

Defe 69/846

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S. 599 A (Rev. 678)

PACK No. 226232

Office Date Stamp

Office Date Stamp: -6 OCT 1952
NORTHWOOD HAS SHIP MODEL

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Cross References:

No. Subject

SUBJECT:

REPORT OF PROCEEDINGS

Fosm

F 106

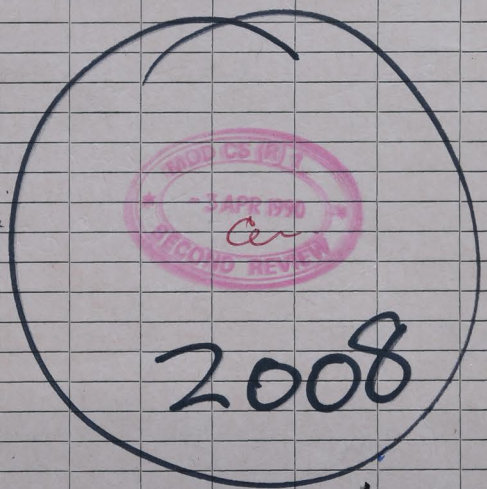
TKA

8/9/52

SUBJECT: REPORT OF PROCEEDINGS - Fosm

CIRCULATION

Table with 12 columns: Referred to, Initials and Date, Referred to, Initials and Date, Referred to, Initials and Date, Referred to, Initials and Date, Referred to, Initials and Date, Referred to, Initials and Date. Includes handwritten entries like NP 3, SEC, and various initials.



DEFE 69/846

BRING UP

Table with 3 columns: Date, To, Remarks. Includes handwritten entries like 15 Nov 82, Sec 0, and 16 Apr 84.

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PACK No. 226232

1613

SECTION A

This document is to be signed by an officer of the rank of Lieutenant or above-CONF
Lieutenant Commander or above-RET

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Authorisation is given for*... WTL STOKER
to make photocopy(ies) of the following documents numbering. 11 pages.

ORIGINATOR... FCSM... REFERENCE... SM 5019/135.A (+1 page covering letter)

DATE... 9 Mar 84... CLASSIFICATION... Secret (for SECRET Witness required)**

CINCFLEET PACK NO. 226/2/34.....

AUTHORISING SIGNATURE... [Signature] NAME IN CAPITALS... P.M. FORBES

RANK... LT STAFF TITLE... SEC W

DATE... 21/3/84.....

SECTION B - DISPOSAL OF COPIES

Note: If photocopy(ies) are to be used as an enclosure to a CINCFLEET letter quote the covering letter.

COPY NO ADDRESS OF STAFF TITLE OR RECIPIENT

- 1. FOFI via ACOS(W) to NFA 102 No 21/84
- 2. _____
- 3. _____
- 4. _____
- 5. _____

SECTION C

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*(who is to be the person authorised above).....

(Required For SECRET)**

WITNESS... [Signature]

NAME RTC... SWINNELTON
(In Capitals)

DATE... 22 Mch 84.....

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Pack No.

STAFF MINUTE SHEET

- Notes: 1. Use both sides of this form and place subsequent minute sheets on top, not beneath.
2. Drafts should be placed opposite on the appropriate form (draft letter form or signal pad), and NOT on this sheet.

NP No. 1

From: FGS M

Ref: Sm. 2000/2/24.W

Dated: 5/10/82

Class: S

M1

By WTR O

1. Copies of NP1 sent to OSG, WAR DIARY, MTS DIARY, ~~DIARY~~ ^{BATH.} and MOD (NHR).

6/10/82

M1

KP

By Sec O

1. Separate copies of this ROR have been circulated as below:

Temp file A - FWO
FASWO
FDO
Acos(W) -

Temp file C - Acos(olp)
FDD
Fomo
Acos(olp)

Temp file B - FLC
M2C
FMAO
Mat-1
OCL
FMETOC
~~...~~

Temp file D - Acos(Cus)
Flo
SO(z)
Acos(Cuz)

On completion, the packs will be combined and further circulated as required.

2. POLA acknowledging receipt.

6/10.

M

Pack No.

STAFF MINUTE SHEET

- Notes: 1. Use both sides of this form and place subsequent minute sheets on top, not beneath.
2. Drafts should be placed opposite on the appropriate form (draft letter form or signal pad), and NOT on this sheet.

NP No. 1 From: Room
 Ref: SM 2000/2/24.11 Date: 5/10/82 Class: SUCRESB.

By WTC 0

1. Separate copies of NP 1 have been circulated as follows:

Temp file A: Fwo
FASWO
FOO
ACOS (w)

Temp file B: File
MIC
FMSO
Met 1.
OCI
FMSIOC

Temp file C: ACOS (OP)
FOO
FMSO
ACOS (OP)

2. On completion, the papers will be combined and further circulated as required.

[Signature], 7/10/82

ML m2

By ACOS (w)

Points raised have already been taken care of in CTF 317's relevant records. [Signature]

11 Oct 82

STAFF MINUTE SHEET

- Notes: 1. Use both sides of this form and place subsequent minute sheets on top, not beneath.
2. Drafts should be placed opposite on the appropriate form (draft letter form or signal pad), and NOT on this sheet.

No. No. 1 From: FOSM

Re: S.M. 2000/2/24.W Dated: 5/10/82 Class: S UK eyes B. Temple

By Sec 0

M1

This temporary file circulated for comment and required action. On completion of circulation the facts will be combined and further circulated as required.

6/10.

~~M3~~

By FMO.

No comment.

J.

3-11-82.

~~M4~~

By FMO

1. Amend para 16; this has been quoted earlier to MOD and is under very active construction.

19/11

Pack No.

STAFF MINUTE SHEET

- Notes: 1. Use both sides of this form and place subsequent minute sheets on top, not beneath.
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NP No. 2 From: CINCFLEET
Ref: 226/2132 Dated: 11 OCT 83 Class: WC

NP No. 3 From: FOSM
Ref: SM. 5020/138.0 Dated: 9 DEC 83. Class: SECRET

M5

By Sec 0

1. CMC has already noted Section 1 Para 4 - "only with my prior agreement on a case by case basis". This therefore circulated for early comment with a view to replying on CMC return from leave.

15/12.

M6

By FCO

1. Section 1 para 7 (Communications). There is nothing contentious here.

21 Dec 83

M7

By Sec Cos

Cos ③ (i).

28/12

M8 28/12

M9



staff minute sheet

Pack No.

- Notes
1. Use both sides on the form and place subsequent minute sheets on top, not beneath.
 2. Staff Officers are reminded that wherever possible comment should be in the form of a draft letter which should be placed opposite on the appropriate form and NOT on this sheet.

MS

Ry W

N/P 1+2 7x to 210/1/67.W

6/6

8

From : ADMIRAL SIR JOHN FIELDHOUSE, GCB

File (2)



COMMANDER-IN-CHIEF FLEET
NORTHWOOD, MIDDLESEX
HA6 3HP
Telephone No: Northwood 26161

DECOMAT
12 OCT 1982
DESTAT UNIT

226/2/32

Vice Admiral P G M Herbert
Flag Officer Submarines
HMS WARRIOR

11 October 1982

Dear Peter,

Your Report of Proceedings of Operation CORPORATE is a most valuable account of a vital contribution to the success of the Operation. It will provide much useful information for my reports of Lessons Learned as well as forming an invaluable historical record.

Well done.

Courage.
John F.



Flag Officer Submarines
 Eastbury Park
 Northwood
 Middlesex
 HA6 3HA

SM.2000/2/24.W

Northwood 26161 Ext. 7358

The Commander-in-Chief Fleet
 Northwood
 Middlesex

272/10.W.

S October 1982

Sir

OPERATION CORPORATE

1. I have the honour to report the proceedings of Task Group 324.3 during Operation CORPORATE. Bearing in mind that details of operations are contained in individual submarine Reports of Proceedings, my War Diary and Lessons Learned, the purpose of this report is to outline the principal events affecting submarines and highlight areas of interest or concern. Supporting details are contained in Annexes A to K.

The Background

2. With twelve scrap metal merchants, warranting no more than an inch of press copy forming the background to the Falklands Islands crisis, it was with some surprise that I received the Ministry of Defence directive on 29 March to prepare an SSN to sail to the South Atlantic. The seriousness of the situation was brought home when this was quickly followed by the order to nominate and sail a second and third SSN.
3. HMS SPARTAN was recalled from SPRINGTRAIN, outloaded in Gibraltar with HMS ORACLE's weapons and sailed on April Fool's Day. HMS SPLENDID was withdrawn from important operations in the Northern Fleet Exercise Areas and sailed on the same day. HMS CONQUEROR followed on 4 April.
4. HMS SPARTAN arrived in the Maritime Exclusion Zone on 12 April followed two days later by HMS SPLENDID, the 'S' boats making over 23 knot Speeds of Advance. HMS CONQUEROR equipped with towed array and with 6 Squadron SBS embarked arrived off South Georgia on 18 April having achieved a 21 knot Speed of Advance.

The Plan

5. I had two objectives. Firstly to enforce the Maritime Exclusion Zone (MEZ) and secondly to provide defence to the Task Force.
6. My main concern initially was the ASW capability of the two Argentine 209 class SSKs assessed to be very quiet on main motors. HMS SPARTAN was therefore ordered to carry out an offset approach and establish patrol off Port Stanley whilst HMS SPLENDID was directed to patrol the western semi-circle of the MEZ.

7. The 200 mile radius dimension of the MEZ was a compromise between a small enough area which could be effectively enforced, whilst being sufficiently large to enable SSNs to operate without undue restriction.

Operations

8. After a week patrolling the MEZ, HMS SPLENDID was retasked to locate and shadow the CVA group believed to be operating off the mainland. Although she sighted both the Type 42 destroyers and A69 frigates, HMS SPLENDID did not have the necessary Rules of Engagement to attack, nor did she detect the CVA 25 DE MAYO. During this period HMS SPARTAN witnessed an LST and auxiliary minelaying off Port Stanley.

9. Meanwhile HMS CONQUEROR had carried out a reconnaissance off South Georgia's northern coastline and after reporting the area clear of shipping for the approaching HMS ANTRIM group, was ordered to a holding position in the vicinity of latitude 47° South longitude 51° West where she would be well placed to cover Task Group 317.8, take offensive action against the CVA group to the north west, corner flag to the Falklands or south east to South Georgia. After South Georgia had been retaken, CONQUEROR was retasked to the Tierra del Fuego area to intercept the BELGRANO group.

BELGRANO Attack

10. Early on 1 May, HMS CONQUEROR established trail on BELGRANO escorted by BOUCHARD and PIEDRA BUENO tracking east and believed by intelligence to be heading towards the Falkland Islands. In the event this incursion did not occur and at 1400Z HMS CONQUEROR reported that the group had reversed course. The Rule of Engagement authorising attack was issued at 1204Z and after a stern chase HMS CONQUEROR fired three Mark 8 torpedoes from 1200 yards, achieving two hits. An attempted counter attack with depth charges by the two escorting destroyers gained no contact.

11. Although HMS CONQUEROR heard breaking up noises whilst evading the escorts, it was some 24 hours before evidence began to show that BELGRANO had in fact sunk. This event was to deter the Argentinians from venturing outside the 12 mile territorial limit and allowed Admiral WOODWARD to concentrate on the air threat.

General Operations

12. On 6 May, HMS SPLENDID off the Mainland coast reported a major defect with a turbo-generator exciter, complicated by steam leaks. In order to avoid Argentinian ASW air activity he withdrew from his area to the east. HMS SPARTAN meanwhile worked north to the shallow waters off Puerto Belgrano in an effort to find the 25 DE MAYO whilst HMS CONQUEROR moved up the western sector of the TEZ to patrol 300 miles north of the Falkland Islands to provide cover for Task Group 317.8 and the Amphibious Group en route from Ascension Island.

13. By 13 May, HMS SPLENDID 200 miles north of South Georgia had completed repairs and commenced transit west and south of the Falkland Islands to take up patrol off Tierra Del Fuego some three days later.

14. HMS VALIANT on passage to the Falkland Islands from the United Kingdom reached the latitude of Puerto Belgrano and was immediately tasked to intercept the SAN LUIS believed to be returning to base. No detection was made and twenty four hours later HMS VALIANT continued south to relieve HMS SPLENDID off Tierra Del Fuego. HMS SPLENDID transitted north east through the areas and on 29 May passed latitude 40° South heading for home.

15. With the arrival of HMS VALIANT, HMS SPARTAN was moved into the Golfo San Jorge in the hope of detecting frigates operating inside the twelve mile limit. After several days with no detections HMS SPARTAN was redirected down the coast to take up patrol 250 miles north west of the Falklands with HMS CONQUEROR remaining where she had been for the previous two weeks, some 200 miles north east of him.

Support of Land Forces Re-supply

16. Once land forces had established a firm bridgehead in the Falkland Islands it was appreciated that any enemy attacks by surface units were likely from three threat directions: Isle De Los Estados (BOUCHARD, BUENA and patrol boats); Cabo Blanco (SAG) and Cabo Dos Bahias (Main Force). It was therefore decided to operate three SSNs (HMS VALIANT, HMS COURAGEOUS and HMS CONQUEROR) forward in an offensive posture to cover these likely Argentinian departure points, with HMS SPARTAN positioned 250 miles north of the Falkland Islands to provide defence to UK surface forces. With food supplies dwindling, HMS SPARTAN departed for the UK on 9 June HMS COURAGEOUS being moved over to occupy the defensive position.

17. Throughout the final two weeks of the campaign, submarines positioned forward provided invaluable information on enemy aircraft sorties. HMS VALIANT was conspicuous in this role and in one period of three and a half days reported one hundred aircraft movements.

SSK Operations

18. HMS ONYX departed UK on 26 April and arrived in San Carlos water on 31 May to embark Special Forces. She was then employed landing and recovering Special Forces from offshore islands, and on anti shipping patrol.

Command and Control

19. Under your Command as CTF 324, I exercised operational control of submarines as CTG 324.3. Whilst deep and constant consideration was given to operating submarines under direct control of CTG 317.8, the excellent communications both with CTG 317.8 and submarines

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provided by satellite communications, coupled with the intelligence picture at Northwood and the familiarity of my staff with submarine control procedures convinced me that control from Northwood was the preferred option. With hindsight, that view stands.

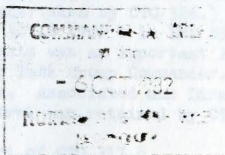
Conclusions

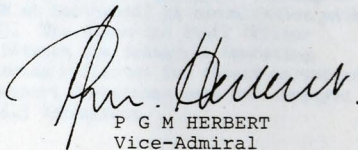
20. Recommendations for action by Ministry of Defence have already been forwarded, and many more lessons learned are being staffed for action by CINCFLEET, FOSM and subordinate commands. The principal conclusions affecting submarines arising from Operation CORPORATE are:

- a. The capability of the SSN to deploy quickly with minimal notice for patrols of up to two months without support 7000 miles from base was amply demonstrated.
- b. Following the sinking of the BELGRANO, the presence of SSNs deterred the Argentinian surface fleet from leaving the sanctuary of the mainland 12 mile limit.
- c. SSIXS has greatly simplified and improved submarine control procedures.
- d. There is an urgent requirement for a reliable towed array for SSNs to enable them to carry out operations in shallow water.
- e. Action must be taken to improve torpedo effectiveness. This should be done in the first instance by making the Mark 24-1 a reliable weapon and phasing out the Mark 8. However because of the Mark 24's shortcomings in speed and warhead size, early introduction of Spearfish into service is essential.

I have the honour to be,
Sir,

Your obedient Servant




P G M HERBERT
Vice-Admiral

Annexes:

- A. Operations and Tactics
- B. Submarine Weapon System
- C. Communications
- D. Intelligence
- E. Command and Control
- F. Logistics
- G. Material-Engineering Support
- H. Medical
- J. Meteorology and Oceanography
- K. Public Relations

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ANNEX A TO
FOSM's SM.2000/2/24.W
DATED 5 OCT 82

OPERATIONS AND TACTICS

Initial Deployment

1. Submarine operations undertaken during Operation CORPORATE used the procedures, well established and frequently exercised during reactive operations in the North Atlantic, contained in Joint Operation Order 2172. The rapid covert submarine transits to the South Atlantic enabled HMG to declare on 7 April that a 200 miles Maritime Exclusion Zone (MEZ) around the Falkland Islands would come into operation on 12 April some 10 days after the invasion. HMS SPARTAN, first of the deployed submarines, arrived at the MEZ on 12 April and was joined 2 days later by HMS SPLENDID. The sea blockade enforced by submarines throughout the campaign was broken on one occasion only. A third SSN, HMS CONQUEROR, with Special Forces (SBS) embarked, arrived on station on 18 April having transitted directly to South Georgia in advance of the UK surface units. In the event SBS were not used, however useful reconnaissance was achieved prior to the re-possession action. During the action, CONQUEROR maintained an upthreat patrol to the west of South Georgia.

2. These three SSNs sailed at short notice, two on 1 April and one on 4 April for patrols which were destined to last entirely without support for periods between 2½ and 3 months. By the time SPARTAN returned to harbour she had spent 150 of the previous 162 days at sea.

Blockade

3. The enforcement of the Maritime Exclusion Zone proved effective in denying the Argentine Forces in the Falkland Islands resupply or reinforcement by sea except for one ship (CARCARANIA) which was known to have run the blockade. The necessary Rules of Engagement to prevent this occurrence were requested in good time but in event were not forthcoming.

Direct Support to CTG 317.8

4. Once the Task Group under CTG 317.8 arrived in the vicinity of the Total Exclusion Zone, submarine operations were directed towards supporting the group whilst maintaining the sea blockade of the Falkland Islands. Tasking of submarines was undertaken by CTG 324.3 (FOSM at Northwood) in consultation with the staff of CTG 317.8 (POF 1 in HMS HERMES). The Submarine Staff Officer onboard the Flagship was an important link between the Submarine Operating Authority and the Task Group Commander. Tasking reflected the threat perceived by the CTG at sea. Associated and Direct Support Operations were not employed and tactical control was retained by CTG 324.3 throughout.

Tasking in support of CTG 317.8

5. Whilst the CTG at sea endeavoured to establish sea and air control of the TEZ, submarines were tasked on distant surveillance, shadowing, anti-diesel submarine search and vectored intercept operations to counter any attempt by Argentinian naval and auxiliary forces to threaten the Task Force or resupply the Falkland Islands.

Tactics

6. a. Area Allocation. A grid was established between 35 and 60 degrees South and from 20 to 70 degrees West. By reducing this area to one degree 'boxes' the allocation of submarine patrol zones was simplified. Mutual separation from surface and air ASW units was achieved by defining, and periodically

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updating, an ASW weapons tight boundary between Task Force operating areas and submarine patrol areas (SPA's). A Buffer zone, normally of 30 to 50 nm in depth, was maintained between the ASW weapons tight boundary and the nearest SPA.

b. Area Flexibility was achieved by keeping areas allocated to a minimum whilst allowing submarines to leave areas provided CTG 324.3 was informed. Rapid satellite communications enabled the early response from shore of further appropriate water allocation. Submarines were specifically denied access to another submarine's area, as indeed were surface units except, very occasionally, under carefully stage managed conditions.

c. Enforcement of Blockade. The principle contribution made by SSNs to Operation CORPORATE was the blockade of Argentinian naval and auxiliary forces. On 29 April SPLENDID intercepted destroyer and frigate elements of the enemy navy. Rules of Engagement prevented attack at that stage. However on 2 May HMG ordered the attack by CONQUEROR on the cruiser GENERAL BELGRANO; the ship was sunk by a salvo of three Mk 8 torpedoes fired from 1200 yards. The sinking of this ship demonstrated British determination as well as the effectiveness of the SSN; it was instrumental in persuading the Argentine maritime forces to remain within the safety of the mainland 12 mile limit of territorial waters for the rest of the conflict. From that moment onwards submarines on forward ASW operations outside the TML encountered nothing more sinister than the occasional merchant ship and Soviet Bloc fishing vessels.

d. ASW Operations. Throughout the hostilities, submarines faced an indeterminate threat from Argentinian submarines. Many suspicious contacts were investigated, and on two occasions SSNs were positioned to intercept transitting 209 class SSK's. However no firm contact was ever made.

e. Amphibious Operations were protected by four SSNs operating up threat from the Amphibious Operating Area and the route from the Battle Group to the landing area.

f. Air warning picket duties were imposed on all submarines at various times during the operation. VALLANT was conspicuous in this role. Stationed off Rio Grande for a considerable period during the air war, she made over three hundred reports of aircraft movements; one hundred of these were reported in one brief period of three and a half days. Aircraft movement was detected by various sensors, visual, ESM and sonar! Communications intercept was of limited value in view of the restricted intercept equipment. Lack of knowledge of specific target frequencies precluded the optimum use of comint sensors. Spanish linguists were not embarked in SSNs.

g. Special Operations. ONYX left UK on 26 April and arrived in San Carlos Water on 31 May to embark Special Forces. Subsequently she conducted operations to the west of the Falklands, close inshore. These included landing and recovery of special forces from offshore islands as well as spending many hours training for further operations. She was employed on surveillance and anti-surface ship patrol as well as providing advance warning of aircraft movements.

k. Shallow water was from the outset evidently considered by Argentinian surface units as a safe refuge from Royal Naval SSNs. The SSNs spent extended periods inside the 50 fathom line and at times operated dived in less than 27 fathoms.

l. Weather reports from submarines west and up weather of the Falklands were particularly important before the landing operation, indeed the reporting interval was reduced to 6 hours on 19 May to assist CTG 317.8 in final planning.

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ANNEX B TO
FOSM's SM.2000/2/24.W
DATED 5 OCT 82

SUBMARINE WEAPON SYSTEM

Sonar

1. Towed arrays were only available for deployment in CONQUEROR, VALIANT and COURAGEOUS. None was readily available for the first two submarines SPARTAN and SPLENDID, sailed in response to the developing crisis. Although the acoustic conditions were generally favourable to the use of the array and played a major part in HMS CONQUEROR's initial detection of the cruiser GENERAL BELGRANO through the detection of the accompanying oilers tonals at a range of 90nm, the lack of a reliable array was very apparent during the protracted periods spent on shallow water forward support operations. Both VALIANT and CONQUEROR suffered damage to their arrays.
2. In spite of improved analysers in VALIANT and COURAGEOUS, it is doubtful whether the towed array contributed significantly to the ability to detect the Argentinian S209's especially while their operations were confined to the shelf and shelf edge waters.
3. Whereas CONQUEROR employed 2001 active in an attempt to classify submarine-like passive contacts, SPARTAN and SPLENDID considered the counter-detection risks too high. The effect of the environment on sonar performance is addressed in Annex J.
4. Although CONQUEROR occasionally used a 48 KHz echo sounder in shallow water, SPARTAN and SPLENDID felt that without a more secure echo sounder the risk of detection was too high.

ESM

5. The aged UA4 became defective in all submarines, leaving them with degraded protection whilst the equipment was unserviceable. Only UA12 amongst the current submarine ESM fits is able to measure radar frequencies and accurate bearings, however the large radar echoing area (REA) of the associated AYZ aerial precluded its use by SPLENDID in the hostile ESM environment prevailing off Argentina. HMS SPLENDID alone was fitted with the combined periscope and communications/ESM (AVS/MORTHOE) mast: the Commanding Officer reported extremely favourably on this mast.

Navigation

6. SINS II and QZ4 (Satnav 1105) performed very successfully. Accurate navigation was a significant factor in both shallow water and overall Command and Control.

WEAPONS SYSTEM PERFORMANCE

Weapons

7. a. Mk 8 Torpedo. Embarked in all submarines deployed and the only ASVW weapon in SPARTAN and SPLENDID. The Mk 8 again demonstrated its lethality both in HMS CONQUEROR's attack on the GENERAL BELGRANO, where two hits from a Salvo of three sank the cruiser at a range of 1400 yds, and in HMS ONYX's sinking of RFA SIR GALAHAD. The Mk 8 also demonstrated all too clearly its many failings: it is inaccurate and must be used at ranges which would be suicidal against

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competent ASW opposition; it is nearly incompatible with DCB; it is dangerous to handle, unsafe if exposed to pressures greater than 200 psi and it leaks. The tubes cannot be flooded until the final stages of an attack; and it must be withdrawn regularly for check charging leading to a very large number of noisy weapon movements, and a reduced weapon availability.

b. Mk 20 Torpedo. Embarked in the stern tubes of HMS ONYX. There was no role for this anti-cavitating submarine weapon.

c. Mk 24 - 0 Torpedo (Tigerfish Mod 0). Embarked in HMS SPARTAN, SPLENDID and COURAGEOUS as their only ASW weapon. There was no opportunity to use the weapon. It requires an absolute minimum depth of water of 200 feet in the passive role and nearer 600 feet when in active and would therefore have been useless against the quiet Argentinian SSKs, the radiated noise levels of which dictated the use of the active mode in the shallow waters in which the RN submarines mainly operated.

d. Mk 24 - 1 Torpedo (Tigerfish Mod 1). Embarked in HMS CONQUEROR, VALIANT and ONYX as their only ASW weapon (with the exception of the Mk 20 in ONYX), and as an alternative to the Mk 8 for ASVW. It suffers the same drawbacks in the ASW role as the Mk 24-0. It was rejected in favour of the Mk 8 for use against BELGRANO because of its unproven lethality, known unreliability and the relatively small punch of the warhead when used against a cruiser with armoured strengthening on its hull. Two were used by HMS ONYX in an attempt to sink RFA SIR GALAHAD, but both failed to run.

e. RNSH. Embarked in HMS COURAGEOUS as the primary ASVW weapon, giving her a significantly enhanced capability. In the event not fired, but a very important factor in the tactical employment of these submarines. Opportunity has been taken during the Crisis to practise Over The Horizon Targetting (OTHT) procedures.

Fire Control Systems

9. a. DCB Fitted in HMS SPARTAN, SPLENDID, COURAGEOUS. Hardware proved to have a very high availability and reliability, but is barely compatible with the use of the Mk 8 torpedo. Many of its known shortcomings in the handling of AIO data may have been overcome by the addition of a peripheral computer in COURAGEOUS. AIO Issue 5 was the base software for DCB fitted submarines. An interim Issue 6 was tried in COURAGEOUS, providing a Kalman Scratch Pad facility, but this was proven to be too unreliable for operational use.

b. TCSS 10 Fitted in HMS VALIANT, CONQUEROR and ONYX, and used successfully for Mk 8 attacks by CONQUEROR and ONYX.

Countermeasures Anti Weapons

10. a. NAE Beacons were carried by all submarines, but were not employed operationally. Those fired by submarines on return from patrol worked correctly after being loaded and flooded for very long periods. Although most submarines carried 8, two carried only 4 NAE Beacons; this allocation used up all stocks except for 8 in each running SSBN.

b. Bubble Decoy. Out of date, withdrawn stores, were carried by HMS COURAGEOUS, VALIANT and ONYX to supplement the NAE Beacons. In the event they were not used.

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- c. SSEs. S Class SSEs were found to corrode badly during long periods flooded.

Weapon Handling and Discharge Equipment

11. a. Weapon Handling. The swung fronts (loading trays) associated with HMS CONQUEROR's loading beam fouled at depth preventing loading below 300 feet. The problem was temporarily overcome by a file and force.
- b. Weapon Embarking. S Class do not carry embarking rails. To allow them to reload (or change to a mining role) it was necessary to deploy rails to the South Atlantic. In the end three of the total of six sets of rails were embarked in three RFAs and have yet to return.
- c. Weapon Discharge. Some Commanding Officers expressed the fear that their discharge gear would not continue to operate correctly unless regularly exercised. Most Commanding Officers did exercise the discharge gear regularly. Two postulated that a full ALPHA load of weapons would have presented a problem to move weapons around so that watershots could be fired from individual tubes.
- d. HMS ONYX damaged 5 and 6 tubes in a grounding incident and was unable to use them. These tubes are the only Mk 24 capable tubes in an O Class SSK. It was therefore necessary to move the Mk 24 interface equipment to 3 and 4 tubes; and although the interface was subsequently tested onboard it remains a possible cause of the failure of ONYX's Mk 24 firings.

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ANNEX C TO
FCSM's SM.2000/2/24.W
DATED 5 OCT 82

COMMUNICATIONS

1. No suitable submarine VLF or LF broadcast which adequately covered the South Atlantic, was available for the operation. As a result, all submarines deployed were dependent upon UHF Satcom for both broadcast and ship-shore traffic. HF broadcasts from New Zealand and Rugby were activated to provide back up in the event of SSIKS failure.
2. The Royal Naval UHF Satcom shore terminal at Northwood only became operational on 20 March 1982. It was central to timely Command and Control and the success of submarine operations.
3. Initially two satellite channels were in use:
 - a. GAPFILLER A - which rapidly proved unsuitable for RN submarines due to the shortcomings of submarine UHF aerials.
 - b. USN FLTSATCOM Channel Six - shared with the USN under a bilateral Memorandum Of Understanding (MOU) arranged some years ago.
4. Access, with exclusive RN control, to a second UHF Satellite Channel was urgently requested from the USN who responded by making FLTSATCOM channel nine quickly available. This channel was utilised as a High Data Rate (HDR) tactical circuit between submarines and the CTG 317.8's flagship. When channel nine proved incompatible with RN submarine equipments the USN exchanged channel nine for channel five. No further trouble was experienced for the remainder of the operation. This link proved especially useful for rapidly passing tactical messages, in particular ESM intercept data from the submarines, tasked in AEW role to the Task Force Commander, thereby giving better early warning of air attacks.
5. The US also responded rapidly to an urgent request for additional cryptographic units without which a rapid expansion of the SSIKS installation programme would not have taken place. Three units were loaned until 15 Nov 82 and were vital to the whole operation.
6. The following LF/HF Broadcasts were activated as back up communications in case of a SSIKS failure:
 - LSBI - USN LF and HF
 - Z12W - New Zealand HF
 - Rugby - Rugby (BBC) HF 30KW transmitterRugby and Z12W were dual keyed from Northwood and were designated as Broadcast BSAD.
7. The reception of LSBI in the operating areas proved inadequate and was therefore discontinued. BSAD was read, with difficulty, by all submarines deployed. Nine separate frequencies were transmitted for BSAD and with judicious use this would have been barely adequate as a backup system in the event of a SSIKS failure. A broadcast reading interval of greater than one in two would have been needed.

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8. The existing submarine UHF aerial proved inadequate for the reception of RN SSIIX especially between 20°N and 20°S, consequently a new aerial, the Conical Log Spiral, was rapidly manufactured and is now being installed in all submarines equipped with SSIIX. Of further concern however was the lack in the SWIFTSURE class, of redundancy in dived communication aerials at all frequencies.

9. The tactical use of both High Data Rate (HDR) and Low Data Rate (LDR) as well as secure voice on SSIIX was rapidly developed and proved successful. UHF Satcom (SSIIX) undoubtedly contributed to the development of Command and Control techniques for submarines. The proximity of the communications centre to the submarine operations room greatly enhanced the ability of the operational commander to control submarines deployed. Without this capability Command and Control would have been virtually impossible and the effectiveness of the submarine force would have been severely degraded.

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ANNEX D TO
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DATED 5 OCT 82

INTELLIGENCE

INTRODUCTION

1. The real time intelligence picture provided by the Joint Maritime Intelligence Centre (JMIC) was an essential factor in the strategic positioning of submarines; so much so that the SSNs were moved rapidly and often in reaction to new information. In particular the quality and timeliness of intelligence available to JMIC directly contributed to HMS CONQUEROR's successful attack on the cruiser, GENERAL BELGRANO.
2. Intelligence assessments of Argentine naval intentions were generally excellent but lack of surveillance facilities, particularly MPA and MRR aircraft, made accurate localisation of naval units more a matter of chance; for example, not a single British unit successfully achieved contact on the CVA, 25 DE MAYO, throughout Operation CORPORATE.
3. Documented technical intelligence of Argentine units was markedly sparse in the early days of the operation. During the first two or three weeks much technical intelligence was gathered from a variety of sources, the bulk being supplied by DI57. The transmission of this information to deployed submarines placed a substantial additional load on the satellite communication channels and would have overloaded the traditional broadcasts.

INTELLIGENCE SOURCES

4. It is not intended to report on the source of intelligence in detail because of security classification, but merely to make some broad observations.
5. GCHQ Cheltenham was by far the most important source of intelligence on Argentine naval forces. Their contribution was invaluable to the success of the submarine campaign.
6. One notably weak area was the almost complete dearth of human intelligence. A reliable source on the ground in Puerto Belgrano could have done much to clarify the whereabouts of the Argentine submarines, which, from time to time, might have permitted a more relaxed ASW posture by British units.
7. The British submarines themselves made an invaluable contribution to the intelligence picture, and provided the capability to check intelligence from other sources. Examples of the submarines' achievement in the intelligence role are:
 - a. HMS SPARTAN - reported minelaying activities off Port Stanley.
 - b. HMS SPARTAN - resolved the ELINT confusion between A69 Frigates and Japanese fishing vessels.
 - c. HMS VALIANT - reported aircraft raids launched from RIO GRANDE air base.
 - d. SPLENDID - provided the only RN positive identification of the Argentinian Type 42 destroyers and A69 corvettes.

JMIC

8. Early in the Operation it was clear that even the augmented manning of JMIC was insufficient to cope with the flood of intelligence messages.

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Arrangements were made further to augment JMIC with a union of three watchkeeping submarine officers to provide a constant flow of up to date filtered intelligence to the submarine operations room.

9. Likewise, watchkeepers were also provided for the Army and Royal Air Force. In fact the presence of these additional watchkeepers provided a valuable tri-service input to intelligence assessment. The floor space available in JMIC was however a major stumbling block to expanding the intelligence handling process - more assessment and analysis could have improved some of the intelligence predictions.

10. The presence of staff from GCHQ provided invaluable liaison with Cheltenham round the clock. Furthermore the GCHQ personnel made a very significant contribution to intelligence assessments.

TECHNICAL INTELLIGENCE

11. Operation CORPORATE highlighted the lack of readily available, documented, technical intelligence on countries outside the Eastern Block. Intelligence on the weapons and performance of the Argentine Navy was woefully sparse during the early days of the operation. The first three submarines to deploy had onboard little more than JANE's FIGHTING SHIPS and ATP 29 for this information. During the first two or three weeks much research was necessary to resolve the plethora of conflicting technical information arriving from various sources.

CONCLUSIONS

12. GCHQ, Cheltenham, was the linch-pin of the intelligence support for Operation CORPORATE, and made a major contribution to the success of the submarine campaign.

13. JMIC needed to be augmented by three submarine officers to ensure the timely flow of filtered intelligence to the submarines.

14. JMIC does not have the capacity to expand to meet the requirements of a major war.

15. There is a need to collect and publish technical data on all countries, outside the Eastern Bloc, which have significant armed forces.

RECOMMENDATIONS

16. Review the plans for CJMOC, Northwood, with a view to providing an allowance of floor space sufficient to meet the expanded needs of JMIC during wartime.

17. Collection and publication of technical intelligence on non-Eastern Bloc countries.

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DATED 5 OCT 82

COMMAND AND CONTROL

1. Under the Command of Commander-in-Chief Fleet as CTF 317 and CTF 324 the Flag Officer Submarines was the Commander of the Task Group 324.3. FOSM retained operational control of all submarines assigned to Operation CORPORATE. Submarines were routed to the operating area under covert subnotes. They joined Task Group 324.3 once they entered the covert Notice of Intention declared for the area south of 35° South and West of 20° West. Each submarine was assigned a Task Unit designation:

<u>SUBMARINE</u>	<u>TU</u>
SPARTAN	324.3.1
SPLENDID	324.3.2
CONQUEROR	324.3.3
VALIANT	324.3.4
COURAGEOUS	324.3.5
ONYX	324.3.6

2. Command and Control of CORPORATE submarines was exercised at Northwood from the CTF 311 Operations Room. Close links were maintained with the staff of CINCFLEET (CTF 317/CTF 324). In addition secure voice communications with the Flagship at sea enabled CTG 324.3 and CTG 317.8 to discuss and agree submarine tasking as required, and at least daily. Co-location of the Submarine and Special Forces cells within the MHQ at Northwood ensured a good liaison was maintained between these two Commands.

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ANNEX F TO
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LOGISTICS

General

1. At an early stage during preparations for Operation CORPORATE it was decided that logistic support for deployed submarines would be largely on a reactive basis; submarines on patrol would be expected to remain self-sufficient in the same manner as SSBNs with the exception of major defects affecting operational capability and for which onboard spares are not carried.
2. A small number of high usage submarine support stores were loaded into RFA/STUPT ships deploying to the South Atlantic at the beginning of the operation. With one or two minor exceptions these were not called upon by deployed submarines.

Victualling

3. It has proved possible to store SSNs of all classes for 90 days endurance without difficulty, provided large numbers of trainees are not carried and care is exercised with consumption on patrol. With limited choice menus and one 'snack' type meal per day it was even possible to extend patrol endurance to between 105 and 110 days. The SSK is effectively limited to a normal endurance of 72 days without replenishment.

Stores Support

4. Between 95% and 99% of stores requirements in SSNs were provided from ships' stocks. During the period of conflict up to the fall of Port Stanley no stores were delivered to SSNs in the area of operations, which says much for the ingenuity of ships' staff in carrying out urgent repairs. Nevertheless, on several occasions the requirements for urgent stores deliveries to the South Atlantic appeared imminent; the speed of reaction within the UK and the airfreight pipeline to the South Atlantic via Ascension Island were quite outstanding. Numerous stores requirements for HMX ONYX were similarly met, both en route during a long 35 day passage and whilst in area.
5. In some cases however, shortage of spares gives cause for concern; some DSM items such as SWIFTSURE Class CPMS mounts have a high incidence of defects and insufficient spares are available to allow all submarines of the class to carry replacement mounts. Failures on patrol in HMS SPARTAN caused a considerable degradation of operational performance due to the resulting increase in radiated noise. Lengthy patrols resulted in delays in returns of such items, thus increasing repair cycle time and reducing availability still further.

2024 Towed Arrays

6. Due to non-availability two SSNs deployed without towed arrays. Of the three towed arrays that were deployed two were damaged during operations in shallow water.

Conclusions

7. Despite the success of logistic support during the limited period of Operation CORPORATE, already scarce resources in some areas would rapidly be exhausted in any protracted period of conflict involving all operational submarines.

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ANNEX G TO
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MATERIAL - ENGINEERING SUPPORT

1. Considerable experience of single unit operation deployments has clearly demonstrated the overall reliability of nuclear powered warships. CORPORATE SSNs were able to deploy quickly, and the existing Flotilla support system was able to meet the challenge rapidly and effectively. An overall policy of reactive, rather than contingent, support was established.
2. The support vessel STENA SEASPREAD was subsequently sailed as a forward support ship and one submarine qualified engineer officer together with five technical senior rates were sent to join Naval Party 1810, to give local support if required. In the event this submarine expertise was not used.
3. Submarine support equipment including power supplies and cables and nuclear fenders were embarked in STENA SEASPREAD.
4. Following the decision to deploy a conventional submarine on 25 Apr 82, the support policy was amended to provide for the differing needs of HMS ONYX. For example fuel and oils had to be embarked from surface vessels. The forward support ship was used for a 3 day period to assist in OPDEF work.
5. Excellent two way communications allowed defects to be reported in some detail and stores to be demanded. Further information on logistics is at Annex F. Advice could in turn be passed to the submarines and by a process of discussion solutions were achieved. One example was the severe sparking at the port TG exciter of HMS SPLENDID. This defect was reported and various palliative measures attempted following discussion with DG Ships/DPT before the problem was finally solved by ship's staff action thereby avoiding further operational limitations.
6. A number of defects were experienced and dealt with. In general no new lessons were learnt; though some existing problems were re-emphasised. These include:
 - a. SWIFTSURE class Constant Position Mounting System (CPMS) mount failure.
 - b. TG exciter sparking.
 - c. Degaussing equipment reliability.
7. It is to the credit of the submarines that a continued high level of plant and equipment availability was maintained.

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MEDICAL

1. The most significant medical problem occurred in HMS SPARTAN, the only submarine without a doctor onboard. On 24 April she reported a rating as having suffered an apparent 'Petit Mal' attack while on Watch. He re-gained consciousness in 15 minutes and was subsequently sedated. Although overnight he appeared to recover fully SPARTAN recommended transfer to a unit with a Medical Officer as soon as convenient.
2. By 13 June in view of his deteriorating condition, memory lapses, confusion, hallucinating smells etc., SPARTAN requested comments and advice from CTG 324.3.
3. Consultation with Surgeon Commander S VINCENT Royal Navy PMO HMS WARRIOR resulted in a recommendation to land the rating. Arrangements were made for a diversion and a CASEVAC off ASCENSION on 15 June.
4. A general report concerning the medical aspects of the submarine deployments will be produced from the Medical Journals of the doctors embarked during the submarine deployments.

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METEOROLOGY AND OCEANOGRAPHY

Effect of Environment on Submarine Operations and Sonar Performance

General

1. The overriding features were the extremes in climatic conditions due to the expanse of the operating area and dominance of shallow water in the submarine forward operating areas when in support of the Task Force.
2. The width and shallow nature of the continental shelf bordering Argentina is unique - no other shelf waters of major maritime significance extend so far seaward. This fact coupled with the shelter provided by the mainland results in a unique set of environmental conditions in the shelf waters, not generally suited to SSN operations.
3. The predominantly mild, calm conditions of the shelf regions were in marked contrast to the conditions at and to the east of the Falklands, in particular the South Georgia area. In the South Georgia area numbers and distribution of icebergs were of most concern during the approach of HMS CONQUEROR when undertaking Operation PARQUET.
4. Although UK SSNs have successfully operated under Arctic pack ice in iceberg free waters for a number of years no diver operating experience has been gained amongst large numbers of free icebergs, especially of the sizes commonly found in the Antarctic waters. A diver approach to South Georgia was potentially extremely hazardous, as the recommended operating mode for sonar 2001 against icebergs was unproven.
5. Although valuable spot iceberg updates had been received from HMS ENDURANCE, a week separated her last report on her northward transit, and the arrival of CONQUEROR at 50° south. Real time satellite data was not available due to a combination of lack of camera resolution and cloud cover.
6. Consequently, a final line of approach from 50°S had to be based on an estimated iceberg distribution deduced from the ENDURANCE reports and the likely drift pattern. In the event CONQUEROR successfully penetrated to South Georgia without encountering any icebergs, in marked contrast to STUFT ships forced to adopt a different line of approach due to the air threat. Such an operation emphasised the need for reliable real time information and a proven ice warning sonar if protracted submarine operations are contemplated in similar waters.

Oceanographic/Acoustic conditions

7. The general area sub-divides into four distinct zones:
 - a. Inside the 50 fathom line
 - b. Between 50 and 100 fathom lines
 - c. Shelf edge
 - d. Deep water

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Zones a. and c. were subject to considerable concentrations of biological activity causing a marked degradation in broadband sonar performance. Zones b. and d. were much quieter, with minimal activity in the deep water. Unique to these areas are the concentrations of kelp to be found in the vicinity of the Falklands and coastal regions of the mainland. Offshore winds, cause large patches to break away and drift seaward, presenting an unusual hazard to submarines in the shallow water.

8. The temperature profiles in all areas were conducive to good sonar performance; under these conditions actual sonar performance was dominated by either the biological noise interference, sea state or shore noise.

Broadband Sonar Performance

9. Broadband sonar proved particularly sensitive to sea-state in the shelf waters. At low sea states (less than 3) ranges of 30 to 60 K yards on surface ships were not uncommon, however in sea states of 4 and above ranges fell dramatically to the more usual 10 to 20K yards.

10. The pronounced biological activity severely degraded Sonar 2007 and the Passive Recorder displays of Sonar 2001 with false target responses, to the extent that aural channels for passive sonar provided the only definitive classification clues. Clearly the likelihood of a successful search and prosecution of the quiet even moderately well handled S209 in such conditions by the use of broadband sonar alone must be in considerable doubt. Use of a active sonar on and around the shelf even in the absence of biological activity generated the usual plethora of reverberation problems.

Narrowband sonar performance

11. The general conditions were conducive to good narrowband towed array performance - the major limiting factor being the constraints imposed by prolonged operations in shallow water. Excellent narrowband performance was experienced in the deeper waters off the shelf edge and to the south of the Falklands. As expected narrowband performance proved far less susceptible to the effects of biological interference. Performance of the narrowband towed array system against the quiet S209 remains unevaluated, but in view of the minimal snorting requirements, and likely areas of deployment the effectiveness of the narrowband towed array in the vicinity of the shelf/Falklands against the S209 must remain in doubt.

Non-Acoustic conditions

12. With the exception of the eastern TEZ, South Georgia and Cape Horn regions the forward operating areas were generally characterised by good periscope visibility, light winds and low sea states. The combination of sheltered conditions, shallow water and water clarity, the latter especially in the vicinity of Bahia Blanca, presented significant counter detection threats to the SSN, especially when operating at periscope depth in the radar picket and/or visual surveillance roles. Insufficient depth was available to allow the surface effects to be minimised when below periscope depth at speed.

13. Severe bioluminescence, characteristic of these areas particularly in the vicinity of the Falklands and Golfo San Jorge north to Bahia Blanca reduced the security traditionally associated with night operations.

Radar Propagation/ESM

14. The area to the west and northwest of the Falklands is particularly susceptible to ANAPROP conditions. Submarines in the vicinity of and to the north of Golfo San Jorge experienced such conditions, noting in particular the sensitivity of the ESM response to intercept aerial height.

15. The early suppression of Argentinian meteorological data from the International circuits precluded realistic real time quantitative assessments of effect on intercept ranges being made.

16. The advent of Sub-Harpoon only serves to accentuate the need for quantitative techniques to be developed for predicting likely performance of the ESM intercept equipment against known emitters.

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PUBLIC RELATIONS

1. In accordance with normal public relations policy there was no active seeking of publicity for the submarines involved in the operation. The policy of not disclosing where submarines on patrol were operating led to the assumption by the press in the early days that SUPERB was in the South Atlantic when she was, for at least part of the time that speculation was continuing, alongside in the Clyde Submarine Base.
2. The sinking of the cruiser GENERAL BELGRANO also caused much speculation, and, although it was not confirmed until her return to Faslane that CONQUEROR had carried out that attack, most of the press had correctly reported her involvement due primarily to the disclosure by the media representation with the Task Force. The policy of silence on the details of the attack have resulted in concrete statements in the media that GENERAL BELGRANO was sunk using Tigerfish torpedoes. Wide media coverage was given to the fact that the Argentine Navy learned its lesson with the loss of the GENERAL BELGRANO and thereafter kept its naval forces within the TML rather than expose them to the threat of attack by SSNs.
3. The covert operations of the submarines in the Falklands have generally remained unpublicised, although the dagger on CONQUEROR's patrol flag and its implication was noted by the press.
4. The policy of encouraging the press to be on the quayside when submarines returned (apart from SPLENDID which returned before the fall of Port Stanley) and to be able to talk to families helped to maintain the work of the Flotilla in the public eye.

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