Iseg bases in AMANDA

Source: Azriel Goldschmidt, email & private communication, July, 2003; also a list by Jerry Przybylski at the end of his PowerPoint slides presented at the LBNL Workshop, July, 2003; Albrecht Karle, private communication, August, 2003.

The AMANDA String 18, deployed in the 1999-2000 season, employs PMT HV Bases supplied by Iseg. These bases are similar to the "Old Iseg Base" discussed in the above, except that the HV control and monitor are done by analog signals to or from the main board. A total of forty-one (41) of such bases have been deployed, of which three (3) are believed to have failed. The remaining thirty-eight (38) are believed to be "working fine".

Azriel's email (to JP, cc NK, 7/30/2003) says:

> I do not have the serial numbers of the bases (broken or not), sorry. The typical failure was one that left the PMT at some high HV, which we cannot control besides turning power off/on to the DOM. There are two ADCs on the DOM board (string 18) that read the voltages of the cathode-1st dynode and 1st dynode-anode. When it fails, one of them reads exactly 0 and the other 4095 (the rail value). There is also some evidence that when the bases broke the current being drawn was high. This was observed by seeing that the other DOM voltages went down w.r.t. normal.

…and Jerry's list identifies the three "bad" bases:

> DOMID 1044, OM604, base went bad, gives 1MHz hits….
> DOMID 1013, OM632, … also bad base, since deployment.
> DOMID 1009, OM608, cannot set values of voltage, but usable PMT signals and digital data….

…and referring to those DOMs, Azriel says "…They all show a railed Dynode voltage and zero anode voltage."

We must remember though, Albrecht says, that the DOMs (and the PMT bases) on String 18 were reworked at the South Pole (opening up the module and soldering, etc.), which may have compromised the reliability of the modules.

Albrecht also added that approximately 18 additional Iseg bases have been used in the DAOMs on other strings, all of which have been functioning fine.

/nk