instrument is low enough that drift of the energy scale may occur, see section 3.3.

For the entrance deflection the table is

ICA_ELEVATION_TABLE_VNN.TAB and ICA_ELEVATION_TABLE_VNN.LBL where NN is the version of the onboard software.

ICA can be booted using different versions of the onboard software. Different versions of the software will use different energy, mass lookup and elevation tables. There is therefore one version of each table for each software version. The software version in turn is determined through the PROM section, which is given in the data. The relation between PROM section and software version is given in the table at the end of this ~~paragraph~~ section. The end user need not determine the appropriate table through this table, it is given in the label file.

The elevation table contains 16 +1 columns and 96 rows, where 16 corresponds to the amount of elevation angles and 96 to the amount of energy levels. The energy index number is given in the first column. A sample close to nominal value obtained at intermediate energy index 42 is shown below:

38.6,-33.2,-28.0,-22.6,-17.4,-12.2, -7.1, -1.7, 3.8, 8.9, 14.2, 19.6, 24.8, 30.1, 35.3, 40.6

At low (below 300 eV) and high (above 15 keV) energy the angular resolution and coverage deviates significantly from nominal values. At low energy this is because of insufficient resolution of the digital to analog conversion. At high energies the discrepancy is due to insufficient high voltage to deviate the flight path of the more energetic ions. This table can be used by the end user to get accurate conversion of elevation index into actual physical angle from the spacecraft X-Z plane. Otherwise nominal values can be used (for approximate visualization purposes) with the angle given by:

-42.1875+elev*90/16 where elev is the elevation index number (0-15)

The angle within the X-Z plane, from X towards Z, is given by the sector (or azimuth angle index).as

-168.75+azim*360/16 where azim is the azimuth index (0-15, same as sector number).

The ICA has a command, enable bad-HV masking. This sets all deflection angle and energy combinations which deviates substantially from nominal values to zero. However, experiences from Mars Express shows clearly that it is better to set the elevation angle setting to zero for the low energy case and keep the data. Therefore a new table with deflection angle as close to zero as possible is now used for energies below 100 eV where the limited elevation angle accuracy problem may occur. However, the command for bad-HV masking exists and may be used again in the future. For high energies the deflection voltage is set to as high as possible and this data will not be masked either, but will not have the deflection angle nominally specified. Therefore the end-user must have access to this table

Finally, mass look-up and mass calibration tables must be used. The mass look-up tables are used on-board to reduce the telemetry. As described in section 2 ICA has 32 mass channels. Ions of a certain mass will hit the detector surface (MCP) at some range of mass channels, and this range will vary with the energy. Therefore the mass look-up table must have one entry for each energy, telling what range of mass channels to put together. Furthermore the post-acceleration setting will also affect where the particles hit the detector surface. Therefore ICA has three mass look-up tables for three different post-acceleration settings (labeled 0, 1 and 2 in the calibration document). For high mass-resolution modes the actual mass-channel data will be transferred to ground, possibly binned (32, 16 or 8 bins). For lower resolution ~~then that~~ the data is instead