USS ROBERT G BRADLEY (FFG-49)

SEMAT IV HULL AND SUPPORTING STRUCTURE SURVEY

INTERIOR AREAS
8/18/02 TO 8/23/02

PREPARED BY
SUPERVISOR OF SHIPBUILDING CONVERSION AND REPAIR
PORTSMOUTH VIRGINIA

Q.E.D.
SYSTEMS, INC.

4646 WITCHDUCK ROAD
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30 August, 2002
Serial # 1697 BJ 093

Q.E.D. Systems, Inc. was tasked by the Supervisor of Shipbuilding Conversion and Repair, USN (SPORT) Portsmouth, VA. to conduct an Ultrasonic Thickness (U/T) Survey of specific locations on board USS ROBERT G BRADLEY (FFG-49) during the period of 18 – 23 August 2002.

The survey was conducted by:

Francis J. LaRock Certified Level II, 09 March 2001

Candace Short Certified Level I, 11 January 2002

The instruments used were Krautkramer Branson,

Model DMS-2TC. Serial Number: 00N3V8

Calibration Date:	22 February 2002
Probes Used:	TC 560
	KBA 560
	FH 2 E
	KBA 525

I have reviewed the results of the survey and approved of the findings. The discrepancies have been recorded on MAF's and are included in this report.

Frank

Francis J. LaRock
Certified Level II

USS ROBERT G BRADLEY (FFG-49)

SHELL CONDITION ASSESSMENT SURVEY
INTERIOR AREAS

TABLE OF CONTENTS

	PAGE NUMBER
GENERAL SUMMARY OF CONDITIONS FOUND	**3A**
SURVEY RESULTS	**4**
AUXILIARY MACHINERY ROOM NO. 3 (5-292-0-E)	**7**
MAIN ENGINE ROOM (5-250-0-E)	**11**
SONAR COOLING EQUIPMENT ROOM (4-48-1-Q)	**15**
FFG-7 CRITICAL INSPECTION AREAS (HOT- SPOTS)	**16**
FFG-7 STRUCTURAL INSPECTION MATRIX	**17**

USS ROBERT G BRADLEY (FFG-49)
HULL AND SUPPORTING STRUCTURE SURVEY
INTERIOR AREAS
GENERAL SUMMARY OF CONDITIONS FOUND

A SEMAT IV HULL AND SUPPORTING STRUCTURE SURVEY OF ALL ASSESSABLE AREAS WAS CONDUCTED ON BOARD USS ROBERT G BRADLEY (FFG 49) AT NAVAL STATION, MAYPORT FL. FROM 19 TO 23 AUGUST 2002.

THE SURVEY WAS CONDUCTED IN ACCORDANCE WITH HULL STRUCTURE MRC 1102 USING A DELMHORST MODEL BD 1102 MOISTURE METER AND A KRAUTKRAMER MODEL DMS 2 THICKNESS GAGE FOR ULTRASONIC TESTING. THE INSTRUMENT SERIAL NUMBER 008NV8 CALIBRATION DUE DATE IS 02/22/03.

DURING THE SURVEY, AREAS OF HISTORICALLY PRONE TO CORROSION (HOT SPOTS) ON (FFG 7) CLASS VESSELS WERE INSPECTED AND NOTED ALONG WITH THE4 OTHER AREAS WHERE CORROSION WAS FOUND. THE BILGE AREA OF AUX 3, 5-292 –0-E WAS THE ONLY AREA OF CONCERN. THE BOTTOM SHELL STRAKES (A) AND (B) FROM FRAME 300 TO 328 ON THE PORT SIDE AND FROM FRAMES 316 TO 328 STARBOARD ARE HEAVILY PITTED. THE DEEPEST PITS EXCEEDED ONE EIGHT INCH WITHOUT REMOVING ANY PAINT WHEN MEASURED BY A DEPTH MICROMETER. THE AREA WAS TOO PITTED TO OBTAIN RELIABLE ULTRASONIC THICKNESS READINGS.

USS ROBERT G BRADLEY (FFG-49) STRUCTURAL INSPECTION RESULTS

UNSATISFACTORY AREAS

LOCATION	AREA	RESULTS
(4-48-1-Q) SONAR COOLING EQUIPMENT ROOM JCN CA01-0756	STARBOARD SHELL	TWO1.75 X 3 INCH VERTICAL STIFFENERS ON THE STARBOARD SHELL ARE DETERIORATED AT THE LOWER TEN INCHES. SHIPS FORCE HAS SUBMITTED A 2 KILO FOR REPAIRS
(5-292-0-E) AUXILIARY MACHINERY ROOM 3 JSN P211	PORT AND STARBOARD BILGE AREA	THERE IS SEVERE DEEP PITTING IN THE (A) & (B) STRAKES FROM FRAME 300 TO FRAME 328 ON THE PORT SIDE AND FROM FRAME 316 TO FRAME 328 STARBOARD SIDE.THE NATURE OF THE PITS MADE THE U/T READINGS QUESTIONABLE. ADEPTH MICROMETER WAS USED TO GAUGE THE DEPTH OF THE PIT WITHOUT THE REMOVAL OF PAINT. THE DEEPER PITS EXCEEDED 1/8 INCH WITHOUT THE REMOVAL OF PAINT. THE EXCESSIVE PITTING OF THE PLATE SURFACE MADE FOR AN UNEVEN SURFACE TO WORK FROM.

USS ROBERT G BRADLEY (FFG-49)
STRUCTURAL INSPECTION RESULTS
SATISFACTORY AREAS

LOCATION	COMPARTMENT	MCA SUBMITTED
(3-32-2-A)	SECURITY FORCE ISSUE ROOM	YES
(3-32-1-K)	FLAMMABLE LIQUID STRM	YES
(3-36-2-T)	TRUNK	YES
(3-40-2-A)	CPO STOREROOM	YES
(3-46-1-A)	FIRST DIVISION OFFICE	YES
(3-48-2-A)	MEDICAL STRM NO. 1	YES
(3-53-2-A)	CREW AND CPO BAGGAGE ROOM	YES
(3-56-0-A)	DECK GEAR STRM	YES
(3-84-0-E)	A/C MACHINERY RM	YES
(3-93-1-Q)	ELECTRICAL POWER ROOM	YES
(3-100-0-L)	BERTHING	YES
(3-100-1-L)	LEARNING CENTER	YES
(3-113-1-L)	SANITARY SPACE	YES
(3-140-1-L)	PASSAGEWAY	YES
(3-140-2-L)	NAV/ ADMIN BERTHING	YES
(3-144-0-L)	BERTHING	YES
(3-154-1-Q)	CHT VALVE ROOM	YES
(3-156-2-Q)	CHT VALVE ROOM	YES
(3-180-2-C)	SWITCH GEAR ROOM	YES
(3-180-5-A)	DRY PROVISIONS STRM	YES
(3-196-2-A)	S-2 STOREROOM	YES
(3-292-2-E)	#4 SSDG	YES
(3-328-0-A)	STOREROOM	YES
(4-32-0-A)	SONAR ROOM	YES
(4-48-2-L)	PASSAGE	YES
(4-56-0-M)	SMALL ARMS MAGAZINE	YES
(4-56-2-A)	ENGINEERS STRM	YES
(4-64-0-Q)	MAG SERVICE ROOM	YES
(4-100-0-E)	APU MACH ROOM	YES
(4-140-0-Q)	LAUNDRY	YES
(4-140-2-A)	SODA STRM NO. 2	YES
(4-140-3-A)	STRM NO.3	YES
(4-152-1-A)	CHEMICAL WARFARE DEF EQPT STRM	YES
(4-160-0-Q)	CHT PUMP ROOM	YES
(4-172-1-E)	FIRE PUMP ROOM	YES
(5-51-0-Q)	EDUCTOR ROOM	YES
(5-180-1-E)	SSDG NO. 1 ENCLOSURE	YES
(5-180-0-E)	AUX MACHINERY ROOM NO. 1	YES
(5-212-0-E)	AUX MACHINERY ROOM NO. 2	YES
(5-226-1-E)	SS DSL GEN NO. 2	YES
(5-226-2-E)	SS DSL GEN NO. 3	YES
(5-250-0-E)	MER	YES
(5-368-0-E)	STEERING GEAR RM	YES
(5-376-1-A)	BOS'N STRM NO. 3	YES

USS ROBERT G BRADLEY (FFG-49) STRUCTURAL INSPECTION RESULTS
UNASSESSABLE AREAS

LOCATION	COMPARTMENT	**RESULTS**
3-20-0-Q	CHAIN LOCKER	UNASSESSABLE/ REQUIRES GAS FREE
3-64-2-V	VOID	UNASSESSABLE/ REQUIRES GAS FREE
3-64-1-V	VOID	UNASSESSABLE/ REQUIRES GAS FREE
3-236-1-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
3-236-2-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
3-240-1-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
3-240-2-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
3-272-2-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
3-272-1-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
3-278-1-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
3-278-2-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
3-286-2-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
3-286-1-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
3-292-8-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
3-316-1-J	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
3-322-1-J	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
4-H-0-V	VOID	UNASSESSABLE/ REQUIRES GAS FREE
4-20-0-W	WATER TANK	UNASSESSABLE/ REQUIRES GAS FREE
4-27-0-V	VOID	UNASSESSABLE/ REQUIRES GAS FREE
5-FF-0-V	VOID	UNASSESSABLE/ REQUIRES GAS FREE
5-32-0-W	WATER TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-56-0-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-64-0-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-84-2-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-84-1-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-100-2-W	WATER TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-100-1-W	WATER TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-100-4-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-100-3-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-116-2-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-116-1-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
5 ½-116-0-V	VOID	UNASSESSABLE/ REQUIRES GAS FREE
5-132-0-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-137-1-T	PIT SWORD	UNASSESSABLE/ REQUIRES GAS FREE
5-140-2-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-140-1-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-164-0-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-164-2-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-164-1-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-170-0-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-192-2-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-201-1-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-201-3-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-204-2-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-204-1-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-220-2-W	WATER TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-222-1-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-250-1-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-250-2-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-270-0-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-276-0-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE

USS ROBERT G BRADLEY (FFG-49) STRUCTURAL INSPECTION RESULTS
UNASSESSABLE AREAS

5-290-2-F	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-292-1-W	WATER TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-292-2-W	WATER TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-292-3-W	WATER TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-308-2-W	WATER TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-308-1-W	WATER TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-328-0-J	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-328-2-W	WATER TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-328-1-W	WATER TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-344-0-J	FUEL TANK	UNASSESSABLE/ REQUIRES GAS FREE
5-368-0-V	VOID	UNASSESSABLE/ REQUIRES GAS FREE
5-386-0-V	VOID	UNASSESSABLE/ REQUIRES GAS FREE
5-392-0-V	VOID	UNASSESSABLE/ REQUIRES GAS FREE

MATERIAL ASSESSMENT FORM

ITEM NUMBER				SHIP: USS ROBERT G BRADLEY (FFG-49)
SYSTEM: SHELL & SUPPORTING STRUCTURE	ESWBS: 1/011	EIC: A100	APL: X SYSTEMS	RIN: N/L
EQUIPMENT NAME: HULL STRUCTURE 110XX	IDENT/SERIAL: N/A	LOCATION: 5-292-0-E	WORK CENTER: EM04	JSN: **P211**

EQUIPMENT STATUS	PROBLEM STATUS	CATEGORY	EOC
1. SAT - SATISFACTORY 2. UNSAT - UNSATISFACTORY 3. TNA - TEST NOT ATTEMPTED 4. TNC - TEST NOT COMPLETED 5. NOB - EQUIPMENT NOT ONBOARD	1. C – CORRECTED 2. A – AWAITING PARTS 3. T – AWAITING TECH ASSIST* 4.S - SHIP'S FORCE *UNCORRECTED PROBLEMS	1. S - PERSONNEL SAFETY 2. Z - EQUIPMENT SAFETY 3. H – HARDWARE 4. D - DOWN 5. L - LIMITED	6

TYPEAVAILABILITY	WHEN TO BE ACCOMPLISHED	STATUS	CAUSE	DEFERRAL REASON
1. DEPOT 2. IMA 3. TECH ASSIST 4. SHIP'S FORCE 5. SFWL 3	1. IMMEDIATELY 2. PRIOR TO NEXT UNDERWAY 3. PRIOR TO NEXT DEPLOYMENT 4. DURING POST DEPLOYMENT AVAILABILITY 4	1. OPERATIONAL 2. NON-OPERATIONAL 3. REDUCED CAPABILITY 0. NOT APPLICABLE 1	1. ABNORMAL ENVIRONMENT 2. MANFACTURER/INSTALLATION DEFECTS 3. LACK OF KNOWLEDGE 4. COMMUNICATION PROBLEMS 5. INADEQUATE INSTRUCTION/PROCEDURE 6. INADEQUATE DESIGN 7.NORMAL WEAR AND TEAR 0. NOT APPLICABLE 1	1. S/F BACKLOG/OPERATIONAL PRIORITY 2. LACK OF MATERIAL 3. NO FORMAL TRAINING ON THIS EQUIPMENT 4. FORMAL TRAINING INADEQUATE IN THIS EQUIPMENT 5. INADEQUATE SCHOOL PRACTICAL TRAINING 6. LACK OF FACILITIES/CAPABILITIES 7. NOT AUTHORIZED FOR S/F ACCOMPLISHMENT 8. FOR S/F OVERHAUL OR AVAILABILITY WORK LIST 9. LACK OF TECHNICAL DOCUMENTATION 0. OTHER OR NOT APPLICABLE 7

MAN HRS EXPENDED	MAN HRS REMAINING	COMPLETED ACTION TAKEN	S/F MANHOURS	PRIORITY
8	200			

SAFETY HAZARD:		PRIORITY
1. SERIOUS - CORRECT AS SOON AS POSSIBLE 2. SERIOUS - SUSPENSION OF EQUIPMENT/SYSTEM/SPACE REQUIRED 3. SERIOUS - WAIVER OF EQUIPMENT/SYSTEM 4. SAFETY ITEM - MINOR 5. COMBUSTIBLE MATERIAL 4	1. MAINTENANCE ACTION COMPLETED: PARTS DRAWN FROM SUPPLY 2. MAINTENANCE ACTION COMPLETED: REQUIRED PARTS NOT DRAWN FROM SUPPLY 3. MAINTENANCE ACTION COMPLETED: NO PARTS REQUIRED 4. CANCELLED - DEFERRAL WILL BE REMOVED FROM CSMP 7. MAINTENANCE ACTION COMPLETED: 3-M CAPABILITY UTILIZED 0. NONE OF THE ABOVE, DESCRIBE IN REMARKS/DESCRIPTION SECTION	1. MANDATORY 2. ESSENTIAL 3. HIGHLY DESIRABLE 4. DESIRABLE 4

DISCREPANCY DESCRIPTION: PER SEMAT 4 UNDERWATER HULL ASSESSMENT: AUX MACH ROOM 3 (5-292-0-E) CORROSION TO SHELL PLATING LOCATED IN BILGE, BETWEEN FRAME 300 AND 328, PORT/STDB, AND EXTENDS BETWEEN STRINGERS P3 AND S4 WITH THE EXCEPTION OF ONE PANEL OF GENERAL CORROSION, CORROSION IS CONFINED TO APPROX. (25) ISOLATED PITS. GENERAL CORROSION RANGES FROM 25% TO 30% OF ORIGINAL PLATE THICKNESS. SIZE OF PITS RANGES FROM ½ INCH TO 1 ½" IN DIAMETER.

RECOMMENDED REPAIRS: RECOMMEND CLAD WELDING THE DEEP PITS FROM FRAMES (300 TO 328) APPROX 100 SQ INCHES.

SSPORT C221 POC: A.DAVIS (757-396-4001 EXT) TPOC: R. NORMAN

CSMP SUMMARY: SEVERE PITTING IN SHELL PLATE

TEST# MRC 1102/1

ROOT CAUSE/AMPLIFICATION: H1

STEP# 1 THRU 5

SYSTEM LEVEL IMPACT: NONE

	PART NO.	NOMENCLATURE	QTY	NSN	COST
1					
2					
3					
4					
5					
6					

FIRST CONTACT	RATE	SECOND CONTACT	RATE	PHONE
GREEN	DCC	CARROL	ENS	

ASSESSOR / ACT / TECH ID#	TD	TL	LOGISTICIAN	TSP
F. LAROCK / C. SHORT QED SYSTEMS INC (757) 490-5047				

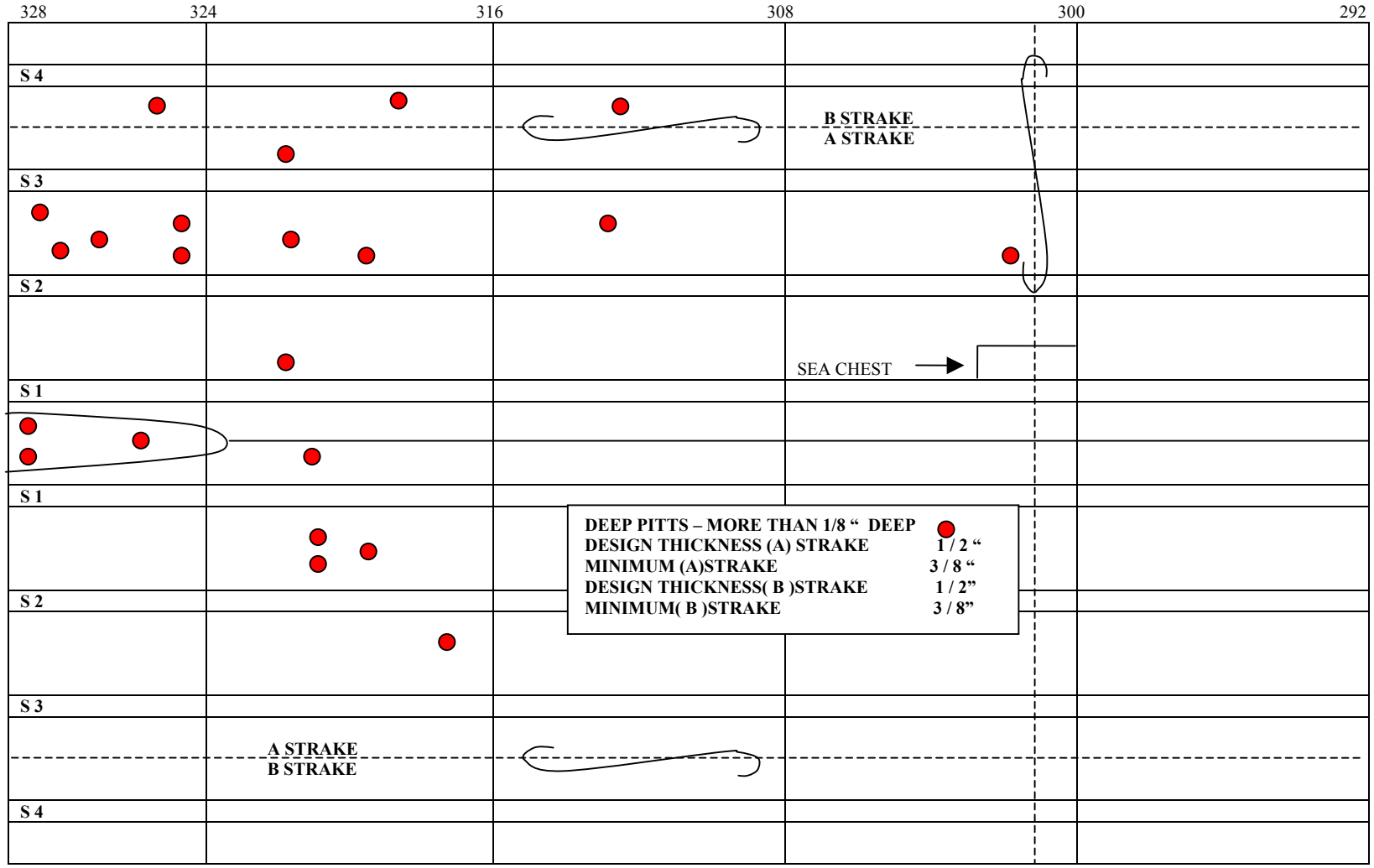
(A) STRAKE BETWEEN FRAMES 316 AND 324 AND STRINGERS 2 AND 3 PORTSIDE.

(A) STRAKE BETWEEN FRAMES 324 AND 328 AND STRINGERS 2 AND 3 PORTSIDE. JSN-P001

**(B) STRAKE BETWEEN FRAMES 324 AND 328
AND STRINGERS 3 AND 4 PORTSIDE**

**(B) STRAKE BETWEEN FRAMES 308 AND 316
AND STRINGERS 3 AND 4 PORTSIDE**

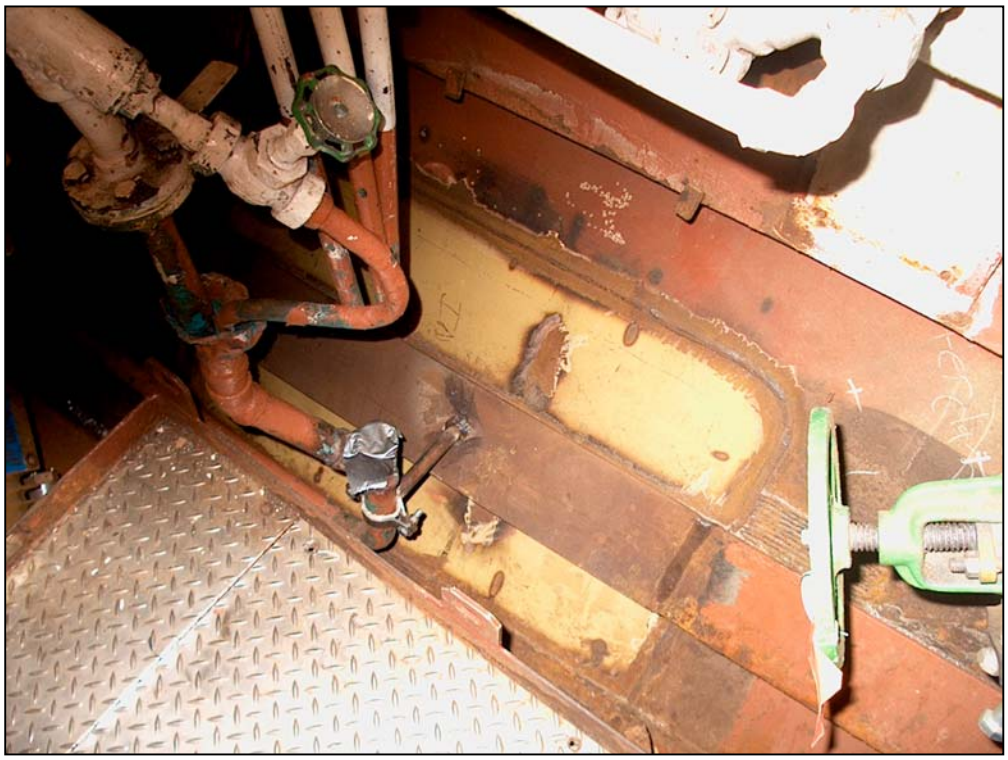
PORT **AREAS OF DEEP PITTING**



STARBOARD

USS ROBERT G BRADLEY (FFG-49)
AUXILIARY MACHINERY ROOM 3 (5-292-0-E)

F. LAROCK LVL 2 / C. SHORT LVL 1
QED SYSTEMS INC.
20 AUG. 2002

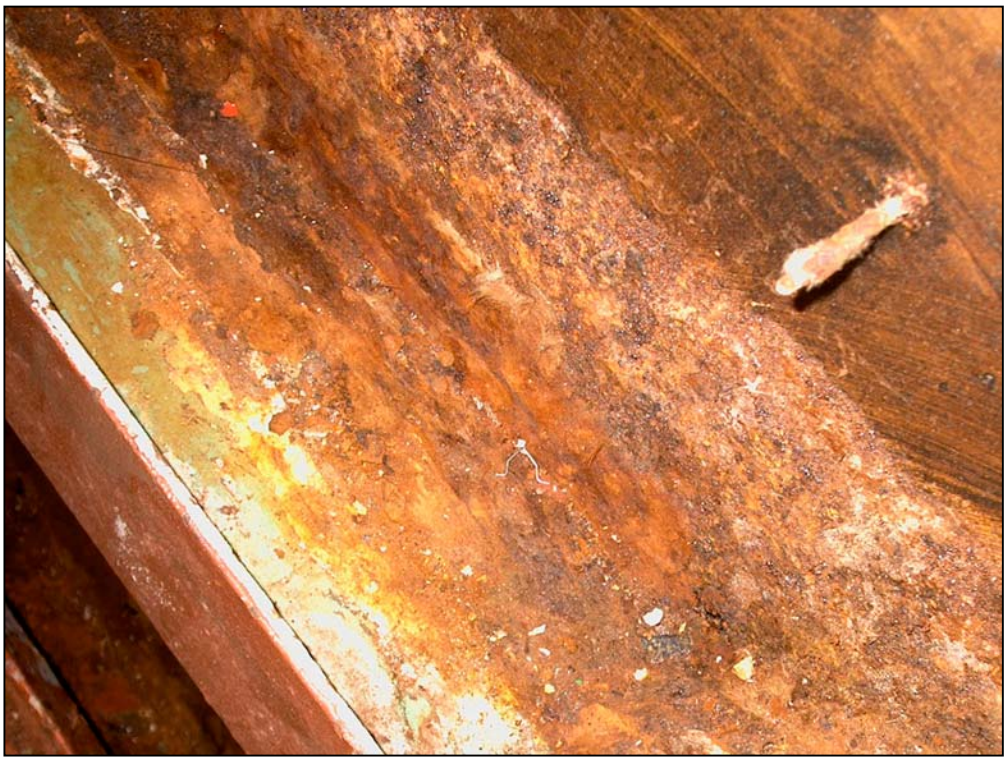


NEW PLATE, PORTSIDE BETWEEN FRAMES (264 AND 270)

CLAD WELD REPAIRS, PORTSIDE AFT OF FRAME (270)

USS ROBERT G BRADLEY (FFG- 49)
MAIN ENGINE ROOM (5-250-0-E)

STRINGERS 10, 11 & 12 PORTSIDE BETWEEN FRAMES (264 AND 270)



USS ROBERT G BRADLEY (FFG- 49)
MAIN ENGINE ROOM (5-250-0-E)

CORROSION THAT WAS HIDDEN BY HULL INSULATION. STARBOARD SIDE AT BULKHEAD (250)

CORROSION ON THE SHELL AND STRINGER (11) AT FRAME (258) STARBOARD SIDE.

250 258 264 270 271 278

1'

S 16

D STRAKE

S 15

DESIGN THICKNESS C STRAKE . 375 MIN. . 280
DESIGN THICKNESS D STRAKE . 313 MIN. . 234

S 14

.332	.317	. 325	. 323	.322	. 320	. 321	. 335	. 318	. 322	. 326	. 326	.335	.335
.330	. 326	. 331	.325	. 331	319	. 326	. 329	. 337	. 336	. 318	.323	. .323	. 313

S 13

. 335	. 328	. 328	. 326	. 328	.323	. 327	. 319	. 326	.338	. 315	. 317	.332	.325
. 332	. 313	. 319	. 319	. 309	.292	320	..298	. 330	. 313	. 315	. 328	. 328	. 332

S 12

. 341	. 347	. 344	. 352	.338	. 339	. 342	. 332	. 342	. 335	. 330	. 325	. 335	. 325
. 287	. 313	. 298	. 329	. 323	. 322	. 337	. 250	. 311	. 279	. 314	. 317	. 346	. 335

S 11

						. 319	. 320		. 340		. 343		

C STRAKE

S 10

USS ROBERT G BRADLEY (FFG-49)
MAIN ENGINE ROOM (5-250-0-E)
STARBOARD SIDE

F. LAROCK LVL 2 / C . SHORT LVL 1
QED SYSTEMS INC.
19 AUG. 2002

USS ROBERT G BRADLEY (FFG-49)
SONAR COOLING EQUIPMENT ROOM (4-48-1-Q)

ONE OF TWO DETERIORATED 1.5” X 3” INTERCOSTALS AT DECK LEVEL. A 2-KILO WAS PREVIOUSLY ENTERED INTO THE SHIPS CSMP. (JSN-CA01-0756)

STRUCTURAL AGENDA FOR (FFG-7) CLASS
HOT SPOT LIST

MER (5-250-0-E)	FR 271 PORT TRANSVERSE WELD SEAM FR 250 PORT BULKHEAD UNDER ADJACENT EDUCTOR PIPING FR (258-264) STARBOARD
BERTHING (3-100-0-L)	TANK TOP FO (5-116-2-F) STARBOARD SHELL BEHIND SHEATHING DECK PLATING IN WAY OF X-FLOODING TRUNK
APU MACHINERY (4-100-0-E)	STARBOARD SHELL AT BILGE TURN OVERHEAD FROM OPS BERTHING
A/C MACHINERY(3-84-0-E)	PORT OUTBOARD NEAR OPS BERTHING STARBOARD OUTBOARD BEHIND A/C UNIT – PORTSIDE UNDER SFC'S
AUX 3 (5-292-0-E)	EDUCTOR OVERBOARD FR (316-328) PORT SIDE SHELL TO STRINGER UNDER 4 SSDG COOLING PUMP AFT COOLING PUMP NEAR POT WTR TANK (5-308-2-W) OUTBOARD SHELL NEAR POT WTR TANK (5-308-2-W) BULKHEAD BETWEEN AUX 3 AND MER POT WTR TANK TOP (5-308-2) UNDER VACUUM PRIMING PUMP POT WTR TANK TOP (5-292-1) LONGITUDINAL UNDER 4 SSDG ENCLOSURE UNDER OILY WAST TANK OVER SKEG
AUX 3POT WTR TANK (5-308-1-W)	INBOARD LOWER BILGE 16" FROM BILGE MARGIN PLATE
AUX 3 POT WTR TANK (5-308-2-W)	INBOARD LOWER BILGE 16" FROM ROG
AUX 3 POT WTR TANK (5-292-3-W)	INBOARD LOWER BILGE 16" FROM BILGE
AUX 3 POT WTR TANK (5-292-1-W)	OUTBOARD MARGIN PLATE INBOARD BULKHEAD
FIRE PUMP ROOM (4-172-1-E)	BULKHEAD BETWEEN CHT AND FPR PUMP FOUNDATION
CPO BERTHING (3-144-2-L)	UNDER FCU
AUX 2 (5-212-0-E)	OUTBOARD NO 1 HPAC
AUX 1 (5-180-0-E)	PORT FWD BULKHEAD INTO CHT AT BILGE
CHT (4-160-0-Q)	PORT OUTBOARD NEAR OWS BEHIND PUMP AT MARGIN PLATE STARBOARD SIDE BULKHEAD FRAME (180) OUTBOARD BILGE POCKET PORT & STBD FRAME (164) DISCHARGE PUMP FOUNDATION STRINGERS UNDER CHT TANK FWD BULKHEAD
FORECASTLE	BULWARK – LONGITUDINAL & VERTICAL STIFFENERS
PIT SWORD	FATHOMETER
LAUNDRY (4-140-2-Q)	F/O TANK TOP (5-140-0-2) & (5-164-2-F) MARGIN PLATE BILGE POCKET
SONAR CLG RM (4-48-1-Q)	COOLER FOUNDATION, SHELL PLATE, STRINGERS FWD BULKHEAD AND DECK
FWD EDUCT RM (5-51-0-Q)	SHELL, STRINGERS, VERTICAL STIFFENERS AND DECK PLATFORM

FFG 7 CLASS STRUCTURAL ASSESSMENT MATRIX

SPACE NUMBER	SPACE ASSESSABLE	LAGGING INSTALLED ON BHD	IS THE SPACE INSPECTED DURING SEMAT 1	HISTORICAL HOT SPOT	COMMENTS
3RD DECK					
3-20-0-Q	N	N	Y		SPACE REQUIRES GAS FREE
3-32-2-A	Y	Y	Y		ACCESSIBLE HIDDEN LAGGED 100% (100% OF SHELL ASSESSABLE)
3-32-1-K	Y	Y	Y		ACCESSIBLE HIDDEN LAGGED 100% (100% OF SHELL ASSESSABLE)
3-36-2-T	Y	N	Y		(100% OF SHELL ASSESSABLE)
3-40-2-A	Y	Y	Y		
3-46-1-A	Y	Y	Y		INSULATION 1” DOWN FROM OVHD
3-48-2-A	Y	Y	Y		
3-53-2-A	Y	N	Y		
3-56-0-A	Y	Y	Y		
3-64-2-V	NOT DURING SHIP CHECK	N	Y		SPACE REQUIRES GAS FREE
3-64-1-V	NOT DURING SHIP CHECK	N	Y		SPACE REQUIRES GAS FREE

FFG 7 CLASS STRUCTURAL ASSESSMENT MATRIX

SPACE NUMBER	SPACE ASSESSABLE	LAGGING INSTALLED ON BHD	IS THE SPACE INSPECTED DURING SEMAT 1	HISTORICAL HOT SPOT	COMMENTS
3RD DECK					
3-84-0-E	Y	Y	Y	FRS 84-100 STBD SIDE SHELL, DECK TO OVERHEAD FR 95, PORT SIDE, ON TANK TOP	ACCESSIBLE HIDDEN LAGGED 100% (100% OF PORT SIDE SHELL ASSESSABLE) ACCESSIBLE HIDDEN LAGGED 100% (ACCESSIBLE AREA - STBD FWD BHD 84 TO FRAME 100)
3-93-1-Q	Y	Y	Y		ACCESSIBLE LAGGING 100% STBD SIDE
3-100-0-L	Y	Y	Y		ACCESSIBLE HIDDEN LAGGED 100% (NOT ACCESSIBLE AREA PORT AND STBD FROM FRAME 115 TO AFT BHD 140, 6' 3" OFF DECK - BUNKS)
3-100-1-L	Y	Y	Y		ACCESSIBLE LAGGING 100%
3-113-0-L	Y	Y	Y	FR 113-124, STBD SIDE OF SHELL, DECK TO OVERHEAD	LAGGING 100% AND SS 50% (SS INSTALLED 49" OFF DECK, FRAME 113 TO 123)
3-140-2-L	Y	Y	Y		LAGGING 100% AND SS 50% (SS INSTALLED 49" OFF DECK, FRAME 140 TO 155)

FFG 7 CLASS STRUCTURAL ASSESSMENT MATRIX

SPACE NUMBER	SPACE ASSESSABLE	LAGGING INSTALLED ON BHD	IS THE SPACE INSPECTED DURING SEMAT 1	HISTORICAL HOT SPOT	COMMENTS
3RD DECK					
3-140-1-L	Y	Y	Y		LAGGING 100% AND SS 50% (SS INSTALLED 49" OFF DECK, FRAMES 140 TO 155)
3-144-0-L	Y	Y	Y		ACCESSIBLE HIDDEN LAGGED 100% (NOT ACCESSIBLE AREA, PORT & STBD FRAME 165 TO 180, 6'3" OFF DECK BUNKS)
3-159-2-Q	Y	Y	Y		ACCESSIBLE HIDDEN LAGGED 100% (100% OF PORT SIDE SHELL ASSESSABLE)
3-155-1-Q	Y	Y	Y		ACCESSIBLE HIDDEN LAGGED 100% (100% OF SHELL ASSESSABLE)
3-180-2-C	Y	Y	Y		ACCESSIBLE HIDDEN LAGGED 100% (100% OF SHELL ASSESSABLE)
3-180-5-A	Y	Y	Y		ACCESSIBLE HIDDEN LAGGED 100% (100% OF SHELL ASSESSABLE)
3-196-2-A	Y	Y	Y		ACCESSIBLE HIDDEN LAGGED 100% (100% OF SHELL ASSESSABLE)
3-236-1-F	N	N	Y		SPACE REQUIRES GAS FREE
3-236-2-F	N	N	Y		SPACE REQUIRES GAS FREE
3-240-1-F	N	N	Y		SPACE REQUIRES GAS FREE

SPACE NUMBER	SPACE ASSESSABLE	LAGGING INSTALLED ON BHD	IS THE SPACE INSPECTED DURING SEMAT 1	HISTORICAL HOT SPOT	COMMENTS
3RD DECK					
3-240-2-F	N	N	Y		SPACE REQUIRES GAS FREE
3-272-2-F	N	N	Y		SPACE REQUIRES GAS FREE
3-272-1-F	N	N	Y		SPACE REQUIRES GAS FREE
3-278-1-F	N	N	Y		SPACE REQUIRES GAS FREE
3-278-2-F	N	N	Y		SPACE REQUIRES GAS FREE
3-286-2-F	N	N	Y		SPACE REQUIRES GAS FREE
3-286-1-F	N	N	Y		SPACE REQUIRES GAS FREE
3-292-8-F	N	N	Y		SPACE REQUIRES GAS FREE
3-316-1-J	N	N	Y		SPACE REQUIRES GAS FREE
3-322-1-J	N	N	Y		SPACE REQUIRES GAS FREE
3-328-0-A	Y	Y	Y		ACCESSIBLE HIDDEN LAGGED 100% (100% OF SHELL ASSESSABLE)

SPACE NUMBER	SPACE ASSESSABLE	LAGGING INSTALLED ON BHD	IS THE SPACE INSPECTED DURING SEMAT 1	HISTORICAL HOT SPOT	COMMENTS
4TH DECK					
4-H-0-V	N	N	Y		SPACE REQUIRES GAS FREE
4-20-0-W	N	N	Y		SPACE REQUIRES GAS FREE
4-27-0-V	N	N	Y		SPACE REQUIRES GAS FREE FR 27 FR 32 P/S FROM 3' UP 26' 4 1/16
4-32-0-Q	Y	Y	Y		
4-48-2-L	Y	Y	Y		ACCESSIBLE HIDDEN LAGGED 100% (100% OF SHELL ASSESSABLE)
4-48-1-Q	Y	Y	Y	FR 49-55 STBD SIDE OF SHELL, 4'-0' OFF DECK	ACCESSIBLE HIDDEN LAGGED 100% (NOT ACCESSIBLE AREA FRAME 50 TO AFT BHD 56, 4'-0' OFF DECK HEATEX & PPG)
4-56-2-A	Y	N	Y		ACCESSIBLE HIDDEN LAGGED 100% (100% OF SHELL ASSESSABLE)
4-56-0-M	Y	Y	Y		ACCESSIBLE HIDDEN LAGGED 100% (100% OF SHELL ASSESSABLE)

SPACE NUMBER	SPACE ASSESSABLE	LAGGING INSTALLED ON BHD	IS THE SPACE INSPECTED DURING SEMAT 1	HISTORICAL HOT SPOT	COMMENTS
4TH DECK					
4-64-0-Q	Y	N	Y		
4-100-0-E	Y	Y	Y	FR 100-101 STBD SIDE OF SHELL 6'BELOW GRATING	ACCESSIBLE HIDDEN LAGGED 100% (100% OF PORT & STBD SHELL ASSESSABLE DOWN TO DECK PLATE LEVEL)
4-140-0-Q	Y	Y	N	TANK TOP FOR 5-140 & 5-164-2F	ACCESSIBLE HIDDEN LAGGED 100% (100% OF SHELL ASSESSABLE)
4-140-2-A	Y	Y	N		
4-140-3-A	Y	N	Y	TANK TOP FOR 5-140 & 5-164-2F	STAINLESS STEEL 100% (100% OF PORT SIDE SHELL ASSESSABLE) ACCESSIBLE HIDDEN LAGGED 100%(100% OF SHELL ASSESSABLE)
4-151-1-A	N	Y	N		ACCESS BLOCKED BY SHIPYARD HOSES
4-152-1-A	Y	N	Y		ACCESSIBLE HIDDEN LAGGED 100% (100% OF SHELL ASSESSABLE)

SPACE NUMBER	SPACE ASSESSABLE	LAGGING INSTALLED ON BHD	IS THE SPACE INSPECTED DURING SEMAT 1	HISTORICAL HOT SPOT	COMMENTS
4TH DECK					
4-160-0-Q	Y	N	Y		100% OF PORT AND STBD SHELL ASSESSABLE
4-172-1-E	Y	Y	Y	FR 174-180 STBD OF SHELL 6" BELOW GRATING BETWEEN L7-L9	100% OF PORT & STBD SHELL ASSESSABLE

SPACE NUMBER	SPACE ASSESSABLE	LAGGING INSTALLED ON BHD	IS THE SPACE INSPECTED DURING SEMAT 1	HISTORICAL HOT SPOT	COMMENTS
5TH DECK					
5-FF-0-V	N	N	N		INACCESSIBLE VOID FR 18 - FR 32, P/S. FROM STEM UP 4FT. FR 5 - FR 18, P/S. FROM STEM UP ~6FT; FR E -12, P/S. FROM STEM UP ~10FT
5-32-0-W	N	N	Y		SPACE REQUIRES GAS FREE
5-51-0-Q	Y	Y	Y		100% OF PORT & STBD SHELL ASSESSABLE
5-56-0-F	N	N	Y		SPACE REQUIRES GAS FREE
5-64-0-F	N	N	Y		SPACE REQUIRES GAS FREE
5-84-2-F	N	N	N		SPACE REQUIRES GAS FREE
5-84-1-F	N	N	N		SPACE REQUIRES GAS FREE
5-100-2-W	N	N	N		SPACE REQUIRES GAS FREE
5-100-1-W	N	N	N		SPACE REQUIRES GAS FREE
5-100-4-F	N	N	Y		SPACE REQUIRES GAS FREE
5-100-3-F	N	N	Y		SPACE REQUIRES GAS FREE
5-116-2-F	N	N	Y		SPACE REQUIRES GAS FREE
5-116-1-F	N	N	Y		SPACE REQUIRES GAS FREE

SPACE NUMBER	SPACE ASSESSABLE	LAGGING INSTALLED ON BHD	IS THE SPACE INSPECTED DURING SEMAT 1	HISTORICAL HOT SPOT	COMMENTS
5TH DECK					
51/2-116-0-V	N	N	N		INACCESSIBLE VOID FR 116 - FR 132, P/S FROM KEEL UP ~4FT
5-132-0-F	N	N	N		SPACE REQUIRES GAS FREE
5-137-1-T	N	N	N		SPACE REQUIRES GAS FREE
5-140-2-F	N	N	N		SPACE REQUIRES GAS FREE
5-140-1-F	N	N	N		SPACE REQUIRES GAS FREE
5-164-0-F	N	N	N		SPACE REQUIRES GAS FREE
5-164-2-F	N	N	N		SPACE REQUIRES GAS FREE
5-164-1-F	N	N	N		SPACE REQUIRES GAS FREE
5-170-0-F	N	N	N		SPACE REQUIRES GAS FREE
5-180-0-E	Y	Y	Y	FRAME 180, PORT 15'-0" OFF CL,8'	SHELL NON-ASSESSABLE ON PORT SIDE FRAME 180 TO 195, FRAME 204 TO 212, OVERHEAD TO BILGE, TANK & FND
5-180-01-E	Y	Y	Y		100% OF STBD SHELL ASSESSABLE
5-192-2-F	N	N	Y		SPACE REQUIRES GAS FREE
5-201-1-F	N	N	Y		SPACE REQUIRES GAS FREE
5-201-3-F	N	N	Y		SPACE REQUIRES GAS FREE

SPACE NUMBER	SPACE ASSESSABLE	LAGGING INSTALLED ON BHD	IS THE SPACE INSPECTED DURING SEMAT 1	HISTORICAL HOT SPOT	COMMENTS
5TH DECK					
5-204-2-F	N	N	N		SPACE REQUIRES GAS FREE
5-204-1-F	N	N	N		SPACE REQUIRES GAS FREE
5-212-0-E(UL)	Y	Y	Y	FRS 215-220 PORT SIDE OF SHELL, U/L BETWEEN L13-L14	ACCESSIBLE HIDDEN LAGGED UPPER LEVEL. (NOT ACCESSIBLE AREA, PORT SIDE FRAME 220 TO 224, 5'-0" OFF U/L GRATING VOLTAGE REGULATOR)
5-212-0-E(LL)	Y	Y	Y		ASSESSABLE HIDDEN, LAGGED LOWER LEVEL, ACCESSIBLE AREA PORT FRAME 212 TO 228, L10 TO BILGE AREA, STBD FRAME 212 TO 228 L8 TO BILGE AREA. (NOT ACCESSIBLE AREA - PORT & STBD FRAME 228 TO 250, FROM U/L TO BILGE AREA FUEL OIL HEATER)
5-220-2-W	N	N	N		SPACE REQUIRES GAS FREE
5-222-1-F	N	N	N		SPACE REQUIRES GAS FREE

SPACE NUMBER	SPACE ASSESSABLE	LAGGING INSTALLED ON BHD	IS THE SPACE INSPECTED DURING SEMAT 1	HISTORICAL HOT SPOT	COMMENTS
5TH DECK					
5-226-2-E	Y	Y	Y		SHELL NON-ASSESSABLE FRAME 225 TO 229, 4'-2" OFF U/L GRATING, FRAME 235 TO 250, 6'-3" OFF U/L GRATING - AIR FLASK, MANIFOLD & FUEL TANK, UPPER 15" INSULATED
5-226-1-E	Y	Y	Y		SHELL NON-ASSESSABLE FRAME 225 TO 229, 4'-2" OFF U/L GRATING, FRAME 235 TO 250, 6'-3" OFF U/L GRATING, AIR FLASK, MANIFOLD & FUEL TANK, UPPER 15" INSULATED
5-250-0-E	Y	Y	Y	FR 271-272 PORT SIDE OF SHELL TOP OF L0 TANK TOP	LAGGED EXCEPT FOR BILGE AREA, AT 18" ABOVE GRATING INTO BILGE AREA, SHELL NON-ASSESSABLE ON PORT 1'-0" AFT OF FRAME 270 TO FRAME 292, FROM 5'-0" OFF GRATING, STBD FRAME 265 TO 270 FROM 1'-0" FROM OVERHEAD TO 6" BELOW GRATING, 14" AFT OF FRAME 270 TO 273, 5'-0" OFF GRATING POWER PANELS

SPACE NUMBER	SPACE ASSESSABLE	LAGGING INSTALLED ON BHD	IS THE SPACE INSPECTED DURING SEMAT 1	HISTORICAL HOT SPOT	COMMENTS
5TH DECK					
5-250-0-E (CONT'D)	Y	Y	Y	FR 250 PORT SIDE OF SHELL, BETWEEN L9-L12	
5-250-O-E (CONT'D)	Y	Y	Y	FR 258-264 STBD SIDE OF SHELL, BETWEEN L9-L12	
5-250-1-F	N	N	N		SPACE REQUIRES GAS FREE
5-250-2-F	N	N	N		SPACE REQUIRES GAS FREE
5-270-0-F	N	N	N		SPACE REQUIRES GAS FREE
5-276-0-F	N	N	N		SPACE REQUIRES GAS FREE
5-290-2-F	N	N	N		SPACE REQUIRES GAS FREE
5-292-0-E	Y	Y	Y	FR 316-328 PORT SIDE OF SHELL BETWEEN L5-L9	ACCESSIBLE HIDDEN LAGGED, ASSESSABLE AREA PORT FRAME 292 TO 318, DK GRATING TO OVERHEAD (SHELL NON-ASSESSABLE ON PORT FRAME 318 TO 328, 2'-0" FROM GRATING TO OVERHEAD OF SPACE, STBD FRAME 292 TO 300, 3'-0" OFF GRATING

SPACE NUMBER	SPACE ASSESSABLE	LAGGING INSTALLED ON BHD	IS THE SPACE INSPECTED DURING SEMAT 1	HISTORICAL HOT SPOT	COMMENTS
5TH DECK					
5-292-0-E (CONT'D)	Y	Y	Y	FR 316-328 PORT SIDE OF SHELL BETWEEN L5-L9	TO OVERHEAD, FRAME 305 TO 308, 3'-0" OFF GRATING TO OVERHEAD, FRAME 313 TO 328,6'-3" OFF GRATING & POWER PANELS
5-292-0-E (CONT'D)			Y	FR 292-328 PORT SIDE OF SHELL BETWEEN L1-L3	
5-292-1-W	N	N	N		SPACE REQUIRES GAS FREE
5-292-2-W	N	N	N		SPACE REQUIRES GAS FREE
5-292-3-W	N	N	N		SPACE REQUIRES GAS FREE
5-308-2-W	N	N	N		SPACE REQUIRES GAS FREE
5-308-1-W	N	N	N		SPACE REQUIRES GAS FREE
5-328-0-J	N	N	N		SPACE REQUIRES GAS FREE
5-328-2-W	N	N	N		SPACE REQUIRES GAS FREE

FFG 7 CLASS STRUCTURAL ASSESSMENT MATRIX

SPACE NUMBER	SPACE ASSESSABLE	LAGGING INSTALLED ON BHD	IS THE SPACE INSPECTED DURING SEMAT 1	HISTORICAL HOT SPOT	COMMENTS
5TH DECK					
5-328-1-W	N	N	N		SPACE REQUIRES GAS FREE
5-344-0-J	N	N	N		SPACE REQUIRES GAS FREE
5-368-0-V	N	N	N		SPACE REQUIRES GAS FREE
5-386-0-V	N	N	N		INACCESSIBLE VOID FRAME 386 TO 392, P/S, FROM KEEL UP ~2FT; FRAME 392 TO 400, S, FROM KEEL UP ~2FT; FRAME 400 TO 408 P/S FROM KEEL UP ~2FT
5-392-0-V	N	N	N		SPACE REQUIRES GAS FREE
5-368-0-E	Y	Y	Y		ACCESSIBLE HIDDEN LAGGED 100% (100% OF SHELL ASSESSABLE)
5-376-1-A	Y	Y	Y		ACCESSIBLE HIDDEN LAGGED 100% (100% OF SHELL ASSESSABLE)

SPACE NUMBER	SPACE ASSESSABLE	LAGGING INSTALLED ON BHD	IS THE SPACE INSPECTED DURING SEMAT 1	HISTORICAL HOT SPOT	COMMENTS
5TH DECK					
5-FF-0-V	N	N	N		INACCESSIBLE VOID FR 18 - FR 32, P/S. FROM STEM UP 4FT. FR 5 - FR 18, P/S. FROM STEM UP ~6FT; FR E -12, P/S. FROM STEM UP ~10FT
5-32-0-W	N	N	Y		SPACE REQUIRES GAS FREE
5-51-0-Q	Y	Y	Y		100% OF PORT & STBD SHELL ASSESSABLE
5-56-0-F	N	N	Y		SPACE REQUIRES GAS FREE
5-64-0-F	N	N	Y		SPACE REQUIRES GAS FREE
5-84-2-F	N	N	N		SPACE REQUIRES GAS FREE
5-84-1-F	N	N	N		SPACE REQUIRES GAS FREE
5-100-2-W	N	N	N		SPACE REQUIRES GAS FREE
5-100-1-W	N	N	N		SPACE REQUIRES GAS FREE
5-100-4-F	N	N	Y		SPACE REQUIRES GAS FREE
5-100-3-F	N	N	Y		SPACE REQUIRES GAS FREE
5-116-2-F	N	N	Y		SPACE REQUIRES GAS FREE
5-116-1-F	N	N	Y		SPACE REQUIRES GAS FREE