



DEPARTMENT OF THE NAVY

COMMANDER SUBMARINE FORCE
U.S. ATLANTIC FLEET
7958 BLANDY RD.
NORFOLK, VA 23551-2492

NP-1300-D-0030-93
Copy 3 of 3 Copies
1 Page
09 JUN 1993

FIRST ENDORSEMENT on RADM -- ltr NP-1300-D-0022-93 of
24 Apr 93

[removal of basic letter and enclosures)] upon

From: Commander Submarine Force, U.S. Atlantic Fleet
To: Judge Advocate General
Via: Commander in Chief, U.S. Atlantic Fleet

Subj: INVESTIGATION INTO THE COLLISION BETWEEN USS GRAYLING (SSN
646) AND A RUSSIAN SUBMARINE THAT OCCURRED IN THE BARENTS
SEA ON 20 MARCH 1993

1. Readdressed and forwarded.
2. The findings of fact and opinions of the Investigating Officer are approved.
3. I will take recommendations 1 through 4 for action.

Copy to:
CNO (N23)

Classified by: []
Declassify on: OADR

ALLBG

From: Rear Admiral , USN
To: Commander Submarine Force, U.S. Atlantic Fleet

Subj: INVESTIGATION INTO THE COLLISION BETWEEN USS GRAYLING
(SSN 646) AND A RUSSIAN SUBMARINE THAT OCCURRED IN THE
BARENTS SEA ON 20 MARCH 1993 (U)

Ref: (a) Manual of the Judge Advocate General (JAG Manual)

Encl: (1) COMSUBLANT Appointment Letter 5830 Ser N02L/01890 of
23 Mar 93 (U)
(2) Excerpt from COMSUBLANT OPORD 2102 (U)
(3) COMSUBLANT [] Message 271350Z JAN 93 (U)
(4) COMSUBLANT [] Message 191539Z FEB 93 (U)
(5) CNO [] 291725Z JAN 93 (U)
(6) CINCLANTFLT [] 221707Z FEB 93 (U)
(7) CNO [] 261510Z FEB 93 (U)
(8) CINCLANTFLT [] 022006Z MAR 93 (U)
(9) Excerpt from COMSUBLANT OPORD 2102 (U)
(10) COMSUBLANT [] Message 222013Z FEB 93 (U)
(11) USS MIAMI Message 291910Z OCT 92 (U)
(12) USS JACKSONVILLE Message 181747Z DEC 92 (U)
(13) USS BATFISH Message 272005Z JAN 93 (U)
(14) USS SAND LANCE Message 140145Z JAN 93 (U)
(15) ONI SUITLAND MD Message 251403Z FEB 93 (U)
(16) Naval Submarine School Groton, CT ltr 3522
Ser 053/S-322-92 of 11 Dec 92 (U)
(17) Sonar Operator's Sworn Statement and Transcript
with Suspect's Rights Acknowledgement/Statement (U)
(18) Sonar Supervisor's Sworn Statement and Transcript
with Suspect's Rights Acknowledgement/Statement (U)
(19) Submarine Training Facility, Charleston, SC ltr 1500
Ser 10/0450 of 1 Apr 93 (U)
(20) Chief Staff Officer, Submarine Squadron FOUR
Memorandum for the Record of 12 Apr 93 with
supporting documents (U)
(21) Completed Checklist from COMSUBLANTINST C3501.3 (U)
(22) Commander Submarine Squadron FOUR ltr of 11 Feb 93
(U) D-0001-93 (U)
(23) Excerpt from Enclosure (7) to ND-3202-D-0001-93
(24) Excerpt from Commanding Officer's Standing Order
Number Six (U)

Classified by: MULTIPLE SOURCES
Declassify on: OADR

- (25) Analyst's report concerning the 20 Mar 93 collision between USS GRAYLING and DELTA (U)
- (26) Excerpt from USS GRAYLING's Ship Position Log (U)
- (27) Defense Mapping Agency Hydrographic/Topographic Center Nautical Chart 117639 (U)
- (28) Excerpt from USS GRAYLING Ship's Deck Log (U)
- (29) USS GRAYLING Message 081400Z APR 93 (U)
- (30) Excerpt from enclosure (5) to ND-3202-0001-93 (U)
- (31) USS GRAYLING Underway Watchbill effective during period 17-20 March 1993 (U)
- (32) Excerpt from USS GRAYLING (SSN 646) Qualified Watchstanders/Proficiency Status List (U)
- (33) Sworn Statement and Transcript of sonar expert (U)
- (34) Excerpt from NWP 76-0-3 (U)
- (35) Excerpt from Enclosure (5) to ND-3202-D-0001-93 (U)
- (36) Excerpt from NWP 79-0-1 (U)
- (37) Excerpt from NWP 71-1-2 (U)
- (38) Excerpts from NP-0000-D-0105-90 (Rev. 7) (U)
- (39) Excerpts from NWP 74 (Rev. B) (U)
- (40) USS GRAYLING Sonar Search Plan and Sonar Equipment Lineup (U)
- (41) Sound Velocity Profile taken 200035Z Mar 93 (U)
- (42) Commanding Officer's Written Statement (U)
- (43) Commanding Officer's Sworn Statement and Transcript with Suspect's Rights Acknowledgement/Statement (U)
- (44) Executive Officer's Sworn Statement and Transcript with Suspect's Rights Acknowledgement/Statement (U)
- (45) Excerpts from USS GRAYLING (SSN 646) Commanding Officer's Night Orders (U)
- (46) Navigation/Operations Officer's Sworn Statement and Transcript with Suspect's Rights Acknowledgement/Statement (U)
- (47) Excerpts/comments from case 14205 [] recorded on 20 March 1993 (U)
- (48) Excerpts/comments from reel 90054 recorded from 0443:30Z to 1247:00Z on 20 March 1993 (U)
- (49) Engineer Officer's Sworn Statement and Transcript with Suspect's Rights Acknowledgement/Statement (U)
- (50) Sketch of Analog Video Signal Display Unit (AVSDU) display shortly before the time of the collision (U)
- (51) CTU [] Message 211100Z MAR 93 (U)
- (52) CTU [] Message 221000Z MAR 93 (U)
- (53) Excerpt from USS GRAYLING NAVDEPTINST 5400.28A (U)
- (54) USS GRAYLING Standard Operating Procedure (SOP) Navigation and Piloting Bill (U)

- (55) Sonar Operator's Sworn Statement and Transcript with Suspect's Rights Acknowledgement/Statement (U)
- (56) Moscow ITAR-TASS World Service Russian Interfax in English of 1407 GMT 22 Mar 93/FOREIGN BROADCAST INFORMATION SYSTEM Message 221439Z MAR 93 (U)
- (57) MOSCOW ROSSIYSKAYA GAZETA first edition of 1 Apr 93/FOREIGN BROADCAST INFORMATION SYSTEM Message 311915Z MAR 93 (U)
- (58) MOSCOW JOURNAL KRASNAYA ZVEZDA press release, 27 Mar 93 (U) (U)
- (59) COMSUBLANT [] Message 211808Z MAR 93
- (60) Damage estimate based on divers inspection of hull damage to USS GRAYLING (SSN 646) (U)
- (61) Damage to the DELTA (U)
- (62) Report of post-deployment AN/BQQ-5(B) Sonar operational verification conducted from 8-13 Apr 93 (U)
- (63) Memorandum for the Record regarding the pre-deployment training conducted by USS GRAYLING (U)
- (64) Memorandum for the Record regarding the installation of the auxiliary sonar suite installed on USS GRAYLING (U)
- (65) Memorandum for the Record regarding post-mission review of the USS GRAYLING Sonar Search Plan (U)
- (66) Excerpt from NWP-71 (Rev. B) (U)
- (67) USS GRAYLING (SSN 646) Operational and Tactical Information (U)
- (68) CTU [] Message 251245Z MAR 93 (U)
- (69) List of Post-Collision Damage Checks and Results (U)
- (70) Excerpt from David W. Taylor Research Center Report DTRC/SAD-592/34E-1921 of January 1992 (U)
- (71) Excerpts from Commanding Officer's Standing Order Number Eight (U)
- (72) Excerpt from Enclosure (4) to NP-3202-D-0001-93 (U)
- (73) Annotated drawing of damage to USS GRAYLING (SSN 646) (U)
- (74) Excerpt from Operating Guidelines TM FZ1463-3-88 (U)
- (75) USS GRAYLING Sonar Equipment Modifications (U)
- (76) Memorandum regarding preliminary cost estimate to repair damage to the GRAYLING (U)
- (77) VHS format video tape of diver survey of USS GRAYLING (SSN 646) hull damage (U)
- (78) Memorandum regarding training ICO USS GRAYLING (SSN 646) (U)
- (79) OPNAVINST S1510.9D (U)

- (80) Sonar Operator's Sworn Statement and Transcript with Suspect's Rights Acknowledgement/Statement (U)
- (81) Fire Control Tracking Party Member's Sworn Statement and Transcript with Suspect's Rights Acknowledgement/Statement (U)
- (82) Photographs (with negatives) of damage to USS GRAYLING (SSN 646) taken in dry dock (U)
- (83) VHS format video tape of hull damage to USS GRAYLING (SSN 646) taken in dry dock (U)
- (84) Excerpt from NWP 71-1-2 (U)
- (85) Excerpt from draft copy of Enclosure (4) of ND-3202-D-0001-93 (U)
- (86) Memorandum for the Record regarding Tab (A) of Enclosure (4) of ND-3202-D-0001-93 (U)
- (87) Memorandum for the Record regarding Submarine Training Facility, Charleston, South Carolina (U)
- (88) Memorandum regarding time of Officer of the Deck relief on 20 March 1993 (U)
- (89) List of acronyms (U)

Preliminary Statement

1. [] As directed by enclosure (1), I conducted an investigation without a hearing concerning the facts surrounding the collision that occurred between USS GRAYLING (SSN 646) and a Russian nuclear submarine [] on 20 March 1993. This investigation was conducted on board USS GRAYLING and in Charleston, South Carolina between 4 April 1993 and 21 April 1993. The objective of this investigation was to determine the cause of the collision, to ascertain resulting damage to USS GRAYLING and to determine the responsibility therefore. The broad areas evaluated included the state of training of the personnel involved, the condition and material readiness of equipment which was employed by USS GRAYLING and germane to the investigation and which were relevant to the events preceding, during and subsequent to the collision. The events of this incident were reconstructed using information from records on board USS GRAYLING, facilities of the various technical agencies in the Department of the Navy and the Submarine Training Facility, Charleston, South Carolina. It should be noted that USS GRAYLING did not have the same degree of detailed analysis capability of the events prior to and subsequent to the collision as were available to the investigation team. To ensure time conformation during the events, automatic data recording systems were used where possible. USS GRAYLING's track was reconstructed from all available data on board including recordings and logs. Where recordings were not available, ship's hand written logs were available. Ambiguities were resolved by talking to the most experienced personnel who showed a clear recollection of events. All individuals interviewed were fully cooperative.
2. [] All reasonably available evidence was collected and all requirements of enclosure (1) were met.
3. [] I was assisted in this investigation by the Commander Submarine Force U.S. Atlantic Fleet Assistant Chief of Staff for Readiness and Tactical Training, the Commander Submarine Group TWO Flag Lieutenant, a Principal Analyst assigned to Commander Submarine Development Squadron TWELVE, an Analyst assigned to Commander Submarine Development Squadron TWELVE, a Senior Chief Sonarman assigned to the Commander Submarine Group TWO Sonar and Tactical Weapons Certification Team and a Cryptologic Technician (Administrative) First Class assigned to Naval Security Group Activity, Groton, Connecticut. The Commander Submarine Force U.S. Atlantic Fleet Force Judge Advocate was consulted concerning

issues potentially related to admiralty law and law of the sea. Additionally, he provided advice regarding the procedural aspects of the investigation. Prior to interviews, Article 31(b), UCMJ, warnings were given to all personnel whose performance of duty was reasonably at issue. These personnel were reminded of their rights under Article 31(b) at subsequent interviews or if the subsequent interviews occurred more than one day after the warnings had been sworn, new warnings were administered. After being advised of his rights, the Commanding Officer requested that a written statement he had prepared be included in the investigation, in addition to the transcript of his interview. Statements that other crew members prepared prior to my arrival on board were not used in any fashion in this investigation.

4. [] In reviewing written and oral statements all times are referenced to Greenwich Mean Time (GMT) (Z) and all courses referenced to heading in degrees True (T).

Findings of Fact

1. [] The USS GRAYLING (SSN 646) was authorized to conduct operations in international waters, [] at the time of the collision. (Enclosures (2), (3), (4), (5), (6), (7), (8), (9) and (10))

2. [] All sonar equipment installed on board GRAYLING for the deployment was approved. (Enclosures (64), (67), (72) and (75))

3. [] A pre-deployment sonar system groom was conducted.

[] (Enclosures (15) and (16))

4. []

(11), (12), (13), (14) and (70))

[] (Enclosures

5. [] GRAYLING pre-deployment training for Fire Control [] Parties was conducted and assessed by Submarine Training Facility (SUBTRAFAC) Charleston, South Carolina. []

(Enclosures (19), (78) and (87))

6. [] GRAYLING successfully completed a [] workup and certification program prior to deployment and was evaluated as []

[] (Enclosures (20), (21) and (22))

7. [] After departing homeport, GRAYLING conducted extensive training of wardroom and sonar personnel. (Enclosure (23))

8. [] In Standing Order Number Six, the Commanding Officer

[] USS GRAYLING (SSN 646) directed that compliance with the direction of NWP-74 (Rev B) was mandatory at all times. (Enclosure (24))

9. [] The Commanding Officer provided guidance on [] in Standing Orders Number Six and Eight. The Commanding Officer reaffirmed this policy when interviewed during this investigation. GRAYLING was operated in accordance with the Commanding Officer's Standing Orders []

[] (Enclosures (24), (25), (43) and (71))

10. [] In Standing Order Number Six, the Commanding Officer directed the actions to be taken in response to a close aboard submerged contact. (Enclosure (24))

11. [] After departing homeport, GRAYLING wrote and executed a test procedure designed to evaluate changes in sonar system performance resulting from recent modifications. This test was conducted with another United States Navy attack submarine (SSN).
[

(Enclosures (17), (25), (43), (44), (46), (74), (80) and (84))]

12. [] The ship's view regarding bearing accuracy improvement changed as the investigation progressed. (Enclosures (72), (85) and (86))

13. [] On 20 March 1993, USS GRAYLING was conducting independent operations in international waters [

(Enclosures (26), (27) and (28))]

14. [] Section 3 was on the midwatch from about 2330Z, 19 March 1993 to about 0530, 20 March 1993. (Enclosure (31))

15. [] Section 1 was on watch at the time of the collision. (Enclosure (31))

16. [] The key personnel on watch [] satisfactorily completed all watchstation qualifications with the exception of one sonarman who was still under the supervision of a senior experienced qualified sonarman. (Enclosures (31), (32), (33) and (36))

17. [] Sonar Section 1 was manned as required by NWP 76-0-3 and Office of the Chief of Naval Operations Instruction (OPNAVINST) S1510.9D for submerged operations. (Enclosures (31), (32), (33), (34) and (79))

18. [] GRAYLING initially detected a contact, [] (Enclosure (35))]

19. [] Contact [] was also designated []
[] subsequently this contact was determined to be a []
(Enclosures (25), (35) and (38))

20. [] The sonar search plan used by GRAYLING was the search
plan recommended by the []
[] and their type of main frame sonar system. (Enclosures
(40) and (41))

21. [] Acoustic conditions during the interaction were moderate
with about 10 knots of wind and an approximate sea state one. []
[] (Enclosures (25), (35) and (41))

22. [] During the early morning hours of 20 March, the
midwatch []

(Enclosures (17), (25), (29), (30), (37), (39), (43) and (81)) []

23. [] the
Commanding Officer awakened and came to the CONN. He discussed
the tactical situation with both the Command Duty Officer and the
Officer of the Deck. []

[] After further discussion, the Commanding Officer
concluded this course of action to be safe, [] (Enclosures
(17), (18), (25), (35), (42), (43) and (46))

24. [

] The OOD was immediately informed. [

] (Enclosures

(25), (35), (43), (44), (45) and (46))

25. [] Based on this report [

] (Enclosures (42), (43) and

(46))

26. [] At the time specified by the Commanding Officer, [] However, the Command
Duty Officer (CDO), the Executive Officer, directed the OOD to
instead maintain [

] (Enclosures (25), (28) and (46))

27. [

] This confirmation was reported
to the sonar supervisor but was not reported to the OOD.
(Enclosures (25), (46) and (47))

28. [

] nearing time for watch relief,

time, [

] the Officer of the Deck [

] At that
concurrent in this [] change. (Enclosures (25), (35), (44) and
(46))

29. [] The Officer of the Deck was relieved by the oncoming
Officer of the Deck [

] once watch relief had occurred, []

[(Enclosures (46), (47), (49) and (88))

30. [

[] (Enclosures (24), (25), (28), (47) and (48))

31. [] At about this same time, while monitoring the remote sonar display unit on the Conn, the OOD [] (Enclosures (49) and (50))

32. [] the OOD executed the correct [] for this situation. By this time GRAYLING was "in extremis". This action was not effective in avoiding collision. (Enclosures (25), (28), (49), (50) and (66))

33. [] GRAYLING was submerged at the time of the collision, approximately 0545:42Z. (Enclosures (25), (28), (47) and (48))

34. [] The Officer of the Deck ordered the ship "Rigged for Collision" after impact. (Enclosures (28) and (47))

35. [] GRAYLING was forced upward as a result of the impact. (Enclosures (25), (42) and (43))

36. [] After the collision, the Commanding Officer determined that he had collided with a [] He remained in the vicinity of the collision [] concluding that the [] was seaworthy and that her crew was safe. Based on that conclusion, GRAYLING departed datum. (Enclosures (25), (28), (42), (43), (49) and (52))

37. [] There were no injuries to GRAYLING crew members as a result of the collision. (Enclosure (51))

38. [] The collision datum was []

[] (Enclosures (27) and (28))

39. [] The position of GRAYLING at the time of collision was determined by dead reckoning ship's motion from a Global positioning System (GPS) fix obtained at 1914Z on 19 March. The quality ascribed to the fix was "Excellent". []

[] (Enclosures (26), (53) and (54))

40. [] The Electrically Suspended Gyro Navigation (ESGN) system was operating normally and was accurately estimating ship's position. (Enclosures (26) and (43))

41. [] On 22 March 1993, a Moscow Interfax indicated that at 0545Z on the morning of 20 March, a Russian Northern Fleet nuclear submarine collided with a foreign submarine at a depth of 74 meters below the surface outside of Russian territorial waters. According to the Press Center of the Russian Navy, the Russian nuclear submarine returned to its base unassisted at 0900 on 21 March. External inspection of the submarine revealed slight damage to the fore section of the hull. No casualties were reported. (Enclosures (56) and (61))

42. [] The MOSCOW RUSSIYSKAYA GAZETA first edition of 1 April 1993, reported that GRAYLING had "grazed the bow section of our submarine and was just 20 meters away from the conning tower of our atomic submarine." The report quoted Rear Admiral [] the Russian Navy's Chief Navigation Officer as stating that "for around an hour our ship followed an unchanged course at the same depth..." The MOSCOW KRASNAYA ZVEZDA quoted the Watch Officer Lieutenant Captain [] who participated in the incident: "We had been proceeding for around 50 minutes without changing course. And suddenly, the submarine drove into what seemed like an underwater rock. I heard a dull crash. Shuddering, the vessel started to nose dive...After the submarine leveled off, the compartments were inspected. No holes or ingress of water were detected." (Enclosures (57) and (58))

43. [] After the collision, GRAYLING was directed to [] return to Charleston, South Carolina. The Commanding Officer of GRAYLING conducted extensive checks for internal damage. []

[] Additionally, he surfaced to check for external damage. (Enclosures (42), (59), (68) and (69))

44. [] The Navy conducted a preliminary damage estimate based on the divers' report and a post dry-docking inspection of GRAYLING subsequent to the collision. [] (Enclosures (60), (73), (76), (77), (82) and (83))

45. [] A post-event sonar operational verification was performed on GRAYLING. [] (Enclosure (62))

ALL BY

46. [] A post-event audit by the investigation team of the pre-deployment training conducted by GRAYLING indicated that the training conducted covered the topics required by COMSUBLANT Instruction C3501.3, Pre-deployment Training and the COMSUBLANT/COMSUBPAC Training Manual. (Enclosure (63))

47. [] A post-event reconstruction of the effective sonar search plan using the [] was conducted. []

[] GRAYLING was operating as recommended by the sonar search plan. (Enclosure (65))

48. [] Post-event analysis and processing of available acoustic data indicated:

a. [] []

b. [] []

(Enclosure (25))

49. [] Post-event analysis by the investigation team revealed that []

[] This data was not reported or was reported late to the Officer of the Deck (OOD) - (Enclosures (25), (47) and (55))

50. []

(Enclosures (25), (57) and (58)) []

Opinions

1. The collision occurred in international waters.
 [FF (1), (13), (38) and (41)]

2. The type, quality and extent of pre-deployment training received by GRAYLING met the requirements of higher authority.
[FF (5), (6) and (46)]

3. The material condition of and the equipment installed on board GRAYLING were adequate [FF (2), (3), (4) and (45)]

4. The performance of the equipment installed on board GRAYLING and relevant to this investigation was [FF (39), (40) and (45)]

5. The assumption by the Commanding Officer and crew that

As a result, they

[FF (11), (12), (22) and (48)]

6.
[FF (9), (10), (11), (22), (23), (24), (26), (27), (28) and (49)]

7.
[FF (21), (48) and (49)]

8. The Commanding Officer's decision

[FF (9)]

9.
[FF (9), (10), (11), (20), (21), (22), (23), (24), (25), (26), (27), (28), (47), (48) and (49)]

10.

[] []
[] [] [FF
(8), (9), (22), (23), (24), (25) and (26)]

11. [] [] The midwatch OOD and the CDO did not comply with the Commanding Officer's desire []
[] Upon arriving on the CONN at about 0430Z and assessing the tactical situation, the Commanding Officer took no action to correct this error. []

[] [FF (22) and (23)]

12. [] [] The collision would probably have been avoided if the OOD at the time of the collision had the Deck and the Conn for only a short while longer prior to impact. []

[] [FF (28) and (29)]

13. [] GRAYLING had completed all the training and certification required by higher authority []

[] GRAYLING did not properly integrate this information and translate it into safe and []
[] [FF (5), (6), (9), (10), (11), (12), (20), (21), (22), (23), (24), (25), (26), (27), (28), (29), (46), (47), (48) and (49)]

14. [] [] The tactical decisions made by the Commanding Officer and the Officer of the Deck after the time of collision were appropriate to ensure the safety of GRAYLING and to ascertain the seaworthiness of the [] [] [FF (34) and (36)]

15. [] [] while it is difficult to ascribe knowledge of the tactical situation and intent to the Commanding Officer of the []

(42) and (50)]

[] [FF

[

]

Recommendations

1. [] It is recommended [

]

2. [] It is recommended [

]

3. [] It is recommended [

]

4. [] It is recommended [

]

b6

[]
[]

]

]