4. Description of Waveform Processing

Initial processing, which consisted of converting data from field tapes into AH format, quality control and initial arrival picking, and conversion to SEED format, was conducted at Lamont. Data was transmitted from Lamont to the JSPC in SEED format where it was converted into a relational database form for further processing. A detailed description of the database schema is given in the *Caucasus Network information product schema description manual*. Lamont analysts picked P and S arrival onset times and these picks were transmitted to the JSPC via ASCII pick files. JSPC analysts reviewed all of the Lamont picks and modified the arrival information to include time uncertainty and amplitude and period measurements. The only waveform processing done at the JSPC was to convert the 4-byte integer waveform segments to 2-byte form whenever possible (this resulted in a factor of two reduction in the data volume) and to flag the telemetry gaps. Because of the volume of the data, SAC waveform segments were not created and the data in this information product are all in either 2-byte or 4-byte integer form with the majority of data being in 2-byte form. The programs **db2sac** and **db2ah**, included in this information product, can be used to convert any desired waveform segments into SAC or AH format. The procedures followed in locating and associating events are described in section 5. The detailed waveform processing steps are given below.

1. **Data Assimilation** - AH files and SEED volumes were produced from the original field data. All of the SEED volumes were converted into relational database form.
4. **Telemetry gap flagging** - All waveform segments were run through a telemetry gap detector. Data samples within a a detected telemetry gap were flagged with the integer value 32767 for 2-byte data and 2147483647 for 4-byte data.
5. **Arrival Picking** - First arrival P-wave and S-wave picks were made by an analyst on the processed waveform data using the following instructions.
   - Only first P and S-waves were to be picked on a single channel for each station.
   - The vertical channel (SHZ) was to be used for P-waves and the north or east channel (SHN or SHE) was to be used for S-waves.

   NOTES: Because of problems associated with the data acquisition triggering algorithm, the vertical channel start times were sometimes too late to record the first P arrival. In these situations the analysts would attempt to pick the P arrival on one of the horizontal components. During part of the time from January to November the north and vertical components at station NAG appeared to be switched although there were no definitive field records to indicate this. The analysts picked P arrivals on the channel indicated as SHN during this time period.

5. Event Locations and Associations

All event locations and associations were done at the JSPC by analysts through an interactive set of software utilities that provided extensive review and immediate relocation capabilities. The location program used to determine the event hypocenters given in this information product was a slightly modified version of **LocSAT** which can be obtained through the anonymous ftp login at the Center for Seismic Studies (CSS). **LocSAT** was developed to implement the algorithms given by Bratt and Bache for locating seismic events using azimuth and slowness data as well as arrival times. Although the program can include azimuth and slowness estimates, we did not make use of this feature in this version of the Caucasus Network catalog. **LocSAT** is driven by lookup travel time tables and is well suited to handle events in a wide range of distances from local to teleseismic. The program was