REPORT ON THE VISIT OF

THE DEFENCE SUB-COMMITTEE

of the

JOINT COMMITTEE ON FOREIGN AFFAIRS,

DEFENCE AND TRADE

to

ADELAIDE

JULY 1991

The Parliament of the Commonwealth of Australia

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JULY 1991

Printed by the House of Representatives Printing Section

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36th Parliament
Main Committee

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Deputy Chairman: Hon M J R MacKellar, MP

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Mr W L Taylor, MP

Secretary to the Sub-Committee: Gillian Gould

PARTICIPANTS IN THE INSPECTIONS

Mr E J Lindsay, RFD, MP
Senator D J MacGibbon
Mr R G Halverson, OBE, MP
Rt Hon I McC Sinclair, MP
Mr A R Bevis, MP

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INTRODUCTION

On 18/19 July 1991 the Defence Sub-Committee of the Joint Committee on Foreign Affairs, Defence and Trade inspected Defence facilities and organisations in the Adelaide area. These inspections were made in accordance with the tradition of the Defence Sub-Committee of conducting familiarisation visits for its Members.

The Sub-Committee was briefed at RAAF Edinburgh on the surveillance and defence role of the Long Range Maritime Patrol aircraft, the P3C Orions. The visit afforded opportunities for Members to gain first hand knowledge on the Patrol's search and rescue function and equipment and a clearer understanding of the situation surrounding the recent loss of the Orion aircraft in the Cocos Islands.

Members of the Sub-Committee are interested in ascertaining the impact of the Force Structure Review on the Australian Defence Force and its supporting organisations. One such organisation is the Defence Science and Technology Organisation (DSTO) at Salisbury. Members were therefore briefed on forthcoming changes to DSTO's operations. Presentations were also provided on several major projects currently being undertaken by personnel at DSTO.

In April this year the Sub-Committee was briefed in Canberra by the Managing Director of the Australian Submarine Corporation. The Sub-Committee therefore availed itself of the opportunity to inspect the plant and to monitor progress on the construction of the submarine fleet.

The Sub-Committee visited the 16th Air Defence Regiment at Woodside Barracks. Members inspected the Rapier Fire Unit and the RBS 70. Elements of the Regiment served in the Gulf War. Members were therefore provided with valuable information on the performance of the RBS 70 which had been adapted for shipboard use.

The Sub-Committee is appreciative of the excellent briefings provided throughout the tour. Members are also appreciative of Lieutenant-Colonel Clint Ferndale's invitation to visit Keswick Barracks for informal discussions with Regular and Reserve personnel.

PROGRAM

Thursday 18 July 1991

RAAF BASE EDINBURGH

0930 - 1010 hours	Briefing/discussions
1045 - 1100 hours	Tour of base
1100 - 1115 hours	Inspection of P3C Orion Aircraft
1115 - 1125 hours	Inspection of A/C Tasking Board
1125 - 1135 hours	Inspection of 92 Wing Hangar
1140 - 1150 hours	Inspection of Avionics Workshop
1155 - 1215 hours	Inspection of ARDU Hangar
1220 - 1330 hours	Luncheon/informal discussions at Officers Mess

DEFENCE SCIENCE AND TECHNOLOGY ORGANISATION (DSTO)

1400 - 1425 hours	Briefing/discussions on DSTO Salisbury Laboratories
1425 - 1445 hours	Presentation on DORIC
1445 - 1520 hours	Briefing on Jindalee Operational Radar Network

1525 - 1540 hours	Presentation on Microwave Radar Environment Generation/MRAD
1545 - 1605 hours	Presentation on KARIWARA Towed Array
1610 - 1630 hours	Briefing on P3C Refurbishment
1630 - 1700 hours	Briefing on DAMASK

KESWICK BARRACKS

1800 - 2000 hours	Dinner/informal discussions at Officers Mess

Friday 19 July 1991

AUSTRALIAN SUBMARINE CORPORATION

0900 - 1100 hours	Briefing/tour of site including Administration Building, Hull and Outfitting Workshop and Ship Lift

16th AIR DEFENCE REGIMENT
WOODSIDE BARRACKS

1200 - 1230 hours	Briefing
1230 - 1340 hours	Luncheon/informal discussions at Officers Mess
1345 - 1500 hours	Tour/inspections Inverbrackie, including gymnasium, RBS 70, Rapier Fire Unit and Workshop

INSPECTIONS

RAAF BASE EDINBURGH

The Sub-Committee was welcomed to RAAF Edinburgh by the Commander Maritime Patrol Group Air Commodore S T James AFC.

The Sub-Committee was briefed on the role and structure of the base and the advantages of its location for its surveillance role. From RAAF Edinburgh's central location a P3C aircraft can be on task at any point on the Australian coastline within four hours of take-off.

RAAF Edinburgh consists of both operational and support units of the RAAF which perform a wide variety of tasks. The main task is the operation and maintenance of the RAAF's Long Range Maritime Patrol aircraft, the P3C Orion.

Surveillance is carried out by 92 Wing. Other units serving at RAAF Edinburgh are No 1 Recruit Training Unit (1RTU), Aircraft Research and Development Unit (ARDU), Airman Aircrew Flying Training School (AAFTS) and Electronic Warfare Operational Support Unit (EWOSU).

At the time of the visit personnel strength at the base was 1672. The Sub-Committee was informed that 2300 Air Force personnel are located in South Australia.

During discussions at RAAF Edinburgh Members took the opportunity to ask the Commander Maritime Patrol Group to comment on criticisms made by Laurence Gruzman (*The Bulletin*, June 11 1991) of the equipment used in the attempted rescue of the crew of the yacht *Rockin' Robin* which foundered in June 1990.

Through the discussions Members also gained a better understanding of the recent loss of the Orion aircraft in the Cocos Islands.

No 92 Wing

No 92 Wing consists of a headquarters, two operational flying squadrons (Nos 10 and 11 Squadrons), a training and support squadron (No 292 Squadron) and a centralised maintenance squadron (No 492 Squadron).

The roles of No 92 Wing include maritime surveillance, both surface and sub-surface, maritime interdiction, mine-laying and search and rescue.

No 10 Squadron is equipped with Lockheed P3C Orion Update 11 aircraft. The Orions are fitted with the AQS-901 Acoustic Processor and with the SSQ-801 Barra Sonobuoy. Since mid 1981 the P3Cs have had a stand-off missile capability through the acquisition of AGM-84 Harpoon Weapons. The personnel strength at the time of the visit was 96.

No 11 Squadron is also equipped with P3C Update 11 aircraft. The transition from P3B aircraft was completed in 1985. The personnel strength of the squadron is also 96.

No 292 Squadron is responsible for the basic training of aircrew - pilots, navigators, airborne electronic analysts and flight engineers - of P3C Orions. The Squadron is also responsible for detailed analysis of in-flight records, particularly acoustic data, and the investigation and formulation of new tactics. No 292 Squadron is also responsible for computer programs used in P3Cs and for the maintenance of flight simulators. Personnel strength at the time of the visit was 42.

No 492 Squadron supports a fleet of 20 P3C aircraft by providing maintenance support for the P3C aircraft, its propulsion systems, avionics and armament systems, and safety/survival equipment. No 492 Squadron also maintains the computer and simulator facilities, all motor transport and aircraft handling equipment for the base and the aircraft arrester system on the runway. The briefing stated that the manning strength was 617.

Lockheed P3C Orion Update 11 Aircraft

The Sub-Committee inspected a Lockheed P3C Orion Update 11 aircraft. On board the Orion Members were briefed on the aircraft's computer-based sensor system which can be divided into two main groups:

- 'above-water' sensors such as radar, magnetic anomaly detector (MAD) and electronic support measures (ESM);
- 'below-water' sensors - AQS-901 acoustic processor.

The Sub-Committee was told that the sensor stations in the Orion aircraft are manned with Senior Non-Commissioned Officers - the Airborne Electronic Analysts (AEAs).

AEAs utilise the sensors to avoid weather, detect ships and submarines or to update the aircraft's navigational systems.

The Sub-Committee was also briefed on the Australian-developed SSQ-801 Barra Sonobuoy and AGM-84 Harpoon weapons.

A/C Tasking Board

Inside the Tarmac Office Members inspected the A/C Tasking Board. This was described as the hub of operations. The Board indicated the number of aircraft available for service on any given day. The Sub-Committee was told that it was desirable that 12 aircraft be 'on line'; in fact the number of aircraft available was often less than this.

Aircraft allocated for service at Butterworth are those which need the least maintenance. Crews generally serve at Butterworth for five to six weeks.

Members were informed that aircraft could be expected to undergo only minor maintenance for about 10 years. Thereafter, they would be subjected to a major maintenance program.

Base Support Wing

Base Support Wing provides a wide range of domestic services and support functions necessary for operating RAAF Base Edinburgh. At the time of the Sub-Committee's visit the unit had a strength of about 450 Service personnel and 90 civilians.

No 1 Recruit Training Unit (1RTU)

The function of 1RTU is to develop skills in, and impart knowledge to, newly enlisted airmen/airwomen in the RAAF. 1RTU helps recruits adjust from civilian life to Service life. At the time of the Sub-Committee's visit the personnel strength of 1RTU was 65.

The Sub-Committee was told that 1800 - 2000 recruits enlist each year. 40 per cent of these are women. Recruits are generally taken on at the age of 17. Skilled tradesmen are also recruited.

There is a high demand amongst recruits to train as pilots.

1RTU applies its own recruitment standards. It has been observed that the level of applications reflects fluctuating economic conditions in the wider community.

Courses are typically 12 weeks long. In the case of skilled tradesmen, training is focused on developing military skills. A curriculum entitled *Pathway to Excellence* has been developed within 1RTU. The failure rate is between 10 and 15 per cent.

Following training, return of service is short - generally 5 to 6 years. The Sub-Committee was told that the Air Force is moving towards introducing a more open-ended scheme based on three years minimum service and retention bonuses.

Aircraft Research and Development Unit (ARDU)

ARDU is the RAAF's flight test organisation which provides specialist facilities for research development, test and evaluation of Defence Force

aircraft, airborne weapons and aircraft systems. Its personnel strength at the time of the visit was 244.

The Sub-Committee visited the ARDU Hangar where discussions were held with ARDU personnel on tests which were being conducted on the F/A-18 Hornet and the Black Hawk helicopter. Members also inspected the PC-9 and CT4 trainer aircraft.

The Airman Aircrew Flying Training School (AAFTS)

AAFTS provides basic training for all airmen aircrew. Three courses are conducted. They are the Sergeant Aircrew Basic Course which aims to develop military skills, the Airman Aircrew Basic Course which provides a suitable background to proceed on to specific aircraft conversion courses and the Airborne Electronic Analyst (AEA) course. The AEA course was introduced following the decision to man sensor stations in the Orion aircraft with Senior NCOs. Indeed, AAFTS was initially formed to provide the necessary training for these men.

DEFENCE SCIENCE AND TECHNOLOGY ORGANISATION (DSTO)

The Sub-Committee was briefed on the role of DSTO and the implications of the Force Structure Review for the organisation.

DSTO's prime role is to provide scientific and technical advice and support to the Australian Defence Force and the Department of Defence. At the time of the Sub-Committee's visit DSTO had 2234 staff and its budget for 1990/91 was $212 million.

The Sub-Committee was told that, as a result of the Force Structure Review, DSTO is facing a number of major changes which include reducing the civilian staff at DSTO by 700. DSTO has conducted a review of research priorities to determine how staff numbers can be reduced without jeopardising the highest priority areas of research.

Members were informed that the Weapons System Research Laboratory (WSRL) will no longer exist as an organisational entity. One Division of WSRL - Ordinance System Division - will be amalgamated with Explosives Division of the Materials Research Laboratory (Melbourne). The work will, however, continue to be carried out at Salisbury. The Combat Systems Division and Guided Weapons Division will be transferred to the Electronics Research Laboratory. The Maritime Systems Division will be transferred to the Surveillance Research Laboratory. In Melbourne, Aircraft Structures Division will amalgamate with Aircraft Materials Division at Aeronautical Research Laboratory.

Following the briefing which provided an overview of the DSTO Salisbury Laboratories, Members were briefed on major projects in train at Salisbury.

Defence Organisation Integrated Communications (DORIC) Program

The Defence Organisation Integrated Communications (DORIC) Program is a high priority program which comprises three separate tasks. They are integrated communications architecture, uncommitted radio technology and adaptive link control research. The Sub-Committee was briefed on each of these and told that the program aims to take advantage of the rapid evolution in commercial wide-area networks.

This will involve a move away from separate and dedicated voice, data and video networks toward a common integrated services architecture.

Radar Environment Generation

The Sub-Committee was told that the Surveillance Research Laboratory has developed a powerful and cost-effective system which can be used to simulate the environment seen by aircraft radars. In time the equipment will be capable of being used on an aircraft to provide a greater sense of realism in training programs.

KARIWARA Towed Array Project

KARIWARA is a thin, reelable towed array sonar system which will be fitted in the Collins class submarines and deployed from surface ships. The towed array project team is engaged in gathering data on aspects of the streamer design to ensure compliance with Navy's requirements.

Members discussed with DSTO personnel the possibilities of commercialising the KARIWARA technology.

P3C Refurbishment

The Sub-Committee's inspection of the P3C Orion at RAAF Edinburgh was complemented by a briefing on P3C refurbishment - in a P3C fuselage - at DSTO. The P3C refurbishment project is a major project of the organisation.

The Sub-Committee was told that many systems on the aircraft are using outdated technology and the refurbishment program is being developed to determine which of these systems should be replaced. The first phase of the project is a Project Definition Study which is scheduled for completion early in 1992. Tests are being conducted on the effects of fatigue, corrosion and weight of equipment on airframe life.

The briefing pointed out that, in refurbishing P3C Orions, consideration has to be given to the cost effectiveness of upgrading old airframes. It was estimated that refurbishment would cost about $550 million.

Support to Operation DAMASK

The Sub-Committee was briefed on the provision by DSTO of scientific and technical assistance for Operation DAMASK during the Gulf War. Support was provided in the areas of chemical defence, satellite communications, electronic warfare, tactics, reducing ship vulnerability, electro-optical equipment and underwater warfare.

Members were informed of DSTO's role in adapting the RBS 70 for use on HMAS Supply, improving satellite communications between HMAS Supply and the US command ship, adapting infra-red images for use on ship and in developing electronic countermeasures.

KESWICK BARRACKS

The Sub-Committee visited the Officers Mess at Keswick Barracks where Members were provided with an opportunity to engage in informal discussions with Regular and Reserve Army personnel. Members met with personnel from Headquarters 4 Military District, 9 Brigade and 4 Training Group. Members of the Committee for Employer Support of the Reserve Forces (CESRF) South Australia also attended.

Members of the Sub-Committee found the discussions very productive, particularly in view of the Sub-Committee's Inquiry into the Australian Defence Force Reserve.

The Members of the Sub-Committee are appreciative of the kind hospitality extended to them and of the efforts of the Commanding Officer in arranging the occasion.

AUSTRALIAN SUBMARINE CORPORATION

The Sub-Committee visited the Australian Submarine Corporation which occupies 20 hectares of land on the Port River at Osborne. Members were briefed by the Managing Director, Dr Don Williams.

The Australian Submarine Corporation was awarded the contract to build submarines for the Royal Australian Navy in 1987. The contract between the Commonwealth and the Australian Submarine Corporation was signed on 3 June 1987.

The shareholders in the Australian Submarine Corporation are Kockums (50%), AIDC (47.5%) and James Hardie (2.5%). The Australian Submarine Corporation employs over 400 personnel. The number of unions covering personnel has been reduced to three.

Dr Williams outlined progress made to date in the Collins Class Submarine Project. The first submarine will be launched in August 1993 and will be ready for delivery in January 1995. The schedule provides for one vessel to be completed each year thereafter to 1999.

The Sub-Committee was told that the Type 471 (Collins Class) submarines represent 'state-of-the-art' in submarine design. Type 471 is a conventionally powered diesel-electric submarine which is 75 metres long with a diameter of approximately 8 metres. It has a displacement of 2,500 tons.

The Type 471 submarine can be operated by fewer crew than the Oberon class submarines. Each Collins Class submarine will have a crew of 41.

The Sub-Committee inspected the Osborne plant, including the ship lift in the Port River. The ship lift is one of the largest in Australia.

The Hull and Outfitting Workshop is designed to accommodate a number of submarines at the one time. Members inspected the overhead cranes and were told that the floor has been constructed especially to carry the giant transfer system needed to move a 3000-tonne submarine from the workshop to the water.

During the tour of the Hull and Outfitting Workshop Members inspected sections of the hull of a submarine. The hull is constructed in six sections which are joined together by three-metre wide steel 'rings'. Members also inspected the horizontal modules - platforms - which are inserted into partially assembled submarines.

The Sub-Committee was told that a modular approach has been adopted because it allows greater flexibility than older methods of constructing submarines. The modular system was developed by Kockums.

Dr Williams commented on the management information system utilised by the Australian Submarine Corporation. The system is computer-based and complex. It includes systems such as Cost/Schedule Control (which was the first to receive Australian Government validation), Configuration Management, Manufacturing Resources Planning and Integrated Logistic Support.

The briefing highlighted the establishment by the Corporation of the Integrated Logistic Support Department. This Department has four basic roles. Firstly, *logistic engineering* involves analysing and predicting likely failure modes and determining the consequences of failure. Secondly, *supply support* concerns appropriating spares. Thirdly, the Department has a *documentation development* role for creating manuals. Fourthly, it is involved in *training* programs.

Other issues raised in discussion between Members and Australian Submarine Corporation personnel included aspects of the contract for the submarines, insurance and the proportion of local content. With respect to the last of these, the Sub-Committee was told that there was 70 per cent reliance on Australian content except in the production of the combat system. There is a 46% local industry involvement in the combat system work.

A few days before the Sub-Committee's visit the Corporation had announced that it had taken over Carrington Slipways at Tomago, New South Wales. Members were therefore interested in Dr Williams' views on the future of shipbuilding in Australia, particularly in terms of Defence requirements. Dr Williams put forward the view that, while the focus might be on producing Defence vessels, shipbuilding yards need to diversify into the production of other commodities if they are to remain viable. Accordingly, the Australian Submarine Corporation - which was established specifically to construct the submarine fleet - has been designed also to facilitate the manufacture of other products.

16th AIR DEFENCE REGIMENT
WOODSIDE BARRACKS

The Sub-Committee was met at Woodside Barracks by Major Ian Lynch. Members were briefed on the organisation, role and tasks of the unit. Informal discussions took place with 16 Air Defence Regiment personnel over lunch in the Officers Mess.

The unit consists of Headquarters Battery, 110 Air Defence Battery, 111 Air Defence Battery (Light) and 16 Air Defence Regiment Workshop. At the time of the visit the Regiment had an authorised establishment of 424 and a posted strength of 343.

The Sub-Committee appreciated the opportunity provided by Major Lynch to inspect closely the Rapier Fire Unit and the RBS 70 Missile System which had been set up for the occasion.

The briefing stated that 110 Air Defence Battery is equipped with 12 optical Rapier Fire units which were purchased from British Aerospace in 1978. Rapier is a lightweight, mobile, air-portable surface-to-air guided missile system. Rapier, when deployed as an optical system, consists of a launcher, a tracker and a generator interconnected by cables. The launcher contains the Surveillance, IFF and Command radars, a computer and four missiles on launch beams. After a missile is fired it is maintained on the sightline using the TV system, command guidance signals being transmitted by the command radar transmitter. The missile (which weights 43 kilograms) flies at over 2,400 kilometres per hour to a range of 6.8 kilometres. The DN 181 Radar Tracker provides an all weather day/night capability for the Rapier Equipment, making it an Automatic Command to Line of Sight system. It automatically tracks both target and missile simultaneously, updating missile commands, at a rate of 4,000 times per second. Once a target is detected and identified as hostile, the operator can select either the optical or radar tracker system. 110 Air Defence Battery is equipped with four DN 181 Radar Trackers.

Each Rapier Missile detachment consists of a seven-man crew commanded by a sergeant.

Members of the Sub-Committee are concerned that the limited numbers of Rapiers held by the Unit are insufficient to defend more than, for example, one vital asset or an airfield in northern Australia at a given time.

Members are also concerned that the limited numbers of missiles available for use in peace-time are insufficient for *proving* the ability of the equipment to fire.

111 Air Defence Battery (Light) is equipped with the RBS 70 Missile System which is capable of being carried in three manpack loads. The Sub-Committee was told that the system can be assembled in 30 seconds. It is capable of shooting down an aircraft travelling at over 800 knots at ranges in excess of 4.5 kilometres, up to an altitude of 3 kilometres.

The RBS 70 is a laser beam-riding weapon intended for engagement of visually detected targets with the operator tracking the target by optical means throughout the engagement. To track the target, a fine-aim thumb joystick is used to operate a gyro-stabilised optical system.

111 AD Bty (Lt) provided air defence missiles and crew for HMAS Success and Westralia during the Gulf War. Inspection of the RBS 70 in the field complemented DSTO's briefing on adapting this weapon for shipboard use.

The Sub-Committee was told that the Unit receives an allocation of only 6 RBS 70 missiles per annum. As in the case of the Rapier, this is insufficient for *proving* the equipment.

The visit to 16 Air Defence Regiment included a tour of Woodside Barracks. The Sub-Committee was told that extensive refurbishing of the barracks accommodation and the married quarter accommodation took place between 1983 and 1987. Notwithstanding this, there remains a shortfall in live-in accommodation required by Other Ranks.

E.J. Lindsay, RFD, MP
Chairman Defence Sub-Committee

October 1991

Senator Chris Schacht
Chairman
Joint Committee

TABLING STATEMENT

REPORT ON THE VISIT OF THE DEFENCE SUB-COMMITTEE OF THE JOINT COMMITTEE ON FOREIGN AFFAIRS, DEFENCE AND TRADE TO ADELAIDE

On behalf of the Joint Committee on Foreign Affairs, Defence and Trade, I present the report of the Committee entitled ***Report on the Visit of the Defence Sub-Committee of the Joint Committee on Foreign Affairs, Defence and Trade to Adelaide.***

In July the Defence Sub-Committee inspected defence facilities in the Adelaide area. These inspections were made in accordance with the tradition of the Defence Sub-Committee of conducting familiarisation visits for its Members.

The Sub-Committee visited RAAF Edinburgh where it was briefed on the surveillance role of the Long Range Maritime Patrol aircraft, the P3C Orions. The visit afforded Members the opportunity to gain first hand knowledge on the Patrol's search and rescue function. Members were able to gain some appreciation of the equipment used in carrying out search and rescue, particularly in light of the attempted rescue of the crew of the yacht *Rockin' Robin* last year.

Through the discussions with the Commander Maritime Patrol Group Air Commodore Staff James AFC we were also able to obtain a better understanding of the events surrounding the loss of the Orion aircraft in the Cocos Islands.

The visit fulfilled its aim of keeping Members up-to-date with developments in technology in Defence equipment. The Sub-Committee inspected a P3C Orion at RAAF Edinburgh where it was briefed on the aircraft's computer-based sensor system, the Barra Sonobuoy and the

AGM-84 Harpoon. This was complemented by a briefing at DSTO on the project for the refurbishment of the Orion.

At RAAF Edinburgh we were also interested to ascertain the percentages of aircraft undergoing maintenance and 'on line' at any given time. We gained a clearer understanding of the nature of the maintenance program and of the tests conducted on, for example, the F/A-18 Hornet and the Black Hawk helicopter by the Aircraft Research and Development Unit (ARDU).

During the visit to DSTO we were briefed on the impact of the Force Structure Review on DSTO and the approach adopted by the Organisation to accommodate the changes to their operations.

We also received briefings on a number of major projects in train at DSTO such as DORIC, the KARIWARA Towed Array Project and the support provided by DSTO to Operation DAMASK during the Gulf War. We were also interested in DSTO's task of adapting the RBS 70 for shipboard use, particularly as our visit to Adelaide included an inspection of the RBS 70 at Woodside Barracks.

At Woodside the Sub-Committee appreciated the opportunity to inspect closely both the RBS 70 Missile System and the Rapier Fire Unit which had been set up for the occasion.

Members of the Sub-Committee are concerned that the limited numbers of Rapiers held by 110 Air Defence Battery are insufficient to defend more than one vital asset or one airfield in northern Australia at a given time.

We were also concerned to learn that the numbers of missiles available for use by 110 Battery are inadequate for *proving* the ability of the equipment to fire.

We were told that 111 Air Defence Battery (Light) also suffers from receiving insufficient numbers of RBS 70 missiles for proving their equipment - the Battery receives an allocation of only 6 missiles per year.

Whilst in Adelaide we inspected the Submarine Project at the Australian Submarine Corporation's plant at Osborne. The inspection complemented another element of the Sub-Committee's program, that is, of receiving briefings on aspects of Defence or Defence support at our

regular meetings in Canberra. Earlier this year the Managing Director of the Submarine Corporation had addressed Members on the Submarine Project. We were therefore interested to monitor progress on the construction of the submarine fleet.

Finally, the visit provided Members of the Sub-Committee with opportunities for informal discussions with Defence Force personnel. One such occasion was arranged at Keswick Barracks where discussions with Regular and Reserve personnel from Headquarters 4 Military District, 9 Brigade and 4 Training Group proved most productive.

I commend the report to the House.

PARLIAMENT OF AUSTRALIA

JOINT COMMITTEE ON FOREIGN AFFAIRS, DEFENCE AND TRADE
PARLIAMENT HOUSE, CANBERRA, ACT, 2600

MEDIA RELEASE

TABLING OF REPORT

VISIT OF THE DEFENCE SUB-COMMITTEE OF THE JOINT COMMITTEE ON FOREIGN AFFAIRS, DEFENCE AND TRADE TO ADELAIDE

A Report of the visit of the Defence Sub-Committee of the Joint Committee on Foreign Affairs, Defence and Trade to Adelaide will be tabled in both the Senate and the House of Representatives today.

On 18/19 July the Sub-Committee inspected Defence facilities and organisations in the Adelaide area. The Sub-Committee was briefed at RAAF Edinburgh on the surveillance role of the Long Range Maritime Patrol aircraft, the P3C Orions. The visit afforded opportunities for Members to gain first hand knowledge on the Patrol's search and rescue function and equipment and a clearer understanding of the recent loss of the Orion in the Cocos Islands.

The Sub-Committee visited DSTO at Salisbury for briefings on several major projects including the P3C refurbishment, the Kariwara Towed Array and the support provided to Operation DAMASK during the Gulf War. The Sub-Committee also sought to ascertain the impact of the Force Structure Review on DSTO's operations.

Members monitored progress on the *Collins* Class submarines at the Australian Submarine Corporation's plant at Osborne. This complemented discussions held between the Sub-Committee and the Managing Director of ASC earlier this year in Canberra.

The Sub-Committee also held productive discussions at Keswick and Woodside Barracks.

The Chairman of the Sub-Committee, Mr Ted Lindsay, RFD, MP (ALP, Herbert) said in Canberra today:

> "Visits such as this one to Adelaide are of immense value in keeping Members attuned to current Defence issues. But they also draw attention to matters of concern. For instance, Members were concerned that the limited numbers of

Rapiers held by the 16th Air Defence Regiment are insufficient to defend more than one vital asset or an airfield in northern Australia at a given time.

Moreover, we found that the limited numbers of missiles available to the Regiment are insufficient for *proving* the ability of the equipment to fire."

Further information may be obtained from:

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Chairman
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Tel: (06) 277 4702

The Secretary
Defence Sub-Committee
Parliament House

Tel: (06) 277 2098

17 October 1991

REPORT ON THE VISIT OF

THE DEFENCE SUB-COMMITTEE

of the

JOINT COMMITTEE ON FOREIGN AFFAIRS,

DEFENCE AND TRADE

to

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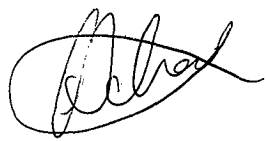

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Senator C Schacht
Mr A R Bevis, MP
Mr E J Fitzgibbon, MP
Mr R G Halverson, OBE, MP
Mr N J Hicks, MP
Hon M J R MacKellar, MP
Hon J C Moore, MP
Hon G F Punch, MP
Rt Hon I McC Sinclair, MP
Mr W L Taylor, MP

Secretary to the Sub-Committee: Gillian Gould

PARTICIPANTS IN THE INSPECTIONS

Mr E J Lindsay, RFD, MP
Senator D J MacGibbon
Mr R G Halverson, OBE, MP
Rt Hon I McC Sinclair, MP
Mr A R Bevis, MP

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INTRODUCTION

On 18/19 July 1991 the Defence Sub-Committee of the Joint Committee on Foreign Affairs, Defence and Trade inspected Defence facilities and organisations in the Adelaide area. These inspections were made in accordance with the tradition of the Defence Sub-Committee of conducting familiarisation visits for its Members.

The Sub-Committee was briefed at RAAF Edinburgh on the surveillance and defence role of the Long Range Maritime Patrol aircraft, the P3C Orions. The visit afforded opportunities for Members to gain first hand knowledge on the Patrol's search and rescue function and equipment and a clearer understanding of the situation surrounding the recent loss of the Orion aircraft in the Cocos Islands.

Members of the Sub-Committee are interested in ascertaining the impact of the Force Structure Review on the Australian Defence Force and its supporting organisations. One such organisation is the Defence Science and Technology Organisation (DSTO) at Salisbury. Members were therefore briefed on forthcoming changes to DSTO's operations. Presentations were also provided on several major projects currently being undertaken by personnel at DSTO.

In April this year the Sub-Committee was briefed in Canberra by the Managing Director of the Australian Submarine Corporation. The Sub-Committee therefore availed itself of the opportunity to inspect the plant and to monitor progress on the construction of the submarine fleet.

The Sub-Committee visited the 16th Air Defence Regiment at Woodside Barracks. Members inspected the Rapier Fire Unit and the RBS 70. Elements of the Regiment served in the Gulf War. Members were therefore provided with valuable information on the performance of the RBS 70 which had been adapted for shipboard use.

The Sub-Committee is appreciative of the excellent briefings provided throughout the tour. Members are also appreciative of Lieutenant-Colonel Clint Ferndale's invitation to visit Keswick Barracks for informal discussions with Regular and Reserve personnel.

PROGRAM

Thursday 18 July 1991

RAAF BASE EDINBURGH

0930 - 1010 hours	Briefing/discussions
1045 - 1100 hours	Tour of base
1100 - 1115 hours	Inspection of P3C Orion Aircraft
1115 - 1125 hours	Inspection of A/C Tasking Board
1125 - 1135 hours	Inspection of 92 Wing Hangar
1140 - 1150 hours	Inspection of Avionics Workshop
1155 - 1215 hours	Inspection of ARDU Hangar
1220 - 1330 hours	Luncheon/informal discussions at Officers Mess

DEFENCE SCIENCE AND TECHNOLOGY ORGANISATION (DSTO)

1400 - 1425 hours	Briefing/discussions on DSTO Salisbury Laboratories
1425 - 1445 hours	Presentation on DORIC
1445 - 1520 hours	Briefing on Jindalee Operational Radar Network

1525 - 1540 hours	Presentation on Microwave Radar Environment Generation/MRAD
1545 - 1605 hours	Presentation on KARIWARA Towed Array
1610 - 1630 hours	Briefing on P3C Refurbishment
1630 - 1700 hours	Briefing on DAMASK

KESWICK BARRACKS

1800 - 2000 hours	Dinner/informal discussions at Officers Mess

Friday 19 July 1991

AUSTRALIAN SUBMARINE CORPORATION

0900 - 1100 hours	Briefing/tour of site including Administration Building, Hull and Outfitting Workshop and Ship Lift

16th AIR DEFENCE REGIMENT
WOODSIDE BARRACKS

1200 - 1230 hours	Briefing
1230 - 1340 hours	Luncheon/informal discussions at Officers Mess
1345 - 1500 hours	Tour/inspections Inverbrackie, including gymnasium, RBS 70, Rapier Fire Unit and Workshop

INSPECTIONS

RAAF BASE EDINBURGH

The Sub-Committee was welcomed to RAAF Edinburgh by the Commander Maritime Patrol Group Air Commodore S T James AFC.

The Sub-Committee was briefed on the role and structure of the base and the advantages of its location for its surveillance role. From RAAF Edinburgh's central location a P3C aircraft can be on task at any point on the Australian coastline within four hours of take-off.

RAAF Edinburgh consists of both operational and support units of the RAAF which perform a wide variety of tasks. The main task is the operation and maintenance of the RAAF's Long Range Maritime Patrol aircraft, the P3C Orion.

Surveillance is carried out by 92 Wing. Other units serving at RAAF Edinburgh are No 1 Recruit Training Unit (1RTU), Aircraft Research and Development Unit (ARDU), Airman Aircrew Flying Training School (AAFTS) and Electronic Warfare Operational Support Unit (EWOSU).

At the time of the visit personnel strength at the base was 1672. The Sub-Committee was informed that 2300 Air Force personnel are located in South Australia.

During discussions at RAAF Edinburgh Members took the opportunity to ask the Commander Maritime Patrol Group to comment on criticisms made by Laurence Gruzman (*The Bulletin,* June 11 1991) of the equipment used in the attempted rescue of the crew of the yacht *Rockin' Robin* which foundered in June 1990.

Through the discussions Members also gained a better understanding of the recent loss of the Orion aircraft in the Cocos Islands.

No 92 Wing

No 92 Wing consists of a headquarters, two operational flying squadrons (Nos 10 and 11 Squadrons), a training and support squadron (No 292 Squadron) and a centralised maintenance squadron (No 492 Squadron).

The roles of No 92 Wing include maritime surveillance, both surface and sub-surface, maritime interdiction, mine-laying and search and rescue.

No 10 Squadron is equipped with Lockheed P3C Orion Update 11 aircraft. The Orions are fitted with the AQS-901 Acoustic Processor and with the SSQ-801 Barra Sonobuoy. Since mid 1981 the P3Cs have had a stand-off missile capability through the acquisition of AGM-84 Harpoon Weapons. The personnel strength at the time of the visit was 96.

No 11 Squadron is also equipped with P3C Update 11 aircraft. The transition from P3B aircraft was completed in 1985. The personnel strength of the squadron is also 96.

No 292 Squadron is responsible for the basic training of aircrew - pilots, navigators, airborne electronic analysts and flight engineers - of P3C Orions. The Squadron is also responsible for detailed analysis of in-flight records, particularly acoustic data, and the investigation and formulation of new tactics. No 292 Squadron is also responsible for computer programs used in P3Cs and for the maintenance of flight simulators. Personnel strength at the time of the visit was 42.

No 492 Squadron supports a fleet of 20 P3C aircraft by providing maintenance support for the P3C aircraft, its propulsion systems, avionics and armament systems, and safety/survival equipment. No 492 Squadron also maintains the computer and simulator facilities, all motor transport and aircraft handling equipment for the base and the aircraft arrester system on the runway. The briefing stated that the manning strength was 617.

Lockheed P3C Orion Update 11 Aircraft

The Sub-Committee inspected a Lockheed P3C Orion Update 11 aircraft. On board the Orion Members were briefed on the aircraft's computer-based sensor system which can be divided into two main groups:

- 'above-water' sensors such as radar, magnetic anomaly detector (MAD) and electronic support measures (ESM);
- 'below-water' sensors - AQS-901 acoustic processor.

The Sub-Committee was told that the sensor stations in the Orion aircraft are manned with Senior Non-Commissioned Officers - the Airborne Electronic Analysts (AEAs).

AEAs utilise the sensors to avoid weather, detect ships and submarines or to update the aircraft's navigational systems.

The Sub-Committee was also briefed on the Australian-developed SSQ-801 Barra Sonobuoy and AGM-84 Harpoon weapons.

A/C Tasking Board

Inside the Tarmac Office Members inspected the A/C Tasking Board. This was described as the hub of operations. The Board indicated the number of aircraft available for service on any given day. The Sub-Committee was told that it was desirable that 12 aircraft be 'on line'; in fact the number of aircraft available was often less than this.

Aircraft allocated for service at Butterworth are those which need the least maintenance. Crews generally serve at Butterworth for five to six weeks.

Members were informed that aircraft could be expected to undergo only minor maintenance for about 10 years. Thereafter, they would be subjected to a major maintenance program.

Base Support Wing

Base Support Wing provides a wide range of domestic services and support functions necessary for operating RAAF Base Edinburgh. At the time of the Sub-Committee's visit the unit had a strength of about 450 Service personnel and 90 civilians.

No 1 Recruit Training Unit (1RTU)

The function of 1RTU is to develop skills in, and impart knowledge to, newly enlisted airmen/airwomen in the RAAF. 1RTU helps recruits adjust from civilian life to Service life. At the time of the Sub-Committee's visit the personnel strength of 1RTU was 65.

The Sub-Committee was told that 1800 - 2000 recruits enlist each year. 40 per cent of these are women. Recruits are generally taken on at the age of 17. Skilled tradesmen are also recruited.

There is a high demand amongst recruits to train as pilots.

1RTU applies its own recruitment standards. It has been observed that the level of applications reflects fluctuating economic conditions in the wider community.

Courses are typically 12 weeks long. In the case of skilled tradesmen, training is focused on developing military skills. A curriculum entitled *Pathway to Excellence* has been developed within 1RTU. The failure rate is between 10 and 15 per cent.

Following training, return of service is short - generally 5 to 6 years. The Sub-Committee was told that the Air Force is moving towards introducing a more open-ended scheme based on three years minimum service and retention bonuses.

Aircraft Research and Development Unit (ARDU)

ARDU is the RAAF's flight test organisation which provides specialist facilities for research development, test and evaluation of Defence Force

aircraft, airborne weapons and aircraft systems. Its personnel strength at the time of the visit was 244.

The Sub-Committee visited the ARDU Hangar where discussions were held with ARDU personnel on tests which were being conducted on the F/A-18 Hornet and the Black Hawk helicopter. Members also inspected the PC-9 and CT4 trainer aircraft.

The Airman Aircrew Flying Training School (AAFTS)

AAFTS provides basic training for all airmen aircrew. Three courses are conducted. They are the Sergeant Aircrew Basic Course which aims to develop military skills, the Airman Aircrew Basic Course which provides a suitable background to proceed on to specific aircraft conversion courses and the Airborne Electronic Analyst (AEA) course. The AEA course was introduced following the decision to man sensor stations in the Orion aircraft with Senior NCOs. Indeed, AAFTS was initially formed to provide the necessary training for these men.

DEFENCE SCIENCE AND TECHNOLOGY ORGANISATION (DSTO)

The Sub-Committee was briefed on the role of DSTO and the implications of the Force Structure Review for the organisation.

DSTO's prime role is to provide scientific and technical advice and support to the Australian Defence Force and the Department of Defence. At the time of the Sub-Committee's visit DSTO had 2234 staff and its budget for 1990/91 was $212 million.

The Sub-Committee was told that, as a result of the Force Structure Review, DSTO is facing a number of major changes which include reducing the civilian staff at DSTO by 700. DSTO has conducted a review of research priorities to determine how staff numbers can be reduced without jeopardising the highest priority areas of research.

Members were informed that the Weapons System Research Laboratory (WSRL) will no longer exist as an organisational entity. One Division of WSRL - Ordinance System Division - will be amalgamated with Explosives Division of the Materials Research Laboratory (Melbourne). The work will, however, continue to be carried out at Salisbury. The Combat Systems Division and Guided Weapons Division will be transferred to the Electronics Research Laboratory. The Maritime Systems Division will be transferred to the Surveillance Research Laboratory. In Melbourne, Aircraft Structures Division will amalgamate with Aircraft Materials Division at Aeronautical Research Laboratory.

Following the briefing which provided an overview of the DSTO Salisbury Laboratories, Members were briefed on major projects in train at Salisbury.

Defence Organisation Integrated Communications (DORIC) Program

The Defence Organisation Integrated Communications (DORIC) Program is a high priority program which comprises three separate tasks. They are integrated communications architecture, uncommitted radio technology and adaptive link control research. The Sub-Committee was briefed on each of these and told that the program aims to take advantage of the rapid evolution in commercial wide-area networks.

This will involve a move away from separate and dedicated voice, data and video networks toward a common integrated services architecture.

Radar Environment Generation

The Sub-Committee was told that the Surveillance Research Laboratory has developed a powerful and cost-effective system which can be used to simulate the environment seen by aircraft radars. In time the equipment will be capable of being used on an aircraft to provide a greater sense of realism in training programs.

KARIWARA Towed Array Project

KARIWARA is a thin, reelable towed array sonar system which will be fitted in the Collins class submarines and deployed from surface ships. The towed array project team is engaged in gathering data on aspects of the streamer design to ensure compliance with Navy's requirements.

Members discussed with DSTO personnel the possibilities of commercialising the KARIWARA technology.

P3C Refurbishment

The Sub-Committee's inspection of the P3C Orion at RAAF Edinburgh was complemented by a briefing on P3C refurbishment - in a P3C fuselage - at DSTO. The P3C refurbishment project is a major project of the organisation.

The Sub-Committee was told that many systems on the aircraft are using outdated technology and the refurbishment program is being developed to determine which of these systems should be replaced. The first phase of the project is a Project Definition Study which is scheduled for completion early in 1992. Tests are being conducted on the effects of fatigue, corrosion and weight of equipment on airframe life.

The briefing pointed out that, in refurbishing P3C Orions, consideration has to be given to the cost effectiveness of upgrading old airframes. It was estimated that refurbishment would cost about $550 million.

Support to Operation DAMASK

The Sub-Committee was briefed on the provision by DSTO of scientific and technical assistance for Operation DAMASK during the Gulf War. Support was provided in the areas of chemical defence, satellite communications, electronic warfare, tactics, reducing ship vulnerability, electro-optical equipment and underwater warfare.

Members were informed of DSTO's role in adapting the RBS 70 for use on HMAS Supply, improving satellite communications between HMAS Supply and the US command ship, adapting infra-red images for use on ship and in developing electronic countermeasures.

KESWICK BARRACKS

The Sub-Committee visited the Officers Mess at Keswick Barracks where Members were provided with an opportunity to engage in informal discussions with Regular and Reserve Army personnel. Members met with personnel from Headquarters 4 Military District, 9 Brigade and 4 Training Group. Members of the Committee for Employer Support of the Reserve Forces (CESRF) South Australia also attended.

Members of the Sub-Committee found the discussions very productive, particularly in view of the Sub-Committee's Inquiry into the Australian Defence Force Reserve.

The Members of the Sub-Committee are appreciative of the kind hospitality extended to them and of the efforts of the Commanding Officer in arranging the occasion.

AUSTRALIAN SUBMARINE CORPORATION

The Sub-Committee visited the Australian Submarine Corporation which occupies 20 hectares of land on the Port River at Osborne. Members were briefed by the Managing Director, Dr Don Williams.

The Australian Submarine Corporation was awarded the contract to build submarines for the Royal Australian Navy in 1987. The contract between the Commonwealth and the Australian Submarine Corporation was signed on 3 June 1987.

The shareholders in the Australian Submarine Corporation are Kockums (50%), AIDC (47.5%) and James Hardie (2.5%). The Australian Submarine Corporation employs over 400 personnel. The number of unions covering personnel has been reduced to three.

Dr Williams outlined progress made to date in the Collins Class Submarine Project. The first submarine will be launched in August 1993 and will be ready for delivery in January 1995. The schedule provides for one vessel to be completed each year thereafter to 1999.

The Sub-Committee was told that the Type 471 (Collins Class) submarines represent 'state-of-the-art' in submarine design. Type 471 is a conventionally powered diesel-electric submarine which is 75 metres long with a diameter of approximately 8 metres. It has a displacement of 2,500 tons.

The Type 471 submarine can be operated by fewer crew than the Oberon class submarines. Each Collins Class submarine will have a crew of 41.

The Sub-Committee inspected the Osborne plant, including the ship lift in the Port River. The ship lift is one of the largest in Australia.

The Hull and Outfitting Workshop is designed to accommodate a number of submarines at the one time. Members inspected the overhead cranes and were told that the floor has been constructed especially to carry the giant transfer system needed to move a 3000-tonne submarine from the workshop to the water.

During the tour of the Hull and Outfitting Workshop Members inspected sections of the hull of a submarine. The hull is constructed in six sections which are joined together by three-metre wide steel 'rings'. Members also inspected the horizontal modules - platforms - which are inserted into partially assembled submarines.

The Sub-Committee was told that a modular approach has been adopted because it allows greater flexibility than older methods of constructing submarines. The modular system was developed by Kockums.

Dr Williams commented on the management information system utilised by the Australian Submarine Corporation. The system is computer-based and complex. It includes systems such as Cost/Schedule Control (which was the first to receive Australian Government validation), Configuration Management, Manufacturing Resources Planning and Integrated Logistic Support.

The briefing highlighted the establishment by the Corporation of the Integrated Logistic Support Department. This Department has four basic roles. Firstly, *logistic engineering* involves analysing and predicting likely failure modes and determining the consequences of failure. Secondly, *supply support* concerns appropriating spares. Thirdly, the Department has a *documentation development* role for creating manuals. Fourthly, it is involved in *training* programs.

Other issues raised in discussion between Members and Australian Submarine Corporation personnel included aspects of the contract for the submarines, insurance and the proportion of local content. With respect to the last of these, the Sub-Committee was told that there was 70 per cent reliance on Australian content except in the production of the combat system. There is a 46% local industry involvement in the combat system work.

A few days before the Sub-Committee's visit the Corporation had announced that it had taken over Carrington Slipways at Tomago, New South Wales. Members were therefore interested in Dr Williams' views on the future of shipbuilding in Australia, particularly in terms of Defence requirements. Dr Williams put forward the view that, while the focus might be on producing Defence vessels, shipbuilding yards need to diversify into the production of other commodities if they are to remain viable. Accordingly, the Australian Submarine Corporation - which was established specifically to construct the submarine fleet - has been designed also to facilitate the manufacture of other products.

16th AIR DEFENCE REGIMENT
WOODSIDE BARRACKS

The Sub-Committee was met at Woodside Barracks by Major Ian Lynch. Members were briefed on the organisation, role and tasks of the unit. Informal discussions took place with 16 Air Defence Regiment personnel over lunch in the Officers Mess.

The unit consists of Headquarters Battery, 110 Air Defence Battery, 111 Air Defence Battery (Light) and 16 Air Defence Regiment Workshop. At the time of the visit the Regiment had an authorised establishment of 424 and a posted strength of 343.

The Sub-Committee appreciated the opportunity provided by Major Lynch to inspect closely the Rapier Fire Unit and the RBS 70 Missile System which had been set up for the occasion.

The briefing stated that 110 Air Defence Battery is equipped with 12 optical Rapier Fire units which were purchased from British Aerospace in 1978. Rapier is a lightweight, mobile, air-portable surface-to-air guided missile system. Rapier, when deployed as an optical system, consists of a launcher, a tracker and a generator interconnected by cables. The launcher contains the Surveillance, IFF and Command radars, a computer and four missiles on launch beams. After a missile is fired it is maintained on the sightline using the TV system, command guidance signals being transmitted by the command radar transmitter. The missile (which weights 43 kilograms) flies at over 2,400 kilometres per hour to a range of 6.8 kilometres. The DN 181 Radar Tracker provides an all weather day/night capability for the Rapier Equipment, making it an Automatic Command to Line of Sight system. It automatically tracks both target and missile simultaneously, updating missile commands, at a rate of 4,000 times per second. Once a target is detected and identified as hostile, the operator can select either the optical or radar tracker system. 110 Air Defence Battery is equipped with four DN 181 Radar Trackers.

Each Rapier Missile detachment consists of a seven-man crew commanded by a sergeant.

Members of the Sub-Committee are concerned that the limited numbers of Rapiers held by the Unit are insufficient to defend more than, for example, one vital asset or an airfield in northern Australia at a given time.

Members are also concerned that the limited numbers of missiles available for use in peace-time are insufficient for *proving* the ability of the equipment to fire.

111 Air Defence Battery (Light) is equipped with the RBS 70 Missile System which is capable of being carried in three manpack loads. The Sub-Committee was told that the system can be assembled in 30 seconds. It is capable of shooting down an aircraft travelling at over 800 knots at ranges in excess of 4.5 kilometres, up to an altitude of 3 kilometres.

The RBS 70 is a laser beam-riding weapon intended for engagement of visually detected targets with the operator tracking the target by optical means throughout the engagement. To track the target, a fine-aim thumb joystick is used to operate a gyro-stabilised optical system.

111 AD Bty (Lt) provided air defence missiles and crew for HMAS Success and Westralia during the Gulf War. Inspection of the RBS 70 in the field complemented DSTO's briefing on adapting this weapon for shipboard use.

The Sub-Committee was told that the Unit receives an allocation of only 6 RBS 70 missiles per annum. As in the case of the Rapier, this is insufficient for *proving* the equipment.

The visit to 16 Air Defence Regiment included a tour of Woodside Barracks. The Sub-Committee was told that extensive refurbishing of the barracks accommodation and the married quarter accommodation took place between 1983 and 1987. Notwithstanding this, there remains a shortfall in live-in accommodation required by Other Ranks.

E.J. Lindsay, RFD, MP
Chairman Defence Sub-Committee

October 1991