NAVSHIPS 0967-872-5020
TM-03816B-35/2
TM 11-5820-510-35-1

REPAIR AND MAINTENANCE
TECHNICAL MANUAL

FOR

RADIO SET

AN/PRC-41A

DEPARTMENT OF THE NAVY
NAVAL ELECTRONIC SYSTEMS COMMAND

Published: 1 September 1969

NAVSHIPS 0967-872-5020
TM-03816B-35/2
TM11-5820-510-35-1

TABLE OF CONTENTS

Paragraph Page

SECTION 1 - GENERAL INFORMATION

1-1. Scope....1-1
1-2. Equipment Supplied....1-1
1-3. Equipment Required But Not Supplied....1-1
1-4. General Description....1-4
1-5. Description of Units....1-4
a. General....1-4
b. Radio Set AN/PRC-41A....1-4
(1) Radio Set Case CY-3883/PRC-41....1-4
(2) Radio Receiver-Transmitter RT-695A/PRC-41....1-5
(3) Receiver-Transmitter Case CY-3884/PRC-41....1-7
(4) Storage Battery BB-451/U....1-7
(a) General....1-7
(b) Construction....1-8
(c) Cells....1-8
(d) Charge Retention (Dry)....1-8
(e) Activation....1-8
(f) Charge Acceptance....1-8
(g) Storage....1-8
(5) Antenna AS-1404/PRC-41....1-8
(6) Handset H-33R/PT....1-9
(7) Rucksack Frame....1-9
(8) Special Purpose Electrical Cable Assembly CX-10831/PRC-41A....1-9
c. Radio Set Accessory Kit MK-706/PRC-41....1-9
(1) Electronic Equipment Case CY-3885/PRC-41....1-9
(2) Power Supply PP-3700/PRC-41....1-10
(3) Mountings MT-2976/PRC-41 and MT-2977/PRC-41....1-10
(4) Antenna AS-1405/PRC-41 and Accessories....1-11
(5) Antenna Mounting Brackets....1-11
(6) Radio Frequency Cable Assembly CG-55G/U....1-11
(7) Power Electric Cable Assembly CX-8686/PRC-41....1-11
(8) Power Electric Cable Assembly CX-8687/PRC-41....1-11
(9) Special Purpose Electrical Cable Assembly CX-8688/PRC-41....1-12
(10) DC Adapter Cable....1-12
(11) Maintenance Cable Kit....1-12
(12) Took Kit....1-15
1-6. Reference Data....1-15
a. Power Requirements....1-15
b. Frequency Date....1-15
c. Transmitter Data....1-15

Paragraph Page

SECTION 1 - GENERAL INFORMATION (Cont)

d. Receiver Data....1-15
e. Main Receiver Auxiliary Output Data....1-18
f. Guard Receiver Data....1-18
g. Guard Receiver Auxiliary Output Data....1-18
1-7. Factory or Field Changes....1-18
1-8. Preparation for Reshipment....1-19

SECTION 4 - TROUBLESHOOTING

4-1. Logical Troubleshooting....4-1
a. Historical Data Availability....4-1
(1) Symptom Recognition....4-1
(2) Symptom Elaboration....4-1
(3) Listing Probable Faulty Function....4-1
(4) Localizing the Faulty Function....4-1
(5) Localizing Trouble to the Circuit....4-1
(6) Failure Analysis....4-1
b. General Trouble Isolation....4-1
(1) Use of Signal Generator Pad CN-315/URM-26....4-1
(2) Transistor Servicing....4-1
4-2. Overall Functional Description....4-5
a. Radio Set AN/PRC-41A....4-5
b. Test Points....4-7
c. Overall Trouble Isolation....4-9
(1) Test Setup....4-9
(2) Test Equipment Required....4-9
(a) Signal Generator AN/USM-44A 4-9
(b) RF Wattmeter AN/URM-43C....4-9
(c) Electronic Multimeter TS-505/U....4-9
(d) Signal Generator Pad CN-315/urm-26....4-9
(e) Fuse MX-1730/U....4-9
4-3. Overall Main Receiver Functional Section....4-11
a. Description....4-11
b. Test Data....4-11
(1) Test Equipment Required....4-11
(a) Signal Generator AN/USM-44A....4-11
(b) Signal Generator Pad CN-315/URM-26....4-11
(c) Fuse MX-1730/U....4-11
(d) Output Power Meter ME-2/U....4-11
(2) Test Setup....4-11
(3) Functional Section Performance Test....4-11

TABLE OF CONTENTS (Cont)

Paragraph Page

SECTION 4 - TROUBLESHOOTING (Cont)

c. Main Receiver Circuit Description....4-11
(1) Functional Description....4-11
(a) RF and Power Amplifier Module 1A8....4-12
1. RF Amplifiers V1 Through V4....4-12
2. Power Amplifier V5....4-12
3. AVC Amplifier Q1....4-12
4. Output Control Relay K1....4-12
(b) 1t and 2nd IF Amplifier Module 1A2....4-12
1. IF Amplifiers Q1 and Q2....4-12
2. Second Receiver Mixer Q3....4-12
3. Third Receiver Mixer and Transmitter Buffer Q6....4-12
4. Relay Switching....4-15
(c) 3rd IF and Squelch Module 1A3....4-15
1. Filter 1A3FL1 and IF Amplifiers Q1 Q2, and Q3....4-15
2. Audio Detector Q4....4-15
3. AVC Detector Q6....4-15
4. AVC Amplifiers Q5 and Q7....4-15
5. DC Amplifier Q10 and Squelch Relay Amplifier Q8....4-15
(d) Audio Module 1A4....4-16
(2) Test Data....4-16
(a) Test Equipment Required....4-16
1. Oscilloscope AN/ USM-105A....4-16
2. Audio Oscillator TS 382B/U....4-16
3. Signal Generator AN/ USM-44A....4-16
4. Signal Generator AN/ URM-25D....4-16
5. Electronic Multi meter TS-505/U....4-16
6. Output Power Meter ME -2/U....4-16
7. Signal Generator Pad CN-315/URM-26....4-16
8. MX-1730/U....4-16
(b). Test Setup....4-16
(c) Main Receiver Functional Section Circuit Trouble Isolation....4-16

Paragraph Page

Section.4 - TROUBLESHOOTING (Cont)

4-4. Overall Guard Receiver Functional Section....4-20
a. Description....4-20
b. Test Data....4-20
(1) Test Equipment Required....4-20
(a) Signal Generator AN/ USM-44A....4-20
(b) Signal Generator Pad CN-315/Urm-26....4-20
(c) Fuse MX-1730/U....4-20
(d) Output Power Meter ME-2/U....4-20
(2) Test Setup....4-20
(3) Functional Section Performance Test....4-21
c. Guard Receiver Circuit Description....4-21
(1) Functional Description....4-21
(a) Guard Receiver Module 1A7....4-21
1. RF Amplifiers Q1 and Q2....4-21
2. Oscillator Q4....4-21
3. IF Amplifiers Q5, Q6, Q7, Q8 and Q9....4-21
4. Detector Q10....4-21
5. Audio Amplifier Q15 and Squelch Ampli- fier Q13....4-21
6. AVC Amplifiers Q11 and Q12....4-22
(2) Test Data....4-22
(a) Test Equipment Required....4-22
1. Oscilloscope AN/ USM- 105A....4-22
2. Signal Generator AN/ USM-44A....4-22
3. Signal Generator Pad CN-315/URM-26....4-22
4. Fuse MX- 1730/U....4-22
5. Electronic Multimeter TS-505/U....4-22
(b) Test Setup....4-22
(c) Guard Receiver Functional Section Circuit Trouble Isolation....4-22
4-5. Overall Transmitter Functional Section....4-23
a. Description....4-23
b. Test Data....4-24
(1) Test Equipment Required....4-24
(2) Test Setup....4-24
(3) Functional Section Performance Test....4-24

TABLE OF CONTENTS (Cont)

Paragraph Page

SECTION 4 - TROUBLESHOOTING (Cont)

c. Transmitter Circuit Description 4-24
(1) Functional Description 4-24
(a) 1st and 2nd IF Amplifier Module 1A2 4-24
1. Third Receiver Mixer and Transmitter Buffer Q6 4-24
2. Transmitter Mixer Q4 4-24
3. IF Amplifiers Q1 and Q2 and Second Transmitter Mixer 1A9CR1 4-27
(b) RF and Power Amplifier Module 1A8 4-27
(c) Modulator Module 1A6 4-27
(2) Test Data 4-27
(a) Test Equipment Required 4-27
1. RF Wattmeter AN/URM-43C 4-27
2. Electronic Multimeter TS-505/U 4-27
3. Audio Oscillator TS 382B/U 4-27
(b) Test Setup 4-27
(c) Transmitter Functional Section Circuit Trouble Isolation 4-27
4-6. Overall Subordinate Circuits 4-27
a. Description 4-27
b. AF Amplifier Assembly (Buffer) 4-30
(1) Functional Description of AF Amplifier Assembly (Buffer) 4-30
(2) Test Data 4-30
(a) Test Equipment Required 4-30
1. Signal Generator AN/USM-44A 4-30
2. Signal Generator Pad CN-315/URM-26 4-30
3. Fuse MX-1730/U 4-30
4. Electronic Multimeter TS-505/U 4-30
(b) Test Setup 4-30
(c) AF Amplifier Assembly (Buffer) Functional Section Circuit, Trouble Isolation 4-30
c. Main Chassis 1A9 4-31
(1) Functional Description 4-31
(a) Receive-Transmit Switch 4-31
(2) Test Data 4-31
d. Primary Power Circuits 4-31
(1) Functional Description 4-31
(a) Storage Battery BB-451/U. 4-31
(b) Power Supply PP-3700/PRC-41 4-32
(2) Storage Battery BB-451/U, ...4-32
Test Data 4-33
(3) Power Supply PP-3700/PRC-41, Test Data 4-33
(a) Test Equipment Required 4-33
(b) Test Setup 4-33
(c) Power Supply PP-3700/PRC-41, Circuit Trouble Isolation 4-33
e. Power Distribution Circuits 4-33
(1) Functional Description 4-33
(a) DC Power Supply Module 1A1 4-36
(b) Filament Circuits 4-36
(c) Receive-transmit Relays, Dial Light, and Guard Receive Module 4-39
(2) Test Data 4-39
(a) Test Equipment Required 4-39
(b) Test Setup 4-39
(c) Power Distribution Circuit, Trouble Isolation 4-42
f. Frequency Generator Circuits 4-42
(1) Functional Description, Receive Operation 4-42
(2) Functional Description, Transmit Operation 4-42
(3) IF Frequency Calculation 4-42
(a) Spectrum Generator Module 4-42
(b) High-Frequency Oscillator 1A2Q5 4-43
(c) Low-Frequency Oscillator 1A2Q7 4-43
(4) Test Data 4-44
(a) Test Equipment Required 4-44
(b) Test Setup 4-44
(c) Frequency Generation Circuit, Trouble Isolation 4-44
g. Control Circuits 4-44
(1) Functional Description 4-44
(a) Mechanical Frequency Selection 4-44
(b) Receive Operational Switching 4-44
(c) Transmit Operational Switching 4-46
(2) Control Circuits Trouble Isolation 4-47

TABLE OF CONTENTS (Cont)

Paragraph Page

SECTION 4 - TROUBLESHOOTING (Cont)

h. Omnidirectional and Directional Antennas 4-47
(1) Antenna AS-1405/PRC-41....4-47
(2) Antenna AS-1404/PRC-41....4-47
4-7. History of Modifications....4-47

SECTION 5 - MAINTENANCE

5-1. Failure, and Performance and Operational Reports....5-1
5-2. Preventive Maintenance....5-1
a. Maintenance Standards....5-1
(1) General....5-1
(2) Test Equipment and Special Tools....5-1
(3) Special Procedures....5-1
(a) Junction Box....5-1
(4) Reference Standard Procedures....5-1
(5) Preventive Maintenance Procedures....5-1
(6) Periodic Schedule Charts
5-3. Tuning and Adjustment....5-27
a. General....5-27
(1) Test Equipment....5-27
(2) Special Tools and Cables....5-27
(3) Preliminary Test Setup....5-27
b. Alignment of High- and Low - Frequency Oscillators of 1st and 2nd IF Amplifier Module....5-28
(1) Test Equipment Required....5-28
(2) Alignment Setup....5-28
(3) Procedure....5-28
c. Alignment of 1st and 2nd IF Amplifier Stages of 1st and 2nd IF Amplifier Module....5-28
(1) Test Equipment Required....5-28
(2) Alignment Setup....5-28
(3) Procedure....5-29
d. Alignment of Spectrum Generator Module....5-30
(1) Test Equipment Required....5-30
(2) Alignment Setup....5-30
(3) Procedure....5-30
e. Alignment of RF and Power Amplifier Module....5-31
(1) Test Equipment Required....5-31
(2) Alignment Setup....5-31
(3) Procedure....5-32
f. Alignment of Guard Receiver Module 5-33
(1) Test Equipment Required....5-33
(2) Alignment Setup....5-33
(3) Procedure....5-34

Paragraph Page

SECTION 5 - MAINTENANCE (Cont)

g. Final Adjustments....5-34
(1) General....
(a) 3rd IF and Squelch Module....5-34
5-4. Repair....5-35
a. Removal, Repair, and Replacement of Parts, Modules, and Units....5-35
b. Module Removal....5-35
c. Disassembly....5-35
(1) 1st and 2nd IF Amplifier Module....5-35
(a) Z1, Z2, and Z3 Slug Rack....5-35
(b) Z4, Z5, and Z6 Slug Rack....5-37
(c) Oscillator and Switchboard and RF Coil Assemblies....5-37
(2) RF and Power Amplifier Module....5-37
(a) Z1, Z2, and Z3 Tuned Circuits....5-37
(b) Z4 and Z5 Tuned Circuits....5-37
(3) Spectrum Generator Module....5-37
(a) Crystal and Switch Section S2....5-37
(b) Coil Turret Section....5-38
(c) Tuning Circuit Section....5-38
(4) Radio Receiver-Transmitter RT-695A/PRC-41 Main Chassis....5-38
d. Repair....5-38
e. Reassembly....5-38
(1) 1st and 2nd IF Amplifier Module....5-38
(a) Z1, Z2, and Z3 Slug Rack....5-38
(b) Z4, Z5, and Z6 Slug Rack....5-39
(c) Oscillator and Switchboard, and RF Coil Assemblies....5-39
(2) RF and Power Amplifier Module....5-39
(a) Z1, Z2, and Z3 Tuned Circuits....5-39
(b) Z4 and Z5 Tuned Circuits....5-39
(3) Spectrum Generator Module....5-40
(a) Crystal and Switch S2 Section....5-40
(b) Coil Turret Section....5-40
(c) Tuning Circuit Section....5-40
(4) Radio Receiver-Transmitter RT-695A/PRC-41 Main Chassis....5-40
f. Synchronization....5-41
(1)1st and 2nd IF Amplifier Module....5-41

ORIGINAL

TABLE OF CONTENTS (Cont)

Paragraph Page

SECTION 5 - MAINTENANCE (Cont)

(2) RF and Power Amplifier Module 5-41
(3) Spectrum Generator Module 5-41
g. Replacement 5-41
(1) Spectrum Generator Module 5-41
(3) RF and Power Amplifier Module....5-42
(3) 1st and 2nd IF Amplifier Module....5-42
5-5. Voltage and Resistance Measurements....5-42
5-6. Lubrication 5-42
5-7. Parts Location....5-42

SECTION 6 - PARTS LIST

6-1. Introduction....6-1
a. Reference Designations....6-1
b. Ref Desig Prefix 6-1
6-2. List of Units 6-1
6-3. Maintenance Parts List....6-1.1
6-4. List of Manufacturers....6-1.1
6-5. Stock Number Identification....6-1.1
6-6. Notes....6-1.1

LIST OF ILLUSTRATIONS

Figure Page

SECTION 1 - GENERAL INFORMATION

1-1. Radio Set AN/PRC-41A, Operating Configuration 1-0
1-2. Radio Set AN/PRC-41A, Equipment Contents of Radio Set Case CY-3883/PRC-41 1-5
1-3. Radio Set Accessory Kit MK-706/ PRC-41, Accessory Contents of Electronic Equipment Case CY-3885/PRC -41 1-6
1-4. Radio Receiver- Transmitter RT-695A/PRC-41, Receiver-Transmitter Case CY-3884/ PRC-41 Displaced 1-7
1-5. Storage Battery BB-451/U, Oblique View 1-8
1-6. Radio Set AN/PRC-41A, Man-Pack Operation Configuration 1-9
1-7. Power Supply PP-3700/PRC-41, Oblique View 1-10
1-8. Mounting MT-2976/PRC-41 and MT-2977/PRC-41, Oblique View 1-11
1-9. Antenna AS-1405/PRC-41, Mast AB-777/PRC-41 and Accessories....1-12
1-10. Antenna Mounting Bracket 1-13
1-11. Cable Assemblies. 1-13
1-12. Maintenance Cable Kit....1-14
1-13. Contents of Tool Kit 1-15

Figure Page

SECTION 4 - TROUBLESHOOTING

4-1. Radio Receiver- Transmitter, RT-695A/ PRC-41, Module and Test-Point Locations....4-2
4-2. Transistor Base Diagrams 4-5
4-3. Radio Set AN/PRC-41A, Overall Functional Block Diagram 4-6
4-4. Radio Receiver-Transmitter RT-695A/PRC-41, Receiver Functional Section Block Diagram 4-13
4-5. Radio Receiver-Transmitter RT-695A/PRC-41, Transmitter Functional Section Block Diagram 4-25
4-6. Receive-Transmit Switch, Simplified Schematic Diagram....4-32
4-7. Storage Battery BB-451/U, Typical Rate of Discharge 4-33
4-8. Power Supply PP-3700/PRC-41, Test Setup 4-34
4-9. Radio Receiver- Transmitter RT-695A/ PRC-41, Power Distribution, Simplified Schematic Diagram....4-37
4-10. Radio Receiver-Transmitter RT-695A/PRC-41, Filament Circuits....4-39
4-11. Main Receiver and Transmitter, Functional Section, Frequency Scheme....4-43
4-12. Frequency Selection, Functional Diagram 4-46
4-13. Radio Receiver-Transmitter RT-695A/ PRC-44, Receiver, Functional Switching Diagram....4-49

LIST OF ILLUSTRATIONS (Cont)

Figure Page

SECTION 4 - TROUBLESHOOTING (Cont)

4-14. Radio Receiver- Transmitter RT- 695A/ PRC-41, Transmitter,Functional Switching Diagram 4-51
4-15. Antenna AS-1405/PRC-41, Azimuthal Plane Voltage Pattern 4-53
4-16. Antenna AS-1405/PRC-41, Voltage Standing-Wave Ratio....4-54
4-17. Antenna AS- 1404/PRC-41, Azimuthal Voltage Pattern 4-55
4-18. Antenna AS-1404/PRC-41, Voltage Standing-Wave Ratio....4-56
4-19. Radio Set AN/PRC-41A, Functional Section Servicing Block Diagram....4-57

SECTION 5 - MAINTENANCE

5-1. Junction Box, Schematic Diagram....5-2
5-2. Junction Box, Suggested Layout for Fabrication....5-2
5-3. Examples of Periodic Schedule Charts To Be Prepared for Recording Preventive Maintenance Results....5-4
5-4. Preventive Maintenance Test, D1 and D2....5-5
5-5. Preventive Maintenance Test, W1....5-6
5-6. Preventive Maintenance Test, M1....5-7
5-7. Preventive Maintenance Test, M2....5-8
5-8. Preventive Maintenance Test, M3....5-9
5-9. Preventive Maintenance Test, M4....5-11
5-10. Preventive Maintenance Test, M5....5-12
5-11. Preventive Maintenance Test, M6....5-13
5-12. Preventive Maintenance Test, SA1....5-14
5-13. Preventive Maintenance Test, SA2....5-15
5-14. Preventive Maintenance Test, SA3....5-17
5-15. Preventive Maintenance Test, SA4 and SA5 5-19
5-16. Preventive Maintenance Test, SA6 and SA7 5-20
5-17. Preventive Maintenance Test, SA8 and SA9 5-22
5-18. Preventive Maintenance Test, SA10. 5-24
5-19. Preventive Maintenance Test, SA11....5-25
5-20. Preventive Maintenance Test, SA12. 5-26
5-21. Radio Receiver-Transmitter RT- 695A/PRC-41, Standard Test Bench Setup 5-28
5-22. Main Chassis Couplers in the 225-MHz Position....5-29
5-23. Spectrum Generator Module, Tuning Capacitor Rotor Tab Z1, Z2, Z3, Adjustment Diagram....5-30
5-24. Spectrum Generator Module, Rotor-Stator Coincidence at 225 MHz....5-31

Figure Page

SECTION 5 - MAINTENANCE (Cont)

5-25. RF and Power Amplifier Module, Tuning Capacitor Rotor Tab Z1, Z2, and Z3, Adjustment Diagram 5-32
5-26. RF and Power Amplifier Module, Tuning Capacitor Rotor Tab Z1, Z4, and Z5, Adjustment Diagram 5-32
5-27. RF and Power Amplifier Module, Rotor-Stator Coincidence at 225 MHz....5-33
5-28. 1st and 2nd IF Amplifier Module, Switch and Cam Positioning Diagram 5-36
5-29. RF and Power Amplifier Module, Left Side View, Lubrication Points....5-48
5-30. RF and Power Amplifier Module, Right Side View, Lubrication Points 5-48
5-31. 1st and 2nd IF Amplifier Module, Lubrication Points....5-49
5-32. Spectrum Generator Module, Lubrication Points 5-49
5-33. Radio Receiver- Transmitter RT-695A/ PRC-41, Right Side View, Lubrication Points 5-50
5-34. Radio Receiver- Transmitter RT-695A/ PRC-41, Left Side View, Lubrication Points 5-51
5-35. Radio Set AN/PRC-41A, Parts List Unit Designation....5-52
5-36. Radio Set Accessory Kit MK-706/ PRC-41, Parts List Unit Designation 5-52
5-37. Radio Receiver-Transmitter RT-695A/ PRC-41 and Receiver-Transmitter-Case CY-3884/PRC-41 5-53
5-38. DC Power Supply Module, Oblique View, Parts Location....5-53
5-39. DC Power Supply Module, Bottom View, Parts Location....5-54
5-40. 1st and 2nd IF Amplifier Module, Wired Bracket, Parts Location 5-55
5-41. 3rd IF and Squelch Module, Right Side View, Parts Location 5-56
5-42. 3rd IF and Squelch Module, Left Side View, Parts Location....5-57
5-43. Audio Amplifier Module, Rear View, Parts Location 5-58
5-44. Modulator Module, Front View, Parts Location 5-58
5-45. Guard Receiver Module, Right Side View, Parts Location....5-59
5-46. Guard Receiver Module, Right Side View, Parts Location....5-59
5-47. Guard Receiver Module, Left Side View, Parts Location....5-60
5-48. Guard Receiver Module, Left Side View, Parts Location....5-60

ORIGINAL

LIST OF ILLUSTRATIONS (Cont)

Figure Page

SECTION 5 - MAINTENANCE (Cont)

5-49. Guard Receiver Module, Terminal Board, Parts Location 5-61
5-50. RF and Power Amplifier Module, Rear View, Parts Location 5-62
5-51. RF and Power Amplifier Module, Left Side View, Parts Location 5-63
5-52. RF and Power Amplifier Module, Right Side View, Parts Location 5-63
5-53. Radio Receiver-Transmitter RT-695A/PRC-41, Left Side View, Parts Location 5-64
5-54. Radio Receiver-Transmitter RT 695A/PRC-41, Front Panel, Parts Location 5-65
5-55. Receiver-Transmitter Case CY-3884/ PRC-41, Inside View, Parts Location 5-66
5-56. Power Supply PP-3700/PRC-41, Dust Cover Displaced, Parts Location 5-66
5-57. Power Supply PP-3700/PRC-41, Bottom View, Dust Cover Removed, Parts Location 5-67
5-58. Power Supply PP-3700/PRC-41, Side View, Dust Cover Removed, Parts Location 5-67
5-59. Power Supply PP-3700/PRC-41, End View, Dust Cover Removed, Parts Location 5-68
5-60. Power Supply PP-3700/PRC-41, Oblique View, Parts Location 5-68
5-61. Power Supply PP-3700/PRC-41, Side View, Dust Cover Removed, Parts Location 5-69
5-62. Antenna AS-1405/PRC-41, Parts Location 5-69
5-63. Mounting MT-2965/PRC-41, Parts Location 5-70
5-64. Mounting MT-2976/PRC-41, Rear View, Parts Location 5-70
5-65. DC Adapter Cable, Parts Location 5-71
5-66. Cable Assemblies, Parts Location 5-71
5-67. Mast AB-777/PRC-41, Parts Location 5-72
5-68. Adjustable Antenna Mast Adapter, Parts Location 5-72
5-69. Mounting MT-2977/PRC-41, Parts Location 5-73
5-70. Rucksack Frame and Harness 5-73
5-71. Antenna Mounting Bracket, Parts Location 5-74
5-72. Maintenance Cable Set, Parts Location 5-75
5-73. DC Maintenance Adapter, Parts Location 5-76

Figure Page

SECTION 5 - MAINTENANCE (Cont)

5-74. Directional Antenna Carrying Bracket, Parts Location 5-76
5-75. 1st and 2nd IF Amplifier Module, Exploded View 5-77
5-76. 1st and 2nd IF Amplifier Module, Oscillator and Switchboard Assembly, Exploded View 5-79
5-77. 1st and 2nd IF Amplifier Module, RF Coil Assembly, Exploded View 5-79
5-78. 1st and 2nd IF Amplifier Module, Amplifier Subassembly, Exploded View 5-81
5-79. Spectrum Generator Module, Exploded View 5-82
5-80. RF and Power Amplifier Module, Exploded View 5-83
5-81. Radio Receiver-Transmitter RT-695A/PRC-41, Main Chassis, Exploded View 5-84
5-82. AF Amplifier Assembly (Buffer) 5-85
5-83. Connector and Filter Assembly 5-85
5-84. Receive-Transmit Switch, Exploded View 5-86
5-85. Special Purpose Electrical Cable Assembly CX-10831/PRC-41A 5-86
5-86. Power Supply PP-3700/PRC-41, Schematic Diagram 5-87
5-87. DC Power Supply 1A1, Schematic Diagram 5-89
5-88. 1st and 2nd IF Amplifier 1A2, Schematic Diagram 5-91
5-89. 3rd IF and Squelch 1A3, Schematic Diagram 5-93
5-90. Audio 1A4, Schematic Diagram. 5-95
5-91. Spectrum Generator 1A5, Schematic Diagram 5-97
5-92. Modulator 1A6, Schematic Diagram 5-99
5-93. Guard Receiver 1A7, Schematic Diagram 5-101
5-94. RF amd Power Amplifier 1A8, Schematic Diagram 5-103
5-95. Radio Set AN/PRC-41A, Interconnection Diagram 5-104
5-96. Radio Receiver-Transmitter RT-695A/PRC-41, Main Chassis, Wiring Diagram 5-106
5-97. Electrical Wire Code 5-107
5-98. Radio Set AN/PRC-41A, Schematic Diagram 5-109
5-99. Mounting MT-2976/PRC-41, Wiring Diagram and Schematic Diagram 5-115

LIST OF TABLES

Table Page

SECTION 1 - GENERAL INFORMATION

1-1. Radio Set AN/PRC-41A, Equipment Supplied....1-1
1-2. Radio Set Accessory Kit MK-706/ PRC-41, Equipment Supplied....1-2
1-3. Equipment Required But Not Supplied....1-3
1-4. Contents of Maintenance Cable Kit....1-16
1-5. Contents of Tool Kit....1-17

SECTION 4 - TROUBLESHOOTING

4-1. How to Avoid Damage to Transistors While Servicing Circuits....4-3
4-2. Test Points....4-7
4-3. Overall Trouble Isolation....4-10
4-4. Main Receiver Functional Section, Trouble Isolation....4-16
4-5. Guard Receiver Functional Section, Trouble Isolation....4-22
4-6. Transmitter Functional Section, Trouble Isolation4-8
4-7. AF Amplifier Assembly (Buffer) Circuits, Trouble Isolation....4-31
4-8. Power Supply PP-3700/PRC-41, Trouble Isolation....4-35
4-9. Power Distribution Circuits....4-40
4-10. Frequency Generation, Circuit Trouble Isolation....4-45

Table Page

SECTION 5 - MAINTENANCE

5-1. Reference Standards Procedures....5-3
5-2. DC Power Supply Module, Voltage Measurements....5-43
5-3. 1st and 2nd IF Amplifier Module, Voltage Measurements....5-43
5-4. 3rd IF and Squelch Module, Voltage Measurements....5-43
5-5. Audio Module, Voltage Measurements....5-44
5-6. Spectrum Generator Module, Voltage Measurements....5-44
5-7. Spectrum Generator Module, Resistance Measurements....5-44
5-8. Modulator Module, Voltage Measurements....5-44
5-9. Guard Receiver Module, Voltage Measurements....5-45
5-10. .RF and Power Amplifier Module, Voltage Measurements....5-45
5-11. RF and Power Amplifier Module, Resistance Measurements....5-46
5-12. Radio Receiver-Transmitter RT 695A/PRC-41, Main Chassis Voltage Measurements....5-46
5-13. Power Supply PP-3700/PRC-41, Normal Voltage Measurements....5-46
5-14. Power Supply PP-3700/PRC-41, Overload Trip Voltage Measurements....5-46
5-15. Lubrication Instructions....5-47

SECTION 6 - PARTS LIST

6-1. List of Units....6-2
6-2. Maintenance Parts List....6-3
6-3. List of Manufacturers....6-51

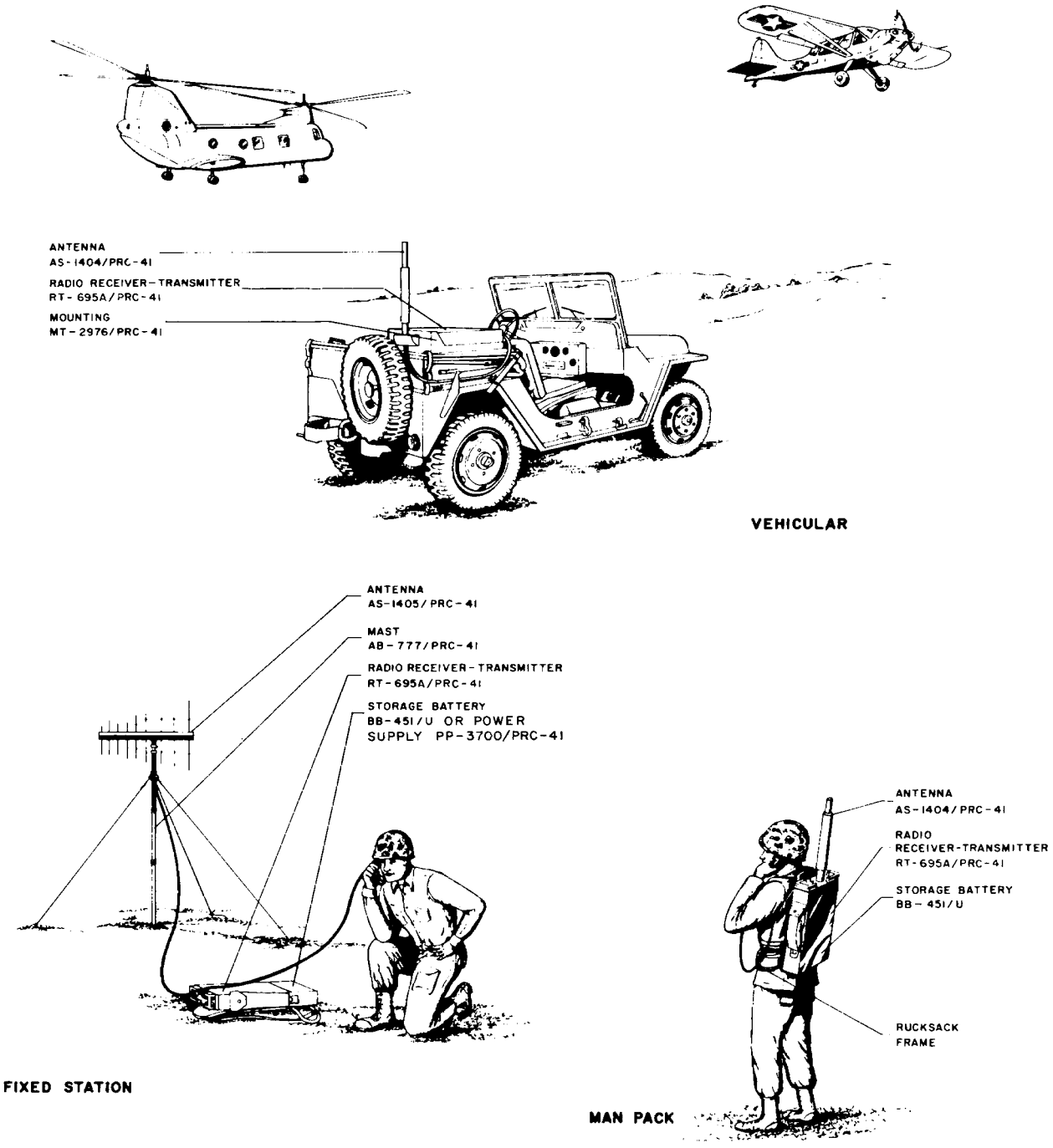

Figure 1-1. Radio Set AN/PRC-41A, Operating Configuration

Original

SECTION 1

GENERAL INFORMATION

1-1. SCOPE.

Information applicable to Radio Set AN/PRC-41A is contained in the Installation and Operation Technical Manual for Radio Set AN/PRC-41A NavShips 0967-872-5010 end the Repair and Maintenance Technical Manual for Radio Set AN/PRC-41A NavShips 0967-872-5020. The format and content of these manuals is in accordance with the requirements of Military Specification MIL -M - 15071 F (SHIPS) and contract N00039-69-C-3511. The installation and operation technical manual includes sections 1, 2, and 3. The repair and maintenance technical manual includes sections 1, 4, 5, and 6. These manuals are applicable to the items and accessories of Radio Set AN/PRC-41A. Section 1 contains a general description, provides reference data, lists the applicable items and accessories, and provides information required for the preparation for reshipment of the Radio Set AN/PRC-41A equipment. Section 2 provides installation information such as unpacking, power requirements for operation, site selection, inspection and adjustment, and interference reduction. Section 3 contains operating instructions. Section 4 provides theoretical description and test data of the functional sections and subordinate circuits of the equipment. Section 5 provides preventive maintenance instructions, repair information, and illustrations which are applicable to all sections such as part location, exploded views, connection diagrams, and overall equipment schematics. Section 6 lists the detail parts of the items and accessories of Radio Set AN/PRC-41A. These technical manuals are in effect upon receipt. Extracts from these publications may be made to facilitate the preparation of other Department of Defense publications.

1-2. EQUIPMENT SUPPLIED.

Radio Set AN/PRC-41A consists of the equipment contained in Radio Set Case CY-3883/PRC-41. Refer to table 1-1 and figure 1-2. Radio Set Accessory Kit MK-706/PRC-41 consists of the equipment contained in Electronic Equipment Case CY-3885/PRC-41. Refer to table 1-2 and figures 1-1 and 1-3.

1-3. EQUIPMENT REQUIRED BUT NOT SUPPLIED.

The equipment required for maintenance of Radio Set AN/PRC-41A is listed in table 1-3.

TABLE 1-1. RADIO SET AN/PRC-41A, EQUIPMENT SUPPLIED

ITEM	QTY	NOMENCLATURE		OVERALL DIMENSIONS (in)			VOL (in^3)	WT (lb)
		NAME	DESIGNATION	H	W	D		
1	1	Radio set case (less contents)	CY-3883/PRC-41	15-1/2	35	26-1/2	14,376	82.5
2	1	Radio receiver-transmitter (without case (CY-884/ PRC-41)	RT-695A/PRC-41	14	11-5/16	4-9/16	812	18.5
3	1	Receiver-transmitter case	CY-3884/PRC-41	12-5/8	11-3/16	4-15/32	635	3.6
4	3	Storage battery	BB-451/U	7-11/16	11-9/16	4-9/64	402	16.0
5	1	Antenna	AS-1404/PRC-41	23-1/2	1-3/4 dia			.07
6	1	Handset	H-33E/PT (GFE)	2	8	3-3/8		1.2
7	1	Rucksack frame	(GFE)	19	17	6-1/4		1.5
8	1	Harness set						3.1
9	2	Installation and operation technical manual	NavShips 0967-872-5010 TM-03816B-12/1 TM-11-5820-510-12-1	8-1/2	11	1-1/2		