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Subject:	POS/MV installation info
Project:	Healy POS/MV
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This is a quick run down on the equipment involved in a POS/MV installation.

## 1 PCU:

This is a standard rack mount unit. A view from the back is shown in Figure 1. It requires 4 1/2" of rack space. Although the unit is not particularly deep, a clear depth of about 18" is required to allow for connectors and cable bends. It is powered by 110VAC, single phase.



Figure 1: Back view of the POS/MV-320 PCS

## 2 Antennas:

A collection of GPS antennas is shown in Figure 2. The two GPS antennas that are part of the POS/MV-320 are from Novatel and will be mounted in choke rings on a cross bar of an antenna mast. Our current working concept is that this mast would be on top of (or perhaps at a corner of) the Healy's existing flight

operations space, near where the antenna array for the Ashtech 3DGPS is mounted.

## 2.1 Antenna masts:

Figure 6 shows the antenna mast arrangement on the R/V Thompson. In this case the antenna mast was installed on the aft (starboard) edge of the top of the pilohouse. This antenna has subsequently been relocated to make room for a three meter VSAT antenna.

Figure 7 shows the mast arrangement on the R/V Ewing. In this case, we installed a new mast on the deck aft of the pilot house and forward of the stack. The cross tree is a about the height of the stack. There is moderate multipath from the platform of the mast above the pilohouse.

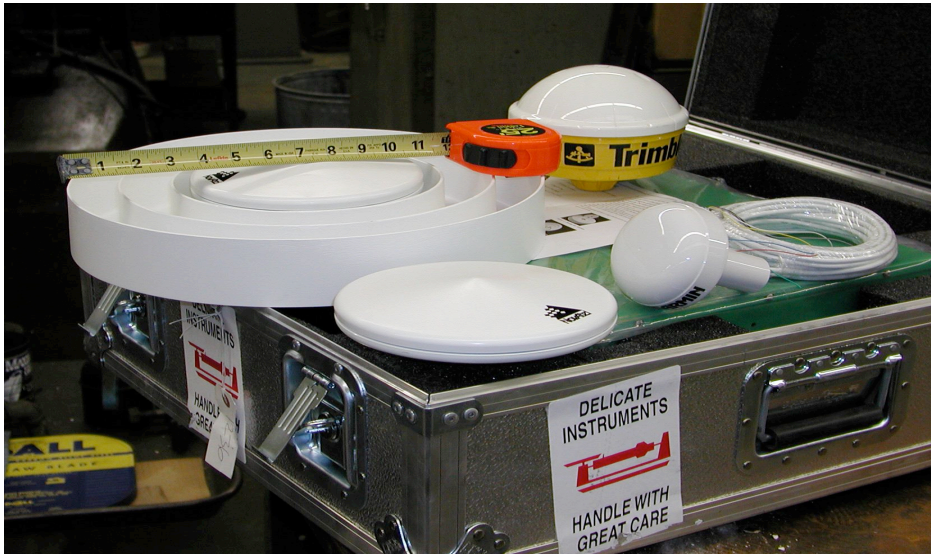


Figure 2: A collection of GPS antennas. The POS/MV uses two Novatel antennas. One is shown mounted in a choke ring at the back left and the other without a choke ring the left front. In the back right is the antenna for a Trimble AG-132 satellite differential GPS receiver and at the right front is the Garmin 17 WAAS receiver. The scale on the tape is inches.



Figure 3: The POS/MV Inertial Measurement Unit (IMU.) The scale on the tape is inches.

### 3 POS/MV IMU:

The Inertial Measurement Unit (IMU) of the POS/MV-320 is shown in Figure 3. Our current working concept is that it will be mounted on a foundation inside the flight ops space. Precision alignment and offset between the IMU and the two antennas is critical to accurate and stable operation of the POS/MV. Both the IMU and the antennas must be very rigidly mounted to ship's structure. We typically tie the foundation into frames rather than deck plating.

### 4 Cables

#### 4.1 POS/MV GPS cables

A pair of will cables runs from the back of the PCU to the POS/MV GPS antennas. The example cables shown in Figure 4 are short cables of the type we expect to use on the Healy installation. In the event that longer cables are necessary, they get much bigger in diameter and very hard to bend and route. Each cable is terminated with Type-N connectors on both ends.

Type N connectors are approximately 16mm OD. This cable is 12mm OD.

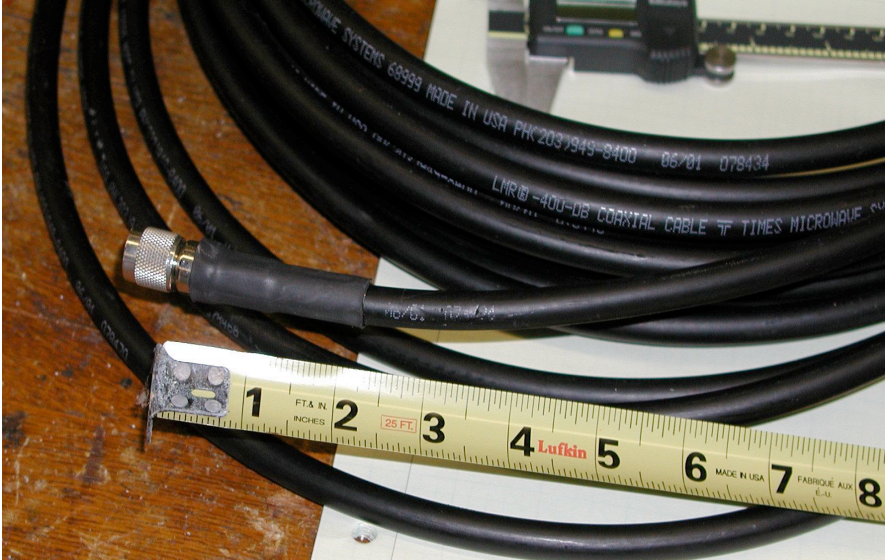


Figure 4: POS/MV-320 GPS antenna cables. These are “short” (20m) cables. Longer cable runs may require substantially larger diameter cable.

#### 4.2 POS/MV IMU cable:

One cable will run between the PCS the IMU. In our working concept, this would be within the flight ops space. An example IMU cable is shown in Figure 5. Note that this is a short cable and if we require a longer cable, the cable diameter will increase. The cable is terminated on both ends with MS connectors. The connectors are 30mm OD and this cable is 10mm OD.

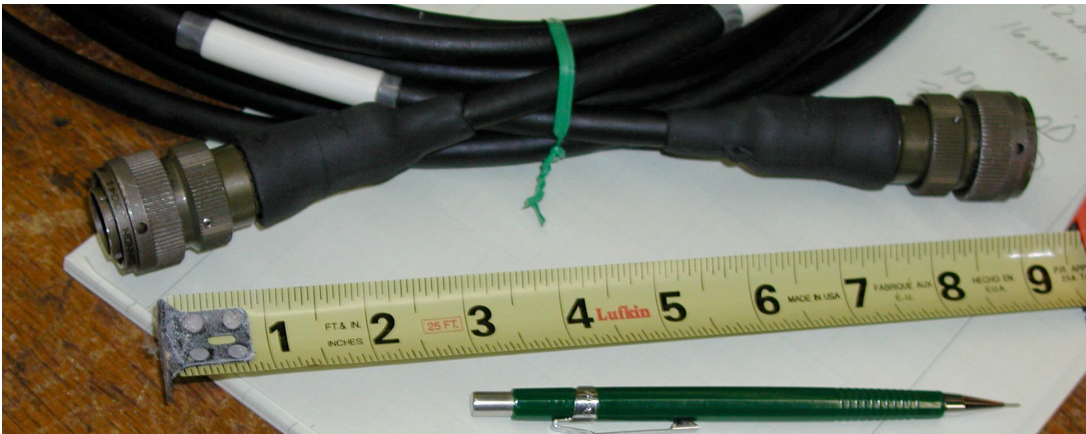


Figure 5: POS/MV IMU cable.



Figure 6: POS/MV Antenna mast on R/V Thompson



Figure 7: POS/MV mast on the Ewing