NRL REPORT 3544

# U.S. NAVY RADAR SYSTEMS SURVEY

NAVAL RESEARCH LABORATORY

WASHINGTON, D.C.

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NRL REPORT 3544

# U.S. NAVY RADAR SYSTEMS SURVEY

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September 27, 1949

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## ABSTRACT

A series of studies reviewing naval electronic systems was initiated in order to facilitate the prosecution of problems related to the integration of systems for "Command" purposes. This report enumerates all current and proposed Navy radar systems, itemizing approximately 25 operational and technical characteristics. A bar graph showing frequency relationships of these radars is also included.


## PROBLEM STATUS

This is an interim report on one phase of the problem; work is continuing.

## AUTHORIZATION

NRL Problem R07-25R
NR 507-250

## U. S. NAVY RADAR SYSTEMS SURVEY

### PREFACE

This survey is one in a series of studies to facilitate the prosecution of Part II* of NRL Problem 39R07-25R. Not only those systems presently installed but also all systems proposals under consideration and all developments in progress are included in the survey, thereby providing characteristics of surface, sub-surface, airborne, amphibious, mobile, and landbased equipments. Only by this means was it possible to assure consideration of all available equipments and techniques.

Initially it was necessary to establish a subject classification by means of which the many kinds of electronic equipments could be grouped. A review of library systems including Dewey Decimal, filing systems, the subject breakdown used by the RDB committee on Electronics, and others did not disclose any classification readily adaptable to electronic equipment. Appendix A shows the breakdown which has been developed for use with the project. Admittedly, the classification of a number of equipments under certain fields is controversial, but this listing was prepared principally as a means of organizing electronics into compartments of manageable size, and of permitting like systems to be grouped together.

Radar was selected as the first major field to be reviewed. For purposes of this survey, Radar is defined to cover search and weapon control radars, indicators, and trainers. Other closely related subjects will be treated under their respective fields as shown in Appendix A. For example, radars which are employed in landing systems will be surveyed under the field of Navigation.

Excellent cooperation and courtesy were encountered in contacts with personnel in the various material bureaus of the Navy Department. A large amount of data which was entirely adequate for this project was obtained directly from charts that had been previously prepared by these bureaus. The presentation of data was reviewed by the activities which supplied the respective information so that the charts contained in this survey should be accurate as of April 1949.

Appendix B lists 15 sources of information that are referred to numerically on each chart, and in addition shows examples of NRL problem assignments and RDB project cards. Appendix C is a bar graph showing the disposition of Navy radars in the frequency

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*Part II of this problem was identified in paragraph 6 of NRL Letter Report 3950-18/49 (3954) Ser., 6981 dtd May 10, 1949, to ONR, "Electronics; Combat Command Electronic Systems, Problem 39R07-25R; Interim report on; forwarding of," (Secret).*

spectrum. Radars are grouped on the graph according to their use, and those having a common frequency coverage are combined and so indicated.

Although every effort has been made to assure accurate and complete data, the authors invite any corrections or additions of new material the reader may be able to provide.

* * *

# TABLES

## SURVEY OF NAVY RADAR SYSTEMS

SHIPBOARD SEARCH RADARS

| Peak Power Output (KW) | Pulse Length ($\mu$sec) | Frequency (Mc) | Pulse Rate (PPS) | Smallest Ship | Function |
|---|---|---|---|---|---|
| 85 | 0.5 | 8740 - 8890 | 600 | SS | Attack |
| 500 | 1<br>4 | 1244 - 1350 | 600<br>150 | SS | Air search |
| 500<br>250 | 5.5<br>0.4 | 1244 - 1350<br>6275 - 6575 | 300<br>1800 | DE | Air<br>Surface |
| 10MW | 7 | 1215 - 1350 | 220 | CLC | Air |
| 200 | 1/3<br>2/3 | 9080 - 9375 | 3000<br>1500 | DD | Hemispherical |
| 200 | 0.37<br>1.3 | 5450 - 5825 | 650 | DD | Surface<br>Zenith search |
| 200 | 0.37 | 6275 - 6575 | 683 | PT | Surface |
| 500 | 1<br>4 | 1250 - 1350 | 600<br>150 | CV | Air |
| 500 | 1<br>4 | 1250 - 1350 | 600<br>150 | CL | Air |
| 500 | 1<br>4 | 1250 - 1350 | 600<br>150 | DD | Air |
| 40 | 0.17 | 34550 - 35050 | 750 | PC | Surface |
| 700 to 2000 | 1<br>2 | 3430 - 3570 | 1000<br>500 | DD | Height finder |
| 1MW<br>250 | 0.5<br>0.25<br>1.5 | 3600 (Tent)<br>34550 - 35050 | 2000<br>600 | DD | Surface |
| 200 | 0.25<br>1.3 | 6275 - 6575 | 615 | PC | Surface |
| 10MW | 7 | 1244 - 1350 | 300 | CL | Air |

| Maximum Reliable Range (Miles) | | Scan Coverage | | Scan Rate RPM | | Beam Widths | |
|---|---|---|---|---|---|---|---|
| 2200T DD | 20 $M^2$ Aircraft B/S =.5 | Hor. | Vert. | Hor. | Vert. | Hor. | Vert. |
| 10 | -- | 360° | 16° | 60°/sec | -- | 2° | 16° |
| 20 | 70 | 360° | 12° | 0 - 12 | -- | 3.5° | 12° |
| 20<br>15 | 50<br>-- | 360° | 30°<br>-- | 7½ - 15 | -- | 5.5°<br>3° | 30°<br>12° |
| -- | 300 alt. to 15 miles | 360° | 20° | 10 | -- | 1.5° | 2.4° |
| 20 | 20 | 360° | 80° | 5 - 15 | 0-10-30 per sec | 2.9° | 2.5°<br>1.7° |
| 20 miles 0 | 20<br>15 | 360° | 14°+ 12°$CSC^2\theta$ 50° | 5 - 15 | -- | 2°<br>2.2° | 14°+ 12°$CSC^2\theta$ 50° |
| 15 | 15 | 360° | 90° | 15 | manual | 2.5° | 14°+ 12°$CSC^2\theta$ |
| 20 | 70 | 360° | 10° | 5 - 15 | -- | 3.2° | 10° |
| 20 | 60 | 360° | 20° | 5 - 15 | -- | 3.2° | 20° |
| 20 | 50 | 360° | 30° | 5 - 15 | -- | 3.2° | 30° |
| 10 | -- | 360° | 10° | 0.6<br>6.0 | -- | 0.6° | 10° |
| 20 | 45 | 30°<br>200° | 36° | 1/2/3<br>5/10 | 0/5/10<br>20/sec | 3.5° | 1.1° |
| 20<br>20 | 35<br>-- | 360° | 14°+ 12°$CSC^2\theta$ 2° | 1-15-15 | -- | 1.75°<br>0.17° | 14° + 12°$CSC^2\theta$ 2° |
| 20 | 20 | 360° | 14°+ 12°$CSC^2\theta$ | 15 | -- | 1.3° | 14°+ 12°$CSC^2\theta$ |
| 20 | 200 | 360° | 20° | 15 | -- | 2° | 4° |

| Main Lobe DB Gain | Minor Lobe DB Down | Reflector | | Ant. Weight (lbs) | Total System Weight (lbs) | 90 Knot Wind Load (lbs) | Range Resolution |
|---|---|---|---|---|---|---|---|
| | | Type | Size (ft) | | | | |
| 26 | 24 | LINEAR | .5 x 3 | 300 | 5000 | -- | -- |
| 27.9 | 22 | PARABOLOID | 5 x 15 | 1500 | -- | -- | -- |
| --<br>-- | 22<br>-- | PARABOLA | 12 x 4<br>1 x 4 | 860<br>TOTAL | --<br>3000 | --<br>-- | --<br>-- |
| 35 | 28 | PARABOLOID | 35' W<br>21' H | 12 TONS | -- | -- | -- |
| 37 | 20 | PAR-CYL | 12 x 2½ | 2000 | 6300 | 1400 | ± 100 YDS |
| 30<br>23 | 25<br>20 | SECTION PARABOLA | 2'x7'<br>55"x58" | 630 | -- | 700 | ± 100 YDS |
| 28 | 25 | SECTION PARABOLA | 1½ x 5 | 125 | 1200 | 250 | -- |
| 28.8 | 21 | SECTION PARABOLA | 5 x 18 | 750 | -- | 1100 | -- |
| 27.3 | 22 | SECTION PARABOLA | 6 x 17½ | 750 | -- | 1450 | -- |
| 27 | 26 | SECTION PARABOLA | 6 x 17½ | 750 | -- | 1500 | -- |
| 35 | 30 | SECTION PARABOLA | 8"x60" | 125 | 1000 | 150 | -- |
| 37 | 17 | SECTION PARABOLA | 15 x 5 | 3000 | 5 T | 1500 | -- |
| 33<br>50 | 30<br>35 | SECTION PARABOLA<br>LENS OR PARABOLA | 4 x 12<br>3 x 12 | 500 | -- | -- | -- |
| 33 | 27 | SECTION PARABOLA | 2 x 9 | 225 | 1600 | -- | -- |
| 32 | 28 | SECTION PARABOLA | 25 x 13 | 7 TONS | -- | -- | -- |

| STABILIZATION | | | | POWER SOURCE | | | |
|---|---|---|---|---|---|---|---|
| TYPE | ACCURACY | ROLL LIMIT | PITCH LIMIT | PHASE | FREQ. | VOLTS | KVA |
| -- | -- | -- | -- | 1 | 60 | 115 | 3.8 |
| -- | -- | -- | -- | 1 | 60 | 115 | 5 |
| STABLE BASE | $\pm 2^{\circ}$ | $30^{\circ}$ | $10^{\circ}$ | 1<br>1 | 60<br>60 | 115<br>115 | 10.5<br>10.5 |
| STABLE BASE | $\pm \frac{1}{3}^{\circ}$ | $25^{\circ}$ | $8^{\circ}$ | 3 | 60 | 440 | 130 |
| STABLE BASE | $\pm \frac{1}{3}^{\circ}$ | $25^{\circ}$ | $8^{\circ}$ | 3 | 60 | 440 | 20 |
| -- | -- | -- | -- | 1 | 60 | 440<br>220 or<br>115 | 4.0 |
| -- | -- | -- | -- | 1 | 60 | 115 | 2.25 |
| -- | -- | -- | -- | 1 | 60 | 115 | 5 |
| -- | -- | -- | -- | 1 | 60 | 115 | 5 |
| -- | -- | -- | -- | 1 | 60 | 115 | 5 |
| -- | -- | -- | -- | 1 | 60 | 115 | 1.7 |
| STABLE BASE | $\pm \frac{1}{3}$ | $30^{\circ}$ | $6^{\circ}$ | 3 | 60 | 440 | 20 |
| STABLE BASE | $\pm$ 15 MIN | $\pm 45^{\circ}$ | $\pm 8^{\circ}$ | 1 | 60 | 115 | -- |
| -- | -- | -- | -- | -- | -- | -- | -- |
| STABLE BASE | $\pm \frac{1}{3}^{\circ}$ | $30^{\circ}$ | $8^{\circ}$ | 3 | 60 | 440 | 40 |

| TRANSMISSION LINE | | | | REFERENCES | No. in Use or Tent. Available Date |
|---|---|---|---|---|---|
| Type | Number | Size (inches) | 1 Way db/FT Loss | | |
| Guide | RG-51/U | 5/8"x1 1/4" | .044 | 2<br>NE 090201 | FY 53 |
| Guide | RG-69/U | 3¼ x 6½ | .0025 | 2 | FY 53 |
| Guide<br>Guide | CAY14ACM<br>RG-50/U | 6½ x 3¼<br>1½ x 3/4 | .0228<br>.0228 | NE 050402<br>6 and 2 | FY 52 |
| Wave Guide | RG-103/U | 6½ x 3¼ | .0022 | NE 050513, 15<br>R02-22R<br>6 and 2 | FY 55 |
| Wave Guide | RG-51/U | 1¼ x 5/8 | .044 | NE 050403<br>R02-23R<br>6 and 2 | FY 51 |
| Guide | RG-49/U | 1 x 2 | .02 | NE 050412<br>2 | FY 52 |
| Guide | RC-50/U | 3/4 x 1½ | .0228 | NE 050609<br>2 | FY 51 |
| Guide | CAY<br>14 ACM | 6½ x 3¼ | .00251 | 2 | FY 49 |
| Guide | CAY<br>14 ACM | 6½ x 3¼ | .00251 | 2 | FY 49 |
| Guide | CAY<br>14 ACM | 6½ x 3¼ | .00251 | 2 | FY 49 |
| Guide | -- | Tent.<br>1" circular | .02 | NE 050613<br>2 | FY 51 |
| Guide | RG-75/U | 1½ x 3 | .0075 | NE 050407<br>2 | FY 52 |
| Guide<br>Guide | RG-48/U<br>-- | 1½ x 3<br>Tent. 1" round | .00875 | NE 050614 | FY 53 |
| | | | | NE 050618<br>2 | FY 51 |
| Guide | RG-103/U | 6½ x 3 ¼ | .0022 | NE 050516, 27<br>R02-55R<br>6 | FY 55 |

| | SEC. CLASS. | REMARKS | MODEL |
|---|---|---|---|
| | C | Short Exposure Submarine Attack Radar | AN/BPS-1 |
| | C | VK-2 Indicator Known Also As XDU Radar Similar to ST Except for Frequency | AN/BPS-2 |
| | C | AN/SPA-4 Indicator | AN/SPS-1 |
| | C | Multiple Vertical Beams and Multiple Indicators. Replaces XDQ | AN/SPS-2 |
| | C | 10" VK-2, 12" VL, 20" VN 2 Transmitters S-1430 is Intermediate Range Version NRL R02-42R | AN/SPS-3 |
| | C | VJ Repeaters; 5" 'A' STD Remotes Surface and Zenith Search Antennas on Same Pedestal. Similar to SG-6 Except for Frequency | AN/SPS-4 |
| | C | 7" PPI; 5" PPI Auxiliary Bridge Repeater | AN/SPS-5 |
| | C | 12" VJ or 12" VK STD Remotes MTI under Development | AN/SPS-6 |
| | C | 12" VJ or 12" VK STD Remotes | AN/SPS-6A |
| | C | 12" VJ or 12" VK STD Remotes | AN/SPS-6B |
| | C | Adapted to Navigation in Ice Packs. Uses 10" SPA-4 as System Indicator. STD Remotes | AN/SPS-7 |
| | C | 30°-200° Sector Scan at 2-5 RPM. VK-2, VL Modification of SX (Lightweight) Replacement for SP | AN/SPS-8 |
| | C | Simultaneous Operation of Both 3600 & 35000 MC Systems on 2-12" PPI's. "Rubber" Range Scales of 0.5,1.0,4,20 & 80 miles. Antennas on same Pedestal | AN/SPS-9 |
| | C | AN/SPS-10 15 115 VAC. AN/SPS-10X is 115 D.C. Equipment. VJ or AN/SPA-4 Repeater used as Master Indicator. STD Remotes | AN/SPS-10 AN/SPS-10X |
| | C | Standard Remote Indicators For Guided Missile Detection | AN/SPS-11 |

SHIPBOARD SEARCH RADARS

| Peak Power Output (KW) | Pulse Length ($\mu$ sec.) | Frequency (Mc) | Pulse Rate (PPS) | Smallest Ship | Function |
|---|---|---|---|---|---|
| 500 | 1<br>4 | 1250 - 1350 | 600<br>150 | CV | Air |
| 500 | 1<br>4 | 1250 - 1350 | 600<br>150 | CL | Air |
| 500 | 1<br>4 | 1250 - 1350 | 600<br>150 | DD | Air |
| 23 | 0.17 | 23744 - 24244 | 750 | LSM | Surface |
| 200 | 0.37<br>1.3 | 6275 - 6575 | 650 | DD | Surface<br>Zenith |
| 200 | 5 | 195 - 205<br>215 - 225 | 60 | DD | Air search |
| 400 | 1/3<br>1.25 | 3550 - 3700 | 750 | CVE | Traffic control<br>CCA |
| 50 | 2. | 3019 - 3100 | 750<br>800<br>850 | DD | Surface |
| 400 | 1/3<br>1.25 | 3550 - 3700 | 750 | CL | Surface |
| 200 | 5 | 215 - 220 | 60 | CL | Air search |
| 20 | 1 | 9000 - 9160 | 400 | PT | Surface |
| 50 | 1 | 9000 - 9160 | 400 | PC | Surface |
| 200 | 0.37 | 6275 - 6575 | 400 | PT | Surface |
| 200 | 0.37<br>1.3 | 6275 - 6575 | 650 | PC | Surface |
| 700 | 1<br>5 | 2785 - 2820 | 600<br>120 | DDR | Height finder |

| Maximum Reliable Range (Miles) | | Scan Coverage | | Scan Rate RPM | | Beam Widths | |
|---|---|---|---|---|---|---|---|
| 2200T DD | 20 $M^2$ Aircraft B/S = .5 | Hor. | Vert. | Hor. | Vert. | Hor. | Vert. |
| 20 | 80 | 360° | 10° | 5-15 | -- | 3.2° | 10° |
| 20 | 70 | 360° | 20° | 5-15 | -- | 3.2° | 20° |
| 20 | 60 | 360° | 30° | 5-15 | -- | 3.2° | 30° |
| 8 | -- | 360° | 10° | 0.6<br>6.0 | -- | .8° | 10° |
| 15<br>0 | 15<br>12 | 360°<br>360° | 14° + 12° $CSC^2\theta$<br>50° | 5-15<br>5-15 | -- | 2.5°<br>2.2° | 14° + 12° $CSC^2\theta$<br>50° |
| 8 | 50 | 360° | 60° | 4 | -- | 22° | 60° |
| 20 | 25 | 360° | 12° | 1.5-30 | .05-.25 | 2.5° | 2° |
| 15 | 10 | 360° | 15° | 4-8-16 | -- | 5° | 15° |
| 20 | 20 | 360° | 10° | 2.5-5 | -- | 2.6° | 10° |
| 12 | 60 | 360° | 20° | 4 | -- | 20° | 20° |
| 9 | -- | 360° | 9° | 9 | -- | 3.2° | 9° |
| 10 | -- | 360° | 13° | 5 | -- | 1.5° | 13° |
| 12 | -- | 360° | 17° + 15° $CSC^2\theta$ | 15 | -- | 2.7° | 17° + 15° $CSC^2\theta$ |
| 13 | -- | 360° | 17° + 15° $CSC^2\theta$ | 15 | -- | 2.7° | 17° + 15° $CSC^2\theta$ |
| 20 | 35 | 360° | 30° | 0-6 | MANUAL | 3° | 3° |

| Main Lobe DB Gain | Minor Lobe DB Down | Reflector | | Ant. Weight (lbs) | Total System Weight (lbs) | 90 Knot Wind Load (lbs) | Range Resolution |
|---|---|---|---|---|---|---|---|
| | | Type | Size (ft) | | | | |
| 28.8 | 21 | SECTION PARABOLA | 5 x 18 | 850 | --- | 1100 | -- |
| 27.3 | 22 | SECTION PARABOLA | 6x17½ | 850 | -- | 1500 | -- |
| 27 | 26 | SECTION PARABOLA | 6x17½ | 850 | -- | 1500 | -- |
| 34 | 30 | SECTION PARABOLA | 8"x60" | 305 | -- | 450 | -- |
| 28<br>23 | 25<br>20 | SECTION PARABOLA | 1½ x 5<br>50"x53" | 600<br>600 | -- | 600<br>600 | -- |
| 13.5 | 18.4 | MATTRESS 12 DIPOLE | 4 x 15 | 600 | 2425 | 1200 | -- |
| 35 | 30 | SECTION PARABOLA | 12x10 | 1100 | -- | -- | -- |
| 23 | 19 | SECTION PARABOLA | 1¼x4 | 340 | 2120 | 330 | -- |
| 27.5 | 24 | SECTION PARABOLA | 1⅔x7½ | 425 | 3970<br>4205 | 425 | -- |
| 19.5 | 18 | MATTRESS 36 DIPOLE | 17x17 | 2400 | 4600 | 2000 | -- |
| 30 | 26 | SECTION PARABOLA | 6"x26" | 125 | 875 | 136 | -- |
| 32 | 25 | SECTION PARABOLA | 5"x48" | 160 | 1561 | 237 | -- |
| 27 | 25 | SECTION PARABOLA | 1 x 4 | 175 | 881 | 200 | -- |
| 27 | 25 | SECTION PARABOLA | 1 x 4 | 195 | 1870 | 250 | -- |
| 32 | 20 | PARABOLA | 8' DISH | 2700 | 6235 | 900 | -- |

| STABILIZATION | | | | POWER SOURCE | | | |
|---|---|---|---|---|---|---|---|
| TYPE | ACCURACY | ROLL LIMIT | PITCH LIMIT | PHASE | FREQ. | VOLTS | KVA |
| -- | -- | -- | -- | 1 | 60 | 115 | 5.5 |
| -- | -- | -- | -- | 1 | 60 | 115 | 5.5 |
| -- | -- | -- | -- | 1 | 60 | 115 | 5.5 |
| -- | -- | -- | -- | 1 | 60 | 115 | .8 |
| -- | -- | -- | -- | 1 | 60 | 440<br>220<br>115 | 4 |
| -- | -- | -- | -- | 1 | 60 | 115 | 3.5 |
| STABLE BASE | ± 20 MIN | ± 15° | ± 4° | 1<br>3 | 60 | 440 | 5 |
| -- | -- | -- | -- | 1 | 60 | 440<br>220<br>115 | 3 |
| STABLE BASE | -- | -- | -- | 1 | 60 | 440-220<br>or 115 | 4 |
| -- | -- | -- | -- | 1 | 60 | 115 | 4.75 |
| -- | -- | -- | -- | DC | DC | 26 | 1.7 |
| -- | -- | -- | -- | DC | DC | 115 | 2.8 |
| -- | -- | -- | -- | DC | DC | 26 | 2.1 |
| -- | -- | -- | -- | 1<br>DC | 60<br>DC | 115<br>115 | 2.5<br>3.0 |
| 3 AXIS | ± 25 MIN | 30° | 10° | 1<br>3 | 60<br>or<br>DC | 220 or 440AC<br>115 or 230DC | 15 |

| TRANSMISSION LINE | | | | REFERENCES | NO. IN USE OR TENT. AVAILABLE DATE |
|---|---|---|---|---|---|
| Type | Number | Size (inches) | 1 Way db/Ft Loss | | |
| Guide | CAY 14 ACM | $6\frac{1}{2}$ x $3\frac{1}{4}$ | .00251 | 2 | -- |
| Guide | CAY 14 ACM | $6\frac{1}{2}$ x $3\frac{1}{4}$ | .00251 | 2 | -- |
| Guide | CAY 14 ACM | $6\frac{1}{2}$ x $3\frac{1}{4}$ | .00251 | 2 | -- |
| Not Required | | -- | -- | 2 | -- |
| Guide | RG-50/U | $1\frac{1}{2}$ x $3\frac{1}{4}$ | .0228 | 2 | 48 |
| Coax | RG-18/U | 0.945" | .013 | 1 and 2 | 41 |
| Guide | RG-48/U | $1\frac{1}{2}$ x 3 | .00875 | 2 | |
| Guide | RG-48/U | $1\frac{1}{2}$ x 3 | .00875 | NE 050413 1 and 2 | 300 |
| Guide | RG-48/U | $1\frac{1}{2}$ x 3 | .00875 | 1 and 2 | 6 |
| Coax | GAS | 1 5/8 | .00003 | 1 and 2 | 2 |
| Guide | RG-51/U | 5/8 x $1\frac{1}{4}$ | .044 | 1 and 2 | |
| Guide | RG-51/U | 5/8 x $1\frac{1}{4}$ | .044 | 1 and 2 | 50 |
| Guide | RG-50/U | $1\frac{1}{2}$ x 3/4 | .0228 | 1 and 2 | |
| Guide | RG-50/U | $1\frac{1}{2}$ x 3/4 | .0228 | 1 and 2 | 3 |
| Guide | RG-48/U | $1\frac{1}{2}$ x 3 | .00875 | NE 050504 1 and 2 | 8(SP-2s) FY 50 111(SPs) |

| | SEC. CLASS. | REMARKS | MODEL |
|---|---|---|---|
| | R | 12" VJ or 12" VK STD Remotes | AN/SPS-12 |
| | R | 12" VJ or 12" VK STD Remotes | AN/SPS-12A |
| | R | 12" VJ or 12" VK STD Remotes | AN/SPS-12B |
| | C | 5" PPI. Antenna Transmitter-Receiver is one Unit | CXJG (CINDY) |
| | R | VJ Repeater; 5" A; STD. Remotes; Surface and Zenith Search Antennas on same Pedestal | SG-6 |
| | U | 12" PPI. 5" A STD Remotes A.V.C | SC-5 |
| | R | CCA uses VK as System Indicator. STD Remotes | AN/SPN-6 SG-7 |
| | U | 5" A 7" PPI Console STD Remotes | SG-1B |
| | R | 5" A 7" PPI Console STD Remotes | SG-3 |
| | U | 12" PPI 5" A STD Remotes | SK-1 |
| | R | 5" PPI | SO-3 |
| | R | 5" PPI | SO-4 |
| | R | 5" PPI Plus 5" PPI Auxiliary Bridge Repeater | SO-5 |
| | R | 5" PPI SO-6 IS 115V DC SO-10 IS 115V AC | SO-6,10 |
| | R | 5" A/R,7" PPI,3" Tracking, Large Console See AN/SPQ-2 SP-2 in Mod. SP by Field Charge 23 | SP SP-2 |

SHIPBOARD SEARCH RADARS

| Peak Power Output (KW) | Pulse Length (μ sec.) | Frequency (Mc) | Pulse Rate (PPS) | Smallest Ship | Function |
|---|---|---|---|---|---|
| 300 | 4 | 192 - 198<br>215 - 225 | 120 | DD | Air search |
| 350 | 1<br>4 | 550 - 660 | 180<br>600 | CL | Air search |
| 500 | 1<br>4 | 1244 - 1350 | 150<br>600 | CL | Air search |
| 500 | 1<br>4 | 1244 - 1350 | 600<br>150 | CL | Air |
| 500 | 2 | 1244 - 1350 | 300 | DD | Air |
| 500 | 2 | 1244 - 1350 | 300 | DD<br>CL | Air search |
| 85 | 0.5 | 8740 - 8890 | 600 | SS | Surface<br>Torpedo F.C. |
| 85 | 0.5 | 8740 - 8890 | 600 | SS | Range only |
| 50 | 0.5<br>1 | 9000 - 9160 | 600 | DE | Surface |
| 50 | 0.25<br>1 | 9000 - 9160 | 600 | DE | Surface |
| 500 | 1 | 3400 - 3650 | 400 | SS | Air search |
| 500 | 1 | 3400 - 3650 | 400 | SS | Height finder |
| 600 | 1 | 3400 - 3650 | 400 | SS | Air search |
| 500 | 1 | 3400 - 3650 | 400 | SS | G/m track |
| 700<br>1000 | 1 | 3500 - 3550<br>2780 - 2900 | 1170<br>390 | | Height finder<br>Early warning |

| Maximum Reliable Range (Miles) | | Scan Coverage | | Scan Rate RPM | | Beam Widths | |
|---|---|---|---|---|---|---|---|
| 2200T DD | 20M² Aircraft B/S =.5 | Hor. | Vert. | Hor. | Vert. | Hor. | Vert. |
| 8 | 50 | 360° | 50° | 7 | -- | 22° | 50° |
| 8 | 55 | 360° | 22° | 7 | -- | 7.5° | 22° |
| 20<br>20 | 30<br>70 | 360° | 38°<br>10° | 5<br>5-15 | --<br>-- | 4°<br>3.2° | 38°<br>10° |
| 20 | 60 | 360° | 20° | 5-15 | -- | 3.2° | 20° |
| 20 | 50 | 360° | 30° | 5-15 | -- | 3.2° | 30° |
| 20<br>20 | 25<br>70 | 360°<br>360° | 30°<br>10° | 5-15<br>5-15 | --<br>-- | 8°<br>3.2° | 30°<br>10° |
| 12 | -- | 360° | 16° | 0-8 | -- | 2.6° | 16° |
| 10 | -- | 360° | 12° | HAND | -- | 25° | 12° |
| 15 | -- | 360° | 3.8° | 6 | -- | 3.8° | 3.8° |
| 20 | -- | 360° | 3.8° | 6 | -- | 1.9° | 3.8° |
| 15 | 25 | 360° | 60° | 0-6 | -- | 5.5° | 60° |
| -- | 35<br>LOON | 360° | -10°<br>to<br>+80° | 0-6 | 20°/SEC | 5° | 2.3° |
| 15 | 30° | 360° | 60° | 0-6 | -- | 5.5° | 60° |
| 15 | 85<br>BEACON | 360° | 5° | 0-6 | -- | 2.3° | 5° |
| 20<br>20 | 40<br>60 | 360<br>360 | 11<br>18 | 0-4<br>0-4 | 10°/SEC<br>-- | 3.5°<br>1.6° | 1.1°<br>18° |

| Main Lobe DB Gain | Minor Lobe DB Down | Reflector | | Ant. Weight (lbs) | Total System Weight (lbs) | 90 Knot Wind Load (lbs) | |
|---|---|---|---|---|---|---|---|
| | | Type | Size (ft) | | | | |
| 15 | 18 | MATRESS | 6 x 15 | 711 | 2678 | 1400 | -- |
| 22 | 30 | SECTION PARABOLA | 6 x 15 | 790 | 4771 | 1700 | -- |
| 23<br>28.8 | --<br>21 | LINEAR<br>SECTION PARABOLA | 1½x17<br>5 x 18 | 750<br>750 | 4317 | 1600<br>1100 | -- |
| 27.3 | 22 | SECTION PARABOLA | 6 x 17½ | 750 | -- | 1450 | -- |
| 27.0 | 26 | SECTION PARABOLA | 6 x 17½ | 750 | -- | 1500 | -- |
| 21<br>28.8 | --<br>21 | LINEAR<br>SECTION PARABOLA | 1½ x 9<br>5 x 18 | 375<br>750 | 2283 | 425<br>1100 | -- |
| 26 | 21 | SECTION PARABOLA | 8"x30" | 200 | 6200 | -- | -- |
| 14 | 16 | PERISCOPE WINDOW | 6"x3" | -- | 844 | -- | -- |
| 33 | 25 | FULL PARABOLA | 2' DIA | 210 | 1275<br>1900 | 150 | -- |
| 36 | 28 | SECTION PARABOLA | 2 x 4½ | 180 | 2500 | 200 | -- |
| 23.5 | 26 | SECTION PARABOLA | 2 x 4 | 370 | 3400 | -- | -- |
| 33° | 24 | SECTION PARABOLA | 8 x 3 | 3000 | -- | -- | -- |
| 23.5 | 26 | PARABOLOID | 2 x 4 | 370 | 5000 | -- | -- |
| 33 | 24 | SECTION PARABOLA | 3 x 8 | 1000 | -- | -- | -- |
| 37<br>34 | 17<br>20 | PARABOLA<br>PARABOLOID | 15 x 5<br>5 x 14 | 6400<br>6400 | 22000<br>-- | 4000<br>4000 | --<br>-- |

| STABILIZATION | | | | POWER SOURCE | | | |
|---|---|---|---|---|---|---|---|
| TYPE | ACCURACY | ROLL LIMIT | PITCH LIMIT | PHASE | FREQ. | VOLTS | KVA |
| -- | -- | -- | -- | 1 | 60 | 115 | 7.5 |
| -- | -- | -- | -- | 1 | 60 | 115 | 7.0 |
| -- | -- | -- | -- | 1<br>1 | 60<br>60 | 115<br>115 | 5.0<br>5.0 |
| -- | -- | -- | -- | 1 | 60 | 115 | 5.0 |
| -- | -- | -- | -- | 1 | 60 | 115 | 5.0 |
| -- | -- | -- | -- | 1<br>1 | 60<br>60 | 115<br>115 | 5.0<br>5.0 |
| -- | -- | -- | -- | 1 | 60 | 115 | 3.8 |
| -- | -- | -- | -- | 1 | 60 | 115 | 3.8 |
| 2 AXIS | ± 2.5° | ± 45° | ± 7° | 1<br>DC | 60<br>60 | 115<br>115 | 2.3<br>4 |
| 2 AXIS | ± 1.0° | ± 30° | ± 5° | 1 | 60 | 115 | 3.5 |
| -- | -- | -- | -- | 1 | 60 | 115 | 6 |
| 2 AXIS | ± 2.5° | ± 25° | ±10° | 1 | 60 | 115 | 6 |
| -- | -- | -- | -- | 1 | 60 | 115 | 6 |
| -- | -- | -- | -- | 1 | 60 | 115 | 6 |
| 3 AXIS<br>3 AXIS | ± 30 MIN<br>± 30 MIN | 15°<br>15° | 5°<br>5° | 3<br>33 | 60<br>60 | 440<br>440 | 37.5<br>37.5 |

| | TRANSMISSION LINE | | | REFERENCES | NO. IN USE OR TENT. AVAILABLE DATE |
|---|---|---|---|---|---|
| Type | Number | Size (inches) | 1 Way db/ft Loss | | |
| Coax | RG-20/U | 1.195 | .011 | 1 and 2 | 97 |
| Coax | Gas | 1 5/8 | .00004 | 1 and 2 | |
| Guide | RG-69/U | $3\frac{1}{4}$ x $6\frac{1}{2}$ | .00251 | RO2-47T 1, 2, 12 | 18(SR-3) |
| Guide | CAY 14 ACM | $6\frac{1}{2}$ x $3\frac{1}{4}$ | .00251 | 2 | |
| Guide | CAY 14 ACM | $6\frac{1}{2}$ x $3\frac{1}{4}$ | .00251 | 2 | |
| Guide | CAY 14 ACM | $6\frac{1}{2}$ x $3\frac{1}{4}$ | .00251 | 1 and 2 | |
| Guide | RG-51/U | 5/8 x $1\frac{1}{4}$ | .044 | 1 and 2 | 70 |
| Guide | RG-51/U | 5/8 x $1\frac{1}{4}$ | .044 | 1 and 2 | 30 |
| Guide | RG-51/U | 5/8 x $1\frac{1}{4}$ | .044 | 1 and 2 | 250 |
| Guide | RG-51/U | 5/8 x $1\frac{1}{4}$ | .044 | RO2-49T 2, 12 | |
| Guide | RG-48/U | $1\frac{1}{2}$ x 3 | .00875 | 1, 2, 12 | 17 |
| Guide | RG-48/U | $1\frac{1}{2}$ x 3 | .00875 | NE 050502 2 | FY 50 |
| Guide | RG-48/U | $1\frac{1}{2}$ x 3 | .00875 | NE 050507 2 | FY 51 |
| Guide | RG-48/U | $1\frac{1}{2}$ x 3 | .00875 | NE 050518 2 | 1 |
| Guide | RG-48/U | $1\frac{1}{2}$ x 3 | .00875 | RO2-48T 2 | 18 |

| | SEC. CLASS. | REMARKS | MODEL |
|---|---|---|---|
| | U | 7" PPI, 5"A STD Remotes SRA is Field Modified SR using Plate Modulation was XBF | SR-A |
| | R | 7" PPI, 5"A STD Remotes | SR-2 |
| | R | 5" STD Remote $\frac{B}{S}$ =.5(2F6F-10,000 ft-30 miles) SR-3A is SR-3 with SPS-6 Antenna | SR-3<br>SR-3A |
| | R | SR-3 with SPS-6A Antenna.<br>5" A STD Remotes | SR-3B |
| | R | SR-6 with SPS-6B Antenna<br>5" A STD Remotes | SR-6B |
| | R | 5" A STD Remotes<br>SR-6A is SR-6 with SPS-6 Antenna | SR-6<br>SR-6A |
| | R | 5" PPI 3" A/B Console | SS-1 |
| | R | SS-1 Console & SS Transmitter<br>XDU is K Band Model<br>ST-1 and ST part of SS | ST-1 |
| | U | 5" A, 5" PPI, SU is 115V A.C.<br>SU-1 is 115V D.C. | SU/SU-1 |
| | R | 5" A 5"PPI STD Remotes | SU-2 |
| | R | 5" PPI 3" A/B Console (CXLJ-Triple Antenna Development for Radar TFF and RCM) | SV-1 |
| | C | VF and SS Indicator; Amplidyne Train and Elevation Control | SV-2 |
| | C | VK, 3" A Hydrogen Thyratron Modulator on Basic SV-1 2 12" PPI's | SV-3 |
| | C | Sector Scan and Large Antenna on SV-1 | SV-4 |
| | R | Console 7" RHI, 7" PPI, 7" MSS, or STD Remotes B/S=5 (F80-18000 ft - 50 miles) (F4U - 25000 ft - 55 miles) | SX |

## LANDBASED SEARCH RADARS

| PEAK POWER (KW) | PULSE LENGTH (μsec) | PULSE RATE (pps) | FREQUENCY RANGE (Mc) | FUNCTION |
|---|---|---|---|---|
| 200 | 1.3<br>.37 | 650 | 6275 - 6575 | Height Finder |
| 600 | 4. | 200 | 1220 - 1280 | General Search |
| 750 | 4.0 | 220 | 1220 - 1350 | - |
| 600 | 4. | 200 | 1220 - 1350 | General Search |
| - | 1.0 | 400 | 2770 - 2830<br>2992 - 3019 | Surface |
| 50 | 1. | 465 | 9000 - 9160 | Surface and Air |
| 750 | 5.<br>1. | 120<br>600 | 2787 - 2818 | Height Finder |
| 750 | 0.5 | 1000 per beam | 2800 - 3000 | Mortar Locater |
| - | - | - | 1215 - 1350 | Long Range Air |
| 285 | 0.8 | 731 | 2905 - 2845 | Air Search & Tracking |
| 200 | 5 | 60 | 215-220 | Air Search |
| 750 | 1.0 | 350 | 2800 | Microwave E.W. |
| 50 | 2.0 | 775,800, 825 | 3000 | Surface search |
| 700<br>1000 | 1.0 | 1170, 390 | 3500 - 3550<br>2780 - 2900 | Height Finder(EW) |
| 50 | 1.0 | 650 | 3300 | Weather Tracking |
| | | | | Cielometer |
| | 0.365 | 700, 900 | X Band | Surface and Air |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

| Max. Reliable Range (miles) | | SCAN COVERAGE | | SCAN RATE (RPM) | |
|---|---|---|---|---|---|
| 2200 T DD | 20 $n^2$ Aircraft B/S = .5 | HOR | VERT | HOR | VERT |
| -- | 65 | 360° | -5° to +25° | 6 | 1 to 1½ scan/sec |
| Horizon Limited | 100 | 360° | No Scan | 15 | -- |
| -- | 100 | 360° | -- | 0 - 15 | -- |
| -- | 100 | 360° | -- | 0 - 15 | -- |
| 35 | -- | 360° | -- | -- | -- |
| 35 | -- | 360° | 2 or 6° | 6 | -- |
| -- | 80 | 360° | 0 to 30 | 0 to 6 | -- |
| -- | -- | 3° | 5° | -- | -- |
| -- | 200 | 360° | 0 to 20° | 15° | -- |
| -- | -- | 360° | -70 to +1580 Mils | 6 | Manual Tracking |
| 12 | 60 | 360° | 20° | 0 - 5 | |
| | | | | | |
| 15 | 35 | 360° | | 4, 8, 12. | |
| 20<br>20 | 40<br>60 | 360° | 11°<br>18° | 0 - 4 | 10°/ sec. |
| | | 360° | -20° to 20° | 12 or 24 | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

| BEAM WIDTH | | MAIN LOBE DB GAIN | MINOR LOBE DB GAIN | REFLECTOR | |
|---|---|---|---|---|---|
| HOR | VERT | | | TYPE | SIZE (ft) |
| 4° | .8° | 36.5 | Coma lobe 9 db | Section Parabola | 3 X 15 |
| 3° | 11° | — | -- | Paraboloid | 4 X 15 |
| 3° | 11° | -- | -- | Paraboloid | 4 X 15 |
| 3° | 11° | -- | -- | Paraboloid | 4 X 15 |
| -- | -- | -- | -- | Paraboloid | 3 X 5 |
| 1.5° | 2 or 6° | 36.9 | -- | Slotted Section Parabola | 3 X 5 |
| 3° | 3° | 34 | 12 | Parabola | 8 |
| -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- |
| 3° | 3° | 34 | -- | Dish | 8 |
| 20° | 20° | 19.5 | 18 | | |
| | | | | | |
| 5.6° | 15° | | | Slatted Parabola | 15 x 48 inches |
| 3.5°<br>1.6° | 11°<br>18° | 37<br>34 | 17<br>20 | Paraboloid | |
| 9° | 9° | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
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| | | | | | |
| | | | | | |

| TOTAL SYSTEM WEIGHT | RANGE RESOLUTION | TRANSMISSION LINE | | | |
|---|---|---|---|---|---|
| | | TYPE | NUMBER | SIZE (in.) | 1 WAY db/FT LOSS |
| 5 T | -- | WAVE GUIDE | UG/50 | -- | -- |
| 5760 | -- | COAX. | -- | 1 - 5/8" | -- |
| 2600 | -- | COAX. | -- | 1 - 5/8" | -- |
| -- | -- | COAX. | -- | 1 - 5/8" | -- |
| 3212 Less Trailer | -- | -- | -- | -- | -- |
| 2590 Less Trailer | ±100 yds | WAVE GUIDE | -- | 1½" x 1" | -- |
| 58,391 | -- | WAVE GUIDE | -- | 1½" x 3" | -- |
| -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- |
| -- | ±150 | COAX. | -- | 7/8" | -- |
| 4600 | | | | | |
| | | | | | |
| 3000 | ± 400 | WAVE GUIDE | | 1½ x 3 | |
| | | | | | |
| 350 | | | | | |
| | | | | | |
| | | | | | |
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| | | | | | |

| POWER SOURCE | | | | REFERENCES (misc.) |
|---|---|---|---|---|
| PHASES | FREQ. CYCLES | K.V.A. | VOLTS | |
| 1 or 3 | 60 | 4 | 115 | NE 050505, 24 |
| 1 | 400 | 2.8<br>.45 | 115<br>27 D.C. | NE 051003<br>R95-97T #1 |
| 1 | 400 | 2.8<br>.45 | 115<br>27 D.C. | NE 050508 |
| 1 | 400 | 2.8<br>.45 | 115<br>27 D.C. | #1 |
| -- | -- | 4 | -- | #1 |
| 1 | 60 | 4 | 115 | NE 051402<br>#1 |
| 1 or 3 | 60 | 15 | 115 | NE 050506<br>#1 |
| -- | -- | -- | -- | NE 051204 |
| -- | -- | -- | -- | NE 050408 |
| 3 | 60 | 12 | 115 | R07-27T |
| 1 | 60 | 4.75 | 115 | 1, 2. |
| 3 | 60 | 50 kw | 120/208 | Code 945 |
| 1 | 60 | 3 | 110/440 | Code 945 |
| | | | | Code 945 |
| 1 | 400 - 2400 | 541 w<br>782 w | 26 dc<br>115 | Code 945 |
| | | | | Code 945 |
| | | | | Code 945 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

| Remarks | Sec. Class. | MODEL |
|---|---|---|
| Uses VK-2 for PPI. Has R.H.I. and "A" Indicators. 7 in use. | C | AN/MPS-4 |
| 39 in use. | R | AN/TPS-1B |
| To replace AN/TPS-1B, MTI, PPI, and "A" Scopes. | C | AN/TPS-1D |
| Transportable 1B with miniature techniques. | C | AN/UPS-1 |
| PPI | U | SO-7M/N |
| PPI, MTI Indicators. | R | SO-12M/N |
| "A", "R" Scopes PPI Electrical Hoist on Antenna. 2 in use. | R | SP-1M |
| To locate high trajectory projectiles and their source. Uses 6 stationary beams amphibious. | C | AN/KPQ-1 |
| To detect targets moving up to 700 MPH. Provide multibeam scan every 4 sec. Height indication by signal comparison. | S | — |
| Modified SCR 584. For detection and tracking of close support aircraft. Helicalscan. | C | AN/MPQ-2A |
| | U | SK - 1M |
| 5 in use. | R | AN/CPS-1 |
| 40 in use. | U | SG -2S |
| 4 in use. | C | SX - 1 |
| 20 in use. | U | AN/APS-2 |
| | U | AN/GMQ-2 |
| | R | MK - 33 |
| | | |
| | | |
| | | |
| | | |

AIRBORNE SEARCH AND WEAPON CONTROL RADARS

| PEAK POWER (KW) | PULSE LENGTH (μ sec) | FREQUENCY RANGE (MC) | PULSE RATE (PPS) | FUNCTION |
|---|---|---|---|---|
| .025 avg. | 1.0 0.5 | 9335 - 9415 | 700 1400 | Surface |
| 40 (mean) | .6 2.1(B) | 9375 ± 55 9310 ± 10(B) | 600* 1000 | Air and Surface |
| .04 avg. | 1.0 0.5 | 9375 ± 40 | 1000 2000 | Search and Intercept |
| .005 avg. | .8 | 9345 - 9405 | 800 | Surface and Navigation |
| 40 (mean) | 1.0, 0.5, 2.0(B) | 9375 ± 55 9310 ± 10(B) | 622, 1155, 1347, 350(B) | 360° Looking Recon. |
| 40 | 1.5, 0.5 0.25, 2.1(B) | 9375 ± 55 9310 ± 10(B) | 640, 2000, 4000, 450(B) | Search Intercept G.A. |
| 1000 | 2 | 2880 ± 30 | 300 | A.E.W. |
| 2000 | 2 | 2880 ± 30 | 300 | A.E.W. |
| 250 | 25, 1.5, 2.35(B) | 9375 ± 40 | 600, 2000, 300(B) | Lock Follow Intercept |
| 250 | 1.6 | 9375 ± 40 | 1260 | Spherical |
| 70 | 4.5, 0.5, 2.25(B) | 9375 ± 55 9310 ± 10(B) | 200, 800, 400(B) | F.L. Recon. Radar |
| 70 | 4.5, 0.5, 2.25(B) | 9375 ± 55 9310 ± 10(B) | 200, 800, 400(B) | 360° Looking Recon. |
| | | 9375 ± 55 5280 ± 30 | | Air |
| 40 | .75, 5.0, 2.25(B) | 375 ± 55 310 ± 10(B) | 200, 800, 300(B) | Transport Search |
| 1000 | - | 9375 ± 55 5280 ± 30 | 300 | Anti Snorkeling |
| 250 | 4, 1.75, 2.25 | 9375 ± 40 9310 ± 10(B) | 2500, 550, 360(SNB) | Air |
| 40 | .5 | 9245 ± 30 | 2000 | Tail Warning |
| 40 | .4 | 9245 ± 30 | 2500 | Gun Laying |
| | | | | |
| | | | | |
| | | | | |

| AIRCRAFT INSTALLATION | MAX. REL. RANGE $20M^2$ AIRCRAFT B/S = .5 | MIN. RANGE (MILES) | MAX. ALT. (FT) | SCAN COVERAGE HOR. | VERT. |
|---|---|---|---|---|---|
| | | | | 160° | 2° |
| SB 2C-4E, 5.TBM-3E. AD-1.2.AM-1 | | 250 | 30000 | 150° | 31° to -33° 13 to -37° |
| | | | | | |
| | | | | | |
| PB4Y-2 K- Airship | 15 | 250 | 35000 | 360° | +21° to -32° |
| F4U-5N, AD-3N, 4Q. 4N. 4 | 2-4 | 150 | 40000 | 1300 30°(G.A) | 15° to 20° |
| TMB-3W, PB-1W AD-3W. 4W | | 2000 | 30000 | 360° | |
| ZPN | | 2000 | 30000 | 360° | 8° Beam Dep. 2° down |
| F4D, F10F, F7U, F3H | 15 | 150 | 50000 | 170° | ±45° |
| Escort Version of XQ2J | 10 | 500 | 50000 | Complete sphere | |
| PBM-5,5A, AF2S, P2V-4 UF-1.AJ-1 | | 200 | 40000 | 150°(A) 6°(B) | View 20° $CSC^2$ +18° to -55 |
| P2V-1, 2, 3, ZP2K | | 200 | 40000 | 360°(A) 60°(B) | View 27° $CSC^2$ |
| | | | | 180° | |
| R5C,D JRM, R4D. R4Q-1 | | 150 | 50000 | 360°,240° 120° | ±15° pencil $CSC^2$ 3°-40° |
| P2V-4 | | 200 | 40000 | 360° | Modified $CSC^2$ |
| Jet Night Fighter | 150 Map 15 (INT) | 150 | 50000 | 170° 30° | ±90° |
| F3D | 3 | 150 | 50000 | 180° | 180° |
| F3D | 4000 yds | 150 | 50000 | 120° cone | 120° cone |
| | | | | | |
| | | | | | |
| | | | | | |

| RANGE ACCURACY | AZIMUTH ACCURACY | MAX. TRACK RATE | | SCAN IN. | |
|---|---|---|---|---|---|
| | | RANGE | ANGULAR | SEARCH | TRACK |
| | | | | | |
| ±5% | ±3° over center 50°<br>±50 over remainder | | | | |
| | | | | | |
| | | | | | |
| ±1-7% | ±3% | | | | |
| ±2%<br>±10% range | ±3% A.I. to search<br>±1/2° G.A. | | | Wigway | Spiral |
| ±2% | ±1.5° | | | | |
| ±2% | ±1.5° | | | | |
| ±25 yds. track | ±2.5° | 900 K | 45° /sec | Wigway Stop | Conical |
| ±5% | ±5° | | | Spiral | |
| ±3% | ±2° | | | | |
| ±3% | ±2° | | | | |
| | | | | | |
| ±2% | | | | | |
| ±3% | ±0.5° | | | | |
| ±2% | ±3° | | | Wigway | Stop Wigwag |
| ±2% | ±3° | | | Spiral | |
| ±25 yds | ±.25° | 900 K | 45° sec | Conical | Conical |
| | | | | | |
| | | | | | |
| | | | | | |

| SCAN RATES | | BEAM WIDTHS | | REFLECTOR | |
|---|---|---|---|---|---|
| RPM | Looks per min. | Hor. | Vert. | Type | Size |
| 35 | | | | | |
| | 30-50<br>55-70 | 24°-(A,I)<br>10°-(S) | | Paraboloid | 14" |
| -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- |
| For 15<br>12-24 10% | For 15A,B<br>12 or 24 | -- | 15° | Paraboloid | 29" |
| 60 | 60 | -- | -- | Paraboloid | 18" |
| 6-10 | 6 and 10 | -- | 8° depressed<br>2° down | Paraboloid | 3'x8' |
| 6-10 | 6 and 10 | -- | 8° depressed<br>2° down | Paraboloid | 3'x8' |
| -- | -- | -- | -- | Paraboloid | 30" |
| -- | 15 | -- | -- | Paraboloid | 20" |
| -- | 50-20 (A)<br>100-55 (B) | -- | 10° to -20° | Modified Paraboloid | 18" |
| 24<br>4-7(A) | 100-50 (B) | -- | $CSC^2$ | Modified Paraboloid | 29" |
| -- | -- | -- | -- | -- | -- |
| 40-15 | 50-18<br>90-35 | -- | -- | Paraboloid<br>$CSC^2$ | 18"<br>30" |
| -- | 3, 6, 12 | -- | -- | Modified Paraboloid | 3'x8' |
| -- | 60<br>45 | -- | -- | Paraboloid | 30" |
| -- | 1200 | -- | -- | Paraboloid | 12.5" |
| -- | 1800 | -- | -- | Paraboloid | 10" |
| | | | | | |

| POWER SOURCE | | | | TOTAL SYSTEM WEIGHT | NO. IN USE OR AVAIL. DATE |
|---|---|---|---|---|---|
| PHASE OR AMPS | FREQ. (CPS) | KVA | VOLTS | | |
| | 800-2400 | .07<br>.76 | 26 dc<br>115 | | |
| 3 amps<br>1 | 800-2400 | .084 kw<br>.69 | 28 dc<br>115 | 185 | 15,000 |
| | 800-2400 | .81<br>.78 | 27 dc<br>115 | 242 | |
| | 380-1600 | .125<br>.385 | 27 dc<br>115 | 123 | 10 |
| 20 amps | 400-2400 | 950 w | 28 dc<br>115 | 399 | |
| 2.5 amps<br>(19-A) | 380-1760<br>800-2400 | 650 w | 28 dc<br>115 | 169 | Fall<br>1949 1000 |
| 27A, 1,<br>1 | 400-800<br>380-420 | 2750 w<br>220 w | 28 dc<br>120/208<br>120 | 1275 | 1950 for<br>P2V-4 |
| 40 amps<br>3<br>3 | 400-800<br>400 | 6.5 kva<br>300 w | 29 DC<br>115/208<br>115 | 1350 | JAN<br>1952 |
| 60 amps<br>3 | 320-1000 | 2000 w | 20 DC<br>115 | 400 | Oct<br>1952 |
| 200 amps<br>3 | 320-1000 | 4 kw | 115 | 750 | Dec.<br>1952 |
| 20 amps<br>9 amps | 380-160 | | 27 dc<br>115 | 380 | 1948 - PBM-5<br>1950 - P2V-4 |
| 20 amps<br>9A,1 phase | 380-1600 | | 27 dc<br>115 | 400 | 250 |
| | | | | 1400 | |
| 11 amps<br>1 | 300-480 | 1.6 | 28 dc<br>150 | 250 | JAN<br>1950 |
| 3 | 320-1000 | | 28 dc<br>115/208 | 1500 | Oct.<br>1951 |
| 60 amps | 380-420 | 1.7 kw<br>1.5 kw | 28 dc<br>115 | Total | 127 |
| 15 amps | 380-420 | .5 kw | 28 dc<br>115 | weight | 127 Dec. 1950 |
| 10 amps | 380-420 | 1.5 kw | 28 dc<br>115 | 650 lbs. | 127 |
| | | | | | |
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| INDICATORS | | SEC. CLASS. | DISPLAY | | REFERENCES |
|---|---|---|---|---|---|
| PPI | OTHERS | | IFF | BEACON | |
| | | U | | | No. 11 |
| | Two 3" (B) Double dot | U | | | No. 11 and EL-80 |
| | | U | | | No. 6 and 11 |
| | | U | | | No. 11 |
| 5" 5" Rep. | 2" (A) | U | | | No. 6, 11 and EL-80 |
| | 3"B(S), 3" O(I) 3" V (G.A.) | R | yes | yes | EL-80 |
| 3-5" | 1-3"(A) | R | | | No. 6 and 11, R02-05,06,10,16D |
| 3",5",7" 7" special | | C | | | EL-80 and NL414008 |
| | 5" BandC | C | yes | yes | No. 6, EL-80 and NL402007 |
| 2-7" | 2-5"(C) | C | yes | no | EL-80 NL 402008 |
| 2-5" Sector | | R | | | No. 11 and EL-80 |
| 2-5" | | R | | | No. 11 and EL-80 |
| | | C | | | NL406023 |
| 2-5" 1-5" NAV. | | U | | | NL404027 |
| 5" 7" & 10" | 3" (A) 2-7" Book | C | | | EL-80 |
| 5" | 5" (C) | C | yes | yes | EL-80 NL402006 |
| | 3" (O) | C | no | no | EL-80 and 6 |
| 3" Modified U with meter for range presentation | | C | no | no | EL-80 |
| | | | | | |
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| REMARKS | MODEL |
|---|---|
| Rectangular Scan. Obsolescent. | AN/APS-3 |
| *PRS 1000 for 4-20 50-mile ranges and 600 for 100-mile ranges. A forward looking carrier based air search for bomb rack mounting. | AN/APS-4 |
| Obsolescent. Spiral scan covers a conical volume of 120°. | AN/APS-6, 6A |
| For evaluation. | AN/APS-10 |
| Heavy patrol aircraft. | AN/APS-15, 15A, 15B |
| Replaces APS-4, 6. For all carrier based aircraft nightfighters. | AN/APS-19, 19A |
| Also used as ASW Radar. | AN/APS-20, 20A |
| Carrier and patrol LTA. | AN/APS-20B |
| Includes computer for 20 MM Guns, rockets, and bombs.(Glide bombing) Tentative characteristics. Computer similar to a FCS Mk 11. | AN/APS-25 |
| Not intended for surface search. | AN/APS-29 |
| Forward search only. For carrier based aircraft. | AN/APS-31 |
| For medium patrol aircraft. | AN/APS-33 |
| MTI and G.P.I. | AN/APS-41 |
| Transport radar | AN/APS-42 |
| | AN/APS-44 |
| Long Range, high power search intercept gun | AN/APS-21 |
| aiming and tail warning for two place fighters. | AN/APS-28 |
| Includes computer for 20 MM. Special computer for AN/APG-26. | AN/APG-26 |
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AN/APS-35

AIRBORNE SEARCH AND WEAPON CONTROL RADARS

| PEAK POWER (KW) | PULSE LENGTH (μS) | FREQUENCY RANGE (MC) | PULSE RATE (PPS) | FUNCTION |
|---|---|---|---|---|
| -- | -- | -- | -- | AEW Beacon |
| 6 | 2.5, 5, 5.0 (B) | 975 ± 55<br>940 ± 3(B) | 200, 400, 800, 1600(B) | Search and Bomb |
| 7.5 | 0.4 | 9350-9400 | 1600 | Automatic Range |
| 30-50W avg. | -- | 10000-10250 | -- | A.R.O. |
| 50 W, cw | -- | X Band FM | -- | A.G.L. |
| 50 | -- | X Band | -- | A.G.L. |
| 50 | -- | X Band | -- | A.G.L. |
| 50 | -- | X Band | -- | A.G.L. |
| 5-10 | .4 ± .1 | 9375 ± 40 | 800 ± 25 | A.R.O. |
| 112 | -- | 2700-2900 | 576 | Mid-Course Guidance |
| -- | -- | X Band | -- | Bomb Release |
| -- | -- | X Band | -- | Height Finder |
| -- | -- | -- | -- | AEW |
| -- | -- | 3000 | -- | Air and Zenith Watch |
| -- | -- | -- | -- | AEW |
| 250 | -- | X Band | -- | Tracking and Beam Rider |
| -- | -- | VIF | -- | Surface |
| -- | -- | -- | -- | Surface |
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| AIRCRAFT INSTALLATION | MAX. REL. RANGE $20M^2$ AIRCRAFT B/S = .5 | MIN. RANGE (MILES) | MAX. ALT. (ft) | SCAN COVERAGE | |
|---|---|---|---|---|---|
| | | | | HOR | VERT |
| -- | -- | -- | -- | -- | -- |
| AJ DRONE | 120 on cities | 200 | 60000 | $\pm 75^\circ$ | $\csc^2$ $\pm 10$ to $-45^\circ$ |
| -- | 3000 yds | 150 | 50000 | $18^\circ$ | $18^\circ$ |
| F6F | 3000 yds | 100 | 50000 | $18^\circ$ | $18^\circ$ |
| -- | 6000 yds | 150 | 50000 | Same as Turret | |
| -- | 6000 yds | 150 | 50000 | Same as Turret | |
| Fighter Nose Turret | 6000 yds | 150 | 50000 | Same as Turret | |
| -- | 100 MAP 6000yds Track | 200 | 50000 | $170^\circ$ | $170^\circ$ |
| F9F-2, 3, 4, F10F-1, F7U-1, F2H-1, 2, 2N, XA2D-1 | 3000 yds | 150 | 50000 | $18^\circ$ Pencil | $18^\circ$ Pencil |
| Lark | 90000 yds | -- | 50000 | -- | -- |
| -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- |
| -- | 30 | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- |
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| RANGE ACCURACY | AZIMUTH ACCURACY | MAX. TRACK RATE | | SCAN IN: | |
|---|---|---|---|---|---|
| | | RANGE | ANGULAR | SEARCH | TRACK |
| -- | -- | -- | -- | -- | -- |
| ±2% | ±1.25° | -- | -- | -- | -- |
| ±25 yds. | -- | 900K | -- | -- | -- |
| ±10 yds. or 3% | -- | 900K Closing 300K Opening | -- | -- | -- |
| ±15 yds. | 4 Mils or less | 1200K | 140°/sec | Stop Wigwag | Simul. Lobe |
| ±15 yds. | 4 Mils or less | 1200K | 75°/sec | -- | Mono. Pulse |
| ±15 yds. | 4 Mils or less | 1200K | 140°/sec | -- | Conical |
| ±15 yds. | 4 Mils or less | 1200K | 140°/sec | Wigwag Conical | Conical |
| ±25 yds. | -- | 1000K | -- | -- | -- |
| -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- |
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| SCAN RATES | | BEAM WIDTHS | | REFLECTOR | |
|---|---|---|---|---|---|
| RPM | LOOKS PER MINUTE | HOR | VERT | TYPE | SIZE |
| -- | -- | -- | -- | -- | -- |
| -- | (S)-60<br>(T)-600 | -- | -- | Paraboloid | 36" |
| -- | -- | -- | -- | Horn | 5" dia. |
| -- | -- | -- | -- | Horn | 5" dia. |
| -- | -- | -- | -- | -- | 2 - 11" dia. |
| -- | -- | -- | -- | -- | 2 - 12" x 6" |
| -- | -- | -- | -- | -- | 11" |
| -- | -- | -- | -- | -- | 14" |
| No Scan | -- | -- | -- | Horn<br>Lens | 4 - 1/4", 5 - 1/4"<br>5 - 5/8" |
| 1440 RPM | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- |
| -- | -- | -- | Overhead<br>Cone 40° | -- | -- |
| -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- |
| 1800 | -- | -- | -- | -- | -- |
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| POWER SOURCE | | | | TOTAL SYSTEM WEIGHT | NO. IN USE OR AVAIL. DATE |
|---|---|---|---|---|---|
| PHASE OR AMPS | FREQ. (CPS) | KVA | VOLTS | | |
| -- | -- | -- | -- | -- | -- |
| 40A | 380-1600<br>400 | 1.8<br>30 VA | 28 DC<br>115, 115 | 700 | 7-1-52 |
| 1 | 400-2400 | 500 W<br>175 W | 115<br>28 DC | 90 | 12 |
| -- | -- | -- | 400 W AC<br>80 W DC | 40 | 6 on order |
| Included in Turret Power | | | | 150 | 1 on order June '49 |
| Included in Turret Power | | | | 125 | 1 on order June '49 |
| Included in Turret Power | | | | 150 | 1 on order June '49 |
| Included in Turret Power | | | | 125 | 1 on order |
| 1 | 380-1760 | 80W D.C.<br>.4 | 26.5 DC<br>115 | 50 | 800 |
| 4 Amps. D.C. | | | 28 DC | 25 | 45 |
| -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- |
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| -- | -- | -- | -- | 4000 | -- |
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| INDICATIONS | | DISPLAY | | SEC. CLAS | REFERENCES |
|---|---|---|---|---|---|
| PPI | OTHERS | IFF | BEACON | | |
| -- | -- | -- | -- | C | NL - 421019 |
| 5" | -- | -- | -- | C | EL - 80 |
| -- | -- | -- | -- | R | 11 and NL 401011 |
| -- | -- | no | No | C | EL 80, NL - 401013,#11 |
| -- | -- | No | No | C | EL - 80, NL - 401015 |
| -- | -- | No | No | C | EL - 80 |
| -- | -- | No | No | C | EL - 80 |
| -- | -- | Yes | Yes | C | NL - 401018 EL - 80 |
| Computing Sight, Reticule and Warning Lights | | No | No | R | EL - 80 |
| -- | -- | -- | -- | C | NL - 480041 |
| -- | -- | -- | -- | C | EL - 80 |
| -- | -- | -- | -- | C | R02-04D |
| -- | -- | -- | -- | C | R02-08D |
| -- | -- | -- | -- | C | NE 050517 |
| -- | -- | -- | -- | C | NL - 410006 |
| -- | -- | -- | -- | C | NL 480042 Code 3667 |
| -- | -- | -- | -- | C | R02-26R |
| -- | -- | -- | -- | C | NE 050617 |
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| REMARKS | MODEL |
|---|---|
| Provides an AEW beacon system used with AN/APS-20A | AN/APR-12(XN) |
| For attack and long range bombers. Electronic computer. | AN/APB-3 |
| Circular horn feed with polystrene lens. Computer AFCS 1,4,6,7, 9, 11. | AN/APG-18 |
| Supplies range to MK18 and MK23. Computing gun sights. | AN/APG-22 |
| For tail and nose turret installation. Special computer. | AN/APG-25(XN-1) |
| Tail turret installation. Special computer. | AN/APG-25(XN-2) |
| Wing tip and nose turret installation. Special computer. | AN/APG-25 (XN-3) |
| Special Computer. | AN/APG-25(XN-4) |
| AFCS-1, 4, 6, 7, 9, 11 computer. | AN/APG-30 |
| Beam rider system for LARK XSAMN-4 and SKY LARK XSAMN-2. 2 Receivers only, works with AN/SPQ-2. | AN/APW-4 |
| Bombing equipment for carrier based planes. | AN/ASB-1 |
| - - - | -- |
| - - - | -- |
| - - - | -- |
| - - - | -- |
| Spiral beam rider guidance system. Search auto track and dual pulse per quadrant guidance references. | -- |
| Detection of submerged submarines from aircraft. | -- |
| Mod. AN/SPS-2. Rapid scan surface search. | -- |
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Note * This column displaced one space upward.

AIRBORNE SEARCH AND WEAPON CONTROL RADARS

| PEAK POWER (KW) | PULSE LENGTH ($\mu$ sec) | FREQUENCY RANGE (Mc) | PULSE RATE (pps) | FUNCTION |
|---|---|---|---|---|
| - | Parent Radar | Parent Radar | - | Bombing Equipment |
| - | Parent Radar | Parent Radar | - | Bombing Equipment |
| - | Parent Radar | Parent Radar | - | Bombing Equipment |
| | 1/4 | X-Band | - | Bombing Equipment |
| - | - | - | - | Nav. and Bombing Computer |
| - | - | - | - | Target Location and Tracking |
| - | - | - | - | FCR |
| - | - | - | - | FCR |
| - | - | - | - | AMTI Study |
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| AIRCRAFT INSTALLATION | MAX. REL. RANGE 20M² AIRCRAFT B/S = .5 | MIN. RANGE (MILES) | MAX. ALT. (ft.) | SCAN COVERAGE | |
|---|---|---|---|---|---|
| | | | | HOR. | VERT. |
| P2V - PBM | Parent Radar | - | 35000 | - | - |
| XP5Y VA - VP | Parent Radar | - | 50000 | - | - |
| AD | Parent Radar | - | 500 | - | - |
| AJ | 200 | - | 50000 | - | - |
| - | - | - | - | - | - |
| - | - | - | - | - | - |
| - | - | - | - | - | - |
| - | - | - | - | - | - |
| R4D | - | - | - | - | - |
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| RANGE ACCURACY | AZIMUTH ACCURACY | MAX. TRACK RATE | | SCAN IN: | |
|---|---|---|---|---|---|
| | | RANGE | ANGULAR | SEARCH | TRACK |
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| SCAN RATES | | BEAM WIDTHS | | REFLECTOR | |
|---|---|---|---|---|---|
| RPM | LOOKS PER MINUTE | HOR. | VERT. | TYPE | SIZE |
| | | | | Parent Radar | 1' |
| | | | | Parent Radar | 1' |
| | | | | Parent Radar | 1' |
| | | | | | 36" |
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| POWER SOURCE | | | | TOTAL SYSTEM WEIGHT | NO. IN USE OR AVAIL. DATE |
|---|---|---|---|---|---|
| PHASE OR AMPS | FREQ. (CPS) | KVA | VOLTS | | |
| 1 | 400-2400 | 300 W | 115 | 175 | 600 |
| 1 | 380-1000 | 500 W | 115 | 135 | - |
| 1 | 400-2400 | 140 W | 115 | 50 | 2000 |
| | | | | 9000 | |
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| INDICATORS | | COMPUTER | ROCKET PROVISION | SEC. CLASS | REFERENCES |
|---|---|---|---|---|---|
| PPI | OTHERS | | | | |
| | | Electronic | Yes | R | EL-80 |
| | | Electronic | Yes | C | EL-80 |
| | | Electronic | Yes | R | EL-80 |
| | | Mechanical | No | C | EL-80 |
| | | | | C | NO. 6 |
| | | | | C | NO 328012 |
| | | | | C | NO 284619.20 |
| | | | | C | NO 328301 |
| | | | | C | NO 411002 |
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| REMARKS | TYPE |
|---|---|
| | AN/APA-5A |
| Indicator equipment enables accurate LAB, HAB, and rocket release under any condition of AN/APA-5. | AN/APA-5B |
| | AN/APA-16 |
| Pulse emission period same as BuOrd bomb director Mk 5 Mod 0 | AN/APB-2 |
| Ground position indicator. | AN/APA-44 |
| For passive homing of XAUM-6 missile. | |
| High speed lobing by electronic means. | |
| Supplies target position data for forward firing weapons. To replace AN/APG-21 | |
| Converted AN/APS-33. | |
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SHIPBOARD WEAPON CONTROL RADARS

| TYPE OF GUNS CONTROLLED | FIRE CONTROL SYSTEM OR GUN DIRECTOR USED WITH | FUNCTION |
|---|---|---|
| | None | Experimental Anti-Aircraft Automatic Track Fire Control |
| Main Battery | Mk 34, Mk 38 | Surface Main Battery Fire Control |
| Main Battery | Mk 34, Mk 38 | Surface Main Battery Fire Control |
| 5"/38 Cal. | Mk 37 | Surface and Anti-Aircraft Fire Control |
| Main Battery | Mk 34, Mk 38, Mk 54 | Surface Main Battery Fire Control |
| 5"/38 Cal. | Radar Mk 12 or G.D. Mk 37 | Low Elevation Angle AA Fire Control |
| 5"/38 Cal.<br>5"/54 Cal. | Mk 37 | Surface and AA Auto. Track Fire Control |
| 5"/38 Cal.<br>5"/54 Cal. | Mk 37 | Surface and AA Auto. Track Fire Control |
| | Mk 37 | Missile Guidance and Antiaircraft Auto. Track Fire Control |
| Main Battery | F.C. Tower,<br>6" and 8" Turrets | Surface Main Battery Fire Control |
| 5"/38 Cal.<br>40 mm | GFCS Mk 63 | AA Fire Control |
| 40 mm<br>3" and 5" | GFCS Mk 57<br>Mods 0, 1 and 2 | AA Fire Control |
| 5"/38 Cal.<br>40 mm | GFCS Mk 63<br>Mod 6 & 11 | AA Fire Control |
| 40 mm, 3"/50,<br>5"/38 and 6"/47 | GFCS Mk 57 Mod 3 | AA Fire Control |
| 3"/50, 5"/54,<br>and 6"/47 | GFCS Mk 56 | Surface and AA Auto. Track Fire Control |

| SMALLEST SHIP | WEIGHT (LBS) | | | NUMBER IN USE OR AVAILABLE DATE |
|---|---|---|---|---|
| | Topside | Lower Deck | Antenna | |
| | 1800 | 2200 est | 1800 | 2 |
| CL | 3209 | 1229 | 2750 | 120 |
| CL | 1554 | 1229 | 1000 | 82 |
| DD | 1310 | 1827 | 460 | 685 |
| CL | 1795 | 3070 | 1000 | 107 |
| DD | 713 | 485 | 180 | 876 |
| DD | 2000 | 5000 | 600 | 270 |
| DD | 2200 | 5700 | 600 | July 1951 |
| Special | 4000 | 6000 | | March 1950 |
| CL | 1447 | | 425 | 49 |
| DE | 385 | 1500 | 135 | 239 |
| CL | 100 | 1400 | 70 | 100 (obsolescent) |
| DE | 115 | 1700 | 115 | Mod 2 - 278<br>Mod 6 - 328 |
| CL | 185 | 1600 | 100 | 255 |
| CL | 598 | 520 | 265 | 165 |

| PEAK POWER (KW) | FREQUENCY RANGE (Mc) | PULSE LENGTH (u sec) | PULSE RATE (pps) |
|---|---|---|---|
| 30 | 3000<br>9000 | 0.6 | 1800 |
| 20-30 | 3050 ± 50 | 0.4 | 1500 ± 10% |
| 35-45 | 8815 ± 75 | 0.3 | 1500 ± 5% |
| 90-110 | 920-970 | 1.2 | 480 ± 5% |
| 25- 35 | 8815 ± 75 | 0.3 | 1800 ± 10% |
| 35 | 9375 ± 30 | 0.5 | 480 |
| 35- 70 | 8500-9600 | 0.25 | 1800 to 2200 |
| 250 | 8500-9600 | 0.25 | 1350 ± 10% |
| 250 | 9230-9404 | 0.25 | 1350 ± 10%<br>675 ± 10% |
| 20- 30 | 3071-3100 | 0.4 | 1500 ± 10% |
| 30 | 2992-3019 | 0.5 | 1800 ± 10% |
| 25- 35 | 9345-9405 | 0.5 | 1800 ± 10% |
| 25- 35 | 8740-8890 | 0.3 | 1800 ± 10% |
| 25- 35 | 8740-8890 | 0.3 | 1800 ± 10% |
| 50 | 8500-9600 | 0.1 | 3000 ± 5% |

| IF BAND WIDTH (mc) | ACQUISITION SCAN | | | |
|---|---|---|---|---|
| | Type | Rate | Horizontal Coverage | Vertical Coverage |
| 6.6 | Spiral, PPI, Eliptical | 30 cps<br>2.5 cps | 9.1° | 9.1° |
| 1.8 | Same as Track Scan | 10 cps | 29° | |
| 5 | Same as Track Scan | 5 cps | 11.5° | |
| 4 | Same as Track Scan | 60 cps | 15° | 15° |
| 9 | Same as Track Scan | 5 cps | 11.5° | |
| 5 | Same as Track Scan | 1 cps | 4.5° | +6<br>-7 |
| 9 | Spiral Scan | 30 cps @<br>2 cps | 12° | 12° |
| 9 | Spiral Scan | 30 cps @<br>2 cps | 12° | 12° |
| 9 | Spiral Scan | 30 cps @<br>3 cps | 6° | 6° |
| 4 | Same as Track Scan | 30 cps | 11° | |
| 5 | Conical and Antenna Nod | 30 cps and<br>.67 cps | 11.2° | 41.2° |
| 2 | Same as Track Scan | 30 cps | 5° | 5° |
| 5 | Conical and Antenna Nod | 30 cps<br>.67 cps | 4.5° | 34.5° |
| 5 | Same as Track Scan | 30 cps | 4.5° | 4.5° |
| 11 | Spiral Scan | 24-36 cps<br>@ 2 cps | 12° | 12° |

| TRACKING SCAN | | REFLECTOR | |
|---|---|---|---|
| Type | Coverage | Type | Size |
| Conical | 2.8° | Paraboloid | 57" |
| Linear Horizontal | 29° | Polyrod Array | 10'2" H. x 34" V. |
| Sinusoidal Horizontal | 11.5° | Eliptical Paraboloid | 8' H. x 2' V. |
| Lobe Switching | 15° | Double Cylindrical Paraboloid | 6' x 6' |
| Sinusoidal Horizontal | 11.5° | Eliptical Paraboloid | 8' x 2' |
| Sinusoidal Vertical | 13° | Section of Paraboloid | 6' x 1½' |
| Conical | 2.6° | Paraboloid | 5' |
| Conical | 2.6° | Paraboloid | 5' |
| Conical | 2.6° | Lens | 7½' |
| Lobe Switching | 11° | Paraboloid | 30" H. x 15" V. |
| Conical | 11.2° | Paraboloid | 45" |
| Conical | 5° | Paraboloid | 30" |
| Conical | 4.5° | Paraboloid | 30" |
| Conical | 4.5° | Paraboloid | 30" |
| Conical | 3° | Paraboloid | 48" |

| BEAM WIDTH | | TRANSMISSION LINE | |
|---|---|---|---|
| Hor. | Vert. | Type | Number |
| 1.6° | 1.6° | Wave Guide | |
| 2° | 6° | Wave Guide | |
| 0.9° | 3.6° | Wave Guide | RG-51/U |
| 10° | 10° | Coax Cable | |
| 0.9° | 3.6° | Wave Guide | RG-51/U |
| 4.5° | 1.2° | Wave Guide | RG-52/U |
| 1.6° | 1.6° | Wave Guide | RG-51/U |
| 1.6° | 1.6° | Wave Guide | RG-51/U |
| 1° | 1° | Wave Guide | RG-51/U |
| 6° | 12° | Wave Guide | |
| 6.7° | 6.7° | Coax Cable | RG-14/U |
| 3° | 3° | Wave Guide | RG-52/U |
| 3° | 3° | Wave Guide | RG-51/U |
| 3° | 3° | Wave Guide | RG-51/U |
| 2° | 2.1° | Wave Guide | RG-52/U |

| POWER REQUIREMENTS | | | | RANGE (INSTR) MAX (Miles) | RANGE MIN (Yds) |
|---|---|---|---|---|---|
| Volts | Phase | Frequency (cps) | KVA | | |
| 480 | 3 | 60 | 15 | 25 | 250 |
| 115<br>440 | 1<br>3 | 60<br>60 | 2.2<br>2.5 | 30 | 250 |
| 440<br>440 | 3<br>1 | 60<br>60 | 0.9<br>2.4 | 30 | 200 |
| 115 | 1 | 60 | 3.1 | 25 | 400 |
| 115<br>440 | 1<br>3 | 60<br>60 | 3<br>0.9 | 40 | 350 |
| 440<br>115 | 3<br>1 | 60<br>60 | 2<br>0.28 | 15 | 250 |
| 115<br>115 | 1<br>3 | 60 | 2.54<br>0.20 | 25 | 350 |
| 115<br>115 | 1<br>3 | 60 | 3.5<br>0.20 | 50 | 350 |
| 115<br>440 | 1<br>3 | 60 | 6<br>1 | 50<br>200 | 350 |
| 440 | 1 | 60 | 2 | 30 | 400 |
| 115 | 1 | 60 | 1.7 | 20 | 400 |
| 115 | 1 | 60 | 1.4 | 20 | 350 |
| 115<br>440 | 1<br>3 | 60<br>60 | 1.5<br>0.025 | 20 | 350 |
| 115<br>440 | 1<br>3 | 60<br>60 | 1.5<br>0.025 | 20 | 350 |
| 115<br>440 | 1<br>3 | 60 | | 15 | 350 |

| TYPE OF PRESENTATION | RELIABLE TRACKING RANGE | |
|---|---|---|
| | Surface DD (yds) | Aircraft F6F (yds) |
| PPI, DI, A, B, E, C | | 36000 |
| 5" B, 3" B | 35000 | |
| 5" B, 3" B | 40000 | |
| 4-3" A or F | | 45000 |
| 6 - 3" B | 40000 | |
| 2 - 3" E | | 30000 |
| 5" B, 3" A<br>5" E or Δ E | | 30000 |
| 5" B, 3" A<br>5" E or Δ E | | 45000 |
| 5" B, 3" A<br>5" E or Δ E | | 70000 |
| 5" A | 30000 | |
| 5"A, 2"F, 3"EE | | 20000 |
| 2-2" F, 2" A, 5" A | | 20000 |
| 5"A, 2"F, 3"EE | | 20000 |
| 5" A, 2" A, 2-2" F | | 20000 |
| 5" A/R, 5" B, 7" E | | 30000 |

| TRACKING ACCURACY | | | BEARING | |
|---|---|---|---|---|
| Range (yds) | Bearing (mils) | Elevation (mils) | Track Rate (deg/sec) | Slew (Max) (deg/sec) |
| ±15 +.1% R | 0.3 | 0.3 | 50 | 50°/sec |
| ±15 ±1% R | ±2 | | | |
| ±15 +.1% R | ±3.62, Reset ±1.5 | | | |
| ±20 ±.025%R | ±10', Reset ±4' | ±10' above 10° | 16 | 25°/sec |
| ±15 ±.1% R | ±3.62, Reset ±1.5 | | | |
| | .5° | ±3 | 16 | 25°/sec |
| ±15 ±.1% R | ±1 average | ±1 above 1° | 16 | 25°/sec |
| ±12 ±.025%R | ±1 average | ±1 above 1° | 16 | 25°/sec |
| ±10 ±.025%R | ±0.7 average | ±0.7 | 16 | 25°/sec |
| ±15 ±.1% R | ±4, ±50 PPI | | | |
| ±15 +.1% R | ±2 reset | 2 reset | Manual | |
| ±15 +.1% R | ±2 reset | 2 reset | Manual | |
| ±15 +.1% R | ±2 reset | ±2 reset | Manual | |
| ±15 +.1% R | ±2 reset | ±2 reset | Manual | |
| 20 ±.025% R | 0.7 | 0.7 above 1.0° | | 72°/sec |

| RESOLUTION | | RANGE TRACK RATE (Yds/Sec) | REFERENCES | SECURITY CLASSIFI-CATION |
|---|---|---|---|---|
| Range (yds) | Bearing | | | |
| 60 | 1.4° | | | R |
| 120 | 1.0° | | 9 | R |
| 100 | 0.5° | | 1, 9 | R |
| 300 | 5.0° | 500 | 1 | R |
| 100 | 15 mils | | 1, 9 | R |
| 90 | 2.25° | | 1, 9 | R |
| 80 | 1.30° | 500 | 1, 9, R12-08T | C |
| 80 | 1.3° | 1000 | | C |
| 80 | 1.0° | 2000 | | C |
| 150 | 6.0° | | 1, 9, 12 | U |
| 150 | 6.0° | ±350 K<br>±843.75 K | 1, 9, 12 | U |
| 100 | 3.0° | +250, - 450 | 1, 9 | U |
| 200 | 3.0° | 843.75 K | 1, 9, 12 | R |
| 200 | 3.0° | +250, - 450 | | R |
| 35 | 1.5° | 450 | 1, 9, 12 | C |

| REMARKS | MODEL |
|---|---|
| Experimental Automatic Tracking Radar | Mk 7<br>Mk 7 Mod 1 |
| | Mk 8 Mod 2 |
| Mk 8 Mod 2 converted from S-band to X-band | Mk 8 Mod 3 |
| A and F Spot Error Indicator Scopes | Mk 12 Mod 1 |
| | Mk 13 |
| Used with R.E. Mk 12 to provide accurate elevation data below $10^{\circ}$ | Mk 22 Mod 1 |
| Used with Computer Mk 1 in GFCS Mk 37 | Mk 25 Mod 2 |
| Used with Gun Fire Control System Mk 67 | Mk 25 Mod 3 |
| Special purpose missile guidance radar for Terrier; beacon facilities; dual transmitters and dual receiver channels; guidance by frequency modulation of repetition rate | Mk 25 Mod 6 |
| 6"/47 and 8"/55 M.B. Turret Radar; also, in BB fire control tower | Mk 27 Mod 0,2 |
| Used with GFCS Mk 63; antenna reflector mounted on gun | Mk 28, Mod 2 |
| Interim radar for GFCS Mk 57. Currently being replaced by R.E. Mk 39 Mod 3 | Mk 29 Mod 2 |
| Mod 2 controls 40mm guns; Mod 6 - 3"/50 guns | Mk 34 Mod 2,6 |
| Mods 13 and 14 have acquisition features the same as R.E. Mk 39 Mod 2. Mods determined by type of guns controlled. | Mk 34 Mod 3,4, 7-14 |
| | Mk 35 Mod 2 |

SHIPBOARD WEAPON CONTROL RADARS

| TYPE OF GUNS CONTROLLED | FIRE CONTROL SYSTEM OR GUN DIRECTOR USED WITH | FUNCTION |
|---|---|---|
| 40 mm, 3", 5", and 6" | GFCS Mk 57 Mod 4 | AA Fire Control |
| Torpedo | FCS Mk 101 | Experimental Submarine Fire Control |
| 40mm, 6"/47, 5"/38, 54 | GFCS Mk 61 | Auto Angle Track AA Fire Control |
| 5"/54, 3"/50, 3"/70 | Gunar Mk 1 | AA Auto Track Fire Control |
| A.A. G.M. | None | Missile Guidance and AA Automatic Tracking Fire Control |
| | | Passive Homing |
| | | Missile Guidance |
| | | Missile Guidance |
| | Lark and Skylark | Auto Missile Tracking |
| | Lark and Skylark | Missile Guidance |
| | | Missile Guidance |
| None | None | Missile Guidance |
| | | Missile Guidance |
| Kingfisher E | | Missile Guidance and Track |
| | | |

| SMALLEST SHIP | WEIGHT (LBS) | | | NUMBER IN USE OR AVAILABLE DATE |
|---|---|---|---|---|
| | Topside | Lower Deck | Antenna | |
| CL | 160 | 1700 | 110 | 187 |
| SS | 1520 total | | 550 | 1(experimental) |
| DD | 220 | 2129 | 220 | Mod 0 - 4<br>Mod 1 - 7 |
| DD | 132 | 4000 | 132 | 2 Models - Jan 1951,<br>14 - 1952 |
| DD | 11000 | 6000 | 5000 | Exp. 1952 |
| | 75 | | | Sep. 1949 |
| | | | | |
| | | | | |
| AV-11 | 7800 | 2000 | 2200 | 1 Jan 1950 |
| | 64000 with power<br>including vans | | | 1 in use<br>2 Dec 1949 |
| | | | | |
| | 2300<br>Incl Mount | 50000 incl<br>2 vans | 100 | 1 |
| | | | | |
| | 6000 lbs total | | | |
| | | | | |

| PEAK POWER (KW) | FREQUENCY RANGE (Mc) | PULSE LENGTH (μ sec) | PULSE RATE (pps) |
|---|---|---|---|
| 25-35 | 9000-9160 | 0.5 | 1800 ± 10% |
| 50 | 15800-16200 | 0.2<br>0.8 | 3200-3950 or<br>900-1100 |
| 25-35 | 9000-9160 | 0.5 | 1800 ± 10% |
| 250 | 8500-9600 | 0.25 | 1320 ± 10% |
| 3 Meg | 5650 ± 250 | 0.3<br>and 3.0 | 800 and 500 |
| | 2700-2950 | | |
| | 2750-2950 | | |
| 5 | 2700-3600 | | |
| 700 | 2700-2900 | 1.0 | 350-850<br>576 |
| 700 | 2700-2900 | 1.0 | 350-850<br>576 |
| | | | |
| 50 | 8500-9600 | 0.25 | 1000-3500 |
| 700 | 2800 | 1.0 | |
| 35-70 | 8500-9600 | 0.25 | 1800-2200 |
| | | | |

| IF BAND WIDTH(mc) | ACQUISITION SCAN | | | |
|---|---|---|---|---|
| | Type | Rate | Horizontal Coverage | Vertical Coverage |
| 3.5 | Elliptical Scan | 30 cps | $5^\circ$ | $19^\circ$ |
| | Sector Scan | 30 cps | $12^\circ$ | |
| 3.5 to 5.0 | Elliptical | 30.5 cps to 27.5 cps | $3.5^\circ$ | $12^\circ$ |
| 9 | Spiral | 30 cps @ 2 cps | $12^\circ$ | $12^\circ$ |
| 5, .5 | Raster | 4/sec 1/sec | $5^\circ$ x $5^\circ$ $11^\circ$ x$11^\circ$ | $5^\circ$ x $5^\circ$ $11^\circ$ x $11^\circ$ |
| 2.5 | | | | |
| | | | | |
| | | | | |
| 2.2 | | 24 cps | | |
| 2.2 | | 24 cps | | |
| | | | | |
| 11 | | | | |
| 2.2 | | | $CSC^2$ $\theta$ | |
| 9 | Spiral | 30 cps | $11^\circ$ | $11^\circ$ |
| | | | | |

| TRACKING SCAN | | REFLECTOR | |
|---|---|---|---|
| Type | Coverage | Type | Size |
| Conical | 5.0° | Paraboloid | 30" |
| Lobe Switching | 2.2° | Section of Paraboloid | 40" H x 8" V |
| Conical | 3.5° | Paraboloid | 48" |
| Conical | 3.6° | Paraboloid | 40" |
| Simultaneous Lobing | 1.6° | Lens | 8' x 8' |
| | | Paraboloid | 7-$\frac{1}{4}$" |
| | | | |
| | | | |
| Conical | 2.0° | Paraboloid | 8' |
| Conical | 2.0° | Paraboloid | 8' |
| | | SV-4 | |
| Monopulse | System | Lens | 72" dia. |
| | | | |
| Conical | $+\frac{1}{2}$° squint | Paraboloid | 5' |
| | | | |

| BEAM WIDTH | | TRANSMISSION LINE | |
|---|---|---|---|
| Hor. | Vertical | Type | Number |
| 3.0° | 3.0° | Wave Guide | RG-52/U |
| 1.5° | 9.0° | Wave Guide | |
| 2.0° | 2.0° | Wave Guide | RG-52/U<br>RG-51/U |
| 2.2° | 2.2° | Wave Guide | RG-51/U |
| 1.6° | 1.6° | Wave Guide | |
| 12.0° | 12.0° | Coax | |
| | | | |
| | | | |
| 3.0° | 3.0° | Wave Guide | |
| 3.0° | 3.0° | Wave Guide | |
| | | | |
| 1.4° | 1.4° | None | |
| | | | |
| 1.6° | 1.6° | Wave Guide | RG-51/U |
| | | | |

| POWER REQUIREMENTS | | | | RANGE (INSTR) MAX. (Miles) | RANGE MIN (Yds) |
|---|---|---|---|---|---|
| Volts | Phase | Frequency (cps) | KVA | | |
| 115 | 1 | 60 | 2.2 | 15 | 300 |
| 120<br>27.5 V DC | 1 | 400 | 2.58<br>400 watts | 30 | 200 |
| 115, 440<br>270 V DC | 1, 3<br>resp. | 60 | 2.75,<br>0.5,<br>0.11 KW | 15 | 300 |
| 117, 440 | 1, 3 | 60, 60 | 4, .2 | 20 | 350 |
| 440, 110,<br>27 V & 110 V | 3, 3<br>DC | 60, 400 | 5, 1,<br>1 & 1.5 | 150 | 500 |
| 28 V DC | | | 600 W | 200 | 300 |
| | | | | | |
| 28 V DC<br>115 V | 1 | 400-1600 | 3 | | |
| 110 | 3 | 60 | 7 | 200 | 300 |
| 110 | 3 | 60 | 7 | 50 | 300 |
| | | | | | |
| 115 | 3 | 60 | Approx.<br>3 KVA | 25 | 100 |
| | | | | 50 | 300 |
| 115, 115<br>440 | 1, 3,<br>3 | 6 | 2.54,<br>.18, .20 | 25 | 350 |
| | | | | | |

| TYPE OF PRESENTATION | RELIABLE TRACKING RANGE | |
|---|---|---|
| | Surface DD (yds) | Aircraft F6F (yds) |
| 2"E, 2-2"F, 5"A/R, 3"E or EE | | 20000 |
| 5"B, 5"L, 5" PPI | | |
| 5" A/R, 2" F, 5" E or EE, 5" PPI | | 25000 |
| 5"-A/R, 5"-B, 5"-E or ΔE, 2"-F | | 30000 |
| 5" B-3 dim., 5" A, 10"-PPI | | 200000 |
| Auto Control | | 26000 |
| | | |
| | | |
| R-A B-PPI | Horizon | 100000 |
| R-A B-PPI | Horizon | 100000 |
| | | |
| IRBEI, Spot | | 30000 Est |
| | | |
| R-A, B, E, B-B, E, E-E, AE | 30000 | 30000 |
| | | |

| TRACKING ACCURACY | | | BEARING | |
|---|---|---|---|---|
| RANGE (Yds) | BEARING (Mils) | ELEVATION (Mils) | TRACK RATE (Deg/Sec) | SLEW (MAX) (Deg/Sec) |
| ±30 +.5% R | ±2 reset | ±2 reset | Manual | |
| ±(3 +.1% R) | ±1.1 | | 50 | 150°/sec |
| ±30 +.5% R | ±2 (Telescope Mk 92 - reset) | ±2 (Telescope Mk 92 - reset) | 42 | 42°/sec |
| ±10 ±.025% R | ±.75 mil reset | ±.75 mil reset | 30°/sec | 30°/sec |
| ±15 +.025% R | ±.2 mil | Tracking ±.2 mil | 50°/sec | 100°/sec |
| Must approach target | within 50 feet of | Boresight .25 | | |
| | | | | |
| | | | | |
| ±15 | 1° at 10°/sec | .1° at 10°/sec | 30 | 36°/sec |
| ±15 | 1° at 10°/sec | .1° at 10°/sec | 30 | 36°/sec |
| | | | | |
| ±15 +.1% | 0.2 mils | 0.2 mils | 50 | 50°/sec |
| | | | | |
| ±15 +.1% | ±1 mil Average | ±1 mil Average | 16 | 25°/sec |
| | | | | |

| RESOLUTION | | RANGE TRACK RATE (Yds/Sec) | REFERENCES | SECURITY CLASSIFI-CATION |
|---|---|---|---|---|
| Range (yds) | Bearing | | | |
| 100 | 3.0° | +450 -750 | 1, 9, 12, R12-03T | R |
| | 1.5° | 250 | NO 304601 | S |
| 100 | 2.0° | +450, -750 | 1, NO 284603 | C |
| 80 | 2.2° | ±1115 | | C |
| 50 | 1.3° | 2000 | NO 314603, Re4f | S |
| | | | Code 3609 | S |
| | | | NL 421001 | U |
| | | | NE 081104 | C |
| 150 | 2.5° | 2500 | NE 081403, 4<br>R05-36D, and #12 | C |
| 150 | 2.5° | 2500 | Code 3609 | U |
| | | | NE 081402 | R |
| 80 | 1.4° | 1500 | NO 284609 | C |
| | | | # 12 | R |
| 80 | 1.3° | 500 | NO 314605 | C |
| | | | | |

| REMARKS | MODEL |
|---|---|
| Mod 0, 1 and 2 not installed. One Mod 4 on USS MISSISSIPPI | Mk 39 Mod 3,4 |
| 5" PPI, 5" B or L | Mk 44 |
| Automatic tracking in bearing and elevation - Aided tracking in range | Mk 47 Mod 0,1 |
| Antenna reflector mounted on gun mount; slew, tracking and acceleration rates dependent on gun mount drive characteristics | AN/SPG-48 |
| Double RF head for look-thorugh. Beacon tracking | AN/SPG-49 |
| Semi-passive homing SKYLARK; AN/SPG-2 used as illuminating source | AN/DPN-7 |
| Transponder type pulse beacon | AN/APN-4(XN) |
| For GM and P/A tracking | AN/APN-62 |
| Modified SP to include stabilization. Maximum ranges to employ beacons in missiles | AN/SPQ-2 |
| Two receivers. Now AN/MPQ-5 | SP-1M LARK |
| Permits tracking of KUW-1 Missile (LOON). For submarine installation | SV-1 |
| Simultaneous lobing. Angle information is obtained from each individual pulse. May be used as gun director and missile guidance. | RE Mk 50 |
| For use with AN/MPS-4(XN) | SP-1Ma |
| Modified F.C. Radar Mk 25 Mod 2. Has AFC for beacon signal and provides for command transmission via P.R.F. | |
| | |

## LANDBASED WEAPON CONTROL

| PEAK POWER OUTPUT (KW) | FREQUENCY RANGE (MC) | PULSE LENGTH (μsec) | PULSE RATE (pps) | FUNCTION |
|---|---|---|---|---|
| 200 | 3000 | .2 or .8 | 1100 | F.C. for 90 MM AA guns. |
| | 2927 | | | Fire Control |
| .015 | 680-720<br>920-970 | 0.75 | 1639 | F.C. Beacon |
| .300 | 9310 | 0.5 | 1000-3000 | F.C. Beacon |
| 100 | 1200 | 1.6 | 255 | Searchlight Control |
| | | | | Guidance radar |
| 210 | 2700-2900 | 0.8 | 1707 | Control and Guidance |
| | | | | FC for 40 MM AA guns. |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

| Band-WIDTH (mc) | BEARING RESOLN. | RANGE RESOLN. | TYPE OF PRESENTATION | BEAM WIDTH | |
|---|---|---|---|---|---|
| | | | | HOR. | VERT. |
| 3.5, 5, 1.0 | | 25 yds | 5"A, 7"PPI 3"J,2-2" PN* | 5° | 5° |
| | | | | | |
| | | | | 90° | 60° |
| 7 | | | | 120° at 10th power pt. | 60° @10th power pt. |
| | 1 mil | 300 yds | 1 A 1 pip notch | | |
| | | | | 10° | 10° |
| 2 | | | | | |
| | | | | 4° | 4° |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

PN* Pip Notch

| RANGE | | RELIABLE RANGE | | TRACK SCAN | |
|---|---|---|---|---|---|
| MAX (miles) | MIN. (yds) | SURFACE (yds) | AIRCRAFT (yds) | HOR. | VERT. |
| | 500 | | 80,000 s<br>45000 AT | 360° | 10° |
| | | | | | |
| | | | | | |
| | | | | | |
| 25 | 300 | 50,000 | 50,000 | | |
| | | | | | |
| | 500 | | | Helical | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

AT- Automatic Track.

| TRACKING ACCURACY | | | ACQUISITION SCAN COVERAGE | | WEIGHT (lbs) |
|---|---|---|---|---|---|
| RANGE (yds) | BEARING | ELEVATION | HOR. | VERT. | |
| 20 | 1.5mils | 1.5mils | | | |
| | | | | | |
| | | | | | 40 |
| | | | | | 100 approx |
| 300 | 1 mil | 1 mil | 360° | 90° | |
| | | | | | |
| | | | 360° | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

| ACQUISION SCAN | | REFLECTOR | | TYPE OF GUNS CONTROLLED | NO. IN USE OR AVAIL. DATE |
|---|---|---|---|---|---|
| TYPE | RATE | TYPE | SIZE | | |
| Conical | 6 RPM | Circular Paraboloid | 67" | 90 MM | 20 |
| | | | | | |
| | | Corner Reflect--or dipole | | 5"/38 to 16"/50 | 10 |
| | | Two feed horns | | 5"/38 to 16"/50 | Nov.49 |
| Conical | | Circular Parabolic dish | 76" | Search-light | |
| | | | | | |
| | | | | | |
| | | | | 40 MM | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

| POWER SOURCE | | | | REFERENCES |
|---|---|---|---|---|
| VOLTS | PHASES | FREQ. | KVA | |
| 115 | 3 | 60 | 15 | 1 |
| 105-125 | | 60 | | 1 |
| 6 volt batteries 5 amperes. | | | | 6 and 12 |
| Gas engine 110 | | 400 cycle | | NO 274603,4 NE 081102,R05-10D |
| 115 | 1 | 400 | 3.5 | 1 and 9 |
| | | | | NO 284609 Code 3609 |
| 115 | 3 | 60 | 12 | 3 and 15 |
| | | | | NE 060801 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

| REMARKS | SEC. CLASS. | MODEL |
|---|---|---|
| | C | AN/MSG -1 |
| Velocity measurements from 400 to 500 ft/sec. AN/TPS-13A is mod. for indoor installation. | C | AN/TPS -13,13A |
| To direct naval fire during amphibious operations. 10 db antenna gain. | R | MK-2 Mod 0,1,2 |
| For shore bombardment operations. One horn for receiving and one for transmitting. | C | AN/UPN-54 AN/UPN-8 |
| 5" A and two 3" pip match presentation. | R | MK-20 Mod 0,1,3 |
| Simultaneous Lobe Comparison(BuO). May be used as Gun Director or Missile Guidance. | C | MK-50 |
| To search, detect, and track. Mod. for control G/M Hermes A-1 or guide Bumblebee. | C | SCR-584 |
| To replace optical aiming. | C | --- |
| | | |
| | | |
| | | |
| | | |

| PRESENTATION | SEC. CLASS. | FUNCTION |
|---|---|---|
| | U | Repeater Indicator |
| | U | Repeater Indicator |
| 2 - 12" scopes | R | Indicator assembly |
| 10" flat-face P.P.I. | C | Repeater |
| | U | Bearing and Range Indicator |
| 7" remote P.P.I. 12" modification | U | P.P.I. Repeater |
| 7" horizontal face remote PPI. | U | Repeater |
| 7" vertical P.P.I. | U | Remote P.P.I. |
| 12" P.P.I.,Special selective switch. | U | Remote P.P.I. |
| 2-5" P.P.I. Expanded B scope. | R | Precision P.P.I. Repeater |
| Projects on to 24" horizontal plotting unit. Deck mounted | C | Projection Repeater |
| 5" lightweight remote P.P.I. | R | Repeater |
| 12" P.P.I. Added delay unit | R | Repeater |
| 12" delayed off-centered P.P.I. | C | Repeater |
| 12" delayed off-centered P.P.I. | C | Repeater |
| 12" delayed presentation from 0-180 miles. | C | Repeater Remote R.H.I. |
| 12" P.P.I. | C | Repeater |
| 20" off-centered. | C | Repeater |

| INPUT DATA | PULSE RATE (PPS) |
|---|---|
| | |
| | |
| | |
| | 150 to 3000 |
| Search radar video and trigger, Antenna bearing, Ships heading, Director train and range from 1 director. | |
| Standard video, trigger and 1 speed radar bearing. No transmission features. | |
| Radar information at 1 speed. No range or bearing transmission. | |
| Standard inputs - 1 speed | 60 to 1100 |
| | 60 to 1100 |
| | |
| | 60 to 1100 |
| Standard video, trigger, and 1 speed radar bearing. No range of bearing transmission. | |
| | |
| Standard inputs. | |
| | |
| Range height information from SX or modified SP radar. | |
| Standard inputs plus I.F.F. or M.T.I. information. | |
| | |

| OUTPUT DATA | RANGE (miles) |
|---|---|
| | |
| | |
| | |
| | 1-5, 4-20, 10-50, 40-200. |
| Target bearing(1 x synchro) Target range(synchro-72000 yds/rev. | |
| Target range and bearing. | 7,5,20,75,200; 4,20,80,200 |
| Target range and bearing. | 4,20,80,200. |
| | 4,20,80,200. |
| | |
| | 4,20,80,200. |
| | 4,10,20,80,200. |
| | 2,4,10,20,80,200. |
| | 2,4,10,20,80,200. |
| True bearing transmission at 1 speed & range transmission at 72000 yds / rev. | 4,10,20,40,80,200 |
| from 5G's. | 4,10,20,40,80,200 |
| | 20,40,80,200 |
| | 4-20, 15-90, 60-240. |
| | 4-40, 10-100, 20-200. |

| SWEEP STEP DOWN ? | Elevation SCAN | MAXIMUM HEIGHT (ft) | NUMBER IN USE OR AVAILABLE DATE. | REFERENCES |
|---|---|---|---|---|
| | | | 1400 | 6 |
| | | | | 6 |
| | | | | 6 |
| | | | | 6 & 2<br>NE 051109 |
| | | | | R07 - 32T |
| | | | 1280<br>445 | 1 |
| | | | 225<br>2571 | 1 |
| | | | 850<br>130 | 1 |
| | | | 66 | 1 |
| | | | 1250 | 1<br>NE 051126 |
| | | | 739, 100, 107 | 1 |
| | | | 100 | 1<br>NE 051127 |
| | | | 600 | 1<br>NE 051125 |
| | | | 150 | 1, R07-17T<br>NE 051102 |
| NO | | | | |
| YES | -2 to 88° | 100,000 | | 6 & 2<br>NE 051101 |
| | | | 2 | 6 & 2<br>NE 051104 |
| | | | 3 | 6<br>NE 051105 |

| POWER SOURCE | | | | SIZE H. W. D. (inches) | TOTAL SYSTEM WEIGHT (lbs) |
|---|---|---|---|---|---|
| PHASE | FREQ. | K. V. A. | VOLTS | | |
| | 400 - 2400 | | 110-120 | | 25 |
| | | | | | |
| | | | | | |
| 1 | 60 | | 115 | 38 x 18 x19$\frac{3}{4}$ | |
| | | 12 W<br>.24 KW | 6<br>115 | | |
| 1 | 60 | .275 | 115 | 40x24x20 | 400 |
| 1 | 60 | .175 | 115 | 36x16x20 | 330 |
| 1 | 60 | .220 | 115 | 30x14x28 | 180 |
| 1 | 60 | | 115 | 30x14x34 | |
| 1 | 60 | 1.3 Operate<br>0.5 Stand-by | 115 | 43x32x24 | 1410 |
| 1 | 60 | 1.765<br>1.5 | 115 | 35x32x59<br>38x42x89 | 1280<br>2650 |
| 1 | 60 | 0.45 | 115 | 20 x 8 x 10 | 437 |
| 1 | 60 | .660 | 115 | 32x20x21-1/2 | 815 |
| 1 | 60 | 1.84<br>1.69 | 115 | 37-1/2x18-5/16<br>x16-5/8. | 450 |
| 1 | 60 | 800 Watts | 115 | 17x19x32<br>12x20x24 | 400 |
| 1 | 60 | | 115 | 19x32x17 | 400 |
| 1 | 60 | | 115 | | |
| 1 | 60 | 1 KW<br>approximate | 115 | 34x30x25.5 | 300 PS<br>400 |

| REMARKS | MODEL |
|---|---|
| | AN/APA #1A |
| | AN/APA -32 |
| Ground stabilization and plotting system. | AN/APA -53 |
| Continuously variable range from 200 to 1 mile. | AN/SPA -4 |
| Provides remote PPI and TDT in director. Slave to TDT MK 11 or VJ. PD panel combination. | MK - 3 Mod 2 |
| Selector switch permits selection of any one of 5 radars. | VC VC - 1 |
| Splash proof. May be used on open bridge. Portable. VD-1 has 10 mile range. | VD to VD-2 |
| | VE VE-1 |
| Similar to VE-1 except uses 12" CRT instead of 7". | VE-1A |
| Surface plotting may be done directly on plotting surfaces. Mod. VF for 400 cycles.VF-1.VF-1A cancelled. | VF |
| 10 or 20 mile sector of overall range may be expanded to fill entire scope. VG-2 has DRT in place of chart table. | VG to VG-3 |
| East-West,North-South off-centering. Will work with AEW or DRA. VH-A is mod. VH for 400 cycles. | VH |
| Mod. VK. Independent instantaneous ranging strobe, electronic cursor. VJ-A is mod. VJ for 400 cycles. | VJ VJa |
| Deck mounted. Has provision for manual off-centering, and will accept tracking ing. from DRA or AEW. | VK |
| Mechanically redesigned VK. Will work with AEW. Off-centering, 40 miles on 4 to 80 mile scale | VK-2 |
| Height indicator. 5 to 1 vertical expansion. | VL |
| Uses 2 different color PPI displays optically superimposed. IFF or RKI. | VM |
| Similar to VK. Off-centering to 200 miles. 2 video channels for use with MK-5 IFF. Rubber range scales. | VN |

## INDICATORS

| PRESENTATION | SEC. CLASS. | FUNCTION |
|---|---|---|
| | C | Video Insertion Repeater |
| 5 ft. PPI screen. | C | Photographic Repeater |
| | C | Vitual PPI Reflectoscope |
| | R | Repeater |
| | C | Repeater |
| RCA Graphechon tube. Bright TRACE TUBE. | C | Projection Repeater |
| | C | 3 coordinate Indicator |
| | C | Dual PPI Repeater |
| | C | Indicator |
| | C | Integrated Display |
| | C | 3 coordinate Repeater |
| | C | Combat Control Center Indicator |
| | C | Indicator |
| | C | Indicator |
| | C | DRT and Automatic plotter. |
| | | |
| | | |
| | | |

| INPUT DATA | PULSE RATE (PPS) |
|---|---|
| | |
| Standard video, trigger, and 1 speed radar bearing. | |
| | |
| | |
| | |
| | 60 to 1000 |
| | |
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| | |

| OUTPUT DATA | RANGE (miles) |
|---|---|
| | |
| | 16,000 yds |
| | |
| | |
| | |
| | 4,10,20,80,200 |
| | |
| | |
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| | |

| SWEEP STEP DOWN ? | ELEVATION SCAN | MAXIMUM HEIGHT (ft) | NUMBER IN USE OR AVAILABLE DATE. | REFERENCES |
|---|---|---|---|---|
| | | | | NE 051108 |
| | | | 4 | 6, R07-34T<br>NE 051103 |
| | | | | R07-24D<br>NE 051124 |
| | | | | 6 |
| | | | | NE 051123 |
| | | | | NE 051122 |
| | | | | NE 051115 |
| | | | | NE 051116 |
| | | | | Ne 051120 |
| | | | | NE051121 |
| | | | | NE051207 |
| | | | | NE 091401 |
| | | | | NL413005 |
| | | | | NO 274605 |
| | | | | NS 693001 |
| | | | | |
| | | | | |
| | | | | |

| POWER SOURCE | | | | SIZE H.W.D. (inches ) | TOTAL SYSTEM WEIGHT (lbs) |
|---|---|---|---|---|---|
| PHASE | FREQ. | K.V.A. | VOLTS | | |
| | | | | | |
| 1 | 60 | | 115 | 48x20x14 | |
| | | | | | |
| | | | | | |
| | | | | | |
| 1 | 60 | | 115 | 38x89x40 plus rack | |
| | | | | | |
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| REMARKS | MODEL |
|---|---|
| Introduction of printed or written information into video channels. Never produced- closed. | VO |
| Permits continuous presentation on a 5 ft vertical screen at a distance of 7 ft within 6 seconds. | VP |
| Used with AN/SPA-4 as navigational aid. | VPR |
| EXPerimental VH. | X-VH |
| Increases range of VF to 100 miles | VF-2 |
| To convert low intensity scan to bright PPI raster scan by graphechon techniques. VG indicator. | VG-1A |
| Used with hemispherical scan radars. | --- |
| To increase quantity of presented data. Plan to use 2-gun CRT to permit simultaneous display without time sharing. | --- |
| To evaluate 3 dimensional information. | --- |
| --- | --- |
| Breadboard delivered by RCA to NRL 3930 | --- |
| Used by Marines in amphibious landings. | --- |
| Video mapping and projected PPI. | --- |
| To provide transfer of radar target information to the acquiring radar in fire control systems. | --- |
| --- | --- |
| | |
| | |
| | |

## TARGET DESIGNATION

| RANGE ACCURACY | BEARING ACCURACY | FREQUENCY (Mc) | FUNCTION |
|---|---|---|---|
| | | | Bearing and Range Converter |
| | | | Target Designation |
| ± 200 yds<br><br>Self only | ± 1° in all coordinates<br><br>Self only | 680 - 720<br><br>920 - 970 | Bearing, Range and Elevation Parallax Converter |
| ± 160 yds overall | ±2.3° overall | | Target Designation Transmitter |
| | | | Bearing Transmitter |
| | | | Target Designation Transmitter |
| | | | Target Designation |
| | | | Bearing and Range Indicator |
| | | | |

| POWER SUPPLY | | | | REFERENCES | SEC. CLASS. |
|---|---|---|---|---|---|
| Volts | Phases | Freq. (cps) | KVA | | |
| 110 | 1 | 60 | -- | NO 274107 | R |
| -- | -- | -- | -- | NO 274117 | C |
| 117 | 1 | 60 | 0.25 | NO 274120<br>12 | S |
| electronic<br>115<br>synchro<br>115 | 1<br><br>1 | 60<br><br>60 | .506<br><br>1.391 | NO 274105<br>R07-32T | R |
| -- | -- | -- | -- | NO 274106 | S |
| -- | -- | -- | -- | NO 274116 | S |
| -- | -- | -- | -- | NO 304203<br>Re4b | S |
| 6<br>115 | | | 12 W<br>.24 KW | R07-32T | C |
| | | | | | |

| INPUT DATA |
| --- |
| |
| |
| 1. Target Bearing (1 x synchro)<br>2. Target Range (72000 and 1,296,000 yds/rev)<br>3. Target Elevation (2 x synchro)<br>4. Own Ships Course<br>5. Coordinates of Reference Ship Bearing (1xSynchro), Range (72000 yds/rev) |
| 1. Search Radar Video and Trigger<br>2. Antenna Bearing (1 X Synchro)<br>3. Ships Heading (1 X Synchro)<br>4. Director Train from Four Directors (1 X Synchro) |
| |
| |
| |
| Search Radar, Video and Trigger<br>Antenna Bearing<br>Ships Heading<br>Director Train and Range from One Director |
| |

| OUTPUT DATA | |
|---|---|
| | |
| | |
| 1. Target Bearing (1 X Synchro)<br>2. Target Range (72,000 and 1,296,000 yds/rev)<br>3. Target Elevation (2 X Synchro) | |
| 1. Search Radar, Video and Trigger<br>2. Antenna Bearing (1 X Synchro)<br>3. Ships Heading (1 X Synchro)<br>4. Target Bearing (1 X Synchro)<br>5. Target Range (synchro - 72000 yds/rev | To any or all of six director stations |
| | |
| Target Bearing (1 X Synchro)<br>Target Range (synchro - 72000 yds/rev)<br>Target Elevation (2 X Synchro) | |
| | |
| Target Bearing (1 X synchro)<br>Target Range (synchro - 72000 yds/rev) | To one station |
| | |

| REMARKS | MODEL |
|---|---|
| Main battery, for use in shore bombardment. Used on CL and above. F.C. computer only. To be replaced by plotter Mk 10. | Mk 1 Mod 0 |
| High speed T.D.S. - Breadboard 3-coordinate T.D. display. Elevation is indicated in color. Converts PPI and IFF display to roster scan. | Mk 2 |
| Converts information referred to one ship to the same elements referred to another ship. Breadboard model only. (1) Should be redesigned before production. | Mk 3 Mod 0 |
| Remote PPI indicator. Incorporates six switching positions to select proper director. (12 in use.) | Mk 11 Mod 1 |
| Target information for torpedo and gun. Optical - Bearing only. Receives automatic track data. For DD, DDE, and DDK. | Mk 14 |
| Optical scope tied to synchros which transmit range and estimated bearing to Air Defense positions (sky forward and aft). Developmental only. | Mk 15 |
| Aided tracking unit for use on VF PPI. (one experimental unit only). | -- |
| Provides remote PPI and T.D.T. in director. Slave to T.D.T. Mk 11 or VJ. P.D. panel combination. | Mk 3 Mod 2 |
| | |

## ALTIMETERS

| RANGE | ANTENNA PATTERN | FREQUENCY (MC) | POWER OUTPUT | WEIGHT (LBS) |
|---|---|---|---|---|
| 0 - 400<br>400-4000ft | 100° x 60° | 420 - 460 | 0.1W | 35 |
| o-10000ft | 100° x 60° | 1625 - 1675 | 1.5W | 50 |
| 0-10,000ft | 80° x 60° | 4270 - 4330 | 1.0W | 35 |
| 0-10,000ft | 100° x 60° | 1605 - 1655 | 1.5W | 35 |
| | | | | |
| | | | | |
| | | | | |

| POWER SOURCE | | | ANTENNA | REFERENCE |
|---|---|---|---|---|
| VOLTS | FREQUENCY | K.V.A. | | |
| 28 dc | | 3 Amps. | Dipole or Slotted | 6 |
| 28 dc | | 200 W | Flush mounted | 6 |
| 28 dc | | 160 W | Flush mounted | 6 |
| 115 | 320 - 1760 | 130 W | Flush mounted | NL 450035 |
| | | | | |
| | | | | |
| | | | | |

| REMARKS | MODEL |
|---|---|
| F.M. 115,000 procured. U | AN/APN -1 |
| F.M. U | AN/APN -22(XN-1) |
| F.M. U | AN/APN -22(XN-2) |
| Redesigned AN/APN-22(XN-1) to reduce size, weight, and power requirements. F.M. U | AN/APN -22(XN-3) |
| | |
| | |
| | |

TRAINERS

| MANEUVERING SIMULATOR | | | | | |
|---|---|---|---|---|---|
| Target | | Own Ship | | Max Vert Speed (ft/min) | Function |
| Turn Rate (deg/sec) | Speed (knots) | Turn Rate (deg/sec) | Speed (knots) | | |
| | | | | | Loran Trainer |
| Manual | 0-20 | 9 | 80-400 | 2000 | L.A.B. Trainer |
| | | | | | Airborne Search Ultrasonic |
| | | | | | Annapolis Tactical Trainer |
| | | | 1500 | | Tactical Trainer |
| This is primarily a UHF signal generator | | | | | Rad CM Trainer |
| | | | | | |
| | 0-500 | | | | Radar Trainer |
| | | | | | AA Gunnery Trainer |
| 0-35 | 0-2000 | | | | Radar Trainer |
| | V2 speeds | | | | AA Target Simulator |
| | | | | | Radar Trainer |
| | | | | | Radar Trainer |
| 24 | | | 1700 | | Air Search Trainer |
| 24 | | | 1700 | | Radar Trainer |

| SIGNAL SIMULATOR | | | | |
|---|---|---|---|---|
| Rep Rate (cps) | Pulse Length ($\mu$ sec) | Band Width (deg) | Types<br>A. Target B. Sea return<br>C. Altitude line E. Noise<br>D. Range attenuation I. IFF<br>F. Fading G. Jamming H. Land mass | Output<br>A. 30-60 MC I.F.<br>B. Video<br>C. Trigger<br>D. 1X Sync. Ant. |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| 60 to 2000 | 4, 1, $\frac{1}{2}$ | | | A, B, D |
| 20 to 3000 | 1 to 10 | Var | Radar Transmitter | 2700-3100 MC |
| | | | | |
| Same as Radar | | | A, E. F, G | B |
| | | | | |
| 2000 | .1 | 1.6 to 2 | A, B, D, E, F, G | A, 60 MC |
| | | | | |
| | | | | |
| | | | | |
| 60 or 200 | 4 or 1 | | | A |
| 60/200<br>150/600<br>300/400 | | | | A, D |

| SPACE SIMULATOR | | SERVICE EQUIPMENT | |
|---|---|---|---|
| Problem Area (sq miles) | Number of Targets | Outpuls Required<br>A. Trigger B. 1X Synchro Azimuth<br>C. Voltages prop to Azimuth & EL<br>D. L.O. tuning voltage<br>E. 1X 360° Potentiometer Ant AZ | Radar |
| | | | |
| | | | AN/APS-2<br>AN/APQ-5<br>AN/APS-31 |
| | | | AN/APS-2,3,4,13,15 |
| 36 or 360 | | | SG, SR |
| 36 or 360 | 6 | | SG, SV, SR, SS<br>SP-1 |
| | | | Radar Countermeasures Equipment |
| | | | |
| 50,000 yd radius | | | Mk 12 in Mk 37 |
| 1 min run | | | Mk 28, 29, 34 |
| 50,000 yd radius | | | Mk 25 or 35 |
| | | | Mk 65 |
| 60 or 200 | | | Mk 3, 4 |
| | 6 | | |
| | | E, B | SA, SC, SK, SR |
| | | | SA, SC, SK, SR |

| Size L.W.H. | Weight (lbs) | POWER SOURCE | | | |
|---|---|---|---|---|---|
| | | Volts | Phase | Freq | K.V.A. |
| | | | | | |
| | | | | | |
| | | 220<br>110 | 3<br>1 | 60<br>60 | 1.915<br>1.120 |
| | | | | | |
| | | 115 | 1 | 60 | |
| 25"x17"x<br>44". 18"x<br>18"x21" | 175<br><br>40 | 115<br>24 | 1 DC | <br>400-1500 | .850<br>.075 |
| | | | | | |
| 20'x14' | 4753 | 115 | 1 | 60 | 3 KW |
| 6½' H<br>2' W | 1200 with<br>Mk 51<br>Director | 115 | 1 | 60 | |
| | | 115 | 1 | 60 | 10 |
| | | | | | |
| | | | | | |
| | | | | | |
| | 1537 | 110 | 1 | 60 | 1.155 KW |
| | | 110 | 1 | 60 | |

| Number of Operators That are Trained | Security Class. | Number of Equipments Produced | Available Date |
|---|---|---|---|
| | U | | |
| | U | | |
| | U | | |
| | R | 1 | |
| | R | | |
| Unlimited | R | 1 | Under Evaluation |
| | R | | |
| Complete Crew (3) | R | 11 | |
| 1 | U | 200 | 1 Jan 1950 |
| Crew for Mk 25 or 35 | C | 7 | Estimated July 1950 |
| | C | | |
| | U | | |
| | R | | |
| | R | 30 | |
| | R | | |

| REMARKS | REFERENCE | MODEL |
|---|---|---|
| | 6 | AN/APN-T4 |
| | 6 | AN/APQ-5-T1A |
| | 6 | AN/APS-T1-T3 |
| To train CIC personnel (Annapolis). Optical projector. | 6 | AN/SSQ-T1 |
| For CIC personnel. DRT will be from indicators. | NE 051314 | AN/SSQ-T2(XW-1) |
| | NR 825002 | AN/ULT-T1 |
| Known as "Modified Rug.", also RRL-F-3800 | 6 | AN/UPT-T4 |
| Permanent information by tape recording meters. | 1 | Mk 2 |
| For GFCS Mk 57 or 63 | NO 284306<br>R13-03T | Mk 8 |
| Three independent moving targets. (3 coordinates). All problems recorded on film. | NO 284606 | Mk 10 |
| | NO 284617 | |
| | 6 | OAC |
| For use in CIC schools. Obsolescent. See OCJ and OCZ. | 6<br>12 | OBJ |
| Uses 6 cams for bearing, range, and intensity. To be replaced by OCJ-1. | 6<br>12 | OCJ |
| Mod OCJ. Target course cams cannot be changed after program has started. | NE 051323 | OCJ-1 |

TRAINERS

| MANEUVERING SIMULATOR | | | | | |
|---|---|---|---|---|---|
| Target | | Own Ship | | Max Vert Speed (ft/min) | Function |
| Turn Rate (deg/sec) | Speed (knots) | Turn Rate (deg/sec) | Speed (knots) | | |
| 24 | | | 1700 | 5000 dive 40000 | Radar Trainer |
| 24 | | | 1700 | | Radar Trainer |
| Land mass | | 6 | 75-300 | None | Optical PPI Trainer |
| Manual | 100-600 5-30 | Manual | 100-600 | Manual | Cadillac Evaluation System |
| Manual | 4-24 | Manual | 100-600 | None | M.A.D. Trainer |
| Manual | 100-600 5-30 | Fixed | Station | None | Search Radar Trainer |
| Manual | 100-600 5-30 | Manual | 100-600 5-30 | None | Primary PPI Plotting Trainer |
| Slaved to device | | 21-A-7 | | | Submarine Attack Teacher |
| 27 | 50-450 | | | 5000 | AN/APS-6 Night Fighter Trainer |
| 27 | 100-900 | | | 10000 | Night Fighter Trainer |
| | | None | None | | GCA Trainer |
| Manual | 100-600 | Manual | 100-600 | 1000 | Airborne Search Radar Trainer |
| | | | | | Target Simulator |
| | | | | | Radar Trainer |
| | | | | | Tactical Trainer |

| SIGNAL SIMULATOR | | | | |
|---|---|---|---|---|
| Rep Rate (cps) | Pulse Length (μ sec) | Beam Width (deg) | Types<br>A. Target I.IFF E. Noise<br>B. Sea Return F. Fading<br>C. Altitude Line G. Jamming<br>D. Range Atten. H. Land Masses | Output<br>A. 30-60 Mc IF<br>B. Video<br>C. Trigger<br>D. 1X Sync Ant |
| 60 or 200 | 4 or 1 | | | |
| 60/200<br>150/600<br>300/400 | | | | A, D |
| | | | | |
| Ext. | | Var | A, D, F, I | B |
| MAD Comparator used with recorder | | | | |
| 200 & Slave | 2 | Var | A, D, F, I | B |
| Sequence scan | | | A | |
| Slaved to SS Radar | | | | |
| Same as | AN/APS-19 | | A, B, C, D, E, I | A |
| Same as | AN/APQ-35 | | A, B, C, D, E, I | A |
| Same as | AN/MPN-1 | | A, D, E, F | A |
| 200 | | | A, B, C, D, H | B, C |
| | | | | |
| | | | | |
| | | | | |

| SPACE SIMULATOR | | SERVICE EQUIPMENT | |
|---|---|---|---|
| Problem Area (sq miles) | Number of Targets | Outputs Required<br>A. Trigger B. 1X Synchro Azimuth<br>C. Voltages Prop to Azimuth & EL<br>D. L.O. Tuning Voltage<br>E. 1X 360° Potentiometer Ant AZ | Radar |
| | | | SA, SC, SK, SR |
| | | | SA, SC, SK, SR |
| 400 X 400 | | A, C, D | AN/APQ-35 |
| 200 X 200 | 30 | A, B | AN/APS-20<br>AN/APA-56, 57 |
| 25 | 1 | | |
| 200 X 200 | 6 | A, B | All Air Search PPI's |
| 100 X 100 or 2500 | | | |
| 2500 | 5 | A, E | SS |
| 200 X 200 | | A, C, D | AN/APS-19 |
| 400 X 400 | | A, C, D | AN/APQ-35 |
| 100 X 100 | | A, C | AN/MPN-1 |
| 400 X 600 Land Mass | | B | AN/APS-20, 31, 33 |
| | 24 | | |
| | | | SX |
| 36 or 360 | | | |

| Size L.W.H. | Weight (lbs) | POWER SOURCE | | | |
|---|---|---|---|---|---|
| | | Volts | Phases | Freq. | K.V.A. |
| | 1645 | 110-130 | 1 | 58-60 | |
| | 1645 | 110-130 | 1 | 58-60 | |
| 2x2x5 | 70 | 115 | 1 | 60 | 375 |
| Consists of 5 15J1c units | | 105-125 | 1 | 60 | |
| 4x4x4 Estimated | 500 | 115 | 1 | 60 | 1 |
| 24"x24"x 24" (3 units) | 550 | 105-125 | 1 | 60 | 1.3 |
| 17"x20"x 48". 16"x 22"x36" | 460<br>960 | 105-125 | 1 | 60 | 2 |
| 16"x19"x 48" | | 115 | 1 | 60 | 2 |
| 20'x1'x7' | 6650 | 230<br>115<br>Plus regular AN/APS-19 required | 3<br>1 | 60<br>60 | 20<br>2.5 |
| Will be mounted in trailer | | Not determined - approx same as 15V4 | | | |
| 12'x4'x7' | 3500 | 230 | 3 | 60 | 5 |
| 8'x4'x5' | | | | | |
| | | | | | |
| | | 90-125 | 1 | 60 | |
| | | | | | |

| Number of Operators that are Trained | Security Class. | of Equipments Produced | Available Date |
|---|---|---|---|
| | R | | |
| | R | | |
| 20 | R | 40 | In Stock |
| Cadillac Crew | C | Under Development | Contemplate 11/49 |
| 1 | C | 1 | Devel. 12-49 |
| Unlimited | C | 16 | October 49 |
| 6 | C | 4 | All Allocated |
| | C | | |
| 2 | C | 6 | In Stock |
| 3 | C | Under Development | Prototype |
| 4 | C | 1 | In Use Olathe, Kansas |
| 1 | C | Under Development | Prototype 8/49 |
| | C | | |
| | C | | |
| | C | | |

| REMARKS | REFERENCE | MODEL |
|---|---|---|
| Incorporates analog computer. To be replaced by OCZ-1. | 6 | OCZ |
| Target course speed and altitude can be changed at the will of instructor. | NE 051324 | OCZ-1 |
| Classroom optical PPI trainer. | | 15AE2 |
| Airborne CIC | NR 784006 | 15AM1 |
| Permits complete tactical submarine search. | NR 825008 | 15G2 |
| | NR 821003 | 15J1C |
| Displayed on large C.R.T. | NR 821004 | 15J2B |
| | NR 821006 | 15M8 |
| | | 15V4 |
| | NR 821002 | 15V5 |
| GCA operations trainer. | | 15W1 |
| | NR 821001 | 15Z3 |
| | NE 051322 | |
| To provide 24 echos. Height finder. | NE 051313 | |
| Gunfire and torpedo tracks shown at 2000 ft/sec at range of 2000 to 16000 yds. | NE 051317 | |

## APPENDIX A
### Electronic Equipment Subject Classification

I. Radar

- A. Altimeters
- B. Indicators
- C. Search Radar
  - 1. Shipboard
  - 2. Airborne
  - 3. Landbased
- D. Target Designation
- E. Trainers
- F. Weapon Control
  - 1. Shipboard
  - 2. Airborne
  - 3. Landbased

II. Communication

- A. Voice and Code
  - 1. Radio
    - a. Receivers
    - b. Transmitters
    - c. Transmitter Receiver Sets
  - 2. Wire
    - a. Intercommunication Systems
    - b. Announcing Systems
    - c. Telephone Systems
    - d. Telegraph Sets
  - 3. Infrared
    - a. Receivers
    - b. Transmitters
- B. Terminal Equipments
  - 1. Telepicture
  - 2. Teletype
    - a. Frequency Shift Keyers
    - b. Frequency Shift Converters
    - c. Printers
    - d. Miscellaneous Accessories
  - 3. Speech Security
  - 4. Television
    - a. Receivers
    - b. Transmitters
- C. Miscellaneous
  - 1. Ships Consoles
  - 2. Signal Lamps
  - 3. Telautograph
  - 4. Antennas

III. Data Transmission

A. Continuous
B. Digital

IV. Countermeasures

A. Intercept and Analysis
   1. Direction Finders
   2. Indicators
   3. Receivers
   4. Recorders
   5. Trainers
B. Deception
   1. Active
   2. Passive
C. Jammers
   1. Transmitters
   2. Search and Jam Systems
   3. Trainers

V. Navigation

A. Direction Finders
B. Buoys
C. Homing Systems
D. Landing Systems
E. Long Range Navigation

VI. Radio Control

A. Aircraft
   1. Automatic Pilot
   2. Bombsight
   3. Remote Control
B. Guided Missiles
   1. Proximity Fuses
   2. Remote Control
   3. Target Seeking
C. Remote Operations

VII. Identification and Recognition

VIII. Sound
A. Echo Ranging and Listening
   1. Sonar
   2. Listening Devices
   3. Fathometer
   4. Sound Location
B. Recording Devices
C. Sono Buoys
D. Training Devices

IX. Radiac

A. Computers
B. Detectors
1. Fixed
2. Portable Survey
3. Dosimeters
C. Trainers

X. Infrared Detection

XI. Magnetic Detection

XII. Computation
A. Analog
B. Digital
C. Stable Elements

XIII. Measurement and Test

* * *

## APPENDIX B
### List of Publications and Sources of Information


1. Catalogue of Electronic Equipment, April 1946, BuShips NavShips 900,116. (Confidential)

2. Chart of Surface Search Radars prepared by BuShips Code 820, March 1949.

3. Catalog of Marine Corps Electronic Equipment, Oct. 1948, TA Descriptive Section.

4. Catalogue of Test Equipment, August 1945, NavShips 900,105.

5. Electronic Equipment Type Allowance Booklet, April 1948, RE 11A 100.

6. List of Naval Electronic Equipment, NavShips 900,123, (formerly Ships 242-A) Jan. 1947. (Confidential)

7. Manual of Test Equipment of Airborne Electrical and Electronic Equipment NavAer 08-5s-78, Jan. 1948. (Confidential)

8. Reference on this number has been deleted.

9. "Electron" Fire Control Radars, BuShips Feb. 1947 NavShips 900,100. (Confidential)

10. Division 14 of the National Defense Research Committee. N.D.R.C. Final Project Report, Dec. 1945.

11. U. S. Radar Survey Section 1 Airborne Radar, Change 1, N.D.R.C. August 1945. (Confidential)

12. U. S. Radar Survey Section 2, Shipborne Radar, N.D.R.C. August 1945. (Confidential)

13. U. S. Radar Survey Section 4, Navigational Radar, Change 1. N.D.R.C. June 1945. (Confidential)

14. U. S. Radar Survey Section 7, Nomenclature Index, N.D.R.C. Dec. 1944. (Confidential)

15. U. S. Radar Survey Section 3, Ground Radar, Change 1, N.D.R.C. May 1945. (Confidential)


NOTE: In addition there are a number of NRL Problem Assignments and RDB Project Cards as noted specifically in the tables.

# RADAR FREQUENCY BA

100 MC — 1 KMC — 10 KMC

## SEARCH RADARS (SHIPBOARD)

- SC-5 195-205, 215-225
- AN/BPS-2,(AN/SPS-1,11)(SR-3,3A,3B,6,6A,6B) 1244 1350
- SR-2 550 660
- SK-1 215 220
- (AN/SPS-6,6A,6B,12,12A,12B) 1250 1350
- AN/SPS-2 1215 1315
- SR-A 192 198, 215 225 SR-A
- AN/SPS-8 3430 3570
- AN/BPS-1,SS-1,ST-1 8740 8890
- (SV-1,2,3,4) 3400 3650
- AN/SPS-4 5450 5825
- SG-3,(SG-7,AN/SPN-6) 3550 3700
- SO-3,4, SU,SU-1,2 9160
- (AN/SPS-1,5,10,10X), (SO-5,6,10),SG-6 6275 6575
- SG-1B 3019 3100
- AN/SPS-3 9080 9375
- SX 2780 2900
- SX 3500 3550
- SP 2785 2820
- AN/SPS-9 3600 (TENT.)

## WEAPON CONTROL (LANDBASED)

- (MK-20,MOD. 0,1,3) 1200
- F.C.B.(MK-2 MOD. 0,1,2) 680 720, 920 970
- AN/MSG-1 3000
- SCR-584 2700 2900
- F.C.B.(AN/UPN-8, AN/APN-54, MK-6 9310
- AN/TPS-13,13A 2927

## SEARCH RADARS (AIRBORNE)

- AN/APS-42 300 430
- AN/APS-20,20A,20B 2850 2910
- AN/APS-4,(15,15A,15B),(19,19A),(31,33) 9300 9430
- AN/APS-3,(6,6A), AN/APS-25,29 9335 9415
- AN/APS-41 5280 5310
- AN/APS-41 9320 9430
- AN/APS-10 9345 9405

## SEARCH RADARS (LANDBASED)

- AN/TPS-1B 1220 1280
- AN/TPS-1D,AN/UPS-1 1220 1350
- AN/KPQ-1 2800 3000
- SO-7M/N 2770,2830,2992,3019
- SP-1M 2787 2818
- AN/MPQ-2A 2845 2905
- AN/MPS-4 6275 6575

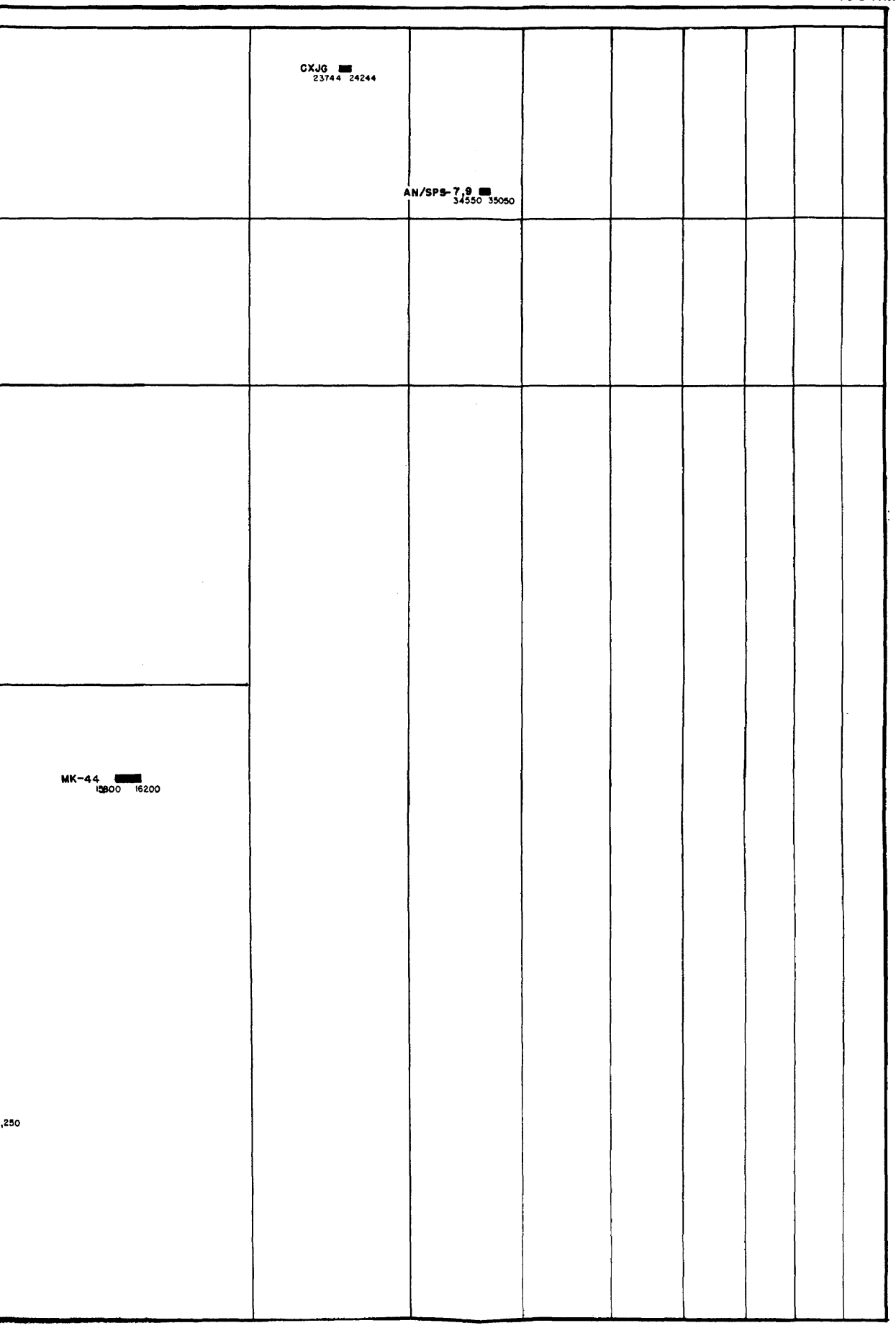
## WEAPON CONTROL (SHIPBOARD)

- MK-12 MOD. 1 920 970
- AN/DPN-7,AN/SPQ-2,SP-1M 2700 2900
- MK-22 MOD. 1, MK-29 MOD. 2 9345 9405
- MK-8 MOD. 3, MK-13, MK-34 MOD. 2,3,4,6,7,8,9,10,11,12,13,14 8740 8890
- (MK-25 MOD. 2,3,6)(MK-35 MOD. 0,1,2) AN/SPG-48, R.E. 50 8500 9600
- MK-7, MK-8 MOD. 2 3000
- AN/SPG-49 5400 5900
- MK-7 MOD. 1 9000
- MK-27 MOD. 2 3071 3100
- (MK-39-MOD. 0,1,2,3)(MK-47 MOD. 0,1) 9000 9160
- MK-28 MOD. 0,2,3 2992 3019
- AN/APN-41 (XN) 2750 2950
- AN/APN-62 2700 3600
- SPIMa 2800

## WEAPON CONTROL (AIRBORNE)

- AN/APB-3 920 1030
- AN/APW-4 2700 2900
- AN/APG-18 9350 9400
- AN/APS-28)(AN/APG-26) 9215 9275
- (AN/APS-21)(AN/APG-30) 9335 9415
- AN/APG-22 10,000 10,250
- AN/APS-21 BEACON 9310±10

## ALTIMETERS

- AN/APN-1 420 460
- AN/APN-22 (XN-1) 1625 1675
- AN/APN-22 (XN-3) 1605 1655
- AN/APN-22(XN-2) 4270 4330

# APPENDIX C