Ship/HULL NO.	Ship/HULL NAME	JON:	ICN:	Rev:	Key Op:
YON-285	BARGE		89MVA15007		A01

TITLE:

Knuckle Crane; install

JOB SPECIFICATION

Anticipated Award Date:	Production Completion Date:	PREPARING ACTIVITY:
7/31/2026	02/02/2027	SASEBO
POP Start Date: 9/28/2026	**POP End Date:** 4/30/2027	

PREPARED BY:	CODE	DATE
S.NODA	H_NO	1/30/2026
APPROVED BY: S.MURAKAMI	CODE S225	
CONCURRED BY: S.MOROOKA	CODE S231	

```
PART-I     HULL-WORK: S.NODA (H_NO) ---------- Page  2 through 5
PART-II    MACH-WORK: T.OOKUBO (M_OO) --------- Page  6 through 26
           ELEC-WORK: J.SAKURAI (E_SJ)
PART-III   PIPE-WORK: T.YOAHINAGA (P_YO) ------ Page 27 through 31
```

DESCRIPTION:

JSN(S): _____ **CASREP #** _____.

S/F CONTACT: _____ **CWP #** _____ **CCNS #** _____.

Approved by S300/S900 T. ESCRITOR-YAMADA PM S320 **Date:** 2/2/2024 **AVL:** ~~7B1~~ 6B1.

LWC: _____.

Work Completed

S/Force: _____ **Rate:** _____ **Date:** _____.

Ship Supt: _____ **Date:** _____ **SRF CONTROL NO.:** 1301348511.

WORK CERTIFICATION SIGNATURES

COMPLETION OF WORK REVIEW:	BADGE NO.:	SHOP/CODE:	PHONE:	DATE:

1/31

Ship/HULL NO.	Ship/HULL NAME	JON:	ICN:	Rev:	Key Op:
YON-285	BARGE		89MVA15007		A01

TITLE:

Knuckle Crane; install (Part-I, HULL Work)

JOB SPECIFICATION

Anticipated Award Date:	Production Completion Date:	PREPARING ACTIVITY:
7/31/2026	2/28/2027	SASEBO
POP Start Date: 10/1/2026	**POP End Date:** 4/30/2027	

PREPARED BY: **S.NODA**	CODE **H_NO**	DATE **1/30/2026**
APPROVED BY: **S.MURAKAMI**	CODE **S225**	
CONCURRED BY: **S.MOROOKA**	CODE **S231**	
ASSIST PLANNER'S NAME:	CODE	
ASSIST PLANNER'S NAME:	CODE	
ASSIST PLANNER'S NAME:	CODE	

DESCRIPTION:

JSN(S): _____ **CASREP #** _____.

S/F CONTACT: _____ **CWP #** _____ **CCNS #** _____.

T. ESCRITOR-YAMADA
PM S320

Approved by S300/S900 _____ **Date:** 2/2/2026 **Avl:** 6B1 ~~7B1~~.

LWC: _____.

Work Completed

S/Force: _____ **Rate:** _____ **Date:** _____.

Ship Supt: _____ **Date:** _____ **SRF CONTROL NO.:** _____.

WORK CERTIFICATION SIGNATURES

COMPLETION OF WORK REVIEW:	BADGE NO.:	SHOP/CODE:	PHONE:	DATE:

2/31

Ship/HULL NO.	Ship/HULL NAME	JON:	ICN:	Rev:	Key Op:
YON-285	BARGE		89MVA15007		A01

TITLE:

Knuckle Crane; install (Part-I, HULL Work)

1. **SCOPE:**

1.1 Title: Knuckle Crane; install (Part-I, HULL Work)

1.2 Location of Work:

1.2.1 Listed in 2.2

1.3 Identification:

1.3.1 Listed in 2.2 for Installation of Knuckle Boom Crane Assembly including Hydraulic Power Unit (HPU), Located in 1.2.1

2. **REFERENCES:**

2.1 Standard Items (~~FY27~~ FY26)

2.2 185-8970282, SHIPALT YON-0126D Structural and Foundation Knuckle Crane Install

3. **REQUIREMENTS:**

3.1 Accomplish the requirements of 2.2 for installation of each new foundation for knuckle boom crane assembly including hydraulic power unit installation listed in 1.3.1 including each general note.

3.1.1 Accomplish the requirements of **009-12** of 2.1, including Table 4, Column A, Lines One through 7 for welding. (See NOTE 4.4)

(V) "REPORT"

3.1.1.1 Ensure to notify which welding standard has been selected to SUPERVISOR.

3.1.1.2 Accomplish nondestructive test of each welded joint of primary structure in accordance with Line 9.

3.1.2 Accomplish the requirements of **009-25** of 2.1 for a local air hose test of each new weld joint of watertight boundary. Allowable leakage: None.

3.2 Accomplish the requirements of **009-32** of 2.1 for cleaning and preservation of each new and disturbed surface to match surrounding areas.

4. **NOTES:**

4.1 Initial Condition - YON-285 SHIPALTs 126D has not been completed.

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4.2 The contractor is responsible to dispose all waste generated by this work item in accordance with Japanese Environmental Governing Standards (JEGS).

4.3 SRF Tool Room will issue each pressure gauge and each torque wrench when required.

4.4 OPTION A) of Table 4 of 009-12 of 2.1 has been allowed to utilize under ELM-255171 Rev A.

4.5 Dry docking and Undocking will be covered by other ICN 89MVA86301_A01, Docking and Undocking; accomplish.

4.6 Marine chemist inspection for entire of YON-285 will be covered by other ICN 89MVA11001_A01, Underwater Hull and Freeboard; repair and preserve.

4.7 The cleaning work of each cargo fuel oil tank (S-1, P-1, S-2, P-2, S-3 and P-3) will be covered by ICN: 38MVA12301_A01, (8) Cargo Oil Tank; clean.

4.8 The cleaning work of each void (Number One through Number 6) will be covered by ICN: 38MVA11001_A01, Underwater Hull and Freeboard; preserve

4.9 Preservation work of underwater hull and freeboard will be covered by ICN 38MVA11001_A01, Main Deck and Deck House; preserve

4.10 Preservation work and non-skid deck covering work on main deck will be covered by ICN 38MVA15003_A01.

5. GOVERNMENT FURNISHED MATERIAL(GFM) :

5.1 See attached MATERIAL LIST.

MATERIAL LIST

ITEM NO.	PC NO.	REF NO.	M / C	DESCRIPTION	STOCK NUMBER	HAZ MAT	DOC NO.	QTY REQD/ UNIT	PARA NO.
001			M	ELECTROD,WELDING ROD, 7018M, SMAW, 3/32"DIA X 14"LG, 10LB/CN, MIL-E-22200/10, P/N: 255014102 CERTIFICATION IS NOT REQUIRED.	9G 3439 SA4742861	9		7/CN	3.1
002			M	ELECTROD,WELDING ROD, 7018M, SMAW, 1/8"DIA X 14"LG, 10LB/CN, MIL-E-22200/10, P/N: 255014110 CERTIFICATION IS NOT REQUIRED	9G 3439 SA4742863	9		10/CN	3.1
501	1	2	M	PLATE,METAL,PLATE,METAL, 20.4#, 1/2" THK, ASTM A36, OSS, 2 FT X 5 FT REQUIRED.	9B 9515	9		10/SF	3.1
502	2	2	M	PLATE,METAL,PLATE,METAL, 40.8#, 1" THK, ASTM A36, OSS, 5 FT X 10 FT REQUIRED.	9B 9515	9		50/SF	3.1

Ship/HULL NO.	Ship/HULL NAME	JON:	ICN:	Rev:	Key Op:
YON-285	BARGE		89MVA15007		A01

TITLE:

Knuckle Crane; install (Part-I, HULL Work)

MATERIAL LIST

ITEM NO.	PC NO.	REF NO.	M / C	DESCRIPTION	STOCK NUMBER	HAZ MAT	DOC NO.	QTY REQD/ UNIT	PARA NO.
503	3	2	M	PLATE,METAL,PLATE,METAL, 61.2#, 1-1/2"THK, ASTM A36, OSS, 2 FT X 5 FT REQUIRED.	9B 9515	9		10/SF	3.1
504	4	2	M	FLAT BAR,FLAT BAR, 6" X 1/2" X 18 FT X 4 EA, ASTM A36, OSS	9B 9510	9		72/LF	3.1
505	5	2	M	ANGLE,ANGLE, 6" X 3-1/2" X 3/8", ASTM A36, OSS	9B 9520	9		10/LF	3.1
506	6	2	M	KNUCKLE BOOM CRANE,FOLDABLE KNUCKLEBOOM MARINE CRANE, PROPOSAL# 20251210-A-DW-M180E.20A5. PLEASE SEE ATTACHED QUOTATION AND DATA.	9B 3810 SA2505109	9	6028E500	1/EA	3.1
507	7	2	M	ANGLE,ANGLE, 3" X 3" X 1/4", ASTM A36, OSS	9B 9520	9		11/LF	3.1
508	8	2	M	BOLT,HEX HD,BOLT,HEX,HD, M14 X 2MM, L=20MM, DIN 933, CRES 316	9B 5306	9		4/EA	3.1
509	9	2	M	NUT,NUT, M14 X 2MM, DIN 934, CRES 316	9B 5310	9		4/EA	3.1
510	10	2	M	WASHER,FLAT,WASHER,FLAT, M14, DIN 125, CRES 316	9B 5310	9		8/EA	3.1
511	11	2	M	PLATE,METAL,PLATE,METAL, 15.3#, 3/8" THK, ASTM A36, OSS, 1 FT X 3 FT REQUIRED.	9B 9515	9		3/SF	3.1

Ship/HULL NO.	Ship/HULL NAME	JON:	ICN:	Rev:	Key Op:
YON-285	BARGE		89MVA15007		A01

TITLE:

Knuckle Crane; install (Part-II, MACH and ELEC Work)

JOB SPECIFICATION

Anticipated Award Date:	Production Completion Date:	PREPARING ACTIVITY:
POP Start Date:	POP End Date:	SASEBO

PREPARED BY: T.OOKUBO	CODE M_OO	DATE 1/23/2026
APPROVED BY: S.MURAKAMI	CODE S225	
CONCURRED BY: N.SASHI	CODE S232	
ASSIST PLANNER'S NAME: J.SAKURAI	CODE E_SJ	
ASSIST PLANNER'S NAME:	CODE	
ASSIST PLANNER'S NAME:	CODE	

DESCRIPTION:

JSN(S): _____ **CASREP #** _____.

S/F CONTACT: _____ **CWP #** _____ **CCNS #** _____.

T. ESCRITOR-YAMADA
PM S320

Approved by S300/S900 _____ **Date:** 2/2/2024 **AVL:** 6B1 ~~7B1~~.

LWC: _____.

Work Completed

S/Force: _____ **Rate:** _____ **Date:** _____.

Ship Supt: _____ **Date:** _____ **SRF CONTROL NO.:** _____.

WORK CERTIFICATION SIGNATURES

COMPLETION OF WORK REVIEW:	BADGE NO.:	SHOP/CODE:	PHONE:	DATE:

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Ship/HULL NO.	Ship/HULL NAME	JON:	ICN:	Rev:	Key Op:
YON-285	BARGE		89MVA15007		A01

TITLE:

Knuckle Crane; install (Part-II, MACH and ELEC Work)

1. SCOPE:

1.1 Title: Knuckle Crane; install (Part-II, MACH and ELEC Work)

1.2 Location of Work:

1.2.1 Main Deck, Frame 3, PORT Side

1.3 Identification:

1.3.1 Quantity (One AY), Knuckle Boom Crane ASSY including Hydraulic Power Unit (HPU) located in 1.2.1, MFR DMW MARINE GROUP LLC, Model M180E.20A5, Lifting Capacity 870 kg at 13.7 Meter, Item No.6 of 2.2

2. REFERENCES:

2.1 Standard Items (~~FY27~~ FY26)

2.2 185-8970282, Structural and Foundation Knuckle Crane Install

2.3 556-8970283, HPU & Hydraulic Piping Install Incidental Knuckle Crane Install

2.4 321-8970275, S/A YON-0125D YON-285 Power Distribution System Installation

2.5 Tech Library No. 2026-0022, Hydraulic Marine Crane, M180E.20A, Operation and Maintenance Handbook

2.6 MIL-STD-1310H, Shipboard Bonding, Grounding, and Other Techniques for Electromagnetic Compatibility, Electromagnetic Pulse (EMP) Mitigation, and Safety

2.7 Test Procedure (TP) File No.58911-4-100_26058, Knuckle Boom Crane - Load Test (Enclosed)

3. REQUIREMENTS:

3.1 Install crane ASSY listed in 1.3.1 in accordance with 2.2, using 2.3 through 2.5 for guidance.

3.1.1 Bond and ground equipment in accordance with 2.6.

3.1.2 Fill the hydraulic oil reservoir to operating range with new oil conforming to MIL-PRF-17672 2110TH (ISO 46) or 2135TH (ISO 68), using Paragraph 9.7.1 of Page 83 of 2.5 for guidance.

3.1.2.1 Purge the hydraulic system free of air.

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3.1.3 Fill the slewing gearbox to operating range with new oil conforming to SAE J2360 80W-90, using Paragraph 9.7.2 of Page 84 of 2.5 for guidance.

3.1.4 Tighten each fixation bolt (M24, 16 EA) of the base to 1,000 N-m in accordance with Paragraph 4.3 of Page 113 of 2.5.

3.2 Accomplish the requirements of **009-032** of 2.1 for each new and disturbed surface.

(V) (G) "LOAD TEST"

3.3 Accomplish the requirement of 2.7 (TP) for load test of crane ASSY listed in 1.3.1. **-S246**

3.3.1 Provide mobile crane which has load capacity specified in 2.7 for the load test.

4. NOTES:

4.1 Initial Condition - YON-285 SHIPALTs 126D has not been completed.

4.2 SRF Tool Room will issue each torque wrench when required.

4.3 Electrical work including cable installation/connection for crane ASSY will be accomplished under other JON 89MVA15006-A01.

5. GOVERNMENT FURNISHED MATERIAL (GFM):

MATERIAL LIST

ITEM NO.	PC NO.	REF NO.	M / C	DESCRIPTION	STOCK NUMBER	HAZ MAT	DOC NO.	QTY REQD/ UNIT	Para No.
101	-	2.5	M	HYDRAULIC FLUID,PET, MIL-PRF-17672, 2110-TH, ISO 46, 55 GL/DR	9B 9150 005825480	Y		2/DR	3.1
102	-	2.5	M	HYDRAULIC FLUID,PET, MIL-PRF-17672, 2135-TH, ISO 68, 55 GL/DR	9B 9150 005842560	Y		2/DR	3.1
103	-	2.5	M	LUBRICATING OIL,GEA, SAE-J2360,80W-90, 5 GL/CN	9B 9150 010355393	Y		2/CN	3.1

SHIP/HULL NO.: BARGE / YON-285	JON:	ICN:	Rev:	Key Op:	
T.P FILE NO.: 58911-4-100_26058		89MVA15007	00	A01	Page 1 of 18

SHIP REPAIR FACILITY – JAPAN REGIONAL MAINTENANCE CENTER DET SASEBO
DET TEST PROCEDURE

TITLE:	JCN:
KNUCKLE BOOM CRANE – LOAD TEST	N/A
	CWP: N/A

TEST PROCEDURE PREPARATION

	PRINT NAME & SIGNATURE		PHONE	CODE	DATE
PREPARED BY S. TAKAGI	TAKAGI.SHINOBU.1275251301	Digitally signed by TAKAGI.SHINOBU.1275251301 Date: 2026.01.13 16:25:04 +09'00'	252-8051	S246C	13-Jan-2026
REVIEWED BY S. IIDA	IIDA.SHUNICHI.1274619127	Digitally signed by IIDA.SHUNICHI.1274619127 Date: 2026.01.14 04:40:46 +09'00'	252-8045	S246A	14-Jan-2026
APPROVED FOR ISSUE S. PHILLIPS	PHILLIPS.SHAUN.PARRY.1093485625	Digitally signed by PHILLIPS.SHAUN.PARRY.1093485625 Date: 2026.01.20 09:18:23 +09'00'	252-8049	S246CTE	20-Jan-2026

PROCEDURE COMPLETED

PRINT NAME & SIGNATURE	COMPANY NAME	BADGE/RANK	DATE
LWC			
S246	SRF-JRMC DET. SASEBO		

CERTIFICATION REVIEW AND APPROVAL OF TEST RESULTS

PRINT NAME & SIGNATURE		PHONE	CODE	DATE
REVIEWER	(Test Certified Complete and Test Results Satisfactory) S. IIDA	252-8045	S246A	
TEST CODE	(Test Results Reviewed and Approved)		S246CTE	

COMMENTS:

9/31

SHIP/HULL NO.: **BARGE / YON-285**	JON:	ICN:	Rev:	Key Op:	
T.P FILE NO.: **58911-4-100_26058**		**89MVA15007**	**00**	**A01**	Page 2 of 18

TEST PROCEDURE GENERAL NOTES

1. **TEST SEQUENCE:** Unless otherwise specified in the test document, this test procedure (TP) shall be completed in provided order.

2. **VERIFICATION:** The person designated to sign for an action verifies, based on personal observation, objective evidence, or watch stander reports and certifies by signature that the action has been performed in accordance with the specified requirements.

3. **USE ORIGINAL DOCUMENTS:** All data attached to the Master TP shall have original pen and ink entries on the data sheets (unless otherwise specified in the test procedure).

4. **USE DARK INK:** All signature and data shall be in dark, water insoluble ink.

5. **CORRECTIONS:** When an error was made, it shall be corrected by drawing a single line through the error, recording the correct entry, initialing, dating and printing the name of the person making the correction in accordance with JOINT FLEET MAINTENANCE MANUAL (JFMM), COMUSFLTFORCOMINST 4790.3, VOLUME V, QUALITY MAINTENANCE.

6. **LATEST APPLICABLE REVISION:** Use the latest applicable revision of plans, instructions, technical manuals, and other reference material cited in this test procedure.

7. **INSTRUMENT CALIBRATION:** All measuring equipment shall be in current calibration as required by NAVSHIPREPFACINST 4734.1.

8. **OPERATION OF COMPONENTS:** Only authorized personnel shall operate ship's permanently installed equipment. The cognizant Shop shall control and operate their temporary test equipment. Ship's Force shall operate temporary systems and equipment formally turned over to the ship.

9. **SAFETY INSTRUCTION:** The Test Director is responsible for the safe conduct of this test. The safety precautions of NAVSHIPREPFAC M-5100.8 shall be observed at all times.

10. **TEST STOPPAGE:** The Test Director shall stop the test once a problem has been found in the system or equipment being tested. S246 Testing Standard Operating Procedure (SOP) shall be used to determine course of action prior to resuming the test procedure.

11. **ENERGIZED EQUIPMENT:** NSTM 300, para 300-2.4 shall be followed when working on energized equipment.

12. **DATA COLLECTION:** The test documents may require collection of additional data for which there is no acceptance criteria, provided the data sheet identifies that data is for information only.

13. **SUPPLEMENTATION:** When supplementation is made, annotate the supplemental information on the page with 'See Remarks' followed by a sequential numbering system corresponding in the Remarks section.

14. **USE ASTERISK (*):** When supplementation, correction and/or signature is made but there is not enough space, annotate using an asterisk (*) followed by sequential number adjacent to the portion then clarify on the same page using the same annotation.

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SHIP/HULL NO.: **BARGE / YON-285**	JON:	ICN:	Rev:	Key Op:	
T.P FILE NO.: **58911-4-100_26058**		**89MVA15007**	**00**	**A01**	Page 3 of 18

KNUCKLE BOOM CRANE – LOAD TEST

1. PURPOSE

1-1 The purpose of this procedure is to conduct the initial certification testing for the newly installed M 180E.20A5 knuckle boom crane on the YON-285 barge. This test will verify that the installation is correct and the crane is in a safe condition for operation, while ensuring all functions comply with the initial certification requirements of NAVFAC P-307.

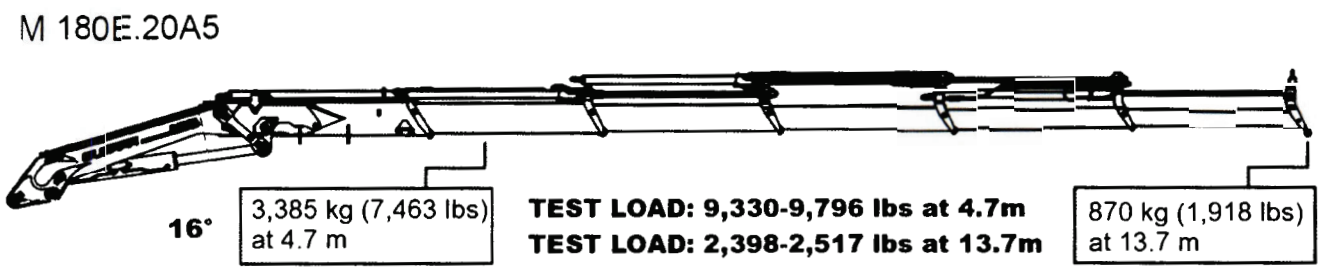

FIGURE-1: LOAD DIAGRAM

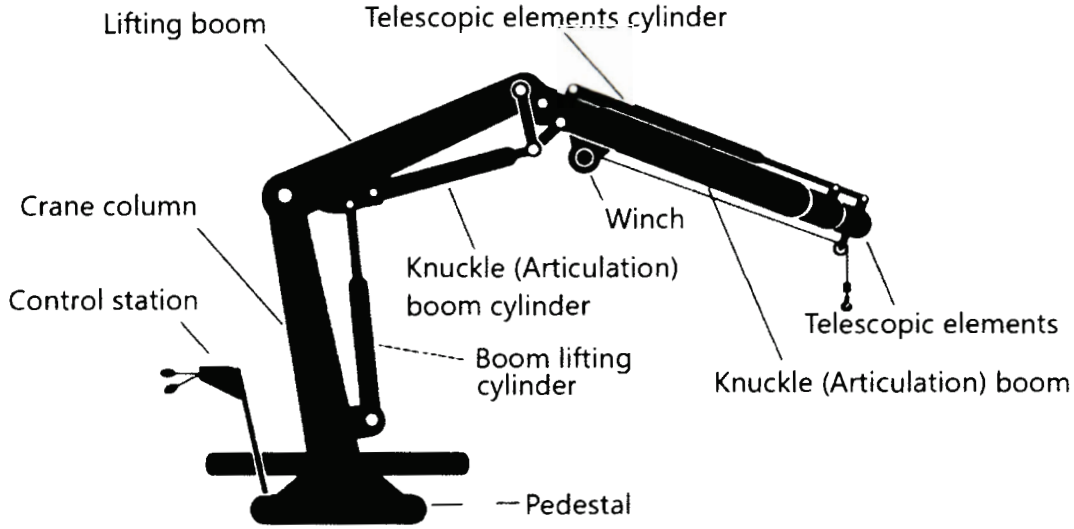

FIGURE-2: INVENTORY DETAILS OF THE CRANE

2. REFERENCES

2-1 NAVSEA DRAWING

2-1.1 '85-8970282; S/A YON-126D YON-285 STRUCTURAL AND FOUNDATION KNUCKLE CRANE INSTALL

2-2 NAVFAC-NAVAL FACILITIES ENGINEERING COMMAND P-307; WEIGHT HANDLING PROGRAM MANAGEMENT

2-3 OEM TECHNICAL MANUAL

2-3.1 OPERATION AND MAINTENANCE HANDBOOK M 180E.20A YEAR 2021

2-4 NAVSHIPREPFAC M-5100.8; SAFETY AND HEALTH PROGRAM MANUAL

3. TEST AND SUPPORT EQUIPMENT/MATERIAL

3-1 Support Hoisting Device (e.g., crane)

3-2 Test weights (for Test #1 & Test #2)

3-3 Necessary Rigging gears

3-4 Load indicating device (e.g., Dynamometer)

3-5 Tag lines

3-6 Stopwatch

3-7 Warning signs, ropes and/or barricades to ensure area affected by load testing is secured

4. GENERAL PRECAUTIONS

4-1 Only those personnel actively engaged in performing or witnessing this test shall be permitted in the testing area. All specified safety regulations shall be strictly observed.

4-2 To prevent injury or death, ensure that proper test equipment is used during testing.

4-3 Safeguarding of personnel and equipment shall be adhered to at all times.

5. WEIGHT HANDLING PLAN

NOTE
ALL RIGGING GEAR SHALL HAVE A RATED CAPACITY GREATER THAN THE LOADS AND STRAIN IMPOSED UPON THE RIGGING GEAR. ALL RIGGING GEAR SHALL ACCOMPLISH REQUIREMENTS OF P307.

5-1 WEIGHT HANDLING PLAN Prepare and submit a weight handling plan to S246 for load testing at least 5 working days prior to conducting the load test. If the service crane will be used for load testing, submit weight handling plan to S980D (WHE manager) also. Omit this step if test weight is not used.

6. TESTING STEPS

6-1 PRETEST BRIEFING Conduct a pre-test briefing (e.g., safety precaution, station assignments, testing steps) with all involved test personnel.

6-2 PRE-TEST INSPECTION Verify the crane's condition and the correctness of its installation prior to any operation. Record result in TEST DATA SHEET. All findings from this inspection shall be recorded in the REMARKS.

6-2.1 Structural and Mechanical components:

(1) Visually inspect the entire crane structure (pedestal, column, booms) for any damage (dents, weld cracks, deformation) from transport or installation.

Acceptance criteria: The crane structure shall be free of any visible defects, damage, or deformation.

(2) Inspect the full length of the wire rope for any kinks or damage. Ensure it is seated correctly in all sheaves.

Acceptance criteria: The wire rope shall be free of any visible damage, such as kinks, frays, or broken strands. The rope must also be properly seated in the groove of all sheaves.

(3) Inspect the hook, block, and safety latch for defects and proper function.

Acceptance criteria: The hook, block, and safety latch shall be free of any visible defects, such as cracks, or deformation. The safety latch must operate smoothly and return to its closed position automatically.

6-2.2 Hydraulic System:

(1) Check the fluid level in the main hydraulic reservoir and the slewing gear case against manufacturer specifications.

Acceptance criteria: All fluid levels must be within the manufacturer-specified operating range (e.g., between the 'MIN' and 'MAX' marks on the sight glass or dipstick).

(2) Visually inspect all hydraulic hoses, fittings, and cylinders for any leaks, chafing.

Acceptance criteria: There shall be no evidence of active fluid leaks, weeping, or residue at any hose, fitting, or cylinder seal. Hose outer jackets shall be free from chafing, abrasion, or other signs of wear that would expose the underlying reinforcement.

6-3 NO LOAD TEST Conduct no load test as follows and record the results in the TEST DATA SHEET.

6-3.1 Operate each function through its full range of motion. All motions must be smooth and controllable.

(1) Hoist (Winch) Operation: Hoist the hook block up and down through its full range of travel.

(a) Operate the hoist through its full range of speeds, from slow to maximum.

Acceptance criteria: The hoist must demonstrate smooth and controlled operation across the entire speed range.

(b) Listen for any abnormal noises from the winch motor or gearbox.

Acceptance criteria: No abnormal noises (e.g., grinding, squealing, binding) from the winch motor or gearbox.

(c) Visually observe the wire rope as it spools onto the winch drum to ensure it is winding evenly and not crossing over or bunching.

Acceptance criteria: The wire rope must wind onto the drum in a uniform and orderly pattern, free from crossovers, bunching, or significant gaps between wraps.

(2) Lifting Boom Operation: Raise (boom up) and lower (boom down) the lifting boom.

(a) Operate the lifting boom through its entire range of motion, from its lowest working angle to its highest, and back down.

Acceptance criteria: The boom must move smoothly and without hesitation or binding throughout its entire operational range. Operation must be controllable at all points.

(b) Visually inspect the boom lift cylinder, hoses, and connections for any signs of hydraulic fluid leakage during operation.

Acceptance criteria: There shall be no evidence of active leaks or weeping from the cylinder, hoses, or their associated fittings at any point during the movement.

(3) Knuckle (Articulation) Boom Operation: Raise (knuckle out) and lower (knuckle in) the knuckle boom.

(a) Operate the knuckle boom through its full range of motion.

Acceptance criteria: The knuckle boom must move smoothly and without hesitation or binding throughout its entire operational range. Operation must be controllable at all points.

(b) Visually inspect the knuckle boom cylinder, hoses, and connections for any signs of hydraulic fluid leakage.

Acceptance criteria: There shall be no evidence of active leaks or weeping from the knuckle boom cylinder, hoses, or their associated fittings at any point during the movement.

(4) Telescopic Element Operation: Extend and retract all telescopic elements.

(a) Fully extend and then fully retract all hydraulic extensions.

Acceptance criteria: The booms must achieve its full extension and retraction lengths.

(b) Observe the movement to ensure no sections are binding or moving erratically.

Acceptance criteria: All telescopic elements must extend and retract smoothly, without hesitation, binding, or erratic movement.

(5) Slewing (Rotation) Operation: Rotate the crane clockwise and anti-clockwise.

(a) Perform a full range rotation in both directions.

Acceptance criteria: The crane must complete its full range of rotation in both clockwise and anti-clockwise directions. The motion must be smooth and continuous, without hesitation or binding.

(b) Start and stop the rotation at various points to test the responsiveness of the control and the slew brake.

Acceptance criteria: The crane starts and stops without excessive jerking or uncontrolled drift.

(c) Operate at various speed.

Acceptance criteria: The slewing speed must be proportional to the control input, demonstrating smooth and controllable operation from minimum to maximum speed.

6-3.2 Safety device test:

(1) Emergency Stop: While a slow crane function (e.g., slewing) is active, press the E-stop button.

Acceptance criteria: All motion must cease immediately. Reset the E-stop and confirm that normal functions can be resumed.

(2) Upper Limit Switch: Slowly hoist the hook block towards the boom tip.

Acceptance criteria: The hoist function must stop automatically before the block makes contact with the boom.

(3) Lower Limit Switch: Slowly lower the hook.

Acceptance criteria: The winch function must stop automatically, leaving the minimum of 3-4 wraps of wire rope on the drum.

6-3.3 If the crane is equipped with a **radio remote control**, repeat all tests specified in paragraphs **6-4.1 and 6-4.2(1)** using the radio remote control unit. Record the results of the remote-control tests in the designated results section at the bottom of the TEST DATA SHEET. If the crane is not equipped with a radio remote control, mark this entire section as "N/A" (Not Applicable).

6-4 LOAD TEST Conduct load test as follows and record the data and results in the TEST DATA SHEET. This procedure consists of two separate proof load tests designed to certify the crane system under its two most critical operational stress conditions. See figure-1 for details.

6-4.1 Test #1 (Maximum Moment): Performed at the shortest radius (4.7 m) with the test load 9,330-9,796 lbs. This is the primary test for certifying the structural integrity of the crane's foundation and the barge's supporting structure.

6-4.2 Test #2 (Maximum Reach): Performed at the longest radius (13.7 m) with the load 2,398-2,517 lbs. This test verifies the integrity and stability of the crane's boom and hydraulic systems at their maximum extension.

6-5 LOAD TEST #1 (at 4.7-meter Radius):

6-5.1 Preliminary Before performing load tests, complete the following. Record the data.

(1) TMDE Record all Test, Measuring & Diagnostic Equipment (TMDE) type, range, serial number and calibration due date. TMDE shall be calibrated and has not expired. Record the data in TEST DATA SHEET.

(2) Using a calibrated dynamometer, verify the mass of the prepared test loads. The total measured weight for each test, including all associated rigging gear, must conform to the ranges specified below.

- Test #1: 9,330-9,796 lbs

(3) Lead work center shall verify that all test weight and rigging gear used for this test is listed in submitted weight handling plan and they are in proper condition, appropriate type/size and properly rigged.

6-5.2 STATIC LOAD TEST #1 Conduct load test as follows. Record data and result.

(1) The all telescopic elements are fully retracted (stowed in). Position the crane hook to achieve a horizontal radius of 4.7 meters using the lifting boom and knuckle boom controls.

(2) Using support lifting device, slowly transfer the load of **9,330 to 9,796 lbs** to the crane's hook. Support lifting device rigged wire rope shall be removed from the test weight after transferring the test load to the crane. Hold the test load for a **period of 10 minutes.**

(a) During static load test and at a safe distance, observe followings.

1. Any hydraulic fluid leaks.

Acceptance criteria: There shall be no evidence of active fluid leaks, weeping, or residue from any hydraulic component (cylinders, hoses, fittings, etc.) while the system is under load.

2. Any structural deformation, binding, warping or cracking in the foundation or boom.

Acceptance criteria: The crane structure, including the foundation, pedestal, and boom sections, shall exhibit no signs of permanent deformation, cracking, warping, or binding.

3. Any uncommanded downward drift of the load.

Acceptance criteria: While the load is held stationary, there shall be no uncommanded downward drift. The load must remain securely suspended by the crane's hydraulic and brake systems without any measurable slippage or movement.

(b) Remove the test load and inspect for followings.

1. Any hydraulic fluid leaks.

Acceptance criteria: There shall be no evidence of active fluid leaks, weeping, or residue from any hydraulic component (cylinders, hoses, fittings, etc.).

2. Any structural deformation, binding, warping or cracking in the foundation or boom.

Acceptance criteria: The crane structure, including the foundation, pedestal, and boom sections, shall exhibit no signs of permanent deformation, cracking, warping, or binding. All components must return to their original condition after the load is removed.

6-5.3 DYNAMIC LOAD TEST #1 Following the successful static load test, slowly conduct followings. The hook remains within a 4.7-meter radius through the movement. Record data and result.

(1) The all telescopic elements are fully retracted (stowed in). Position the crane hook to achieve a horizontal radius of 4.7 meters using the lifting boom and knuckle boom controls.

(2) Using support lifting device, slowly transfer the load of **9,330 to 9,796 lbs** to the crane's hook. Support lifting device rigged wire rope shall be removed from the test weight after transferring the test load to the crane.

(a) Slew: Verify slewing function by rotating the crane slowly left and right to test control and brake function.

Acceptance criteria: The crane must slew in both clockwise and anti-clockwise directions in response to control inputs. Upon stopping, the slew brake must engage securely, holding the boom's position without any drift.

(b) Boom: Verify the lifting boom function by first raising it a short distance and then lowering it, ensuring the hook remains within a 4.7-meter radius throughout the movement.

Acceptance criteria: The lifting boom must raise and lower directions in response to control inputs. Upon stopping, the boom brake must engage securely, holding the boom's position without any drift.

(c) Knuckle (Articulation): Verify the knuckle boom function by first lower (knuckle in) it a short distance and then raise (knuckle out) it, ensuring the hook remains within a 4.7-meter radius throughout the movement.

Acceptance criteria: The knuckle boom must lower (knuckle in) and raise (knuckle out) directions in response to control inputs. Upon stopping, the knuckle boom brake must engage securely, holding the boom's position without any drift.

(d) Winch: Lower and raise the load a few feet to test the hoist brake's holding capacity.

Acceptance criteria: The winch must lower and raise the load directions in response to control inputs. When the control is released, the hoist brake must automatically and immediately engage, holding the load securely at its position. There shall be no downward drift or slippage.

(e) Telescopic: Extend and retract telescopic elements as practical, ensuring the hook remains within a 4.7-meter radius throughout the movement.

Acceptance criteria: The telescopic elements must extend and retract in response to control inputs. Upon stopping, the telescopic brake must engage securely, holding the boom's position without any drift.

6-6 LOAD TEST #2 (at 13.7-meter Radius):

6-6.1 Preliminary Before performing load tests, complete the following. Record the data.

(1) TMDE Record all Test, Measuring & Diagnostic Equipment (TMDE) type, range, serial number and calibration due date. TMDE shall be calibrated and has not expired. Record the data in TEST DATA SHEET.

(2) Using a calibrated dynamometer, verify the mass of the prepared test loads. The total measured weight for each test, including all associated rigging gear, must conform to the ranges specified below.

- Test #2: 2,398-2,517 pounds

(3) Lead work center shall verify that all test weight and rigging gear used for this test is listed in submitted weight handling plan and they are in proper condition, appropriate type/size and properly rigged.

6-6.2 STATIC LOAD TEST #2 Conduct load test as follows. Record data and result.

(1) Fully extend all telescopic elements and using the lifting boom and knuckle boom to achieve a horizontal radius of 13.7 meters. Lifting boom angle being approximately 16° to the horizontal. See figure-1.

(2) Using support lifting device, slowly transfer the static load of **2,398 to 2,517 pounds** to the crane's hook. Support lifting device rigged wire rope shall be removed from the test weight after transferring the test load to the crane. Hold the test load for a **period of 10 minutes.**

(a) During static load test and at a safe distance, observe followings.

1. Any hydraulic fluid leaks.

Acceptance criteria: There shall be no evidence of active fluid leaks, weeping, or residue from any hydraulic component (cylinders, hoses, fittings, etc.) while the system is under load.

2. Any structural deformation, binding, warping or cracking in the foundation or boom.

Acceptance criteria: The crane structure, including the foundation, pedestal, and boom sections, shall exhibit no signs of permanent deformation, cracking, warping, or binding.

3. Any uncommanded downward drift of the load.

Acceptance criteria: While the load is held stationary, there shall be no uncommanded downward drift. The load must remain securely suspended by the crane's hydraulic and brake systems without any measurable slippage or movement.

(b) Remove the test load and inspect for followings.

1. Any hydraulic fluid leaks.

Acceptance criteria: There shall be no evidence of active fluid leaks, weeping, or residue from any hydraulic component (cylinders, hoses, fittings, etc.).

2. Any structural deformation, binding, warping or cracking in the foundation or boom.

Acceptance criteria: The crane structure, including the foundation, pedestal, and boom sections, shall exhibit no signs of permanent deformation, cracking, warping, or binding. All components must return to their original condition after the load is removed.

6-6.3 DYNAMIC LOAD TEST #2 Following the successful static load test, slowly conduct followings. The hook remains within a 13.7-meter radius through the movement. Record data and result.

(1) Fully extend all telescopic elements and using the lifting boom and knuckle boom to achieve a horizontal radius of 13.7 meters. Lifting boom angle being approximately 16° to the horizontal. See figure-1.

(2) Using support lifting device, slowly transfer the static load of **2,398 to 2,517 pounds** to the crane's hook. Support lifting device rigged wire rope shall be removed from the test weight after transferring the test load to the crane. Hold the test load for a **period of 10 minutes**

(a) Slew: Verify slewing function by rotating the crane slowly left and right to test control and brake function.

Acceptance criteria: The crane must slew in both clockwise and anti-clockwise directions in response to control inputs. Upon stopping, the slew brake must engage securely, holding the boom's position without any drift.

(b) Boom: Verify the lifting boom function by first raising it a short distance, and then lowering it while ensuring the hook remains within a 13.7-meter radius.

Acceptance criteria: The lifting boom must raise and lower directions in response to control inputs. Upon stopping, the boom brake must engage securely, holding the boom's position without any drift.

(c) Knuckle (Articulation): Verify the knuckle boom function by first lower (knuckle in) it a short distance and then raise (knuckle out) it, ensuring the hook remains within a 13.7-meter radius throughout the movement.

Acceptance criteria: The knuckle boom must lower (knuckle in) and raise (knuckle out) directions in response to control inputs. Upon stopping, the knuckle boom brake must engage securely, holding the boom's position without any drift.

(d) Winch: Lower and raise the load a few feet to test the hoist brake's holding capacity.

Acceptance criteria: The winch must lower and raise the load directions in response to control inputs. When the control is released, the hoist brake must automatically and immediately engage, holding the load securely at its position. There shall be no downward drift or slippage.

(e) Telescopic: Extend and fully retract telescopic elements as practical, ensuring the hook remains within a 13.7-meter radius throughout the movement.

Acceptance criteria: The telescopic elements must extend and retract in response to control inputs. Upon stopping, the telescopic brake must engage securely, holding the boom's position without any drift.

6-7 Return system/equipment to readiness condition, as required.

6-8 COMPLETION OF LOAD TEST LWC and S246 shall sign the TEST DATA SHEET upon completion of the test.

7. TEST LABEL PLATE Upon satisfactory completion of all load testing, manufacture and install a visible label plate indicating following information. See Figure 7-1 for sample of the Label Plate.

7-1 A stamped, etched, or engraved metal plate shall be manufactured and attached to the tested item with mechanical fasteners or adhesives. Marking shall include the equipment ID or Serial No., the date tested, expiration date. The date expiration date. Figure 7-1 for a sample.

7-2 The certification is valid for one year from the date of signature of the certifying official. The certification expiration date shall be one day prior to the anniversary date of the certification. The crane may remain in service on the expiration date. For example, if a crane is certified 30 June, the expiration date shall be 29 June of the following year.

KNUCKLE BOOM CRANE	
CRANE ID / SERIAL NO.:	
TEST PERFORMED:	INITIAL PROOF LOAD TEST
TEST LOAD: 125% OF RATED CAPACITY NAVSEA DWG 185-8970282	STATIC & DYNAMIC TEST 9,330 lbs at 4.7m 2,398 lbs at 13.7m
TEST DATE:	
EXPIRATION DATE:	
TESTING ACTIVITY:	SRF-JRMC DET SASEBO

Figure 7-1: Sample of Test Label Plate

8. **TEST PROCEDURE COMPLETION**

8-1 Sign the test procedure cover sheet to confirm that the test procedure has been fulfilled and completed and return it to S246 for review and approval.

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9. **REMARKS**

TEST DATA SHEET

6-2 PRE-TEST INSPECTION

6-2.1 Structural and Mechanical components

Test Description & Acceptance Criteria	RESULT
(1) Visually inspect the entire crane structure (pedestal, column, booms) for any damage (dents, weld cracks, deformation) from transport or installation. *Acceptance criteria: The crane structure shall be free of any visible defects, damage, or deformation.*	☐ SAT / ☐ UNSAT
(2) Inspect the full length of the wire rope for any kinks or damage. Ensure it is seated correctly in all sheaves. *Acceptance criteria: The wire rope shall be free of any visible damage, such as kinks, frays, or broken strands. The rope must also be properly seated in the groove of all sheaves*	☐ SAT / ☐ UNSAT
(3) Inspect the hook, block, and safety latch for defects and proper function. *Acceptance criteria: The hook, block, and safety latch shall be free of any visible defects, such as cracks, or deformation. The safety latch must operate smoothly and return to its closed position automatically.*	☐ SAT / ☐ UNSAT

6-2.2 Hydraulic System

Test Description & Acceptance Criteria	RESULT
(1) Check the fluid level in the main hydraulic reservoir and the slewing gear case against manufacturer specifications. *Acceptance criteria: All fluid levels must be within the manufacturer-specified operating range (e.g., between the 'MIN' and 'MAX' marks on the sight glass or dipstick).*	☐ SAT / ☐ UNSAT
(2) Visually inspect all hydraulic hoses, fittings, and cylinders for any leaks, chafing. *Acceptance criteria: There shall be no evidence of active fluid leaks, weeping, or residue at any hose, fitting, or cylinder seal. Hose outer jackets shall be free from chafing, abrasion, or other signs of wear that would expose the underlying reinforcement.*	☐ SAT / ☐ UNSAT

6-3 NO LOAD TEST

6-3.1 (1) Hoist (Winch) Operation

Test Description & Acceptance Criteria	RESULT
(a) Operate the hoist through its full range of speeds, from slow to maximum. *Acceptance criteria: The hoist must demonstrate smooth and controlled operation across the entire speed range.*	☐ SAT / ☐ UNSAT **6-3.3** ☐ SAT / ☐ UNSAT / ☐ NA
(b) Listen for any abnormal noises from the winch motor or gearbox. *Acceptance criteria: No abnormal noises (e.g., grinding, squealing, binding) from the winch motor or gearbox.*	☐ SAT / ☐ UNSAT **6-3.3** ☐ SAT / ☐ UNSAT / ☐ NA
(c) Visually observe the wire rope as it spools onto the winch drum to ensure it is winding evenly and not crossing over or bunching. *Acceptance criteria: The wire rope must wind onto the drum in a uniform and orderly pattern, free from crossovers, bunching, or significant gaps between wraps.*	☐ SAT / ☐ UNSAT **6-3.3** ☐ SAT / ☐ UNSAT / ☐ NA

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6-3.1 (2) Lifting Boom Operation	
Test Description & Acceptance Criteria	RESULT
(a) Operate the lifting boom through its entire range of motion, from its lowest working angle to its highest, and back down. *Acceptance criteria: The lifting boom must move smoothly and without hesitation or binding throughout its entire operational range. Operation must be controllable at all points.*	☐ SAT / ☐ UNSAT **6-3.3** ☐ SAT / ☐ UNSAT / ☐ NA
(b) Visually inspect the boom lift cylinder, hoses, and connections for any signs of hydraulic fluid leakage during operation. *Acceptance criteria: There shall be no evidence of active leaks or weeping from the cylinder, hoses, or their associated fittings at any point during the movement.*	☐ SAT / ☐ UNSAT **6-3.3** ☐ SAT / ☐ UNSAT / ☐ NA

6-3.1 (3) Knuckle (Articulation) Boom Operation	
Test Description & Acceptance Criteria	RESULT
(a) Operate the knuckle boom through its full range of motion. *Acceptance criteria: The knuckle boom must move smoothly and without hesitation or binding throughout its entire operational range. Operation must be controllable at all points.*	☐ SAT / ☐ UNSAT **6-3.3** ☐ SAT / ☐ UNSAT / ☐ NA
(b) Visually inspect the knuckle boom cylinder, hoses, and connections for any signs of hydraulic fluid leakage. *Acceptance criteria: There shall be no evidence of active leaks or weeping from the knuckle boom cylinder, hoses, or their associated fittings at any point during the movement.*	☐ SAT / ☐ UNSAT **6-3.3** ☐ SAT / ☐ UNSAT / ☐ NA

6-3.1 (4) Telescopic Element Operation	
Test Description & Acceptance Criteria	RESULT
(a) Fully extend and then fully retract all hydraulic extensions. *Acceptance criteria: The booms must achieve its full extension and retraction lengths.*	☐ SAT / ☐ UNSAT **6-3.3** ☐ SAT / ☐ UNSAT / ☐ NA
(b) Observe the movement to ensure no sections are binding or moving erratically. *Acceptance criteria: All telescopic elements must extend and retract smoothly, without hesitation, binding, or erratic movement.*	☐ SAT / ☐ UNSAT **6-3.3** ☐ SAT / ☐ UNSAT / ☐ NA

6-3.1 (5) Slewing (Rotation) Operation	
Test Description & Acceptance Criteria	RESULT
(a) Perform a full range rotation in both directions. *Acceptance criteria: The crane must complete its full range of rotation in both clockwise and anti-clockwise directions. The motion must be smooth and continuous, without hesitation or binding.*	☐ SAT / ☐ UNSAT **6-3.3** ☐ SAT / ☐ UNSAT / ☐ NA
(b) Start and stop the rotation at various points to test the responsiveness of the control and the slew brake. *Acceptance criteria: The crane starts and stops without excessive jerking or uncontrolled drift.*	☐ SAT / ☐ UNSAT **6-3.3** ☐ SAT / ☐ UNSAT / ☐ NA
(c) Operate at various speed. *Acceptance criteria: The slewing speed must be proportional to the control input, demonstrating smooth and controllable operation from minimum to maximum speed.*	☐ SAT / ☐ UNSAT **6-3.3** ☐ SAT / ☐ UNSAT / ☐ NA

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6-3 NO LOAD TEST (continuous)

6-3.2 Safety Device Test

Test Description & Acceptance Criteria	RESULT
(1) Emergency Stop: While a slow crane function (e.g., slewing) is active, press the E-stop button. *Acceptance criteria: All motion must cease immediately. Reset the E-stop and confirm that normal functions can be resumed.*	☐ SAT / ☐ UNSAT **6-3.3** ☐ SAT / ☐ UNSAT / ☐ NA
(2) Upper Limit Switch: Slowly hoist the hook block towards the boom tip. *Acceptance criteria: The hoist function must stop automatically before the block makes contact with the boom.*	☐ SAT / ☐ UNSAT
(3) Lower Limit Switch: Slowly lower the hook. *Acceptance criteria: The winch function must stop automatically, leaving the minimum of 3-4 wraps of wire rope on the drum.*	☐ SAT / ☐ UNSAT

6-5 LOAD TEST #1 (at 4.7-meter Radius)

6-5.1(1) TMDE

EQUIPMENT TYPE /	RANGE /	SERIAL NO. /	CAL. DUE DATE

6-5.2 STATIC LOAD TEST #1

ACTUAL TEST LOAD _____ LBS, TEST DURATION _____ Minutes

(2)(a) During static load test and at a safe distance, observe followings.

Test Description & Acceptance Criteria	RESULT
1. Any hydraulic fluid leaks. *Acceptance criteria: There shall be no evidence of active fluid leaks, weeping, or residue from any hydraulic component (cylinders, hoses, fittings, etc.) while the system is under load.*	☐ SAT / ☐ UNSAT
2. Any structural deformation, binding, warping or cracking in the foundation or boom. *Acceptance criteria: The crane structure, including the foundation, pedestal, and boom sections, shall exhibit no signs of permanent deformation, cracking, warping, or binding.*	☐ SAT / ☐ UNSAT
3. Any uncommanded downward drift of the load. *Acceptance criteria: While the load is held stationary, there shall be no uncommanded downward drift. The load must remain securely suspended by the crane's hydraulic and brake systems without any measurable slippage or movement.*	☐ SAT / ☐ UNSAT

(2)(b) Remove the test load and inspect for followings.

Test Description & Acceptance Criteria	RESULT
1. Any hydraulic fluid leaks. *Acceptance criteria: There shall be no evidence of active fluid leaks, weeping, or residue from any hydraulic component (cylinders, hoses, fittings, etc.).*	☐ SAT / ☐ UNSAT
2. Any structural deformation, binding, warping or cracking in the foundation or boom. *Acceptance criteria: The crane structure, including the foundation, pedestal, and boom sections, shall exhibit no signs of permanent deformation, cracking, warping, or binding. All components must return to their original condition after the load is removed.*	☐ SAT / ☐ UNSAT

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TEST DATA SHEET

6-5.3 DYNAMIC LOAD TEST #1

ACTUAL TEST LOAD _____ LBS

Test Description & Acceptance Criteria	RESULT
(a) Slew: Verify slewing function by rotating the crane slowly left and right to test control and brake function. *Acceptance criteria: The crane must slew in both clockwise and anti-clockwise directions in response to control inputs. Upon stopping, the slew brake must engage securely, holding the boom's position without any drift.*	☐ SAT / ☐ UNSAT
(b) Boom: Verify the lifting boom function by first raising it a short distance and then lowering it, ensuring the hook remains within a 4.7-meter radius throughout the movement. *Acceptance criteria: The lifting boom must raise and lower directions in response to control inputs. Upon stopping, the boom brake must engage securely, holding the boom's position without any drift.*	☐ SAT / ☐ UNSAT
(c) Knuckle (Articulation): Verify the knuckle boom function by first lower (knuckle in) it a short distance and then raise (knuckle out) it, ensuring the hook remains within a 4.7-meter radius throughout the movement. *Acceptance criteria: The knuckle boom must lower (knuckle in) and raise (knuckle out) directions in response to control inputs. Upon stopping, the knuckle boom brake must engage securely, holding the boom's position without any drift.*	☐ SAT / ☐ UNSAT
(d) Winch: Lower and raise the load a few feet to test the hoist brake's holding capacity. *Acceptance criteria: The winch must lower and raise the load directions in response to control inputs. When the control is released, the hoist brake must automatically and immediately engage, holding the load securely at its position. There shall be no downward drift or slippage.*	☐ SAT / ☐ UNSAT
(e) Telescopic: Extend and retract telescopic elements as practical, ensuring the hook remains within a 4.7-meter radius throughout the movement. *Acceptance criteria: The telescopic elements must extend and retract in response to control inputs. Upon stopping, the telescopic brake must engage securely, holding the boom's position without any drift.*	☐ SAT / ☐ UNSAT

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6-6 LOAD TEST #2 (at 13.7-meter Radius)

6-6.1(1) TMDE

EQUIPMENT TYPE /	RANGE /	SERIAL NO. /	CAL. DUE DATE

6-6.2 STATIC LOAD TEST #2

ACTUAL TEST LOAD _____ LBS, TEST DURATION _____ Minutes

(2)(a) During static load test and at a safe distance, observe followings.

Test Description & Acceptance Criteria	RESULT
1. Any hydraulic fluid leaks. *Acceptance criteria: There shall be no evidence of active fluid leaks, weeping, or residue from any hydraulic component (cylinders, hoses, fittings, etc.) while the system is under load.*	☐ SAT / ☐ UNSAT
2. Any structural deformation, binding, warping or cracking in the foundation or boom. *Acceptance criteria: The crane structure, including the foundation, pedestal, and boom sections, shall exhibit no signs of permanent deformation, cracking, warping, or binding.*	☐ SAT / ☐ UNSAT
3. Any uncommanded downward drift of the load. *Acceptance criteria: While the load is held stationary, there shall be no uncommanded downward drift. The load must remain securely suspended by the crane's hydraulic and brake systems without any measurable slippage or movement.*	☐ SAT / ☐ UNSAT

(2)(b) Remove the test load and inspect for followings.

Test Description & Acceptance Criteria	RESULT
1. Any hydraulic fluid leaks. *Acceptance criteria: There shall be no evidence of active fluid leaks, weeping, or residue from any hydraulic component (cylinders, hoses, fittings, etc.).*	☐ SAT / ☐ UNSAT
2. Any structural deformation, binding, warping or cracking in the foundation or boom. *Acceptance criteria: The crane structure, including the foundation, pedestal, and boom sections, shall exhibit no signs of permanent deformation, cracking, warping, or binding. All components must return to their original condition after the load is removed.*	☐ SAT / ☐ UNSAT

6-6.3 DYNAMIC LOAD TEST #2

ACTUAL TEST LOAD _____ LBS

Test Description & Acceptance Criteria	RESULT
(a) Slew: Verify slewing function by rotating the crane slowly left and right to test control and brake function. *Acceptance criteria: The crane must slew in both clockwise and anti-clockwise directions in response to control inputs. Upon stopping, the slew brake must engage securely, holding the boom's position without any drift.*	☐ SAT / ☐ UNSAT
(b) Boom: Verify the lifting boom function by first raising it a short distance, and then lowering it while ensuring the hook remains within a 13.7-meter radius. *Acceptance criteria: The lifting boom must raise and lower directions in response to control inputs. Upon stopping, the boom brake must engage securely, holding the boom's position without any drift.*	☐ SAT / ☐ UNSAT

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6-6.3 DYNAMIC LOAD TEST #2 (continued)	
(c) Knuckle (Articulation): Verify the knuckle boom function by first lower (knuckle in) it a short distance and then raise (knuckle out) it, ensuring the hook remains within a 13.7-meter radius throughout the movement. *Acceptance criteria: The knuckle boom must lower (knuckle in) and raise (knuckle out) directions in response to control inputs. Upon stopping, the knuckle boom brake must engage securely, holding the boom's position without any drift.*	☐ SAT / ☐ UNSAT
(d) Winch: Lower and raise the load a few feet to test the hoist brake's holding capacity. *Acceptance criteria: The winch must lower and raise the load directions in response to control inputs. When the control is released, the hoist brake must automatically and immediately engage, holding the load securely at its position. There shall be no downward drift or slippage.*	☐ SAT / ☐ UNSAT
(e) Telescopic: Extend and fully retract telescopic elements as practical, ensuring the hook remains within a 13.7-meter radius throughout the movement. *Acceptance criteria: The telescopic elements must extend and retract in response to control inputs. Upon stopping, the telescopic brake must engage securely, holding the boom's position without any drift.*	☐ SAT / ☐ UNSAT

6-8 COMPLETION OF THE TEST

RESPONSIBILITY	PRINT NAME & SIGNATURE & DATE
LWC	
S246	

Ship/HULL NO.	Ship/HULL NAME	JON:	ICN:	Rev:	Key Op:
YON-285	BARGE		89MVA15007		A01

TITLE:

Knuckle Crane; install (Part-III, Piping Work)

JOB SPECIFICATION

Anticipated Award Date:	Production Completion Date:	PREPARING ACTIVITY:
POP Start Date:	POP End Date:	SASEBO

PREPARED BY: T.YOSHINAGA	CODE P_YO	DATE 1/23/2026
APPROVED BY: S.MURAKAMI	CODE S225	
CONCURRED BY: T.TAKAMASU	CODE S234	
ASSIST PLANNER'S NAME:	CODE	
ASSIST PLANNER'S NAME:	CODE	
ASSIST PLANNER'S NAME:	CODE	

DESCRIPTION:

JSN(S): _____ **CASREP#** _____.

S/F CONTACT: CIV _____ **CWP #** _____ **CCNS #** _____.

Approved by S300/S900 T. ESCRITOR-YAMADA PM S320 **Date:** 2/2/2026 **AVL:** ~~7B1~~ 6B1.

LWC: _____.

Work Completed

S/Force: _____ **Rate:** _____ **Date:** _____.

Ship Supt: _____ **Date:** _____ **SRF CONTROL NO.:** _____.

WORK CERTIFICATION SIGNATURES

COMPLETION OF WORK REVIEW:	BADGE NO.:	SHOP/CODE:	PHONE:	DATE:

Ship/HULL NO.	Ship/HULL NAME	JON:	ICN:	Rev:	Key Op:
YON-285	BARGE		89MVA15007		A01

TITLE:

Knuckle Crane; install (Part-III, Piping Work)

1. **SCOPE:**

1.1 Title: Knuckle Crane; install (Part-III, Piping Work)

1.2 Location of Work:

1.2.1 See 2.2

1.3 Identification:

1.3.1 See 2.2. (Hydraulic Piping for Knuckle Clane; install, Pressure Line; Class P-1 Piping, Return Line and Casing Drain Line; Class P-2 Piping)

2. **REFERENCES:**

2.1 Standard Items (~~FY27~~ FY26)

2.2 556-8970283, SHIPALT YON-0126D HPU and HYDRAULIC Piping Install Incidental Knuckle Crane Install

2.3 185-8970282, SHIPALT YON-0126D Structural and Foundation Knuckle Crane Install

2.4 MIL-STD-419F, Cleaning, Protecting, and Testing Piping, Tubing, and Fittings for Hydraulic Power Transmission Equipment

2.5 S9086-S4-STM-010/CH-556/Rev 10, Hydraulic Equipment (Power Transmission and Control)

3. **REQUIREMENTS:**

3.1 Prior to the start of hydraulic piping replacement work, ensure that each area affected by this work item has been cleaned to a gas/oil free condition. (See 4.2 and 4.3)

3.2 Accomplish the requirements of 2.2 including each note for installation of hydraulic piping listed in 1.3.1, using 2.3 for guidance.

3.2.1 Accomplish the requirements of **009-12** of 2.1, including Table One Column A, Lines One through 10.

3.2.1.1 Accomplish the requirements of **009-09** of 2.1 for Class P-1 weld and inspection operations.

3.2.1.2 Accomplish nondestructive testing of each welded joint in accordance with Line 13 for each Class P-1 piping welded.

3.2.2 Accomplish the requirements of **009-71** of 2.1 for hydrostatic test of piping to verify tightness of each Class P-1 and Class P-2 welded

joint, using system fluid at 5,439 (+50/-0) PSIG for Class P-1 Piping and 300 (+6/-0) PSIG for Class P-2 Piping. (See 4.4)

3.2.3 Accomplish the requirements of **009-12** of 2.1, including Table 2, Column A, Lines One through 7 for each penetration sleeve and pipe hanger.

3.2.4 Accomplish the requirements of **009-25** of 2.1 for local air hose test of penetration sleeve. Allowable leakage: None.

(V) (G) "SAMPLING"

3.2.5 After completion of cleaning and flushing for hydraulic piping affected by this work item, take the sample from the piping system in accordance with 5.6.2 of 2.4. - **S130**

3.2.5.1 Particle contamination must meet SAE AS4059 Class 9 or ISO 4406 Code -/18/15, or better in accordance with 5.6-f of 2.4 and Table 556-8-3a of 2.5. Water content must not exceed 0.05 percent by volume.

(V) "REPORT"

3.2.5.2 Submit One legible condition report listing results of the requirements of 3.2.5.1.

3.3 Accomplish the requirements of **009-32** of 2.1 for cleaning and preservation of each new and disturbed surface to match surrounding areas.

4. NOTES:

4.1 Initial Condition - S/A YON-0126D, knuckle crane installation, not accomplished.

4.2 Each cargo oil tank cleaning will be covered by ICN 89MVA12301_A01.

4.3 Marine Chemist inspection will be covered by 89MVA11001_A01.

4.4 System fluid will be ordered by Part-II MACH and ELEC Work.

4.5 Operational test (Load test) of each mechanical joint of hydraulic piping for knuckle crane system will be conducted by Part-II MACH and ELEC Work.

4.6 SRF tool room will provide each pressure gauge.

4.7 The contractor is responsible to dispose all waste generated by this work item in accordance with Japanese Environmental Governing Standards (JEGS).

5. GOVERNMENT FURNISHED MATERIAL (GFM) :

5.1 SRF will provide following material.

MATERIAL LIST

ITEM NO.	PC NO.	REF NO.	M / C	DESCRIPTION	STOCK NUMBER	HAZ MAT	DOC NO.	QTY REQD/ UNIT	PARA NO.
301			C	COUPLING,PIPE,COUPLING, 1"IPS, SW, CRES 316,L, 6,000#, ANSI B16.11	9B 4730 012771396	9		3/EA	3.2
302			C	COUPLING,PIPE,COUPLING, 1-1/4"IPS, SW, 6000#, ANSI B16.11, CRES 316L	9B 4730 012771392	9		3/EA	3.2
303			C	COUPLING,PIPE,COUPLING, 3/4"IPS, SW, 6000#, ANSI B16.11, CRES 316L	9B 4730 014264989	9		3/EA	3.2
304			M	WELDING,WELDING ELECTRODE, 1/16 X 36, MIL-316L, MIL-E-19933, CL.2, GTAW 10LB/BX	9B 3438 SA4589224	H		1/CN	3.2
305			M	ROD,WELDING,WELDING ELECTRODE, 1/16 X 12, MIL-RN82, MIL-E-21562, CL.2, GTAW, INCONNEL	9B 3439 004344851	H		1/BX	3.2
306			M	ROD,WELD,WELDING ELECTRODE, 1/16 X 36, MIL-70S-2, MIL-E-23765/1, CL.6, GTAW, 5 LB/CO	9B 3439 009008737	H		1/CO	3.2
512	P-1	2.2	M	PIPE,1" PIPE, 1.315" OD X 0.250" THK, SCH 160, ASTM A312, 316 SS, SEAMLESS	9B 4730	9		24/FT	3.2
513	P-2	2.2	M	PIPE,1-1/4" PIPE, 1.660" OD X 0.250" THK, SCH 160, ASTM A312, 316 SS, SEAMLESS	9B 4730	9		22/FT	3.2
514	P-3	2.2	M	PIPE,3/4" PIPE, 1.050" OD X 0.218" THK, SCH 160, ASTM A312, 316 SS, SEAMLESS	9B 4730	9		24/FT	3.2
515	P-4	2.2	M	PIPE,3" PIPE, 3.500" OD X 0.300" THK, SCH 80, ASTM A106, CARBON STEEL, SEAMLESS	9B 4730	9		3/FT	3.2
516	P-5	2.2	M	PIPE,2-1/2" PIPE, 2.875" OD X 0.276" THK, SCH 80, ASTM A106, CARBON STEEL, SEAMLESS	9B 4730	9		3/FT	3.2
517	P-6	2.2	M	PIPE,2" PIPE, 2.375" OD X 0.218" THK, SCH 80, ASTM A106, CARBON STEEL, SEAMLESS	9B 4730	9		3/FT	3.2
518	P-7	2.2	M	PIPE,1/2" PIPE, 0.840" OD X 0.187" THK, SCH 160, ASTM A312, 316 SS, SEAMLESS	9B 4730	9		3/FT	3.2
519	F-1	2.2	M	ELBOW,1-1/4", ELBOW,90 DEG, 6000#, SWLDG, 316 SS, ASTM A182	9B 4730	9		3/EA	3.2
521	F-3	2.2	M	RDC COUPLING,1-1/4" X 1", REDUCING COUPLING, 6000#, SWLDG, 316 SS, ASTM A182	9B 4730	9		2/EA	3.2
522	F-4	2.2	M	ELBOW,1", ELBOW, 90 DEG, 6000#, SWLDG, 316 SS, ASTM A182	9B 4730	9		3/EA	3.2
523	F-5	2.2	M	SEALANT,SILICONE,FI,SEALANT,SILIC ONE,FIRE RESISTANT, DRK GREY, U/I: 310 ML/CA	9Q 8030 LHA007168	5		5/CA	3.2
524	F-6	2.2	M	RDC COUPLING,1" X 3/4", REDUCING COUPLING, 6000#, SWLDG, 316 SS, ASTM A182	9B 4730	9		2/EA	3.2
525	F-7	2.2	M	ELBOW,3/4", ELBOW, 90 DEG, 6000#, SWLDG, 316 SS, ASTM A182	9B 4730	9		3/EA	3.2

Ship/HULL NO.	Ship/HULL NAME	JON:	ICN:	Rev:	Key Op:
YON-285	BARGE		89MVA15007		A01

TITLE:

Knuckle Crane; install (Part-III, Piping Work)

MATERIAL LIST

ITEM NO.	PC NO.	REF NO.	M / C	DESCRIPTION	STOCK NUMBER	HAZ MAT	DOC NO.	QTY REQD/ UNIT	PARA NO.
526	F-8	2.2	M	FILTER SLEEVE,FILTER SLEEVE, 22/15 140MM NOFIRNO MULTI BUNDLE P/N 80-5072	9B 4330 SA2505112	9	6028E708	10/EA	3.2
527	F-9	2.2	M	RDC COUPLING,3/4" X 1/2", REDUCING COUPLING, 6000#, SWLDG, 316 SS, ASTM A182	9B 4730	9		2/EA	3.2
528	F-10	2.2	M	MALE ADAPTER,1",MALE ADAPTER, JIC 37 DEG, FLARE X MPT, ASTM A182, 316 SS, SIM TO PARKER TRIPLE-LOK SERIES 16 FTXO-SS	9B 4730 SA2505123	9	6029PS01	2/EA	3.2
529	F-11	2.2	M	MALE ADAPTER,3/4", MALE ADAPTER, JIC 37 DEG, FLARE X MPT, ASTM A182, 316 SS, SIM TO PARKER TRIPLE-LOK SERIES 12 FTXO-SS	9B 4730 SA2505124	9	6029PS03	2/EA	3.2
530	F-12	2.2	M	MALE ADAPTER,1/2", MALE ADAPTER, JIC 37 DEG FLARE X MPT, ASTM A182, 316 SS, SIM TO PARKER TRIPLE-LOK SERIES 8-8 FTXO-SS	9B 4730 SA2505125	9	6029PS02	2/EA	3.2
531	F-13	2.2	M	COUPLING,3/4", COUPLING, 6000#, SWLDG X FPT, 316 SS, ASTM A182	9B 4730	9		2/EA	3.2
532	F-14	2.2	M	COUPLING,1", COUPLING, 6000#, SWLDG X FPT, 316 SS, ASTM A182	9B 4730	9		2/EA	3.2
533	F-15	2.2	M	COUPLING,1/2", COUPLING, 6000#, SWLDG X FPT, 316 SS, ASTM A182	9B 4730	9		2/EA	3.2