AD 434328

BOSTON NAVAL SHIPYARD

BOSTON, MASSACHUSETTS

COLLECTION OF REPORTS ON
VIBRATION SURVEYS

CONDUCTED BY
BOSTON NAVAL SHIPYARD
DURING 1963

COMPILED BY CODE 265-a
IN COMPLIANCE WITH BUSHIPS INST. 9400.9
SER 345-302 4 OCTOBER 1961

SUBMITTED BY
G. CAPANO
SUPERVISOR
VIBRATION & SOUND GROUP
CODE 265-a

APPROVED BY
E.S. MOBERG
SUPERVISOR
PERFORMANCE ANALYSIS BRANCH
CODE 265

TABLE OF CONTENTS

NOV 5 1963

MEMORANDUM

From: Code 265
To: Code 1200

Subj: USS LUISENO (ATF156); No. 3 S/S Generator Vibration Survey, report of

Ref: (a) D.S.R. 0690

1. A vibration survey and a natural frequency investigation was conducted on the No. 3 ship service Diesel generator of LUISENO while pierside in Newport, R. I. on 11 October 1963, in accordance with reference (a).

2. The maximum vibration amplitudes measured at the plane of the crank shaft under full load and no load conditions and at normal operating speed are as follows:

Position	Dir.	Displacement (S.A. Mils) No Load	Displacement (S.A. Mils) 100 KW Load	Freq. (C.P.M.)	Source
Fwd end of diesel	V/H	19.0	19.5	1200	1 x Operating Speed
Aft " " "	"	16.6	16.2	"	" "
Fwd " " generator	"	17.5	18.5	"	" "
Aft " " "	"	19.2	17.5	"	" "
" " " "	V	8.4	7.8	"	" "

The above amplitudes are excessive. No appreciable vibration at any other frequency was detected.

3. The natural frequency investigation, conducted by the bump test method, on the subject unit showed a rocking natural frequency about the longitudinal axis of 1230 cpm. This frequency is almost coincident with the operating frequency of 1200 cpm, and is the cause of the excessive vibration mentioned above.

4. A visual inspection of the unit on its foundation revealed a cracked weld where the forward transverse stiffener joins the longitudinal supporting beam.

5. It is, therefore, recommended that this cracked weld be repaired and a post repair vibration survey be conducted to evaluate the above correction.

6. This confirms Xerox delivered to INDMAN 17 October 1963.

E. S. Moberg
E. S. MOBERG

Codes 1210, 210, 260, 260w, 265(2)

Prepared by: A Ogle Typed by: E Nash 10/30/63

I

265
CAG1

JUL 23 1963

MEMORANDUM

From: Code 265
To: Codes 211 ✓ 225

Subj: USS BOSTON (CAG1); No's 1, 2 and 3 Forced Draft Blowers Vibration Survey, report of

Ref: (a) Design Services Request No. 308-32 of 4 Apr 1963

1. Vibration Surveys were conducted on the Numbers 1, 2 and 3 Forced Draft Blowers of BOSTON at Pier 4, Boston Naval Shipyard on 12 July 1963, in accordance with reference (a).

2. The maximum single amplitudes of Vibration are listed below for each unit. All readings were taken at the turbine bearing of the respective units. The maximum speeds attained for the blowers was as follows: Number 1 5640 RPM, Number 2 5460 RPM and Number 3 4200 RPM

Blower	Position	Dir.	Displacement S.A. Mils	Freq. C.P.M.	Source
No. 1	Turbine Brg.	V	.43	5400	1X Turbine
No. 1	" "	P/S	.31	4400	"
No. 2	" "	V	.17	5460	"
No. 2	" "	P/S	.16	5100	"
No. 3	" "	V	.25	4200	"
No. 3	" "	P/S	.29	4200	"

These single amplitudes of vibration are satisfactory for the recorded speed range.

3. In view of the above no further action was deemed necessary from a vibration standpoint.

4. This confirms XEROX copy delivered to Planning and Estimating on 17 July 1963.

E. S. MOBERG

Copy to:
Codes 260
265
260S
232

265
DE1021

JAN 29

MEMORANDUM

From: Code 265
To: Codes 212 225

Subj: USS COURTNEY (DE1021); Post-Repair Vibration Survey on Forced Draft Blowers No.'s 1-A-1 and 1-A-2, Report of

Ref: (a) Design Services Request No. 271-01 of 8 Aug 1962

1. A post-repair vibration survey was conducted on Numbers 1-A-1 and 1-A-2 forced draft blowers of COURTNEY during sea trial of 21 January 1963 in compliance with reference (a).

2. The maximum single amplitudes of [illegible] measured on the subject units for pre-repair and post-repair [illegible] are listed below:

Blower No.	Position			Dir.	Displacement (Single Mils) Pre-Repair	Post-Repair	Freq. (CPM)	Source
1-A-1	Fwd.	Turb.	Brg.	Vert.	.62	.13	4500	1X Turbine
"	"	"	"	P/S	.76	.14	4500	"
"	"	"	"	Vert	.35	.25	5600	"
"	"	"	"	P/S	.80	.35	5600	"
1-A-2	"	"	"	Vert	.[illegible]	.14	4700	"
"	"	"	"	P/S	.[illegible]	.33	4700	"
"	"	"	"	Vert	.08	.18	6000	"
"	"	"	"	P/S	.[illegible]	.31	6000	"

The single amplitudes of first order vibration measured during the post-repair survey are satisfactory. No appreciable amplitudes were found at any other frequency.

3. In view of the above and since blowers 1-B-1 and 1-B-2 were found satisfactory at pre-repair survey of 30 October 1962, no further action is necessary from a vibration standpoint.

4. This confirms verifax copy delivered to Planning and Estimating on 23 January 1963.

W. S. NOBERG

Copy to:
Ship.Supt. USS COURTNEY (DE1021)
Codes 232
260
260S
265(2)

Prepared by: R. V. Butler Typed by: [illegible] 1-28-63

265
19 September 1963

MEMORANDUM

From: Code 265
To: Codes 212 225

Subj: USS HARTLEY (DE1029); Vibration Survey on Forced Draft Blowers, report of

Ref: (a) D.S.R. No. 368-04 of 2 July 63

1. Vibration surveys were conducted on forced draft blowers 1A1, 1A2, 1B1 and 1B2 on HARTLEY at pierside on 5 September 1963 in compliance with reference (a).

2. The maximum single amplitudes of vibration recorded on each unit measured throughout a speed range of 2000 to 5800 RPM are as follows:

BLOWER	POSITION	DIR	DISPLACEMENT S.A.MILS	FREQ CPM	SOURCE
1A1	Thrust End	P/S	.08	5000	1 X Turbine
1A1	Thrust End	F/A	.08	5000	1 X Turbine
1A2	Thrust End	P/S	.24	5000	1 X Turbine
1A2	Thrust End	F/A	.24	5000	1 X Turbine
1B1	Thrust End	P/S	*.95	5000	1 X Turbine
1B1	Thrust End	F/A	.40	5000	1 X Turbine
1B2	Thrust End	P/S	.30	5000	1 X Turbine
1B2	Thrust End	F/A	.27	5000	1 X Turbine

The amplitude of vibration marked with an asterisk is excessive. No appreciable vibration was found at any other frequency.

3. In view of the above:

a. Blowers 1A1, 1A2 and 1B2 are satisfactory from a vibration point of view and no action is necessary.

b. Blower 1B1 has excessive vibration and the following action is recommended:

(1) Check bearing and labyrinth clearances and journal conditions, inspect fan and turbine rotor for missing or damaged rotating parts.

(2) If no significant discrepancies are found, remove the turbine blower rotor to the shop, inspect for bent shaft and dynamically balance the turbine blower rotor as a unit.

(3) Perform a post-repair vibration survey.

4. This confirms Xerox delivered to Planning and Estimating on 12 September 1963.

E. S. MOBERG

Copy to:
Codes 232
244
260
265
260S

Prepared by: J. Carlson
Typed by: F. Guglielmo 9/19/63

265
DD694

JUL 15 1963

MEMORANDUM

From: Code 265
To: Codes 212 225

Subj: USS INGRAHAM (DD694); Numbers 3 and 4 Forced Draft Blowers Vibration Survey, report of

Ref: (a) Design Services Request No. 673-06, of 7 Jun 1963

1. In compliance with reference (a) a vibration survey was conducted on the subject unit aboard INGRAHAM at pierside at Boston on 21 June 1963.

2. Vibration was measured on the turbine bearings in the vertical and port and starboard directions through a speed range of 2500 to 6300 R.P.M. The maximum overall single amplitudes of vibration on the Number 3 blower in the vertical direction was .17 mils at 94 cps and .26 mils port and starboard at 112.5 cps. The Number 4 Blower had low vibration with .12 mils port and starboard at 94 cps and .11 mils vertical at 95.5 cps.

3. Since the above amplitudes are considered satisfactory and no appreciable vibration at any other frequency was noted, no corrective action is required to the subject blowers from a vibration standpoint.

4. This confirms XEROX copy delivered to Planning and Estimating on 2 July 1963.

E. S. MOBERG

Copy to:
Codes 265(2)
232
260
260S

265
DE1022

MEMORANDUM

SEP 30 1963

From: Code 265
To: Codes 212/225

Subj: USS LESTER (DE1022); Vibration Surveys on Nos. 1A-2 and 1B-1 Forced Draft Blowers, report of

Ref: (a) DSR 681-09 of 9 Aug 63

1. Vibration surveys were conducted on the Nos. 1A2 and 1B1 Forced Draft Blowers of LESTER underway from Newport, R. I. to Earle, N. J., on 10 September 1963 in compliance with reference (a).

2. The maximum single amplitudes of vibration recorded on each unit throughout its entire speed range are listed below:

Blower	Position		Dir.	Displacement (SA Mils)	Freq. (CPM)	Source
1A2	Turbine Brg. Thrust End		V	.34	4800	1 x Turbine
"	"	"	P/S	.12	4800	" "
1B1	"	"	"	*.66	4800	" "
"	"	"	V	*.44	5600	" "
"	"	"	P/S	*.70	5600	" "

The single amplitudes of vibration marked with asterisk (*) are excessive.

3. In view of the above:

a. Blower 1-A-2 is satisfactory and no further action is necessary from a vibration standpoint.

b. Blower 1-B-1 vibrates excessively and the following is recommended:

(1) Record drop of rotor at number 2 journal as lower half of bearing is rolled out, and then record runout of number 2 journal. Relate runout readings to a reference bolt on coupling.

(2) If runout is excessive (over .0004"), check and adjust torque on coupling bolts in accordance with instructions in NAVSHIPS 353-0140, Chapter 5, Section 5.4.1, procedure 3, and again record runout at number 2 journal. Identify position of each bolt and its torque with respect to reference bolt.

(3) Record clearance on all bearings.

(4) Record horizontal and vertical alignment of number 3 (blower end) bearing with respect to turbine rotor bearings.

(5) Immediately, upon completion of each phase of the above work, forward a copy of the data to Code 265 for evaluation.

(6) Contingent upon steps (1) through (5), it may be necessary to remove the turbine rotor and propeller assembly to be balanced as a complete unit.

4. Upon completion of corrective action, accomplish a post-repair vibration survey.

5. This confirms Xerox copy delivered to P&E on 17 September 1963.

E. S. MOBERG

Copy to:
Codes 232
265a
260
260s

Prepared by: R V Butler
Typed by: E Nasif 9/25/63

265
DL2

MAY 29 1963

MEMORANDUM

From: Code 265
To: Codes 225 √ 212

Subj: USS MITSCHER (DL2); Vibration Surveys on 2-A-1 and 2-B-1 Forced Draft Blowers, report of

Ref: (a) Design Services Request No. 333-52 of 17 May 1963

1. Vibration surveys were conducted on Number 2-A-1 Forced Draft Blower on 17 May 1963 and on 17 May 1963 and on Number 2-B-1 on 20 May 1963 in compliance with reference (a).

2. Vibration was recorded on the lower bearing through a speed range of 2000-6000 R.P.M. The maximum single amplitudes of vibration are listed below:

Blower	R.P.M.	Position	Direction	Displ. (S.A.Mils)	Freq. CPM	Source
2-A-1	5760	Lower Brg.	P/S	*.90	5760	1X Rotational Speed
2-A-1	5760	"	F/A	.50	5760	" "
2-B-1	5750	"	P/S	.37	5750	" "
2-B-1	5750	"	F/A	.40	5750	" "

The single amplitude of vibration marked with an asterisk is excessive. No significant amplitudes were observed at any other frequency.

3. In view of the above, Number 2-B-1 is satisfactory. Number 2-A-1 has excessive vibration and the following action is recommended:

a. Check match marks on rotating element for proper alignment.

b. Check alignment of rotor assembly in casing.

c. If match marks and rotor alignment are satisfactory, remove entire rotating assembly to shop.

d. Check rotor shaft runout and correct as necessary.

e. Balance entire rotating assembly as a unit, making sure that match marks are properly aligned.

MEMORANDUM

f. Re-install unit in ship with match marks properly aligned.

g. Notify Code 265 when a post-repair vibration survey may be conducted.

4. This confirms XEROX Copy delivered to Planning and Estimating on 21 May 1963.

E. S. MOBERG

Copy to:
Ship Supt. USS MITSCHER (DL2)
Codes 232
265
260
260S

265
DD931

AUG 13 1963

MEMORANDUM

From: Code 265
To" Codes 212 V 225

Subj: USS FORREST SHERMAN (DD931); Vibration Survey on No. 1A1, 1A2, 1B1, 1B2, 2A1, 2A2, 2B1 and 2B2 Forced Draft Blower, report of

Ref: (a) Design Services Request No. 822-08 of 8 Jun 1963

1. A pre-repair vibration survey was conducted on the above forced draft blowers of SHERMAN at pierside on 6 August 1963 in compliance with reference (a).

2. The maximum single amplitudes of vibration recorded over a speed range of 3000 to 6000 blower R.P.M. are listed below:

Blower	RPM	Position	Dir.	Displacement (S.A. Mils)	Freq.	Source
1AL	6000	Lower Turb. Brg.	F/A	0.06	6000	1X Turbine
1A2	"	" "	"	0.05	"	"
1B1	"	" "	"	0.12	"	"
1B2	"	" "	"	0.07	"	"
2A1	"	" "	"	0.17	"	"
2A2	"	" "	P/S	0.06	"	"
2B1	"	" "	"	0.05	"	"
2B2	"	" "	"	0.06	"	"

These single amplitudes of vibration are satisfactory. No appreciable amplitudes at any other frequency were observed.

3. No further action is necessary from a vibration standpoint.

4. This confirms XEROX copy delivered to Planning and Estimating on 8 August 1963.

E. S. MOBERG

Copy to:
Codes 232
260S
260
265

265
DE1027

FEB 14 1963

MEMORANDUM

From: Code 265
To: Codes 212 225

Subj: USS J. WILLIS (DE1027); Vibration Surveys on Forced Draft Blowers, report of

Ref: (a) Design Service Request No. 272-06 of 7 Sep 1962

1. Post Repair Vibration Surveys were conducted on forced draft blowers 1A1 and 1A2 on J. WILLIS at pierside on 4 February 1963 in accordance with reference (a). Blowers 1B1 and 1B2 were not available for vibration survey, due to ship's steaming schedule of the B boiler, through 11 February 1963 at which time J. WILLIS departed Boston Naval Shipyard.

2. The maximum single amplitudes of vibration recorded on each unit measured throughout the speed range are as follows:

Blower	Position				Dir.	Displacement (S.A. Mils)	Freq. (C.P.M.)	Source
1A1	Turb.	Brg.	Thrust	End	V	.32	5500	1X Turbine
1A1	"	"	"	"	P/S	.22	5500	"
1A2	"	"	"	"	V	.16	5500	"
1A2	"	"	"	"	P/S	.16	5500	"

The above amplitudes of vibration are satisfactory. No appreciable vibration at any other frequency was recorded.

3. No further corrective action is recommended from a vibration standpoint.

4. This confirms verifax copy delivered to Planning and Estimating on 12 February 1963.

E. S. MOBERG

Copy to:
Ship Supt. USS J. WILLIS (DE1027)
Codes 232
260
260C
265(2) ✓

Prepared by: G. Ogle
Typed by: G. Kasabian 2-13-63

12

265
CG10

AUG 2 1963

MEMORANDUM

From: Code 265
To: Codes 225 √ 213

Subj: USS ALBANY (CG10); Vibration Surveys on Hull, No. 3 & No. 4 S.S. TG and No. 3 H.P. Main Turbine, report of

Ref: (a) USS ALBANY (CG10) Verbal Request's of Ship Supt.

1. In compliance with reference (a) vibration surveys were conducted on the subject units of ALBANY during the sea trial of 15-18 July 1963.

2. Results of the surveys are as follows:

a. Hull - Vibration was monitored on the hull throughout a speed range of 141-338 shaft R.P.M. The maximum single amplitudes of vibration are listed below:

Shaft R.P.M.	Position	Dir.	Displa. (S.A.Mils)	Freq. (CPM)	Source
170	Fr. 164 Mn. Dk.	P/S	2.4	170	1X Shaft
270	" "	P/S	1.26	270	"
310	" "	V	1.3	310	"
310	" "	P/S	2.1	1240	1X Blade

These single amplitudes of vibration are satisfactory.

b. Number 3 Ship's Service Turbo-Generator - Vibration was recorded on all bearings under 600 K.W. load and again on Number 1 Bearing at 850 K.W. load. Maximum single amplitudes of vibration are listed below:

Load	Position	Dir.	Displa. (S.A.Mils)	Freq. (CPM)	Source
600 K.W.	Fwd. Turb. Brg.	P/S	.28	10,033	1X Turb.
"	" "	F/A	*.35	"	"
850 K.W.	" "	P/S	.25	"	"
"	" "	F/A	*.50	"	"

The amplitudes of vibration marked with an asterisk (*) are considered excessive.

c. Number 4 Ship's Service Turbo-Generator - Vibration of the deck area in the vicinity of the Generator was investigated with the unit operating at 600 K.W. load. The vibration on the unit and its foundation were found to be satisfactory. The deck plating adjacent to

MEMORANDUM

generator on the outboard side had 2 to 5 times as much vibration as the generator foundation indicating a resonant condition of the plating. It was noticed that some hold down screws for this plating were loose and missing altogether.

d. Number 3 H.P. Main Turbine - Vibration was monitored on both the fwd and after bearings of the Number 3 H.P. Turbine throughout a speed range of 95 to 325 shaft R.P.M. The maximum vibration (.12 mils) due to turbine rotational speed occurred at 251 shaft R.P.M. (4210 Turbine (R.P.M.). This is considered satisfactory.

3. In view of the above the following is recommended:

a. Hull - The outboard shafting and propellers are satisfactory and no further action is necessary from a vibration standpoint.

b. Number 3 Ship's Service Turbo-Generator - The vibration of the unit is considered to be excessive. It is understood that the General Electric Company has been notified and is to conduct tests of their own to eliminate the above vibration. Upon completion of above work conduct another vibration survey.

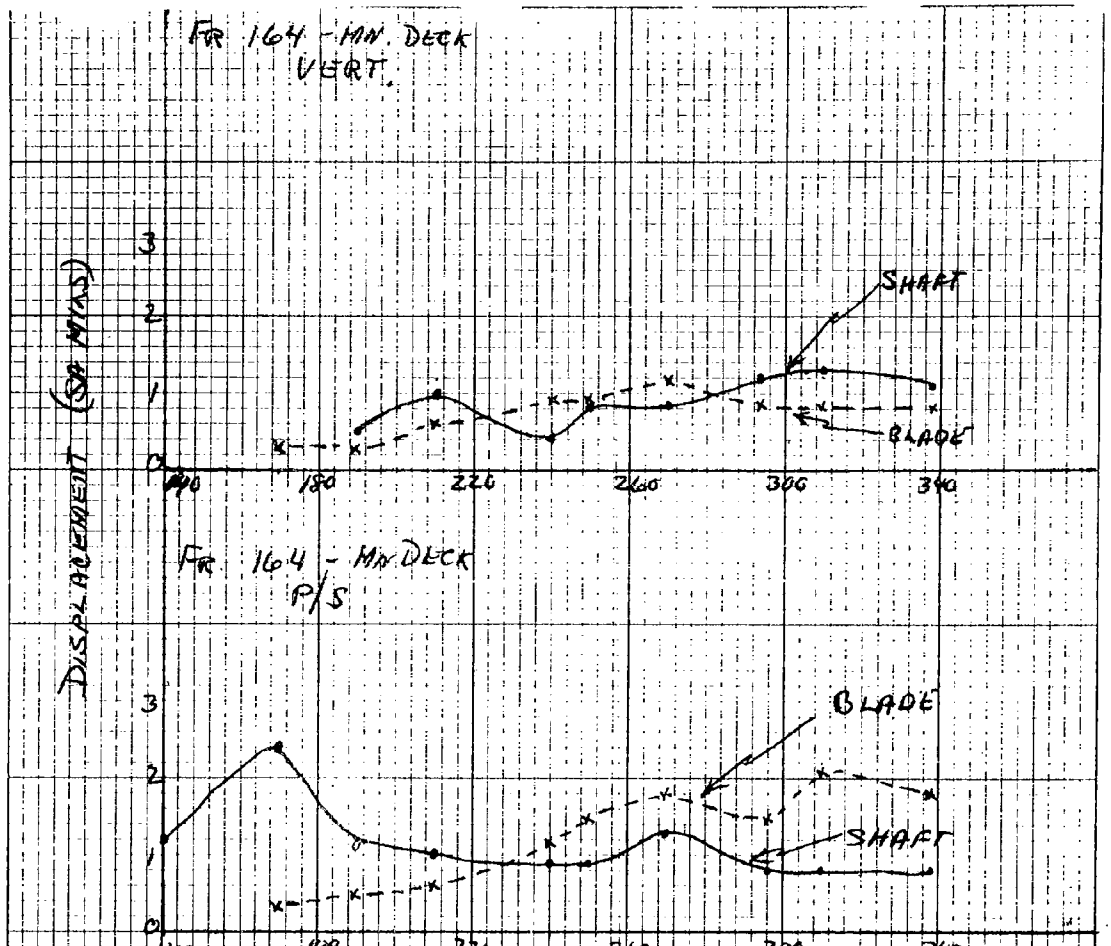
c. Number 4 Ship's Service Turbo-Generator - Recommend that all bolts be tightened, missing bolts be replaced and additional bolts be installed to provide bolts approximately every 18" along plate.

d. Number 3 H.P. Main Turbine - Vibration is satisfactory, no further action is necessary from a vibration standpoint.

4. This confirms XEROX copy delivered to Planning and Estimating on 29 July 1963.

E. S. MOBERG

Copy to:
Ship Supt. USS ALBANY (CG10)
Codes 260
265
260S



USS ALBANY (CG-10)

GRAPHICAL SUMMARY OF HULL VIBRATION ON SEA TRIAL OF 15-18 JULY 1963

SEA STATE - 0 MEAN DRAFT - 22 FT.

265
DD698

JAN 9 19

MEMORANDUM

From: Code 265
To: Codes 212 225

Subj: USS AULT (DD698); Hull and Main Mast Vibration Survey, report of

Ref: (a) Machinery Trials J. O. No. 16201-9005

1. A vibration survey was conducted on the Hull and Main Mast of AULT during the machinery trials of 18 December 1962 in accordance with reference (a).

2. The maximum amplitudes of vibration measured on the Hull and Main Mast throughout the speed range of 160 to 347 shaft rpm are as follows:

Shaft RPM	Position	Dir.	Displacement (S.A. Mils)	Freq. (C.P.M.)	Source
250	Fr. 196 Mn. Dk.	P/S	3.5	250	1X Shaft
250	Fr. 69 02 Lvl	P/S	4.3	250	"
310	Fr. 196 Mn. Dk.	V	3.8	310	"
310	Fr. 69 02 Lvl	P/S	2.7	310	"
235	Top of Top Mast	P/S	15.0	235	Const. Fre
347	Top of Top Mast	P/S	9.5	385	" "
235	Top of Stub Mast	P/S	14.0	235	Const. Fre
235	Fwd.End of AN/SPS-29 Pltfm.	P/S	73.0	235	" "
235	Aft " " " "	P/S	8.5	235	" "

The above amplitudes of vibration are satisfactory.

3. As the hull and main mast are satisfactory from a vibration viewpoint no corrective action is recommended. However, if an AN/SPS 948 antenna is [illegible] atop the top mast in lieu of the presently installed antenna it is recommended that a vibration survey be conducted to evaluate the excitation of the new mast system.

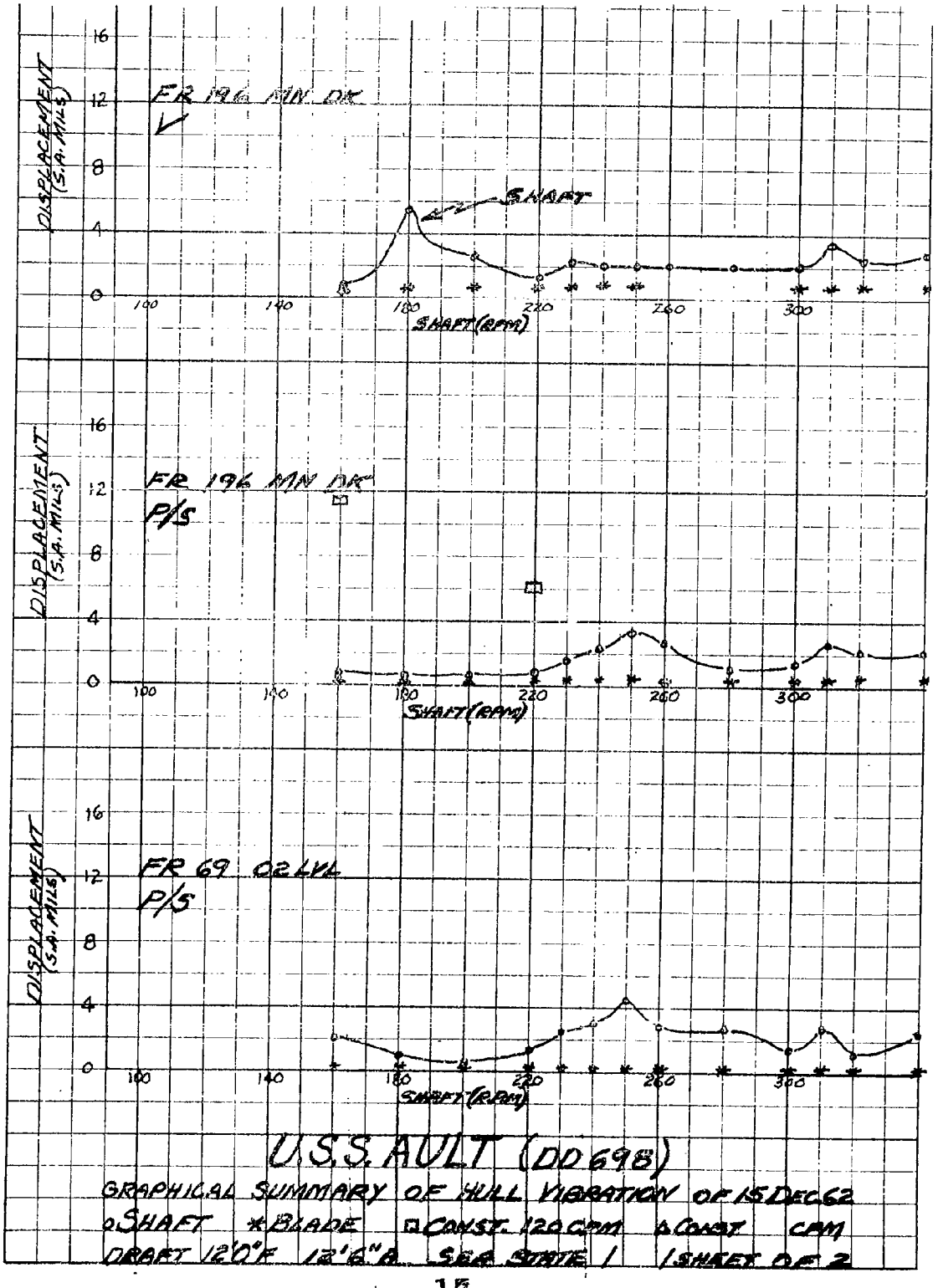
4. This confirms verifax copy delivered to Planning and Estimating on 19 December 1962.

E. S. NEBERG

Copy to:
Ship Supt. USS AULT (DD698)
Codes 232 260
2603 265(2)(w/1 copy of Graphical Summary of Hull & Main Mast [illegible])

Typed by: [illegible]

16

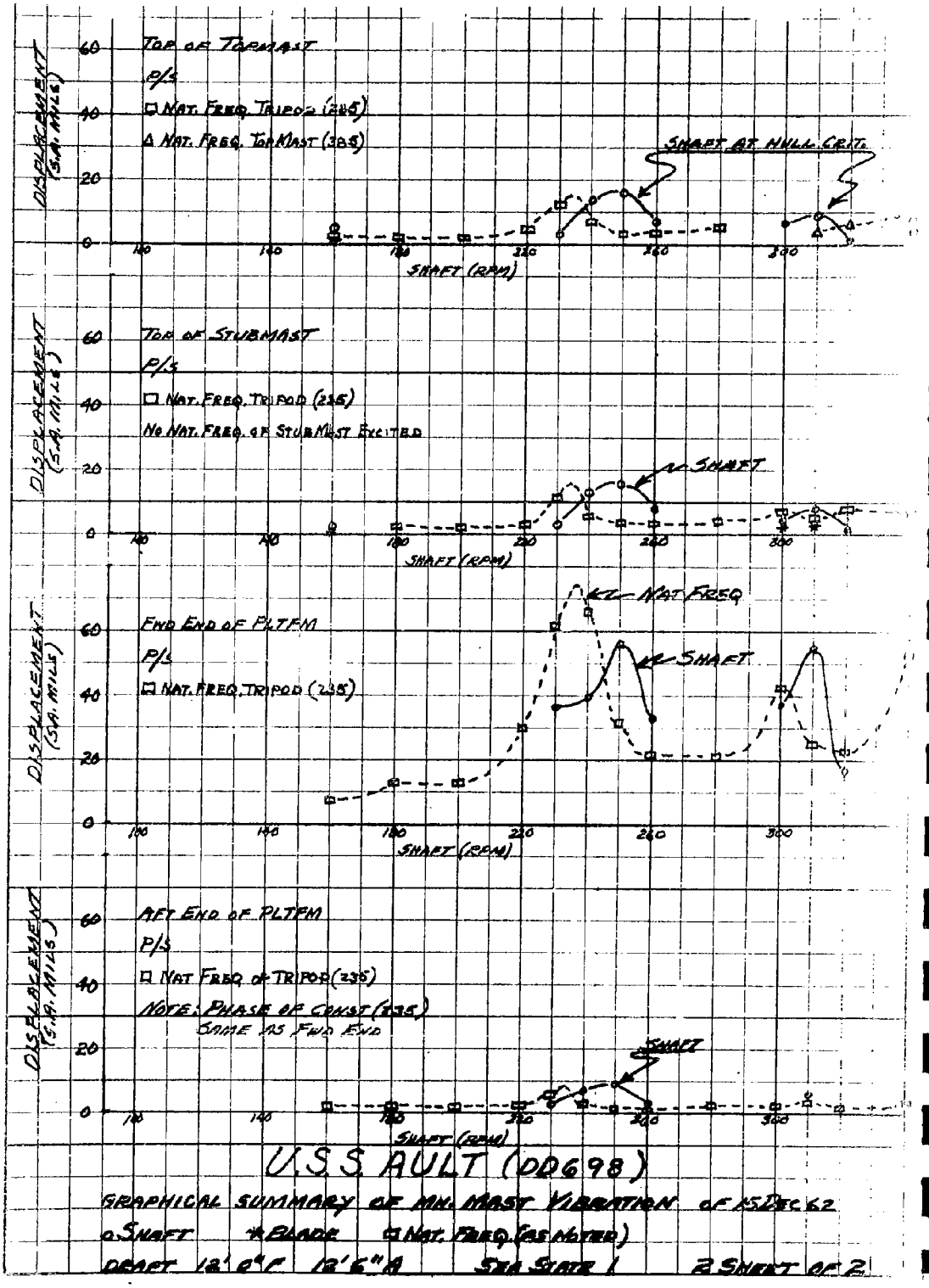


U.S.S. AULT (DD 698)

GRAPHICAL SUMMARY OF HULL VIBRATION OF 15 DEC 62

○ SHAFT * BLADE □ CONST. 120 CPM △ CONST CPM

DRAFT 12'0"F 12'6"A SEA STATE 1 1 SHEET OF 2


DISPLACEMENT (S.A. MILS)
TOP OF TOPMAST
P/S
□ NAT. FREQ. TRIPOD (285)
Δ NAT. FREQ. TOPMAST (385)
SHAFT AT NULL CRIT.
SHAFT (RPM)
TOP OF STUBMAST
P/S
□ NAT. FREQ. TRIPOD (235)
NO NAT. FREQ. OF STUBMAST EXCITED
SHAFT
SHAFT (RPM)
FWD END OF PLTFM
P/S
□ NAT. FREQ. TRIPOD (235)
NAT FREQ
SHAFT
SHAFT (RPM)
AFT END OF PLTFM
P/S
□ NAT FREQ OF TRIPOD (235)
NOTE: PHASE OF CRUST (235)
SAME AS FWD END
SHAFT
SHAFT (RPM)
U.S.S. AULT (DD698)
GRAPHICAL SUMMARY OF MK. MAST VIBRATION OF 15 DEC 62
○ SHAFT * BLADE □ NAT. FREQ. (AS NOTED)
DRAFT 12'0"F 12'6"A SEA STATE 1 2 SHEET OF 2

265
DD698

FEB 1 1963

MEMORANDUM

From: Code 265
To: Codes 212 225

Subj: USS AULT (DD698); Hull Vibration Survey, report of

Ref: (a) Job Order No. 16201-4239

1. A post-repair hull vibration survey was conducted on AULT during the sea trial of 27 January 1963 in compliance with reference (a).

2. Vibration was recorded throughout a speed range of 160 to 330 shaft S.P.M. The maximum single amplitudes of vibration are listed below:

Shaft R.P.M.						
Port	Stbd.	Position	Dir.	Displ.(S.A.Mils)	Freq. (CPM)	Source
250	250	Fr. 196 Mn. Dk.	P/S	11	250	1X Shaft
250	210	" "	P/S	7.5	250	1X Port Shaft
210	250	" "	P/S	3.5	250	1X Stbd. Shaft
250	250	Fr. 72 02 Level	P/S	9	250	1X Shaft
320	320	Fr. 196 Mn. Dk.	Vert	9	320	1X Shaft
315	315	Fr. 72 02 Level	P/S	6.5	315	1X Shaft

These single amplitudes of vibration are satisfactory.

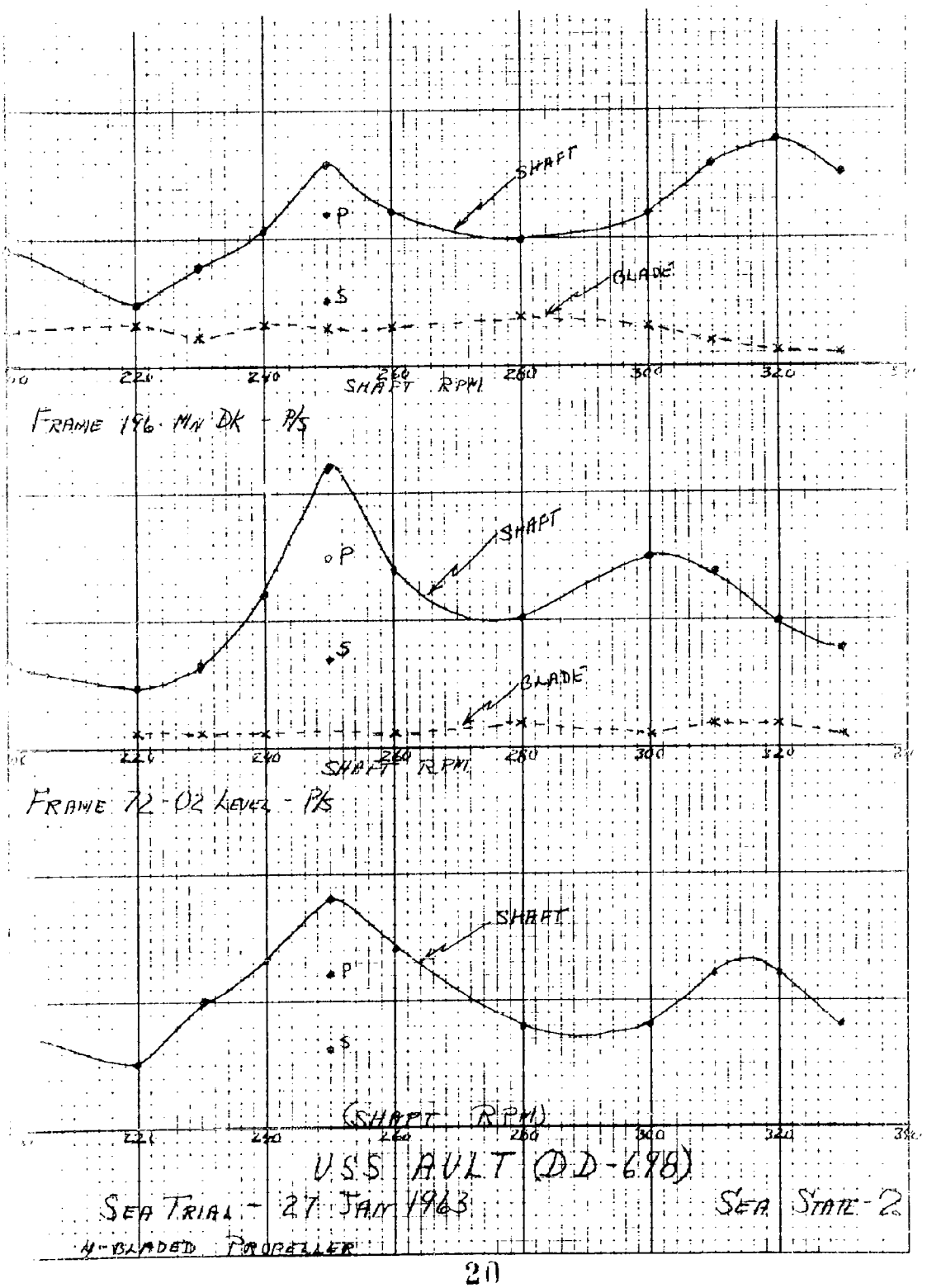
3. In view of the above, no further action is necessary from a vibration standpoint.

4. This confirms verifax copy delivered to Planning and Estimating on 31 January 1963.

E. S. MOBERG

Copy to:
Ship Supt. USS AULT (DD698)
Codes 240
260
260S
265(2)
232

Prepared by: R. V. Butler
Typed by: G. Kasabian 1-31-63


SHAFT
P
S
BLADE
220
240
260
280
300
320
SHAFT RPM
FRAME 196 MN DK - P/S
SHAFT
P
S
BLADE
220
240
260
280
300
320
SHAFT RPM
FRAME 72-02 LEVEL - P/S
SHAFT
P
S
220
240
260
280
300
320
SHAFT RPM
USS AULT (DD-698)
SEA TRIAL - 27 JAN 1963
SEA STATE - 2
4-BLADED PROPELLER

265
DD933

JUN 7 1963

MEMORANDUM

From: Code 265
To: Codes 225 V 212

Subj: USS BARRY (DD933); Hull Vibration Survey, report of

Ref: (a) D.S.R. No. 622-04 of 29 April 1963

1. A hull vibration survey was conducted on BARRY enroute to Earle, New Jersey on 27 May 1963 in compliance with reference (a).

2. The maximum single amplitudes of vibration recorded throughout a speed range of 180 to 296 shaft R.P.M. are listed below:

Shaft R.P.M.	Position	Direction	Displ. (S.A. Mils)	Freq. (CPM)	Source
200	02 Level Fr. 68	P/S	8	200	1X Shaft
240	Mn. Dk. Fr. 196	P/S	7.5	240	"
260	Mn. Dk. Fr. 196	Vert	7.0	260	"

These single amplitudes of vibration are satisfactory.

3. Vibration was also monitored on the Number 1 HP-IP turbine. The maximum single amplitude of vibration was 0.15 recorded at 280 shaft R.P.M. This amount of vibration is satisfactory. No appreciable amplitudes was observed at any other frequency.

4. The noise investigation requested in reference (a) was not accomplished because the ship stated that they had no such problem.

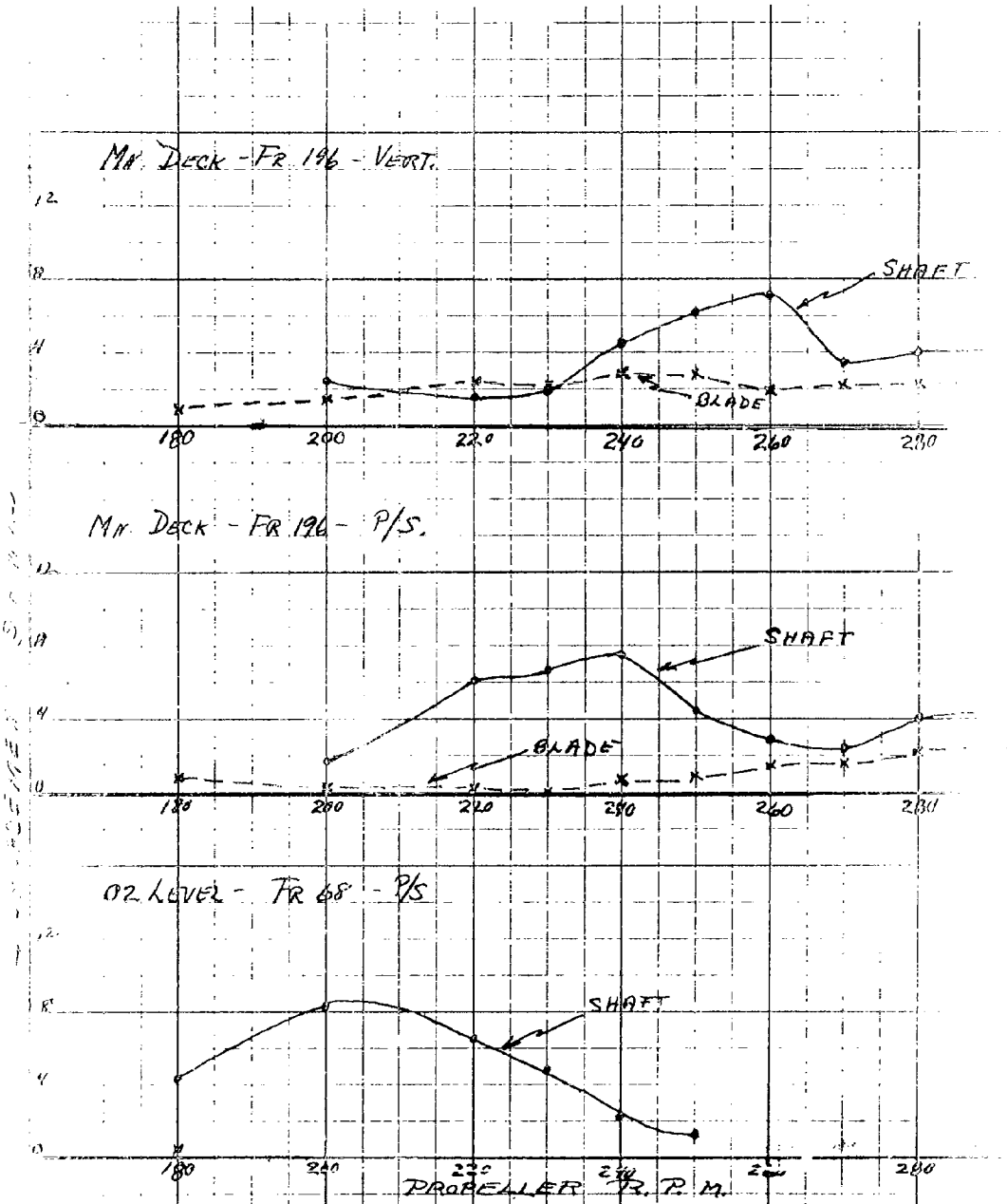
5. In view of the above no corrective action is necessary from a vibration standpoint for either the main propulsion shafting systems or the Number HP-IP turbine.

6. This confirms XEROX copy delivered to Planning and Estimating on 5 June 1963.

E.S. Moberg

E.S. MOBERG

Copy to:
Ship Supt. USS BARRY (DD933)
Codes 232
265(2) (w/1 copy of Graphical Summary)
[illegible]
260S



USS BARRY (DD 933)

GRAPHICAL SUMMARY OF HULL VIBRATION

SEA TRIAL OF 27 MAY 1963 4-BLADED PROPELLER

DRAFTS - FWD - 13'2" AFT 14'6" SEA STATE - 0

265a
AGM4

SEP 20 1963

MEMORANDUM

From: Code 265
To: Code 1200

Subj: USS GLACIER (AGM4); Hull Vibration Survey, report of

Ref: (a) Design Service Request 583

1. A post repair vibration survey was conducted on the hull and stern tube bearings during the sea trial of 5 Sep 63. This survey was conducted to evaluate the recent shafting work in accordance with reference (a).

2. The maximum vibration amplitudes measured on the bearings and hull through the ships speed range of 80 to 170 shaft rpm are as follows:

Shaft RPM	Position	Dir.	Dis Movement (S.A. mils)	Freq. (C.P.M.)	Source
160	Fr. 195 Mn Dk		2.0	160	1 x Shaft
160	" "		4.5	480	"
160	" "	P/S	1.8	160	"
160	" "	"	10.0	480	1 x Blade
160	Fr. 84 03 Lvl.	"	1.8	160	1 x Shaft
160	" "	"	19.0	480	1 x Blade
160	Fwd Strbd Stern Tube Brg.		5.7	480	"
160	Fwd Port Stern Tube Brg.		6.5	480	"

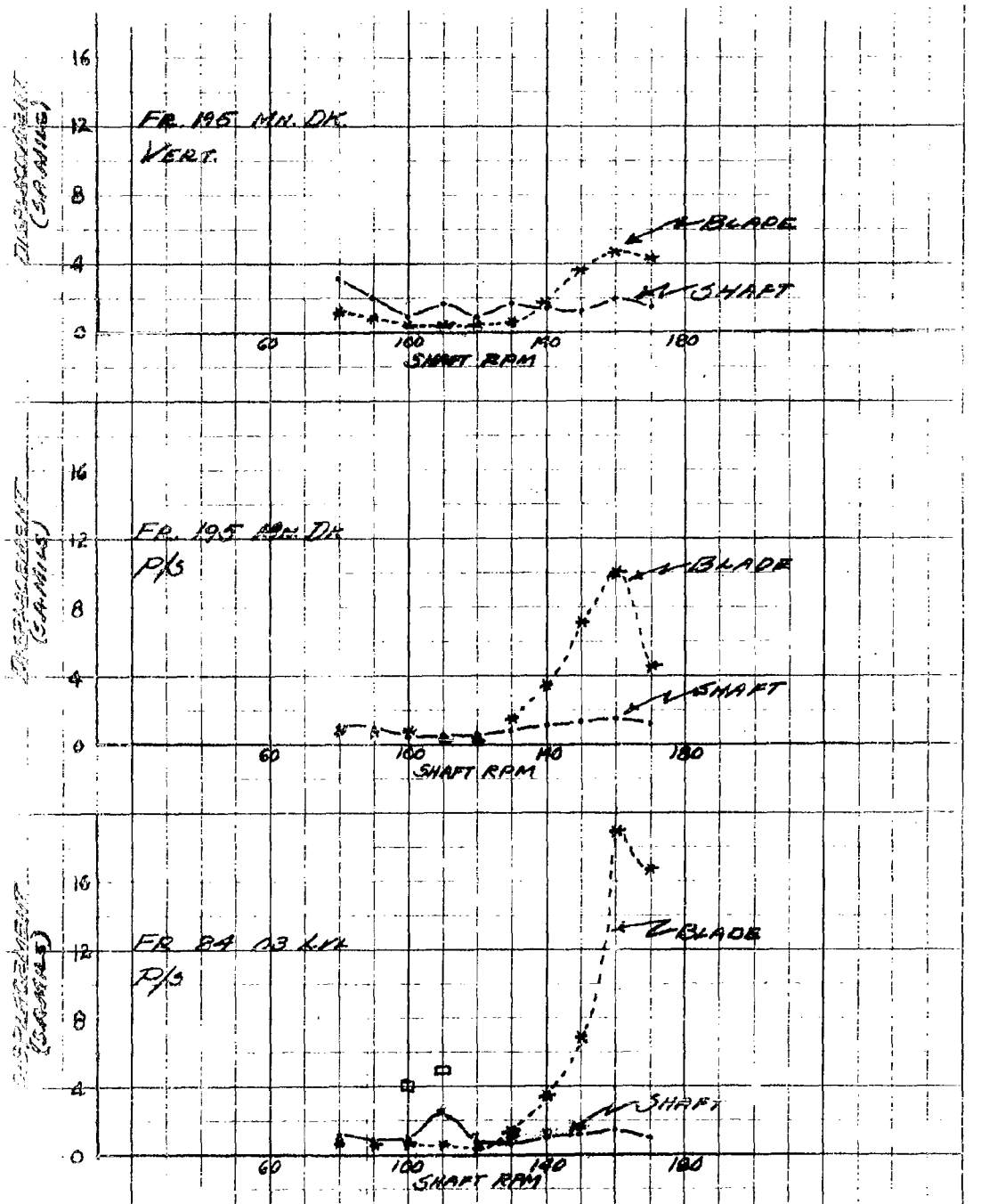
The above amplitudes of shaft excited vibration are satisfactory. The blade excited vibration, which is caused by the blade action against the hull, is considerably higher with the new propellers and the light condition of GLACIER during this sea trial; the nineteen (19) mils measured on the bridge is considered excessive. Extended operation of 160 RPM could cause local structural failures or derangement of navigational equipment.

3. It is recommended that the ship be cautioned about prolonged operation at 160 shaft rpm and that BUSHIPS be contacted to consider necessity for corrective action on existing and replacement propellers. NAVSHIPYD BSY message 122042Z Sep reflects above.

4. This confirms Xerox copy delivered to Code 1200 on 16 Sep 63.

E. S. MOBERG

Codes 1101, 1102, 240, 250, 260a
265 (2) (W/1 copy of Graphical Summary of Hull Vibration)

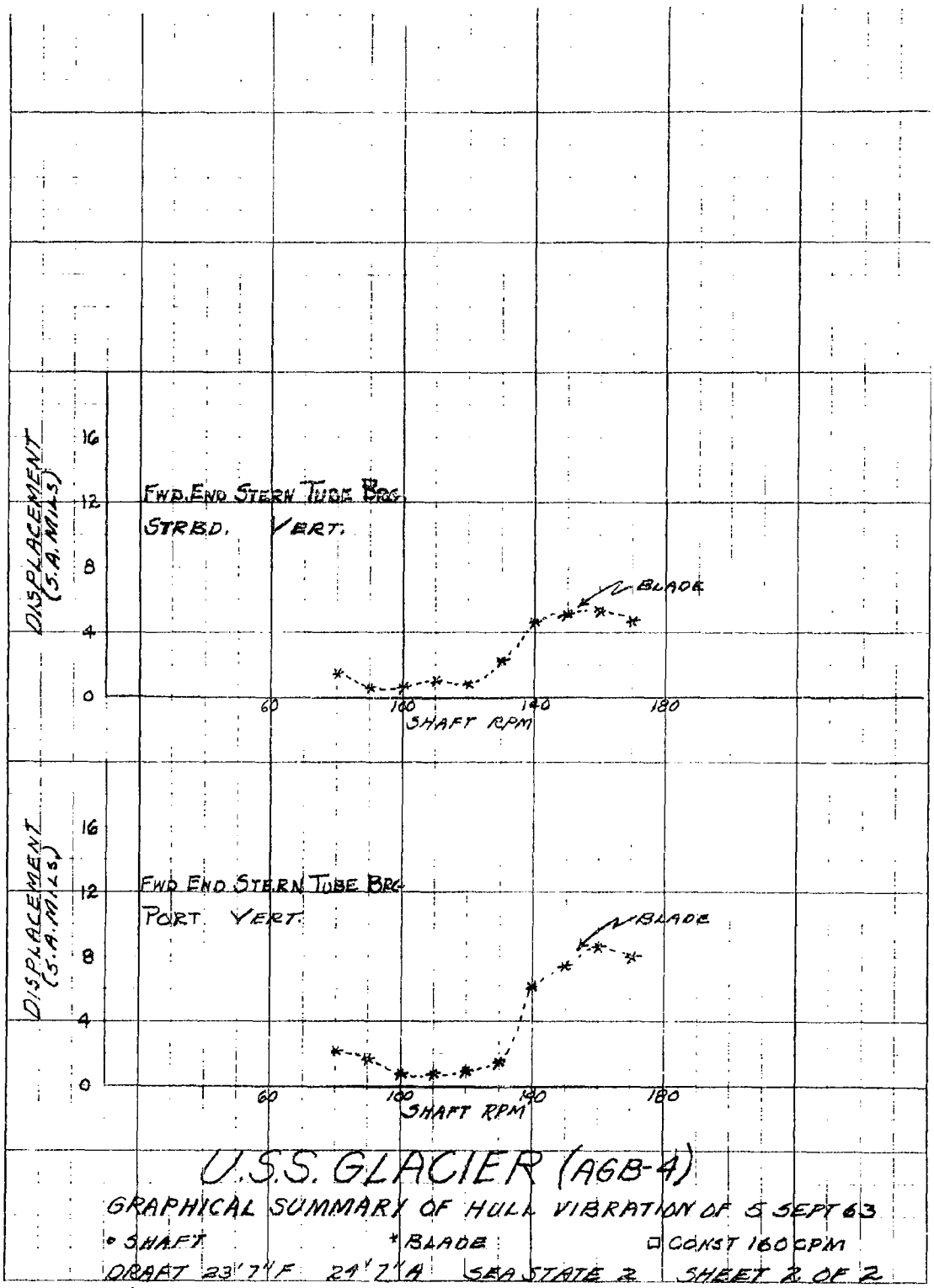


U.S.S. GLACIER (AGB-4)

GRAPHICAL SUMMARY OF HULL VIBRATION OF 5 SEP 68

○ SHAFT * BLADE □ CONST 160 CPM

DRAFT 23'7"F 24'7"A SEA STATE 2 SHEET 1 OF 2



U.S.S. GLACIER (AGB-4)

GRAPHICAL SUMMARY OF HULL VIBRATION OF 5 SEPT 63

• SHAFT * BLADE □ CONST 160 CPM

DRAFT 23'7"F 24'2"A SEA STATE 2 SHEET 2 OF 2

265
DD840

MAY 2 1963

MEMORANDUM

From: Code 265
To: Codes 212 225

Subj: USS GLENNON (DD840); Hull, Main Mast, and ECM Mast, Vibration Survey and Main Propulsion Bearing Investigation, report of

Ref: (a) Machinery Trials J.O. No. 12819-0202

1. A vibration survey was conducted on the subject units during the machinery trials of 27 April 1963, in accordance with reference (a).

2. The maximum vibration amplitudes measured on the hull and observed on the masts through a speed range of 160 to 274 shaft rpm (the highest speed available) are as follows:

Unit Measured or Observed	Shaft RPM Stbd.	Port	Position	Dir.	Displacement (S.A. Mils)	Freq. CPM	[illegible]
Hull	255	255	Fr. 197 Mn. Dk.	P/S	13.2	255	[illegible]
"	255	255	Fr. 69 02 Lvl.	"	9.4	255	
"	255	220	Fr. 197 Mn. Dk.	"	11.0	255	
"	200	255	" " " "	"	1.8	255	
Main Mast	220	220	Top of Top Mast	"	*225 Approx.	220	
ECM Mast	180	180	" " " "	"	*150 "	180	

The above asterisked amplitudes are considered excessive. The 13.2 Mils measured at the lower hull critical although higher than normal is not excessive. No appreciable vibration at any other frequency was detected.

3. The main propulsion bearing investigation consisted of monitoring the temperatures of the line bearings, the reduction gear bearings, and the stuffing boxes during the speed build up and during the 274 RPM run. All temperatures were found to be satisfactory.

4. In view of the above the following corrective action is recommended:

a. Tighten the existing stays at the top of the ECM Mast to a positive tension.

b. Schedule a sea trial to conduct full evaluation of masts and hull at upper hull critical (approximately 310 shaft RPM) prior to scheduled drydocking.

c. Conduct a natural frequency investigation on the main mast.

MEMORANDUM

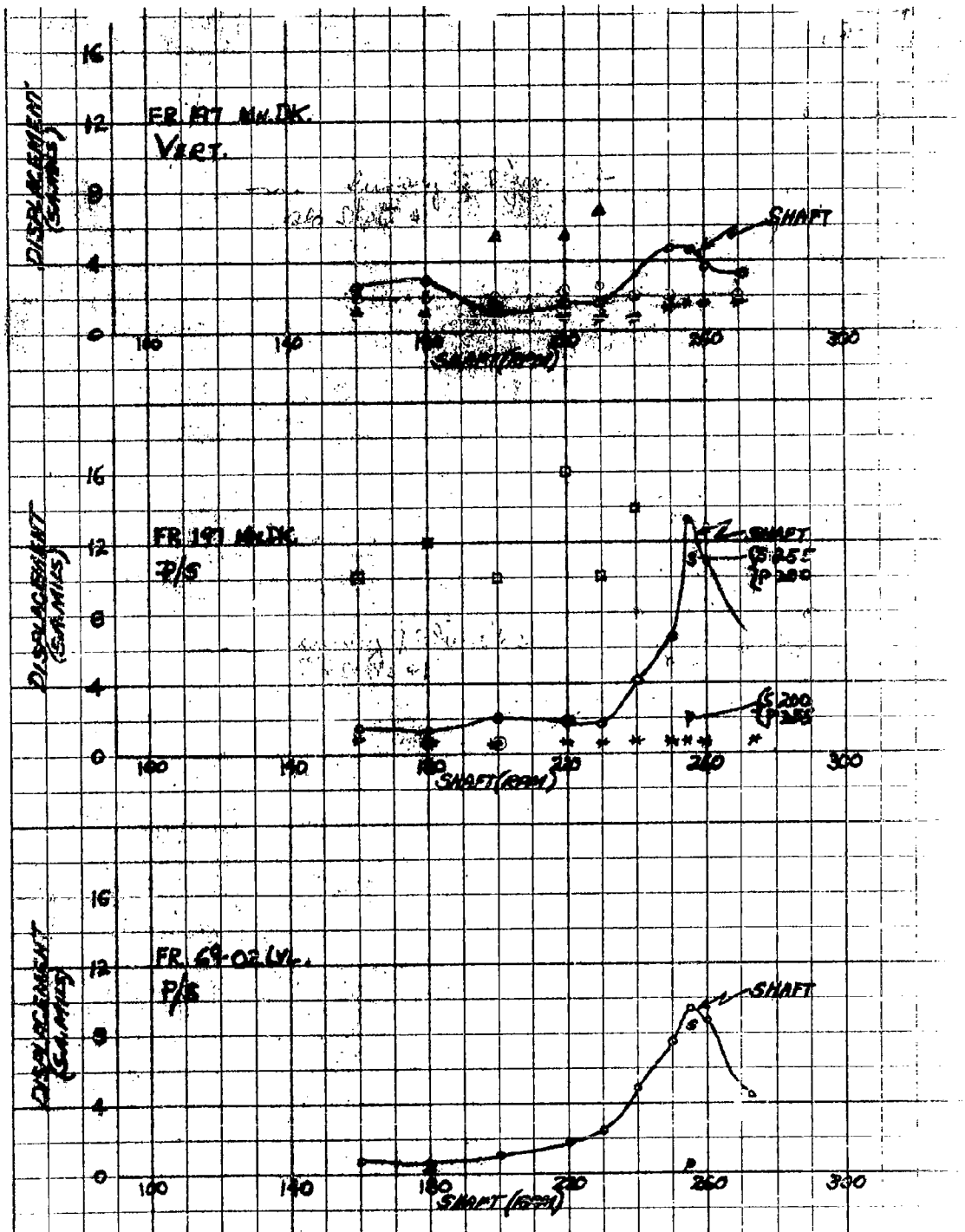
5. Pursuant to above investigations stiffening recommendations may be initiated.

6. This confirms XEROX copy delivered to Planning and Estimating on 30 April 1963.

E. S. MOBERG

Copy to:
Codes 237
264
231
232
254
260
260S
265(2)(w/1 copy of Graphical Summary of Vibration) ✓

Prepared by: G. Ogle
Typed by: G. Kasabian 5-1-63



U.S.S. GLENNON (DD 840)

GRAPHICAL SUMMARY OF HULL VIBRATION 27 APRIL 63

○ SHAFT ✱ BLADE □ CONST 140 CPM △ CONST 180 CPM

DRAFT 12'6"F 12'0"A SEA STATE 2 1 OF 1

265
DD840

MAY 10 1963

MEMORANDUM

From: Code 265
To: Codes 212 ✓ 225

Subj: USS GLENNON (DD840); Hull, Main Mast, and ECM Mast Vibration Survey and Main Propulsion Bearing Temperature Investigation, report of

Ref: (a) Design Services Request No. 230A-01

1. The subject surveys were conducted during the sea trial of 4 May 1963, in accordance with reference (a).

2. The maximum vibration amplitudes measured on the hull and masts through a speed range of 160 to 330 shaft rpm are as follows:

Unit Measured	Shaft(RPM) Stbd.	Port	Position	Dir.	Displacement (S.A. Mils)	Freq. (CPM)	Source
Hull	255	255	Fr. 197 Mn. Dk.	P/S	12.4	255	1X Shaft
"	255	255	" 69 02 Lvl.	P/S	13.4	255	"
"	315	315	" 197 Mn. Dk.	V	* 21.8	315	"
"	315	315	" 69 02 Lvl.	P/S	13.5	315	"
"	255	180	" 197 Mn. Dk.	P/S	10.8	255	"
"	180	255	" " " "	P/S	1.8	255	"
Main Mast	225	225	Top of Top Mast	P/S	*198.0	225	"
ECM Mast	163	163	" " ECM "	P/S	55.0	163	"

The above asterisked amplitudes are considered excessive.

3. The maximum temperature recorded on the line bearings, the reduction gear bearings, and the stuffing boxes during the speed build up and during the 274 RPM run was 107°F measured on the Number 2 line bearing.

4. In view of the above, the following corrective action is recommended for the excessive hull vibration. Upon completion of the analysis of the data taken on the main mast additional recommendations may be initiated for the mast vibration:

a. Check the starboard propeller for pitch, track and balance.

b. Check the starboard dunce cap for static roll balance.

c. Take runout readings on the starboard tail shaft at propeller taper (small and large end), journals (main and intermediate) at forward end, and outboard periphery on inboard coupling flanges and stern tube bearing journals.

265
DD840

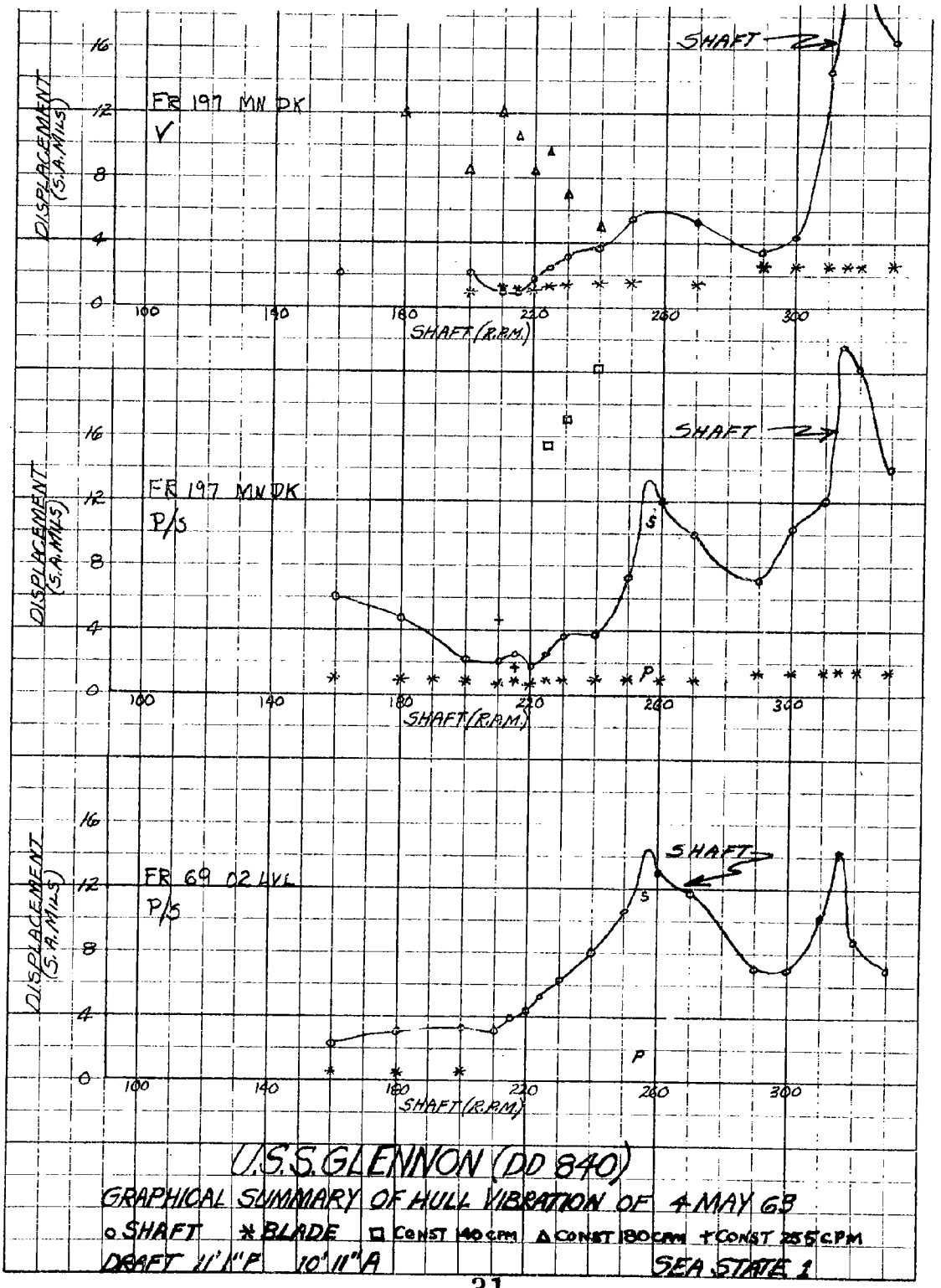
MEMORANDUM

d. Forward a copy of the above data to Code 265 for evaluation relative to further recommendations.

5. This confirms XEROX copy delivered to Planning and Estimating on 7 May 1963.

E. S. NOBERG

Copy to:
Ship Supt. USS GLENNON (DD840)
Codes 232
251
260
260S
265(2)(w/1 copy of Graphical Summary of Hull Vibration)



U.S.S. GLENNON (DD 840)

GRAPHICAL SUMMARY OF HULL VIBRATION OF 4 MAY 68

○ SHAFT * BLADE □ CONST 140 CPM △ CONST 180 CPM + CONST 255 CPM

DRAFT 11' 1" F 10' 11" A SEA STATE 1

265
DD840

JUN 17 1963

MEMORANDUM

From: Code 240
To: Codes 212 225

Subj: USS GILLMORE (DD840); Hull Vibration Survey, report of

Ref: (a) Design Services Request No. 230a-001 of 13 Jun 1962

1. A vibration survey was conducted on the hull and sonar domes on GILLMORE during the sea trial of 8 June 1963. This trial was conducted to determine the effects on the sonar domes on the hull vibration in conjunction with reference (a).

2. The maximum amplitudes of hull vibration measured at the 240 RPM critical and the 310 RPM critical are as follows:

Shaft RPM				Displacement	Freq.	
Stbd.	Port	Position	Dir.	(S.A. Mils)	(CPM)	
240	240	Fr. 197 Ma. Bk.	P/S	15.0	240	
240	240	Fr. 69 02 Lg.	P/S	14.0	240	
300	300	Fr. 197 Ma. Bk.	V	*24.0	300	
300	300	Fr. 69 02 Lg.	P/S	12.5	300	
300	260	Fr. 197 Ma. Bk.	V	17.0	300	
260	300	Fr. 197 Ma. Bk.	V	6.0	300	

The above asterisked amplitude is considered excessive.

3. A preliminary analysis of the dome vibration and its contribution to hull vibration shows the main contribution to be the starboard shafting system and not the domes. A thorough analysis of the dome vibration will be reported by 17 June 1963.

4. In view of the excessive hull vibration (attributed to the starboard shafting system) the following corrective action is recommended for the starboard shafting:

a. Take bearing clearance readings at the Main, Intermediate, and stern tube bearings.

b. Remove the propeller and the tail and stern tube shafts through the muff coupling and send to Shop 31. Inspect the shafts for straightness on audio gauge at selected points on length of both shafts.

c. Subsequent to aligning aft inboard bearings boresight from aft end of line shaft. Use check target at aft end of stern tube, and [illegible] wire supported at one end of each bearing. Forward targets and [illegible] to Design for evaluation.

MEMORANDUM

d. Obtain a replacement tail and stern tube shaft, muff coupling and propeller. Inspect for cracks, then indicate and correct as necessary the shaft runout including midspan areas; fit the propeller and muff coupling to the shafts and check and correct pitch track and balance of replacement propeller.

(1) Indicate and correct as necessary the muff to stern tube and tailshaft taper.

(2) Machine a land 1/2" wide on Fwd and Aft periphery of muff coupling.

e. Re-assemble replacement shafting on ship taking runout readings at the main, intermediate, and stern tube journals, also on the muff coupling and tailshaft taper.

f. Recommendation paragraph 4.b. which requests a check of the removed shafting to determine a possible cause of the excessive vibration source can be conducted so as not to interfere with the replacement shafting work.

4. All runout data, fits, and propeller data (replacement items) should be reviewed by Code 265 prior to final use on GLENNON.

5. This confirms XEROX copy delivered to Planning and Estimating on 10 June 1963.

O.A.HARD

Copy to:
Ship Supt. USS GLENNON (DD840)
Codes 240
232
260
2603
265

265
DD840

MEMORANDUM

JUN 19 1963

From: Code 265
To: Codes 213 225

Subj: USS GLENNON (DD840); Hull Vibration Survey, report of

Ref: (a) Builder's Trials J.O. 12618-0001
(b) Foremast Stiffening DD840 - 125/S1702 - 2131620

1. A vibration survey was conducted on the hull of GLENNON during the builder's trials of 1 June 1963, in accordance with reference (a).

2. The maximum amplitudes of vibration measured throughout the speed range of 160 to 330 shaft rpm for the builder's trials of 1 June, are as follows:

Shaft RPM Stbd.	Port	Position	Dir.	Displacement (S.A. Mils)	Freq. (CPM)	Source
245	245	Fr. 197 Mn. Dk.	P/S	13.7	245	1X Shaft
245	245	Fr. 69 02 Lvl.	P/S	14.2	245	"
300	300	Fr. 197 Mn. Dk.	V	*28.0	300	"
300	300	Fr. 69 02 Lvl.	P/S	14.0	300	"
300	260	" "	V	20.0	300	"
260	300	" "	V	4.0	300	"

The above asterisked amplitude is considered excessive.

a. The maximum vibration amplitudes measured on the previous sea trials are listed below along with the builder's trial amplitudes just listed above:

	Displacement (S.A. Mils) Position				
Trial Date	Fr. 197 Mn.Dk.P/S	Fr. 69 02 Lvl.	Fr. 197 Mn.Dk.V	Fr. 69 02 Lvl.	Stbd. Contribution (% of Total)
Pre-Arrival 18 Jun 62	8.1	9.2	21.0	15.4	79
Mach. Trials 27 Apr 63	13.2	9.4			83
Sea Trial 4 May 63	12.4	13.4	21.8	13.5	87
Builder's Trial 1 Jun 63	13.7	14.2	28.0	14.0	84
Critical	Lower	Lower	Upper	Upper	—

b. Bearing Temperatures (inboard starboard) monitored during course of sea trial were well within limits.

MEMORANDUM

3. In view of the excessive hull vibration the following corrective action is recommended:

a. Conduct a natural frequency investigation of the newly installed sonar domes at pierside during the work week of 3 June. Pump out forward void forward dome for installation of pickups. Provide divers services for installation of pickups, aft dome.

b. Conduct a vibration survey on the domes and hull during the forthcoming sea trial of 8 June.

c. The following bearing checks should be made on the starboard inboard shafting:

(1) After removing the top half, Numbers 4, 5 and 6 bearings should be checked in the following manner starting with Number 6 bearing: Mount four (4) dial indicators (top and side forward and aft of bearing) on the shaft so that the bottom half of the bearing can be rolled out freely. Set all indicators on zero, roll out bearing observing the vertical drop and horizontal movement of the shaft.

(2) Set all indicators back to zero and record the runout every 45° for three (3) revolutions.

(3) With the runout readings completed check that the lower half of the bearing may be rolled in from both the outboard and inboard side of the bearing. Roll the lower half of the bearing back in.

4. Notify Code 251a in sufficient time to witness bearing checks and runout.

5. Pursuant to the above findings further recommendations will be initiated for work to be performed during the dry docking of 10 through 26 June 1963.

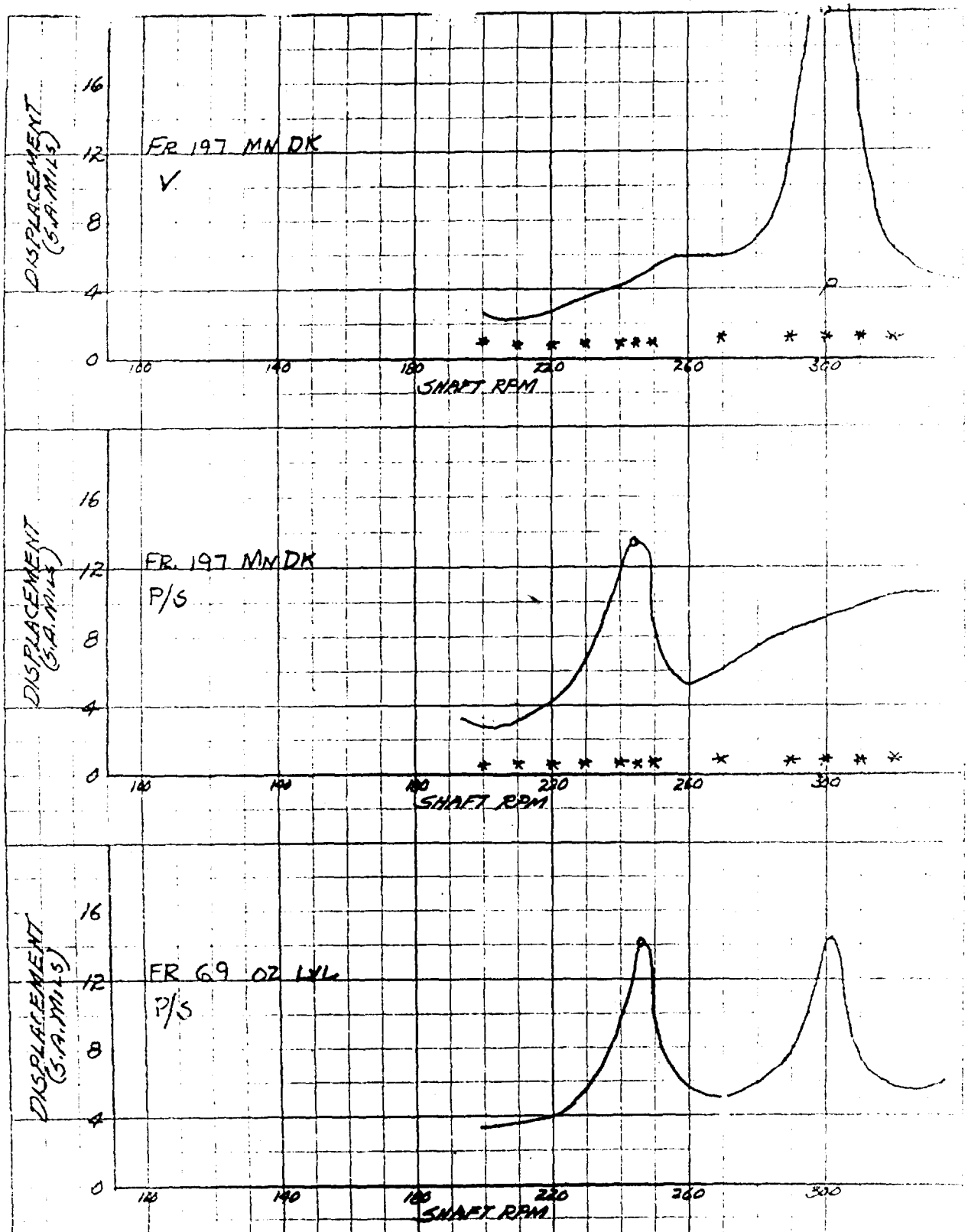
6. It is recommended that foremast be stiffened in accordance with reference (b).

7. This confirms XEROX copy delivered to Planning and Estimating on 4 June 1963.

E. S. HUBERG

Copy to:
Ship Supt. USS OLEMMON (DD840)
Codes 240 260
232 2605
251 265(w/1 copy of Graphical Summary of Hull Vibration) ✓

Prepared by: G. Ogle
Typed by: G. Kasabian 6-5-63 2 Retyped by: G. Kasabian 6-13-63



U.S.S. GLENNON (DD840)

GRAPHICAL SUMMARY OF HULL VIBRATION OF 1 JUN 63

o SHAFT * BLADE A CONST 140 CPM

DRAFT F A SEA STATE

265
DD840

JUL 2 1963

MEMORANDUM

From: Code 265
To: Codes 212 ✓ 225

Subj: USS GLENNON (DD840); Sonar Domes, Stuffing Boxes, Stern Tube Brgs., and Mast Vibration Surveys, report of

Ref: (a) Design Services Request No. 230a 001 of 13 Jun 1962
(b) Code 265 Memo DD840 of 17 May 1963
(c) Code 265 Memo DD840 of 4 Jun 1963, (XEROX copy)
(d) Code 240 Memo DD840 of 10 Jun 1963,(XEROX copy)

1. The subject survey was conducted on GLENNON during the sea trial of 8 June 1963. This survey was conducted to determine the effects of the sonar domes on the hull vibration in conjunction with reference (a). The stuffing boxes (bulkhead and stern tube) fwd stern tube bearings in P/S shaft alleys were monitored for correlation with hull vibration.

2. The maximum amplitudes of vibration measured on the domes at the lower and upper hull criticals (240 and 300 cpm respectively) under various ship operating conditions are as follows:

a. Steady on 0 heading

Shaft (RPM)	Position	Dir.	Dome Vibration Displacement (S.A.Mils)	Freq. (CPM)	Hull Vibration Displacement(S.A. Mils) Fr. 69 02 Lvl P/S	Fr. 197 Mn. Dk. V
240	Fwd. Dome 2' Below Top of Transducer	P/S	8.0	240	14.5	----
240	Above Aft. Dome on Keel	"	1.8	240	14.5	----
240	Fwd. Dome 2' Below Top of Transducer	V	8.0	240	----	6.0
240	Above Aft. Dome on Keel	V	2.0	240	----	6.0
300	Fwd. Dome 2' Below Top of Transducer	P/S	8.0	300	12.5	----
300	Above Aft Dome on Keel	"	2.0	300	12.5	----
300	Fwd. Dome 2' Below Top of Transducer	V	2.3	300	----	25.0
300	" " " "	V	4.8	270	----	-----
300	Above Aft Dome on Keel	V	1.2	300	----	25.0

The above dome amplitudes of vibration are considered satisfactory and not indicative of a hull vibration source. The above 4.8 mils displacement at 270 cpm is a constant frequency displacement measured only in the vertical di rection

MEMORANDUM

b. Fishtailing (5°Rt to 5°L etc. Rudder)

Shaft (RPM)	Position	Dir.	Dome Vibration Displacement (S.A. Mils)	Freq. (C.P.M.)	Hull Vibration Displacement Fr. 69 02 Lvl P/S
240	Fwd. Dome 2' Below Top of Transducer	P/S	7.0	240	14.5
240	Above Aft Dome on Keel	P/S	1.0	240	14.5
300	Fwd. Dome 2' Below Top of Transducer	P/S	8.0	300	12.0
300	Above Aft Dome on Keel	P/S	3.0	300	12.0

The above dome amplitudes are considered satisfactory.

c. Turning Hard (30°Rt to 30°L etc. Rudder)

Shaft (RPM)	Position	Dir.	Displacement (S.A. Mils)	Freq. (C.P.M.)	Hull Vibration Displacement (S.A. Fr. 69 02 Lvl P/S
240	Fwd. Dome 2' Below Top of Transducer	P/S	7.0	240	20.0
240	Above Aft. Dome on Keel	P/S	1.0	240	20.0
300	Fwd. Dome 2' Below Top of Transducer	P/S	8.0	300	20.0
300	Above Aft Dome on Keel	P/S	3.0	300	20.0
300	Fwd. Dome 2' Below Top of Transducer	P/S	20.0	120	———

The above dome amplitudes are considered satisfactory.

d. The maximum vibration amplitudes measured on the stuffing boxes at Fr. 148 and the fwd end of the stern tube bearings of 240 and 300 shaft rpm are as follows:

Shaft (RPM)	Position	Side	Dir.	Displacement (S.A. Mils)	Freq. (CPM)	Source
240	Stuffing Box at Fr.148	Stbd	P/S	2.4	240	1X Shaft
240	Stern Tube Stuffing Box	"	"	3.3	240	"
300	Stuffing Box at Fr.148	"	F/A	15.0	300	"
300	Stern Tube Stuffing Box	"	P/S	18.5	300	"
240	Stuffing Box at Fr.148	Port	V	12.0	240	"
240	Stern Tube Stuffing Box	"	V	3.5	240	"
300	Stuffing Box at Fr.148	"	P/S	17.5	300	"
300	Stern Tube Stuffing Box	"	P/S	15.0	300	"

MEMORANDUM

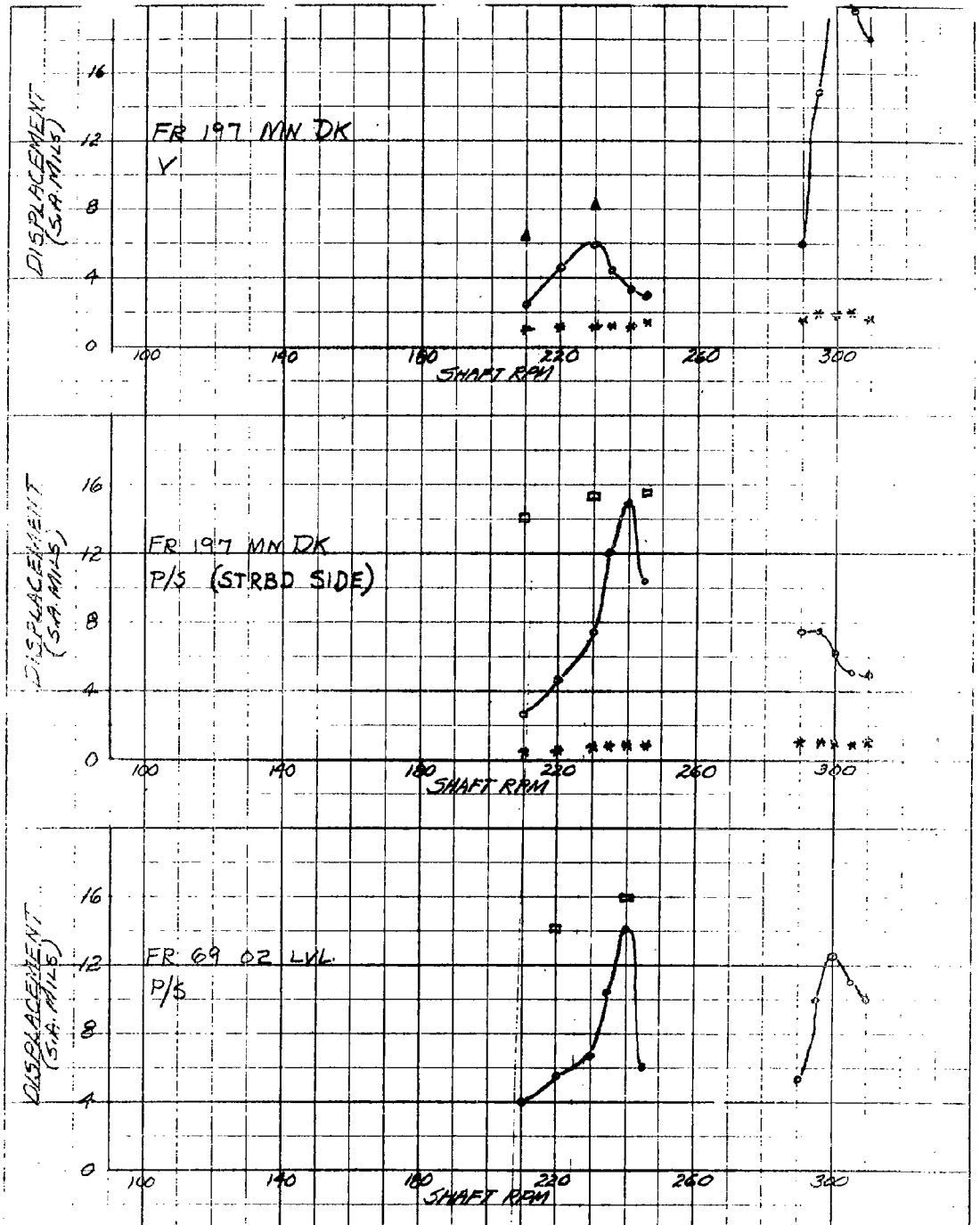
The above amplitudes of vibration although higher than normal are not considered excessive or the cause of the excessive hull vibration at the 300 cpm critical.

4. The maximum vibration amplitude measured at the top of the top mast of the main mast was 235 mils (s.a.) at 220 shaft rpm. This vibration was in the athwartship direction and a product of the large hull vibration and the top mast platform natural frequency; it is considered excessive. A complete mast vibration survey was reported in reference (b), and corrective recommendations in reference (c).

5. In view of the above findings, the recommendations set forth in reference (d) regarding starboard shafting corrections are applicable without change.

E. S. MOBERG

Copy to:
Ship Supt. USS GLENNON (DD840)
Codes 240
232
260S
260
265 (w/1 copy of Graphical Summary of Vibration)
241

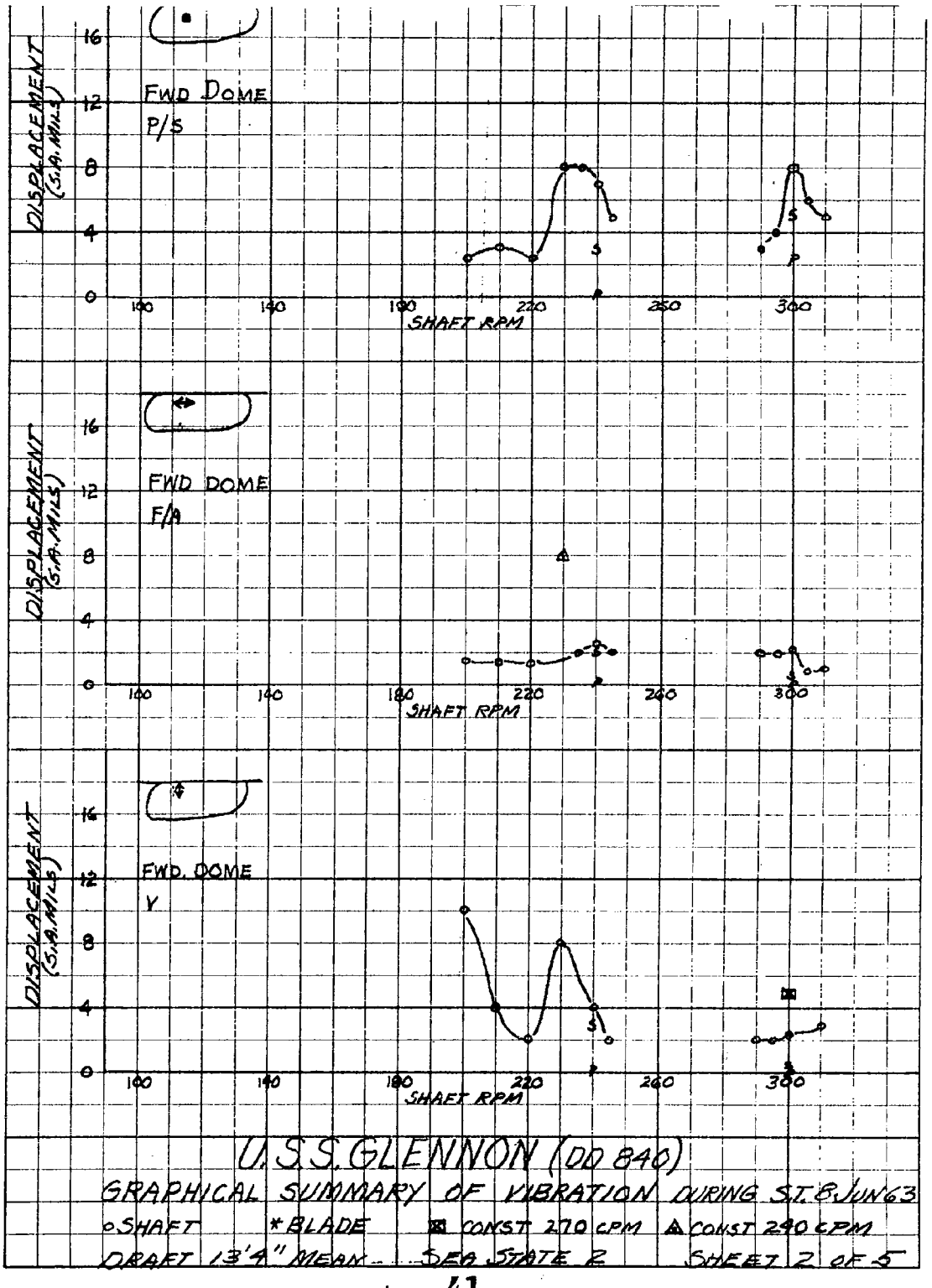


U.S.S. GLENNON (DD 840)

GRAPHICAL SUMMARY OF VIBRATION DURING ST. 8 JUN 63

o SHAFT * BLADE □ CONST 140 CPM △ CONST 180

DRAFT 13'4" MEAN - SEA STATE 2 SHEET 1 OF 5

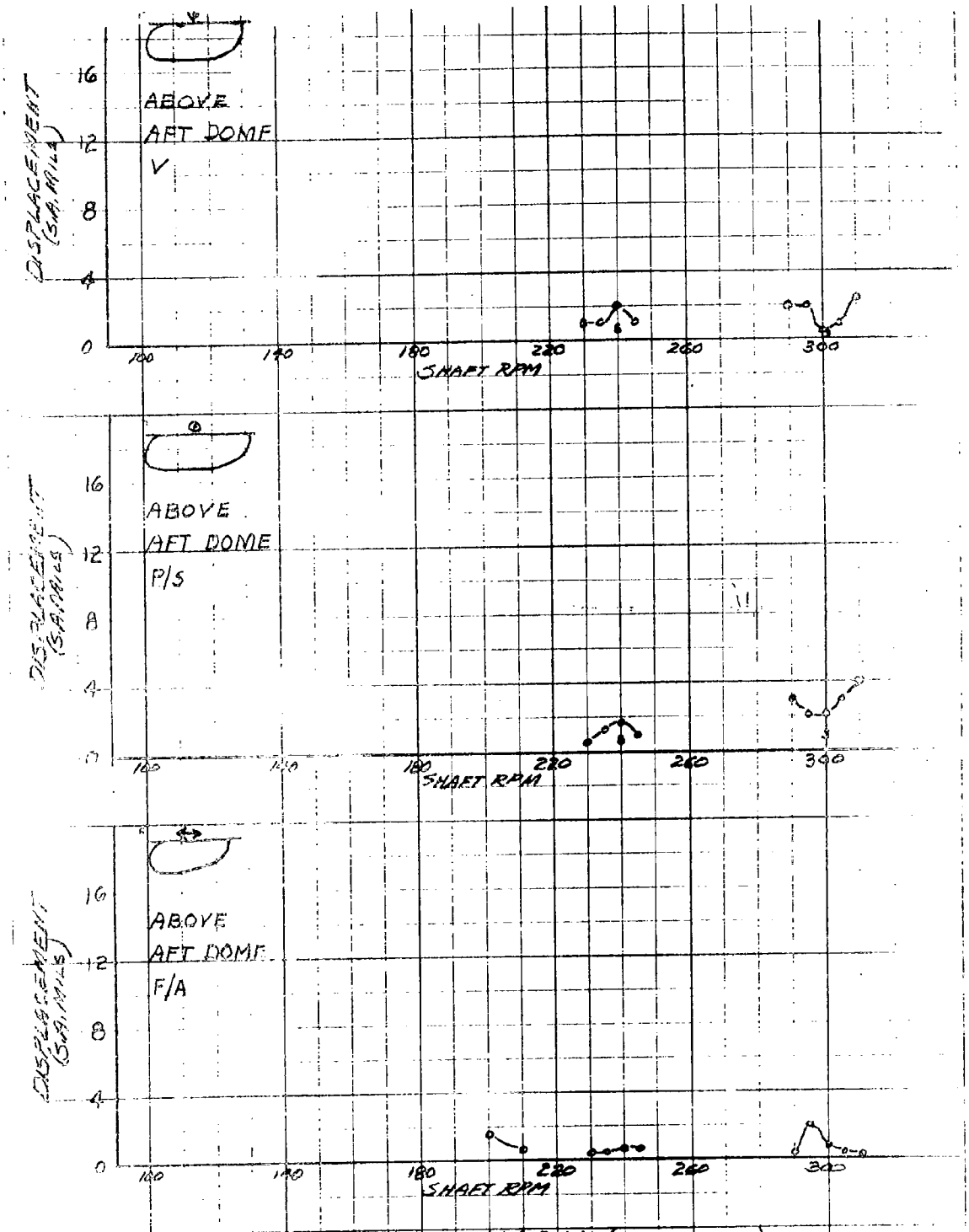


U.S.S. GLENNON (DD 840)

GRAPHICAL SUMMARY OF VIBRATION DURING S.T. & JUN 63

○ SHAFT * BLADE ⊠ CONST 270 CPM ▲ CONST 290 CPM

DRAFT 13'4" MEAN SEA STATE 2 SHEET 2 OF 5

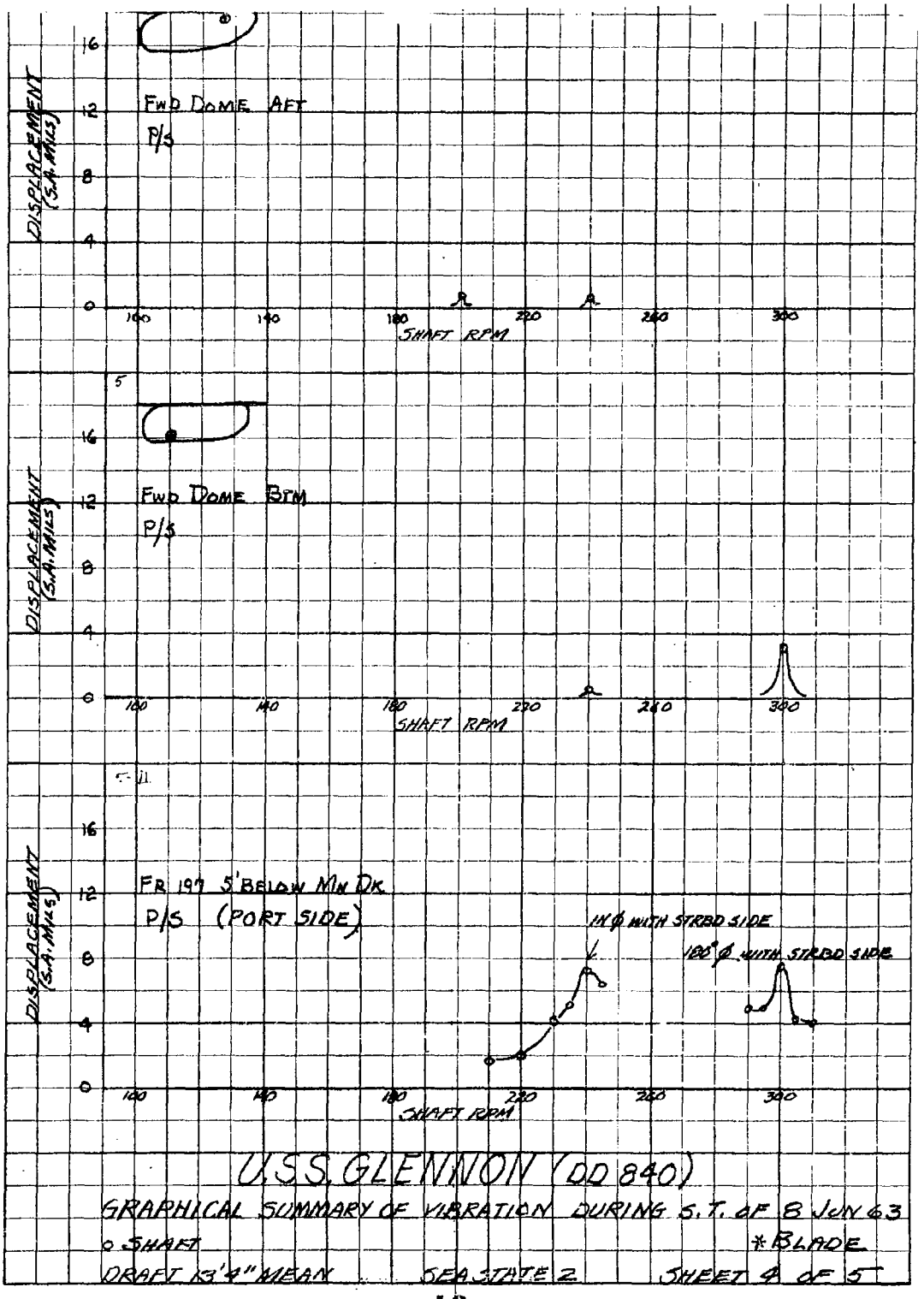


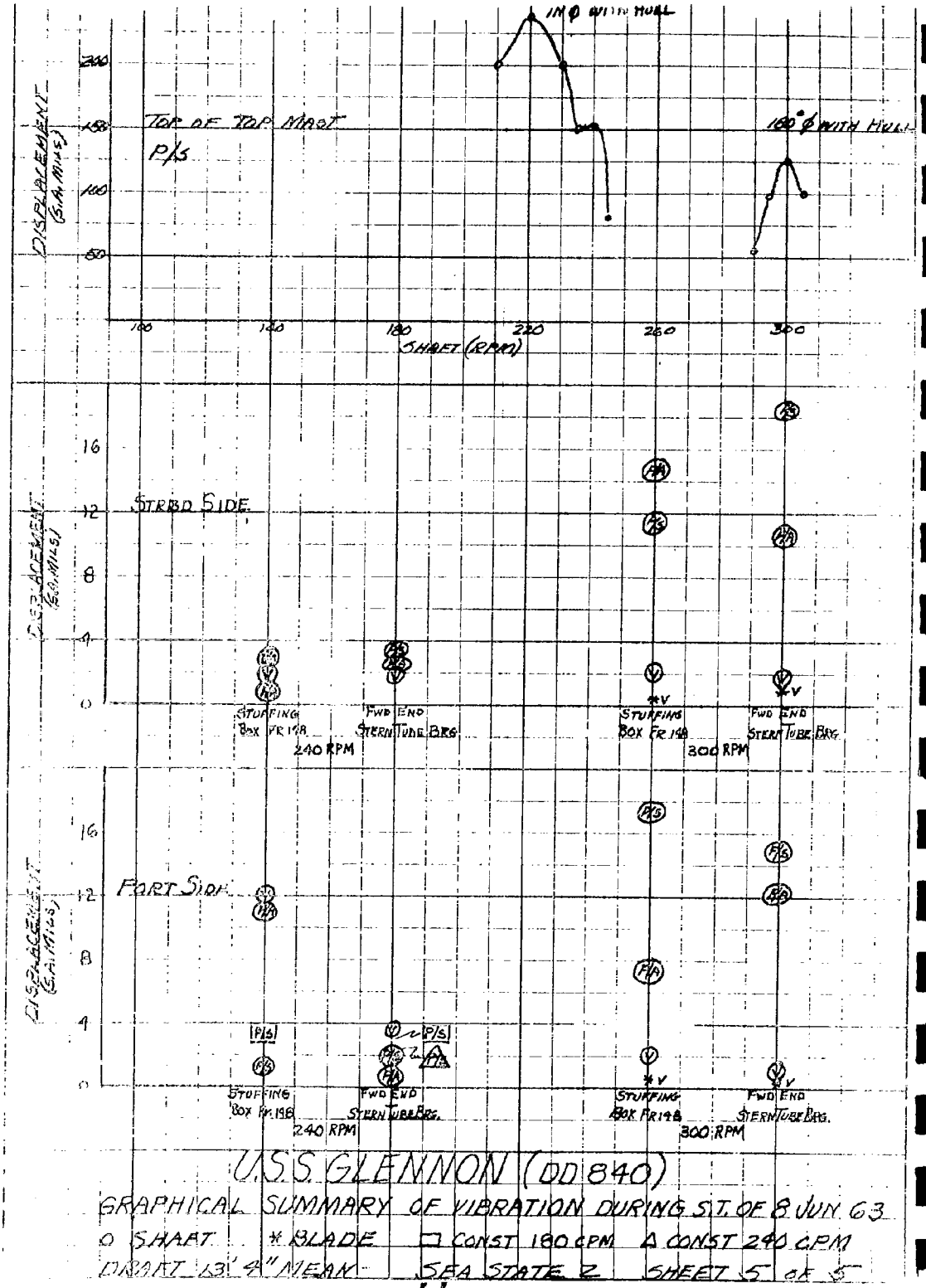
U.S.S. GLENNON (DD 840)

GRAPHICAL SUMMARY OF VIBRATION DURING S.T. & JUNE 63

○ SHAFT * BLADE

SHAFT 13'4" MEAN SEA STATE 2 SHEET 8 OF


DISPLACEMENT (S.A. MILS)
FWD DOME AFT P/S
SHAFT RPM
FWD DOME BTM P/S
FR 197 5' BELOW MN DK P/S (PORT SIDE)
1K Ø WITH STBD SIDE
180° Ø WITH STBD SIDE
USS GLENNON (DD 840)
GRAPHICAL SUMMARY OF VIBRATION DURING S.T. OF 8 JUN 63
○ SHAFT
* BLADE
DRAFT 13'4" MEAN
SEA STATE 2
SHEET 4 OF 5



U.S.S. GLENNON (DD 840)

GRAPHICAL SUMMARY OF VIBRATION DURING S.T. OF 8 JUN 63

O SHAFT * BLADE □ CONST 180 CPM Δ CONST 240 CPM

DRAFT 23' 4" MEAN SEA STATE 2 SHEET 5 OF 5

265
DD840

JUL 23 1963

MEMORANDUM

From: Code 265
To: Codes 212, 225

Subj: USS GLENNON (DD840); Hull Vibration, Main Mast Vibration, and Main Propulsion Bearing Temperature Survey, report of

Ref: (a) Code 265 Memo of 17 Jun 1963
(b) Code 265 Memo of 19 Jun 1963

1. The subject post repair survey was conducted on GLENNON during the sea trial of 8 July to evaluate the corrective actions recommended in references (a) and (b).

2. The results of the survey are as follows:

a. Hull Vibration: The maximum amplitudes of vibration measured over the speed range of 170 to 330 shaft RPM are:

Shaft RPM				Displacement	Freq.	
Stbd.	Port	Position	Dir.	(S.A. Mils)	(C.P.M.)	Source
240	240	Fr. 197 Mn. Dk.	P/S	3.2	240	1X Shaft
240	240	Fr. 69 02 Lvl.	P/S	3.5	240	"
300	300	Fr. 197 Mn. Dk.	V	2.5	300	"
300	300	Fr. 69 02 Lvl.	P/S	5.4	300	"
300	260	Fr. 69 02 Lvl.	P/S	3.6	300	"

The above amplitudes of vibration are satisfactory.

b. Main Mast Vibration: The maximum vibration amplitudes measured, at the top of the top mast, through a speed range of 170 to 330 shaft RPM, occurred at 230 shaft RPM with an amplitude of 28.0 mils (s.a.). This amplitudes is shaft excited and indicative of a top mast critical of 230 cpm. No appreciable amplitudes at any other frequency were detected. The above top mast vibration amplitude and frequency is considered satisfactory.

c. Main Propulsion Bearing Temperatures (inboard): were monitored during full power build up and for one hour at 340 shaft RPM. All temperatures were well within limits.

265
DD840

MEMORANDUM

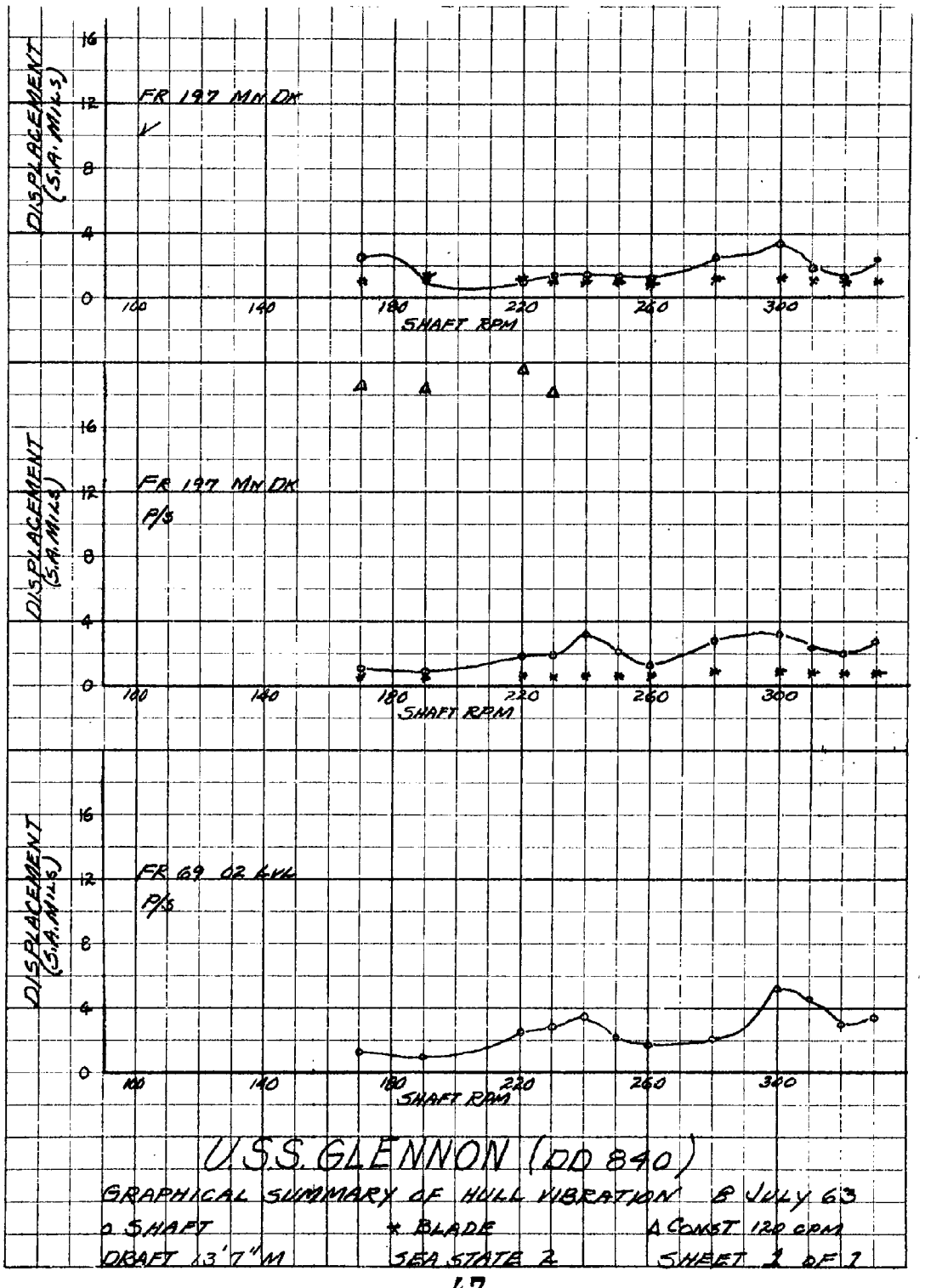
3. No corrective action is recommended from a vibration or bearing temperature viewpoint.

4. This confirms XEROX copy delivered to Planning and Estimating on 17 July 1963.

E. S. Moberg

E. S. MOBERG

Copy to:
Codes 246
[illegible]
251
260
260S
265 (w/1 copy of Graphical Summary of Hull Vibration)



U.S.S. GLENNON (DD 840)

GRAPHICAL SUMMARY OF HULL VIBRATION 8 JULY 63

o SHAFT * BLADE Δ CONST 120 CPM

DRAFT 13'7"M SEA STATE 2 SHEET 2 OF 7

OCT 11 1963

MEMORANDUM

From: Code 265
To: Codes 212 and 225

Subj: USS GREENE (DD-711), Post-FRAM Hull Vibration Survey; report of

Ref: (a) DSR 242-801-28 of 6 Dec 1962

1. A Post-FRAM Hull Vibration Survey was conducted on GREENE during Builders Trials of 21 September 1963 to evaluate recommendations given in compliance with reference (a).

2. Vibration was measured throughout a speed range of 180 to 325 Shaft RPM. The maximum single amplitudes of vibration are listed below:

Shaft RPM	Position	Dir	Displ. (S.A.Mils) Pre-Fram	Post-Fram	Freq. (CPM)	Source
310 Both Shafts	Mn Dk - Fr 196	V	30.5	15	310	1X Shaft
250 " "	Mn Dk - Fr 196	P/S	-	14	250	1X Shaft
235 " "	Mn Dk - Fr 196	P/S	14.5	-	235	1X Shaft
250 " "	02 Lvl- Fr 72	P/S	-	12	250	1X Shaft
235 " "	02 Lvl- Fr 72	P/S	12	-	235	1X Shaft
310 Stbd Shaft 270 Port Shaft	Mn Dk - Fr 196	V	17	4	310	1X Stbd Shaft
270 Stbd Shaft 310 Port Shaft	Mn Dk - Fr 196	V	13.5	11	310	1X Port Shaft

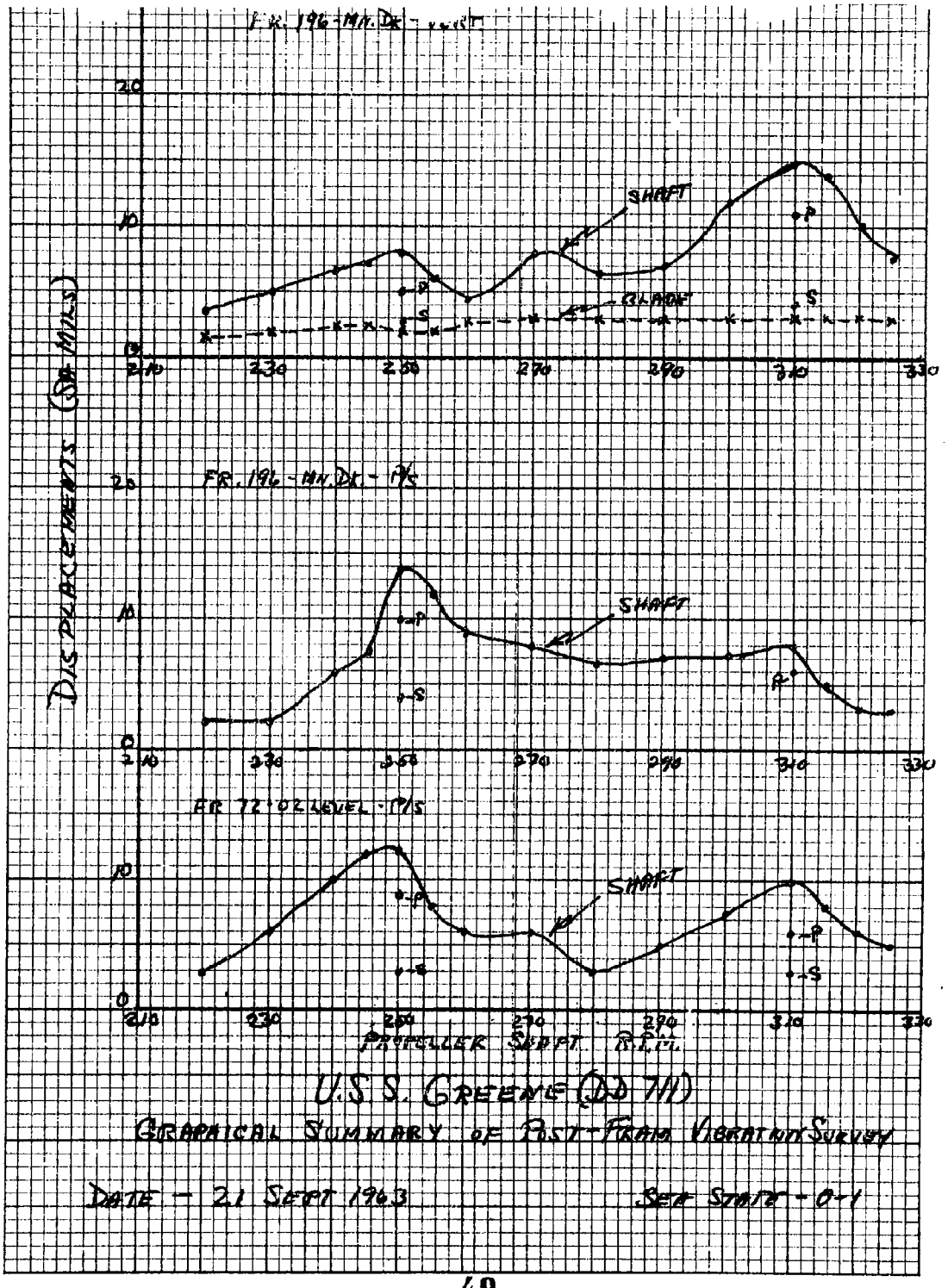
The single amplitudes of vibration listed for the Post-FRAM Survey are satisfactory.

3. No further action is necessary from a vibration standpoint.

4. This confirms Xerox copy delivered to P & E on 30 September 1963.

E. S. MCBERG

Copy to:
240 260 232 265a 260s



U.S.S. GREENE (DD 711)

GRAPHICAL SUMMARY OF POST-TRIAL VIBRATION SURVEY

DATE - 21 SEPT 1963 SEA STATE - 0-1

265
DD694

JUN 18 1963

MEMORANDUM

From: Code 265
To: Codes 212 \/ 225

Subj: USS INGRAHAM (DD694); Hull Vibration Survey, report of

Ref: (a) Design Services Request No. 673-02

1. The survey was conducted enroute from Earle, New Jersey to Boston Naval Shipyard on 28 May 1963, in accordance with reference (a).

2. The maximum amplitudes of hull vibration recorded over a speed range of 200 to 335 shaft RPM are as follows:

Shaft (RPM)	Position	Dir.	Displacement (S.A. Mils)	Freq. (CPM)	Sensor
260 Both	Fr. 197 Mn. Dk.	V	6.6	260	1X Shaft
260 Both	Fr. 197 Mn. Dk.	P/S	6.6	260	"
260 Both	Fr. 60 02 Lvl.	P/S	6.6	260	"
330 Both	Fr. 197 Mn. Dk.	V	15.0	330	"
330 Both	Fr. 197 Mn. Dk.	P/S	11.8	330	"
330 Both	Fr. 69 02 Lvl.	P/S	7.5	330	"
330 Port 290 Stbd.	Fr. 197 Mn. Dk.	V	9.4	330	"
330 Stbd. 290 Port	Fr. 197 Mn. Dk.	V	6.1	330	"

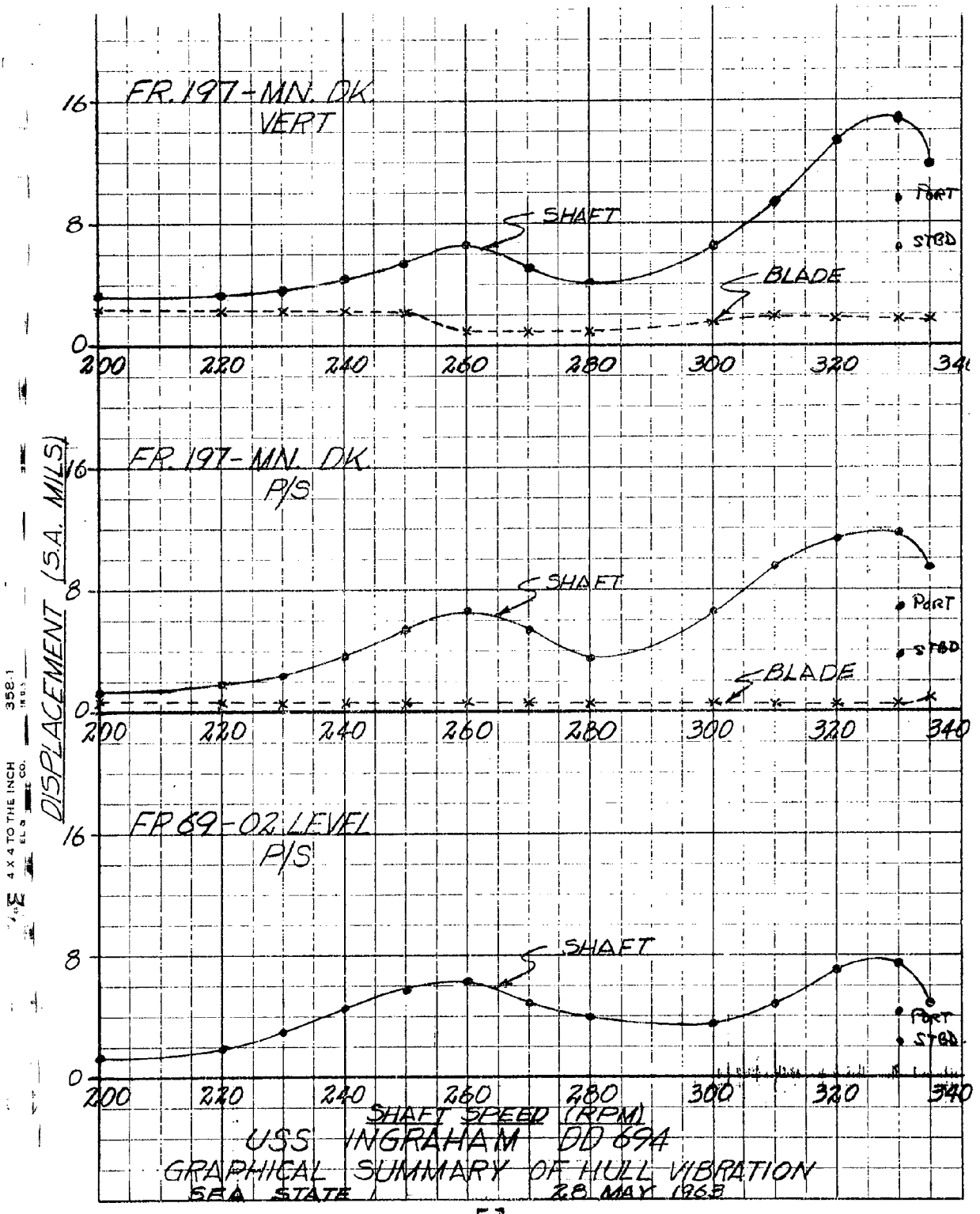
The above amplitudes are within allowable limits. It is noted that the port shafting system is the greater contributor to the measured amplitudes but not by a large margin.

3. No corrective action is recommended from a vibration standpoint. It is understood however that the present "Quiet Type" propellers are to be replaced by standard NACAB 692 Class propellers. It is therefore recommended that another hull vibration survey be conducted during the next scheduled sea trial following the replacement of these propellers.

4. This confirms XEROX copy delivered to Planning and Estimating on 10 June 1963.

E. S. MOBERG

Copy to:
Ship Supt. USS INGRAHAM (DD694)
Codes 244
265
260
260S



USS INGRAHAM DD 694

GRAPHICAL SUMMARY OF HULL VIBRATION

SEA STATE 1 28 MAY 1968

265
DD694

JUL 15 1963

MEMORANDUM

From: Code 265
To: Codes 212 225

Subj: USS INGRAHAM (DD694); Post-Repair Hull Vibration Survey, report of

Ref: (a) Design Services Request No. 673-02
(b) Code 265 Memo DD694 of 18 Jun 1963

1. The subject survey was conducted enroute from Boston Naval Shipyard to Newport, Rhode Island in accordance with references (a) and (b).

2. The maximum single amplitudes of hull vibration recorded over a speed range of 220 to 340 shaft RPM are as follows:

Shaft	Position	Dir.	Displacement (S.A. Mils)	Freq. CPM	Source
250 Both	Fr. 197 Mn. Dk.	V	3.7	250	1X Shaft
250 Both	" "	P/S	4.0	250	"
320 Both	Fr. 69 02 Level	P/S	4.0	320	"
330 Both	Fr. 197 Mn. Dk.	V	6.9	330	"
330 Both	" "	P/S	4.8	330	"

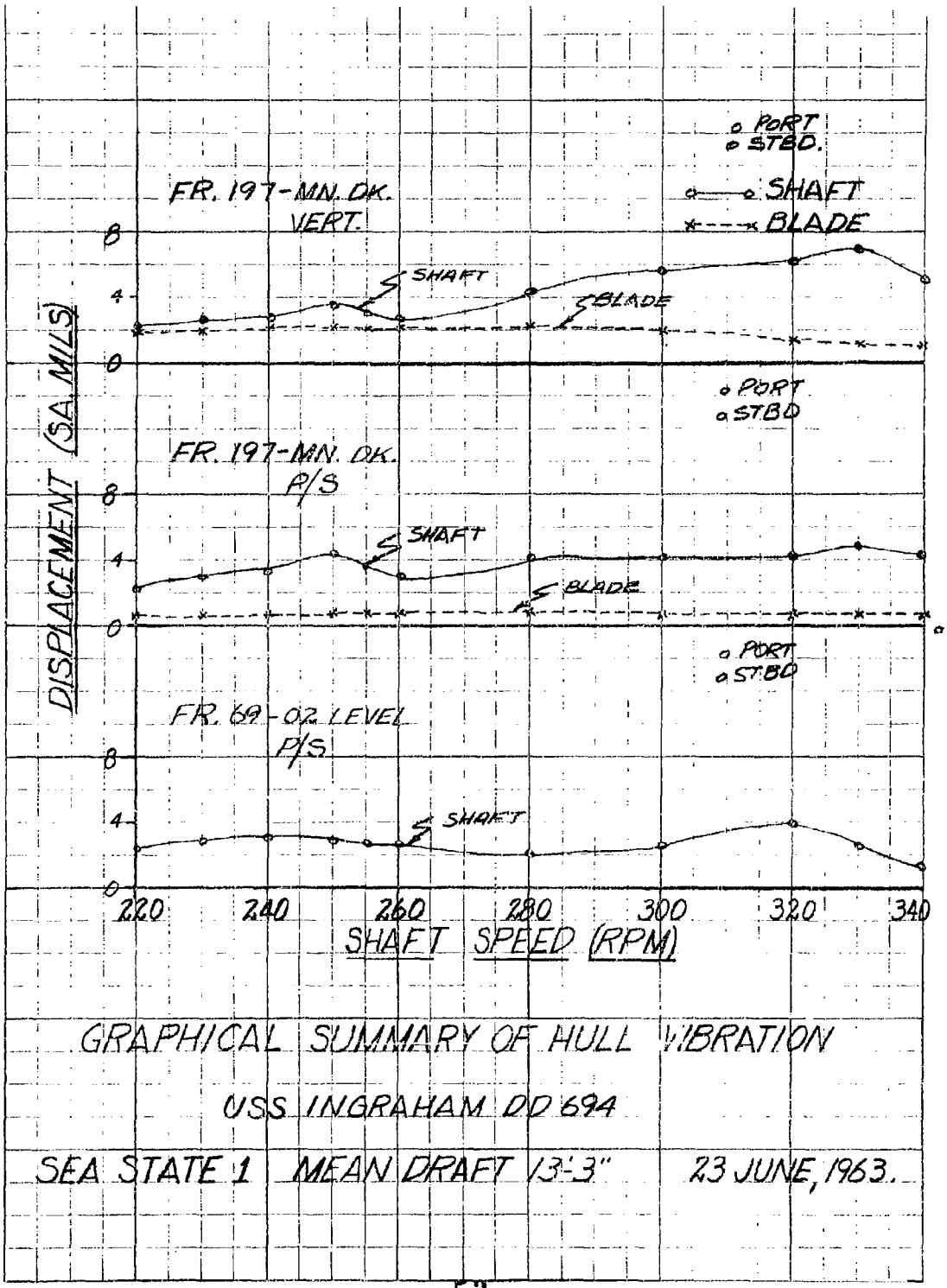
The single amplitudes of vibration measured at the lower and upper criticals of the ship's hull are below the normal level that is usually encountered for ships of this class.

4. No futther action is required from a vibration point of view.

5. This confirms XEROX dopy delivered to Planning and Estimating on 1 July 1963.

E. S. MOBERG

Copy to:
Codes 260
265(2)
232
260S



GRAPHICAL SUMMARY OF HULL VIBRATION

USS INGRAHAM DD 694

SEA STATE 1 MEAN DRAFT 13'-3" 23 JUNE, 1963.

265
DD765

JUN 11 1963

MEMORANDUM

From: Code 265
To: Codes 225 √ 212

Subj: USS KEPPLER (DD765): Hull Vibration Survey, ECM Mast Investigation, Vibration of Starboard Inboard Shafting, report of

Ref: (a) D.S.R. No. 623-01 of 29 Apr 1963
(b) Verbal Request from Code 212

1. A hull vibration survey was conducted on KEPPLER enroute to Boston, Massachusetts from Earle, New Jersey on 28 May 1963 in compliance with reference (a). In addition, vibration of the ECM mast was also investigated at the request of reference (b).

2. Vibration was recorded on the hull, Number 6 Spring Bearing and the ECM mast throughout a speed range of 150 through 335 shaft R.P.M.

a. The maximum single amplitudes of vibration recorded on the hull are as follows:

Shaft R.P.M.	Position	Direction	Displ. (S.A. Mils)	Freq. (CPM)	Source
265	Mn. Dk. Fr. 196	Vert	11.5	260	1X Shaft
330	" "	"	*20.5	330	"
260	Mn. Dk. Fr. 196	P/S	*24.0	260	"
260	02 Level Fr. 72	P/S	16.0	260	"
Stbd. 260 Port 220	Mn. Dk. Fr. 196	P/S	17.5	260	1X Stbd. Shaft
Port 260 Stbd. 220	" "	P/S	7.0	260	1X Port Shaft

The single amplitudes of vibration marked with an asterisk (*) are excessive. Trailing shafts indicates that the starboard shaft is the major contributor to the overall vibration. Visual inspection shows a piece 14" X 6" missing from tip of Number 1 Blade on Starboard Propeller.

b. The maximum single amplitude of vibration on the Number 6 Spring Bearing was 6 mils at 300 shaft R.P.M. This vibration is not excessive.

c. The maximum single amplitude of vibration on the ECM mast was 70 mils and occurred at 335 shaft R.P.M. This vibration is high but not excessive.

3. In view of the above, the following is recommended:

a. Remove Starboard propeller and fool's cap to shop.

MEMORANDUM

b. Repair or replace propeller.

c. Check pitch and track and dynamically balance the propeller which is to be reinstalled on ship and correct as necessary.

d. Check balance of fool's cap and correct as necessary.

e. Take runout readings on starboard tail shaft at small and large end of taper, at fwd end of main journal, fwd end of intermediate journal, and aft end of stern tube journal.

f. Send above readings to Design Division, Code 265, for evaluation.

4. Recommdendations resulting from mechanical check of inboard bearings have been given in Design Memo DD765 Code 265 of 4 June 1963.

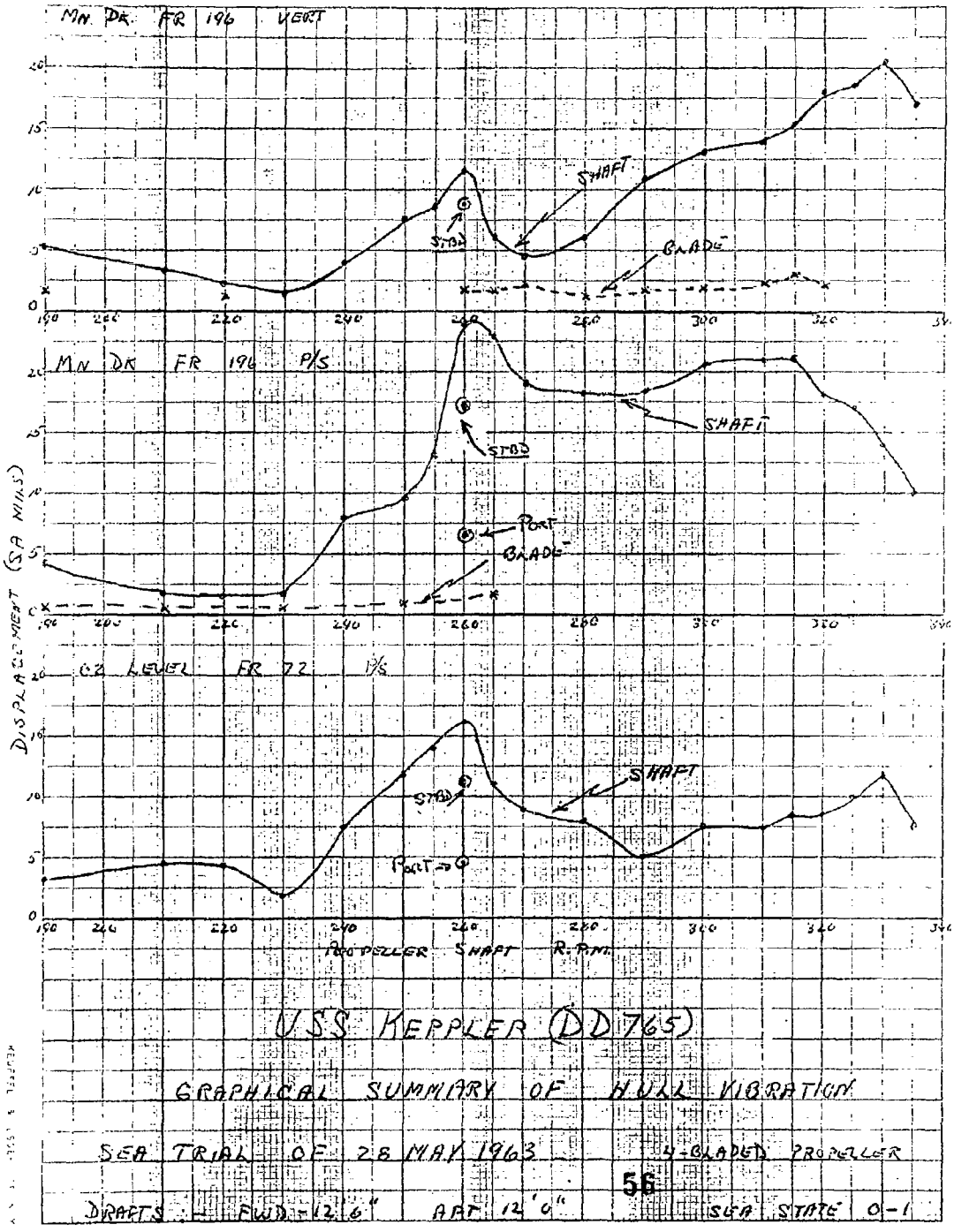
5. It is understood that additional equipment is to be installed on the ECM mast at a future date. Therefore it is recommended that no work be done on the mast at this time. However, when all equipment has been installed it is recommended that the vibrational characteristics of this mast be measured and evaluated.

6. Upon completion of work recommended in paragraphs 3 and 4 conduct a post repair hull survey.

7. This confirms XEROX copy delivered to Planning and Estimating on 6 June 1963.

E. S. MOBERG

Copy to:
Ship Supt. USS KEPPLER (DD765)
Codes 265(2)(w/2 copies of graphical summary)
232
260
260S

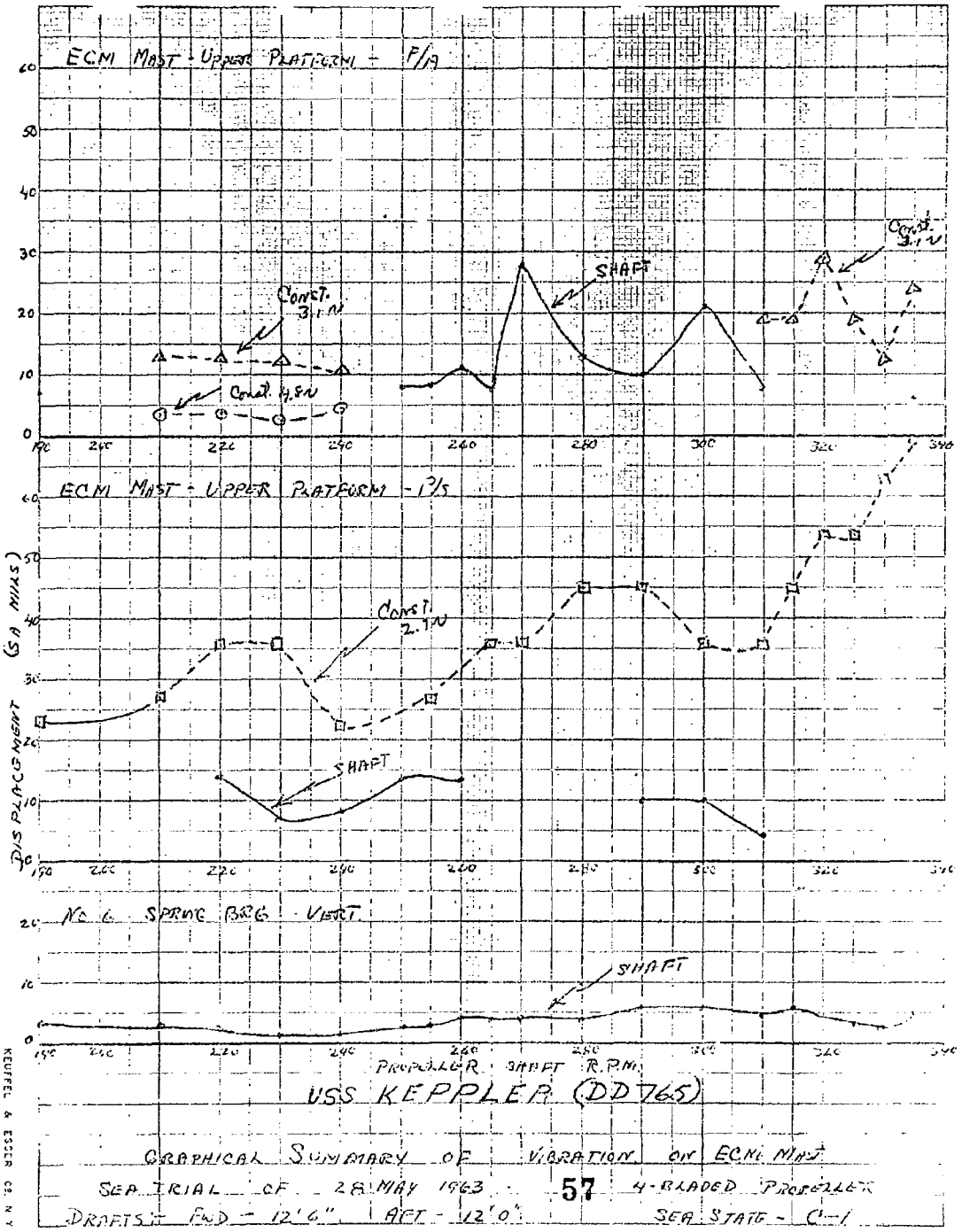


USS KEPPLER (DD 765)

GRAPHICAL SUMMARY OF HULL VIBRATION

SEA TRIAL OF 28 MAY 1963 4-BLADED PROPELLER

DRAFTS — FWD - 12' 6" AFT 12' 0" SEA STATE 0-1



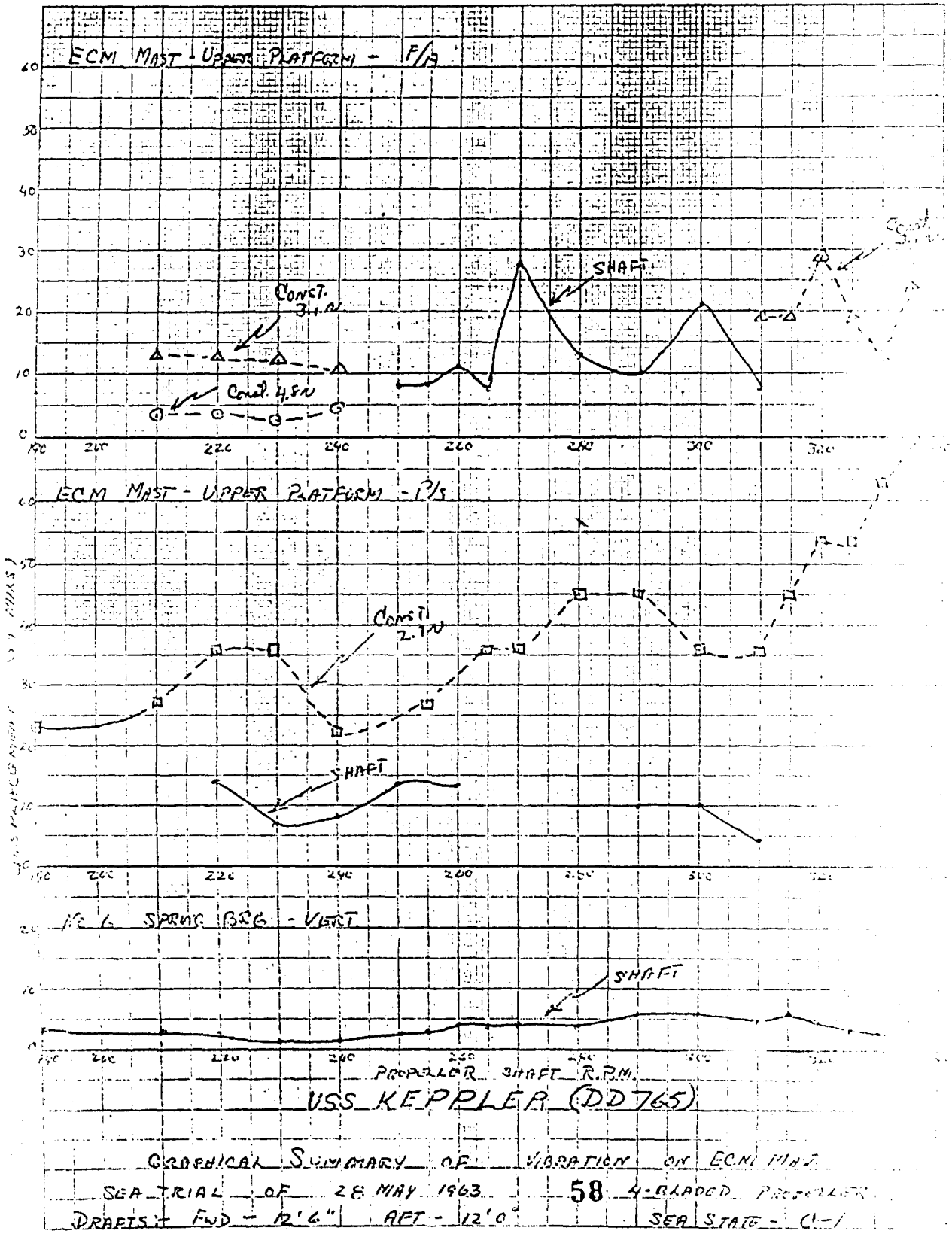
USS KEPPLER (DD765)

GRAPHICAL SUMMARY OF VIBRATION ON ECM MAST

SEA TRIAL OF 28 MAY 1963 **57** 4-BLADED PROPELLER

DRAFTS - FWD - 12'6" AFT - 12'0" SEA STATE - C-1

KEUFFEL & ESSER CO. N.Y.



USS KEPPLER (DD765)

GRAPHICAL SUMMARY OF VIBRATION ON ECM MAST

SEA TRIAL OF 28 MAY 1963 58 4-BLADED PROPELLER

DRAFTS: FWD - 12'6" AFT - 12'0" SEA STATE - 0-1

265
DD765

JUL 2 1963

MEMORANDUM

From: Code 265
To: Codes 212 ✓ 225

Subj: USS KEPPLER (DD765); Post-Repair Hull Vibration Survey, Analysis of Main Propulsion Shafting

Ref: (a) Design Services Request No. 623-01 of 29 Apr 1963

1. A post-repair hull vibration survey was conducted on KEPPLER during the sea trial of 22 June 1963 in compliance with reference (a).

2. Vibration was measured throughout a speed range of 200 to 330 shaft R.P.M. The maximum single amplitudes of vibration are listed below:

Position	Dir.	Displacement(S.A.Mils) Pre-Repair	Post-Repair	Freq. (CPM)	Source
Mn. Dk. Fr. 196	Vert	11.5	4.0	260	1X Shaft
" "	"	20.5	5.0	330	"
" "	P/S	24.0	4.5	260	"
02 Level Fr. 72	P/S	16.0	4.0	260	"
Mn. Dk. Fr. 196	P/S	21.5	8.0	310	"

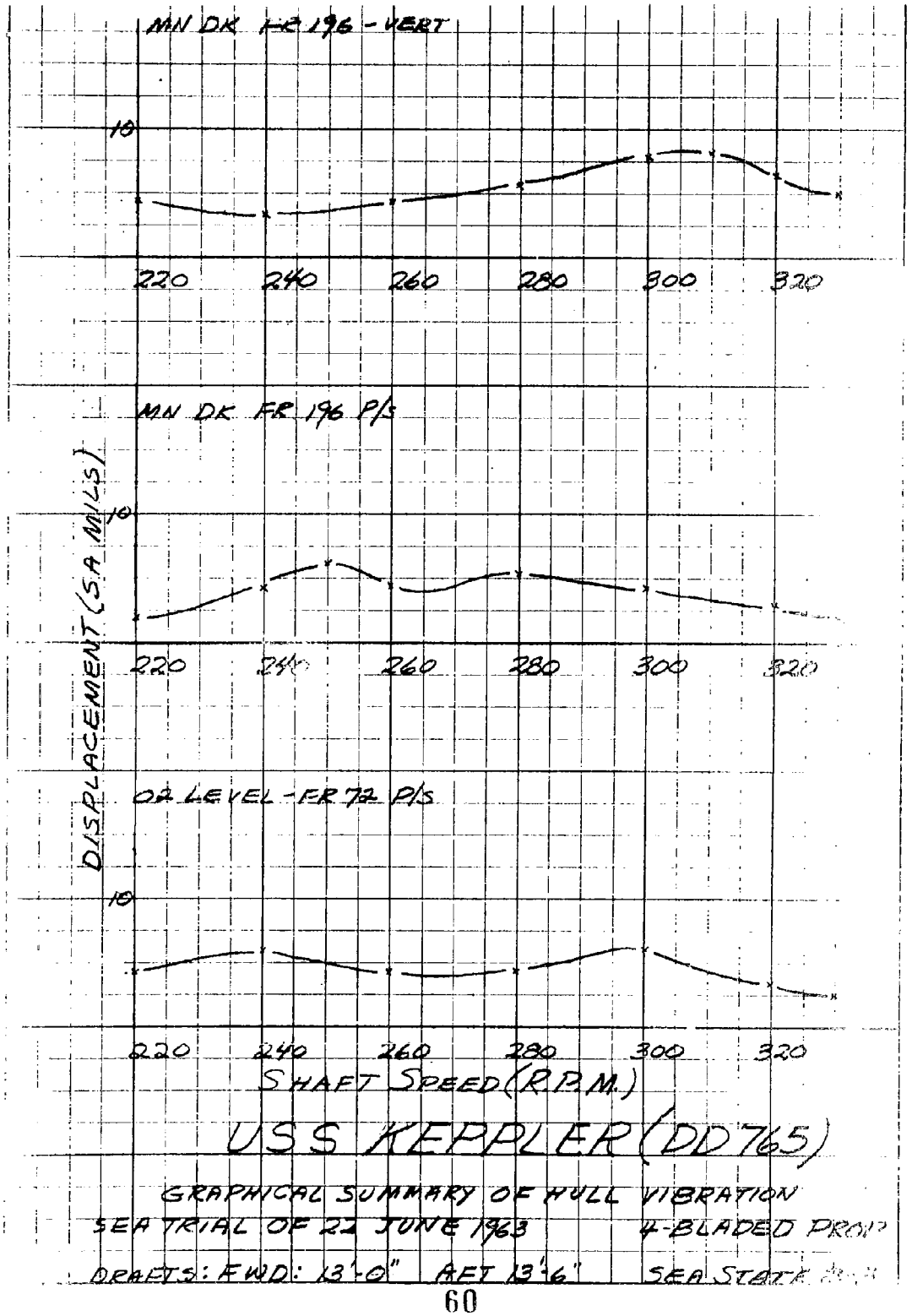
The single amplitudes of vibration for the post-repair survey are satisfactory.

3. Bearing temperatures were monitored throughout the speed run. The maximum temperature recorded was 125°F on Number 2 and Number 4 spring bearings. These temperatures are satisfactory.

4. In view of the above no further action is necessary from a vibration standpoint.

E. S. MOBERG

Copy to:
Ship Supt. USS KEPPLER (DD765)
Codes 232
260
260S
265 (w/1 copy of Graphical Summary)



USS KEPPLER (DD765)

GRAPHICAL SUMMARY OF HULL VIBRATION

SEA TRIAL OF 21 JUNE 1963 4-BLADED PROP

DRAFTS: FWD: 13'-0" AFT 13'-6" SEA STATE [illegible]

265
DD849

JUL 15 1963

MEMORANDUM

From: Code 265
To: Codes 212 225

Subj: USS KRAUS (DD849); Hull Vibration and Main Propulsion Bearing Temperature Survey, report of

Ref: (a) Design Services Request No. 801-06

1. A pre-Fram hull vibration and main propulsion bearing temperature survey was conducted on KRAUS enroute Boston on 27 June 1963, in accordance with reference (a).

2. The maximum hull vibration amplitudes measured from 160 to 330 shaft rpm are as follows:

Shaft RPM				Displacement	Freq.	
Stbd.	Port	Position	Dir.	(S.A. Mils)	(C.P.M.)	Source
250	250	Fr. 196 Mn. Dk.	P/S	3.8	250	1X Shaft
"	"	Fr. 69 02 Lvl.	"	3.8	"	"
320	320	Fr. 196 Mn. Dk.	V	9.2	320	"
"	"	Fr. 69 02 Lvl.	P/S	4.8	"	"
320	290	Fr. 196 Mn. Dk.	V	8.3	"	"
290	320	" "	V	2.3	"	"

The above amplitudes are considered satisfactory.

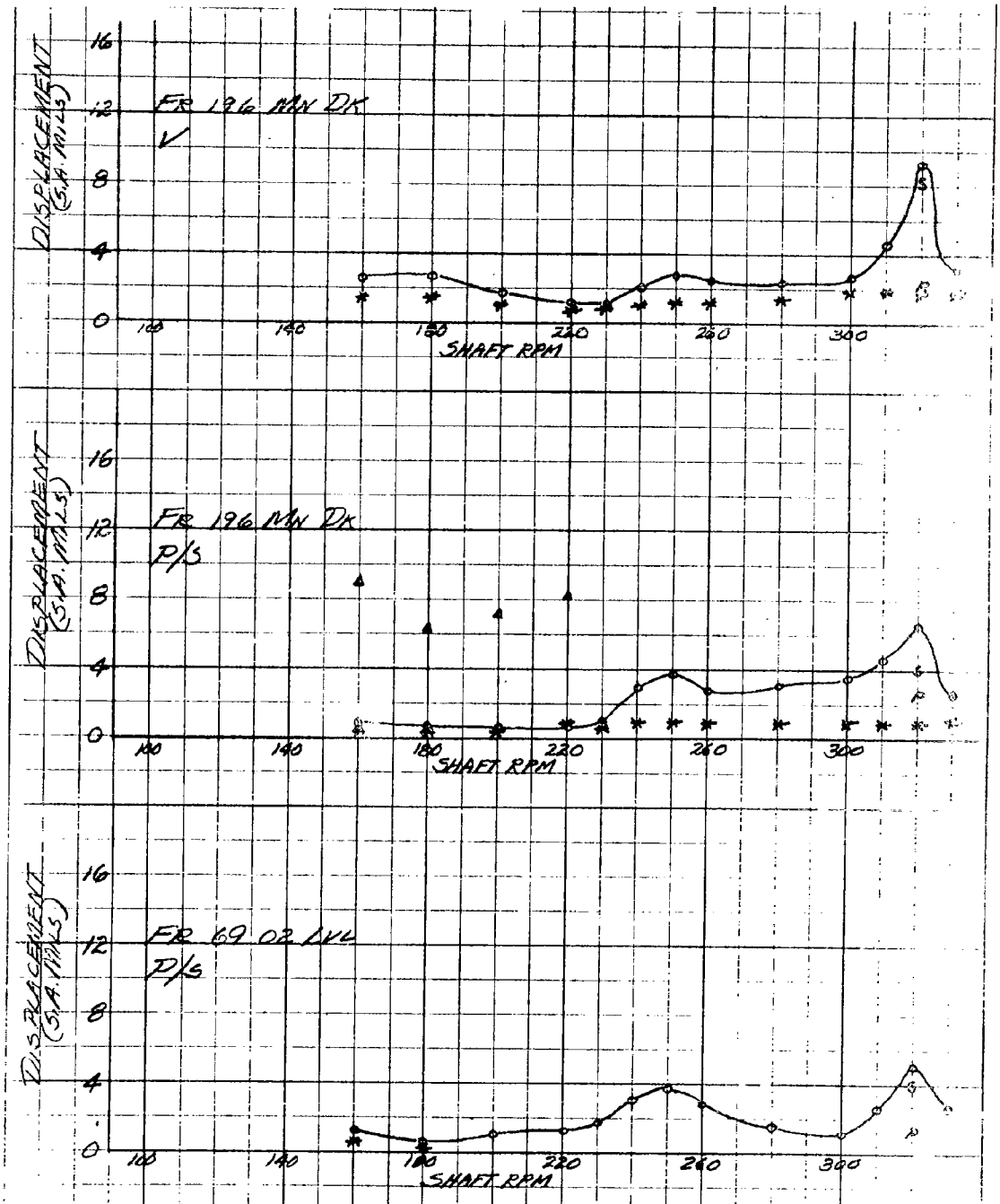
3. The main propulsion bearing temperature survey, which consisted of monitoring all inboard main propulsion bearings and stuffing boxes during full power build-up and 1/2 hour at 330 shaft rpm, showed no abnormal temperatures.

4. In view of the above no corrective action is recommended from a vibration or bearing viewpoint.

5. This confirms XEROX copy delivered to Planning and Estimating on 1 July 1963.

E. S. MOBERG

Copy to:
Codes 232
260
260S
265(2)(w/1 copy of Vibration Graphical Summary)
251



U.S.S. KRAUS (DD849)

GRAPHICAL SUMMARY OF HULL VIBRATION 77 Nov 3

○ SHAFT * BLADE Δ CONST 140 CPM

DRAFT 13'0" M SEA STATE 1 SH 1 OF 1

265
DD849

OCT 10 1963

MEMORANDUM

From: Code 260
To: Codes 212, 225

Subj: USS KRAUS (DD849); Main propulsion shafting evaluation

Ref: (a) DSR 252-801-21

1. In compliance with reference (a), a review of the port and starboard main propulsion shafting system was made to correlate runout, unbalance and clearance data with pre-FRAM vibration data. Based on the findings in drydock and in shop the following is recommended:

a. Take runout at aft stern tube journal, main and inter strut bearing (forward or aft).

b. Remove intermediate strut bearing and record drop of shaft journal and side to side readings.

c. Take runout at intermediate journal.

d. Remove starboard tailshaft to shop for restoration to within acceptable runout tolerance (Note: Port tailshaft all right).

e. Remove muff coupling to shop to adjust fit and draw to tailshaft taper and machine 1/2 inch lands on forward and aft periphery when assembled to taper.

f. Correct dunce cap unbalance to within acceptable limits.

g. Prior to installing FRAM type propellers check fit to tailshaft tapers and rebalance if fit adjustment is made.

h. Remove plug on end of propeller and stern tube shafts and inspect inside for anything loose or offset.

i. No further work on outboard bearings required unless shaft rework necessitates over-size staves.

2. During the re-installation of the starboard shafting system the following runout data is required:

a. With muff engaged to stern tube shaft, take runout at both ends of muff periphery and on aft stern tube journal.

b. With tailshaft and bearings installed, take runout at both ends of muff periphery, at main, intermediate and aft stern tube bearings and SE-LE of taper.

3. Design Division to witness and evaluate all readings prior to installing propeller, fairwaters, etc.

4. Before placing ex-KRAUS propellers into program refit it is recommended that pitch outages of prop serial No. 21511 be corrected; that bores of both props be checked and corrected for fit using plug gage prior to final balancing corrections.

5. This confirms xerox copy delivered to P & E on 30 September 1963.

N. R. AVERY
ACTING

Copy to:
240
232
260
265(2)
260s

265
CVS39

MAY 2 1963

MEMORANDUM

From: Code 265
To: Codes 211 225

Subj: USS LAKE CHAMPLAIN (CVS39); Main Propulsion Shafting Noise Survey, report of

Ref: (a) Design Services Request No. 368-40

1. A noise survey was conducted on the main propulsion shafting of LAKE CHAMPLAIN enroute Boston on 15 April 1963. This survey was conducted in accordance with reference (a) to investigate the unusual noise signature reported emanating from the main propulsion shafting system.

2. The noise survey consisted of monitoring each shaft from 0 to 160 shaft rpm (the excitation range of the reported noise) under various rudder angles, and recording the noise of the maximum level for each shaft with the adjacent shaft locked. A discrete frequency analysis of the noise showed the following:

a. Two separate noises, one emanating from the Number 2 shafting system at 775 cps and one from the Number 3 shafting system at 805 cps.

b. The number 2 shafting system noise has the characteristics of a nicked propeller blade on the leading edge.

c. The number 3 shafting system noise has the characteristics of a rope guard or fairwater rubbing on the shaft.

3. It is therefore recommended, from a sound viewpoint, that the Number 2 and 3 outboard shafting systems be inspected for the above deficiencies and copies of these findings be forwarded to Code 265 for evaluation. Contingent upon the above findings further recommendations may be necessitated.

4. This confirms verifax copy delivered to Planning and Estimating on 17 April 1963.

E. S. MOBERG

Copy to:
Ship Supt. USS LAKE CHAMPLAIN (CVS39)
Codes 232 260S
260 265(2)

Prepared by: G. Ogle
Typed by: G. Kasabian 4-18-63

65

265
CVS39

AUG 13 1963

MEMORANDUM

From: Code 265
To: Codes 211 ✓ 225

Subj: USS LAKE CHAMPLAIN (CVS39); Hull Vibration Survey and Main Propulsion Shafting Noise Survey, report of

Ref: (a) Design Services Request No. 368-79 of 1 Aug 1963
(b) Design Services Request No. 368-40 of 3 Apr 1963
(c) Code 265 Memo CVS39 of 2 May 1963

1. A hull vibration survey was performed during a sea trial on LAKE CHAMPIAIN on 3 August in compliance with refernnce (a). In addition, a post-repair noise survey was conducted on the main propulsion shafting in compliance with reference (b) to evaluate recommendations given in reference (c).

2. A hull vibration was recorded over a speed range of 110 to 220 shaft R.P.M. which was the highest speed attained due to machinery problems. The maximum single amplitudes of vibration recorded throughout the above speed range are as follows:

Position	Dir.	Shaft RPM	Freq. CPM	Amplitude (S.A. Mils)	Source
Fr. Dk. Fr. 150	Vert	220	220	3	Shaft
Fr. Dk. Fr. 150	P/S	220	220	3	"
010 Level, Fr. 96	P/S	220	220	23	"

These amplitudes of vibration are satisfactory. However, since the amplitudes were still increasing it 220 R.P.M. it is not known if the critical speed was raached.

3. No unusual noises were observed coming from the main propulsion shafting throughout the speed range of 9 to 220 R.P.M.

4. In view of the above, no further action is recommended for the main propulsion shafting system from either a noise or vibration standpoint.

5. This confirms XEROX copy delivered to Planning and Estimating on 7 August 1963.

E. S. MOBERG

Copy to:
Codes 260
265
260S
232

265
DLG16

MAY 29 1963

MEMORANDUM

From: Code 265
To: Codes 225 ✓ 211

Subj: USS LEAHY (DLG16); Hull Vibration Survey, report of

Ref: (a) Design Services Request No. 572-83 of 3 May 1963

1. Hull vibration measurements were taken on LEAHY during the sea trial of 7 May 1963 in compliance with reference (a).

2. Vibration measurments were recorded through a speed range of 160-310 shaft R.P.M. The maximum single amplitudes of vibration are listed below:

Shaft R.P.M.	Position	Direction	Displ. (S.A.Mils)	Freq. CPM	Source
200	Mn. Dk. Fr. 203	P/S	5.6	200	1X Shaft
200	03 Level for 79	P/S	2.5	200	"
260	Mn. Dk. for 203	Vert.	5.0	260	"
260	03 Level Fr. 79	P/S	4.0	260	"
250	Mn. Dk. Fr. 203	Vert.	1.5	1250	1X Blade

These single amplitudes of vibration are satisfactory.

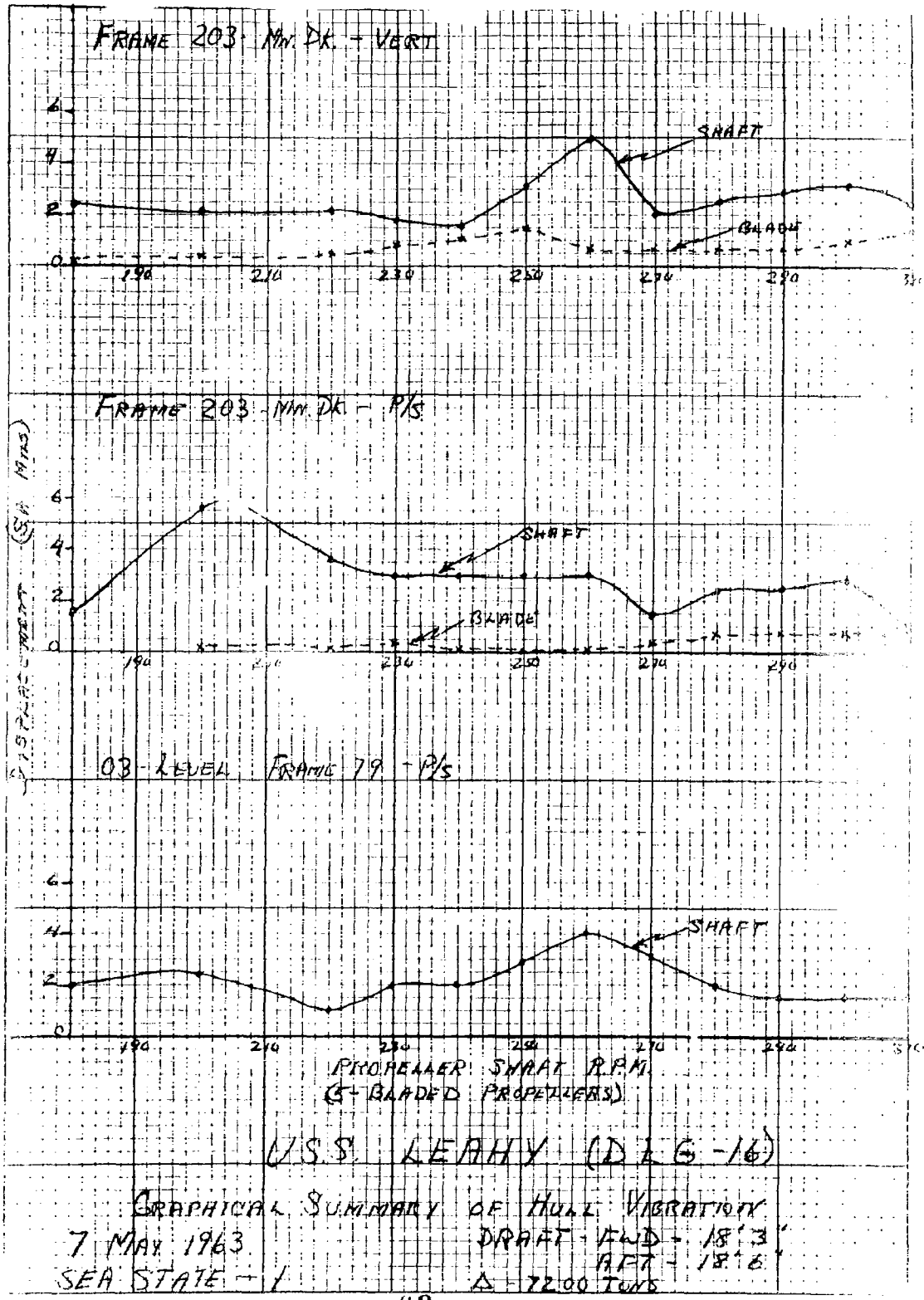
3. No action is necessary with respect to outboard shafting and propellers.

4. This confirms XEROX copy delivered to Planning and Estimating on 10 May 1963.

E. S. Moberg

E. S. MOBERG

Copy to:
Ship Supt. USS LEAHY (DLG16)
Codes 232
265(2)(w/2 copies graph)
260
260S


FRAME 203 Mn. DK. - VERT
SHAFT
BLADE
FRAME 203 - Mn. DK. - P/S
SHAFT
BLADE
03 - LEVEL FRAME 79 - P/S
SHAFT
PROPELLER SHAFT R.P.M.
(5-BLADED PROPELLERS)
U.S.S. LEAHY (DLG-16)
GRAPHICAL SUMMARY OF HULL VIBRATION
7 MAY 1963
SEA STATE - 1
DRAFT - FWD - 18'3"
AFT - 18'6"
Δ - 7200 TONS

265

OCT 9 1963

MEMORANDUM

From: Code 265
To: Codes 212 and 225

Subj: USS LESTER (DE-1022), Hull Vibration Survey; report of

Ref: (a) D.S.R. No. 681-01

1. A hull vibration survey was conducted on LESTER enroute Earle, New Jersey from Newport, Rhode Island on 10 September 1963 in compliance with reference (a).

2. Vibration was recorded throughout a speed range of 90-245 Shaft RPM. The maximum single amplitudes of vibration are listed below:

Shaft RPM	Position	Direction	Displacement (S. A. Mils)	Freq CPM	Source
170	Fr 162 - Mn Dk	P/S	6	175	1X Shaft
170	Fr 74 - 02 Lvl	P/S	8	175	1X Shaft
220	Fr 162 - Mn Dk	Vert	4.5	220	1X Shaft

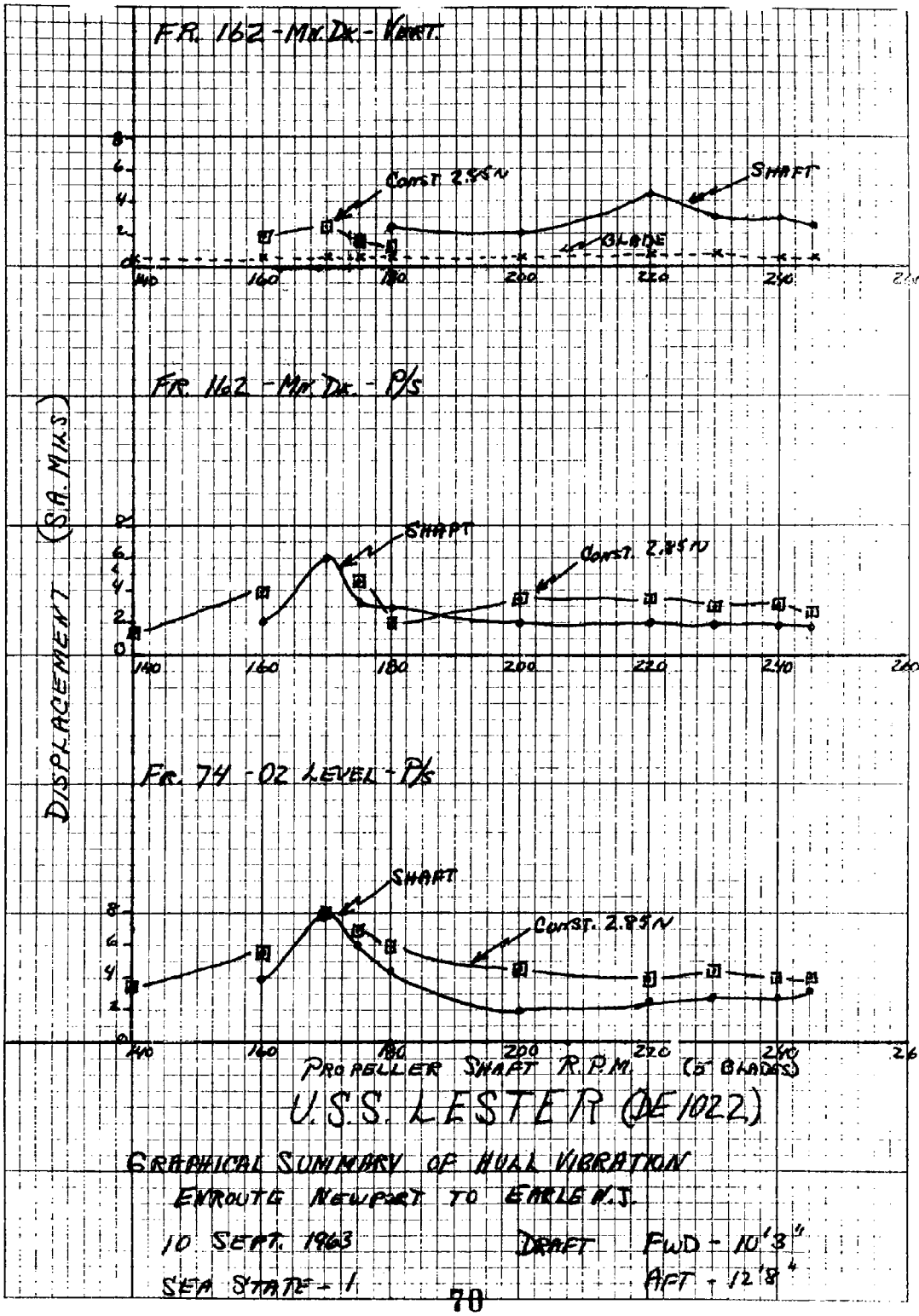
These single amplitudes of vibration are satisfactory.

3. In view of the above, no action is necessary from a vibration standpoint.

4. This confirms Xerox copy delivered to the Planning and Estimating Division on 26 September 1963.

E. S. MOBERG

Copy to:
240
260
232
260s
265a (w/2 copies of graphical summary)


FR. 162 - MID. DK. - VERT.
CONST. 2.85 N
SHAFT
BLADE
FR. 162 - MID. DK. - P/S
SHAFT
CONST. 2.85 N
FR. 74 - 02 LEVEL - P/S
SHAFT
CONST. 2.85 N
DISPLACEMENT (S.A. MILS)
PROPELLER SHAFT R.P.M. (5 BLADES)
U.S.S. LESTER (DE 1022)
GRAPHICAL SUMMARY OF HULL VIBRATION
ENROUTE NEWPORT TO EARLE N.J.
10 SEPT. 1963
DRAFT FWD - 10'3"
SEA STATE - 1
AFT - 12'8"

265
KDE791

MAR 18 1963

MEMORANDUM

From: Code 265
To: Code 1200

Subj: USS MALOY (KDE791); Hull Vibration Survey, report of

Ref: (a) D.S.R., IND 0222 of 8 Mar 1963

1. A hull vibration survey was conducted on MALOY enroute from Earle, New Jersey to Boston, Massachusetts on 12 March 1963 in compliance with reference (a).

2. Vibration was monitored throughout a speed range of 160-360 shaft R.P.M. The maximum single amplitudes of vibration recorded, are listed below:

Shaft RPM	Position	Dir.	Displ. (S.A. Mils)	Freq. (CPM)	Source
340	Fr. 159-Mn. Dk.	Vert.	2.5	340	1X Shaft
350	Fr. 159-Mn. Dk.	P/S	6	180	Const. Freq.
350	Fr. 54-02 Level	P/S	4	350	1X Shaft

These amplitudes of vibration are satisfactory.

3. No further action is necessary from a vibration standpoint.

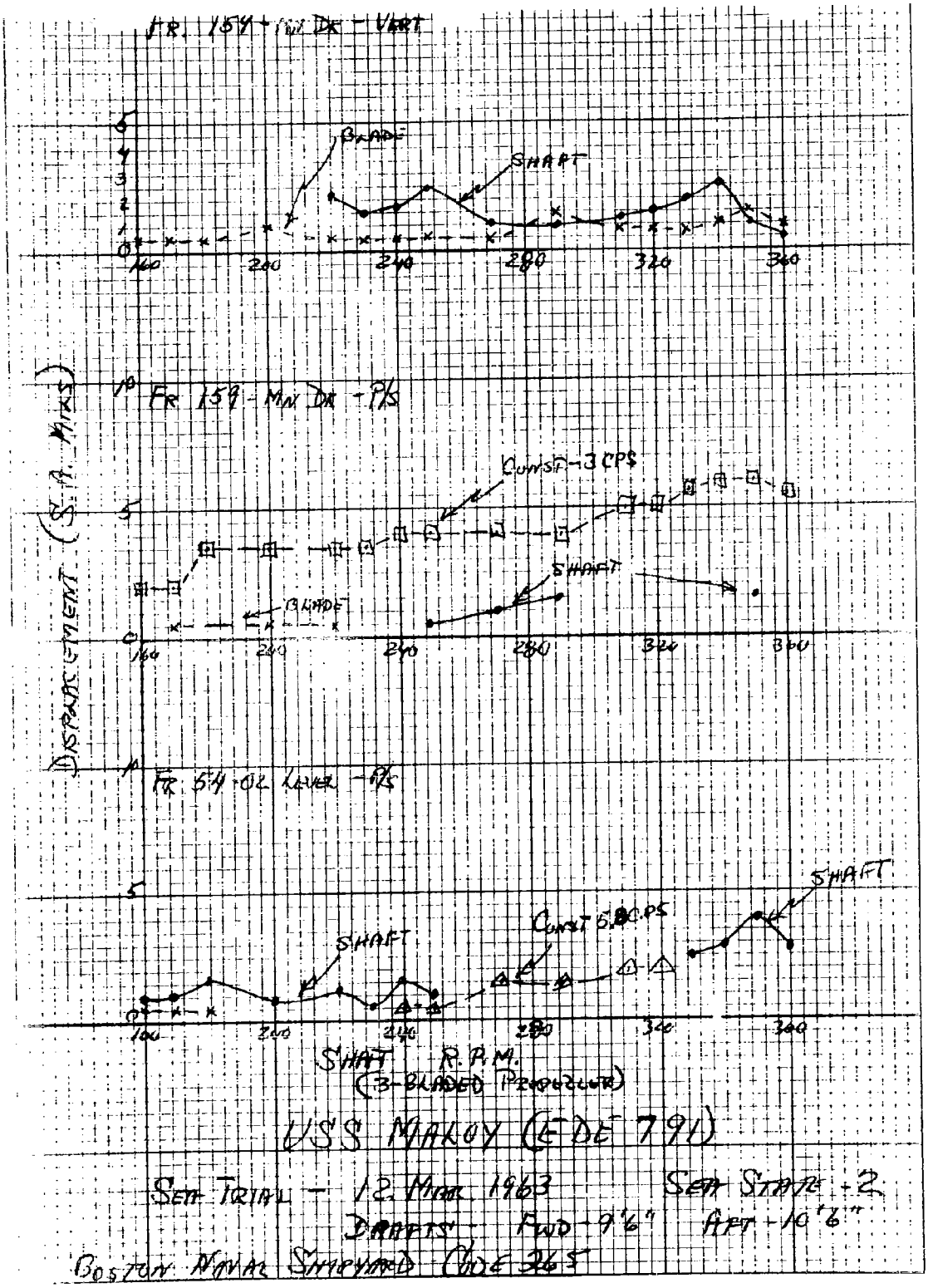
4. This confirms verifax copy delivered to INDMAN, Planning and Estimating on 15 March 1963.

E. S. MOHERG

3/18
3/15

Copy to:
Codes 265(2)
260
260S

Prepared by: R. V. Butler
Typed by: G. Kasabian 3-18-63


FR 159 - MAX DK - VERT
BLADE
SHAFT
FR 159 - MAX DK - P/S
DISPLACEMENT (S.A. MILS)
CURVE - 3 CPS
SHAFT
BLADE
FR 54 - 02 LEVER - P/S
SHAFT
CURVE - 5.0 CPS
SHAFT
SHAFT R.P.M.
(3-BLADED PROPELLER)
USS MAKO (DE 791)
SEA TRIAL - 12 MAR 1963
SEA STATE - 2
DRAFTS - FWD - 9'6"
AFT - 10'6"
BOSTON NAVAL SHIPYARD CHOC 265

265
DD852

MAR 5 1963

MEMORANDUM

From: Code 265
To: Codes 212 225

Subj: USS MASON (DD852); Hull Vibration Survey, report of

Ref: (a) Design Services Request No. 248-501-02

1. A pre-from hull vibration survey was conducted on MASON during the sea trial of 21 February 1963 in accordance with reference (a).

2. The maximum amplitudes of vibration recorded over a speed range of 160 to 310 shaft rpm (the highest speed available) are as follows:

Shaft (RPM)	Position	Dir.	Displacement (S.A. Mils)	Freq. (C.P.M.)	Source
240 both shafts	Fr. 197 Mn. Dk.	P/S	*22.0	240	LP Shaft
240 " "	Fr. 72 02 Lvl.	P/S	*22.0	240	"
310 " "	Fr. 197 Mn. Dk.	V	*19.7	310	"
310 " "	Fr. 72 02 Lvl.	P/S	7.0	310	"
240 Stbd. Shaft 140 Port	Fr. 197 Mn. Dk.	P/S	8.0	240	"
240 Port " 140 Stbd.	Fr. 197 Mn. Dk.	P/S	14.0	240	"

The above asterisked amplitudes are excessive.

3. In view of the above, it is recommended that the following work be accomplished on both shafting systems:

a. Check the pitch, track, and balance of the propellers.

b. Check the balance of the dunce caps.

c. Take tailshaft runout readings at both ends of the taper, the main bearing journal, the intermediate bearing journal, and the after stern tube bearing journal.

d. Forward a copy of the above data to Code 265 for evaluation relative to further recommendations.

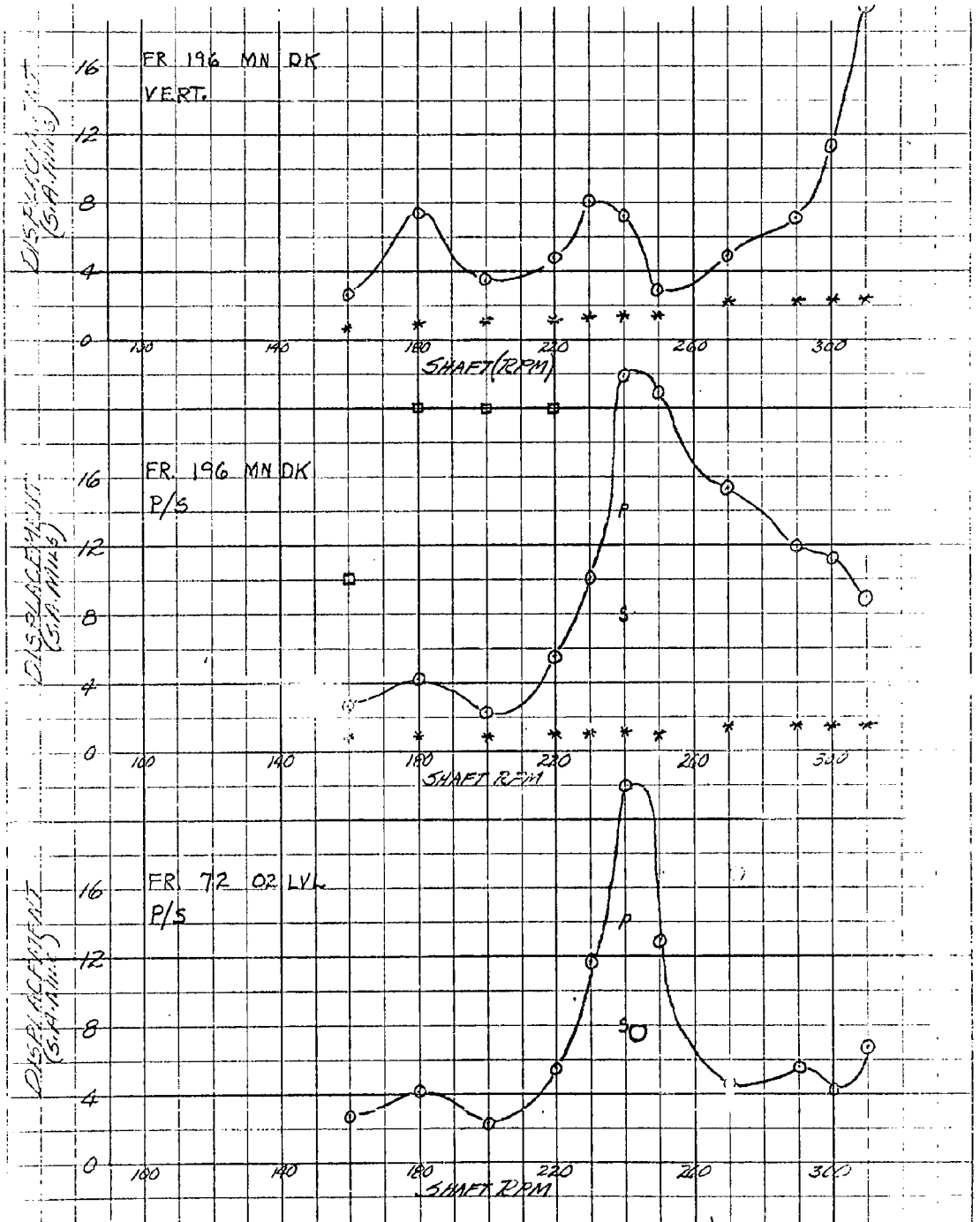
4. This confirms verifax copy delivered to Planning and Estimating on 1 March 1963.

E. S. ROBERG

Copy to:
Ship Supt. USS MASON (DD852)
Codes 232 260 260S
240 265(2)(w/1 copy of Graphical Summary)

73

Prepared by: G. Ogle Typed by: G. Kasabian 3-4-63



U.S.S. MASON (DD852)

GRAPHICAL SUMMARY OF HULL VIBRATION OF 21 FEB 63

Δ SHAFT * BLADE □ CONST 150 CPM ○ CONST → CPM

DRAFT 12'3" F 12'3" A SEA STATE 2

265
DD778

JUL 15 1963

MEMORANDUM

From: Code 265
To: Codes 212 225

Subj: USS MASSEY (DD778); Hull and Tripod Mast Vibration Survey, report of

Ref: (a) Design Services Request No. 634-02 of 18 Jun 1963
(b) BUSHIPS Dwg. No. DD697-125-2130507

1. A hull and tripod mast vibration survey was conducted on MASSEY during a sea trial from Newport, Rhode Island to Earle, New Jersey on 27 June 1963 in compliance with reference (a).

2. The maximum single amplitudes of vibration recorded on the hull and the tripod mast when measured throughout the speed range of 180 to 330 shaft RPM are listed below:

Position	Dir.	Shaft RPM	Displ. (S.A. Mils)	Freq. CPM	Source
Main Deck, Fr. 197	P/S	245	12	245	Shaft
02 Level, Fr. 69	P/S	245	7	245	"
" "	P/S	315	6	315	"
Main Deck, Fr. 197	Vert	315	15	315	"
"29" Pltfm. Fwd. End.	P/S	240	80	240	Nat. Freq.
" Aft End	P/S	240	57	240	"
Top of Stubmast	P/S	240	115	240	"

The amplitudes of vibration measured on the hull are within limits although higher than normal. Trailing shafts indicated that the port shafting system is contributing four (4) times as much force into the hull as the starboard system. The amplitudes measured on the AN/SPS-29 platform and on the top of the stubmast and those observed on the topmast are considered to be typical for this type of installation. However, the vibration on the tripod and stubmast would be greatly reduced by correcting the unbalance in the port shafting system and the vibration of the topmast will be reduced by stiffening as shown in reference (b) which is going to be added because of the installation of the DASH antenna.

3. A natural frequency survey conducted on the foremast indicated that the torsional natural frequency of the entire structure is 200 CPM and the first mode athwartship natural frequency is 240 CPM. The 240 CPM critical nearly coincides with the 245 CPM hull critical and therefore the amplitudes on the the mast at this critical were much greater than at the 200 CPM critical.

MEMORANDUM

4. In view of the fact that the existing propellers on MASSEY are going to be replaced anyway, it is recommended that the following action be taken to reduce the vibration on the foremast to more acceptable levels:

a. No corrective action is necessary for any part of the foremast except for that shown on reference (b).

b. Dynamically balance and check the pitch and track of both of the quiet type replacement propellers.

c. Dynamically balance both fools caps.

d. Record the taper runouts of both tail shafts.

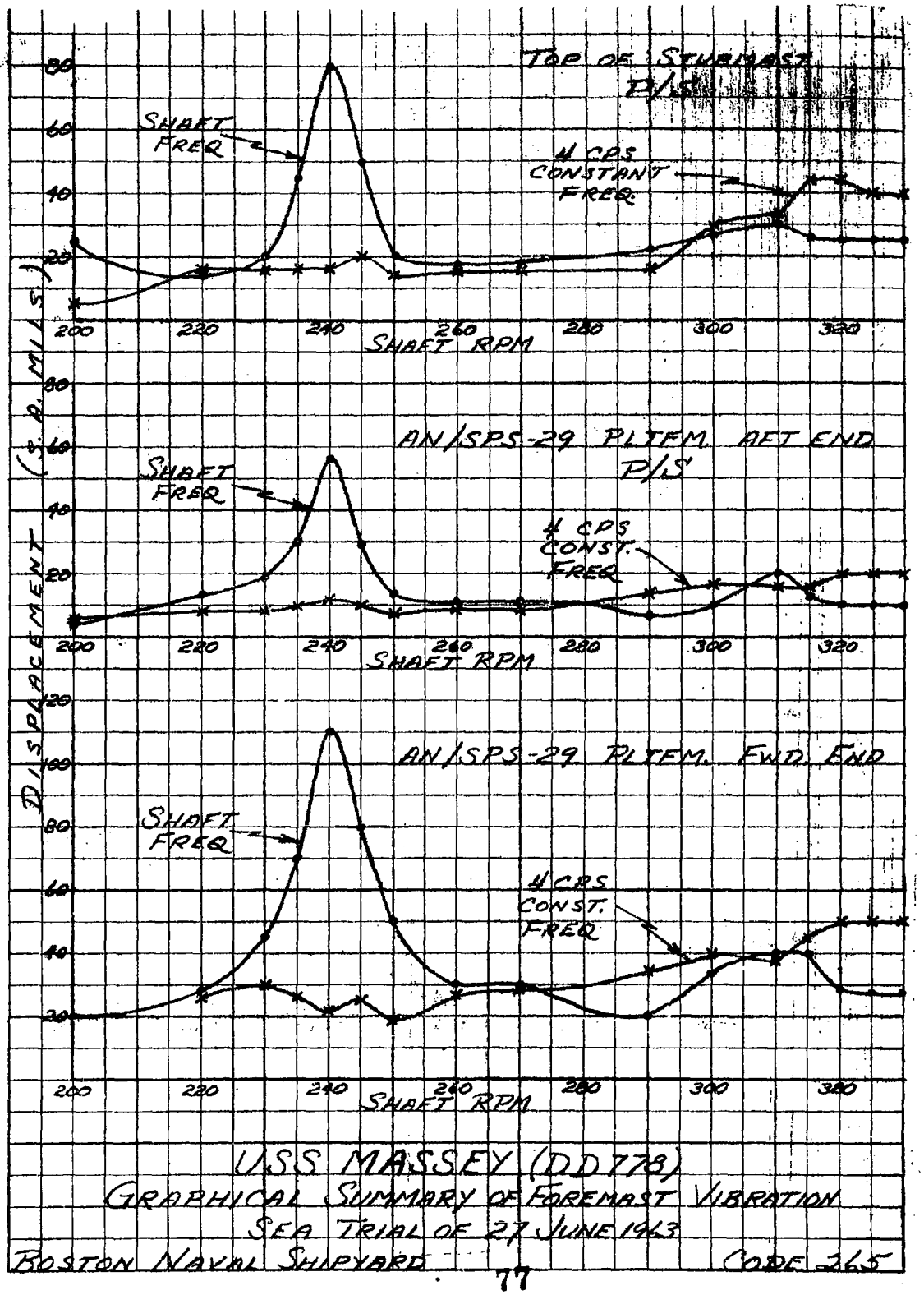
e. Forward a copy of the above data to Code 265 for evaluation and possible further recommendations.

f. Perform a post-repair vibration survey on the foremast.

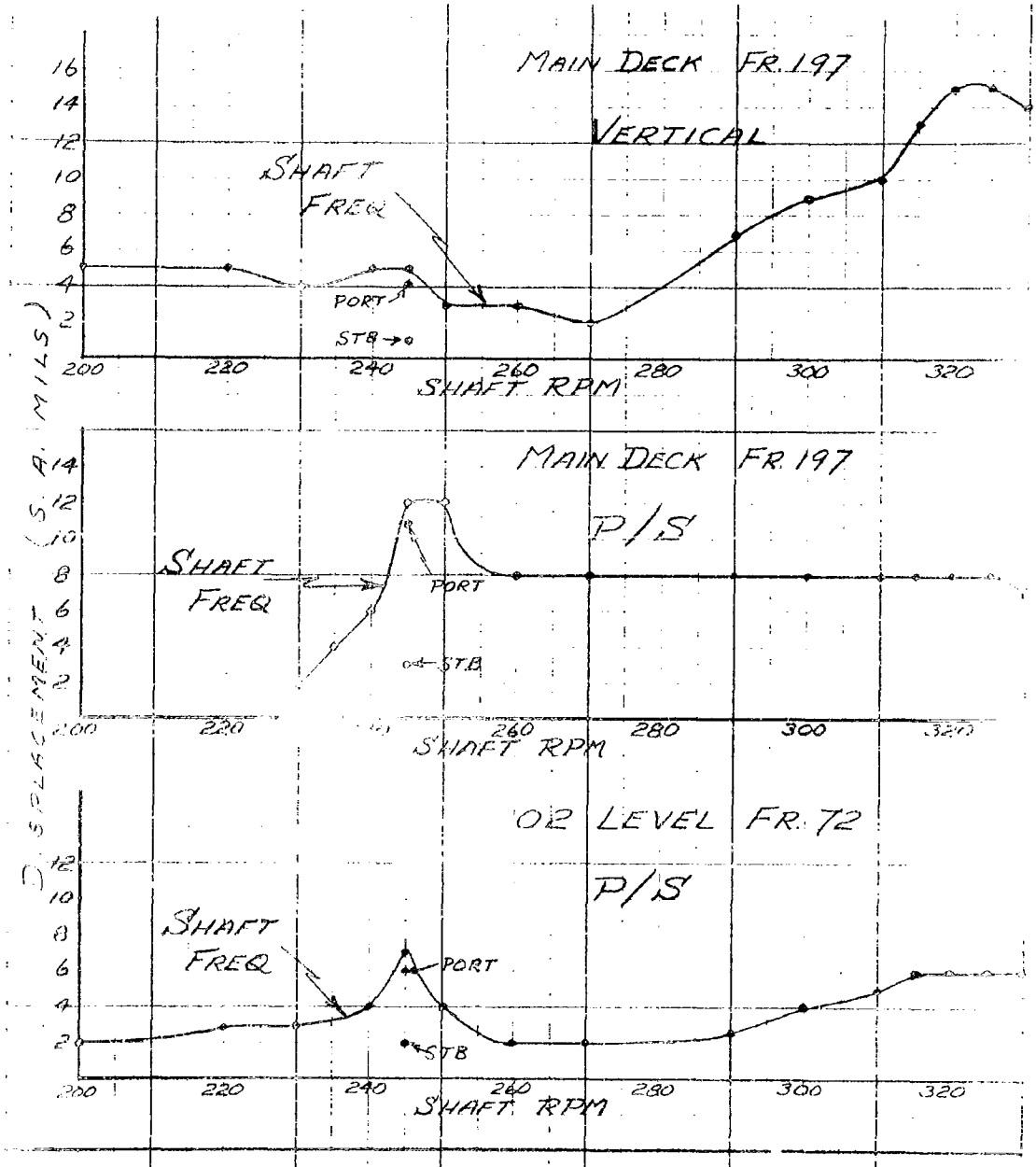
5. This confirms [illegible] copy delivered to Planning and Estimating on 9 July 1963.

E. S. MORBERG

Copy to:
Codes 231
232
265(2)
260
260S



USS MASSEY (DD778)
GRAPHICAL SUMMARY OF FOREMAST VIBRATION
SEA TRIAL OF 27 JUNE 1963
BOSTON NAVAL SHIPYARD. CODE 265



USS MASSEY (DD778)

GRAPHICAL SUMMARY OF HULL VIBRATION
SEA TRIAL OF 27 JUNE 1963

DRAFTS: F-13'3", A-13'

SEA STATE 1

BOSTON NAVAL SHIPYARD
CODE 265

265
DD703

NOV 6 196[illegible]

MEMORANDUM

From: Code 265
To: Codes 212 and 225

Subj: USS MAHAN (DD708), Foremast and Hull Vibration Survey; report of

Ref: (a) Design Services Request No. 634-62
(b) Bushipe Dwg. No. DD697-125-2130507
(c) Code 265 memo of 15 Jul 1963

1. A vibration survey was conducted on MAHAN on the foremast during a sea trial on 1 October 1963, in compliance with reference (a), to evaluate the topmast stiffening as given in reference (b) and the effect of the installation of different propellers. A hull vibration survey was also conducted to assist in the evaluation.

2. The maximum single amplitudes of vibration recorded on the hull and the foremast, when measured throughout the speed range of 180 to 339 Shaft RPM, are listed below along with the amplitudes recorded on the pre-overhaul trial of 27 June 1963 which were reported in reference (c).

Shaft RPM	Position	Dir.	Displ (S.A.Mils) Pre	Displ (S.A.Mils) Post	Freq. CPM	Source
245	Mn Dk Fr. 197	P/S	12	3	245	Shaft
245	02 Level Fr. 69	P/S	7	3	245	Shaft
320	02 Level Fr. 69	P/S	6	2	320	Shaft
320	Mn Dk Fr. 197	V	15	5	320	Shaft
240	"29" Pltfm, Fwd End	P/S	135	60	240	Shaft
240	"29" Pltfm, Aft End	P/S	57	18	240	Shaft
240	Topmast	P/S	-	50	240	Shaft
240	Topmast	F/A	-	27	240	Shaft
330	"29" Pltfm, Fwd End	P/S	50	50	240	Nat. Freq.
330	"29" Pltfm, Aft End	P/S	20	16	240	Nat. Freq.
339	Topmast	P/S	-	35	240	Nat. Freq.
339	Topmast	P/S	-	72	150	Nat. Freq.
339	Topmast	F/A	-	30	240	Nat. Freq.

MEMORANDUM

All of the amplitudes of vibration on the post-overhaul survey are satisfactory. The recordings on the topmast were measured approximately eleven (11) feet above the AN/SPS-10 platform. No recordings were made on the topmast during the 27 June survey. It can be seen that the [illegible] vibration is greatly reduced because of the new balanced propellers and this in turn reduced the shaft frequency vibration on the mast. The constant 240 CPM vibration on the mast throughout the speed range is the same for both sea trials.

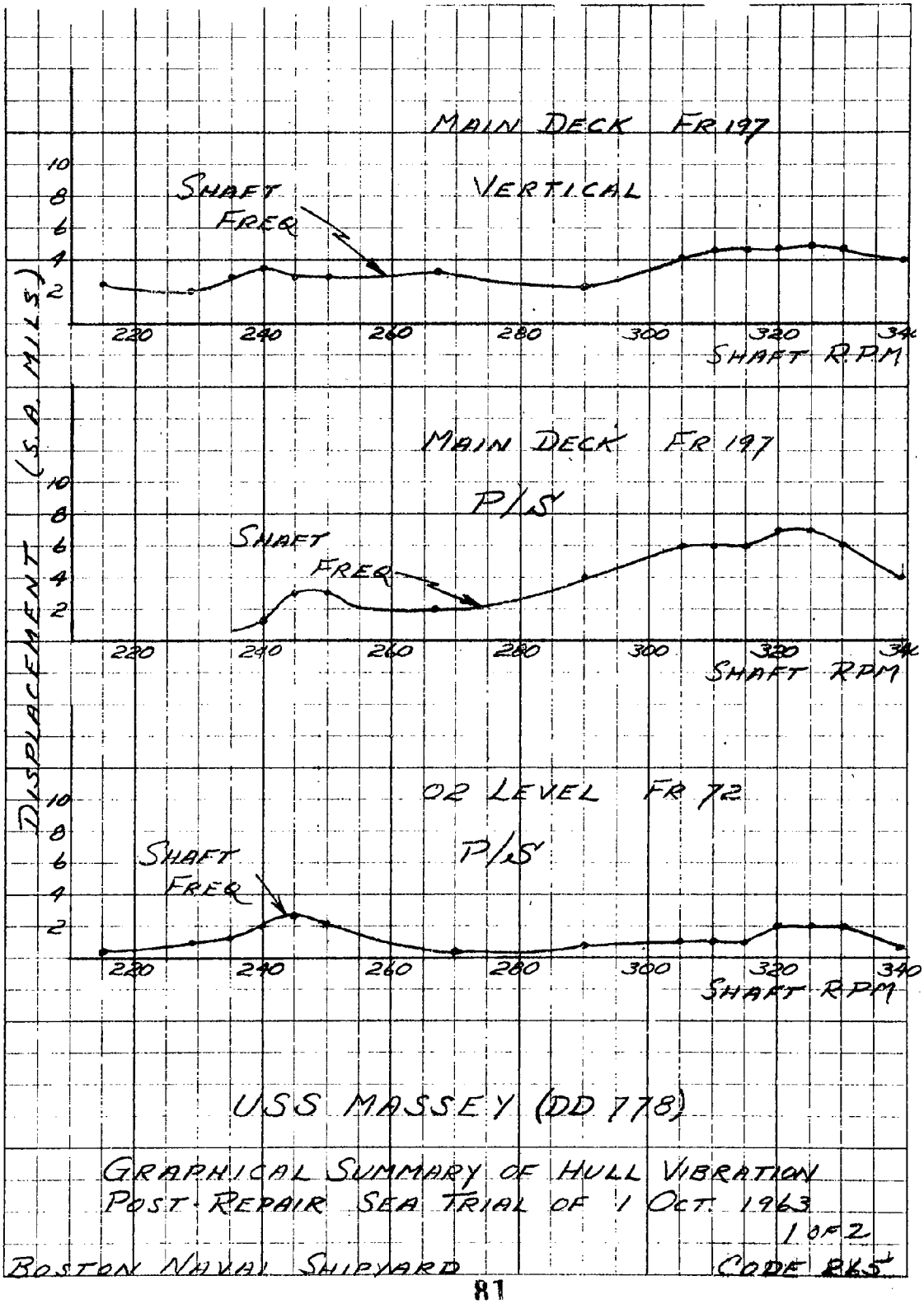
3. No further action is necessary on the foremast or the hull from a vibration standpoint.

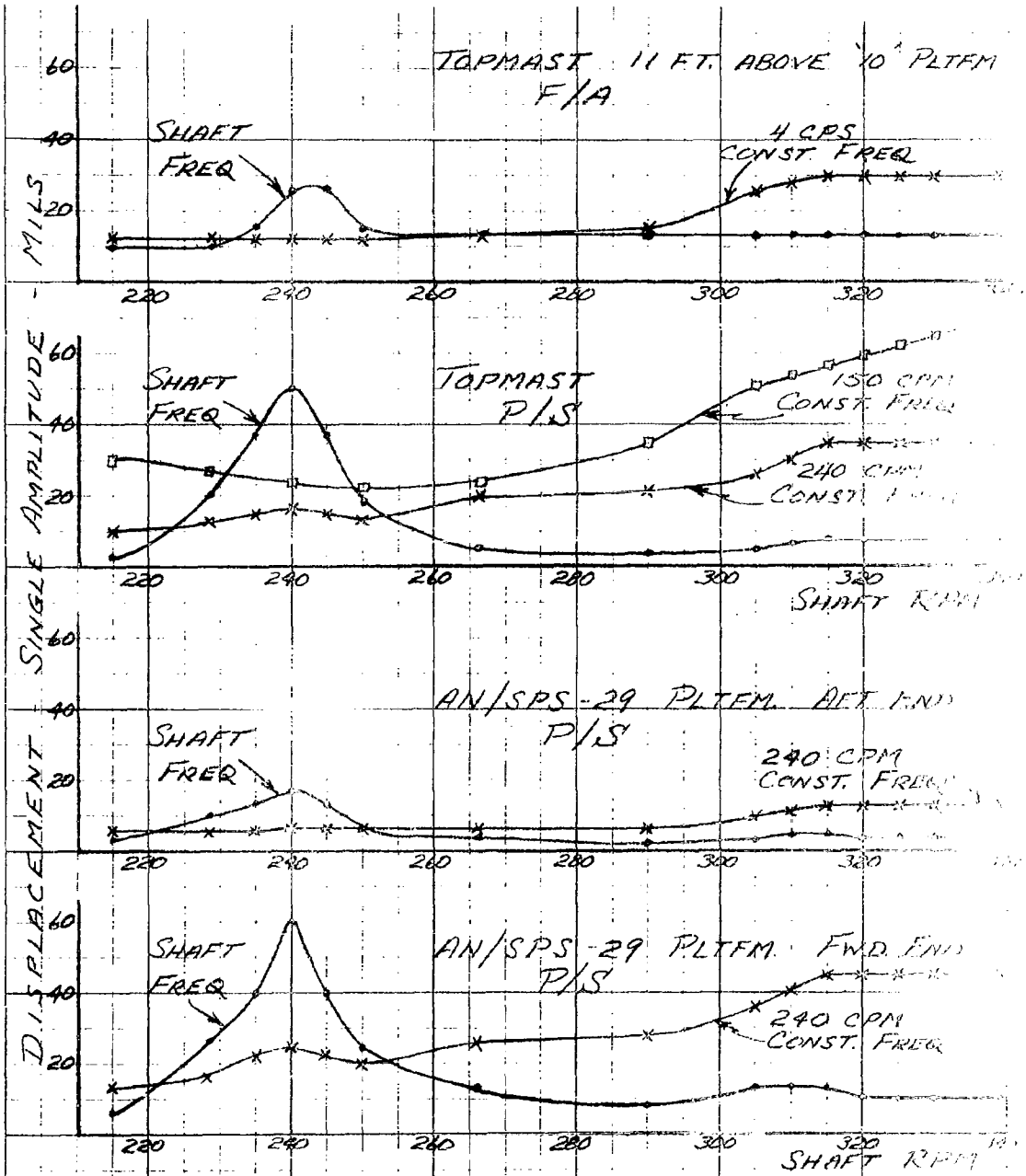
4. This confirms Xerox copy delivered to P & E on 10 October 1962.

E. S. MORRIS

Copy to:
240
231
232
265(2)
260
260a

Prepared by: T.P.McGinn
Typed by: H.M.Swanson 11/4/63





USS MASSEY (DD 778)

GRAPHICAL SUMMARY OF FOREMAST VIBRATION
POST-REPAIR SEA TRIAL OF 1 OCT 1963

BOSTON NAVAL SHIPYARD CODE 263

BOSTON NAVAL SHIPYARD

265

DEC 30 1963

MEMORANDUM:

From: Code 265
To: Code 225

Subj: USS MC CLOY (DE 1038), Hull Vibration Survey; report of

Ref: (a) Design Services Request No. 038-01 of 24 Sep 1963

1. A hull vibration survey was conducted on the USS MC CLOY on 5 December 1963 enroute to Boston from Charleston, South Carolina in compliance with reference (a).

2. Vibration measurements were recorded throughout a speed range of 150 to 280 shaft RPM. The maximum single amplitudes of vibration are listed below:

SHAFT RPM	POSITION	DIRECTION	DISPLACEMENT (S.A. MILS)	FREQ (CPM)	SOURCE
205	Fr 132 Mn Bk	Vert	9	205	1 x shaft
200	Fr 132 Mn Bk	F/S	7	200	1 x shaft
270	Fr 132 Mn Bk	F/S	*16	270	1 x shaft

The single amplitude of vibration marked with an asterisk (*) is considered excessive.

3. In view of the above, the following is recommended:

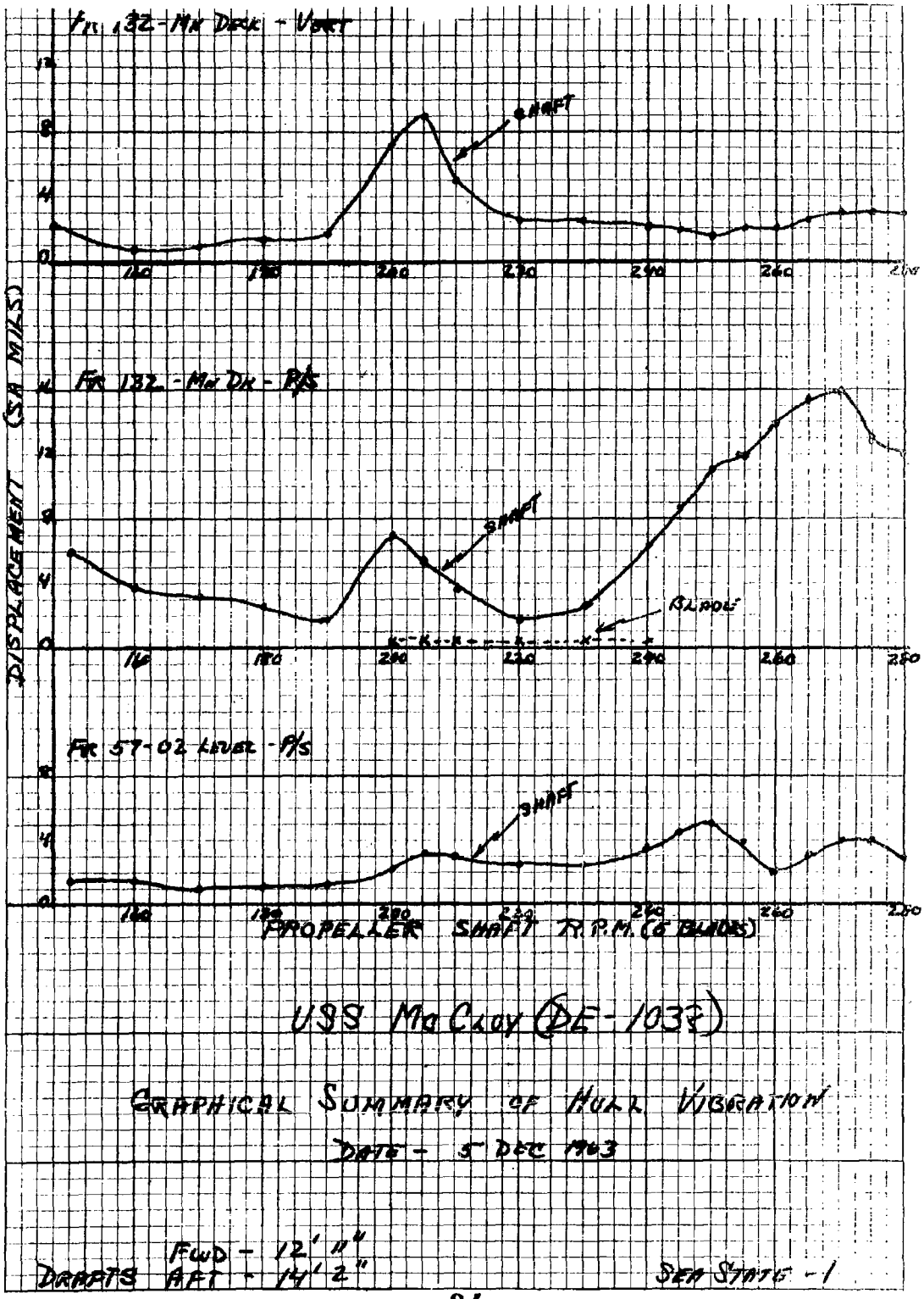
a. Remove propeller and dunce cap to shop. If damage to propeller permits, check pitch, track and balance of propeller.
b. Check balance of dunce cap.
c. Take runout readings on the shaft at the following points:
1. Small end of taper.
2. Large end of taper.
3. Forward end of main strut bearing.
4. Aft end of stern tube bearing.
d. Forward all readings to Design, Code 265 for evaluation.

4. This confirms Xerox copy delivered to P & E on 11 December 1963.

E. S. MORENO

Copy to: Ship Supt. USS MC CLOY (DE 1038)
Code 240
260
260s
265(a) ✓
212
232

Prepared by: R.V. Butler
Typed by: F. Winer 12/26/63



USS MacCLOY (DE-1037)

GRAPHICAL SUMMARY OF HULL VIBRATION

DATE - 5 DEC 1963

DRAFTS FWD - 12' 11"
AFT - 14' 2"

SEA STATE - 1

BOSTON NAVAL SHIPYARD

265

DEC 30 1963

MEMORANDUM:

From: Code 265
To: Code 225

Subj: USS MC CLOY (DE 1038), Investigation of Reported Shaft Squeal; report of

Ref: (a) DSR No. 083-05 of 28 Oct 1963
(b) FONECON of 10 DEC 1963 R. BEATTY, BUSHIPS and G. CAPANO, CODE 265A
(c) BUSHIPS PLAN DE1037-203-2018920D

1. An investigation of a reported shaft squeal was conducted on 5 - 7 December 1963 on the USS MC CLOY enroute to Boston from Charleston, South Carolina, in compliance with reference (a).

2. The reported noise was recorded at shaft speeds of 60 to 110 RPM. Analysis of the tapes and personal aural observations indicated that the most predominant noise occurred at 70 RPM at a pure tone frequency of 480 CPS. The noise occurred again as the ship entered the channel in Boston. At this time, the intensity was higher but could not be recorded because the ship was maneuvering in the channel and could not hold particular speeds for required length of time. The above analysis and observations indicates that the reported shaft squeal is actually a singing propeller.

3. Inspection of the propeller after dry-docking showed that the plan modification of trailing edges to correct for the above condition had not been adequately accomplished at the time of installation.

4. The Bureau of Ships has been contacted to determine the amount of modification detail necessary to correct the above condition. As a result of reference (b), and subsequent telephone conversations, it is recommended that trailing edge modification (detail 4A-1 of ref (c)) be accomplished.

5. This confirms Xerox delivered to P & E on 18 December 1963.

E. S. MOBERG

Copy to:
Ship Supt. USS MC CLOY (DE 1038)
Codes 240
260
260a
232
265a

Prepared by: G. Capano
Typed by: F. Winer 12/27/63

265a
DL-2

MEMORANDUM

DEC 2 9 1963

From: Code 265
To: Code 225

Subj: U.S.S. Mitscher (DL-2); Hull Vibration Survey, report of

Ref: (a) D.S.R. Ser. No. 215 - 02 of 21 Nov 63

1. A hull vibration survey was conducted on Mitscher on 21 November 1963 during a sea trial from Boston to Newport, R.I. in compliance with reference (a).

2. The maximum single amplitudes of shaft frequency vibration measured on the fantail, frame 1 - 235, throughout the speed range of 160 - 230 shaft RPM was 2 mils in the P/S direction and 1 1/2 mils vertically at 230 RPM which is considered to be the critical speed. These amplitudes are satisfactory.

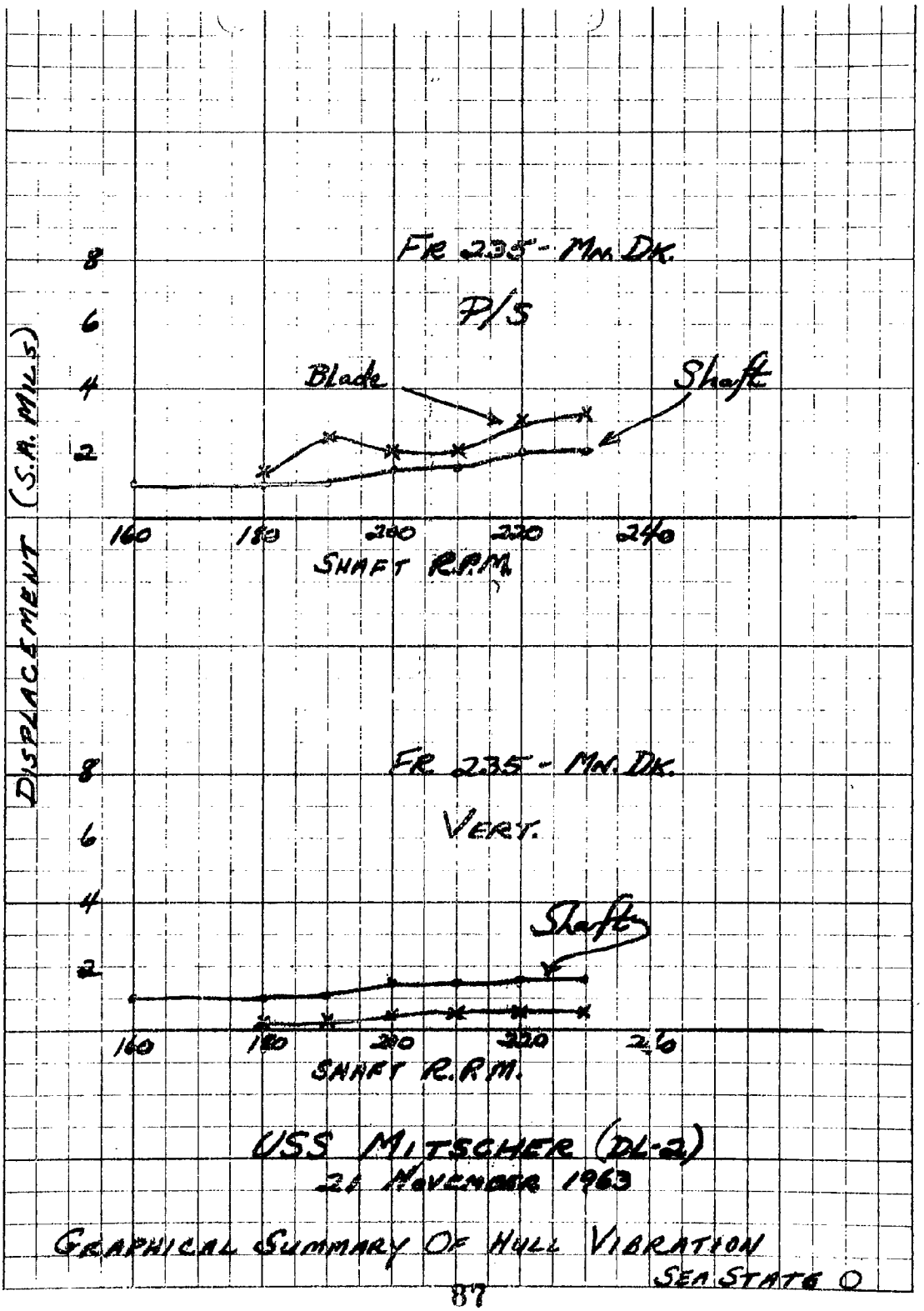
3. No exceptional main propulsion shafting noises were observed or brought to the attention of the survey team.

4. In view of the above no action is necessary from either a vibration or noise viewpoint.

5. This confirms xerox delivered to P & E 29 November 1963.

E. S. MOBERG

Copy to:
Code 240
232
265a (2)
260a



USS MITSCHER (DL-2)

24 NOVEMBER 1963

GRAPHICAL SUMMARY OF HULL VIBRATION

SEA STATE 0

265a
DE708

OCT 7 1963

MEMORANDUM

From: Code 265
To: Codes 212, 225a

Subj: USS PARLE (DE708); Hull vibration survey, report of

Ref: (a) DSR No. 352-01 of 25 Sep 1963

1. A hull vibration survey was conducted on PARLE during a sea trial from Newport, Rhode Island, to Boston, on 26 September 1963, in compliance with reference (a).

2. The maximum single amplitudes of hull vibration recorded throughout the speed range of 180 to 370 shaft RPM are listed below.

Shaft Speed RPM		Position	Dir.	Freq. CPM	Displacement (D.A. Mils)
190	Both shafts	Mn Deck Fr. 159	P/S	190	43
190	" "	02 Level Fr. 56	P/S	190	16
350	" "	02 " " 56	P/S	350	21
360	" "	Mn Deck Fr. 159	Vert	360	33
230	" "	Mn " " 159	Vert	230	52
230	Port only	Mn Deck Fr. 159	Vert	230	48
230	Stbd only	Mn Deck Fr. 159	Vert	230	4

All of the above amplitudes of vibration are excessive with the exception of the run with the starboard shaft only. It can be seen that the port shaft is the major contributor to the hull vibration.

3. In view of the above and the fact that runout was found to be excessive on the port shaft taper (.037 inches mid span) and propeller blades damaged, the following action is recommended for the port shafting system. (Starboard system is satisfactory.)

a. Replace propeller with different propeller. Check replacement for pitch and track, fit to shaft taper and then check balance. Correct as necessary.

b. Record bearing clearance readings on main strut bearing with the runout point up and with high point down. (High point is up when No. 1 keyway is 45° outboard from top.)

c. Record bearing clearances at forward end of intermediate strut bearing and aft end of aft stern tube bearing.

d. Pull main shaft. Remove to shop and correct deficiencies to within acceptable tolerances.

e. Record runout on stern tube shaft on the forward and aft stern tube journals. Contingent upon Design evaluation do (f).

f. Boresight from the aft end of the stern tube shaft. Take two boresight targets, one at the aft end of the main strut, and one at the aft end of the intermediate strut (to be used as a check target). Run wire from optical center of the aft end of main strut to mechanical center of stern tube shaft flange. Remove sag, using transit at one end only of intermediate strut. Secure wire. Record wire to bore readings at main and intermediate strut.

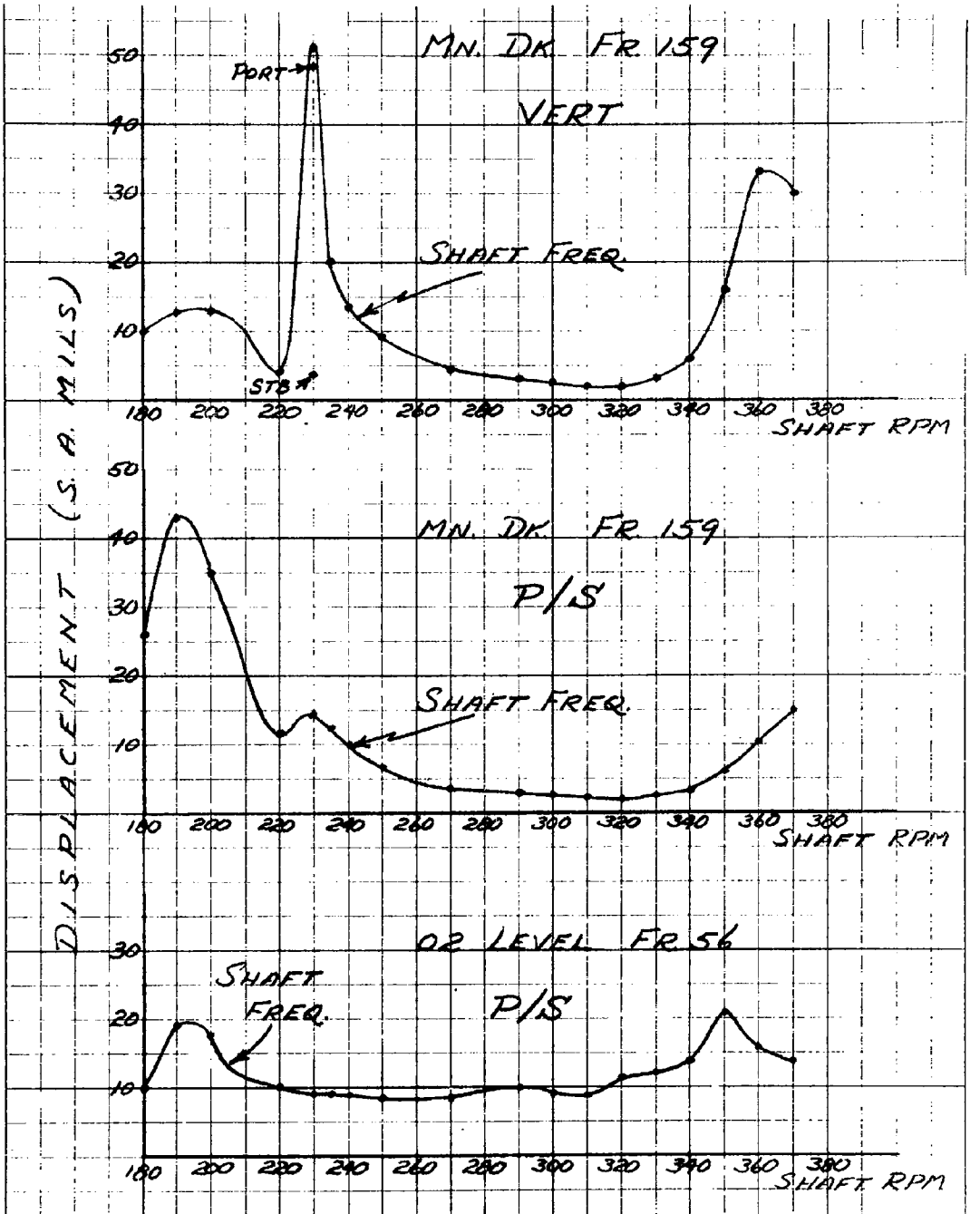
g. Replace propeller shaft and take runout on taper and intermediate strut bearing journal.

4. Design to witness all readings and fits prior to final evaluation and issue of additional and/or final recommendations.

5. This confirms xerox copy delivered to P & E on 27 Sep 1963.

E. S. MOBERG

Copy to:
Ship Superintendent (USS PARLE (DE708)
240
232
251
260
265(2)
260s



USS PARLE (DE 708)

GRAPHICAL SUMMARY OF HULL VIBRATION

PRE-REPAIR SEA TRIAL OF 26 SEPT 1963

BOSTON NAVAL SHIPYARD CODE 265

265

NOV 5 1963

MEMORANDUM

From: Code 265
To: Code 225

Subj: USS PARLE (DE708); Post-Repair Hull Vibration Survey, report of

Ref: (a) DSR No. 079-05 of 16 Oct 63

1. A post-repair hull vibration survey was conducted on PARLE during sea trial of 18 October in compliance with reference (a).

2. The maximum single amplitudes of vibration for pre and post repair surveys over a speed range of 180-390 shaft RPM are listed below:

Shaft RPM	Position	Dir.	Displacement (SA Mils) Pre-Repair	Post-Repair	Freq. (CPM)	Source
190	Mn.Dk-Fr.159	P/S	43	8.5	190	1 x Shaft
190	02 Level-Fr.56	"	19	3.5	190	"
230	Mn.Dk-Fr.159	V	52	6.3	230	"
360	02 Level-Fr.56	P/S	21	6.5	360	"
360	Mn.Dk.-Fr.159	V	33	6	360	"

The single amplitudes of vibration for post-repair are satisfactory.

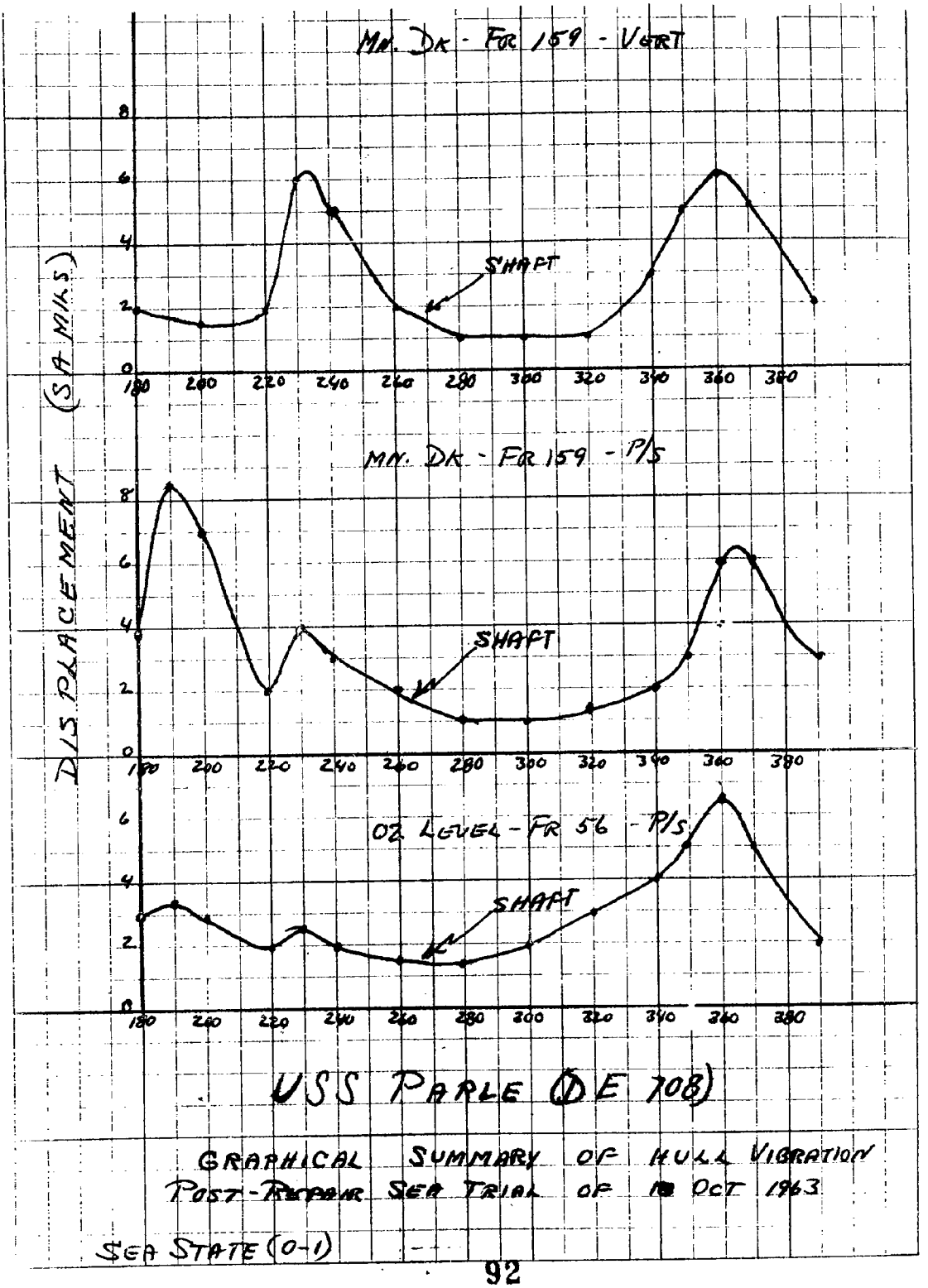
3. No further action is necessary from a vibration standpoint.

4. This confirms Xerox delivered to P&E on 21 October.

E. S. MOBERG

Copy to:
Codes 240
260
260s
265
232

Prepared by: R V Butler
Typed by: E Nasif 11/1/63



USS PARLE (DE 708)

GRAPHICAL SUMMARY OF HULL VIBRATION
POST-REPAIR SEA TRIAL OF 18 OCT 1963

SEA STATE (0-1)

251
DD853

JUN 26 1963

MEMORANDUM

From: Code 1260
To: Code 1200

Subj: USS ROAN (DD853); Starboard Main Propulsion Shafting Alignment

1. Bearing clearance data observed on 14 June and 18 June 1963 indicated that both the main and intermediate strut bearings are cocked relative to the line of the shaft. Shaft deflection readings taken on 18 June on the intermediate strut bearing indicate a 3600 pound load(This is about 50% of the normal load).

2. The following procedure is recommended in order to improve alignment:

a. Remove the lower half of the intermediate strut bearing.

b. Measure the distance between the bottom of the shaft and the middle land of the intermediate strut barrel. Insert a block between the middle land and the shaft which will raise the shaft 0.215" at this point.

c. Measure the clearances between the shaft and the intermediate strut lands. Undercut, band and re-turn the strut bearing lands so that the bearing will fit on the basis of these readings.

d. Measure bearing clearances at the forward and aft ends of the main strut bearing.

3. All work in paragraph 2 is to be done either with the propeller on or with 16,000 pounds attached at the propeller location.

4. Recommendations for correcting alignment of main strut bearing will be forthcoming upon evaluation of data obtained as result of work in paragraph 2.d.

5. It is requested that the Design Division (Code 251, Ext. 300) be notified so they can witness all readings.

6. This memo confirms preliminary information to INDIAN by foneon (R. Woollacott to R. Lyons) on 19 June 1963.

J. J. FRANCIS

Copy to:
Codes 251 260
265(2) 260S
Prepared by: W. J. Drummey
Typed by: G. Kasabian 6-20-63

265
DD853

JUN 28 1963

MEMORANDUM

From: Code 265
To: Code 1200

Subj: USS ROAN (DD853); Post-Repair Hull Vibration Survey, report of

Ref: (a) INCMAN Design Services Request No. 0443 of 22 May 1963
(b) Code 251 Memo DD853 of 18 Jun 1963
(c) BUSHIPS Plan DD710-125-18816064

1. A post-repair hull vibration survey was conducted on ROAN during the sea trial of 16 June 1963 in conjunction with reference (a).

2. Vibration was recorded throughout a speed range of 180 to 320 shaft R.P.M. The maximum single amplitudes of vibration are listed below:

Shaft R.P.M.	Position	Dir.	Displ. (S.A. Mils)	Freq. (CPM)	Source
310	Mn. Dk.-Fr. 196	Vert.	*24	310	1X Shaft
310	02 Level-Fr. 71	F/S	13.5	310	"
300	Mn. Dk.-Fr. 196	F/S	16	300	"
Stbd-310 Port-260	Mn. Dk.-Fr. [illegible]	Vert.	17	310	1X Stbd. Shaft
Port-310 Stbd-260	Mn. Dk.-Fr. [illegible]	Vert.	8	310	1X Port Shaft

The single amplitude of vibration marked with an asterisk (*) is excessive. Trial shaft data indicates that the major source of vibration is the starboard shaft system (shaft and propeller). The port system although not excessive is higher than normal.

3. High vibration was noted on the MK4 Stub Mast which resulted in failure of a mounting bracket for one of the small antennas at the top of mast.

4. In order to correct the excessive vibration the following is recommended:

a. Remove both propellers and check the pitch, track and balance and correct as necessary.

b. Check balance of both dunce caps and correct as necessary.

c. Record runout at small and large end of taper on each shaft.

d. Recheck starboard main and intermediate strut bearing clearances. Pending results of these readings, machine bearings as outlined in reference (b).

MEMORANDUM

5. It is recommended that all of the above work be witnessed and evaluated by Boston Naval Shipyard Design personnel prior to re-installation of component parts.

6. To correct high vibration of ECM Mast, it is recommended that stiffening be installed in accordance with reference (c).

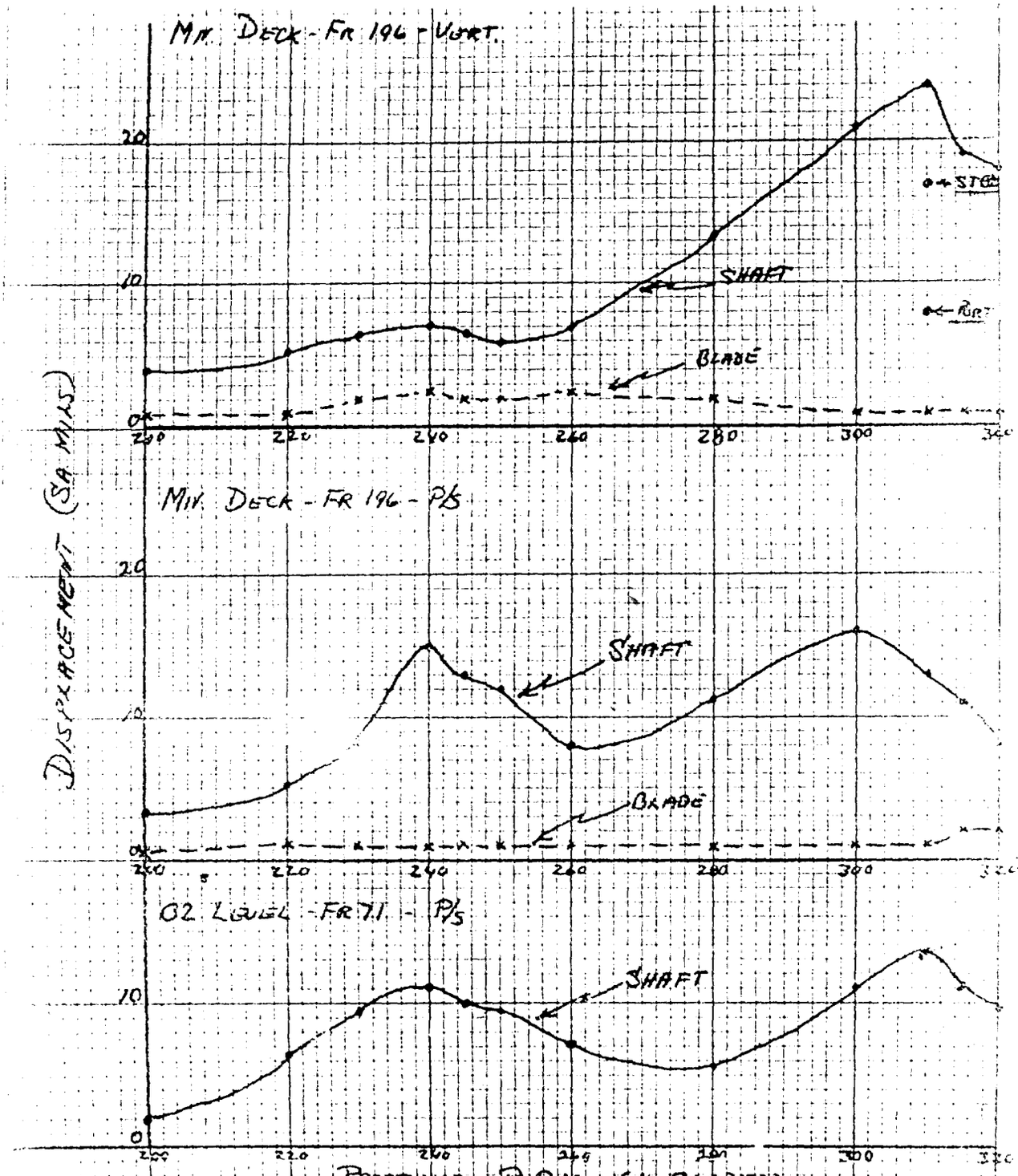
7. Conduct a sea trial for final evaluation of above recommendations.

8. This confirms XEROX copy delivered to IRVAN Planning and Estimating on 18 June 1963.

E. S. MOSING

Copy to:
Codes 240
260
265 (w/1 copy of graphical summary)
2603
251

Prepared by: R. V. Butler
Typed by: G. Kasabian 6-20-63



PROPELLER R.P.M. (4-BLADED)

U.S.S. ROAN (DD 853)

GRAPHICAL SUMMARY OF HULL VIBRATION

SEA TRIAL OF 16 JUNE 1963

Δ = 3100 TONS

DRAFT 14'0" - FWD 13'0" - AFT SEA STATE - 1

265
DD853

JUL 3 1963

MEMORANDUM

From: Code 265
To: Code 1200

Subj: USS ROAN (DD853); Post-Repair Hull Vibration Survey, report of

Ref: (a) Code 265 Memo DD853 of 17 Jun 1963(XEROX Copy)

1. A post-repair hull vibration survey was conducted on ROAN during the sea trial of 27 June 1963 as requested by reference (a).

2. Vibration was recorded through a speed range of 180-324 shaft R.P.M. The maximum single amplitudes of vibration are listed below. The results of the sea trial of 16 June are included for comparison:

Shaft RPM	Position	Dir.	Displ(S.A. Mils) June 16	Displ(S.A. Mils) June 27	Freq. CPM	Source
280	Mn. Dk. Fr. 196	Vert	12.5	11	280	RX Shaft
310	" "	"	24.0	10	310	"
280	" "	P/S	11.0	10	280	"
300	" "	P/S	16	4	300	"
310	02 Level Fr. 71	P/S	13.5	4	310	"

The single amplitudes of vibration shown for the trial of 27 June 1963 are satisfactory.

3. Temperatures were monitored on the Number 5 and Number 6 spring bearings throughout the speed build-up to 324 shaft R.P.M. and while running at this speed for one hour. Temperatures gradually increased to a maximum of 120 F and then leveled off after 1/2 hour at 324 shaft R.P.M. These temperature readings are satisfactory.

4. In view of the above, no further action is necessary from a vibration or bearing standpoint.

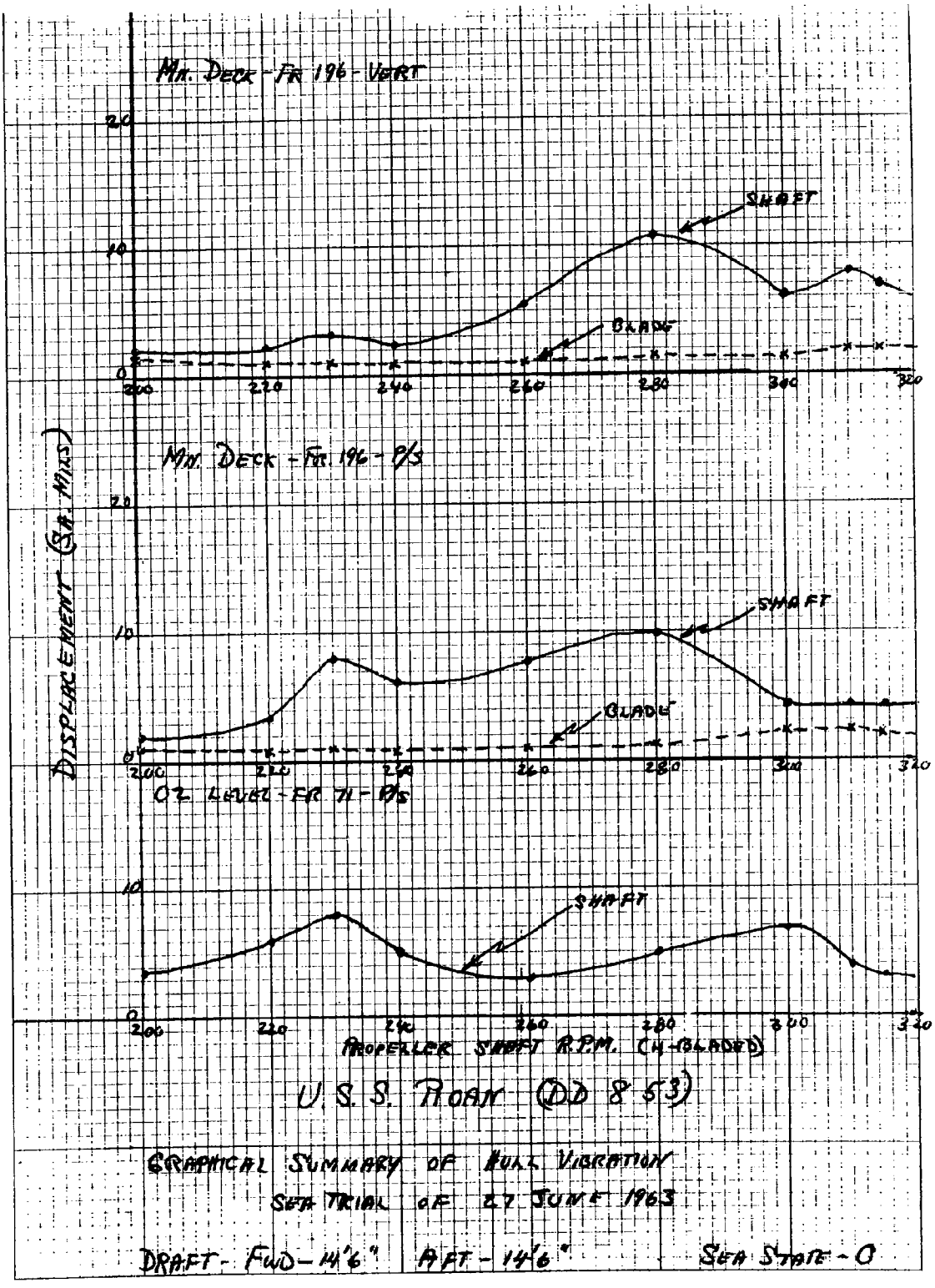
5. This confirms XEROX copy delivered to Planning and Estimating on 28 June 1963.

E. S. MOBERG

Copy to:
Codes 240
260
265(2)
2605
251

Prepared by: R. V. Butler
Typed by: G. Kasabian 7-2-63

97


Mn. Deck - Fr 196 - Vert
SHAFT
BLADE
Mn. Deck - Fr. 196 - P/S
SHAFT
BLADE
O2 Level - Fr 71 - P/S
SHAFT
DISPLACEMENT (Sq. Mils)
PROPELLER SHAFT R.P.M. (4-BLADED)
U. S. S. ROAN (DD 853)
GRAPHICAL SUMMARY OF HULL VIBRATION
SEA TRIAL OF 27 JUNE 1963
DRAFT - FWD - 14'6" AFT - 14'6"
SEA STATE - 0

265
DD837

MAY 2 1963

MEMORANDUM

From: Code 265
To: Codes 212 225

Subj: USS SARSFIELD (DD837); Hull, Main Mast, ECM Mast, and Feed Water Suction Lines Vibration Surveys and Main Propulsion Bearing Investigation, report of

Ref: (a) Builders's Trials J.O. No. 12799-0202
(b) Design Services Request No. 014-237

1. A vibration survey was conducted on the subject units during the builder's trials of 20 April 1963, in accordance with references (a) and (b).

2. The maximum vibration amplitudes measured on the hull and feed water suction lines, and observed on the main mast and the ECM mast, through a speed range of 160 to 330 shaft rpm are as follows:

Unit Measured or Observed	Shaft RPM	Position	Dir.	Displacement (S.A. Mils)	Freq. (CPM)	Source
Hull	250	Fr. 197 Mn. Dk.	P/S	3.0	250	1X Shaft
"	250	Fr. 69 02 Lvl.	P/S	2.4	250	"
"	300	Fr. 197 Mn. Dk.	V	4.3	300	"
"	300	Fr. 69 02 Lvl.	P/S	4.3	300	"
Main Mast	220	Top of Top Mast	P/S	*120 Approx.	220	Nat. Freq.
" "	330	Top of Top Mast	P/S	* 80 "	300	Hull Critical
ECM Mast	320	Top of Mast	P/S	80 "	*320	Nat. Freq.
Feed Water Suction Lines	240	Fr. 118 1/2	P/S	13.5	*960	Nat. Freq.

The above asterisked amplitudes are considered excessive. No appreciable vibration at any other frequency was detected.

3. The Main Propulsion Bearing Investigation consisted of monitoring the temperatures of the line bearings, the reduction gear bearings, and the stuffing boxes during the speed build up and during the full power run. All temperatures were found to be satisfactory.

4. In view of the above, the following corrective action is recommended:

a. Add a hanger to the hot feed water suction line at frame 118 1/2. This hanger to be placed mid way between the existing hangers (approx. 13 1/2 ft. fwd. of pump).

MEMORANDUM

b. Tighten the existing stays of the top of the main and FCM masts to a positive tension.

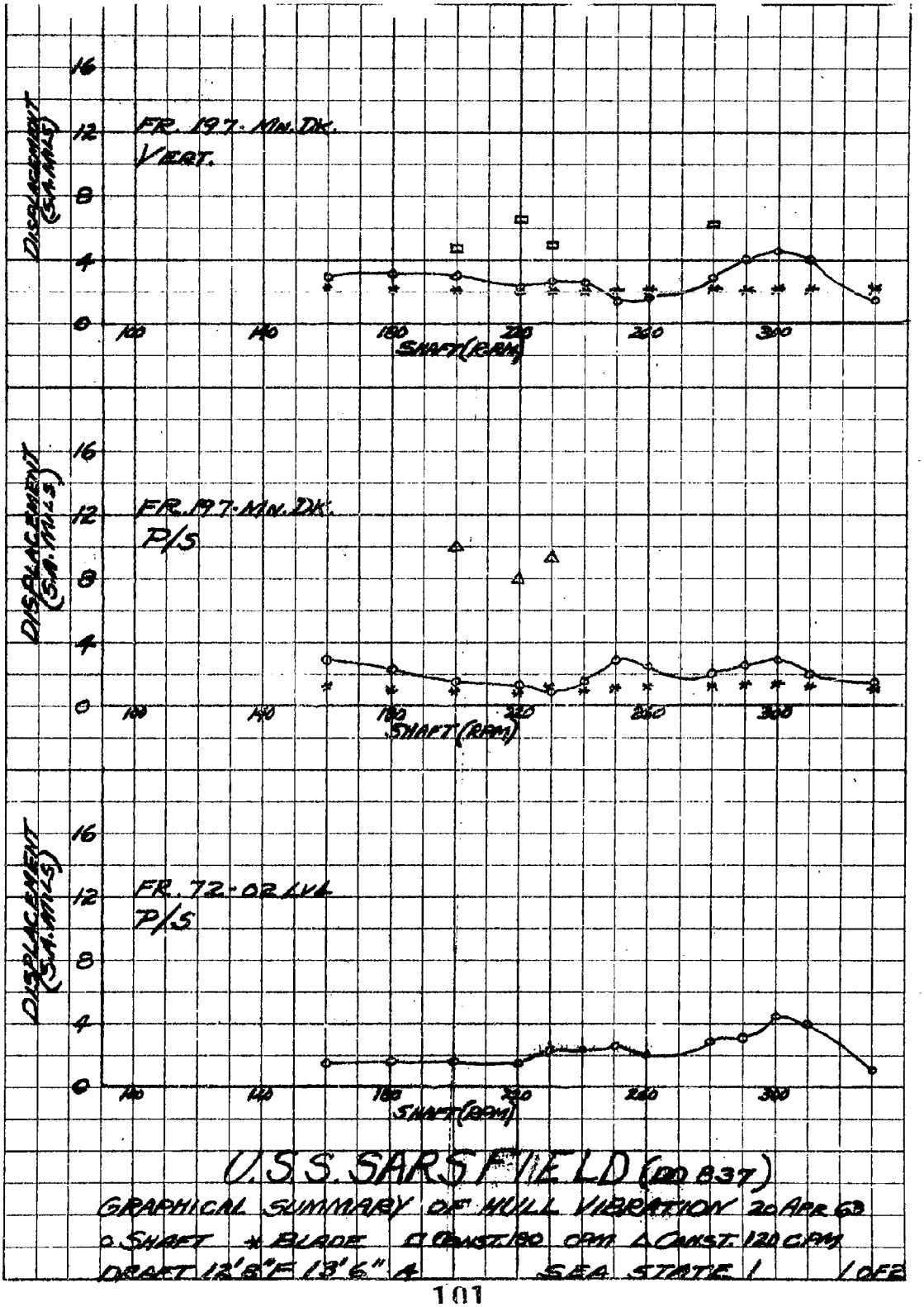
5. This confirms XEROX copy delivered to Planning and Estimating on 25 April 1963.

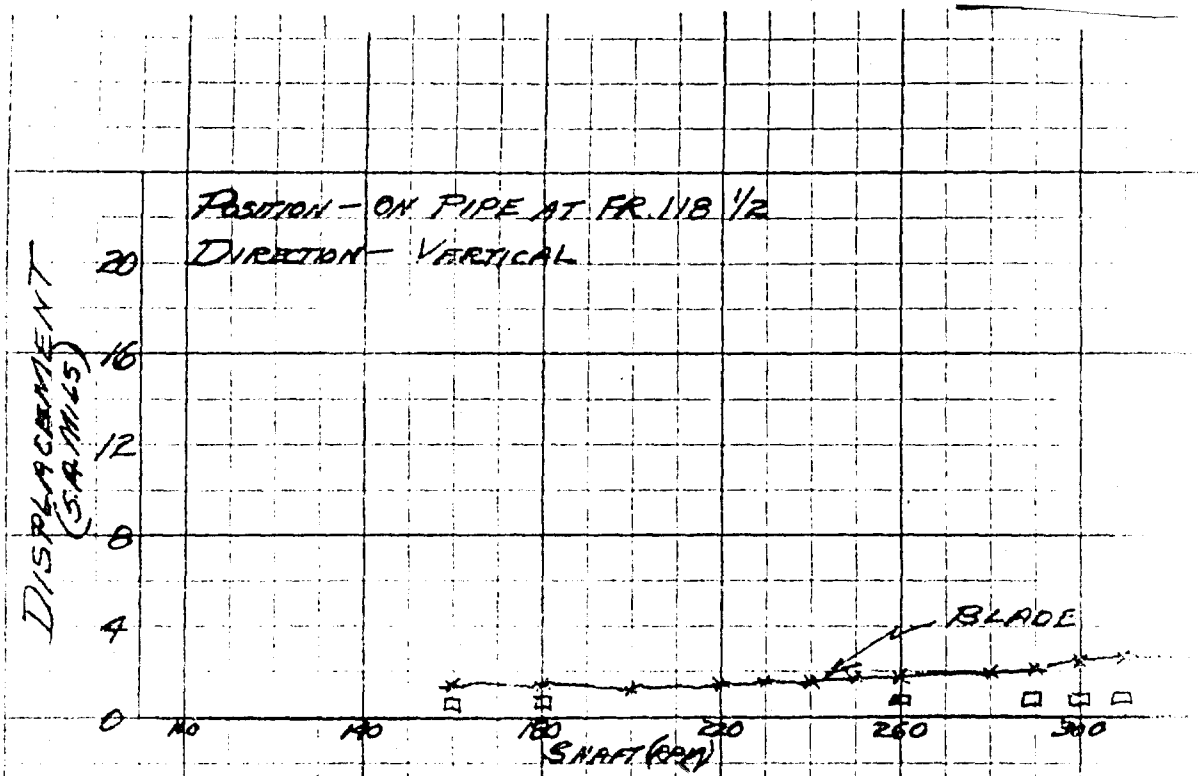
E. S. NORBERG

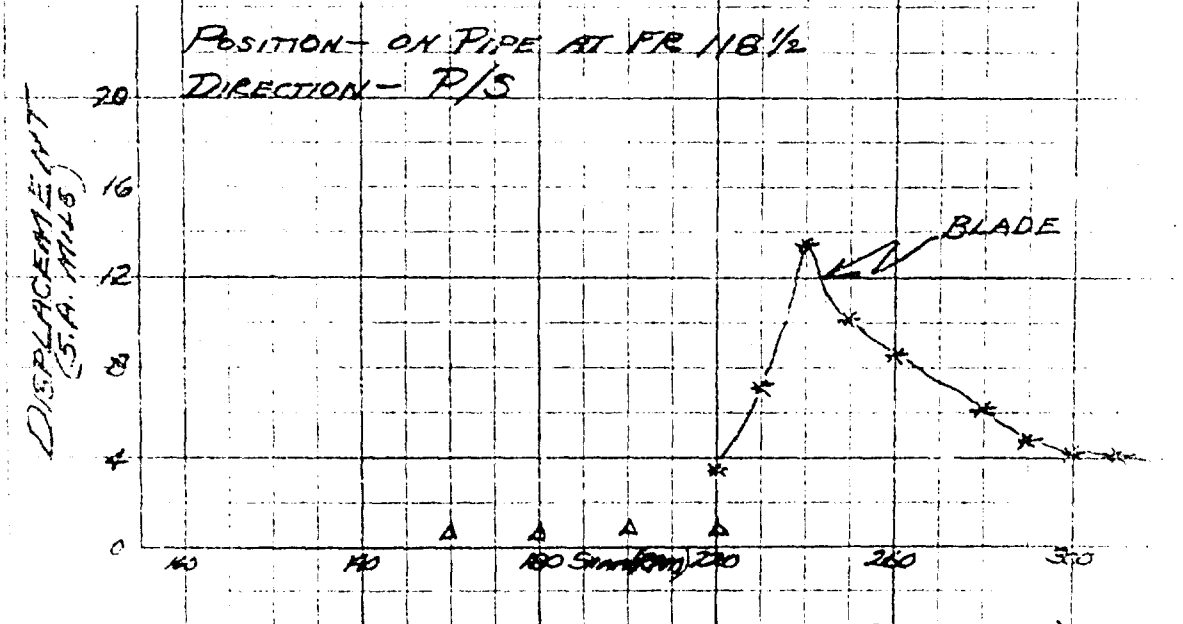
Copy to:
Ship Supt. USS BARBEY (DD837)
Codes 237
264
231
254
260
2603
265(2)(w/1 copy of Graphical Summary of Vibration)

Prepared by: G. Ogle
Typed by: G. Kasabian 4-26-63

1:10







U.S.S. SARSFIELD (DD 837)

GRAPHICAL SUMMARY OF FEED WATER SUCTION LINES
VIBRATION TAKEN ON SEA TRIAL OF 20 APRIL 1963
* BLADE □ CONST. 80 CPS △ CONST. 50 CPS

265
DD843

JUN 2 6 1963

MEMORANDUM

From: Code 265
To: Codes 212 225

Subj: USS WARRINGTON (DD843); Hull Vibration and Shaft Noise Survey, report of

Ref: (a) Design Services Request No. 605-23 of 2 May 1963
(b) BUSHIPS Dwg. No. DD692-S4302-5

1. In accordance with reference (a) a hull vibration and shaft noise survey was conducted on WARRINGTON during a Sea Trial from Newport, Rhode Island to Earle, New Jersey on 27 May 1963.

2. Vibration was recorded throughout a speed range of 180 to 320 shaft R.P.M. The maximum single amplitudes of hull vibration are listed below:

Shaft R.P.M.	Position	Dir.	Displacement (S.A. Mils)	Freq. (C.P.M.)	Source
300	Fr. 196 Mn. Dk.	V	10	300	Shaft
250	" "	P/S	7.8	250	"
300	" "	P/S	7.2	300	"
300	Fr. 72 02 Level	P/S	7	300	"
250 Port 200 Stbd.	Fr. 106 Mn. Dk.	P/S	4.9	250	Port Shaft
250 Stbd. 200 Port	" "	P/S	2.9	250	Stbd. Shaft

The above single amplitudes of vibration are satisfactory.

3. Noise Recordings were made throughout a speed range of 87 to 230 Shaft R.P.M. Recordings were made while driving with the Starboard shaft at 130 R.P.M. and trailing the port shaft at 90 R.P.M. then driving with the port at 130 R.P.M. and the starboard at 90 R.P.M. Finally recordings were made with both shafts driving astern at 110 R.P.M.

4. Analysis of the noise recordings revealed that the noise is emanating from the starboard shafting system once during each revolution of the shaft of a broad band nature indicative of metal rubbing; disappearing with the ship driving astern. The previous information lead to the conclusion that the starboard propeller was rubbing against the rope-guard. Upon inspection of WARRINGTON in dry dock it was evident that the starboard propeller had been rubbing aginst the rope-guard. There was also a large piece missing (2" X 6") from the Number 2 blade of the starboard propeller.

MEMORANDUM

5. No action is necessary from a vibration standpoint. However, since the starboard propeller is to be removed for repair it should be checked for pitch, track, and balance prior to reinstallation. Check runout of tailshaft taper.

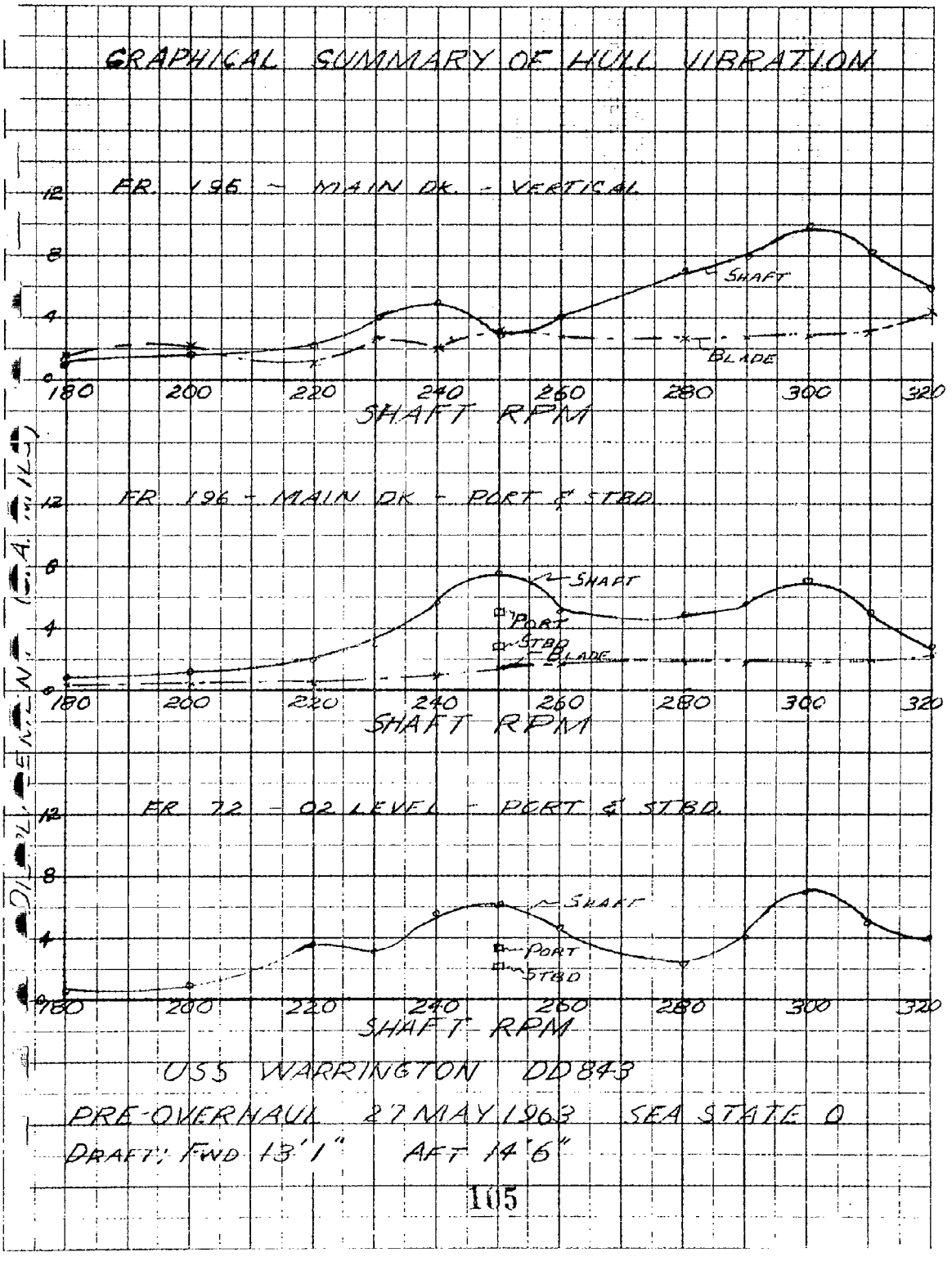
6. With respect to noise emanating from starboard shafting it is recommended that a new rope-guard be installed according to reference (b), with a minimum running clearance of three-eights (3/8) of an inch.

7. This confirms XEROX delivered to Planning and Estimating on 11 June 1963.

E. S. MOBERG

Copy to:
Codes 265 (w/2 copies graphical summary)
232
260
260S

Prepared by: R. Lanza
Typed by: G. Kasabian 6-19-63


GRAPHICAL SUMMARY OF HULL VIBRATION
FR. 196 - MAIN DK. - VERTICAL
SHAFT
BLADE
SHAFT RPM
FR. 196 - MAIN DK. - PORT & STBD.
SHAFT
PORT
STBD
BLADE
SHAFT RPM
FR. 72 - 02 LEVEL - PORT & STBD.
SHAFT
PORT
STBD
SHAFT RPM
DOUBLE AMPLITUDE (T.I.R.) MILS
USS WARRINGTON DD843
PRE-OVERHAUL 27 MAY 1963 SEA STATE 0
DRAFT: FWD 13'1" AFT 14'6"

265
~~19 September 1963~~
4 SEP. 1963

MEMORANDUM

From: Code 265
To: Codes 213 225a

Subj: USS WEEKS (DD701); Post-Overhaul Vibration Survey

Ref: (a) D.S.R. No. 059-03 of 29 Aug 1963

1. A post-overhaul hull vibration survey was performed on WEEKS during a sea trial of 3 September 1963 in compliance with reference (a).

2. The maximum single amplitudes of hull vibration recorded throughout a speed range of 180 to 325 shaft RPM are listed below:

SHAFT SPEED RPM	POSITION	DIR.	FREQ. CPM	DISPLACEMENT S.A. MILS
235 Both Shafts	Mn.Dk.Fr.196	P/S	235	17
235 Stb Only	Mn.Dk.Fr.196	P/S	235	17
235 Port Only	Mn.Dk.Fr.196	P/S	235	3
305 Both Shafts	Mn.Dk.Fr.196	Vert	305	21*
305 Stb Only	Mn.Dk.Fr.196	Vert	305	17
305 Port Only	Mn.Dk.Fr.196	Vert	305	4
305 Both Shafts	02 Level,Fr.72	P/S	305	11
305 Stb Only	02 Level,Fr.72	P/S	305	9
305 Port Only	02 Level,Fr.72	P/S	305	2

The above amplitude marked with an asterisk is excessive. The starboard shaft is the major contributor to the hull vibration.

3. In view of the excessive vibration the following corrective action is recommended to the starboard shafting system only:

a. Remove dunce cap and propeller and check the fit of the propeller to the shaft taper while in drydock.

b. Check propeller bore and hub face to gage.

c. Check pitch track and balance of propeller and balance of dunce cap.

d. Check dunce cap rabbet on propeller while still in balancing machine to find concentricity to arbor taper. Relate to No. 1 keyway.

e. Take runout readings on propeller shaft at the small and large ends of the taper, and at either end of both outboard bearing journals. Relate to No. 1 keyway.

f. Remove plug on end of propeller shaft and inspect inside for anything loose or offset.

4. An alternate recommendation follows:

a. Select a replacement propeller and send to drydock to check fit to shaft taper. Correct as necessary and return propeller to shop. Check the replacement propeller for pitch, track, balance and dunce cap rabbet concentricity. Correct as necessary.

b. Accomplish runout scan outlined in paragraph 3.e. above.

5. Code 265 to witness all readings and fits prior to final evaluation and issue of additional and/or final recommendations.

6. This confirms Xerox delivered to Planning and Estimating on 4 September 1963.

E. S. MOBERG

Copy to:
Codes 240
232
260
265 (2)
260S

Prepared by: T.McGinn
Typed by: F. Guglielmo 9/19/63

265
DD701

SEP 10 1963

MEMORANDUM

From: Code 265
To: Codes 213 and 225

Subj: USS WEEKS (DD701); Starboard Shafting System Evaluation

Ref: (a) Code 265 memo DD701 of 4 Sep 1963

1. In keeping with the recommendations of reference (a), the following evaluations have been made to date:

a. Propeller fit to tailshaft taper satisfactory.
b. Propeller check balance satisfactory.
c. Dunce cap to propeller hub rabbet within acceptable limit.
d. Pitch and track of replacement propeller (ex-MASSEY) within limits.
e. Runout of SE and LE tailshaft taper within limits.
f. Runout of intermediate strut bearing journals excessive (.005" and .013") at main and intermediate struts respectively.

2. In view of the foregoing, it is recommended that the tailshaft be removed to shop for correction of journal runout to within acceptable limits after taking the following runout readings:

a. Repeat of intermediate strut bearing.
b. Fwd and aft end of muff coupling periphery and aft stern tube.
c. Concurrently or following tailshaft removal take runout at fwd stern tube journal, each line shaft midway between bearings (top and side 45° readings 2 Revolutions).

3. Prior to processing balance of replacement propeller for WEEKS, insure that fit to taper and hub faces to taper is satisfactory using gage and repeat fit security by checking propeller to shaft taper. Repeat same for existing propeller.

4. Upon receipt of tailshaft in shop, it is requested that Audio-gage be accomplished and findings reported.

5. This confirms Xerox copy delivered to Planning and Estimating on 5 September 1963.

E. S. MOBERG

Copy to:
240, 260, 260s, 265, 232

265
DD701

SEP 19 1963

MEMORANDUM

From: Code 265
To: Codes 213 and 225

Subj: USS WEEKS (DD701); Post-repair vibration survey, report of

Ref: (a) D.S.R. No.059-06 of 4 Sep 1963.
(b) Code 265 memo of 4 Sep 1963.

1. A post-overhaul hull vibration survey was conducted on WEEKS during a sea trial on 12 September 1963, in compliance with reference (a) to evaluate starboard shafting system work done as a result of recommendations given in reference (b) and subsequent instructions.

2. The maximum single amplitudes of shaft frequency vibration recorded throughout the speed range of 180 to 325 shaft RPM on both the 12 September and the 3 September 1963, sea trials are listed below.

Shaft RPM	Position	Dir.	Displacement (S.A.Mils) Pre	Post
235	Mn. Dk., Fr. 196	P/S	17	4
235	02 Level, Fr.72	P/S	11	3
305	Mn. Dk., Fr. 196	Vert.	21	6
305	Mn.Dk., Fr. 196	P/S	171	5
305	02 Level, Fr.72	P/S	11	4

The amplitudes of vibration measured on the post-repair survey of 12 September 1963, are satisfactory.

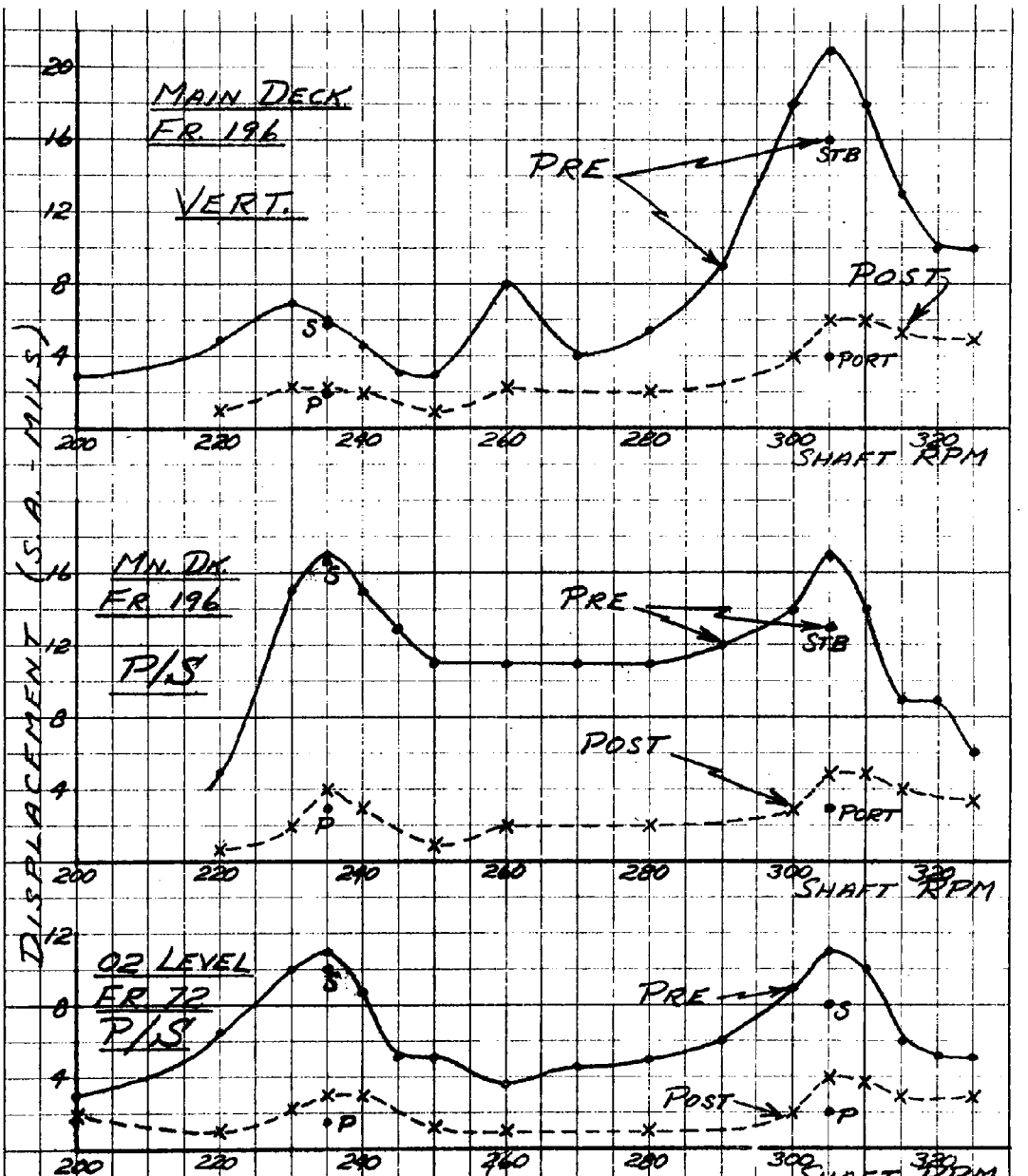
3. No further corrective action is necessary from a vibration viewpoint.

4. This confirms Xerox copy delivered to P & E on 16 September 1963.

E. S. Moberg

E. S. MOBERG

Copy to:
232
240
260
265(2) (w/2 copies of graphical summary)
260s



USS WEEKS (DD 701)

GRAPHICAL SUMMARY OF SHAFT FREQUENCY HULL VIBRATION

PRE-REPAIR SEA TRIAL OF 3 SEPT 1963

POST-REPAIR SEA TRIAL OF 12 SEPT 1963

MN. DRAFT: 13' BOTH TRIALS — BOSTON NAVAL SHIPYARD

SEA STATE: PRE-1 POST-5 — CODE 265

265a
EDD848

MEMORANDUM

JAN 4 1963

From: Code 265
To: Codes 212, 225

Subj: USS WITEK (EDD848); Hull Vibration and Shafting Noise Survey, Report of

Ref: (a) D.S.R. No.401-03 of 7 December 1962

1. The subject surveys were conducted during the sea trial of 8 December 1962. These surveys were conducted in accordance with referance (a), to measure the increased hull vibration, reported by WITEK, and to identify strange noises emanating fron the shafting system.

2. The results of these surveys are as follows:

a. The maximum amplitudes of Hull Vibration measured from 30 to 270 shaft rpm (the highest speed available) are:

SHAFT (RPM) STBD.	PORT	POSITION	DIR	DISPL S.A. MILS	FREQ C.P.M	SOURCE
240	240	Fr.196 Mn.Dk.	P/S	6.0*	240	1X Shaft
240	240	Fr.72 02 Lvl.	P/S	8.0*	240	"
240	140	Fr.196 Mn.Dk.	P/S	2.5	240	"
140	240	Fr.196 Mn.Dk.	P/S	3.5	240	"

The above asterisked amplitudes are considered excessive based on all previous survey results which place hull vibration at 2 Mils S.A. Max.

b. Analysis of the strange noises recorded over the speed range of 30 to 270 shaft rpm show that there are three (3) sources with the following characteristics:

NOISE TYPE	EXISTS FROM TO	FREQ. C.P.S.	MAJ.SHAFTING SYS.CONTRIB.	MAX SHAFT (rpm)	LVL DB*	SOURCE
Rubbing	30-270rpm	2.5-22.5	Port	270	114	1X Blade
Humming	30-270 "	100-170	Port	270	114	Resonances
Tinkling	30-100 "	3100-4000	STBD	30	64	"

*These DB Levels were airborne measurements taken 1 inch away from the vertical strut of both port and starboard main struts (odb=.0002 dynes/cm^2).

The above rubbing and humming frequencies are considered to be a product of the rotor blades hitting a shroud liner or liners lifted up into propeller field. The tinkling noise could be caused by foreign objects or balance weights in the starboard dunce cap or shafting bores respectively.

3. The following corrective action is recommended from a vibration and noise viewpoint:

a. Drydock ship and make visual inspection of outboard shafting and pump jets.

b. Take rotor clearances.

c. Take runout readings at the intermediate bearings and muff couplings.

d. Remove the dunce caps, inspect for loose parts (bearing keeper strips or zincs) and correct all deficiencies. Take stator bearing clearances.

e. Remove STBD shaft plug and inspect bore for loose balance weights.

f. Contingent to findings of above further recommendations will be initiated to: Remove rotor or rotors to check pitch and track of rotor blades and dynamically balance rotor and shaft as a unit.

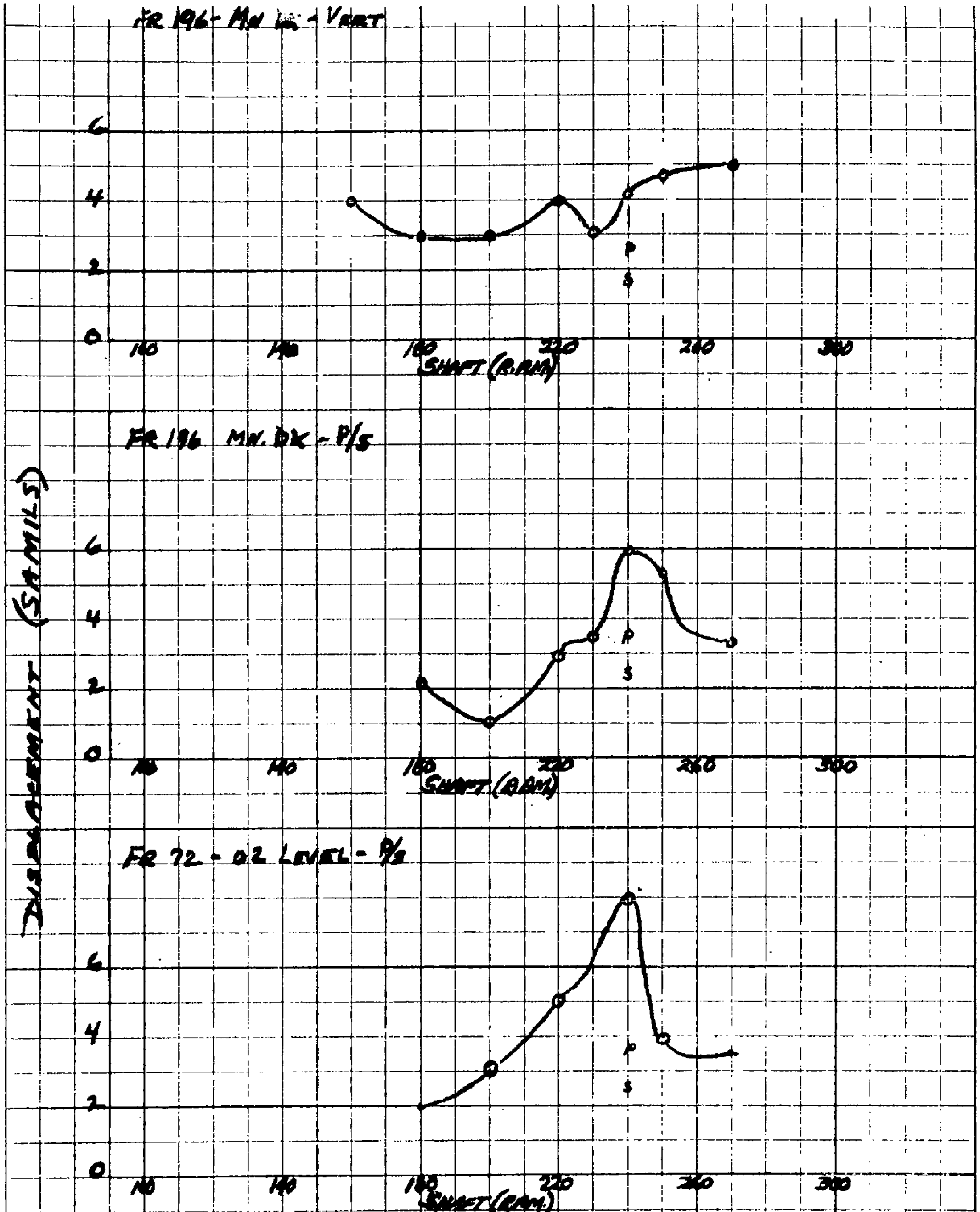
g. Forward a copy of all data to Code 265 for evaluation.

4. This confirms verifax delivered to P&E on 14 Dec. 1962.

J. J. FRANCIS

Copy to: Codes 240
232
260
260s
265(2)(W/1 copy of Graphical Vibration Summary)
212(2)

Prepared by: G. Ogle
Typed by: M. Greene



U.S.S. WITEK (EDD 848)

GRAPHICAL SUMMARY OF HULL VIBRATION ON 8 DEC. 62

○ SHAFT * BLADE □ CONST. FREQ. — CPM

DRAFT F — A — SHEET NO 1 OF 1

265
EDD848

FEB 5 1963

MEMORANDUM

From: Code 265
To: Codes 212 225

Subj: USS WITEK (EDD848); Hull Vibration Survey, report of

Ref: (a) Design Services Request No. 401-03 of 7 Dec 1962

1. A post repair hull vibration survey was conducted on WITEK during the sea trial of 30 January 1963 to evaluate the effects of work done on the main propulsion system during recent overhaul. This is in accordance with reference (a).

2. The maximum vibration amplitudes measured through a speed range of 160 to 270 shaft rpm (the highest speed available) are as follows:

Shaft (RPM)	Position	Dir.	Displacement (S.A. Mils)	Freq. (C.P.M.)	Source
240	Fr. 196 Mn. Dk.	P/S	3.2	240	1X Shaft
240	Fr. 72 Mn. Dk.	P/S	2.8	240	"
240	Fr. 196 Mn. Dk.	V	2.8	240	"

The above vibration amplitudes measured at the 240 hull critical are satisfactory. No unusual noises or vibration were heard or recorded during the trial which included all normal ship maneuvers.

3. No further corrective action is recommended from a vibration or noise viewpoint.

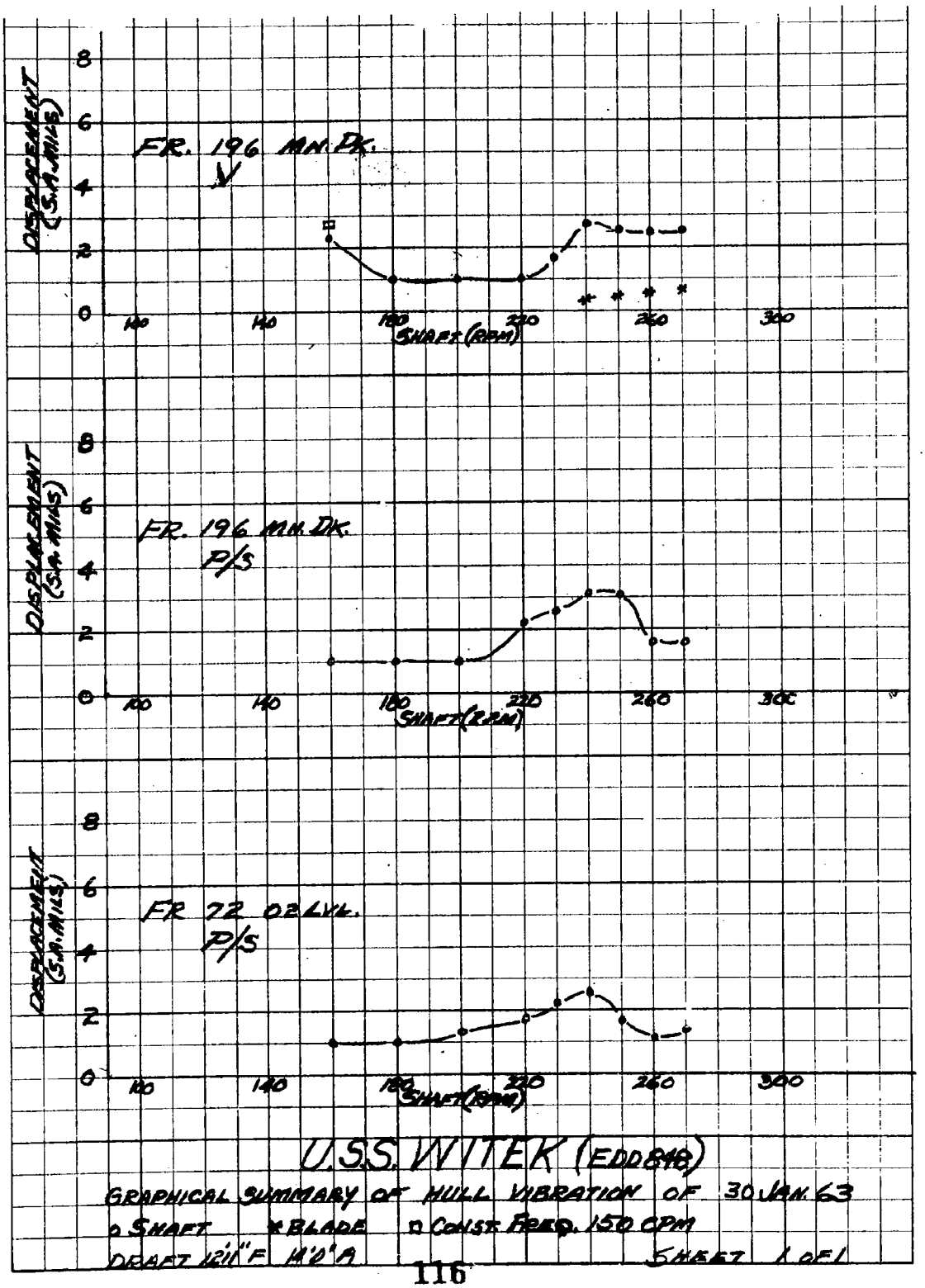
4. This confirms verifax copy delivered to Planning and Estimating on 4 February 1963.

E. S. MOBERG

Copy to:
Ship Supt. USS WITEK (EDD848)
Codes 240
232
260
2603
265(2)(w/2 copies of Graphical Vibration Summary)

Prepared by: G. Ogle
Typed by: G. Kasabian 2-5-63

115



U.S.S. WITEK (EDD 848)

GRAPHICAL SUMMARY OF HULL VIBRATION OF 30 JAN 63

○ SHAFT ✱ BLADE □ CONST FREQ. 150 CPM

DRAFT 12'11" F 14'0" A

SHEET 1 OF 1

265
EDD848

MAR 29 1963

MEMORANDUM

From: Code 260
To: Codes 212 225

Subj: USS WITEK (EDD848); Hull Vibration and Shafting Noise Survey, report of

Ref: (a) Design Services Request No. 475-01 of 15 Mar 1963

1. The subject surveys were conducted on WITEK enroute to Boston Naval Shipyard, on 19 March 1963. These surveys were conducted in accordance with reference (a), to measure the increased hull vibration, reported by WITEK, and to identify strange noises emanating from the shafting system.

2. The results of these surveys are as follows:

a. The maximum amplitudes of hull vibration measured from 160 to 270 shaft rpm (the highest speed available) are:

Shaft (RPM) Stbd.	Port	Position	Dir.	Displacement (S.A. Mils)	Freq. (C.P.M.)	Source
260	260	Fr. 196 Mn. Dk.	V	*9.2	260	LX Shaft
260	260	" " " "	P/S	5.7	"	"
260	260	" 72 02 Level	P/S	3.1	"	"
260	180	" 196 Mn. Dk.	V	1.7	"	"
180	260	" " " "	V	*8.0	"	"

The above asterisked amplitudes are considered excessively high with respect to a pump jet installation.

b. Analysis of the structureborne and airborne noise recorded over the speed range of 30 to 270 shaft rpm show no unusual source of noise, or increase in level since the survey of 8 December 1962.

3. The following corrective action is recommended from a vibration and mechanical viewpoint:

a. Take hull deflection data afloat including droop of stern to relate to rotational clearances taken in dock.

b. Drydock ship and make visual inspection of outboard shafting and pump jets.

(1) Take rotor clearances and stator bearing clearances.

(2) Take runout readings at the intermediate bearing and muff coupling.

MEMORANDUM

c. Contingent to above findings further recommendations will be initiated to:

(1) Remove rotor or rotors, to check pitch and track of rotor blades, to dynamically balance rotor and shaft as a unit, and to bore sight bearings.

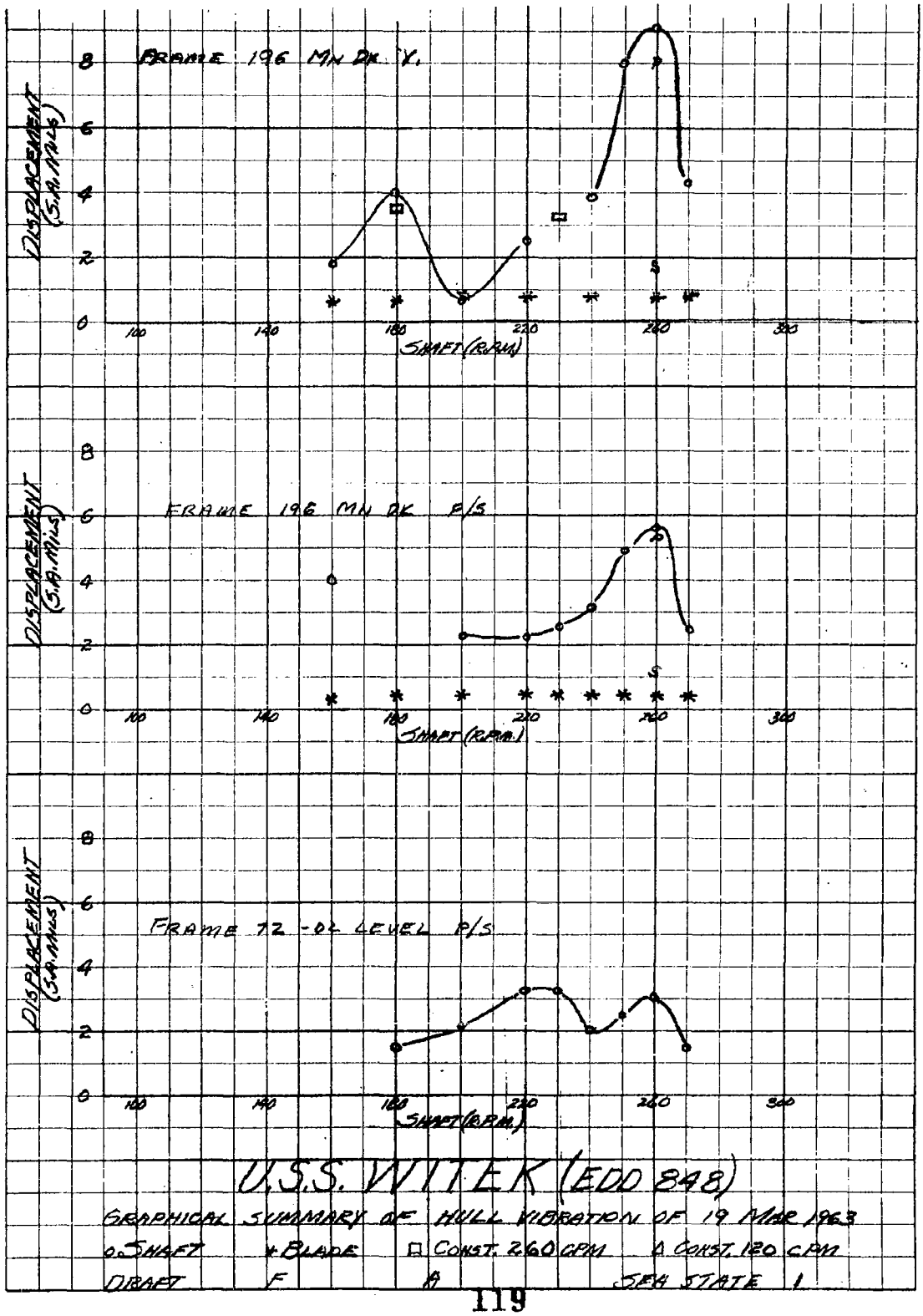
d. Forward a copy of all data to Code 265 for evaluation.

4. This confirms verifax copy delivered to Planning and Estimating on 21 March 1963.

J. J. FRANCIS

Copy to:
Codes 240
232
251
260
260S
265(2)(w/1 copy of Vibration Summary) ✓

Prepared by: G. Ogle
Typed by: G. Kasabian 3-22-63
Retyped Page 2 " " 3-26-63 2



U.S.S. VITEK (EDD 848)

GRAPHICAL SUMMARY OF HULL VIBRATION OF 19 MAR 1963

o SHAFT * BLADE □ CONST. 260 CPM Δ CONST. 120 CPM

DRAFT F A SEA STATE 1

265
EDD848

MAY 3 1963

MEMORANDUM

From: Code 265
To: Codes 212 ✓ 225

Subj: USS WITEK (EDD848); Hull Vibration Survey, report of

Ref: (a) Design Services Request No. 475-04

1. A post repair hull vibration survey was conducted on WITEK enroute Earle, New Jersey on 25 April 1963 in accordance with reference (a).

2. The maximum amplitudes of hull vibration measured from 160 to 270 shaft RPM (the highest speed available) are:

Shaft (RPM)				Displacement	Freq.	
Stbd.	Port	Position	Dir.	(S.A. Mils)	(C.P.M.)	Source
240	240	Fr. 196 Mn. Dk.	P/S	2.9	240	1X Shaft
240	240	Fr. 69 02 Lvl.	P/S	2.7	240	"
260	260	Fr. 196 Mn. Dk.	V	3.3	260	"
260	260	Fr. 196 Mn. Dk.	P/S	3.1	260	"
180	240	Fr. 196 Mn. Dk.	P/S	2.2	240	"

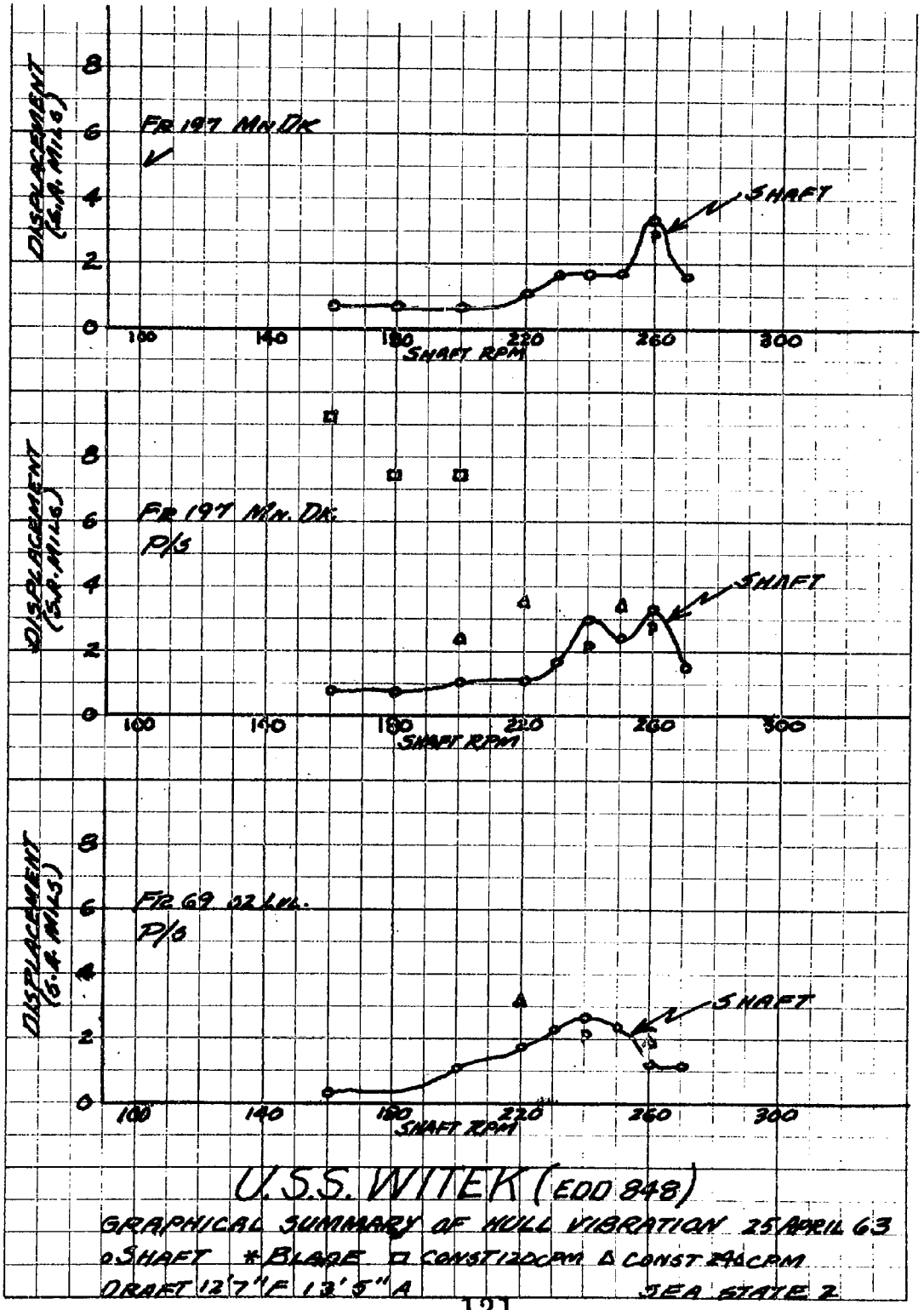
The above amplitudes of vibration are satisfactory.

3. No further corrective action is recommended from a vibration viewpoint.

4. This confirms XEROX copy delivered to Planning and Estimating on 30 April 1963.

Ss Moberg
E. S. MOBERG

Copy to:
Ship Supt. USS WITEK (EDD848)
Codes 240
232
251
260
260S
265(2)(w/1 copy of Vibration Summary)



U.S.S. WITEK (EDD 848)

GRAPHICAL SUMMARY OF HULL VIBRATION 25 APRIL 63

○ SHAFT * BLADE □ CONST 120 CPM △ CONST 240 CPM

DRAFT 12'7" F 13'5" A SEA STATE 2

265
SDD848

AUG 21 1963

MEMORANDUM

From: Code 265
To: Codes 212 225

Subj: USS WITEK (DD848); Hull Vibration & Main Propulsion Stress and Noise Survey, report of

Ref: (a) COMCRUDESLANT Msg of 29 May 1963

1. The subject survey was conducted on WITEK enroute to Earle, New Jersey on 17 June 1963 in accordance with reference (a).

2. The results of this survey are as follows:

a. Hull Vibration: The maximum vibration amplitudes measured through a speed range of 160 to 270 shaft rpm (the highest speed available) are:

Shaft RPM Strbd	Port	Position	Dir.	Displacement (S.A. Mils)	Freq. C.P.M.	Source
240	240	Fr. 196 Mn. Dk.	P/S	3.8	240	1X Shaft
240	240	Fr. 69 02 Lvl.	P/S	3.2	240	"
250	250	Fr. 196 Mn. Dk.	V	4.4	250	"
250	250	Fr. 196 Mn. Dk.	P/S	3.8	250	"
200	250	Fr. 196 Mn. Dk.	V	3.5	250	"
250	200	Fr. 196 Mn. Dk.	V	1.1	250	"

The above amplitudes of vibration are, not considered excessive.

b. Port shaft Vibration: The maximum vibration amplitudes measured concurrently with the hull vibration at the forward end of the stern tube bearing was 1.5 mils (s.a.) in the athwartship direction. This maximum amplitude occurred at 240 shaft RPM and is considered satisfactory.

c. Strain Gauge Readings: The maximum strain measured on the girders supporting the port main struts occurred during 30°R and 30°L turns at 163 shaft RPM as listed below:

Position	Strain(Min/In)	Type
Top of web above Mid Point of Vertical Strut	235	Static
" " " Fwd End " " "	270	"
" " " " " Canted "	240	"
" " " Mid Point " "	260	"

The above strains are considered normal and did not fluctuate with the occurrance of the noise in these maneuvers.

MEMORANDUM

d. Noise Analysis: A noise survey was conducted on WITEK in conjunction with shaft vibration and strain measurements on the girders supporting the port main struts. The noise occurred while in hard right and hard left turns at 110 to 163 (the highest speed advisable due to the unusual noise) shaft RPM. The noise occurred only in turns with both shafts at 163 shaft RPM, with the starboard at 163 and the port at 110, and with the port at 173 and the starboard at 110 shaft RPM. There was no noticeable change in the volume or occurrence of the noise in any of the above conditions. A discrete frequency analysis of the noise, as recorded above the port intermediate strut (the location of the maximum volume), showed the noise to be of a random nature occurring on the average of 1.15 times a second. These conditions are indicative of a misaligned intermediate strut.

3. Due to the above noise the following corrective action is recommended for the port outboard shafting:

a. Record the rotor tip clearances, the main and intermediate bearing clearances, and take runout readings on the main bearing journal, the intermediate bearing journal, and on the muff coupling.

b. Remove rotor assembly, repair damage to blade and balance.

c. Boresight from aft stern tube position.

d. Send a copy of the above data to Code 265 for evaluation and initiation of further recommendations.

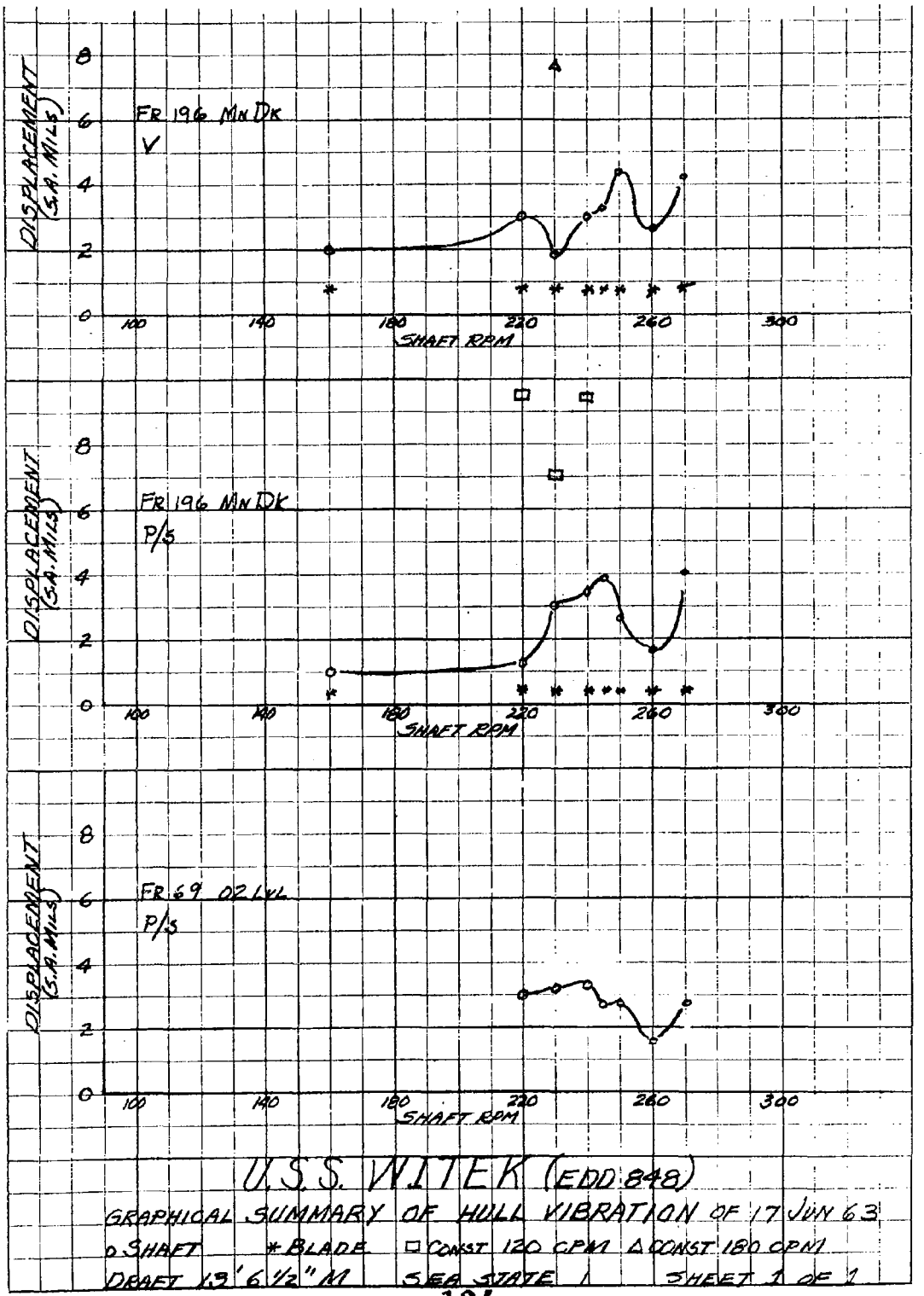
e. Recommendations for the installation of pressure pickups, proximity pickups, and strain gauges to evaluate the proper operation of the pump jets under sonar trailing will be initiated upon the findings of (a) through (d).

4. This report confirms information passed out at conference of 9 July 1963.

E. S. MORERO

Copy to:
Ship Supt. USS WITEK (SDD848)
Codes 240 260
232 2603
251 265 (w/1 copy of Vibration Summary)

Prepared by: G. Ogle
Typed by: G. Kasabian 8-29-63 2



U.S.S. WITEK (EDD 848)

GRAPHICAL SUMMARY OF HULL VIBRATION OF 17 JUN 63

○ SHAFT * BLADE □ CONST 120 CPM △ CONST 180 CPM

DRAFT 19' 6 1/2" M SEA STATE 1 SHEET 1 OF 1

265
DLG18

JUL 26 1963

MEMORANDUM

From: Code 265
To: Code 225 / 212

Subj: USS WORDEN (DLG18); Hull Vibration Survey, report of

Ref: (a) Design Services Request No. 029-02 of 8 Jul 1963

Encl: (1) USS WORDEN (DLG18) Graphical Summary of Vibration Survey

1. A hull vibration survey was performed on WORDEN during P.A.T. on 16 July 1963 in compliance with reference (a).

2. The maximum single amplitudes of hull vibration recorded throughout the speed range of 160 to 306 shaft RPM are as indicated below. The complete graphical summary is shown on enclosure (1):

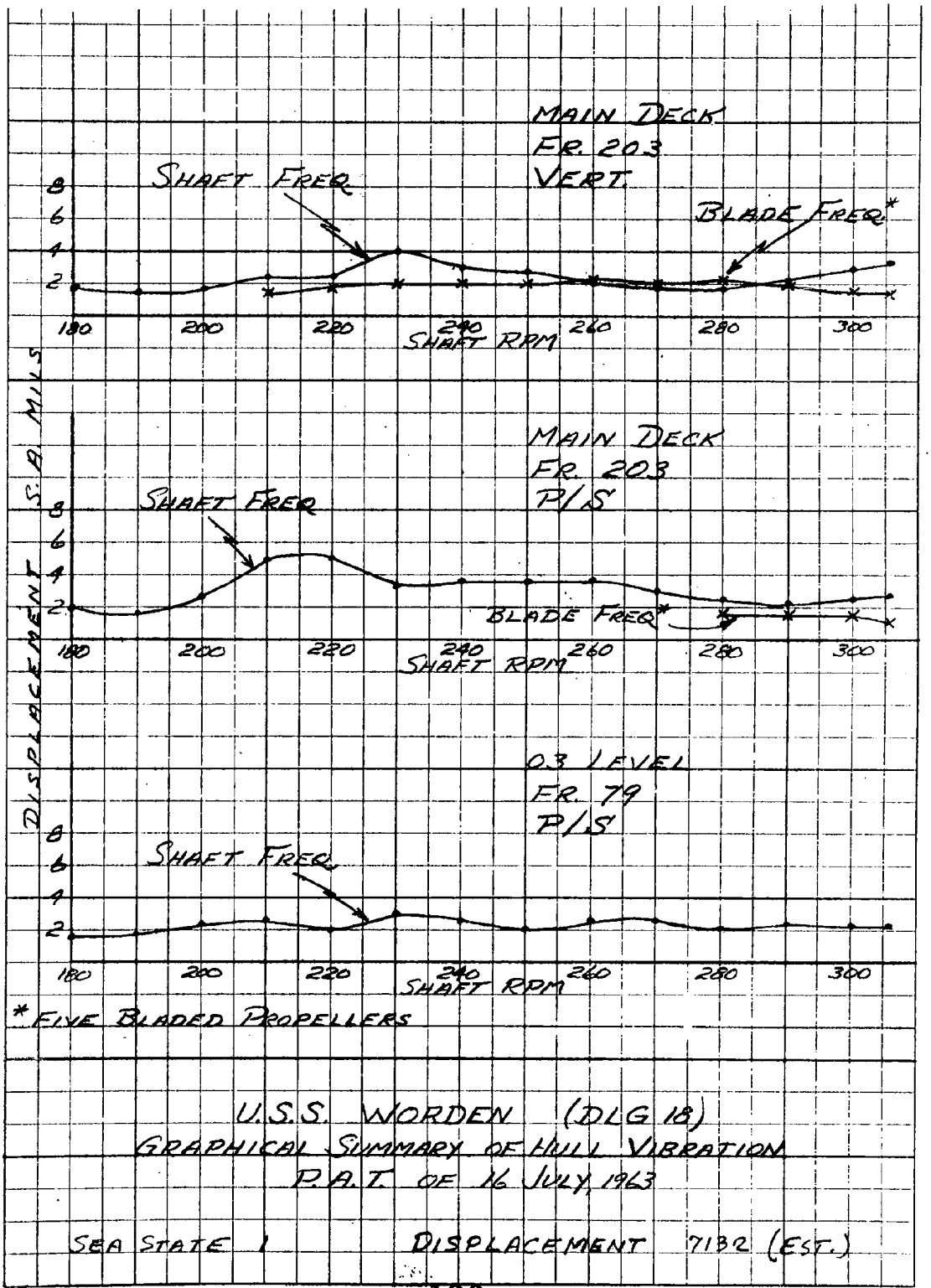
Shaft RPM	Position	Dir.	Freq. CPM	Displ. S.A. Mils	Source
215	Mn. Dk. Fr. 203	P/S	215	5	Shaft
230	Mn. Dk. Fr. 203	Vert	230	4	"
230	03 Level Fr. 79	P/S	230	3	"
306	Mn. Dk. Fr. 203	Vert	306	3.5	"
280	Mn. Dk. Fr. 203	Vert	1400	2.1	Blade

These amplitudes of vibration are satisfactory.

3. No corrective action is required from a vibration point of view.

E. S. Moberg
E. S. MOBERG

Copy to:
Codes 240
260
244
265(2)(w/2 copies Graphical Summary)
260S



U.S.S. WORDEN (DLG 18)
GRAPHICAL SUMMARY OF HULL VIBRATION
P.A.T. OF 16 JULY 1963

SEA STATE 1 DISPLACEMENT 7182 (EST.)

ENCL (1)

265
AGB2

MAY 10 1963

MEMORANDUM

From: Code 265
To: Code 1200

Subj: USS EDISTO (AGB2); Vibration Survey on No. 6 Main Engine, report of

Ref: (a) IND D.S.R. 0326 of 8 Apr 1963

1. A vibration survey was conducted on the Number 6 Main Engine of EDISTO at pierside on 29 April 1963 in compliance with reference (a).

2. Vibration of the subject unit was measured at several speeds between 450 and 750 R.P.M. The maximum single amplitudes of vibration are listed below:

Position	Dir.	Engine RPM	Displacement(S.A.Mils)	Freq. (CPM)	Source
Blower	P/S	750	*11.0	1500	1X Blower R.P.
Engine-Blower End	P/S	750	* 9.0	1500	1X " "
Engine-Blower End	P/S	750	1.8	750	1X Engine "
Engine-Control End	P/S	750	1.7	750	1X " "

The single amplitudes of vibration marked with an asterisk (*) are excessive.

3. Recommendations to correct the above vibration are as follows:

a. Remove blower and balance blower rotors in accordance with Instruction Manual NAVSHIPS 361-1393.

b. Inspect blower journals and bearings and correct if necessary.

c. After balance install blower in accordance with NAVSHIPS 361-1393.

d. Notify Code 265 when work has been accomplished so that a post-repair vibration survey can be conducted.

4. This confirms XEROX copy delivered to IND. Planning and Estimating on 6 May 1963.

E S Moberg
E. S. MOBERG

Copy to:
Ship Supt. USS EDISTO (AGB2)
Codes 265(2) 260 260S

127

265
AGB2

JUN 26 1963

MEMORANDUM

From: Code 265
To: Code 1200

Subj: USS EDISTO (AGB2); Post-Repair Vibration Survey on No. 6 Main Engine, report of

Ref: (a) Code 265 Memo AGB2 of 10 May 1963

1. A post-repair vibration survey was conducted on the Number 6 Main Engine of EDISTO at pierside on 12 June 1963 as requested by reference (a).

2. Vibration of the subject unit was measured at 450 and 750 R.P.M. The maximum single amplitudes of vibration are listed below:

Position	Dir.	Engine R.P.M.	Displacement(S.A. Mils) Pre-Repair	Post-Repair	Freq. (CPM)	Source
Blower	P/S	750	11.0	.64	1500	1X Blower R.P.M.
Engine-Blower End	P/S	750	9.0	.55	1500	"
Engine-Blower End	P/S	750	1.8	1.6	750	1X Engine R.P.M.
Engine-Control End	P/S	750	1.7	1.4	750	"

The post repair single amplitudes of vibration are satisfactory.

3. No further action is necessary from a vibration standpoint.

4. This confirms XEROX copy delivered to INDMAN on 17 June 1963.

E. S. MOBERG

Copy to:
Ship Supt. USS EDISTO (AGB2)
Codes 265(2)
260
260S

Prepared by: R. V. Butler
Typed by: G. Kasabian 6-19-63

265

OCT 9 196

MEMORANDUM

From: Code 265
To: Codes 212 and 225

Subj: USS LEAHY (DLG-16), Main Propulsion Turbines Vibration Survey; report of

Ref: (a) D.S.R. No. 572-87

1. A vibration survey was conducted on the main propulsion turbines during the uncoupled spin tests of 9 and 11 September 1963 and during the sea trial of 13 September 1963. These surveys were conducted on LEAHY in accordance with reference (a) to evaluate the recent corrections made on the turbines.

2. The maximum vibration amplitudes listed below occurred during the sea trial which included a two hour power build up, a four hour full power run, a crash back, one hour full power astern, and a crash ahead.

Shaft (RPM)	Turbine Unit	Brg	Dir	Displacement (S. A. Mils)	Freq. (CPM)	Source
300	#1 H.P.	Fwd	Radial	.37	7320	1X Turbine
300	#1 H.P.	Fwd	Axial	.18	7320	1X Turbine
300	#1 H.P.	Aft	Radial	.08	7320	1X Turbine
160	#1 L.P.	Fwd	Radial	.17	2940	1X Turbine
160	#1 L.P.	Fwd	Axial	.15	2940	1X Turbine
280	#2 H.P.	Fwd	Radial	.16	6640	1X Turbine
300	#2 H.P.	Fwd	Axial	.08	7320	1X Turbine
300	#2 H.P.	Aft	Radial	.04	7320	1X Turbine
240	#2 L.P.	Fwd	Radial	.11	4380	1X Turbine
300	#2 L.P.	Fwd	Axial	.03	5528	1X Turbine
300	#2 L.P.	Aft	Radial	.03	5528	1X Turbine

The above amplitudes are considered satisfactory since the #1 H.P. turbine only exceeded the limit at one position at the start of full power run dropping off to .29 mils for remainder of the four (4) hour run. In general, the vibration followed the trends established during the spin tests.

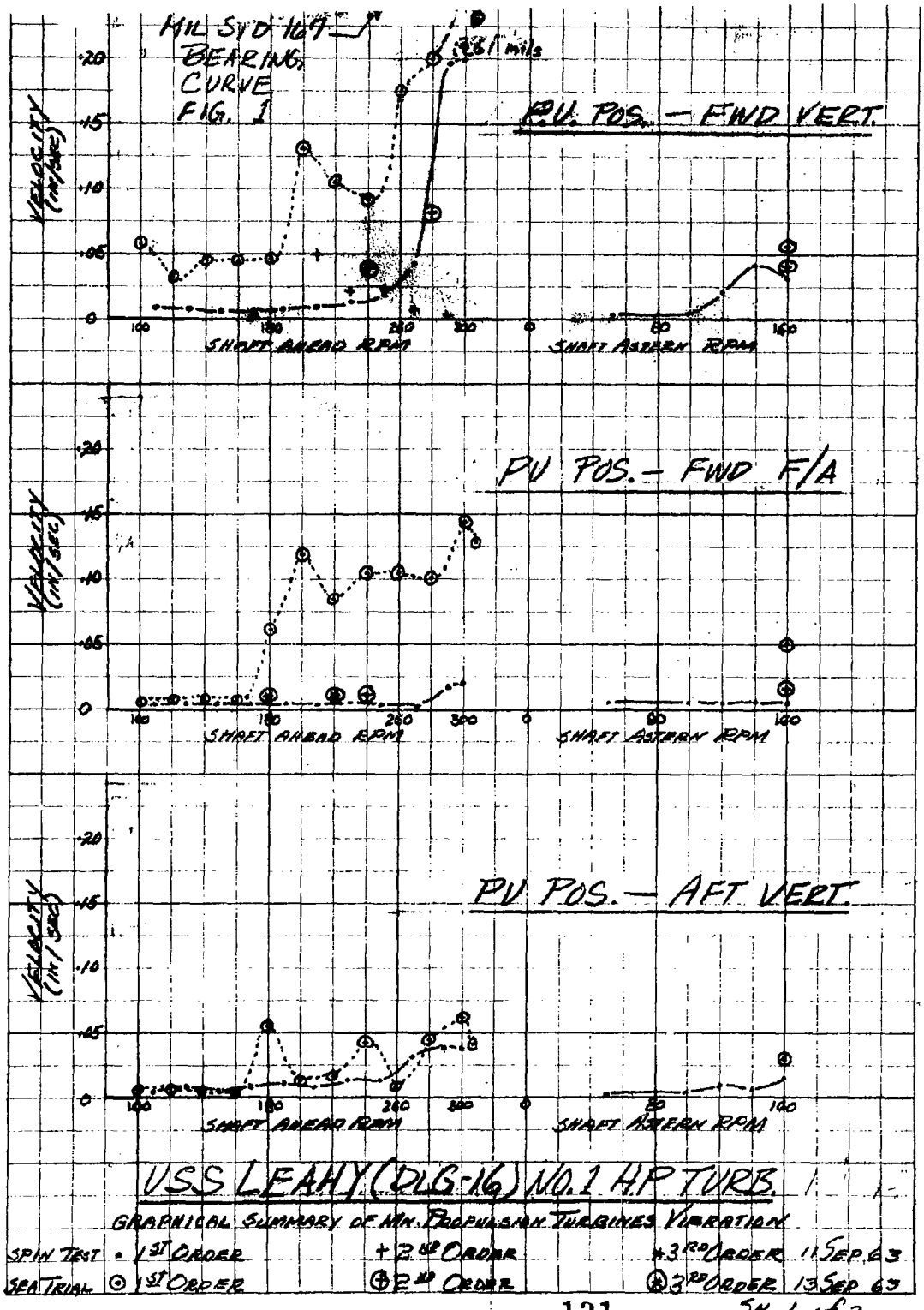
MEMORANDUM

3. No corrective action is required from a vibration viewpoint.

4. This confirms Xerox copy delivered to the Planning and Estimating Department on 26 September 1963.

E. S. MOBERG

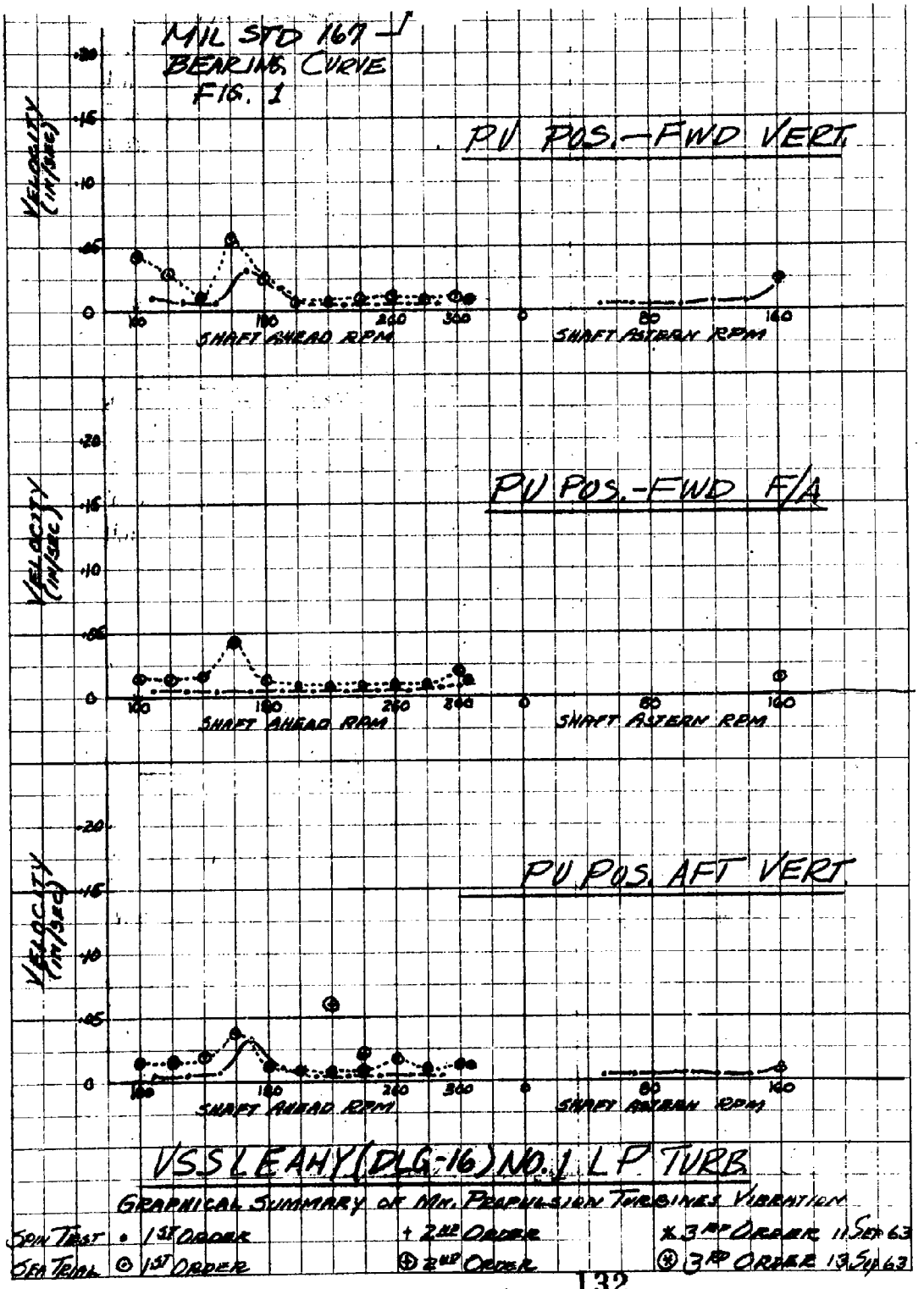
Copy to:
232
240
260
260s
265a(w/2 copies of graph summary)



SHT 1 OF 4

SH 1 of 2

MIL STD 167-1
BEARING CURVE
FIG. 1

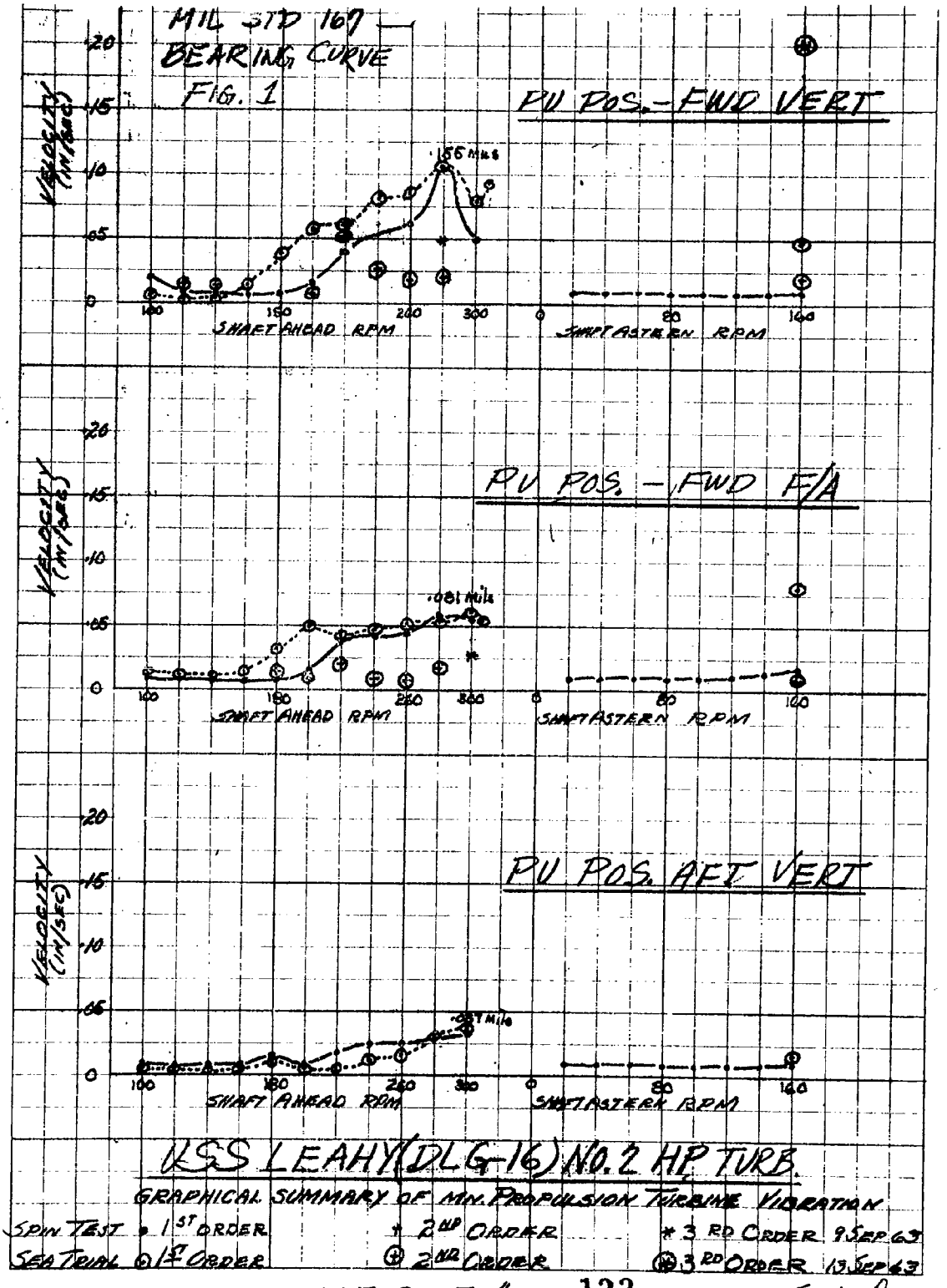


VS SLEAHY (DLG-16) NO. 1 LP TURB.

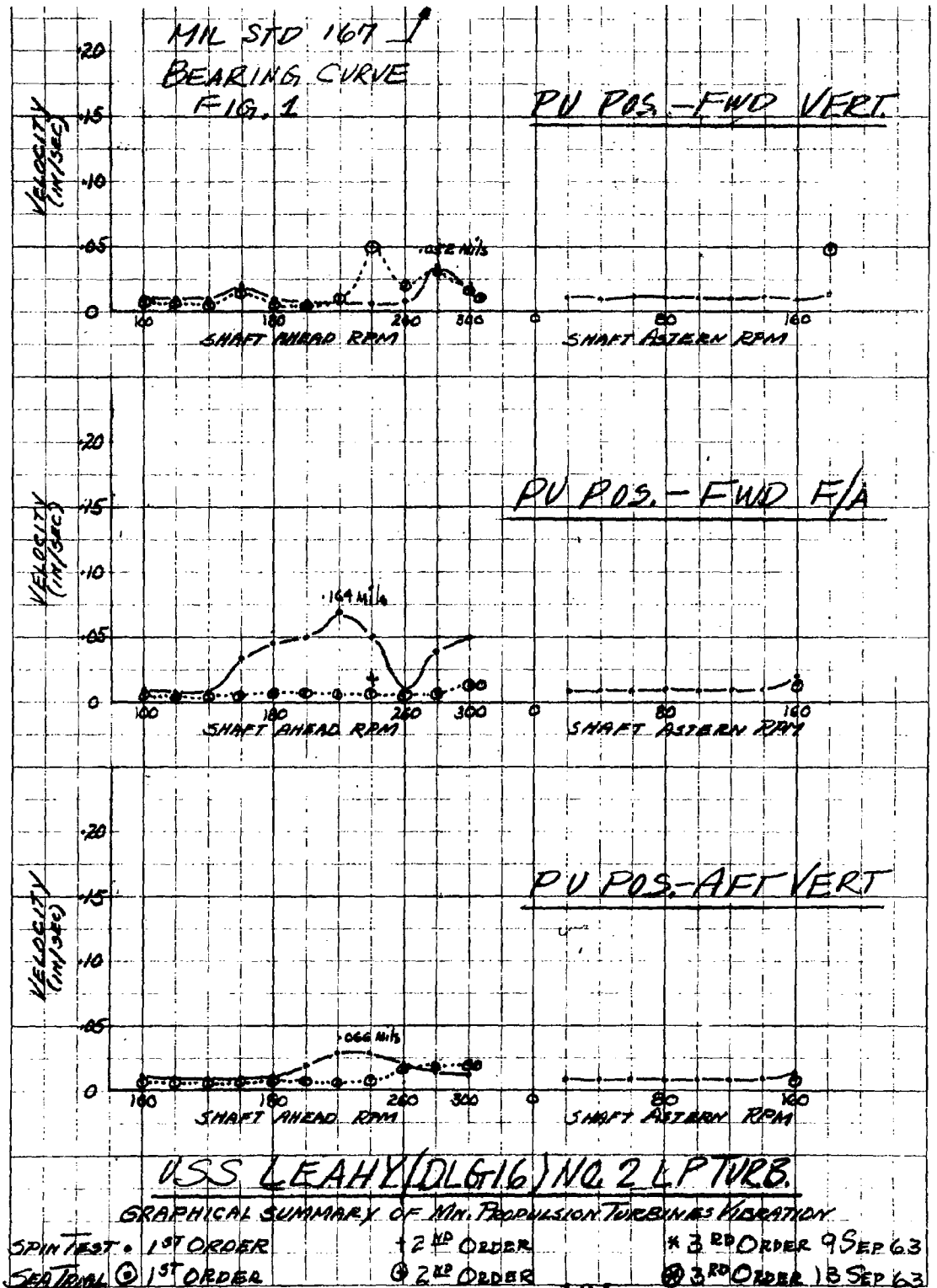
GRAPHICAL SUMMARY OF MN. PROPULSION TURBINES VIBRATION

SEA TRIAL ⊙ 1ST ORDER ⊕ 2ND ORDER ⊛ 3RD ORDER 13 SEP 63

SHT 2 OF 4



MIL STD 167 1
BEARING CURVE
FIG. 1



USS LEAHY (DLG16) NO. 2 LP TURB.

GRAPHICAL SUMMARY OF MN. PROPULSION TURBINES VIBRATION

SPIN TEST • 1ST ORDER + 2ND ORDER * 3RD ORDER 9 SEP 63
SEA TRIAL ⊙ 1ST ORDER ⊕ 2ND ORDER ⊛ 3RD ORDER 18 SEP 63

SHT 4 OF 4

SH 2 OF 2

OCT 10 1963

MEMORANDUM

Fr : Code 265
T Code 211 and 225

Subj: USS WORDEN (DLG-18), Main Propulsion Turbines Vibration Survey; report of

Ref: (a) DSR No. 029-30

1. A vibration survey was conducted on the main propulsion turbines during the sea trial of 24-25 September 1963 in accordance with reference (a).

2. The maximum vibration amplitudes measured during the two (2) hour power build up, the three (3) hour full power run, the crash astern, the one (1) hour full speed astern, and the crash ahead to full power are as follows:

Shaft	Unit	Brg	Dir	Displacement (S. A. Mils)	Freq. (CPM)	Source
1[illegible]	#1 H.P.	Fwd	Radial	.12	3900	1X Turbine
[illegible]	#1 H.P.	Fwd	Axial	.05	7500	1X Turbine
[illegible]	#1 H.P.	Aft	Radial	.05	6300	1X Turbine
[illegible]	#1 L.P.	Fwd	Radial	.10	4980	1X Turbine
[illegible]	#1 L.P.	Fwd	Axial	.09	4980	1X Turbine
[illegible]	#1 L.P.	Aft	Radial	.09	4980	1X Turbine
2[illegible]	#2 H.P.	Fwd	Radial	.32	6300	1X Turbine
[illegible]	#2 H.P.	Fwd	Axial	.09	7500	1X Turbine
[illegible]	#2 H.P.	Aft	Radial	.20	7500	1X Turbine
[illegible]	#2 L.P.	Fwd	Radial	.03	5700	1X Turbine
[illegible]	#2 L.P.	Fwd	Axial	.04	5160	1X Turbine
3[illegible]	#2 L.P.	Aft	Radial	.03	5700	1X Turbine

The above amplitudes of vibration are satisfactory. No appreciable amplitudes at any other frequency were detected.

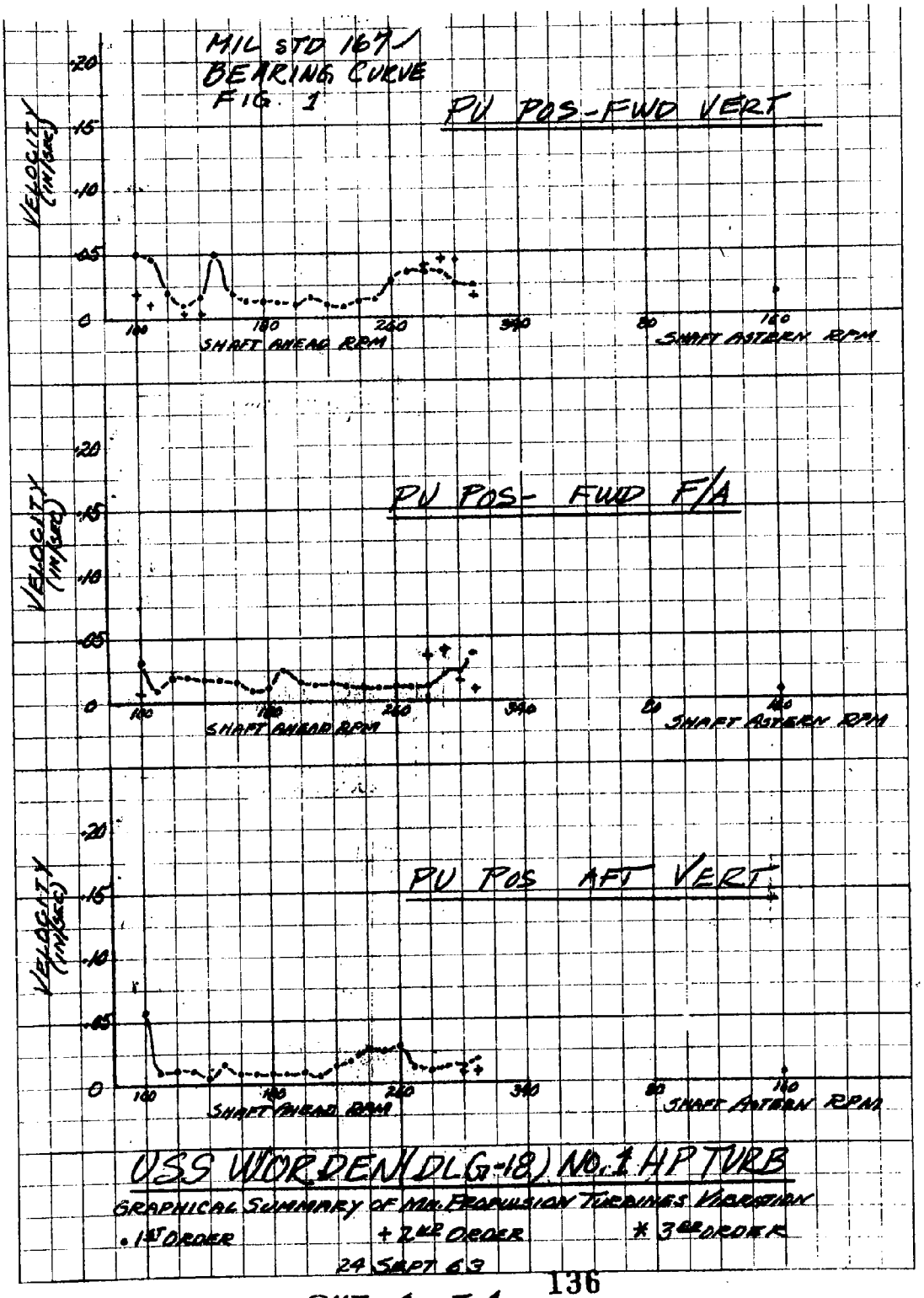
3. No further corrective action is recommended from a vibration viewpoint.

4. This confirms Xerox copy delivered to P & E on 1 October 1963.

E. S. MOBERG

Copy to:
240, 260, 232, 227, 260s, 265(2)(w/1 copy of Graphical Summary)

MIL STD 167-1
BEARING CURVE
FIG. 1



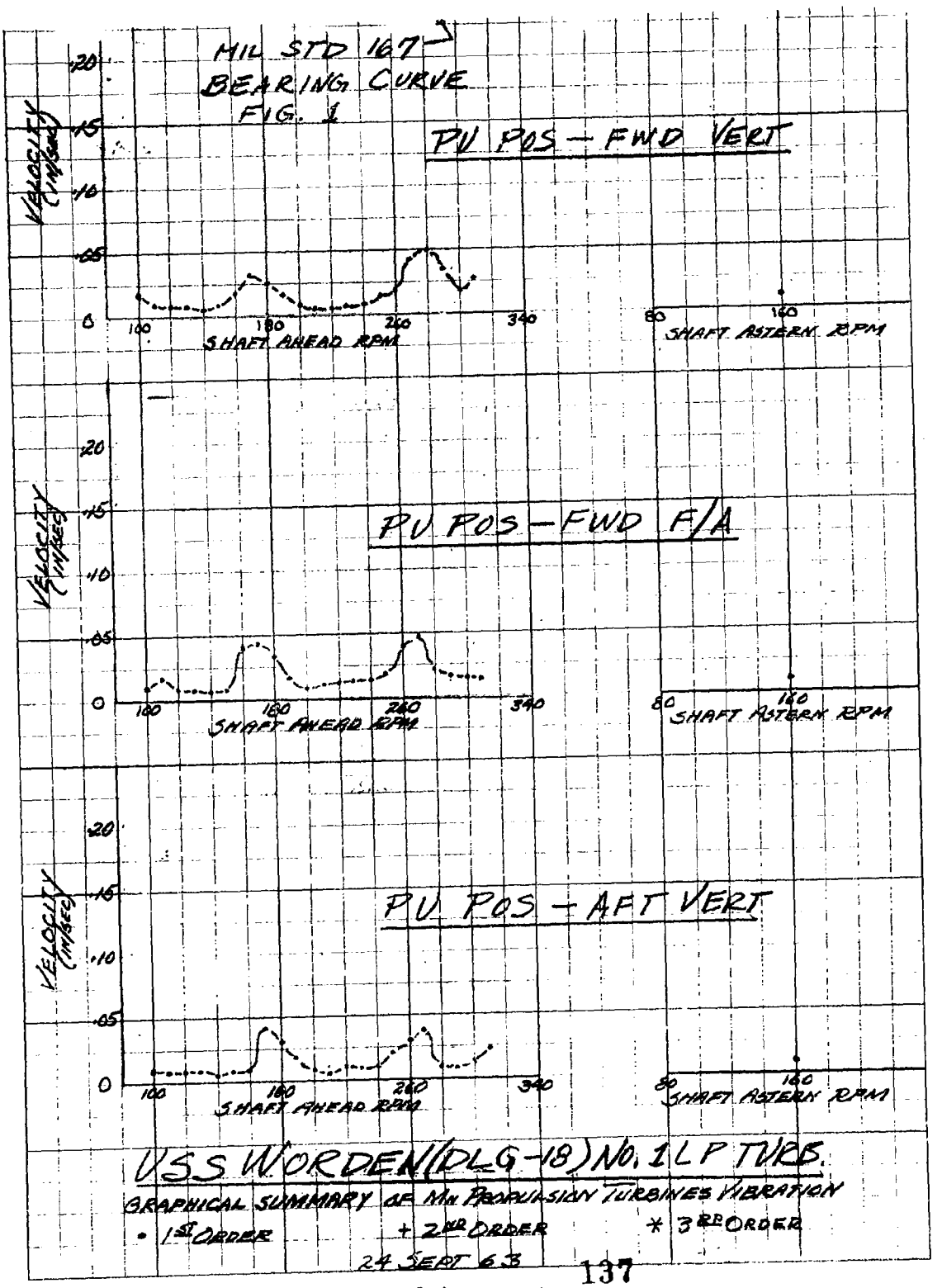
USS WORDEN (DLG-18) NO. 1 HP TURB

GRAPHICAL SUMMARY OF MR. PROPULSION TURBINES VIBRATION

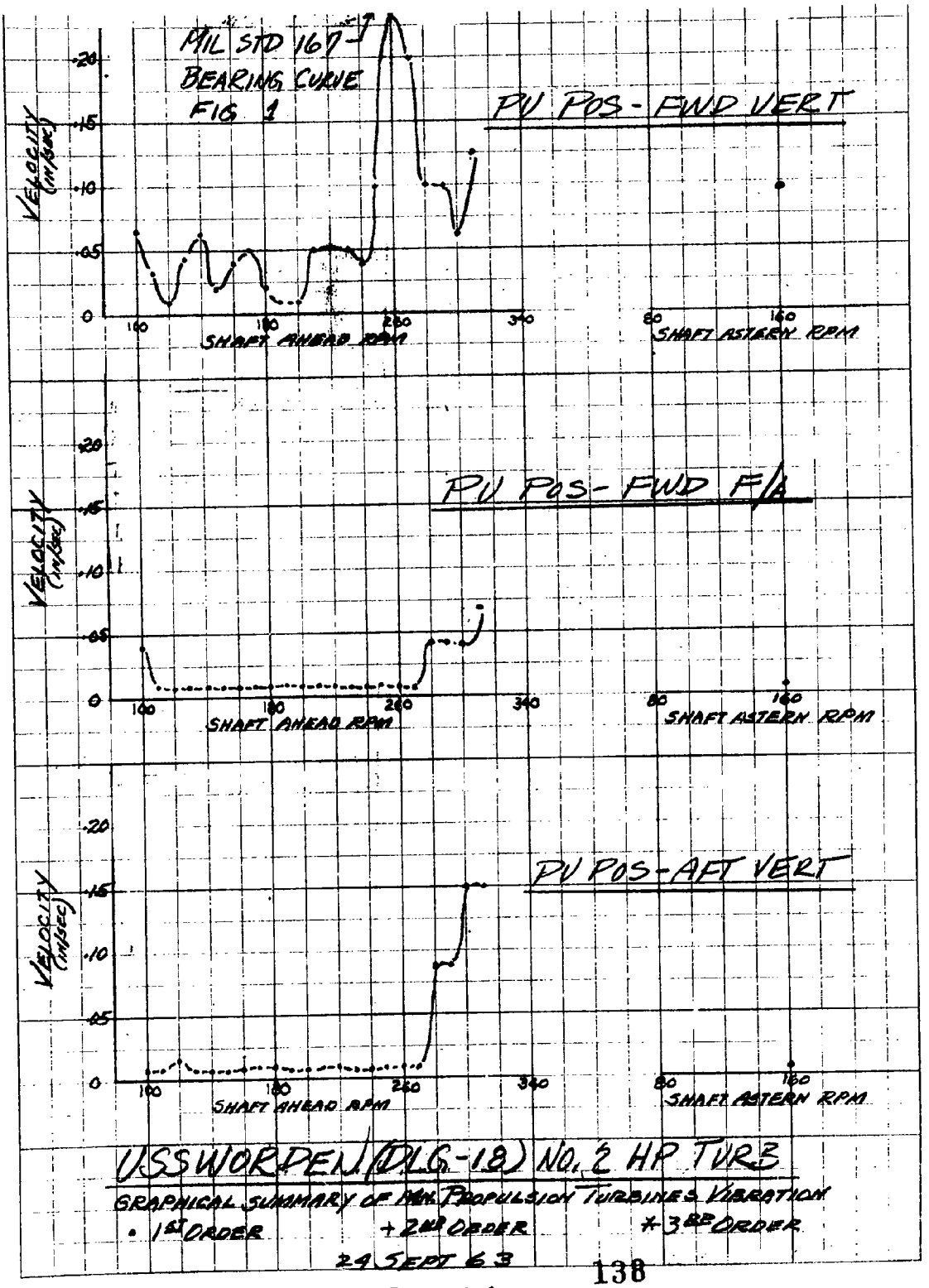
• 1ST ORDER + 2ND ORDER * 3RD ORDER

24 SEPT 63

SHT 1 OF 4



SHT 2 OF 4



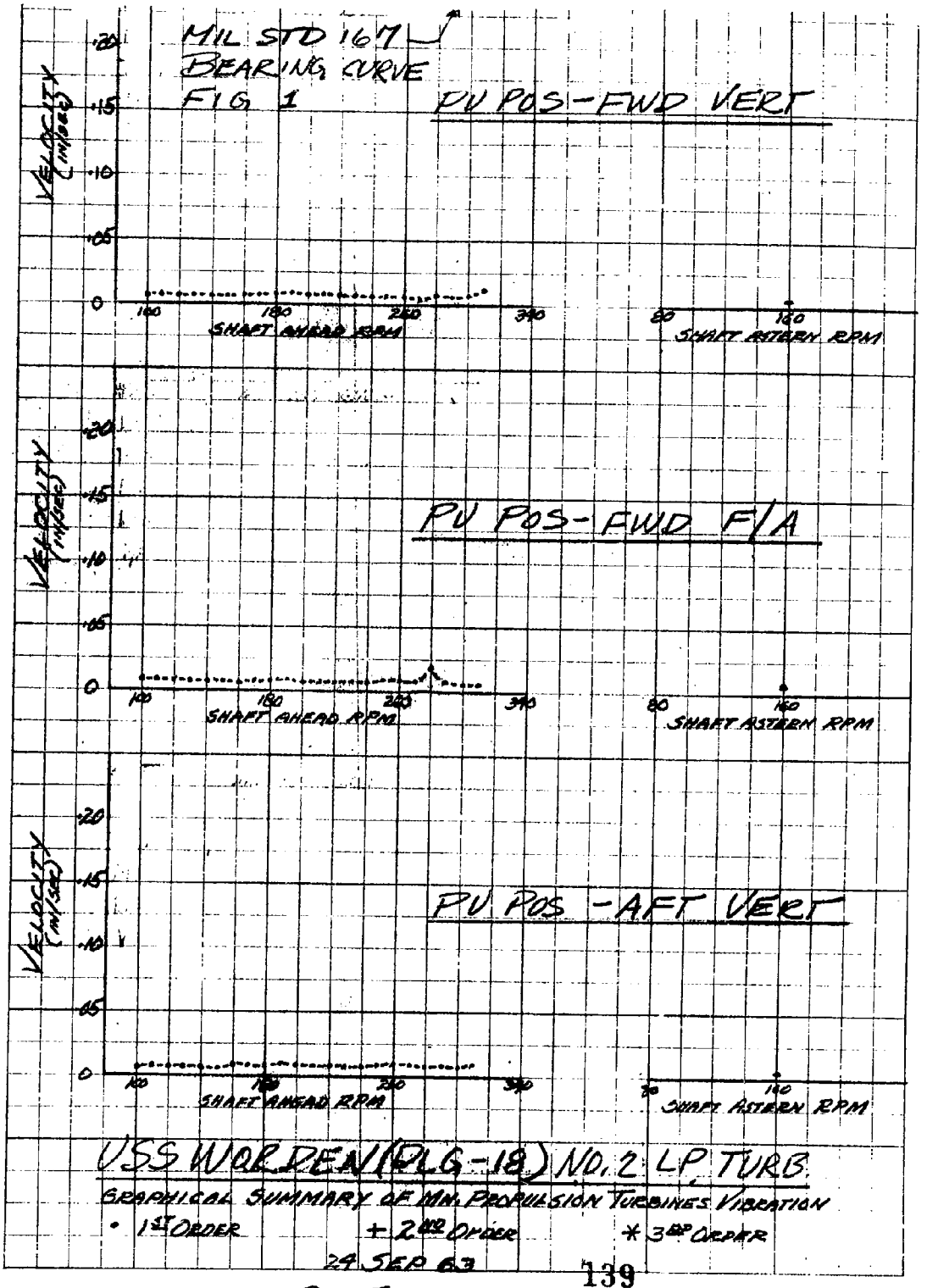
USS WORDEN (DLG-18) NO. 2 HP TURB

GRAPHICAL SUMMARY OF MAIN PROPULSION TURBINES VIBRATION

• 1ST ORDER + 2ND ORDER * 3RD ORDER

24 SEPT 63

SHT 3 OF 4



SHT 4 OF 4

265
AGB3

JAN 22 196

MEMORANDUM

From: Code 265
To: Codes 213 225

Subj: USS ATKA (AGB3); Main Mast Natural Frequency Investigation, report of

Ref: (a) Design Services Request No. 337-30
(b) Code 265 Memo AGB3 of 21 Nov 1962

1. A natural frequency survey was conducted on ATKA main mast at pierside during the week of 17 December 1962. This survey was performed, in accordance with reference (a), to investigate and recommend corrective action for the excessive vibration reported in reference (b).

2. The following natural frequencies were excited by means of a mechanical shaker mounted on the mast and shaking within the frequency range of 10 to 800 CPM:

Position	Dir.	Mode	Freq. (C.P.M.)
Center of Main Mast	P/S	2nd Lat	414
" " " "	F/A	2nd Lat	420
Top " Top Mast	P/S	1st Lat	*252
" " " "	F/A	1st Lat	*260
Aft End of Platform	P/S	1st Tor	720

The above asterisked frequencies, measured on the top mast, are within the blade excitation range and nearly in resonance with the 270 CPM critical of the ship. The frequencies measured on the main mast were found to be satisfactory. The 1st lateral mode of the main mast at approximately 57 CPM was not excited because of the low force output of the shaker at this frequency.

3. The following corrective action is recommended from a vibration viewpoint to limit the vibration amplitude of the top mast:

a. Stiffen the top mast by the addition of stays in the P/S and F/A directions fixed on the fwd end of the top platform and on spreaders extending from the port and starboard sides; and aft end of the top platform, in accordance with details to be furnished by Code 254 by 25 January 1963.

MEMORANDUM

b. Conduct a post repair vibration survey to evaluate the corrective action.

4. This confirms verifax copy delivered to Planning and Estimating on 14 January 1963.

E. S. MOBERG

Copy to:
Ship Supt. USS ATK[illegible] (AGB3)
Codes 231
254
251
260
260S
265(2)

Prepared by: R. C. Charette/ R. J. Lanza
Typed by: G. Kasabian 1-16-63

141

265
AGB3

FEB 5 1963

MEMORANDUM

From: Code 265
To: Codes 213 225

Subj: USS ATKA (AGB3); Post Repair Main Mast Natural Frequency Investigation, report of

Ref: (a) Design Services Request No. 337-20
(b) Code 265 Memo AGB3 of 22 Jan 1963

1. A post repair natural frequency investigation of the topmast of the main mast was conducted at pierside on 19 February 1963. This survey was performed in accordance with reference (a) to evaluate the corrective action of reference (b).

2. The following natural frequencies were excited by means of the bump test method:

Position	Dir.	Mode	Freq. CPM
Top of Top Mast	F/S	1st Lat.	450
" " " "	F/A	" "	462

The above frequencies are satisfactory.

3. No further corrective action is recommended from a vibration viewpoint.

4. This confirms verifax copy delivered to Planning and Estimating on 20 February 1963.

E. S. MOBERG

Copy to:
Ship Supt. USS ATKA (AGB3)
Codes 231
254
251
260
2603
265(2)

Prepared by: R. J. Lanza/ D. Cummings
Typed by: G. Kasabian 2-21-63

142

265
DD840

MAY 17 1963

MEMORANDUM

From: Code 265
To: Codes 212 ✓ 225

Subj: USS GLENNON (DD840); Main Mast Vibration Analysis, report of

Ref: (a) Design Memo (265) DD840 (XEROX copy dated 6 May 1963)

1. A detailed analysis of the excessive main mast vibration recorded during the sea trial of GLENNON on 4 May 1963 and reported in reference (a) has been completed.

2. The maximum single amplitudes of vibration measured on the mast through a speed range of 160-330 shaft R.P.M. are as follows:

Position	Dir.	Shaft RPM	Displ. (S.A. Mils)	Freq. (CPM)	Source	Phase (Re: Hull Vib.)
Top of Top Mast	P/S	225	*198	225	N.F.-1	Out
Base of Top Mast	P/S	225	*198	225	"	"
Middle of Aft Braces of AN/SPS-10 Platf.	P/S	225	*128	225	"	"
Aft End of AN/SPS-40 Platf.	P/S	225	59	225	"	"
Fwd. End of AN/SPS-40 Platf.	P/S	220	*150	220	N.F.-2	In
Lowest Horizontal of Aft Tripod Legs	P/S	225	8.6	225	N.F.-1	In

N.F.-1 = Natural frequency of upper platform as presently mounted on the Tripod mast.

N.F.-2 = Natural frequency of torsional mode of tripod.

The above asterisked single amplitudes of vibration are excessive.

3. It is recommended that any action on the main mast vibration be deferred until it can be re-measured at sea upon completion of the present shafting repairs for the following reasons:

a. The recorded hull vibration of GLENNON during the sea trial of 4 May 1963 was excessive (reference (a)).

MEMORANDUM

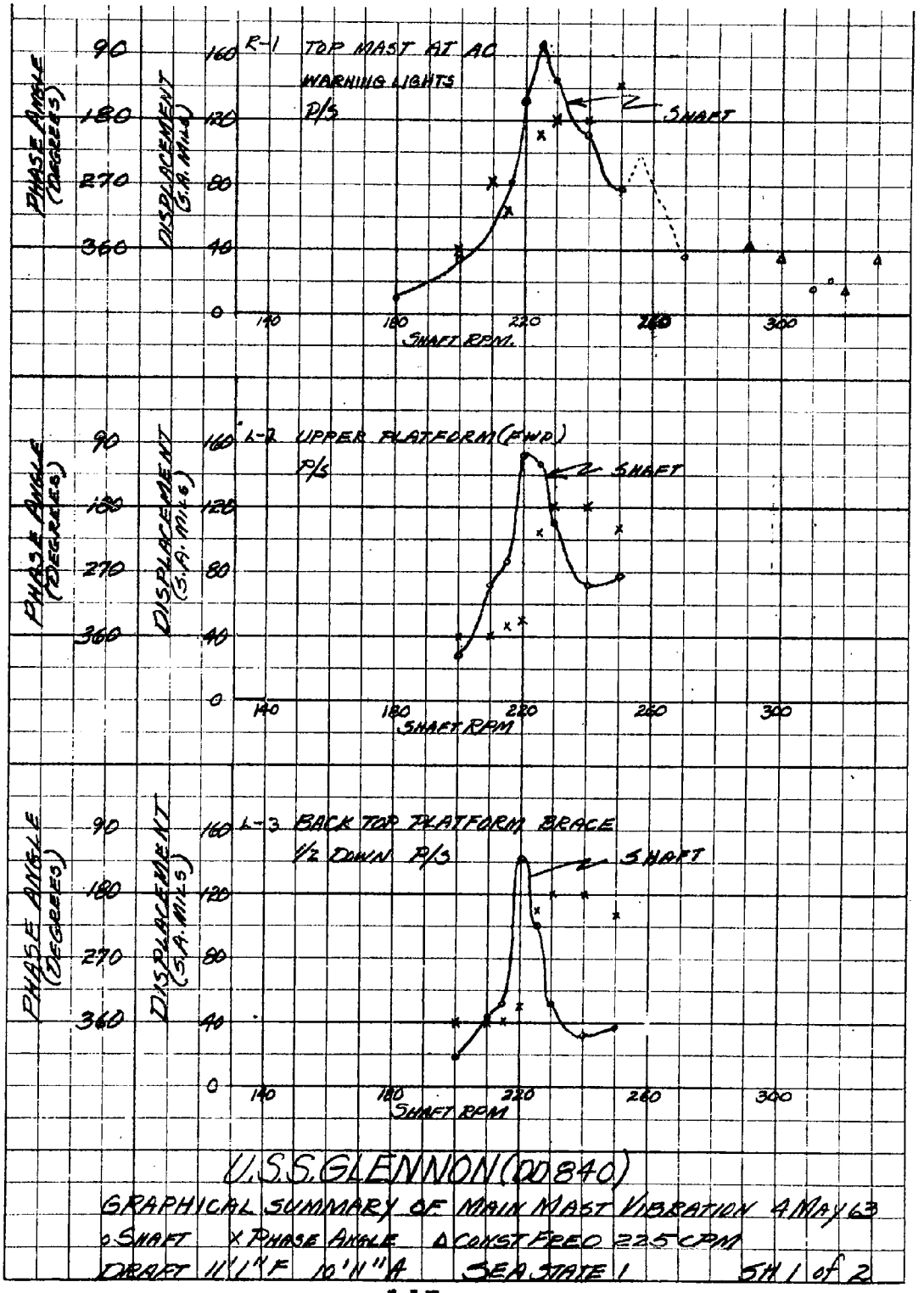
b. Another ship of the class (USS SARSFIELD)(DD837)) which has an identical mast configuration but low hull vibration, reported satisfactory mast vibration after its last sea trial.

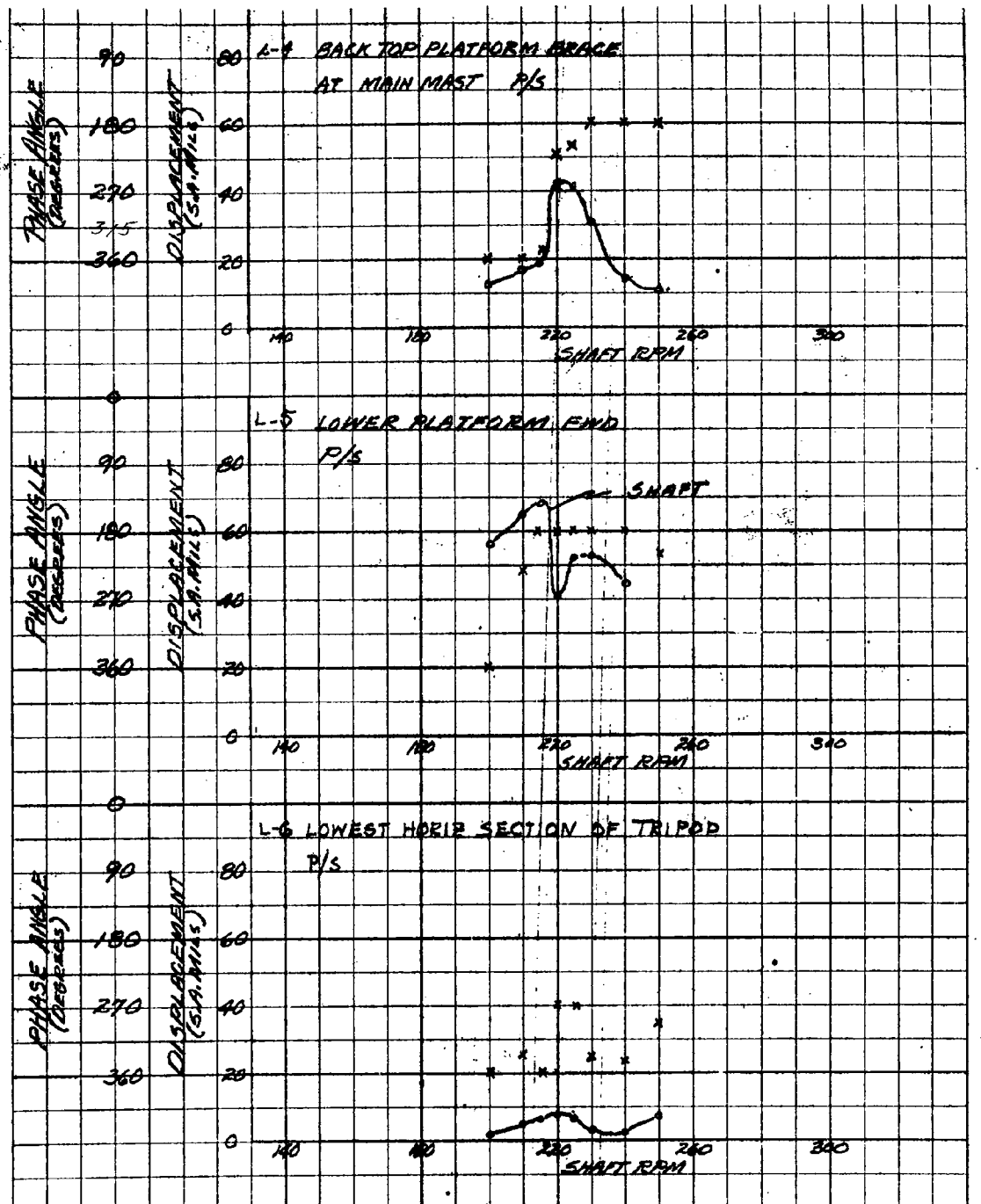
c. To raise the natural frequency of the upper platform above the athwartship hull critical of 255 CPM would require extensive stiffening which does not seem warranted at this time.

4. This confirms XEROX copy delivered to Planning and Estimating on 10 May 1963.

E. S. MOBERG

Copy to:
Ship Supt. USS GLENNON (DD840)
Codes 232
231
251
254
260
260S
265(2)


R-1 TOP MAST AT AC
WARNING LIGHTS
P/S
SHAFT
PHASE ANGLE (DEGREES)
DISPLACEMENT (S.A. MILS)
SHAFT RPM
L-2 UPPER PLATFORM (FWD)
P/S
SHAFT
L-3 BACK TOP PLATFORM BRACE
1/2 DOWN P/S
SHAFT
U.S.S. GLENNON (DD 840)
GRAPHICAL SUMMARY OF MAIN MAST VIBRATION 4 MAY 63
o SHAFT X PHASE ANGLE Δ CONST FREQ 225 CPM
DRAFT 11'1"F 10'1"A SEA STATE 1
SH 1 of 2


L-4 BACK TOP PLATFORM BRACE AT MAIN MAST P/S
PHASE ANGLE (DEGREES)
DISPLACEMENT (S.A. MILS)
90
180
270
360
80
60
40
20
0
140
180
220
260
300
SHAFT RPM
L-5 LOWER PLATFORM END P/S
SHAFT
L-6 LOWEST HORIZ SECTION OF TRIPOD P/S
U.S.S. GLENNON (DD 840)
GRAPHICAL SUMMARY OF MAIN MAST VIBRATION OF 4 MAY 63
o SHAFT X PHASE ANGLE Δ CONST 255 CPM
DRAFT N'LY F 10'11"A SEA STATE 1 SHT 2 OF 2

265
DD862

JAN 10 1963

MEMORANDUM

From: Code 265
To: Codes 212 225

Subj: USS VOGELGESANG (DD862); Vibration Surveys on Stub Mast for AS-1018-SRC Antenna and P/S Signal Projects, report of

Ref: (a) USS VOGELGESANG (DD862); Builder's Trial Report of 15 Dec 1962, Items 220C and 219C

1. Vibration surveys were conducted on the subject units of VOGELGESANG on 18 December 1962 as requested by reference (a).

2. The results of the surveys are as follows:

a. Stub Mast for AS-1018-SRC Antenna

The stub mast and its antenna has a natural frequency of 348 C.P.M. with a low damping factor in the P/S direction and a natural frequency of 468 CPM in the F/A direction. The P/S frequency is within the range of shaft excitation.

b. P/S Signal Projects (Blinker Signal Lights)

The foundations of these units are very soft in a P/S direction and are excited by wind or wave action on the ship.

3. In view of the above it is reccommended that:

a. For Stub Mast and AS-1018-SRC Antenna - Weld a 3" X 1/4" flat bar of mild steel 14' long to each side of Stub Mast. These flat bars to be placed to give strength in the P/S direction and to run from the 01 level to the top of Stub Mast on both sides.

b. For Signal Projects - Provide additional P/S stiffness by installing a 1" flat bar bracket between the unit foundation and the top of the adjacent vertical stanchion.

4. This confirms verifax copy delivered to Planning and Estimating on 19 December 1962.

1/10
1/9

E. S. MOBERG

Copy to:
Ship Supt. USS VOGELGESANG (DD862)
Codes 231 254 244
260 2603 265(2) ✓

147

Prepared by: M. V. Butler Typed by: G. Kasabian 1-8-63

265
AD23

JUN 13 1963

MEMORANDUM

From: Code 265
To: Codes 212 / 225

Subj: USS ARCADIA (AD23); Vibration Survey on Ships 5KW 400 Cycle Motor Generator Set, report of

Ref: (a) Job Order No. 25408-0318 of 9 May 1963

1. A vibration survey was conducted on subject unit of ARCADIA pierside at Newport, Rhode Island on 4 June 1963 in compliance with reference (a).

2. The maximum single amplitudes of first order vibration measured on the subject unit while operating at one-third load and motor speed of 3530 R.P.M. are as follows:

Position	Dir.	Displacement (S.A. Mils)	Freq.(CPM)
Motor End	V	.43	1X Motor
" "	P/S	.31	"
" "	F/A	.27	"
Gen. End	V	.19	1X Gen.
" "	P/S	.155	"
" "	F/A	.23	"

These single amplitudes of vibration are satisfactory.

3. Final alignment was accomplished with the aid of the vibration team. No further action is necessary from a vibration standpoint.

4. This confirms XEROX copy delivered to Planning and Estimating on 7 June 1963.

E. S. MOBERG

Copy to:
Codes 233
265
260
260S

265
DD934

APR 26 1963

MEMORANDUM

From: Code 265
To: Codes 212 225

Subj: USS BLANDY (DD934); Vibration Survey on No. 1 and No. 2 25KW I.C. and F.C. Motor Generator Sets, report of

1. A vibration survey of the Number 2 I.C. and F.C. motor generator set was conducted at pierside on 17 April 1963. The Number 1 unit was not operable due to electrical difficulties at that time.

2. Vibration was measured on the Number 2 unit at 20% load.

a. Following is a list of the maximum amplitudes of vibration:

Position	Dir.	Displacement S.A. Mils	Freq.	Source
Motor - Motor End	P/S	.31	1780	1X Motor
Clutch - " "	P/S	.23	1780	"
Clutch - Gen. End	P/S	.48	1714	1X Gen.
Gen. - Gen. Ed	P/S	.32	1714	"

These single amplitudes of first order vibration are satisfactory.

3. No further action is deemed necessary from a vibration standpoint on the Number 2 unit. Upon completion of repairs to the Number 1 unit notify Design, Code 265 so that a vibration survey can be conducted.

4. This confirms XEROX delivered to Planning and Estimating on 22 April 1963.

E. S. MOBERG

4/26 69
4/25 6A

Copy to:
Ship Supt. USS BLANDY (DD934)
Codes 233
265(2) ✓
260
2608

Prepared by: R. J. Lanza
Typed by: G. Kasabian 4-23-63

265
CAG1

MAY 29 1963

MEMORANDUM

From: Code 265
To: Codes 225 / 211

Subj: USS BOSTON (CAG1); Vibration Survey on No. 2 400 Cycle Motor Generator Set, report of

Ref: (a) Job Order No. 16308-0201

1. Vibration surveys were conducted on the Number 2 400 cycle M/G set of Boston in Shop 51 on 1 May 1963 and on ship on 14 May 1963 in compliance with reference (a).

2. The maximum single amplitudes of vibration measured in shop and on ship under no load conditions are listed below:

Position	Direction	Displacement(S.A. Mils) Shop 51	Ship	Freq. (CPM)	Source
Motor	Vert	.80	.31	1770	1X Motor
"	P/S	.40	.27	1770	1X Motor
Clutch	Vert	.70	.55	1770	1X Motor
"	P/S	.72	.63	1770	1X Motor
Generator	Vert	.78	.55	1715	1X Gen.
"	P/S	.72	.43	1715	1X Gen.

These single amplitudes of vibration are satisfactory.

3. No further action is necessary from a vibration standpoint.

4. This confirms XEROX copy delivered to Planning and Estimating on 21 May 1963.

E. S. MOBERG

Copy to:
Ship Supt. USS BOSTON (CAG1)
Codes 233
265
260
260S

265
DE1021

JAN 23 1963

MEMORANDUM

From: Code 265
To: Codes 225 212

Subj: USS COURTNEY (DE1021); Vibration Survey No. 2 5KW 400 Cycle Motor-Generator Set, report of

Ref: (a) Job Order No. 16271-0201

1. Post-repair vibration surveys were conducted on the Number 2 400 cycle Motor-generator set of COURTNEY in Shop 51 and on the Ship on 15 January 1963 as requested by reference (a).

2. The maximum single amplitudes of vibration under load conditions are listed below:

Position	Dir.	Displacement (S.A. Mils) Shop 51	In Ship	Freq. (CPM)	Source
Motor End	Vert	.22	.30	3575	1X Motor
" "	P/S	.12	.27	"	"
" "	F/A	.16	.19	"	"
Motor-Clutch End	V	.12	.19	"	"
" " "	P/S	.12	.19	"	"
Gen.-Clutch End	V	.36	.20	3428	1X Gen.
" " "	P/S	.20	.28	"	"
Gen.-Gen. End	V	.39	.24	"	"
" " "	P/S	.28	.32	"	"
" " "	F/A	.20	.16	"	"

These single amplitudes of vibration are satisfactory. No appreciable vibration at any other frequency was observed.

3. No further action is necessary from a vibration standpoint.

4. This confirms verifax copy delivered to Planning and Estimating on 16 January 1963.

E. S. NOBRO

Copy to: Ship Supt. USS COURTNEY (DE1021)
Codes 265(2)
260
260S

Prepared by: R. V. Butler
Typed by: G. Kasabian 1-22-63

151

265
DD931

AUG 15 1963

MEMORANDUM

From: Code 265
To: Codes 212 ✓ 225

Subj: USS FORREST SHERMAN (DD931); Vibration Survey on No. 1 and No. 2, 25 KW 400 Cycle Motor Generator Set, report of

Ref: (a) Job Order 16822/6102, 16822/6103
(b) Sketch DD931 - 113/S1112 - 2131604 Foundation Modifications 400 Cycle MG Set No. 1

1. A vibration survey was conducted on subject units of FORREST SHERMAN at pierside on 7 August 1963 in compliance with reference (a).

2. The maximum single amplitudes of first order vibration measured on the subject unit and foundation while operating at motor speed of 1750 R.P.M. are as follows:

Position	Dir.	Displacement(S.A. Mils) No. 1 M.G.	No. 2 M.G.	Freq. (CPM)
Aft Gen. Brg	Vert	.34	.23	1750
" " "	P/S	1.44	.26	"
Magnetic Clutch	Vert	.77	.36	"
" "	P/S	*1.85	.36	"
Fwd. Motor Brg.	Vert	.6	.23	"
" " "	P/S	1.3	.29	"
Foundation Fr. 103	P/S	.85	---	"
" Fr. 99	P/S	.85	---	"

The vibration of Number 2 MG set is satisfactory.

The single amplitude of first order vibration on Number 1 M.G. set marked with an asterisk (*) is excessive. However, the foundation of the Number 1 M.G. set is in resonance with the operating speed of the Number 1 M.G. set and is the major contributor to the excessive vibration measured on the Number 1 M.G. set.

3. In view of the above the following action is recommended:

a. No corrective action is recommended on the Number 1 and Number 2 units from a vibration standpoint.

MEMORANDUM

b. Stiffening be installed on foundation Number 1 as indicated on reference (b)(reference (b) to be issued by 22 August 1963).

c. Perform a post repair vibration survey.

4. This confirms XEROX copy delivered to Planning and Estimating on 13 August 1963.

E. S. MOBERG

Copy to:
Codes 232
260S
260
265
253

MEMORANDUM

OCT 9 1963

From: Code 265
To: Codes 212 and 225

Subj: USS GREENE (DD-711), Vibration Survey on No. 1 and No. 2 400 Cycle Motor Generator Sets; report of

Ref: (a) DSR 242-801-55 of 23 Apr 1963

1. Vibration surveys were conducted on the No. 1 and No. 2 400 Cycle Motor Generator Sets of GREENE during Builders Trials on 21 September 1963 in compliance with reference (a).

2. Vibration measurements were taken with the units operating under approximately 1 Amp load. The maximum single amplitudes of vibration are listed below:

Position	Direction	Displacement (S.A.Mils) No. 1	No. 2	Freq. (CPM)	Source
Motor End	V	.28	.19	1500	1X Operating Speed
" "	P/S	.28	.36	1500	1X Operating Speed
" "	F/A	.28	.28	1500	1X Operating Speed
Gen. End	V	.28	.28	1500	1X Operating Speed
" "	P/S	.36	.28	1500	1X Operating Speed
" "	F/A	.28	.28	1500	1X Operating Speed

These single amplitudes of vibration are satisfactory.

3. No further action is necessary from a vibration standpoint.

4. This confirms Xerox copy delivered to P & E on 30 September 1963.

E. S. MOBERG

Copy to:
240
260
260s
265a
233

APR 26 1963

MEMORANDUM

From: Code 263
To: Codes 211 225

Subj: USS LAKE CHAMPLAIN (CV539); No.'s 3, 4, 5, 6, 7 and 8 Jet Aircraft Starting Motor Generators Natural Frequency Investigation and Vibration Survey, report of

Ref: (a) Design Services Request No. 368-45

1. A natural frequency investigation and a vibration survey was conducted on the subject units at pierside on 18 April 1963. These surveys were conducted in accordance with reference (a) to determine the need of corrective action to the units and their foundations.

2. The results of these surveys are as follows:

a. The maximum single amplitudes of vibration measured under no load condition and normal operating speed are:

		Displacement (S.A. Mils) Unit No.							
Position	Dir.	No.3	No.4	No.5	No.6	No.7	No.8	Freq. (CPM)	Source
Motor Brg.	V	*1.35	*1.53	*1.35	*1.24	*1.53	*1.37	3600	LA Nat.
" "	F/S	*1.91	*2.12	*1.91	*2.08	*1.51	*1.33	"	"
" "	F/A	.56	* .68	* .64	* .76	* .83	* .95	"	"
Gen. Brg.	V	*1.60	*1.89	.57	*1.13	*1.70	*1.63	"	"
" "	F/S	* .95	*1.89	*2.03	*1.69	* .95	*1.69	"	"
" "	F/A	.49	* .95	.56	* .95	.45	.34	"	"
Ctr.of Found.	V	.38	.56	* .64	* .76	*1.06	* .87	"	"

The above asterisked amplitudes are excessive. No appreciable amplitudes at any other frequencies were recorded.

b. The natural frequencies of the units on their foundations, as excited by the bump test method, are as follows:

	Natural Frequency (C.P.M.) Unit No.'s					
Direction (Relative to Unit)	No.3	No.4	No.5	No.6	No.7	No.8
Vertical Translational	1350	2110	630	1110	900	640
" Rotational	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.
Athwartship Translational	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.
" Rocking	1360	1500	780	900	560	420
Axial Translational	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.
" Rocking	N.E.	N.E.	N.E.	N.E.	420	420

N.E. = Not Excited (indicitive of a frequency greater than 5000 CPM)

MEMORANDUM

All the above natural frequencies are sufficiently separated from the operating frequency of the units so that there is no appreciable amplification of the vibration (this is considered a satisfactory mounting). Units 7 and 8 are vibration isolated because of their proximity to the Admiral's cabin.

3. The following corrective action is recommended from a vibration viewpoint:

a. Overhaul Number 3, 4, 5, 6, 7, and 8 motor-generators as follows:

(1) Replace bearings and check bearing housings.

(2) Check for runout and bent shaft, correcting as required.

(3) Dynamically balance the motor-generator rotor.

(4) Conduct a post-repair vibration survey in the shop and on the ship.

b. Re-install existing 2 1/2" X 2 1/2" X 1/4" black rubber pads (S.S.N. C-5330-244-0194) under the Number 7 and 8 motor generators.

c. No corrective action is recommended for the motor-generator foundations.

4. This confirms XSROI copy delivered to Planning and Estimating on 22 April 1963.

E. B. MOBERG

Copy to:
Ship Supt. USS LAKE CHAMPLAIN (CV39)
Codes 233
231
260
2603
265(2)

Prepared by: G. Ogle
Typed by: G. Kasabian 4-23-63

265
DLG16

MAY 3 1963

MEMORANDUM

From: Code 265
To: Codes 212 √ 225

Subj: USS LEAHY (DLG16); No. 2 I.C. and F.C. 400 Cycle Motor-Generator Post-Repair Vibration Survey, report of

Ref: (a) Design Services Request No. 572-77

1. Vibration surveys were conducted on the Number 2 I.C. and F.C. 400 Cycle M.G. set of LEAHY in Shop 51 on 12 April 1963 and on ship on 22 April 1963 as requested by reference (a).

2. The maximum single amplitudes of first order vibration measured under load conditions in Shop 51 and no load on ship are listed below. Final shipboard alignment was accomplished with the assistance of Design personnel:

Position	Dir.	Displacement(S.A. Mils) Shop 51	On Ship	Freq. C.P.M.	Source
Motor End	V	.68	.23	3000	1X Motor
" "	P/S	.55	.18	3000	1X "
Gen. End	V	.36	.18	3000	1X Gen.
" "	P/S	.41	.14	3000	1X Gen.

These amplitudes of first order vibration are satisfactory. No further appreciable amplitudes at any other frequency were observed.

3. No further action is necessary from a vibration standpoint.

4. This confirms XEROX copy delivered to Planning and Estimating on 30 April 1963.

E. S. MOBERG

Copy to:
Codes 233
265(2)
260
260S

265
DL2

APR 5 1963

MEMORANDUM

From: Code 265
To: Codes 225 212

Subj: USS MITSCHER (DL2); Post-Repair Vibration Survey on No. 2 Motor-Generator (25 KW), report of

Ref: (a) Job Order No. 16333/0201 of 18 Mar 1963

1. Post-repair vibration surveys were conducted on the Number 2 25 KW M/G set of MITSCHER in Shop 51 and on ship in compliance with reference (a).

2. The maximum single amplitudes of vibration measured under full load conditions are as follows:

Position	Dir.	Displacement (S.A. Mils) Shop 51	Ship	Freq. (CPM)	Source
Motor	V	.50	.48	1750	1X Motor
"	P/S	.60	.60	1750	"
"	F/A	.40	.32	1750	"
Clutch	V	.48	.64	1750	"
"	P/S	.72	.56	1750	"
"	F/A	.64	.64	1750	"
Generator	V	.86	.48	1714	1X Generator
"	P/S	.52	.44	1714	"
"	F/A	.40	.48	1714	"

These single amplitudes of vibration are satisfactory.

3. No further action is necessary from a vibration standpoint.

4. This confirms XEROX copy delivered to Planning and Estimating on 22 April 1963.

4/25

E. S. MOBERG

Copy to:
Ship Supt. USS MITSCHER (DL2)
Codes 265(2) 260S
260 233

Prepared by: R. V. Butler
Typed by: G. Kasabian 4-23-63

158

265
DDG18

NOV 5 1963

MEMORANDUM

From: Code 265
To: Codes 212/225

Subj: USS SEMMES (DDG-18); Vibration survey on No. 1, No. 2 and No. 3 400 cycle Motor Generator sets, report of

Ref: (a) J.O. 26402/0301 of 7 Oct 63

1. A vibration survey was conducted on the subject M.G. sets on SEMMES at pierside on 12 October 1963 in compliance with reference (a).

2. The maximum single amplitudes of vibration measured under 20 amp load on SEMMES are listed below:

		DISPLACEMENT (SA Mils)				
POSITION	DIR	NO.1 MG	NO.2 MG	NO.3 MG	FREQ. (CPM)	SOURCE
Motor Brg.	P/S	.27	.23	.32	3000	1X Motor
Motor Brg.	V	.23	.27	.36	3000	1X Motor
Motor Brg.	F/A	.18	.27	.18	3000	1X Motor
Gen. Brg.	P/S	.09	.14	.36	3000	1X Gen.
Gen. Brg.	V	.18	.14	.36	3000	1X Gen.
Gen. Brg.	F/A	.09	.09	.18	3000	1X Gen.

These single amplitudes of vibration are satisfactory. Final alignment was accomplished with the assistance of Design Personnel.

3. No further action is necessary from a vibration standpoint.

4. This confirms Xerox delivered to Planning and Estimating on 15 October 1963.

E. S. MOBERG

Copy to:
Codes 240
233
260
265
260S

265
DD697

MAY 14 1963

MEMORANDUM

From: Code 265
To: Code 225

Subj: USS SPERRY (DD697); Vibration Survey on No. 2 H.V. M.G. Set, report of

Ref: (a) Design Services Request No. 370-19 of 3 May 1963
(b) BUSHIPS Ltr 9670/13 Ser 689C-116 of 2 Mar 1963(encl.(1))

1. A vibration survey was conducted on the Number 2 H.V.M.G. set of SPERRY at pierside on 3 May 1963 in compliance with reference (a).

2. The maximum single amplitudes of vibration recorded on the subject unit at normal operating speed are as follows:

Position	Dir.	Displacement (S.A. Mils)	Frequency (CPM)	Source
Top of Unit	P/S	.80	3500	1X Rotor Speed
" " "	F/A	1.20	"	"
" " "	Vert.	.59	"	"
Bottom of Unit	P/S	.64	"	"
" "	F/A	.59	"	"
" "	Vert.	.75	"	"

All of the above single amplitudes of vibration are excessive. In addition a random type vibration was observed which is usually indicative of bad ball bearings.

3. It is recommended that the unit be removed to the shop and the following accomplished:

a. Check balance of rotor.

b. Install new bearings, Refer to Shipalt DD764-2055 and enclosure (1) of reference (b).

c. Perform vibration survey in shop after unit is reassembled.

d. Perform vibration survey in ship after installation.

4. This confirms XEROX copy delivered to Planning and Estimating on 7 May 1963.

E.S. Moberg

E.S. MOBERG

Copy to: Ship Supt. USS SPERRY (DD697)
Codes 233 265(2) 260 260S

160

265
DD697

MAY 16 1963

MEMORANDUM

From: Code 265
To: Codes 212 / 225

Subj: USS SPERRY (DD697); Vibration Survey of No. 2 Sonar High Voltage Motor Generator Set, report of

Ref: (a) Design Services Request No. 370-19

1. Vibration surveys were conducted on the Number 2 Sonar High Voltage M.G. set of SPERRY in Shop 51 on 6 May 1963 and on board ship on 7 May 1963 in compliance with reference (a).

2. The maximum single amplitudes of first order vibration with the unit operating under load conditions in Shop 51 and on board ship are listed below:

		Displacement(S.A.Mils)		Freq.	
Position	Dir.	In X51	Ship	(CPM)	Source
Top	P/S	.15	.38	3500	1X Unit
	F/A	.1	.4	"	"
Bottom	V	.1	.15	"	"
	P/S	.13	.15	"	"

These single amplitudes of first order vibration are satisfactory. No appreciable amplitudes were observed at any other frequency.

3. No further action is necessary from a vibration standpoint.

4. This is to confirm XEROX copy delivered to Planning and Estimating on 8 May 1963.

E. S. MOBERG

Copy to:
Ship Supt. USS SPERRY (DD697)
Codes 212
225a
265(2)
260
260S

265a
DD875

NOV 5 1963

MEMORANDUM

From: Code 265
To: Codes 212 - 225

Subj: USS TUCKER (DD875) Nos. 1,2 and 3 400 Cycle Motor Generator Sets Vibration Survey; report of

Ref: (a) DSR No. 801-28

1. A vibration survey was conducted on the subject units in Shop 51 and after installation in Tucker while pierside on 14 Oct 1963, in accordance with reference (a).

2. The maximum vibration amplitudes measured on the units under full load in X51 and normal operating load aboard ship, are as follows:

		Displacement (S.A.M./S) Unit No. 1		No. 2		No. 3		Freq.	
Position	Dir	X51	Ship	X51	Ship	X51	Ship	(C.P.M.)	Source
Gen. Brg.	P/S	.45	.15	.46	.34	.46	.19	3600	1 X Motor Gen
Gen Brg	F/A	.45	.34	.46	.34	.53	.26	3600	1 X Motor Gen
Motor Brg	V	.19	.19	.34	.34	.23	.15	3600	1 X Motor Gen
Motor Brg	P/S	.11	.15	.15	.15	.30	.15	3600	1 X Motor Gen

The above vibration amplitudes are satisfactory. No appreciable vibration at any other frequency was detected.

3. No corrective action is recommended from a vibration viewpoint.

4. This confirms XEROX copy delivered to P&E on 18 Oct 1963.

E. S. MOBERG

Copy to:
Codes 240
260
233
260S
265 (2)

Prepared by: G. Ogle
Typed by: J. Orfanides 11-1-63

265
CVS18

MEMORANDUM

From: Code 265
To: Codes 212 225

Subj: USS WASP (CVS18); Vibration Survey on No. 2 400 Cycle Motor Generator Set, report of

Ref: Job Order No. 25139/6104

1. A post repair vibration survey was conducted on Number 2 400 cycle M/G set on WASP at South Boston on 28 February 1963 in compliance with reference (a).

2. The single amplitudes of first order vibration measured on the subject unit while operating at 3530 RPM are as follows:

Position	Direction	Displacement (S.A. Mils)	Frequency (C.P.M.)
Motor End Brg.	Vert.	.78	3530
" " "	P/S	.72	"
" " "	F/A	.31	"
Generator End Brg.	Vert.	.56	"
" " "	P/S	.49	"
" " "	F/A	.27	"

The above amplitudes of first order vibration are satisfactory. No appreciable amplitudes at any other frequency were observed.

3. No further action is necessary from a vibration standpoint.

4. This confirms verifax copy delivered to Planning and Estimating on 6 March 1963.

E. S. MOBERG

Copy to:
Codes 233
265(2)
260
2603

Prepared by: P. DiCarlo
Typed by: G. Kasabian 3-8-63

163

265
DE1027

JAN 14 1963

MEMORANDUM

From: Code 265
To: Codes 225 212

Subj: USS J. WILLIS (DE1027); Post-Repair Vibration Survey on No. 1 & No. 2 400 Cycle Motor-Generator Sets, report of

Ref: (a) Job Order 16272-0201

1. Post-repair vibration surveys were conducted on Number 1 and Number 2 400 cycle Motor-Generator sets of J. WILLIS at pierside after installation as requested by reference (a).

2. The maximum single amplitudes of vibration under load conditions after final alignment are as follows:

Position	Direction	Displacement (S.A. Mils) No. 1 Unit	No. 2 Unit	Freq. (CPM)	Source
Motor-Motor End	Vert	.08	.08	3530	1X Motor
" " "	P/S	.08	.08	"	"
Motor-Clutch End	Vert	.12	.08	"	"
" " "	P/S	.12	.06	"	"
Gen. Clutch End	Vert	.10	.12	3428	1X Gen.
" " "	P/S	.18	.16	"	"
Gen.-Gen. End	V	.16	.12	"	"
" " "	P/S	.12	.12	"	"
" " "	F/A	.16	.20	"	"

The above single amplitudes of vibration are satisfactory, no appreciable amplitudes were found at any other frequency.

3. No further action is required from a vibration standpoint.

4. This confirms verifax copy delivered to Planning and Estimating on 7 January 1963.

E. S. MOBERG

Copy to:
Ship Supt. USS J. WILLIS (DE1027)
Codes 265(2)
260
260S
233

Prepared by: R. V. Butler Typed by: G. Kasabian 1-11-63

265
W698

JAN 11 19[illegible]

MEMORANDUM

From: Code 265
To: Codes 225 213

Subj: USS AULT (DD698); Excessive Vibration of Foundation for [illegible] Equipment in C.I.C.

Ref: (a) Trial Board Item No. 300
(b) Addendum Trial Board Item No. 334C

Encl: (1) Code 265 sketch, stiffening for SLR Foundation in C.I.C.

1. A natural frequency investigation was conducted on the subject unit at Bayside on AULT on 26 December 1962 in compliance with references (a) and (b).

2. The discrete frequency analysis of the data indicates that the subject unit and foundation have a natural frequency of 10.5 c.p.s. in the fore and aft direction. This frequency is in resonance with blade excitation at 162 R.P.M. The existing foundation system has a low damping factor of .02%. This condition causes it to be easily excited at resonant and near resonant frequencies.

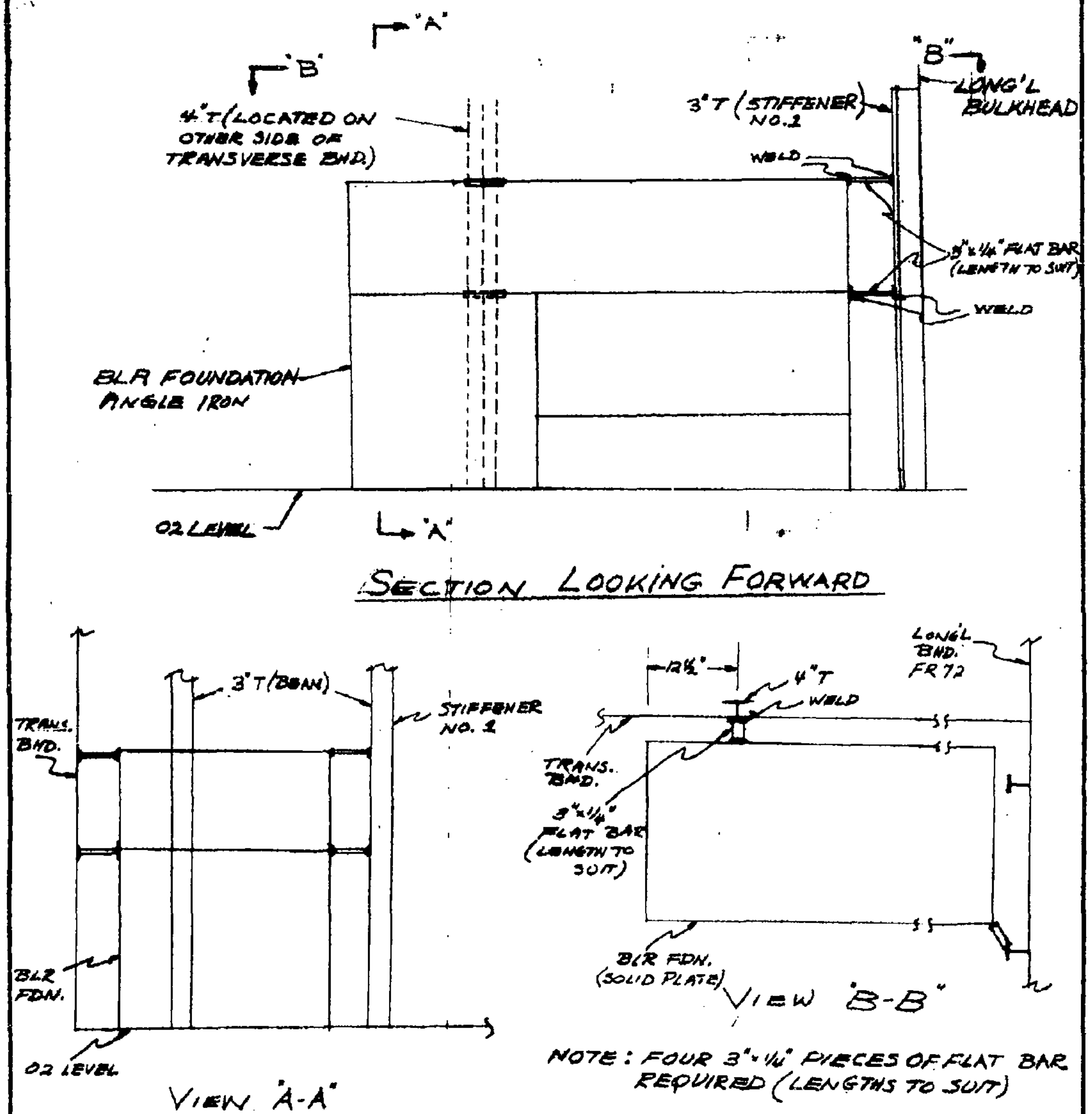
3. From the above, it is recommended that the subject unit be stiffened (braced) as shown on enclosure (1). This will raise the natural frequency above the blade excitation range and eliminate the vibration problem.

4. This confirms verifax copy delivered to Planning and Estimating on 31 December 1962.

[illegible]

Copy to:
Ship supt. USS AULT (DD698)
Codes 244
260
260.
265(2)(w/1 copy encl (1))

Prepared by: P. DiCarlo
Typed by: G. Kasabian 1-10-63



NOTE: FOUR 3" x 1/4" PIECES OF FLAT BAR REQUIRED (LENGTHS TO SUIT)

SHIPALT. TRIAL BOARD ITEM 30C SCALE: NONE DATE 28 Dec. 1962

J. O. NO. SHIP AULT (DD 698) BOSTON NAVAL SHIPYARD

PRINTS

DRAWN P. DiCARLO

SEC SUPV.

GR. SUPV.

APPROVED

DATE

CODE

STIFFENING FOR BLR FOUNDATION IN C.I.C.

SK-265 a

IND-BSNMS-1219 (New 2-58)

NAVY-DPPO IND. BOSTON, MASS.

Enclosure (1)

265
DL698

JAN 11 1963

USS RANDOLPH

From: Code 265
To: Codes 225 213

Subj: USS AULT (DD698); Excessive Vibration of Foundation for IFF Equipment in Radar Transmitter Rm., Frs. 72-80, 01 Level

Ref: (a) Trial Board Item No. 31C

Encl: (1) Code 265 Sketch. Stiffening for IFF Foundation in Radar Transmitter Room

1. A natural frequency investigation was conducted on the subject unit at pierside on AULT on 26 December 1962 in compliance with reference (a).

2. The discrete frequency analysis of the data indicates that the subject unit and foundation have a natural frequency of 16.9 c.p.s. in the fore and aft direction. This frequency is in resonance with blade excitation at 255 R.P.M.

3. From the above, it is recommended that the foundation for the subject unit be stiffened (braced) as shown on enclosure (1). This will raise the natural frequency above the blade excitation range and eliminate the vibration problem.

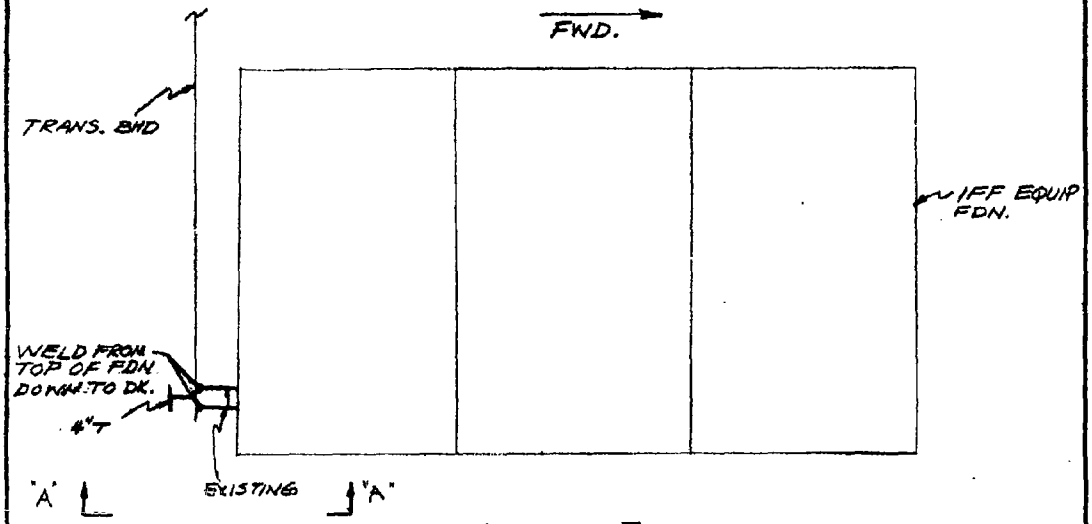
4. This confirms verifax copy delivered to Planning and Estimating on 31 December 1962.

S. H. HUBERG

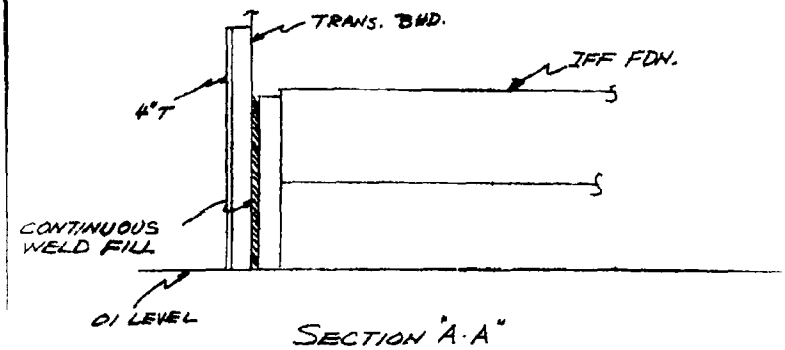
Copy to:
Ship Supt. USS AULT (DD698)
Codes 244
260
260.3
265(2)(w/1 copy encl (1))

Prepared by: P. DiCarlo
Typed by: G. Kasabian 1-10-63

167



PLAN VIEW OF FOUNDATION



SECTION "A-A"

SHIPALT. TRIAL BOARD ITEM 31C | SCALE: NONE | DATE 28 Dec. 1962

J. O. NO. | SHIP AULT (DD698) | BOSTON NAVAL SHIPYARD

PRINTS

DRAWN: P. DiCarlo

DES SUPV.

DR. SUPV. 265

APPROVED: 12/31 [illegible]

DATE

265 CODE

STIFFENING FOR IFF FOUNDATION IN RADAR TRANSMITTER ROOM.

SK-265a

ND-BSNNS-1219 (New 2-58)

ENCLOSURE(1)

NAVY-DPPO IND, BOSTON, MASS.

265
WPG-64

DEC 13 1963

MEMORANDUM

From: Code 265
To: Code 214

Subj: U.S.C.G.C. ESCANABA (WPG-64); SPA-52 Antenna natural frequency investigation and vibration survey, report of

Ref: (a) J.O. 77207-6703

1. A natural frequency investigation in conjunction with a vibration survey was conducted on the SPA-52 antenna of ESCANABA during the sea trial of 22 November 1963. This survey was conducted to determine the cause of the recent structural failures of the reflector in accordance with reference (a).

2. The results of the natural frequency investigation, conducted by the bump test method, on the reflector is as follows:

MODE OF VIBRATION	FREQ. (C.P.M)	NO OF NODES	DAMPING FACTOR (UNIT LESS)
1st Cantilever of reflector and pedestal about bottom of pedestal (Athwartship to face of reference)	143	1	.06
2nd Cantilever of reflector and pedestal about bottom of pedestal (Athwartship to face of reference)	570	2	.01
1st Cantilever of antenna about bottom of pedestal (perpendicular to face of reflector)	150	1	.01
2nd Cantilever	600	2	.01
Vert of platform supporting antenna	810	Unidentified	.01
Rotational of reflector supported on pedestal	372	1	.04

The above natural frequencies are considered satisfactory.

3. The maximum amplitudes of vibration resulting from the vibration survey conducted from 100 to 180 shaft rpm are as follows:

SHAFT RPM AHEAD	POSITION	DIR.	DISPLACEMENT (S.A.Mils)	FREQ. (CPM)	SOURCE
140	FR230 Mn Dk	V	0.8	720	Blade
120	FR230 Mn Dk	P/S	1.1	600	"
140	FR230 Mn Dk	P/S	1.2	700	"
160	Aft Platf. of tripod mast	P/S	32.0	750	N.F. MAST Blade Excited
160	Fwd " " " "	P/S	41.5	750	N.F. MAST Blade Excited
160	SPA-52 Pedestal	P/S	34.5	750	Mast Excited
160	SPA-52 Reflector	P/S	15.0	750	Mast Excited
110	" " "	P/S	33.5	560	N.F. of Antenna
160	" " "	V	35.5	750	N.F. of Platform

The above amplitudes of vibration are satisfactory.

4. The maximum vibration amplitudes measured during crash back and backing down at 1/3, 2/3 and full astern are as follows:

CONDITION	POSITION	DIR.	DISPLACEMENT (S.A.Mils)	FREQ. (C.P.M)	SOURCE
Full Back	FR 230 MnDk	V	5.5	650	Blade
" "	FR 230 MnDk	P/S	4.0	650	"
" "	SPA-52 ANT.	F/A	120.0*	630	" & Shock
" "	" "	V	80.0	810	" "
" "	" "	P/S	45.0	570	" "
2/3 "	" "	F/A	80.0	630	" "
1/3 "	" "	F/A	43.0	630	Shock

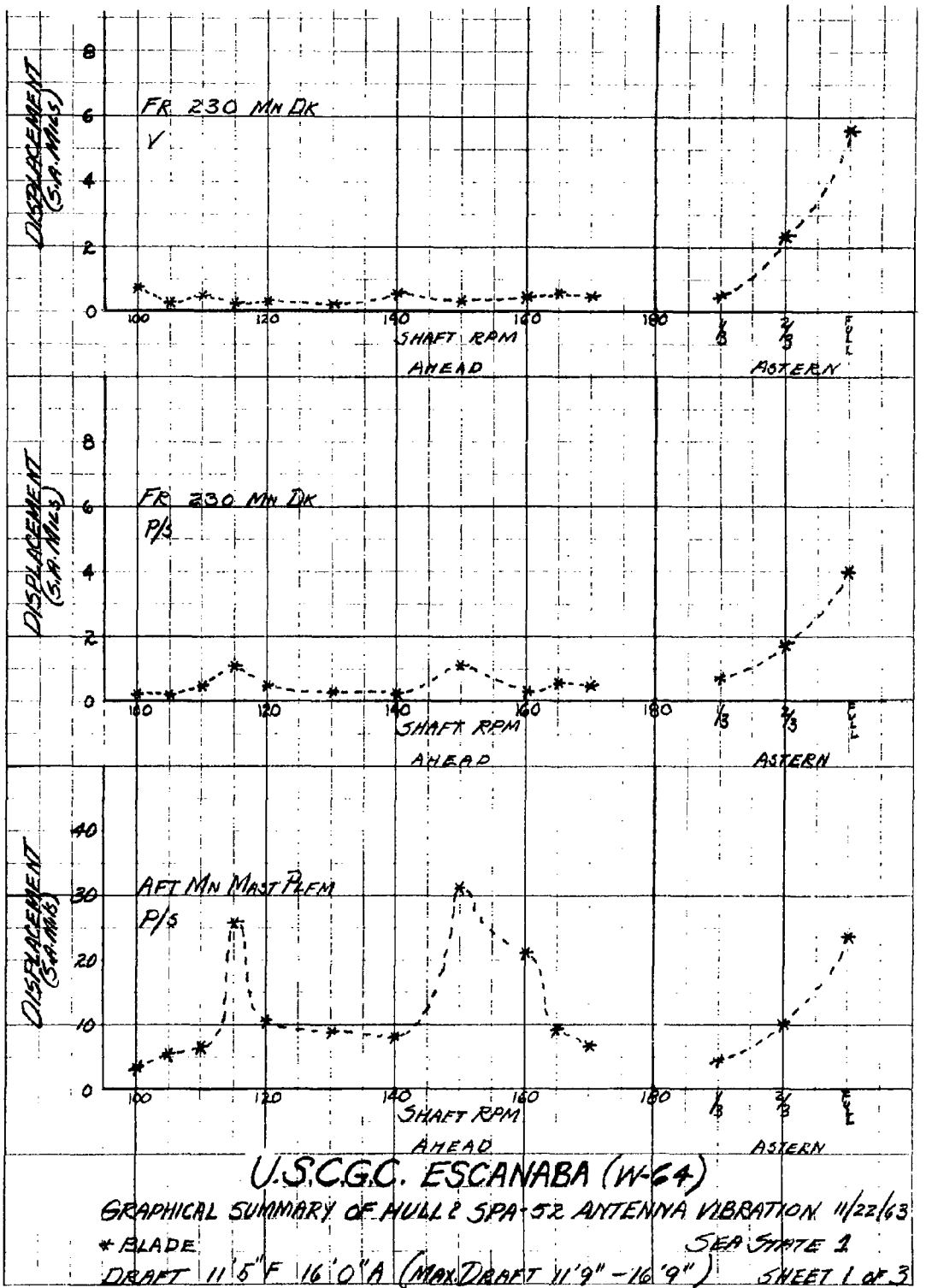
The above asterisked amplitude is considered excessive.

5. As evidenced by the above the antenna problem only exists when the ship develops full power astern. In view of this evidence, it is recommended that full back down for extended periods be avoided whenever possible. Additionally a review of the antenna framing design should be undertaken toward preventing a reoccurrence of local framing failures.

6 This confirms XEROX delivered to P & E on 6 December 1963.

E. S. MOBERG

Copy to:
Code 240
260

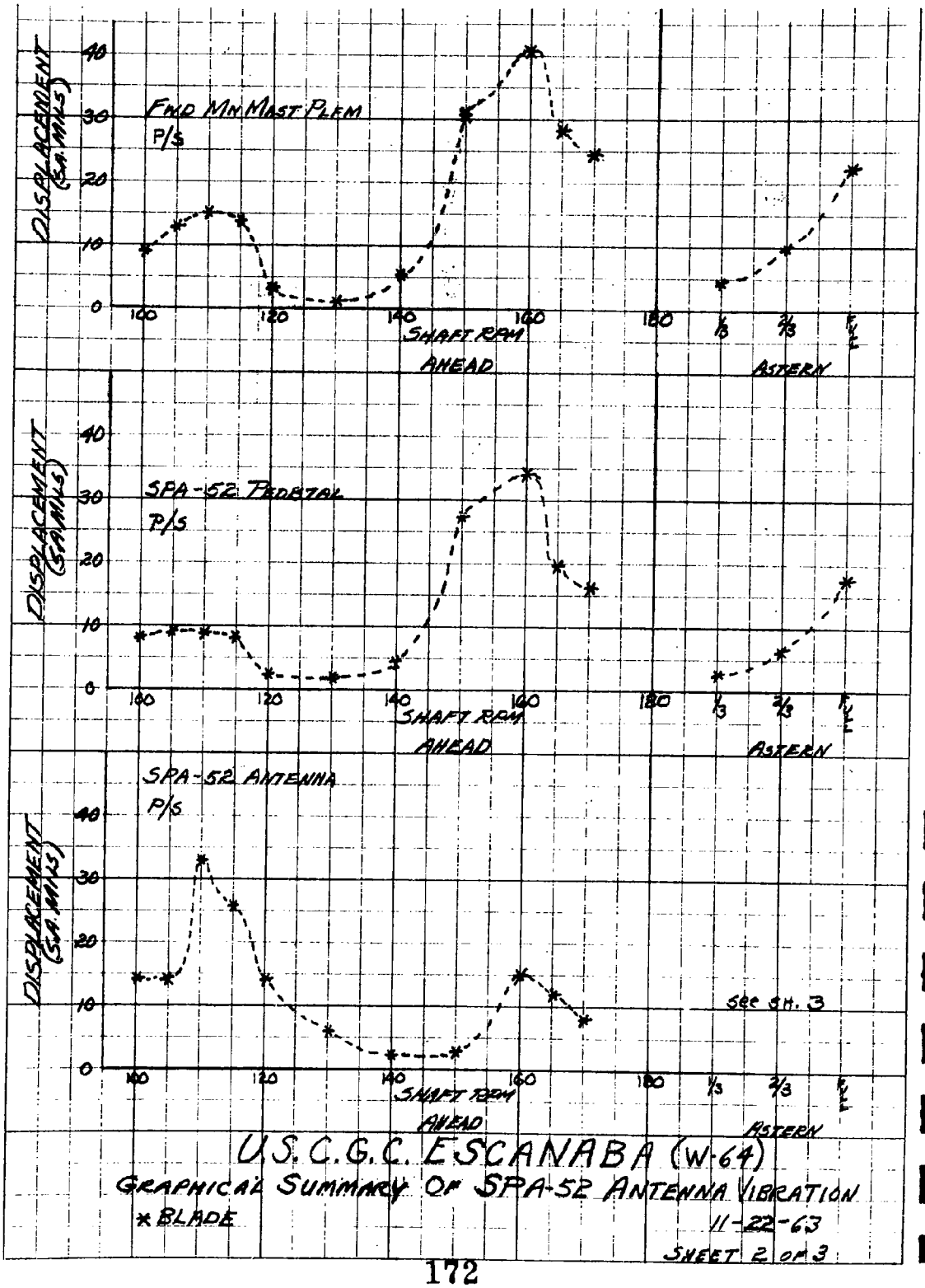


U.S.C.G.C. ESCANABA (W-64)

GRAPHICAL SUMMARY OF HULL & SPA-52 ANTENNA VIBRATION 11/22/63

* BLADE SEA STATE 2

DRAFT 11'5"F 16'0"A (MAX DRAFT 11'9" - 16'9") SHEET 1 OF 3



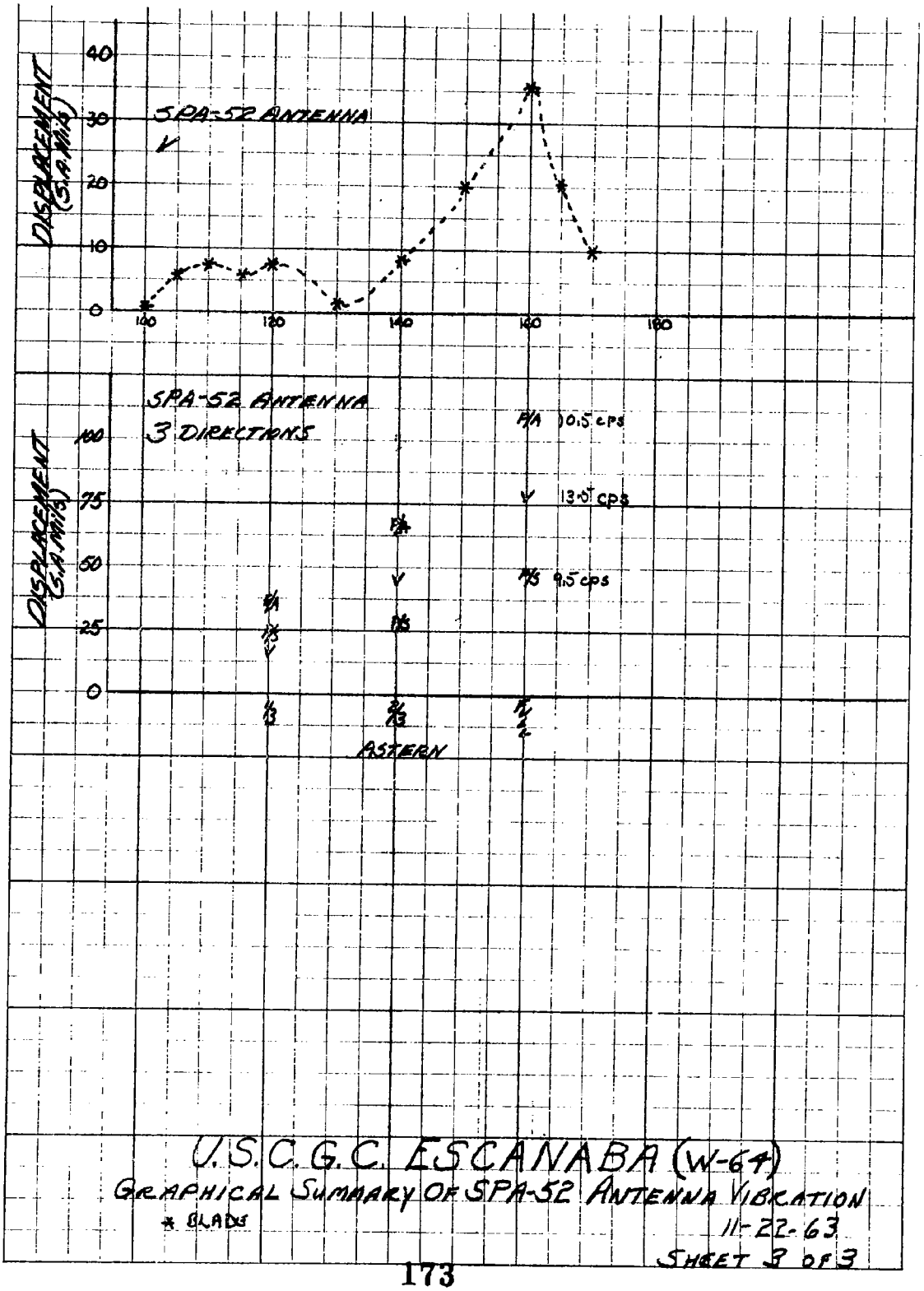
U.S.C.G.C. ESCANABA (W-64)

GRAPHICAL SUMMARY OF SPA-52 ANTENNA VIBRATION

* BLADE

11-22-63

SHEET 2 OF 3



U.S.C.G.C. ESCANABA (W-64)

GRAPHICAL SUMMARY OF SPA-52 ANTENNA VIBRATION

* BLADE

11-22-63

SHEET 3 OF 3

265
AD28

SEP 25 1963

MEMORANDUM

From: Code 265
To: Code: 1200

Subj: USS GRAND CANYON (AD28); Vibration Survey on Kingpost and AN/SPS-6C Antenna Pedestal; report of

Ref: (a) INDMAN D.S.R. No. 0566 of 30 Jul 63
(b) NAVSHIPS 91620(A) - Instruction Book for Radar Set AN/SPS-6C

1. In compliance with reference (a), an investigation was conducted on the AN/SPS-6C Antenna and cargo boom kingpost of GRAND CANYON on 26 August 1963 at pierside in Newport, R. I., to determine the cause for repeated failures of oil seal (U-1309).

2. It was determined from the unit's history that failure of oil seal U-1309 occurred after extended operation of the jumbo-boom. Under heavy loads, this boom tends to have an erratic movement which causes a whipping action to mast and antenna. It is felt that this whipping action along with bearing wear and end play in the main drive shaft assembly dislodges the oil seal and allows it to leak.

3. It is recommended that the antenna pedestal be overhauled and all parts inspected for wear and replaced if necessary. Reassembly shall be in accordance with procedures and tolerances set forth in reference (b) (Section 7-Par. 17C).

4. Overhaul with renewal of bearings, etc., can alleviate the problem and extend the life of the oil seal. However, it is recommended that consideration be given to relocation of the unit to an area less subject to vibration.

5. This confirms Xerox copy sent to INDMAN on 17 September 1963.

E. S. MOBERG

Codes 265a, 244, 240, 260s

Prepared by: R Butler
Typed by: E Nasif 9/24/63

265
DD711

OCT 21 1963

MEMORANDUM

From: Code 265
To: Codes 212, 225

Subj: USS GREENE (DD711); Vibration Noise in Vicinity No. 1 Stack, report of

Ref: (a) Builder's Trial Item 140 dc. - Noise in Vicinity of No. 1 Stack

1. Subject complaint investigated on 26 September 1963, in compliance with reference (a).

2. Results of investigation are as follows:

a. Air intake louvers on port side appear to be loose and rattling.

b. Additional information from Builder's Trial Board member indicates possibility of a loose pipe or of two pipes which are hitting within stack.

3. It is recommended that:

a. Air intake louvers on stack be checked and tightened.

b. Inside of stack be inspected for a loose pipe hanger or the possibility of two pipes being too close.

c. Above checks to be accomplished prior to lighting off of boiler for sea trial on 28th September 1963.

4. This confirms xerox copy delivered to P & E on 27 September 1963.

E. S. MOBERG

Copy to:
~~240~~
244
265a

265a
DD711

NOV 5 1963

MEMORANDUM

From: Code 265
To: Codes 213, 225

Subj: USS GREENE (DD 711); AN/SRT-14 transmitter and electronic equipment in Sonar Equipment Room natural frequency investigation, report of

Ref: (a) DSR No. 210-05 (Trial Board Item I-K-70P)
(b) DSR No. 210-06 (Trial Board Item I-K-80P)

1. A natural frequency investigation was conducted on the subject units of GREENE while pierside on 18 October 1963, in accordance with references (a) and (b).

2. The results of this investigation, conducted by the bump test method, are as follows:

	Natural Frequency (C.P.S.)						
	Vert.		Athwartship		Fore & Aft		
Unit	Translat.	Rotat.	Translat.	Rotat.	Translat.	Rotat.	Remarks
AN/SRT-14	24.0	N.E.	N.E.	17.1	24.0	N.E.	
RT-158B/UQC-1	24.0	N.E.	N.E.	15.6	N.E.	12.0	
O-956/SQS23B	55.0	N.E.	N.E.	17.2	30.0	N.E.	
C-4180/SQS23B	39.0	N.E.	24.0	N.E.	30.0	N.E.	
CV-751/SQS23	36.0	N.E.	N.E.	12.0	20.0	14.0	
J-1037/SQS23	22.0	N.E.	24.0	N.E.	64.0	N.E.	All 3 units
AM-2077/SQS23	28.0	N.E.	N.E.	11.4	N.E.	11.0	3 fwd units
AM-2077/SQS23	28.0	N.E.	26.5	11.0	51.0	11.4	3 aft units
CV-1314/SQS23B	24.0	120.0	30.0	N.E.	N.E.	13.2	
AM-3366/SQS23B	50.0	N.E.	N.E.	18.0	N.E.	12.0	
YS-1778/SQS23B	48.0	N.E.	N.E.	11.4	N.E.	11.1	
R-1138/SQS23	28.0	N.E.	24.0	N.E.	N.E.	12.0	
R-918/ SQS23	16.0	N.E.	21.0	N.E.	20.0	N.E.	
CV-1313/SQS23B	28.0	N.E.	26.0	N.E.	24.0	N.E.	
PP-2161/SQS23	32.0	N.E.	24.0	N.E.	24.0	N.E.	
PP-3041/SQS23A	24.0	N.E.	16.5	N.E.	28.0	N.E.	
TS-1779/SQS23B	22.2	N.E.	18.0	N.E.	21.9	N.E.	

* N.E. - Mode not excited.

All of the above units, except TS1779 which is not mounted, and PP2161 and PP3041 which have bottom mounts only, are mounted with 4 bottom mounts and back flex plates. All of the above frequencies that were excited by the bump test method are considered satisfactory even though there are some frequencies within the blade excitation range. The blade excitation in this area is normally very low or non-existant.

3. In view of the above it is recommended that all the subject units be monitored for vibration at the time of the next sea trial that will go to full power. In this way the complete excitation from the ship will be evaluated for all the modes of vibration.

4. This confirms xerox copy delivered to P & E on 21 October 1963.

E. S. MOBERG

Copy to:
240
260
231
265(2)
260s

265

SEP 10 1963

MEMORANDUM

From: Code 265
To: Code 345

Subj: USS LAKE CHAMPLAIN (CVS-39), Vibration Survey on No. 10 Antenna; report of

Ref: (a) Job Order 16368-0402 of 9 Aug 1963

1. A vibration investigation of No. 10 Antenna of LAKE CHAMPLAIN was conducted at pierside during period 12-14 August 1963.

2. Results of the above investigation show that the No. 10 Antenna foundation is responsive to hull vibration at propeller blade frequency at 230 Shaft RPM.

3. The present location of the subject antenna is such that it is not possible to install adequate stiffening to raise the natural frequency of the antenna foundation above blade frequency excitation.

4. In view of the above, the alternative is to relocate the antenna to an area of the hull where a foundation similar to that of No. 11 Antenna can be installed. In addition, the site of relocation must be agreeable from an electronics standpoint.

5. This memorandum confirms verbal recommendations given to Ship Superintendent on 15 August 1963.

E. S. MOBERG

Copy to:
240
260
260a
265a
225
253
273

265
DD778

OCT 21 1963

MEMORANDUM

From: Code 265
To: Codes 212 and 225

Subj: USS MASSEY (DD778), Vibration of VDS Receiver Scanner in Ram Room; report of

Ref: (a) DSR No. 634-32

1. The subject piece of electronic equipment on MASSEY became inoperable during the sea trial of 1 October 1963 because of the large amount of vibration in the Ram Room where it is located.

2. Investigation in compliance with reference (a) led to the following:

a. The vibration in the Ram Room is typical of this class of ship and cannot be reduced.

b. The subject unit is presently resiliently mounted for shock. The translational natural frequencies are all approximately 25 CPS and the rotational frequencies are 10.5 to 11.5 CPS.

c. The unit vibrates at its rotational natural frequencies and at blade frequency throughout the speed range, especially at the upper speeds.

d. Installing softer resilient mounts on the subject unit (keeping the natural frequency range between shaft and blade excitation) should reduce the transmissibility of the hull vibration to the unit and still provide adequate shock protection.

e. Installing softer mounts is the only alternative to moving the subject unit to a forward compartment where the blade vibration would be less.

3. In view of the above, the following action is recommended for the subject Receiver-Scanner:

a. Install four (4) 6E150 resilient mounts under the unit in place of the existing BARRY mounts and two (2) 11M25 resilient mounts on the upper back of the unit in place of the existing Lord mounts. (The 6E150

MEMORANDUM

mounts are on Plan No. 1385778 and Stock No. KZ5340-543-3575. The 11M25 mounts are on Plan No. 1385824 and Stock No. KZ5340-530-8810.)

b. After installation of the new mounts, check the vibration of the unit at sea.

c. Structural mods will be provided by Design representative directly to shops involved.

4. This confirms Xerox copy delivered to the Planning and Estimating Division on 9 October 1963.

E. S. MOBERG

Copy to:
233
273
265a
253
260s

265

NOV 5 1963

MEMORANDUM

From: Code 265
To: Codes 212, 225

Subj: USS MASSEY (DD778); Vibration Survey of VDS Receiver Scanner in Ram Room, report of

Ref: (a) DSR 634-32
(b) 265 Memo of 9 Oct 63
(c) BUSHIPS Dwg 5000-S1112-1385824E

1. In accordance with reference (a) and after completion of recommended action of reference (b), a Vibration Survey was conducted upon subject unit while operating at sea on 14 October.

2. The maximum single amplitude of vibration was 43 Mils at 250 shaft R.P.M. This coincides with a natural frequency of the hull.

3. An investigation revealed that the resilient back mounts were not installed in accordance with reference (c). Remedial action was taken and a natural frequency bump test was performed at pierside on 16 October. The natural frequencies recorded are as follows:

Dir.	FREQ. (CPS)
P/S	5.2
F/A	5.3
V	12

4. These measured frequencies are in accordance with calculated values. It is, therefore, concluded that this resilient mounting system will provide suitable shock and vibration isolation.

5. This confirms Xerox delivered to P&E on 21 October.

E. S. MOBERG

Codes 240, 260, 260s, 265, 231

Prepared by: Messrs. McGinn and Charette
Typed by: E Nasif 10/30/63

265/253
DDG10

JAN 11 1963

MEMORANDUM

From: Code 265
To: Codes 211 225

Subj: USS SAMPSON (DDG10); Vibration of Data Converter 2864/SPG-51B unit

1. A vibration survey was conducted on the subject/during a sea trial on SAMPSON on 19 December 1962.

2. The maximum single amplitude of vibration occurred at 135 R.P.M. in the fore and aft direction. This speed yields blade excitation of 9.0 c.p.s. which corresponds very closely to the natural frequency of the unit which is 9.5 c.p.s.

3. From the above, it is recommended that the foundation of the subject unit be stiffened as follows:

a. Install one line of 4" X 3" X 1/4" AL angle intercostal longitudinal headers above 0_2 level at Frames 125-127(P), 8'-1" off ℄, flanged inboard.

b. Provide a 1/2" AL. doubler plate on the inboard side of the longitudinal foundation angle of the subject unit extending from the forward bulkhead to Frame 127.

4. The stiffening as provided above will raise the natural frequency above blade excitation range and will eliminate the vibration problem.

5. This confirms varifax copy delivered to Planning and Estimating on 21 December 1962.

E. S. MYBERG

R. W. INGHAM

Copy to:
Ship Supt. USS SAMPSON (DDG10)
Codes 253
265(2)
260
260S

Prepared by: P. DiCarlo
Typed by: G. Masabian 1-9-63

265
DD837

JUN 26 1963

MEMORANDUM

From: Code 265
To: Codes 225 212

Subj: USS SARSFIELD (DD837); Vibration of Train Power Drive Unit(5"-51 Mount)

Ref: (a) Design Services Request No. 837-234-041

1. A vibration survey was conducted on the subject unit on SARSFIELD at pierside on 11 June 1963 in compliance with reference (a).

2. The maximum single amplitudes of vibration measured on the power train motor are listed below:

Position	Direction	Displacement(S.A.Mils)	Freq. (CPM)	Source
Motor Brg-Motor End	P/S	* 1.4	3600	1X Motor
" "	V	.8	"	"
Motor Brg-Red. Gear End	P/S	* 1.3	"	"
" " "	V	.7	"	"

The single amplitudes of first order vibration which are marked with an asterisk are excessive.

3. From the above, it is recommended that the Power Train Motor be balanced and furnished with new bearings.

4. This confirms XEROX copy delivered to Planning and Estimating on 13 June 1963.

E. S. MOBERG

Copy to:
Codes 234
265
260
2605

265
DE1021

JAN 25 1963

MEMORANDUM

From: Code 265
To: Codes 212 225

Subj: USS COURTNEY (DE1021); No. 1 Emergency Feed Pump Vibration Survey and Natural Frequency Investigation, report of

Ref: (a) Design Services Request No. 271-23

1. A natural frequency investigation was conducted on the subject unit to determine the need of additional stiffening to correct the reported misalignment caused by BHD 96's excessive vibration. This survey in conjunction with a vibration survey on the unit and the bulkhead were conducted at pierside on 19 January 1963, in accordance with reference (a).

2. The following are the results of these surveys:

a. The natural frequency investigation of the subject pump and connecting bulkhead show the following:

Unit	Dir.	Nat. Freq. (C.P.S.)	Damping Factor
No. 1 EM Feed Pump	V	39.0	.02 approx.
" " "	P/S	42.0	.02 "
" " "	F/A	greater than 60.0	.02 "
BHD 96	F/A	48.0	.02 "

The above natural frequencies are satisfactory.

b. The vibration survey taken on the feed pump and on bulkhead 96 adjacent to the pump show that there is an insignificant amount (less than .1 mils) of vibration caused by the starboard air conditioning compressor, or by the L.P. Air Compressor.

3. The above results show that the reported misalignment of the feed pump is not caused by vibration of a weak or resonant support but more likely from the movement of bulkhead 96 due to thermal growth or working when underway. It is therefore recommended that the feed pump connection to bulkhead 96 be fitted to allow for the movement of this bulkhead; this can be accomplished by bolting the bulkhead bracket to the pump using a piece of soft rubber instead of the steel chalks.

4. This confirms verifax copy delivered to Planning and Estimating on 18 January 1963.

E. S. MOBERG

184

Copy to: Ship Supt. USS COURTNEY (DE1021)
Codes 232 253 260 260S 265(2)
Prepared by: G. Ogle Typed by: G. Kasabian 1-23-63

MEMORANDUM

NOV 5 1963

From: Code 265
To: Code 225/212

Subj: USS GREENE (DD711); Noisy Fresh Water Circulating Pump, report of

Ref: (a) DSR No. 243-801-77 of 10 Oct 1963
(b) DSR No. 243-801-75 of 4 Oct 1963
(c) BUSHIPS Type Plan-810-1256397A - Arrangement for Installation of "Ismode" Noise Isolation Mounts for Machinery

1. In compliance with references (a) and (b) an investigation of the subject pump on USS GREENE (DD711) was conducted on 7 October 1963 at pierside.

2. This investigation revealed that the noise in the compartment was due to water turbulence in pipes and a high pitched noise characteristic of water flow through an orifice plate. Vibration measurements were taken on the pump and on hull and are listed below:

Position	Direction	Displacement (SA mils)	Frequency (CPM)	Source
Pump	Vert	.27	3500	1X Pump
Motor	Vert	.31	3500	1X Pump
Supporting Long.	P/S	.08	3500	1X Pump
On Plating	P/S	.16	3500	1X Pump

These single amplitudes of vibration are entirely satisfactory. In view of the above, and in order to eliminate any possible source of noise interference to sonar, the following is recommended:

a. To correct airborne noise levels, remove orifice from discharge line of pump.

b. To eliminate structure-borne noise, install two (2) Isomode pads (1-5/8" x 1-5/8") at each foot of motor and pump. Pads to be separated by 1/16" plate the same size as pads. Installation to be in accordance with reference (b). In addition, piping to be modified by installing sections of flexible hose in inlet and discharge lines to pump. Electrical connections to be of sufficient length to allow for at least 1/2" movement of unit.

3. This confirms Xerox copy delivered to P&E on 15 October 1963.

E. S. MOBERG

Copy to:
Code 232
240
260
264
265a
260s

Code 265

NOV 5 1963

MEMORANDUM

From: Code 265
To: Codes 212, 225

Subj: USS GREENE (DDR711); No. 1 L. P. Air Compressor Vibration Survey, report of

Ref: (a) Verbal Request from Code 212a of 14 Oct 1963

1. A vibration survey and a natural frequency investigation was conducted on the subject unit aboard GREENE while at pierside on 14 October 1963, in accordance with reference (a).

2. The maximum vibration amplitudes measured on the unit at normal operating speed while unloaded are as follows:

Position	Dir.	Displacement (S.A. Mils)	Freq. (C.P.M.)	Source
Inboard Base of Motor	V	45.0	900	1 x Comp.
" " " Compressor	V	49.0	900	1 x Comp.
Top of Motor	P/S	72.0	900	1 x Comp.
" " Compressor	P/S	76.0	900	1 x Comp.

The above vibration amplitudes are excessive.

3. The natural frequency investigation conducted by means of the bump test method showed that the subject unit had a vertical natural frequency of 960 cpm. This is the first mode with the node at the shell stringer.

4. Because of the resonant condition of the foundation, it is recommended that the following stiffening be added and a post repair vibration survey be conducted to evaluate the added stiffening:

a. Add four pieces of 2" x 2" x ¼" angle (approx. 2 ft. each) Two of these four pieces to run from the inboard ends (forward & aft) of the fdn to the mid points of the two existing oblique supports and two pieces to run from these two mid points to the shell stringer at the outboard junction of foundation.

5. This confirms XEROX copy delivered to P & E on 14 Oct 1963.

E. S. MOBERG

Copy to:
Codes
240
231
253
250
260s
265 (2)
260

265a
DD711

Nov 6 1963

MEMORANDUM

From: Code 265
To: Codes 212, 225

Subj: USS GREENE (DD711); No. 1 L.P. Air Compressor Vibration Survey, Report of

Ref: (a) Verbal request from Code 212a of 14 Oct 1963

1. A post repair vibration survey and a natural frequency investigation was conducted on the subject unit aboard GREENE (after foundation stiffening) on 21 October 1963, in accordance with reference (a).

2. The maximum vibration amplitudes measured on the unit of normal operating speed while unloaded are as follows:

Position	Dir.	Displacement (S.A.Mils)	Freq. (G.P.M.)	Source
Inboard base of motor	V	0.6	900	1 x comp.
Inboard base of compressor	V	0.9	900	1 x comp.
Top of Motor	P/S	1.5	900	1 x comp.
Top of Compressor	P/S	1.8	900	1 x comp.
Top of Compressor	F/A	1.6	900	1 x comp.

The above vibration amplitudes are satisfactory.

3. The natural frequency investigation showed that the vertical natural frequency has been raised from 960 cpm to 1440 cpm. This post-repair frequency is satisfactory.

4. No further corrective action is necessary from a vibration viewpoint.

5. This confirms xerox copy delivered to P & E on 23 October 1963.

E. S. MORERG

Copy to:
240
260
260s
253
231
265(2)

188

Prepared by: G. Ogle
Typed by: E. T. Lane 10/30/63

265
CC10

JUN 28 1960

MEMORANDUM

From: Code 265
To: Codes 225 213

Subj: USS ALBANY (CC10); Vibration Survey on No. 3 Ship's Service Turbo-Generator, report of

Ref: (a) Code 273 Test Memo for Up-rated Turbo-Generator

1. A vibration survey was conducted on the Number 3 Ship's Service Turbo-generator on ALBANY at pierside on 18 June in conjunction with reference (a).

2. Vibration readings were taken at No Load condition on all bearings and readings were satisfactory. A 50% load was put on unit and vibration became excessive (1.25 s.a. mils at 3 times turbine frequency in an axial direction) at the Number 1 turbine bearing. Adjustment of bearing oil pressure and temperature resulted in a temporary reduction in vibration and then vibration returned to previous high level. The load was removed but vibration remained, even under No Load conditions. The unit was secured and a mechanical inspection of the Number 1 bearing and journal showed that the bearing had a clearance of .010 inches and that the journal had a .003 inch crown in the center. Upon reassembly the unit was run again. At No Load the readings were still high but not excessive. As a gradual load was applied to the unit, the vibration increased until it became excessive, at 30% load (1.1 s.a. mils at 3 time turbine frequency in an axial direction). It should be noted that a prior mechanical inspection of Number 2 turbine bearing showed an unsatisfactory wear condition of the bearing and indications of rubbing of the oil deflector ring. As far as can be determined, no corrections were made to this bearing.

3. Analysis of all vibration data on the subject unit does not indicate the major cause for the excessive vibration. It is felt that the mechanical deficiencies noted above are not the main source of vibration but they could be a possible contributing factor and should be corrected. It is therefore recommended that:

a. The mechanical deficiencies of Number 1 and Number 2 bearings be corrected.

b. The crown on Number 1 journal be removed.

c. The alignment of unit be rechecked.

265
CG10

MEMORANDUM

4. Upon completion of the above work conduct a vibration survey to evaluate corrective actions outlined. Further recommendations will be provided based on results of this survey.

5. This confirms XEROX copy delivered to Planning and Estimating on 20 June 1963.

E. S. NORBERG

Copy to:
Codes 240
260
265(2)
273
260S

265

Prepared by: R. V. Butler
Typed by: G. Kasabian 6-21-63

265

OCT 11 1963

MEMORANDUM

From: Code 265
To: Codes 225 and 213

Subj: USS ALBANY (CG-10), Vibration on No. 3 Ship's Service Turbo-Generator; report of

Ref: (a) 273 Test Memo for ALBANY Uprated Ship's Service Turbo-Generators

Encl: (1) No. 3 Ship's Service Turbo-Generator Sound Pressure Levels

1. The subject unit was first checked for vibration and noise on 12 June 1963, in compliance with reference (a), and was found to have excessive vibration on the No. 1 (fwd turbine) Bearing. A mechanical inspection of the bearing and carbon rings showed only that there was negative pinch-down of the bearing cap which was corrected. The unit was checked again on 13 June 1963 and showed no improvement.

2. The General Electric Company was notified and under the direction of their field engineers checks were made of alignment, bearing conditions (size, clearance, oil holes, etc.) gear wear, thrust and bearing loads. Vibration checks were conducted when requested with no improvement of vibration. Under direction of General Electric Company engineers, the rotor assembly (turbine and pinion gear) was removed to the shop and given a searching mechanical check. All discrepancies in runout, journal size, coupling faces, and balance were corrected. After reassembly in the ship, a vibration check showed no improvement.

3. The unit was operated during a four (4) day sea trial but was limited to 75% load. A vibration check during the sea trial at 50% load showed high vibration amplitudes on the No. 1 Bearing.

4. During the period 22-29 July, the General Electric Company engineers attempted to balance the turbine rotor in place on the ship. The final vibration readings on the No. 1 Bearing taken with approximately 800 KW load just prior to ship's departure are listed below:

Position	Direction	Displacement (S. A. Mils)	Freq. (CPM)	Source
Fwd Turbine Brg	Vert.	.08	10033	1X Turbine
" " "	P/S	.27	10033	1X Turbine
" " "	F/A	* .43	10033	1X Turbine

The single amplitude of vibration marked with an asterisk (*) is considered excessive. All vibration measured at other points on the unit was satisfactory.

191

MEMORANDUM

5. The final octave band noise levels shown in enclosure (1) are satisfactory with respect to the limits given in reference (a).

6. The ship and General Electric Company were both notified about the vibration prior to the ship's departure. The ship was requested to monitor the vibration of the No. 1 Bearing and to note any apparent change.

7. It is understood that the General Electric Company will remain cognizant of the above condition and will attempt further corrective measures at the earliest opportunity.

E. S. MOBERG

Copy to:
240
260
260s
265a
273

SHIP USS ALBANY (CG-10)

BOSTON NAVAL SHIPYARD

NO. 3 ~~AND NO. 2~~ SHIP'S SERVICE TURBO-GENERATOR SOUND PRESSURE LEVELS

CODE 265A

DATE 31 July 1963

POSITION	GENERATOR LOAD CONDITION	OVERALL NOISE LEVEL	OCTAVE BAND (CPS) 20 75	75 150	150 300	300 600	600 1200	1200 2400	2400 4800	4800 9600
NO. 3 TURBO-GENERATOR										
1" AWAY FROM TOP OF RED. GEAR CASE	NO LOAD	97	77	79	93	85	78	86	87	74
	800 KW LOAD	101	79	85	96	86	94	98	87	83
1" AWAY FROM PINION SIDE OF RED. GEAR CASE	NO LOAD	94	76	82	85	89	86	83	81	73
	800 KW LOAD	97	78	84	95	90	88	89	85	77
AT WATCH STATION	NO LOAD	89	76	75	84	83	77	81	82	72
	800 KW LOAD	92	78	77	87	83	87	84	82	76
NO. 2 TURBO-GENERATOR										
1" AWAY FROM TOP OF RED. GEAR CASE	NO LOAD									
	KW LOAD									
1" AWAY FROM PINION SIDE OF RED. GEAR CASE	NO LOAD									
	KW LOAD									
AT WATCH STATION	NO LOAD									
	KW LOAD									
GENERAL SPECIFICATIONS FOR SHIPS OF THE U.S. NAVY SECTION S1-10-C, CATEGORY D OF 1 APRIL 1958			110	105	100	90	90	85	85	85

Ref: 0 DB = 0.0002 DYNES/CM2

ENCLOSURE 1

193

265
A097

AUG 7 1963

MEMORANDUM

From: Code 265
To: Code 1200

Subj: USS ALLAGASH (AO97); Nos. 1 and 2 Ship's Service Generators, report of

Encl: (1) USS ALLAGASH (AO97); Nos. 1 and 2 S.S. Turbo-Generator Sound Pressure Levels

1. Noise and vibration surveys were conducted on Numbers 1 and 2 Turbo-Generators of ALLAGASH at pierside at Newport, Rhode Island on 17 July 1963 in compliance with reference (a).

2. The maximum amplitudes of vibration recorded on both units operating under 240 KW load conditions are listed below:

Position	Dir.	Displacement(S.A. Mils) No. 1	No. 2	Freq. CPM	Source
Fwd. Pinion Brg.	Vert	*1.0	*.28	10,020	1X Turbine
Aft " "	Vert	* .62	*.62	"	3X "
" " "	P/S	* .62	.14	"	"
" " "	F/A	.18	*.50	"	"
Fwd. Bull Gear Brg.	P/S	* .53	.22	"	1X Turbine
Aft " " "	P/S	* .79	.17	"	"

The vibration amplitudes marked with an asterisk are excessive. No appreciable vibration at any other frequency was measured.

3. An octave band analysis of noise readings taken at the watch station for both units under a 240 KW load indicates that both units exceed the sound pressure level limits of reference (b) within the 600-1200, 1200-2400 and 2400-4800 cps bands (see enclosure (1)). A discrete frequency analysis of the noise at the watch station and one inch away from the reduction gear case shows that the major source of noise is at 3, 6, 9, 12, 15 and 18 times turbine frequency. These particular frequency orders are indicative of wear between the pinion and bull gears.

4. In view of the above it is recommended that the following work be accomplished on both Number 1 and 2 generators:

a. Replace the reduction gears with a new or rehobbed set.

MEMORANDUM

b. Take a pin check of pinion and bull gears (present installations) and forward data to Code 265 for evaluation.

c. Check alignment and bearing clearances, correcting as necessary. Forward a copy of data to Code 265 for evaluation.

d. Balance the Number 1 and 2 turbine rotors and new pinions as a unit.

e. Conduct a post repair vibration and noise survey upon completion of the overhaul.

5. This confirms XEROX copy delivered to INGMAN on 2 August 1963.

E. S. MOBERG

Copy to:
Codes 260
260S
265(2)(w/2 copies of encl. (1))

Prepared by: P. DiCarlo
Typed by: G. Kasabian 8-5-63

SHIP USS ALLAGASH (AO-97)

BOSTON NAVAL SHIPYARD

NO. 1 AND NO. 2 SHIP'S SERVICE TURBO-GENERATOR SOUND PRESSURE LEVELS

CODE 265A

DATE 19 JULY 1963

POSITION	GENERATOR LOAD CONDITION	OVERALL NOISE LEVEL	OCTAVE BAND (CPS) 20 75	75 150	150 300	300 600	600 1200	1200 2400	2400 4800	4800 9600
NO. 1 TURBO-GENERATOR										
1" AWAY FROM TOP OF RED. GEAR CASE	NO LOAD									
	240 KW LOAD	112	97	93	102	103	100	110	103	89
1" AWAY FROM PINION SIDE OF RED. GEAR CASE	NO LOAD									
	240 KW LOAD	110	86	90	103	102	103	107	93	84
AT WATCH STATION	NO LOAD									
*	240 KW LOAD	104	89	89	88	96	95	102	89	79
NO. 2 TURBO-GENERATOR										
1" AWAY FROM TOP OF RED. GEAR CASE	NO LOAD									
	240 KW LOAD	118	98	94	96	101	105	106	101	87
1" AWAY FROM PINION SIDE OF RED. GEAR CASE	NO LOAD									
	240 KW LOAD	111	93	88	92	104	103	108	101	87
AT WATCH STATION	NO LOAD									
*	240 KW LOAD	108	89	97	85	91	~~106~~ 96 ~~106~~ 96	92	78	
* GENERAL SPECIFICATIONS FOR SHIPS OF THE U.S. NAVY SECTION S1-10-C, CATEGORY D OF 1 APRIL 1958			110	105	100	90	90	85	85	85

RE: 0 DB = 0.0002 DYNES/CM2

ENCLOSURE 1

265

MEMORANDUM

From: Code 265
To: Code 1200

Subj: U.S.S. ALLAGASH, (AO97), Repeat Sound and Vibration Survey on No. 2 Ship's Service Turbo-Generator, report of

Ref: (a) Verbal Request from Code 1200

1. An additional sound and vibration survey was conducted on the No. 2 Ship's Service Turbo-Generator of ALLAGASH on 21 November 1963, at pierside in compliance with reference (a) to determine if any change had occurred in the sound and vibration characteristics of the subject unit after an extended period of operation.

2. The maximum single amplitudes of vibration measured under a 190KW load are listed in the table below. In addition, the results of the November 12, 1963, survey are also listed for comparative purposes.

NO.2 SSTG

POSITION	DIRECTION	DISPLACEMENT (SAMILS) NOV. 12, 1963	NOV. 21, 1963	FREQ (CPM)	SOURCE
FWD TURB BRG.	VERT	.10	.10	10000	1X Turbine
" " "	P/S	.15	.07	"	"
" " "	F/A	.19	.10	"	"
" " "	P/S	.17	.10	"	"
" " "	F/A	.80	.56	1200	1X Gen
AFT GEN BRG.	P/S	.40	.32	"	"

These single amplitudes of vibration are satisfactory. A comparison of the results of the two surveys indicates that there has been a decrease in vibration amplitudes during the period 12 - 21 November 1963.

3. Octave band sound level measurements at the watch station under the 190KW load are satisfactory and substantially the same as those taken on 12 November 1963.

4. In view of the above it is concluded that the subject unit is still satisfactory in all respects and requires no further action with respect to vibration and sound.

5. This confirms xerox delivered to P & E on 29 November 1963.

E. S. MOBERG

Copy to:
Code 240
265(a)
260
260s

265
CAG1

JUL 15 1963

MEMORANDUM

From: Code 265
To: Codes 212 225

Subj: USS BOSTON (CAG1); Vibration and Sound Survey of No. 4 S/S Turbo-Generator, report of

Ref: (a) Job Order No. 16308-6105
(b) BUSHIPS INST. 9610.12 Ser 541-1147 of 25 Jun 1957

1. A post-repair vibration and sound survey was conducted on the Number 4 Ship's Service Turbo-Generator of BOSTON on 25 June 1963, in accordance with reference (a).

2. The maximum amplitudes of vibration measured under load and no load are as follows:

Position	Dir.	Displacement(S.A. Mils) No Load	500KW Load	Freq. (C.P.M.)	Source
Fwd. Turbine Brg.	F/A	.07	.04	10,033	1X Turbine
Aft. " "	V	.19	.06	"	"
" " "	P/S	.15	.01	"	"
" Gen. "	V	.70	.90	1,200	1X Gen.

The above amplitudes of vibration are satisfactory.

3. Sound pressure levels taken at the watch station under no load and 550KW load are satisfactory in accordance with reference (b).

4. No further corrective action is necessary from a vibration or sound viewpoint.

5. This confirms XEROX copy delivered to Planning and Estimating on 28 June 1963.

E. S. MOBERG

Copy to:
Codes 240
260
260S
265 (w/1 copy of Sound Pressure Levels)
Prepared by: G. Ogle
Typed by: G. Kasabian 7-2-63
Retyped by: G. Kasabian 7-9-63

199

265
DD857

JAN 14 1963

MEMORANDUM

From: Code 265
To: Codes 212 225

Subj: USS BRISTOL (DD857); No. 2 Ship's Service Turbo-Generator, Vibration and Noise Survey, report of

Ref: (a) Design Services Request No. 401-03 of 19 Dec 1962
(b) BUSHIPS INST. 9610.12 Ser 541-1147 of 25 Jun 1957

1. A sound and vibration survey was conducted on the subject unit of BRISTOL while at pierside in Newport, Rhode Island on 7 January 1963, in accordance with reference (a).

2. Results of the investigation are as follows:

a. The maximum amplitudes of vibration measured under load and no load while at normal operating speed, are listed below:

Position	Dir.	Displacement (S. A. Mils) No Load	Displacement (S. A. Mils) 200 KW Load	Freq. (C.P.M.)	Source
Fwd. Turb. Brg.	V	* .30	* .40	10,059	1X Turbine
" " "	F/A	* .17	* .14	30,177	3X Turbine
" Pinion Brg.	V	* .30	.21	10,059	1X Turbine
" Bull Gear Brg.	P/S	.21	* .24	10,059	1X Turbine
Aft " " "	P/S	* .29	* .24	10,059	1X Turbine

The above asterisked amplitudes are excessive. No appreciable vibration at any other frequency was detected.

b. Watch station noise data taken on the subject unit indicates that it is satisfactory and within the limits of reference (b).

3. In view of the above excessive vibration the following corrective action is recommended from a vibration viewpoint:

a. Dynamically balance the turbine rotor and pinion as a unit.

b. Re-assemble recording all alignment drops and clearances.

c. Check and correct if necessary the forward turbine bearing pinch down.

d. Forward a copy of the above data to Code 265 for evaluation and record purposes.

265
DD857

MEMORANDUM

4. This confirms verifax copy delivered to Planning and Estimating on 9 January 1963.

E. S. MOBERG

Copy to:
Ship Supt. USS BRISTOL (DD857)
Codes 232
260
260S
265(2)(w/2 copies of noise data)

1/14 - 65

1/14 - Cpl

Prepared by: G. Ogle
Typed by: G. Kasabian 1-11-63

SHIP U.S.S. BRISTOL (DD857)

BOSTON NAVAL SHIPYARD

NO. 1 AND NO. 2 SHIP'S SERVICE TURBO-GENERATOR SOUND PRESSURE LEVELS

CODE 265A

DATE 7 JAN 1963

POSITION	GENERATOR LOAD CONDITION	OVERALL NOISE LEVEL	OCTAVE BAND (CPS) 20 75	75 150	150 300	300 600	600 1200	1200 2400	2400 4800	4800 9600
NO. 1 TURBO-GENERATOR										
1" AWAY FROM TOP OF RED. GEAR CASE	NO LOAD									
	KW LOAD									
1" AWAY FROM PINION SIDE OF RED. GEAR CASE	NO LOAD									
	KW LOAD									
AT WATCH STATION	NO LOAD									
	KW LOAD									
NO. 2 TURBO-GENERATOR										
1" AWAY FROM TOP OF RED. GEAR CASE	NO LOAD	96	79	80	89	95	92	86	79	76
	200 KW LOAD	99	82	84	89	91	93	88	81	85
1" AWAY FROM PINION SIDE OF RED. GEAR CASE	NO LOAD	100	76	85	99	89	88	84	78	71
	200 KW LOAD	105	83	87	101	98	97	92	81	92
AT WATCH STATION	NO LOAD	101	76	86	100	87	84	82	75	72
	200 KW LOAD	103	76	87	102	92	85	82	77	76
GENERAL SPECIFICATIONS FOR SHIPS OF THE U.S. NAVY SECTION S1-10-C, CATEGORY D OF 1 APRIL 1958			110	105	100	90	90	85	85	85

REF: 0 DB = 0.0002 DYNES/CM²

ENCLOSURE 1

202

265
A098

FEB 1 1963

MEMORANDUM

From: Code 265
To: Codes 1200 1210

Subj: USS CALOOSAHATCHEE (A098): No's 1 & 2 Ship's Service Turbo-Generators Vibration & Sound Survey, report of

Ref: (a) Design Services Request No. 0127 of 18 Jan 1963
(b) BUSHIPS INST. 9610.12 Ser 541-1147 of 25 Jun 1957

1. A sound and vibration survey was conducted on the subject turbo-generators of CALOOSAHATCHEE while at pierside on 28 January 1963, in accordance with reference (a).

2. Results of the investigation are as follows:

a. The maximum vibration measured under No Load and 300KW Load for both generators are listed below:

		Displacement (S.A. Mils)					
		No. 1 Gen.		No. 2 Gen.		Freq.	
Position	Dir.	No Load	300KW Load	No Load	300KW Load	(C.P.M.	Source
Fwd. Turb. Brg.	V	.01	.05	*.26	*.27	10,000	1X Turb.
" " "	P/S	.05	.04	.16	.15	"	"
" " "	F/A	.04	.04	.18	.11	"	"
Fwd. Pinion Beg.	V	.01	.05	*.28	.23	"	"
Aft. " "	V	.09	.03	*.27	.10	"	"
Fwd. Bull Gear Brg.	P/S	.04	.03	*.25	.10	"	"

The above asterisked amplitudes are excessive. No appreciable amplitudes of any other frequency were detected.

b. Watch Station noise data taken under 300KW load indicates that the Number 2 turbo-generator exceeds the noise level limits of reference (b) in the 1200 to 2400 cps band by 7db. A discrete frequency analysis of the noise at the watch station and one (1) inch away from the reduction gear casing show the major source of noise are the 3rd, 7th and 9th orders of turbine frequency. This is indicative of gear wear. The Number 1 turbo-generator satisfies the noise level limits of reference (b).

3. In view of the above excessive vibration and noise measured on the Number 2 turbo-generator, the following corrective action is recommended from a vibration and noise standpoint:

MEMORANDUM

a. Replace the pinion and bull gear with a new or rehobbed set. Speedletter containing pertinent noise data will be forwarded to Bureau of Ships by 1 February 1963.

b. Balance the turbine rotor and pinion as a unit.

c. Record all alignment drops and clearances, pinch down, and thrust clearance.

d. Forward a copy of above data to Code 265 for evaluation.

e. Conduct a post-repair vibration survey upon completion of overhaul.

4. This confirms verifax copy delivered to Codes 1200 and 1210 on 30 January 1963.

E. S. MOBERG

Copy to:
~~Ship Supt. USS CALO (SAHATCHEE (A098)~~
Codes 240
1213
260
260S
265(2)(w/2 copies of noise data) ✓

Prepared by: G. Ogle
Typed by: G. Kasabian 1-31-63

SHIP USS CALOOSAHATCHEE (AO98) BOSTON NAVAL SHIPYARD

NO. 1 AND NO. 2 SHIP'S SERVICE TURBO-GENERATOR SOUND PRESSURE LEVELS CODE 265A

DATE 28 JAN 1963

POSITION	GENERATOR LOAD CONDITION	OVERALL NOISE LEVEL	OCTAVE BAND (CPS) 20-75	75-150	150-300	300-600	600-1200	1200-2400	2400-4800	4800-9600
NO. 1 TURBO-GENERATOR										
1" AWAY FROM TOP OF RED. GEAR CASE	NO LOAD	99	80	90	98	91	88	85	78	68
	300 KW LOAD	104	85	93	102	92	96	89	82	78
1" AWAY FROM PINION SIDE OF RED. GEAR CASE	NO LOAD	105	81	93	103	92	86	84	79	72
	300 KW LOAD	106	86	95	103	94	101	91	84	78
AT WATCH STATION	NO LOAD	96	79	84	93	89	88	83	79	66
	300 KW LOAD	97	80	87	96	91	89	85	77	70
NO. 2 TURBO-GENERATOR										
1" AWAY FROM TOP OF RED. GEAR CASE	NO LOAD	109	82	92	102	107	96	94	83	72
	300 KW LOAD	107	83	93	106	99	98	101	93	77
1" AWAY FROM PINION SIDE OF RED. GEAR CASE	NO LOAD	103	86	93	97	98	98	95	84	74
	300 KW LOAD	108	87	95	105	96	100	101	91	79
AT WATCH STATION	NO LOAD	99	82	88	98	90	89	87	78	69
	300 KW LOAD	98	85	86	94	87	89	92	82	69
GENERAL SPECIFICATIONS FOR SHIPS OF THE U.S. NAVY SECTION S1-10-C, CATEGORY D OF 1 APRIL 1958			110	105	100	90	90	85	85	85

REF: 0 DB = 0.0002 DYNES/CM²

ENCLOSURE 1

A098

APR 30 1963

MEMORANDUM

From: Code 265
To: Codes 1200 1210

Subj: USS CALOOSAHATCHEE (A098); No. 2 Ship's Service Turbo-Generator Vibration and Sound Survey, report of

Ref: (a) Design Services Request No. 0127
(b) BUSHIPS INST. 9610.12 Ser 541-1147 of 25 Jun 1957

1. A post repair sound and vibration survey was conducted on the subject turbo-generator of CALOOSAHATCHEE while at pierside on 23 April 1963, in accordance with reference (a).

2. Results of the investigation are as follows:

a. The maximum amplitudes of vibration measured under No load and 200 KW load for the Number 2 generator are listed below:

Position	Dir.	Displacement(S.A.Mils) No Load	200 KW Load	Freq. (C.P.M.)	Source
Fwd. Turb. Brg.	V	.10	.15	10,000	1X Turbine
" " "	F/A	.14	.11	"	"
Aft. Pinion Brg.	V	.11	.08	"	"
Fwd. Bull Gear Brg.	V	.10	.10	"	"
" " " "	F/A	.05	.14	"	"
Aft " " "	P/S	.08	.11	"	"

The above amplitudes are satisfactory. No appreciable amplitudes of any other frequency were detected.

b. Noise measurements of the new gears taken at the watch station under No Load and 200 KW Load satisfy the requirements set forth in reference (b).

3. No further corrective action is necessary from a vibration or noise viewpoint.

4. This confirms XEROX copy delivered to Planning and Estimating on 25 April 1963.

E. S. MOHRING

Copy to:
Ship Supt. USS CALOOSAHATCHEE (A098) 206
Codes 1213 260S
260 265(2)(w/2 copies of noise data) ✓

Prepared by: G. Ogle Typed by: G. Kasabian 4-29-63

265
CVS9

MAR 18 1963

MEMORANDUM

From: Code 265
To: Codes 211 225

Subj: USS ESSEX (CVS9); Vibration and Noise Survey on No. 4 S.S. Turbo-Generator, report of

Ref: (a) Design Services Request 137-01 of 5 Nov 1963
(b) BUSHIPS INST 9610.12 Ser 541-1147 of 25 Jun 1957

1. A post repair sound and vibration survey was conducted on Number 4 Ship's Service Turbo-Generator on ESSEX at Quonset, Rhode Island on 8 March 1963 in compliance with reference (a).

2. Results of the survey are as follows:

a. The maximum amplitudes of vibration under 450KW Load and No Load conditions are listed below:

Position	Dir.	Displacement (S.A. Mils) No Load	Displacement (S.A. Mils) 450KW Load	Freq. (C.P.M.)	Source
Fwd. Turb. Brg.	V	.02	.02	7,938	1X Turb.
" " "	P/S	.05	.05	"	"
" " "	F/A	.04	.12	"	"
Aft Pinion Brg.	P/S	.14	.11	"	"
" Gen. Brg.	V	.19	.19	3,600	1X Gen.
" " "	P/S	.16	.32	"	"
" " "	F/A	.21	.26	"	"

The above amplitudes of vibration are satisfactory.

b. Watch Station noise data under 450KW load indicates that the generator exceeds the noise level limits of reference (b) in the 600 to 1200 cps band, the 1200 to 2400 cps band, and the 2400 to 4800 cps band by 7, 21 and 18 db respectively. A discrete frequency analysis of the noise at the watch station and 1 inch away from the reduction gear casing shows that the major sources of noises are the 7th, 9th, 13th, 17th and 19th order of turbine frequency. This is indicative of gear wear.

3. In view of the excessive noise level emenating from the reduction gears, which causes a serious ear hazard to personnel in the area, it is recommended that the gears be replaced by a new or rehobbed set. Speed letter containing pertinent noise data will be forwarded to Bureau of Ships upon request.

265
CVS9

MEMORANDUM

4. This confirms verifax copy delivered to Planning and Estimating on 13 March 1963.

E. S. MOBERG

Copy to:
Ship Supt. USS ESSEX (CVS9)
Codes 232
260
260S
265(2)(w/2 copies of noise data) ✓

3/18
3/18

Prepared by: G. Ogle
Typed by: G. Kasabian 3-15-63

208

SHIP USS ESSEX (CVS9)

BOSTON NAVAL SHIPYARD

NO. 1 AND NO. 2 SHIP'S SERVICE TURBO-GENERATOR SOUND PRESSURE LEVELS

CODE 265A

DATE 8 MAR 1963

POSITION	GENERATOR LOAD CONDITION	OVERALL NOISE LEVEL	OCTAVE BAND (CPS) 20 75	75 150	150 300	300 600	600 1200	1200 2400	2400 4800	4800 9600
NO. 4 TURBO-GENERATOR										
1" AWAY FROM TOP OF RED. GEAR CASE	NO LOAD	102	88	102	94	87	82	87	81	73
	450 KW LOAD	112	95	103	93	85	100	110	103	88
1" AWAY FROM PINION SIDE OF RED. GEAR CASE	NO LOAD	103	93	103	93	85	85	89	84	74
	450 KW LOAD	108	93	103	94	88	105	112	107	93
AT WATCH STATION	NO LOAD	97	87	97	85	83	82	88	78	67
	450 KW LOAD	110	102	104	94	82	92	106	103	86
NO. 2 TURBO-GENERATOR										
1" AWAY FROM TOP OF RED. GEAR CASE	NO LOAD									
	KW LOAD									
1" AWAY FROM PINION SIDE OF RED. GEAR CASE	NO LOAD									
	KW LOAD									
AT WATCH STATION	NO LOAD									
	KW LOAD									
GENERAL SPECIFICATIONS FOR SHIPS OF THE U.S. NAVY SECTION S1-10-C, CATEGORY D OF 1 APRIL 1958			110	105	100	90	90	85	85	85

R : 0 DB = 0.0002 DYNES/CM2

602

ENCLOSURE 1

265
CVS9

OCT 16 1963

MEMORANDUM

From: Code 265
To: Codes 213 and 225

Subj: USS ESSEX (CVS-9), Post-Repair Noise and Vibration Surveys on No. 1 and No. 3 Ship's Service Turbo-Generators; report of

Ref: (a) DSR 137-01 of 9 Sep 1963
(b) BUSHIPSINST 9610.12 Ser 541-1147 of 25 Jun 1957
(c) General Specifications for Ships of the U. S. Navy, Section S-1-10-C

Encl: (1) USS ESSEX (CVS-9) - No. 1 and No. 3 Ship's Service Turbo-Generator Sound Pressure Levels

1. Post-repair sound and vibration surveys were conducted on the No. 1 and No. 3 Ship's Service Turbo-Generators of ESSEX during the period 19 to 25 September 1963 at Pierside, Quonset Point, Rhode Island in compliance with reference (a).

2. A problem of alignment and poor tooth contact on No. 1 S.S.T.G. was found to be caused by mechanical deficiencies in the makeup of the high-speed thrust bearing.

3. Excessive vibration on the exciter bearing of No. 3 S.S.T.G. was found to be caused by a .007" runout of the exciter shaft which was corrected by remaking the coupling and adjusting shims under the exciter bearing.

4. After correction of above deficiencies, vibration measurements were taken with the units operating under 1200 KW load. The final maximum single amplitudes of vibration are listed below:

Position	Direction	Displ (S.A.Mils) No. 1	No. 3	Freq. (CPM)	Source
Fwd Turbine Brg	Vert	.07	.22	7938	1X Turbine
Fwd Pinion Brg	P/S	.04	.24	7938	1X Turbine
Aft Pinion Brg	P/S	.04	.12	7938	1X Turbine
Fwd Bull Gr Brg	P/S	.14	.19	3600	1X Generator
Aft Bull Gr Brg	P/S	.12	.22	3600	1X Generator
Aft Gen Brg	P/S	.26	.40	3600	1X Generator
Exciter Brg	P/S	.26	.40	3600	1X Generator

Vibration Limits - MIL-STD-167 (Ships)
Turbine Frequency - .32 (S.A.Mils)
Generator Frequency - .70 (S.A.Mils)

The above single amplitudes of vibration are satisfactory. No appreciable amplitudes at other frequencies were observed.

5. Noise measurements taken with the units operating at 1200 KW load are detailed in enclosure (1). An analysis of these readings indicates that all octave band noise levels at the Watch Station position are satisfactory with respect to reference (b) and tolerances outlined in reference (c).

6. In view of the above, no further action is necessary from either a vibration or noise standpoint for either turbo-generator.

7. This confirms Xerox copy delivered to P & E on 7 October 1963.

E. S. MOBERG

Copy to:
240
300
260
260s
232
265a(2)(w/2 Copies of Encl. (1))

SHIP USS ESSEX (CVS-9) BOSTON NAVAL SHIPYARD

NO. 1 AND NO. 3 SHIP'S SERVICE TURBO-GENERATOR SOUND PRESSURE LEVELS CODE 265A

DATE 25 September 1963

POSITION	GENERATOR LOAD CONDITION	OVERALL NOISE LEVEL	OCTAVE BAND (CPS) 20 75	75 150	150 300	300 600	600 1200	1200 2400	2400 4800	4800 9600
NO. 1 TURBO-GENERATOR										
1" AWAY FROM TOP OF RED. GEAR CASE	NO LOAD	100	83	98	86	88	88	89	89	94
	1200 KW LOAD	106	83	98	87	90	92	98	101	98
1" AWAY FROM PINION SIDE OF RED. GEAR CASE	NO LOAD	100	86	98	85	87	90	92	88	83
	1200 KW LOAD	105	89	99	88	90	92	98	99	89
AT WATCH STATION	NO LOAD	90	86	84	81	80	80	82	79	75
	1200 KW LOAD	93	88	84	83	83	80	86	84	76
NO. 3 TURBO-GENERATOR										
1" AWAY FROM TOP OF RED. GEAR CASE	NO LOAD	103	88	100	96	90	87	87	85	82
	1200 KW LOAD	106	94	104	98	94	90	96	89	88
1" AWAY FROM PINION SIDE OF RED. GEAR CASE	NO LOAD	103	92	101	95	90	85	87	85	82
	1200 KW LOAD	106	96	104	96	92	92	95	89	91
AT WATCH STATION	NO LOAD	96	80	95	84	84	81	82	82	79
	1200 KW LOAD	99	96	98	91	89	86	85	82	78
GENERAL SPECIFICATIONS FOR SHIPS OF THE U.S. NAVY SECTION S1-10-C, CATEGORY D OF 1 APRIL 1958			110	105	100	90	90	85	85	85

RE: 0 DB = 0.0002 DYNES/CM²

ENCLOSURE 1

212

265

SEP 25 1963

MEMORANDUM

From: Code 265
To: Code 225/213

Subj: USS GREENE (DD711); Noise and Vibration Survey on Nos. 1 and 2 Ship's Service Turbo-Generators, report of

Ref: (a) J.O. 12438-0101
(b) BUSHIPSINST 9610.12 Ser 541-1147 of 25 Jun 57

1. Noise and vibration surveys were conducted on Nos. 1 and 2 Ship's Service Turbo-Generators of GREENE at pierside on 9 September 1963 in compliance with reference (a).

2. The maximum single amplitudes of vibration recorded under 250KW load for each unit are listed below:

Position	Dir.	Displacement (SA Mils) No. 1 Unit	No. 2 Unit	Freq. (CPM)	Source
Fwd Turb. Brg.	V	.07	.07	10020	1 x Turbine
Aft Pinion "	P/S	.08	.08	10020	"
" Bull Gear Brg.	"	.64	.58	1200	1 x Gen.
Aft Gen. Brg.	"	.34	.46	1200	"

These single amplitudes of vibration are satisfactory. No appreciable amplitude at any other frequency were observed.

3. Octave band noise data recorded at the watch station under 250 KW load for each unit are satisfactory with respect to noise limits of reference (b).

4. No further action is necessary from a noise or vibration standpoint.

5. This confirms Xerox copy delivered to P&E on 17 September 1963.

E. S. MOBERG

Codes 240, 232, 265a, 260s

Prepared by: R V Butler
Typed by: E Nasif 9/23/63

213

265
CVS39
APR 2 1963

MEMORANDUM

From: Code 265
To: Codes 211 √ 225

Subj: USS LAKE CHAMPLAIN (CVS39); Vibration and Noise Survey on the No. 1 Ship's Service Turbo-Generator, Vibration Surveys on Nos. 1 and 3 H.P. Air Compressor and No. 1 L.P. Air Compressor, report of

Ref: (a) Design Services Request No. 368-03 of 4 Feb 1963
(b) Design Services Request No. 368-19 of 14 Feb 1963
(c) BUSHIPS INST. 9610.12 Ser. 541-1147 of 25 Jun 1957

1. Vibration and noise surveys were conducted on the Number 1 Ship's service turbo-generator; and vibration surveys were conducted on the Numbers 1 and 3 H.P. air compressors and Number 1 L.P. air compressor of LAKE CHAMPLAIN on 27 March 1963 at pierside at Quonset, Rhode Island as requested by references (a) and (b).

2. The results of the surveys are as follows:

a. Vibration surveys on Number 1 Ship's Service Turbo-Generator - The maximum single amplitudes of vibration at rated speed under no load and 450 K.W. load conditions are listed below:

Position	Dir.	Displacement (S.A. Mils) No Load	450 K.W. Load	Freq. (CPS)	Source
Fwd. Turb. Brg.	Vert.	.32	*2.0	2880	Resonant Freq.
" " "	F/A	.16	*1.3	"	" "
Aft Pinion Brg.	P/S	.30	.08	8050	1X Turbine
" " "	P/S	---	.46	2880	Resonant Freq.
Fwd. Bull Gear Brg.	P/S	.18	.07	8050	1X Turbine
" " " "	P/S	---	.52	2880	Resonant Freq.

The single amplitudes of vibration marked with an asterisk (*) are considered excessive.

b. Octave band noise measurements made at the watch station under load and no load conditions are satisfactory with respect to limits set forth in reference (c).

c. Vibration measurements made on the air compressors under load conditions resulted in the following single amplitudes of vibrations:

265
CVS39

MEMORANDUM

Position	Dir.	Displacement (C. . Mils) No. 1 H.P. A/C	No. 2 H.P. A/C	No. 1 L.P. A/C	Freq. (CPM)	Source
Motor	F/A	*4.0	---	---	1120	2X Comp. R.P.M.
Motor	F/A	*6.0	2.5	1.4	560	1X " "
Motor	Vert	3.8	3.0	.6	560	1X " "
Reduction Gear	Vert	*5.2	1.0	1.0	561	1X " "
Compressor	P/S	3.7	2.2	1.6	561	1X " "

The single amplitudes of vibration marked with an asterisk (*) are excessive. Therefore Number 1 H.P. Air Compressor is unsatisfactory and Number 3 H.P. and Number 1 L. P. Air Compressors are satisfactory.

3. Recommendations are as follows:

a. Number 1 Ship's Service Turbo-Generator - This unit is satisfactory with respect to noise, however the vibration is excessive. It is recommended that the journals and bearings be checked for size and clearance, that carbon rings on turbine be inspected and that the condition of gears on the oil pump and governor be inspected, forward the result of these inspections to Code 265 for evaluation.

b. Number 1 L.P. and Number 3 H.P. Air Compressors are satisfactory and no further action is necessary from a vibration standpoint.

c. Number 1 H.P. Air Compressor has excessive vibration. It is understood that this unit is to be torn down and overhauled for mechanical deficiencies. It is recommended that when the unit is reassembled that particular attention be paid to alignment of motor, reduction gear and compressor.

4. This confirms verifax copy delivered to Planning and Estimating on 1 April 1963.

E. S. NOBERG

Copy to:
Ship Supt. USS LAKE CHAMPLAIN (CVS39)
Codes 232
260
260S
265(2)

215

SHIP USS LAKE CHAMPLAIN (CVS 39) BOSTON NAVAL SHIPYARD

NO. 1 AND NO. 2 SHIP'S SERVICE TURBO-GENERATOR SOUND PRESSURE LEVELS CODE 265A

DATE 27 Mar. 1963

POSITION	GENERATOR LOAD CONDITION	OVERALL NOISE LEVEL	OCTAVE BAND (CPS) 20 75	75 150	150 300	300 600	600 1200	1200 2400	2400 4800	4800 9600
NO. 1 TURBO-GENERATOR										
1" AWAY FROM TOP OF RED. GEAR CASE	NO LOAD	106	88	101	96	100	103	88	80	77
	450 KW LOAD	102	94	96	94	95	91	94	91	88
1" AWAY FROM PINION SIDE OF RED. GEAR CASE	NO LOAD	102	85	100	92	96	97	85	80	75
	450 KW LOAD	98	90	93	89	89	85	91	90	84
AT WATCH STATION	NO LOAD	95	87	91	86	92	88	82	74	67
	450 KW LOAD	94	88	85	83	84	81	86	85	80
NO. 2 TURBO-GENERATOR										
1" AWAY FROM TOP OF RED. GEAR CASE	NO LOAD									
	KW LOAD									
1" AWAY FROM PINION SIDE OF RED. GEAR CASE	NO LOAD									
	KW LOAD									
AT WATCH STATION	NO LOAD									
	KW LOAD									
GENERAL SPECIFICATIONS FOR SHIPS OF THE U.S. NAVY SECTION S1-10-C, CATEGORY D OF 1 APRIL 1958			110	105	100	90	90	85	85	85

REF: 0 DB = 0.0002 DYNES/CM²

ENCLOSURE 1

265
CV539

AUG 19 1963

MEMORANDUM

From: Code 265
To: Codes 211 225

Subj: USS LAKE CHAMPLAIN (CV39); Vibration and Noise Survey on No. 1 Ship's Service Turbo-Generator, report of

Ref: (a) Design Services Request No. 368-63 of 4 Feb 1963
(b) BUSHIPS[illegible]INST. 9610.12 Ser 541-1147 of 25 Jun 1957

1. A post repair vibration and sound survey was conducted on the Number 1 SSTG during the sea trial of 3 August 1963 in compliance with reference (a).

2. The maximum single amplitudes of vibration under 450 KW load and no load conditions are listed below:

Position	Dir.	Displacement (S.A. Mils) No Load	Displacement (S.A. Mils) 450 KW Load	Freq. (CPM)	Source
Fwd. Turb. Brg.	V	.12	.12	8050	1X Turbine
" " "	P/S	.09	.07	"	"
Aft Pinion Brg.	V	.10	.14	"	"
" " "	P/S	.12	.17	"	"
Fwd. Bull Gear Brg.	V	.80	.90	1200	1X Generator
" " " "	P/S	.55	.[illegible]	"	"
Aft Gen. Brg.	V	.68	.57	"	"
" " "	P/S	.80	.68	"	"

The above amplitudes of vibration are satisfactory. No other appreciable amplitudes were present.

3. Noise measurements taken at the watch station under load conditions satisfy the requirements set forth in reference (b).

4. No further corrective action is necessary from a noise or vibration standpoint.

5. This confirms XEROX copy delivered to Planning and Estimating on 13 August 1963.

S. S. MORRIS

Copy to:
Codes 240
233
260
2603
265

217

Prepared by: J. Carlson Typed by: G. Kasabian 8-15-63

SHIP USS LAKE CHAMPLAIN (CVS-39) BOSTON NAVAL SHIPYARD

NO. 1 AND NO. 2 SHIP'S SERVICE TURBO-GENERATOR SOUND PRESSURE LEVELS CODE 265A

DATE 3 AUG 63

POSITION	GENERATOR LOAD CONDITION	OVERALL NOISE LEVEL	OCTAVE BAND (CPS) 20 75	75 150	150 300	300 600	600 1200	1200 2400	2400 4800	4800 9600
NO. 1 TURBO-GENERATOR										
1" AWAY FROM TOP OF RED. GEAR CASE	NO LOAD	101	89	96	95	98	98	86	80	79
	450 KW LOAD	101	83	97	88	89	83	90	87	85
1" AWAY FROM PINION SIDE OF RED. GEAR CASE	NO LOAD	100	84	98	91	96	95	96	84	76
	450 KW LOAD	99	82	91	89	88	85	91	91	88
AT WATCH STATION	NO LOAD	94	87	90	85	87	87	82	74	70
	450KW LOAD	93	82	86	85	85	84	83	82	84
NO. 2 TURBO-GENERATOR										
1" AWAY FROM TOP OF RED. GEAR CASE	NO LOAD									
	KW LOAD									
1" AWAY FROM PINION SIDE OF RED. GEAR CASE	NO LOAD									
	KW LOAD									
AT WATCH STATION	NO LOAD									
	KW LOAD									
GENERAL SPECIFICATIONS FOR SHIPS OF THE U.S. NAVY SECTION S1-10-C, CATEGORY D OF 1 APRIL 1958			110	105	100	90	90	85	85	85

REF: 0 DB = 0.0002 DYNES/CM2

ENCLOSURE 1

265
DE1022

SEP 30 1963

MEMORANDUM

From: Code 265
To: Codes 212/225

Subj: USS LESTER (DE1022); Noise and Vibration Surveys on Nos. 1 and 2 Ship's Service Turbo-Generators, report of

Ref: (a) DSR 681-15
(b) DSR 681-01
(c) BUSHIPSINST 9610.12 Ser 541-1147 of 25 Jun 59

Encl: (1) USS LESTER (DE1022) Nos. 1 and 2 S.S. Turbo Generator Sound Pressure Levels

1. Noise and vibration surveys were conducted on the Nos. 1 and 2 Ship's Service Turbo-Generators of LESTER at pierside in Newport, R. I. on 10 September 1963 in compliance with references (a) and (b).

2. The maximum single amplitudes of vibration recorded on each unit under a 250 KW load are listed below:

Position	Dir.	Displacement (SA Mils) No. 1	No. 2	Freq. (CPM)	Source
Fwd Turb. Brg.	P/S	.03	.06	11835	1 x Turbine
High Speed Gear Brg.	V	.02	.04	11835	"
Low Speed Gear Brg.	P/S	.01	.04	11835	"
Aft Gen. Brg.	V	.16	.16	1200	1 x Gen.

These single amplitudes of vibration are satisfactory. No appreciable amplitudes at any other frequency were observed.

3. Octave band noise measurements of both turbo-generators are shown in enclosure (1). Analysis of the noise data indicates the following:

a. No. 1 S.S. Turbo-Generator - Is satisfactory with respect to noise limits set forth in reference (c).

b. No. 2 S.S. Turbo-Generator - Exceeds the limits of reference (c) in the 1200-2400 CPS and the 2400-4800 CPS bands by 12db and 10db respectively. A discrete frequency analysis of the noise recorded at the Watch Station shows the major sources to be the 8th, 9th, 10th, and 17th

harmonics of turbine rotational frequency.

4. In view of the above, the following is recommended:

a. No. 1 S.S. Turbo-Generator - No further action is necessary from either a vibration or noise standpoint.

b. No. 2 S.S. Turbo-Generator - Is satisfactory with respect to vibration but is excessively noisy. It is recommended that:

(1) The reduction gear set of No. 2 unit be replaced by a new or rehobbed set.

(2) Both the high speed and low speed pinions be pin-checked and a copy of the data be forwarded to Code 265a for evaluation.

(3) Condition of fitted bolts and bolt holes be checked; replaced or corrected as necessary.

5. Upon completion of above work, conduct a post-repair noise and vibration survey.

6. A speedletter containing pertinent noise data will be forwarded to the Bureau of Ships by 20 September 1963.

7. This confirms Xerox copy delivered to P&E on 19 September 1963.

E. S. MOBERG

Copy to:
Codes 240
232
260
265a(W/2 copies of encl (1))
260s

Prepared by: R V Butler
Typed by: E Nasif 9/24/63

SHIP ~~USS LESTER (DE1022)~~ BOSTON NAVAL SHIPYARD

NO. 1 AND NO. 2 SHIP'S SERVICE TURBO-GENERATOR SOUND PRESSURE LEVELS CODE 265A

DATE 10 Sep 63

POSITION	GENERATOR LOAD CONDITION	OVERALL NOISE LEVEL	OCTAVE BAND (CPS) 20 75	75 150	150 300	300 600	600 1200	1200 2400	2400 4800	4800 9600
NO. 1 TURBO-GENERATOR										
1" AWAY FROM TOP OF RED. GEAR CASE	NO LOAD									
	250 KW LOAD	101	81	80	88	88	98	100	96	86
1" AWAY FROM PINION SIDE OF RED. GEAR CASE	NO LOAD									
	250 KW LOAD	103	88	86	88	92	98	102	99	87
AT WATCH STATION	NO LOAD									
	250 KW LOAD	90	78	79	80	80	84	87	83	78
NO. 2 TURBO-GENERATOR										
1" AWAY FROM TOP OF RED. GEAR CASE	NO LOAD									
	250 KW LOAD	108	96	85	101	94	98	104	102	86
1" AWAY FROM PINION SIDE OF RED. GEAR CASE	NO LOAD									
	250 KW LOAD	106	84	83	92	90	95	105	105	90
AT WATCH STATION	NO LOAD									
	250 KW LOAD	99	74	77	88	84	86	97	95	79
GENERAL SPECIFICATIONS FOR SHIPS OF THE U.S. NAVY SECTION S1-10-C, CATEGORY D OF 1 APRIL 1958			110	105	100	90	90	85	85	85

97 = Excessive

REF: 0 DB = 0.0002 DYNES/CM²

ENCLOSURE 1

265
A0108

APR 3 1963

MEMORANDUM

From: Code 265
To: Codes 211 225

Subj: USS PAWCATUCK (A0108); Noise and Vibration Survey on No. 1 Ship's Service Turbo-Generator, report of

Ref: (a) Design Services Request No. 313-30 of 31 Dec 1962
(b) BUSHIPS INST. 9610.12 Ser 541-1147 of 25 Jun 1959

1. A sound and vibration survey was conducted on Number 1 ship's service turbo-generator of PAWCATUCK at pierside on 28 March 1963 in compliance with reference (a).

2. The results of the survey are as follows:

a. The maximum single amplitudes of vibration measured underload conditions are listed below:

Position	Dir.	Displacement(S.A. Mils) 200 KW Load	Freq. (C.P.M.)	Source
Fwd. Gen. Brg.	V	.16	5645	1X Turbine
" " "	P/S	.12	"	"
Fwd. Pinion Brg.	V	.13	"	"
Aft. " "	V	.16	"	"
" " "	F/A	.12	"	"
Aft. Gen. Brg.	V	.62	1200	1X Gen.
" " "	P/S	.8	1200	"

These amplitudes of vibration are satisfactory. No appreciable amplitudes at any other frequency were observed.

b. Octave band noise level readings taken at the watch station under a 200 KW load are within the limits set forth in reference (b).

3. In view of the above, no corrective action is necessary from either a vibration or noise standpoint.

4. This confirms verifax copy delivered to Planning and Estimating on 1 April 1963.

4/2

E. S. MOBERG

Copy to:
Ship Supt. USS PAWCATUCK (A0108)
Codes 232 260
260S 265(2)

222

Prepared by: R. Lanza Typed by: G. Kasabian 4-2-63

265
DD697
MAY 10 1963

MEMORANDUM

From: Code 265
To: Codes 212 & 225

Subj: USS SPERRY (DD697); Vibration and Noise Survey of No. 2 S/S Turbo-Generator, report of

Ref: (a) Design Services Request No. 370-10
(b) BUSHIPS INST. 9610.12 Ser. 541-1147 of 25 Jun 1957

1. A post-repair survey was conducted on Number 2 S.S. Turbo-Generator on SPERRY at pierside on 30 April 1963 in compliance with reference (a).

2. The maximum amplitudes of vibration measured on the unit while operating at load and no load are as follows:

Position	Dir.	Displacement (S.A. Mils) No Load	Displacement (S.A. Mils) 150 KW Load	Freq. (C.P.M.)	Source
Fwd. Turb. Brg.	Vert.	.08	.07	10,020	1X Turbine
" " "	P/S	.02	.03	"	"
" " "	F/A	.05	.06	"	"
Aft. Pinion Brg.	Vert.	.04	.05	"	"
" " "	P/S	.02	.06	"	"
Aft. Gen. Brg.	Vert.	.16	.22	1,200	1X Gen.

The above amplitudes of vibration are satisfactory. No appreciable amplitudes at any other frequency were observed.

3. The noise level recorded at the watch station with the unit operating at no load and 150 KW load indicates that it is satisfactory and within the limits specified in reference (b).

4. No further corrective action is necessary to the subject unit either from a sound or vibration viewpoint.

5. This confirms XEROX copy delivered to Planning and Estimating on 6 May 1963.

E. S. Moberg

E. S. MOBERG

Copy to:
Ship Supt. USS SPERRY (DD697)
Codes 232
260S
260
265(2)(w/1 copy of Generator Sound Pressure Levels)

223

SHIP USS SPERRY (DD697) BOSTON NAVAL SHIPYARD

NO. 1 AND NO. 2 SHIP'S SERVICE TURBO-GENERATOR SOUND PRESSURE LEVELS CODE 265A

DATE 30 Apr 1963

POSITION	GENERATOR LOAD CONDITION	OVERALL NOISE LEVEL	OCTAVE BAND (CPS) 20 75	75 150	150 300	300 600	600 1200	1200 2400	2400 4800	4800 9600
NO. 1 TURBO-GENERATOR										
1" AWAY FROM TOP OF RED. GEAR CASE	NO LOAD									
	KW LOAD									
1" AWAY FROM PINION SIDE OF RED. GEAR CASE	NO LOAD									
	KW LOAD									
AT WATCH STATION	NO LOAD									
	KW LOAD									
NO. 2 TURBO-GENERATOR										
1" AWAY FROM TOP OF RED. GEAR CASE	NO LOAD	96	81	84	88	89	86	89	86	74
	150 KW LOAD	97	81	80	91	93	89	85	87	74
1" AWAY FROM PINION SIDE OF RED. GEAR CASE	NO LOAD	97	75	83	91	92	93	86	80	72
	150 KW LOAD	99	78	82	88	89	96	89	86	77
AT WATCH STATION	NO LOAD	92	78	81	88	90	81	81	77	70
	150 KW LOAD	92	78	80	85	86	82	86	80	70
GENERAL SPECIFICATIONS FOR SHIPS OF THE U.S. NAVY SECTION S1-10-C, CATEGORY D OF 1 APRIL 1958			110	105	100	90	90	85	85	85

REF: 0 DB = 0.0002 DYNES/CM2

ENCLOSURE 1

224

265a
DD875

DEC 12 1963

MEMORANDUM

From: Code 265
To: Codes 212 and 225

Subj: U.S.S. TUCKER (DD 875); No. 1 & 2 Ship Service Turbo Generator, Vibration and Sound Survey, report of

Ref: (a) J. O. 12458-0101
(b) BUSHIPS INST 9610.12 Ser 541-1147 of 25 Jun 1959

1. A vibration and sound survey was conducted on the subject units of TUCKER while pierside on 23 October 1963, in accordance with reference (a).

2. The results of the surveys are as follows:
(a) The maximum amplitudes of vibration measured on both units under load and no load at normal operating speed are:

		DISPLACEMENT (S.A.MILS)					
		No I S.S.GEN.		No II S.S.GEN.		FREQ.	
POSITION	DIR	No Load	100KW Load	No Load	100KW Load	(CPM)	SOURCE
Fwd. Turb. Brg.	V	.03	.01	.16	.18	10,020	1 x Turbine
" " "	P/S	.04	.03	.19	.20	"	"
" " "	F/A	.05	.04	.08	.07	"	"
Aft Pinion Brg	P/S	.08	.06	.06	.07	"	"
Aft Bull Gr Brg	P/S	.04	.04	.07	.08	"	"
" Gen. Brg.	P/S	.22	.34	.70	.34	1200	1 x Gen

The above vibration amplitudes are satisfactory. No appreciable vibration at any other frequency was detected.
(b) Noise measurements taken at the watch station under load and no load conditions were satisfactory for both units under the requirements set forth in reference (b).

3. No corrective action is necessary from a vibration or sound standpoint.

4. This confirms XEROX copy delivered to P & E on 31 October 1963.

H. S. MEIER

Copy to: Codes 240
260
260s
232
271
265(2) (w/1 copy of sound Pressure Levels)

225

SHIP U.S.S. TUCKER (DD875)

BOSTON NAVAL SHIPYARD

NO. 1 AND NO. 2 SHIP'S SERVICE TURBO-GENERATOR SOUND PRESSURE LEVELS

CODE 265A

DATE 23 Oct 63

POSITION	GENERATOR LOAD CONDITION	OVERALL NOISE LEVEL	OCTAVE BAND (CPS) 20 75	75 150	150 300	300 600	600 1200	1200 2400	2400 4800	4800 9600
NO. 1 TURBO-GENERATOR										
1" AWAY FROM TOP OF RED. GEAR CASE	NO LOAD	95	80	86	86	89	84	85	81	82
	200 KW LOAD	95	80	86	86	89	83	84	80	83
1" AWAY FROM PINION SIDE OF RED. GEAR CASE	NO LOAD	97	81	85	87	89	87	85	83	85
	200 KW LOAD	97	81	85	87	84	87	84	84	84
AT WATCH STATION	NO LOAD	90	81	83	81	83	78	78	77	78
	200 KW LOAD	90	81	83	81	83	77	78	77	78
NO. 2 TURBO-GENERATOR										
1" AWAY FROM TOP OF RED. GEAR CASE	NO LOAD	93	84	84	86	88	88	84	81	78
	110 KW LOAD	93	84	84	87	87	88	84	81	77
1" AWAY FROM PINION SIDE OF RED. GEAR CASE	NO LOAD	93	80	84	86	87	83	83	81	80
	110 KW LOAD	93	80	84	86	86	83	83	81	80
AT WATCH STATION	NO LOAD	91	78	82	82	85	81	81	78	73
	110 KW LOAD	91	78	81	82	85	80	82	78	72
GENERAL SPECIFICATIONS FOR SHIPS OF THE U.S. NAVY SECTION S1-10-C, CATEGORY D OF 1 APRIL 1958			110	105	100	90	90	85	85	85

REF: 0 DB = 0.0002 DYNES/CM²

ENCLOSURE 1

265
DD701

SEP 18 1963

MEMORANDUM

From: Code 265
To: Codes 213 and 225

Subj: USS WEEKS (DD701); Post repair sound and vibration survey on No.2 Ship's Service Turbo-Generator, report of

Ref: (a) Design Service Request No. 059-04 of 30 Aug 1963.
(b) BUSHIPS Inst 9610.12 Ser 541-1147 of 25 Jun 1957.

1. A post repair vibration and noise survey was conducted on the No.2 Ship Service Turbo-Generator at sea on 3 September 1963, in compliance with reference (a).

2. Noise and vibration measurements were recorded with the unit operating under a 130 K.W. load. Results are as follows:

a. The octave band analysis of the noise measured at the nearest watch station indicates that the noise levels in all bands are satisfactory with respect to the limits set forth in reference (b).

b. The maximum single amplitude of first order turbine vibration was 0.09 mils measured vertically on the forward turbine bearing. This is satisfactory.

3. In view of the above, no further action is recommended to No.2 Ship Service Turbo-Generator from either a noise or vibration viewpoint.

4. This confirms Xerox copy delivered to P & E on 12 September 1963.

E S Moberg

E. S. MOBERG

Copy to:
232
240
260
265 (2)
260s

265
AD19

JUN 11 1963

MEMORANDUM

From: Code 265
To: Code 1200

Subj: USS YOSEMITE (AD19); Vibration and Noise Survey on Ship's Service Turbo-Generator No's 420803 and 420802, report of

Ref: (a) Verbal Request from Code 1200
(b) BUSHIPS INST. 9610.12 Ser 541-1147 of 25 Jun 1957

1. In compliance with reference (a), noise and vibration surveys were conducted on rebuilt turbo-generators Numbers 420803 and 420802 of YOSEMITE at the Fitchburg plant of General Electric Company on 3 June 1963.

2. Vibration measurements were taken at full load conditions and the maximum single amplitudes of vibration are listed below:

Position	Direction	Displacement (S.A. Mils) No. 420803	Displacement (S.A. Mils) No. 420802	Freq. (CPM)	Source
Fwd. Turb. Brg.	Vert.	.035	.035	10033	1X Turbine
	P/S	.045	.03	10033	"
	F/A	.06	.01	10033	"
Fwd. Pinion Brg.	Vert.	.02	.02	10033	"
	P/S	.01	.02	10033	"
Aft Pinion Brg.	Vert.	.04	.04	10033	"
	P/S	.05	.05	10033	"
	F/A	.03	.04	10033	"
Fwd. Bull Gear Brg.	Vert.	.70	.08	1200	1X Generator
	P/S	.70	.30	1200	"
	F/A	.18	.18	1200	"
Aft Bull Gear Brg.	Vert.	.5	.12	1200	"
	P/S	.60	.25	1200	"
Aft Generator Brg.	Vert.	.50	.08	1200	"
	P/S	.15	.15	1200	"
	F/A	.50	.15	1200	"

These single amplitudes of vibration are satisfactory.

3. Noise measurements are detailed in enclosure (1). Number 420803 exceeds the limits by 2db in the 1200-2400 cps band. Number 420802 exceeds the limits by 1db in 600 to 1200 cps and 1200 to 2400 cps bands respectively. These levels are allowable according to reference (b).

265
AD19

MEMORANDUM

4. With respect to vibration, these units are entirely satisfactory and no further action is necessary.

5. With respect to noise, these units are already at the upper limits of acceptability. From past experience it is felt that after six (6) months operation these noise levels will be excessive. Correction of this condition requires the installation of a new or rehobbed set of reduction gears for each unit.

6. This confirms XEROX copy delivered to INDMAN on 7 June 1963.

E. S. MOBERG

Copy to:
Codes 265(2)
260
260S

SHIP USS YOSEMITE (AD19)

BOSTON NAVAL SHIPYARD

NO. ~~1~~ 420703 AND NO. ~~2~~ 420802 SHIP'S SERVICE TURBO-GENERATOR SOUND PRESSURE LEVELS (AT G.E. PLANT IN FITCHBURG, MASS.)

CODE 265A

DATE 3 JUNE 1963

POSITION	GENERATOR LOAD CONDITION	OVERALL NOISE LEVEL	OCTAVE BAND (CPS) 20 75	75 150	150 300	300 600	600 1200	1200 2400	2400 4800	4800 9600
# 420 803 ~~NO. 1~~ TURBO-GENERATOR										
1" AWAY FROM TOP OF RED. GEAR CASE	NO LOAD	96	81	86	86	85	87	91	85	80
	1060 KW LOAD	102/104	88	89	90	88	95	98/101	94/96	90
1" AWAY FROM PINION SIDE OF RED. GEAR CASE	NO LOAD	94	81	76	84	88	85	83	82	81
	1000 KW LOAD	99	82	86	85	88	92	84/88	89/94	92
AT ~~WATCH STATION~~ 4' AWAY FROM PINION SIDE	NO LOAD	84	78	80	82	80	80	81	78	71
	1000 KW LOAD	92	78	81	82	81	84	(86/87)	83	77
# 420 802 ~~NO. 2~~ TURBO-GENERATOR										
1" AWAY FROM TOP OF RED. GEAR CASE	NO LOAD	94	79	84	79	88	82	89	83	80
	1000 KW LOAD	101	89	84	82	92	91	95	91	82
1" AWAY FROM PINION SIDE OF RED. GEAR CASE	NO LOAD	93	78	82	83	87	81	86	81	79
	1000 KW LOAD	101	86	82	84	87	89	100	96	88
~~AT WATCH STATION~~ 4' AWAY FROM PINION SIDE	NO LOAD	88	74	76	83	78	77	82	80	72
	1000 KW LOAD	91	78	76	87	78	(91)	(86)	82	74
GENERAL SPECIFICATIONS FOR SHIPS OF THE U.S. NAVY SECTION S1-10-C, CATEGORY D OF 1 APRIL 1958			110	105	100	90	90	85	85	85

(○) = LEVEL IS HIGH BUT ALLOWABLE

REF: 0 DB = 0.0002 DYNES/CM2

ENCLOSURE 1

230