Washington Public Power Supply System
Box 1223 Elma, Washington 98541 (206) 482-4428

October 29, 1981
G03-81-2675

U.S. Nuclear Regulatory Commission, Region V
Office of Inspection and Enforcement
1450 Maria Lane, Suite 210
Walnut Creek, CA 94596-5368

Attention: Mr. B. H. Faulkenberry
Chief, Reactor Construction Projects Branch

Gentlemen:

Subject: PROJECT NOS. 3 AND 5
DOCKET NUMBERS 50-508 AND 50-509
FINAL REPORT OF 50.55(e)
LINEAR INDICATION IN ASME PIPE SPOOL

Reference: Letter, G03-81-2473, R. S. Leddick to B. H. Faulkerberry, dated September 11, 1981.

Attached please find the Engineers' final report of a 10CFR50.55(e) condition of linear indications discovered in ASME pipe delivered to the WNP-3/5 Site.

Should you have any questions or desire further information, please contact me directly.

Very truly yours,

R. S. Leddick
Program Director, WNP 3/5

Attachment

cc: J. Adams - PP&L-WO/A
D. Smithpeter - BPA -WO/A
Ebasco - New York -WO/A
WNP-3/5 Files - Richland -WO/A

8111060675

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

WPPSS NUCLEAR PROJECTS NO. 3 AND 5

ENGINEERING FINAL REPORT

10CFR50.55(e) - D/N #032

LINEAR INDICATIONS IN ASME PIPE SPOOLS - HEAT NO. WE 218

October 26, 1981

Prepared by: J P Sluka

C M Kim

R C Taylor

INTRODUCTION

On May 15, 1981 the installing contractor observed a crack-line indication in the weld end preparation of pipe spool #3-3AF3-111SB-12 as it was being installed in the Auxiliary Feedwater System of WNP-3. This piping is designed to the requirements of ASME Section III Class 3 and the pipe in question is three (3) inch Schedule 40, carbon steel SA106 Grade B. Examination using liquid penetrant methods disclosed a tight crack-like indication running essentially the full length of the pipe. Attempts to remove the indication by grinding and blending reduced the wall thickness below minimum requirements (0.189 inches) for Schedule 40 pipe. NCR 251-4546 was issued against this spool and an investigation was initiated to identify and inspect all piping produced from the same heat of material (Heat No. WE218).

On August 13, 1981 the NRC was notified of the deficiency under the requirements of 10CFR50.55(e) and an Interim Report was submitted on September 15, 1981.

This Final Report summarizes the results of the investigation and the actions taken to resolve the deficiency. It must be noted that material from Heat No. WE218 has been used by the fabricator to produce pipe spools for both ASME and ANSI systems, however this report addresses only that piping produced to the requirements of ASME Section III for Safety Related Systems and ANSI B31.1 Fire Protection for WNP-3/5.

A. DESCRIPTION OF DEFICIENCY

1. Original Finding of Deficiency and Notification to NRC

On May 15, 1981 the piping installation contractor, Peter Kiewit Sons, observed a crack-like indication in the weld end preparation of Spool #3-3AF3-111SB-12. Further investigation disclosed a tight hairline crack running essentially the full length of the pipe and NCR #251-4546 was initiated. Attempts to remove the indication by grinding and blending resulted in a reduction of the wall thickness below minimum requirements of Standard Schedule 40 pipe. The pipe was rejected and the entire length was removed from the spool for further detailed examination.

This pipe is three (3) inch Schedule 40, SA106 Grade B, designed to the requirements of ASME Section III, Class 3 as part of the Auxiliary Feedwater System, and is located inside the Radioactive Pipe Chase at Elev. 352'-3" of the WNP-3 Reactor Auxiliary Building.

The minimum wall thickness requirements for three (3) inch Schedule 40 pipe produced in accordance with SA-530 is 0.189 inches. Since the defect exceeds the allowable and the pipe is installed in a Safety Related System, the deficiency was judged to be significant. Accordingly, on August 13, 1981 the NRC was notified of the deficiency under the requirements of 10CFR50.55(e) and on September 15, 1981 an Interim Report was issued.

2. Additional Findings

Since the defect in Spool 3-3AF3-111SB-12 ran the length of the pipe, it was indicative of a basic flaw that could exist in other piping. It was therefore decided to inspect all piping in the field and in the shop that was fabricated from the same heat of material, and to conduct a metallurgical examination of the crack found in Spool 3-3AF3-111SB-12. The heat number was identified as WE218 and a careful search was made of the QA records to identify all materials produced from this heat.

a. Material at Pipe Fabrication Shop

The fabricator, Associated Piping and Engineering Incorporated (AP&E) was directed to identify all piping containing material from Heat No. WE218 categorized as shipped, in process or in stock. They were also directed to conduct a metallurgical examination of material removed from Spool 3-3AF3-111SB-12, to stop shipment of all Heat No. WE218 material, and to perform nondestructive inspection of all piping containing material from this heat. The inspection was to be performed

TABLE A.2.a (1)

RESULTS OF INSPECTION PERFORMED BY
ASSOCIATED PIPING AND ENGINEERING ON
FABRICATED-BUT NOT SHIPPED SPOOLS
(Total of 16 Spools)

Shop Sheet No.	Linear Indication	Encroachment of Minimum Wall Thickness
144		
599		
1604		
1788		
1789	Positive	Yes, 0.183"
1790		
1791		
1872	Positive	No
2135		
2136		
2137		
2139	Positive	No
2140	Positive	No
2141		
2142		
2144	Positive	No

NOTE: Full circumferential inspection performed at maximum of ten (10) foot intervals using LPE, plus 100% MPE. All blended areas re-examined with LPE and MPE to confirm removal of indication. UT readings taken on all blended areas to measure remaining wall thicknesses.

A. DESCRIPTION OF DEFICIENCY (CONT'D)

(3) Spools Shipped to the Site (71 Total)

This total includes both ASME III and ANSI B.31.1. See Section A.2.b below for description.

(4) Metallurgical examinations were conducted by both AP&E and US Steel Corporation. The defect in Spool 3-3AF3-111SB-12 was measured at 40% to 45% through wall by AP&E. US Steel Corporation concluded that the linear condition existed in the billet prior to piercing or occurred during the piercing operation, and that such a condition is related to the product of this billet and is not a function of the heat of steel. See Attachments 2 and 3 respectively for these reports.

(5) The piping produced from Heat No. WE218 was subjected to hydrostatic tests at a minimum pressure of 2500 psi as evidenced by USSC's Metallurgical Test Report. (See Attachment 4)

b. Material Delivered to the Site

The seventy-one (71) pipe spools identified as containing material from Heat No. WE218 and delivered to the Site consist of thirty-seven (37) ASME Section III Class 3 (AP&E Job No. 17948) and thirty-four (34) ANSI B31.1 (AP&E Job No. 17950). NCR's have been issued against all of these ASME III Class 3 and against one ANSI B31.1 spool. Only one ANSI B31.1 spool is to be installed in a Safety Related System (Fire Protection) in WNP-3. These spools with their designated NCR and status are as shown in Tables A.2.b-1 and A.2.b-2.

Each spool will be inspected by LPE or MPE as described in Section A.2.a above and is being properly controlled and dispositioned through the NCR process. Rework and repair will be in accordance with the requirements described in Section 3 of this report.

At the time of this report, twelve (12) spools have been inspected and except for Spool 3-3AF3-111SB-12 no rejectable linear indications have been found.

Description - 3" SCH 40 SA106 GR B (0.189 Min. Wall)
Code Class ASME III Class 3

TABLE A.2.b-1
Sheet 2 of 2

Job-17948

SHOP SHT #	SPOOL #	LOCATION	NCR #	INSPECTION-RESULTS	STATUS	REMARKS
448	3-3AF3-111SB-6	RAB Inst	14095	#616 Acc		
449	3-3AF3-111SB-7	RAB Inst	14095	#619 Acc		
450	3-3AF3-111SB-8	RAB Inst	14095	#617 Acc		
451	3-3AF3-111SB-9	RAB Inst	14095	#620 Acc		
452	3-3AF3-111SB-10	RAB Inst	14095	#622 Acc		
453	3-3AF3-111SB-11	RAB Inst	14095			
454	3-3AF3-111SB-12	Ret'd to APÉE	4546	#810 Rej		
455	3-3AF3-111SB-13	RAB Inst	14095			
601	3-3AF3-004SN-12	Issued	14106			
602	3-3AF3-004SN-13	SAGINAW	14105			
775	3-3AF3-032SA-1	SAGINAW	14105			
780	3-3AF3-033SB-1	SAGINAW	14105			
1067	3-3CC3-066SB-2	SAGINAW	14105			
1214	3-3AF3-111SB-3A	RAB Inst	14107	#628 Acc		
2153	3-3CC3-957SB-7	SAGINAW	14105			
35,039	3-3AF3-004SN-8A	SAGINAW	14165			

B. ANALYSIS OF THE SAFETY IMPLICATIONS

Piping produced from material of Heat No. WE218 has been fabricated into spools for the following systems:

System	Design Pressure	Design Temperature	No. of Spools Fab'd
Aux. Feedwater	150 psi	125°F	37
Component Cooling	150 psi	200°F	16
Fire Protection	167 psi	80°F	1
		Total Fabricated	54

The design pressure for these systems is extremely low compared to the 2500 psi minimum hydro pressure reported by US Steel Corporation in Attachment 4. However, the 40% to 45% through wall crack depth reported by AP&E in Attachment 2 gives rise to serious concerns for the long term integrity of the piping systems under the most adverse design loading conditions considering pressure, temperature, thermal expansion and dynamic effects. In consideration of these loads over the long term duration of the plant design life, any defect of the magnitude found in Spool 3-3AF3-111SB-12 would have to be judged detrimental to the overall plant safety.

ATTACHMENT 1

SITE NONCONFORMANCE REPORT NO. 251-4546

REPORT NO (1) 251-4546

EBASCO SERVICES INCORPORATED
WNP - 3/5

PAGE 1 OF 3

SITE NONCONFORMANCE REPORT

QUALITY CLASS (2) [X] I [ ] II [ ] G

INSTRUCTIONS (SEE BACK OF FORM)

PROJECT NO (3) [X] 3 [ ] 5 [ ] 385

DESCRIPTION OF COMPONENT, PART, OR SYSTEM (4)	LOCATION (5)	DRAWING/SPEC/CODE/STANDARD NO (6)
3-AF3-1115R-12	RAB pipe chase	3AF-A11-C2 Rev 5

RESPONSIBLE CONTRACT (7)	ACTION TAKEN TO CONTROL NONCONFORMANCE (8)	SUBSEQUENT ITEMS OR AREAS AFFECTED (9)
3240-251	Hold Tag # 927-3AF-847	Aux. Feedwater System

I. DESCRIPTION OF NONCONFORMANCE (10)

Spool 3-3AF3-1115R-2 is located 13'-5" w. of "2" line & 15'-0" S. of "F" line (El. 352'-3"). This spool has a hairline crack running entire length of pipe (on O.D.) See attachment

NAME, SIGNATURE, COMPANY & CONTRACT (11) — TITLE — DATE

[illegible] PKS 251 QE Supv. 5/[illegible]

II. RECOMMENDED DISPOSITION (12)

DESIGN DOCUMENT CHANGE REQUIRED (13) [ ] YES [X] NO

(14) [ ] USE-AS-IS [ ] REPAIR [ ] REWORK ON PREPURCHASED ITEMS WITHOUT APPROVED PROCEDURE IDENTIFIED

(15) [X] REJECT [X] OTHER REWORK

(16) CORRECTIVE ACTION: ~~The spool reject and cut spool to facilitate removal from frame supports. Return to the warehouse. Retain elbow from spool for use with replacement pipe from stock.~~ Use Fieldweld 11A [initials] 5/[illegible]

Contractor to remove straight length and return to Owner's warehouse. Replace this section with pipe from Owner's Bulk stock [initials] 6/1/81

Redisposition See page 3 [initials] 6/3/81

ACTION TO PREVENT REOCCURRENCE (IF APPLICABLE) (17) AP&E on site rep has been advised [initials] 5/[illegible]

INFO COPY

RECOMMENDED VERIFICATION BY (18) CONTRACTOR QC [✓]

[ ] EBASCO Q.A. [ ] EBASCO ENGINEERING [X] CONTRACT NO 251 [ ] OTHER [ ] NOT REQUIRED

NAME AND SIGNATURE OF PERSON RECOMMENDING DISPOSITION (19) — TITLE — DATE

[illegible] QE Supv. 5/[illegible]

III. EVALUATION OF DISPOSITION (21)

Supplement Data Room with Correct Documentation

[initials] 6/1/81

NRB (20) [ ] REQUIRED [X] NOT REQUIRED

ANI CONCURRANCE [ ] REQUIRED [X] NOT REQUIRED [initials] 6/5/81

BY [signature] RKHC 6/1/81 — NAME — TITLE — DATE

ANI CONCURRANCE BY [signature] — TITLE — DATE

[ ] RESIDENT ENGINEER [X] MATERIALS MANAGEMENT [ ] ESSE	[X] QUALITY ASSURANCE	[X] OTHER AUTHORIZED PERSONNEL	[ ] OTHER AUTHORIZED PERSONNEL
NAME (SIGNATURE) [signature]	NAME (SIGNATURE) [signature]	NAME (SIGNATURE) [signature]	NAME (SIGNATURE)
DATE 6/1/81 6/3/81	DATE 6/1/81	DATE 6/3/81	DATE
[X] ACCEPTED [ ] REJECTED [ ] ACCEPTED WITH COMMENTS	[X] ACCEPTED [ ] REJECTED [ ] ACCEPTED WITH COMMENTS	[ ] ACCEPTED [ ] REJECTED [X] ACCEPTED WITH COMMENTS	[ ] ACCEPTED [ ] REJECTED [ ] ACCEPTED WITH COMMENTS

IV. CONFIRMATION OF COMPLETION OF APPROVED DISPOSITION (22)

J P Ryan James P Ryan — Supt — 8/28/81

NAME, SIGNATURE, COMPANY & CONTRACT NO — TITLE — DATE

V. VERIFICATION OF COMPLETION OF APPROVED DISPOSITION (23)

PHILLIP AMBROSINO, Phillip Ambrosino, PKS-3240-251 — QE — 8/28/81

NAME, SIGNATURE, COMPANY & CONTRACT NO — TITLE — DATE

VI. FINAL REVIEW SATISFACTORY (24)

ANI ACCEPTANCE NAME ______ TITLE ______ DATE ______

BY ______ SIGNATURE ______ TITLE ______ DATE ______

EBASCO SERVICES INCORPORATED

WNP - 3/5

RECEIVED

JUN 0 4 1981

P.K.S. SATSOP

SITE NONCONFORMANCE REPORT
REDISPOSITION

INSTRUCTIONS: (SEE BACK OF FORM)

REPORT No. 4546

PAGE 3 OF 3

QUALITY CLASS: [X] I [ ] II [ ] G

PROJECT No.: [X] 3 [ ] 5 [ ] 3 & 5

DESCRIPTION OF COMPONENT, PART OR SYSTEM	LOCATION	DRAWING/SPEC./CODE/STANDARD
3-SAF3-11BB-12	RAB Chase	SAF-A11-62 Rev 5

RESPONSIBLE CONTACT	ACTION TAKEN TO CONTROL NONCONFORMANCE	SUBSEQUENT ITEMS OR AREAS AFFECTED
3240-251	Hold Tag # 727-3AF-847	Aux Feedwater System

REASON FOR REDISPOSITION: Ebasco QA personnel examined the spool and performed an LP test and found that the crack did not run the entire length but was approx 3/4" long at the bevel

II. RECOMMENDED DISPOSITION:

DESIGN DOCUMENT CHANGE REQUIRED [ ] YES [X] NO

[ ] USE - AS - IS [ ] REPAIR [ ] REWORK ON PREPURCHASED ITEMS WITHOUT APPROVED PROCEDURE IDENTIFIED

[ ] REJECT [X] OTHER REWORK

CORRECTIVE ACTION: Contractor to blend crack into surrounding area, perform LP to assure that all indications are removed and build up ground area to restore nominal wall thickness. All welding and examination of weld shall be in accordance with ASME Section III, Subsection ND 2551. Contractor to attach all NDE reports to this NCR. Contractor shall supplement the Data Form with the appropriate documentation

INFO COPY

III. EVALUATION OF DISPOSITION:

NDE REPORT ATTACHED

NRB [ ] REQUIRED [✓] NOT REQUIRED

ANI CONCURRANCE [ ] REQUIRED [✓] NOT REQUIRED

BY [signature] NAME RAAE TITLE 6/3/81 DATE

ANI CONCURRANCE BY ______ NAME ______ TITLE ______ DATE

[ ] RESIDENT ENGINEERING [ ] MATERIALS MANAGEMENT [ ] ESSE	[✓] QUALITY ASSURANCE	[X] OTHER AUTHORIZED PERSONNEL	[X] OTHER AUTHORIZED PERSONNEL
NAME (SIGNATURE): [signature]	NAME (SIGNATURE): [signature] N	NAME (SIGNATURE): [signature]	NAME (SIGNATURE): [signature] ANE
DATE: 6/3/81	DATE: 6/4/81	DATE: 6/3/81	DATE: 6-5-81
[✓] ACCEPTED [ ] REJECTED [ ] ACCEPTED WITH COMMENTS	[X] ACCEPTED [ ] REJECTED [ ] ACCEPTED WITH COMMENTS	[X] ACCEPTED [ ] REJECTED [ ] ACCEPTED WITH COMMENTS	[X] ACCEPTED [ ] REJECTED [ ] ACCEPTED WITH COMMENTS

IV. CONFIRMATION OF COMPLETION OF APPROVED DISPOSITION

NAME, SIGNATURE, COMPANY AND CONTRACT No. ______ TITLE ______ DATE ______

V. VERIFICATION OF COMPLETION OF APPROVED DISPOSITION:

See Page 1 of 5 PAA 8/28/81

NAME, SIGNATURE, COMPANY AND CONTRACT No. ______ TITLE ______ DATE ______

VI. FINAL REVIEW SATISFACTORY:

ANI ACCEPTANCE: NAME ______ TITLE ______ DATE ______

BY ______ SIGNATURE ______ TITLE ______ DATE ______

CS - AD - 464C (8.8.80) R1 (11.19.80) R2 (12.11.80)

REPORT No. 25-4546

QUALITY CLASS: [X] I [ ] II [ ] G

SITE NONCONFORMANCE REPORT
REDISPOSITION

SEP 14 1981

INSTRUCTIONS: (SEE BACK OF FORM)

PROJECT No.: [X] 3 [ ] 5 [ ] 3 & 5

DESCRIPTION OF COMPONENT, PART OR SYSTEM	LOCATION	DRAWING / SPEC. / CODE / STANDARD
3-3AF3-111SB-12	Rob Chase	3AF-A11-G2 Rev 5

RESPONSIBLE CONTACT	ACTION TAKEN TO CONTROL NONCONFORMANCE	SUBSEQUENT ITEMS OR AREAS AFFECTED
3240-251	Hold Tag # 727-3AF-847	Aux Feedwater System

REASON FOR REDISPOSITION: Due to re-testing & re-evaluation and to obtain additional signatures this is being redispositioned.

II. RECOMMENDED DISPOSITION: DESIGN DOCUMENT CHANGE REQUIRED [ ] YES [X] NO

[ ] USE - AS - IS [ ] REPAIR [ ] REWORK ON PREPURCHASED ITEMS WITHOUT APPROVED PROCEDURE IDENTIFIED

(2) [X] REJECT (1) [X] OTHER REWORK

RKS - RECEIVED
JUL 3 1 1981

CORRECTIVE ACTION:

(1) Contractor to remove straight length and return to Owner's warehouse. Replace this section with pipe from Owner's bulk stock. Use Field weld 11A.

(2) Owner's warehouse to mark spool with Reject TAG & hold untill further notice from Engineering [signature] 7/29/81

INFO COPY

III. EVALUATION OF DISPOSITION:

DEVIATION IS SIGNIFICANT

Accepted

NRB [ ] REQUIRED [X] NOT REQUIRED
ANI CONCURRANCE [ ] REQUIRED [X] NOT REQUIRED

BY [signature] RAAE 7/29/81
NAME TITLE DATE

ANI CONCURRANCE BY
NAME TITLE DATE

[X] RESIDENT ENGINEERING [ ] MATERIALS MANAGEMENT [ ] ESSE	[X] QUALITY ASSURANCE	[ ] OTHER AUTHORIZED PERSONNEL	[ ] OTHER AUTHORIZED PERSONNEL
NAME (SIGNATURE): [signature]	NAME (SIGNATURE): J V May P	NAME (SIGNATURE)	NAME (SIGNATURE)
DATE: 7/29/81	DATE: 7/29/81	DATE	DATE
[X] ACCEPTED [ ] REJECTED [ ] ACCEPTED WITH COMMENTS	[X] ACCEPTED [ ] REJECTED [ ] ACCEPTED WITH COMMENTS	[ ] ACCEPTED [ ] REJECTED [ ] ACCEPTED WITH COMMENTS	[ ] ACCEPTED [ ] REJECTED [ ] ACCEPTED WITH COMMENTS

IV. CONFIRMATION OF COMPLETION OF APPROVED DISPOSITION:

See page 1 of 5

NAME, SIGNATURE, COMPANY AND CONTRACT No. TITLE DATE

V. VERIFICATION OF COMPLETION OF APPROVED DISPOSITION:

See Page 1 of 5 [initials] 8/28/81

NAME, SIGNATURE, COMPANY AND CONTRACT No. TITLE DATE

VI. FINAL REVIEW SATISFACTORY:

ANI ACCEPTANCE NAME ______ TITLE ______ DATE ______

BY CHARLES R. REEVES SIGNATURE [signature] TITLE QA/Rpt DATE 9-3-81

Peabody Testing

X-Ray Engineering Company

☐ FOSTER CITY – MAIN OFFICE 1118 Chess Drive, Foster City, CA 94404, (415) 573-6000

☐ SAN LEANDRO OFFICE 2506 Davis Street, San Leandro, CA 94577 (415) 562-7500

CERTIFIED REPORT of NONDESTRUCTIVE EXAMINATION

Phila

CUSTOMER: PETER KIEWIT SON'S COMPANY

DATE: June 16, 1981

ADDRESS: P.O BOX 520, ELMA, WASHINGTON 98541

CONTROL NO. OR REPORT NO.: 3PBT-PT-210

JOB OR PROJECT LOCATION: WPPSS 3 and 5

P.O. NO.: 97-1-3

PLAN OR DWG. NO.: 3AP-A11-62-847

SURFACE CONDITION: as prepared, as grd.

HEAT NO.: N/A

HEAT TREAT: BEFORE N/A AFTER

TYPE OF MATERIAL: SS

TEMP. OF MAT'L: 60°

TYPE OF EXAMINATION: UT ☐ MT ☐ PT ☒

EXAMINATION STANDARD: ASME Section III

ACCEPTANCE STANDARD: Para 8.0 of

N.D.T. PROCEDURE NO.: 23.A.1 RW6803-4

ULTRASONIC EXAMINATION

EQUIPMENT / TRANSDUCER / TEST BLOCK / METHOD USED / SCANNING METHOD / SENSITIVITY LEVEL: ← N/A

MAGNETIC PARTICLE EXAMINATION

EQUIPMENT: ← N/A

DRY ☐ WET ☐ VISIBLE ☐ FLUORESCENT ☐ AC ☐ DC ☐ RECTIFIED ☐ AMPERAGE PROD SPACING HEAD ☐ COIL ☐ PARTICLES – COLOR

LIQUID PENETRANT EXAMINATION

METHOD	PENETRANT BRAND NO.	PENETRANT BATCH NO.	DWELL TIME	CLEANER BRAND NO.	CLEANER BATCH NO.	EMULSIFIER BRAND NO.	EMULSIFIER EMULS. TIME	DEVELOPER BRAND NO.	DEVELOPER BATCH NO.	DEV. TIME	DRY ☐ WET ☐ NON-AQUEOUS ☐
Visible SR	Dubl-Chek	1K08	10 min	Dubl-Chek	4H037	← N/A	→	Dubl-Chek	6J008	7 min	

WELD NO.	TOTAL LENGTH EXAMINED	TYPE OF WORK	NO. OF ITEMS ACCEPTED	NO. OF ITEMS REJECTED
Spool 3AP3-115B-12	100% of area prepared	NEW ☒ REPAIR ☐	0	4

TYPE OF DEFECTS CODE: C – Cracks P – Porosity NF – Non-Fusion LI – Linear Indication S – Slag LA – Lamination OTHER – Specify

PC # OR SN #	ACC	REJ	DEFECT CODE	REMARKS
4 Areas on Spool 3AP3-115B-12	0	4		4 areas on top of spool # 3AP3-115B-12 that were prepared had numerous linear indications running length of examined areas. Ebasco previously inspected same areas.

CONTROLLED COPY

IN ___ A.M. ___ P.M. OUT ___ A.M. ___ P.M.

Technician: M. Elliott SNT-TC-1A Level: II

Asst. Technician:

Total Hours at Job: N/A

Customer: S W Smith

Lunch ___ Standby ___ Travel ___

Witnessed by: Charles R. [illegible] EBASCO QA/I SIGNATURE

Total Hours ___ Total Mileage ___

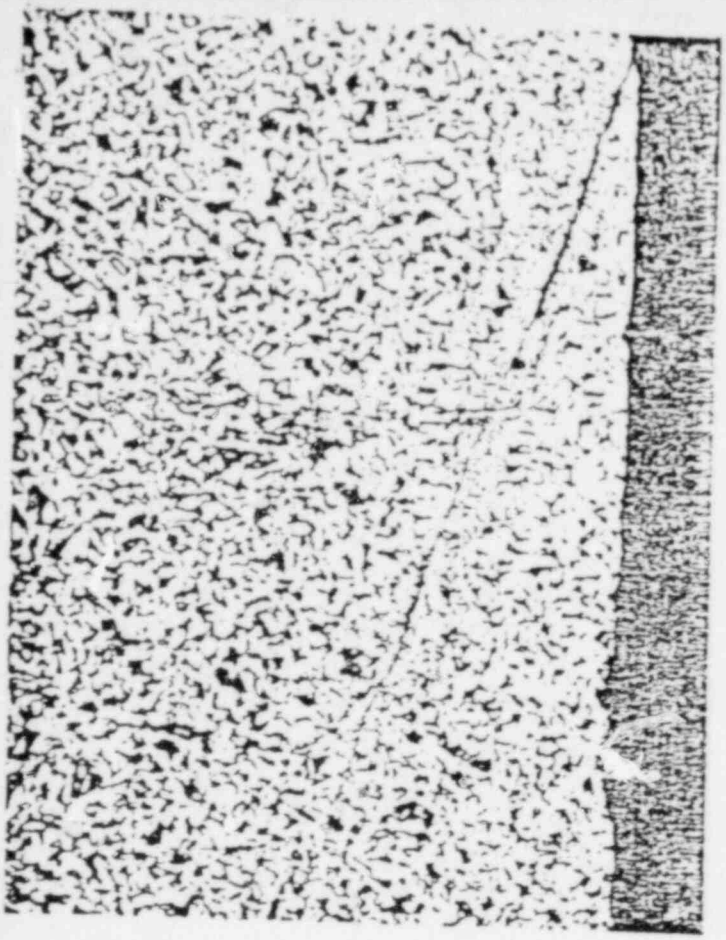
ENCLOSURE ADDED Yes ☐ No ☒

Page 1 of 1

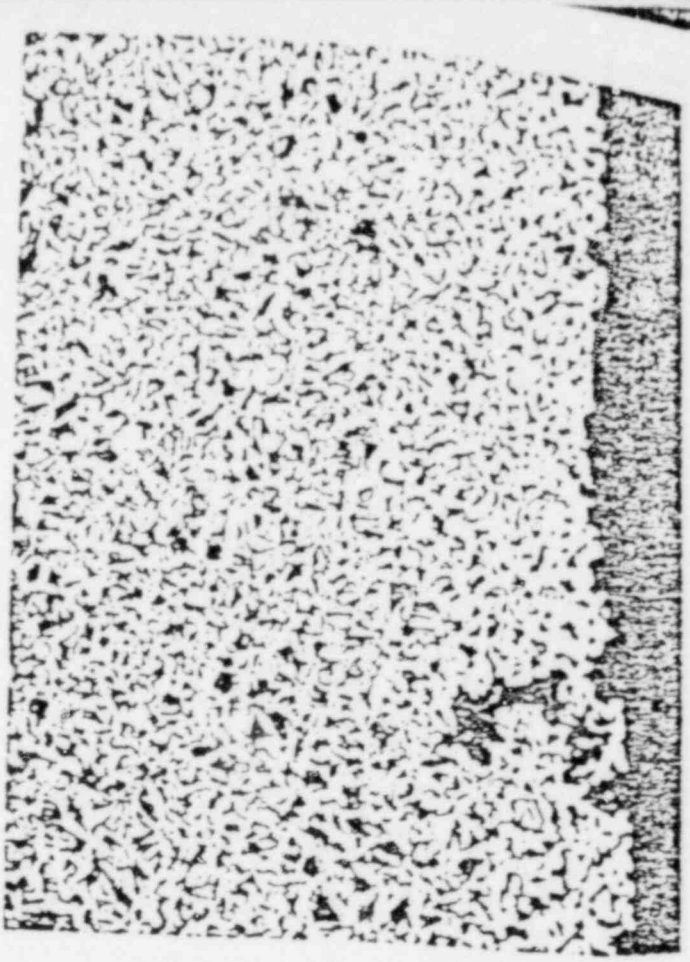
ATTACHMENT 2

JOHNSON CONTROLS IOC "METALLURICAL EVALUATION OF AP&E CODE-WE218"

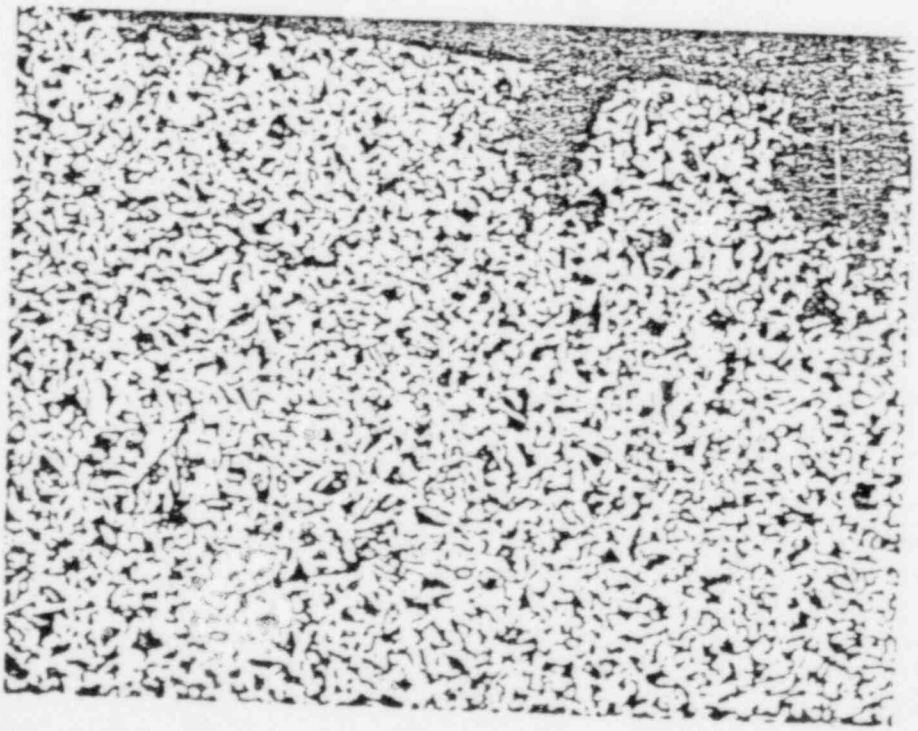
FROM BOB HIPLEY TO K C JONES DATED OCTOBER 8, 1981

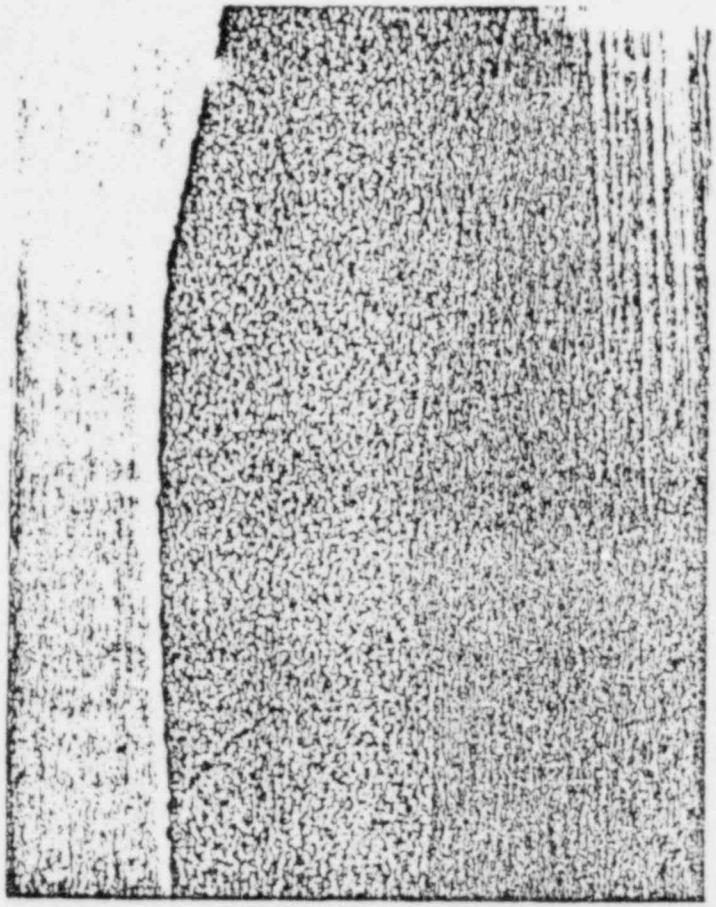


#18

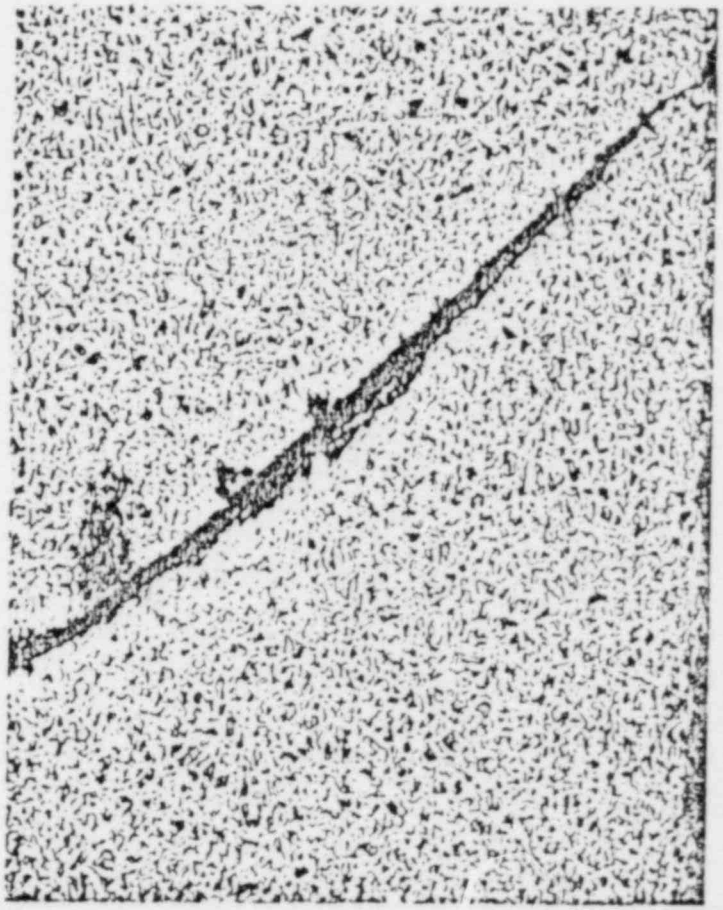


#17





SS 4/54 5+



SS 4/54 50k

ATTACHMENT 3

United States Steel Corporation

R. E. MEIER
MANAGER OF SALES

INTERMOUNTAIN DISTRICT SALES
10 EAST SOUTH TEMPLE #1200
SALT LAKE CITY, UTAH 84133
801/521-4500
DENVER, COLORADO: 303/623-3001

Oct. 7, 1981

Associated Piping & Engineering Co.
851 South Freeport Industrial Pkwy
Clearfield, Utah 84015

Attn: Frank Corjat

Reference: Mill Order AB 48850, Mountain West Pipe & Supply
Purchase Order 0474, 3½ O.D. x .216 W
ASTM A-106 Grade B Heat # N56659

Subject: Linear Indication

Gentlemen:

The sample submitted to you from the spool fabricated from the referenced pipe has been inspected by Mr. Archer, Metallurgical Engineer. After this preliminary inspection it is concluded that the linear condition existed in the billet prior to piercing or occured during the piercing operation.

Such a condition is related to the product of this billet and is not a function of the heat of steel.

This condition did exceed the minimum wall tolerance and the length of pipe is properly rejectable.

A portion of this sample along with another piece randomly selected from your stock is being forwarded to the laboratory of our producing mill at Lorain, Ohio. An in depth investigation will be made and their conclusions reported.

Very truly yours,

R. E. Meier
Manager of Sales
Intermountain DSO

x WE 218

United States Steel Corporation

01 606 0795

TUBULAR PRODUCTS

METALLURGICAL TEST REPORT

CONTRACT NO.	P.O. DATE	PURCHASE ORDER NO.		
[illegible]		0474		
	SHIPPERS NO.	MILL ORDER NO.	INVOICE NO.	
		A948550		
	VEHICLE IDENTITY		11/18/77	

WE HEREBY CERTIFY THAT THE FIGURES SET FORTH BELOW ARE CORRECT, AS CONTAINED IN THE RECORDS OF THE COMPANY.

MOUNTAIN WEST PIPE & SUPPLY
169 WEST 3440 SOUTH
SALT LAKE CITY UTAH 84115

MAIL TO: MOUNTAIN WEST PIPE & SUPPLY
169 WEST 3440 SOUTH
SALT LAKE CITY, UTAH 84115

SIGNATURE E.L. BARTOLOTTA, CH. MET

DATE 11/21/77

PO 4964

RECEIVED
OCT 23 1981
J.P. SLUKA

REVIEWED & APPROVED
QUALITY CONTROL DEPT
A.P.&E
DATE 1/23/78 BY KR

AP&E (N-1640) certifies that this material is in accordance with all provisions of SA106 of ASME section III Class 3, 1974 Edition, S76 Addenda.

A4-1

SIZE	WALL	SPECIFICATION & GRADE	MATL.	HEAT/LOT NO.	MIN. HYDRO PSI	YIELD STR. PSI	TENSILE STR PSI	ELONG. % IN 2"	GAGE WIDTH IN.	FLAT
3 1/2 OD	.216	ASTM A106, ASME SA106 GR B	SMLS	N56659 WE218	2500	52200	60900	37.0	1 1/2	OK
4 1/2 OD	.237	ASTM A106, ASME SA106 GR B	SMLS	N56647 WE219	2800	43500	72800	39.0	1 1/2	OK

HEAT NO.	TYPE	C	MN	P	S	SI	CU	NI	CR	MO	SN	AL	N	V	B	TI	CB	CO
[illegible]	LADL	[illegible]	[illegible]	012	029	180												
56647	LADL	25	58	009	022	150												

REVIEWED A.J.G.

FEB 6 1978

REVIEWED BY
[signature] 3/24/78
EBASCO VQA REP.

RECEIVED
JAN 16 1978
ASSOCIATED PIPING-UTAH
Per ______

ATTACHMENT

* on clear log

INDEX

CONCLUSION

The crack-like indication found in pipe spool 3-3AF3-111SB-12 has been subjected to detailed metallurgical examination by the piping fabricator, Associated Piping and Engineering Corporation and by the material supplier, US Steel Corporation. AP&E has reported that the pipe contains a mill processing defect that extends 40% to 45% through the wal' from the OD surface. US Steel Corporation has reported that the linear indication existed in the billet prior to piercing, or occurred during the piercing operation. Further, that such a condition is related to the product of this billet and not a function of the heat of steel.

All piping produced from this heat (WE218) for WNP-3/5 has been identifed and is being examined for similar indications using liquid penetrant or magnetic particle inspection methods.

Inspection has been completed by AP&E on all WE218 piping in their facilities, including fabricated pieces and material in stock. This inspection has disclosed additional indications, some of which cannot be removed without wall thickness reduction below minimum requirements. Directions are being given to AP&E that such defects may be removed as long as Schedule 40 minimum wall thickness of 0.189 inches is maintained, and that if removal results in a reduction of the pipe wall below minimum wall thickness, repairs may be made in accordance with ASME Section III Subsection ND-2550 and ASTM A106 for ASME and ANSI pipe respectively.

For all piping delivered to the Site which contains material from Heat No. WE218, Site NCR's have been issued and nondestructive examination using liquid penetrant or magnetic particle methods is in process. No additional defects have been found to date. Should indications be found in this delivered material, they will be reworked by grinding and blending. If such rework infringes on the minimum wall requirements, the material will be replaced, or repaired in accordance with the appropriate requirements of ASME Section III and ANSI B31.1 as stated above. All such inspection, rework, replacement or repair will be documented on the NCR's.

It is therefore concluded that

a) with the identification of material produced from Heat No. WE218,
b) the detailed inspection program described herein,
c) the documented dispositioning of all delivered spools in accordance with the NCR procedure, and
d) the controls established at the AP&E fabrication facilities,

the deficiencies associated with Heat No. WE218 will not be present in the piping as finally installed at WNP-3/5.

A. DESCRIPTION OF DEFICIENCY (CONT'D)

using liquid penetrant methods, applied over a full circumferential band at maximum intervals of ten (10) feet with at least one band on each length of pipe. In response to this direction AP&E has reported as follows:

(1) Spools fabricated but not shipped (16 Total)
(See Table A.2.a.(1))

(a) No linear indications found . . . . . 11 spools

(b) Linear indications found. . . . . 5 spools

(c) Indications removed by blending within minimum wall thickness requirement. . . . . 4 spools

(d) Indications removed by blending below minimum wall thickness requirement. . . . . 1 spool*

*In one small area a thickness reading of 0.183 inches was obtained after removal of indication.

(2) Material In-Stock (30 Total)
(See Table A.2.a(2))

(a) No linear indications found. . . . . 12 pieces

(b) Linear indications found . . . . . 18 pieces

(c) Indications removed by blending within minimum wall thickness requirements. . . . 1 pieces

(d) Indications removed by blending below minimum wall thickness requirements. . . . 15 pieces

TABLE A.2.a(2)

RESULTS OF INSPECTION PERFORMED BY
ASSOCIATED PIPING AND ENGINEERING ON
UNFABRICATED PIPE STOCK
(Total of 30 pieces)

Pieces with no linear indication found: 1, 2, 6, 20, 21, 22, 23, 24, 25, 26, 27 and 28 (Total 12)

Pieces with linear indication found and removed within minimum wall thickness requirements: 5, 8 and 17 (Total 3)

Pieces with linear indications found and removed with encroachment on minimum wall thickness (0.189") requirement (Total 15):

Pieces No.	No. of Areas	Lowest Reading (inches)
3	34	0.173
4	1	0.187
7	4	0.183
9	1	0.182
10	2	0.182
11	14	0.175
12	7	0.181
13	3	0.178
14	17	0.173
15	45	0.173
16	1	0.175
18	12	0.181
19	1	0.185
29	3	0.181
30	2	0.131

NOTE: All pieces 100% inspected by LPE and MPE. All blend areas re-inspected with LPE and MPE to assure removal of indication. UT readings taken on all blended areas to measure remaining wall thicknesses.

Description - 3" SCH 40 SA106 GR B (0.189 Min. Wall)
Code Class ASME III Class 3

TABLE A.2.b-1
Sheet 1 of 2

Job-17948

SHOP SHT #	SPOOL #	LOCATION	NCR #	INSPECTION-RESULTS	STATUS	REMARKS
37	3-3AF3-004SN-1	FHB Inst	14095			
42	3-3AF3-004SN-6	FHB Inst	14095			
49	3-3AF3-110SA-6	FHB Inst	14107	#635 ACC		
54	3-3AF3-110SA-1	FHB Inst	14107	#637 ACC		
79	3-3AF3-110SA-7	Saginaw	14105			
80	3-3AF3-110SA-8	Issued	14106			
81	3-3AF3-110SA-9	Issued	14165			
82	3-3AF3-110SA-10	Saginaw	14105			
83	3-3AF3-110SA-11	Saginaw	14105			
84	3-3AF3-110SA-12	Saginaw	14105			
85	3-3AF3-110SA-13	Saginaw	14105			
86	3-3AF3-110SA-14	RAB Inst	14106			
87	3-3AF3-110SA-15	RAB Inst	14106			
88	3-3AF3-110SA-16	RAB Inst	14106			
89	3-3AF3-110SA-17	Saginaw	14105			
90	3-3AF3-110SA-18	Saginaw	14105			Surplus*
137	3-3AF3-111SB-2	Saginaw	14105			
138	3-3AF3-111SB-3	RAB Inst	14107	#647 ACC		
143	3-3AF3-004SN-7	Saginaw	14105			Surplus*
446	3-3AF3-111SB-4	RAB Inst	14095	#615 ACC		
447	3-3AF3-111SB-5	RAB Inst	14105	#618 ACC		

*Original spools had incomplete CMTR. Thus, they were replaced with field fabricated spools.

Description - 3" SCH 40 A106 GR B (0.189 Min. Wall)
Code Class B31.1 (Fire Protection)
Job 17950

TABLE A.2.b-2
Sheet 1 of 1

SHOP SHT #	SPOOL #	LOCATION	NCR #	INSPECTION-RESULTS	STATUS	REMARKS
3287	GFP2½-306-1	SAGINAW	14172			

C. CORRECTIVE ACTION

The defective material found in Spool 3-3AF3-111SB-12 has been scrapped and repaced with conforming material.

The inspection of all piping produced from Heat No. WE218 as described in Section A of this report will provide assurance that all non-conforming material from this heat has been identified.

All similar linear indications will be reworked by grinding and blending within the limitations of the 0.189 inch minimum wall thickness requirement, or by repair in accordance with ASME Section III Subsection ND-2550 for ASME III Class 3 pipe and ASTM A106 for ANSI B31.1 pipe, or the pipe will be replaced, all subject to the Engineer's prior approval.

Welding end preparations produced at the AP&E shops are subjected to visual examination by the operator performing the work and by an independent inspector. Effective October 13, 1981 AP&E has intensified their visual inspection of all weld end bevels prior to the application of the deoxaluminate coating.

Close scrutiny of the weld end preparations will continue to be performed by the installing contractor.

REPORT NO (1) 251-4546

EBASCO SERVICES INCORPORATED
WNP - 3/5

ATTACHMENT I

PAGE 1 OF 7

SITE NONCONFORMANCE REPORT

QUALITY CLASS (2) [X] I [ ] II [ ] G

INSTRUCTIONS (SEE BACK OF FORM)

PROJECT NO. (3) [X] 3 [ ] 5 [ ] 385

DESCRIPTION OF COMPONENT, PART, OR SYSTEM (4)	LOCATION (5)	DRAWING/SPEC./CODE/STANDARD NO. (6)
3-AF3-1115B-12	RAB Pipe chase	3AF-A11-67 Rev 5

RESPONSIBLE CONTRACT (7)	ACTION TAKEN TO CONTROL NONCONFORMANCE (8)	SUBSEQUENT ITEMS OR AREAS AFFECTED (9)
3240-251	Hold Tag # 927-3AF-847	Aux. Feedwater System

I DESCRIPTION OF NONCONFORMANCE (10)

Spool 3-3AF3-1115B-12 is located 13'5" W of "2" Line & 15'-0" So of "P" Line (El. 352-3"). This spool has a hairline crack running entire length of pipe (on O.D.) See attachment

NAME, SIGNATURE, COMPANY & CONTRACT NO (11) — Howard Ebert [signature] PKS 251 — TITLE: QC Supv — DATE: 5/16/81

II RECOMMENDED DISPOSITION (12)

DESIGN DOCUMENT CHANGE REQUIRED (13) [ ] YES [X] NO

(14) [ ] USE-AS-IS [ ] REPAIR [ ] REWORK ON PREPURCHASED ITEMS WITHOUT APPROVED PROCEDURE IDENTIFIED

(15) [X] REJECT [X] OTHER REWORK

(16) CORRECTIVE ACTION ~~The spool reject and cut spool to facilitate removal from frame supports. Return to the warehouse. Retain elbow from spool for use with replacement pipe from stock.~~ Use Fieldweld 11A [initials] 5/26/81

Contractor to remove straight length and return to Owner's warehouse. Replace this section with pipe from Owner's Bulk stock [initials]

Redisposition See page 3 [initials]

ACTION TO PREVENT REOCCURRENCE (IF APPLICABLE) (17) AREE on site rep has been advised [initials]

INFO COPY

RECOMMENDED VERIFICATION BY (18) CONTRACTOR QC ✓

[ ] EBASCO Q.A. [ ] EBASCO ENGINEERING [X] CONTRACT NO 251 [ ] OTHER [ ] NOT REQUIRED

NAME AND SIGNATURE OF PERSON RECOMMENDING DISPOSITION (19) — Howard Ebert [signature] — TITLE: QC Supv — DATE: 5/16/81

III. EVALUATION OF DISPOSITION (21)

Supplement Data Room with Correct Documentation

RDF

5/1/81

NRB (20) [ ] REQUIRED [X] NOT REQUIRED

ANI CONCURRANCE [ ] REQUIRED [X] NOT REQUIRED RJ 5/31

BY [signature] PKHS 6/1/81 (NAME / TITLE / DATE)

ANI CONCURRANCE BY ______ TITLE ______ DATE ______

[ ] RESIDENT ENGINEER [ ] MATERIALS MANAGEMENT [ ] ESSE	[X] QUALITY ASSURANCE	[X] OTHER AUTHORIZED PERSONNEL	[ ] OTHER AUTHORIZED PERSONNEL
NAME (SIGNATURE) [signature]	NAME (SIGNATURE) J P May	NAME (SIGNATURE) [signature]	NAME (SIGNATURE)
DATE 6/1/81 6/3/81	DATE 6/1/81	DATE 6/3/81	DATE
[X] ACCEPTED [ ] REJECTED [ ] ACCEPTED WITH COMMENTS	[X] ACCEPTED [ ] REJECTED [ ] ACCEPTED WITH COMMENTS	[ ] ACCEPTED [ ] REJECTED [X] ACCEPTED WITH COMMENTS	[ ] ACCEPTED [ ] REJECTED [ ] ACCEPTED WITH COMMENTS

IV. CONFIRMATION OF COMPLETION OF APPROVED DISPOSITION (22)

J P Ryan James P Ryan — TITLE: Supt — DATE: 8/28/81

NAME, SIGNATURE, COMPANY & CONTRACT NO

V VERIFICATION OF COMPLETION OF APPROVED DISPOSITION (23)

PHILLIP AMBROSINO, Phillip Ambrosino, PKS-3240-251 — TITLE: QE — DATE: 8/28/81

NAME, SIGNATURE, COMPANY & CONTRACT NO

VI FINAL REVIEW SATISFACTORY (24)

ANI ACCEPTANCE: NAME ______ TITLE ______ DATE ______

BY ______ SIGNATURE ______ TITLE ______ DATE ______

CS-AQ-466A (12-79) R1 (8-29-80) R2 (11-10-80) R3 (12-11-80)

REPORT NO. (1) 251-4546 WNP 3/5 - EBASCO SERVICES INCORPORATED

QUALITY CLASS (2) ☒ I ☐ II ☐ G

SITE NONCONFORMANCE REPORT
CONTINUATION SHEET
INSTRUCTIONS (SEE BACK OF FORM)

PROJECT NO. (3) ☒ 3 ☐ 5 ☐ 3 & 5

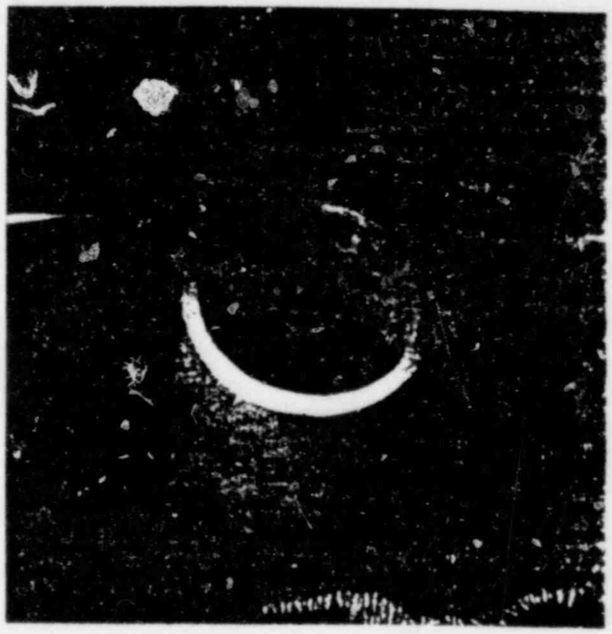
DESCRIPTION OF COMPONENT, PART, OR SYSTEM (4)	LOCATION (5)	DRAWING/SPEC/CODE/STANDARD NO. (6)
SPOOL # 3-3AF3-111SB-12	RAB - PIPE CHASE	3AF-211-63 REV 5

RESPONSIBLE CONTRACT (7)	ACTION TAKEN TO CONTROL NONCONFORMANCE (8)	SUBSEQUENT ITEMS OR AREAS AFFECTED (9)
3240-251	HOLD TAG # 727-3AF3-1 APPLIED	AUX FEEDWATER SYSTEM

PHOTOS OF SPOOL # 3-3AF3-111SB-12

Spool # 3-3AF3-111SB-12

INFO COPY



Spool # 3-3AF3-111SB-12

COMMENT: ACCEPTED BECAUSE OF RE-DISPOSITION - SEE PAGE 3 OF 3

[signature]

EBASCO SERVICES INCORPORATED

WNP - 3/5

RECEIVED

SITE NONCONFORMANCE REPORT REDISPOSITION

REPORT No. 4546

QUALITY CLASS [X] I [ ] II [ ] G

INSTRUCTIONS: (SEE BACK OF FORM)

1981

PKS-SAISOP

PAGE 4 OF 4 5

PROJECT No. [X] 3 [ ] 5 [ ] 385

DESCRIPTION OF COMPONENT, PART OR SYSTEM	LOCATION	DRAWING/SPEC./CODE/STANDARD
3-3AF3-111SB-12	RAB Chase	3AF-A11-6.2 Rev5

RESPONSIBLE CONTACT	ACTION TAKEN TO CONTROL NONCONFORMANCE	SUBSEQUENT ITEMS OR AREAS AFFECTED
3240-251	Hold Tag #727-3AF-847	Aux Feedwater System

REASON FOR REDISPOSITION: PKS had Peabody testing perform a L.P. test on additional areas & surfaces.

II. RECOMMENDED DISPOSITION:

DESIGN DOCUMENT CHANGE REQUIRED [ ] YES [X] NO

[ ] USE-AS-IS [ ] REPAIR [ ] REWORK ON PREPURCHASED ITEMS WITHOUT APPROVED PROCEDURE IDENTIFIED

[ ] REJECT [X] OTHER REWORK

CORRECTIVE ACTION:

Contractor to blend all visual indications, by grinding, the entire length of pipe (except those areas located under frames). Ebasco Engineer's QA personell to verify surface condition AND PERFORM NDE (L.P.) BLENDED AREA TO BE L.P. FOR INDICATION'S, SUBMIT L.P. REPORT TO ENGINEERING FOR FURTHER DISPOSITION.

INFO COPY

III. EVALUATION OF DISPOSITION:

FURTHER DISPOSITION WILL BE DONE BY ENG'R AFTER REVIEW OF L.P. REPORT

NRB [ ] REQUIRED [ ] NOT REQUIRED

ANI CONCURRANCE [ ] REQUIRED [ ] NOT REQUIRED

BY: NAME [signature] TITLE RARE DATE 6/25/81

ANI CONCURRANCE BY: NAME ______ TITLE ______ DATE ______

[ ] RESIDENT ENGINEERING [ ] MATERIALS MANAGEMENT [ ] ESSE	[X] QUALITY ASSURANCE	[ ] OTHER AUTHORIZED PERSONNEL	[ ] OTHER AUTHORIZED PERSONNEL
NAME (SIGNATURE) [signature]	NAME (SIGNATURE) [signature]	NAME (SIGNATURE)	NAME (SIGNATURE)
DATE 6/25/81	DATE 6/30/81	DATE	DATE
[ ] ACCEPTED [ ] REJECTED [ ] ACCEPTED WITH COMMENTS	[X] ACCEPTED [ ] REJECTED [ ] ACCEPTED WITH COMMENTS	[ ] ACCEPTED [ ] REJECTED [ ] ACCEPTED WITH COMMENTS	[ ] ACCEPTED [ ] REJECTED [ ] ACCEPTED WITH COMMENTS

IV. CONFIRMATION OF COMPLETION OF APPROVED DISPOSITION

NAME, SIGNATURE, COMPANY AND CONTRACT No. ______ TITLE ______ DATE ______

V. VERIFICATION OF COMPLETION OF APPROVED DISPOSITION:

See Page 1 of 5 [initials] 8/28/81

NAME, SIGNATURE, COMPANY AND CONTRACT No. ______ TITLE ______ DATE ______

VI. FINAL REVIEW SATISFACTORY:

ANI ACCEPTANCE: NAME ______ TITLE ______ DATE ______

BY ______ SIGNATURE ______ TITLE ______ DATE ______

WASHINGTON PUBLIC POWER SUPPLY SYSTEM
NUCLEAR PROJECTS 3 & 5

EBASCO SERVICES INCORPORATED

REPORT OF NONDESTRUCTIVE EVALUATION

CONTRACTOR: AP & E NCR-251-4546			DATE: 7/24/81
CONTRACT NUMBER: 3240-004			CONTROL No. OR REPORT No.: NDT_P3240-38
JOB OR PROJECT LOCATION: WNP-3	P.O. No.: 004		PLAN OR DWG. No.: N/A
SURFACE CONDITION: Smooth	HEAT No.: N/A	HEAT TREAT. BEFORE ☐ AFTER ☐	TYPE OF MAT'L: S/S — TEMP. OF MAT'L: Ambient
TYPE OF EXAMINATION: UT ☐ MT ☐ PT ☒	EXAMINATION STANDARD: N/A	ACCEPTANCE STANDARD: ASME III ND 5000	NDE PROCEDURE No.: 9-4-0

ULTRASONIC EVALUATION

EQUIPMENT	TRANSDUCER	TEST BLOCK	METHOD USED	SCANNING METHOD	SENSITIVITY LEVEL
N/A					

MAGNETIC PARTICLE EVALUATION

EQUIPMENT	DRY ☐ WET ☐	VISIBLE ☐ FLOURESCENT ☐	AC ☐ DC ☐ RECTIFIED ☐	AMPERAGE	PROD. SPACING HEAD ☐ COIL ☐	PARTICLES - COLOR
N/A						

LIQUID PENETRANT EVALUATION

METHOD	PENETRANT BRAND No.	PENETRANT BATCH No.	DWELL TIME	CLEANER BRAND No.	CLEANER BATCH No.	DEVELOPER BRAND No.	DEVELOPER BATCH No.	DEV. TIME	DRY ☐ NON-WET ☐ AQUEOUS ☐
VIS. Dye	Uresco	H-229	7	Uresco	H-236	Uresco	H-246	7 mins	

PART No.	TOTAL LENGTH EXAMINED FEET	INCHES	TYPE OF WORK	No. OF ITEMS ACCEPTED	No. OF ITEMS REJECTED
3-3AF3-1115B-12	total length	—	NEW ☒ REPAIR ☐		1

TYPE OF DEFECTS CODE

C = CRACKS P = POROSITY NF = NON-FUSION LI = LINEAR INDICATION S = SLAG LA = LAMINATION OTHER = SPECIFY

PC's OR SN's	ACC	REJ	DEFECT CODE	REMARKS	PC's OR SN's	ACC	REJ	DEFECT CODE	REMARKS
3-3AF3-1115B-12		✓	LI	excessive					

INFO COPY

EVALUATOR [signature] [signature]

SNT-TC-1A Level III / II

CS-AD-620 (8.8.80)

WASHINGTON PUBLIC POWER SUPPLY SYSTEM
NUCLEAR PROJECTS 3 & 5

EBASCO SERVICES INCORPORATED

REPORT OF NONDESTRUCTIVE EVALUATION

CONTRACTOR: Peter Kiewit Sons				DATE: 6/2/81	
CONTRACT NUMBER: 226/251				CONTROL No. OR REPORT No.: P 3240-251-28	
JOB OR PROJECT LOCATION: React. Aux BLDG ELEV 352'		P.O. No.		PLAN OR DWG. No.: NCR 251-4546	
SURFACE CONDITION: Buffed	HEAT No.: N/A		HEAT TREAT. N/A BEFORE ☐ AFTER ☐	TYPE OF MAT'L: S.S. [illegible] C/S	TEMP. OF MAT'L: 760°
TYPE OF EXAMINATION: UT ☐ MT ☐ PT ☒	EXAMINATION STANDARD		ACCEPTANCE STANDARD: ASME SECT III	NDE PROCEDURE No.: QAI 9-4	

ULTRASONIC EVALUATION

EQUIPMENT	TRANSDUCER	TEST BLOCK	METHOD USED	SCANNING METHOD	SENSITIVITY LEVEL

MAGNETIC PARTICLE EVALUATION

EQUIPMENT	DRY ☐ VISIBLE ☐ / WET ☐ FLOURESCENT ☐	AC ☐ DC ☐ / RECTIFIED ☐	AMPERAGE	PROD. SPACING HEAD ☐ COIL ☐	PARTICLES - COLOR

LIQUID PENETRANT EVALUATION

METHOD	PENETRANT			CLEANER		DEVELOPER			
	BRAND No.	BATCH No.	DWELL TIME	BRAND No.	BATCH No.	BRAND No.	BATCH No.	DEV. TIME	DRY ☐ NON- WET ☐ AQUEOUS ☒
	URES.	H229	10	URES.	H236	URES.	H246	7	

PART No.	TOTAL LENGTH EXAMINED FEET	INCHES	TYPE OF WORK	No. OF ITEMS ACCEPTED	No. OF ITEMS REJECTED
Spool 3-3AF3-115B-12	2'		NEW ☒ REPAIR ☐		1

TYPE OF DEFECTS CODE

C = CRACKS P = POROSITY NF = NON-FUSION LI = LINEAR INDICATION S = SLAG LA = LAMINATION OTHER = SPECIFY

PC's OR SN's	ACC	REJ	DEFECT CODE	REMARKS	PC's OR SN's	ACC	REJ	DEFECT CODE	REMARKS
1		X	C	BASE MAT'L					

INFO COPY

EVALUATOR [signature] SNT-TC-1A Level II

CS-AD-620 (8.8.80)

ATTACHMENT 2
Inter-Office Correspondence

JOHNSON CONTROLS

Date October 8, 1981

Subject Metallurgical Evaluation of AP&E Code WE-218

From Bob Hipley

To K. C. Jones

Upon your request, I have evaluated the section of A106, 3" .216" wall pipe (U.S. Steel Heat #N56659) returned from the WPPSS site. A macro (5 magnifications) section revealed that there is a longitudinal seam approximately 40% to 45% through the wall thickness. This seam appeared to be a mill processing defect.

After visual examination of the outside diameters of the straight lengths remaining at AP&E, three additional samples from the ends of pipe numbers 15, 17, and 18 were selected for further examination. Micro examination (50 and 100 magnifications) of all three showed only surface conditions, such as, cold laps, folds, and grooves. No evidence of the seam found in the returned pipe was detected.

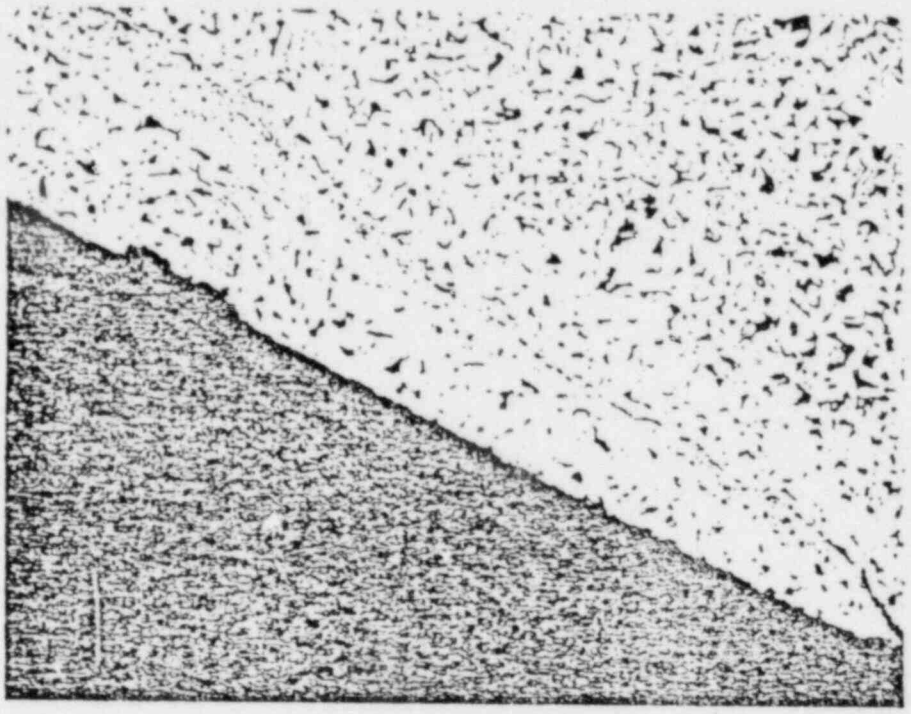
Photomicrographs of these various indications are attached. All these samples were jointly reviewed with the district metallurgist (Bud Archer) from U.S. Steel, and he was given samples and photos to send back to U.S. Steel for their comments.

If we can be of further assistance, let us know.

Bob

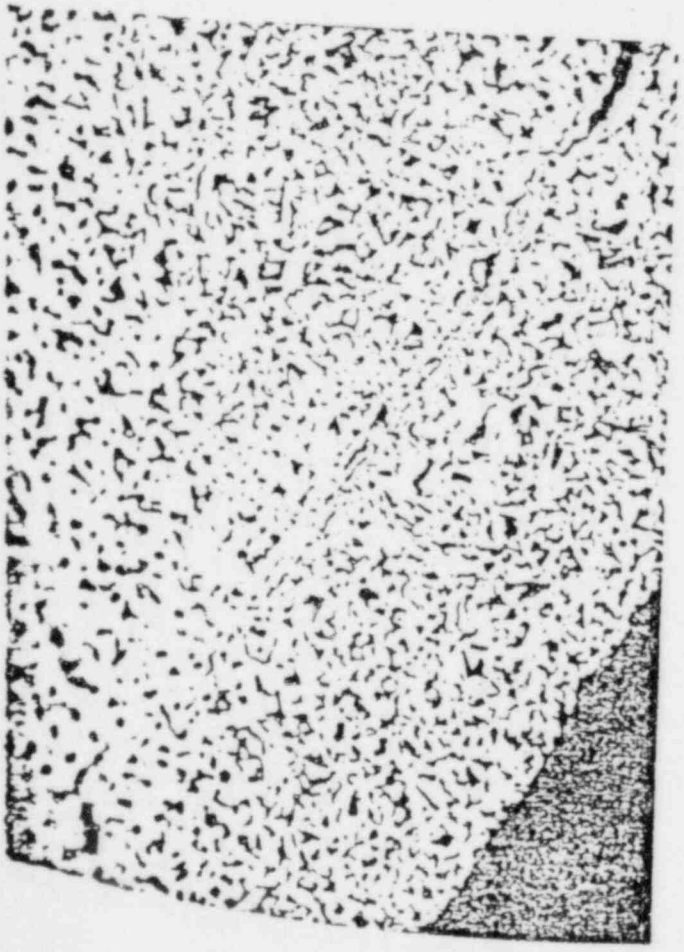
Technical Services

RLH/vm



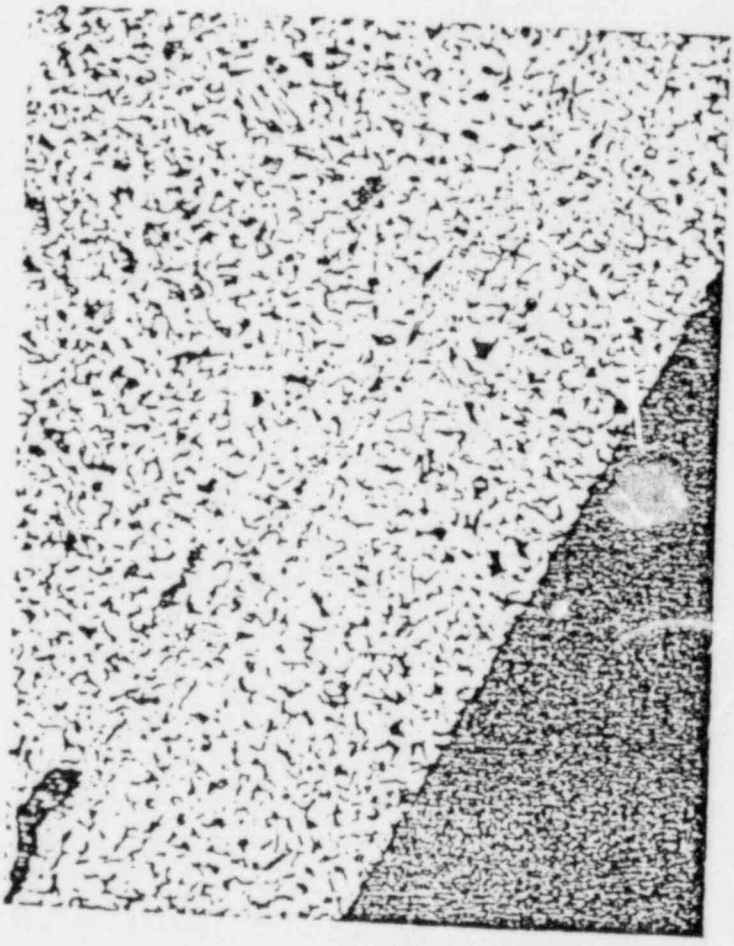
#15

100X



#15

100X



ATTACHMENT 3

UNITED STATES STEEL CORP LETTER TO AP&E "LINEAR INDICATIONS"

FROM R E MEIER TO FRANK CORJAT DATED OCTOBER 7, 1981

ATTACHMENT 4

UNITED STEEL STEEL CORP METALLURGICAL TEST REPORT

DATED 11/21/77 (MARKED FOR WE218)