

Attachment to File 1
File 2004-3-66.

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1



A REPLACEMENT AIRCRAFT CARRIER
AND FIXED WING AIRCRAFT
FOR THE R.A.N.

SECRET

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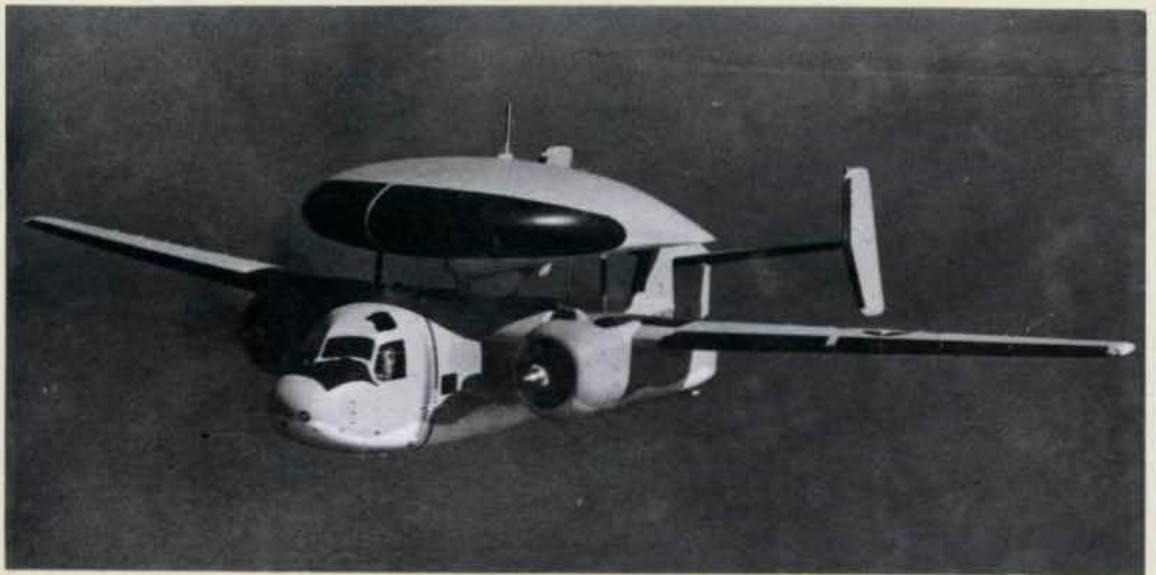
ORISKANY CLASS



PHANTOM



TRACKER



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A REPLACEMENT AIRCRAFT CARRIER AND FIXED WING AIRCRAFT FOR THE R.A.N.

THE RESPONSIBILITIES OF THE R.A.N.

The Strategic Basis of Australian Defence Policy, Defence Committee Minute No. 8/1962, states that in war the R.A.N. is charged with the following responsibilities:

- (a) To provide an effective and sustained Naval contribution to the allied forces maintaining command of the seas in our areas of strategic interest.
- (b) To contribute to and to defend Australian military shipping en route to the areas of operations in South East Asia.
- (c) To protect, within the Australia station, shipping carrying essential imports and exports.
- (d) To co-operate with sister services in general operations of war including the defence of the Australian mainland and Australian island territories.

THE THREAT

2. This paper concerns itself with a ship which should still be in service in the year 1985. It is logical therefore that the assessed threat against which it is required should be the threat estimated to obtain over this period. In its broadest sense this threat may derive from the fact that Australia is the only European country in the South East Asian area, and Asia is now emerging from 300 years of domination and colonisation by Europe. Asia's attitude for some generations to come is likely to be adversely influenced towards Australia by this history particularly if Australia remains European.

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2.

3. Both in the short term and in the long term too the threat emerges from the continuing advance of communism, communism of the chauvinistic Chinese type, through the remaining non-communist countries of South East Asia across the seas towards our own shores. It is obviously impossible to make an assessment in detail of this threat which would be valid up to 1985 or even up to 1975. In fact, a recent attempt by the Joint Intelligence committee to cover the situation for the next three years was rejected as a basis for planning by the Chiefs of Staff Committee (Chiefs of Staff Minute 17/64). It is certain however that the situation has deteriorated and continues to do so. There is no sign of a reversal of this trend and in so far as the Chinese are concerned it seems unwise to be optimistic.

4. The present Strategic Basis of Australian Defence Policy derives from Defence Committee Minute No. 8/62, and this states that in war the Royal Australian Navy is charged with the responsibilities set out in paragraph 1 above. Consideration of these responsibilities shows that they could be more broadly stated as a requirement, in conjunction with Allied Forces and other Australian Services where possible, "to ensure the use of the seas of our areas of interest for our own and for friendly shipping and to deny them to the shipping of the enemy". The priority of these responsibilities may vary from time to time but it is contended that, for an effective contribution, the Navy needs an offensive capability. If we have no offensive capability the initiative remains at all times with the enemy. The maxim that the best method of defence is attack is undoubtedly true.

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17/64

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3.

5. At the present time the Navy is entirely committed to an Anti-Submarine role which is defensive in concept. It has no offensive capability against likely enemies and this is shown at Figures 2 and 5.

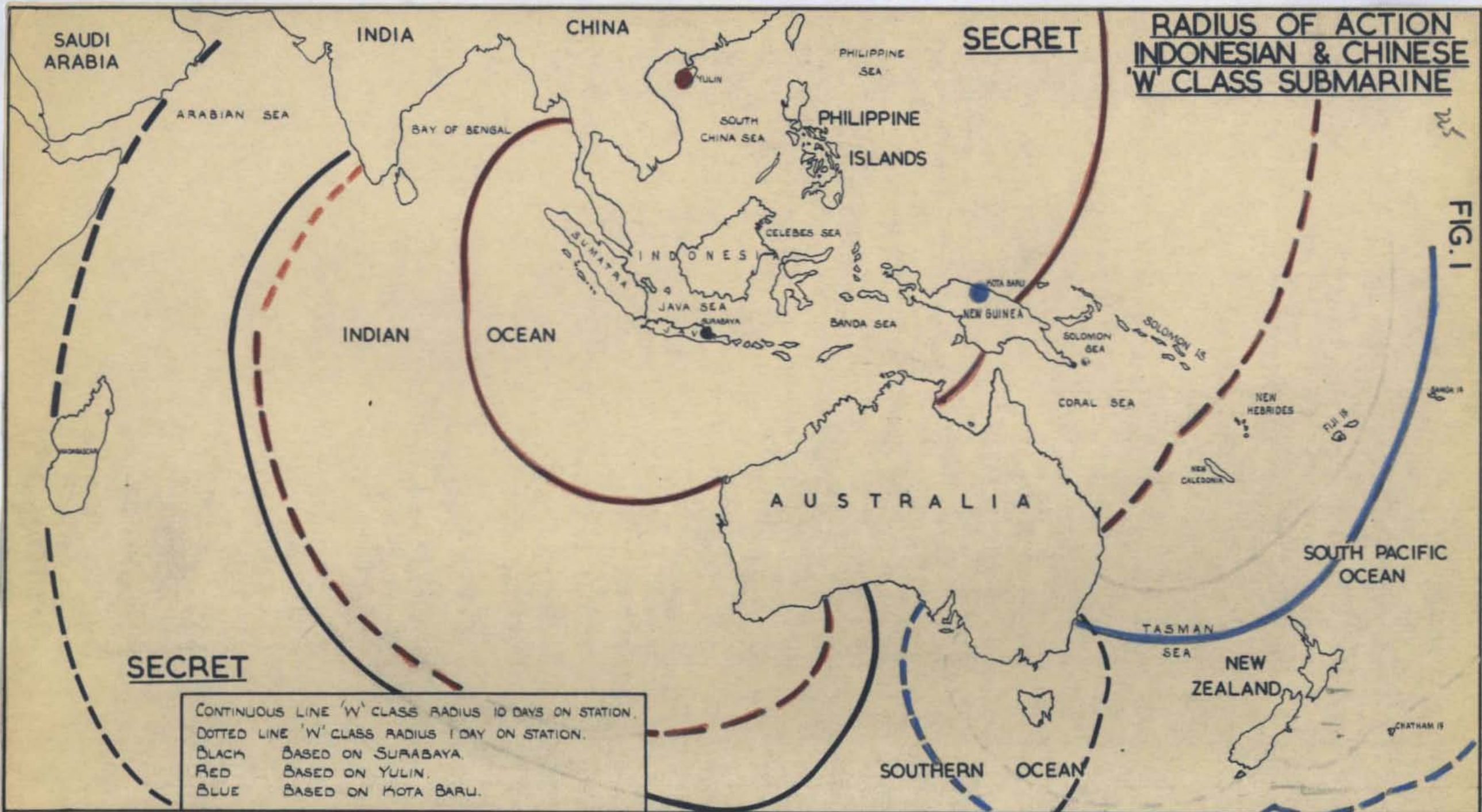
6. Our current strategy rests upon the 'forward' concept but recent events in Borneo, Laos and South Vietnam show that a situation could soon be reached when it may be necessary to consider the defence of Australia and its island territories without access to bases in South East Asia.

7. Indonesia's attitude continues to be unpredictable and she has received naval armaments which, together with stand-off bombers, place her in the position of being able to inhibit action by us in South East Asia until her capacity to interfere is absorbed. It would be most unwise to assume that Asians are incapable of maintaining and using modern and complex weapons and we do not know to what extent Indonesia will receive further material aid from Russia.

8. We have consistently under-estimated the numbers of submarines which have been provided to and received by Indonesia (Figure 3). Moreover we know that she has surface to surface missile firing craft which are to be increased to 12 and an informed assessment of the situation shows that the time could be appropriate for the transfer by the Russians to their satellites of missile firing submarines. These missiles would have conventional warheads and a range of 200-250 miles. The Indonesian Naval and Air Order of Battle is detailed in Appendix 3.

9. The Chinese Communists have not made much naval progress for the past few years but they are just as capable of increasing their submarine arm as the Indonesians. Equally, they have the potential to add missile firing craft to their fleet. The Chinese Communist Naval and Air Order of Battle is attached at Appendix 4.

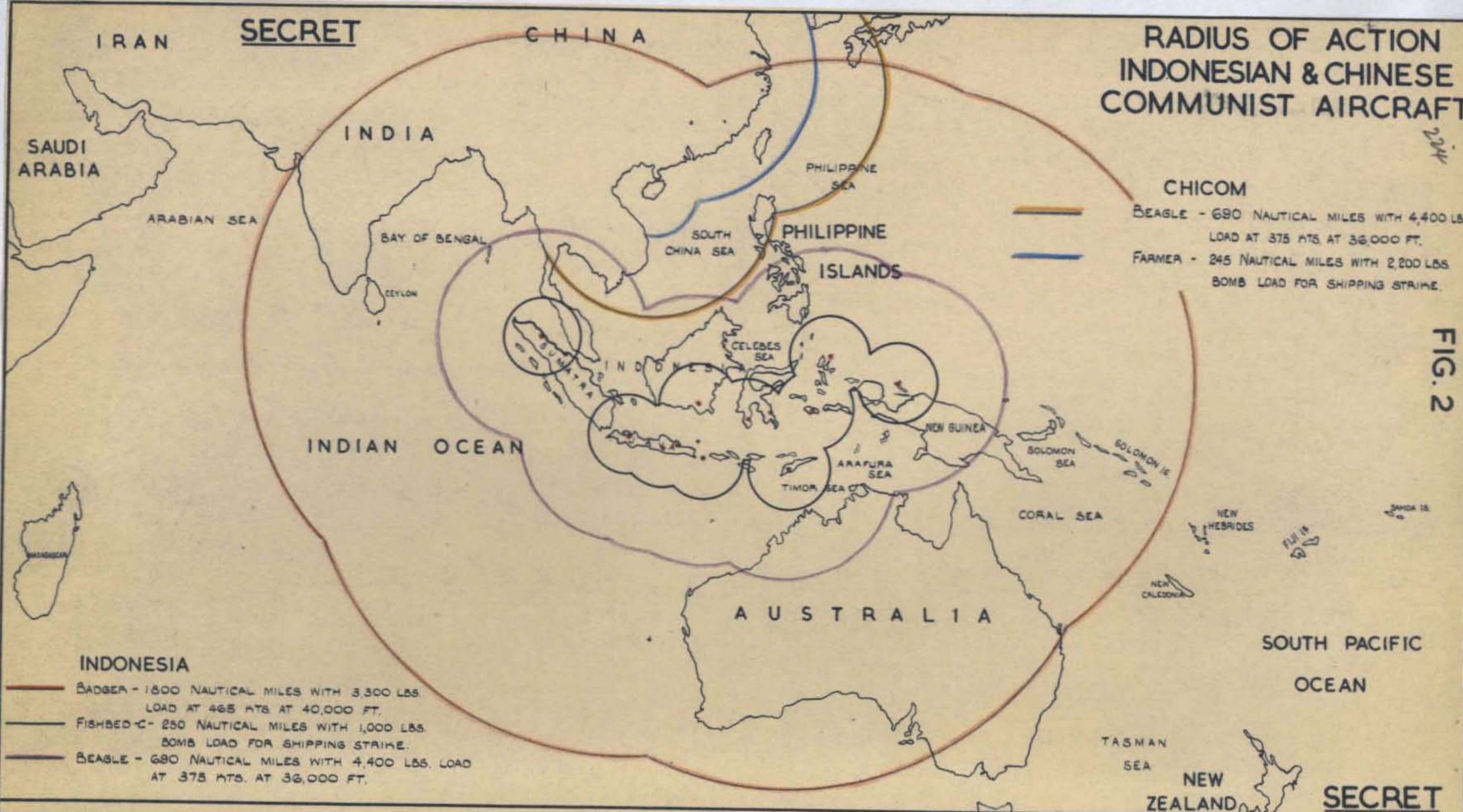
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RADIUS OF ACTION INDONESIAN & CHINESE COMMUNIST AIRCRAFT

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CHICOM

-  BEAGLE - 680 NAUTICAL MILES WITH 4,400 LBS LOAD AT 375 HTS. AT 36,000 FT.
-  FARMER - 245 NAUTICAL MILES WITH 2,200 LBS BOMB LOAD FOR SHIPPING STRIKE.

INDONESIA




-  BADGER - 1,800 NAUTICAL MILES WITH 3,300 LBS LOAD AT 465 HTS. AT 40,000 FT.
-  FISHBED-C - 250 NAUTICAL MILES WITH 1,000 LBS BOMB LOAD FOR SHIPPING STRIKE.
-  BEAGLE - 680 NAUTICAL MILES WITH 4,400 LBS. LOAD AT 375 HTS. AT 36,000 FT.

FIG. 2

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INDONESIAN 'W' CLASS SUBMARINES

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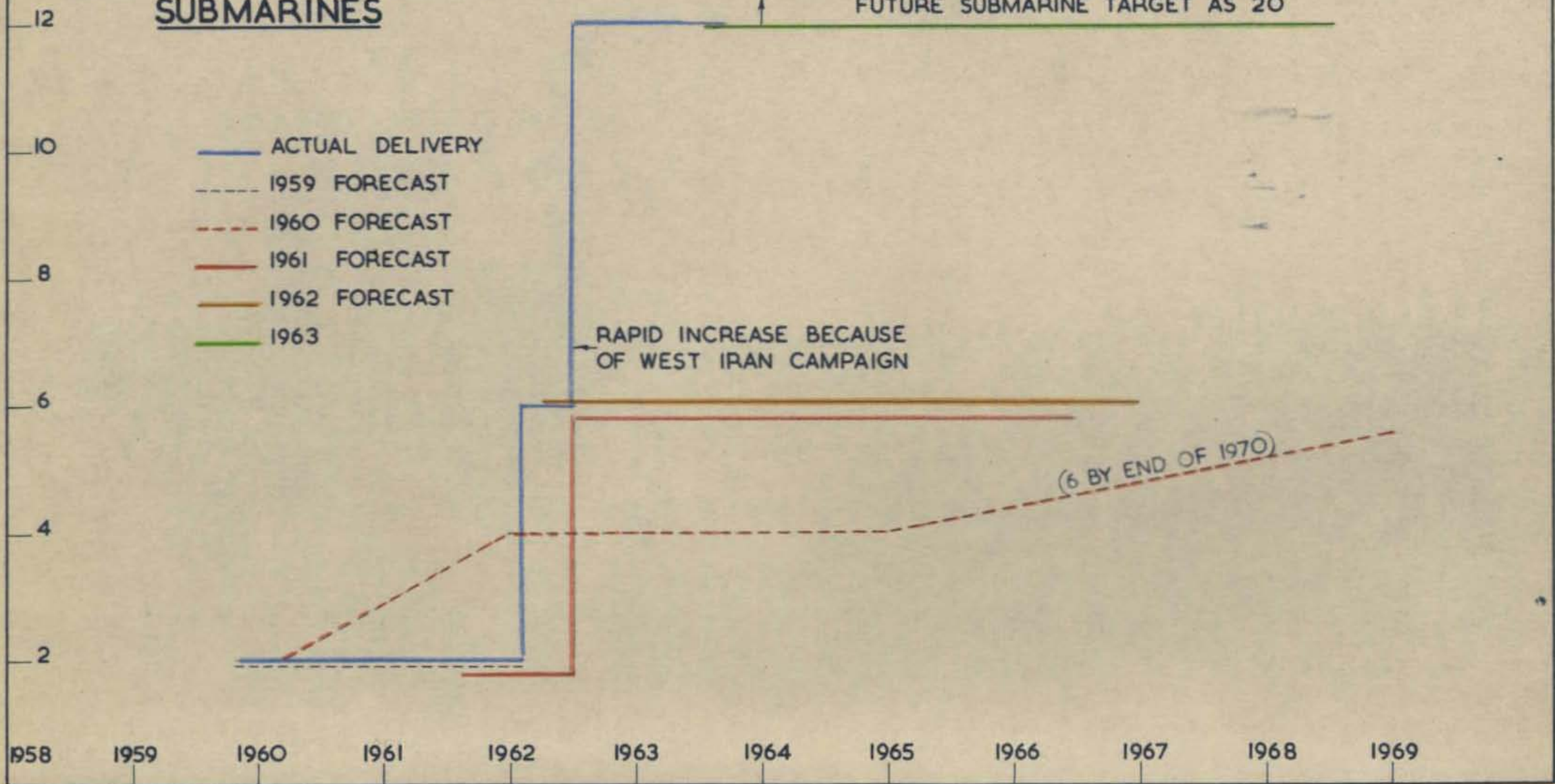


FIG. 3

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10. Figures 1 and 2 show the radius of action of Indonesian and Chinese Communist submarines and aircraft.

11. Although not directly relevant, the fact that the Russian Navy now deploys 96 submarines in the Pacific of which 10 are nuclears must be borne in mind, particularly if the U.S.S.R. were to provide Communist China or Indonesia with military support. Such support could include the use of submarines, manned by 'Volunteers' which could be used to reinforce Chinese or Indonesian submarine operations or to widen the threat by attacks in the approaches to the South China Sea in the case of China, or the Celebes Sea and Indian Ocean in the case of Indonesia.

12. While it is most unlikely that Australia will become involved in a war in South East Asia against Communist China except as part of SEATO or Allied forces, there is always the possibility of our having to take independent action, at least initially, against Indonesian aggression.

THE NEED FOR REPLACEMENT : CARRIER AND AIRCRAFT

13. The R.A.N. must be prepared to meet the responsibilities listed in paragraph 1, and, in common with our other Defence Forces to operate in two dissimilar types of war:

- (a) In conjunction with allies, to meet our Treaty obligations in South East Asian waters.
- (b) To operate alone, for a time at least, in the defence of the Australian mainland and island territories.

14. A situation could exist where both the above requirements needed to be met concurrently. Australia has already nominated for planning purposes the majority of her readily available forces to the various SEATO plans. Once the land and air forces are committed to SEATO operations, Indonesia could exploit the situation in pursuit of her expansionist aims.

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5.

15. To enable the Navy to meet its responsibilities and perform all its tasks effectively, it will be shown that fixed wing aircraft, operating from a modern aircraft carrier, are essential.

A War imposed by our SEATO Obligations to meet Communist Aggression

16. SEATO planning which assumes a non hostile Indonesia, has made clear that with the commitments facing the U.S. and U.K. forces, Australia will be responsible for the escorting and logistic support of her contribution to the area of hostilities in South East Asia. When these forces have arrived the R.A.N. will operate in concert with its Allies, but since little or no assistance from these allies can be expected before this, our own resources must be sufficient to ensure the safe and timely arrival of our national contribution.

17. What the threat will be in the 1970's is impossible of accurate prediction but for the present the principal threat in operations to support our SEATO obligations is the submarine, although reconnaissance and attacks against shipping by BEAGLE aircraft cannot be discounted. No major surface opponents are expected. Against the submarine five separate but inter-related elements are required to provide the optimum defence:

- (a) Long Range Maritime Patrol aircraft, operating in the distant support role a minimum distance of 70/80 miles ahead of the convoy.
- (b) Ship borne A/S aircraft operating between about 15 and 70/80 miles ahead of the convoy.
- (c) Helicopters, normally operating to a maximum of about 10 miles ahead of the convoy.

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Y HELICOPTER.

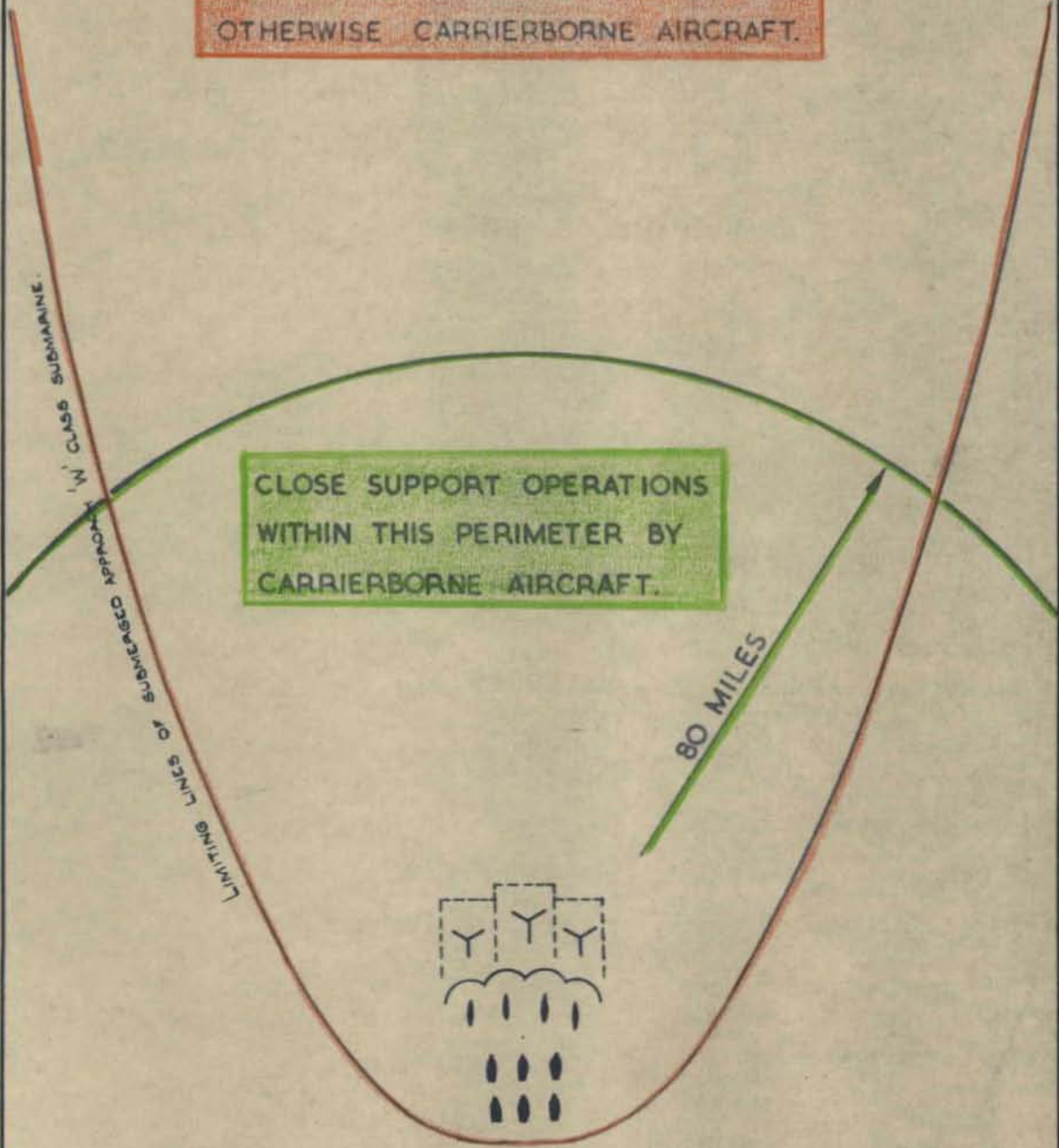
ESCORT WITH SWEEP SONAR SCREEN.

MERCHANT SHIP.

DISTANT SUPPORT OPERATIONS BY
L.R.M.F. AIRCRAFT WHEN AVAILABLE
OTHERWISE CARRIERBORNE AIRCRAFT.

CLOSE SUPPORT OPERATIONS
WITHIN THIS PERIMETER BY
CARRIERBORNE AIRCRAFT.

80 MILES



W CLASS SUBMARINE.
LIMITING LINES OF SWEEPED SONAR SCREENS

15 KNOT CONVOY.

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NOT TO SCALE

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(d) Surface escorts forming a close range A/S screen.

(The relative positions of (a) to (d) are shown in Figure 4).

(e) Anti-submarine submarines operating in enemy transit areas.

18. The present fixed wing A/S aircraft, the Gannet, is planned to be in service until mid 1967. Beyond that date effective numbers will become increasingly difficult to maintain, and unless a replacement aircraft is acquired, a gap in the A/S team required for protection of shipping will result. It is in this crucial area ahead of the convoy that the conventional submarine must be held down to restrict his freedom of movement in manoeuvring to gain a position in the 'grain' of the convoy.

19. In dealing with air attacks on shipping the convoy will be afforded a degree of protection from anti-aircraft weapons. However, attacking aircraft and reconnaissance aircraft operating in the pro-submarine role can only be successfully countered by fixed wing fighter aircraft. A further necessary aid to defence in depth is the Airborne Early Warning aircraft which provides long range radar detection of low flying enemy aircraft, ships and submarines.

War in Defence of Australia and its Territories.

20. While Communist China remains the prime long term threat to Australia, Indonesia's current policy towards Malaysia could lead to direct action against Australia.

A comparison of the Order of Battle of the Royal Australian Navy

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PRESENT WEAPONS COMPARISON.

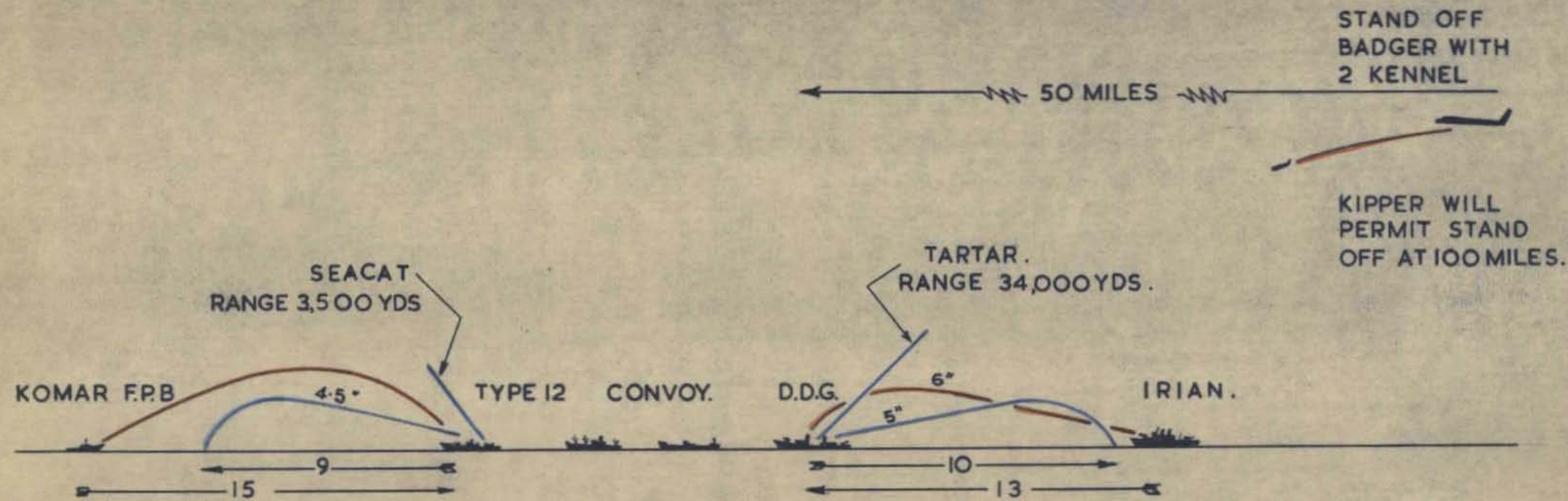


FIG. 5

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and the Indonesian Navy at Appendix 3, leaves no doubt that we are out-numbered, out-gunned, out-ranged and generally out-spaced by the Indonesians. As previously mentioned, additional Russian modern equipment could be made available at short notice. The build up of the Indonesian Navy has been accomplished since 1959, when Indonesia maintained a friendly attitude towards Australia and the main threat lay in a SEATO situation. This may have influenced the Governmental decisions which gave priority to anti-submarine vessels. We have nothing that can match the cruiser IRIAN on the surface, and our only prospect of defence against Indonesian aircraft (apart from anti-aircraft gunnery at close ranges) will depend upon the Tartar missiles in the Guided Missile Destroyers (D.D.G.'s). The range of Tartar is 17 miles.

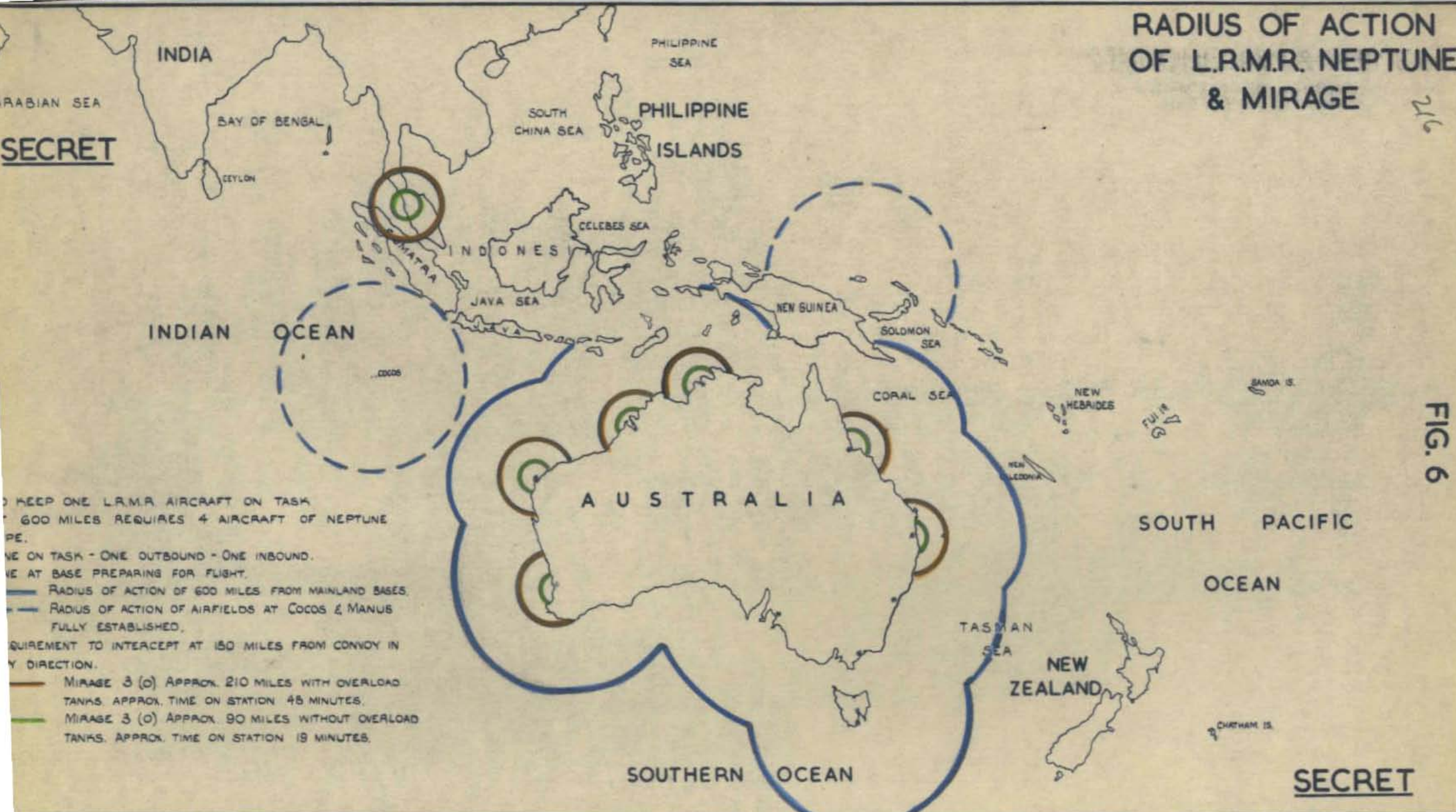
21. Since the decision was made to acquire the D.D.G.'s in 1960 however, the possible threat to our shipping, both from the air and the surface, has been seriously aggravated by the Indonesian acquisition of surface-to-surface and air-to-surface guided missiles which they obtained in 1962-1963. These stand-off weapons have a range of some 15 to 25 miles and 50 miles respectively, (See Figure 5) and the only reliable defence against them is to inhibit them at source, i.e. destroy the parent vehicles before they have been able to release the weapon. There is no way of doing this except by fighter aircraft, particularly carrier based fighters, and without fighter aircraft the Royal Australian Navy would be precluded from operating with any degree of safety in North Australian and New Guinea waters. It is relevant also that if the IRIAN were to operate against Middle East trade routes and more particularly the tanker traffic from the Persian Gulf, the Royal Australian Navy and in fact Australia, has at present nothing with which adequately to defend this vital route. Carrier borne reconnaissance and

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RADIUS OF ACTION OF L.R.M.R. NEPTUNE & MIRAGE

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- TO KEEP ONE L.R.M.R. AIRCRAFT ON TASK AT 600 MILES REQUIRES 4 AIRCRAFT OF NEPTUNE PER HOUR.
- NEPTUNE ON TASK - ONE OUTBOUND - ONE INBOUND. MUST BE AT BASE PREPARING FOR FLIGHT.
- RADIUS OF ACTION OF 600 MILES FROM MAINLAND BASES.
- RADIUS OF ACTION OF AIRFIELDS AT COCOS & MANUS FULLY ESTABLISHED.
- REQUIREMENT TO INTERCEPT AT 150 MILES FROM CONVOY IN ANY DIRECTION.
- MIRAGE 3 (O) APPROX. 210 MILES WITH OVERLOAD TANKS. APPROX. TIME ON STATION 45 MINUTES.
- MIRAGE 3 (O) APPROX. 90 MILES WITHOUT OVERLOAD TANKS. APPROX. TIME ON STATION 19 MINUTES.

FIG. 6

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strike forces provide the only full solution, since the operations in question could be conducted well beyond the range of our shore based aircraft both reconnaissance and bombers.

22. A reading of the following paragraphs may lead to the belief that a carrier will be a panacea for all threats. It is not intended to convey that a carrier can meet all the threats at the same time. The possession of such a ship will allow much more flexibility in the operation of our forces and in meeting threats as they develop.

23. Air Defence of Convoys. The operational radius of the shore based fighters, especially with supersonic capability is necessarily limited, and to provide combat air patrol and the concentrated effort needed the 'air field' must be near the convoy, viz, an aircraft carrier. There is no other means of providing air defence or strike for a convoy in areas where Indonesian aircraft or surface forces can operate and our own fighters cannot. To assume that shore based aircraft can be brought to the necessary position in the ocean hundreds of miles from land to counter a developing attack is irrational.

24. Co-operation with Sister Services. The provision of anti-submarine protection for military convoys is done in conjunction with the Air Force, within the range and availability of its aircraft. Ground support for the Army and air cover over the beaches in an amphibious landing are additional tasks which may be required in the future. This emphasises the need for fighter/strike aircraft at ranges beyond which shore based aircraft can operate continuously. Lack of this capability will confine any amphibious operation to areas within range of shore based aircraft if any enemy air threat, however slight, exists. Such a situation will preclude the full mobility which control of the sea and local air superiority can impart.

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Summary of Requirements

25. The need, in particular requirements, for fixed wing aircraft operating from a modern aircraft carrier has been discussed above in the context of:-

(a) A war imposed by our SEATO obligations to meet communist aggression.

(b) A war in defence of Australia and its territories.

26. It is desired to point out that the requirements have been brought out separately against the most likely threats posed in the two war situations, namely the submarine in SEATO and against Indonesia, air and missile attack. However

(a) reconnaissance

(b) air defence

(c) submarine detection and destruction

(d) air strike

(e) airborne early warning and air direction

(f) ground support

would be applicable, in varying degrees, in each situation.

27. The ability to vary the aircraft complement of the carrier as required for a specific operation provides added flexibility. Finally, if Indonesia did wish to exploit the situation when the majority of our land and air forces were committed to SEATO operations, the ability to deploy quickly an aircraft carrier operating modern strike aircraft could prove the only possible and effective deterrent.

Limitations of H.M.A.S. MELBOURNE and aircraft.

28. MELBOURNE with her present complement of aircraft, viz., 12 Wessex A/S helicopters, 6 Gannet A/S aircraft and 4 Sea Venom All Weather Fighters, is able to perform a limited A/S role only. She is a small carrier with a maximum sustained operating speed of 24 knots which imposes severe restrictions on her capability to operate an adequate number

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of modern A/S aircraft. These restrictions together with her limited deck strength and short catapult prevents the operation of any modern production fighter/strike aircraft. Experience has shown that in tropical nil wind conditions the ship is marginal for operating even the Sea Venom aircraft.

29. As previously mentioned the Gannet aircraft will become increasingly difficult and uneconomical to maintain after mid 1967; the same situation will apply to the Sea Venom. Both types which have severe limitations in equipment and speed will have then been in R.A.N. service for 12 years. They are now out of production and spares required would be unduly expensive. However R.A.N. stores backing for these aircraft is provisioned to 'life of type' in mid 1967. Planning must start now if replacement by then is to be effected.

Conclusions.

30. From the above it will be seen that to meet our responsibilities in a future war the R.A.N. will require a modern fast carrier capable of operating at maximum effectiveness:

- (a) Helicopters - as part of the A/S defences.
- (b) Carrier borne fixed wing aircraft - for reconnaissance and in the A/S role.
- (c) Fighter/strike aircraft - for air defence of ships at sea, reconnaissance, and to provide our only strike capability.
- (d) AEW aircraft - for early radar warning and aircraft direction.

None of these is dispensable. The efficacy of both air and surface escort of convoys in World War 2 is shown in Figure 7.

SELECTION OF AN AIRCRAFT CARRIER

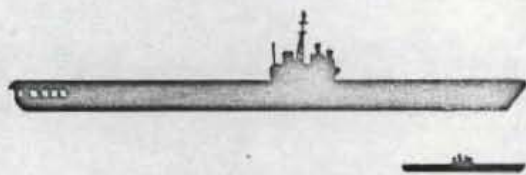
31. H.M.A.S. MELBOURNE cannot meet the requirements for modern aircraft; the acquisition of a modern fast carrier is necessary: This can be achieved by two means:

- (a) Construction of a new carrier
- (b) Modernisation of a carrier obtained from another Navy.

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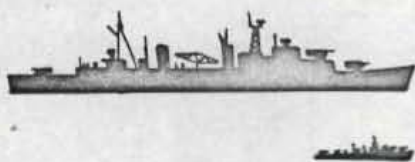
U.K. AND U.S.A. NAVAL LOSSES W. W. 2.

AIRCRAFT CARRIERS
COMMISSIONED

172

LOST - 11%

19

CRUISERS
COMMISSIONED

177

LOST - 23%

44

DESTROYERS
COMMISSIONED

898

LOST - 24%

219

SUBMARINES
COMMISSIONED

518

LOST - 25%

130

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11.

New Construction

32. It would be the better course if the R.A.N. could acquire a new aircraft carrier primarily because it would have a longer life and be fitted with modern machinery. The alternative means of obtaining a new carrier are discussed below:

(a) Assembly in Australia. Whilst it is probable that the hull of a carrier of some 50,000 tons could be built in Australia it would be necessary for the design work to be carried out overseas. The catapult and most of the machinery for the ship and the majority of weapons and equipment would have to be obtained overseas and assembled in the hull. This would add considerably to the cost and time factors and it is estimated that it would take something like 12 years to build the hull and fit it out. The cost would be at least 40% greater than the estimated U.K. cost of £M72 (Aust), viz. £M100 (Aust.). Additionally to fit out such a complex ship as a carrier would absorb the whole of the specialised technical capacity available in this country, and would leave nothing available to do the day to day maintenance and refit work required on Naval ships. To take on such a building project at this time of the country's industrial development is considered to be quite impracticable.

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(b) Built overseas to R.A.N. requirements. As mentioned above the R.A.N. does not have the staff to design a new carrier. Due to pressure of their own work the U.K. Ministry of Defence (Navy) could not afford the design effort for an R.A.N. requirement. The U.S.A. could perhaps carry out the work but undoubtedly the cost of this, together with the construction, would be high, certainly over £M100 (A) if compared with costs of their own carriers. The ship could however, be built in a U.S. yard about 3½ years after the design work was agreed upon, i.e., a total time of about 5 years.

(c) A ship built overseas from existing plans. The French have built two small carriers, but the only two countries currently constructing carriers are the U.K. and the U.S.A. The new carrier project in the U.K. is for a 53,000 ton ship; this will require at least another 1½ years design study followed by 5 years for construction. The first of this new generation of carriers for the Royal Navy will commission in 1971. Although approval has been given to build only one, it is believed the Royal Navy will require to replace four ships between 1971 and 1976. It is likely that the U.K. resources will be fully occupied and this could preclude early construction for the Royal Australian Navy. In the event of the U.K. accepting an added commitment, then 1972-74 would appear to be a reasonable assessment for completion for the R.A.N. at a cost of about £M72.5(A). New construction in the U.S. consists of the Forrestal Class which is too large for R.A.N. requirements. It is understood

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that medium sized ASW carriers of about 52,000 tons may be built for the United States Navy but they are not expected to be in service until about 1972 at the earliest, at an approximate cost of £M103.5(A). A new carrier conforming to present ORISKANY 27C standard could be built in four years at a cost of approximately £M102(A).

Modernise a Carrier obtained from another Navy

33. Enquiries have shown that the R.N. cannot spare a carrier of suitable size capable of being modernised to operate modern aircraft. Enquiries have also been made to determine whether the U.S. could make available an ESSEX Class carrier which could then be modernised to the ORISKANY 27C standard. Advice has been received from the U.S. Navy that an ESSEX Class carrier could be made available subject to Congressional approval.

34. A number of ESSEX Class carriers were placed in preservation after a short service life and are stated to be in good condition. The conversion programme is comprehensive and includes strengthening of the hull by the addition of blisters, reconstruction of the flight deck and island and installation of all modern carrier equipment including radar, communications, flight deck machinery, etc. This class and size of ship has a sustained speed capability of 30 knots which is unlikely to be surpassed by any new ship with conventional propulsion. The U.S.N. estimates a life of 20 to 25 years after modernisation. A more realistic estimate is considered to be 15 to 18 years. Previously it had been understood that the ESSEX class had only a very restricted life owing to the age of the hull but it appears that this has been taken care of in the course of reconstruction. This aspect will however need to be confirmed by actual inspection.

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COMPARISON OF ESSENTIAL DATA

MELBOURNE



NEW ROYAL NAVY CARRIERS
FIRST COMMISSION 1971



ORISKANY CLASS



DISPLACEMENT.
LENGTH.
SPEED.
PROPULSION.
ENDURANCE.
DECK STRENGTHS (STATIC).
CATAPULT.

20,000 TONS FULL LOAD.
700 FEET OVERALL.
24 KNOTS.
STEAM TURBINE.
5,400 AT 20 KNOTS.
24,000 LB.
1 STEAM 103' STROKE.

AIRCRAFT LIFTS.

2

RADAR.
AIRCRAFT.

L. W. O. 2.
12 WESSEX.
6 GANNET.
4 SEA VENOM.

AIRCRAFT FUEL.

205,000 GALL. AVCAT.
5,000 GALL. AVGAS.

ARMOUR PROTECTION.

NIL.

SHIPS ARMAMENT.

20-40 MM.

AVAILABILITY.

IN SERVICE.

COST

53,000 TONS FULL LOAD.
890 FEET OVERALL.
28 KNOTS (6 MONTHS OUT OF DOCK.)
STEAM TURBINE.
6000 AT 20 KNOTS.
70,000 LB.
2 STEAM 250' STROKE.

2 - 70' x 32' DECK EDGE.

THREE 'D' & ACTION DATA AUTOMATION
30 FIGHTER/STRIKE.
5 A/S HELICOPTER. (LARGE)
4 A.E.W.
2 S.A.R. HELICOPTER.

600,000 GALLS. AVCAT.

SPLINTER PROTECTION ONLY.

ONE SEA DART MISSILE LAUNCHER
(RANGE 30 MILES)

1972-74

£ (A) 72.5 M. ADMIRALTY ESTIMATE.

42,000 TONS FULL LOAD.
890 FEET OVERALL.
31.5 MAX. 30 SUSTAINED.
STEAM TURBINE.
12,000 AT 20 KNOTS.
70,000 LB.
2 STEAM 211' STROKE.

250' CAN BE FITTED.

3 2-56' x 44' DECK EDGE.

1 - 70' x 44' CENTRALINE.
SPS 48 LONG RANGE 3 CO-ORDINATE AIA
SEARCH & NT.DS.
16 FIGHTER/STRIKE. AS A.A.N.
12 TRACKER.
16 WESSEX.
4 TRACKER A.E.W.
2 S.A.R. HELICOPTERS

580,000 IMP. GALLS. AVCAT.

71,000 IMP. GALLS. AVGAS.

SIDES 3" - 1 1/2" HANGAR DECK 3"

SECOND DECK 2 1/2" MACHINERY SPACES 1 1/2"

STEERING GEAR BOX - 4"

7-5", 6-3" TWIN

1968 ON COMPLETION MODERNISATION.

£ (A) 58M U.S.N. ESTIMATE.

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FIG. 9

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35. A comparison of essential data between the MELBOURNE the proposed new R.N. carrier and an ORISKANY 27C is shown in Figure 9. It will be seen that the ORISKANY has an operational capability at least equal to the R.N. carrier. The conversion of an ESSEX Class carrier to an ORISKANY would take about 3 years, at a cost of approximately £M58(A).

36. Conclusion. It is concluded from the above that:

- (a) To build a carrier in Australia would be impracticable.
- (b) A carrier could be designed and built in the United States of America to our requirements in about 5 years but the cost would certainly be well in excess of £M100(A).
- (c) The United Kingdom may be able to construct for the R.A.N. a 53,000 ton carrier, similar to their planned new construction. It is unlikely to be available before 1972 at a cost of £M72.5(A). The U.S.N. may build 52,000 ton ASW carriers; the first of these is not expected to be in service until 1972 at an approximate cost of £M103.5(A). A new carrier conforming to an ORISKANY 27C could be built in the United States for about £M102(A).
- (d) The U.S.N. could complete a conversion of an ESSEX Class carrier to ORISKANY 27C standard in 3 years. This ship, for a cost of £M58.1(A), would have the operational capability at least equal to the projected Royal Navy carrier. Based on cost, operational effectiveness and time this carrier most nearly meets the R.A.N.s requirements.

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SELECTION OF AIRCRAFT

Fighter Aircraft

37. Outline Staff Requirement. An all-weather carrier based fighter is required which can give the Fleet air defence in depth against present and future high performance enemy aircraft, stand-off missile vehicles and reconnaissance aircraft. Supersonic and high altitude performance is essential. The aircraft is also required to have a strike capability against well defended surface forces and be able to strike ground targets in a modern air defence environment. A photographic reconnaissance capability is desirable.

38. Vertical Take Off and Landing (V.T.O.L.) Aircraft. Consideration has been given to the feasibility of operating V.T.O.L. aircraft in the hope that this would solve the problem of providing the fighter/strike element from a small carrier. The only V.T.O.L. aircraft showing promise of attaining the desired speed and altitude performance is the Hawker P1154 currently being developed for the Royal Air Force, but it falls short in range, endurance and payload. The P1154 is a very expensive aircraft and would now require further Research and Development such as tricycle undercarriage for adaption to Naval use. As the Royal Navy has abandoned this project all such costs would need to be met by Australia. In any event the all up weight of one P1154 exceeds the maximum static load deck strength of H.M.A.S. MELBOURNE. As neither the United States of America or the United Kingdom are developing V.T.O.L. aircraft for Naval requirements this concept is considered impracticable for the R.A.N.

39. Conventional Design Aircraft. The types of naval aircraft evaluated against the requirement were Phantom F4B, Crusader F8E, Sea Vixen and Demon F3. The latter two have been rejected as they are only transonic aircraft soon to be phased out of service. The Phantom F4B is recommended in

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preference to the Crusader F8E, as it more closely meets the staff requirement and is superior in design, weapon carrying, handling qualities and possesses twin engine safety. Furthermore the Crusader ceases production in January, 1965 and will be replaced in service by the Phantom.

40. The F4B entered squadron service in U.S.N. carriers in 1961/62 and is a proven all weather fighter with an imposing strike capability. The aircraft has a good development potential and with its high speed (Mach. 2.25) and weapon carrying ability is likely to remain in service with the U.S.N. until about 1978. It can be operated from ORISKANY Class carriers.

41. The aircraft will be in production until 1968. It is now in service with the U.S. Navy, the U.S. Marines and the U.S. Air Force, and has been approved as the Royal Navy fighter replacement in about 1968. The aircraft carries intercept radar capable of detecting targets up to 95 miles. The primary air to air weapon is the SPARROW missile, 6 of which can be carried. In the strike role the aircraft can carry an assortment of loads including Bullpup (air to surface missiles), 5 inch rockets, and up to 12,000 lbs conventional bomb load.

42. The lead time for the aircraft has been quoted by the U.S.N. as 18 months; aircraft deliveries would be at the rate of three per month. The equipped cost of the aircraft is approximately £A714,000. Detailed costs are shown in Appendix 1.

Anti-submarine aircraft

43. Outline Staff Requirement. An all weather, long range carrier based aircraft which can give defence in depth against submarines in the close support area, and which can co-operate

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with surface escort and helicopters in the detection, classification and destruction of submarines. The aircraft must give early warning of surface units and possess some strike capability against lightly armed small craft.

43. The only fixed wing A/S aircraft in production is the Grumman Tracker S2E. This latest mark of aircraft is now in U.S.N. service. It is a twin piston engined aircraft with an endurance of 9 hrs, well equipped for all weather operations and could be operated in small numbers from H.M.A.S. MELBOURNE.

45. The A/S equipment includes sonobuoys, Julie (explosive echo ranging), Jozebel (long range passive detection) MAD (magnetic anomaly detector), ECM (Electronic Counter Measures Equipment), radar (maximum detection 100 miles) and search-light. The weapon load of homing torpedoes can be alternated with depth charges, together with 5 inch rockets carried on wing stations.

46. The equipped cost of the aircraft is £A441,696. Production lead time on the basic aircraft is approximately 14 months, however lead time on certain items of Avionic equipment can be 24 months or longer. The final production line of Tracker aircraft will begin in July 1965 and information has been received from the U.S. Navy that advice for purchase must be notified by December 1964. The aircraft deliveries would be at the rate of 2 per month, commencing January 1967. Detailed costs are contained in Appendix 1.

47. Enquiries were made as to the replacement aircraft for the Tracker. Information was received that the replacement aircraft was only in the embryo stage and thinking at the present time was that it might be of the S.T.O.L. type capable of replacing the carrier, anti-submarine, fixed wing and helicopter aircraft. However, it was expected that the Tracker would remain in service in the U.S.N. for about ten years following the final production order.

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Airborne Early Warning Aircraft

48. Outline Staff Requirement. An aircraft is required to provide early detection of low flying aircraft, surface ships and snorkeling submarines. It must also be capable of directing fighter/strike aircraft against air and surface targets and should have a comprehensive Electronic Counter-measures capability.

49. Early warning aircraft currently in service are the Gannet AEW (Royal Navy), Tracer E1B and Hawkeye E2A (U.S. Navy). The Gannet is now out of production and the Royal Navy has issued a staff requirement for a replacement. The Hawkeye is a large aircraft operated only from FORRESTAL Class carriers.

50. The Tracer E1B is basically a development of the Tracker with an overhead radome. The aircraft is well equipped for all weather operations by day or night from carriers of 30,000 tons or more.

51. The Tracer has an endurance of 8 hours and can obtain detections on a ship target at ranges up to 245 miles and on a 1 square metre target (aircraft) at ranges up to 94 miles. Although now out of production it is expected that the small number required could be obtained from U.S.N. stocks.

52. The manufacturers cost for this aircraft is approximately £A851,138 but the cost of the aircraft ex-U.S.N. stocks is likely to be considerably less. Detailed costs are contained in Appendix 1.

Conclusion

53. As far as can be ascertained from the evaluations carried out, the Phantom F4B, the Tracker S2E and the Tracer E1B are the aircraft which most closely meet the RAN Staff Requirements. In addition all these aircraft would have logistic and operating advantages as they are in use in the U.S. Navy, and in the case of the Phantoms, in the Royal Navy in due course.

NUMBERS OF AIRCRAFT

54. The number of aircraft required for an effective operational effort is as follows:

(a) Front Line Squadrons embarked

- 16 Fighter/Strike aircraft
- 12 Fixed Wing A/S aircraft
- 4 Airborne Early Warning aircraft
- (16 A/S helicopters already in R.A.N. Service)
- (2 SAR Helicopters already in R.A.N. Service)

(b) Training

The establishment of new aircraft for operational flying training of aircrew would be:

- 6 Fighter/Strike aircraft
- 6 Fixed Wing A/S aircraft
- 2 Airborne Early Warning aircraft

(c) Reserve Aircraft

Reserve new aircraft as immediate replacements for squadrons would be:

- 6 Fighter/Strike aircraft
- 6 Fixed Wing A/S aircraft
- 2 Airborne Early Warning aircraft

(d) Total New Aircraft Requirement

The total requirement for new aircraft is:

- 28 Fighter/Strike aircraft
- 24 Fixed Wing anti-submarine aircraft
- 8 Airborne Early Warning aircraft

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SUPPORT FACILITIES.R.A.N. Air Station, Nowra.

55. The acquisition of the new aircraft will require some new airfield works and in addition phased improvements already planned will need to be expedited. These are:

- (a) Runways - extension of concrete ends, and complete bituminous concrete seal on remainder.
- (b) Taxiways - complete in concrete.
- (c) Hardstandings - complete in concrete.
- (d) GCA Radar - to be installed.
- (e) Accommodation - additional accommodation and domestic facilities.

56. Estimated costs for the above are shown in Appendix 1.

THE NEED FOR A DECISION.

57. The need for a decision on replacement of fixed wing aircraft and the consequent acquisition of a replacement carrier is urgent. To acquire and equip an aircraft carrier ready for operations will take a minimum of four years and may be longer. The present Gannet and Sea Venom fixed wing aircraft will become increasingly expensive and difficult to maintain in an operational role after mid 1967.

58. It is not possible to plan the shape and size of naval forces less than about 10 years ahead having regard to the lead time required for the production in service of modern ships with their very complex equipments and the long and expensive training of the personnel required to man and maintain them. The production in service of an aircraft carrier and her crew is peculiarly difficult. The Royal Australian Navy has built up this asset - if it is discarded now it will be for the lifetime of those now associated with the defence of this country.

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59. It may be decided that the expense of maintaining a Fleet Air Arm is beyond the financial capacity of this country having regard to other necessary expenditures. If this be the case, then, in order that our SEATO plans may be implemented should there be maritime interference from Indonesia or from China it is considered that negotiations should now be opened with a view to obtaining firm assurance from the United Kingdom or the United States of America that carrier support will be made available. This will be necessary to ensure that military convoys to South East Asia may be brought safely to their destination when circumstances require the assistance of maritime air defence. Should the situation of this country become such that maritime offensive action is required the necessary assistance, and it will be carrier assistance, must be made available.

60. Unless it is known soon that new types of aircraft have been approved, then it can be expected that the interest and enthusiasm of aircrew flying the Gannet and Sea Venom aircraft will wane. It has already been stated that stores backing for these aircraft has been provisioned until mid 1967, but a major defect could result in reducing the numbers available to an unacceptably low figure before this date. It is clear that unless approval is given during this year to acquire at least some modern fixed wing aircraft then naval fixed wing flying will die and the R.A.N. will be unable effectively to fulfill its responsibilities other than in a purely defensive A/S role and even in that role restricted by the lack of the fixed wing component.

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OUTLINE PLAN

61. The following outline dates show the minimum convenient period within which a replacement carrier could be acquired, new aircraft ordered and produced, aircrew trained and the necessary facilities completed at R.A.N. Air Station Nowra.

62. The plan involves the introduction of the aircraft and carrier in two phases.

63. The first phase deals solely with the ordering and timing for the Tracker aircraft and the second shows the ordering and delivery dates of the Phantom, the Tracer aircraft and the carrier.

64. The Trackers have been shown separately as there is advantage to be gained by the early introduction of these aircraft should it become evident that deliveries can be advanced. If this happens some Trackers can be embarked as needed aboard the MELBOURNE thus giving a significant increase in A/S capability before the replacement carrier is available.

	Phase 1	Phase 2
<u>1964</u>		
July	Approved in principle to buy Tracker aircraft	Approval in principle to obtain replacement carrier and aircraft. Carry out overseas evaluations.
October	Letter of intent to place order for 24 Tracker aircraft.	
November		Submit Nowra works programme for approval by Cabinet.

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	Phase 1	Phase 2
<u>1965</u>		
July	Place order for 24 Tracker Aircraft.	Place order for Fighter/Strike and A.E.W. aircraft. Commence carrier modernisation.
<u>1966</u>		
October	Nucleus air and ground crew begin training in U.S.A.	Nucleus air and ground crew begin training in U.S.A.
<u>1967</u>		
June	Ferry to Australia - 12 Tracker aircraft.	Ferry to Australia - 16 Phantom aircraft - 4 A.E.W. aircraft.
July	Pay off Front Line Gannets.	Pay off Front Line Sea Venoms.
August	Form Squadron of 8 Tracker aircraft for aircrew conversion and training.	Form Squadron of 8 Phantoms and 4 A.E.W. aircraft for aircrew conversion and training.
November	Pay off MELBOURNE into Reserve depending upon progress with Phase 2.	Steaming party and other essential personnel proceed to U.S.A.
<u>1968</u>		
May		Carrier modernisation complete. Commence sea acceptance trials.
August		Commission on completion. Passage to Australia. Ferry remaining aircraft, 12 Phantoms, 12 Tracker, 4 A.E.W.

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<u>1968</u> <u>cont.</u>	Embark Squadrons for work up. Form O.F.S. squadrons shore based.	Embark Squadrons for work up. Form O.F.S. squadrons shore based.
<u>1969</u> February/ March		Carrier operational. Squadrons embarked at full Front Line Establishment.

65. Alterations to the timing within the above framework may be necessary when more detail is available following overseas evaluations and discussions.

Alternative Courses of Action.

66. There may be considerations other than those of defence which make it impracticable to achieve the plan outlined above. It may even be possible to implement the plan if the time scale was spread over a longer period. This would involve ordering the A/S fixed wing component, the Tracker S2E. The intent to order must be given before the end of 1964 as they pass out of production in 1965 (see paragraph 46 above). Preliminary investigation has shown that MELBOURNE should be able to operate these aircraft. This is being confirmed in July, 1964, by actual trials with the United States Navy off Subic Bay. It is expected that eight Tracker aircraft and twelve Wessex helicopters could be accommodated. This would provide limited A/S cover from this ship so long as there is no air opposition.

67. If delay must be accepted in the provision of air cover then this permits of the acceptance of a delay in the provision of a replacement carrier but it is certain that MELBOURNE cannot operate any developed or projected fighter/strike aircraft which will be in service in the 1970's and which will be capable of meeting the staff requirements.

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It was expected that a VTOL aircraft would be the solution but as explained in paragraph 38 this expectation has been disappointed. Therefore, if the operational disadvantage is accepted the replacement of the carrier and the fighter/ strike component could be arranged with a greater time spread.

68. The plan would then remain as stated in para 64 above with the Tracker S2E being ordered this year to re-equip the A/S component and operate temporarily from MELBOURNE and the remainder of the scheme being taken at a rate which is financially feasible.

MANPOWER

69. If the re-equipment programme is approved, it is planned to pay off H.M.A.S. MELBOURNE in November 1967. This will provide about 58% of the ship's company for the replacement carrier which has a full peace complement of 218 officers and 2073 men, including squadrons. It is not possible at this time to determine whether MELBOURNE should then:

- (a) Undergo extended refit for subsequent employment as a helicopter carrier; or
- (b) Be converted as a replacement for H.M.A.S. SYDNEY as a fast transport and training ship.

70. As shown in Phase 2 of the outline plan, it is proposed that the new carrier:

- (a) Steam to Australia with a reduced complement in August 1968;
- (b) Conduct a flying and deck-handling period with squadrons at reduced establishment in October 1968;
- (c) Increase to full peace complement and work up to operational standard with squadrons at full aircraft establishment in February/March 1969.

MANPOWER 1969

71. In June, 1969, assuming that the F.A.A. re-equipment programme is approved, it is planned to have in commission the following:

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	New Carrier and Squadrons
D.D.G.'s	PERTH HOBART BRISBANE
Daring Class Destroyer	VAMPIRE
Type 12 Frigates	PARRAMATTA YARRA STUART DERWENT
	2 New Type 12 Frigates.
Troop Transports	SYDNEY
Replenishment Ship	SUPPLY
	Escort Maintenance Ship
Oceanographic Ships	DIAMANTINA GASCOYNE
Survey Ships	MORESBY KIMBLA PALUMA BASS
New Guinea Patrol	BANKS
	6 Ton Class Minesweepers 4 Oberon Class submarines

NOTE: H.M.A.S. VENDETTA will be undergoing half-life modernisation and H.M.A.S. DUCHESS is planned to revert to R.N. early in 1969.

72. In Cabinet Submission No. 157 - Permanent replacement for H.M.A.S. VOYAGER, paragraph 22, is stated:

"22. The Cabinet decisions on the Defence Review of April/May 1963 approved the expansion of the R.A.N. personnel strength from 13,900 to a figure to be determined by the Ministers for Defence and Navy. At that time the Naval Programme funds provision was based on achieving by June 1968 a strength of about 14,300 using the then forecasts of recruiting and re-engagement. Based on present recruiting and re-engagement forecasts, and having regard to the capacity of existing training and accommodation facilities,

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the strength by 1968 is now expected to be over 15,000, all of which would be required to complete full peace complements of present approved projects."

73. The manpower required to man the force (on full peace complement) shown in para. 71, all shore establishments and training commitments and allowing for increased shore personnel required to support the new carrier, is calculated at 1727 officers and 15,892 ratings - total 17,619.

It is estimated that 1743 officers and 15,876 ratings (Total 17,619) could be borne on 30th June, 1969 assuming:

- (a) An adult male rating recruiting rate of 1150 in 1965 rising to 1300 in 1968 and remaining at the level thereafter. (1964 recruiting rate expected to be about 1150.)
- (b) A continued re-engagement rate of about 30%.
- (c) Increases in Junior Recruits, Naval Apprentices and Wrens as shown in the next paragraph.

74. The increase of 2319 personnel from the previously projected strength of 15,300 for the present approved programme to 17,619 results from the following:

- (a) Difference between MELBOURNE and replacement carrier - including squadrons 1067
- (b) Additional personnel at RAN Air Station Nowra owing to new types of aircraft 200
- (c) Increase to 900 the annual intake of junior Recruits in order to overcome manpower deficiencies 300
- (d) Increase to 780 in total number of Naval Artificer Apprentices under training in order to overcome Artificer shortage 200
- (e) Extra numbers required to man two Type 12 Frigates beyond those required for DUCHESS (vide Cabinet Submission No. 157, para. 23) 243

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(f) Provisional estimate of ratings required for Submarine Base for 4 Oberon submarines	110
(g) Increase to 600 in W.R.A.N.S., to enable more male personnel to be available for seagoing billets	50
(h) Increase in ineffectives, i.e. officers and ratings under training, sick leave etc.	149
	2319

NOTE: Concerning these numbers the increases shown in (c) and (d) would be reduced as manpower deficiencies decreased.

75. The estimated overall state in June 1969 based on Full Peace Complements could therefore be a surplus of 16 officers and a deficiency of 16 men. Although there could be a small overall officer surplus it is estimated that there will be a deficiency in E and L specialisations totalling approximately 42 (15% deficient; present deficiency is 19%). Avenues are being explored to overcome this deficiency. In the Artificer branches which are currently suffering the most serious of the rating manning shortages in the Navy, it is calculated that the situation will be as follows:

	<u>June 1964</u>	<u>June 1969</u>
Billets (full peace complement)	779	1002
Estimated numbers borne (30% re-engagement rate)	609	867
Deficiency	170	135
Percentage deficiency	21.3%	13.4%

Various measures are being investigated to improve this situation. The effect of the recent pay increases has not been taken into consideration since the time factor is insufficient to permit of a re-assessment however it is logical to assume that the result will improve the personnel situation.

Conclusion

76. The carrier could be manned as in para. 70 if an early decision is made.

R.A.N. PRIORITIES AND GENERAL PROGRAMME.

77. In early 1963 a re-appraisal of the Defence Programme was ordered and as a result proposals were forwarded under cover of Navy Office letter 201/201/15 dated 15th March, 1963, showing what acceleration was feasible to current plans and giving an expansion programme for major items over the period 1963/64 to 1971/72. These proposals were made as directed by the Minister for Defence on the assumption that "the extended programme should continue to be based on the assumption that fixed wing aviation other than in the Fleet requirements unit will cease in June of this year". The planned expansion in the programme included:

- (a) Escort maintenance ship.
- (b) Fast fleet replenishment ship .
- (c) IKARA to complete fitting of 3 D.D.G.'s and 4 Type 12 frigates.
- (d) A fourth D.D.G.
- (e) Four new escorts of a type to be decided.
- (f) Four extra Oberons.
- (g) Modernisation of Darings.
- (h) Modernisation of MELBOURNE.
- (i) IKARA Operational Evaluation.
- (j) Six new minesweepers.
- (k) Three Oceanographic ships.
- (l) Mine countermeasures support ship.
- (m) Ten extra Wessex helicopters.
- (n) Reserves for Wessex.
- (o) Reserves of ammunition.
- (p) Modernisation of Type 12 frigates.

- (q) Replacement of Wessex wastage.
- (r) Sycamore replacement.
- (s) Attack Transport ship (to replace SYDNEY).
- (t) New Works.
- (u) Commonwealth State Housing.

78. Although directed that the programme should be based on the assumption that fixed wing aviation other than the Fleet requirements unit was to cease in June 1963, the narrative did point out that it was still a firm Naval opinion that fixed wing aircraft are essential to the efficient carrying out of Naval responsibilities. The covering letter referred to in paragraph 77 stated "The Naval opinion is that fixed wing Naval aviation will remain as a major deficiency in the Fleet."

79. After consideration Cabinet approval was given in May 1963 (Decision 768) to the following:

- (a) Continuation of the flying of the present R.A.N. Carrier-borne Fixed Wing Aircraft (Gannets and Venoms) for their remaining Service life.

(Note: This is a decision affecting the existing aircraft only. It does not touch one way or the other upon the question of replacement in due course).

- (b) Construction in Australia of an Escort Maintenance Ship.
- (c) Completion of fitting of IKARA in three D.D.G's and Type 12 Frigates.
- (d) Approval of reserves of Ammunition on basis of four months' holdings at war rates of usage.

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- (e) Approval of Works and Housing funds to the extent of providing total allocations for works and housing £M1.5 in 1962/63, £M1.6 in 1963/64, £M2.0 in 1964/65, and £M1.7 in 1965/66 and subsequent years.
- (f) Expansion of R.A.N. personnel strength from 13,900 to meet the manning requirements of the above projects, to a figure to be determined by the Minister for Defence after consultation with the Minister for the Navy.

80. Since May 1963, Cabinet approval has been given to the construction in Australia of two Type 12 Frigates in replacement for the loss of H.M.A.S. VOYAGER (Decision No. 230 of 13th May, 1964) and to a housing programme for the Navy (Decision No. 256 of 21st May, 1964) as well as to a major increase in cost for the fitting of IKARA in the Fleet (Decision No. 213 of 28th May, 1964). In addition other essential commitments associated with the current programme have either arisen or assumed greater significance since the Defence Review of May 1963. These commitments are:

- (a) Support facilities for D.D.G. destroyers (including servicing facilities for Tartar missiles).
- (b) Support facilities for Oberon submarines.
- (c) Replacement of Wessex helicopter wastage.
- (d) Reserves of spares for Wessex helicopters.
- (e) Modernisation of Wessex helicopters.
- (f) Operational evaluation of IKARA (Major increase in cost).

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- (g) Additional tasks associated with fitting IKARA in the fleet.
- (h) Replacement of overage support craft.
- (i) Major new works projects involving provision of additional shore accommodation for increased numbers and re-building existing accommodation in permanent construction.
- (j) Modernisation of Darings (major increase in cost)

81. Subject to the provision of facilities and the other items listed in paragraph 80 above, Naval opinion remains that the greatest deficiency in the R.A.N. is the lack of offensive and air defence capability which, against our most likely enemies, can be provided only by the possession of a carrier and modern fixed wing aircraft.

82. Other deficiencies remaining in the R.A.N. are:

- (a) Additional escorts
- (b) Additional submarines
- (c) A fast fleet replenishment ship
- (d) Mine countermeasures support ship and additional minesweepers
- (e) Patrol craft and support facilities for the Papua-New Guinea area
- (f) Amphibious capability (to increase Army mobility)
- (g) Defensive equipping of merchant ships.

Although not a deficiency the requirement will arise to replace ships as they become overage. As examples the oceanographic ships and the surveying vessel PALUMA will all be 20 years or older by 1966. The Battle Class destroyers will be 20 years old in the early 1970's.

83. The financial implications of a replacement carrier and fixed wing aircraft are given in the following section.

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FINANCIAL IMPLICATIONS

84. The overall capital cost of the carrier and aircraft as proposed has been assessed at £M150 including £M13.6 for contingencies. Details of the costs are contained in Appendix 1. In Appendix 2 is set out a typical phasing of payments for the capital cost together with an assessment of the annual maintenance costs additional to the annual cost of operating H.M.A.S. MELBOURNE. It will be seen that the project involves for both capital and maintenance expenditure an addition to the Naval vote of an average of £M33 per year during the four years 1965/66-1968/69 £M24 for each of the years 1969/70 and 1970/71 and a recurring annual addition of £M9.339 from 1971/72.

85. The Naval vote proposed on 1st May, 1964 for 1964/65 was £M64.932. To this should now be added £M2.105 towards construction of two additional Type 12 Frigates, £M.613 towards an accelerated housing programme and about £M2.642 for salary and pay increases. As at present framed the vote of about £M70.3 required for 1964/65 would provide for maintenance expenditure of £M42.5 and for capital expenditure of £M27.8. Detailed programming for the years beyond 1964/65 is sufficiently advanced to make it clear that the upward trend in the current programme cost will continue.

86. The increasing strength of the Navy required for present approved projects is expected to add about £M3 to the 1964/65 maintenance costs by 1968. About £M1 a year extra will be required from 1965/66 for practice ammunition due to the impact of the introduction of guided missiles (Tartar, Seacat and Ikara). Other maintenance costs must be expected to rise with the expansion of the Navy.

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87. Capital expenditure additional to that provided in the draft estimates for 1964/65 is expected to be needed in the years 1965/66 - 1967/68 because of the increasing expenditure on the Ikara weapon system and the construction of an additional two Type 12 Frigates, as well as providing for the other essential commitments associated with the current programme as outlined in paragraph 80.

88. Whilst it is difficult to forecast at this stage the size of the Naval vote required to implement all the projects associated with the current programme it is expected that the vote needed from 1965/66 to 1967/68 would average about £M80. Thus to finance the new carrier project on the basis of the preliminary funding arrangements suggested in Appendix 2 would require a vote in the order of £M113, in the years 1965/66 - 1968/69 after which expenditure on the carrier project and on currently approved objectives should taper off. This does not, of course, take account of the other deficiencies referred to in paragraph 82.

CONCLUSIONS

89. It is concluded that:
- (a) The Royal Australian Navy cannot fully meet its responsibilities without the use of modern fixed wing fighters and A/S aircraft.
 - (b) The present Gannet and Sea Venom aircraft will become increasingly difficult to maintain beyond mid 1967 and replacement is necessary.
 - (c) H.M.A.S. MELBOURNE is a small carrier of medium speed (24 knots). The ship can operate only a limited number of the A/S fixed wing aircraft under consideration and is incapable of operating modern fighter/strike aircraft. A fast carrier capable of operating effective numbers of helicopters, fixed wing A/S aircraft, fighter/strike and AEW aircraft is necessary.
 - (d) The type of carrier and aircraft have been evaluated as far as possible without on the spot investigation overseas. The provisional conclusions are:
 - (i) That an ORISKANY Class carrier be obtained modernised and commissioned by June 1968.
 - (ii) The R.A.N. be re-equipped with the following aircraft:
 - 28 Phantom F4B
 - 24 Tracker S2E
 - 8 Tracer E1B
 - (e) The need for decision is urgent. Unless approval is given in 1964 to acquire at least some modern fixed wing aircraft then naval fixed wing flying will die and the R.A.N. will continue as a merely defensive anti submarine force unable to fully meet its responsibilities.

- (f) It should be possible to man to full peace complement and operate an ORISKANY 27C conversion carrier and squadrons by 1969.
- (g) The total capital cost of the carrier and aircraft including all support facilities and new works is estimated at £M150 after allowing 10% for unforeseen contingencies.
- (h) To finance the new carrier project on the basis of the preliminary funding arrangement suggested and including all projects associated with the present approved programme, would require a total naval vote in the order of £M113 from 1965/66 to 1968/69.

90. Whilst it is believed that the provisional conclusions in paragraph 89(d) represent the best practicable solution to the problem, investigations so far made have not been backed up by a firm Government decision on the requirement. Hence it is possible that further investigations following a firm decision on the requirement may lead to some changes in the programme outlined. In any case further on the spot investigations are necessary before firm orders could be recommended.

RECOMMENDATIONS

91. It is recommended that:
- (a) Approval in principle be given as soon as possible to:
 - (i) Equip the R.A.N. with modern fixed wing A/S, AEW and fighter strike aircraft, of the following order:
 - 28 F4B PHANTOMS
 - 24 S2E TRACKERS
 - 8 E1B TRACERS

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- (ii) Acquire a modern fast aircraft carrier in 1968 or as soon as possible thereafter.
- (b) An evaluation team proceed overseas as soon as possible in 1964 to determine:
 - (i) The best aircraft carrier to meet the requirement within the time scale.
 - (ii) That no unforeseen difficulties exist in the operation of the proposed aircraft from carrier or shore, and to confirm training schedules.
 - (iii) To carry out on the spot evaluation of aircraft.
 - (iv) To determine firm costs and funding.

30th June, 1964.

Navy Office,
CANBERRA, A.C.T.

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APPENDIX 1

ESTIMATED COST OF RE-EQUIPMENT PROGRAMME

	£A
28 F-4B PHANTOMS	19 933 700
24 S-2E TRACKERS	10 600 711
8 E-1B TRACERS (See Note below)	6 809 104
F-4B, Test, Support equipment engines and 1 year's maintenance spares	12 031 522
S-2E " " " "	4 601 974
E-1B " " " "	1 618 886
Air Armament	5 434 000
Ship Armament	6 625 000
Aircraft Lighters - 2 No. (for larger aircraft)	120 000
Nowra Works	2 050 000
Nowra Ground Control Approach and surveillance radar	300 000
ORISKANY Class carrier	58 101 449
Base spares for carrier	5 000 000
Additional accommodation for rating training	1 450 000
Additional armament storage	600 000
Additional Naval storage	1 000 000
	<hr/> 136 336 346 <hr/>
Contingency (10%) and rounding off	13 663 654
	<hr/> 150 000 000 <hr/>

NOTE: Could be less, from USN stocks, quoted by Grumman as £3,942,117 if constructed in Japan for the Maritime Self Defence Force.

CAPITAL AND MAINTENANCE COST OF 27C CONVERSION AND AIRCRAFT, ETC. APPENDIX
2.

Project	1965/66	1966/67	1967/68	1968/69	1969/70	1970/71	1971/72	
A. Capital Cost. (incl. aircraft, base spares for ship and aircraft, support equipment, works at Nowra and new JATE) based on carrier cost of £M58.1; orders for aircraft to be placed in 1965 for completion by 1968. Total cost £M150 allowing 10% for unforeseen contingencies.	33.332	31.196	31.635	22.817	15.591	15.429	-	Total Capital Cost: £M150
B. Maintenance Costs Additional to MELBOURNE								
(i) Personnel	.244	.363	1.640	2.719	2.438	2.438	2.438	
(ii) Additional flying courses	.250	.300	.300	.300	.300	.300	.300	
(iii) Precommissioning extras - Type Training, fares, etc.	0.224	0.248	0.200	0.300				
(iv) Operating costs	0.156	1.212	1.753	4.270	4.970	5.870	6.070	
(v) Repair and maintenance of Buildings and works.				.100	.100	.100	.100	
TOTAL MAINTENANCE	.874	2.123	3.893	7.689	7.808	8.708	8.908	
TOTAL PROJECT	34.206	33.319	35.528	30.506	23.399	24.137	8.908	

Phasing of payments for capital is based on the following:-

- (i) Carrier and base spares - equal payments over period 65/66 - 70/71 (assumes funding arrangements similar to D.D.G.'s)
- (ii) Aircraft and associated equipment - based on a dependable undertaking contract with 10% down with order and balance in instalments with full payment before delivery.

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NAVAL ORDERS OF BATTLE AS AT MAY 1964

TYPE	NUMBERS	INDONESIA	CAPABILITY	NUMBERS
AIRCRAFT CARRIERS	NIL		-	1
CRUISER, "IRIAN"	1	SPEED 34 KTS RANGE 8,400 NMS @ 15 KTS PROTECTION - ARMOUR PLATE 4" SIDES 3" DECK 6.5" TURRETS	<u>ARMAMENT</u> 12-6" 12-3.9" 32-37mm DEPTH CHARGES	NIL
<u>DESTROYERS</u> "SKORYI"	7	SPEED - 38 KTS RADIUS - 3,900 NMS @ 14 KTS	<u>ARMAMENT</u> 4-5" 8-37mm 10-21" TORPEDOES	3
<u>DESTROYER ESCORTS</u> "RIGA"	6	SPEED - 28 KTS RANGE - 2,000 NMS @ 15 KTS	<u>ARMAMENT</u> 3-4" 4-37mm 3-21" TORPEDOES DEPTH CHARGES	4
"IMAM BONDJOL"	2	SPEED - 32 KTS RANGE - 3,000 NMS @ 15 KTS	<u>ARMAMENT</u> 4-4" 6-30mm 3-21 TORPEDOES	
<u>ESCORTS</u> "PATIMURA"	2	SPEED - 22 KTS RANGE - 2,400 NMS @ 18 KTS	<u>ARMAMENT</u> 2-3" 4-30mm DEPTH CHARGES HEDGE HOG	
<u>SUBMARINES</u> 'W' CLASS	12	<u>SPEED</u> SURFACED - 18 KTS SUBMERGER - 13.5 KTS <u>RANGE</u> 8,500 NMS @ 10 KTS	<u>ARMAMENT</u> 14-21" TORPEDOES OR 24 MINES	3
SUBMARINE DEPOT SHIP	1	"DON" CLASS - SPEED - 21 KTS RADIUS - 9,000 NMS @ 15 KTS RANGE 18,500 NMS @ 10 KTS	<u>ARMAMENT</u> 4-3.9" 8-57mm 4-25mm	-
	1	"ATREK" CLASS - SPEED 14 KTS RADIUS - 3,900 NMS @ 12 KTS	<u>ARMAMENT</u> NOT KNOWN	
<u>LARGE SUB-CHASERS</u> "KRONSTADT"	16	SPEED - 24 KTS RANGE - 3,100 NMS @ 12 KTS	<u>ARMAMENT</u> 1-85mm 2-37mm 6-12.7mm DEPTH CHARGES AHEAD THROWING A/S WEAPONS	
"YUGOSLAV PBR 501"	6	SPEED - 20 KTS RANGE - 1,500 NMS @ 12 KTS	<u>ARMAMENT</u> 1-3" 1-40mm 6-20mm DEPTH CHARGES	
"US 173 FT"	5	SPEED - 17½ KTS RANGE - 5,200 NMS @ 10 KTS	<u>ARMAMENT</u> 1-3" 2-20mm HEDGE HOG & DC'S	

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NAVAL ORDERS OF BATTLE AS AT MAY 1964

APPENDIX 3

AUSTRALIA
CAPABILITY

CAPABILITY	NUMBERS	AUSTRALIA CAPABILITY
-	1	SPEED 24 KTS RANGE - 7,000 NMS @ 14 KTS <u>ARMAMENT</u> 20-40mm
S @ 15 KTS ARMOUR PLATE 4" SIDES 3" DECK .5" TURRETS <u>ARMAMENT</u> 12-6" 12-3.9" 32-37mm DEPTH CHARGES	NIL	
S @ 14 KTS <u>ARMAMENT</u> 4-5" 8-37mm 10-21" TORPEDOES	3	DARINGS SPEED 30½ KTS RANGE 3,200 NMS @ 16 KTS <u>ARMAMENT</u> 6-4.5" 6-40mm 5-21" TORPEDO A/S MORTAR
S @ 14 KTS <u>ARMAMENT</u> 4-4.5" 10-40mm 10-21" TORPEDO	1	BATTLE CLASS SPEED 31 KTS 3,00G (AS TRAINING SHIP) NMS @ 14 KTS SEE NOTE (v)
S @ 15 KTS <u>ARMAMENT</u> 3-4" 4-37mm 3-21" TORPEDOES DEPTH CHARGES	4	TYPE 12 SPEED 28 KTS <u>ARMAMENT</u> 2-4.5" 2-40mm A/S MORTAR TO HAVE SEACAT LATER
S @ 15 KTS <u>ARMAMENT</u> 4-4" 6-30mm 3-21 TORPEDOES		SEE NOTE (iii)
S @ 18 KTS <u>ARMAMENT</u> 2-3" 4-30mm DEPTH CHARGES HEDGE HOG		
ED - 18 KTS GER - 13.5 KTS NMS @ 10 KTS <u>ARMAMENT</u> 14-21" TORPEDOES OR 24 MINES	3	"T" CLASS SPEED SURFACED - 15 KTS (RN) SUBMERGED - 15 KTS RANGE 8,000 NMS @ 10 KTS <u>ARMAMENT</u> 12-21" TORPEDOES OR 18 GROUND MINES
S @ 15 KTS 0 NMS @ 10 KTS <u>ARMAMENT</u> 4-3.9" 8-57mm 4-25mm	-	
- 0 NMS @ 12 KTS <u>ARMAMENT</u> NOT KNOWN		
S @ 12 KTS <u>ARMAMENT</u> 1-85mm 2-37mm 6-12.7mm DEPTH CHARGES AHEAD THROWING A/S WEAPONS		
S @ 12 KTS <u>ARMAMENT</u> 1-3" 1-40mm 6-20mm DEPTH CHARGES		
S @ 10 KTS <u>ARMAMENT</u> 1-3" 2-20mm HEDGE HOG & DC'S		

SECRET

INDONESIA

TYPE	NUMBERS	CAPABILITY	NUMBERS	
<u>SUB CHASERS</u> "MAWAR" CLASS	1	SPEED - 16 KTS RANGE - NOT KNOWN	<u>ARMAMENT</u> 1-40mm 2-20mm DEPTH CHARGES	
"US "B" CLASS "	3	SPEED - 20 KTS RANGE - 1,500 NMS @ 20 KTS	<u>ARMAMENT</u> 4-5" AHEAD THROWING WEAPONS & DEPTH CHARGES	
<u>PATROL ESCORT</u> "BATHURST" CLASS	3	SPEED - 12 LTS RANGE - 4,300 NMS @ 10 KTS	<u>ARMAMENT</u> 1-3" 1-40mm 4-20mm	
<u>GUIDED MISSILE</u> <u>FAST PATROL BOAT</u> "KOMAR" CLASS	7	SPEED - 43 KTS RANGE - 570 NMS @ 12 KTS	<u>ARMAMENT</u> 2-25mm 2 SURFACE TO SURFACE HOMING MISSILES	
<u>MOTOR TORPEDO BOATS</u> "JAGUAR" CLASS	7	SPEED - 43 KTS RANGE - 700 NMS @ 35 KTS	<u>ARMAMENT</u> 2-40mm 2-12.7mm 4-21" TORPEDOES	
"P6" CLASS	14	SPEED - 45 KTS RANGE - 1,400 NMS @ 22 KTS	<u>ARMAMENT</u> 2-25mm 2-21" TORPEDOES DEPTH CHARGES	
<u>FLEET MINESWEEPERS</u> "T.43" CLASS	6	SPEED 14 KTS RANGE - 3,200 NMS @ 10 KTS	<u>ARMAMENT</u> 4-37mm 4-25mm 4-12.7mm DEPTH CHARGES MINES	6 "TON"
<u>INSHORE MINESWEEPERS</u> "PULAU" CLASS	10	SPEED - 24 KTS RANGE - NOT KNOWN	<u>ARMAMENT</u> 1-40mm 2-20mm	
<u>MOTOR GUN BOATS</u> MOD BK II CLASS	18	SPEED - 20 KTS RANGE - 1,000 NMS @ 10 KTS	<u>ARMAMENT</u> 1-85mm 4-12.7mm MINES	
<u>ATTACK TRANSPORTS</u>	2	SPEED - 12 KTS RANGE - NOT KNOWN	<u>ARMAMENT</u> 1-3" 4-40mm 6-20mm	
<u>LANDING SHIP TANK</u>	7	SPEED - 11.6 KTS RANGE - 12,000 NMS @ 9 KTS CAPABLE OF CARRYING 25 TANKS OR 30-35 LVTS	<u>ARMAMENT</u> 8-40mm 2-20mm	
<u>TANKERS</u>	9			1
<u>CARGO/TRANSPORTS</u>	7			1 HMAS

NOTE:

CAPABILITY	NUMBERS	CAPABILITY
<p>ARMAMENT 1-40mm 2-20mm DEPTH CHARGES</p>		
<p>ARMAMENT 4-5" AHEAD THROWING WEAPONS & DEPTH CHARGES</p>		
<p>ARMAMENT 1-3" 1-40mm 4-20mm</p>		
<p>ARMAMENT 2-25mm 2 SURFACE TO SURFACE HOMING MISSILES</p>		
<p>ARMAMENT 2-40mm 2-12.7mm 4-21" TORPEDOES</p>		
<p>ARMAMENT 2-25mm 2-21" TORPEDOES DEPTH CHARGES</p>		
<p>ARMAMENT 4-37mm 4-25mm 4-12.7mm DEPTH CHARGES MINES</p>	6	"TON" CLASS SPEED - 16 KTS RANGE - 2,900 NMS @ 10 KTS ARMAMENT 1-40mm
<p>ARMAMENT 1-40mm 2-20mm</p>		
<p>ARMAMENT 1-85mm 4-12.7mm MINES</p>		
<p>ARMAMENT 1-3" 4-40mm 6-20mm</p>		
<p>ARMAMENT 8-40mm 2-20mm ABLE OF CARRYING 25 TANKS OR 30-35 LVTS</p>		
	1	
	1	HMAS SYDNEY SPEED - 24 KTS RANGE - 8,000 NMS @ 14 KTS ARMAMENT 4-40mm
		<p>NOTE:</p> <ul style="list-style-type: none"> (i) 3 GUIDED MISSILE DESTROYERS BUILDING IN USA. (ii) 4 OBERON SUBMARINES BUILDING IN UK. (iii) 3 TYPE 15 IN RESERVE. (iv) 1 BATTLE CLASS IN RESERVE. (v) 1 TRIBAL CLASS IN RESERVE (PLANNED FOR DISPOSAL)

INDONESIAN AIR FORCE ORDER OF BATTLE

(as at 1st January, 1964)

FIGHTERS

FISHBED C	(MIG 21)	18
FARMER D	(MIG 19)	7
FRESCO C	(MIG 17)	35
FRESCO D	(MIG 17)	7 (All weather)
MUSTANG	(F-51)	16

BOMBERS

BADGER A		14
BADGER B	(ASM Fitted)	11
BEAGLE		19
MITCHELL		17
INVADER		7

TRANSPORTS

HERCULES	(C-130)	10
DAKOTA	(C-47)	29
CR. TE	(IL 14)	21

MISCELLANEOUS

HOUND Helicopter		22
CATALINA		4
ALBATROSS		7

NOTE: The above types are the principal ones in use. There are many other types, most non-operational and in small numbers, giving a total strength of about 540 aircraft.

INDONESIAN NAVAL AIRCRAFT

A/S AIRCRAFT

FAIREY GANNETS		14
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TRANSPORTS

GRUMMAN ALBATROSS		2
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HELICOPTERS

HOUNDS		5 - 7
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APPENDIX 4

CHINESE COMMUNIST NAVY - ORDER OF BATTLE
(as at 1st April, 1964)

Submarines	25 - 28	22 - 25 'W' Class 3 - 5 M5 Class
Destroyer Escorts	4	
Patrol Escorts	10	
Submarine Chasers	24	
Guided Missile FPB's	1	
Motor Torpedo Boats	150	
Gunboats	3	
Motor Gunboats	56	
Minesweepers	35 - 36	
Amphibious Vessels	262	
Auxiliary Vessels	53	
District Patrol Craft	380	
Old Units	19	4 Submarines 4 Destroyers 5 Escorts 6 Gunboats and Minesweepers

APPENDIX 4

- 2 -

CHINESE COMMUNIST NAVAL AIR FORCE

(As at 1st January, 1964)

FIGHTER

FAGOT/FRESCO (MIG 15/17) 255

BOMBER

BEAGLE (IL 28) 140

TRANSPORT

CAB (LT 2))
CRATE (IL 14) } 11

RECONNAISSANCE

MADGE (B.E.L.) 6

CHINESE COMMUNIST AIR FORCE

FIGHTER

FAGOT/FRESCO (MIG 15/17) 1585

FARMER 60

BOMBER

BEAST (IL 10) 45

BEAGLE (IL 28) 65

BAT (T.U.2) 100

BULL (T.U.4) 13

TRANSPORT

COOT (IL 18) 2

CAB (IL 2) 31

COACH (IL 12) 33

CRATE (IL 14) 46

C40 28