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|---------------------------|------------------|--|-----------------------------------|------------------|-------------------------|
| Engineer: Chris Samios | Date: 5/30/02 |  JPS Communications 5800 Departure Drive, Raleigh, NC 27616 | | | |
| Drawn: Jack Curtis | Date: 5/30/02 | | | | |
| Approved: CTS | Date: 5/30/02 | Title: ACU RADIO APPLICATION NOTES | | | |
| Issued/ Revised | Date: 3/9/04 | Size: A | Dwg. #: 5961-271132-APP | Rev: A | Sheet: 1 Of 4 |

APPLIES TO:

Motorola Spectra Mobile (Dash-mount)
Motorola Spectra Mobile (Trunk-mount)

RADIO MODIFICATIONS:

The Motorola Spectra radios are shipped from the factory with internal jumpers set disabling PTT and external MIC audio to the rear panel DB-15 connector. The internal Jumpers are surface mount zero Ohm resistors that will need to be moved prior to connecting the radio to the ACU-1000. The modification will require proper surface mount soldering/de-soldering tools. Below are the steps needed to move the jumpers (resistors);

- 1) Remove the top cover of the radio.
- 2) Remove the four corner screws from the large cover plate and carefully remove it by pulling straight up on the strap.
- 3) The Command Board has two large connectors, P502 on front of the board and P503 on the rear. The board also has a large IC (U450) located on the left side. U450's heat sink is screwed to the metal case of the radio.
- 4) Remove the screw in the middle of the board as well as the screw holding the U450 heat sink to the radio case. There may be silicone compound around the screw and between the heat sink and the radio chassis.
- 5) Using two small flat-blade screwdrivers, disconnect P503 by pushing back on the receptacle. Be careful not to push the receptacle too far or it may be difficult to reattach the connector when reinserting the board.
- 6) Carefully lift the rear edge of the board using needle-nose pliers until the board can be disconnected from P502.
- 7) Locate the zero Ohm resistor JU518 on the top of the board (See Figure 1.) Carefully unsolder resistor JU518 and reinstall it in position JU500 on the other side of the board (See Figure 2.).
- 8) On the bottom side, remove the zero Ohm resistor JU521 and reinstall it in position JU513.
- 9) Carefully place the board back into position by first slipping the connector P503 on the front edge onto the mating pins, and then lowering the rear edge of the board into place. (It may be necessary to hold connector P503 out of the way with a small screwdriver.)
- 10) Using two small screwdrivers, one on each side, carefully work the connector P503 onto the pins on the rear of the board.
- 11) Replace the screw in the center of the board, and the screw fastening the U450 heat sink to the metal case.
- 12) Replace the cover plate and re-insert the four corner screws.
- 13) Re-attach the top cover.

RADIO PROGRAMMING:

1. Mobile radios should normally be programmed for low transmit power.

RADIO CONTROLS:

1. Adjust the Volume Control until the yellow "SIGNAL" indicator on the associated DSP Module flashes with receive audio. This is approximately level 7 or 8.

CABLING:

Standard ACU-1000 and ACU-T Interface cables are made up of a 2 foot TRP Radio Tray Interface cable and the appropriate 13-foot extension cable.

| | | <u>Dash-Mount</u> |
|--------------------------------|---------------------|------------------------------------|
| ACU-1000 Interface Cable | JPS P/N 5961-291132 | (P/N 5961-271132 + 5961-261002-00) |
| ACU-T Interface Cable | JPS P/N 5961-281132 | (P/N 5961-271132 + 5961-281013-00) |
| TRP-1000 Shelf Interface Cable | JPS P/N 5961-271132 | |
| RF Connector Type | Mini UHF | |

| | | <u>Trunk-Mount</u> |
|--------------------------------|---------------------|--|
| ACU-1000 Interface Cable | JPS P/N 5961-291219 | (P/N 5961-271219 + P/N 5961-261002-00) |
| ACU-T Interface Cable | JPS P/N 5961-281219 | (P/N 5961-271219 + P/N 5961-281013-00) |
| TRP-1000 Shelf Interface Cable | JPS P/N 5961-271219 | |
| RF Connector Type | Mini UHF | |

DSP PROGRAMMING:

| | | |
|-----------------------------|-------------|----------------------------|
| RX Level | 3* | 0 dBm* |
| TX Level | 6* | 0 dBm* |
| Squelch Type | VOX* | - See note below |
| COR Polarity | Active Low* | |
| High Frequency Equalizer | 6 | +3.5 dB |
| RX Audio Delay | 2* | 100 ms* |
| TX Audio Delay (Radio type) | 0* | No Delay* - See note below |
| Noise Reduction Value | 0* | Off* |
| VOX/VMR Threshold | 1* | Med1* |
| VOX/VMR Hang Time | 3* | 775* |
| COR Inhibit After PTT | 1* | 100 ms* - See note below |
| All Others | As needed | |

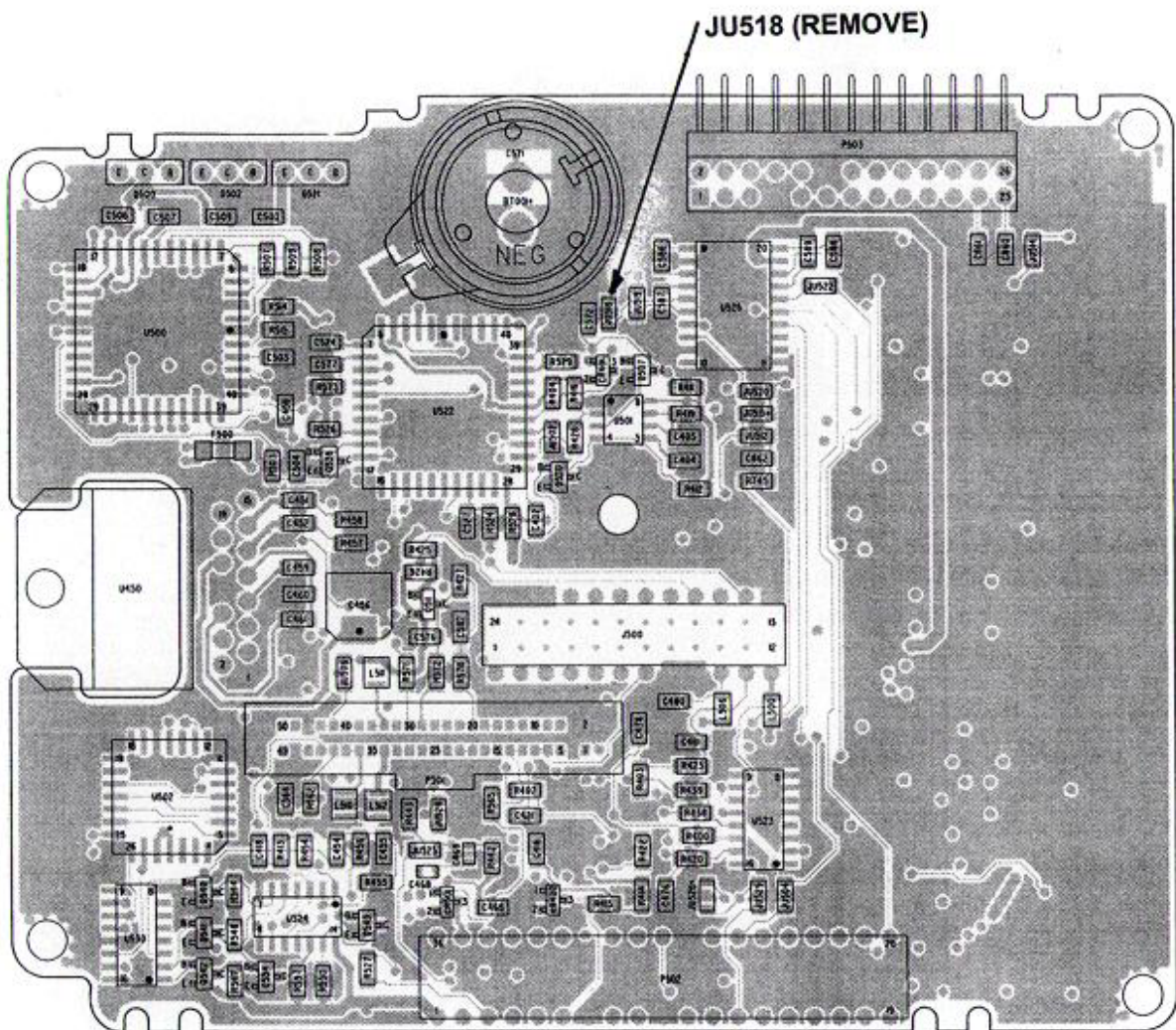
(* Indicates Default Value)

NOTES:

The modification instructions given above are based on Rev. F printed circuit boards. The modifications required for other revisions are likely to be similar.

For trunked radios:

1. COR Inhibit After PTT time may need to be increased to prevent "ping-pong" effect. If this does not resolve the problem, Squelch Type may need to be changed to VMR.
2. TX Audio Delay may need to be added to account time for channel acquisition. (If first syllables are lost, add more delay.)



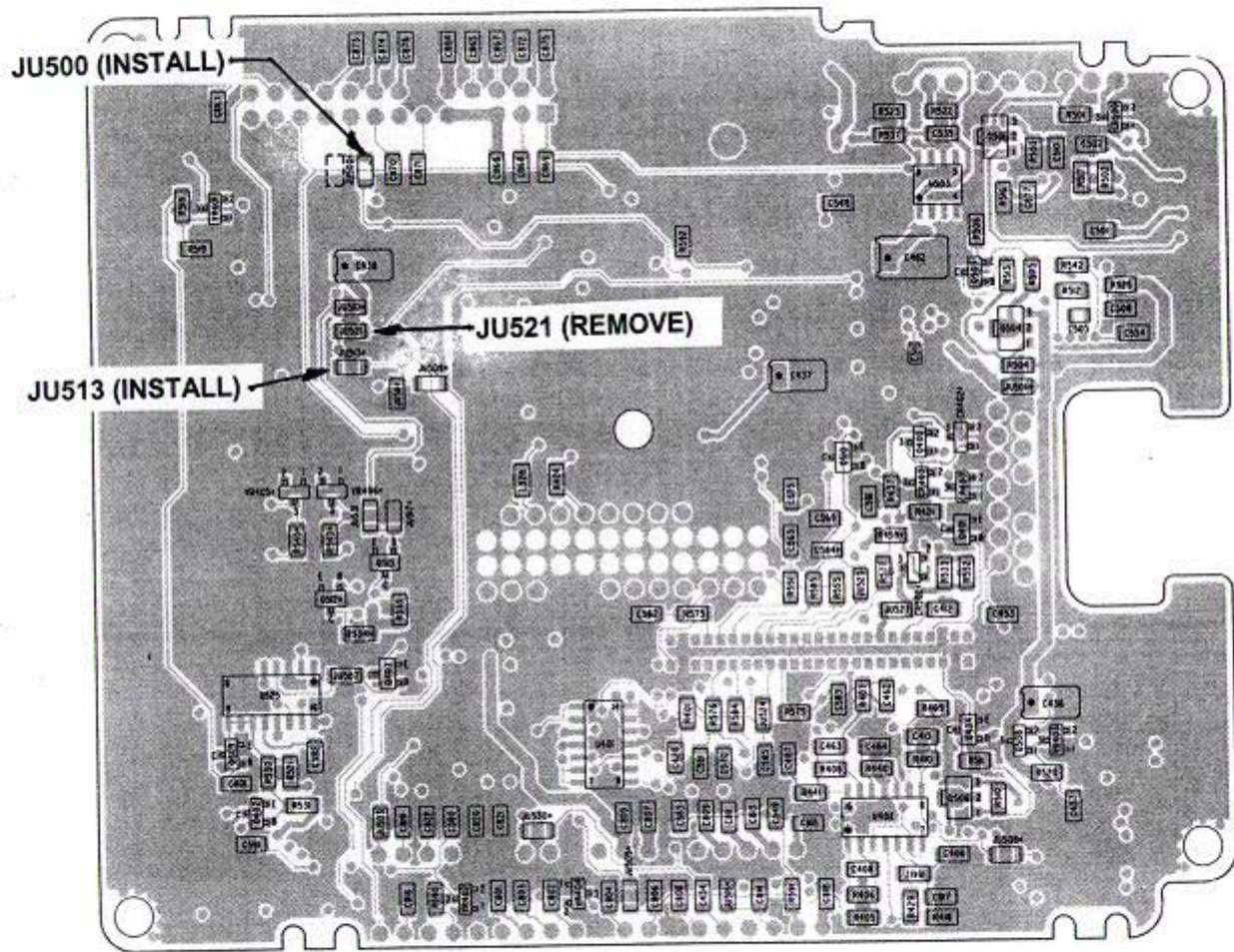
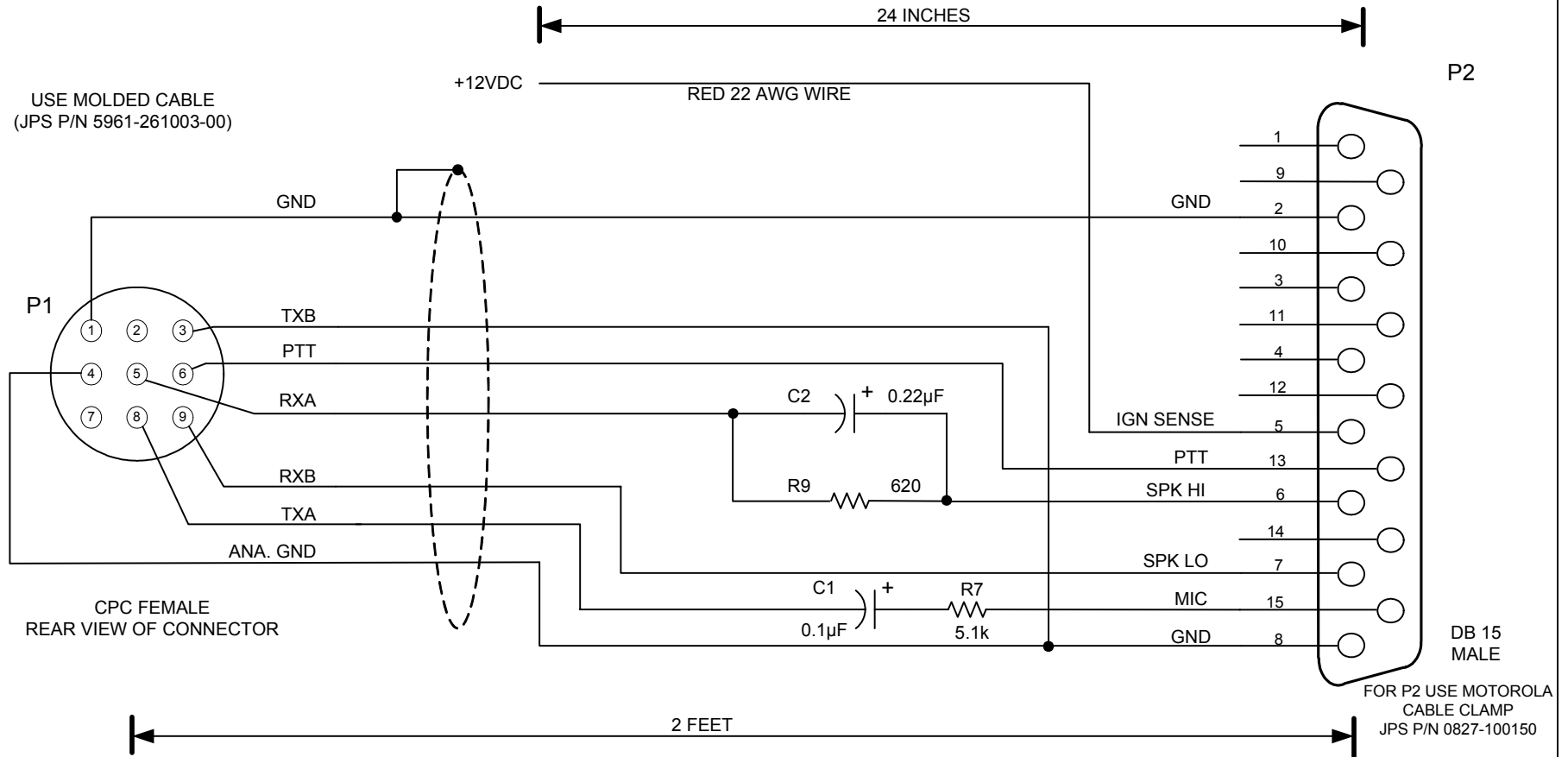


FIGURE 2. COMMAND BOARD - BOTTOM VIEW

PURCHASED PART

| Rev | ECO | Date |
|-----|-----|------|
| A | | |



COMPONENT PCB
(JPS P/N 5961-271000)

C1 JPS P/N 0327-104101
C2 JPS P/N 0327-226500
R7 JPS P/N 1820-512000
R9 JPS P/N 1820-621000
JU5

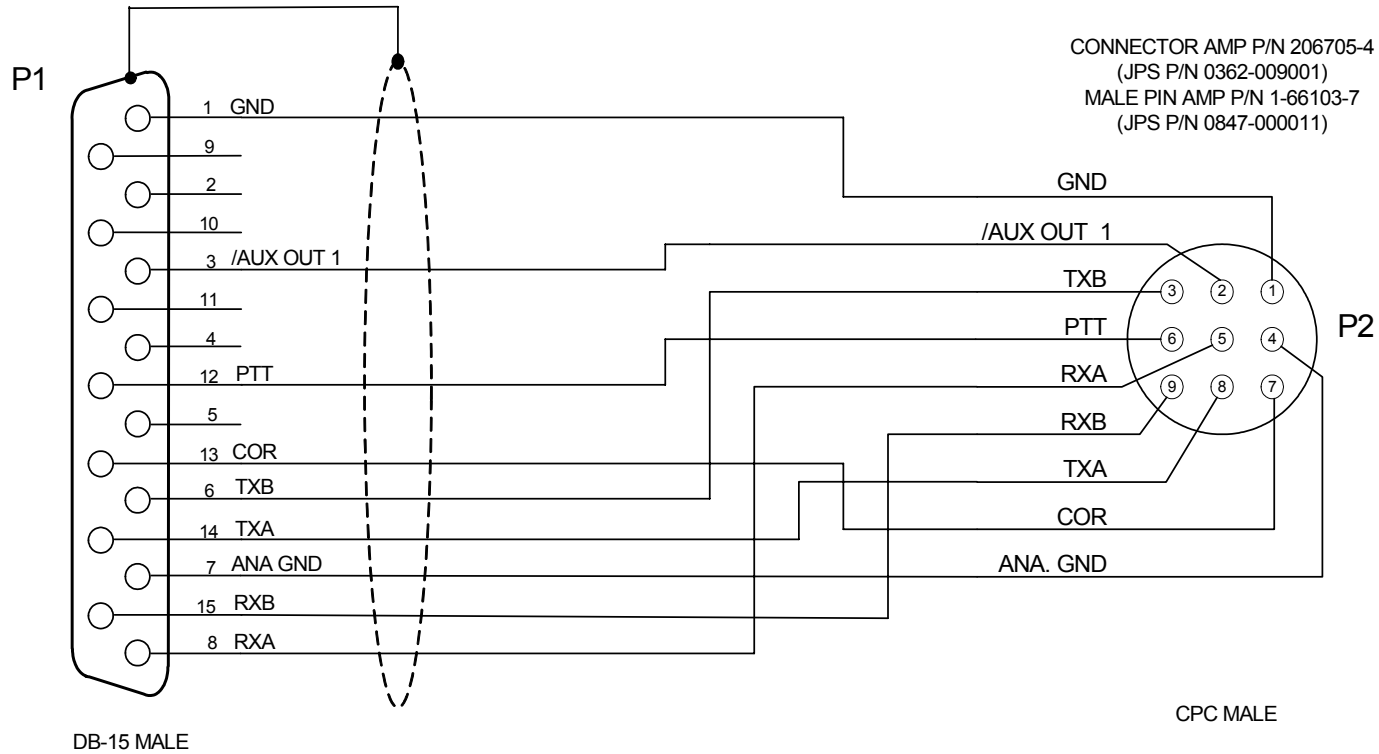
NOTES: SHIELD DRAIN CONNECTED TO PIN 1 OF P1 ONLY.

USED WITH:
MOTOROLA SPECTRA MOBILE (DASH-MOUNT)

| | | | | |
|--------------|-----|---|---------------------------------------|--------------|
| Designed By: | CTS | Raytheon JPS Communications Raleigh, NC USA | | |
| Drawn By: | EDV | Title CABLE, CPC TO MOTOROLA SPECTRA (DASH-MOUNT) | | |
| Checked By: | JAC | Size A | Document Number 5961-271132 | Rev A |
| | | Issued Date | NOVEMBER 5, 2003 | Sheet 1 of 1 |

PURCHASED PART

| Rev | ECO | Date |
|-----|-----|------|
| A | | |



- NOTES: 1) USE BELDEN 9934 SHIELDED CABLE.
2) CONNECT SHIELD DRAIN TO SHELL OF P1 ONLY.
3) CONNECTORS P1 AND P2 MUST BE MOLDED TO THE CABLE.
4) CABLE MUST BE LABELED WITH THE RAYTHEON/JPS P/N AND REV, VENDOR CODE AND DATE (MM/YY).

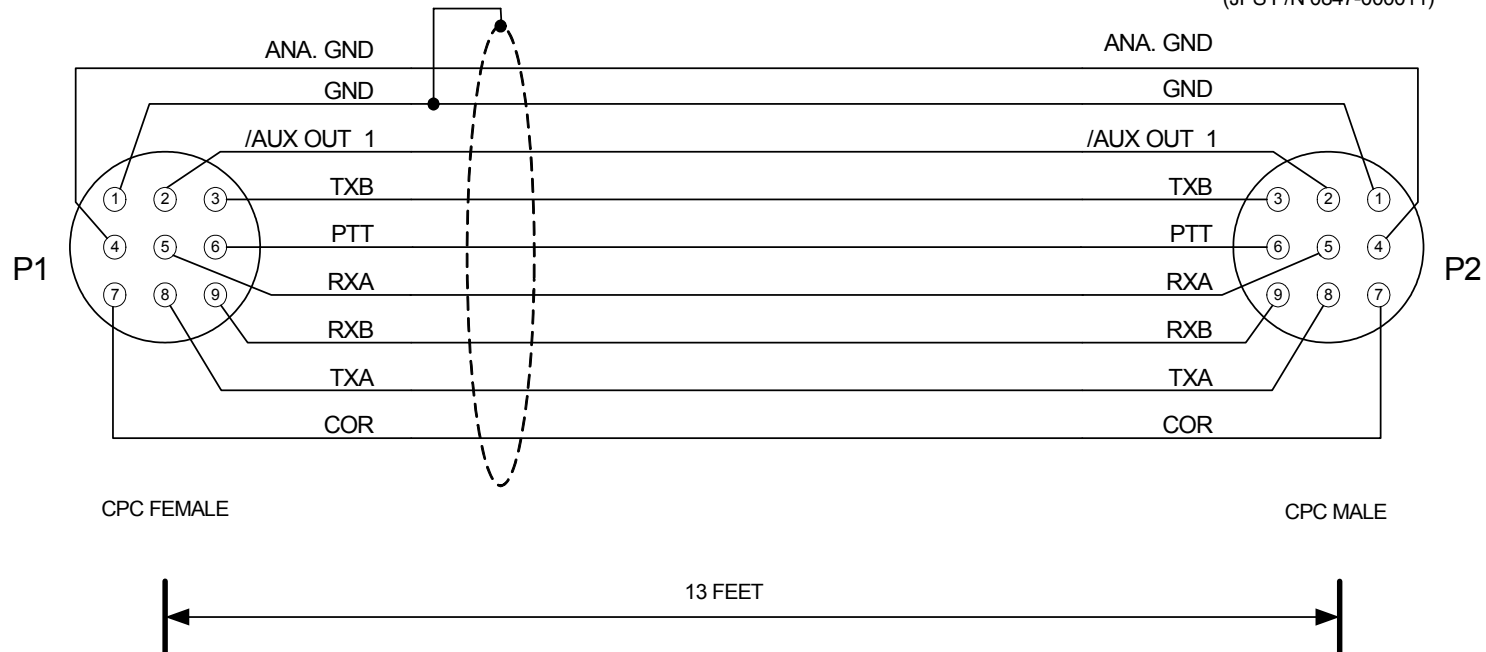
| | | | |
|--------------------------------|--|--|----------|
| Designed By: JAC | Raytheon JPS Communications | | |
| Drawn By: JAC | Title CABLE, ACU-1000 RADIO EXTENSION - 13 FT | | |
| Checked By: RBP | Size A | Document Number 5961-261002-00 | Rev A |
| Issued Date JANUARY 5, 2004 | | Sheet <u>1</u> of <u>1</u> | |

| Rev | ECO | Date |
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| A | | |

PURCHASED PART

CONNECTOR AMP P/N 206708-1
(JPS P/N 0362-005003)
FEMALE PIN AMP P/N 1-66105-8
(JPS P/N 0362-005002)

CONNECTOR AMP P/N 206705-4
(JPS P/N 0362-009001)
MALE PIN AMP P/N 1-66103-7
(JPS P/N 0847-000011)



- NOTES: 1) USE BELDEN 9934 SHIELDED CABLE.
2) CONNECT SHIELD DRAIN TO PIN 1 OF P1 ONLY.
3) CONNECTORS P1 AND P2 MUST BE MOLDED TO THE CABLE.
4) CABLE MUST BE LABELED WITH THE RAYTHEON/JPS P/N AND REV, VENDOR CODE AND DATE (MM/YY).

| | | | |
|--------------------------------|---|--|----------|
| Designed By: JAC | Raytheon JPS Communications Raleigh, NC USA | | |
| Drawn By: JAC | Title CABLE, ACU-T RADIO EXTENSION - 13 FT | | |
| Checked By: RBP | Size A | Document Number 5961-281013-00 | Rev A |
| Issued Date JANUARY 5, 2004 | | Sheet <u>1</u> of <u>1</u> | |