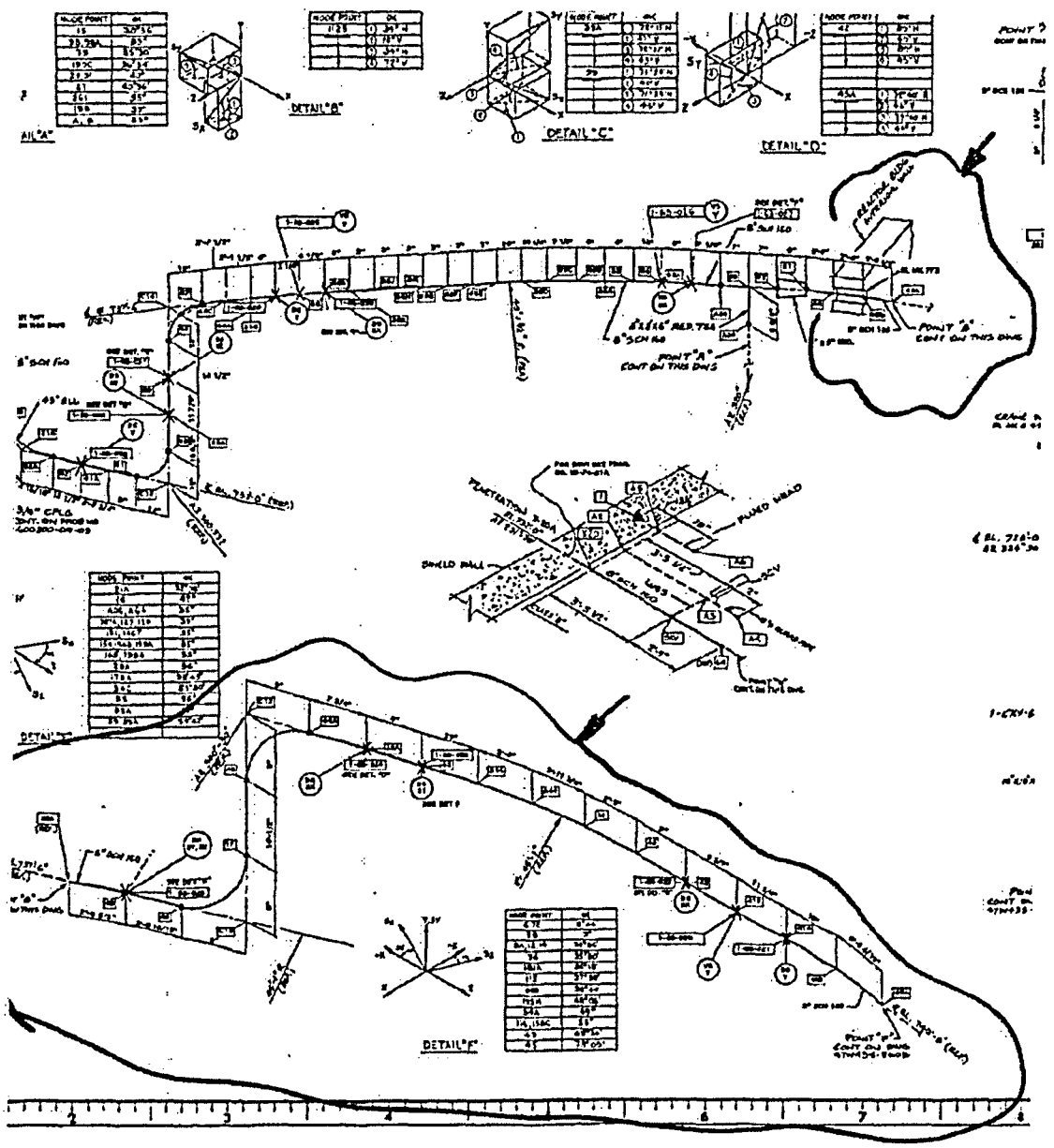
AT 4" OD INSULATION: LENGTH = 4(1/12) = 0.34FT

AT 4" OD INSULATION (2.38" OD TIEBACK SPRT): LENGTH = 7.5(1/12) = 0.63FT

CONTAINMENT DEBRIS WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-014J **SHEET 4 OF 4**

EXCERPT FROM DRAWING 47W435-260



CONTAINMENT DEBRIS WALKDOWN PACKAGE WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-014K SHEET 1 OF 5

DATE:	10/15/2003	AREA:	14	RWP NO.:	8010
		ELEV:	716		

INSPECTORS:	FRANK C YAO, MIKE CALDWELL

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	47W2500-8	
Tools:		
Drawings		
Flashlights		
Ladders		
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	MIN-K-WR, PIPE IDENTIFIER: 1PLC1563B
	APPROXIMATELY AT AZIMUTH ≈ 343°
	THICKNESS OF MIN-K = 0.5"
	ELEVATION 731'
	AT RADIUS OF 44' FORM CENTER OF REACTOR BUILDING
	HORIZONTAL CONDUIT

Prepared By: FRANK C YAO Date: 10/15/03

Checked By: MIKE CALDWELL Date: 10/15/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-014K SHEET 2 OF 5

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
N/A	FAN ROOM 1	716	14	MIN-K-WR	NA	SEE CALC	MIN-K-WR	0.500	0.016	NA	NA	NA	ENCAPSULATED IN STAINLESS FOIL

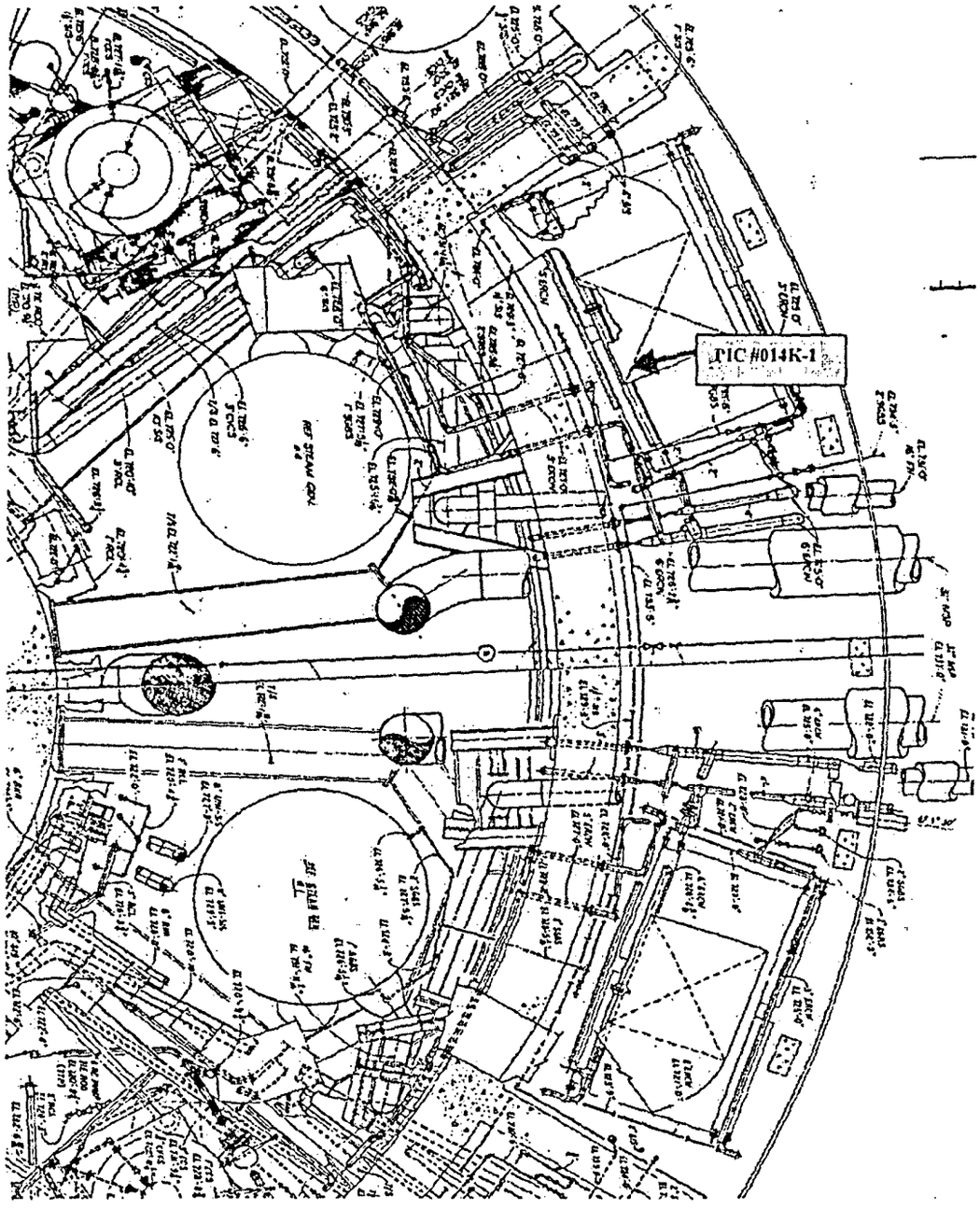
INSULATION CALCULATION

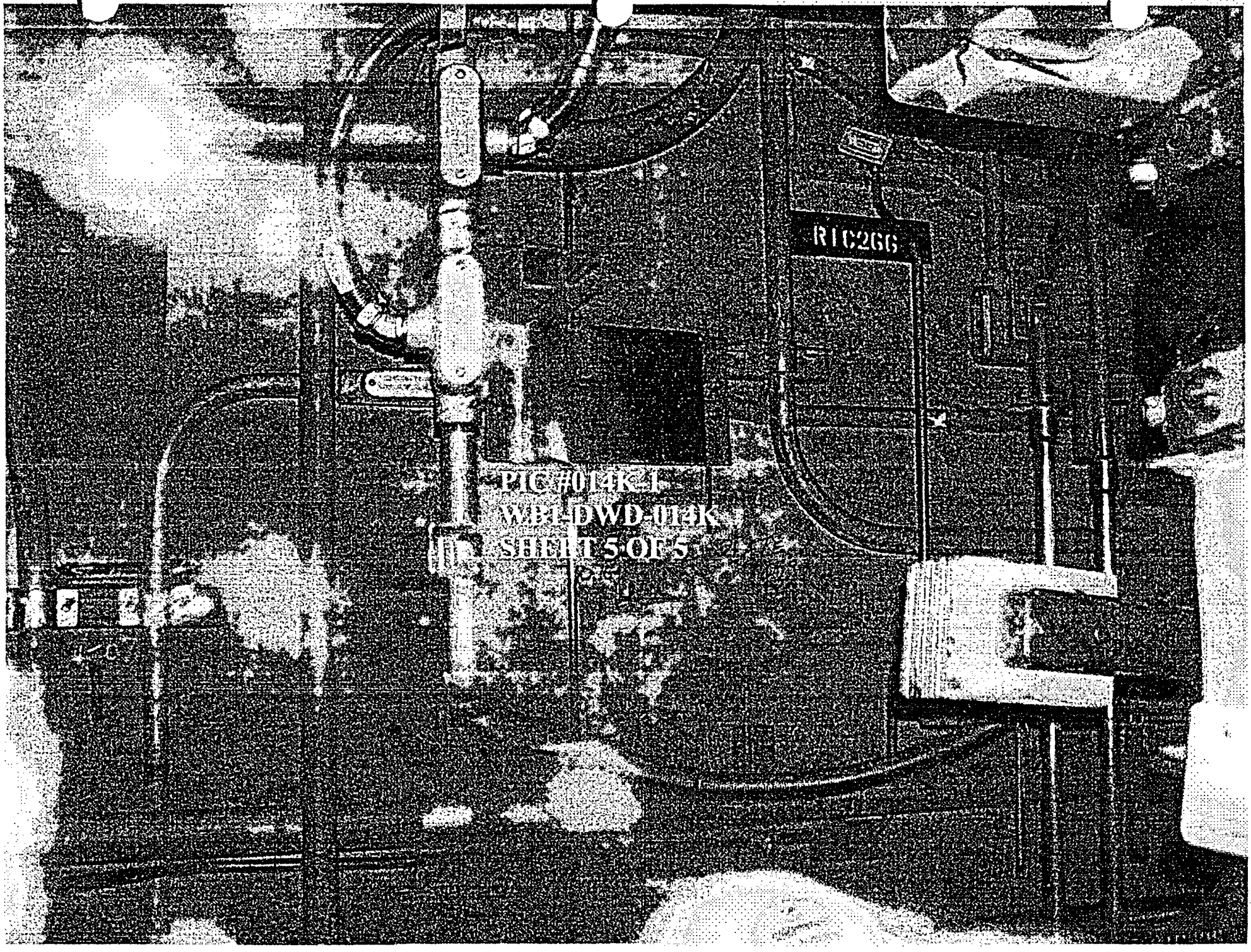
	WIDTH	LENGTH	THICKNESS	VOL (IN)	VOL (CU F)
SIZE =	6.000	9.000	0.500	27.000	0.016

47W2500-9 & 12
QUAD I & IV
EL 720 TO 737.0

WB1-DWD-014K

SHEET 4 OF 5




R1C266
PIC #014K-1
WB1-DWD-014K
SHEET 5 OF 5

CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-014L SHEET 1 OF 3

DATE:	11/03/2003	AREA:	FAN ROOM 1	RWP NO.:	8010
		ELEV:	716'		

INSPECTORS:	C. G. WALLS, FRANK C. YAO

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	590955-064C, SH. 3, REV. D *	
Tools:	590955-064C, SH. 4, REV. D *	
Drawings		
Flashlights		
Ladders		
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	**Verify installation of insulation** as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any **undocumented** insulation.
3	Inspect and determine longitudinal **seam location** and **band spacing** if necessary.
4	Document any **irregularities** of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any **undocumented fibrous insulation (e.g., within rupture restraints)**.
6	Inspect and mark up cable tray drawings to show location of **fire barriers** (vertical and horizontal).
7	Inspect the area for any **weak components** that could be dislodged by jet and that could be transported to sump.
8	Inspect any **equipment insulation** in the area.
9	Inspect and document the general **cleanliness** of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	8" RESIDUAL HEAT REMOVAL
	CONTINUED ON WALKDOWN PACKAGE NO's. WB1-DWD-016E & -019G.
	* TVA CONTRACT NO. 93NNS-75645C

Prepared By: C. G. WALLS Date: 11/3/03

Checked By: FRANK C. YAO Date: 11/3/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-014L SHEET 2 OF 3

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
N/A	FAN ROOM 1	716'	14	RESIDUAL HEAT REMOVAL	8.63	49.84	RMI	1.1875	12.67	S.S.	STD	N/A	11" OD INSULATION

APPROXIMATE INSULATION LENGTH:

AT 11" OD INSULATION (8" PIPING): LENGTH = (10 X 33.31) + 24.32 + (2 X 33.41) + 21.19

+ 32.3 + 23.39 + 11.2 + 30.4 + 19.51 + 34.92 = 598(1/12) = 49.84FT

CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-014M SHEET 1 OF 3

DATE:	11/03/2003	AREA:	FAN ROOM 1	RWP NO.:	8010
		ELEV:	716'		

INSPECTORS:	C. G. WALLS, FRANK C. YAO

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	590955-064C, SH. 3, REV. D *	
Tools:	590955-064C, SH. 5, REV. B *	
Drawings		
Flashlights		
Ladders		
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	**Verify installation of insulation** as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any **undocumented** insulation.
3	Inspect and determine longitudinal **seam location** and **band spacing** if necessary.
4	Document any **irregularities** of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any **undocumented fibrous insulation (e.g., within rupture restraints).**
6	Inspect and mark up cable tray drawings to show location of **fire barriers** (vertical and horizontal).
7	Inspect the area for any **weak components** that could be dislodged by jet and that could be transported to sump.
8	Inspect any **equipment insulation** in the area.
9	Inspect and document the general **cleanliness** of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	8" RESIDUAL HEAT REMOVAL
	CONTINUED ON WALKDOWN PACKAGE NO's. WB1-DWD-019G & -016F.
	* TVA CONTRACT NO. 93NNS-75645C

Prepared By: C. G. WALLS Date: 11/3/03

Checked By: FRNAK C. YAO Date: 11/3/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-014M SHEET 2 OF 3

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
N/A	FAN ROOM 1	716'	14	RESIDUAL HEAT REMOVAL	3.63	49.84	RMI	1.1875	12.67	S.S.	STD	N/A	11" OD INSULATION
N/A	FAN ROOM 1	716'	14	RESIDUAL HEAT REMOVAL	8.63	1.72	MIN-K	0.9375	0.34	S.S.	STD	N/A	10.5" OD MIN-K INSULATION

APPROXIMATE INSULATION LENGTH:

AT 11" OD INSULATION (8" PIPING): LENGTH = 13.38 + 6 + (8 X 33.31) + 30.31

+ 8.5 + 10.58 + 13.23 + 32.19 + 6 + 27.26 + 31.71 + 19.41 + 28.03 + 33.4

+ 28.03 + 12.25 + 30.81 = 598(1/12) = 49.84FT

AT 10.5" OD MIN-K INSULATION: LENGTH = 20.62(1/12) = 1.72FT

CONTAINMENT DEBRIS
WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-014N SHEET 1 OF 3

DATE:	11/05/2003	AREA:	FAN ROOM 1	RWP NO.:	8010
		ELEV:	716'		

INSPECTORS:	C. G. WALLS, FRANK C. YAO

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	590955-048C, SH. 1, REV. C *	
Tools:	590955-048C, SH. 7, REV. C *	
Drawings	590955-048C, SH. 8, REV. D *	
Flashlights	47W435-220, REV. D	
Ladders	1-47W435-220A, REV. 0	
Cameras	1-47W435-220B, REV. 0	
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	8" LOWHEAD SAFETY INJECTION
	CONTINUED ON WALKDOWN PACKAGE NO's WB1-DWD-016N & -019J.
	* TVA CONTRACT NO. 93NNS-75645C

Prepared By: C. G. WALLS Date: 11/5/03

Checked By: FRANK C. YAO Date: 11/5/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-014N SHEET 2 OF 3

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
0600200-09-02	FAN ROOM 1	716'	14	LOWHEAD SAFETY INJECTION	8.63	44.60	RMI	1.1875	11.34	S.S.	STD	N/A	11" OD INSULATION
0600200-09-02	FAN ROOM 1	716'	14	LOWHEAD SAFETY INJECTION	8.63	1.98	MIN-K	0.56	0.22	S.S.	STD	N/A	9.75" OD INSULATION
0600200-09-02	FAN ROOM 1	716'	14	LOWHEAD SAFETY INJECTION	8.63	2.50	RMI	0.6875	0.35	S.S.	STD	N/A	10" OD INSULATION

APPROXIMATE INSULATION LENGTH:

START FROM ACCUMULATOR ROOM I WALL:

AT 11" OD INSULATION (8" PIPING):

LENGTH = (10 X 35.88) + 29.38 + 12.25 + 30 + 33 + 20.31 + 30.16 + 20.16 = 535(1/12) = 44.6FT

AT 9.75" OD MIN-K INSULATION:

LENGTH = 23.72(1/12) = 1.98FT

AT 10" OD INSULATION (8" PIPING): LENGTH = 30(1/12) = 2.5FT

CONTAINMENT DEBRIS WALKDOWN PACKAGE WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-014P SHEET 1 OF 6

DATE:	11/19/2003	AREA:	FAN ROOM 1	RWP NO.:	8010
		ELEV:	716'		

INSPECTORS:	C. G. WALLS, FRANK C. YAO

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	590955-088C, SH. 1, REV. B *	
Tools:	590955-088C, SH. 2, REV. B *	
Drawings	590955-088C, SH. 3, REV. B *	
Flashlights	47W400-208, REV. C	
Ladders	1-47W400-208A, REV. 0	
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

COMMENTS

1"/2"/3"/4" STEAM GENERATOR BLOWDOWN LINE (LOOP 1)

CONTINUED ON WALKDOWN PACKAGE NO. WB1-DWD-006P.

* TVA CONTRACT NO. 93NNS-75645C

Prepared By: C. G. WALLS Date: 11/19/03

Checked By: FRNAK C YAO Date: 11/19/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-014P SHEET _2_ OF _6_

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
0600200-07-01	FAN ROOM 1	716'	14	STEAM GENERATOR BLOWDOWN	4.50	30.09	RMI	2.25	9.97	S.S.	STD	N/A	9" OD INSULATION
0600200-07-01	FAN ROOM 1	716'	14	STEAM GENERATOR BLOWDOWN	4.50	1.04	RMI	1.75	0.25	S.S.	STD	N/A	8" OD INSULATION
0600200-07-01	FAN ROOM 1	716'	14	STEAM GENERATOR BLOWDOWN	4.50	1.81	MIN-K	1.25	0.28	S.S.	STD	N/A	7" OD INSULATION
0600200-07-01	FAN ROOM 1	716'	14	STEAM GENERATOR BLOWDOWN	4.50	1.28	RMI	4.75	1.23	S.S.	STD	N/A	14" OD INSULATION
0600200-07-01	FAN ROOM 1	716'	14	STEAM GENERATOR BLOWDOWN	11.50	1.50	RMI	2.25	1.01	S.S.	STD	N/A	16" OD INSULATION (FLANGES)
0600200-07-01	FAN ROOM 1	716'	14	STEAM GENERATOR BLOWDOWN	4.50	1.57	RMI	4.25	1.27	S.S.	STD	N/A	13" OD INSULATION
0600200-07-01	FAN ROOM 1	716'	14	STEAM GENERATOR BLOWDOWN	2.38	1.79	RMI	3.31	0.74	S.S.	STD	N/A	9" OD INSULATION
0600200-07-01	FAN ROOM 1	716'	14	STEAM GENERATOR BLOWDOWN	2.38	1.33	RMI	2.31	0.31	S.S.	STD	N/A	7" OD INSULATION
0600200-07-01	FAN ROOM 1	716'	14	STEAM GENERATOR BLOWDOWN	8.52	0.56	RMI	2.19	0.29	S.S.	STD	N/A	13" OD INSULATION (FLANGES)
0600200-07-01	FAN ROOM 1	716'	14	STEAM GENERATOR BLOWDOWN	2.00	0.59	RMI	2.81	0.17	S.S.	STD	N/A	8" OD INSULATION
0600200-07-01	FAN ROOM 1	716'	14	STEAM GENERATOR BLOWDOWN	4.50	1.13	MIN-K	0.56	0.07	S.S.	STD	N/A	5.62" OD INSULATION

APPROXIMATE INSULATION LENGTH:

START FROM PEN. MARK NO. 425:

AT 9" OD INSULATION (4" PIPING):

LENGTH = 4.12 + 17.75 + 6.19 + 20.88 + 3.5 + 13 + 19.75 + 5.5 + 4(26.34)

+ (26.34 - 13.5*) + 7 + 19.5 + 7 + 20.94 + 10.12 + 3 + 2[π(6)(90°/180°)] + 1.88

+ .88 + 15.15 + 36.09 + 11 = 361(1/12) = 30.09FT

AT 8" OD INSULATION (4" PIPING): LENGTH = 12.46(1/12) = 1.04FT

AT 7" OD MIN-K INSULATION (4" PIPING): LENGTH = 21.62(1/12) = 1.81FT

AT 14" OD INSULATION (4" PIPING/VLV): LENGTH = 15.25(1/12) = 1.28FT

AT 16" OD INSULATION (11.5" OD FLANGE): LENGTH = 10.25 + 7.75 = (1/12) = 1.50FT

AT 13" OD INSULATION (4" PIPING/VLV): LENGTH = 18.75(1/12) = 1.57FT

AT 9" OD INSULATION (2" PIPING): LENGTH = 10.88 + 10.5 = 21.38(1/12) = 1.79FT

AT 7" OD INSULATION (2" PIPING): LENGTH = 4.75 + 4.25 + 6.88 = 15.88(1/12) = 1.33FT

AT 13" OD INSULATION (8.62" OD FLANGE): LENGTH = 6.62(1/12) = 0.56FT

AT 8" OD INSULATION (2" PIPING/VLV): LENGTH = 7(1/12) = 0.59FT

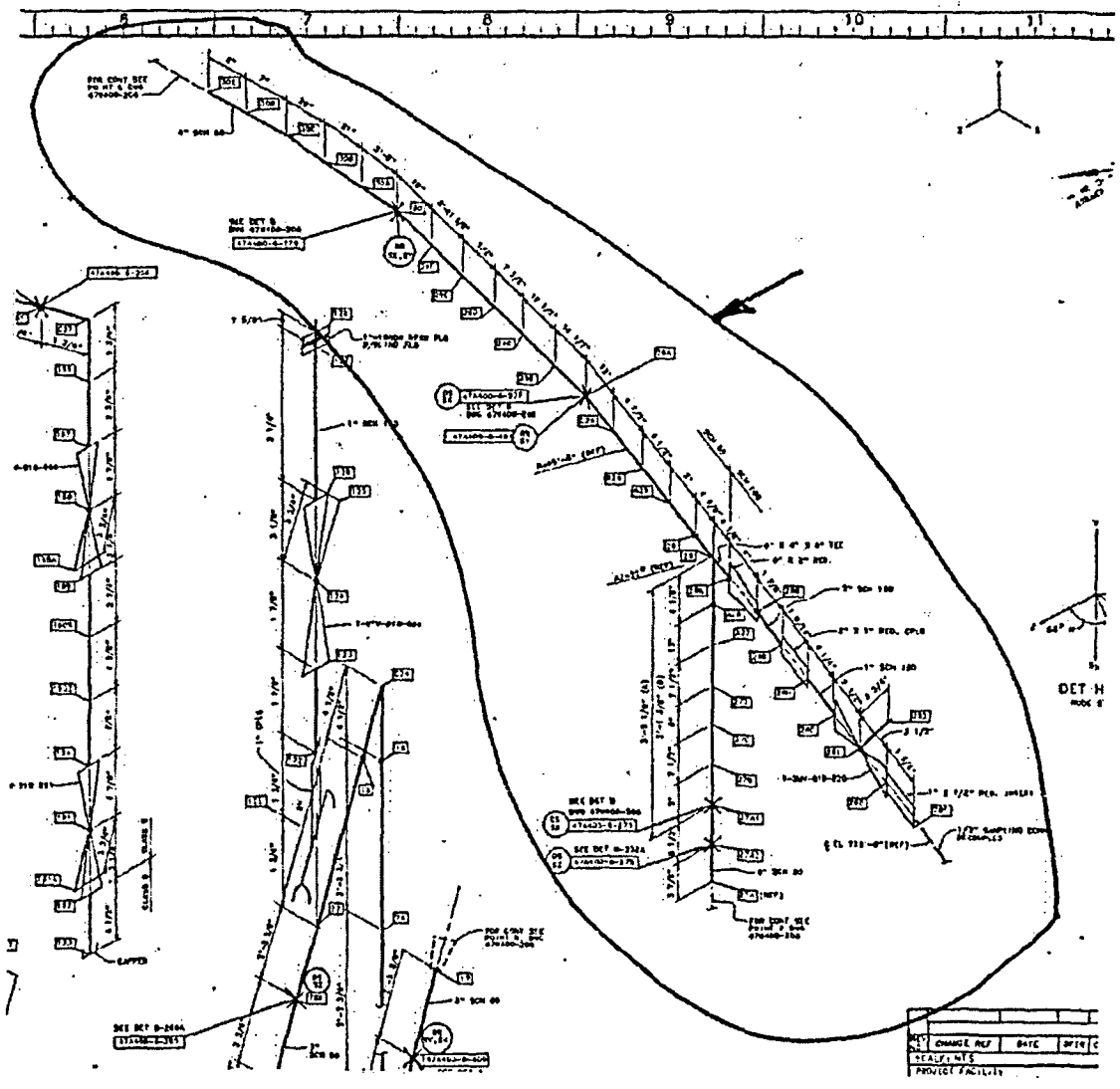
AT 5.62" OD MIN-K INSULATION (4" PIPING): LENGTH = 13.5(1/12) = 1.13FT

*MIN-K INSULATED

CONTAINMENT DEBRIS WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-014P

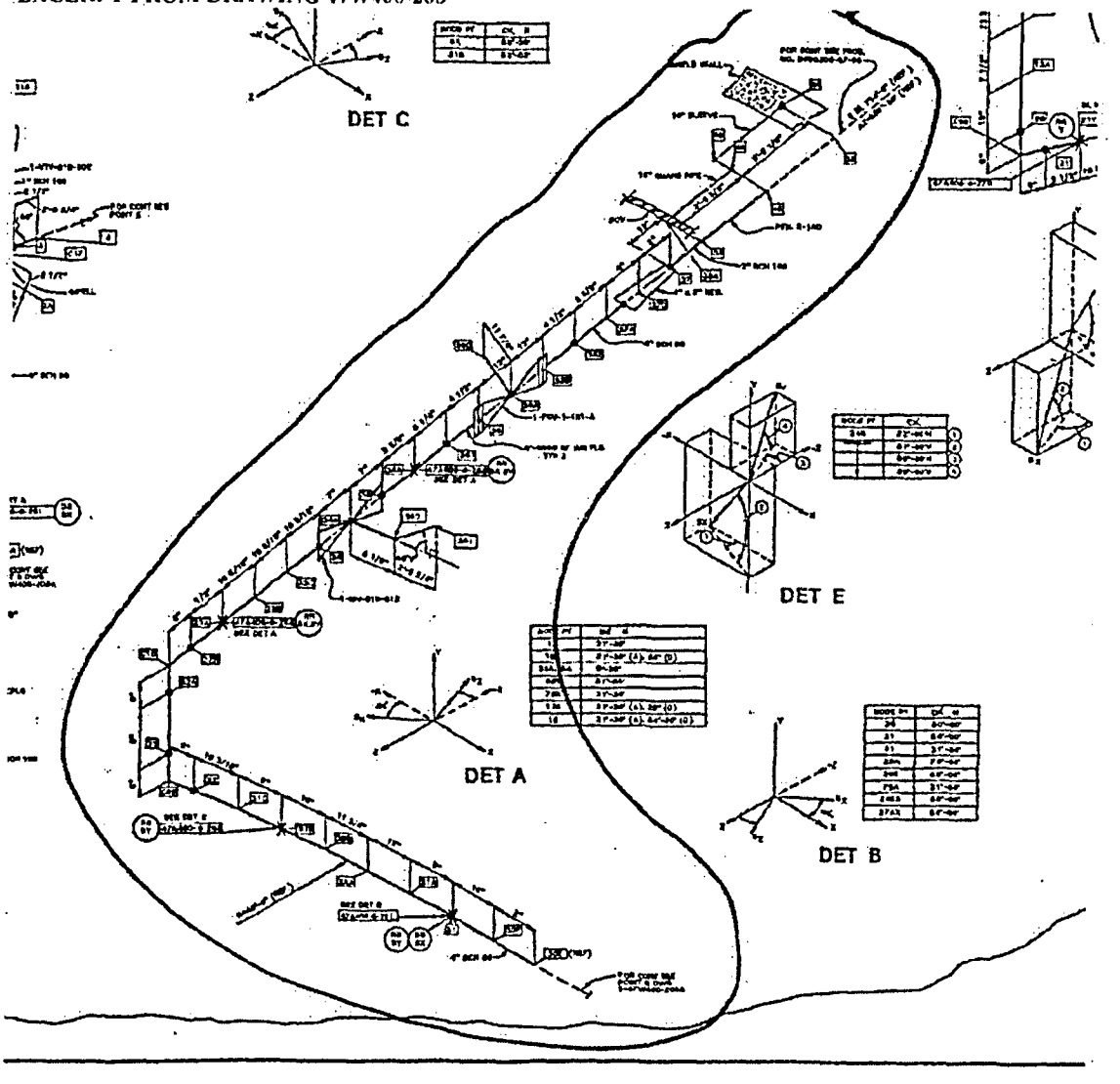
EXCERPT FROM DRAWING 1-47W400-208A



CONTAINMENT DEBRIS WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-014P

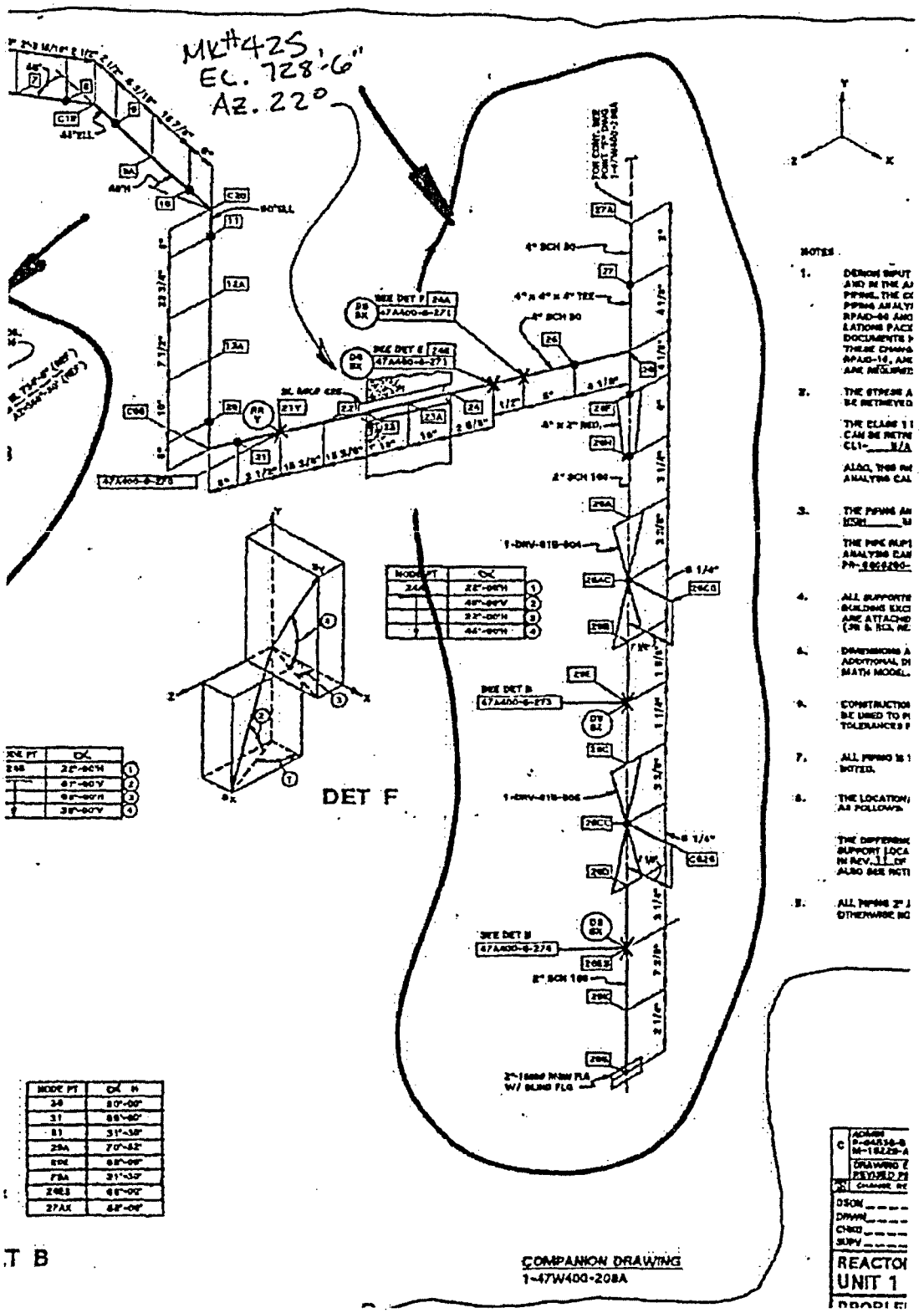
EXCERPT FROM DRAWING 47W400-208



CONTAINMENT DEBRIS WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-014P

EXCERPT FROM DRAWING 47W400-208



CONTAINMENT DEBRIS WALKDOWN PACKAGE WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-014Q SHEET 1 OF 4

DATE:	11/19/2003	AREA:	FAN ROOM 1	RWP NO.:	8010
		ELEV:	716'		

INSPECTORS:	C. G. WALLS, FRANK C. YAO

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	590955-088C, SH. 1, REV. B *	
Tools:	590955-088C, SH. 9, REV. B *	
Drawings	1-47W400-209A, REV. 0	
Flashlights		
Ladders		
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	1"/2"/3"/4" STEAM GENERATOR BLOWDOWN LINE (LOOP 2)
	CONTINUED ON WALKDOWN PACKAGE NO. WB1-DWD-001L.
	* TVA CONTRACT NO. 93NNS-75645C

Prepared By: C. G. WALLS Date: 11/19/03

Checked By: FRNAK C YAO Date: 11/19/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-014Q SHEET 2 OF 4

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
0600200-07-02	FAN ROOM 1	716'	14	STEAM GENERATOR BLOWDOWN	4.50	28.42	RMI	2.25	9.42	S.S.	STD	N/A	9" OD INSULATION
0600200-07-02	FAN ROOM 1	716'	14	STEAM GENERATOR BLOWDOWN	4.50	1.61	RMI	4.25	1.31	S.S.	STD	N/A	13" OD INSULATION
0600200-07-02	FAN ROOM 1	716'	14	STEAM GENERATOR BLOWDOWN	4.50	1.37	RMI	4.75	1.31	S.S.	STD	N/A	14" OD INSULATION

APPROXIMATE INSULATION LENGTH:

START FROM PEN. MARK NO. 769:

AT 9" OD INSULATION (4" PIPING):

LENGTH = 64.5 + 3.75 + 3.5 + 3[π(6)(90°/180°)] + 9.25 + (78.5 - 7) + 10.5

+ 21.91 + 17.97 + 17.25 + 17.12 + 33.5 + 22.02 + 19.64 = 341(1/12) = 28.42FT

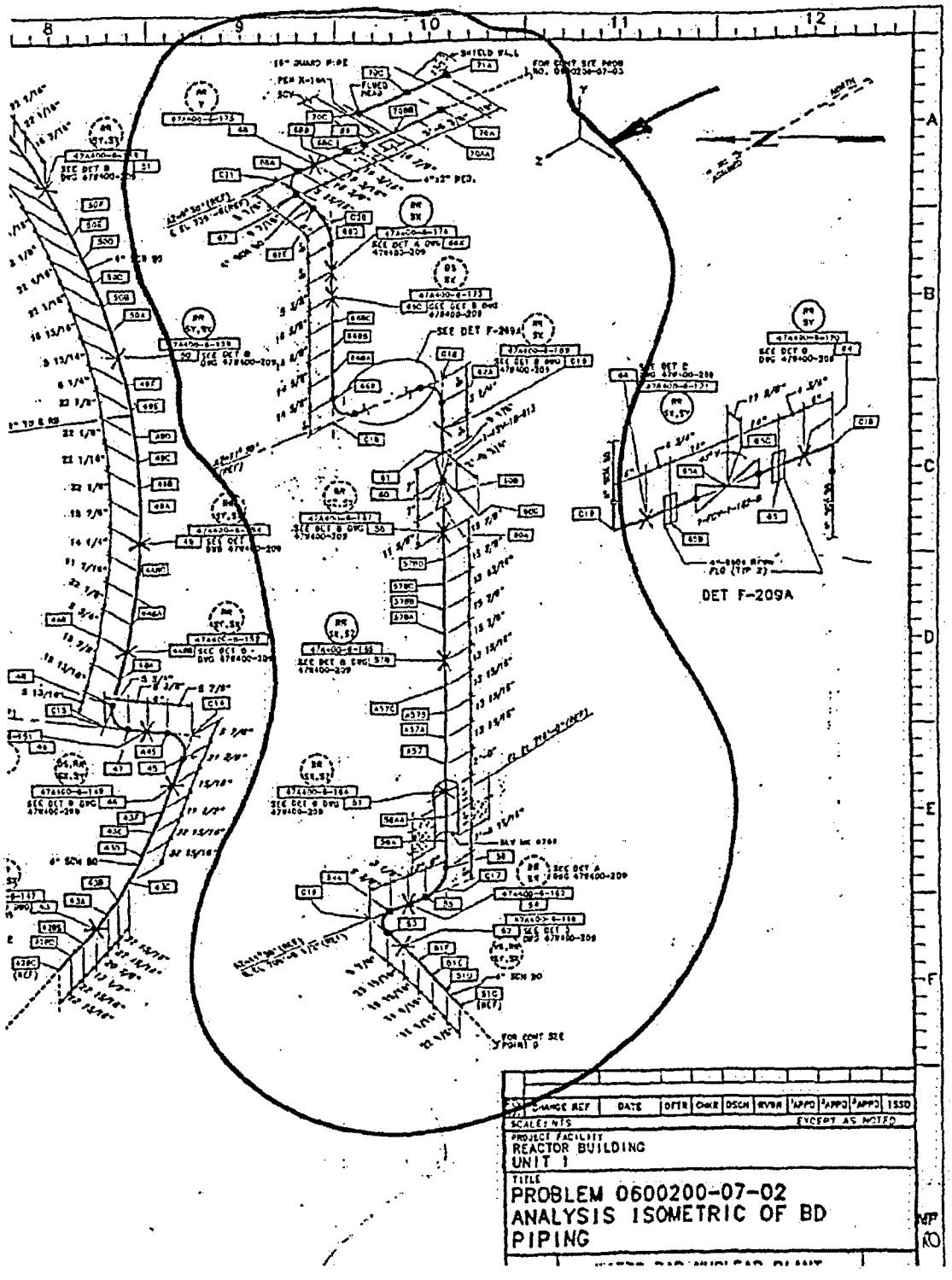
AT 13" OD INSULATION (4" PIPING/VLV): LENGTH = 19.25(1/12) = 1.61FT

AT 14" OD INSULATION (4" PIPING/VLV): LENGTH = 16.38(1/12) = 1.37FT

CONTAINMENT DEBRIS WALKDOWN PACKAGE
WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WBI-DWD-014Q

EXCERPT FROM DRAWING 1-47W400-209A



CONTAINMENT DEBRIS WALKDOWN PACKAGE WATTS BAR N. P. UNIT 1

WALKDOWN PACKAGE NO. WB1-DWD-014R SHEET 1 OF 3

DATE:	11/20/2003	AREA:	FAN ROOM 1	RWP NO.:	8010
		ELEV:	716'		

INSPECTORS:	C. G. WALLS, FRANK C. YAO

REF. MATERIALS:	Piping & Equipment Drawings:	Cable Tray Drawings:
	590955-088C, SH. 1, REV. B *	
Tools:	590955-088C, SH. 16, REV. B *	
Drawings	1-47W400-210B, LATEST REVISION	
Flashlights		
Ladders		
Cameras		
Binoculars		
Tape measure		
Sample bags		
Pens/markers		

INSPECTION LIST:

ITEM NO.	DESCRIPTION
1	Verify installation of insulation as documented in existing plant drawings and/or documentation.
2	Inspect and mark up layout drawings to show any undocumented insulation.
3	Inspect and determine longitudinal seam location and band spacing if necessary.
4	Document any irregularities of the general condition of the piping insulation.
5	Inspect and mark up layout drawings to show any undocumented fibrous insulation (e.g., within rupture restraints).
6	Inspect and mark up cable tray drawings to show location of fire barriers (vertical and horizontal).
7	Inspect the area for any weak components that could be dislodged by jet and that could be transported to sump.
8	Inspect any equipment insulation in the area.
9	Inspect and document the general cleanliness of the area.
10	Inspect and verify any fibrous materials inside electrical components and cabinets

	COMMENTS
	1"/2"/3"/4" STEAM GENERATOR BLOWDOWN LINE (LOOP 3)
	CONTINUED ON WALKDOWN PACKAGE NO. WB1-DWD-001M.
	* TVA CONTRACT NO. 93NNS-75645C

Prepared By: C. G. WALLS Date: 11/20/03

Checked By: FRNAK C YAO Date: 11/20/03

WATTS BAR NUCLEAR PLANT UNIT 1 WALK DOWN RESULTS

WALKDOWN PACKAGE#: WB1-DWD-014R SHEET 2 OF 3

PROBLEM NUMBER	LOCATION	ELEV.	AREA	DESCRIPTION	OD (IN)	LENGTH (FT)	INSULATION TYPE	INSULATION THICKNESS (IN)	INSULATION VOLUME (FT3)	JACKET MATERIAL	BUCKLE TYPE	STRAP TYPE	COMMENTS
0600200-07-03	FAN ROOM 1	716'	14	STEAM GENERATOR BLOWDOWN	4.50	20.00	RMI	2.25	6.63	S.S.	STD	N/A	9" OD INSULATION
0600200-07-03	FAN ROOM 1	716'	14	STEAM GENERATOR BLOWDOWN	4.50	0.50	RMI	1.25	0.08	S.S.	STD	N/A	7" OD INSULATION
0600200-07-03	FAN ROOM 1	716'	14	STEAM GENERATOR BLOWDOWN	4.50	1.34	RMI	4.75	1.28	S.S.	STD	N/A	14" OD INSULATION (VALVE)
0600200-07-03	FAN ROOM 1	716'	14	STEAM GENERATOR BLOWDOWN	4.50	1.55	RMI	4.25	1.26	S.S.	STD	N/A	13" OD INSULATION (VALVE)

APPROXIMATE INSULATION LENGTH:

START FROM FLOOR SLEEVE:

AT 9" OD INSULATION (4" PIPING): LENGTH = 29.62 + 36.09 + 27.79 + 16.87 + 35.76 + 22.12 + 11.12 + 5 + 3[π(6)(90°/180°)] + 22.12 + 4.5 + 3.25 + 10.87 = 240(1/12) = 20.00FT

AT 7" OD INSULATION (4" PIPING): LENGTH = 6(1/12) = 0.50FT

AT 14" OD INSULATION (VALVE): LENGTH = 16(1/12) = 1.34FT

AT 13" OD INSULATION (VALVE): LENGTH = 18.5(1/12) = 1.55FT