

## THE ACTION INFORMATION ORGANISATION.

Since the conception of this organisation was largely forced upon us by the development of RADAR, a course in RADAR is not complete without a brief study of the powerful improvement to the fighting efficiency of the ship which has followed in its train.

It is discussed in this chapter, since Air Detection makes a considerable contribution towards it; and it is not desirable to split into pieces the description of an organisation whose very strength lies in the co-ordination of intelligence into one unified picture.

### The birth of the idea.

The last few years have seen the development of many new devices for locating, detecting and obtaining information of the enemy.

Apart from the normal channels of intelligence, such as visual sightings and V/S reports from surface vessels and aircraft, ASDIC and underwater devices, W/T and R/T reports from surface ships, aircraft and shore bases, there has been a great increase in :-

- 1) The information to be gained from enemy W/T and R/T interceptions.
- 2) The development in W/T and R/T direction finding.
- 3) RADAR, which has brought long range detection of air and surface targets with Fighter Direction, long range identification by I.F.F. and Target Indicating.

However, the arrangements provided in H.M. ships for handling such information have not, in general, expanded to keep pace with these developments, with the result that the fullest use cannot be made of them; and a situation has arisen analogous to that of a man who has been provided by nature with excellent eyes, ears, nose and hands, but with a brain at present too undeveloped to make the best use of his perceptive devices. Such a man cannot become an efficient fighter until his intelligence fully controls and co-ordinates his senses. So with the ship; for if she is to be an efficient fighter it is necessary to provide her with a nerve system worthy of the wonderful new senses with which science has recently equipped her, and to keep pace with the tempo of modern battle.

Under modern conditions, it is vital to provide the Commander with machinery which will, within reason, relieve him of having to deal with a mass of detail, and allow him to concentrate on the really important matters which he alone can decide.

The Action Information Organisation aims at being the solution to all these problems, and to draw in "under one roof", as it were, all these separate organisations which have set up independently, such as the Fighter Direction Office, the Height Filtering Position, the Main Plotting Organisation, the "Headache" Receiving Office, Target Indicating Office, etc.

### The Action Information Centre.

The Action Information Centre is the core, the hub, and the nerve centre of the whole of this organisation, and has two main functions. Firstly to co-ordinate and adjust all information and intelligence and pass it out to the Command in an understandable form, in order that his forces may be disposed to the best advantage. Secondly, following on the achievement of the first, to enable the weapon, be it aircraft, gun, torpedo or depth charge, to be directed accurately upon its target.

To achieve the first objective, a Bridge Plotting Room is added to the organisation to give the Command a ready-to-hand filtered picture of all that is taking place since, for reasons of space and protection, the A.I.C. is to be sited in the hull of the ship, under armour.

It is emphasised that, broadly speaking, two forms of information come into a ship - immediate and non-immediate. It is clear that all information, whatever its classification, should be fed into the A.I.C; but it is equally important that the organisation should be flexible enough to enable the Immediate Intelligence to reach the Bridge Plotting Room for the Command, direct.

The layout of the A.I.C: The A.I.C. consists of a number of rooms, each with their own particular function, but co-ordinated under one authority and working closely with each other.

The Operation Room: Is the centre of the whole system, and is the headquarters of the Action Information Control Officer. It contains a filtered Air Plot, together with wall maps for strategical charts, maps and merchant shipping plots, etc. It has a general operational Plot on a small scale of the area of operation, and it also contains an auto-plot as the Local Operational Plot, which is of particular importance to the actual tactical fighting of the ship.

A short explanation of the auto-plot, or auto-RADAR Plot, is desirable. Everyone is familiar with the type of automatic plot which records the ship's movements on paper, automatically - the A.R.L. is the most common. A new and more potent plotting device is, of course, the Skiatron; but whereas it is of inestimable value to the Fighter Direction Officer, in its present form it is not of great use to the Navigator, since it gives an instantaneous relative picture at any given moment, but does not plot, or leave any record behind it, for subsequent scrutiny or investigation. A combination of the Skiatron and A.R.L. would, of course, be most powerful, combining the advantages of both. It is on these lines that the Auto-Plot is being produced.

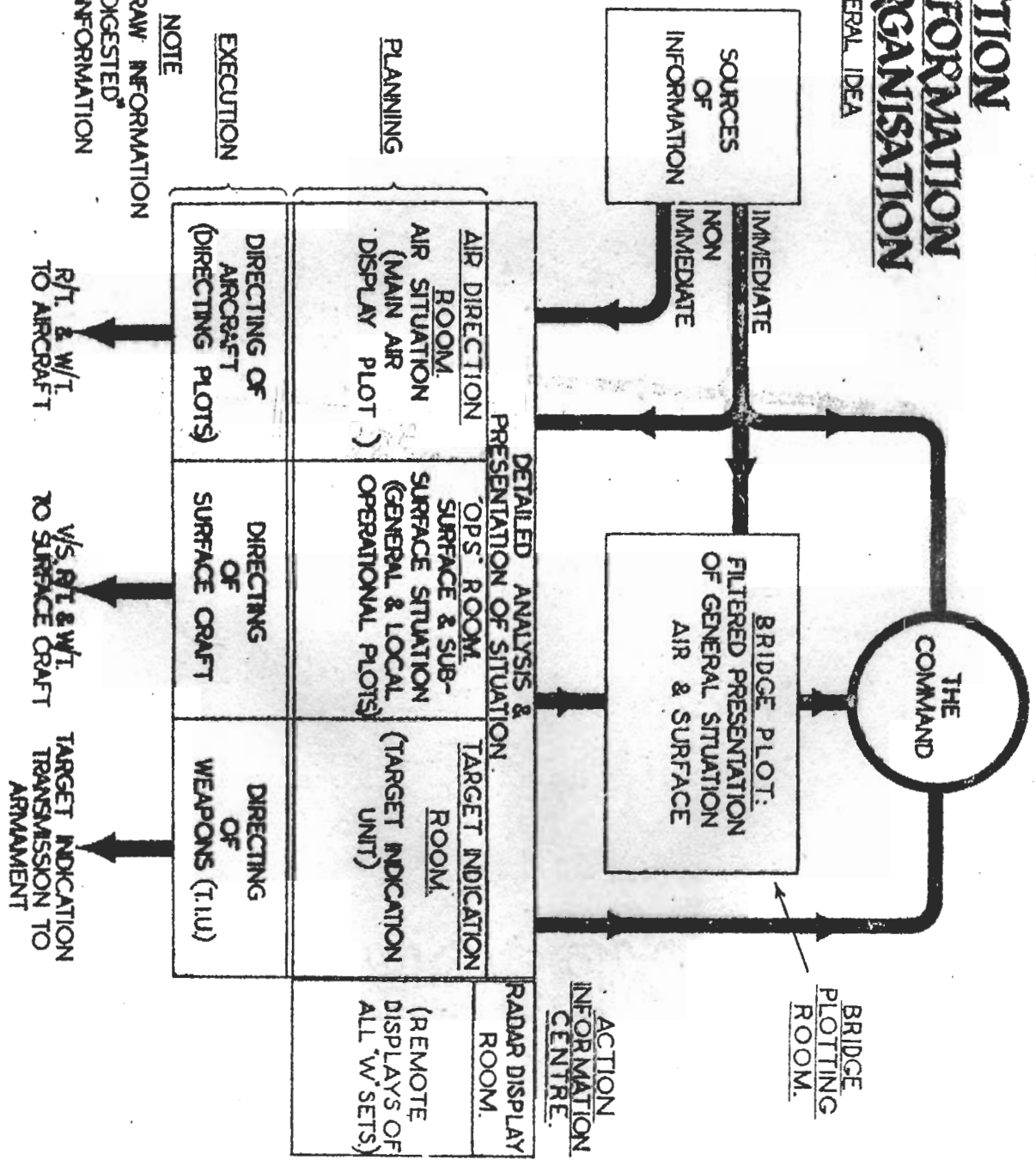
The Air Direction Room: This is the new name in the A.I.O. for the Fighter Direction Office. This room keeps the various departments up-to-date with the air situation and sends the filtered plot to the Operation Room, the Bridge Plotting Room, the Air Defence Officer and the Height Filtering position. Urgent air warnings are also broadcast round the ship.

The Target Indicating Room: One of the fundamental benefits derived from Air Detection at long ranges is the valuable lookout bearing provided for the Gunnery department, to meet the air attacks as they come in. This information was originally forthcoming through the medium of a Gunnery Liaison Officer in the Fighter Direction Office, who studied the air situation from the Plot. This was a satisfactory start, but it was clear that some more rapid and efficient method was needed to compete with attacks in considerable strength, having regard to the ever-increasing speed of modern aircraft. In addition, modern Gunnery RADAR sets have such narrow beams, that some very accurate means of Target Indication was necessary if they were to find the enemy at all. Moreover, in the bigger ships, whose high-angle armament is divided into four separate, independent and self-supporting units facing each bow and quarter, there is a grave danger of their being deployed ineffectively. Each unit must be thrown onto the required targets quickly and efficiently, to protect the ship as a whole - otherwise it may be found that a comparatively small target on the bow may be engaging the attention of most of the armament whilst a large formation may be approaching from another bearing unmolested. This calls for a Target Indicating Officer, who has his own picture to look at, and an instrument by means of which he can indicate targets in the minimum time. The Target Indication Unit has been developed to meet this requirement. It consists of a Target Position Indicator fed by a type 293, which rotates continuously, and thus presents a P.P.I. picture of all targets from 0° to 70°, out to a distance of some 30,000 yards. It has a number of control panels underneath, which enable him to examine the echo in which he is interested, and pass its characteristics to the required portion of the armament. This is described in greater detail in the chapter on Gunnery application.

The T.I.R. is sometimes in the A.D.R. and sometimes sited adjacent to it in a compartment of its own.

# ACTION INFORMATION ORGANISATION

GENERAL IDEA



EXECUTION

PLANNING

NOTE

RAW INFORMATION  
DIGESTED INFORMATION

R/T. & W/T.  
TO AIRCRAFT

V/S, R/T & W/T.  
TO SURFACE CRAFT

TARGET INDICATION  
TRANSMISSION TO  
ARMAMENT

<b>DETAILED ANALYSIS &amp; PRESENTATION OF SITUATION.</b>		
<u>AIR DIRECTION ROOM.</u> AIR SITUATION (MAIN AIR DISPLAY PLOT)	<u>'OPS.' ROOM.</u> SURFACE SITUATION (GENERAL & LOCAL OPERATIONAL PLOTS)	<u>TARGET INDICATION ROOM.</u> (TARGET INDICATION UNIT)
DIRECTING OF AIRCRAFT (DIRECTING PLOTS)	DIRECTING OF SURFACE CRAFT	DIRECTING OF WEAPONS (T.I.U.)
		<u>RADAR DISPLAY ROOM.</u> (REMOTE DISPLAYS OF ALL 'W' SETS)

ACTION INFORMATION CENTRE.

BRIDGE PLOTTING ROOM.

THE COMMAND

SOURCES OF INFORMATION

IMMEDIATE  
NON IMMEDIATE

BRIDGE PLOT.  
FILTERED PRESENTATION OF GENERAL SITUATION AIR & SURFACE

AIR DIRECTION ROOM.

'OPS.' ROOM.

TARGET INDICATION ROOM.

RADAR DISPLAY ROOM.

DIRECTING OF AIRCRAFT (DIRECTING PLOTS)

DIRECTING OF SURFACE CRAFT

DIRECTING OF WEAPONS (T.I.U.)

AIR SITUATION (MAIN AIR DISPLAY PLOT)

SURFACE SITUATION (GENERAL & LOCAL OPERATIONAL PLOTS)

(TARGET INDICATION UNIT)

(REMOTE DISPLAYS OF ALL 'W' SETS)

R/T. & W/T. TO AIRCRAFT

V/S, R/T & W/T. TO SURFACE CRAFT

TARGET INDICATION TRANSMISSION TO ARMAMENT

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RADAR DISPLAY ROOM

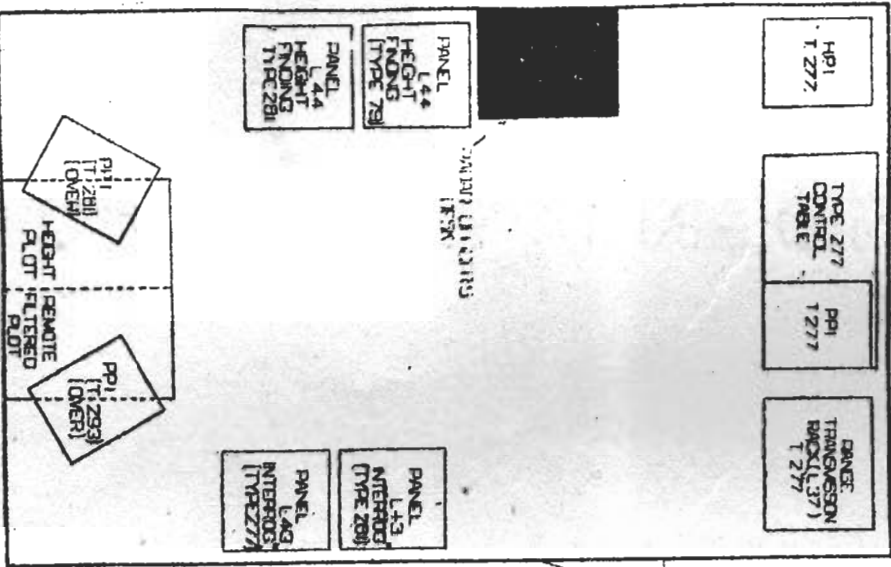
IN A/C CARRIERS & F.D. SHIPS WHEN

TYPES 79, 277, 281, & 293 ARE FITTED

(TYPE 277 REMOTELY CONTROLLED FROM

RDR)

16'-0" x 10'-0"



RADAR DISPLAY ROOM.

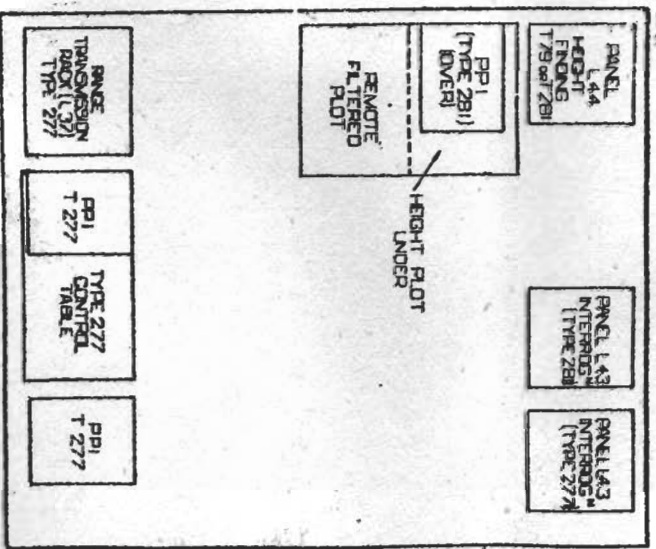
IN BATTLESHIPS & CRUISERS

WHEN TYPES 281(OR 79) 277, 293, ARE

FITTED. (TYPE 277 REMOTELY CONTROLLED

FROM R.D.R.)

12'-0" x 10'-0"



The RADAR Display Room: The idea of this room is to concentrate all the Warning RADAR sets in one room under the charge of the RADAR Officer, and site it adjacent to the Plotting Rooms in the A.I.C. There is to be a new instrument, called the Universal Display Unit, which will accept the results from all Warning Sets and portray them as a composite picture. Another feature of this room is to be the Central Interrogating Position, using a separate and independently controllable Interrogator by means of which the RADAR Officer can establish the identity of any target at will. This position will employ an L.43 Selector Panel, by means of which the results of Interrogation can be compared against the echo of any of the Warning sets. The only other important asset in this room is the Height Filtering Position already described, with its remote filtered plot.

The Bridge Plotting Room: Bearing in mind that it is the principal function of the A.I.C. to serve the Command with a complete and up-to-date picture of the situation at any given moment, it would hardly seem logical to remove the whole core of the Organisation from the Bridge, and sit it down under armour, in spite of the compelling reasons for doing so - indeed, at first sight, there would appear to be a tendency towards keeping the "news" away from the Captain.

This has led to the development of the Bridge Plotting Room. The object of this room is to give the Command the current filtered situation at a glance, and is, therefore, the direct and final product of all that has taken place in the A.I.C.

It is best sited immediately below the Compass Platform and close alongside the Bridge Receiving Room, if possible with a trap hatch between.

The Bridge Plotting Room should be equipped with two auto plots, the G.O.P., and L.O.P., and a P.P.I.

A new View Plot device is being made to enable the Command to appreciate the picture below them, with as little effort or distraction as possible. Its progressive features are a double trunk so that the plot and P.P.I. can be viewed simultaneously, suitable lenses in the trunks with anti-condensation devices, and a light filter device so that the viewer's "light adaptation" is not destroyed by lights in the B.P.R.

So much for the general picture of the Action Information Organisation.

The A.I.C.O.: A final word must be said concerning the Officer who should be in charge of the A.I.C. as a whole, or the Action Information Control Officer (A.I.C.O.)

Current thought has run in the direction of making the Commander, or Executive Officer of the ship, the A.I.C.O. It is argued that, in the event of him taking over command of the ship, he should do so knowing the latest up-to-date picture of what is happening in the battle, and not the grimy and domestic details of the Damage Control situation.

The Americans have carried the argument even further, and say that the Captain himself should fight the ship from this position.

Unpalatable though this line of thought may be to most Officers, there are strong reasons for giving serious consideration to it. Firstly, it places the Captain right at the Intelligence Centre of the ship, and mitigates the anxiety with which most officers view an organisation of the sort appearing, as it does, to be running itself, and taking matters out of the hands of the Command. In the second place, it is argued that, since RADAR is now giving us the faculty for fighting blind, or in other words, the maximum range of the weapon whatever the visibility, there can be no possible reason for the Captain to remain remote from this Intelligence Centre, since the pure station-keeping can be handled by the Navigator.

This interesting experiment is actually being tried in the American Fleet, and will eventually, no doubt, find expression in the British Fleet.

An attempt has been made in this chapter to give a broad outlook on Air Detection, its difficulties, its possibilities and its limitations, and something of the staff arrangements which are growing every minute, to employ to the maximum advantage this vital asset of long-range detection of aircraft by RADAR.