DEPARTMENT OF THE NAVY
Office of the Chief of Naval Operations
Washington 25, D. C.

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From: Chief of Naval Operations
To: Chief, Bureau of Ships

Subj: Intercept equipment covering the frequency range of 2300-11000 MCS; proposed Military Characteristics for

Ref: (a) OPNAV INSTRUCTION 10550.3 ser 411P42 of 23 Apr 1952

Encl: (1) Proposed Military Characteristics for model AN/PLR-1 Intercept equipment covering the frequency range of 2300-11,000 MCS.

1. In accordance with reference (a), proposed military characteristics for the subject equipment are forwarded herewith for comment and recommendations.

2. By copy of this letter, information addressees are invited to comment as desired.

/s/
By direction

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PROPOSED MILITARY CHARACTERISTICS FOR THE MODEL AN/PLR-1 INTERCEPT EQUIPMENT COVERING THE FREQUENCY RANGE OF 2300-11,000 MCS

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GENERAL INFORMATION

1. Objective

a. This equipment is needed to fulfill a requirement for a simple and light-weight portable electronic intercept system for use on naval vessels by lookouts or other specified personnel, also on shore by beach patrols, and which will be capable of intercepting pulse type signals over the specified frequency range.

b. The equipment is particularly intended for use on ships in convoy for the purpose of intercepting radar signals from enemy submarines.

2. Proposed service employment

a. This equipment is for use aboard vessels which have no other electronic intercept equipment, although it may supplement existing equipment in any vessel. It is also intended for use by beach patrols along isolated coastlines.

b. The equipment, being portable, may be located anywhere aboard ship. When in use, it may be located on deck, carried by the operator, or hung in a convenient location on the rail or bulkhead. The operator must, however, hold the antenna in his hand or wear a helmet upon which the antenna may be mounted. The only installation requirement aboard ship is that a 115 volt 60 cycle outlet be available near the location where the equipment is to be used. On beach patrols the equipment must be battery operated, and will be carried by means of a shoulder strap or possibly on the belt.

c. This equipment will not be connected electrically or mechanically with any existing equipment. It will be complete in itself, and information received from it will be relayed by sound-powered phone to those concerned.

d. Relation to existing equipment.

This equipment will not replace existing equipment. It will be designed as new and additional equipment on those ships not normally carrying ECM intercept equipment, and will supplement existing equipment on other ships.

3. Functional requirements

a. The primary function of this equipment will be to make it possible for a lookout, or other specified personnel on board ship, or a beach patrol on shore, to be able to detect enemy radar signals in the specified frequency range.

b. This equipment must be extremely light-weight and suitable for carrying on the back or hung from the belt. It shall be simple in operation with a minimum of controls, and shall be reliable and easy to maintain.

4. Background and/or related information

a. As originally [illegible] this equipment was intended for use by lookouts. The antennas were to be mounted on the lookout's battle helmet and

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each lookout was to be responsible for a specified sector. The receiver is a crystal video type, and the frequency limitations are set by the horn antennas used, 2300 to 5000 Mcs and 5000 to 11,000 Mcs, respectively. It now appears that it may be more feasible to hold the antennas in the hand. Another possible use envisioned is for beach patrols along remote coastlines.

b. There are no existing related equipments, except the more elaborate ECM intercept equipment which this equipment may supplement but not replace.

5. Availability date

a. The AN/PLR-1 (formerly AN/ULR-3) has been given a preliminary evaluation by the Operational Development Force. It is estimated that delivery of production equipments in limited quantities can start in August 1953.

II - OPERATIONAL CHARACTERISTICS

1. Frequency coverage

a. 2300 - 11,000 Mcs

b. Two channels, 2300--5000 Mcs and 5000--11,000 Mcs, determined by the particular horn antenna in use.

2. Emission designation

a. Receive pulse type modulation

3. Range of reception

a. Range of reception shall be at least equal to the radar horizon.

4. Spatial coverage

The spatial coverage will depend entirely upon the direction the horn antennas are pointed. The antenna beam widths will be approximately thirty degrees.

5. Interference elimination

Provisions for shielding and grounding of equipment are required to reduce external interference to a minimum.

III - PHYSICAL CHARACTERISTICS

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1. Limiting weight and volume factors

a. Since this equipment is portable and may be carried while in use the

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weight and volume shall be kept to a minimum. The form factor shall be such as to make the equipment convenient to carry.

2. Arrangement and coordination of component units

a. The receiver will be carried by the operator, placed on deck, or hung on the rail or bulkhead. The antennas may be held in the hand.

3. Not applicable.

4. Anticipated power supply considerations

a. Equipment shall operate from either 115 volt, 60 cycle power source, or from batteries. Where 115 volt 60 cycle power is used a watertight outlet must be provided at the operating location. Power consumption shall be less than 100 watts.

b. No emergency or standby operating conditions will be provided.

5. Adaptability to alteration

a. Not applicable.

6. Construction and special requirements to meet operation, transportation, packaging, and stowage conditions.

a. In view of the special nature and employment of this equipment, conformance with standard Navy specifications is not considered mandatory. However, the equipment must be watertight.

7. Equipment arrangement to promote operators' efficiency

a. Minimum of controls.

b. Aural indication only.

8. Scales and calibrations of meters, indicators, and integral test equipment differing from standard practice.

a. Not applicable.

9. Stabilization requirements

a. Not applicable.

10. Destruction requirements

a. Not applicable.

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IV - EQUIPMENT OPERATION AND MAINTENANCE CHARACTERISTICS

1. Operating time

a. Continuous.

2. Permissible use of continuous and periodic adjustments, tuning, calibrating, maintenance, etc.

a. Periodic adjustment of controls by operator.

b. Maintenance can be performed in ship's electronic shop.

3. Control features not consistent with or included in standard systems, including associated communication circuits and special links.

a. Not applicable.

4. Data transmission

a. By sound-powered phone only.

5. Unique or special safety features

a. None.

6. Maximum acceptable preparation periods from secured or power-off conditions

a. Not applicable.

7. Personnel considerations

a. One operator per equipment, who may also be acting as a visual lookout.

b. Maintenance by ship's technicians.

8. Provision for field maintenance

a. No special test equipment.

9. Special features

a. None.

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