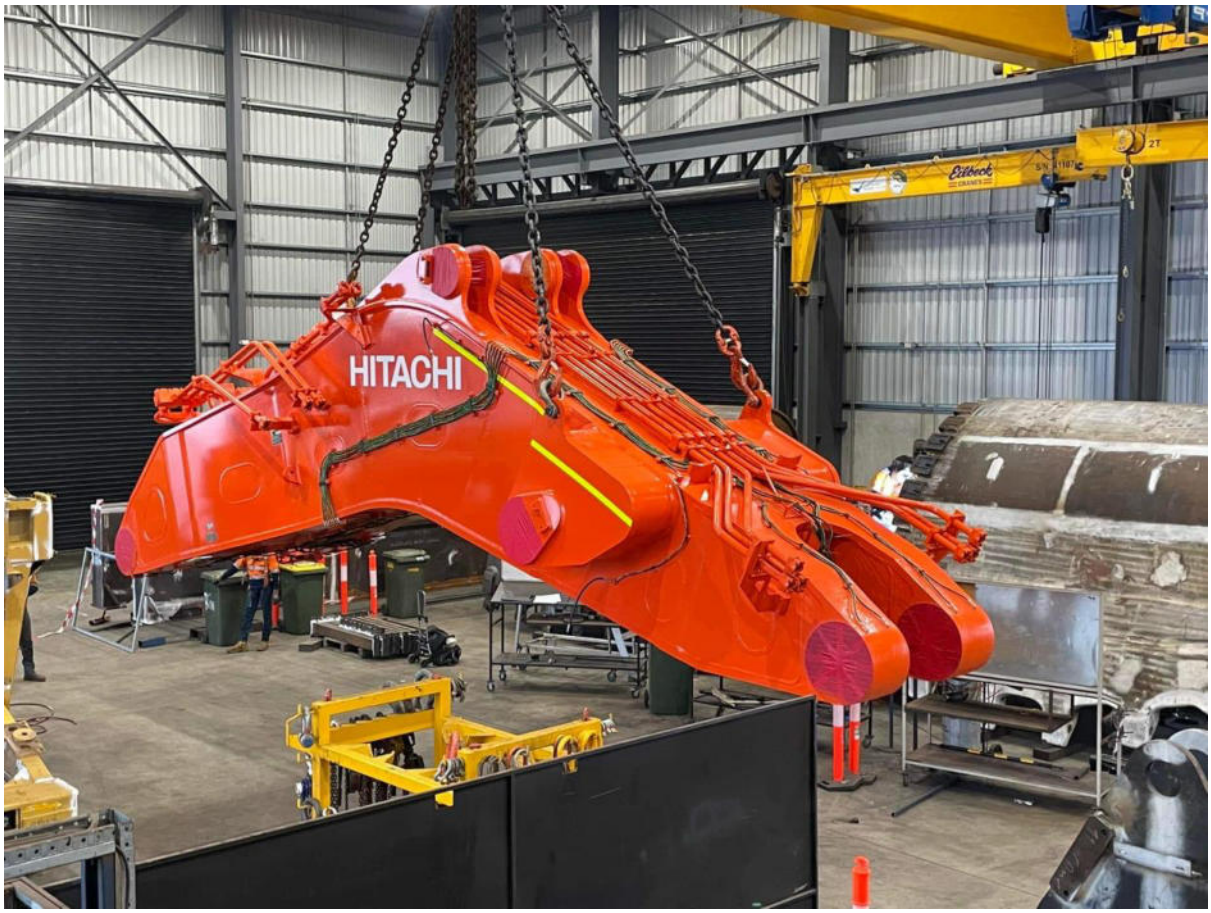
CQ Field
Mining Services

REPAIRER'S DATA REPORT

JOB NUMBER: 27861



Client: **MINESPEC PARTS PTY LTD (QLD)**

Description: **REFURB EX5600 BOOM**

Technical Document Report Index

		Records Provided	
	Section	Yes	No
Structural Integrity Survey Report pre-Overhaul	1	✓	
Certificate of Conformance	2	✓	
Client Purchase Orders	3	✓	
NDT Records	4	✓	
Welding Records / Procedures	5	✓	
Machining QA	6	✓	
Material Certs	7	✓	

CQ Field
Mining Services

Section 1

Structural Integrity Survey Report pre-Overhaul

HEAVY MACHINERY INSPECTIONS

A.B.N. 24 513 221 176
19/148 Forrest Street Fremantle WA 6160
Phone: (08) 93363923 Mobile: 0419600925
email: heavymachineryinspections@gmail.com

STRUCTURAL INTEGRITY SURVEY REPORT FOR THE STRUCTURE

REPORT NUMBER HMI 23-033.7

EXCAVATOR

INSPECTION CARRIED OUT FOR MACMAHON AT THE TROPICANA MINE SITE

Inspection By:	G. Bailey (Heavy Machinery Inspections)
Inspection Period:	16 to 23 April 2023
Report Date:	23 April 2023
Site Contact:	Ms. T Cunningham
Order Number:	4500179047
Order Number:	4270970

MACHINE DATA

Fleet Number:	EX7115
Manufacturer:	Hitachi
Machine Model:	EX5600
Serial Number:	HCMKCA90J00002085
Boom Number:	50
Arm Number:	49
Hours:	24155
Hours Since Last Inspection:	3016

INSPECTION OBJECTIVE

This inspection was performed to identify the presence of any internal and surface cracking in the structure.

The results and recommendations presented are to inform the owner of cracking and discontinuities that can be monitored and repaired in accordance with the categorization of the individual identified indications.

INSPECTION SUMMARY

The inspection of the Hitachi EX5600 machine resulted in the detection seven (7) internal cracks and seven (7) visual cracks or crack groups.

RESULTS

Boom

The survey identified four internal cracks by the ultrasonic method. Refer Results Table and Diagrams 1 and 2.

The survey identified six visual cracks by the visual and magnetic particle examination methods. Refer Diagrams 1, 2 and 3 and Images 1, 2, 3, 4, 5, 6 and 7.

Stick

The survey identified three internal cracks by the ultrasonic method. Refer Results Table and Diagrams 4, 5 and 6.

The survey identified nil visual cracking by the visual examination method.

RESULTS TABLE

BOOM ULTRASONIC EXAMINATION		
Crack	**Details**	**Cat.**
U1	60mm long starting at 415mm up from the underside- right side	1
U2	75mm long starting at 240m up from the underside- right side	1
U3	450mm long starting at 350mm up from underside- right side	1
U4	1040mm long starting at 395mm up from underside- left side (refer V3)	3
BOOM VISUAL EXAMINATION		
Crack	**Details**	**Cat.**
V1	180mm long at forward side of lift mount pin boss- right side	1
V2	65mm long at lower corner weld- left side	1
V3	165mm long behind grease lines associated with U4- left side	3
V4	60mm long at rear of the access window weld- left side	1
V5	305mm long on left front extending down at front edge on left side- upper side	5
V6	230mm long on right front end- upper side	3
STICK ULTRASONIC EXAMINATION		
Crack	**Details**	**Cat.**
U5	60mm long starting at 400mm down from upper side- right side	1
U6	65mm long starting at 560mm up from underside surface- left side	1
U7	205mm long stating at 715mm in from right side- underside	1
STICK VISUAL EXAMINATION		
Crack	**Details**	**Cat.**
--	No cracking identified	0

RESULTS (Continued)

Track Frame

The survey identified nil visual cracking by the visual method.

Main Frame

The survey identified one visual crack, V7, by the visual and magnetic particle examination method. Refer Diagram 7 and Image 8.

Right Side Frame

The survey identified nil visual cracking by the visual method.

Left Side Frame

The survey identified nil visual cracking by the visual method.

Inner Left Dog Bone

The survey identified nil visual cracking by the visual method.

Inner Right Dog Bone

The survey identified nil visual cracking by the visual method.

Outer Left Dog Bone

The survey identified nil visual cracking by the visual method.

Outer Right Side Frame

The survey identified nil visual cracking by the visual method.

'H' Link

The survey identified nil visual cracking by the visual method.

RECOMMENDATIONS

Boom

The internal/visual crack, U4/V3 should be monitored continuously. Category 3. Criticality is high due to the internal length.

The internal cracks (U1, U2, U3, U5, U6 and U7 should be monitored. Category 1.

Repair of these cracks is not a recommendation prior to propagation to the surface.

RECOMMENDATIONS (Continued)

Cracks V5 and V6 were repaired as a result of this inspection.

Crack V5 was categorised as 5 due to the extent of cracking.

Crack V6 was categorised as 3 due to the extent of cracking.

Cracks V1, V2 and V4 could be repaired in the long term as they were considered as subcritical. Category 1.

Stick

The internal cracks identified within the machine structure should be monitored. Category 1.

Repair of these cracks is not a recommendation prior to propagation to the surface.

Main Frame

Crack V6 could be repaired in the long to medium term as it was considered as subcritical. Category 1.

General

Continue to monitor the structure in accordance with Macmahon inspection regime and any Hitachi inspection criteria.

G Bailey
NDT Technician
AINDT N83-18 (UT)
AINDT N83-19 (MT/PT)

INSPECTION DATA

Ultrasonic Examination (UT)

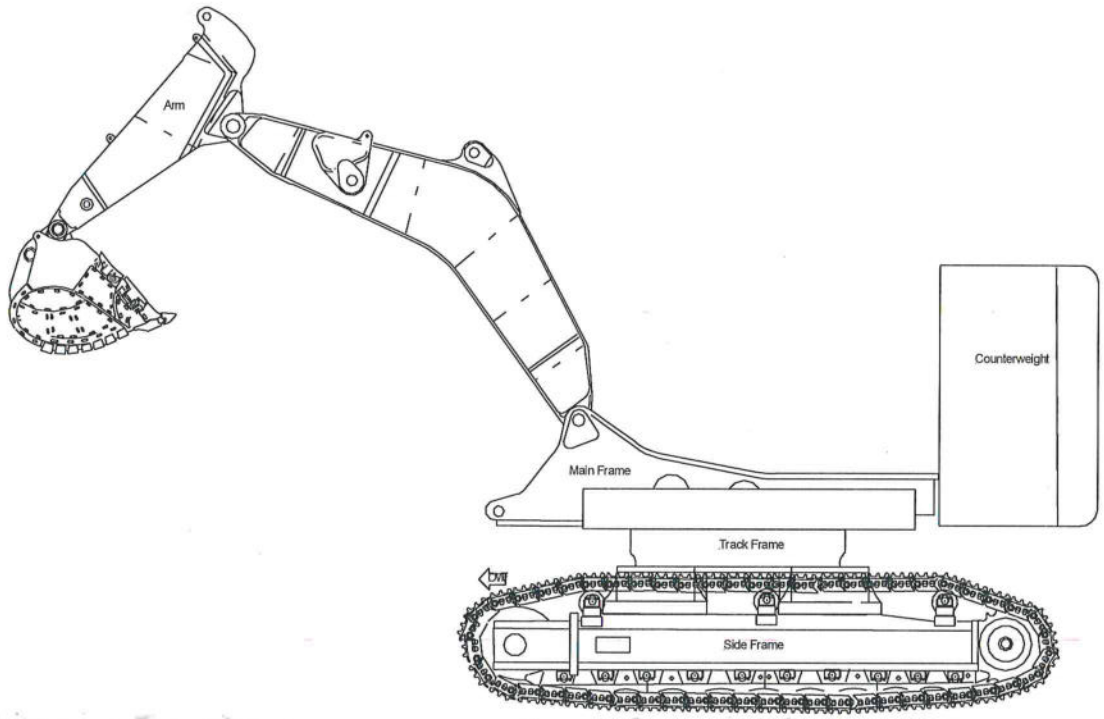
Ultrasonic Test Unit:	GE USN60L
Ultrasonic Test Probes:	GE MWB 45° 4MHz, MWB 60° 4MHz
Couplant:	Cellulose paste
Scanning Sensitivity:	4mm Ø 4mm deep FBH + 12dB
Evaluation Sensitivity:	4mm Ø 4mm deep FBH
Test Range:	0 – 100mm
Thickness Range:	19mm to 50mm
Test Restrictions:	Nil

Visual Examination (VT)

Visual Aid:	4 X magnifying glass
Illumination:	Ambient and incandescent light source
Surface Condition:	As painted
Inspection Standard:	In accordance with AS 3978-2003
Inspection Criteria:	To detect possible surface cracking
Vision Acuity Level:	General- aided as necessary
Recording Device:	Digital imaging camera
Manufacturer:	Olympus Imaging Corp.
Model Number:	IM005
Serial Number:	BHWA61930
Resolution:	16 megapixel
Test Restrictions:	Nil

Magnetic Particle Examination (MT) [As required]

Test Unit Type:	Electro-Spect PM-5 permanent magnet yoke
Magnetic Ink:	Ardrox 800/3
Background:	Ardrox 8901W (White)
Surface Condition:	As cast, as welded (suitable)
Test Type:	Continuous longitudinal magnetic flow
Test Method:	In general accordance with AS 1171
Sensitivity:	2 lines (minimum)-Castrol-Burmah flux indicator
Inspection Criteria:	To detect possible cracking and to quantify cracking identified by visual inspection
Test Restrictions:	Nil



EXCAVATOR COMPONENT NOMENCLATURE

BOOM- RIGHT SIDE

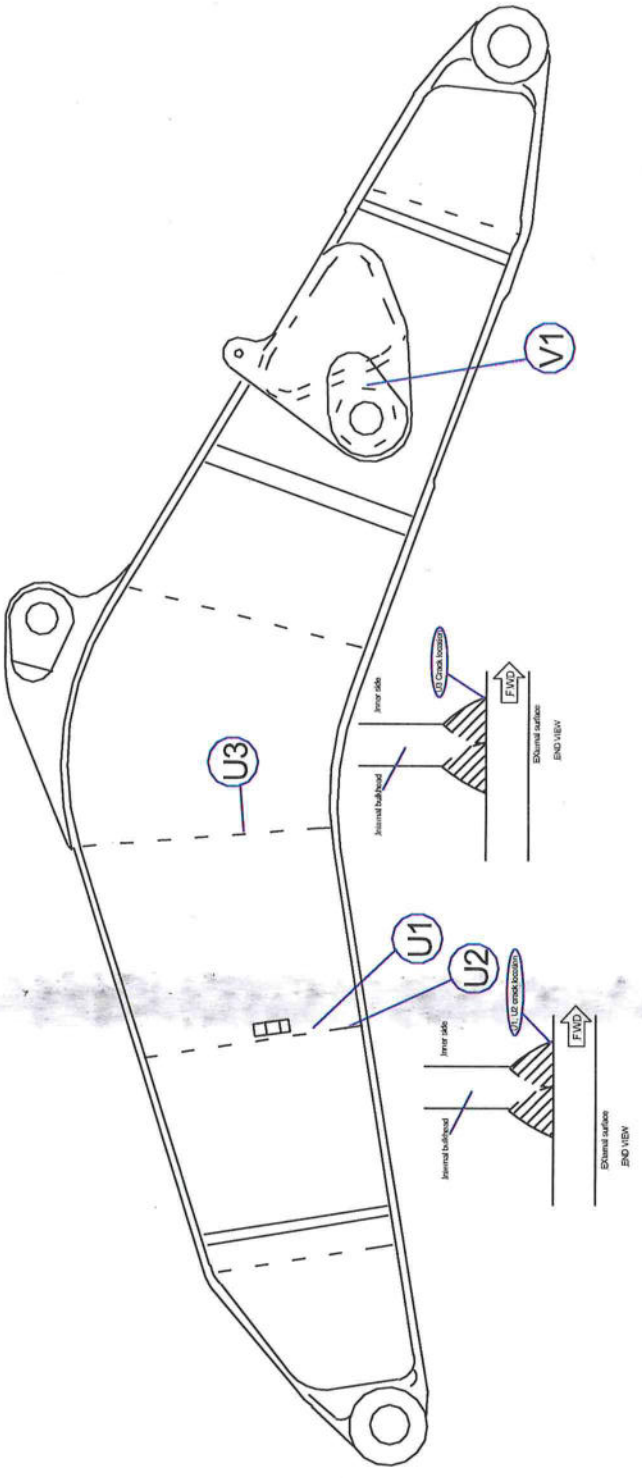


Diagram 1
Schematic indicating crack locations in the right side of the boom

Image 1
View of crack V1 in right side in the pin boss weld at lift cylinder mount

BOOM- LEFT SIDE

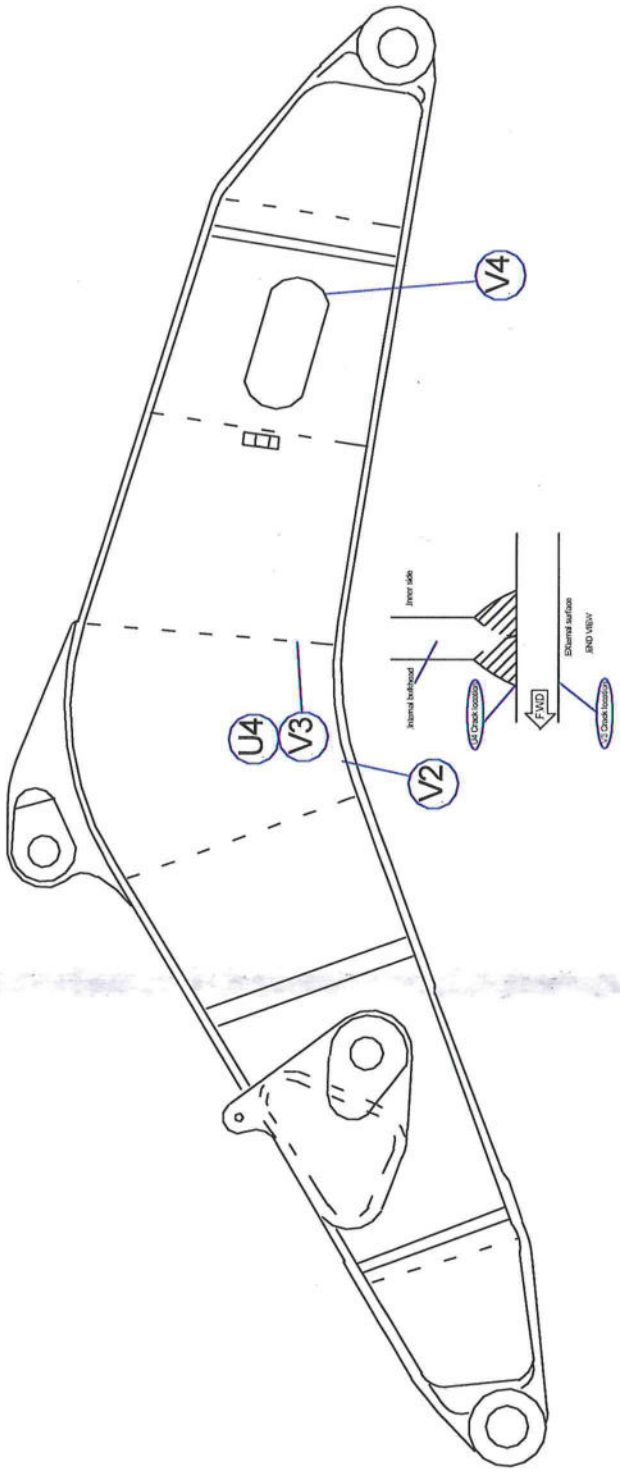


Diagram 2
Schematic indicating crack locations in the left side of the boom

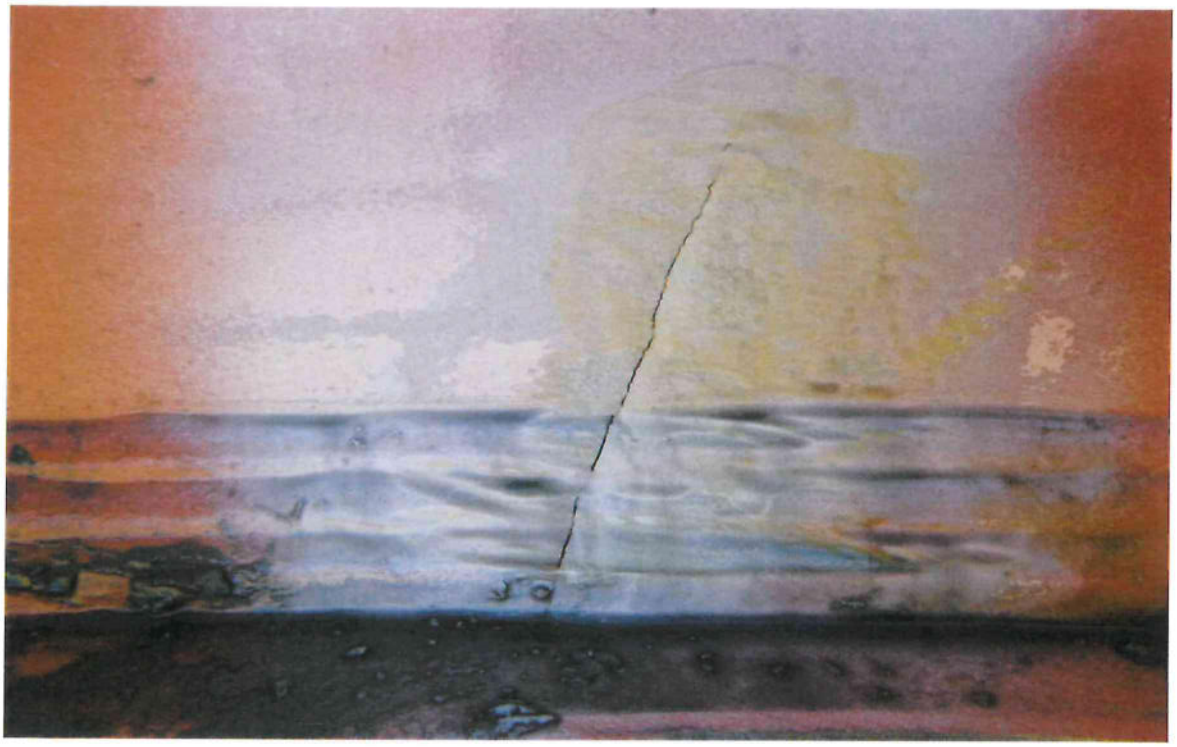


Image 2
View of crack V2 in left side at the lower edge weld

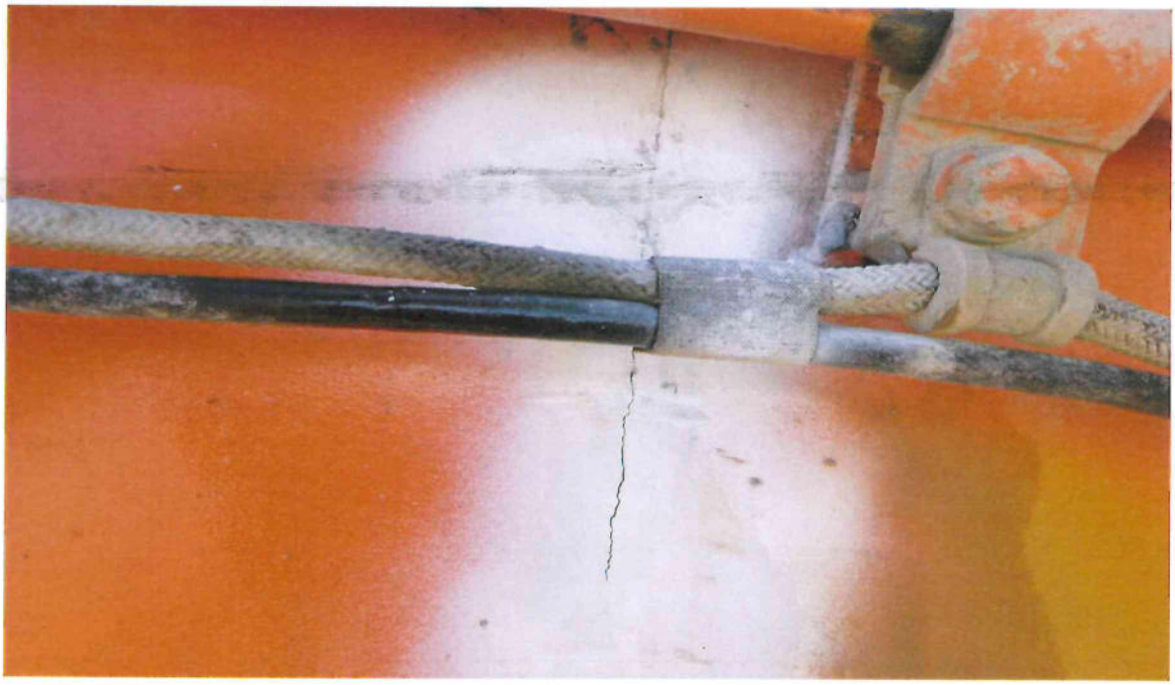


Image 3
View of crack V3 in left side associated with the internal bulkhead at this location

Image 4
View of crack V4 in left side associated with the access window weld adjacent to the operators' cabin

BOOM- UPPER SIDE

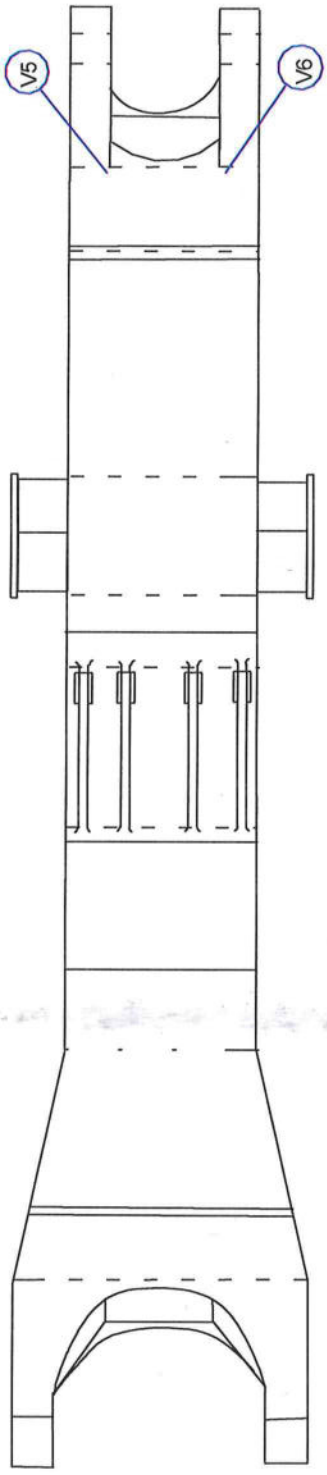


Diagram 3
Schematic indicating crack locations in the upper side of the boom

Image 5
View of crack V5 in upper left side at the front of the boom

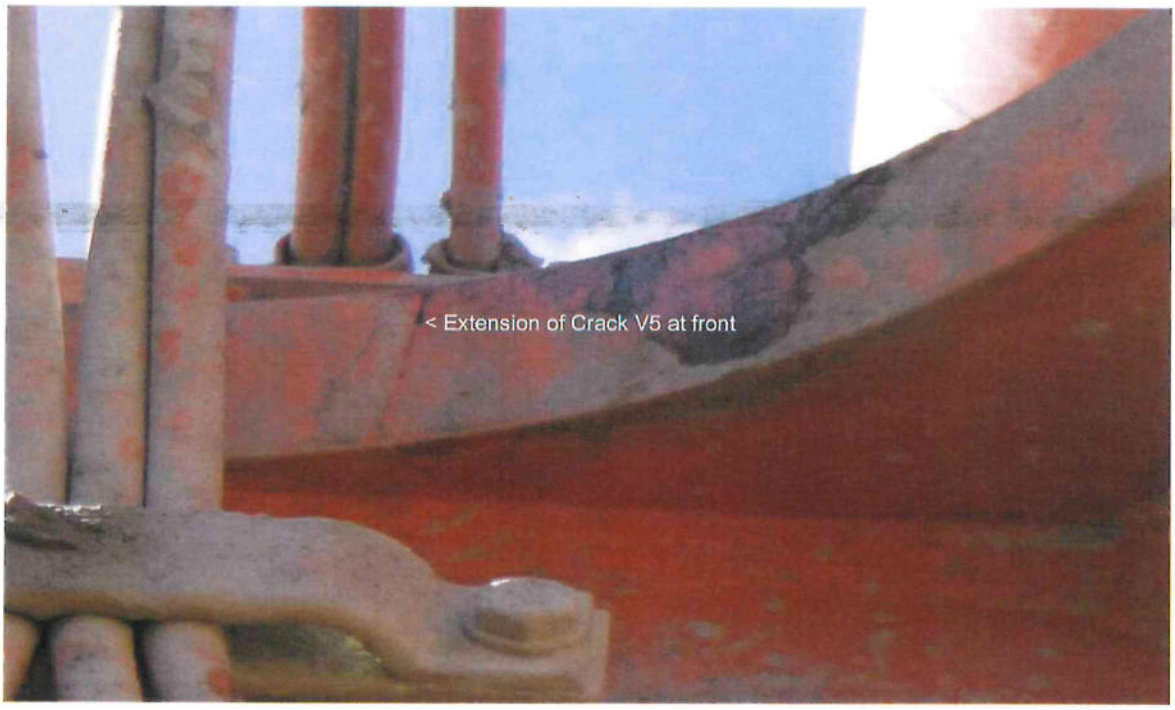


Image 6
View of the extension of crack V5 in upper left side at the front of the boom

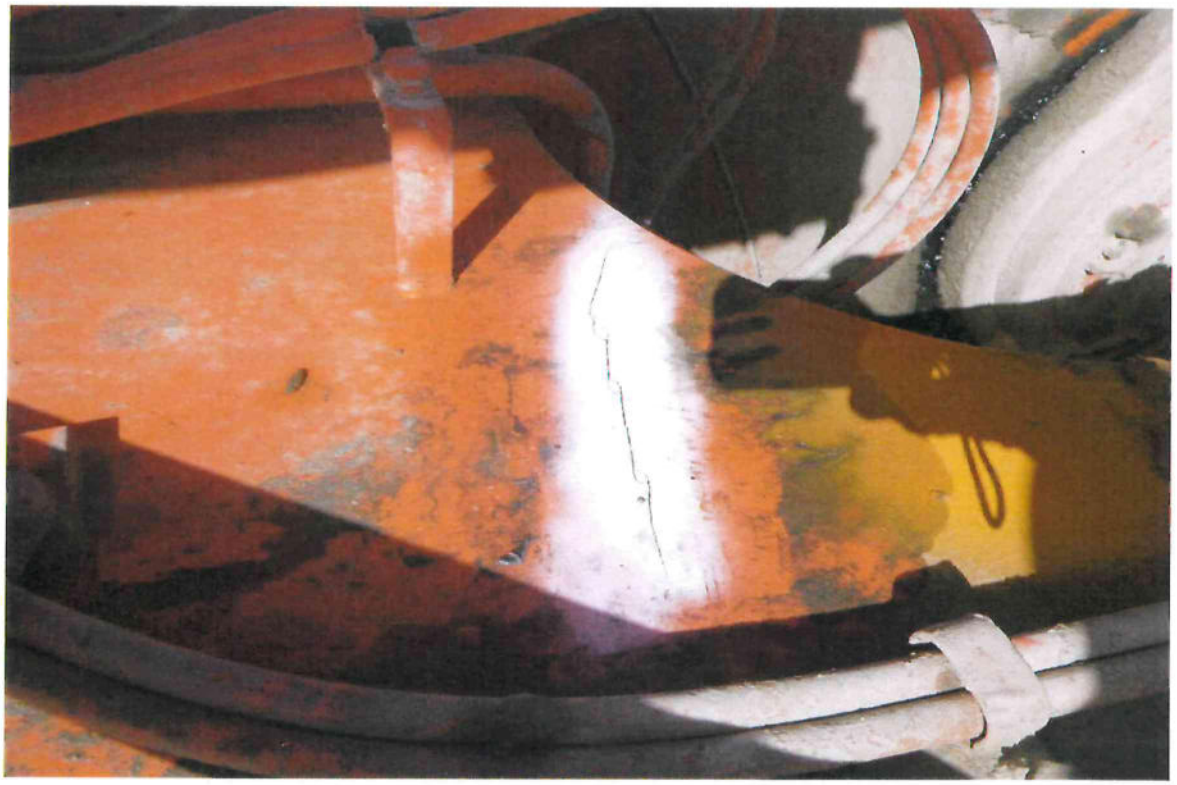


Image 7
View of crack V6 in upper right side at the front of the boom

STICK- RIGHT SIDE

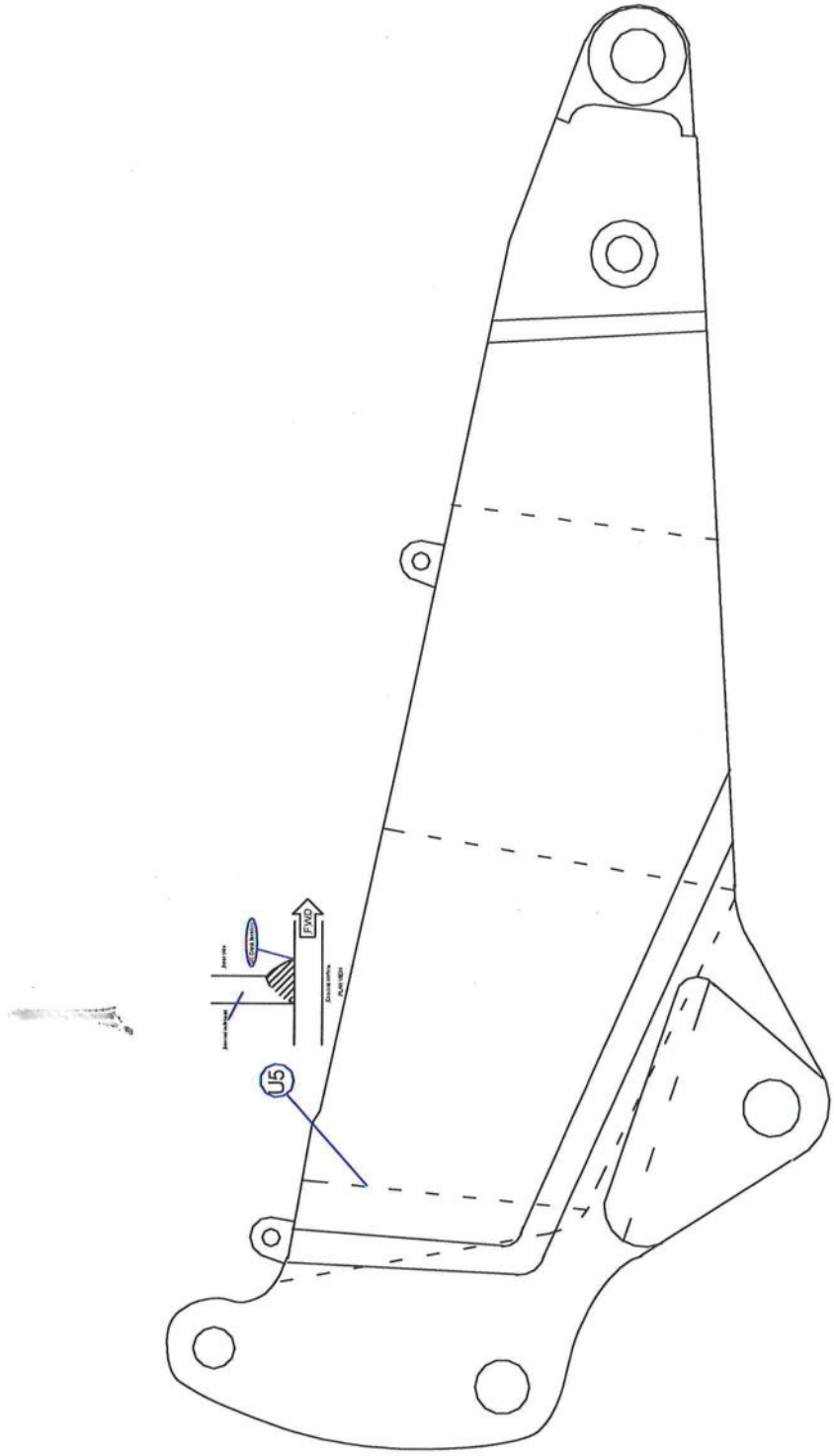


Diagram 4
Schematic indicating crack location in the right side of the stick

STICK- LEFT SIDE

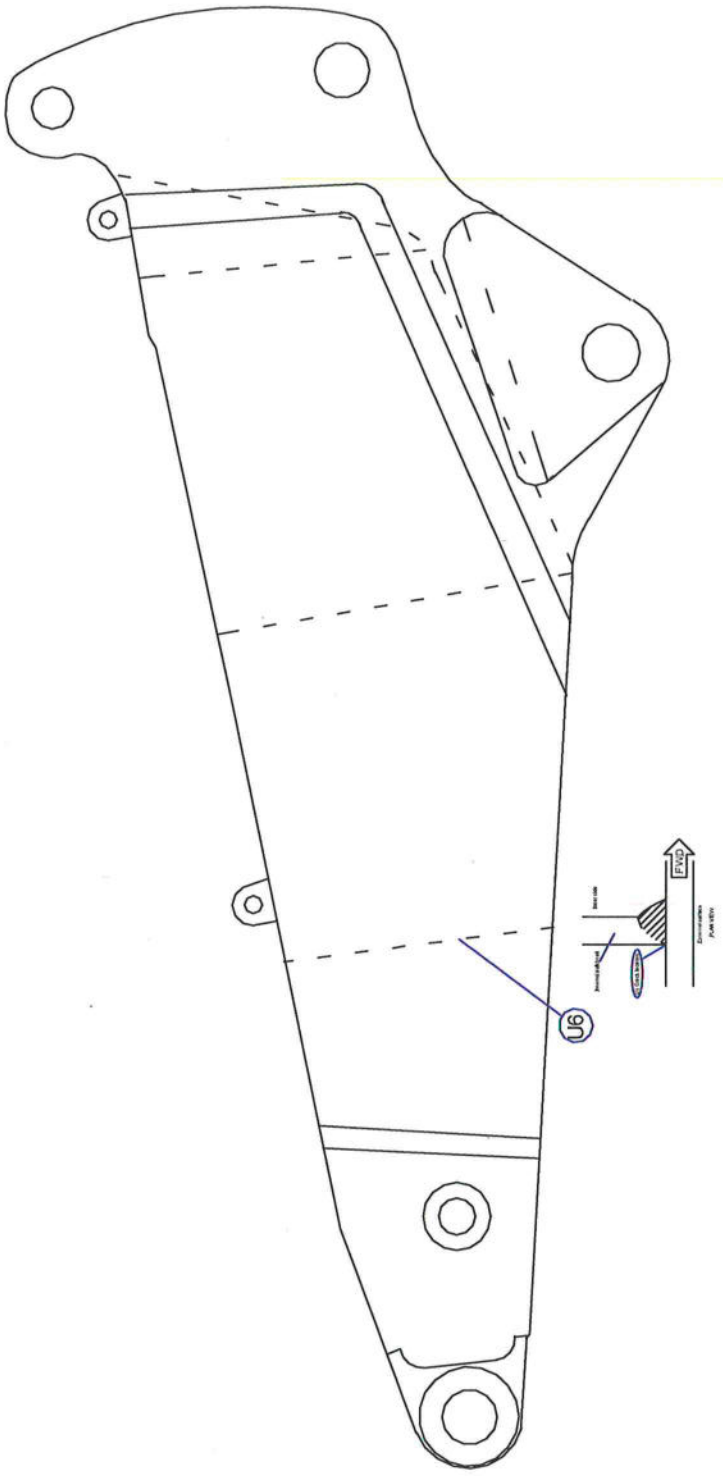


Diagram 5
Schematic indicating crack location in the left side of the stick

UNDERSIDE OF THE STICK

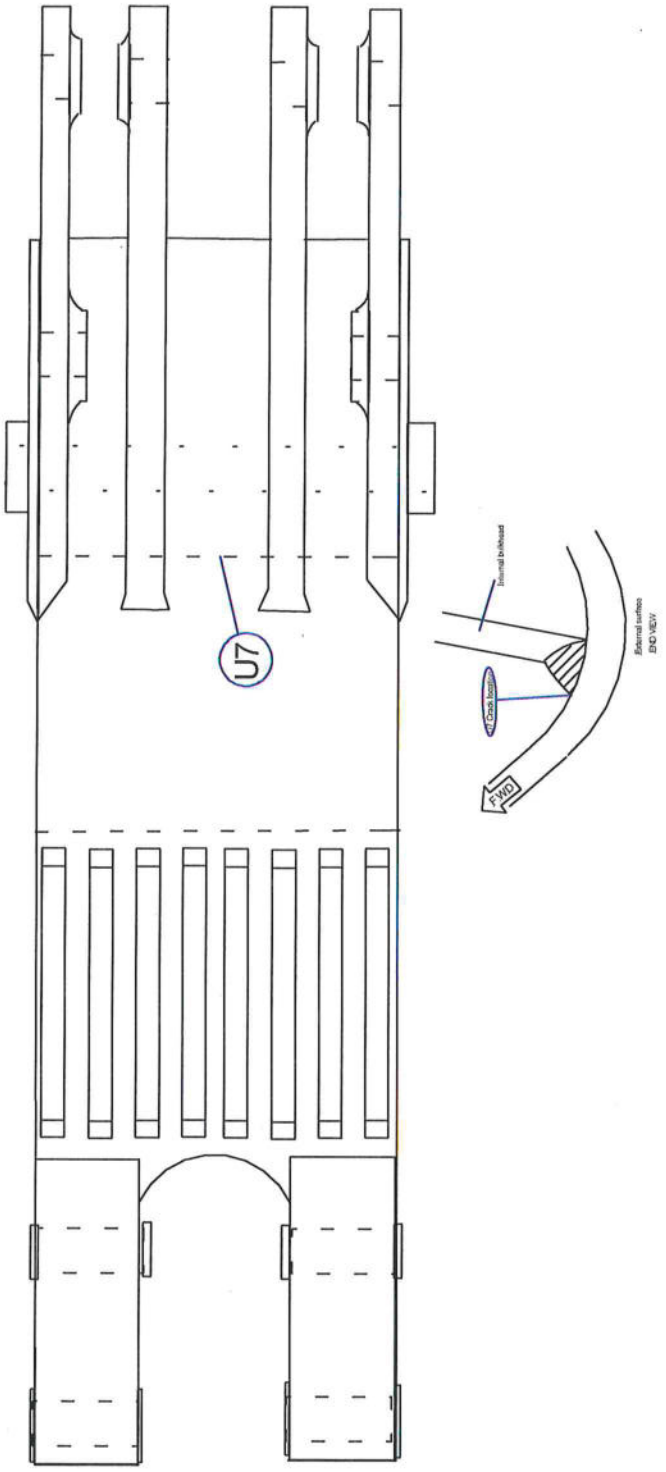


Diagram 6
Schematic indicating crack location in the underside of the stick

TRACK FRAME- FORWARD SIDE

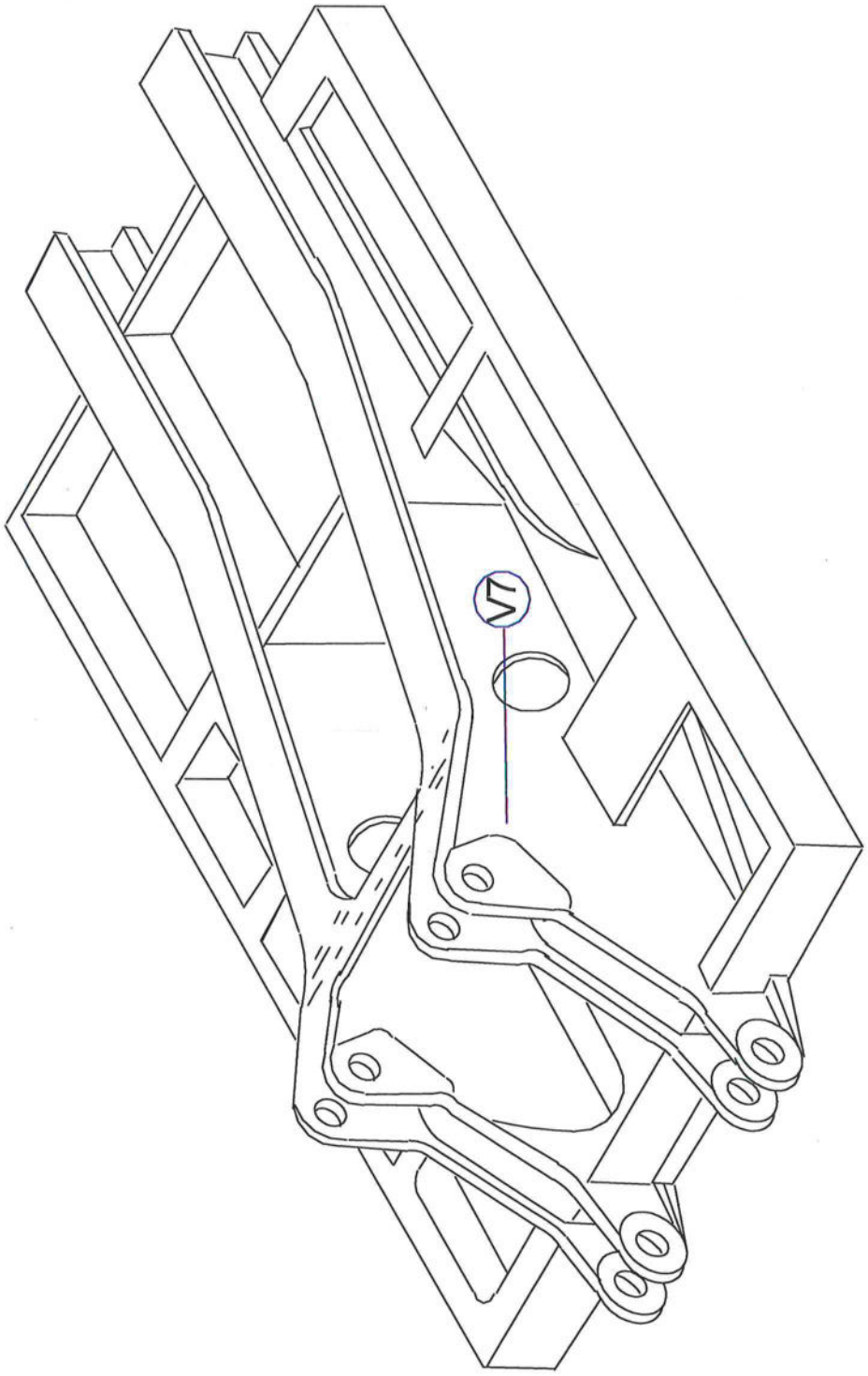


Diagram 6
Schematic indicating crack location in the right side of the main

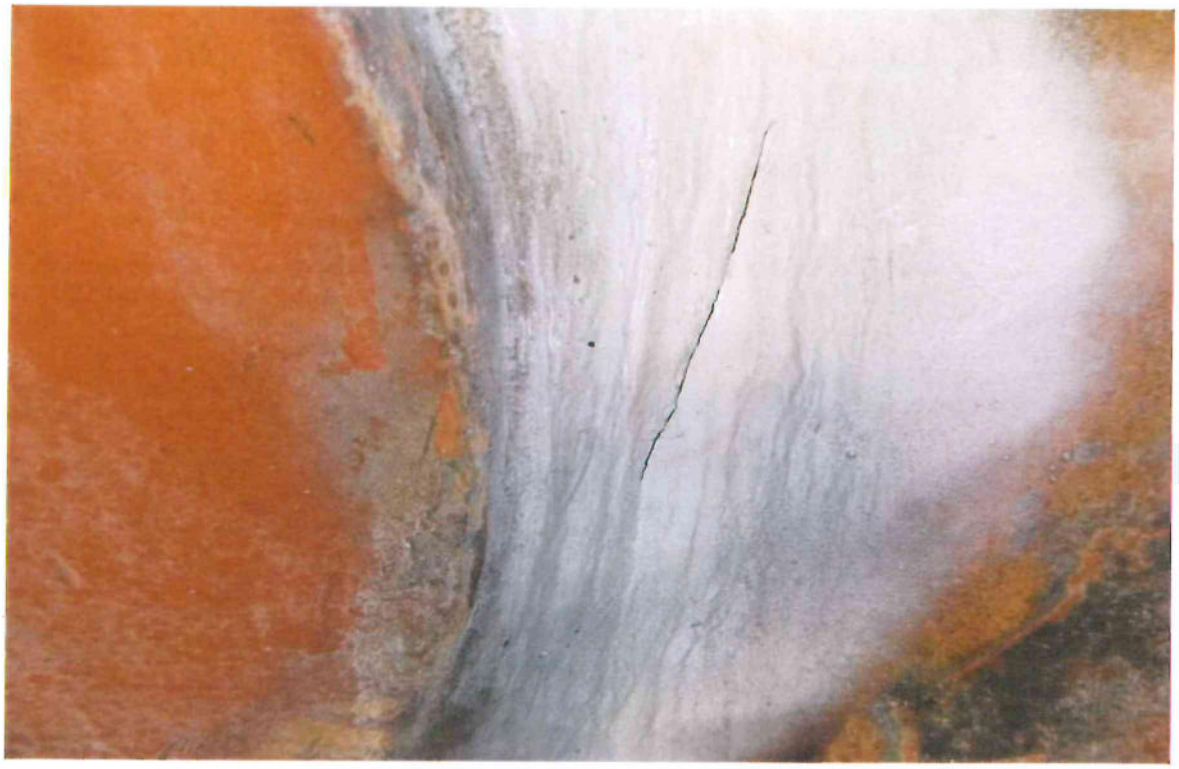


Image 8
View of crack V7 in right side at the main frame at the rear of the boom foot pin

GENERAL GLOSSARY OF TERMS AND NOTATIONS- relating to all HMI reports (not including statutory inspections)

Ambient illumination- background light without the use of additional lighting but generally, solar.

Couplant/coupling medium- a liquid or fluid compound, either oil, grease or cellulose past (wallpaper paste) applied to the component during ultrasonic testing to transfer ultrasonic waves into the test component from the test probe.

DGS- Distance Gain Size. A system by which a defects or discontinuities size can be determined by a comparison of reflectance to a known size reflector. In accordance with AS2207.

FBH- Flat-bottomed hole. This is used to set a level of sensitivity of an ultrasonic method as the most suitable in determining the presence of discontinuities or defects. The flat-bottomed hole is 4mm deep and 4mm in diameter. In accordance with Hitachi sizing method.

Magnetic particle inspection (MT)- a method of NDT used to detect surface breaking discontinuities or defects in carbon steels and cast irons utilising a 240V AC electromagnet yoke or permanent magnet yoke and magnetic inks to highlight those discontinuities or defects. In accordance with AS1171.

NDT/Non Destructive Testing- a series of methods of inspection and testing used to detect discontinuities or defects without the component under test being destroyed or damaged to locate and identify those discontinuities or defects.

Paint stressing- a condition noted in the surface paint of components where stresses have concentrated to form cracking in the paint, and where there has been either cracking or no cracking in the material of the component that the paint has been applied to.

Thick Paint Syndrome (TPS)

TPS is a condition in protective surface coatings that occurs when the coating is applied thickly and during the curing process the surface tension is high and tears initiate.

Recommendations- a series of actions that the inspector deems appropriate that the client may follow in relation to the severity of the discontinuities or defects identified in a test component.

Categorization and severity levels of identified discontinuities or defects- a set of criteria that the inspector deems that the identified discontinuities or defects in a component should be repaired. The criteria are based on a time frame that may be allowed to lapse before those discontinuities or defects pose a risk of failure or where further use of that component may become detrimental to the safety of personnel or production.

The categories and severities are as follows:

Category 0. a level of criticality where there were no identified discontinuities or defects or defective component. No further action required.

Category 1. Subcritical- a level of criticality where the identified discontinuities or defects or defective component should be removed or repaired in the long term. Generally, within 6 months or as monitoring of crack propagation dictates.

Category 2. Hypocritical- a level of criticality where the identified discontinuities or defects or defective component should be removed or repaired in the medium term. Generally, within 2-3 months or as monitoring of crack propagation dictates.

Category 3. Critical- a level of criticality where the identified discontinuities or defects or defective component should be removed or repaired in the short to medium term. Generally, within 1 month or as monitoring of crack propagation dictates.

Category 4. Hypercritical- a level of criticality where the identified discontinuities or defects or defective component should be removed or repaired in the short term. Generally, within 1-2 weeks or as monitoring of crack propagation dictates.

Category 5. Supercritical- a level of criticality where the identified discontinuities or defects or defective component should be removed or repaired in the short term. Generally, immediately or within 1 week or as monitoring of crack propagation dictates.

The time frames forwarded in the above criticalities are suggested only as extremes. The recommendations that could be suggested in the report recommendations may override these criticality time frames.

Crack Group- A crack group constitutes two or more cracks that could be adjacent to one another and not separated from each other by a distance greater than twice the length of the shortest crack or in line with each other and not separated from each other by a distance greater than the length of the longest crack, or a branched crack.

SDH- Side-drilled hole. This is used to set a level of sensitivity of an ultrasonic method as the most suitable in determining the presence of discontinuities or defects. The side-drilled hole is 1.5mm in diameter. In accordance with AS2207.

U- a notation used in a report defining an internal discontinuity or defect in a component detected by ultrasonic testing.

Ultrasonic inspection (UT)- a method of NDT used to detect surface breaking and internal discontinuities or defects in a material utilising high frequency sound waves to locate, identify and size those discontinuities or defects

V- a notation used in a report defining a surface breaking discontinuity or defect in a component detected by MT or visual inspection.

Visual inspection (VI)- a method of inspection using visual aids to identify surface discontinuities or defects. These visual aids include magnifying glasses, mirrors and appropriate light sources and digital cameras.

Defect Location- All reference is taken down from the upper surface of the component or up from the underside surface of the component or the left and right side edges of the component or up or down from a prominent adjacent weld.

Pointer location of internal cracking within diagrams is relative to the side of the of the internal bulkhead/stiffener plates i.e. the pointer ids directed to the rear of the internal bulkhead then the crack was identified on the rear side of the bulkhead.

Schematics- The schematics displayed in the reports are not to scale, are general in description and are to be used as a guide only.

Disclaimer

This inspection report does not in any way claim that all cracking in this equipment has been identified and reported. Unidentified cracking may exist as a result of poor access, obscuring by other components or excessive surface contamination unless stated nil restrictions. The results are described at the time of testing. This report does not relinquish the owner or operator of the equipment from their duties of inspection as per the manufacturers requirements and their quality management procedures.

Section 2

CERTIFICATE OF CONFORMANCE

CERTIFICATE OF CONFORMANCE

Company Name:	CQ Field Mining Services				
Street Address:	40 Production Dr				
City / Suburb:	Paget	**State:**	QLD	**Postcode:**	4740
		CQFMS Part No:		N/A	
CQFMS Job No.:	27861				
Drawing No.:	N/A	**Revision No:**		NA	
Date of Overhaul:	Dec 2023 to Feb 2024	**Qty Shipped:**		1	
Date Shipped:	23rd February 2024	**Serial No.**		N/A	
Description:	Overhaul EX5600 Boom				
Specification/Special Processes:	N/A				

This is to certify that the products and/or services contracted by the Purchase Order have been manufactured, processes, inspected and tested in accordance with all requirements of the purchase order and specified on referenced documents.

Inspection and test results signify that the items delivered are fully acceptable and in complete conformance to all purchase order requirements.

Data and records, not enclosed with this shipment, are maintained on file and are available upon request.

Signature:		Date:	07/03/2024
Position:	Workshop Manager		

CQ Field
Mining Services

Section 3

QC CHECKLIST

CQ Field Mining Services

Quality Control Worksheet

REVISION: 1.0

CUSTOMER	Customer PO No:
Minespec	
Customer Contact:	CQFMS Job No:
CQFMS Project Co-Ord:	27861

Job Description:	Relevant Drawing No's:	Delivery Date:
Refurbish Minespec Hitachi BOOM EX 5600		
Tick ✓		

Office Use (To be completed prior to issuing to workshop)

		YES	NO	Comment	Responsible Person	Sign	Date
1	All relevant information and specification received	✓			Supervisor Name		Date
2	Material ordered	✓			Supervisor Name		Date
3	Job briefing with workshop personnel	✓			Supervisor Name		Date
4	Risk Assessment complete	✓			Supervisor Name		Date
Workshop Use (Workshop Co-ordinator and personnel to complete)							
1	Items received correct from suppliers	✓			Name	Sign	Date
2	Items processed correct (eg rolling and pressing)	✓			Name	Sign	Date
3	Marking of hole location and size checked prior to drilling	✓			Name	Sign	Date
4	Tack items checked and tested for correct position	✓			BIMAL BASIL	BB	Date
5	Items braced for distortion prior to welding	✓			BIMAL BASIL	BB	Date
6	Welding information identified	✓			BIMAL BASIL	BB	Date
7	NDT Required	✓		✓	J. Bezuidenhout		9/3/24
8	**HOLD POINT - Do not proceed until signed**						
9	OK to start welding	✓			BIMAL BASIL	BB	12/12/23
10	Welding complete, job dressed and free from spatter	✓			BIMAL BASIL	BB	10/2/24
11	All hole and item locations rechecked after welding	✓			BIMAL BASIL	BB	10/2/24
12	Checked for distortion and fit-up				Name	Sign	Date
13	**HOLD POINT - Do not proceed until signed**						
14	Machining required-	✓			Supervisor Name		Date
15	a. Specifications determined and provided to contractor	✓			Supervisor Name		Date
14	Internal Lining required-	•			Supervisor Name		Date
15	a. Specifications determined and provided to contractor				Supervisor Name		Date
16	Surface treatment required-	✓			Supervisor Name		Date
17	a.Specifications determined and provided to contractor	✓			Supervisor Name		Date
18	Thickness, colour, quality checked	✓			Name	Sign	Date
19	**HOLD POINT - Do not proceed until signed**						
20	Photo's taken	✓			BIMAL BASIL	BB	Date
21	Job ready for dispatch	✓			Name	Sign	Date
22	Job completed and checked to quality standard	✓			BIMAL BASIL	BB	Date
23	Job loaded secure, items marked and protected	✓			Name	Sign	Date
24	**Approved for release to the client**	✓					

Section 4

NDT RECORDS

AXS PTY. LTD.

MACKAY OFFICE
PO Box 6848
Mackay MC, QLD 4741
PHONE: (07) 4952 5500
FAX: (07) 4952 5511

AVIATION • INDUSTRIAL • HYDROSTATIC • MINING - INSPECTIONS AND TESTING SERVICES

A.B.N. 78 062 915 299 A.C.N. 062 915 299

N.D.T. TEST REPORT

ZT:sk
11DEC23

REPORT No: R23-3540

CLIENT: CQ Field Mining Services
40 Production Drive
Paget, Qld 4740

CLIENT CONTACT: Mr. B. Sedcole

ORDER No: 55056

JOB No: 27861

DRAWING No.: Not Supplied

ITEM: #EX5600 Boom

DESCRIPTION: *Initial* NDT & Inspection of EX5600 Boom
at CQ Field Mining Services Workshop, Mackay.

TECHNICIAN/S: Mr. Z. Tass / Mr. J. Bozier / Mr. Z. Peulen / Mr. J. Friese

DATE OF TEST: 30NOV23 / 05DEC23 / 06DEC23

WORKSHEET REF. No.: MPI 23 – 44407
UT 23 – 10177

INSPECTION DATA:

PROCEDURE No.:	TP-301 / TP-702
AUST. STANDARD:	AS 1171-1998 / AS 2207-2007
SURFACE FINISH:	As Welded / Machined
SURFACE PREPARATION:	Wire Buffed / Mechanical Cleaned (Needle Gunned)
SURFACE COATINGS:	Nil
SURFACE CONDITION:	☐< 6.3µm Ra, ■< 3.2µm Ra
ACC/REJ LIMITS:	Record & Report all Cracking / Discontinuities
MATERIAL SPECIFICATION:	Carbon Steel – No Further Specifications
LIMITATION:	0°, 45°, 60°, 70° Scans Limited Scanning Positions No Drawing Supplied
EQUIPMENT:	■ Ultrasonic ☐ Radiographic ☐ Penetrant ■ MPI ☐ Other – Visual Parker B300S Contour Probe AMP-039 Castrol Flux Indicator Strip USM 36 Flaw Detector AUT-042 Krautkramer-MSEB 4E 0° Ultrasonic Transducer AUT-166 SIUI AFP2-89-45L 45° Ultrasonic Transducer AUT-177 SIUI AFP2-89-60L 60° Ultrasonic Transducer AUT-178 SIUI AFP2-89-70L 70° Ultrasonic Transducer AUT-179 SIUI AFP4-89-45L 45° Ultrasonic Transducer AUT-180 SIUI AFP4-89-60L 60° Ultrasonic Transducer AUT-187 SIUI AFP4-89-70L 70° Ultrasonic Transducer AUT-182 Calibration Block No.1 IIW V1 AUT-020 Calibration Block No.2 IOW AUT-021 Metric Universal Calibration Block AUT-029 Headlamp
MAGNETISATION:	Continuous Method
DEMAGNETISATION:	No
REF. SENSITIVITY:	MPI – 3 Lines Castrol Flux Indicator
CONSUMABLES:	Ardrox, Black Magnetic Ink 800/3, Batch # 4980857866 Ardrox, White Contrast Paint 8901/W, Batch # 4980129572

INSPECTION DATA CONTINUED:

TEMPERATURE:	☐ 10° - 14°	■ 15° - 45°	☐ 46° - 50°
RECORD:	Photograph		
LIGHTING:	1200 Lux		

ULTRASONIC INSPECTION DATA:

THICKNESS RANGE:	0 – 32mm / 0 – 50mm / 0 – 65mm
RANGE:	0 ° Scan: 0 – 150mm 45°, 60°, 70° Scans: 0 – 250mm / 0 – 400mm
REF SENSITIVITY:	2nd BWEFSH / 80% Reference
EVALUATION SENSITIVITY:	Level 2
SCAN POSITION:	UMA / UMB
SURFACE CONDITION:	SP1
WELD PROCESS:	Not Specified
SIZING:	6dB / 20dB
TEST ACCURACY:	± 0.5mm
COUPLANT:	Kerosene
CURVATURE COMPENSATION:	Not Applicable

RESULTS OF EXAMINATION

INSPECTION OF EX5600 BOOM:

***Initial* Magnetic Particle Inspection:** **Worksheet No. 23 – 44407**

Identification	Result
External Boom Job No. 27861 *100% Inspection of Prepared Welds* *100% Inspection of Bores*	➢ Cracking Evident - Refer to Figures 1 to 4 & Table 1.0 for Results
Internal Boom Bay #1 Job No. 27861 *100% Inspection of Prepared Welds*	➢ Cracking Evident - Refer to Figures 5 & Table 2.0 for Results
Internal Boom Bay #2 Job No. 27861 *100% Inspection of Prepared Welds*	➢ Cracking Evident - Refer to Figures 6 & Table 3.0 for Results
Internal Boom Bay #3 Job No. 27861 *100% Inspection of Prepared Welds*	➢ Cracking Evident - Refer to Figures 7 & Table 4.0 for Results
Internal Boom Bay #4 Job No. 27861 *100% Inspection of Prepared Welds*	➢ Cracking Evident - Refer to Figures 8 & Table 5.0 for Results
Internal Boom Bay #5 Job No. 27861 *100% Inspection of Prepared Welds*	➢ Cracking Evident - Refer to Figures 9 & Table 6.0 for Results
Internal Boom Bay #6 Job No. 27861 *100% Inspection of Prepared Welds*	➢ Cracking Evident - Refer to Figures 10 & Table 7.0 for Results
Internal Boom Bay #7 Job No. 27861 *100% Inspection of Prepared Welds*	➢ Cracking Evident - Refer to Figures 11 & Table 8.0 for Results
Internal Boom Bay #8 Job No. 27861 *100% Inspection of Prepared Welds*	➢ Cracking Evident - Refer to Figures 12 & Table 9.0 for Results

Note 1: Lighting Conditions comply with the Requirements of AS 1171 Section 3.5.2 – 1998.

RESULTS OF EXAMINATION CONTINUED

INSPECTION OF EX5600 BOOM:

Ultrasonic Inspection: **Worksheet No. 23 – 10177**

Identification	Result
Left Hand Rear Pivot End to Boom Body Job No. 27861 *100% Inspection of Welds*	➢ Nil Recordable Discontinuities Evident
Right Hand Rear Pivot End to Boom Body Job No. 27861 *100% Inspection of Welds*	➢ Nil Recordable Discontinuities Evident
Left Hand Front Pivot End to Boom Body Job No. 27861 *100% Inspection of Welds*	➢ Recordable Discontinuities Evident - Refer to Figure 11 & Table 8.0 for Results
Right Hand Front Pivot End to Boom Body Job No. 27861 *100% Inspection of Welds*	➢ Recordable Discontinuities Evident - Refer to Figure 10 & Table 7.0 for Results
Bay #2 – Existing Man Hole Cover Job No. 27861 *100% Inspection of Welds*	➢ Nil Recordable Discontinuities Evident
Bay #3 – Existing Man Hole Cover Job No. 27861 *100% Inspection of Welds*	➢ Nil Recordable Discontinuities Evident
Bay #4 – Existing Man Hole Cover Job No. 27861 *100% Inspection of Welds*	➢ Nil Recordable Discontinuities Evident
Bay #5 – Existing Man Hole Cover Job No. 27861 *100% Inspection of Welds*	➢ Nil Recordable Discontinuities Evident

Note 1: Lighting Conditions comply with the Requirements of AS 3978 Section 6.1 – 2003

SUMMARY OF EXAMINATION

INSPECTION OF EX5600 BOOM:

Magnetic Particle Inspection / Ultrasonic Inspection: Worksheet No. 23 – 44407 / 10177

Identification	Total No. of Defects	Total Length of Defects	Interpretation
External Boom	30	4966mm	New Cracking Evident
Internal Boom Bay #1	4	3120mm	New Cracking Evident
Internal Boom Bay #2	9	8820mm	New Cracking Evident
Internal Boom Bay #3	10	11200mm	New Cracking Evident
Internal Boom Bay #4	11	13900mm	New Cracking Evident
Internal Boom Bay #5	13	14250mm	New Cracking Evident
Internal Boom Bay #6	12	1900mm	New Cracking Evident
Internal Boom Bay #7	9	4560mm	New Cracking Evident
Internal Boom Bay #8	4	2890mm	New Cracking Evident

Note 1: Lighting Conditions comply with the Requirements of AS 1171 Section 3.5.2 1998
Note 2: Lighting Conditions comply with the Requirements of AS 3978 Section 6.1 – 2003

Technicians:
Zackary Tass
Joshua Bozier
Zachary Peulen
Jayden Friese

Z. Tass - Senior Technician
Approved NDT / Hydro Test Signatory
AS 3998 / ISO 9712 Level 2
MT, PT, UT, RT, CR/DR
(AINDT Registration No.4796)

RESULTS OF EXAMINATION CONTINUED

FIGURE 1 – EXTERNAL TOP SIDE:

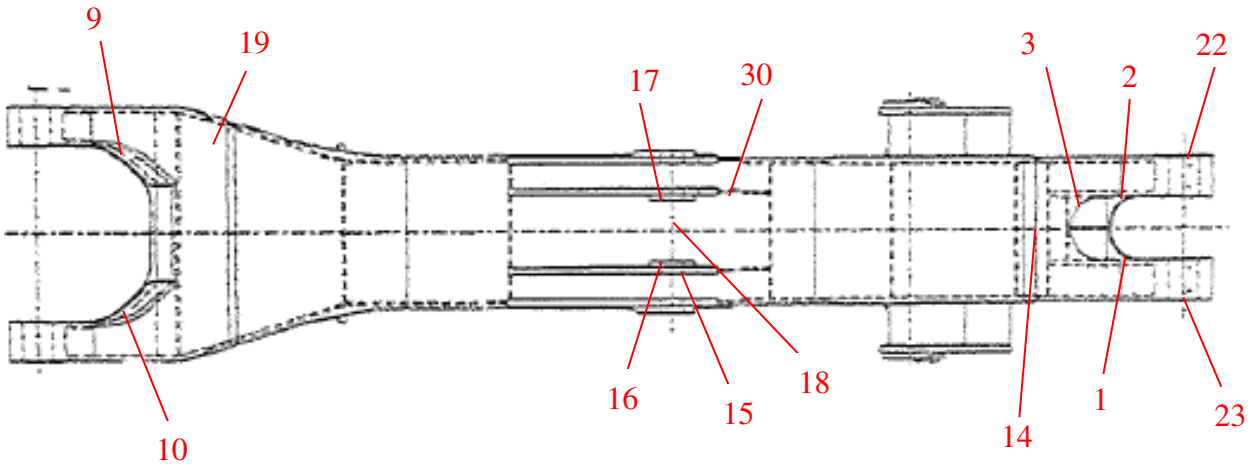
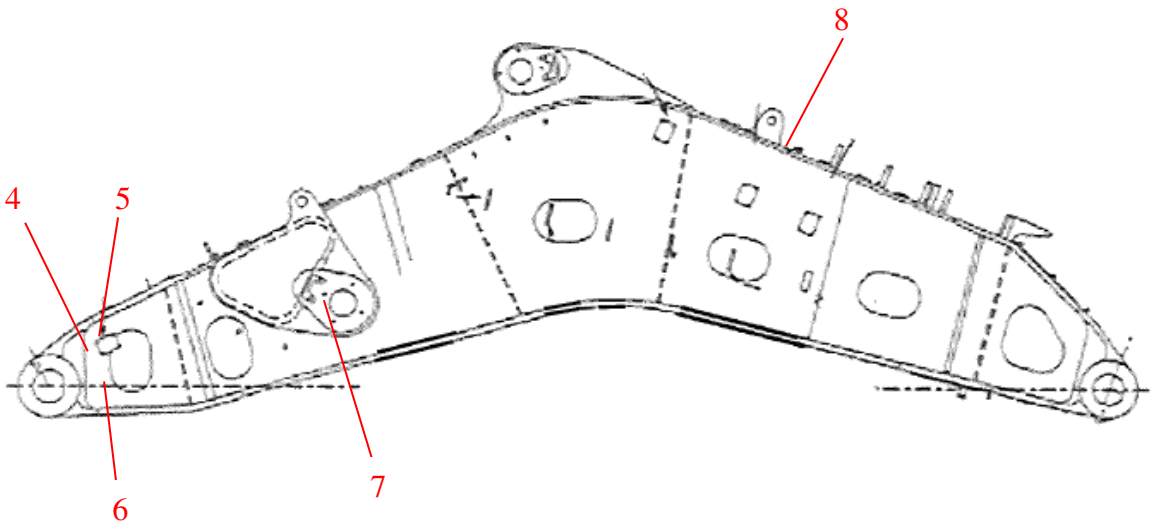


FIGURE 2 – EXTERNAL LEFT HAND SIDE:



RESULTS OF EXAMINATION CONTINUED

FIGURE 3 – EXTERNAL RIGHT HAND SIDE:

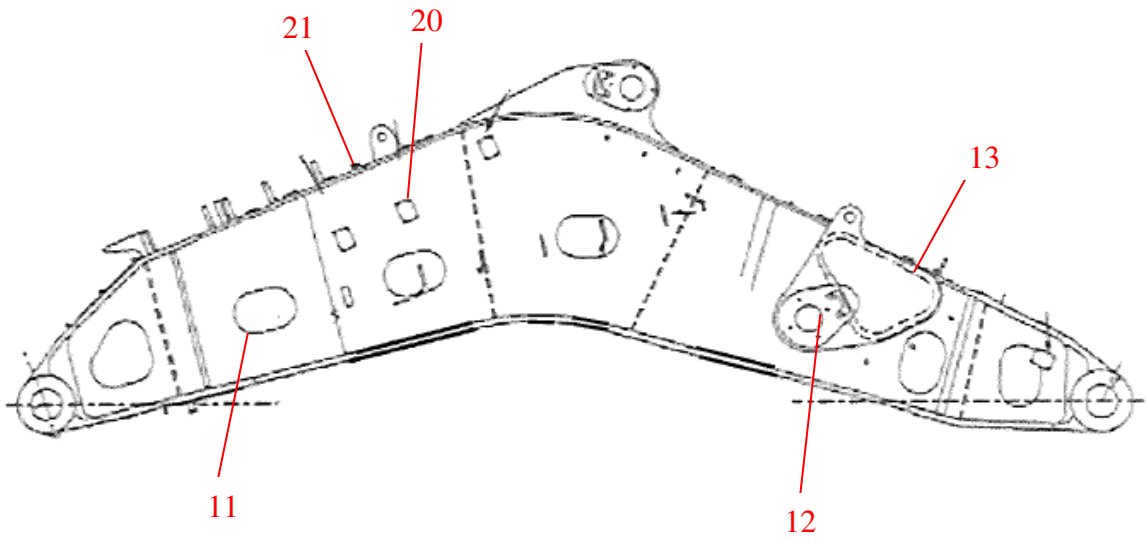
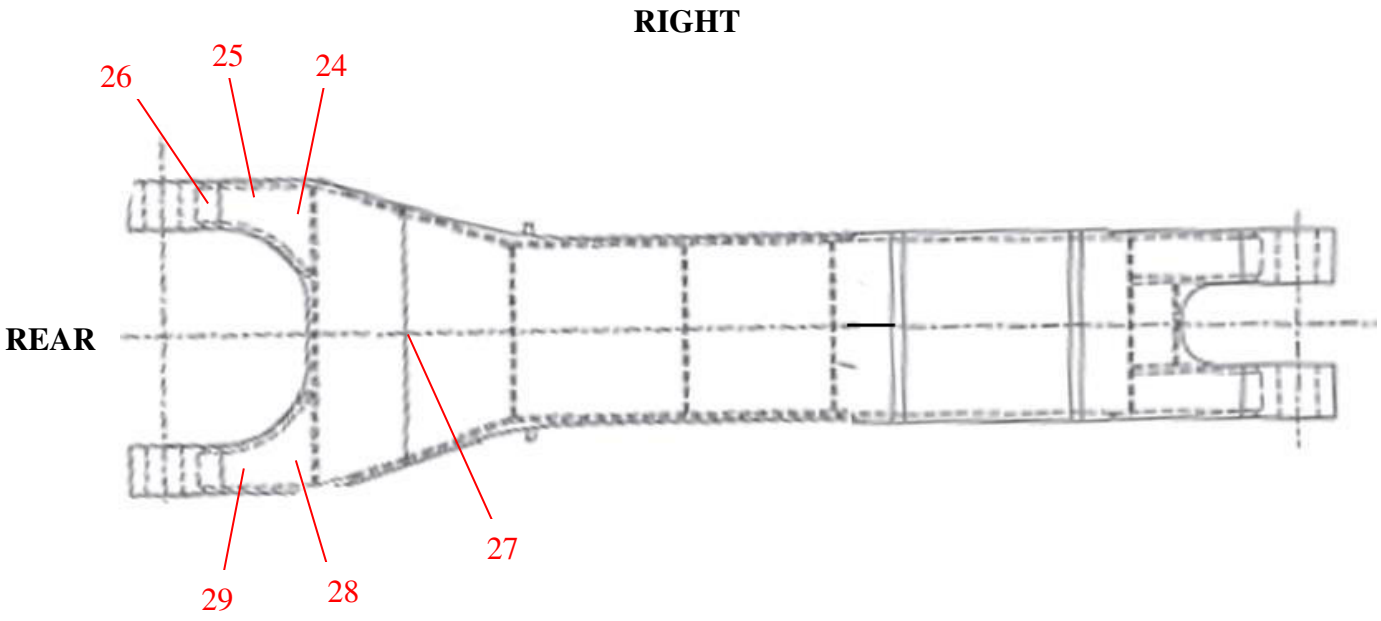


FIGURE 4 – EXTERNAL UNDERSIDE:



RESULTS OF EXAMINATION CONTINUED

TABLE 1.0 – EXTERNAL BOOM DEFECTS:

Defect No.	Length in mm	Defect No.	Length in mm
No. 1	270	**No. 16**	650
No. 2	130	**No. 17**	650
No. 3	80	**No. 18**	5
No. 4	450	**No. 19**	10
No. 5	10	**No. 20**	100
No. 6	10	**No. 21**	50
No. 7	50	**No. 22**	10
No. 8	10	**No. 23**	5
No. 9	20	**No. 24**	70
No. 10	5, 3	**No. 25**	70
No. 11	100	**No. 26**	130
No. 12	450	**No. 27**	10
No. 13	10, 5, 3	**No. 28**	100
No. 14	1100	**No. 29**	100
No. 15	250	**No. 30**	50

PHOTOGRAPH NO. 1 – EXTERNAL BOOM
TYPICAL VIEW OF DEFECT #1

PHOTOGRAPH NO. 2 – EXTERNAL BOOM
TYPICAL VIEW OF DEFECT #2

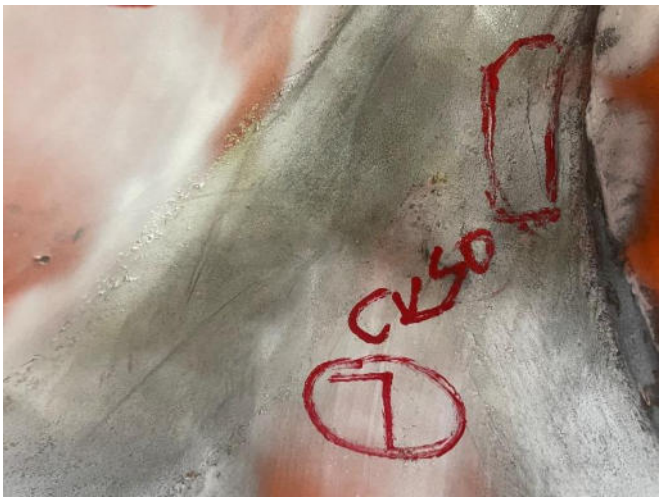
PHOTOGRAPH NO. 3 - EXTERNAL BOOM
TYPICAL VIEW OF DEFECT #3

PHOTOGRAPH NO. 4 – EXTERNAL BOOM
TYPICAL VIEW OF DEFECT #4

PHOTOGRAPH NO. 5 – EXTERNAL BOOM
TYPICAL VIEW OF DEFECT #5

PHOTOGRAPH NO. 6 – EXTERNAL BOOM
TYPICAL VIEW OF DEFECT #6

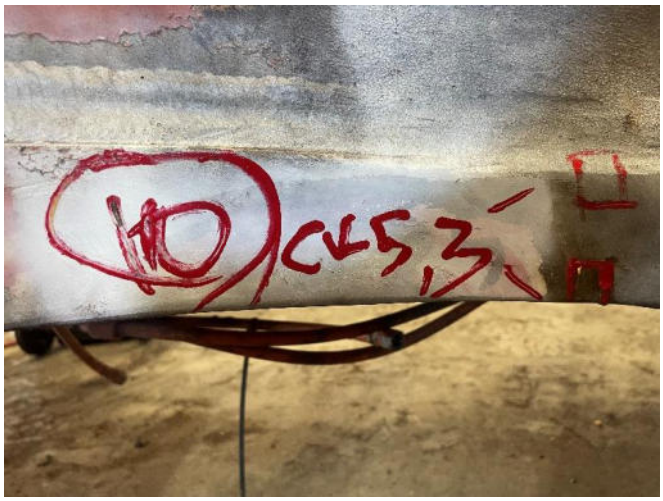
PHOTOGRAPH NO. 7 – EXTERNAL BOOM
TYPICAL VIEW OF DEFECT #7



PHOTOGRAPH NO. 8 – EXTERNAL BOOM
TYPICAL VIEW OF DEFECT #8

PHOTOGRAPH NO. 9 – EXTERNAL BOOM
TYPICAL VIEW OF DEFECT #9

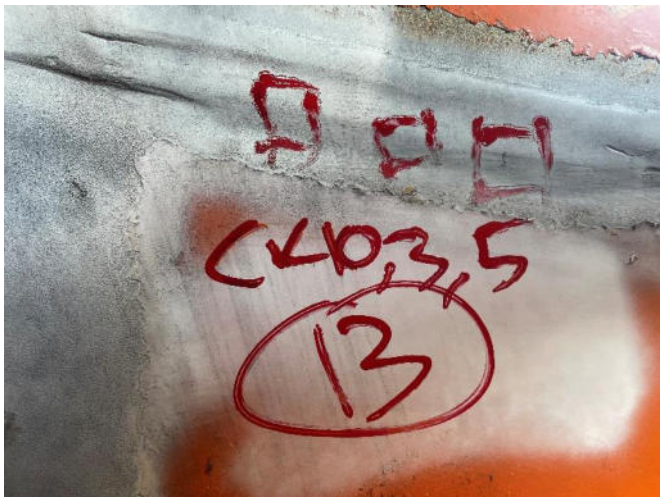
PHOTOGRAPH NO. 10 – EXTERNAL BOOM
TYPICAL VIEW OF DEFECT #10



PHOTOGRAPH NO. 11 – EXTERNAL BOOM
TYPICAL VIEW OF DEFECT #11

PHOTOGRAPH NO. 12 – EXTERNAL BOOM
TYPICAL VIEW OF DEFECT #12

PHOTOGRAPH NO. 13 – EXTERNAL BOOM
TYPICAL VIEW OF DEFECT #13



PHOTOGRAPH NO. 14 – EXTERNAL BOOM
TYPICAL VIEW OF DEFECT #14

PHOTOGRAPH NO. 15 – EXTERNAL BOOM
TYPICAL VIEW OF DEFECT #15

PHOTOGRAPH NO. 16 – EXTERNAL BOOM
TYPICAL VIEW OF DEFECT #16

PHOTOGRAPH NO. 17 – EXTERNAL BOOM
TYPICAL VIEW OF DEFECT #17

PHOTOGRAPH NO. 18 – EXTERNAL BOOM
TYPICAL VIEW OF DEFECT #18

PHOTOGRAPH NO. 19 – EXTERNAL BOOM
TYPICAL VIEW OF DEFECT #19

PHOTOGRAPH NO. 20 – EXTERNAL BOOM
TYPICAL VIEW OF DEFECT #20

PHOTOGRAPH NO. 21 – EXTERNAL BOOM
TYPICAL VIEW OF DEFECT #21

PHOTOGRAPH NO. 22 – EXTERNAL BOOM
TYPICAL VIEW OF DEFECT #22

PHOTOGRAPH NO. 23 – EXTERNAL BOOM
TYPICAL VIEW OF DEFECT #23

PHOTOGRAPH NO. 24 – EXTERNAL BOOM
TYPICAL VIEW OF DEFECT #24

PHOTOGRAPH NO. 25 – EXTERNAL BOOM
TYPICAL VIEW OF DEFECT #25

PHOTOGRAPH NO. 26 – EXTERNAL BOOM
TYPICAL VIEW OF DEFECT #26

PHOTOGRAPH NO. 27 – EXTERNAL BOOM
TYPICAL VIEW OF DEFECT #27

PHOTOGRAPH NO. 28 – EXTERNAL BOOM
TYPICAL VIEW OF DEFECT #28

PHOTOGRAPH NO. 29 – EXTERNAL BOOM
TYPICAL VIEW OF DEFECT #29

PHOTOGRAPH NO. 30 – EXTERNAL BOOM
TYPICAL VIEW OF DEFECT #30

RESULTS OF EXAMINATION CONTINUED

FIGURE 5 – INTERNAL BAY #1:

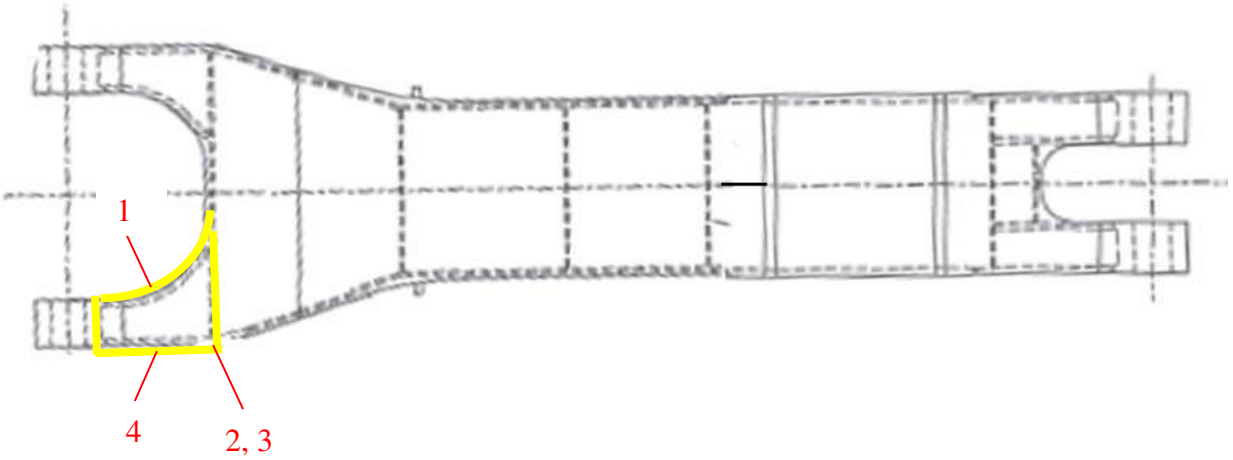


TABLE 2.0 – INTERNAL BAY #1:

Defect No.	Length in mm	Defect No.	Length in mm
No. 1	360 BC	No. 3	10 SW
No. 2	1200 SW	No. 4	800, 750 TC

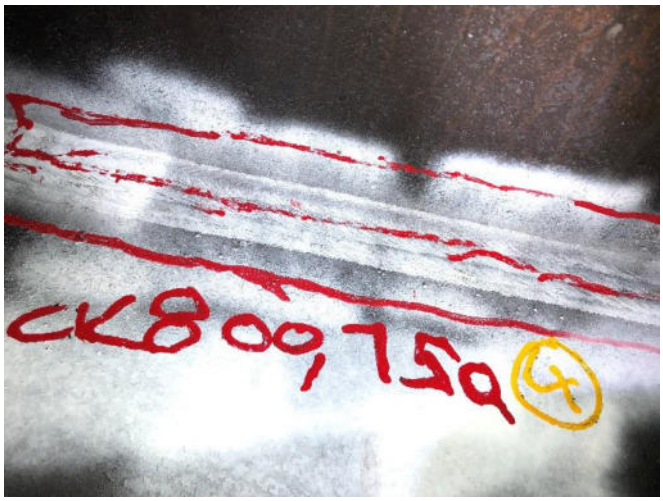
TC = Top Chord
BC = Bottom Chord
FW = Front Wall
RW = Rear Wall
SW = Side Wall
MH = Man Hole

PHOTOGRAPH NO. 31 – INTERNAL BOOM BAY #1
TYPICAL VIEW OF DEFECT #1

PHOTOGRAPH NO. 32 – INTERNAL BOOM BAY #1
TYPICAL VIEW OF DEFECT #2

PHOTOGRAPH NO. 33 – INTERNAL BOOM BAY #1
TYPICAL VIEW OF DEFECT #3

PHOTOGRAPH NO. 34 – INTERNAL BOOM BAY #1
TYPICAL VIEW OF DEFECT #4



RESULTS OF EXAMINATION CONTINUED

FIGURE 6 – INTERNAL BAY #2:

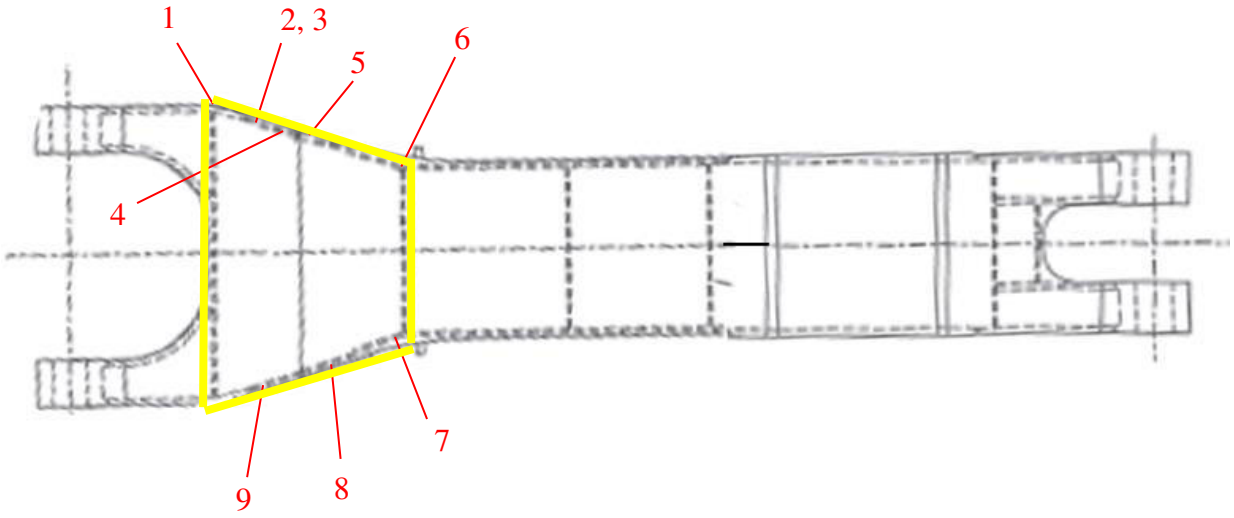


TABLE 3.0 – INTERNAL BAY #2 DEFECTS:

Defect No.	Length in mm	Defect No.	Length in mm
No. 1	1300 SW	**No. 6**	40, 10 TC
No. 2	10 MH	**No. 7**	650 SW
No. 3	10 MH	**No. 8**	1700 TC
No. 4	1700 BC	**No. 9**	1700 BC
No. 5	1700 TC		

TC = Top Chord FW = Front Wall SW = Side Wall
BC = Bottom Chord RW = Rear Wall MH = Man Hole

PHOTOGRAPH NO. 35 – INTERNAL BOOM BAY #2
TYPICAL VIEW OF DEFECT #1

PHOTOGRAPH NO. 36 – INTERNAL BOOM BAY #2
TYPICAL VIEW OF DEFECT #2

PHOTOGRAPH NO. 37 – INTERNAL BOOM BAY #2
TYPICAL VIEW OF DEFECT #3

PHOTOGRAPH NO. 38 – INTERNAL BOOM BAY #2
TYPICAL VIEW OF DEFECT #4

PHOTOGRAPH NO. 39 – INTERNAL BOOM BAY #2
TYPICAL VIEW OF DEFECT #5

PHOTOGRAPH NO. 40 – INTERNAL BOOM BAY #2
TYPICAL VIEW OF DEFECT #6

PHOTOGRAPH NO. 41 – INTERNAL BOOM BAY #2
TYPICAL VIEW OF DEFECT #7

PHOTOGRAPH NO. 42 – INTERNAL BOOM BAY #2
TYPICAL VIEW OF DEFECT #8

PHOTOGRAPH NO. 43 – INTERNAL BOOM BAY #2
TYPICAL VIEW OF DEFECT #9

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RESULTS OF EXAMINATION CONTINUED

FIGURE 7 – INTERNAL BAY #3:

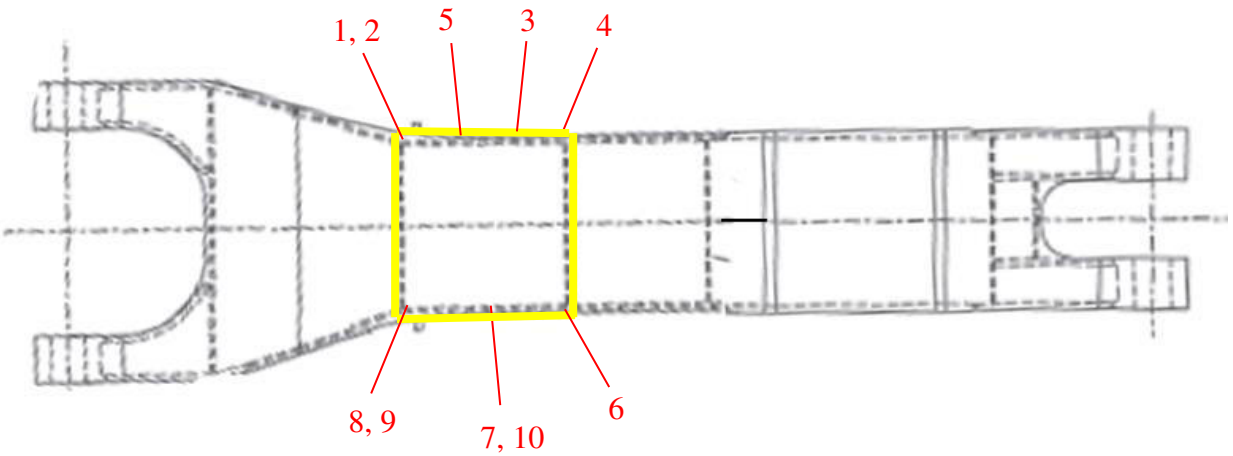


TABLE 4.0 – INTERNAL BAY #3 DEFECTS:

Defect No.	Length in mm	Defect No.	Length in mm
No. 1	500 SW	**No. 6**	1400 SW
No. 2	700 SW	**No. 7**	1500 TC
No. 3	1500 TC	**No. 8**	600 SW
No. 4	1400 SW	**No. 9**	600 SW
No. 5	1500 BC	**No. 10**	1500 BC

TC = Top Chord FW = Front Wall SW = Side Wall
BC = Bottom Chord RW = Rear Wall MH = Man Hole

PHOTOGRAPH NO. 44 – INTERNAL BOOM BAY #3
TYPICAL VIEW OF DEFECT #1

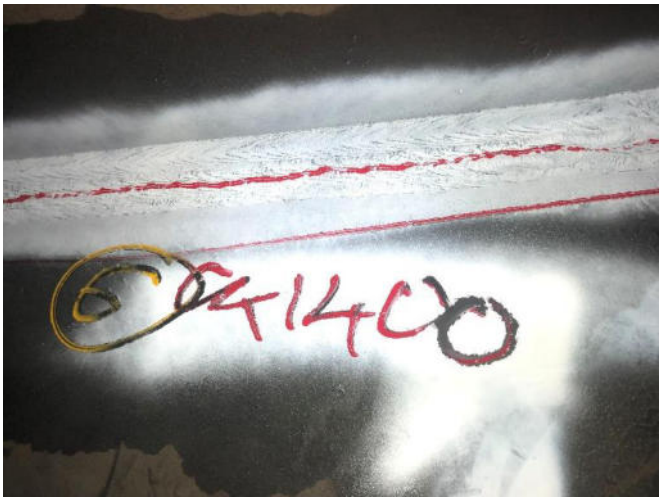
PHOTOGRAPH NO. 45 – INTERNAL BOOM BAY #3
TYPICAL VIEW OF DEFECT #2

PHOTOGRAPH NO. 46 – INTERNAL BOOM BAY #3
TYPICAL VIEW OF DEFECT #3

PHOTOGRAPH NO. 47 – INTERNAL BOOM BAY #3
TYPICAL VIEW OF DEFECT #4

PHOTOGRAPH NO. 48 – INTERNAL BOOM BAY #3
TYPICAL VIEW OF DEFECT #5

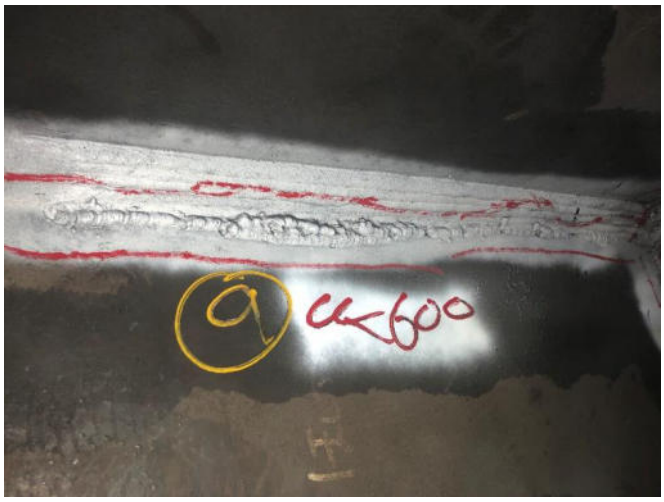
PHOTOGRAPH NO. 49 – INTERNAL BOOM BAY #3
TYPICAL VIEW OF DEFECT #6



PHOTOGRAPH NO. 50 – INTERNAL BOOM BAY #3
TYPICAL VIEW OF DEFECT #7

PHOTOGRAPH NO. 51 – INTERNAL BOOM BAY #3
TYPICAL VIEW OF DEFECT #8

PHOTOGRAPH NO. 52 – INTERNAL BOOM BAY #3
TYPICAL VIEW OF DEFECT #9



PHOTOGRAPH NO. 53 – INTERNAL BOOM BAY #3
TYPICAL VIEW OF DEFECT #10

RESULTS OF EXAMINATION CONTINUED

FIGURE 8 – INTERNAL BAY #4:

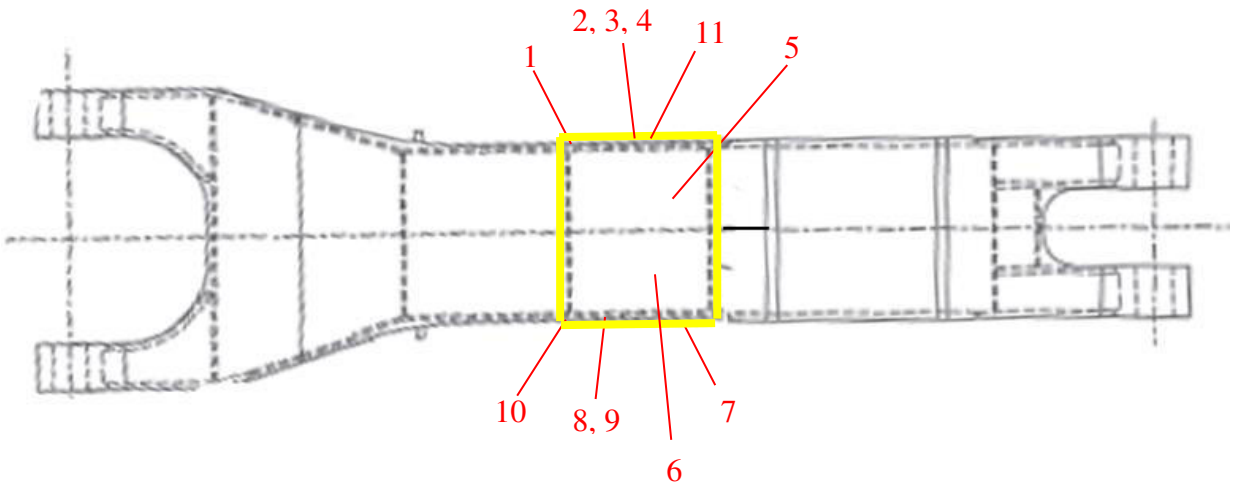
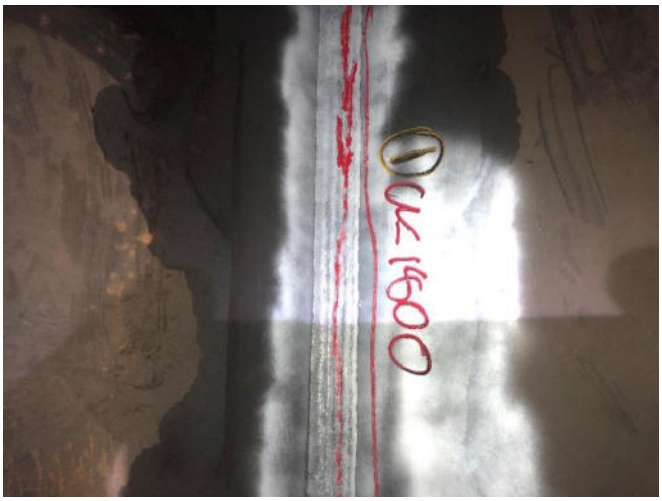


TABLE 5.0 – INTERNAL BAY #4 DEFECTS:

Defect No.	Length in mm	Defect No.	Length in mm
No. 1	1800 SW	**No. 7**	1000 SW
No. 2	50 TC	**No. 8**	50 TC
No. 3	1400 TC	**No. 9**	600 BC
No. 4	1500 BC	**No. 10**	1800 SW
No. 5	2800 TC/SW	**No. 11**	100 MH
No. 6	2800 TC/SW		

TC = Top Chord FW = Front Wall SW = Side Wall
BC = Bottom Chord RW = Rear Wall MH = Man Hole

PHOTOGRAPH NO. 54 – INTERNAL BOOM BAY #4
TYPICAL VIEW OF DEFECT #1



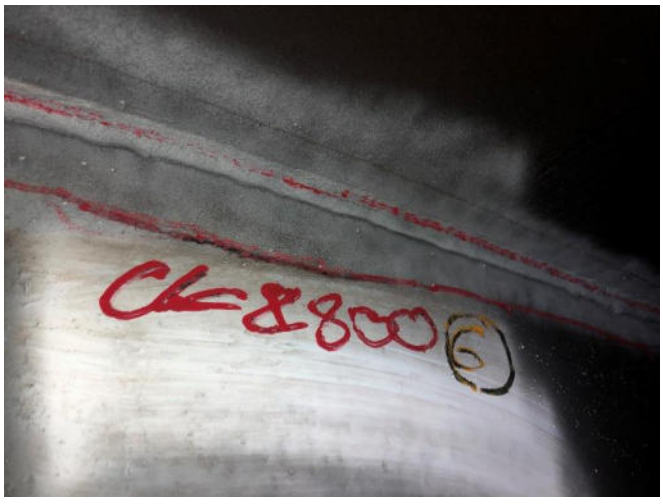
PHOTOGRAPH NO. 55 – INTERNAL BOOM BAY #4
TYPICAL VIEW OF DEFECT #2

PHOTOGRAPH NO. 56 – INTERNAL BOOM BAY #4
TYPICAL VIEW OF DEFECT #3

PHOTOGRAPH NO. 57 – INTERNAL BOOM BAY #4
TYPICAL VIEW OF DEFECT #4

PHOTOGRAPH NO. 58 – INTERNAL BOOM BAY #4
TYPICAL VIEW OF DEFECT #5

PHOTOGRAPH NO. 59 – INTERNAL BOOM BAY #4
TYPICAL VIEW OF DEFECT #6



PHOTOGRAPH NO. 60 – INTERNAL BOOM BAY #4
TYPICAL VIEW OF DEFECT #7

PHOTOGRAPH NO. 61 – INTERNAL BOOM BAY #4
TYPICAL VIEW OF DEFECT #8

PHOTOGRAPH NO. 62 – INTERNAL BOOM BAY #4
TYPICAL VIEW OF DEFECT #9

PHOTOGRAPH NO. 63 – INTERNAL BOOM BAY #4
TYPICAL VIEW OF DEFECT #10

PHOTOGRAPH NO. 64 – INTERNAL BOOM BAY #4
TYPICAL VIEW OF DEFECT #11

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RESULTS OF EXAMINATION CONTINUED

FIGURE 9 – INTERNAL BAY #5:

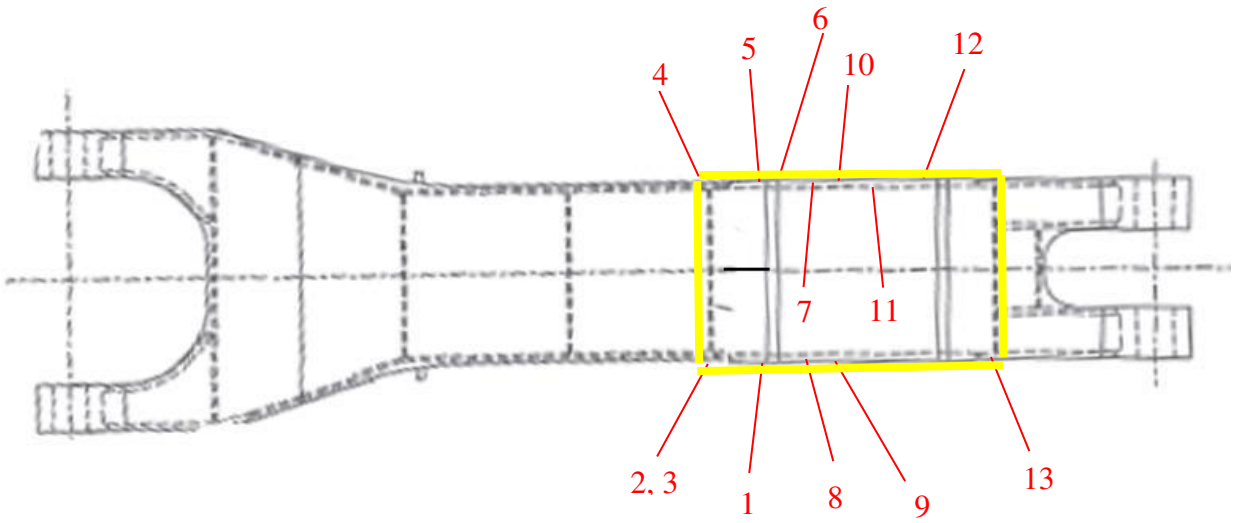


TABLE 6.0 – INTERNAL BAY #5 DEFECTS:

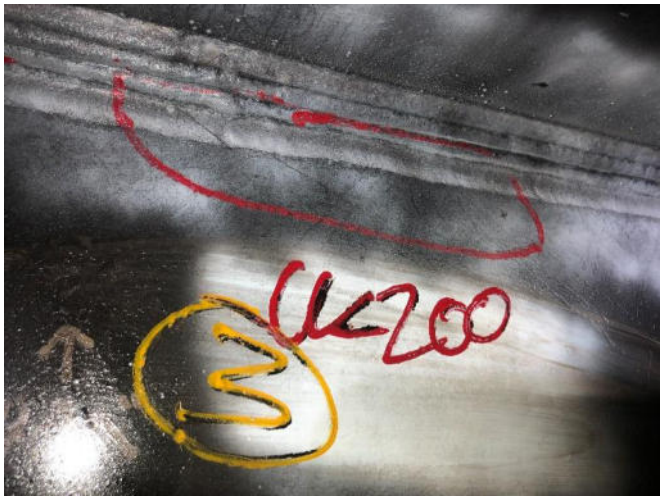
Defect No.	Length in mm	Defect No.	Length in mm
No. 1	600 TC	**No. 8**	2200 TT/SW
No. 2	400 SW	**No. 9**	3600 BC
No. 3	200 SW	**No. 10**	3600 BC
No. 4	150 SW	**No. 11**	1100 TC
No. 5	600 TC	**No. 12**	300 TC
No. 6	200 TT	**No. 13**	300 TC
No. 7	1000 TT/SW		

TC = Top Chord FW = Front Wall SW = Side Wall
BC = Bottom Chord RW = Rear Wall MH = Man Hole
TT = Torque Tube

PHOTOGRAPH NO. 65 – INTERNAL BOOM BAY #5
TYPICAL VIEW OF DEFECT #1

PHOTOGRAPH NO. 66 – INTERNAL BOOM BAY #5
TYPICAL VIEW OF DEFECT #2

PHOTOGRAPH NO. 67 – INTERNAL BOOM BAY #5
TYPICAL VIEW OF DEFECT #3



PHOTOGRAPH NO. 68 – INTERNAL BOOM BAY #5
TYPICAL VIEW OF DEFECT #4

PHOTOGRAPH NO. 69 – INTERNAL BOOM BAY #5
TYPICAL VIEW OF DEFECT #5

PHOTOGRAPH NO. 70 – INTERNAL BOOM BAY #5
TYPICAL VIEW OF DEFECT #6

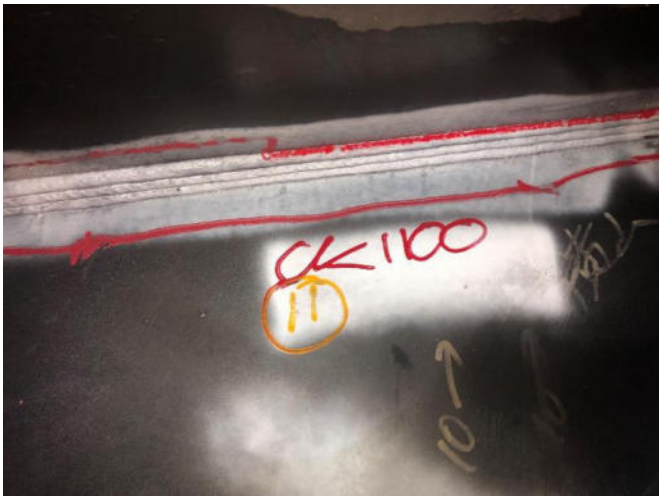
PHOTOGRAPH NO. 71 – INTERNAL BOOM BAY #5
TYPICAL VIEW OF DEFECT #7

PHOTOGRAPH NO. 72 – INTERNAL BOOM BAY #5
TYPICAL VIEW OF DEFECT #8

PHOTOGRAPH NO. 73 – INTERNAL BOOM BAY #5
TYPICAL VIEW OF DEFECT #9

PHOTOGRAPH NO. 74 – INTERNAL BOOM BAY #5
TYPICAL VIEW OF DEFECT #10

PHOTOGRAPH NO. 75 – INTERNAL BOOM BAY #5
TYPICAL VIEW OF DEFECT #11



PHOTOGRAPH NO. 76 – INTERNAL BOOM BAY #5
TYPICAL VIEW OF DEFECT #12

PHOTOGRAPH NO. 77 – INTERNAL BOOM BAY #5
TYPICAL VIEW OF DEFECT #13

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RESULTS OF EXAMINATION CONTINUED

FIGURE 10 – INTERNAL BAY #6:

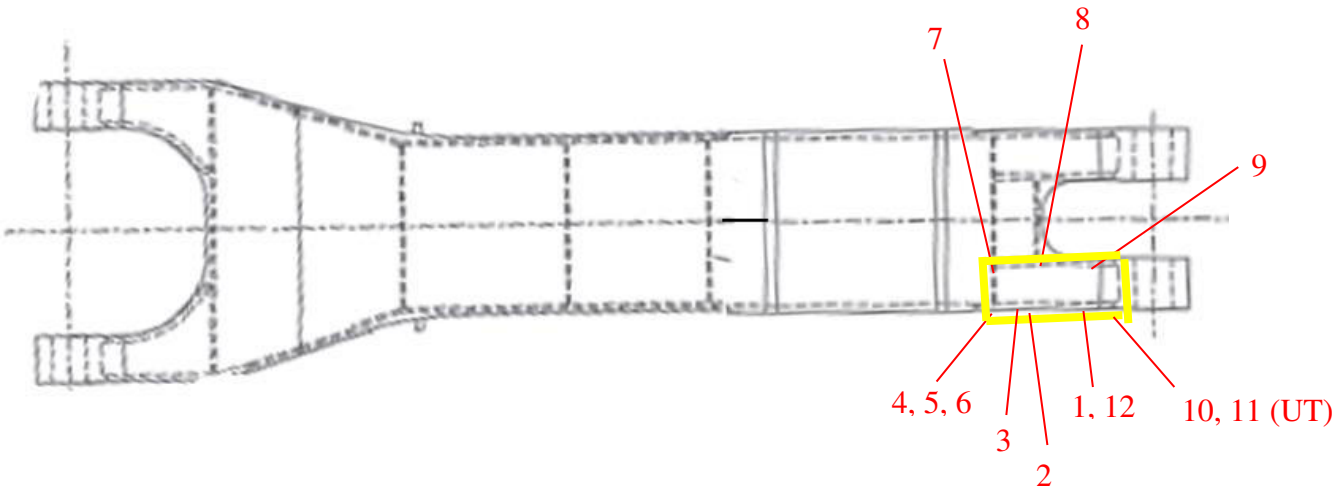

TABLE 7.0 – INTERNAL BAY #6 DEFECTS:

Defect No.	Length in mm	Defect No.	Length in mm
No. 1	370 BC	**No. 7**	360 TC
No. 2	130 MH	**No. 8**	80 TC
No. 3	140 SW	**No. 9**	60 TC
No. 4	90 SW	**No. 10**	120 MH
No. 5	220 MH	**No. 11**	170 TC
No. 6	30 SW	**No. 12**	70, 60 TC

TC = Top Chord FW = Front Wall SW = Side Wall
BC = Bottom Chord RW = Rear Wall MH = Man Hole

PHOTOGRAPH NO. 78 – INTERNAL BOOM BAY #6
TYPICAL VIEW OF DEFECT #1

PHOTOGRAPH NO. 79 – INTERNAL BOOM BAY #6
TYPICAL VIEW OF DEFECT #2

PHOTOGRAPH NO. 80 – INTERNAL BOOM BAY #6
TYPICAL VIEW OF DEFECT #3

PHOTOGRAPH NO. 81 – INTERNAL BOOM BAY #6
TYPICAL VIEW OF DEFECT #4

PHOTOGRAPH NO. 82 – INTERNAL BOOM BAY #6
TYPICAL VIEW OF DEFECT #5

PHOTOGRAPH NO. 83 – INTERNAL BOOM BAY #6
TYPICAL VIEW OF DEFECT #6

PHOTOGRAPH NO. 84 – INTERNAL BOOM BAY #6
TYPICAL VIEW OF DEFECT #7

PHOTOGRAPH NO. 85 – INTERNAL BOOM BAY #6
TYPICAL VIEW OF DEFECT #8

PHOTOGRAPH NO. 86 – INTERNAL BOOM BAY #6
TYPICAL VIEW OF DEFECT #9

PHOTOGRAPH NO. 87 – INTERNAL BOOM BAY #6
TYPICAL VIEW OF DEFECT #10

PHOTOGRAPH NO. 88 – INTERNAL BOOM BAY #6
TYPICAL VIEW OF DEFECT #11

PHOTOGRAPH NO. 89 – INTERNAL BOOM BAY #6
TYPICAL VIEW OF DEFECT #12

RESULTS OF EXAMINATION CONTINUED

FIGURE 11 – INTERNAL BAY #7:

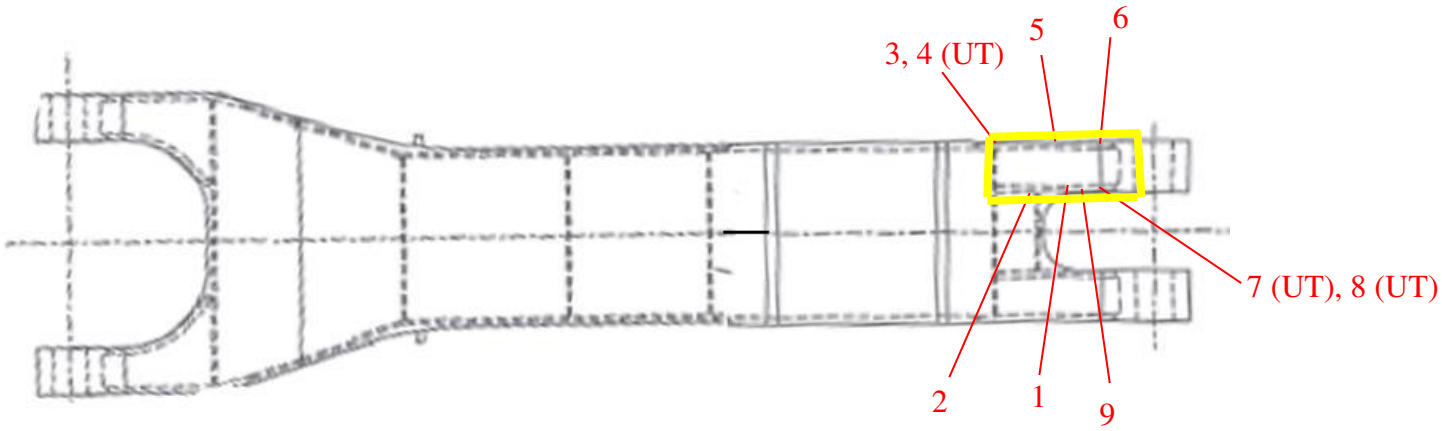

TABLE 8.0 – INTERNAL BAY #7 DEFECTS:

Defect No.	Length in mm	Defect No.	Length in mm
No. 1	150 BC	**No. 6**	530 SW
No. 2	190 BC	**No. 7**	1200 SW
No. 3	1150 SW	**No. 8**	170 TC
No. 4	250 TC	**No. 9**	720 TC
No. 5	350 MH		

TC = Top Chord FW = Front Wall SW = Side Wall
BC = Bottom Chord RW = Rear Wall MH = Man Hole

PHOTOGRAPH NO. 90 – INTERNAL BOOM BAY #7
TYPICAL VIEW OF DEFECT #1

PHOTOGRAPH NO. 91 – INTERNAL BOOM BAY #7
TYPICAL VIEW OF DEFECT #2

PHOTOGRAPH NO. 92 – INTERNAL BOOM BAY #7
TYPICAL VIEW OF DEFECT #3

PHOTOGRAPH NO. 93 – INTERNAL BOOM BAY #7
TYPICAL VIEW OF DEFECT #4

PHOTOGRAPH NO. 94 – INTERNAL BOOM BAY #7
TYPICAL VIEW OF DEFECT #5

PHOTOGRAPH NO. 95 – INTERNAL BOOM BAY #7
TYPICAL VIEW OF DEFECT #6

PHOTOGRAPH NO. 96 – INTERNAL BOOM BAY #7
TYPICAL VIEW OF DEFECT #7

PHOTOGRAPH NO. 97 – INTERNAL BOOM BAY #7
TYPICAL VIEW OF DEFECT #8

PHOTOGRAPH NO. 98 – INTERNAL BOOM BAY #7
TYPICAL VIEW OF DEFECT #9

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RESULTS OF EXAMINATION CONTINUED

FIGURE 12 – INTERNAL BAY #8:

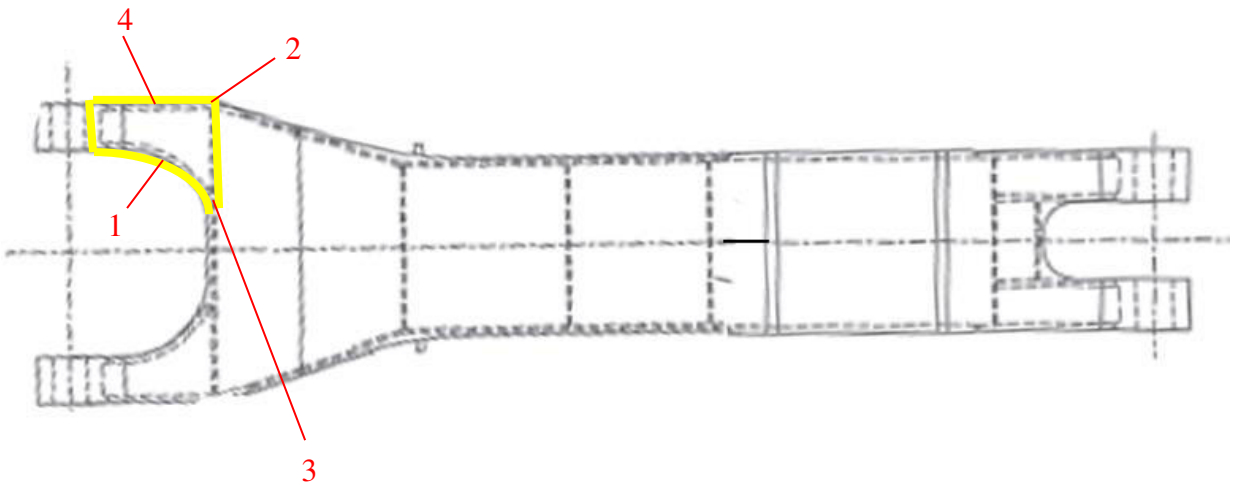


TABLE 9.0 – INTERNAL BAY #8:

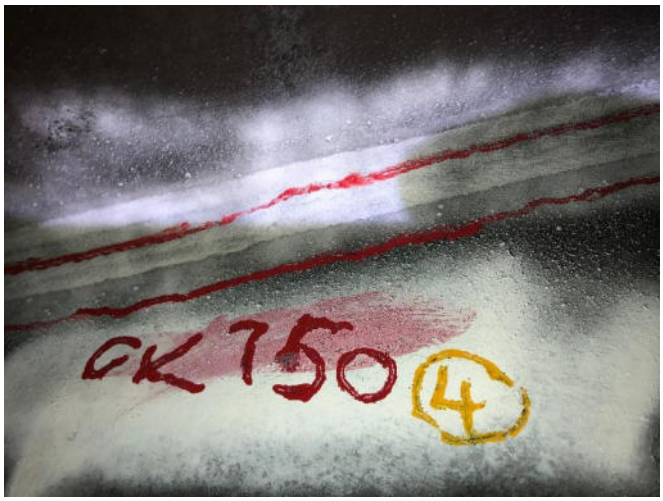
Defect No.	Length in mm	Defect No.	Length in mm
No. 1	350 BC	No. 3	40 TC
No. 2	650, 1100 SW	No. 4	750 TC

PHOTOGRAPH NO. 99 – INTERNAL BOOM BAY #8
TYPICAL VIEW OF DEFECT #1

PHOTOGRAPH NO. 100 – INTERNAL BOOM BAY #8
TYPICAL VIEW OF DEFECT #2

PHOTOGRAPH NO. 101 – INTERNAL BOOM BAY #8
TYPICAL VIEW OF DEFECT #3

PHOTOGRAPH NO. 102 – INTERNAL BOOM BAY #8
TYPICAL VIEW OF DEFECT #4



PHOTOGRAPH NO. 103 – GENERAL VIEW OF EX5600 BOOM

PHOTOGRAPH NO. 104 – GENERAL VIEW OF EX5600 BOOM

PHOTOGRAPH NO. 105 – GENERAL VIEW OF EX5600 BOOM

PHOTOGRAPH NO. 106 – GENERAL VIEW OF EX5600 BOOM

AXS PTY. LTD.

MACKAY OFFICE
PO Box 6848
Mackay MC, QLD 4741
PHONE: (07) 4952 5500
FAX: (07) 4952 5511

AVIATION • INDUSTRIAL • HYDROSTATIC • MINING - INSPECTIONS AND TESTING SERVICES

A.B.N. 78 062 915 299 A.C.N. 062 915 299

N.D.T. TEST REPORT

ZT:sk
08MAR24

REPORT No.: R23-3540a

CLIENT: CQ Field Mining Services
40 Production Drive
Paget, Qld 4740

CLIENT CONTACT: Mr. B. Sedcole

ORDER No.: 55056

JOB No.: 27861

DRAWING No.: Not Supplied

ITEM: #EX5600 Boom

DESCRIPTION: *Final* NDT & Inspection of EX5600 Boom
at CQ Field Mining Services Workshop, Mackay.

TECHNICIAN/S: Mr. Z. Tass / Mr. J. Bozier / Mr. Z. Peulen /
Mr. J. Friese / Mr. B. Bell

DATE OF TEST: 16JAN24 / 25JAN24 / 29JAN24 / 31JAN24 / 01FEB24 / 12FEB24

WORKSHEET REF. No.:
MPI 24 – 45133
VIS 24 – 9285
UT 24 – 10413
CON 24 – 3364

INSPECTION DATA:

PROCEDURE No.:	TP-001 / TP-301 / TP-702
TEST STANDARD:	AS 3978-2003 / AS 1171-1998 / AS 2207-2007
ASSOCIATED STANDARD:	AS/NZS 1554.1-2014
SURFACE FINISH:	As Welded
SURFACE PREPARATION:	Blended
SURFACE COATINGS:	Nil
SURFACE CONDITION:	☐< 6.3µm Ra, ■< 3.2µm Ra
ACC/REJ LIMITS:	AS/NZS 1554.1 2014 Cat SP Table 6.2.2 AS/NZS 1554.1 2014 Table 6.2.1
MATERIAL SPECIFICATION:	Carbon Steel – No Further Specifications
LIMITATION:	0°, 45°, 60°, 70° Scans
EQUIPMENT:	■ Ultrasonic ☐ Radiographic ☐ Penetrant ■ MPI ■ Other – Visual

Parker B300S Contour Probe AMP-047
Castrol Flux Indicator Strip
USM 36 Flaw Detector AUT-041
Krautkramer-MSEB-4E 0° Ultrasonic Transducer AUT-139
SIUI AFP2-89-45L 45° Ultrasonic Transducer AUT-171
SIUI AFP2-89-60L 60° Ultrasonic Transducer AUT-172
SIUI AFP2-89-70L 70° Ultrasonic Transducer AUT-173
SIUI AFP4-89-45L 45° Ultrasonic Transducer AUT-174
SIUI AFP4-89-60L 60° Ultrasonic Transducer AUT-175
SIUI AFP4-89-70L 70° Ultrasonic Transducer AUT-176
Calibration Block No.1 IIW V1 AUT-020
Calibration Block No.2 IOW AUT-021
Metric Universal Calibration Block AUT-029
Headlamp

MAGNETISATION:	Continuous Method
DEMAGNETISATION:	No
REF. SENSITIVITY:	MPI – 3 Lines Castrol Flux Indicator
CONSUMABLES:	Ardrox, Black Magnetic Ink 800/3, Batch # 4980857866 Ardrox, White Contrast Paint 8901/W, Batch # 4980129572

INSPECTION DATA CONTINUED:

TEMPERATURE:	☐ 10° - 14°	■ 15° - 45°	☐ 46° - 50°
RECORD:	Photograph		
LIGHTING:	1200 Lux		
% COMPLETION:	100%		
ACCESS:	100%		
MAGNIFICATION:	Nil		

ULTRASONIC INSPECTION DATA:

THICKNESS RANGE:	0 – 32mm / 0 – 50mm / 0 – 65mm
RANGE:	0 ° Scan: 0 – 150mm 45°, 60°, 70° Scans: 0 – 250mm / 0 – 400mm
REF SENSITIVITY:	2nd BWEFSH / 80% Reference
EVALUATION SENSITIVITY:	Level 2
SCAN POSITION:	UMB
SURFACE CONDITION:	SP1
WELD PROCESS:	Not Specified
SIZING:	6dB / 20dB
TEST ACCURACY:	± 0.5mm
COUPLANT:	Kerosene
CURVATURE COMPENSATION:	Not Applicable

RESULTS OF EXAMINATION

INSPECTION OF EX5600 BOOM:

Final **Magnetic Particle Inspection:** **Worksheet No. 24 - 45133**

Identification	Result
External Boom Job No. 27861 *100% Inspection of Weld Repairs*	➢ Nil Cracking / Defects Evident - Refer to Figures 1 to 4 & Table 1.0 ➢ Complies with the Requirements of AS/NZS 1554.1 2014 Cat SP Table 6.2.2
Internal Boom Bay #1 Job No. 27861 *100% Inspection of Weld Repairs*	➢ Nil Cracking / Defects Evident - Refer to Figures 5 & Table 2.0 ➢ Complies with the Requirements of AS/NZS 1554.1 2014 Cat SP Table 6.2.2
Internal Boom Bay #2 Job No. 27861 *100% Inspection of Weld Repairs*	➢ Nil Cracking / Defects Evident - Refer to Figures 6 & Table 3.0 ➢ Complies with the Requirements of AS/NZS 1554.1 2014 Cat SP Table 6.2.2
Internal Boom Bay #3 Job No. 27861 *100% Inspection of Weld Repairs*	➢ Nil Cracking / Defects Evident - Refer to Figures 7 & Table 4.0 ➢ Complies with the Requirements of AS/NZS 1554.1 2014 Cat SP Table 6.2.2
Internal Boom Bay #4 Job No. 27861 *100% Inspection of Weld Repairs*	➢ Nil Cracking / Defects Evident - Refer to Figures 8 & Table 5.0 ➢ Complies with the Requirements of AS/NZS 1554.1 2014 Cat SP Table 6.2.2
Internal Boom Bay #5 Job No. 27861 *100% Inspection of Weld Repairs*	➢ Nil Cracking / Defects Evident - Refer to Figures 9 & Table 6.0 ➢ Complies with the Requirements of AS/NZS 1554.1 2014 Cat SP Table 6.2.2
Internal Boom Bay #6 Job No. 27861 *100% Inspection of Weld Repairs*	➢ Nil Cracking / Defects Evident - Refer to Figures 10 & Table 7.0 ➢ Complies with the Requirements of AS/NZS 1554.1 2014 Cat SP Table 6.2.2

Note 1: Lighting Conditions comply with the Requirements of AS 1171 Section 3.5.2 – 1998.

RESULTS OF EXAMINATION CONTINUED

INSPECTION OF EX5600 BOOM:

***Final* Magnetic Particle Inspection:** **Worksheet No. 24 - 45133**

Identification	Result
Internal Boom Bay #7 Job No. 27861 *100% Inspection of Weld Repairs*	➢ Nil Cracking / Defects Evident - Refer to Figures 11 & Table 8.0 ➢ Complies with the Requirements of AS/NZS 1554.1 2014 Cat SP Table 6.2.2
Internal Boom Bay #8 Job No. 27861 *100% Inspection of Weld Repairs*	➢ Nil Cracking / Defects Evident - Refer to Figures 12 & Table 9.0 ➢ Complies with the Requirements of AS/NZS 1554.1 2014 Cat SP Table 6.2.2
New Man Hole Covers (x8) Job No. 27861 *100% Inspection of Welds*	➢ Nil Cracking / Defects Evident ➢ Complies with the Requirements of AS/NZS 1554.1 2014 Cat SP Table 6.2.2

Note 1: Lighting Conditions comply with the Requirements of AS 1171 Section 3.5.2 – 1998.

Visual Inspection: **Worksheet No. 24 - 9285**

Identification	Result
External Boom Job No. 27861 *100% Inspection of Weld Repairs*	➢ Nil Defects Evident ➢ Complies with the Requirements of AS/NZS 1554.1 2014 Cat SP Table 6.2.2
Internal Boom Bay #1 Job No. 27861 *100% Inspection of Weld Repairs*	➢ Nil Defects Evident ➢ Complies with the Requirements of AS/NZS 1554.1 2014 Cat SP Table 6.2.2
Internal Boom Bay #2 Job No. 27861 *100% Inspection of Weld Repairs*	➢ Nil Defects Evident ➢ Complies with the Requirements of AS/NZS 1554.1 2014 Cat SP Table 6.2.2
Internal Boom Bay #3 Job No. 27861 *100% Inspection of Weld Repairs*	➢ Nil Defects Evident ➢ Complies with the Requirements of AS/NZS 1554.1 2014 Cat SP Table 6.2.2

Note: Lighting Conditions comply with the Requirements of AS 3978 Section 6.1 - 2003

RESULTS OF EXAMINATION CONTINUED

INSPECTION OF EX5600 BOOM:

Visual Inspection: **Worksheet No. 24 - 9285**

Identification	Result
Internal Boom Bay #4 Job No. 27861 *100% Inspection of Weld Repairs*	➢ Nil Defects Evident ➢ Complies with the Requirements of AS/NZS 1554.1 2014 Cat SP Table 6.2.2
Internal Boom Bay #5 Job No. 27861 *100% Inspection of Weld Repairs*	➢ Nil Defects Evident ➢ Complies with the Requirements of AS/NZS 1554.1 2014 Cat SP Table 6.2.2
Internal Boom Bay #6 Job No. 27861 *100% Inspection of Weld Repairs*	➢ Nil Defects Evident ➢ Complies with the Requirements of AS/NZS 1554.1 2014 Cat SP Table 6.2.2
Internal Boom Bay #7 Job No. 27861 *100% Inspection of Weld Repairs*	➢ Nil Defects Evident ➢ Complies with the Requirements of AS/NZS 1554.1 2014 Cat SP Table 6.2.2
Internal Boom Bay #8 Job No. 27861 *100% Inspection of Weld Repairs*	➢ Nil Defects Evident ➢ Complies with the Requirements of AS/NZS 1554.1 2014 Cat SP Table 6.2.2
New Man Hole Covers (x8) Job No. 27861 *100% Inspection of Welds*	➢ Nil Defects Evident ➢ Complies with the Requirements of AS/NZS 1554.1 2014 Cat SP Table 6.2.2

Note: Lighting Conditions comply with the Requirements of AS 3978 Section 6.1 - 2003

Ultrasonic Inspection: **Worksheet No. 24 - 10413**

Identification	Result
New Man Hole Covers (x8) Job No. 27861 *30% Inspection of Welds*	➢ Nil Recordable Discontinuities Evident ➢ Complies with the Requirements of AS/NZS 1554.1 2014 Table 6.2.1

Note 1: Lighting Conditions comply with the Requirements of AS 3978 Section 6.1 – 2003

SUMMARY OF EXAMINATION

INSPECTION OF EX5600 BOOM:

Magnetic Particle / Visual / Ultrasonic Inspection: Worksheet No. 24 – 45133 / 9285 / 10413

Identification	Total No. of Changes	Interpretation
External Boom	30	Defects Repaired Since Last Inspection
Internal Boom Bay #1	4	Defects Repaired Since Last Inspection
Internal Boom Bay #2	9	Defects Repaired Since Last Inspection
Internal Boom Bay #3	10	Defects Repaired Since Last Inspection
Internal Boom Bay #4	11	Defects Repaired Since Last Inspection
Internal Boom Bay #5	13	Defects Repaired Since Last Inspection
Internal Boom Bay #6	12	Defects Repaired Since Last Inspection
Internal Boom Bay #7	9	Defects Repaired Since Last Inspection
Internal Boom Bay #8	4	Defects Repaired Since Last Inspection

Note 1: Lighting Conditions comply with the Requirements of AS 1171 Section 3.5.2 1998
Note 2: Lighting Conditions comply with the Requirements of AS 3978 Section 6.1 – 2003

Technicians:
Zackary Tass
Joshua Bozier
Zachary Peulen
Jayden Friese
Brdoie Bell

Z. Tass - Senior Technician
Approved NDT / Hydro Test Signatory
AS 3998 / ISO 9712 Level 2
MT, PT, UT, RT, CR/DR
(AINDT Registration No.4796)

RESULTS OF EXAMINATION CONTINUED

FIGURE 1 – EXTERNAL TOP SIDE:

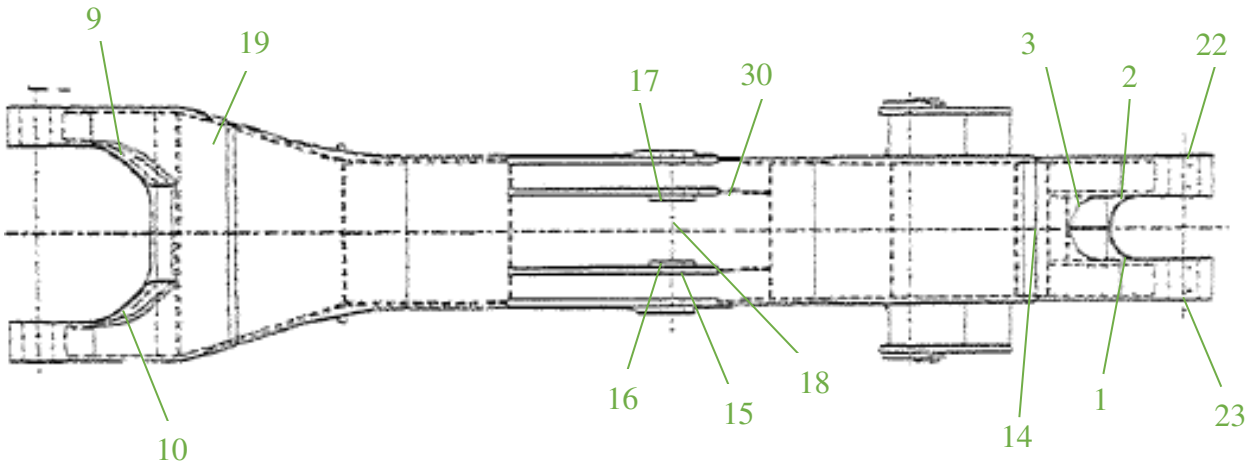
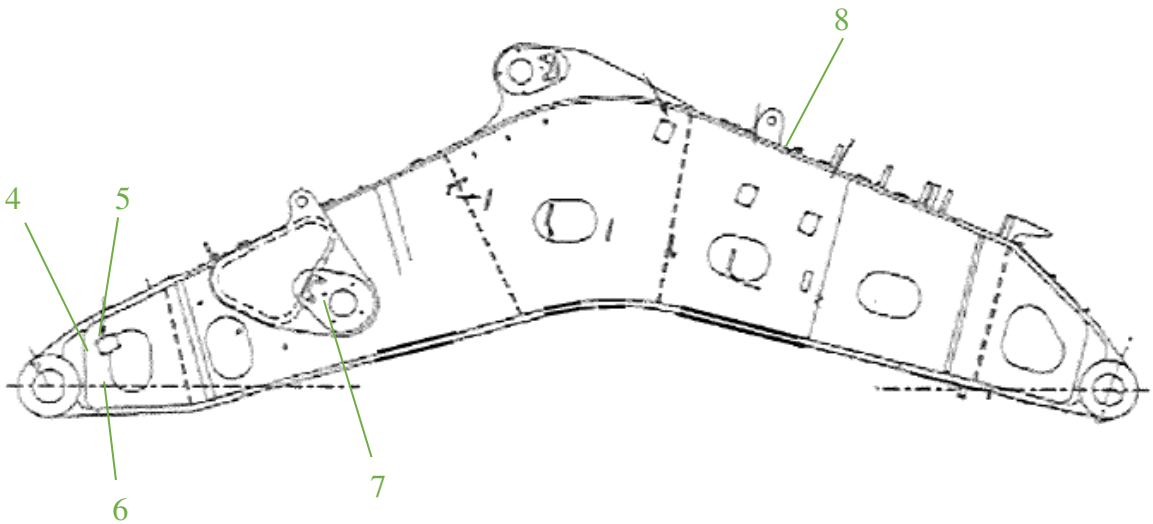


FIGURE 2 – EXTERNAL LEFT HAND SIDE:



RESULTS OF EXAMINATION CONTINUED

FIGURE 3 – EXTERNAL RIGHT HAND SIDE:

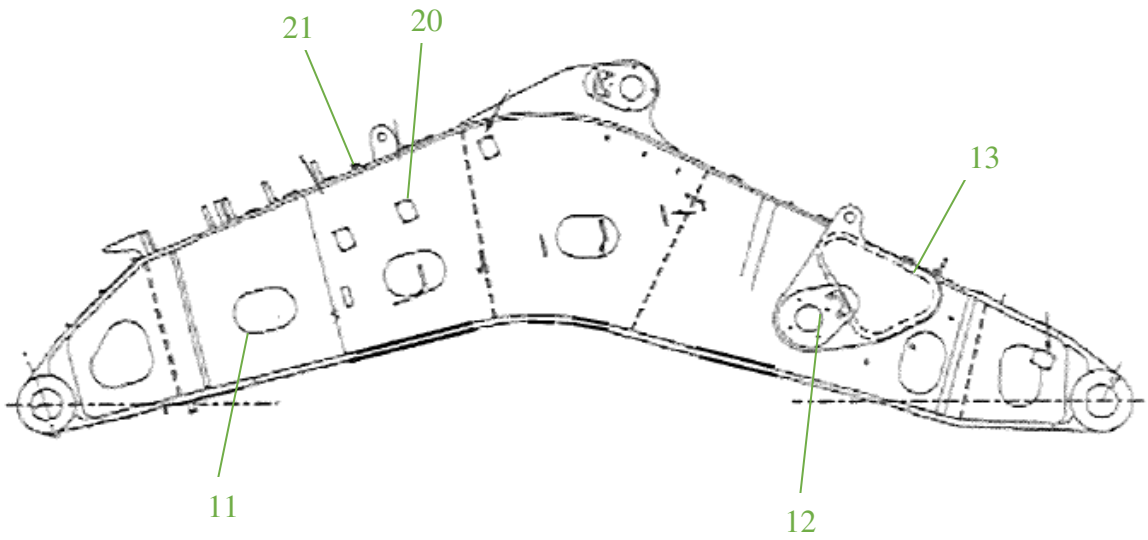
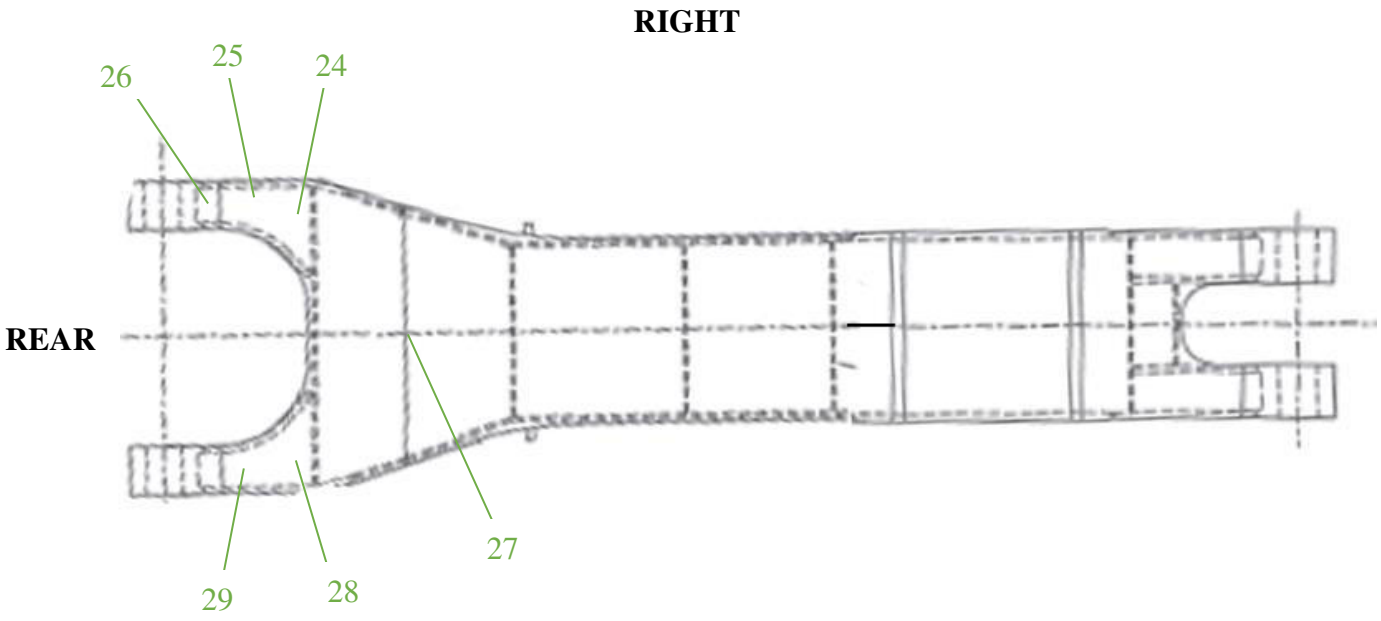


FIGURE 4 – EXTERNAL UNDERSIDE:



RESULTS OF EXAMINATION CONTINUED

TABLE 1.0 – EXTERNAL BOOM REPAIRED DEFECTS:

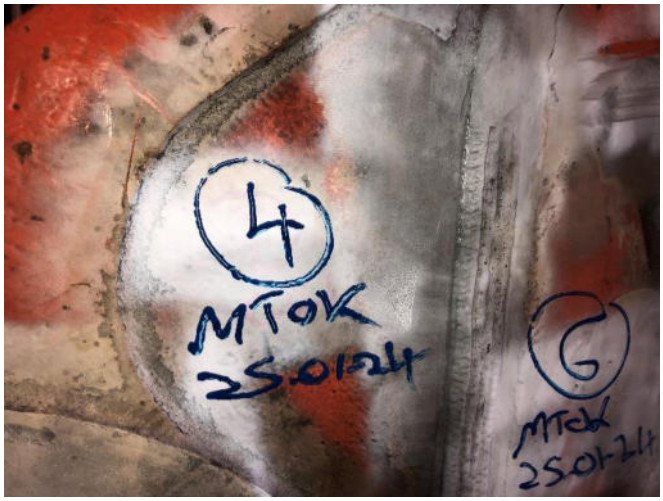
Defect No.	Length in mm	Defect No.	Length in mm
No. 1	270	**No. 16**	650
No. 2	130	**No. 17**	650
No. 3	80	**No. 18**	5
No. 4	450	**No. 19**	10
No. 5	10	**No. 20**	100
No. 6	10	**No. 21**	50
No. 7	50	**No. 22**	10
No. 8	10	**No. 23**	5
No. 9	20	**No. 24**	70
No. 10	5, 3	**No. 25**	70
No. 11	100	**No. 26**	130
No. 12	450	**No. 27**	10
No. 13	10, 5, 3	**No. 28**	100
No. 14	1100	**No. 29**	100
No. 15	250	**No. 30**	50

PHOTOGRAPH NO. 1 – EXTERNAL BOOM
TYPICAL VIEW OF REPAIRED DEFECT #1

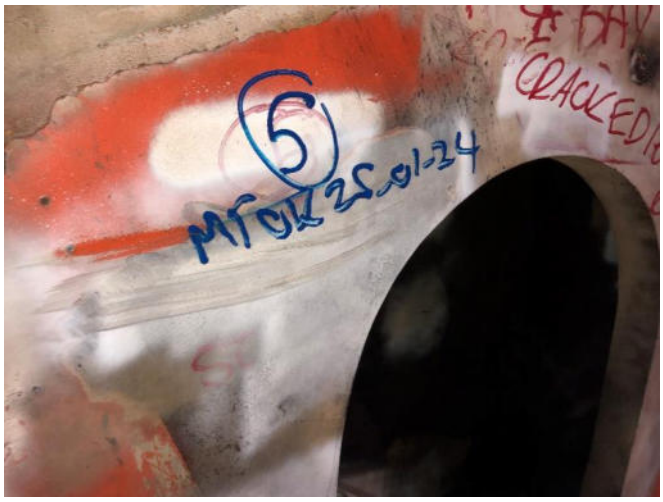
PHOTOGRAPH NO. 2 – EXTERNAL BOOM
TYPICAL VIEW OF REPAIRED DEFECT #2

PHOTOGRAPH NO. 3 - EXTERNAL BOOM
TYPICAL VIEW OF REPAIRED DEFECT #3

PHOTOGRAPH NO. 4 – EXTERNAL BOOM
TYPICAL VIEW OF REPAIRED DEFECT #4



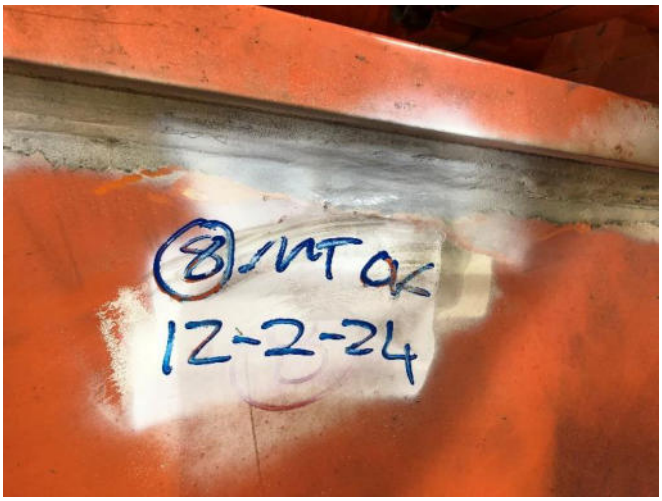
PHOTOGRAPH NO. 5 – EXTERNAL BOOM
TYPICAL VIEW OF REPAIRED DEFECT #5



PHOTOGRAPH NO. 6 – EXTERNAL BOOM
TYPICAL VIEW OF REPAIRED DEFECT #6

PHOTOGRAPH NO. 7 – EXTERNAL BOOM
TYPICAL VIEW OF REPAIRED DEFECT #7

PHOTOGRAPH NO. 8 – EXTERNAL BOOM
TYPICAL VIEW OF REPAIRED DEFECT #8



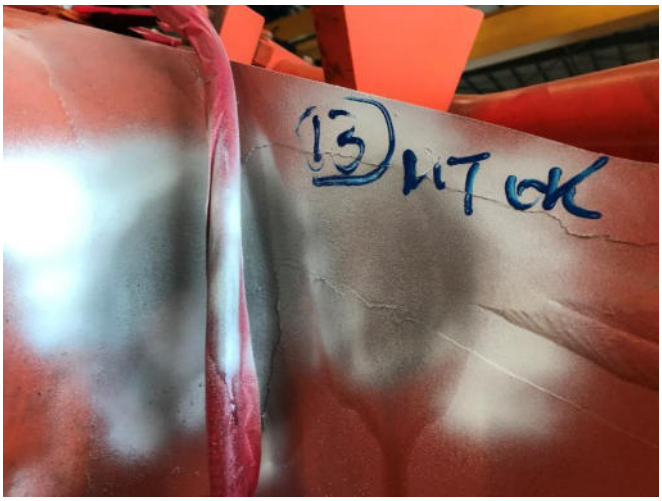
PHOTOGRAPH NO. 9 – EXTERNAL BOOM
TYPICAL VIEW OF REPAIRED DEFECT #9

PHOTOGRAPH NO. 10 – EXTERNAL BOOM
TYPICAL VIEW OF REPAIRED DEFECT #10

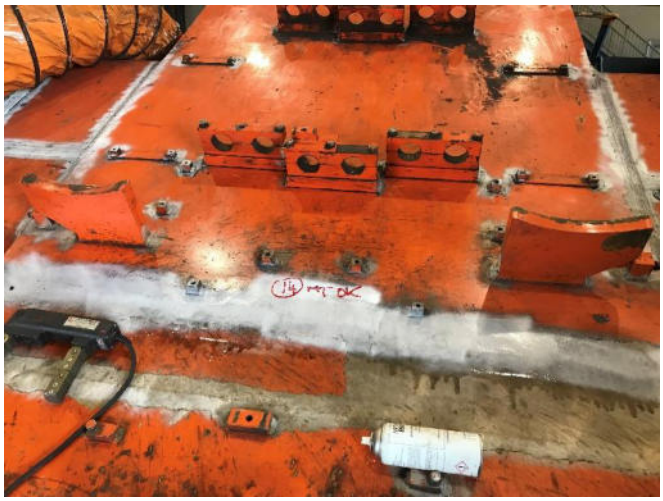
PHOTOGRAPH NO. 11 – EXTERNAL BOOM
TYPICAL VIEW OF REPAIRED DEFECT #11

PHOTOGRAPH NO. 12 – EXTERNAL BOOM
TYPICAL VIEW OF REPAIRED DEFECT #12

PHOTOGRAPH NO. 13 – EXTERNAL BOOM
TYPICAL VIEW OF REPAIRED DEFECT #13



PHOTOGRAPH NO. 14 – EXTERNAL BOOM
TYPICAL VIEW OF REPAIRED DEFECT #14



PHOTOGRAPH NO. 15 – EXTERNAL BOOM
TYPICAL VIEW OF REPAIRED DEFECT #15

PHOTOGRAPH NO. 16 – EXTERNAL BOOM
TYPICAL VIEW OF REPAIRED DEFECT #16

PHOTOGRAPH NO. 17 – EXTERNAL BOOM
TYPICAL VIEW OF REPAIRED DEFECT #17

PHOTOGRAPH NO. 18 – EXTERNAL BOOM
TYPICAL VIEW OF REPAIRED DEFECT #18

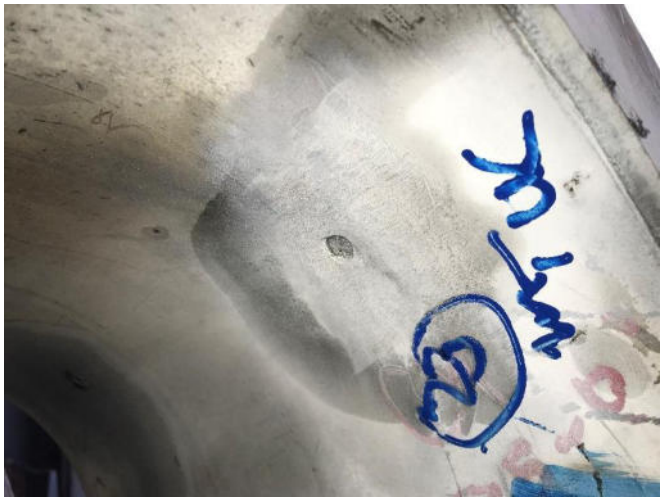
PHOTOGRAPH NO. 19 – EXTERNAL BOOM
TYPICAL VIEW OF REPAIRED DEFECT #19

PHOTOGRAPH NO. 20 – EXTERNAL BOOM
TYPICAL VIEW OF REPAIRED DEFECT #20

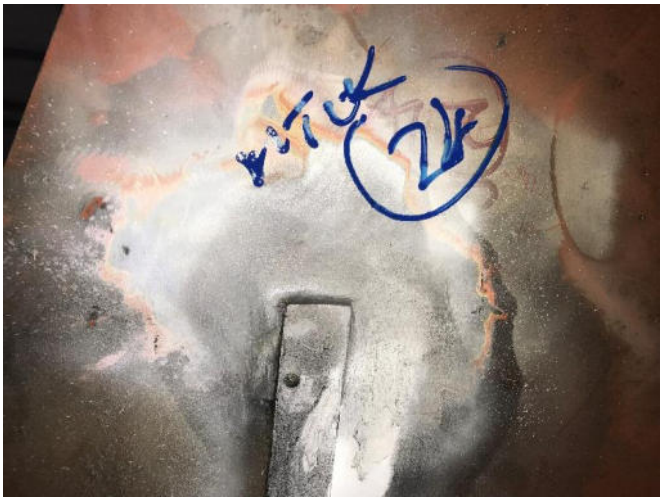
PHOTOGRAPH NO. 21 – EXTERNAL BOOM
TYPICAL VIEW OF REPAIRED DEFECT #21

PHOTOGRAPH NO. 22 – EXTERNAL BOOM
TYPICAL VIEW OF REPAIRED DEFECT #22

PHOTOGRAPH NO. 23 – EXTERNAL BOOM
TYPICAL VIEW OF REPAIRED DEFECT #23



PHOTOGRAPH NO. 24 – EXTERNAL BOOM
TYPICAL VIEW OF REPAIRED DEFECT #24



PHOTOGRAPH NO. 25 – EXTERNAL BOOM
TYPICAL VIEW OF REPAIRED DEFECT #25

PHOTOGRAPH NO. 26 – EXTERNAL BOOM
TYPICAL VIEW OF REPAIRED DEFECT #26

PHOTOGRAPH NO. 27 – EXTERNAL BOOM
TYPICAL VIEW OF REPAIRED DEFECT #27

PHOTOGRAPH NO. 28 – EXTERNAL BOOM
TYPICAL VIEW OF REPAIRED DEFECT #28

PHOTOGRAPH NO. 29 – EXTERNAL BOOM
TYPICAL VIEW OF REPAIRED DEFECT #29

PHOTOGRAPH NO. 30 – EXTERNAL BOOM
TYPICAL VIEW OF REPAIRED DEFECT #30

RESULTS OF EXAMINATION CONTINUED

FIGURE 5 – INTERNAL BAY #1:

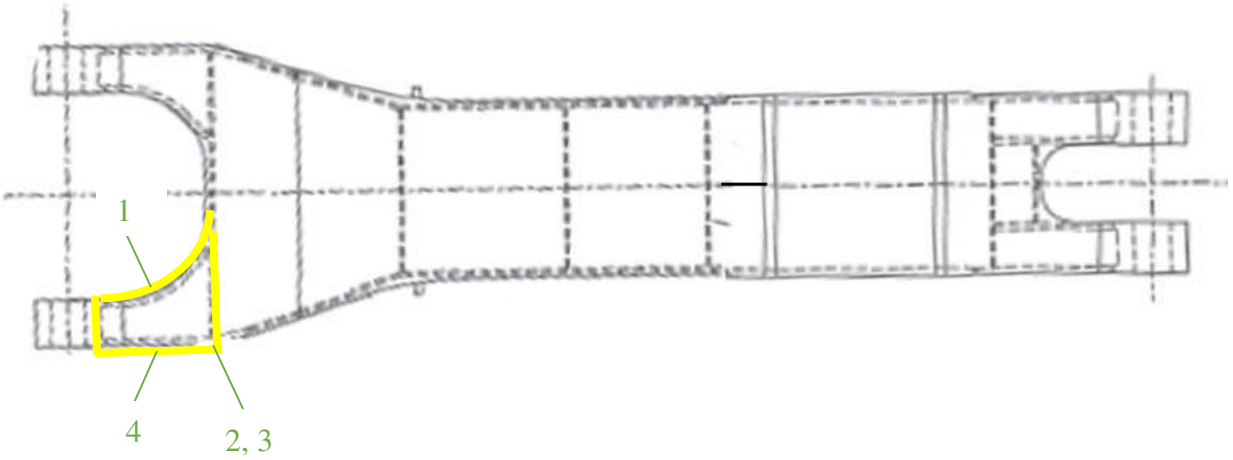


TABLE 2.0 – INTERNAL BAY #1 REPAIRED DEFECTS:

Defect No.	Length in mm	Defect No.	Length in mm
No. 1	360 BC	**No. 3**	10 SW
No. 2	1200 SW	**No. 4**	800, 750 TC

TC = Top Chord
BC = Bottom Chord
FW = Front Wall
RW = Rear Wall
SW = Side Wall
MH = Man Hole

PHOTOGRAPH NO. 31 – INTERNAL BOOM BAY #1
TYPICAL VIEW OF REPAIRED DEFECT #1

PHOTOGRAPH NO. 32 – INTERNAL BOOM BAY #1
TYPICAL VIEW OF REPAIRED DEFECT #2

PHOTOGRAPH NO. 33 – INTERNAL BOOM BAY #1
TYPICAL VIEW OF REPAIRED DEFECT #3

PHOTOGRAPH NO. 34 – INTERNAL BOOM BAY #1
TYPICAL VIEW OF REPAIRED DEFECT #4

RESULTS OF EXAMINATION CONTINUED

FIGURE 6 – INTERNAL BAY #2:

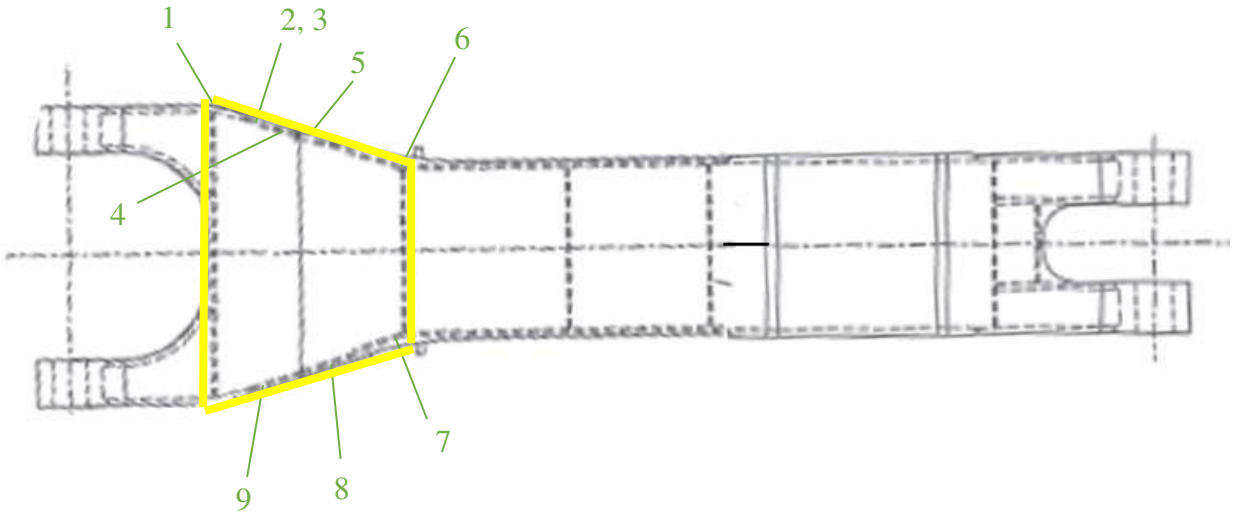


TABLE 3.0 – INTERNAL BAY #2 REPAIRED DEFECTS:

Defect No.	Length in mm	Defect No.	Length in mm
No. 1	1300 SW	**No. 6**	40, 10 TC
No. 2	10 MH	**No. 7**	650 SW
No. 3	10 MH	**No. 8**	1700 TC
No. 4	1700 BC	**No. 9**	1700 BC
No. 5	1700 TC		

TC = Top Chord FW = Front Wall SW = Side Wall
BC = Bottom Chord RW = Rear Wall MH = Man Hole

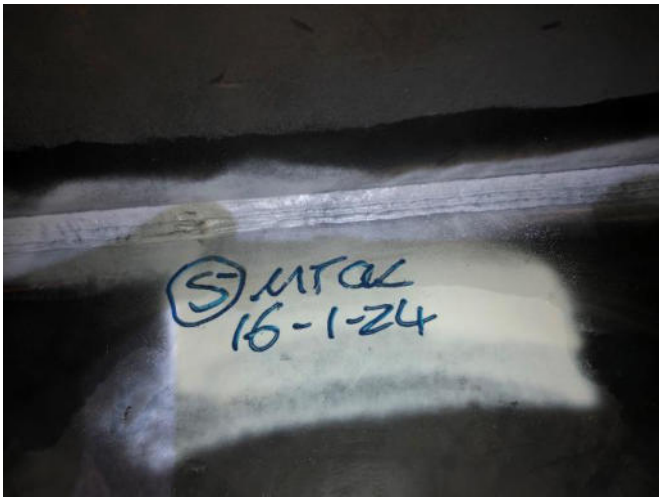
PHOTOGRAPH NO. 35 – INTERNAL BOOM BAY #2
TYPICAL VIEW OF REPAIRED DEFECT #1

PHOTOGRAPH NO. 36 – INTERNAL BOOM BAY #2
TYPICAL VIEW OF REPAIRED DEFECT #2

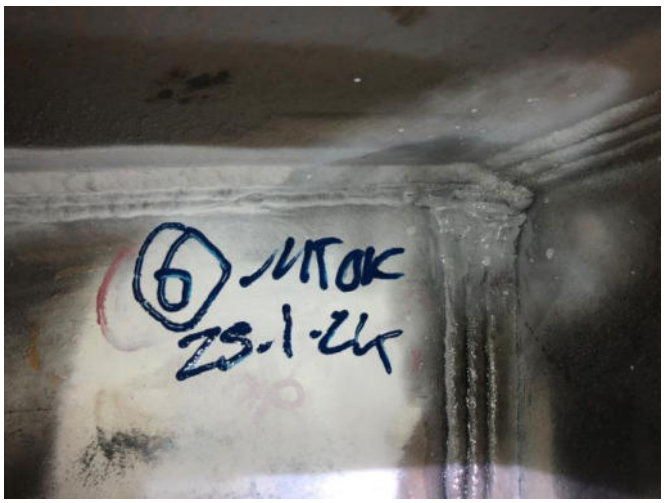
PHOTOGRAPH NO. 37 – INTERNAL BOOM BAY #2
TYPICAL VIEW OF REPAIRED DEFECT #3

PHOTOGRAPH NO. 38 – INTERNAL BOOM BAY #2
TYPICAL VIEW OF REPAIRED DEFECT #4

PHOTOGRAPH NO. 39 – INTERNAL BOOM BAY #2
TYPICAL VIEW OF REPAIRED DEFECT #5

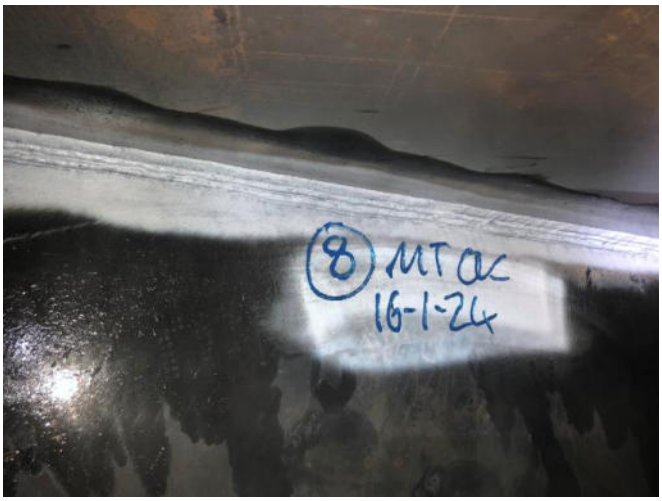


PHOTOGRAPH NO. 40 – INTERNAL BOOM BAY #2
TYPICAL VIEW OF REPAIRED DEFECT #6



PHOTOGRAPH NO. 41 – INTERNAL BOOM BAY #2
TYPICAL VIEW OF REPAIRED DEFECT #7

PHOTOGRAPH NO. 42 – INTERNAL BOOM BAY #2
TYPICAL VIEW OF REPAIRED DEFECT #8



PHOTOGRAPH NO. 43 – INTERNAL BOOM BAY #2
TYPICAL VIEW OF REPAIRED DEFECT #9

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RESULTS OF EXAMINATION CONTINUED

FIGURE 7 – INTERNAL BAY #3:

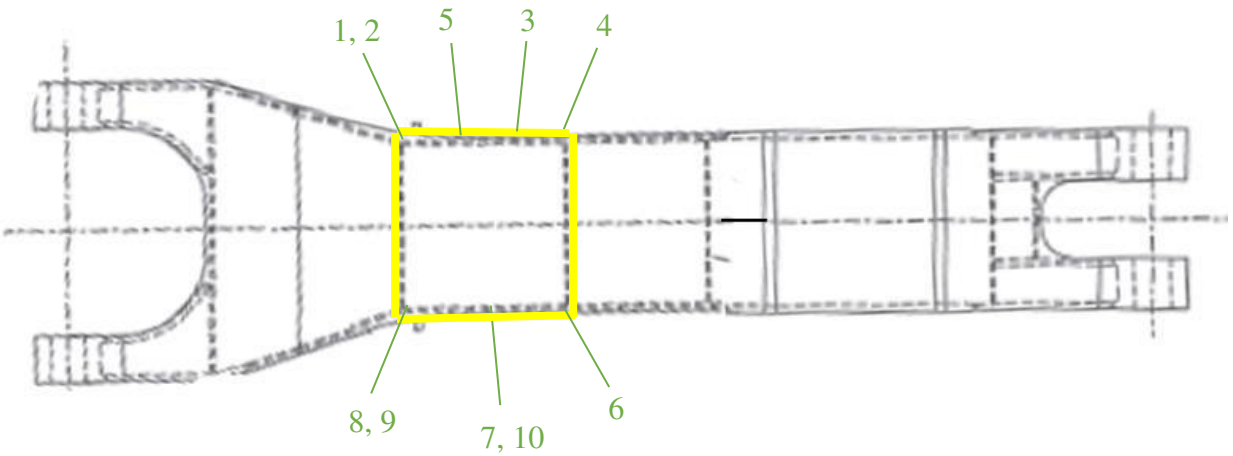
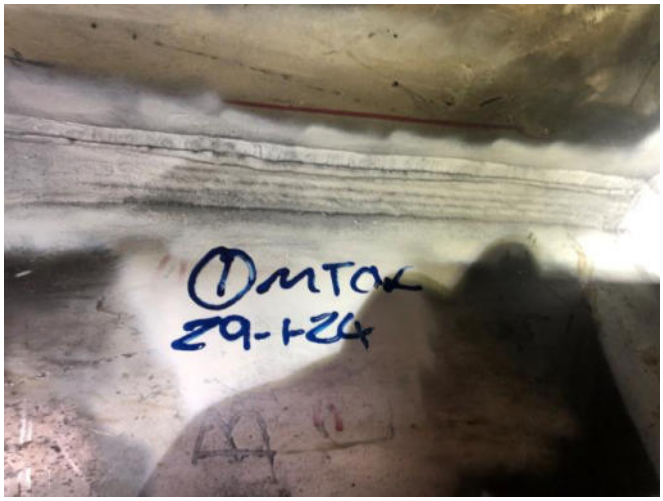


TABLE 4.0 – INTERNAL BAY #3 REPAIRED DEFECTS:

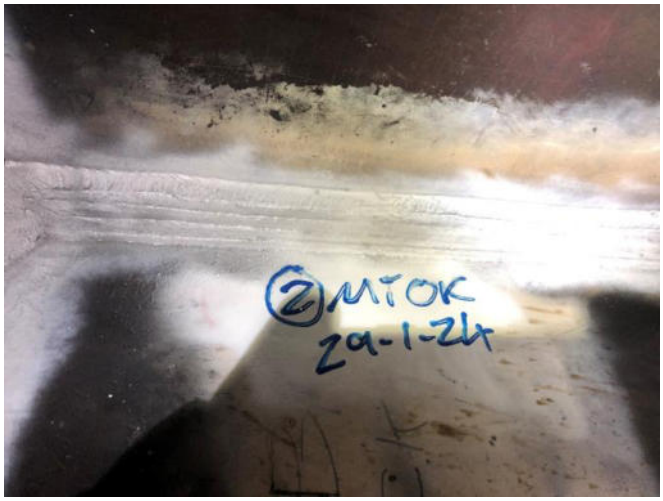
Defect No.	Length in mm	Defect No.	Length in mm
No. 1	500 SW	**No. 6**	1400 SW
No. 2	700 SW	**No. 7**	1500 TC
No. 3	1500 TC	**No. 8**	600 SW
No. 4	1400 SW	**No. 9**	600 SW
No. 5	1500 BC	**No. 10**	1500 BC

TC = Top Chord FW = Front Wall SW = Side Wall
BC = Bottom Chord RW = Rear Wall MH = Man Hole

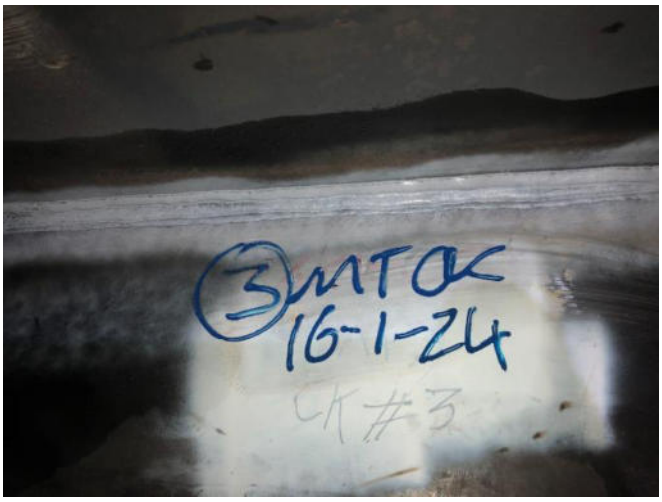
PHOTOGRAPH NO. 44 – INTERNAL BOOM BAY #3
TYPICAL VIEW OF REPAIRED DEFECT #1



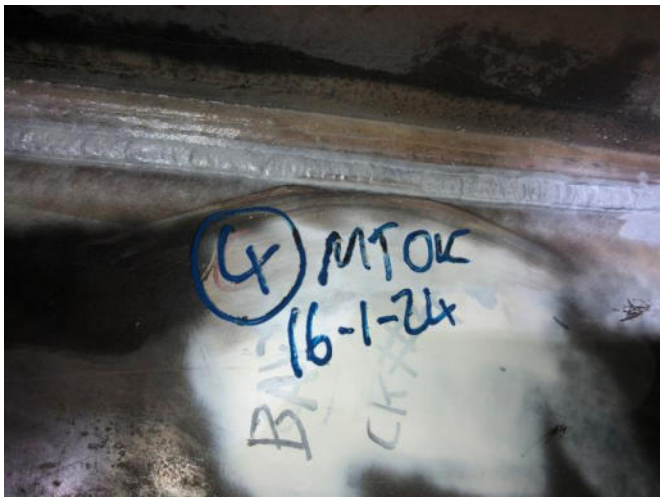
PHOTOGRAPH NO. 45 – INTERNAL BOOM BAY #3
TYPICAL VIEW OF REPAIRED DEFECT #2



PHOTOGRAPH NO. 46 – INTERNAL BOOM BAY #3
TYPICAL VIEW OF REPAIRED DEFECT #3



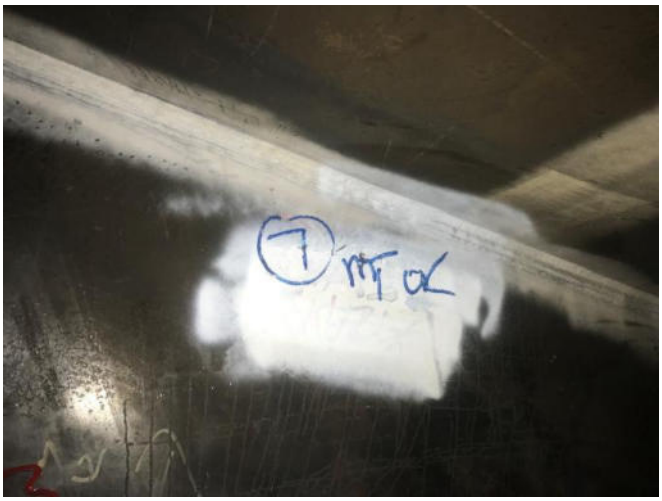
PHOTOGRAPH NO. 47 – INTERNAL BOOM BAY #3
TYPICAL VIEW OF REPAIRED DEFECT #4



PHOTOGRAPH NO. 48 – INTERNAL BOOM BAY #3
TYPICAL VIEW OF REPAIRED DEFECT #5

PHOTOGRAPH NO. 49 – INTERNAL BOOM BAY #3
TYPICAL VIEW OF REPAIRED DEFECT #6

PHOTOGRAPH NO. 50 – INTERNAL BOOM BAY #3
TYPICAL VIEW OF REPAIRED DEFECT #7



PHOTOGRAPH NO. 51 – INTERNAL BOOM BAY #3
TYPICAL VIEW OF REPAIRED DEFECT #8

PHOTOGRAPH NO. 52 – INTERNAL BOOM BAY #3
TYPICAL VIEW OF REPAIRED DEFECT #9

PHOTOGRAPH NO. 53 – INTERNAL BOOM BAY #3
TYPICAL VIEW OF REPAIRED DEFECT #10

RESULTS OF EXAMINATION CONTINUED

FIGURE 8 – INTERNAL BAY #4:

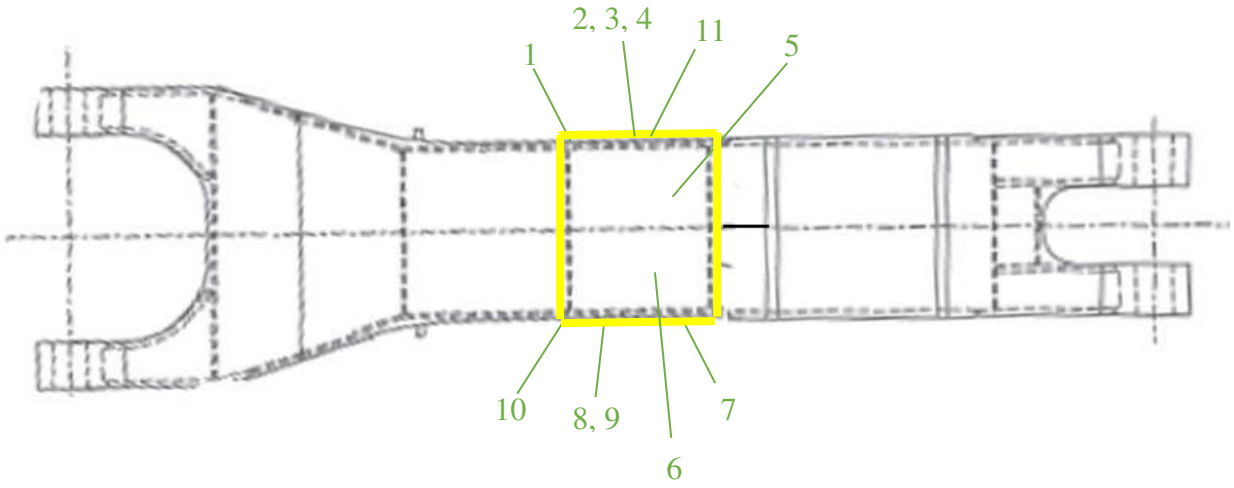
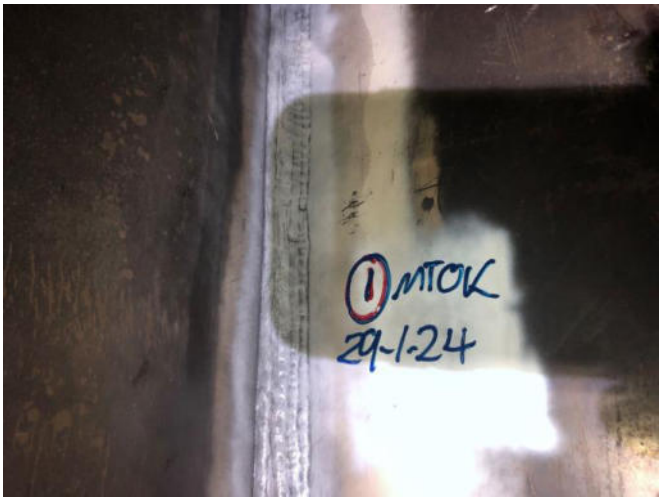


TABLE 5.0 – INTERNAL BAY #4 REPAIRED DEFECTS:

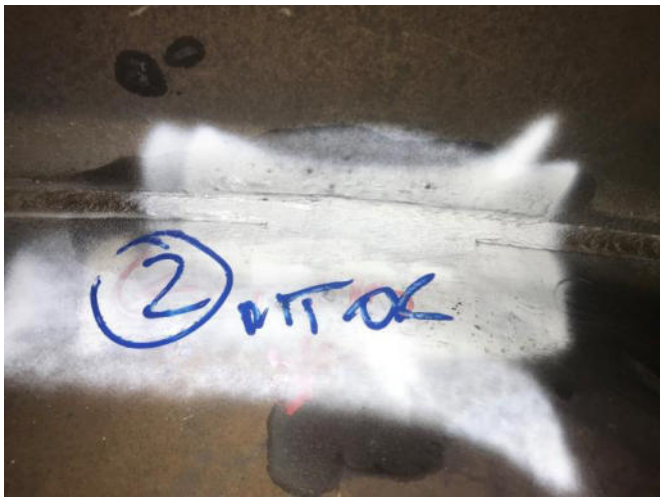
Defect No.	Length in mm	Defect No.	Length in mm
No. 1	1800 SW	**No. 7**	1000 SW
No. 2	50 TC	**No. 8**	50 TC
No. 3	1400 TC	**No. 9**	600 BC
No. 4	1500 BC	**No. 10**	1800 SW
No. 5	2800 TC/SW	**No. 11**	100 MH
No. 6	2800 TC/SW		

TC = Top Chord FW = Front Wall SW = Side Wall
BC = Bottom Chord RW = Rear Wall MH = Man Hole

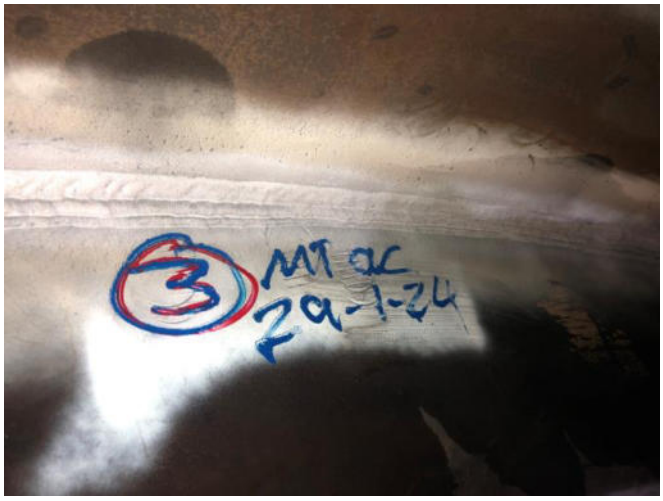
PHOTOGRAPH NO. 54 – INTERNAL BOOM BAY #4
TYPICAL VIEW OF REPAIRED DEFECT #1



PHOTOGRAPH NO. 55 – INTERNAL BOOM BAY #4
TYPICAL VIEW OF REPAIRED DEFECT #2



PHOTOGRAPH NO. 56 – INTERNAL BOOM BAY #4
TYPICAL VIEW OF REPAIRED DEFECT #3

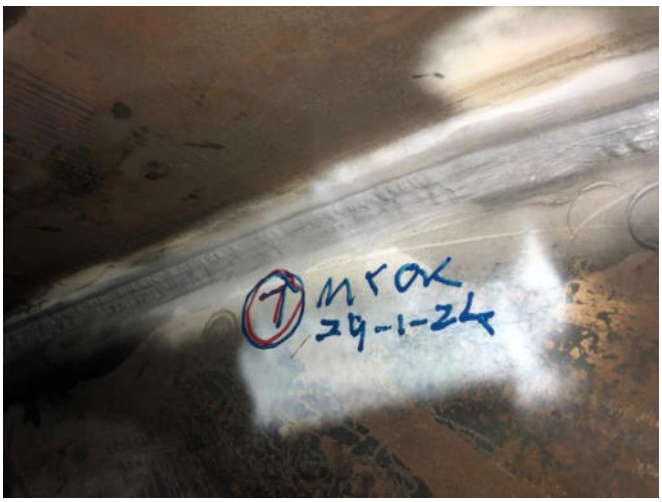


PHOTOGRAPH NO. 57 – INTERNAL BOOM BAY #4
TYPICAL VIEW OF REPAIRED DEFECT #4

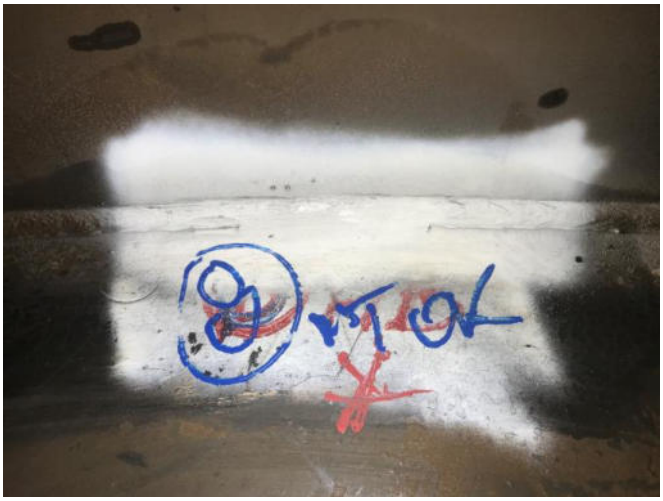
PHOTOGRAPH NO. 58 – INTERNAL BOOM BAY #4
TYPICAL VIEW OF REPAIRED DEFECT #5

PHOTOGRAPH NO. 59 – INTERNAL BOOM BAY #4
TYPICAL VIEW OF REPAIRED DEFECT #6

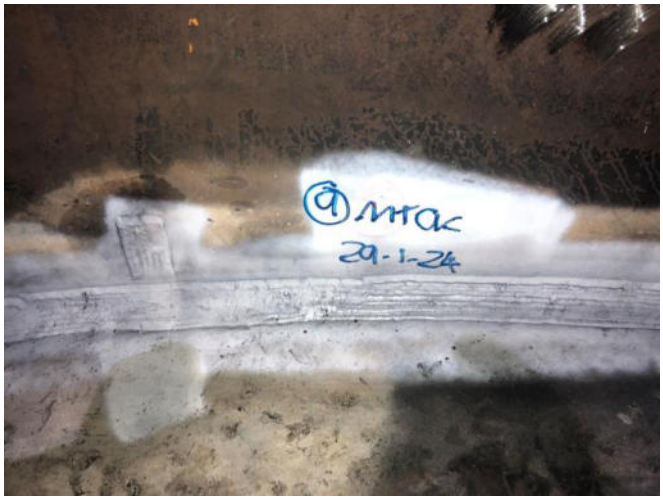
PHOTOGRAPH NO. 60 – INTERNAL BOOM BAY #4
TYPICAL VIEW OF REPAIRED DEFECT #7



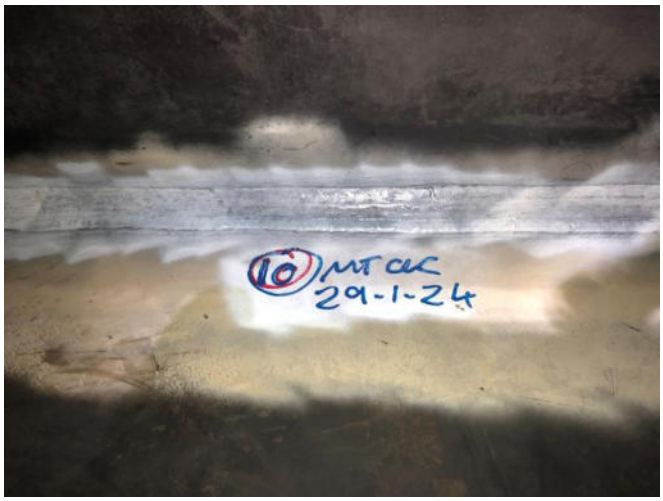
PHOTOGRAPH NO. 61 – INTERNAL BOOM BAY #4
TYPICAL VIEW OF REPAIRED DEFECT #8



PHOTOGRAPH NO. 62 – INTERNAL BOOM BAY #4
TYPICAL VIEW OF REPAIRED DEFECT #9



PHOTOGRAPH NO. 63 – INTERNAL BOOM BAY #4
TYPICAL VIEW OF REPAIRED DEFECT #10



PHOTOGRAPH NO. 64 – INTERNAL BOOM BAY #4
TYPICAL VIEW OF REPAIRED DEFECT #11

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RESULTS OF EXAMINATION CONTINUED

FIGURE 9 – INTERNAL BAY #5:

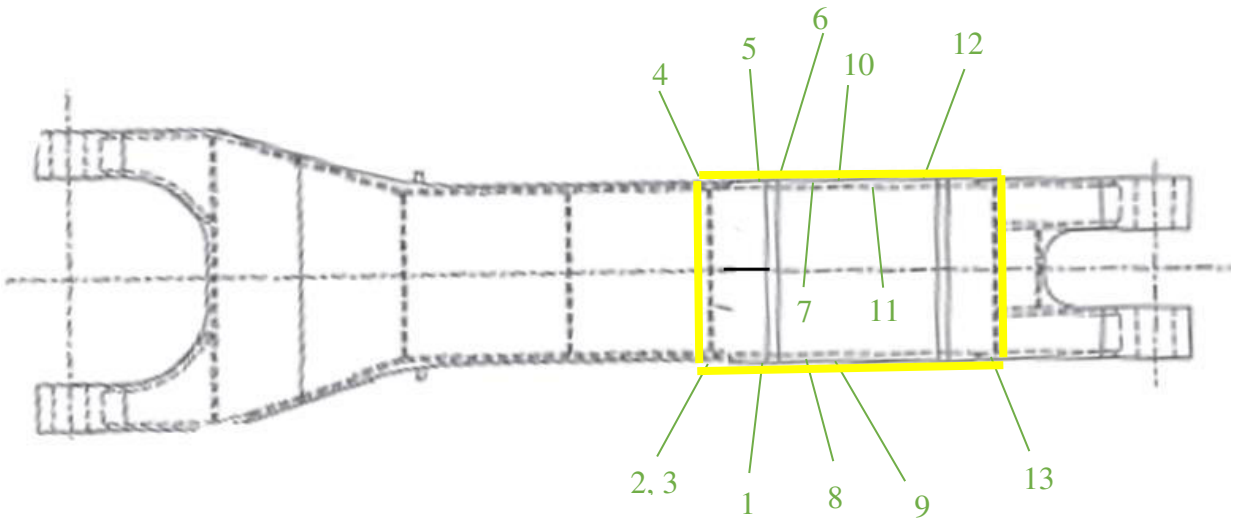


TABLE 6.0 – INTERNAL BAY #5 REPAIRED DEFECTS:

Defect No.	Length in mm	Defect No.	Length in mm
No. 1	600 TC	**No. 8**	2200 TT/SW
No. 2	400 SW	**No. 9**	3600 BC
No. 3	200 SW	**No. 10**	3600 BC
No. 4	150 SW	**No. 11**	1100 TC
No. 5	600 TC	**No. 12**	300 TC
No. 6	200 TT	**No. 13**	300 TC
No. 7	1000 TT/SW		

TC = Top Chord FW = Front Wall SW = Side Wall
BC = Bottom Chord RW = Rear Wall MH = Man Hole
TT = Torque Tube

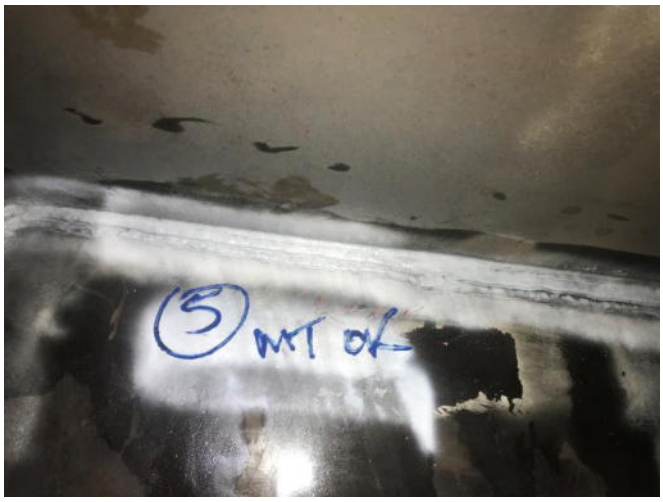
PHOTOGRAPH NO. 65 – INTERNAL BOOM BAY #5
TYPICAL VIEW OF REPAIRED DEFECT #1

PHOTOGRAPH NO. 66 – INTERNAL BOOM BAY #5
TYPICAL VIEW OF REPAIRED DEFECT #2

PHOTOGRAPH NO. 67 – INTERNAL BOOM BAY #5
TYPICAL VIEW OF REPAIRED DEFECT #3

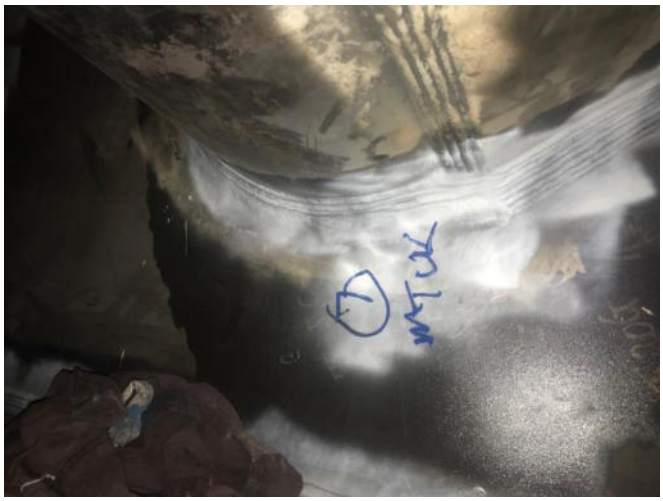
PHOTOGRAPH NO. 68 – INTERNAL BOOM BAY #5
TYPICAL VIEW OF REPAIRED DEFECT #4

PHOTOGRAPH NO. 69 – INTERNAL BOOM BAY #5
TYPICAL VIEW OF REPAIRED DEFECT #5



PHOTOGRAPH NO. 70 – INTERNAL BOOM BAY #5
TYPICAL VIEW OF REPAIRED DEFECT #6

PHOTOGRAPH NO. 71 – INTERNAL BOOM BAY #5
TYPICAL VIEW OF REPAIRED DEFECT #7



PHOTOGRAPH NO. 72 – INTERNAL BOOM BAY #5
TYPICAL VIEW OF REPAIRED DEFECT #8

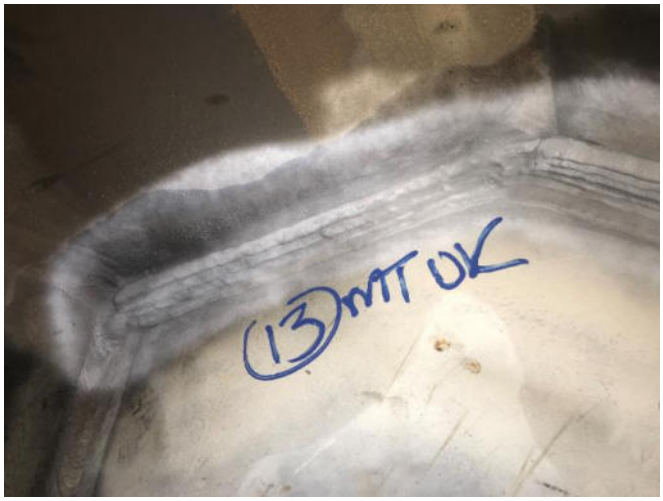
PHOTOGRAPH NO. 73 – INTERNAL BOOM BAY #5
TYPICAL VIEW OF REPAIRED DEFECT #9

PHOTOGRAPH NO. 74 – INTERNAL BOOM BAY #5
TYPICAL VIEW OF REPAIRED DEFECT #10

PHOTOGRAPH NO. 75 – INTERNAL BOOM BAY #5
TYPICAL VIEW OF REPAIRED DEFECT #11

PHOTOGRAPH NO. 76 – INTERNAL BOOM BAY #5
TYPICAL VIEW OF REPAIRED DEFECT #12

PHOTOGRAPH NO. 77 – INTERNAL BOOM BAY #5
TYPICAL VIEW OF REPAIRED DEFECT #13



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RESULTS OF EXAMINATION CONTINUED

FIGURE 10 – INTERNAL BAY #6:

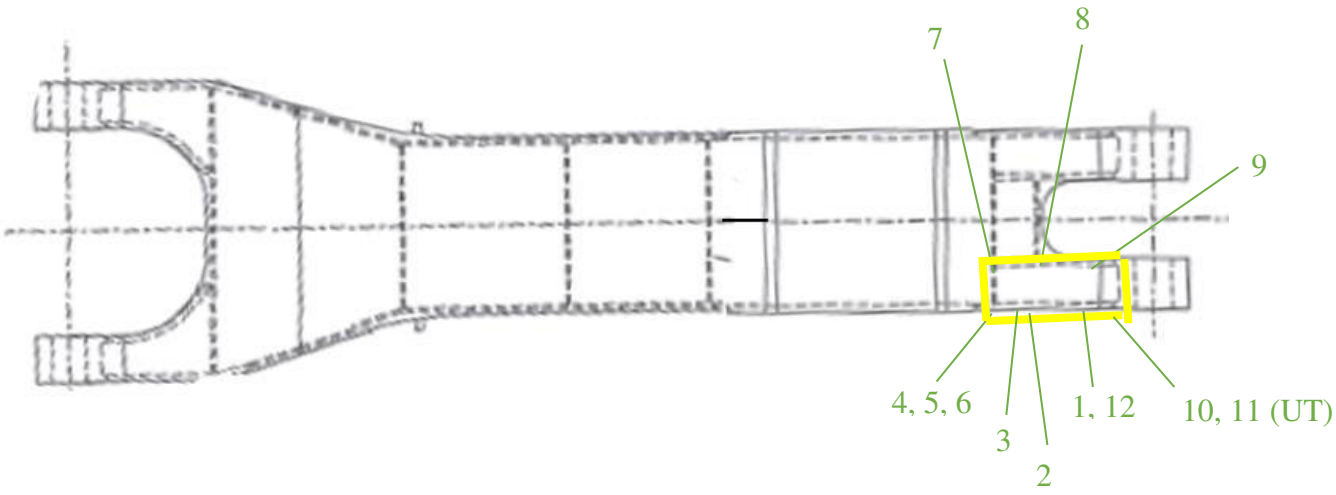


TABLE 7.0 – INTERNAL BAY #6 REPAIRED DEFECTS:

Defect No.	Length in mm	Defect No.	Length in mm
No. 1	370 BC	**No. 7**	360 TC
No. 2	130 MH	**No. 8**	80 TC
No. 3	140 SW	**No. 9**	60 TC
No. 4	90 SW	**No. 10**	120 MH
No. 5	220 MH	**No. 11**	170 TC
No. 6	30 SW	**No. 12**	70, 60 TC

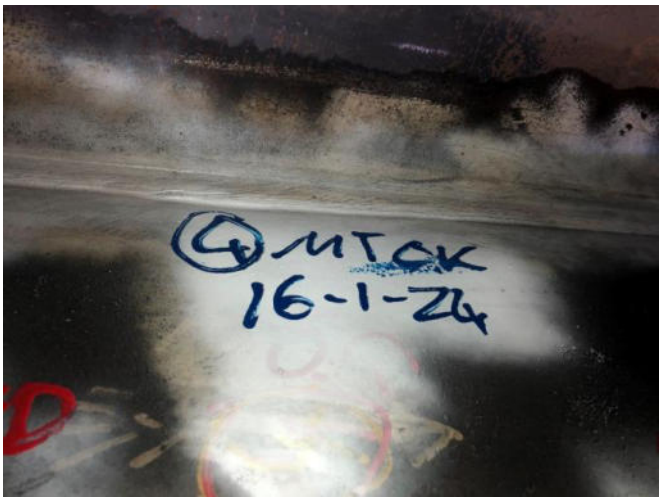
TC = Top Chord FW = Front Wall SW = Side Wall
BC = Bottom Chord RW = Rear Wall MH = Man Hole

PHOTOGRAPH NO. 78 – INTERNAL BOOM BAY #6
TYPICAL VIEW OF REPAIRED DEFECT #1

PHOTOGRAPH NO. 79 – INTERNAL BOOM BAY #6
TYPICAL VIEW OF REPAIRED DEFECT #2

PHOTOGRAPH NO. 80 – INTERNAL BOOM BAY #6
TYPICAL VIEW OF REPAIRED DEFECT #3

PHOTOGRAPH NO. 81 – INTERNAL BOOM BAY #6
TYPICAL VIEW OF REPAIRED DEFECT #4

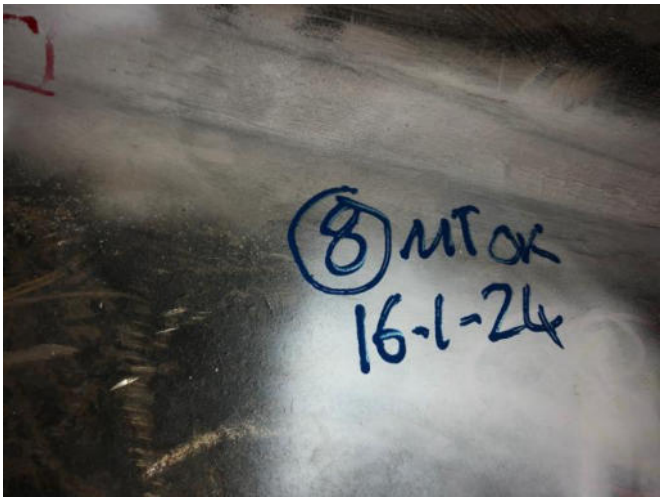


PHOTOGRAPH NO. 82 – INTERNAL BOOM BAY #6
TYPICAL VIEW OF REPAIRED DEFECT #5

PHOTOGRAPH NO. 83 – INTERNAL BOOM BAY #6
TYPICAL VIEW OF REPAIRED DEFECT #6

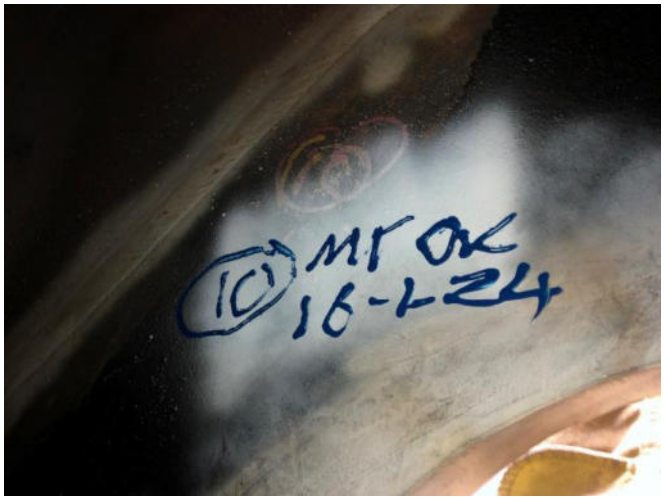
PHOTOGRAPH NO. 84 – INTERNAL BOOM BAY #6
TYPICAL VIEW OF REPAIRED DEFECT #7

PHOTOGRAPH NO. 85 – INTERNAL BOOM BAY #6
TYPICAL VIEW OF REPAIRED DEFECT #8



PHOTOGRAPH NO. 86 – INTERNAL BOOM BAY #6
TYPICAL VIEW OF REPAIRED DEFECT #9

PHOTOGRAPH NO. 87 – INTERNAL BOOM BAY #6
TYPICAL VIEW OF REPAIRED DEFECT #10



PHOTOGRAPH NO. 88 – INTERNAL BOOM BAY #6
TYPICAL VIEW OF REPAIRED DEFECT #11

PHOTOGRAPH NO. 89 – INTERNAL BOOM BAY #6
TYPICAL VIEW OF REPAIRED DEFECT #12

RESULTS OF EXAMINATION CONTINUED

FIGURE 11 – INTERNAL BAY #7:

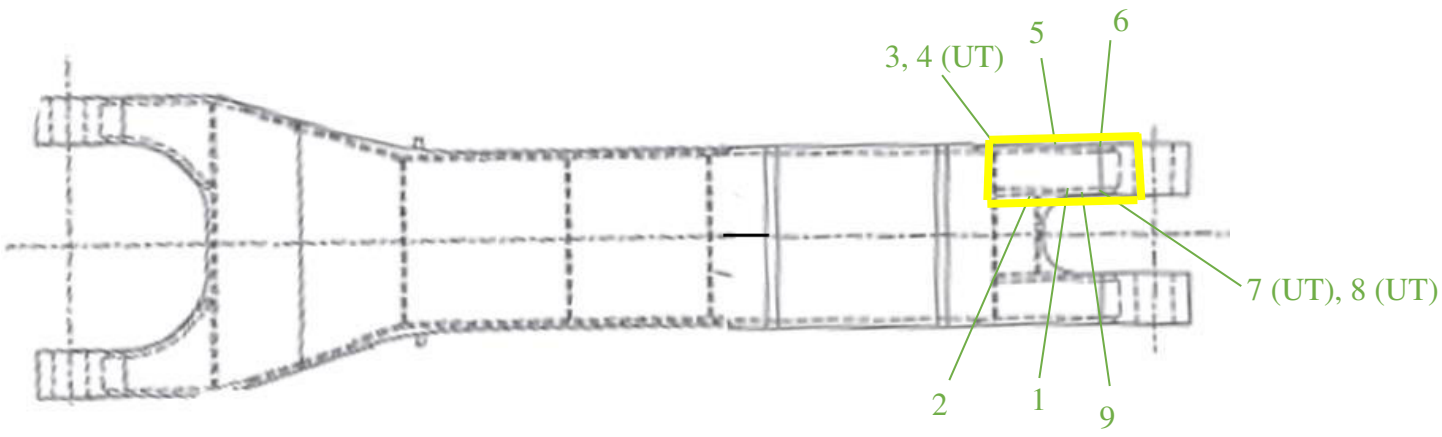
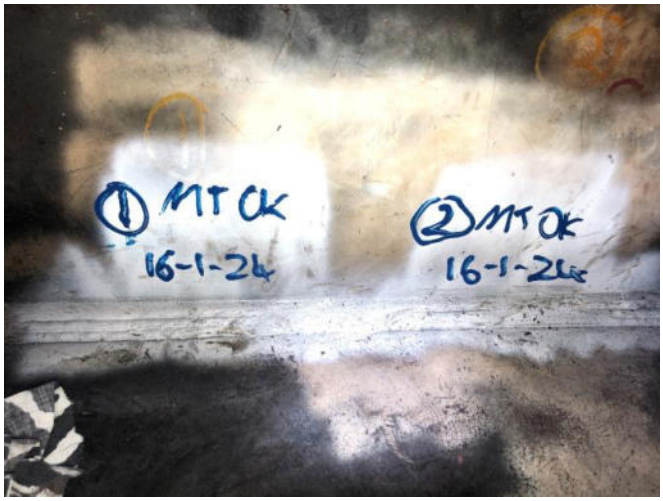


TABLE 8.0 – INTERNAL BAY #7 REPAIRED DEFECTS:

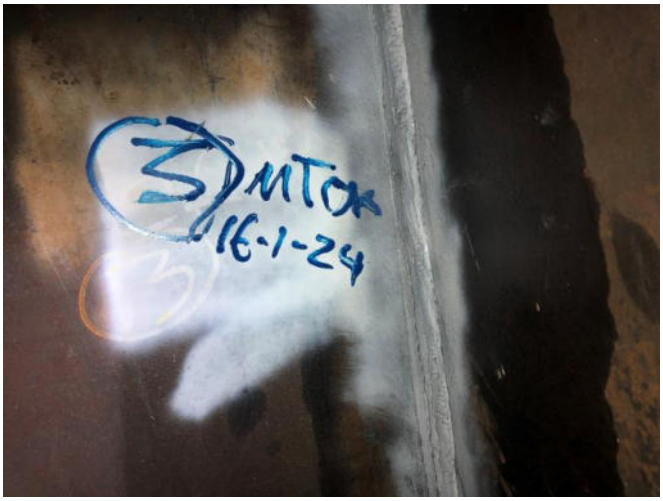
Defect No.	Length in mm	Defect No.	Length in mm
No. 1	150 BC	**No. 6**	530 SW
No. 2	190 BC	**No. 7**	1200 SW
No. 3	1150 SW	**No. 8**	170 TC
No. 4	250 TC	**No. 9**	720 TC
No. 5	350 MH		

TC = Top Chord FW = Front Wall SW = Side Wall
BC = Bottom Chord RW = Rear Wall MH = Man Hole

PHOTOGRAPH NO. 90 – INTERNAL BOOM BAY #7
TYPICAL VIEW OF REPAIRED DEFECT #1 & #2



PHOTOGRAPH NO. 91 – INTERNAL BOOM BAY #7
TYPICAL VIEW OF REPAIRED DEFECT #3



PHOTOGRAPH NO. 92 – INTERNAL BOOM BAY #7
TYPICAL VIEW OF REPAIRED DEFECT #4

PHOTOGRAPH NO. 93 – INTERNAL BOOM BAY #7
TYPICAL VIEW OF REPAIRED DEFECT #5

PHOTOGRAPH NO. 94 – INTERNAL BOOM BAY #7
TYPICAL VIEW OF REPAIRED DEFECT #6

PHOTOGRAPH NO. 95 – INTERNAL BOOM BAY #7
TYPICAL VIEW OF REPAIRED DEFECT #7

PHOTOGRAPH NO. 96 – INTERNAL BOOM BAY #7
TYPICAL VIEW OF REPAIRED DEFECT #8

PHOTOGRAPH NO. 97 – INTERNAL BOOM BAY #7
TYPICAL VIEW OF REPAIRED DEFECT #9

RESULTS OF EXAMINATION CONTINUED

FIGURE 12 – INTERNAL BAY #8:

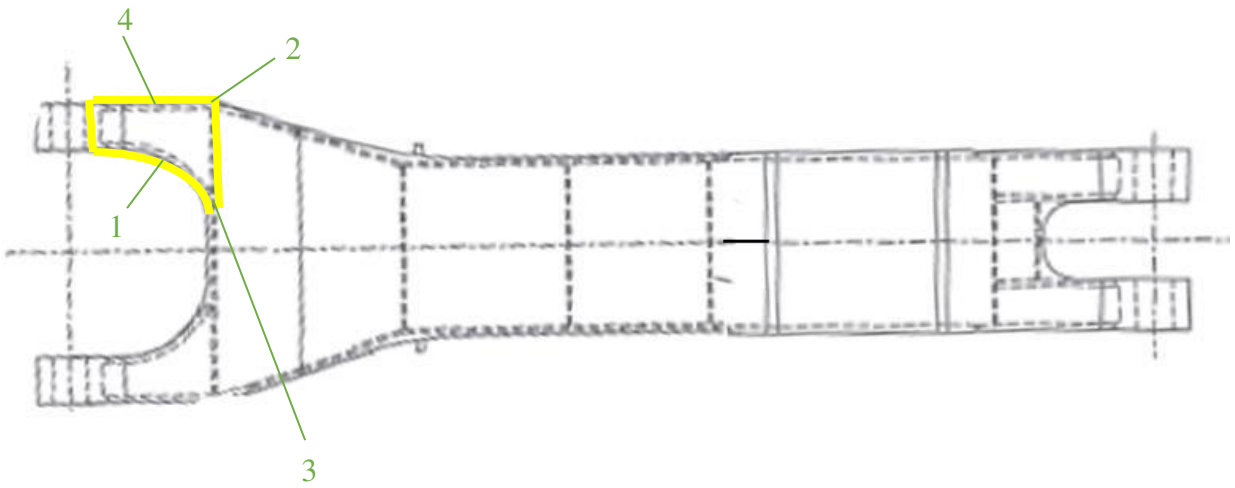
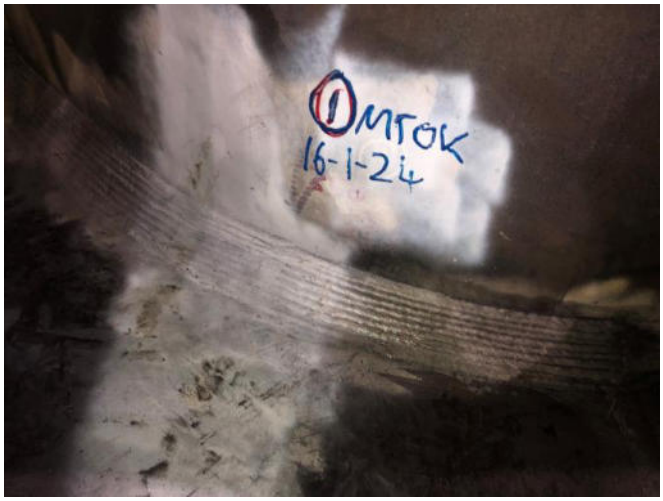


TABLE 9.0 – INTERNAL BAY #8 REPAIRED DEFECTS:

Defect No.	Length in mm	Defect No.	Length in mm
No. 1	350 BC	**No. 3**	40 TC
No. 2	650, 1100 SW	**No. 4**	750 TC

PHOTOGRAPH NO. 98 – INTERNAL BOOM BAY #8
TYPICAL VIEW OF REPAIRED DEFECT #1



PHOTOGRAPH NO. 99 – INTERNAL BOOM BAY #8
TYPICAL VIEW OF REPAIRED DEFECT #2

PHOTOGRAPH NO. 100 – INTERNAL BOOM BAY #8
TYPICAL VIEW OF REPAIRED DEFECT #3

PHOTOGRAPH NO. 101 – INTERNAL BOOM BAY #8
TYPICAL VIEW OF REPAIRED DEFECT #4

PHOTOGRAPH NO. 102 – GENERAL VIEW OF NEW MAN HOLE COVER

PHOTOGRAPH NO. 103 – GENERAL VIEW OF NEW MAN HOLE COVER

PHOTOGRAPH NO. 104 – GENERAL VIEW OF NEW MAN HOLE COVER

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PHOTOGRAPH NO. 105 – GENERAL VIEW OF EX5600 BOOM

PHOTOGRAPH NO. 106 – GENERAL VIEW OF EX5600 BOOM

PHOTOGRAPH NO. 107 – GENERAL VIEW OF EX5600 BOOM

PHOTOGRAPH NO. 108 – GENERAL VIEW OF EX5600 BOOM

Section 5

WELDING RECORDS/PROCEDURES

WELDING PROCEDURE SPECIFICATION

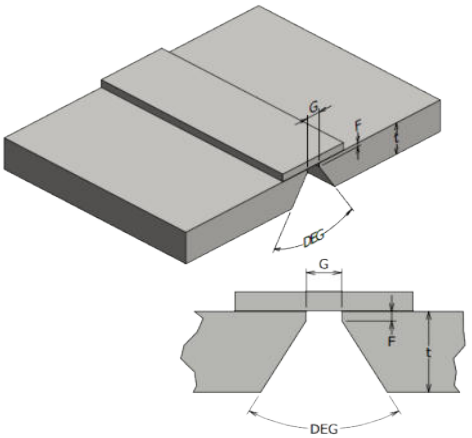
Field Mining Services Group

WELDING PROCEDURE SPECIFICATION NUMBER		WMS_WPS-002	
Code / Standard:	AS/NZS 1554.1 SP	***Edge Preparation:***	Flame Cut & Grind or Machined
Process:	FCAW	***Power Source:***	DC Constant Voltage Transformer or Inverter
Joint Type:	Single-V Butt Weld With Backing	***Technique:***	Stringer
Joint Position:	4G (PE)	***Multi-run or Single:***	Multi
Positions Qualified:	1G (PA), 2G (PC) & 4G (PE)	***Torch Angle:***	5° Drag
PQR Number:	PQR-CQFMS-002	***Inter Pass Cleaning:***	Grind & Brush
Revision:	1	***Root Opening:***	6mm (AS1554 ± 1.5)
Date Issued:	18/02/16	***Root Face:***	0mm (AS1554 ± 1.5)
Welder:	Sam Currell	***Grove Angle:***	30° Included (AS1554 +10° to -5°)
Location:	CQ Field Facility Mackay	***Backing:***	6mm Gr250 Flat Bar

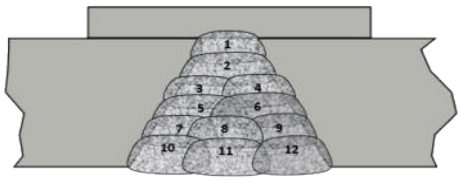
WELDING CONSUMABLE DETAIL

Consumable No 1		Consumable No 2		Shield Gas/Flux	
Classification/Grade:	B T 49 3 T12 1 C A U H10 B T	Classification/Grade:	NA	Shield Gas:	Argoshield Universal
Diameter:	1.6mm	Diameter:	NA	Flow Rate:	20L/M +≥25%/-≥10%
Trade Name:	CIGWELD Verti-cor 3xp	Trade Name:	NA	Purge Rate:	N/A
Batch #:	2001402075	Batch #:	NA	Flux:	N/A
Stickout:	15-20mm	Stickout:	NA		

WELD PREPARATION



SEQUENCE/POSITION



Side 1

Number of weld passes are indicative to nominated weld procedure and may vary

MATERIAL SPECIFICATION

TYPE/GRADE		GROUP	T	Diameter
		AS 1554	*mm*	*mm*
1	AS/NZS 3678 Gr. 350	5	20	N/A
2	AS/NZS 3678 Gr. 350	5	20	N/A
RANGE QUALIFIED		AS 1554: 10mm to 40mm		

THERMAL TREATMENT

PREHEAT:	50°C
MAX INTERPASS:	175°C
P.W.H.T.:	NIL

WELD PASS DETAILS					ELECTRODE DESCRIPTION			PREHEAT	WELDING PARAMETERS							
									AMPS		VOLTS			TRAVEL SPEED (mm/min)		HEAT INPUT (KJ/mm)	
PROCESS	PASS NO.	SIDE NO.	POS	DIR	TYPE	ELECTRODE SIZE mm	SPEC	TEMP °C	Min Actual -10%	Max Actual +10%	Min Actual -7%	Max Actual +7%	POL	Min Actual -15%	Max Actual +15%	Min Actual -10%	Max Actual +10%
FCAW Root & Hot Pass	*1 - 2*	*1*	*4G (PE)*	*Drag*	*136*	*1.6mm*	*A5.20: E71T-1 H8*	*50*	*234.5*	*286.6*	*22.9*	*26.3*	*DC+*	*206.9*	*279.9*	*1.42*	*1.74*
									Actual 260.5		***Actual 24.6***			***Actual 243.4***		***Actual 1.58***	
FCAW Fill	*2 - 9*	*1*	*4G (PE)*	*Drag*	*136*	*1.6mm*	*A5.20: E71T-1 H8*	*50*	*238.1*	*291.0*	*22.8*	*26.2*	*DC+*	*311.1*	*420.9*	*0.96*	*1.18*
									Actual 264.6		***Actual 24.5***			***Actual 366.0***		***Actual 1.07***	
FCAW Cap	*10 - 12*	*1*	*4G (PE)*	*Drag*	*136*	*1.6mm*	*A5.20: E71T-1 H8*	*50*	*240.0*	*293.3*	*22.9*	*26.3*	*DC+*	*306.1*	*414.1*	*0.99*	*1.21*
									Actual 266.7		***Actual 24.6***			***Actual 360.1***		***Actual 1.10***	

TESTING REQUIRED & RESULTS

Refer to supporting PQR for the following testing reports:

Visual	*CQVE-007*
Mechanical:	*M16-0310 A*
NDT:	*M16-0310 A*
Chemical:	*7476829 & 7454009*

NOTES

Preheat
- Ensure preheat is applied according to the relevant material within the group and/or the combined joint thickness as per preheat calculations outlined in WTIA Tech Note 1 for compliance to AS 1554.1.
- Interpass temperature is limited due to CVN impact requirements and temper preservation for this material.

General
- Ensure joints are free from contaminants during welding process.

MINIMUM PREHEAT & MAXIMUM INTERPASS TEMP
Gr. 350

THICKNESS	PREHEAT	INTERPASS
≥26<50	50°C	175°C
≥50<100	75°C	200°C
≥100	140°C	220°C

Complied By:	*Michael Barnes -CQ Field Mining Services-*	***Reviewed By:***	*Craig Evans -iScope-*	***Reviewed By:***	
Signed:		*Signed:*		*Signed:*	
WTIA AU/IWS/00569 WTIA SS-19900		*WTIA AU/IWS/6082 / WTIA SS-2054 / AU/IWI B/00746*			

International Institute of Welding CIWS Craig Evans CIWS/AU/6082/2 Expiry date: 07/04/2023 Personnel Certification System

iScope certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in accordance with the requirements of the standard and category specifications.

WELDING PROCEDURE SPECIFICATION

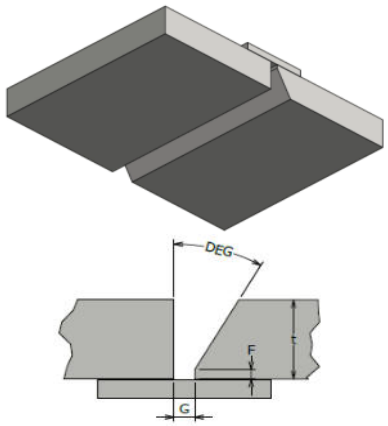
Field Mining Services Group

WELDING PROCEDURE SPECIFICATION NUMBER		WMS_WPS-032	
Code / Standard:	AS/NZS 1554.1 SP	***Edge Preparation:***	Flame Cut & Grind or Machined
Process:	FCAW	***Power Source:***	DC Constant Voltage Transformer or Inverter
Joint Type:	Single Bevel Butt With Backing (BW,ss,mb)	***Technique:***	Stringer
Joint Position:	4G (PE)	***Multi-run or Single:***	Multi
Positions Qualified:	1G (PA), 2G (PC) & 4G (PD & PE)	***Torch Angle:***	5° Drag
PQR Number:	IS4R-WPQR-003	***Inter Pass Cleaning:***	Grind & Brush
Revision:	0	***Root Opening (G):***	6mm
Date Issued:	02/03/20	***Root Face (F):***	0mm
Welder:	Craig Evans	***Grove Angle (DEG):***	45° Included (AS1554 +10° to -5°)
Location:	Mackay Facility	***Backing:***	6mm GR250 plate

WELDING CONSUMABLE DETAIL

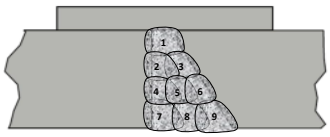
Consumable No 1		Consumable No 2		Shield Gas/Flux	
Classification/Grade:	B T 49 3 T12 1 C A U H10	Classification/Grade:	NA	Shield Gas:	Argoshield 52 - Ar+25% CO
Diameter:	1.6mm	Diameter:	NA	Flow Rate:	20L/M +≥25%/-≥10%
Trade Name:	Verti-Cor 3XP E71T-1 H8	Trade Name:	NA	Purge Rate:	N/A
Batch #:	7486	Batch #:	NA	Flux:	N/A
Stickout:	15-20mm	Stickout:	NA		

WELD PREPARATION



SEQUENCE/POSITION

Side 1



Side 2

Number of weld passes are indicative to nominated weld procedure and may vary

MATERIAL SPECIFICATION

TYPE/GRADE		GROUP	T	Diameter
		AS 1554	*mm*	*mm*
1	AS/NZS 3678 Gr. 350	5	12	N/A
2	AS/NZS 3678 Gr. 350	5	12	N/A
RANGE QUALIFIED		AS 1554.1: 6mm to 25mm		

THERMAL TREATMENT

PREHEAT:	50°C
MAX INTERPASS:	175°C
P.W.H.T.:	NIL

WELD PASS DETAILS					ELECTRODE DESCRIPTION			PREHEAT	WELDING PARAMETERS							
									AMPS		VOLTS			TRAVEL SPEED (mm/min)		HEAT INPUT (KJ/mm)	
PROCESS	PASS NO.	SIDE NO.	POS	DIR	TYPE	ELECTRODE SIZE mm	SPEC	TEMP °C	Min Actual -10%	Max Actual +10%	Min Actual -7%	Max Actual +7%	POL	Min Actual -15%	Max Actual +15%	Min Actual -10%	Max Actual +10%
FCAW Root	*1*	*1*	*3G*	*Up*	*136*	*1.6mm*	*Verti-Cor 3XP E71T-1 H8*	*50°C*	*214.2*	*261.8*	*22.5*	*25.9*	*DC+*	*332.4*	*449.7*	*0.8*	*1.0*
									Actual 238		***Actual 24.2***			***Actual 391***		***Actual 0.88***	
FCAW Hot Pass	*2 - 3*	*1*	*3G*	*Up*	*136*	*1.6mm*	*Verti-Cor 3XP E71T-1 H8*	*50°C*	*199.8*	*244.2*	*22.5*	*25.9*	*DC+*	*303.0*	*410.0*	*0.8*	*1.0*
									Actual 222		***Actual 24.2***			***Actual 356.5***		***Actual 0.91***	
FCAW Fill	*4 - 6*	*1*	*3G*	*Up*	*136*	*1.6mm*	*Verti-Cor 3XP E71T-1 H8*	*50°C*	*205.7*	*251.46*	*22.5*	*25.9*	*DC+*	*279.7*	*378.4*	*0.9*	*1.1*
									Actual 228.6		***Actual 24.2***			***Actual 329***		***Actual 1.01***	
FCAW Cap	*7 - 9*	*1*	*3G*	*Up*	*136*	*1.6mm*	*Verti-Cor 3XP E71T-1 H8*	*50°C*	*192.9*	*235.73*	*22.5*	*25.9*	*DC+*	*261.0*	*353.1*	*0.9*	*1.2*
									Actual 214.3		***Actual 24.2***			***Actual 307***		***Actual 1.05***	

TESTING REQUIRED & RESULTS

Refer to supporting PQR for the following testing reports:

Visual	*IS4R-RPT-0087*
Mechanical:	*IS4R-RPT-0085*
NDT:	*M21-1118*
Chemical:	*BE00027892/MC/PK/XII/19*

NOTES

Preheat
- Ensure preheat is applied according to the relevant material within the group and/or the combined joint thickness as per preheat calculations outlined in WTIA Tech Note 1 for compliance to AS 1554.1.
- Interpass temperature is limited due to CVN impact requirements and temper preservation for this material.

General
- Ensure joints are free from contaminants.

MINIMUM PREHEAT & MAXIMUM INTERPASS TEMP
Gr. 350

THICKNESS	PREHEAT	INTERPASS
≥26<50	50°C	175°C
≥50<100	75°C	200°C
≥100	140°C	220°C

Complied By:	*Clancy Crerar -iScope-*	***Reviewed By:***	*Craig Evans -iScope-*	***Reviewed By:***	
Signed:		*Signed:*		*Signed:*	
AU/IWI B/0895		*WTIA AU/IWS/6082 / WTIA SS-2054 / AU/IWI B/00746*			

International Institute of Welding CIWS Craig Evans CIWS/AU/6082/2 Expiry date: 07/04/2023 Personnel Certification System

iScope certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in accordance with the requirements of the standard and category specifications.

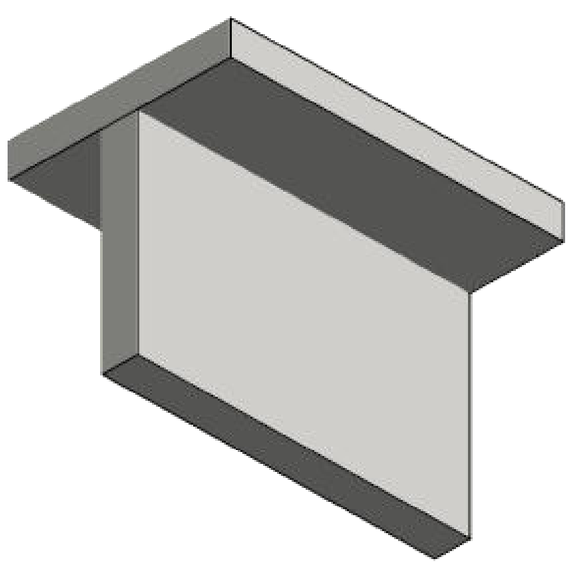
WELDING PROCEDURE SPECIFICATION

WELDING PROCEDURE SPECIFICATION NUMBER		WMS_WPS-062	
Code / Standard:	AS/NZS 1554.5	***Edge Preparation:***	Flame Cut & Grind or Machined
Process:	FCAW	***Power Source:***	DC Constant Voltage Transformer or Inverter
Joint Type:	F1 Fillet	***Technique:***	Stringer
Joint Position:	4F (PD)	***Multi-run or Single:***	Single
Positions Qualified:	1F (PA), 2F (PB) & 4F (PD)	***Torch Angle:***	5° Drag
PQR Number:	R-WPQR-FCAW23	***Inter Pass Cleaning:***	Grind & Brush
Revision:	0	***Root Opening:***	0mm
Date Issued:	19/07/22	***Root Face:***	0mm
Welder:	Bradley Jenkins	***Grove Angle:***	90° Included (AS1554 +10° to -5°)
Location:	Mackay Facility	***Backing:***	Nil

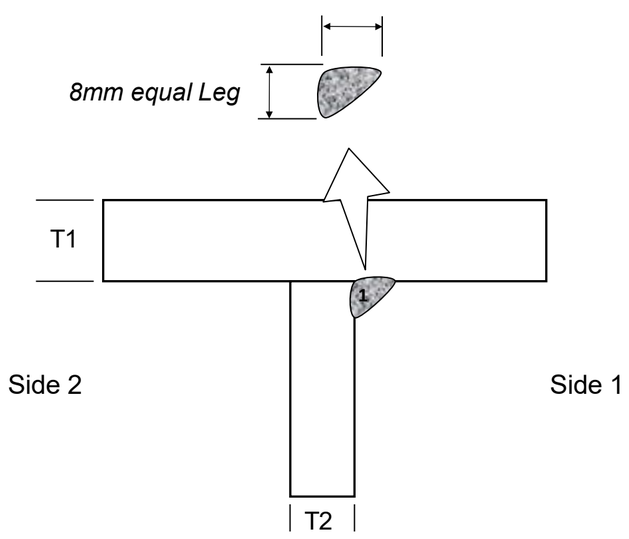
WELDING CONSUMABLE DETAIL

Consumable No 1		Consumable No 2		Shield Gas/Flux	
Classification/Grade:	B T 49 3 T12 1 M A N2 U H5	Classification/Grade:	NA	Shield Gas:	25% CO 75% Argon
Diameter:	1.6mm	Diameter:	NA	Flow Rate:	20L/M +≥25%/-≥10%
Trade Name:	Verti-Cor 3XP E71T-12M H4	Trade Name:	NA	Purge Rate:	N/A
Batch #:	7486	Batch #:	NA	Flux:	N/A
Stickout:	15-20mm	Stickout:	NA		

WELD PREPARATION



SEQUENCE/POSITION



Number of weld passes are indicative to nominated weld procedure and may vary

MATERIAL SPECIFICATION

	TYPE/GRADE	GROUP	T	Diameter
		AS 1554	*mm*	*mm*
1	AS/NZS 3678 Gr. 350	5	12	N/A
2	AS/NZS 3678 Gr. 350	5	12	N/A
RANGE QUALIFIED		AS 1554: 3mm to Unlimited		

THERMAL TREATMENT

PREHEAT:	50°C
MAX INTERPASS:	150°C
P.W.H.T.:	NIL

WELD PASS DETAILS / ELECTRODE DESCRIPTION / PREHEAT / WELDING PARAMETERS

PROCESS	PASS NO.	SIDE NO.	POS	DIR	TYPE	ELECTRODE SIZE mm	SPEC	TEMP °C	AMPS Min Actual -10%	AMPS Max Actual +10%	VOLTS Min Actual -7%	VOLTS Max Actual +7%	POL	TRAVEL SPEED (mm/min) Min Actual -15%	TRAVEL SPEED (mm/min) Max Actual +15%	HEAT INPUT (KJ/mm) Min Actual -10%	HEAT INPUT (KJ/mm) Max Actual +10%
FCAW	*1*	*1*	*4F (PD)*	*Drag*	*136*	*1.6mm*	*Verti-Cor 3XP E71T-12M H4*	*50°C*	*246.6*	*301.4*	*21.5*	*24.7*	*DC+*	*201.3*	*272.3*	*1.44*	*1.76*
									Actual 274.0		***Actual 23.1***			***Actual 236.8***		***Actual 1.60***	

TESTING REQUIRED & RESULTS

Refer to supporting PQR for the following testing reports:

Visual	*IS4R-RPT-1456*
Mechanical:	*M20-1335-02*
NDT:	*NA*
Chemical:	*T11776*

NOTES

Preheat
- Ensure preheat is applied according to the relevant material within the group and/or the combined joint thickness as per preheat calculations outlined in WTIA Tech Note 1 for compliance to AS 1554.5.
- Interpass temperature is limited due to CVN impact requirements and temper preservation for this material.

General
- Ensure joints are free from contaminants.
- Material, consumable & joint type are prequalified as per AS 1554.5
- WPS may be used on nominated CAT & Liebherr Castings as per Spectro reports M22-1185-02 & M22-1185-03.

MINIMUM PREHEAT & MAXIMUM INTERPASS TEMP Gr. 350

THICKNESS	PREHEAT	INTERPASS
≥26<50	50°C	175°C
≥50<100	75°C	200°C
≥100	140°C	220°C

Complied By:	*Clancy Crerar -iScope4Repair-*	***Reviewed By:***	*Craig Evans -iScope4Repair-*	***Reviewed By:***	
Signed:		*Signed:*		*Signed:*	
AU/IWI B/0895 / CC184154-02		*WTIA AU/IWS/6082 / WTIA SS-2054 / AU/IWI B/00746*			

International Institute of Welding
CIWS
Craig Evans
CIWS/AU/6082/2
Expiry date: 07/04/2023
Personnel Certification System

iScope4Repair certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in accordance with the requirements of the standard and category specifications.

WELDING PROCEDURE SPECIFICATION

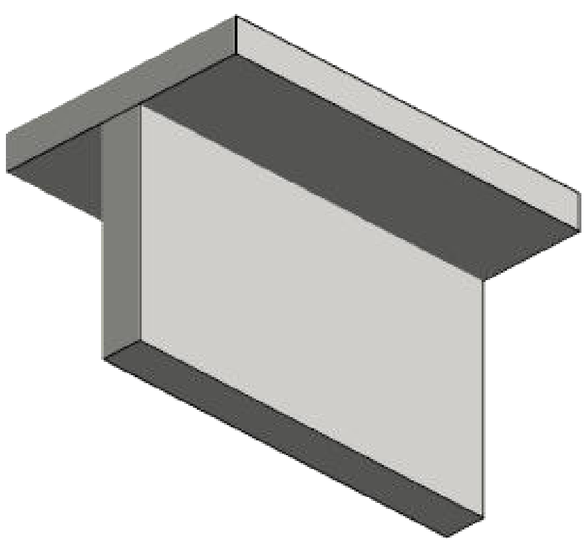
Field Mining Services Group

WELDING PROCEDURE SPECIFICATION NUMBER		WMS_WPS-064	
Code / Standard:	AS/NZS 1554.5	***Edge Preparation:***	Flame Cut & Grind or Machined
Process:	FCAW	***Power Source:***	DC Constant Voltage Transformer or Inverter
Joint Type:	F1 Fillet	***Technique:***	Stringer
Joint Position:	4F (PE)	***Multi-run or Single:***	Multi
Positions Qualified:	1F (PA), 2F (PC) & 4F (PD & PE)	***Torch Angle:***	5° Drag
PQR Number:	R-WPQR-FCAW4	***Inter Pass Cleaning:***	Grind & Brush
Revision:	0	***Root Opening:***	0mm
Date Issued:	19/07/22	***Root Face:***	0mm
Welder:	Bradley Jenkins	***Grove Angle:***	90° Included (AS1554 +10° to -5°)
Location:	Mackay Facility	***Backing:***	Nil

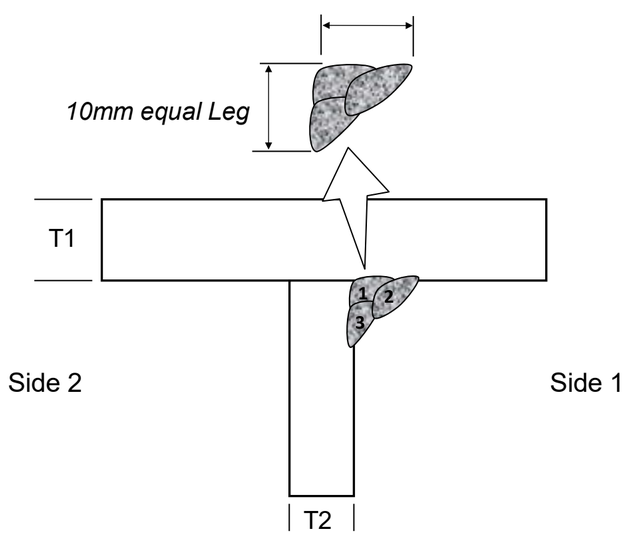
WELDING CONSUMABLE DETAIL

Consumable No 1		Consumable No 2		Shield Gas/Flux	
Classification/Grade:	B T 49 3 T12 1 M A N2 U H5	Classification/Grade:	NA	Shield Gas:	Argoshield 52 - Ar+25% CO
Diameter:	1.6mm	Diameter:	NA	Flow Rate:	20L/M +≥25%/-≥10%
Trade Name:	Verti-Cor 3XP E71T-12M H4	Trade Name:	NA	Purge Rate:	N/A
Batch #:	7486	Batch #:	NA	Flux:	N/A
Stickout:	15-20mm	Stickout:	NA		

WELD PREPARATION



SEQUENCE/POSITION



Number of weld passes are indicative to nominated weld procedure and may vary

MATERIAL SPECIFICATION

	TYPE/GRADE	GROUP	T	Diameter
		AS 1554	*mm*	*mm*
1	AS/NZS 3678 Gr. 350	5	12	N/A
2	AS/NZS 3678 Gr. 350	5	12	N/A
RANGE QUALIFIED		AS 1554: 3mm to Unlimited		

THERMAL TREATMENT

PREHEAT:	50°C
MAX INTERPASS:	150°C
P.W.H.T.:	NIL

WELD PASS DETAILS / ELECTRODE DESCRIPTION / PREHEAT / WELDING PARAMETERS

PROCESS	PASS NO.	SIDE NO.	POS	DIR	TYPE	ELECTRODE SIZE mm	SPEC	TEMP °C	AMPS Min Actual -10%	AMPS Max Actual +10%	VOLTS Min Actual -7%	VOLTS Max Actual +7%	POL	TRAVEL SPEED (mm/min) Min Actual -15%	TRAVEL SPEED (mm/min) Max Actual +15%	HEAT INPUT (KJ/mm) Min Actual -10%	HEAT INPUT (KJ/mm) Max Actual +10%
FCAW Root	*1*	*1*	*4F*	*Drag*	*136*	*1.6mm*	*Verti-Cor 3XP E71T-12M H4*	*50°C*	*243.0*	*297.0*	*23.9*	*27.5*	*DC+*	*212.5*	*287.5*	*1.5*	*1.8*
									Actual 270		***Actual 25.7***			***Actual 250***		***Actual 1.67***	
FCAW Cap	*2 - 3*	*1*	*4F*	*Drag*	*136*	*1.6mm*	*Verti-Cor 3XP E71T-12M H4*	*50°C*	*204.8*	*250.25*	*21.4*	*24.6*	*DC+*	*237.6*	*321.4*	*1.0*	*1.2*
									Actual 227.5		***Actual 23***			***Actual 279.5***		***Actual 1.13***	

TESTING REQUIRED & RESULTS

Refer to supporting PQR for the following testing reports:

Visual	*IS4R-RPT-1458*
Mechanical:	*M-20-0795-03*
NDT:	*NA*
Chemical:	*BE00028082/MC/PK/XII/19*

NOTES

Preheat
- Ensure preheat is applied according to the relevant material within the group and/or the combined joint thickness as per preheat calculations outlined in WTIA Tech Note 1 for compliance to AS 1554.5.
- Interpass temperature is limited due to CVN impact requirements and temper preservation for this material.

General
- Ensure joints are free from contaminants.
- Material, consumable & joint type are prequalified as per AS 1554.5
- WPS may be used on nominated CAT & Liebherr Castings as per Spectro & Hardness reports M22-1185-02 & M22-1185-03.

MINIMUM PREHEAT & MAXIMUM INTERPASS TEMP Gr. 350

THICKNESS	PREHEAT	INTERPASS
≥26<50	50°C	175°C
≥50<100	75°C	200°C
≥100	140°C	220°C

Complied By:	*Clancy Crerar -iScope4Repair-*	***Reviewed By:***	*Craig Evans -iScope4Repair-*	***Reviewed By:***	
Signed:		*Signed:*		*Signed:*	
AU/IWI B/0895 / CC184154-02		*WTIA AU/IWS/6082 / WTIA SS-2054 / AU/IWI B/00746*			

International Institute of Welding CIWS Craig Evans CIWS/AU/6082/2 Expiry date: 07/04/2023 Personnel Certification System

iScope4Repair certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in accordance with the requirements of the standard and category specifications.

WELDING PROCEDURE SPECIFICATION

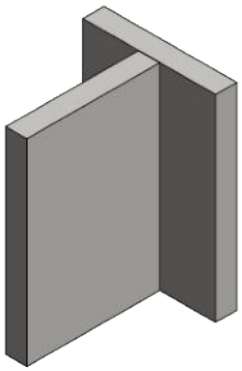
Field Mining Services Group

WELDING PROCEDURE SPECIFICATION NUMBER		WMS_WPS-068	
Code / Standard:	AS/NZS 1554.5	***Edge Preparation:***	Flame Cut & Grind or Machined
Process:	FCAW	***Power Source:***	DC Constant Voltage Transformer or Inverter
Joint Type:	F1 Fillet	***Technique:***	Stringer
Joint Position:	3F (PF)	***Torch Angle:***	5° Push
Positions Qualified:	3F (PF)	***Inter Pass Cleaning:***	Grind & Brush
Multi-run or Single:	Multi	***Root Opening:***	0mm
PQR Number:	R-WPQR-FCAW3	***Root Face:***	0mm
Revision:	0	***Grove Angle:***	90° Included
Date Issued:	21/06/2023	***Backing:***	Nil

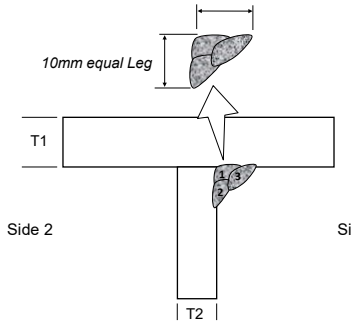
WELDING CONSUMABLE DETAIL

Consumable No 1		Consumable No 2		Shield Gas/Flux	
Classification/Grade: *AS/NZS ISO 14341*	B T 49 3 T12 1 M A N2 U H5	Classification/Grade: *AS/NZS ISO 14341*	N/A	Shield Gas Composition: *ISO 14175*	M26-ArCO-16/2.75
Diameter:	1.6mm	Diameter:	N/A	Flow Rate:	18-25 L/M
Trade Name:	Verti-Cor 3XP E71T-12M H4	Trade Name:	N/A	Purge Rate:	N/A
Stickout:	15-20mm	Stickout:	N/A	Flux:	N/A

WELD PREPARATION



SEQUENCE/POSITION



Number of weld passes are indicative to nominated weld procedure and may vary

MATERIAL SPECIFICATION

	TYPE/GRADE	GROUP	T	Diameter
		AS 1554	*mm*	*mm*
1	AS3678 Gr350	Steel Type: 1, 2, 4, 5 Weldability Group: ≤6	12	NA
2	AS3678 Gr350	Steel Type: 1, 2, 4, 5 Weldability Group: ≤6	12	NA

RANGE QUALIFIED

Thickness: Unlimited

THERMAL TREATMENT

PREHEAT:	Refer to Table in Notes
MAX INTERPASS:	180°C

WELD PASS DETAILS					ELECTRODE DESCRIPTION			PREHEAT	WELDING PARAMETERS							
									AMPS		VOLTS			TRAVEL SPEED (mm/min)		HEAT INPUT (KJ/mm)	
PROCESS	PASS NO.	SIDE NO.	POS	DIR	TYPE	ELECTRODE SIZE mm	SPEC	TEMP °C	Min Actual -10%	Max Actual +10%	Min Actual -7%	Max Actual +7%	POL	Min Actual -15%	Max Actual +15%	Min	Max
FCAW Root	*1*	*1*	*3F (PF)*	*Up*	*136*	*1.6mm*	*A5.20 E71T-12M H4*	*50°C*	*252.0*	*308.0*	*21.3*	*24.5*	*DC+*	*194*	*262*	*1.23*	*2.34*
									Actual 280		***Actual 22.9***			***Actual 227.8***		***Actual 1.78***	
FCAW Cap	*2 & 3*	*1*	*3F (PF)*	*Up*	*136*	*1.6mm*	*A5.20 E71T-12M H4*	*50°C*	*245.7*	*300.3*	*21.7*	*24.9*	*DC+*	*241*	*326*	*0.98*	*1.86*
									Actual 273		***Actual 23.3***			***Actual 283.6***		***Actual 1.42***	

NOTES

Preheat
- Ensure preheat is applied according to the relevant material within the group and/or the combined joint thickness as per preheat calculations outlined in WTIA Tech Note 1 for compliance to AS 1554.5.
- Interpass temperature is limited due to CVN impact requirements and temper preservation for this material.

General
- Ensure joints are free from contaminants.
- Grind all layers to clean material eliminating all surface indications.

MINIMUM PREHEAT & MAXIMUM INTERPASS TEMP Gr350

CJT	PREHEAT	INTERPASS
<50	50°C	180°C
≥50<100	75°C	220°C
≥100	140°C	220°C

Complied By:	*Clancy Crerar -iScope-*	***Reviewed By:***	*Craig Evans -iScope-*	***Reviewed By:***	
Signed:		*Signed:*		*Signed:*	
AU/IWI B/0895 / CC184154-02		*WTIA AU/IWS/6082 / WTIA SS-2054 / AU/IWI B/0895*			

International Institute of Welding CIWS Craig Evans CIWS/AU/6082/2 Expiry date: 07/04/2023 Personnel Certification System

iScope certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in accordance with the requirements of the standard and category specifications.

CQ Field Mining Services

WELDING & PRE-HEAT RECORD SHEET

Client:	Minespec		Job No:	27861	Date:	Weld Procedure:	WPS-062, 064, 068
Scope#		Description:	Crack repair on 5600 Boom		Weld Size & Finish		
Job Description:		Refurbish Minespec 5600 Boom			Drawing No:		

Welder ID	Joint Type/ ID	Weld Procedure No	Recommended Preheat Temp °c	Actual Preheat Temp °c	Date Taken	Time Taken	Volts	Amps	Plant ID	Consumable Used	Consumable Batch No:	Inspected By: Print Name	Inspected By: Initials
264			100	105	12/12/23	6AM	23.5	190	376	3XP E71T1-H8			
264			100	103	12/12/23	7AM	23.5	190	376	3XP E71T1-H8			
264	1F		100	110	12/12/23	8AM	23.5	190	376	3XP E71T1-H8			
264		WPS-062	100	108	12/12/23	9AM	23.5	190	376	3XP E71T1-H8			
264	2F		100	111	12/12/23	10AM	23.5	190	376	3XP E71T1-H8			
264			100	108	12/12/23	11AM	23.5	190	376	3XP E71T1-H8		BIOMAC BASIC	
264	3F	WPS-068	100	113	12/12/23	12pm	23.5	190	376	3XP E71T1-H8			
264			100	115	12/12/23	1pm	23.5	190	376	3XP E71T1-H8			
264			100	107	12/12/23	2pm	23.5	190	376	3XP E71T1-H8			
264			100	108	12/12/23	3pm	23.5	190	376	3XP E71T1-H8			
264			100	112	12/12/23	4pm	23.5	190	376	3XP E71T1-H8			
264			100	118	12/12/23	5pm	23.5	190	376	3XP E71T1-H8			

* NOTE: Readings to be recorded first when the recommended temperature is reached & once every Hour during Welding.

PRE-HEAT and CONSUMABLE GUIDE

Material	20mm & Under	20mm - 40mm	40mm - 60mm	60mm<	Process	Consumable
Q & T 80	100°C	100°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 400	150°C	150°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 450	150°C	150°C	150°C	150°C	FCAW	E81T1-N1-H4
GR250	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
GR350	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
Cruesabro	30°C	30°C	30°C	30°C	FCAW	E71T1-H8

CQ Field Mining Services

WELDING & PRE-HEAT RECORD SHEET

Client:	Minespec		Job No:	27861	Date:		Weld Procedure:	WPS- 062, 064, 068
Scope#		Description:	Crack repair on 5600 Boom		Weld Size & Finish			
Job Description:		Refurbish Minespec 5600 Boom			Drawing No:	BAY 8		

Welder ID	Joint Type/ ID	Weld Procedure No	Recommended Preheat Temp °c	Actual Preheat Temp °c	Date Taken	Time Taken	Volts	Amps	Plant ID	Consumable Used	Consumable Batch No:	Inspected By: Print Name	Inspected By: Initials
CQ214			100°C	120°C	13-12	6:06	27.4	220	4579	3XP E71T1-H8			
CQ214	1F			130°C	13-12	7:00	27.6			3XP E71T1-H8	20015108		
		WPS-062		125°C	13-12	8:00	27.4			3XP E71T1-H8			
				122°C	13-12	9:00	27.4			3XP E71T1-H8			
	2F			123°C	13-12	10:30	27.4			3XP E71T1-H8		BIMAL	
				115°C	13-12	11:30	27.4			3XP E71T1-H8		BASIL	
	↓			120°C	13-12	12:30	27.4			3XP E71T1-H8			
	3F	WPS-068		117°C	13-12	1:30	27.4			3XP E71T1-H8			
			↓	120°C	13-12	2:30	27.4			3XP E71T1-H8			
0				115°C	13-12	3:30	27.4	↓		3XP E71T1-H8			
214				112	13-12	4:06	27.4	220		3XP E71T1-H8	20015108		
										3XP E71T1-H8	20		

* NOTE: Readings to be recorded first when the recommended temperature is reached & once every Hour during Welding.

PRE-HEAT and CONSUMABLE GUIDE

Material	20mm & Under	20mm - 40mm	40mm - 60mm	60mm<	Process	Consumable
Q & T 80	100°C	100°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 400	150°C	150°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 450	150°C	150°C	150°C	150°C	FCAW	E81T1-N1-H4
GR250	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
GR350	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
Cruesabro	30°C	30°C	30°C	30°C	FCAW	E71T1-H8

- Rob

CQ Field Mining Services

WELDING & PRE-HEAT RECORD SHEET

Client:	Minespec		Job No:	27861	Date:	Weld Procedure:	WPS-062, 064, 068
Scope#		Description:	Crack repair on 5600 Boom		Weld Size & Finish		
Job Description:	Refurbish Minespec 5600 Boom				Drawing No:		

Welder ID	Joint Type/ ID	Weld Procedure No	Recommended Preheat Temp °c	Actual Preheat Temp °c	Date Taken	Time Taken	Volts	Amps	Plant ID	Consumable Used	Consumable Batch No:	Inspected By: Print Name	Inspected By: Initials
264			100	105	13/12/23	7AM	23.5	180	376	3XP E71T1-H8			
264	1F		100	110	13/12/23	8AM	23.5	180	376	3XP E71T1-H8			
264		WPS-062	100	107	13/12/23	9AM	23.5	180	376	3XP E71T1-H8			
264			100	112	13/12/23	10AM	23.5	180	376	3XP E71T1-H8			
264	2F		100	115	13/12/23	11AM	23.5	180	376	3XP E71T1-H8		BMAL	
264			100	108	13/12/23	12pm	23.5	180	376	3XP E71T1-H8			
264	3F	WPS-068	100	103	13/12/23	1pm	23.5	180	376	3XP E71T1-H8		BASIL	
264			100	113	13/12/23	2pm	23.5	180	376	3XP E71T1-H8			
264			100	108	13/12/23	3pm	23.5	180	376	3XP E71T1-H8			
264			100	110	13/12/23	4pm	23.5	180	376	3XP E71T1-H8			
264			100	112	13/12/23	5pm	23.5	180	376	3XP E71T1-H8			
264			100	115	13/12/23	6pm	23.5	180	376	3XP E71T1-H8			

* NOTE: Readings to be recorded first when the recommended temperature is reached & once every Hour during Welding.

PRE-HEAT and CONSUMABLE GUIDE

Material	20mm & Under	20mm - 40mm	40mm - 60mm	60mm<	Process	Consumable
Q & T 80	100°C	100°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 400	150°C	150°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 450	150°C	150°C	150°C	150°C	FCAW	E81T1-N1-H4
GR250	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
GR350	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
Cruesabro	30°C	30°C	30°C	30°C	FCAW	E71T1-H8

CQ Field
Mining Services

WELDING & PRE-HEAT RECORD SHEET

Client:	Minespec		Job No:	27861	Date:	14.12.23	Weld Procedure:	WPS – 062, 064, 068
Scope#		Description:	Crack repair on 5600 Boom		Weld Size & Finish		
Job Description:		Refurbish Minespec 5600 Boom			Drawing No:	BAY 2	

Welder ID	Joint Type/ ID	Weld Procedure No	Recommended Preheat Temp °c	Actual Preheat Temp °c	Date Taken	Time Taken	Volts	Amps	Plant ID	Consumable Used	Consumable Batch No:	Inspected By: Print Name	Inspected By: Initials
224			100 °C	120°	14.12	4:30	27.4	220	05/4	3XP E71T1-H8			
224				123°		7:30	27.4	220		3XP E71T1-H8	200151083		
	1F	WPS-062		125°		8:30	27.4	221		3XP E71T1-H8			
				123°		9:30	27.4	220		3XP E71T1-H8			
				115°		10:30	27.4	200		3XP E71T1-H8		BMAC	
	2F			112°		11:30	27.4	220		3XP E71T1-H8		BAIC	
				117°		12:30	27.4	220		3XP E71T1-H8			
		WPS-068		119°		1:30	27.4	220		3XP E71T1-H8			
	3F			111°		2:30	27.4	225		3XP E71T1-H8			
				113°		3:30	27.4	214		3XP E71T1-H8			
214				119 °C	14.12	4:30	27.4	220	05/4	3XP E71T1-H8	200151083		
										3XP E71T1-H8			

* NOTE: Readings to be recorded first when the recommended temperature is reached & once every Hour during Welding.

PRE-HEAT and CONSUMABLE GUIDE

Material	20mm & Under	20mm - 40mm	40mm - 60mm	60mm<	Process	Consumable
Q & T 80	100°C	100°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 400	150°C	150°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 450	150°C	150°C	150°C	150°C	FCAW	E81T1-N1-H4
GR250	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
GR350	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
Cruesabro	30°C	30°C	30°C	30°C	FCAW	E71T1-H8

Row

CQ Field
Mining Services

WELDING & PRE-HEAT RECORD SHEET

Client:	Minespec		Job No:	27861	Date:		Weld Procedure:	WPS-062, 064, 068
Scope#		Description:	Crack repair on 5600 Boom		Weld Size & Finish			
Job Description:		Refurbish Minespec 5600 Boom			Drawing No:			

Welder ID	Joint Type/ ID	Weld Procedure No	Recommended Preheat Temp °c	Actual Preheat Temp °c	Date Taken	Time Taken	Volts	Amps	Plant ID	Consumable Used	Consumable Batch No:	Inspected By: Print Name	Inspected By: Initials
264			100	103	14/12/23	7AM	24	190	376	3XP E71T1-H8			
264			100	105	14/12/23	8AM	24	190	376	3XP E71T1-H8			
264	1F	WPS-062	100	110	14/12/23	9AM	24	190	376	3XP E71T1-H8			
264			100	115	14/12/23	10AM	24	190	376	3XP E71T1-H8			
264	2F		100	104	14/12/23	11AM	24	190	376	3XP E71T1-H8			
264			100	108	14/12/23	12pm	24	190	376	3XP E71T1-H8		RIMAC	
264			100	111	14/12/23	1pm	24	190	376	3XP E71T1-H8		BASIL	
264			100	117	14/12/23	2pm	24	190	376	3XP E71T1-H8			
264	3F	WPS-068	100	112	14/12/23	3pm	24	190	376	3XP E71T1-H8			
264			100	104	14/12/23	4pm	24	190	376	3XP E71T1-H8			
264			100	111	14/12/23	5pm	24	190	376	3XP E71T1-H8			
264			100	112	14/12/23	6pm	24	190	376	3XP E71T1-H8			

* NOTE: Readings to be recorded first when the recommended temperature is reached & once every Hour during Welding.

PRE-HEAT and CONSUMABLE GUIDE

Material	20mm & Under	20mm - 40mm	40mm - 60mm	60mm<	Process	Consumable
Q & T 80	100°C	100°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 400	150°C	150°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 450	150°C	150°C	150°C	150°C	FCAW	E81T1-N1-H4
GR250	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
GR350	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
Cruesabro	30°C	30°C	30°C	30°C	FCAW	E71T1-H8

CQ Field Mining Services

WELDING & PRE-HEAT RECORD SHEET

Client:	Minespec		Job No:	27861	Date:	14/12/23	Weld Procedure:	WPS- 062, 064, 068
Scope#		Description:	Crack repair on 5600 Boom		Weld Size & Finish			
Job Description:		Refurbish Minespec 5600 Boom			Drawing No:			

Welder ID	Joint Type/ ID	Weld Procedure No	Recommended Preheat Temp °c	Actual Preheat Temp °c	Date Taken	Time Taken	Volts	Amps	Plant ID	Consumable Used	Consumable Batch No:	Inspected By: Print Name	Inspected By: Initials
352			100°C	107°C	14/12/23	6:00am	24.2	218	WS720	3XP E71T1-H8	2001416063		
352	1		100°C	105°C		7:00am	24.2	218	WS720	3XP E71T1-H8	2001416063		
352	G		100°C	103°		8:00am	24.2	218	WS720	3XP E71T1-H8	2001416063		
352			100°C	106°C		9:00am	23.2	165	WS720	3XP E71T1-H8	2001416063		
352		WPS-062	100°C	104°C		10:00am	23.2	165	WS720	3XP E71T1-H8	2001416063		
352	2		100°C	107°C		11:00 am	23.2	165	WS720	3XP E71T1-H8	2001416063	Binal	
352	G	WPS- 068	100°C	106°C		12:00PM	23.2	165	WS720	3XP E71T1-H8	2001416063	Basil	
352			100°C	105°C		1:00PM	24.2	218	WS720	3XP E71T1-H8	2001416063		
352	3		100°C	102°C		2:00PM	24.2	218	WS720	3XP E71T1-H8	2001416063		
352	G		100°C	107°C		3:00PM	24.2	218	WS720	3XP E71T1-H8	2001416063		
352			100°C	106°C		4:00PM	23.2	165	WS720	3XP E71T1-H8	2001416063		
										3XP E71T1-H8			

* NOTE: Readings to be recorded first when the recommended temperature is reached & once every Hour during Welding.

PRE-HEAT and CONSUMABLE GUIDE

Material	20mm & Under	20mm - 40mm	40mm - 60mm	60mm<	Process	Consumable
Q & T 80	100°C	100°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 400	150°C	150°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 450	150°C	150°C	150°C	150°C	FCAW	E81T1-N1-H4
GR250	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
GR350	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
Cruesabro	30°C	30°C	30°C	30°C	FCAW	E71T1-H8

CQ Field Mining Services

WELDING & PRE-HEAT RECORD SHEET

Client:	Minespec		Job No:	27861	Date: 15/12/23	Weld Procedure:	WPS-062, 064, 068
Scope#		Description:	Crack repair on 5600 Boom		Weld Size & Finish		
Job Description:	Refurbish Minespec 5600 Boom				Drawing No:		

Welder ID	Joint Type/ ID	Weld Procedure No	Recommended Preheat Temp °c	Actual Preheat Temp °c	Date Taken	Time Taken	Volts	Amps	Plant ID	Consumable Used	Consumable Batch No:	Inspected By: Print Name	Inspected By: Initials
352			100°C	105°C		6:00am	23.2	165	WS720	3XP E71T1-H8	2001416063		
352	1		100°C	109°C		7:00am	23.2	163	WS720	3XP E71T1-H8	2001416063		
352			100°C	103°C		8:00am	23.2	163	WS720	3XP E71T1-H8	2001416063		
352	G	WPS-062	100°C	106°C		9:00am	23.2	163	WS720	3XP E71T1-H8	2001416063		
352			100°C	107°C		10:00am	24.5	220	WS720	3XP E71T1-H8	2001416063		
352	2		100°C	106°C		11:00am	24.5	220	WS720	3XP E71T1-H8	2001416063	Bimal	B
352	G	WPS-068	100°C	103°C		12:00pm	24.5	220	WS720	3XP E71T1-H8	2001416063	BASIC	
352			100°C	105°C		1:00pm	23.2	165	WS720	3XP E71T1-H8	2001416063		
352			100°C	109°C		2:00pm	23.2	165	WS720	3XP E71T1-H8	2001416063		
352	3		100°C	108°C		3:00pm	23.2	165	WS720	3XP E71T1-H8	2001416063		
352	G		100°C	105°C		4:00pm	23.2	165	WS720	3XP E71T1-H8	2001416063		
										3XP E71T1-H8			

* NOTE: Readings to be recorded first when the recommended temperature is reached & once every Hour during Welding.

PRE-HEAT and CONSUMABLE GUIDE

Material	20mm & Under	20mm - 40mm	40mm - 60mm	60mm<	Process	Consumable
Q & T 80	100°C	100°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 400	150°C	150°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 450	150°C	150°C	150°C	150°C	FCAW	E81T1-N1-H4
GR250	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
GR350	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
Cruesabro	30°C	30°C	30°C	30°C	FCAW	E71T1-H8

CKow

CQ Field Mining Services

WELDING & PRE-HEAT RECORD SHEET

Client:	Minespec		Job No:	27861	Date:		Weld Procedure:	WPS-062, 064, 068
Scope#		Description:	Crack repair on 5600 Boom		Weld Size & Finish			
Job Description:		Refurbish Minespec 5600 Boom			Drawing No:			

Welder ID	Joint Type/ ID	Weld Procedure No	Recommended Preheat Temp °c	Actual Preheat Temp °c	Date Taken	Time Taken	Volts	Amps	Plant ID	Consumable Used	Consumable Batch No:	Inspected By: Print Name	Inspected By: Initials
264			100°c	100°c	15-12-23	7AM	24	190	376	3XP E71T1-H8			
				105°c		8AM	24	190	376	3XP E71T1-H8			
	1F	WPS-062		110°c		9AM	24	190	376	3XP E71T1-H8			
				103°c		10AM	24	190	376	3XP E71T1-H8			
	2F			111°c		11AM	24	190	376	3XP E71T1-H8		BIMAL	
				107°c		12pm	24	190	376	3XP E71T1-H8		BASIL	
	3F	WPS-068		104°c		1pm	24	190	376	3XP E71T1-H8			
				112°c		2pm	24	190	376	3XP E71T1-H8			
				103°c		3pm	24	190	376	3XP E71T1-H8			
				100°c		4pm	24	190	376	3XP E71T1-H8			
				115°c		5pm	24	190	376	3XP E71T1-H8			
				107°c		6pm	24	190	376	3XP E71T1-H8			

* NOTE: Readings to be recorded first when the recommended temperature is reached & once every Hour during Welding.

PRE-HEAT and CONSUMABLE GUIDE

Material	20mm & Under	20mm - 40mm	40mm - 60mm	60mm<	Process	Consumable
Q & T 80	100°C	100°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 400	150°C	150°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 450	150°C	150°C	150°C	150°C	FCAW	E81T1-N1-H4
GR250	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
GR350	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
Cruesabro	30°C	30°C	30°C	30°C	FCAW	E71T1-H8

CQ Field
Mining Services

WELDING & PRE-HEAT RECORD SHEET

Client:	Minespec		Job No:	27861	Date:	15.12.23	Weld Procedure:	WPS -062, 069, 068
Scope#		Description:	Crack repair on 5600 Boom		Weld Size & Finish		
Job Description:		Refurbish Minespec 5600 Boom			Drawing No:		

Welder ID	Joint Type/ ID	Weld Procedure No	Recommended Preheat Temp °c	Actual Preheat Temp °c	Date Taken	Time Taken	Volts	Amps	Plant ID	Consumable Used	Consumable Batch No:	Inspected By: Print Name	Inspected By: Initials
ZH			100°C	105°C	15.12.23	6:30	26	200		3XP E71T1-H8			
				110°C		7:30	26	220		3XP E71T1-H8	20015/139		
	1F			115°C		8:30				3XP E71T1-H8			
		WPS		110°C		9:30				3XP E71T1-H8		BMac	
	2	-062		112°C		10:30				3XP E71T1-H8			
				117°C		11:30				3XP E71T1-H8		BMac	BMac
	2F			115°C		12:30				3XP E71T1-H8			
				118°C		1:30				3XP E71T1-H8			
		WPS		112°C		2:30				3XP E71T1-H8			
	3F	-068		110°C		3:30				3XP E71T1-H8			
ZH				109°C		4:30	0	0		3XP E71T1-H8	20015/083		
										3XP E71T1-H8			

* NOTE: Readings to be recorded first when the recommended temperature is reached & once every Hour during Welding.

PRE-HEAT and CONSUMABLE GUIDE

Material	20mm & Under	20mm - 40mm	40mm - 60mm	60mm<	Process	Consumable
Q & T 80	100°C	100°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 400	150°C	150°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 450	150°C	150°C	150°C	150°C	FCAW	E81T1-N1-H4
GR250	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
GR350	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
Cruesabro	30°C	30°C	30°C	30°C	FCAW	E71T1-H8

CQ Field
Mining Services

WELDING & PRE-HEAT RECORD SHEET

Client:	Glencore Collinsville		Job No:	27861	Date:	3.12.24	Weld Procedure: CWPS-062, 064, 068
Scope#		Description:	Crack repair on 5600 Boom		Weld Size & Finish		
Job Description:		Refrubish Minespec 5600 Boom			Drawing No:		

Welder ID	Joint Type/ ID	Weld Procedure No	Recommended Preheat Temp ˚c	Actual Preheat Temp ˚c	Date Taken	Time Taken	Volts	Amps	Plant ID	Consumable Used	Consumable Batch No:	Inspected By: Print Name	Inspected By: Initials
CQ137	Fillet		100°	107	3.1.24	6:30	240 V	177 A	ES-1-5XS	E71T-12M H4 - Verticor 3XP	20.1040808	BIMAL BASIC	B
			100°	112		7:30	V	A		E71T-12M H4 - Verticor 3XP			
			100°	115		8:30	V	A		E71T-12M H4 - Verticor 3XP			
		CWPS-062	100°	110		9:30	V	A		E71T-12M H4 - Verticor 3XP			
			100°	113		10:30	V	A		E71T-12M H4 - Verticor 3XP			
			100°	116		11:30	V	A		E71T-12M H4 - Verticor 3XP			
		CWPS-068	100°	114		12:30	V	A		E71T-12M H4 - Verticor 3XP			
			100°	117		13:30	V	A		E71T-12M H4 - Verticor 3XP			
			100°	110		14:30	V	A		E71T-12M H4 - Verticor 3XP			
			100°	113		15:30	V	A		E71T-12M H4 - Verticor 3XP			
			100°	111		16:30	V	A		E71T-12M H4 - Verticor 3XP			

* NOTE: Readings to be recorded first when the recommended temperature is reached & once every Hour during Welding.

PRE-HEAT and CONSUMABLE GUIDE

Material	20mm & Under	20mm - 40mm	40mm - 60mm	60mm<	Process	Consumable
Q & T 80	100°C	100°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 400	150°C	150°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 450	150°C	150°C	150°C	150°C	FCAW	E81T1-N1-H4
GR250	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
GR350	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8

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CQ Field Mining Services

WELDING & PRE-HEAT RECORD SHEET

Client:	Minespec		Job No:	27861	Date:		Weld Procedure:	WPS-062, 064, 068
Scope#		Description:	Crack repair on 5600 Boom		Weld Size & Finish			
Job Description:		Refurbish Minespec 5600 Boom			Drawing No:			

Welder ID	Joint Type/ ID	Weld Procedure No	Recommended Preheat Temp °c	Actual Preheat Temp °c	Date Taken	Time Taken	Volts	Amps	Plant ID	Consumable Used	Consumable Batch No:	Inspected By: Print Name	Inspected By: Initials
CQ-364			120	130	17-1-24	7Am	23	180	377	3XP E71T1-H8			
364	1F		120	130	17-1-24	8Am	23	180	377	3XP E71T1-H8			
364		WPS-062	120	130	17-1-24	9Am	23	180	377	3XP E71T1-H8			
364			120	136		10Am	23	180	377	3XP E71T1-H8			
364	2F		120	133		11Am	23	180	377	3XP E71T1-H8			
364			120	131		12pm	23	180	377	3XP E71T1-H8		BIMAL	BP
364			120	132		1pm	23	180	377	3XP E71T1-H8		BASIL	
364	3F	WPS068	120	134		2pm	23	180	377	3XP E71T1-H8			
364			120	135		3pm	23	180	377	3XP E71T1-H8			
364			120	133		4pm	23	180	377	3XP E71T1-H8			
										3XP E71T1-H8			
										3XP E71T1-H8			

* NOTE: Readings to be recorded first when the recommended temperature is reached & once every Hour during Welding.

PRE-HEAT and CONSUMABLE GUIDE

Material	20mm & Under	20mm - 40mm	40mm - 60mm	60mm<	Process	Consumable
Q & T 80	100°C	100°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 400	150°C	150°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 450	150°C	150°C	150°C	150°C	FCAW	E81T1-N1-H4
GR250	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
GR350	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
Cruesabro	30°C	30°C	30°C	30°C	FCAW	E71T1-H8

CQ Field Mining Services

WELDING & PRE-HEAT RECORD SHEET

Client:	Minespec		Job No:	27861	Date:	24-1-24	Weld Procedure:	WPS – 062, 064, 068
Scope#		Description:	Crack repair on 5600 Boom		Weld Size & Finish			
Job Description:		Refurbish Minespec 5600 Boom			Drawing No:			

Welder ID	Joint Type/ ID	Weld Procedure No	Recommended Preheat Temp °c	Actual Preheat Temp °c	Date Taken	Time Taken	Volts	Amps	Plant ID	Consumable Used	Consumable Batch No:	Inspected By: Print Name	Inspected By: Initials
364			120	~~130~~ 6 Am	24-1	6Am	23	180	379	3XP E71T1-H8			
364	1F		120	~~132~~ 7Am	24-1	7Am	23	180	379	3XP E71T1-H8			
364			120	132	24-1	8Am	23	180	379	3XP E71T1-H8			
364		WPS-062	120	136	24-1	9Am	23	180	379	3XP E71T1-H8			
364	2F		120	138	24-1	10Am	23	180	379	3XP E71T1-H8		Brad Basil	
364			120	138	24-1	11Am	23	180	379	3XP E71T1-H8			
364			120	136	24-1	12Pm	23	180	379	3XP E71T1-H8			
364	3F	WPS-068	120	136	24-1	1Pm	23	180	379	3XP E71T1-H8			
364			120	138	24-1	2Pm	23	180	379	3XP E71T1-H8			
										3XP E71T1-H8			
										3XP E71T1-H8			
										3XP E71T1-H8			

* NOTE: Readings to be recorded first when the recommended temperature is reached & once every Hour during Welding.

PRE-HEAT and CONSUMABLE GUIDE

Material	20mm & Under	20mm - 40mm	40mm - 60mm	60mm<	Process	Consumable
Q & T 80	100°C	100°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 400	150°C	150°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 450	150°C	150°C	150°C	150°C	FCAW	E81T1-N1-H4
GR250	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
GR350	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
Cruesabro	30°C	30°C	30°C	30°C	FCAW	E71T1-H8

CQ Field
Mining Services

WELDING & PRE-HEAT RECORD SHEET

Client:	Mine spec		Job No:	27861	Date:	6/2/24	Weld Procedure WPS -002,032
Scope #		Description	closing of windows		weld Size &Finish		
Job Description:	Refurbish Minespec 5600 Boom				Drawing No:		

Welder ID	Joint Type/ ID	Weld Procedure No	Recommended Preheat Temp °c	Actual Preheat Temp °c	Date Taken	Time Taken	Volts	Amps	Plant ID	Consumable Used	Consumable Batch No:	Inspected By: Print Name	Inspected By: Initials
CQ324	BUTT JOINT		75°c	77°c	6/2/24	6Am	25.0 V	260² A	WS375	3XP E71T1-H8			
				79°		7Am	V	A		3XP E71T1-H8			
				82°		8Am	V	A		3XP E71T1-H8			
				85°c		9Am	V	A		3XP E71T1-H8			
				87°c		10Am	V	A		3XP E71T1-H8			
				76°		11Am	V	A		3XP E71T1-H8			
				77°		12PM	V	A		3XP E71T1-H8			
				79°		1PM	V	A		3XP E71T1-H8			
				81°		2PM	V	A		3XP E71T1-H8			
				78°c		3PM	V	A		3XP E71T1-H8			
				79°		4 5PM	V	A		3XP E71T1-H8			

* NOTE: Readings to be recorded first when the recommended temperature is reached & once every Hour during Welding.

PRE-HEAT and CONSUMABLE GUIDE

Material	20mm & Under	20mm - 40mm	40mm - 60mm	60mm<	Process	Consumable
Q & T 80	100°C	100°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 400	150°C	150°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 450	150°C	150°C	150°C	150°C	FCAW	E81T1-N1-H4
GR250	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
GR350	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
Cruesabro	30°C	30°C	30°C	30°C	FCAW	E71T1-H8

CQ Field
Mining Services

WELDING & PRE-HEAT RECORD SHEET

Client:	Mine spec		Job No:	27861	Date:	7/2/24	Weld Procedure WPS -002,032
Scope #		Description	closing of windows		weld Size &Finish		
Job Description:	Refurbish Minespec 5600 Boom				Drawing No:		

Welder ID	Joint Type/ ID	Weld Procedure No	Recommended Preheat Temp °c	Actual Preheat Temp °c	Date Taken	Time Taken	Volts	Amps	Plant ID	Consumable Used	Consumable Batch No:	Inspected By: Print Name	Inspected By: Initials
CA324	Butt Joint		75°	78°	7/2/24	6Am	25.0 V	260 A	WS375	3XP E71T1-H8			
				80°		7 Am	V	A		3XP E71T1-H8			
				82°		8 Am	V	A		3XP E71T1-H8			
				83°		9 Am	V	A		3XP E71T1-H8			
				85°		10 Am	V	A		3XP E71T1-H8		BLMAC	
				76°		11 Am	V	A		3XP E71T1-H8			
				77°		12 PM	V	A		3XP E71T1-H8		BASIC	
				79°		1 PM	V	A		3XP E71T1-H8			
				80°		2 PM	V	A		3XP E71T1-H8			
				78°		3 PM	V	A		3XP E71T1-H8			
				80°		4:30 PM	V	A		3XP E71T1-H8			

* NOTE: Readings to be recorded first when the recommended temperature is reached & once every Hour during Welding.

PRE-HEAT and CONSUMABLE GUIDE

Material	20mm & Under	20mm - 40mm	40mm - 60mm	60mm<	Process	Consumable
Q & T 80	100°C	100°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 400	150°C	150°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 450	150°C	150°C	150°C	150°C	FCAW	E81T1-N1-H4
GR250	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
GR350	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
Cruesabro	30°C	30°C	30°C	30°C	FCAW	E71T1-H8

CQ Field
Mining Services

WELDING & PRE-HEAT RECORD SHEET

Client:	Mine spec	Job No:	27861	Date:	8/2/24	Weld Procedure	
Scope #		Description	closing of windows	weld Size &Finish			
Job Description:	Refurbish Minespec 5600 Boom			Drawing No:			

Welder ID	Joint Type/ ID	Weld Procedure No	Recommended Preheat Temp °c	Actual Preheat Temp °c	Date Taken	Time Taken	Volts	Amps	Plant ID	Consumable Used	Consumable Batch No:	Inspected By: Print Name	Inspected By: Initials
CQ324	BUTT JOINT		75°	76°	8/2/24	6 Am	250 V	250 A	WS375	VIRTI CORP 3YP 1.0mm	200151083	Bimal	
				78°		7 Am	V	A					
				80°	8/2/24	8 Am	V	A					
				83°		9 Am	V	A					
				85°		10 Am	V	A					
				78°		11 Am	V	A					
				81°		12 Pm	V	A					
				83°		1 Pm	V	A					
				86°		2 Pm	V	A					
				79°		3 Pm	V	A					
				83°		4:50 Pm	V	A					

* NOTE: Readings to be recorded first when the recommended temperature is reached & once every Hour during Welding.

PRE-HEAT and CONSUMABLE GUIDE

Material	20mm & Under	20mm - 40mm	40mm - 60mm	60mm<	Process	Consumable
Q & T 80	100°C	100°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 400	150°C	150°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 450	150°C	150°C	150°C	150°C	FCAW	E81T1-N1-H4
GR250	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
GR350	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
Cruesabro	30°C	30°C	30°C	30°C	FCAW	E71T1-H8

CQ Field
Mining Services

WELDING & PRE-HEAT RECORD SHEET

Client:	Mine spec		Job No:	27861	Date:		Weld Procedure	WPS -002,032
Scope #		Description	closing of windows		weld Size &Finish			
Job Description:	Refurbish Minespec 5600 Boom				Drawing No:			

Welder ID	Joint Type/ ID	Weld Procedure No	Recommended Preheat Temp °c	Actual Preheat Temp °c	Date Taken	Time Taken	Volts	Amps	Plant ID	Consumable Used	Consumable Batch No:	Inspected By: Print Name	Inspected By: Initials
			25°C	76°C	9/2/24	6Am	250 V	250 A		3XP E71T1-H8			
CQ-337	BUTT			78°C		7am	V	A		3XP E71T1-H8			
	JOINT			80°C		8 am	V	A		3XP E71T1-H8			
				83°C		9 am	V	A		3XP E71T1-H8			
				85°C		10am	V	A		3XP E71T1-H8		BMAC	
				78°C		11 am	V	A		3XP E71T1-H8		BASIC	
				81°C		12 am	V	A		3XP E71T1-H8			
				83°C		1 Pm	V	A		3XP E71T1-H8			
				86°C		2 Pm.	V	A		3XP E71T1-H8			
				79°C		3 Pm	V	A		3XP E71T1-H8			
				83°C		4:50Pm.	V	A		3XP E71T1-H8			

* NOTE: Readings to be recorded first when the recommended temperature is reached & once every Hour during Welding.

PRE-HEAT and CONSUMABLE GUIDE

Material	20mm & Under	20mm - 40mm	40mm - 60mm	60mm<	Process	Consumable
Q & T 80	100°C	100°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 400	150°C	150°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 450	150°C	150°C	150°C	150°C	FCAW	E81T1-N1-H4
GR250	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
GR350	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
Cruesabro	30°C	30°C	30°C	30°C	FCAW	E71T1-H8

CQ Field
Mining Services

WELDING & PRE-HEAT RECORD SHEET

Client:	Mine spec		Job No:	27861	Date:		Weld Procedure WPS -002,032
Scope #		Description	closing of windows		weld Size &Finish		
Job Description:	Refurbish Minespec 5600 Boom				Drawing No:		

Welder ID	Joint Type/ ID	Weld Procedure No	Recommended Preheat Temp °c	Actual Preheat Temp °c	Date Taken	Time Taken	Volts	Amps	Plant ID	Consumable Used	Consumable Batch No:	Inspected By: Print Name	Inspected By: Initials
CQ-337	BUTT		25°C	76°C	10/2/24	6 am	25 V	250 A		3XP E71T1-H8			
	JOINT			78 °C		7 am	V	A		3XP E71T1-H8			
				80 °C		8 am	V	A		3XP E71T1-H8			
				83°C.		9 am	V	A		3XP E71T1-H8			
				85 °C		10 am	V	A		3XP E71T1-H8		BINAC	B
				78 °C		11 am	V	A		3XP E71T1-H8		RASIC	
				81 °C		12 am.	V	A		3XP E71T1-H8			
				82 °C		1 Pm	V	A		3XP E71T1-H8			
				80 °C		2 Pm	V	A		3XP E71T1-H8			
				79 °C		3 Pm	V	A		3XP E71T1-H8			
				82 °C.		4:50 Pm	V	A		3XP E71T1-H8			

* NOTE: Readings to be recorded first when the recommended temperature is reached & once every Hour during Welding.

PRE-HEAT and CONSUMABLE GUIDE

Material	20mm & Under	20mm - 40mm	40mm - 60mm	60mm<	Process	Consumable
Q & T 80	100°C	100°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 400	150°C	150°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 450	150°C	150°C	150°C	150°C	FCAW	E81T1-N1-H4
GR250	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
GR350	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
Cruesabro	30°C	30°C	30°C	30°C	FCAW	E71T1-H8

CQ Field
Mining Services

WELDING & PRE-HEAT RECORD SHEET

Client:	Mine spec		Job No:	27861	Date:		Weld Procedure WPS -002,032
Scope #		Description	closing of windows		weld Size &Finish		
Job Description:	Refurbish Minespec 5600 Boom				Drawing No:		

Welder ID	Joint Type/ ID	Weld Procedure No	Recommended Preheat Temp °c	Actual Preheat Temp °c	Date Taken	Time Taken	Volts	Amps	Plant ID	Consumable Used	Consumable Batch No:	Inspected By: Print Name	Inspected By: Initials
CQ-290	BUTT JOINT		25°C.	76°C	11/2/24	6am	250 V	250 A		3XP E71T1-H8			
				79°C		7am	V	A		3XP E71T1-H8			
				80°C		8am	V	A		3XP E71T1-H8			
				83°C		9am	V	A		3XP E71T1-H8			
				85°C		10am	V	A		3XP E71T1-H8		Bismac	B
				78°C		11am	V	A		3XP E71T1-H8		BASL	
				81°C		12am	V	A		3XP E71T1-H8			
				83°C		1pm	V	A		3XP E71T1-H8			
				86°C		2pm	V	A		3XP E71T1-H8			
				79°C.		3pm	V	A		3XP E71T1-H8			
				83°C.		4:50pm.	V	A		3XP E71T1-H8			

* NOTE: Readings to be recorded first when the recommended temperature is reached & once every Hour during Welding.

PRE-HEAT and CONSUMABLE GUIDE

Material	20mm & Under	20mm - 40mm	40mm - 60mm	60mm<	Process	Consumable
Q & T 80	100°C	100°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 400	150°C	150°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 450	150°C	150°C	150°C	150°C	FCAW	E81T1-N1-H4
GR250	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
GR350	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
Cruesabro	30°C	30°C	30°C	30°C	FCAW	E71T1-H8

CQ Field
Mining Services

WELDING & PRE-HEAT RECORD SHEET

Client:	Mine spec		Job No:	27861	Date:		Weld Procedure	WPS -002,032
Scope #		Description	closing of windows		weld Size &Finish			
Job Description:	Refurbish Minespec 5600 Boom				Drawing No:			

Welder ID	Joint Type/ ID	Weld Procedure No	Recommended Preheat Temp °c	Actual Preheat Temp °c	Date Taken	Time Taken	Volts	Amps	Plant ID	Consumable Used	Consumable Batch No:	Inspected By: Print Name	Inspected By: Initials
			75°C	76°C	12/2/24	6am	250 V	250 A		3XP E71T1-H8			
				79°C		7am	V	A		3XP E71T1-H8			
CQ-				80°C		8am	V	A		3XP E71T1-H8			
290	BUTT			82°C		9am	V	A		3XP E71T1-H8			
				85°C		10am	V	A		3XP E71T1-H8		BIMAL	
	JOINT			78°C		11am	V	A		3XP E71T1-H8		BASIL	
				81°C		12am	V	A		3XP E71T1-H8			
				83°C		1:00pm	V	A		3XP E71T1-H8			
				86°C		2:00pm	V	A		3XP E71T1-H8			
				79°C		3:00pm	V	A		3XP E71T1-H8			
				83°C		4:50pm	V	A		3XP E71T1-H8			

* NOTE: Readings to be recorded first when the recommended temperature is reached & once every Hour during Welding.

PRE-HEAT and CONSUMABLE GUIDE

Material	20mm & Under	20mm - 40mm	40mm - 60mm	60mm<	Process	Consumable
Q & T 80	100°C	100°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 400	150°C	150°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 450	150°C	150°C	150°C	150°C	FCAW	E81T1-N1-H4
GR250	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
GR350	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
Cruesabro	30°C	30°C	30°C	30°C	FCAW	E71T1-H8

CQ Field Mining Services

WELDING & PRE-HEAT RECORD SHEET

Client:	Glencore Collinsville		**Job No:**	27861	**Date:**	2-1-24	**Weld Procedure:** COPS-062, 064, 068
Scope#		**Description:**	Crack repair on 5600 Boom		**Weld Size & Finish**		
Job Description:	Refrubish Minespec 5600 Boom				**Drawing No:**		

Welder ID	Joint Type/ ID	Weld Procedure No	Recommended Preheat Temp ˚c	Actual Preheat Temp ˚c	Date Taken	Time Taken	Volts	Amps	Plant ID	Consumable Used	Consumable Batch No:	Inspected By: Print Name	Inspected By: Initials
CQ137	Fillet		100°	110	2-1-24	6:30	240 V	199 A	EW-1575	E71T-12M H4 - Verticor 3XP	2004090358	Bimal Basic	[illegible]
↓	↓		100°	115	↓	7:30	↓ V	A		E71T-12M H4 - Verticor 3XP			
		COPS-062	100°	105		8:30	V	A		E71T-12M H4 - Verticor 3XP			
			100°	107		9:30	V	A		E71T-12M H4 - Verticor 3XP			
			100°	113		10:30	V	A		E71T-12M H4 - Verticor 3XP			
		COPS-068	100°	111		11:30	V	A		E71T-12M H4 - Verticor 3XP			
			100°	116		12:30	V	A		E71T-12M H4 - Verticor 3XP			
			100°	110		13:30	V	A		E71T-12M H4 - Verticor 3XP			
			100°	122		14:30	V	A		E71T-12M H4 - Verticor 3XP			
			100°	114		15:30	V	A		E71T-12M H4 - Verticor 3XP			
↓	↓		100°	116	↓	16:30	↓ V	A		E71T-12M H4 - Verticor 3XP			

* NOTE: Readings to be recorded first when the recommended temperature is reached & once every Hour during Welding.

PRE-HEAT and CONSUMABLE GUIDE

Material	20mm & Under	20mm - 40mm	40mm - 60mm	60mm<	Process	Consumable
Q & T 80	100°C	100°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 400	150°C	150°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 450	150°C	150°C	150°C	150°C	FCAW	E81T1-N1-H4
GR250	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
GR350	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8

CQ Field Mining Services

WELDING & PRE-HEAT RECORD SHEET

Client:	Minespec		Job No:	27861	Date:	4.1.24	Weld Procedure: WPS-062, 064.
Scope#		Description:	Crack repair on 5600 Boom		Weld Size & Finish		
Job Description:	Refurbish Minespec 5600 Boom				Drawing No:	Bay #4.	

Welder ID	Joint Type/ ID	Weld Procedure No	Recommended Preheat Temp °c	Actual Preheat Temp °c	Date Taken	Time Taken	Volts	Amps	Plant ID	Consumable Used	Consumable Batch No:	Inspected By: Print Name	Inspected By: Initials
CQ137	Fillet		100c	110c	4/1/24	630	243	177	SEW-3M	3XP E71T1-H8	380151002		
↓	↓		↓	113c	↓	7:30	↓	↓		3XP E71T1-H8			
				115c		830				3XP E71T1-H8			
	1F	WPS-062		117		930				3XP E71T1-H8			
				120		1030				3XP E71T1-H8			
	2F			119		1130				3XP E71T1-H8		BIMAL	Bm
		WPS-064		107		12:30				3XP E71T1-H8		BASIL	
				108		1330				3XP E71T1-H8			
	4F			115.		1430				3XP E71T1-H8			
				116		1530				3XP E71T1-H8			
			↓	119		1630				3XP E71T1-H8			
↓	↓		100c	118	↓	1730	↓	↓		3XP E71T1-H8			

* NOTE: Readings to be recorded first when the recommended temperature is reached & once every Hour during Welding.

PRE-HEAT and CONSUMABLE GUIDE

Material	20mm & Under	20mm - 40mm	40mm - 60mm	60mm<	Process	Consumable
Q & T 80	100°C	100°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 400	150°C	150°C	150°C	200°C	FCAW	E81T1-N1-H4
Q & T 450	150°C	150°C	150°C	150°C	FCAW	E81T1-N1-H4
GR250	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
GR350	75°C	75°C	75°C	108°C	FCAW/GMAW	E71T1-H8
Cruesabro	30°C	30°C	30°C	30°C	FCAW	E71T1-H8

Section 6

MACHINING

Josho's Lineboring
Mick Walker
0438080005
jp@joshos.com.au
26 Len Shield Street, Paget QLD 4740
ABN: 93 146 329 982

Quality Assurance Form

Customer	CQFMS
Location	Mackay
Job Number	J27861
Date	14/12/2023
Plant No	EX5500 Boom
Job Description	Bore report before Machining

Bore	Specified Size	Bore Position	Actual Size
1.	300.00+0.05/-0.00	Boom to House LH	300.20 (0.15mm Oversize)
2.	300.00+0.05/-0.00	Boom to House RH	300.35 (0.30mm Oversize)
3.	320.00+0.05/-0.00	Boom to Stick LH	320.80 (0.75mm Oversize)
4.	320.00+0.05/-0.00	Boom to Stick RH	321.10 (1.05mm Oversize)
5.	230.00+0.10/-0.00	Boom Lift Cyl LH Outer	230.45 (0.35mm Oversize)
6.	230.00+0.10/-0.00	Boom Lift Cyl LH Inner	230.55 (0.45mm Oversize)
7.	230.00+0.10/-0.00	Boom Lift Cyl RH Outer	230.60 (0.50mm Oversize)
8.	230.00+0.10/-0.00	Boom Lift Cyl RH Inner	230.65 (0.55mm Oversize)
9.	260.00+0.10/-0.00	Boom to Stick Cyl LH Outer	260.80 (0.70mm Oversize)
10.	260.00+0.10/-0.00	Boom to Stick Cyl LH Inner	260.60 (0.50mm Oversize)
11.	260.00+0.10/-0.00	Boom to Stick Cyl RH Outer	260.85 (0.75mm Oversize)
12.	260.00+0.10/-0.00	Boom to Stick Cyl RH Inner	260.65 (0.55mm Oversize)
13.	**FACES:**		
14.		**Boom To Super Structure**	
15.	410.00+/-0.50mm	LH Ear Width	410.00
16.	1770.00	Inside to Inside	1770.00
17.	410.00+/-0.50mm	RH Ear Width	410.00
18.	2590.00+/-1mm	Outside to Outside	2589.00
19.		**Boom to Stick Faces**	
20.	440.00+/-1.00	Boom To Stick LH	438 (1mm undersize)
21.	440.00+/-1.00	Boom To Stick RH	438 (1mm undersize)
22.	1540.00+/-1.00	Outside to Outside	1536 (3mm Undersize)
23.	660.00+/-1.00	Inside to Inside	660.00

Josho's Lineboring
Mick Walker
0438080005
jp@joshos.com.au
26 Len Shield Street, Paget QLD 4740
ABN: 93 146 329 982

Notes: All bores are oversize up to 1.05mm. Faces on the boom to stick end are oversize and are scratched up. Faces on the boom to house bores are on size however are scratched up as well. Up to the client if they would like it to be welded and machined or just welded and blended back.

Large cracks around cylinder mount bores as well as each end of the boom. Therefore, after crack repairs have been completed Lineboring will be required to ensure alignment of the pins.

Photos attached.

Josho's Lineboring
Mick Walker
0438080005
jp@joshos.com.au
26 Len Shield Street, Paget QLD 4740
ABN: 93 146 329 982

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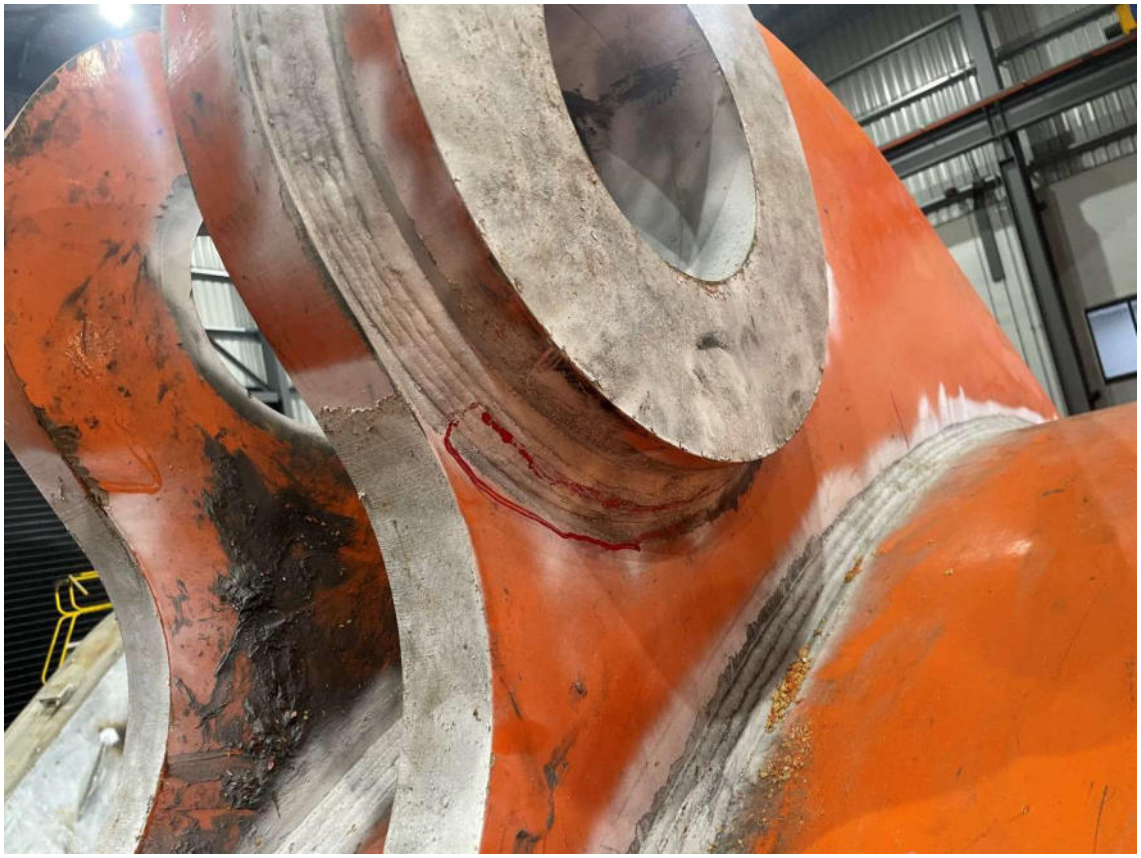


Quality Assurance Form

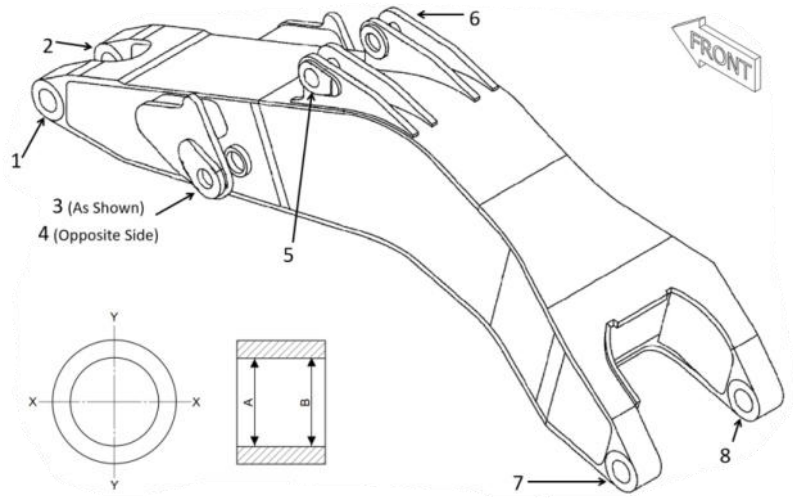
Start Date: 13/02/2024 Finish Date: 15/02/2024

Customer/Location: CQ Workshop

Job Number: 29025

Plant Number: Minespec – Hitachi 5600 Boom

Job Description: Boom to Superstructure and Boom to Stick Bores

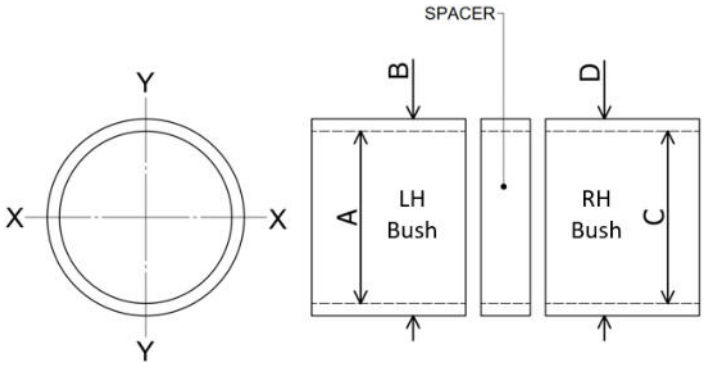


Condition	A		B		Standard Inner Dia. (mm)
☐ Pre-machining ☒ Post-machining	X-X	Y-Y	X-X	Y-Y	
Bore 1	320.00	320.00	320.00	320.00	$000^{+0.0}_{-0.0}$
Bore 2	320.00	320.00	320.00	320.00	
Bore 3					$000^{+0.0}_{-0.0}$
Bore 4					
Bore 5					$000^{+0.0}_{-0.0}$
Bore 6					
Bore 7	300.04	300.04	300.06	300.06	$000^{+0.0}_{-0.0}$
Bore 8	300.02	300.02	300.03	300.03	

Client Direction:	☐ No Machining Required ☐ Reclaim Bores

Field
Mining Services
Group

Quality Assurance Form



Note:
1) All bush arrangements are similar at each location.
2) Refer to above Boom figure for bush locations.

Bushing	Condition (New/ Used)	A (Inner Dia.)		B (Outer Dia.)		C (Inner Dia.)		D (Outer Dia.)		Standard (mm)	
		X-X	Y-Y	X-X	Y-Y	X-X	Y-Y	X-X	Y-Y		
Bushing 1	Old/New			320.55	320.55			320.55	320.55	Inner Dia.	$280^{+0.70}_{+0.60}$
Bushing 2	Old/New			320.55	320.55			320.55	320.55	Outer Dia.	$320^{+0.60}_{+0.55}$
Bushing 7	Old/New			300.50	300.50			300.51	300.51	Inner Dia.	$260^{+0.65}_{+0.55}$
Bushing 8	Old/New			300.50	300.51			300.51	300.50	Outer Dia.	$300^{+0.55}_{+0.50}$

Machine ID: Mine spec Hitachi 5600 Boom	**Measured by: Brett Steele**	**Date:** 15/02/24
FMS Rep Name:	X Leigh Currell Machining Coordinator	
Client Rep Name:	**Client Rep Approval Signature:**	

Client Direction:	☐ Reuse Old Parts ☒ Fit New Parts

Notes: No Photos recorded.

Section 7

MATERIAL CERTIFICATES

TEST CERTIFICATE

Certificate No. : T48357
Transmission Date: 28/10/21

Customer:	**COIL STEELS PTY LTD** **PO BOX 1594** **BROWNS PLAINS BC** **Q L D 4118**	Supplier:	BLUESCOPE STEEL (AIS) PTY LTD PORT KEMBLA, N.S.W., AUSTRALIA. A.B.N. 19 000 019 625
Cust Order No:	24428	Sales Order No: Printed At: on:	B1146 Supplier MWS 20/04/2022

Accredited for compliance with ISO/IEC 17025 - Testing.

I certify that the original records of the company show that the item(s) referred to on this certificate conform to the specification as stated.

R.MATHIESSEN - BLUESCOPE STEEL APPROVED SIGNATORY
Mechanical LAB 0631
M.GATRICK - BLUESCOPE STEEL APPROVED SIGNATORY
Chemical LAB 0632

STEELMAKING: Basic Oxygen - Slab Cast
SPECIFICATION: **AS/NZS 3678-350**
PRODUCT: **XLERPLATE**

INSPECTION: Supplier
CERTIFICATION: EN10204 3.1

CHEMICAL ANALYSIS

Percentage of element by mass (L=Cast, P=Product, -S=Soluble, -T=Total, CF=Chemical Formula, n=Min, x=Max)

Item No	Heat / Unit No	NATA Lab	L/P	C	P	Mn	Si	S	Ni	Cr	Mo	Cu	Al-T
0538	7810199	0632	L	.156	.023	1.23	.31	.011	.017	.046	.003	.044	.024
0539	7810198	0632	L	.156	.023	1.23	.31	.011	.017	.046	.003	.044	.024
0539	7810199	0632	L	.156	.023	1.23	.31	.011	.017	.046	.003	.044	.024

Item No	Heat / Unit No	NATA Lab	L/P	Ti	B-T	Nb	V	CF1	CF2	CF3
0538	7810199	0632	L	.019	.0003	.001	<.003	.37	.11	.02
0539	7810198	0632	L	.019	.0003	.001	<.003	.37	.11	.02
0539	7810199	0632	L	.019	.0003	.001	<.003	.37	.11	.02

CF1=C+ (MN/6) + ((CR+MO+V)/5) + ((CU+NI)/15) CF2=NI + CR + CU + MO CF3=NB + TI + V

MECHANICAL TESTING

Tensile AS 1391 :2020 B

Item No	Heat No	Tested Unit	NATA Lab	Cat	Loc	THICK mm	ReH MPa	Rm MPa	Lo	ELONGN %
0539	7810198	WN008	0631	B	TQM	10.00	395	520	A	38
0539	7810199	WM980	0631	B	TQM	10.00	395	520	A	35
0538	7810199	WN047	0631	P	TQM	12.00	385	520	A	34

ITEMS COVERED BY THIS CERTIFICATE

Item No	Heat No	Ordered Dimensions (mm)	No of Units	Mass (Tonnes)	Unit Identities
0538	7810199	2400.0X12.00X6000	5	6.780	**WN047A1 WN047A2 WN047A3 WN047B1 WN047B2**
0539	7810198	2400.0X10.00X6000	18	20.340	**WN006A1 WN006A2 WN006A3 WN006B1 WN006B2 WN006B3 WN007A1 WN007A2 WN007A3 WN007B1 WN007B2 WN007B3 WN008A1 WN008A2 WN008A3 WN008B1 WN008B2 WN008B3**
0539	7810199	2400.0X10.00X6000	21	23.730	**WN002B1 WN002B2 WN002B3 WN003A1 WN003A2 WN003A3 WN003B1 WN003B2 WN003B3 WN004A1 WN004A2 WN004A3 WN004B1 WN004B2 WN004B3 WN009A1 WN009A2 WN009A3 WN009B1 WN009B2 WN009B3**

COMMENTS

This test certificate is issued subject to the Uncertainty of Results statement set out on BlueScope Steel's Website www.bluescopesteelconnect.com. In order to rely upon this certificate, you must read the Uncertainty of Results statement.
THIS PRODUCT IS SUPPLIED IN ACCORDANCE WITH THE REQUIREMENTS OF AS/NZS 3678:2016. SAMPLING AND CHEMICAL ANALYSIS ARE PERFORMED IN ACCORDANCE WITH BLUESCOPE STEEL PROCEDURE DH-LABS-QS-00 S05.07C. MECHANICAL TESTING HAS BEEN PERFORMED ON SAMPLES SUPPLIED BY THE RELEVANT PRODUCTION DEPARTMENTS. HEAT TREATMENT - PRODUCT AS ROLLED.
Quality management system conforms to AS/NZS ISO 9001 as assessed by BSI (Certificate Number FS 594448).

TEST CERTIFICATE

MECHANICAL COMMENTS

TEST PIECE LOCATION (LOC) TQM=Transverse Quarter Middle
TEST CATEGORY (CAT) P=Pattern B=Batch
GAUGE LENGTH (Lo) A=5.65 * square root of the original cross-sectional area of the test piece.

This testing laboratory is accreditated in accordance with the recognized international Standard ISO/IEC 17025 : 2005

TEST CERTIFICATE

HYUNDAI STEEL
당진제철소 : 충남 당진시 송악읍 북부산업로 1480
1480 Bukbusanup-Ro, Songak-Eup, Dangjin-Si, Chungnam, Korea

주문번호 Order No. : E230300572

품 명 Commodity : Hot Rolled Steel Plate
고객사 Customer : CRONOS
증명서 번호 Certificate No. : 20230603-PS-0014-005
제품규격 Specification : AS/NZS 3678-350L0
주문자 Contractor : DITH AUSTRALIA PTY LTD
발행일자 Date of Issue : 2023-06-03

제품치수 Dimension	수량 Quantity	중량 Weight (Kg)	제강번호 Heat No.	제품번호 Product No.	Position	인장시험 Tensile Test							충격시험 Impact Test V Notch +0.0 ℃			화학성분 Chemical Composition(%) 단위 Unit 2:x100 3:x1,000 4:x10,000 5:x100,000															
						YP	TS	EL	YP-EL	RA	YR	YP Mtd	Energy	SF	LE	Division	C	Si	Mn	P	S	Cr	Ni	B	Cu	Mo	Nb	Ti	V	Sol-Al	CEQ	CA
						(N/㎟) ()		(%)	(%)	(%)	(%)		(Joule)	(%)	(㎜)		4	3	3	4	4	2	2	4	3	2	3	3	3	3	3	3
10.00x2000x4000	1	628	S66626	FD09463302	T	450.6	577.4	31				U	1:176 2:193 3:166 A:178			L	1,524	353	1,457	104	47	2	2	4	23	0	19	2	3	37	403	24
10.00x2000x4000	1	628	S66626	FD09463303	T	450.6	577.4	31				U	1:176 2:193 3:166 A:178			L	1,524	353	1,457	104	47	2	2	4	23	0	19	2	3	37	403	24
10.00x2000x4000	1	628	S66626	FD09463304	T	450.6	577.4	31				U	1:176 2:193 3:166 A:178			L	1,524	353	1,457	104	47	2	2	4	23	0	19	2	3	37	403	24
10.00x2000x4000	1	628	S66626	FD09463305	T	450.6	577.4	31				U	1:176 2:193 3:166 A:178			L	1,524	353	1,457	104	47	2	2	4	23	0	19	2	3	37	403	24

NOTE

* Position - T:Top, M:Middle, B:Bottom
* Tensile test - Direction:Transverse, Gauge length:200mm (Rectangular), Elongation is converted to elongation on gauge lenth 5.65√A。by ISO 2566-1, YP Mtd : 2 (0.2% off-set),5 (0.5% underload), U (Upper yield point), L (Lower yield point)
* Impact test - Direction:Longitudinal, Sub-size:10mmX7.5mm, SF:Shear fracture, LE:Lateral Expansion
* Division - P:Product analysis, L:Ladle analysis

* THIS CERTIFICATE IS ISSUED ACCORDING TO EN 10204 3.1 / 7503010074
* The plate is fully killed steel. Basic oxygen process and Vacuum degassing process were applied. * Test Method : 1) Chemical Composition (ASTM E415), 2) Tensile Test (AS 1391), 3) Impact Test (AS 1544.2) * ISO 9001 is certified by BSI (Cert. no. FM701483) * KOLAS CERTIFIED LAB. NO. KT533* This Mill Test Certificate is issued in accordance with EN 10204 Type 3.1

상기의 제품은 검사의 결과 지정된 규격에 합격한 것을 증명합니다.
WE HEREBY CERTIFY THAT THE MATERIAL HAS BEEN MADE AND TESTED IN ACCORDANCE WITH THE ABOVE SPECIFICATION AND THE REQUIREMENTS

Signature
Chief Of Plate Quality Team

TEST CERTIFICATE

Certificate No. : T84943
Transmission Date: 03/11/23

Customer:	**COIL STEELS PTY LTD** **PO BOX 1594** **BROWNS PLAINS BC** **Q L D 4118**	Supplier:	BLUESCOPE STEEL (AIS) PTY LTD PORT KEMBLA, N.S.W., AUSTRALIA. A.B.N. 19 000 019 625
Cust Order No:	27922	Sales Order No: Printed At: on:	B3146 Supplier MWS 23/11/2023

Accredited for compliance with ISO/IEC 17025 - Testing.

I certify that the original records of the company show that the item(s) referred to on this certificate conform to the specification as stated.

I.ZAFAR - BLUESCOPE STEEL APPROVED SIGNATORY
Mechanical LAB 0631
M.GATRICK - BLUESCOPE STEEL APPROVED SIGNATORY
Chemical LAB 0632

STEELMAKING: Basic Oxygen - Slab Cast
SPECIFICATION: **AS/NZS 3678-350**
PRODUCT: **XLERPLATE**

INSPECTION: Supplier
CERTIFICATION: EN10204 3.1

CHEMICAL ANALYSIS

Percentage of element by mass (L=Cast, P=Product, -S=Soluble, -T=Total, CF=Chemical Formula, n=Min, x=Max)

Item No	Heat / Unit No	NATA Lab	L/P	C	P	Mn	Si	S	Ni	Cr	Mo	Cu	Al-T
1385	7913628	0632	L	.087	.023	1.41	.38	.015	.018	.047	.003	.054	.042

Item No	Heat / Unit No	NATA Lab	L/P	Ti	B-T	Nb	V	CF1	CF2	CF3
1385	7913628	0632	L	.018	.0004	.026	<.003	.34	.12	.04

CF1=C+ (MN/6) + ((CR+MO+V)/5) + ((CU+NI)/15) CF2=NI + CR + CU + MO CF3=NB + TI + V

MECHANICAL TESTING

Tensile AS 1391 :2020 B

Item No	Heat No	Tested Unit	NATA Lab	Cat	Loc	THICK mm	ReH MPa	Rm MPa	Lo	ELONGN %
1385	7913628	DF979	0631	B	TQF	32.00	445	520	A	27
1385	7913628	DF982	0631	B	TQF	32.00	420	510	A	30

ITEMS COVERED BY THIS CERTIFICATE

Item No	Heat No	Ordered Dimensions (mm)	No of Units	Mass (Tonnes)	Unit Identities
1385	7913628	2400.0X32.00X8300	2	10.008	**DK483A1 DK484A1**

COMMENTS

This test certificate is issued subject to the Uncertainty of Results statement set out on BlueScope Steel's Website www.bluescopesteelconnect.com. In order to rely upon this certificate, you must read the Uncertainty of Results statement.
THIS PRODUCT IS SUPPLIED IN ACCORDANCE WITH THE REQUIREMENTS OF AS/NZS 3678:2016. SAMPLING AND CHEMICAL ANALYSIS ARE PERFORMED IN ACCORDANCE WITH BLUESCOPE STEEL PROCEDURE DH-LABS-QS-00 S05.07C. MECHANICAL TESTING HAS BEEN PERFORMED ON SAMPLES SUPPLIED BY THE RELEVANT PRODUCTION DEPARTMENTS. HEAT TREATMENT - PRODUCT AS ROLLED.
Quality management system conforms to AS/NZS ISO 9001 as assessed by BSI (Certificate Number FS 594448).

MECHANICAL COMMENTS

TEST PIECE LOCATION (LOC) TQF=Transverse Quarter Front End
TEST CATEGORY (CAT) B=Batch
GAUGE LENGTH (Lo) A=5.65 * square root of the original cross-sectional area of the test piece.

TEST CERTIFICATE

Certificate No. : T84360
Transmission Date: 19/10/23

Customer:	**INFRABUILD STEEL CENTRE** **NORTH MACKAY** **Q L D 4740**	Supplier:	BLUESCOPE STEEL (AIS) PTY LTD PORT KEMBLA, N.S.W., AUSTRALIA. A.B.N. 19 000 019 625
Cust Order No:	7507359446	Sales Order No: Printed At: on:	F3574 Supplier MWS 30/11/2023

Accredited for compliance with ISO/IEC 17025 - Testing.

I certify that the original records of the company show that the item(s) referred to on this certificate conform to the specification as stated.

I.ZAFAR - BLUESCOPE STEEL APPROVED SIGNATORY
Mechanical LAB 0631
M.GATRICK - BLUESCOPE STEEL APPROVED SIGNATORY
Chemical LAB 0632

STEELMAKING: Basic Oxygen - Slab Cast
SPECIFICATION: **AS/NZS 3678-350**
PRODUCT: **XLERPLATE**

INSPECTION: Supplier
CERTIFICATION: EN10204 3.1

CHEMICAL ANALYSIS

Percentage of element by mass (L=Cast, P=Product, -S=Soluble, -T=Total, CF=Chemical Formula, n=Min, x=Max)

Item No	Heat / Unit No	NATA Lab	L/P	C	P	Mn	Si	S	Ni	Cr	Mo	Cu	Al-T
0533	7915919	0632	L	.089	.016	1.50	.34	.014	.019	.024	.003	.061	.031

Item No	Heat / Unit No	NATA Lab	L/P	Ti	B-T	Nb	V	CF1	CF2	CF3
0533	7915919	0632	L	.017	.0005	.027	<.003	.35	.11	.04

CF1=C+ (MN/6) + ((CR+MO+V)/5) + ((CU+NI)/15) CF2=NI + CR + CU + MO CF3=NB + TI + V

MECHANICAL TESTING

Tensile AS 1391 :2020 B

Item No	Heat No	Tested Unit	NATA Lab	Cat	Loc	THICK mm	ReH MPa	Rm MPa	Lo	ELONGN %
0533	7915919	DK562	0631	B	TQF	50.00	400	510	A	30
0533	7915919	DK569	0631	B	TQF	50.00	380	500	A	31

ITEMS COVERED BY THIS CERTIFICATE

Item No	Heat No	Ordered Dimensions (mm)	No of Units	Mass (Tonnes)	Unit Identities
0533	7915919	2400.0X50.00X7600	1	7.159	**DK564A1**

COMMENTS

This test certificate is issued subject to the Uncertainty of Results statement set out on BlueScope Steel's Website www.bluescopesteelconnect.com. In order to rely upon this certificate, you must read the Uncertainty of Results statement.
THIS PRODUCT IS SUPPLIED IN ACCORDANCE WITH THE REQUIREMENTS OF AS/NZS 3678:2016. SAMPLING AND CHEMICAL ANALYSIS ARE PERFORMED IN ACCORDANCE WITH BLUESCOPE STEEL PROCEDURE DH-LABS-QS-00 S05.07C. MECHANICAL TESTING HAS BEEN PERFORMED ON SAMPLES SUPPLIED BY THE RELEVANT PRODUCTION DEPARTMENTS. HEAT TREATMENT - PRODUCT AS ROLLED.
Quality management system conforms to AS/NZS ISO 9001 as assessed by BSI (Certificate Number FS 594448).

MECHANICAL COMMENTS

TEST PIECE LOCATION (LOC) TQF=Transverse Quarter Front End
TEST CATEGORY (CAT) B=Batch
GAUGE LENGTH (Lo) A=5.65 * square root of the original cross-sectional area of the test piece.