

DEPARTMENT OF NATIONAL DEFENCE

ANTI-SUBMARINE COMMITTEES

A/S DEFENCE OF STRAITS

CAN/UK/US STUDY GROUP

FOR CROSS REFERENCES SEE INSIDE COVER

ROUTING				P.A. & B.F. ENTRIES				REGISTRY ONLY	
REFERRED	REMARKS	DATE OF PASS	INITIALS	DATE OF P.A.	INITIALS	DATE OF B.F.	CANCEL B.F.	DATE RECEIVED	INDEXED
D.N.P.C.	PER REQUISITION CR	FEB 16 1961		13/2/61	CB			MAR 13 1961	Δ
Dr. Plans	PER REQUISITION CR	MAR 23 1961		22/3	P.B.			MAR 23 1961	Δ
Dr. Plans	PER REQUISITION CR	JUL 3 - 1961		13/7/61	Cal			JUL 14 1961	Δ
Staff	WITH PAPERS CR	FEB 26 1962							
S.A./CNS			13/3		P.B.				
V.C.N.S.			22/3	25/3/62	P.B.			MAR 29 1962	Δ
D.N.F.E.R.	PER REQUEST CR	NOV 25 1963		14-12-63	CB			DEC 5 1963	β
D.N.F.E.R.	PER REQUEST CR	DEC 5 1963		12-12-63	CB			DEC 16 1963	β
D.N.P.C./S.A.	PER REQUEST CR	JUN 9 - 1964		19-6-64	RE				
Staff	With papers		22.6.64		oy				
D.N.F.E.R.			27/6		P.B.				
S.A./CNS			21/7		P.B.				
V.C.N.S.			24/7	29-7	CB			JUL 30 1964	β

**"B.F." — DO NOT HOLD — THIS FILE WHEN LAPSE IN ACTION MAY EXCEED 48 HOURS.**

CR 118  
44M-7-55 (M-8536-25)  
2-815-CR 118

SECRET FILE No. S-1271-8 VOL. 2

Call, order 31 December 1959

**SECRET**

NSS 1271-8 (Staff)

Royal Canadian Navy

4, Ontario

29 JUL 1964

GIBRALTAR ANTI-SUBMARINE  
STUDY GROUP

- References: (a) NSS 1271-8 TD 3331A (Staff) dated 11 December, 1963.
- (b) RNLO Secret Letter S2/6/12 dated 18 June, 1964.

The Royal Canadian Navy agrees with the proposal in reference (b) that the formal CAUKUS Gibraltar A/S Study Group be dissolved.

~~DEPUTY NAVAL SECRETARY~~  
(STAFF)

NAVAL SECRETARY

Royal Naval Liaison Officer,  
British Defence Liaison Staff, Canada,  
80 Elgin Street,  
Ottawa 4, Ontario.

*Concurrence  
SACNS ①*

*DR. ORR 173*  
② ACNS (ASST) for concurrence  
③ *Vene W. 27/7* 24.7

ICdr. A.B. Torrie (2-7357) HP

REDESPATCHED BY  
*Blag 17R*  
JUL 29 1964 *AK*

**SECRET**



OFFICE OF  
**THE ROYAL NAVAL LIAISON OFFICER,**  
BRITISH DEFENCE LIAISON STAFF CANADA,  
80 ELGIN STREET,  
OTTAWA 4, ONTARIO.

**S E C R E T**  
RNLO # S.46/64

To: The Naval Secretary,  
Department of National Defence,  
Naval Headquarters,  
Ottawa, Ontario.

File: S2/6/12

Date: 18th June, 1964.

*DIFFER  
22.6 SA/CNS for n/a.  
HAW (4/4)*

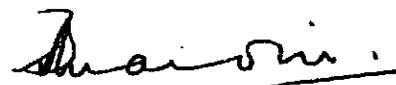
GIBRALTAR ANTI-SUBMARINE STUDY GROUP

Reference: Naval Secretary's letter NSS 1271-STD 3331A(STAFF)  
dated 11th December, 1963

It will be recalled that, in the reference, Canadian agreement was given to expanding the CANUKUS Study Group, concerned with the provision of a Straits Surveillance System for Gibraltar, to become a N.A.T.O. Study Group. It will be remembered also that the invitation for Canadian participation in the CANUKUS Study Group for January 1964 could not be accepted.

2. At the meeting of the CANUKUS Study Group it was agreed that, subject to Canadian concurrence, the formal CANUKUS Gibraltar A/S Study Group could be dissolved, as the wider issues of control of the Straits are going to be discussed by the N.A.T.O. Study Group.

3. It is requested that the Royal Naval Liaison Officer be informed whether the Royal Canadian Navy agrees to this proposal.



T. L. Martin,  
Captain, Royal Navy.

2031

MAIN FILE No. S- 1271-8 T.D. No. 6381 A

DEPARTMENT OF NATIONAL DEFENCE

# SECRET

## TEMPORARY DOCKET

NAVY

26-11

MAIN FILE NUMBER S- 1271-8 T.D. No. 6381 A

ROUTING				P.A. & B.F. ENTRIES				REGISTRY ONLY	
REFERRED	REMARKS	DATE OF PASS	INITIALS	DATE OF P.A.	INITIALS	DATE OF B.F.	CANCEL B.F.	DATE RECEIVED	INSPECTED
	WITH PAPERS	NOV 27 1963							
<i>DAFER</i>		29/1/63	<i>RB</i>						
<i>Dofes</i>		18-12		12-12-63	<i>CB</i>		<i>DF</i>	13 1963	<i>/</i>

### INSTRUCTIONS

1. Temporary Dockets are to deal WITH ONE CASE ONLY.
2. T.D.'s NOT to be placed on main file UNLESS Central Registry informed by means of Form D.N.D. 710.
3. T.D. No. together with main file number to be quoted on all correspondence originated.
4. T.D.'s not to be passed from one service to another.
5. Action should be taken as soon as possible in order that main file may be kept up to date. If action cannot be taken within 48 working hrs., B.F. Docket.
6. T.D.'s to be requisitioned, passed, B.F.'d, etc., in the same manner as main files by means of Form D.N.D. 710.

**SECRET**

NSS 1271-8 TD. 3331A (STAFF)

MEMORANDUM TO: ~~VONS~~

*Concur  
para 3  
10/12*

I have spoken to Dr. Ford on this subject and he agrees that this study should now come under NATO. He emphasized, however, that we are over-committed in the provision of both Scientific and Service personnel for the various Committees and that it was most unlikely that even if the study were undertaken NATO-wide, Canada would be in a position to provide Scientific personnel for this project.

2. Dr. Ford did point out that the NATO Study Group would have access to La Spezia and that Canada provides both civilian Scientific and Military personnel to this establishment in Italy.

3. Dr. Ford therefore concurred in the proposed letter and suggested that when the NATO Group is formed, we should take another look to see if personnel could be made available and, if not, Canada should then withdraw from the study.

*A/A  
DNEER  
PA  
11/12/63*

*10:12:63.*

*[Signature]  
AVONS*

PHG/CA

**SECRET**

NSS 1271-8 TD  
3331A (Staff)

ROYAL CANADIAN NAVY

4, Ontario.

11 DEC 1963

GIBRALTAR ANTI-SUBMARINE STUDY GROUP

- References: (a) NSS 1271-8 (STAFF) dated 23 March, 1962.  
 (b) RNLO Secret Letter 2/6/12 dated 26 November, 1963.

The Royal Canadian Navy concurs completely with the proposal forwarded in reference (b). It is, however, regretted that the invitation for Canadian participation in the meeting of the CANUKUS study group to be held in Gibraltar on 15th and 16th January, 1964, cannot be accepted. It will be noted that Canada has not participated previously in meetings of the study group.

  
 NAVAL SECRETARY  
 (Staff)

Royal Naval Liaison Officer,  
 British Defence Liaison Staff,  
 Canada.



*DMW 4/12*  
 DNaR, for concurrence, plse.  
 ACNS (staff), for approval, plse.  
 VENS *(Signature)* 10/12

DESPATCHED BY  
*A. Bldg n7 K*  
 DEC 11 1963 *AK*

**SECRET**

DEPARTMENT OF NATIONAL DEFENCE  
MINUTE SHEET

Referred to	REMARKS
<p><del>DWFER.</del></p>	<p>To be signed in full showing Appointment, Telephone Number &amp; Date</p> <p>Can you advise please who is the representative on present CANUKUS Study Group - and would you please prepare a reply to RNB/O [insofar as your recommendations are concerned], for AOW's concurrence on proposal to send reps. &amp; desirability of forming another NATO Study Group.</p> <p>P. Bosh ADMINISTRATIVE OFFICER For A/CNS(A&amp;W) 27/11/63</p>

OFFICE OF  
**THE ROYAL NAVAL LIAISON OFFICER,**  
BRITISH DEFENCE LIAISON STAFF CANADA,  
THE ROXBOROUGH,  
OTTAWA, CANADA

**S E C R E T**  
RNLO(BDLS) # S.133/63

*Staff*  
NOV 27 1963  
File No. 1271-8  
Chg'd to *UNFER 25/1/63*

To: The Naval Secretary,  
Department of National Defence,  
Naval Headquarters,  
Ottawa, Ontario.

cc: The Director,  
Naval Fighting Equipment Requirements,  
Department of National Defence,  
Naval Headquarters,  
Ottawa, Ontario.

File: 2/6/12

Date: 26th November, 1963.

Gibraltar Anti-Submarine Group.

Reference: NSS 1271-8 (STAFF) of 23rd March, 1962

*29-11  
A.E. NS (A-20)*

The Royal Naval Liaison Officer has been informed that the Admiralty has agreed a recommendation that the present CANUKUS Study Group, which is considering the provision of a Straits Surveillance System for Gibraltar, might be expanded to become a N.A.T.O. Study Group.

2. In order to seek CANUKUS agreement to this recommendation, it is proposed that a meeting of the CANUKUS Study Group be held at Gibraltar on 15th and 16th January, 1964. Subject to such agreement being obtained it will be necessary for the Group to:-

- (a) determine how much of its original work could be released to N.A.T.O.;
- (b) draw up an agenda for a meeting of the N.A.T.O. Study Group in May, 1964;
- (c) prepare briefs for the N.A.T.O. meeting.

3. It is requested that the Royal Naval Liaison Officer may be informed whether the Royal Canadian Navy agrees with the above proposal; and, if so, of the names of the representatives who would attend the meeting.

*Copy sent to  
UNFER  
/c*

*T. L. Martin*

T. L. Martin,  
Captain, Royal Navy.

RECEIVED  
NOV 27 1963



DEPARTMENT OF NATIONAL DEFENCE  
MINUTE SHEET

Referred to	REMARKS To be signed in full showing Appointment, Telephone Number & Date
	<p><i>G' IUK Study Group.</i></p> <p><u><i>NOTE FOR FILE.</i></u></p> <p><i>This Subject will be discussed under "Other Business" by A/cas (Row) at the May 1962 meeting of the NATO Naval Steering Group. Copies of all pertinent documents have been made for this.</i></p> <p><i>Plash see (Row) 28/3/62</i></p>

HLS/BC

NSS 1271-8(STAFF)

**SECRET**

ROYAL CANADIAN NAVY

Ontario.

23 MAR 1962

GIBRALTAR ANTI-SUBMARINE STUDY GROUP

- References:
- (a) SNLO(UK) #S. 15/62, File 2/6/2, 23 February, 1962.
  - (b) NSS 1271-8 (STAFF), 14 October, 1958.
  - (c) SACLANT Ser: N-110, 26 January, 1961.

It is regretted that the invitation to possibly undertake the Gibraltar Straits project must be declined. The Canadian position, like that of the United Kingdom, stems from lack of scientific effort.

2. In the event that the USA feels unable to undertake the commitment, this would appear to be an excellent item for a NATO project. A Canadian contribution to such a NATO project would be favourably considered.

*L.P.B.*  
NAVAL SECRETARY



Senior Naval Liaison Officer,  
(British Defence Liaison Staff).

For Concurrence: ACNS(A&W)

*Concur W*  
*Staffs Concur WLT, 14/3.*  
*Don Plans*  
*WLT 15/3*

**SECRET**

*Colossus is being considered for GIB. by the USN! W.*

*Aff in Deputy  
ACNS(A&W)*

VEN.S.

**SECRET**

NSS 1271-8 (STAFF)



MEMORANDUM TO:

ACNS(AEW) *CS*

*VCNS*

*Acns (Arms)*

- ①
- ②
- ③

*What about?*  
*Project "Crackpot"?*  
*ha Spozia?*  
*N.N.S.G.*  
*Will*  
*B.W. of NNSB*

GIBRALTAR ANTI-SUBMARINE STUDY GROUP

- References: (a) SNLO(UK) #S. 15/62, File 2/6/2,  
23 February, 1962.  
 (b) NSS 1271-8 (STAFF) 14 October, 1958.  
 (c) SACLANT Ser: N-110, 26 January, 1961.  
 (d) NSS 1271-8 (STAFF) 10 March, 1961.

The RCN has been asked by the Senior Naval Liaison Officer (UK) to consider taking over a project concerning detection of submarines in the Straits of Gibraltar (reference (a)).

2. In the past the RCN has expressed interest in, but taken no active part in, the study of the anti-submarine defence of the Straits of Gibraltar (reference (b)). At present the RCN is charged by SACLANT with national responsibility for assisting in surveillance of the northern approaches to the Atlantic (reference (c)), and has indicated, to the Chairman, Chiefs of Staff, that in periods of tension such responsibility will be accepted, particularly with regard to the Straits of the Arctic Archipelago (reference (d)).

3. Since the technical problems of anti-submarine surveillance in the Arctic Archipelago are considerable, and not entirely similar to those of the Straits of Gibraltar, it seems clear that the RCN does not have scientific effort to spare for the Gibraltar project.

4. A proposed reply to SNLO(UK), based on the foregoing considerations, is attached for concurrence.

*G. Russell*  
 (F.F.X. Russell)  
 CAPTAIN, RCN

DIRECTOR OF NAVAL OPERATIONAL REQUIREMENTS

O T T A W A,

8 March, 1962.

**SECRET**

185

DEPARTMENT OF NATIONAL DEFENCE  
MINUTE SHEET

Referred to	REMARKS To be signed in full showing Appointment, Telephone Number & Date
<p><i>SAC/CSW</i></p> <p><i>DN P. P. [unclear]</i></p> <p><i>do comment to</i></p> <p><i>MR</i></p> <p><i>13/3</i></p> <p><i>ACNS (Adw)</i></p>	<p><i>See [unclear] on N See letter</i></p> <p>Have you any comments for Adw - (who is away until 16 March) + your concurrence on N See letter 2 down phone.</p> <p><i>Plush</i></p> <p><i>13/3/62</i></p>

DND 317

FROM: OFFICE OF SENIOR NAVAL LIAISON OFFICER

(U.K. SERVICES LIAISON STAFF), CANADA  
THE ROXBOROUGH, 95 LAURIER AVENUE WEST  
OTTAWA, CANADA

SECRET

SNLO(UK) # S.15/62

TO: The Naval Secretary,  
Department of National Defence,  
Naval Headquarters,  
Ottawa, Ontario.

SECRET

File: 2/6/2

Date: 23rd February, 1962.

Gibraltar Anti-Submarine Study Group

- References: (a) SNLO(UK) Canada's letter No. SI-2-18-11F dated 22nd August, 1958
- (b) The Naval Secretary's letter No. NSS2171-8 (Staff) dated 14th October, 1958.

on Vol. 1 attached

At the Joint CANUKUS meeting held in Washington on the 5th February, 1960, it was agreed that the Royal Navy should conduct propagation trials to determine the feasibility of using Deep Dangled Asdics in the Anti-Submarine defence of the Straits of Gibraltar.

2. SNLO has been directed by the Admiralty to inform you that the propagation trials have now been completed and that analysis has shown that the use of Deep Dangled Asdics in the Gibraltar Straits appears to provide a feasible solution, but that the United Kingdom is unable to progress further due to lack of scientific effort.

3. SNLO has been further directed to invite you to consider whether the Canadian authorities would now be prepared to take over the project, if the U.S. authorities, who are being approached separately, feel unable to undertake the commitment.

4. In the event that neither the Canadian nor U.S. authorities are able to take over the project, SNLO is to enquire whether, in your view, the help of other NATO Nations might be sought.

*O.H.M. St. J. Steiner*

O.H.M. St. J. Steiner,  
Captain, Royal Navy.

27-2  
DNOR

Referred to... *Staff*

FEB 26 1962

File No. *1271-8*

Sent to.....

SECRET

PFKR/LC

*CB for PA*  
NSS 1271-8 (STAFF)

ROYAL CANADIAN NAVY

AUG 28 1961

MINISTERIAL INQUIRY NO. 258

Reference your memorandum dated 15 August, 1961  
it is suggested that the reply to the Minister's correspondent  
be made along the following lines:

"Your suggestion for detection of underwater  
craft entering Hudson Bay contained in your letter  
dated 16 August, 1961 has been studied by the Royal  
Canadian Navy with great interest. The proposal  
has much merit but has, as you suspected, already  
received consideration by the RCN.

Your concern and interest in national security  
are commendable. If you have further proposals which  
you think may be of National Defence interest I would  
be pleased to receive them. Thank you for your effort  
and time already expended in this regard."

*R. J. Sheehan Cole*  
NAVAL SECRETARY

*N. Sec*

The Associate Minister's Staff Officer.



Despatched by  
N. Sec.

For concurrence:

ACNS (S&W)

ACNS (P)

6-VCNS

*ACNS*

*25.8.*

*25 Aug 61.*

Date  
Time

*28.8.61.*

H.O. 1024

NAVAL SERVICE—MINUTE SHEET

FILE No. ....

REFERRED TO	REMARKS (WITH SIGNATURE, POSITION AND DATE)
<i>M/COMS (ADM)</i>	<i>for reply per  M/COMS 18 Aug 64</i>
<i>DNOR</i>	<i>For draft reply by The Minister, &amp; covering N Sec memo to Minister's Staff Officer. By 25 Aug. please.</i>

TO: UCNS.

Ministerial Inquiry No. 268

The attached Ministerial Inquiry is referred for action. The reply to the Minister's Staff Officer is to be prepared for my signature and forwarded to my office, in triplicate, by 28 August '61.

2. If a complete answer cannot be provided by the above date, an interim reply is to be prepared and forwarded to my office. The interim reply should be as complete as possible, indicate what action is being taken to secure the remaining information, and forecast the date by which it is expected a final reply will be available.

*R. B. Thurber Cdr*  
NAVAL SECRETARY

OFFICE OF THE MINISTER OF NATIONAL DEFENCE

MEMORANDUM for: Naval Secretary

MIN. FILE.....

H. Q. FILE.....

August 18, 1961.

1. Attached is a copy of a letter received by the Minister in which Mr. Peter T. Hodgins of Ottawa suggests that a continuous sonar or magnetometer watch be maintained at the entrance of Hudson Bay.
2. Mr. Hodgins has been thanked for his letter, and has been informed that it would be brought to the attention of the responsible officers of the Royal Canadian Navy for their information.

  
G.S. Foggo, Major,  
A/Minister's Staff Officer.

278 Roger Road,  
Ottawa 1, Ontario,  
August 16, 1961.

Hon. Douglas S. Harkness,  
Minister of National Defence,  
125 Elgin St., Ottawa, Ont.



Dear Sir,

For the increased security of the interior of the North American continent, I believe we should have a continuous sonar or magnetometer watch maintained at the relatively narrow entrances to that inland sea, Hudson Bay. This would make possible the detection of submarines carrying infiltrators or rockets to the heart of our homeland.

A submarine cable carrying a number of appropriately spaced detectors could be laid across Hudson Strait at Resolution Island, and across Fury and Hecla Strait, quite reasonably in my opinion. The total distance involved is in the order of 100 miles, and the whole system could be manned by two small crews. The Dept. of Transport already has installations on Resolution Island. By this simple means, penetration of Fox Basin (and Channel), Hudson Bay and James Bay, Hudson Strait and Ungava Bay could be detected. It should be easy to sort out legitimate, scheduled users of these waters from would-be marauders by radio interrogation, radar surveillance, and visually. (over)

2.

I am certain the U.S.A. would be vitally interested in cooperating in those protecting the central areas of their country, including such prime targets as Chicago, Detroit, etc.

Very likely a scheme like this has been considered or even quietly implemented long before now, but on the off-chance that this has not been the case, I should be very gratified if this suggestion may be given earnest consideration.

Yours truly,

Peter T. Hodgins, P. Eng.

**SECRET**

*PA*

NSS 1271-9  
(STAFF)

ROYAL CANADIAN NAVY

10 MAR 1961

PROVISION OF ANTI-SUBMARINE WARNING  
AND DETECTION SYSTEM

Reference is made to your CC 1050.1 (JPS/N) dated 3 February, 1961, in which you requested comments on SACLANF's letter N-110 dated 26 January, 1961, concerning a SACLANF request to Canada, UK, US and Norway to do their utmost to undertake surveillance in the northern approaches to the Atlantic in peacetime on a national basis.

2. In current peacetime circumstances there is no effective surveillance by Canadian forces in the northern approaches to the Atlantic. However, in periods of tension it is agreed that Canada should endeavour to increase its surveillance efforts by ships and aircraft, particularly in the entrances to the Atlantic from the Arctic Archipelago.

*[Signature]*  
(H.S. Rayner),  
Vice-Admiral, RCN,  
CHIEF OF THE NAVAL STAFF.

CHAIRMAN, CHIEFS OF STAFF.

COPY TO: CHIEF OF THE AIR STAFF.

*Agnes (e) & 9 Mar 61*

*Noted R 2013  
Alcock (Am)*

**SECRET**

*VONS*  
*[Signature]*  
103  
ACNS

DEPARTMENT OF NATIONAL DEFENCE  
MINUTE SHEET

Referred To

REMARKS

To be signed in full showing Appointment, Telephone Number & Date

VCS  
7/3

Paras 6 and 7 have been re-written  
to stress the need for surveillance in  
the Canadian archipelago.

CNS

ACMS(P)  
6/26/61

ACMS(P)

I will think that all Secretariat  
work is some form of reconnaissance  
that we would increase surveillance  
efforts by ship or aircraft in periods  
of tension. The point that he doesn't  
think shore based surveillance is possible.

All we need today is that we  
would subject to some reserve do all we  
can  
for VCS

DND.317

RJP:EAL

**SECRET**

NSS. 1271-8  
(STAFF)

MEMORANDUM TO:

ACNS(P)  
VCNS

*Plans' comments below*  
*2 Mar 61*

SURVEILLANCE OF NORTHERN APPROACHES  
TO THE ATLANTIC

I agree generally with DNOR's comments.

2. The proposed letter to COS was not intended to give the impression that we do not support SACLANT's views on this subject but only to point out the difficulties of implementing this proposal as long as we are tied to current EDP's. I thought, and still think, that MARLANT should be consulted concerning his capability of improving our surveillance in this region in peacetime.

3. I did not get the impression from SACLANT's letter, as DNOR did, that SACLANT intends to amend EDP's. I think he is only asking member nations to do what they can nationally in peacetime. However, DNOR's interpretation is perfectly valid and, once MARLANT's views are received, I think a meeting should be arranged with SACLANT's planners to investigate this aspect. If CANCOMARLANT reports that he is unable to do little with existing forces and because of current EDP's, then we should certainly ask SACLANT if he wishes changes made to the latter.

*R. J. Pickford*

(R.J. Pickford)  
Captain, RCN,

DIRECTOR OF NAVAL PLANS

O T T A W A,

1 March, 1961.

*ACNS(P)*  
*ACWC(A+W)*

*Saclant letter is so vague that I don't think there is any reason to reply.*

**SECRET**

*I disagree entirely with DNOR's remarks. If I was a Russian S/N captain I would never go near any shore under to attack Canada*  
*2/3/61*

**SECRET**

NSS 1271-8 (STAFF)

MEMORANDUM TO:

*Access to Information Act - W.*  
DN PLANS  
ACNS(P) *See*  
VCNS

SURVEILLANCE OF NORTHERN APPROACHES TO THE ATLANTIC

There is no doubt that one of the most effective anti-submarine measures that can be taken is by providing the means for detecting submarines entering the broad Atlantic through the northern approaches. In peacetime, effective detection, and subsequent tracking, will provide important strategic intelligence and in wartime an attrition patrol in the narrower waters will reduce the threat in the open Atlantic.

2. Para 3 of SACLANT's letter implies that Canada has a capability to provide some measure of surveillance at the present time. This capability is limited with present equipment; however, a combination of surface A/S ships, naval and/or maritime aircraft should achieve limited results. The acquisition of Barbel Class submarines would give us a significant capability.

3. The idea that surveillance should take place in the relatively narrow northern approaches is unquestionably more sound tactically and strategically than is the present plan of defending the extensive offshore areas. SACLANT in his letter made no reference to existing EDPs (his) which govern our action; however, if for purposes of reasoning this out we assume that the present proposal will in due course be part of his (and our) EDPs there are the following important implications:

(a) If we decline to provide forces:

(i) We shall presumably have to be prepared to show that the present concept, which is, in effect, a last ditch stand, is liable to be more productive of gathering intelligence than is SACLANT's proposal. This would be impossible.

(ii) We shall in the course of time, as Soviet nuclear submarine capability increases, be in the position of having refused to undertake the proposed task in waters which are essentially a Canadian responsibility namely, the approaches to the Atlantic through the gap between Labrador and Greenland. This would presumably be an undesirable posture.

(b) If we agree to provide forces:

(i) We shall be in the position of having accepted a commitment which appears tactically and strategically sound and by so doing committed ourselves to a definite and tangible peacetime undertaking, the value of which in peace or war (assuming our forces are effective) can hardly be refuted.

**SECRET**

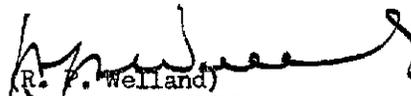
**SECRET**

- 2 -

- (ii) There is the long term implication that a portion of our forces will almost certainly have to be further and more narrowly specialized if the most effective results per dollar spent are to be realized. This is not entirely disadvantageous: The Barbel submarines fit perfectly into this role; moreover, recent research results indicate that specialized detection ships should achieve important results for small expenditures. (This latter statement can be explained in detail if desired).
- (iii) There will be greatly increased operating costs particularly in fuel for ships and aircraft as the areas in question involve long transit times. Refuelling ships on station may reduce costs somewhat.
- (iv) Forces assigned to surveillance may have to be additional to those now in being if present planned commitment are not altered to any extent.

4. In view of the foregoing consideration, I conclude that we should, once the matter of EDPs is cleared up, indicate the desire to support SACLANT's proposal to undertake a definite commitment at the present time.

5. With reference to para 6 of the draft letter to the Chiefs of Staff, would it not be better to tell the COS that it is our intent to determine whether or not this latest idea represents a major change in the SACLANT EDP. Neither the COS or MARLANT, or ourselves, for that matter, can make any further progress in this unless SACLANT puts this matter into relation with his own EDPs.

  
(R. F. Welland)  
Captain, RCN

Director of Naval Operational Requirements

O T T A W A,  
1 March, 1961

**SECRET**

000331

**SECRET**

NSS 1271-8  
(STAFF)

MEMORANDUM TO:

*8*  
ACNS (F) *28 Feb 61.*  
DNOR  
ACNS (A & W)  
VCNS  
CNS

SURVEILLANCE OF NORTHERN APPROACHES TO ATLANTIC

SACLANT has requested, as an interim peacetime measure, that Canada, on a national basis, undertake surveillance in the northern approaches to the Atlantic along with the US, UK and Norway. Although surveillance of this area has been considered for several years, this is the first time that a specific request has been made for Canadian forces to undertake this surveillance. It has been considered that surveillance in this area could best be achieved with a fixed system; however it has now been decided that the establishment of a fixed system in the northern approaches to the Atlantic is not feasible until further technological progress in development of such a system is made. This does not necessarily apply to the approaches via the Canadian Archipelago.

2. The attached letter to the Chairman, Chiefs of Staff, reports that SACLANT's proposal will be forwarded to CANCOMARLANT for comments.

*R. J. Pickford*  
(R.J. Pickford),  
Captain, RCN,  
DIRECTOR OF NAVAL PLANS.

O T T A W A,  
27 February, 1961.

**SECRET**

ROYAL CANADIAN NAVY

PROVISION OF ANTI-SUBMARINE WARNING

AND DETECTION SYSTEM

Reference is made to your CC 1030.1 (JFS/R) dated 3 February, 1961, in which you requested comments on SACLANC's letter N-110 dated 26 January, 1961, concerning a SACLANC request to undertake surveillance in the northern approaches to the Atlantic in peacetime.

2. The surveillance of the Greenland-Iceland-UK (G-I-UK) entrances to the Atlantic was considered in June, 1957, at which time an RCM/RCAF policy statement was made stating that, at the proper time, both the RCM and RCAF would consider the assignment of forces for a Greenland-Iceland-UK surveillance system.

3. At a Canada-UK-US study group meeting on this subject held in July, 1959, the Canadian statement made the following points:

- (a) Canada has no objection to the concept of the establishment of a G-I-UK surveillance line in peacetime.
- (b) Canada is bound to NATO and her ASW forces are fully committed to NATO in war. The co-ordinated employment and command of anti-submarine forces in the Atlantic in peacetime through a Canada-UK-US arrangement, in conjunction with the employment and command in wartime by SACLANC, would require resolution nationally.
- (c) Defence of straits is of special interest to Canada as once undetected access to the Atlantic through the G-I-UK gaps is no longer available, other entrances under the Arctic Ice through waters of the Canadian Archipelago may be used and surveillance of these entrances will be necessary.

4. The report of the study group was considered by the Sea-Air Warfare Committee in September, 1960. It was noted that SACLANC's concept of operations as outlined in his "Feasibility Study on the Forward Defence Concept of AS Operations" is that the G-I-UK line will be manned on receipt of the first warning of hostilities by forces available in the EASTLANC area. Under the SACLANC plan, it is not intended to use Canadian (RCM or RCAF) forces on the G-I-UK line. This is confirmed in the EASTLANC 1960 EDP. Accordingly it was concluded that there was no immediate requirement for Canadian forces on the G-I-UK line.

CHAIRMAN, CHIEFS OF STAFF.

COPY TO: CHIEF OF THE AIR STAFF.

**SECRET**

- 3 -

5. SACLANT has now stated that the establishment of a fixed system in the northern approaches to the Atlantic is not feasible until further technological progress in development of such a system is made. SACLANT therefore requests as an interim penultimate measure, that Canada, on a national basis, undertake surveillance in the northern approaches to the Atlantic along with the US, UK and Norway.

6. It is considered that Canada can best contribute towards surveillance of the approaches to the North Atlantic by directing her efforts toward the establishment of a surveillance system in the waters of the Canadian Archipelago and Davis Strait. SACLANT's statement noted in paragraph 5 above is not considered to be applicable to the Canadian Arctic waters because of the comparatively shallower and narrower channels in certain areas. The establishment of a fixed surveillance system would take several years by which time intelligence has estimated that the Soviet fleet would have the capability for submarine under-ice operations. If undetected access was denied through the Greenland-Iceland-UK gaps, transit through the Canadian Archipelago, if completely safe from detection, might be considered as an alternate route for some submarines.

7. It is therefore considered that, Canada should support the establishment of a surveillance system across the approaches to the North Atlantic by the installation of a surveillance system within the waters of the Canadian Archipelago.

(H.S. Raynor),  
Vice-Admiral, RCN,  
CHIEF OF THE NAVAL STAFF.

A CNS (P) - *[Signature]* - 6 Mar 61.

**SECRET**

Address Reply:  
The Chairman,  
Chiefs of Staff,  
Ottawa

FILE: CC 1050.1 (JPS/W)  
DOCUMENT Attach  
CLASSIFICATION: NATO SECRET  
DATE: 3 Feb 61

JOINT STAFF MEMORANDUM

*Staff*  
ST 1271-8  
~~1271-8~~

Subject: Provision of Anti-Submarine Warning and Detection System

Description: Ser: N-110 dated 26 Jan 61

- 1. The attached document is referred to:
  - CCOS
  - CNS - 2 copies
  - CJS - file
  - D/CJS - file

CNS - for comment by  
15/2/61

- 2. It is requested that action be taken by:

② v c m s *15/2/61*

① *ACNS (P) 28 Feb 61*  
*to [unclear] as w/ [unclear]*  
IAMcP/2-2871/pm  
*DN Plans*

*[Signature]*  
(R. G. Weston)  
Commodore,  
for Chairman, Chiefs of Staff

FEB - 6 - 1961

NORTH ATLANTIC TREATY ORGANIZATION  
HEADQUARTERS  
OF  
THE SUPREME ALLIED COMMANDER ATLANTIC  
NORFOLK 11, VIRGINIA, U.S.A.

Copy No. 24

Ser: N-110  
26 January 1961

**NATO - SECRET**  
NATO SECRET

To: Secretary of Defense United States  
Minister of Defense United Kingdom  
Minister of Defense Canada  
Minister of Defense Norway

Subj: Provision of Anti-Submarine Warning and Detection Systems

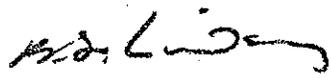
1. There is an existing requirement to maintain surveillance of the northern approaches to the Atlantic as an integral element of strategic warning.
2. The Standing Group has noted that the establishment of shore-based anti-submarine warning and detection systems in the northern approaches to the Atlantic is not feasible until further technological progress in the development of such systems is made.
3. Since interim peacetime measures to conduct such surveillance can only be implemented on a national basis by those nations having forces with the necessary capability, SACLANT requests that those nations with the capability do their utmost to undertake such surveillance.
4. This surveillance is of particular importance in periods of tension and it is specifically requested that nations increase their surveillance efforts during periods of tension and promptly report any resulting intelligence to the appropriate NATO Commander through established channels.
5. French translation is printed on the reverse side.

FOR THE SUPREME ALLIED COMMANDER ATLANTIC:

L. S. SABIN  
Chief of Staff

Copy to:  
SGN

AUTHENTICATED:

  
B. F. LINDSEY  
Assistant Secretary

**NATO - SECRET**  
NATO SECRET

Page 1 of 1

"TRADUCTION FRANCAISE - ORIGINE EN ANGLAIS"

ORGANISATION DU TRAITE DE L'ATLANTIQUE NORD  
ETAT-MAJOR DU  
COMMANDANT SUPREME ALLIE DE L'ATLANTIQUE  
NORFOLK 11, VIRGINIE, U.S.A.

COPY NO \_\_\_\_\_

Ser: N-110  
26 janvier 1961

NATO SECRET

Destinataire: Secrétariat de la Defense Etats-Unis  
Ministre de la Defense Royaume Uni  
Ministre de la Defense Canada  
Ministre de la Defense Norvège

Objet: Mise sur pied de systèmes d'avertissement et de détection anti sous-marins.

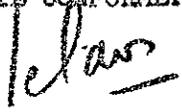
1. Il est indispensable d'effectuer, en vue de conserver tous les éléments intégraux d'avertissement stratégique, une surveillance des zones nord de l'Atlantique.
2. Le Groupe permanent a constaté que l'établissement de systèmes d'avertissement et de détection sous-marins dans les zones nord de l'Atlantique n'était pas possible tant que d'autres progrès technologiques n'auraient pas été réalisés dans le développement de ces systèmes.
3. Comme les mesures de remplacement pour effectuer une telle surveillance peuvent en temps de paix être seulement prises à l'échelon national par les nations ayant des forces aux moyens adéquats, SACLANC demande que les nations qui en ont la possibilité fassent leur maximum pour effectuer cette surveillance.
4. Cette surveillance est particulièrement importante en périodes de tension et il est plus spécifiquement demandé aux pays intéressés d'intensifier leurs efforts de surveillance pendant ces périodes et de rendre compte rapidement au commandant OTAN dont ils dépendent des informations éventuellement recueillies.

POUR LE COMMANDANT SUPREME ALLIE DE L'ATLANTIQUE:

/s/ L. S. SABIN  
L. S. SABIN  
Chef d'Etat Major

Copie à:  
VOIR AU VERSO

CERTIFIE CONFORME:

  
Le CC LE SAOS, Marine Française  
Directeur du Bureau de Traduction

NATO SECRET

SECRET

CR. PA

~~Notes~~ NSS (1271-8) (STAFF)  
Perhaps our policy more frequent  
should be re-examined - exercises in northern waters would be of some help! #D725

MEMORANDUM TO: ACNS (ASW)

G-I-UK BARRIER - CANADIAN PARTICIPATION

- References:-
- (a) NMWTS 1601-13 Vol. 5 dated 1 August, 1957.
  - (b) NSS 1271-8(STAFF) dated 14 August, 1959.
  - (c) NSS 1271-8(STAFF) dated 30 August, 1960.
  - (d) NSS 1270-78-1 dated 26 September, 1960 (Sea/Air Warfare Committee Minutes).

The above references in particular and the greater part of Secret File 1271-8 (A/S Committees, Defence of Straits, CAN/UK/US Study Group) in general are pertinent to Canadian participation in the G-I-UK Barrier.

2. The requirement for a submarine surveillance line across the Greenland-Iceland-UK gaps has been under consideration since 1955, primarily within the USN. The first tripartite conference to consider this matter was held in Norfolk in June, 1957.

3. A tripartite policy statement resulting from the 1957 conference includes in part, "The Royal Canadian Navy and Royal Canadian Air Force hold the position that they have a great deal of interest in the finally selected system. At the proper time both the Royal Canadian Navy and Royal Canadian Air Force will consider the assignment of forces". Minutes of the policy conference are contained in reference (a).

4. Both RCN and RCAF participated in a study on the G-I-UK line held at Argentia in July, 1959. The report of this study is contained as an enclosure to reference (b). Canadian participation was somewhat extemporaneous compared to that of the USN and dealt mainly with current Canadian ASW forces and the moored sonobuoy.

5. The 1959 study resulted in policy statements of the RCN and RCAF positions regarding the study group recommendations for consideration by the Sea/Air Warfare Committee. The RCAF position as stated on 10 August, 1960 was basically that of continuing interest in the establishment of an effective G-I-UK barrier but with no assignment of forces in peacetime until a fixed surveillance system is installed and assignment in wartime only depending on SACLANF requirements. The RCN position was basically that of no requirement for Canadian forces on the G-I-UK line as they are for use elsewhere and of continuation of present efforts to improve the ASW capability of Canadian forces as these efforts may contribute to any system employed on the G-I-UK line.

6. At its 39th meeting on 12 September, 1960, the Sea/Air Warfare Committee reviewed and agreed to both the RCAF and RCN policy positions with the exception of minor

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7908

29 December, 1960

MEMORANDUM TO: VONS *[Signature]* 29/12

PRESS QUERY--"NORTH ATLANTIC GAP"

Dave McIntosh, The Canadian Press, called me on Tuesday afternoon, 27 Dec., to ask if RGN ships patrolled "The North Atlantic Gap--between Greenland and Iceland and Iceland and the Faeroes." I told him that they did not, that this was not within the Canadian area of responsibility.

2. McIntosh did not tell me why he wanted this information. It is now apparent he was working on a story carried yesterday by The Canadian Press and published in last night's Ottawa Citizen. A clipping is attached.

*[Signature]*  
(R.C. Hayden)

Cdr. RCN

DIRECTOR OF NAVAL INFORMATION

*[Signature]*  
ACNS (A) - good old RGN.

DNOR

ACNS (P)

~~ACNS~~

*[Signature]*  
For discussion on Friday 6<sup>th</sup> ? *[Signature]*

~~SECRET~~

- 2 -

changes in the RCN position so that participation in the G-I-UK barrier could be undertaken by Canadian forces at a later date if circumstances so require. Copies of the agreed RCAF and RCN positions are contained in reference (d).



(R.P. Welland)  
Captain, RCN

DIRECTOR OF NAVAL OPERATIONAL REQUIREMENTS

O T T A W A,  
4 January, 1961.

SECRET

000340

G/E Pagg 2-3458

## RCAF Argus Sub Hunters Guard Gap

By The Canadian Press

The RCAF now is helping to patrol the vital North Atlantic gap, the route which Soviet submarines would have to take to reach the open Atlantic.

Informed sources say the RCAF's long-range Argus submarine hunters, flying out of Greenwood, N.S., and Summerside, P.E.I., are assisting periodically the navies and air forces of other NATO countries in this sensitive area.

The North Atlantic gap comprises the waters between Greenland and Iceland — Denmark Strait — and between Iceland and the Danish Faeroe Islands north of Scotland. This is the only possible area in which warning of a Russian submarine thrust into the Atlantic could be provided.

In certain periods of international tension, the United States has put into operation an anti-submarine barrier across the North Atlantic gap. The Canadian Navy has not participated in these barrier operations, chiefly because it is assigned by NATO an area closer to Canada.

Main reason for the barrier is to watch and listen for any large exodus from the Norwegian sea of Soviet submarines which might be used for missile firings on North America as well as for attack on allied shipping.

Pf

11400-64

EXTRACT FROM  
MINUTES OF A MEETING OF THE SEA/AIR WARFARE  
COMMITTEE HELD IN THE AIR COUNCIL ROOM  
NATIONAL DEFENCE HEADQUARTERS AT 1000  
12 September, 1960

FILE NO. 11400-64-1

8	<p><u>RCN/RCAF Reports on Greenland, Iceland, UK</u></p> <p>14 The reports attached at Appendix "A" and "B" representing the RCAF and RCN position on this matter were reviewed. There was general agreement with the stand taken in these reports with the exception of minor changes in the RCN position. It was suggested that the RCN stand should be modified so that participation in the GIUK barrier could be undertaken by Canadian forces at a later date if circumstances so require. Developments in the GIUK barrier should be monitored by both services.</p> <p>15 <u>Decision</u> Para 1 of the RCN report should be amended as follows:</p> <p>"In considering the study group report and SACLANT Forward Defence Concept along with present commitments, it is concluded that there is no immediate requirement for Canadian forces on the GIUK line. They are for use elsewhere. The command structure of forces on the GIUK line is therefore of no primary concern to Canada at this time."</p>	
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S E C R E T  
APPENDIX "A"

TO: RCN NSS 1270-78-1 and  
RCAF S801-100-S81-1  
d. 26 Sep 60

RCN POSITION REGARDING G-I-UK STUDY GROUP RECOMMENDATIONS

The RCN position concerning the recommendations made in the G-I-UK Study Group is:

1. In considering the study group report and SACLANT Forward Defence Concept along with present commitments, it is concluded that there is no requirement for Canadian forces on the G-I-UK line. They are for use elsewhere. The command structure of forces on the G-I-UK line is therefore of no primary concern to Canada, *at this time.*
2. In considering any other degree of Canadian participation on the G-I-UK line, it is concluded that present efforts to improve the ASW capability of Canadian forces in general should be continued as these efforts may also contribute to any system employed on the G-I-UK line. Of particular application to the area are the following:
  - (i) Research towards the development of a permanent or semi-permanent moored buoy system if it shows promise of making a significant improvement to the ASW capability.
  - (ii) Conduct further operational tests of the long-life Jezebel buoys (low frequency passive listening) to determine its effectiveness against quieter submarines. Present indications are not favourable.
  - (iii) Organize the Canadian fishing fleet to assist in detection and reporting of unfriendly submarines and reporting their own position. Although Canadian fishermen do not at present fish in the Greenland-Iceland Area, this may not always be the case. This is also a requirement in Canadian Areas.

S E C R E T

APPENDIX "B"  
TC RCN NSS 1270-78-1 and  
RCAF S801-100-S81-1  
d. 26 Sep 60

RCAF POLICY REGARDING G-I-UK STUDY GROUP RECOMMENDATIONS

1 A review of the study group report has revealed that recommendations of specific concern to the RCAF are as follows:

- (a) The continued development of the moored buoy.
- (b) The development of an air launched "longer life" Sonobuoy with a life of approximately 72 hours.
- (c) The development of a Command structure for control of forces.

2 Having regard for present commitments and programmes, the following represents the proposed RCAF position:

- (a) The RCAF declares a continuing interest in the establishment of an effective G-I-UK anti-submarine barrier. Because air/surface forces by themselves cannot provide a fully effective barrier, some form of fixed surveillance system is required in the area.
- (b) Until a fixed surveillance system is installed, there is little merit in assigning forces for barrier operations in peacetime and none are available for wartime employment unless there is a reduction in SACLANT assignments or unless SACLANT assumes responsibility for controlling barrier operations and utilizes forces now earmarked for other tasks.
- (c) Although the USN is programming the installation of a chain of SOSUS stations for passive surveillance by 1965, it has been agreed that this programme will be cancelled if a more effective or economical system is developed in the interval. The long life Moored Sonobuoy constitutes a possible alternate to SOSUS.
- (d) The Moored Buoy system is being developed jointly by the RCAF and the USN. Essentially, the RCAF is developing the buoy and the USN is responsible for the receiving and analysing equipment in the aircraft. This system is not being developed specifically for the G-I-UK barrier and will be usable in a variety of areas. Nevertheless, it could constitute a useful contribution to the barrier programme if it proves to be successful.
- (e) With regard to the recommendation to develop an air launched longer life (72-hour) sonobuoy, there is already an agreed RCAF/USN requirement for such a device. Development and production plans are being sponsored by DPD with the support of both RCAF and USN and with a view to Canadian production for sales to both services.

S E C R E T

APPENDIX "B"

3           In summary, it can be stated that the G-I-UK study group recommendations for the development of the moored buoy and the longer life air-launched buoy give support to RCAF requirements already stated for these two systems. In addition, the RCAF, by actively supporting the development and production of these sonobuoys can render a definite contribution to the G-I-UK barrier without the expenditure of additional funds.

26 Sep 60



CANADA

Reply to:  
Naval Member

SECRET

DEPARTMENT OF NATIONAL DEFENCE

CANADIAN JOINT STAFF

DA

2450 Massachusetts Ave., N.W.  
Washington 8 D.C.  
U.S.A.

23 November, 1960

ANTI-SUBMARINE BARRIER OPERATIONS

Submitted for the information of Naval Headquarters that a presentation was given by the command of Commander, Anti-Submarine Defence Force, Atlantic, to the Monthly Submarine Conference in the Pentagon, on 15 November, 1960, on the subject of anti-submarine barrier operations. The main presentation was given by Captain McGivern, USN, Assistant Chief of Staff to COMASDEFORLANT, assisted by Commander Cole of that staff. Admiral Taylor, COMASDEFORLANT attended personally. This presentation apparently aroused considerable interest in OPNAV, and Admiral Beakley, DCNO Fleet Operations and Readiness, amongst others, attended personally. This is the first Submarine Conference at which he has been noticed.

2. The following is a summary of the main points of the presentation and the trend of the rather lengthy discussion which followed.

25.11  
DNOR  
Qu

MISSION OF COMASDEFORLANT

3. COMASDEFORLANT is responsible nationally for the anti-submarine defence of the Atlantic and, as such has overall command and makes policy in connection with barriers to control the entry of enemy submarines into the Atlantic. In addition, of course, ASDEFORLANT has the mission of the direct defence of the continental USA against missile firing submarines, but this particular responsibility did not arise in the context of this presentation.

BACKGROUND OF ASW BARRIERS

4. It is obvious that to control the entry of enemy submarines into the Atlantic, the Greenland-Iceland-UK gap offers the best area over which we have control and adjacent bases to place a barrier which enemy submarines must pass without making a passage under ice. For some years it has been USN policy to place such an ASW barrier when deemed necessary with the following aims:-

- (a) In a hot war to prevent the entry of enemy submarines into the Atlantic.
- (b) In a cold war to provide surveillance on the entry of enemy submarines into the Atlantic.

To-date this barrier has been conceived as a "sub-air" barrier, and numerous exercises have taken place to develop doctrine and tactics and to determine its effectiveness. In the presentation Captain McGivern quoted the following exercises which give the most up-to-date picture on the effectiveness of this type of ASW barrier:-

- LANTBEX 1/59 (conducted in the GIUK area - summer 59)
- FISHPLAY (autumn 59 - North of Bermuda)
- LANTBEX 1/60 (February 60 GIUK area)

The Naval Secretary

Attention: DNOR

SECRET

Referred to... DNOR

NOV 25 1960

File No. 8760-1

1271-8

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- 2 -

#### FORCES REQUIRED

5. At present the U.S. is keeping the following immediately available for the barrier:-

8-12 submarines and 2 squadrons of VP aircraft

To sustain the barrier over a long period it is estimated 45 submarines and the full time service of three VP squadrons will be required.

#### PRESENT BARRIER DOCTRINE

6. Present barrier doctrine is as follows:-

- (a) Aircraft patrol in an air patrol zone 50 miles wide at the northern approaches to the barrier.
- (b) There is a narrow radar silence zone between the air patrol zone and the submarine patrol zone.
- (c) The submarine patrol zone is 50 miles wide with each submarine having an area 100 miles in width. Conventionals are used in this barrier. If nuclears are available they operate behind the barrier in pouncer positions.
- (d) The barrier commander is normally ashore in KEFLAVIK.

The aircraft patrol in the air patrol zone using unlimited radar, hopefully preventing submarines from snorting. The submarine barrier detects transiting submarines during the subsequent snorting cycle.

7. When a submarine makes a detection it may call an aircraft from the air patrol zone to a rendezvous and then vectors the aircraft out to investigate and, if necessary, attack.

#### EXERCISE RESULTS

8. It is not intended here to give detailed results of the exercises mentioned in terms of detections, co-operation between submarine and aircraft, and attack. The following general points were noted:-

- (a) Communications between submarine and aircraft have not been very satisfactory although much improved in LANTBEX 1/60 over 1/59.
- (b) Percentages of transits detected were relatively high.
- (c) Percentages of successful attacks against transitors were relatively low.

#### COMMUNICATIONS

9. The following points were made concerning communications:

- (a) In past exercises HF were widely used. In LANTBEX 1/60 an analysis was made of the communications security of the barrier and it was found communications were far from secure and revealed the presence of the barrier. It was also found that communications used could be monitored from Soviet territory.

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- (b) Submerged submarine communications buoys have not yet been generally fitted but in the last exercise two were available. Neither reached the operating area in an operable condition.
- (c) It is believed that UHF must be used for barrier communications. The power available for submarine UHF is being increased and an aircraft fitted with radio relay will be a requirement to give the required range.

#### LESSONS LEARNED TO DATE

- 10. (a) The use of unrestricted radar in the air patrol zone has little effect in preventing the submarines from snorting in that zone.
- (b) Calling the aircraft in from the air patrol zone to the submarine zone by a submarine takes too long.
- (c) HF should be used less on the barrier.
- (d) Communications and homing procedures for aircraft still present a major problem.

#### FUTURE DOCTRINE

11. COMASDEFORLANT has recently been working in conjunction with other interested authorities to produce a new barrier doctrine. In addition to incorporating the lessons learned from previous barrier exercises it has been decided that the forces now employed on the Newfoundland-Azores barrier, i.e. two squadrons of DER's and WV aircraft, will be moved to the Greenland-Iceland-UK barrier during the summer of 1961. It is desired to incorporate these additional forces in the new barrier concept. Further introduction of operational airborne JEZEBEL equipment into the fleet makes it mandatory to make use of this increased airborne detection capability on the barrier.

#### OUTLINE NEW BARRIER DOCTRINE

12. The following are the major points in the new barrier doctrine now being produced:-

- (a) The aircraft patrol zone will still be the forward zone but the following additional features will be incorporated:
  - (i) Some form of restricted radar policy is being evolved.
  - (ii) JEZEBEL buoys will be employed in the air patrol zone to give increased detection capability.
  - (iii) The DER's will patrol in the air patrol zone probably at low speed to avoid interference with the JEZEBEL buoys.
  - (iv) The command and detection facilities of the DER's will probably be utilized to improve control of the aircraft. Consideration is also being given to embarking the barrier commander in one of the DER's.

.....4/

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- 4 -

- (b) The submarine patrol zone will be deepened to 100 miles. This zone will be divided into 50 mile squares with submarines in alternate squares checker-board style and the gaps filled by JEZEBEL buoys monitored by VP aircraft.
- (c) VP aircraft will patrol in the submarine zone to be more readily available to co-operate with submarines, as well as monitor the JEZEBEL buoys.
- (d) The WV aircraft will be utilized to improve surface surveillance and to provide UHF communication links.
- (e) Nuclears, when available, will back up the submarine zone in pouncer stations.

INTRUDERS

13. During LANTBEX 1/60 an intruder was introduced into the problem and had considerable success. A nuclear will act as intruder during the next major barrier exercise. The opinion was expressed during discussion that a nuclear intruder could destroy the whole barrier.

GENERAL DISCUSSION

14. The following are the main points arising from discussion:-

- (a) COMASDEFORLANT strongly emphasized that the GIUK barrier is visualized as a U.S. national responsibility and rather short shrift was given to a suggestion that greater co-ordination with other interested NATO countries is required to assist in the barrier and develop tactics and doctrine.
- (b) COMASDEFORLANT prefers co-ordinated tactics as opposed to co-related tactics.
- (c) Doubts were expressed as to whether the present standard of training is sufficient to make such a barrier effective.

  
COMMODORE

# SECRET

NSS 1271-8  
(STAFF)

MEMORANDUM TO: ② DNOR  
③ ACNS (A & W)  
④ ACNS (P)  
④ VCNS

*1/9*  
*1 Sep 60.*

*PA 28/9/60*

RCN POSITION REGARDING G-I-UK STUDY

GROUP RECOMMENDATIONS

The G-I-UK Study Group report will be considered by the Sea-Air Warfare Committee on ~~Thursday~~ *Tuesday* 1 September.

2. Attached is a brief of the report and a recommended RCN position to be taken at the Sea-Air Warfare Committee Meeting. If approved, it is suggested that the statement on the RCN position be passed to the RCAF prior to the meeting.



(R.J. Pickford)  
Captain, RCN,  
DIRECTOR OF NAVAL PLANS.

O T T A W A,

1 September, 1960.

# SECRET

**SECRET**

RCN POSITION REGARDING G-I-UK STUDY GROUP RECOMMENDATIONS

The RCN position concerning the recommendations made in the G-I-UK Study Group is: *at this time*

1. In considering the study group report and SACLANF Forward Defence Concept along with present commitments, it is concluded that there is no requirement for Canadian forces on the G-I-UK line. They are for use elsewhere. The command structure of forces on the G-I-UK line is therefore of no primary concern to Canada.
2. In considering any other degree of Canadian participation on the G-I-UK line, it is concluded that present efforts to improve the ASW capability of Canadian forces in general should be continued as these efforts may also contribute to any system employed on the G-I-UK line. Of particular application to the area are the following:
  - (i) Research towards the development of a permanent or semi-permanent moored buoy system if it shows promise of making a significant improvement to the ASW capability.
  - (ii) Conduct further operational tests of the long-life Jezebel buoys (low frequency passive listening) to determine its effectiveness against quieter submarines. Present indications are not favourable.
  - (iii) Organize the Canadian fishing fleet to assist in detection and reporting of unfriendly submarines and reporting their own position. Although Canadian fishermen do not at present fish in the Greenland-Iceland Area, this may not always be the case. This is also a requirement in Canadian Areas.

*Approved by  
Sec. of the War Dept. Ctr  
6 Sept 1960*

**SECRET**

**SECRET**NSS 1271-8  
(STAFF)MEMORANDUM TO: DN PLANS  
ACNS(P)ANTI-SUBMARINE DEFENCE OF THE GREENLAND-ICELAND-  
UNITED KINGDOM (G-I-UK) LINEBACKGROUND

The requirement for a submarine surveillance line across the Greenland-Iceland-UK gaps has been under consideration now since 1955.

2. The first tripartite conference was held in Norfolk in June, 1957, to consider this matter. A policy statement was made at that conference which from the Canadian side was approved by CNS and CAS. This statement is attached as Appendix "A". The RN, USN and RCN agreed that it was highly desirable to establish a Sound Surveillance System in the area concerned. The USN held the position that the installation for its portion of the system rested with GNO (i.e. unilateral) and depended on diplomatic and budgetary limitations. These have now been cleared and extensive surveys are being conducted in the area in preparation for the installation of a sound surveillance system. However, this will not be completed prior to 1962 and in the meantime, the USN conducts regular SSK patrols in the area.

3. It was agreed that the ABW Barrier and Sound Surveillance System must be controlled by one commander. This has now been done by the USN in the establishment of the Commander Barrier Force, US Atlantic Fleet, Argentia.

4. The Royal Navy for several reasons proposed to devote their research and development in this area to an active system for coverage in the Shetlands/Faeroes gap. They have advanced in this field to a considerable extent.

5. The RCN and RCAF part in the policy statement made at that conference was that they have a great interest in the finally selected system. At the proper time, both the RCN and RCAF will consider the assignment of forces for the system.

G-I-UK STUDY REPORT

6. A second conference or study as this was called was held on the G-I-UK line in July, 1960, at Argentia under the Chairmanship of the Commander Barrier Force. This study reviewed progress since the June, 1957 conference and studied plans for the reassessment of time scales,

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command relationships and assignment of forces. The aim of the study was to provide practical long term recommendations for detection, classification tracking and localization of the enemy submarines transitting the G-I-UK line in peace, at the time of an alert (increased tension) and in war. In addition, recommendations were required for the best combination of forces in the event of "War Tomorrow."

7. The following assumptions were made which are in accordance with the latest intelligence estimate - CANUS 59:

1. General war is improbable, but Communist actions short of general war will continue. No free world nation can survive if the communists control the seas.
2. A/S effort should be directed to all communist submarines without undue emphasis on the SSG. All types of submarines have capabilities against shipping and threaten control of the seas. Submarine launched surface to surface missiles are a threat only in the general war situation.
3. The G-I-UK Barrier will provide the best capability to account for Communist submarines entering the Atlantic.
4. Communist nuclear submarines will probably be produced in quantity by 1965.
5. Advances in quieting of submarines will be made during the period up to 1965. Communist advances in technical areas will approximately equal those achieved by nations of the Free World.
6. The system must be capable of detecting 25% nuclear submarines operating in quietest mode, unalerted, and when the system is suitably augmented, have a 50% capability against alerted targets.

8. The study group came to the following conclusions:

- A. The system showing the most promise is a passive acoustic, shore based system (Fixed system) to be augmented by an active system when the state of the art permits.
- B. In war a greater degree of warning for the NW approaches of the UK which requires an addition to the system.
- C. Target date for completion - 1962-65.
- D. Because of the fishing boat problem in the area a surface plot of all shipping is required.

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- E. An electronic countermeasure capability should be retained in ships and aircraft and used to the maximum.
- F. Peacetime experience is required by AEW aircraft if they are to be used on the barrier in war.
- G. Forces to be used should be allocated and trained now.
- H. A/S barrier aircraft must have an all weather capability including blind landing equipment to operate from Iceland and Northern UK.
- J. In time of war, combine mobile forces and fixed systems.
- K. Maintenance of barrier in war depends on the ability to operate aircraft in the face of enemy opposition.
- L. Make use of the potential surveillance capability of NATO fishing fleets.
- M. Deep moored minefields would augment the barrier.

9. Recommendations of the study group are grouped under four headings:

A. Peace (Now)

The following recommendations refer to steps that should be taken now for peacetime operations:

- (a) Intensify exercises in the G-I-UK area to further the effectiveness of the A/S barrier under varying conditions.
- (b) Fit A/S ships with additional ASW equipment such as LOFAR, CODAR, VDS and EBR as a matter of urgency.
- (c) Allocate, stabilize and train as a unit now, those forces to be used on the picket line in the event of an alert.
- (d) Investigate the feasibility of equipping and organizing NATO fishing fleets in contributing to the surface plot and assist in detection and reporting of unfriendly submarines.
- (e) Conduct oceanographic, hydrographic and acoustic surveys in order to develop information required for effective operation of the picket line.
- (f) Intensify efforts on study of submarine noise characteristics.

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B. Long Range (Peace)

- (a) Fixed system supported by minimum mobile forces capable of a 300 mile depth of detection. State of the art indicates that this fixed system must be a passive acoustic shore based system. This will have use in conjunction with and/or conversion to future active surveillance systems.
- (b) Fixed and mobile systems, including permanent and semi-permanent moored-buoy systems, should be continually examined with a view toward decreasing or increasing emphasis on the various systems as developments indicate.
- (c) Minimum mobile investigating forces for the fixed systems will require two patrol aircraft at readiness in Iceland and one patrol aircraft at readiness in Northern Ireland.
- (d) A special survey of the proposed area should be conducted to ascertain the feasibility and requirements for a surface ship plot. Would require increased patrol aircraft requirements.
- (e) Start immediately to conduct necessary surveys and political negotiations for site locations and phase production and installation programme with a view toward completion not later than 1965.

C. Alert

At time of alert or period of increased international tension, duration of which cannot be predicted, the following measures would achieve the aim:

- (a) Establish patrol aircraft-laid long-life Jezebel sonobuoy barrier. The minimum force requirement is estimated to be 48 aircraft with a large effort initially, decreasing when SSK's reached the area.
- (b) Sail immediately available SSK's (up to 18) in order to establish mobile SUBAIR barrier in G-I-UK area.
- (c) Optimum barrier in time of increased tension or war should combine both mobile and static surveillance systems.

D. War Tomorrow

Implementation of items under "Alert", reinforced with 3 SSN's. Plant deep minefields.

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10. A copy of the Canadian statement made at the 1960 conference is attached as Appendix "B". The main Canadian points made at this conference were:

- (i) Canada has no objection to the concept of the establishment of a G-I-UK surveillance line in peacetime.
- (ii) Canada is bound to NATO and her ASW forces are fully committed to NATO in war. The co-ordinated employment and command of anti-submarine forces in the Atlantic in peacetime through a Canada-UK-US arrangement, in conjunction with the employment and command in wartime by SACLANT would require resolution nationally.
- (iii) Once undetected access to the Atlantic through G-I-UK gaps is no longer available, other entrances under the Arctic Ice through waters of the Canadian Archipelago may be used.

The Canadian paper mentioned certain Canadian developments which would have some application in the area (i.e. DDE's equipped with long range sonar, VDS and helicopters and Argus aircraft with long endurance). A separate Canadian paper was presented on the RCAF Moored Buoy System giving a brief outline of the proposed system and details of the experimental programme. The paper aroused many questions on the advantages and disadvantages of the system.

11. The recommendations of the study group of particular concern to Canada are:

- (a) Provide a Fixed System supported by minimum mobile forces to be available not later than 1965.
- (b) Intensify development and production of long-life Jezebel buoys (low frequency passive listening).
- (c) Intensify development of the permanent-semi/permanent moored Sonobuoy system.
- (d) Allocate, stabilize and train as a unit now those forces to be used on the G-I-UK line in time of alert. Examine and decide upon appropriate command structure.
- (e) Organize NATO fishing fleets to assist in detection and reporting of unfriendly submarines and reporting their own positions.
- (f) The optimum G-I-UK A/S barrier in time of increased tension (Alert) today or in war tomorrow or in the future should combine both mobile forces and fixed systems.

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12. In considering these points however the following should be taken into account:

- (i) At no time was there any specific request or strong desire stated for RCN forces. The group did recognize that submarines and maritime patrol aircraft equipped with advanced weapons are the most effective ASW forces for barrier operations.
- (ii) The extent to which the A/S barrier can be maintained in war will depend mainly upon the ability to operate patrol aircraft in this area in the face of enemy opposition. The ability to use bases remote from the area might be a deciding factor in maintaining the SUBAIR barrier. It is only in this context (in war when bases in Iceland, Greenland and Northern Ireland are lost) that there would be the requirement for very long range capability of Argus or Shackleton aircraft. Otherwise the USN could look after the problem with their shorter range patrol aircraft.
- (iii) The use of moored sonobuoys on the high seas might well be contrary to international law as a danger to navigation to submarines and surface ships. I can state with reasonable assurance as a result of my close association with the Department of External Affairs that that Department would not be likely to approve the laying of these buoys in large numbers for ocean surveillance because of the international implications.
- (iv) Canadian maritime forces are fully committed to SACLANT in wartime and their wartime employment will not be in the G-I-UK line area.
- (v) SACLANT has also noted the requirement for the G-I-UK line and in August, 1957, SACLANT developed a concept for a Forward Defence barrier for North Atlantic A/S operations. At present, from SACLANT's point of view, the line can only be established in war. SACLANT based his minimum 1960-62 force requirements to meet all his A/S commitments. These are:
  - (a) Barrier Operations (G-I-UK line)
  - (b) Strike Fleet Support Operations
  - (c) Anti-guided missile submarine operations
  - (d) Focal Area Operations
  - (e) A/S defence of shipping and Task Forces.

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SACLANT's concept of operations as outlined in his "Feasibility Study on the Forward Defence Concept of A/S Operations", is that the G-I-UK line will be manned on receipt of the first warning of hostilities by forces available in the EASTLANT area. Under the SAACLANT plan, it is not intended to use Canadian, (RCN or RCAF) forces on the G-I-UK line. This is confirmed in the EASTLANT 1960 EDP.

#### SUMMARY

13. We therefore have two plans for the establishment of the G-I-UK line before us, one complementing the other. One plan is a tripartite national plan which concerns itself primarily with peacetime considerations or prior to SAACLANT acquiring forces. The primary factor in this plan is the establishment of a fixed surveillance system. Until the fixed system is established, the line will consist of submarines and patrol aircraft. The shorter range aircraft of the USN are quite adequate.

14. The SAACLANT plan is for wartime use which however must obviously be closely tied with the peacetime plan. The problems before the committee are therefore as follows:

- (i) The Command Structure of the G-I-UK line.
- (ii) The degree of Canadian participation on the G-I-UK line.

#### CONCLUSIONS

15. In considering the national and SAACLANT plan together for a G-I-UK line, there is no requirement for Canadian forces on the G-I-UK line. They are for use elsewhere. The command structure is therefore of no primary concern to Canada.

16. Canada can, however, contribute to the G-I-UK line in the following recommendations:

- (i) Intensify development and production of long-life Jezebel buoys (low frequency passive listening).
- (ii) Intensify development of the permanent-semi permanent moored Sonobuoy system.
- (iii) Organize the Canadian fishing fleet to assist in detection and reporting of unfriendly submarines and reporting their own positions. Although Canadian fishermen do not at present fish in the Greenland-Iceland area, this may not always be the case. This is also a requirement in Canadian areas of responsibility.

#### RECOMMENDATIONS

1. Inform the USN and RN of the above conclusions.

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*Secretary should  
have focus in peacetime*

2. Reiterate the RCN stand made at the NATO ASW symposium concerning the creation of a NATO Naval force in peacetime. Part of this force could be employed on the G-I-UK line. This part may or may not include Canadian forces but it could not constitute a requirement for increased Canadian forces.

*E.M. Jones*

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Lieutenant-Commander, RCN,  
A/DN PLANS (INTERNATIONAL) 2

O T T A W A,

30 August, 1960.

APPENDIX "A" TO:  
NSS 1271-8 (STAFF)  
Dated: 30 August, 1960.

POLICY STATEMENT RESULTING FROM A CONFERENCE ON

THE G-I-UK LINE HELD AT NORFOLK ON 25 AND 26 JUNE, 1957

The three navies agree that it is highly desirable to establish a Sound Surveillance System in the Greenland-Iceland-Faeroes-Shetlands/UK-Norway Area, and desire to continue in a close tripartite relationship for the establishment of any system ultimately approved.

The US Navy holds the position that the installation decision for its portion of the system rests with the Chief of Naval Operations depending upon diplomatic and budgetary limitations. The US will not proceed bilaterally with Iceland at this time but will continue to welcome the interest, study and prospective allocation of forces of both the UK and Canada in the establishment of a Sound Surveillance System.

It was agreed that the AEW Barrier and the Sound Surveillance System must be controlled by one commander in order to avoid duplication; planning should consider this in setting up mutual facilities.

Trial experience from the British station on Unst has shown that the performance of passive equipments in these waters is very much less than that which is achieved in the far deeper waters of the Caesar Chain. Further, the presence of large numbers of fishing boats in the area has also posed an extremely difficult classification problem. Added to this is the fear by the Royal Navy that by the end of the next decade the Russians may have sufficient quiet submarines to reduce seriously the value of a purely passive system.

For these reasons, the Royal Navy proposes to devote their limited research and development resources to the development of an active system after completing the first phase of the passive station in Unst in August of this year. In August one deep water array will be laid; it will give bearings only coverage in a part of the Shetlands/Faeroes gap. While the Royal Navy concentrates on the development of active systems, it would, however, be able to complete its portion of a passive system in the Shetlands/Faeroes gap within the time scale outlined by the US Navy for the construction of stations to cover the rest of this large area.

The Royal Canadian Navy and the Royal Canadian Air Force hold the position that they have a great interest in the finally selected system. At the proper time both the Royal Canadian Navy and the Royal Canadian Air Force will consider the assignment of forces for the system.

It was agreed that the time for the next conference would depend on scientific breakthroughs, completion of diplomatic negotiations, or the firming up of plans that may call for re-assessment of time scales, command relationships, and assignment of forces.

APPENDIX "B" TO:  
NSS 1271-8 (STAFF)  
Dated: 30 August, 1960.

CANADIAN BRIEF GIVEN TO STUDY GROUP ON G-I-UK LINE AT MEETING

HELD AT ARGENTIA IN JULY, 1959

Canada does not disagree with the A/S surveillance barrier concept in the Iceland-Greenland-UK area in peacetime. If accepted such a system should be maintained at a high state of readiness as a routine type of submarine surveillance. This should be capable of immediate conversion to a surveillance and kill capability in wartime.

Defence of straits is of special interest to Canada as once undetected access to the Atlantic through the Greenland, Iceland-UK gaps is no longer available, other entrances under the Arctic ice through the waters of the Canadian Archipelago may be used and surveillance of these entrances will be necessary. Preliminary oceanographic and hydrographic surveys are being made in 3 of these and acoustic measurements have been made under the ice in one.

It is not our purpose to present a complete Canadian proposal or solution to this problem but rather to point out developments in which we are concerned and which may have an application. This can best be done by reviewing Canadian forces which are now available and their capabilities, followed by consideration of current and future developments applicable to this problem.

As you know, the Canadian operational organization in maritime warfare consists of an integrated RCAF/RCN staff headed by a Maritime Commander on each coast responsible to the Canadian, Chiefs of Staff Committee.

Anti-Submarine forces available to the Maritime Commander are:

An aircraft carrier with CS2F aircraft

Destroyer Escorts

Frigates

Argus long range patrol aircraft

The destroyer escorts are fitted with long and medium range hull mounted sonar, and attack sonar with limbo and the MK 43 torpedoes. Operational endurance is approximately eight days at 14 knots.

Future equipment to be fitted in the RCN ships which will improve their capability include the Canadian designed Variable Depth Sonar and destroyer borne helicopter.

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We believe that VDS has a particular application in G-I-UK area because of the adverse bathythermal conditions in summer and the problems of bad weather and high sea states in winter. Experimental trials are being conducted into the possibility of relaying lofar information from the CS2F to a shore station or attending ship to give this aircraft Jezebel capability. Interim Explosive Echo Ranging is installed in this aircraft and methods of improved navigation and display are under trial.

The Argus long range patrol aircraft is a vehicle which we believe can make an effective contribution to the barrier problem. If the integrity of the Icelandic bases is lost, then the ability of this aircraft to contribute to the barrier while operating from Canadian bases may be important indeed. If operations from the Azores-Iceland are also possible, then a proportionally greater contribution can be made.

A few details on the capability of this 148,000 lb aircraft may be of interest.

Endurance is in excess of 24 hours.

The aircraft carries 8,000 lbs of armament (i.e. 16 MK 43 torpedoes).

100+ SSQ2B sonobuoys

104 Practice Depth Charges (Julie Bombs)

105 Practice Marine Markers

For Navigation the aircraft is equipped with ANTAC Integrated. Tactical Navigation System.

The aircraft now has a KER capability and in 1961 will be equipped with Jezebel.

In the near future, doppler and ASR 3 equipment will be fitted and an improved Julie capability that will greatly increase the data handling rate.

Studies have been conducted by the three countries on the use of the SSK/aircraft team in barrier operations. We believe that this concept is worthy of serious consideration as the best available system today. As you are aware, Canada cannot provide submarines for this purpose, however, the Argus long range patrol aircraft can be used in this concept. The provision of real estate by Canada for operational bases may be a contribution. It is appreciated that there remains several basic problems before the SSK/aircraft team can be fully effective.

On a long term basis, however, due to force availability and cost, other surveillance systems could be more practical. From this aspect, Canada has conducted other studies aimed at providing an independent SOSUS capability for our long range patrol aircraft. Specifically this proposal deals with the concept of mooring long

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endurance sonobuoys over a wide area. As this may have direct bearing on the problem at hand I will ask S/L Agnew to present greater details of this shortly.

It appears that the only surveillance system which can be made available immediately is provided by mobile forces. These forces are in most cases assigned to national commanders for employment in their areas. In wartime, nearly all Canadian forces are committed to NATO control. The transfer of the Canadian forces to NATO could take place during an increased alert. Thus, the merits of a Canada-UK-US arrangement versus or along with the NATO arrangement for employment of forces of a barrier will have to be considered.

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RCAF POLICY REGARDING G-I-UK STUDY GROUP RECOMMENDATIONS

1 A review of the study group report has revealed that recommendations of specific concern to the RCAF are as follows:

- (a) The continued development of the moored buoy.
- (b) The development of an air launched "longer life" Sonobuoy with a life of approximately 72 hours.
- (c) The possible use of Argus in barrier operations.
- (d) The development of a Command structure for control of forces.

2 Having regard for present commitments and programmes, the following represents the proposed RCAF position:

- (a) The RCAF declares a continuing interest in the establishment of an effective G-I-UK anti-submarine barrier. Because air/surface forces by themselves cannot provide a fully effective barrier, some form of fixed surveillance system is required in the area.
- (b) Until a fixed surveillance system is installed, there is little merit in assigning forces for barrier operations in peacetime and none are available for wartime employment, unless there is a reduction in SACLANT assignments or unless SACLANT assumes responsibility for controlling barrier operations and utilizes forces now earmarked for other tasks.
- (c) Although the USN is programming the installation of a chain of SOSUS stations for passive surveillance by 1965, it has been agreed that this programme will be cancelled if a more effective or economical system is developed in the interval. The long life Moored Sonobuoy constitutes a possible alternate to SOSUS.
- (d) The Moored Buoy system is being developed jointly by the RCAF and the USN. Essentially, the RCAF is developing the buoy and the USN is responsible for the receiving and analysing equipment in the aircraft. This system is not being developed specifically for the G-I-UK barrier and will be usable in a variety of areas. Nevertheless, it could constitute a useful contribution to the barrier programme if it proves to be successful.
- (e) With regard to the recommendation to develop an air launched longer life (72-hour) sonobuoy, there is already an agreed RCAF/USN requirement for such a device. Development and production plans are being sponsored by DDP with the support of both RCAF and USN and with a view to Canadian production for sales to both services.

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3                    In summary, it can be stated that the G-I-UK study group recommendations for the development of the moored buoy and the longer life air-launched buoy give support to RCAF requirements already stated for these two systems. In addition, the RCAF, by actively supporting the development and production of these sonobuoys can render a definite contribution to the G-I-UK barrier without the expenditure of additional funds.

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