

MIL-STD-367(MR)

10 FEBRUARY 1986

MILITARY STANDARD

ARMOR TEST DATA REPORTING



AMSC No. A3719

FSC 95GP

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1. SCOPE

1.1 Purpose. The purpose of this standard is to provide acceptable procedures for reporting armor test and armor welding data when such data is required from contractors supplying armor or armor products to the government.

1.2 Scope. This standard incorporates in a single document, acceptable procedures and formats for reporting quality control test data requisite to the acceptance and acquisition of armor and armor products.

1.2.1 Formats included in this document are as follows:

Format I - Check list for data on steel armor material

Format II - Check list for data on non-ferrous armor material

Format III - Format for reporting ballistic test armor welding data

Format IV - Format for reporting an armor welding procedure

2. REFERENCED DOCUMENTS

Not applicable.

3. DEFINITIONS

3.1 Armor. Defensive covering used as a protection against weapons.

3.2 Armor test data. Pertinent facts, figures, exhibits and test results developed and recorded by contractors as required in applicable standards, specifications, drawings, purchase descriptions or other contractual agreements.

3.3 Contractor. The organization supplying armor or armor assemblies to the government under contract.

4. GENERAL REQUIREMENTS

4.1 Reporting armor test data. Armor test data as required by procurement documents shall be processed according to the detailed requirements of Section 5.

4.2 Authentication. The armor test data report shall provide for the following signatures.

4.2.1 Responsible officer. The armor test data report shall be signed by a responsible officer of the contractor's organization.

4.2.2 Government representative. A Government representative may witness tests and countersign test reports. The latter signature shall constitute verification of the test data reported, but shall not necessarily indicate concurrence with any conclusion presented.

5. DETAILED REQUIREMENTS

5.1 Generation of armor test data. When procurement documents require the submission of armor test data, ballistic test armor welding data or armor welding procedures by a contractor, instructions for generating such data shall be given in the procurement documents.

5.2 Armor test data reporting formats. Acceptable formats for reporting armor test data and welding information are shown in paragraphs 5.5 through 5.8, (Formats I through IV). Armor contractual documents requiring the submission of armor test data shall refer to this standard, MIL-STD-367(MR), and shall cite the applicable Format (or Formats) in the contract or detailed specification. When appropriate, the format figures provided in this standard may be reproduced and adapted for use. Optional formats differing from Formats I through IV may be employed by the contractor (See 5.4).

5.3 Pagination.

5.3.1 Page size. A uniform page size of 8 1/2 x 11 inches shall be used in the submission of armor test data.

5.3.2 Page identification. Each page in a report shall be identified to provide a reliable means of record control. Pages shall be numbered consecutively and listed as Page of Pages. The page number shall be placed in the lower right corner of the page.

5.4 Optional armor test data formats. If any item of data listed in Formats I through IV is not applicable in a particular data submission, the notation "N/A" shall be entered in the appropriate item location.

Armor test data which cannot be adequately reported in any of the acceptable Formats I through IV, shall be submitted in a format approved by the government.

5.5 Format I - check list for data on steel armor material.

5.5.1 Instructions for completion of Format I, Figure 1.

Instructions are provided below. Each statement is numbered to correspond with a number in parenthesis on Figure 1. The latter are for instruction reference only and should not appear on any reports submitted to the government.

1. Insert the name of the Government Activity responsible for acceptance of the steel armor.
2. Insert the prime contract number.
- 2A. Insert the contract number for ballistic test if different than 2.
3. Insert the name of the prime contractor.
4. Insert the name of the manufacturer.
5. Insert the address of the manufacturer.
6. The manufacturer's record number and the date of manufacture shall be inserted in this space.
7. Insert the date on which the test sample was shipped.
8. Insert destination (name of proving ground) to which the test sample was shipped.
9. Place an "X" in the block describing the purpose for which the test is to be conducted.
10. Place an "X" in the appropriate block to indicate whether the test sample is the first sample representing the lot, or a subsequent sample for retest.
11. Insert the weight of the quantity of material in the lot represented by the sample.
12. To be filled in by Government Ballistic Test Agency.
13. To be filled in by Government Ballistic Test Agency.
14. Indicate the specification number under which the sample is to be tested, and indicate the revision and/or amendment number when appropriate.
15. Insert type of furnace used.
16. Insert cast or heat no.
17. Insert "X" in appropriate block to indicate type of armor.
18. Insert in this space the nomenclature, model designation or other identification of the vehicle on which the material is to be used if known.

19. Insert range of chemical composition established.
20. Insert chemical analysis of material submitted for ballistic testing.
21. Insert method of sulfur shape control.
22. Insert homogenizing temperature and time at temperature.
23. Insert hardening temperature and time at temperature.
25. Insert draw temperature and time at temperature.
26. Record coolant used.
27. For plates, record lot or heat number, ingot no., slab no., plate no., ordered thickness, size plate, ordered width, rolled width, required hardness and actual hardness of plates.
28. Record charpy impact specimen size, the charpy impact in the LT and TL direction as well as the Brinell hardness of the test specimen.
29. When applicable record bend test results.
30. When required for castings, record result of radiographic inspection.
31. and 32. Self explanatory.
33. Ballistic firing tests to be filled in by the Government Ballistic Test Agency.

CHECK LIST FOR DATA ON STEEL ARMOR MATERIAL						DCAS REGION (1)						
INSTRUCTIONS: To be filled in by typewriter.						Contract No. (2)						
PRIME CONTRACTOR (3)						Contract No. for Ballistic Test: (2A)						
MFG. (4)						Firing Date: (12)						
Address (5)						Firing Record No. (13)						
MFG. Record No. & Date (6)						MIL-A- (14) REV. Amend. _____						
Shipping Date: (7)						Type of Furnance: (15)						
Shipped To: (8)						Cast or Heat No. (16)						
PURPOSE: Acceptance (9) Development 1st Art.						End Item: Plate (17) Casting Forging						
SAMPLE: Primary (10) Retest						Material for use on (Specific Vehicle) (18)						
Represents (11) Lbs.												
CHEMICAL COMPOSITION RANGE ESTABLISHED BY POWDERY ON STEEL PRODUCER (19)												
C	Mn	P	S	Si	Ni	Cr	Mo	V	B	Sr	OTHER	
/	/	/	/	/	/	/	/	/	/	/		
CHEMICAL ANALYSIS OF MATERIAL SUBMITTED (20) * Sulfur Shape Control Method (21)												
C	Mn	P	*S	Si	Ni	Cr	Mo	V	B	Sr	OTHER	
1												
2												
3												
HOMOGENIZE (22)			NORMALIZE (23)			HARDEN (24)			DRAW (25)			COOLANT (26)
Temp.	Time at Temp.	Temp.	Time at Temp.	Temp.	Time at Temp.	Temp.	Time at Temp.	Temp.	Time at Temp.			
LOT OR HEAT No.		INGOT	SLAB	PLATE No.	ORD THICK	SIZE	ORD WIDTH	ROLL WIDTH	REQ. HARD TYPE	ACT. HARD TYPE		
1 (33)												
2												
3												
CHARPY IMPACT AT -40 F (28)				BEND TEST (29)		RADIOGRAPHIC INSPECTION (30)						
Specimen Size _____				Bend Radius		Passed/Failed		Standard		Pass		
LT	TL	BHN on Specimen								Remarks		
1												
2												
3												
SIGNATURE OF SUPPLIER'S REPRESENTATIVE (31)						SIGNATURE OF GOVT. REPRESENTATIVE (32)						
DATE						DATE						
BALLISTIC TEST RECORD												
TEST	PROJECTILE	OBL	THRS	REQ. VEL	ACT. VEL	PASSED/FAILED	REMARKS					
1	(33)											
2												
3												
LOT NET/FAILED TO MEET THE BALLISTIC REQUIREMENTS OF SPECIFICATION												
DATE		PROOF FACILITY SIGNATURES										
		CHIEF, ARMOR BRANCH						TEST DIRECTOR				

FIGURE 1 FORMAT I. Checklist for data on steel armor material

5.6 Format II - Check list for data on non-ferrous armor material.

5.6.1 Instructions for completion of Format II, Figure 2 are given below:

The instructions are numbered to correspond to a number in parenthesis in Figure II. The numbers in parenthesis are for instruction reference only, and should not appear on any reports submitted.

1. Insert the name of the Government Activity responsible for acceptance of the steel armor.
2. Insert the prime contract number.
- 2A. Insert the contract number for ballistic test if different than 2.
3. Insert the name of the prime contractor.
4. Insert the name of the manufacturer.
5. Insert the address of the manufacturer.
6. The manufacturer's record number and the date of manufacture shall be inserted in this space.
7. Insert the date on which the test sample was shipped.
8. Insert destination (name of proving ground) to which the test sample was shipped.
9. Place an "X" in the block describing the purpose for which the test is to be conducted.
10. Place an "X" in the appropriate block to indicate whether the test sample is the first sample representing the lot, or a subsequent sample for retest.
11. Insert the weight of the quantity of material in the lot represented by the sample.
12. To be filled in by Government Ballistic Test Agency.
13. To be filled in by Government Ballistic Test Agency.
14. Insert specification number and revision or amendment under which the sample is to be tested.
15. Insert type of furnace used.
16. Insert cast or heat no.
17. Insert "X" in appropriate block to indicate type of armor.

18. Insert the model vehicle designation on which the material is to be used, if known.
19. Insert serial number, code number, or plate number.
20. Insert lot no. represented by the test item.
21. Insert ordered thickness in inches.
22. Insert length and width.
23. Insert alloy number and temper, aluminum association or SAE designation.
24. Insert chemical analysis of the material submitted for first article.
25. Insert an "X" in the block if the chemical composition of production lot conforms.
26. Insert ultimate tensile strength in psi.
27. Insert the 0.2% offset yield strength in psi.
28. Insert elongation in inches.
29. Leave blank.
30. Insert bend test results when required.
31. Insert results of corrosion tests when required.
32. through 35. Self explanatory.
36. Ballistic tests to be filled in by the Government Ballistics Test Agency.

CHECK LIST FOR DATA ON ALUMINUM ARMOR AND OTHER NONFERROUS MATERIAL									
DCAS REGION (1)					Contract No. (2)				
PRIME CONTRACTOR (3)					Contract No. (2A)				
MFG. (4)					for Ballistic Test:				
Address (5)					Firing Date: (12)				
MFG. Record No. & Date (6)					Firing Record No. (13)				
Shipping Date: (7)					MIL-A- (14) REV. _____ Amend. _____				
Shipped To: (8)					Type of Furnace: (15)				
PURPOSE: _____ Acceptance _____ Development _____ 1st Art. (9)					Cast or Heat No. (16)				
SAMPLE: _____ Primary (10) _____ Retest					End Item: Plt. _____ Cast _____ Forg _____ Ext. (17)				
Represents (11) Lbs.					Material for use on (Specific Vehicle) (18)				
TEST ITEM IDENTIFICATION									
Serial Code or Plate No.	Representing Lot No.	Ordered Thick (in.)	Size (L x W)	Alloy No. & Temper					
(19)	(20)	(21)	(22)	(23)					
(24) CHEMICAL ANALYSIS OF SUBMITTED FIRST ARTICLE									
FE	MG	NI	CU	FE	SI	CR	TI	OTHER	REMAINDER - AL
/	/	/	/	/	/	/	/	/	
(25) CHEMICAL COMPOSITION OF PRODUCTION LOTS(S): CONFORMS TO SPECIFICATION REQUIREMENTS <input type="checkbox"/>									
MECHANICAL PROPERTIES									
UTS - PSI	YS (.2% OFFSET) PSI	ELONG. 2"		ACT. HARD. TYPE					
(26)	(27)	(28)		(29)			(30)		
Stress Corrosion Test				Date:		Signature of Supplier's Representative			
(31)				(32)		(33)			
				Date:		Signature of Govt. Representative			
				(34)		(35)			
BALLISTIC TEST RECORD									
Test	Projectile	Obl. (Degree)	Act. Thks. (in.)	Reqd. Vel. (fps)	Act. Vel. (fps)	Excess Vel. (fps)	Results Passed/Failed	AMCS Nos.	
(36)									
Lot Met (failed to meet) the ballistic requirements of Specification								TECON or TRMS No.	
DATE			PROOF FACILITY SIGNATURES						
			CHIEF, ARMOR BRANCH				TEST DIRECTOR		

FIGURE 2 FORMAT II. Checklist for data on non-ferrous armor material

5.7 Format III. Format for reporting ballistic test armor welding data.

5.7.1 Instructions for completion of Format III (Figures 3A, 3B, and 3C) are given in 5.7.2, 5.7.3 and 5.7.4.

5.7.2 Instructions for completion of Format III Figure 3A.

The instructions are numbered to correspond with the circled numbers on the sample form. The circled numbers are for instruction reference only, and should not appear on any reports submitted.

The following instructions illustrates how to fill out weld armor data sheet 1 (see Figure 3A).

1. Leave blank. To be filled in by the Government test agency.
2. Leave blank. To be filled in by the Government test agency.
3. Insert serial number of plate, as assigned by the fabricator. Each plate shall be numbered in such a manner as to provide ready identification.
4. Enter the date on which the plate was welded.
5. Insert type of armor, e.g., "aluminum".
6. Insert thickness of plate.
7. Insert the number of the specification under which the material is to be tested.
8. Insert the name of the fabricator doing the welding. If welded by a subcontractor, information as to the primary contractor must be given in a letter of transmittal.
9. Insert the complete address of the fabricator.
10. Insert the number of the contract, if any, in accordance with which the sample or weldment is submitted.
11. Insert model and name of vehicle to which welding applies.
12. Insert the name, clock number, or symbol by which the welder of the sample or weldment can be identified, and the name of the fabricator.
13. Insert "For Capability Testing".
14. Prepare a sketch of the weld. It is imperative that the following characteristics be shown in the sketch whenever they are present in the plate:
 - (a) Thickness of plate.
 - (b) Included angle.
 - (c) Root gap.

- (d) Spacer strip or backup bar.
 - (e) Exact sequence and number of pass deposits.
 - (f) Root face dimension
- 15. Block out words not applicable.
 - 16. Block out words not applicable
 - 17. Block out words not applicable
 - 18. Insert preheat temperature in degrees "F". The preheat temperature of plate welded at room temperature is the room temperature.
 - 19. Insert "Yes" or "No".
 - 20. Block out words not applicable.
 - 21. Enter post heat temperature, if any. If none, insert the work "None".
 - 22. Insert "Yes" or "No".
 - 23. Insert the size of the electrode used in the pass indicated in the left hand column.
 - 24. Indicate the type of pass used. For beading, insert "B", for weaving, "W". This column need not be completed for automatic welding.
 - 25. Indicate amperage used on each pass.
 - 26. Indicate voltage used on each pass.
 - 27. Indicate length of crack, if any, for each bead (visual examination with no greater than 10 power reading glass).
 - 28. State whether chipping or grinding carried out.
 - 29. For automatic welding, insert speed in inches per minute. For hand welding, no entry need be made.
 - 30. Insert interpass temperature. This is determined by measuring the temperature of the base metal immediately before depositing each bead, at a point lying approximately at the intersection of a line three (3) inches from and parallel to the center line of the joint, and a line perpendicular to and through the midpoint of the length of the joint. Readings must be taken for all welds and will be listed for the right leg, left leg, and cross bar, respectively, in the columns headed, "A-B", "C-D", and "E-F-G".
 - 31. See item 30 above.
 - 32. See item 30 above.

ARMOR WELDING DATA SHEET #1								REPORT NO. (1)		
								SHEET NO. (2) OF		
PLATE NO. (3)				WELDED ARMOR DATA						
DATE (4)				SUBMITTED BY (8)						
TYPE (5)				ADDRESS (9)						
THICKNESS (6)										
SPECIFICATION (7)				CONTRACT NO. (10)						
ORDNANCE MATERIAL CONCERNED				(11)						
WELDED BY				(12)						
OBJECT				(13)						
<p>On a dimension sketch of the Groove and Weldment, indicate: (1) the included angle; (2) the root opening; (3) the root face; (4) the bead sequence; (5) additional sketch of spacer strip on back-up, if any; (6) width of marking, if any, on edges of plate; (7) average height of weld reinforcement.</p> <p style="text-align: center;">(14)</p> <p style="text-align: center;">Weld reinforcement (has) (has not) been removed.</p>										
WELDING DATA										
PLATE PREPARATION: Flame cutting - Flame softening - Grinding - Machining (15)										
POSITION OF WELDING: Flat - Horizontal - Vertical - Overhead (16)										
WELDING: Automatic - Hand - (17) POLARITY: - Str - Rev - AC - DC (20)										
PREHEAT (18) POSTHEAT (21)										
PEENING (19) BUTTERING (22)										
PASS	ELEC SIZE	TYPE PASS	AMPS	VOLTS	CRACKING	CHIP OR GRIND	SPEED IN/MIN	INTERPASS TEMP. (F)		
								A-B	C-D	E-F-G
1										
2	(23)									
3		(24)								
4			(25)							
5				(26)						
6					(27)					
7						(28)				
8							(29)			
9								(30)		
10									(31)	
11										(32)
12										
13										
14										
15										
16										
B - BEADING PASS W - WEAVING PASS										

FIGURE 3A FORMAT III Armor welding data sheet No. 1

5.7.3 The following instructions illustrate how to fill out weld armor data sheet 3 (see Figure 3B).

1. Leave blank. To be filled in by the Government test agency.
2. Leave blank. To be filled in by the Government test agency.
3. Insert the serial number of the plate. Each plate shall be numbered in a manner that will provide ready identification.
4. Insert the name of the manufacturer of the armor.
5. Insert type of armor, e.g., "aluminum armor plate".
6. Insert thickness of plate.
7. Insert the heat number of designation assigned by the manufacturer.
8. Insert the lot number or designation assigned by the manufacturer.
9. Block out words not applicable.
10. Insert the chemical composition of the armor, as furnished by the manufacturer. Note: Change headings as required.
11. Insert the Brinell hardness number for the face and for the back of the plate.
12. Enter the name of the heat treating company and subcontractor, if any and list each step of the heat treating process in sequence.
13. Enter electrode or filler metal data. Space is provided for four entries. If electrodes of more than four (4) sizes, or more than four manufacturers are used, additional sheets must be submitted. complete as follows:
 - (a) In the first column, enter the size of the electrode used.
 - (b) In the second column, enter the name of the manufacturer of the electrode of the size shown under (a) above. If electrodes of identical size from more than one manufacturer are used, more than one entry must be made.
 - (c) In the third column, enter the trade name of the electrode, as designated by the manufacturer.
 - (d) In the fourth column, enter the type of electrode, when applicable.
 - (e) In the fifth column, enter the class of electrode, when applicable.

14. Enter chemical analysis of electrode or filler metal. Change headings as required. If electrodes of more than four (4) sizes, or more than four manufacturers are used, additional sheets must be submitted. Complete as follows:
 - (a) In the first column, enter the name of the manufacturer, the trade name of the electrode, and the size of the electrode.
 - (b) In the space provided, enter the chemical analysis of the core wire, as submitted by the manufacturer of the core wire.
 - (c) Enter the chemical analysis of the weld metal, either as submitted by the manufacturer or as determined by the fabricator.
 - (d) In the last column, enter the type of coating on the electrode, if any.
15. This space is provided for fabricators who used any automatic process in welding. Complete as follows:
 - (a) In the first column, enter the name of the manufacturer of the wire used in the automatic process.
 - (b) In the second column, enter the trade name of the wire, as designated by the manufacturer. If the trade name includes a number, this also must be given.
 - (c) Enter the size of the electrode in the third column.
 - (d) In the fourth column, enter the trade name, including number of the flux if used.
 - (e) Enter the results of chemical analyses of both the core wire and the weld deposit in the preceding page.
16. Enter the name of the company doing the radiographic inspection of the welds.
17. Enter the serial number assigned by the radiographer.
18. Enter in this space any remarks that may be needed to clarify any of the various entries.
19. This space is provided for the signature of the representative of the fabricating company.
20. Signature of the Government inspector.

ARMOR WELDING DATA SHEET #2												REPORT NO. (1)	
ARMOR PLATE DATA												SHEET NO. (2) OF	
PLATE NO. (3)													
				PLATE "A"				PLATE "B"					
MANUFACTURER (4)													
TYPE (5)													
THICKNESS (6)													
HEAT (7)													
LOT (8)													
PROCESS (9)				O.H. ELEC. ACID BASIC				O.H. ELEC ACID BASIC					
(10) CHEMICAL COMPOSITION (11) BHN													
	C	Mn	Si	P	S	Cr	Ni	Mo	Zr	V	FACE		BACK
PLATE "A"													
PLATE "B"													
(12) HEAT TREATING DATA													
HEAT TREATED BY													
(13) ELECTRODE OR FILLER METAL DATA													
Table 1													
SIZE	MANUFACTURER				TRADE NAME				TYPE		CLASS		
TABLE 2 (14)													
MANUFACTURER TRADE NAME AND SIZE				CHEMICAL ANALYSIS									
				C	Mn	Si	S	P	Cr	Mi	Mo	COATING	
CORE WIRE													
				WELD METAL									
CORE WIRE													
				WELD METAL									
CORE WIRE													
				WELD METAL									
CORE WIRE													
				WELD METAL									
CORE WIRE													
				WELD METAL									
TABLE 3 (AUTOMATIC WELDING) (15)													
MANUFACTURER				TRADE NAME				SIZE		FLUX			
RADIOGRAPHED BY (16)													
RADIOGRAPH SERIAL NO. (17)													
REMARKS The procedure used in fabricating the crossbar weld (is) (is not) the same as the procedure used in fabricating the leg welds.													
(18)													
FABRICATOR REPRESENTATIVE (19)										RESIDENCE INSPECTOR OF ORDNANCE (20)			

FIGURE 3B FORMAT III Armor welding data sheet No. 2

5.7.4 The following instructions illustrate how to fill out the weld armor data sheet 3 (see Figure 3C).

1. Leave this space blank. To be filled in by Government testing agency.
2. Leave blank.
3. Enter the name of the company submitting the plate.
4. Enter the plate number.
5. Enter applicable specification number.
6. Enter the name of the company or agency radiographing the plate.
7. Enter the date on which the plate was radiographed.
8. Enter the actual thickness of the plate (not including weld reinforcement).
9. Enter the actual kilovoltage used during the exposure.
10. Enter milliamperge readings of the machine.
11. Enter exposure time expressed in seconds.
12. Enter the focal distance (the distance in feet and inches from the target of the X-ray machine to the film).
13. Enter the exact commercial brand and type of film used.
14. Identify screens or filters used (whether fluorescent or lead type intensifying screens or filters).
15. The type and degree of defects present in the welds should be indicated by use of these symbols. The defects should be drawn in as accurately as possible and to approximate scale.
16. In this space, the actual measurements of the defects and the type should be designated by position, e.g.:

	<u>FOR</u>	<u>PLATE</u>
Position		
	1 - 2	- Sound
	3 - 4	- Sound
	5 - 6	- Sound
	7 - 8	- Sound

17. The form should be signed by the fabricator's representative who inspects the films, and by the Resident Inspector of the Government





ARMOR WELDING DATA SHEET #3					(1) Report No. Sheet No. of	
(2) X-RAY SERIAL NO. WELD RADIOGRAPHIC REPORT						
(3) PLATE SUBMITTED BY			(4) PLATE NO.		(5) SPEC.	
(6) RADIOGRAPHED BY					(7) DATE	
(8) PLATE THICKNESS		(9) KV	(10) MA	(11) TIME	(12) FOCAL DIST.	
(13) TYPE OF FILM				(14) SCREENS OR FILTERS		
<p>SHOCK TEST PLATE</p> <p>Showing Locations of Radiographs and Results of Tests</p> <div style="border: 1px solid black; height: 200px; margin: 10px auto; width: 80%;"></div> <div style="display: flex; justify-content: space-around; align-items: flex-end; margin-top: 10px;"> <div style="text-align: center;">  <p>(15) CRACK</p> </div> <div style="text-align: center;">  <p>INCOMPLETE FUSION</p> </div> <div style="text-align: center;">  <p>INCOMPLETE PENETRATION</p> </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-end; margin-top: 10px;"> <div style="text-align: center;"> <p>--- POROSITY AND SLAG INCLUSIONS</p> </div> <div style="text-align: center;">  <p>UNDERCUTTING</p> </div> </div>						
<p>(16) RESULTS</p>						
<p>(17) NEGATIVES READ BY</p>						

FIGURE3C FORMAT III Armor welding data sheet No. 3

5.8 Format IV. Format for reporting an armor welding procedure.

5.8.1 Illustration data used in Format IV - Figures 4A through 4G. The illustration data used in the preparation of Format IV, Figures 4A through 4G are examples intended to serve for demonstration purposes only. Contractor's armor test data reports shall contain actual data generated in the manufacture and testing of the armor products they are supplying to the government. In Figure 4A the signatures of responsible officers of both the contractor and the manufacturer organizations are required when the latter is not the contractor. In Figure 4C it is to be noted that engineering drawings other than perspective may be utilized when such drawings would be more appropriate. The following figures illustrate Format IV armor test data reporting:

RECORDED JOINT WELDING PROCEDURE

FOR

MEDIUM TANK M1 (VEHICLE)

WELDED HULL (WELDMENT)

Book 10

DATE OF SUBMITTAL - 28 NOV 78

MANUFACTURED BY

Tank Manufacturing Company

LOCATED AT

Lincoln, Pennsylvania

FOR CONTRACTOR

ABC Corporation

LOCATED AT

El Paso, California

Contract No.

Manufactured Under

Approved by Contractor
Date

Approved by Manufacturer
Date

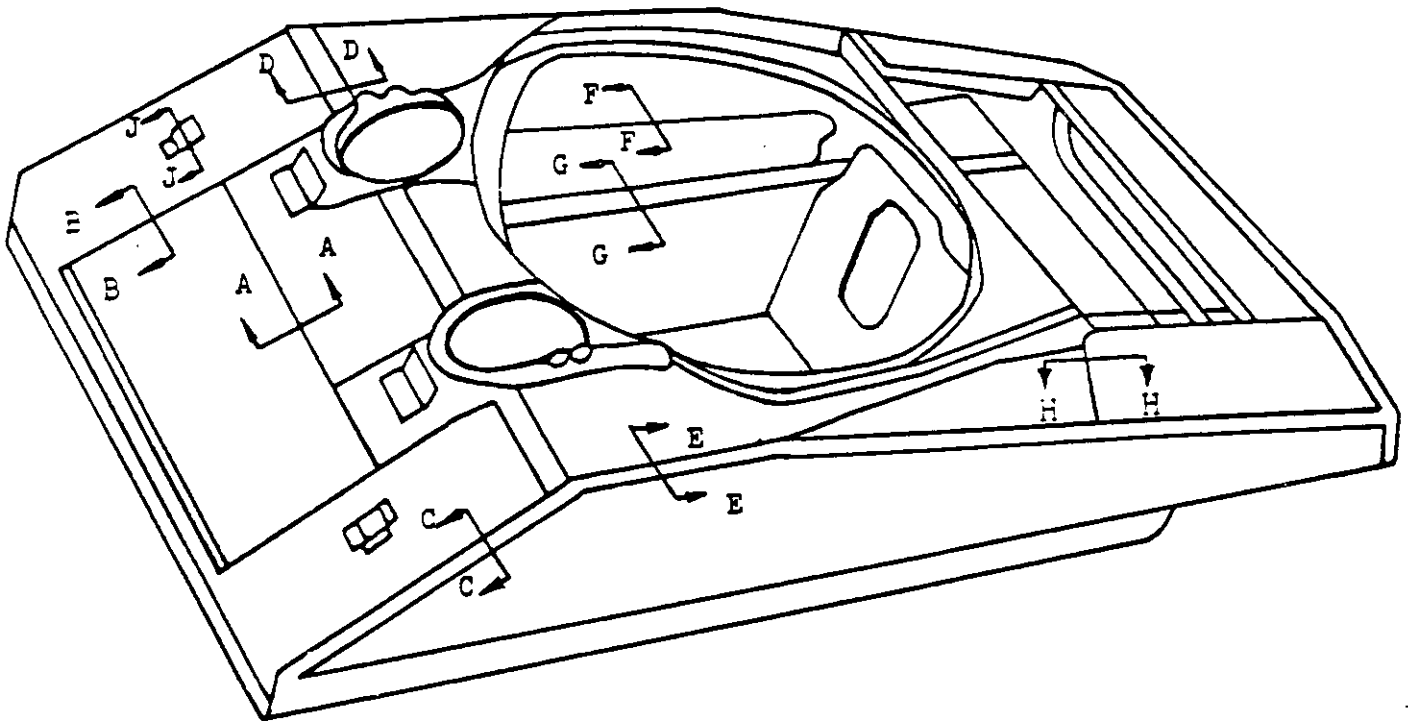
FIGURE 4A. Format IV. Example of cover page for recorded armor joint
welding procedure

Recorded Joint Welding Procedure
for
A Welded Hull

Contents:

Cover	Figure 1
Contents	Figure 2
Perspective Drawing Showing Locations of Welded Joints	Figure 3
Summary of Welding Procedure Certification Tests	Figure 4
Summary of Armor and Filler Metal Data	Figures 5 and 6
Recorded Joint Welding Procedures	Figures 7 and 8

Figure 4B. Format IV. Example of table of contents



NOTES:

- a. Joint details are shown in recorded joint welding procedures.
- b. The joint designs shown in the recorded joint welding procedures are for illustration purposes only, and it is not necessarily indicated that applications of these joints in similar locations will be approved for any specific vehicle.

FIGURE4C Format IV Example of persepective drawing showing location of weld joints in recorded joint welding procedure.

Summary of Certification Tests for Recorded Joint Welding Procedure

Joint No.	Joint Type	Recorded Joint Welding Procedure No.	Armor** Reference Designation	Status of Procedure Certification					
				Ballistic Tests		Workmanship Specimens			
				Flat	Passed Specimen #17&18)	Not Tested	Horizontal	Vertical	Horizontal
A-A		1	I	Passed Specimen #17&18)	"	Tested	Passed (Specimen #50)	Not Required	Not Required
B-B		2	I and II	Passed Specimen #17&18)	"	"	"	"	"
C-C		3	I and II	Passed Specimen #17&18)	"	"	Passed (Specimen #51)	Not Tested	Not Tested
D-D		4	I and II	Passed Specimen #16)	"	"	Passed (Specimen #51)	Not Tested	Not Tested
E-E		5	II	Passed Specimen #20&21)	"	"	Passed (Specimen #51)	Not Tested	Not Tested
F-F		6	II	Passed Specimen #20&21)	"	"	Passed (Specimen #52)	"	"
G-G		7	II	Passed Specimen #20&21)	"	"	Passed (Specimen #52)	"	"
H-H		8	II	Not Required	Not Required	Not Required	Passed (Specimen #53)	Passed (Specimen #54)	Passed (Specimen #55)
J-J		9	I and II	"	"	"	"	"	"

**Summary of armor and filler data

FIGURE 4D Format IV Summary of certification tests for various joints required by the armor welding procedure

FOR ILLUSTRATION ONLY

Table A. Electrodes conforming with specification No. MIL-E-XXXX

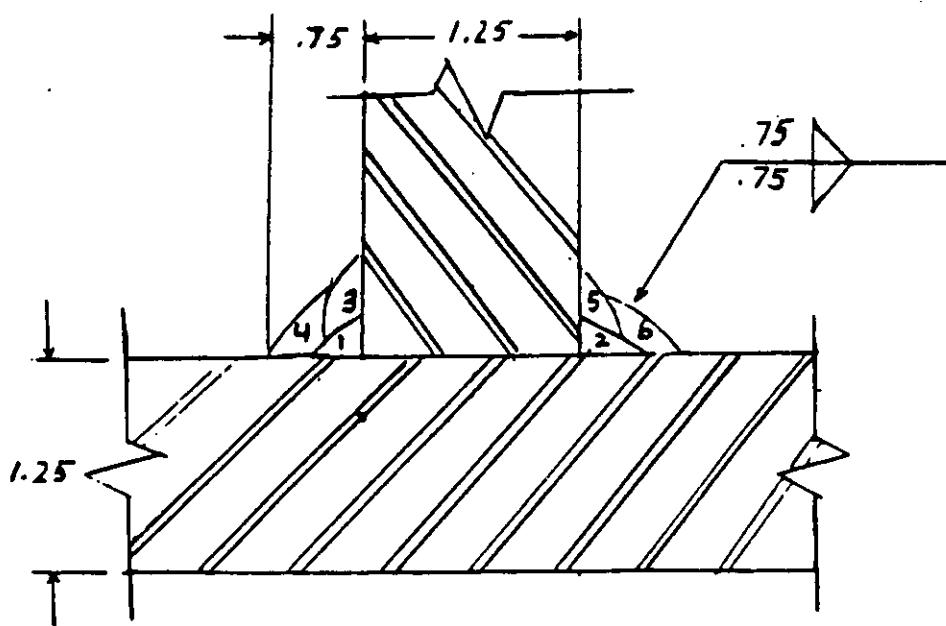
Electrode Reference Designation	Manu- facturer	Brand Name	Type	Class
A	"X"	Bestweld	V	MIL-307L-15
B	"X"	Superweld	VI	MIL-308MOL-15
C	"Y"	Bestalloy	VI	MIL-308MOL-15
D	"Y"	Superloy	VI	MIL-308MOL-15
E	"Z"	Bestarc	V	MIL-307L-15
F	"Z"	Superarc	VI	MIL-308MOT-16

Table B. Electrodes not conforming with specification No. MIL-E-XXXX

Electrode Reference	Manu- facturer	Brand Name	Type of Covering	Chemical composition range (%)										
				C	Mn	Si	S	P	Cr	Ni	Mo	V	Others	
G	"Q"	Excelweld	Lime	Core wire	.15	3.50	.25	.03	.04	19.5	9.0			
				Deposited	Max.	4.50	.60	Max.	Max.	21.5	10.5			
				Weld Metal	.17	5.00	.80		18.0			.50		
					Max.				20.5		1.00			
H	"R"	Wonderweld	Titania	Core wire	.15	1.50	.25	.03	.04	19.5	9.0			
				Deposited	Max.	2.00	.60	Max.	Max.	21.5	10.5			
				Weld Metal	.17	1.25	.80		18.0			1.80		
					Max.	2.00	Max.		20.5			2.25		

FIGURE 4E Format IV Summary of filler metal

Base Metal	AA 5083 to AA 5083 (MIL-A-46027)
Base Metal Thickness	1.25"
Welding Process	GMAW
Filler Metal	5356 (Alcoa)
Filler Metal Size	0.045"
GTAW Electrode Type and Size	N/A
Position	Vertical up
Shielding Gas Type	75% A / 25% He
Gas Flow/Nozzle Size	60 CFM/10
Weld Passes	6
Current Polarity and Amperage	DCRP/275A
Voltage	27 V
Travel Speed	14 in/min
Edge Preparation	Machined and Degreased
Back Gouging	N/A
Backing	N/A
Pre/Post Heat and Interpass Temperature	Ambient / 200°F Max.
Cleaning	Stainless steel wire brush between each pass



WELDING PROCEDURE COMPANY NAME	JOINT DETAIL FOR SECTION A-A
	DRAWING NO. 257 A-R
PREPARED BY : JOHN SMITH (SIGNATURE), TITLE, DATE	
ACCEPTED BY: JOHN DOE (SIGNATURE), GOVT. REP., DATE	

FIGURE 4F FORMAT IV Example of a sketch for a joint A-A in joint-welding procedure

MIL-STD-367(MR)

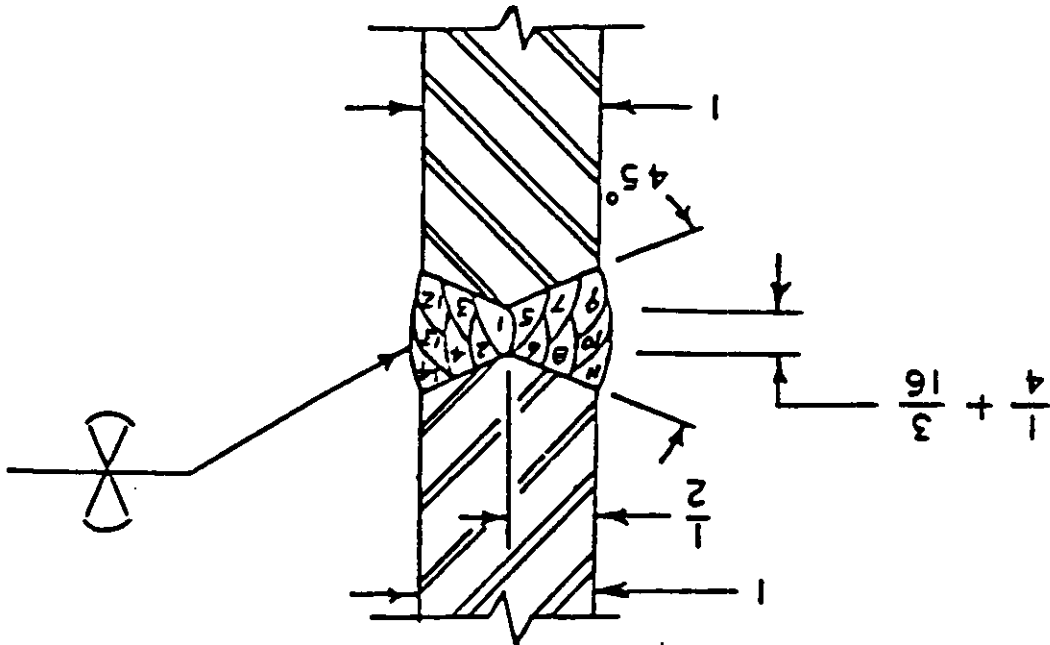
Custodian:
Army - MR
Review Activities:
Army - AR, AT, TE
Preparing Activity
Army - MR
(Project No. 95GP-A016)

27

FIGURE 46 FORMAT IV Example of a sketch for a joint H-H in joint-welding procedure

ACCEPTED BY: JOHN DOE(SIGNATURE), GOVT. REP., DATE
PREPARED BY : JOHN SMITH (SIGNATURE), TITLE, DATE

WELDING PROCEDURE		COMPANY NAME
JOINT DETAIL FOR SECTION H-H		DRAWING NO. 258 A-R



Base Metal	AA 5083 to AA 5083 (MIL-A-46027)
Base Metal Thickness	1.25"
Welding Process	GMAW
Filler Metal	5356 (Alcoa)
Filler Metal Size	0.045"
GMAW Electrode Type and Size	N/A
Position	Vertical up
Shielding Gas Type	75% Ar / 25% He
Gas Flow/Nozzle Size	60 CFM/10
Weld Passes	6
Current Polarity and Amperage	DCRP/275A
Voltage	27 V
Travel Speed	14 in/min
Edge Preparation	Machined and Degreased
Back Gouging	N/A
Backing	N/A
Pre/Post Heat and Interpass Temperature	Ambient / 200°F Max.
Cleaning	Stainless steel wire brush between each pass

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