

General
Engineering
Guideline

ATTACHMENT D General Visual Examination Checklist

IP2-GEG-3113
Rev. 1
Rev. Date: 03-10-2000

Yes = exceeds the recording criteria
No = does not exceed the recording criteria

Component Number or Zone Number	Recording Conditions																Initial and Date		
	Nicks, Gouges, arc strikes		Metal Cracking		Metal Corrosion		Blistering (coating)		Checking (coating)		Cracking (coating)		Peeling (coating)		Rust staining				
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No			
IWE-046-001																			
VCM-01		X		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
VCL-02		X		X	X			X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000

EXAMINATION PERFORMED BY: *[Signature]* DATE 3/10/2000



ATTACHMENT C Demonstration of Remote Examination Equipment

Type of equipment used Nikon Action Lookout IV 10x50 binoculars

Maximum Examination Distance: 75'

Description of demonstration:

⁹
~~This demonstration is required to be performed prior to executing the General Visual Examinations when the use of remote equipment is required. This demonstration shall be witnessed by the Site ANII. (see note 1)~~

<sup>CAS
1/25/01</sup>
The remote equipment shall be able to resolve a 1/32" black line on a white background. Resolution and illumination shall be verified at a distance equal to the examination distance plus 20%. The light source shall be setup in an area to simulate the examination conditions. Measure the distance that is required to perform the demonstration. On one end of this distance setup the test line. On the other end of this distance setup the remote lighting and the remote examination equipment. Turn on the light. From the side with the remote equipment verify that the specified line thickness can be seen.

This demonstration only needs to be performed once at the beginning of this surveillance to qualify the light source and the remote equipment used. If the light source or the remote equipment is changed then the new equipment shall be qualified prior to use.

The acceptance of the results of this demonstration qualifies both this procedure and the remote equipment used to perform this procedure.

Demonstration distance 100'

Demonstration performed by: Donald A. Jones Date 3/10/00

Demonstration witnessed by: Chris Sward Date 3/10/00

³¹
Note 1: The ANII was notified by ConEd of the nature and schedule of the subject examinations but was not present to witness the remote demonstration. Since there is no code requirement for this witness, this stipulation has been deleted from the associated procedure.

ATTACHMENT D (cont.)
Observations

Component or Zone Number: IWE-046-001

Item No.	Description	Photo
01	Sealant is missing from Column 1-4. See Drawing IWE-DET-001 and ConEd Drawing DMD 322097 Det. 1.	00030801.jpg and 00030804.jpg
02	Metal corrosion is noted below concrete in a 2 foot circumferential area between Column 3-4.	00030905.jpg 00031403.jpg

EXAMINATION PERFORMED BY: *Arnold A. Pen* DATE 3/10/2000



ATTACHMENT D (cont.)
Responsible Engineer's Review

Component or Zone Number: IWE-046-001

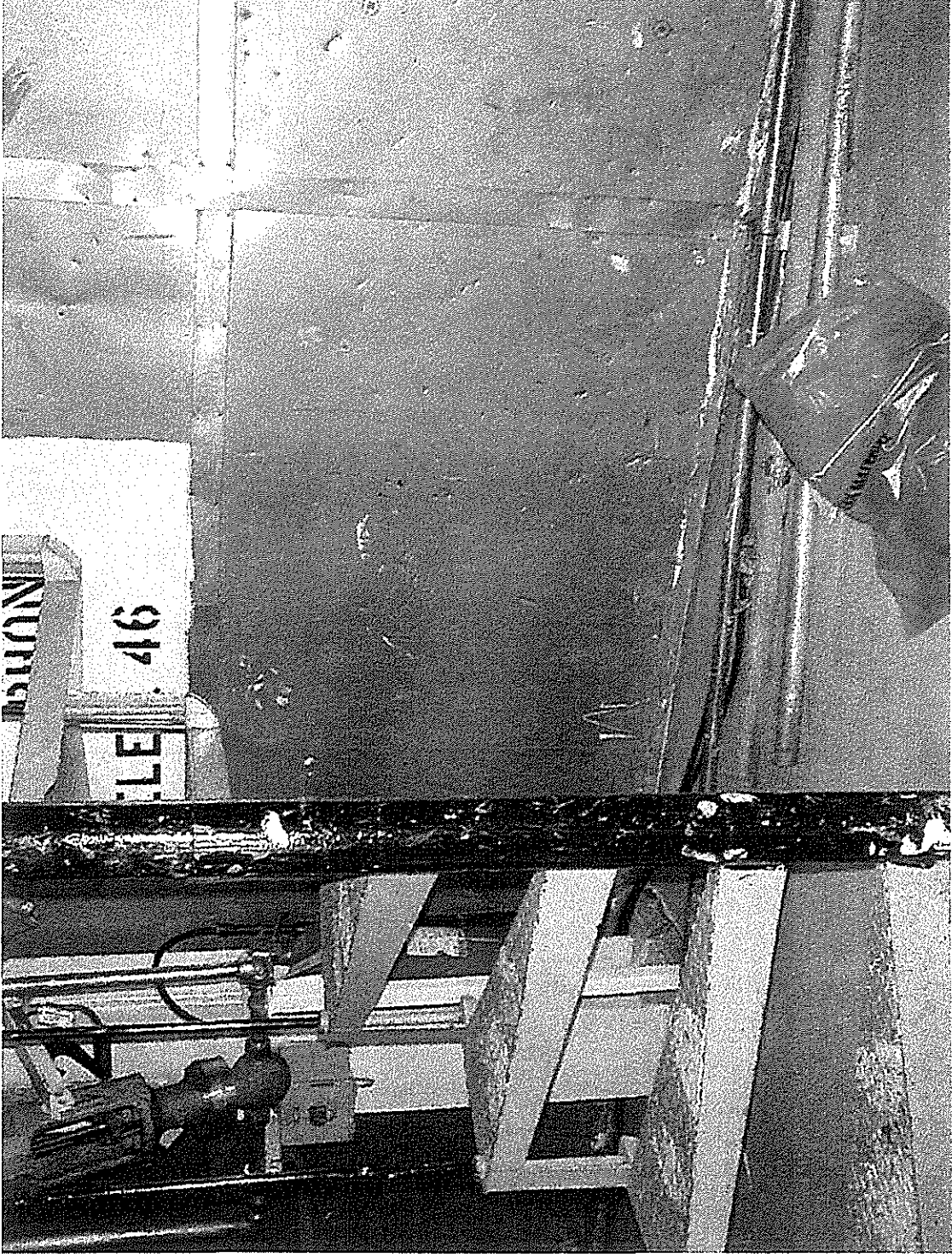
Item No.	Discussion	Acceptable	Additional Eval. Req'd.
01, 02	The corrosion of the liner at the slab interface requires engineering evaluation to determine its significance relative to Containment integrity. Subsequent investigations have revealed that this condition potentially exists throughout the entire circumference of the containment. The liner corrosion and the moisture barrier have been addressed via CRS 200001209.		✓

RESPONSIBLE ENGINEER: *BA Silen* DATE *6/11/02*



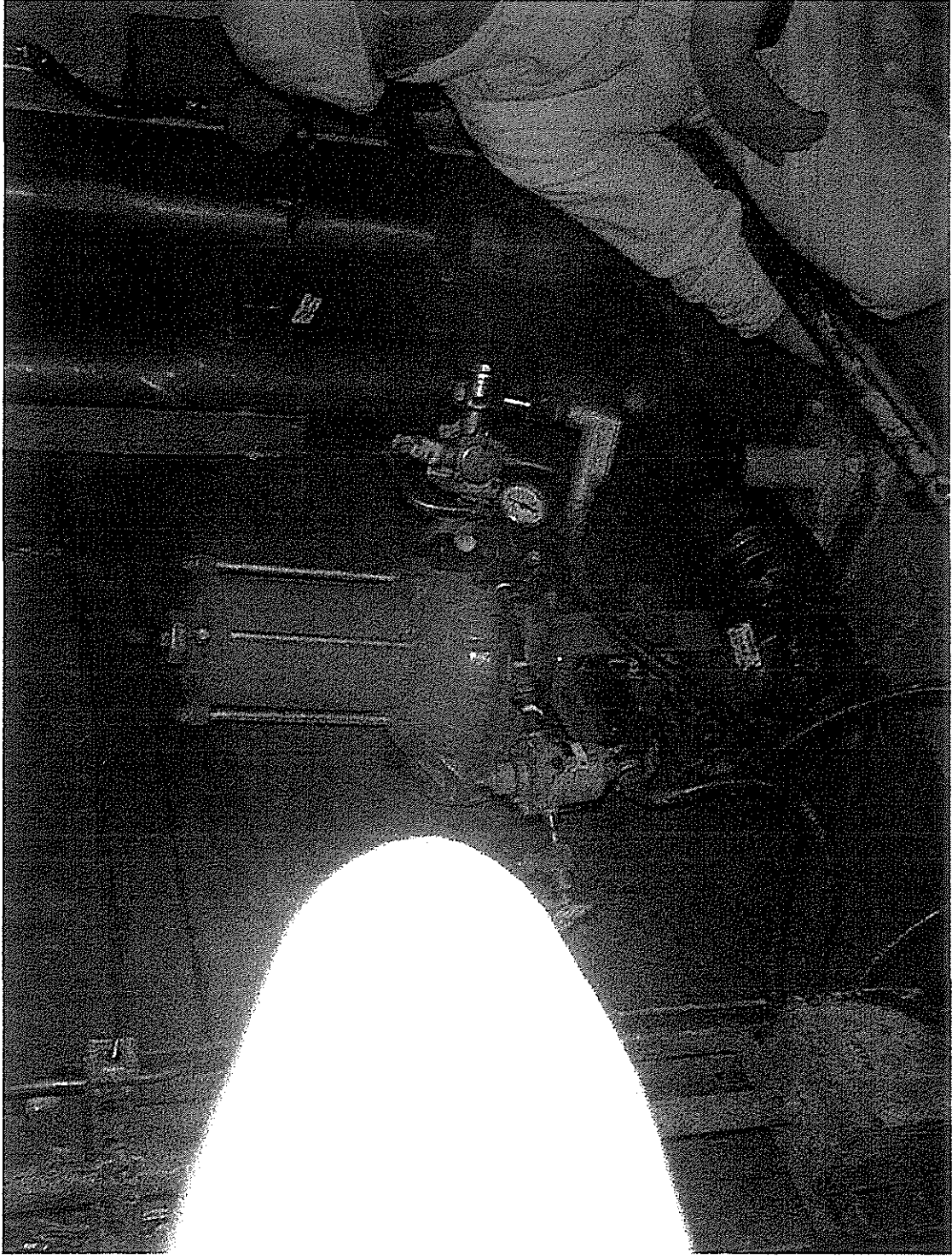
IWE-046-001

00030801.jpg



IWE-046-001

00030804.jpg



00030905.jpg

IWE-046-001



IWE-046-001

00031403.jpg

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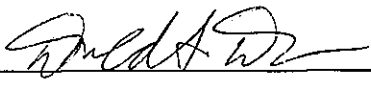
Component Number or Zone Number	Recording Conditions																Initial and Date		
	Nicks, Gouges, arc strikes		Metal Cracking		Metal Corrosion		Blistering (coating)		Checking (coating)		Cracking (coating)		Peeling (coating)		Rust staining				
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No			
IWE-046-002																			
VCM-02		X		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
VCL-03		X		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000

EXAMINATION PERFORMED BY: *Arnold S. Owen* DATE *3/10/2000*

ATTACHMENT D (cont.)
Observations

Component or Zone Number: IWE-046-002

Item No.	Description	Photo
01	Area at moisture barrier caulking sealant is missing from Column 4-5. See Drawing IWE-DET-001 and ConEd drawing DMD 322097 Det. 1. Supplemental examinations will be performed to determine the extent of potential liner degradation.	00031601.jpg and 00031604.jpg

EXAMINATION PERFORMED BY:  DATE 3/10/2000

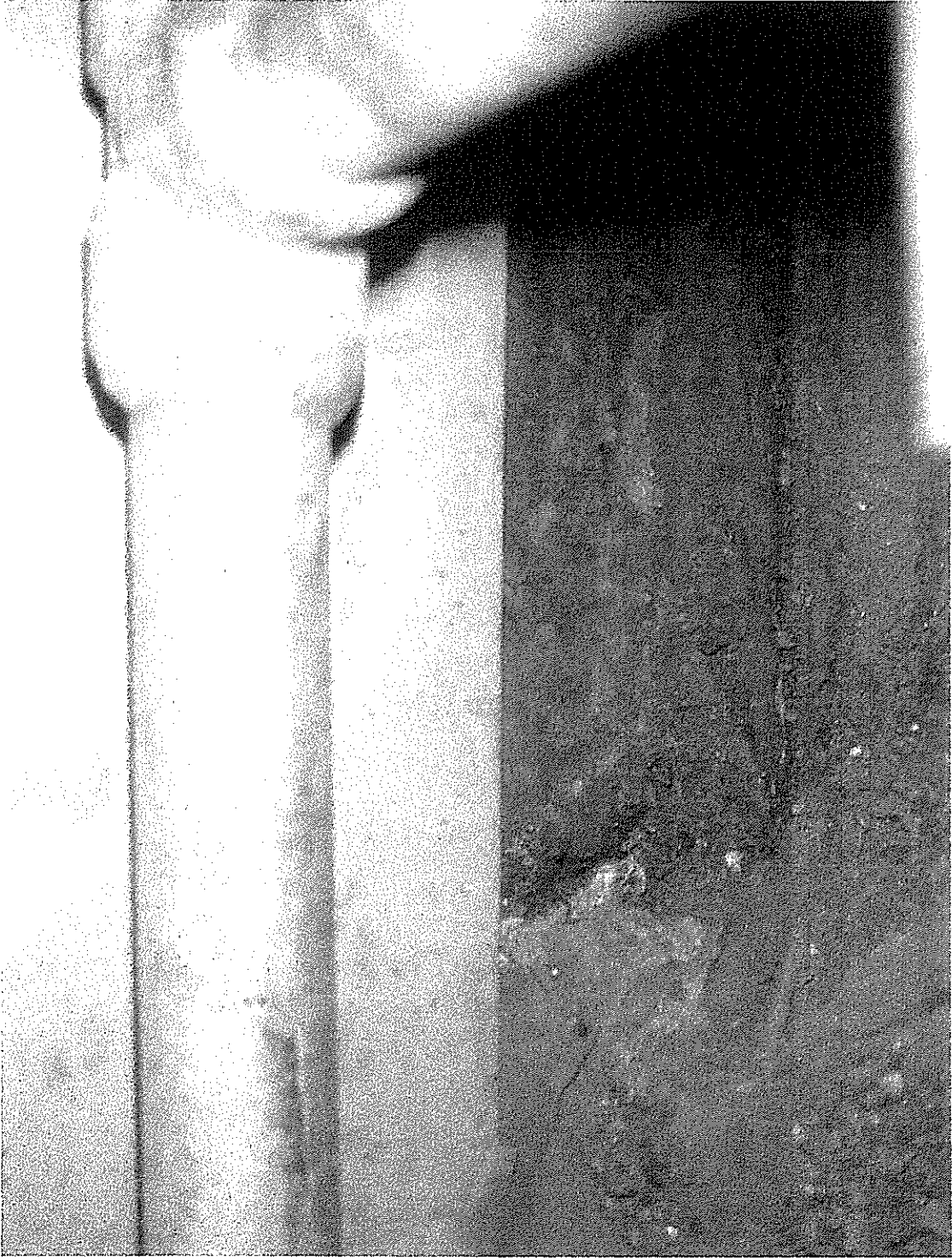


ATTACHMENT D (cont.)
Responsible Engineer's Review

Component or Zone Number: IWE-046-002

Item No.	Discussion	Acceptable	Additional Eval. Req'd.
01	The corrosion of the liner at the slab interface requires engineering evaluation to determine its significance relative to Containment integrity. Subsequent investigations have revealed that this condition potentially exists throughout the entire circumference of the containment. The liner corrosion and the moisture barrier have been addressed via CRS 200001209.		✓

RESPONSIBLE ENGINEER: *B. A. [Signature]* DATE *6/11/00*



IWE-046-002

00031601.jpg



00031604.jpg

IWE-046-002

ATTACHMENT D General Visual Examination Checklist

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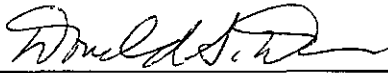
Component Number or Zone Number	Recording Conditions																Initial and Date
	Nicks, Gouges, arc strikes		Metal Cracking		Metal Corrosion		Blistering (coating)		Checking (coating)		Cracking (coating)		Peeling (coating)		Rust staining		
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	
IWE-046-003																	
VCM-03		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
VCL-04		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
MP-H		X		X		X		X		X		X		X	X		<i>[Signature]</i> 3/10/2000
MP-G		X		X		X		X		X		X		X	X		<i>[Signature]</i> 3/10/2000
MP-D		X		X		X		X		X		X		X	X		<i>[Signature]</i> 3/10/2000
MP-C		X		X		X		X		X		X		X	X		<i>[Signature]</i> 3/10/2000

EXAMINATION PERFORMED BY: *Donald S. [Signature]* DATE *3/10/2000*

ATTACHMENT D (cont.)
Observations

Component or Zone Number: IWE-046-003

Item No.	Description	Photo
01	Mechanical penetration nos. MP-C, MP-D, MP-G and MP-H showed surface rusting on the head plates. Penetrations are for main steam and feedwater piping with service that will not promote an active corrosive environment. Rust staining around the mechanical penetrations is classified as ASTM D610, Grade 1 -2 that is between 1/3 and 1/2 of the head plate circumference is rusting.	00031706.jpg, 00031707.jpg, 00031708.jpg, 00031709.jpg and 00031710.jpg

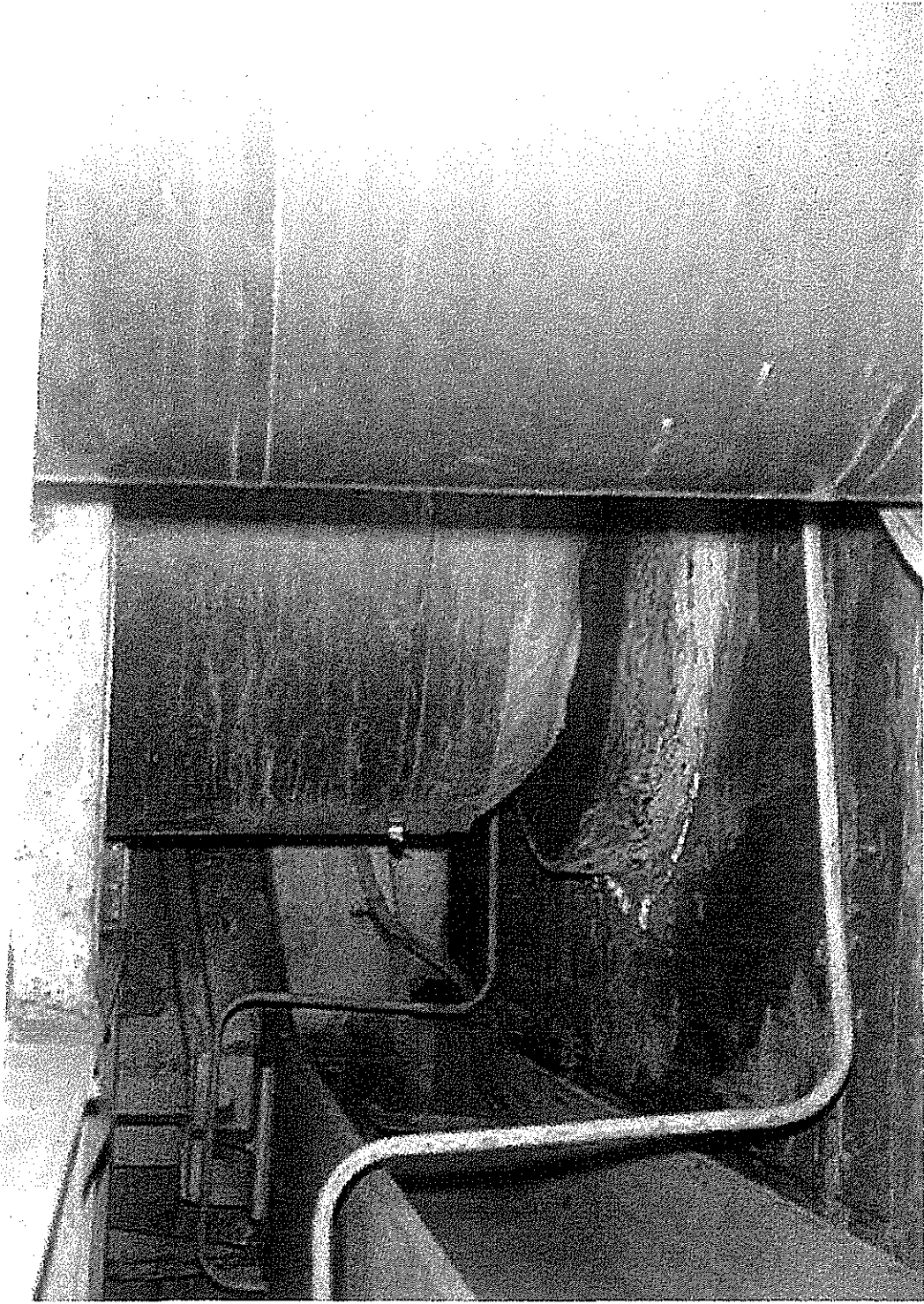
EXAMINATION PERFORMED BY:  DATE 3/10/2000

ATTACHMENT D (cont.)
Responsible Engineer's Review

Component or Zone Number: IWE-046-003

Item No.	Discussion	Acceptable	Additional Eval. Req'd.
01	<p>The corrosion on the 2-1/2" thick penetration head plates has resulted from high temperatures, which have burned off the coating and allowed corrosion of the plate. (MP-C and MP-D are for Main Steam lines with process temperatures of 556°F. MP-G and MP-H are for Feedwater lines with process temperatures of 427°F.) The corrosion is powdery in form and does not exhibit flaking or pitting which would indicate a more severe condition. During plant operation the piping temperatures will be sufficiently high as to preclude moisture from the head plates and thus the plates will only be subject to corrosion during plant outages. These times are sufficiently short and the corrosion rates sufficiently low as to not result in significant loss of material (i.e., well less than 10% as discussed in IWE-3512.3) Corrosion on the penetration sleeves is general surface corrosion that has not resulted in any significant loss of material. Examination at the next regular inspection period is sufficient to monitor these conditions.</p>	✓	

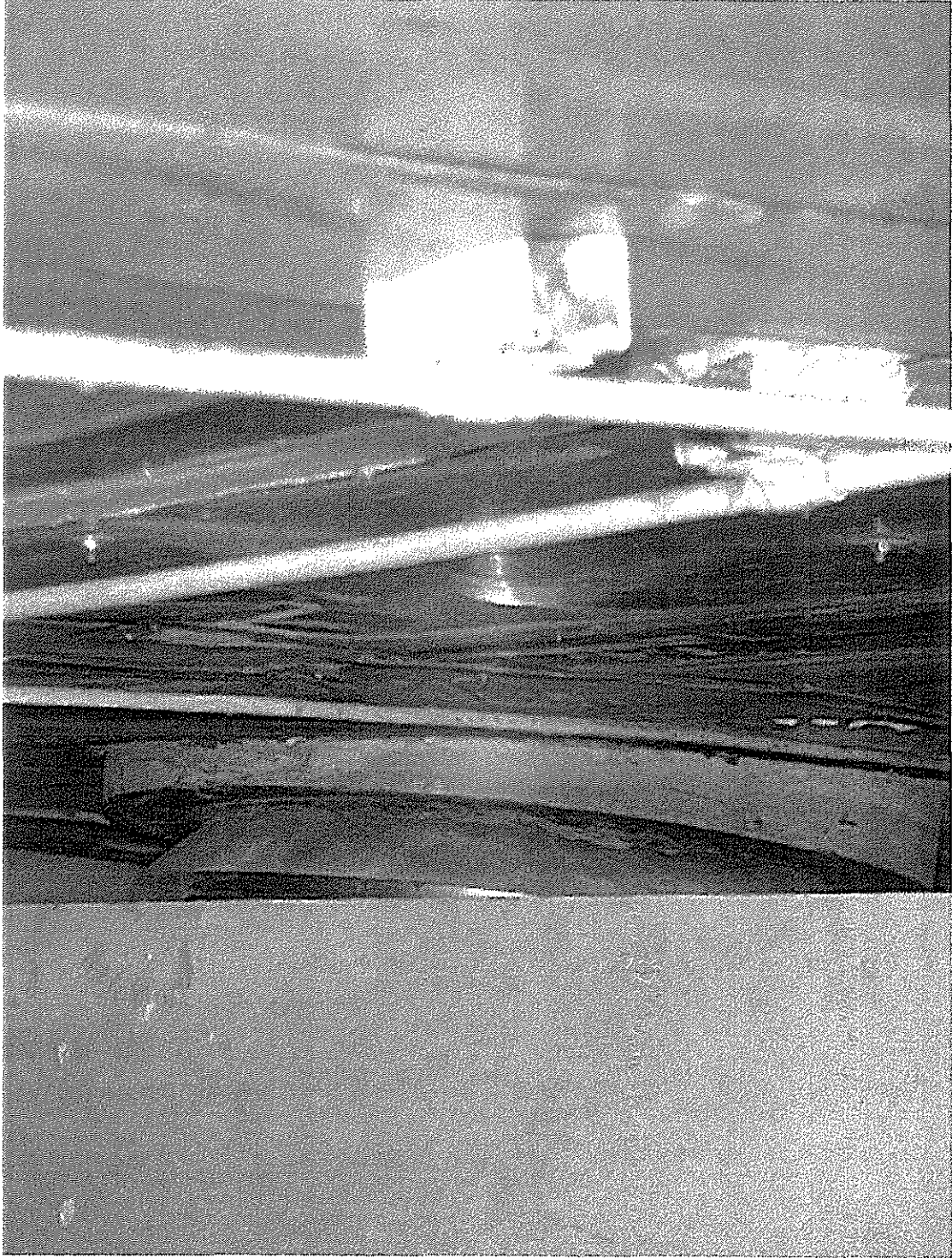
RESPONSIBLE ENGINEER: *[Signature]* DATE 7/13/00



IWE-046-003

MP-C

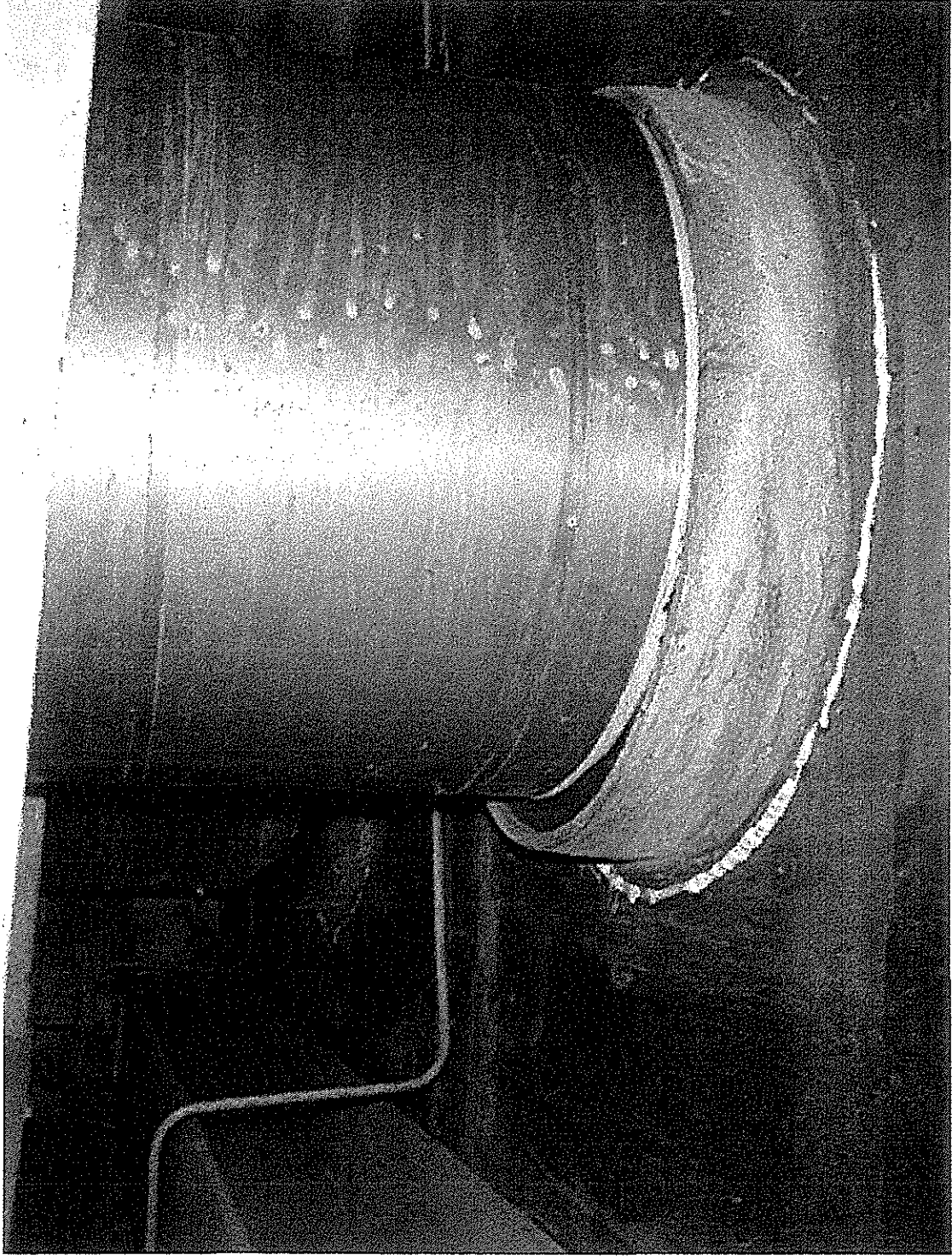
00031709.jpg



00031707.jpg

MP-D

IWE-046-003



IWE-046-003

MP-G

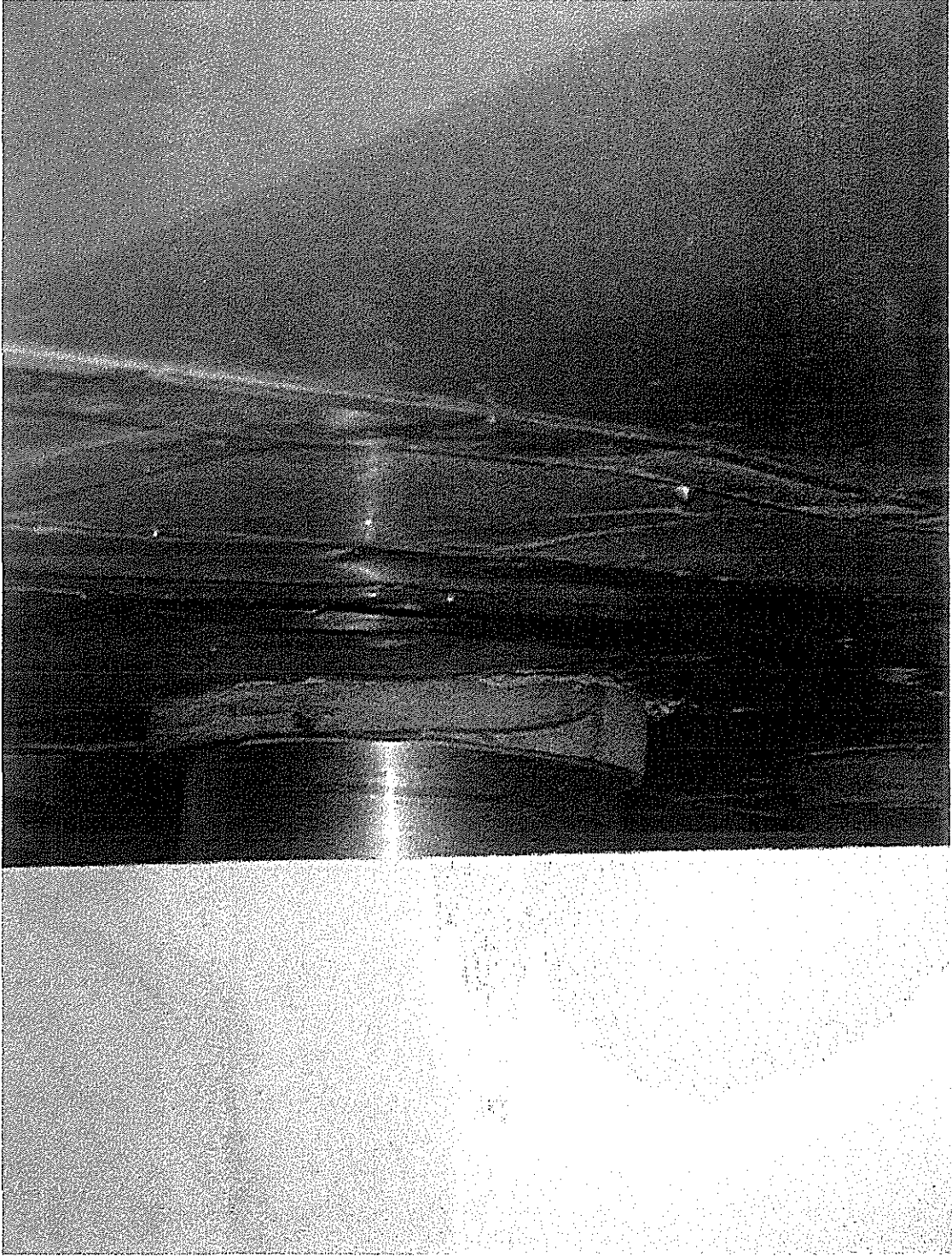
00031708.jpg



00031710.jpg

MP-D

IWE-046-003



00031706.jpg

MP-H

IWE-046-003

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	Nicks, Gouges, arc strikes		Metal Cracking		Metal Corrosion		Blistering (coating)		Checking (coating)		Cracking (coating)		Peeling (coating)		Rust staining		
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	
IWE-046-004																	
VCM-04		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
VCL-05		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
MP-F		X		X		X		X		X		X	X				<i>[Signature]</i> 3/10/2000
MP-E		X		X		X		X		X		X	X				<i>[Signature]</i> 3/10/2000
MP-B		X		X		X		X		X		X	X				<i>[Signature]</i> 3/10/2000
MP-A		X		X		X		X		X		X	X				<i>[Signature]</i> 3/10/2000
EP-H62		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
EP-H61		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
EP-H60		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
EP-H59		X		X		X		X		X		X	X				<i>[Signature]</i> 3/10/2000
EP-H58		X		X		X		X		X		X	X				<i>[Signature]</i> 3/10/2000
EP-H49		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
EP-H48		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000

EXAMINATION PERFORMED BY: *Donald S. [Signature]* DATE 3/10/2000

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Yes = exceeds the recording criteria
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Component Number or Zone Number	Recording Conditions														Initial and Date		
	Nicks, Gouges, arc strikes		Metal Cracking		Metal Corrosion		Blistering (coating)		Checking (coating)		Cracking (coating)		Peeling (coating)			Rust staining	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No		Yes	No
IWE-046-004																	
EP-H18		X		X		X		X		X		X		X	X		<i>[Signature]</i> 3/10/2000
EP-H17		X		X		X		X		X		X		X	X		<i>[Signature]</i> 3/10/2000
EP-H16		X		X		X		X		X		X		X	X		<i>[Signature]</i> 3/10/2000
EP-H15		X		X		X		X		X		X		X	X		<i>[Signature]</i> 3/10/2000
EP-H14		X		X		X		X		X		X		X	X		<i>[Signature]</i> 3/10/2000
EP-H13		X		X		X		X		X		X		X	X		<i>[Signature]</i> 3/10/2000
EP-H12		X		X		X		X		X		X		X	X		<i>[Signature]</i> 3/10/2000
EP-H11		X		X		X		X		X		X		X	X		<i>[Signature]</i> 3/10/2000

EXAMINATION PERFORMED BY: *Arnold L. Owen* DATE 3/10/2000

ATTACHMENT D (cont.)
Observations

Component or Zone Number: IWE-046-004

Item No.	Description	Photo
01	Mechanical penetration nos. MP-A, MP-B, MP-E and MP-F showed surface rusting on the end plates. Penetrations are for main steam and feedwater hot piping in which service will not promote an active corrosive environment. Rust staining is classified as ASTM D610, Grade 1-2 (between 1/3 and 1/2 of of end plate is rusted).	00031512.jpg - 00031515.jpg
02	Electrical penetration nos. EP-H11, EP-H12, EP-H13, EP-H14, EP-H15, EP-H16, EP-H17, EP-H18, EP-H58, EP-H59 showed loose surface rusting on the construction primer coat around the weld ring -to-flange areas. Rust staining is classified as ASTM D610, Grade 1-2 (between 1/3 and 1/2 of weld ring-to-flange circumference is rusted).	00031407.jpg - 00031417.jpg

EXAMINATION PERFORMED BY:  DATE 3/10/2000

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Component Number or Zone Number	Recording Conditions																Initial and Date
	Nicks, Gouges, arc strikes		Metal Cracking		Metal Corrosion		Blistering (coating)		Checking (coating)		Cracking (coating)		Peeling (coating)		Rust staining		
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	
IWE-046-004																	
EP-H47		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
EP-H46		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
EP-H45		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
EP-H36		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
EP-H35		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
EP-H34		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
EP-H33		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
EP-H32		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
EP-H23		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
EP-H22		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
EP-H21		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
EP-H20		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
EP-H19		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000

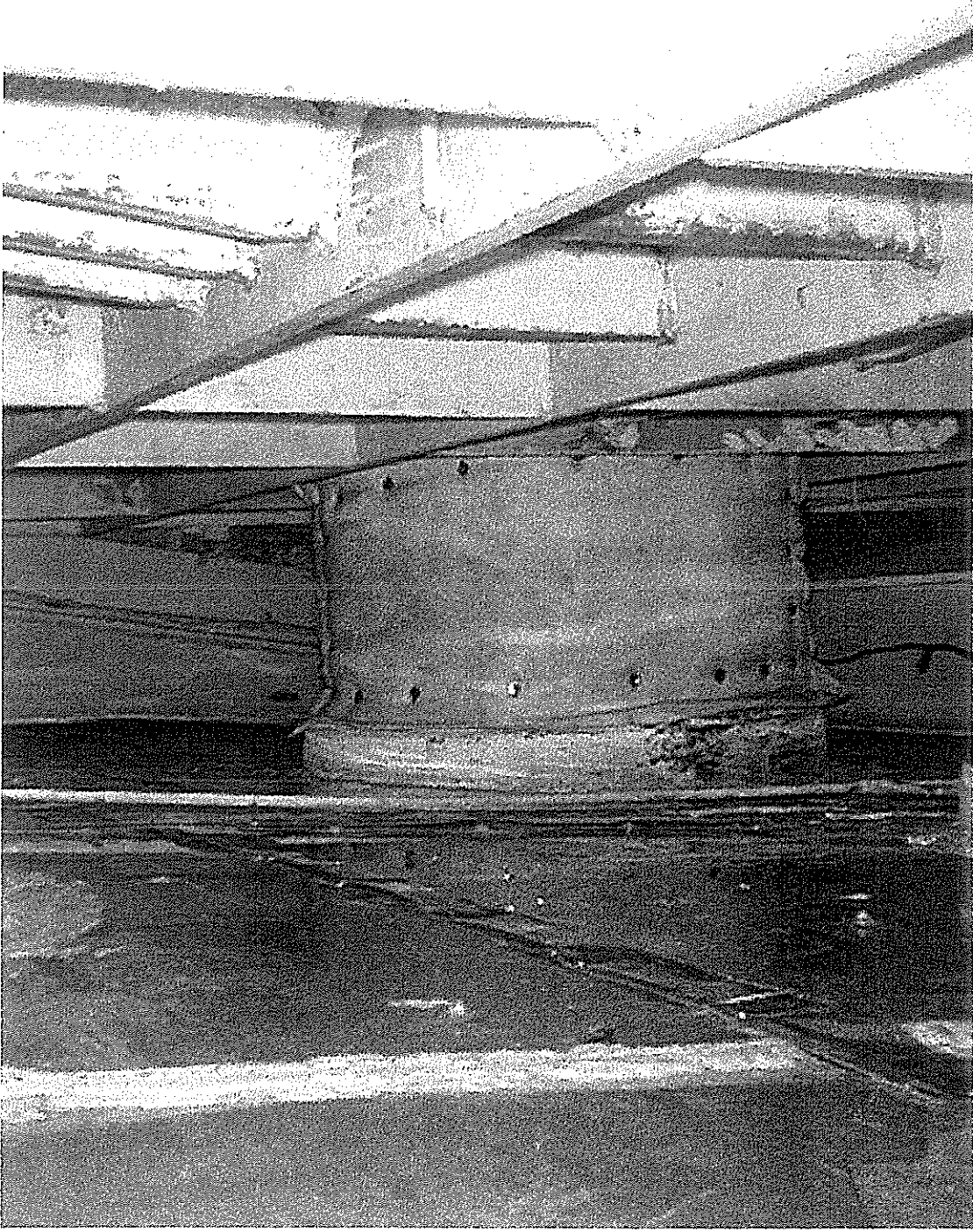
EXAMINATION PERFORMED BY: *[Signature]* DATE 3/10/2000



IWE-046-004

MP-A

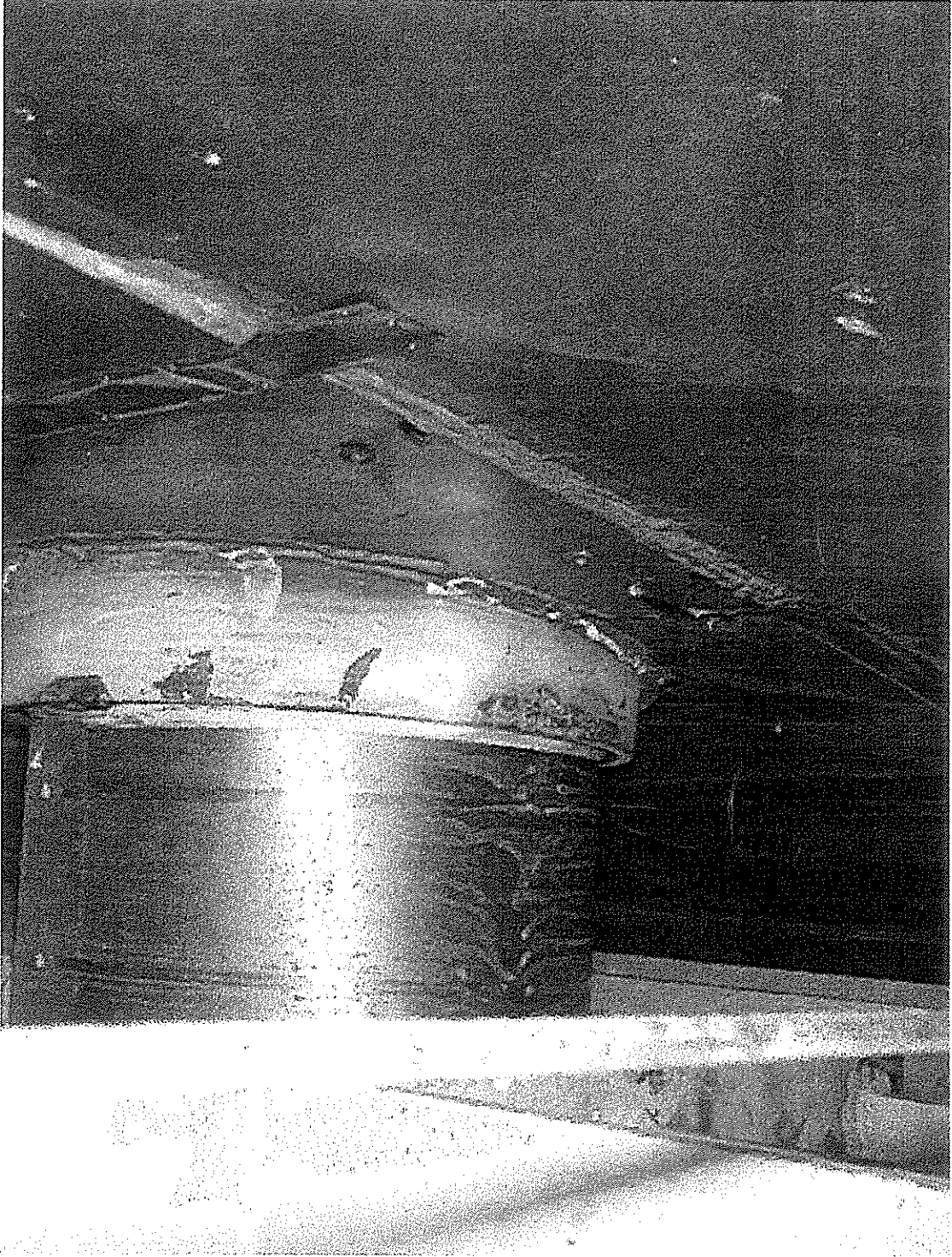
00031512.jpg



00031514.jpg

MP-B

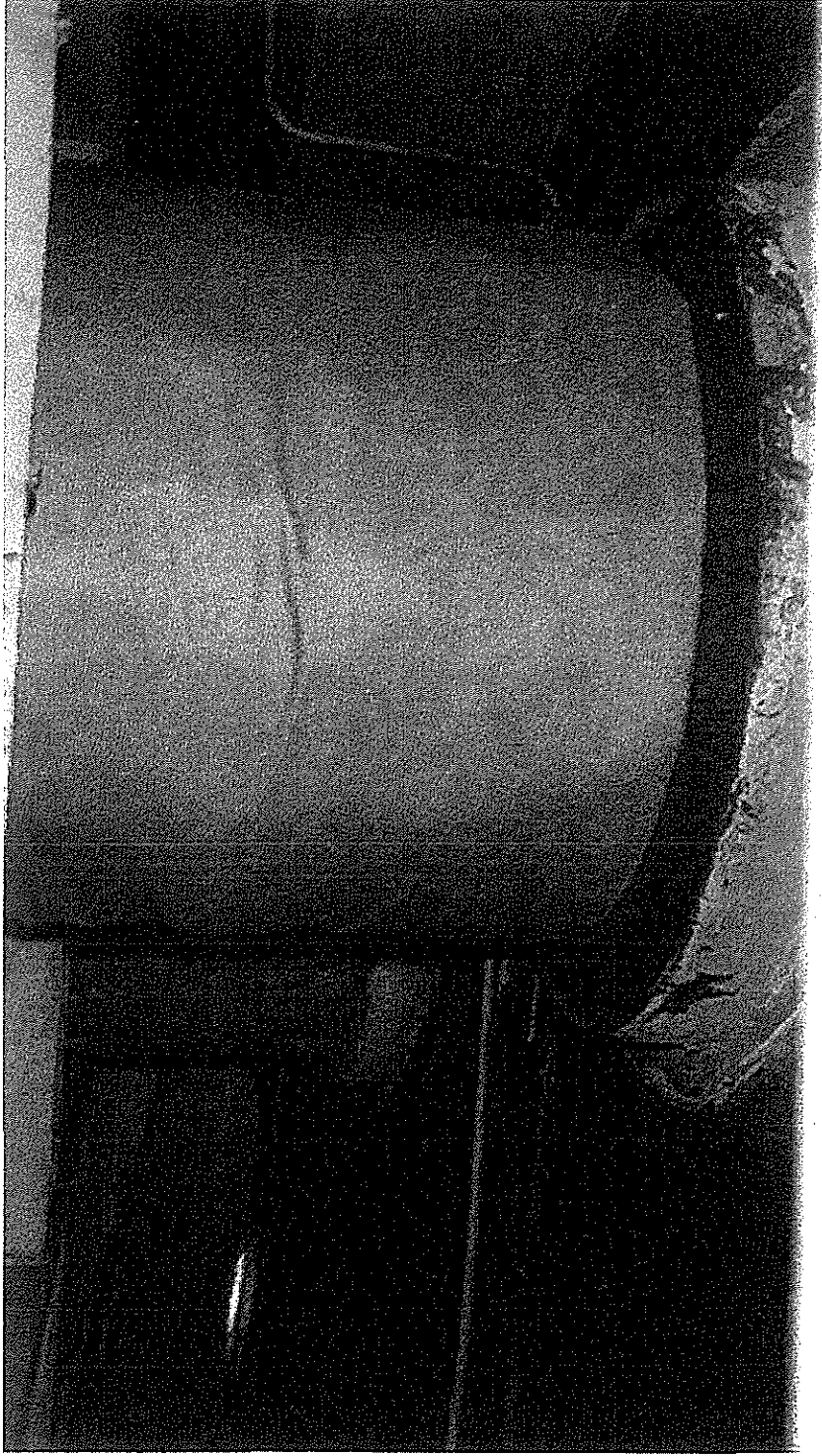
IWE-046-004



IWE-046-004

MP-E

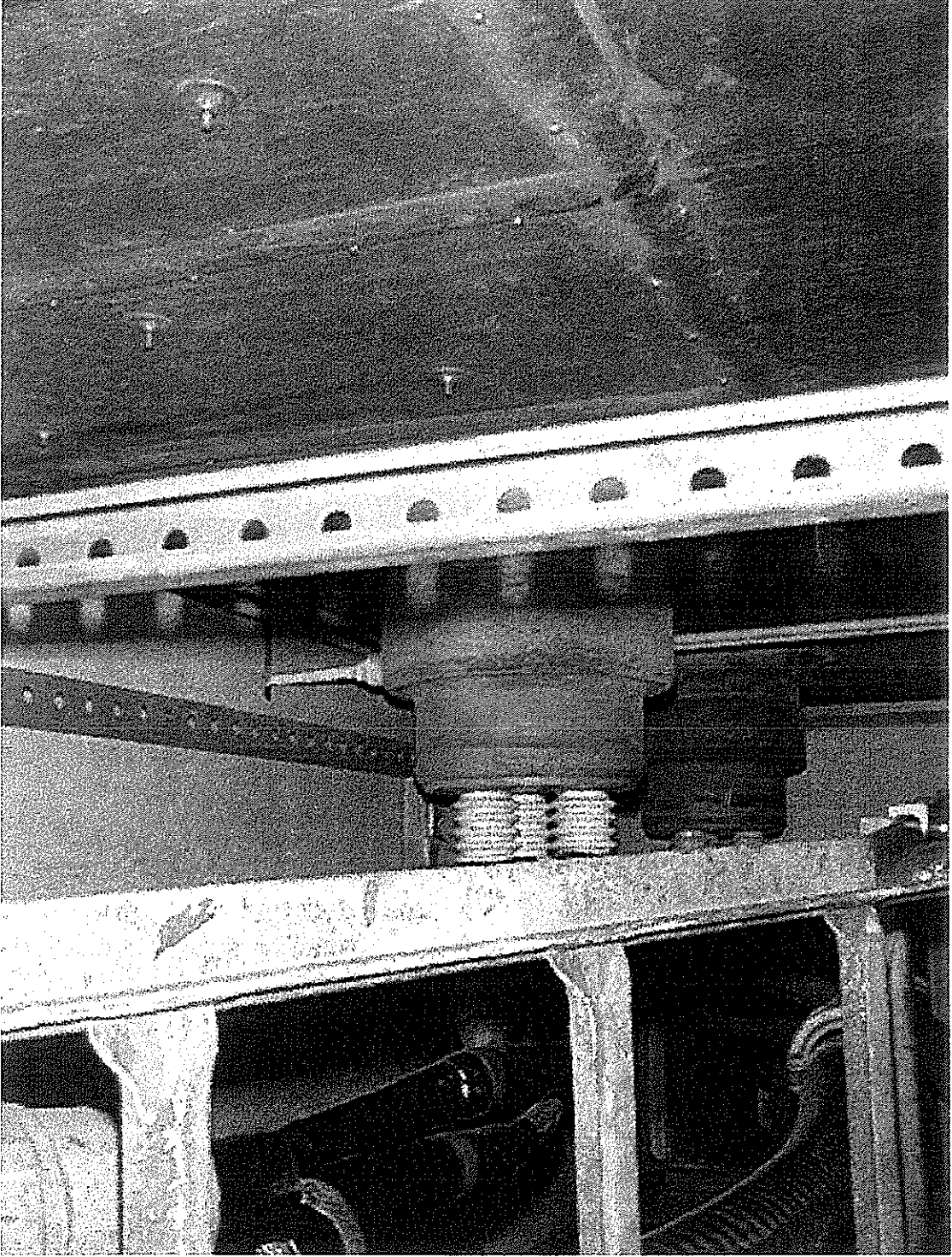
00031513.jpg



IWE-046-004

MP-F

00031515.jpg



00031415.jpg

EP-H11

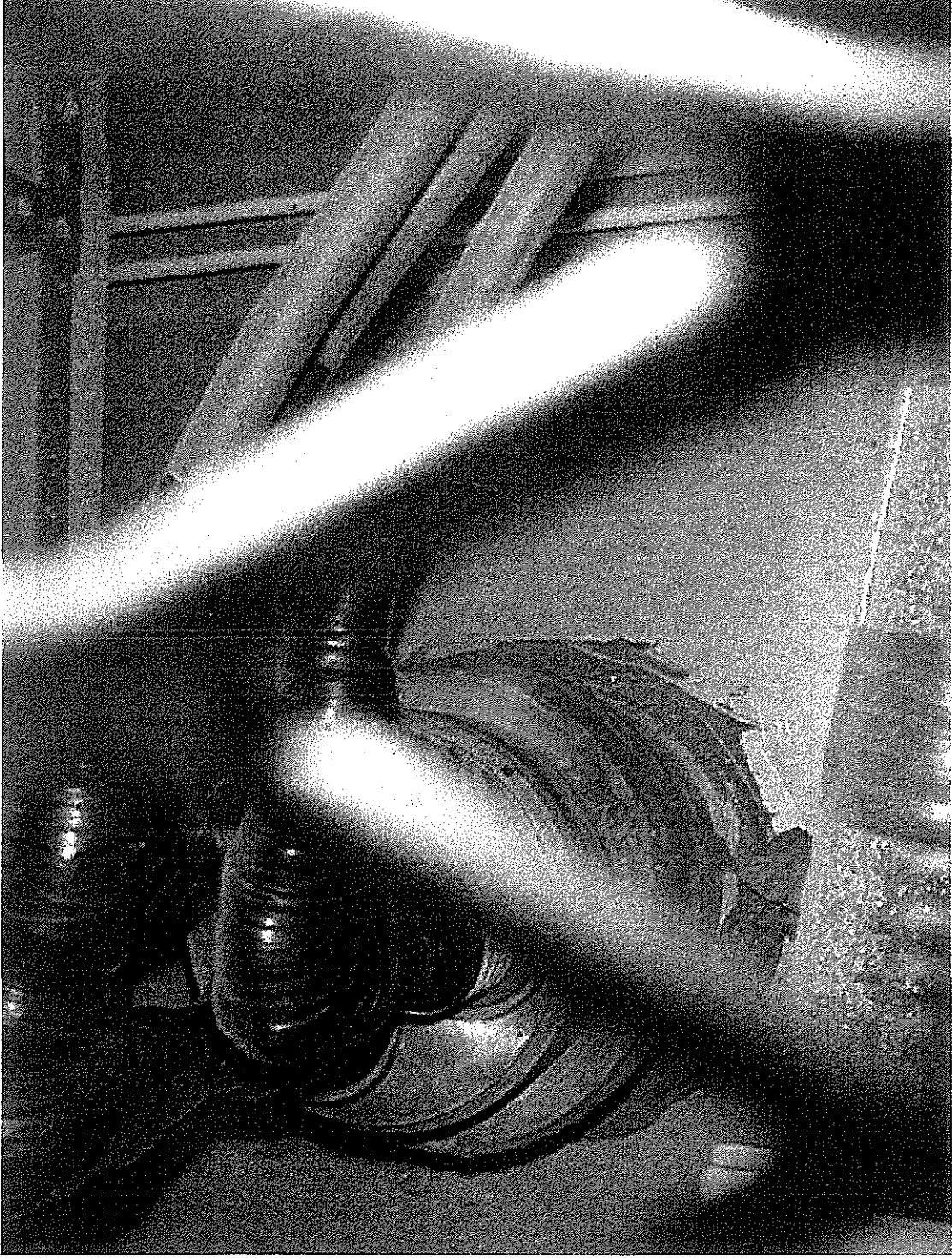
IWE-046-004



IWE-046-004

EP-H12

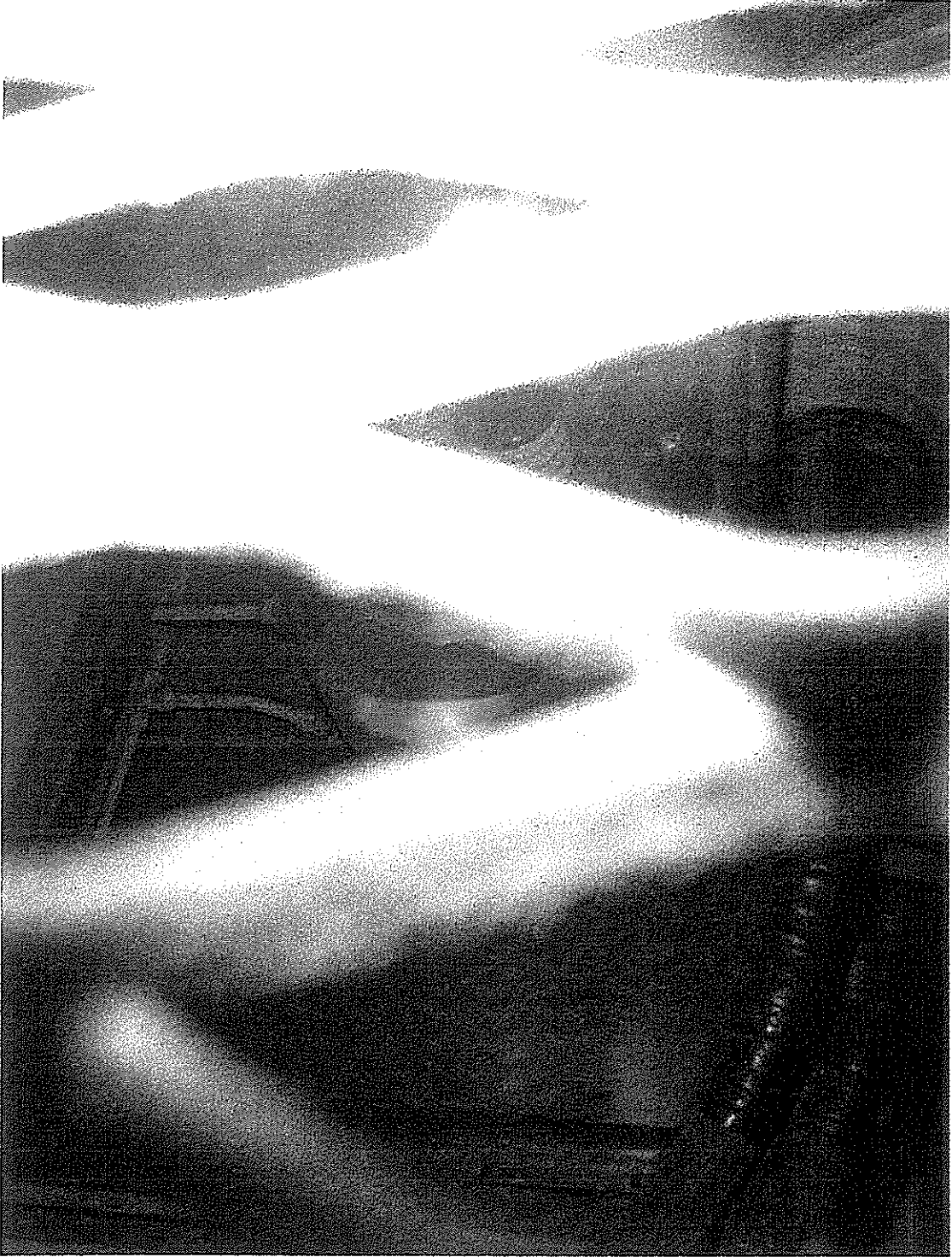
00031413.jpg



IWE-046-004

EP-H12

00031414.jpg



IWE-046-004

EP-H13

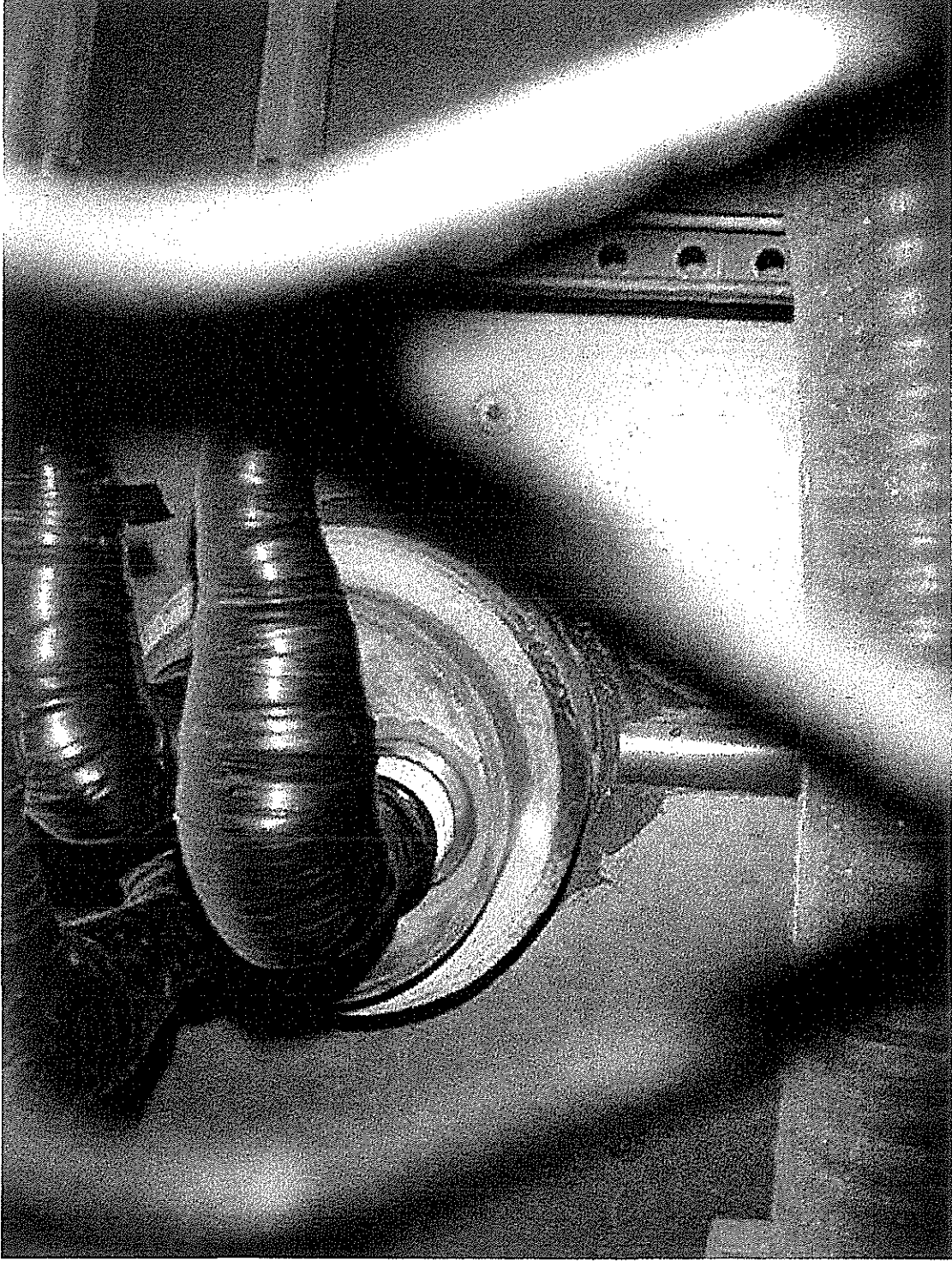
00031412.jpg



00031411.jpg

EP-H14

IWE-046-004



IWE-046-004

EP-H15

00031407.jpg



IWE-046-004

EP-H16

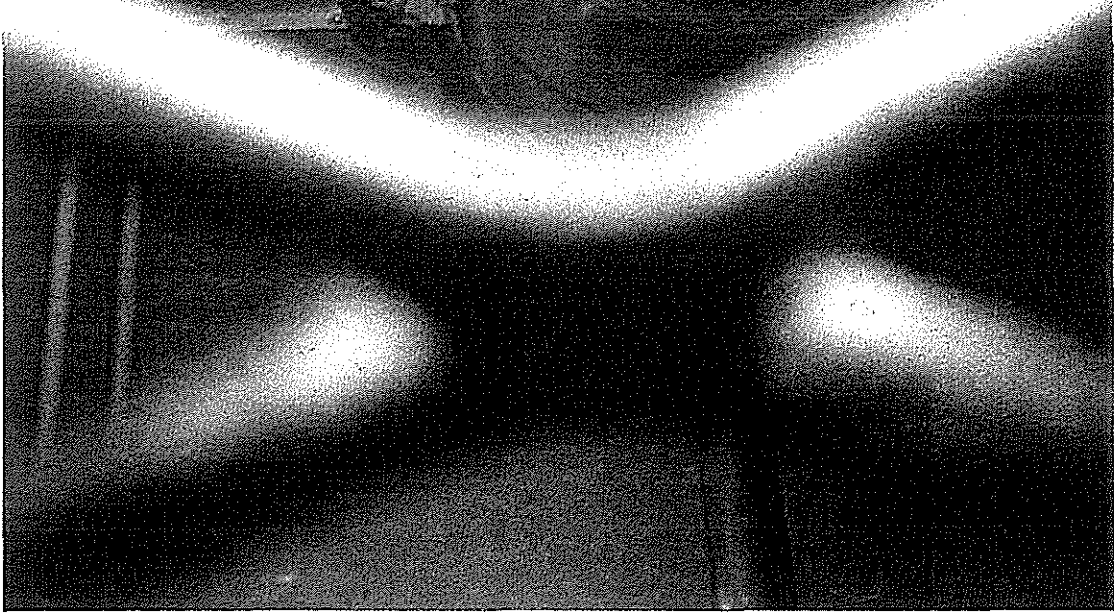
00031408.jpg



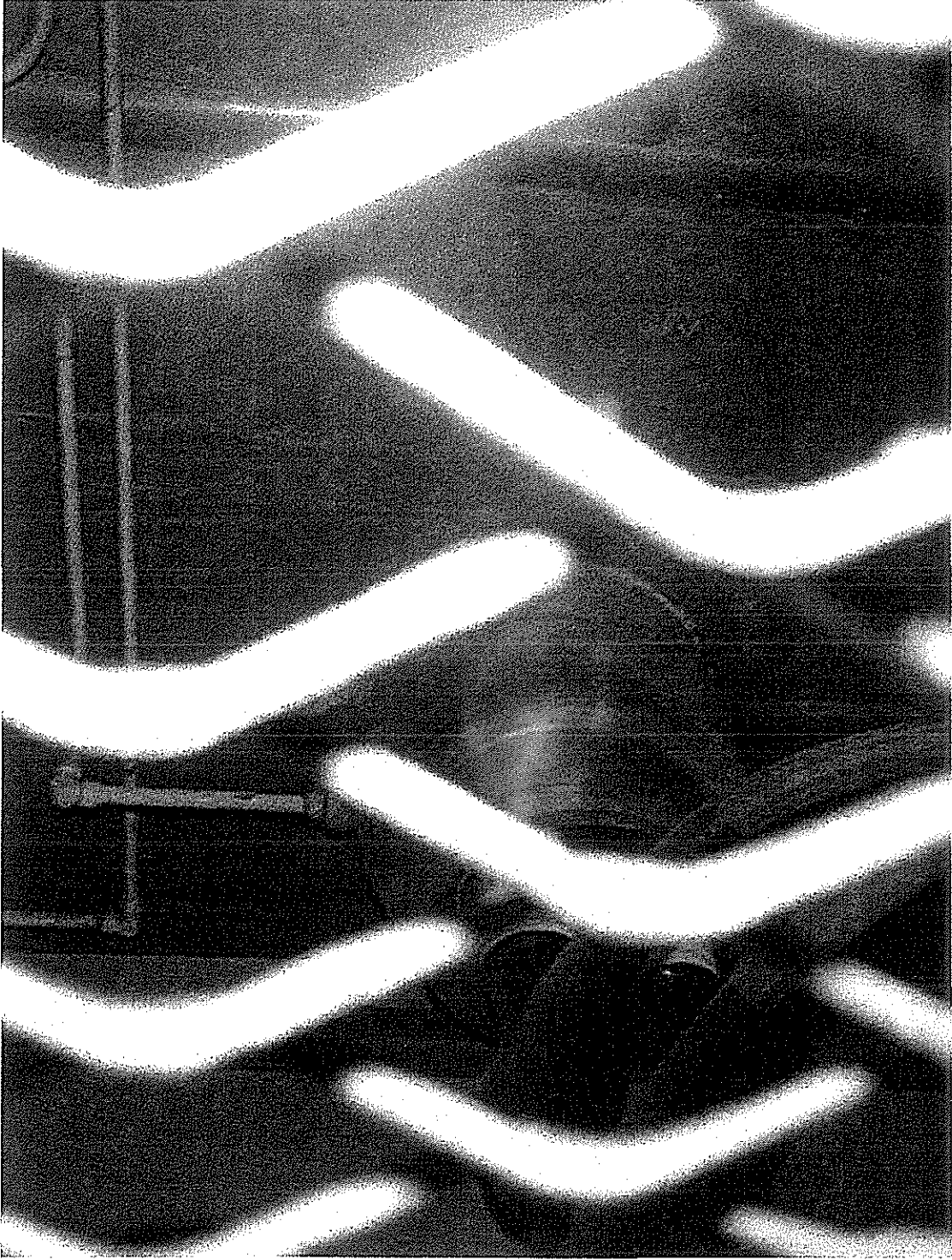
00031409.jpg



EP-H17



IWE-046-004



00031410.jpg

EP-H18

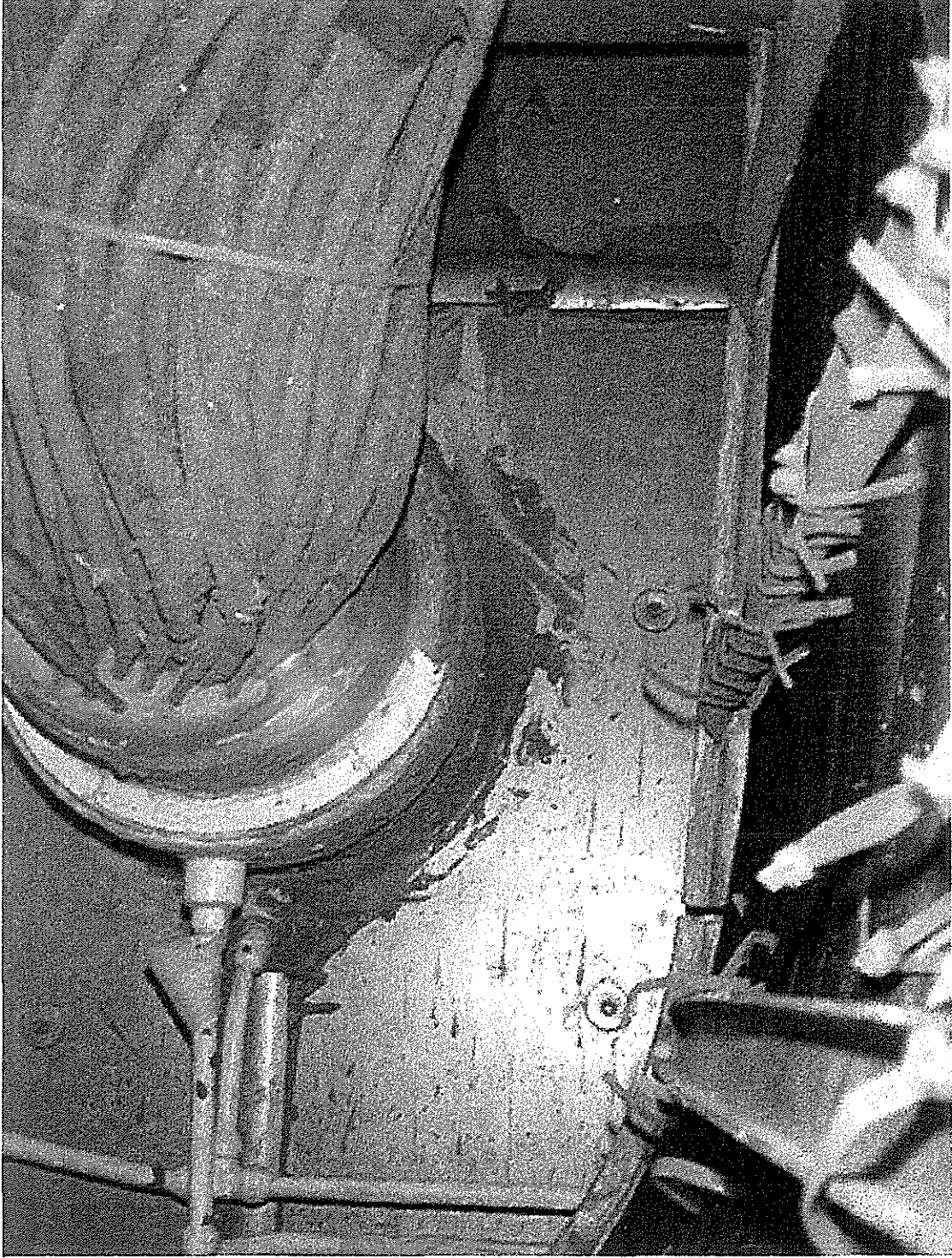
IWE-046-004



IWE-046-004

EP-H58

00031416.jpg



IWE-046-004

EP-H59

00031417.jpg

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	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	
IWE-046-005																	
VCM-05		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
VCL-06		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
MP-X		X		X		X		X		X		X		X	X		<i>[Signature]</i> 3/10/2000
MP-W		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
MP-V		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
MP-U		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
MP-TT		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
MP-SS		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
MP-S		X		X		X		X		X		X		X	X		<i>[Signature]</i> 3/10/2000
MP-R		X		X		X		X		X		X		X	X		<i>[Signature]</i> 3/10/2000
MP-QQ		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
MP-NN		X		X		X		X		X		X		X	X		<i>[Signature]</i> 3/10/2000
MP-Mc		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000

EXAMINATION PERFORMED BY: *[Signature]* DATE 3/10/2000

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	Nicks, Gouges, arc strikes		Metal Cracking		Metal Corrosion		Blistering (coating)		Checking (coating)		Cracking (coating)		Peeling (coating)		Rust staining			
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No		
IWE-046-005																		
MP-Mb		X		X		X		X		X		X		X		X		X
MP-Ma		X		X		X		X		X		X		X		X		X
MP-LL		X		X		X		X		X		X		X		X		X
MP-Lc		X		X		X		X		X		X		X		X		X
MP-Lb		X		X		X		X		X		X		X	X			X
MP-La		X		X		X		X		X		X		X		X		X
MP-KK		X		X		X		X		X		X		X		X		X
MP-K		X		X		X		X		X		X		X		X		X
MP-JJ		X		X		X		X		X		X		X		X		X
MP-J		X		X		X		X		X		X		X	X			X
EP-H70		X		X		X		X		X		X		X		X		X
EP-H69		X		X		X		X		X		X	X					X
EP-H68		X		X		X		X		X		X		X		X		X

EXAMINATION PERFORMED BY: *[Signature]* DATE 3/10/2000

General
Engineering
Guideline

ATTACHMENT D
General Visual Examination Checklist

IP2-GEG-3113
Rev. 1
Rev. Date: 03-10-2000

Yes = exceeds the recording criteria
No = does not exceed the recording criteria

Component Number or Zone Number	Recording Conditions																Initial and Date		
	Nicks, Gouges, arc strikes		Metal Cracking		Metal Corrosion		Blistering (coating)		Checking (coating)		Cracking (coating)		Peeling (coating)		Rust staining				
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No			
IWE-046-005																			
EP-H67		X		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
EP-H66		X		X		X		X		X		X		X	X				<i>[Signature]</i> 3/10/2000
EP-H65		X		X		X		X		X		X		X			X		<i>[Signature]</i> 3/10/2000
EP-H64		X		X		X		X		X		X	X				X		<i>[Signature]</i> 3/10/2000
EP-H63		X		X		X		X		X		X		X			X		<i>[Signature]</i> 3/10/2000
EP-H57		X		X		X		X		X		X		X	X				<i>[Signature]</i> 3/10/2000
EP-H56		X		X		X		X		X		X		X			X		<i>[Signature]</i> 3/10/2000
EP-H55		X		X		X		X		X		X		X			X		<i>[Signature]</i> 3/10/2000
EP-H54		X		X		X		X		X		X		X			X		<i>[Signature]</i> 3/10/2000
EP-H53		X		X		X		X		X		X		X			X		<i>[Signature]</i> 3/10/2000
EP-H52		X		X		X		X		X		X		X			X		<i>[Signature]</i> 3/10/2000
EP-H51		X		X		X		X		X		X		X			X		<i>[Signature]</i> 3/10/2000
EP-H50		X		X		X		X		X		X	X				X		<i>[Signature]</i> 3/10/2000

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	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	
IWE-046-005																	
EP-H44		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
EP-H43		X		X		X		X		X		X		X	X		<i>[Signature]</i> 3/10/2000
EP-H42		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
EP-H41		X		X		X		X		X		X	X			X	<i>[Signature]</i> 3/10/2000
EP-H40		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
EP-H39		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
EP-H38		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
EP-H37		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
EP-H31		X		X		X		X		X		X		X	X		<i>[Signature]</i> 3/10/2000
EP-H30		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
EP-H29		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
EP-H28		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
EP-H27		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000

EXAMINATION PERFORMED BY: *[Signature]* DATE 3/10/2000

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Component Number or Zone Number	Recording Conditions																Initial and Date		
	Nicks, Gouges, arc strikes		Metal Cracking		Metal Corrosion		Blistering (coating)		Checking (coating)		Cracking (coating)		Peeling (coating)		Rust staining				
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No			
IWE-046-005																			
EP-H26		X		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
EP-H25		X		X		X		X		X		X		X		X		X	<i>[Signature]</i> 3/10/2000
EP-H24		X		X		X		X		X		X		X	X				<i>[Signature]</i> 3/10/2000

EXAMINATION PERFORMED BY: *[Signature]* DATE 3/10/2000

ATTACHMENT D (cont.)
Observations

Component or Zone Number: IWE-046-005

Item No.	Description	Photo
01	Mechanical penetration nos. MP-S, MP-X, MP-R, MP-Lb, MP-J, MP-NN showed surface rusting on the end plates. Penetrations with hot piping will have service that will not promote an active corrosive environment. Rust staining is classified as ASTM D610, Grade 1 -2 (between 1/3 and 1/2 of the end plate is rusting.)	00031516.jpg, 00031522.jpg, 00031523.jpg, 00031524.jpg, 00031528.jpg and 00031530.jpg
02	Electrical penetration nos. EP-H57, EP-H31, EP-H43, EP-H66, EP-H24, showed loose surface rusting around the weld ring -to-flange areas. EP-H69, EP-H41, EP-H64, EP-H50 penetrations limited coating peeling at nameplate and weld ring-to-flange areas. Rust staining is classified as ASTM D610, Grade 1 -2. (between 1/3 and 1/2 of the weld ring-to-flange circumference is rusting.)	00031532.jpg, 00031534.jpg, 00031537.jpg, 00031544.jpg, 00031612.jpg, 00031535.jpg, 00031543.jpg, 00031550.jpg and 00031610.jpg

EXAMINATION PERFORMED BY: *Ronald S. Brown* DATE *3/10/2000*

ATTACHMENT D (cont.)
Responsible Engineer's Review

Component or Zone Number: IWE-046-005

Item No.	Discussion	Acceptable	Additional Eval. Req'd.
01	The penetrations with corrosion on the head plates are for hot piping (with fluid temperatures above 200°F). During plant operation the piping temperatures will be sufficiently high as to preclude moisture from the head plates and thus the plates will only be subject to corrosion during plant outages. These times are sufficiently short and the corrosion rates sufficiently low as to not result in significant loss of material (i.e., well less than 10% as discussed in IWE-3512.3). Corrosion on the penetration sleeves is general surface corrosion that has not resulted in any significant loss of material. Examination at the next regular inspection period is sufficient to monitor these conditions.	✓	
02	The corrosion on the electrical penetrations is generally due to damage or degradation of the coating. It is general surface corrosion that has not resulted in any significant loss of material and is not aggressive in nature. This condition does not reflect significant degradation of the Containment. Examination at the next regular inspection period is sufficient to monitor this condition.	✓	

RESPONSIBLE ENGINEER: *BA Slen* DATE *2/13/00*