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Subject: AGS - PGNCSS Radar Interface

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A proposed change to the AGS (Abort Guidance System) software would enable the AGS to update its state vector during rendezvous by reading raw rendezvous radar data from the PGNCSS downlink. This would simplify the astronaut workload during rendezvous.

The AGS routine is initiated by the astronaut via a DEDA entry. (The DEDA - Data Entry and Display Assembly - is the AGS counterpart to the DSKY). The AGS then monitors the PGNCSS downlink, looking for the I.D. word for the Rendezvous/Prethrust downlist. When the R/P downlist is found, the first 17 words are read into the AGS. The radar data must be in these first 17 words.

The format the data must have is similar to that used in R47 - namely, the data must be in the first word of the downlink pair. The AGS needs the raw data, raw range rate data, the shaft and trunnion angles, and a code word that includes the data good and low scale information.

New data should be sent about once per minute to give the best updating schedule. In order to update the data once per minute, the data transmission to the AGS could be synchronized with the R22 radar read in P20. The code word could be set after the R22 read, if the data good signal was present, and the code word could be "reset" by the first R65 radar read. Figure 1 has a flowchart for this.

The drawback to the above method is that a PGNCSS failure that affects P20 would inhibit the AGS data transmission. For this reason it seems desirable to also add a routine that would perform the same function. A flowchart for this routine is given in Figure 2. If there were a total PGNCSS failure, the AGS could still be updated using the manual method that is currently available.

Figure 1

# R22 and R65 Radar Reads

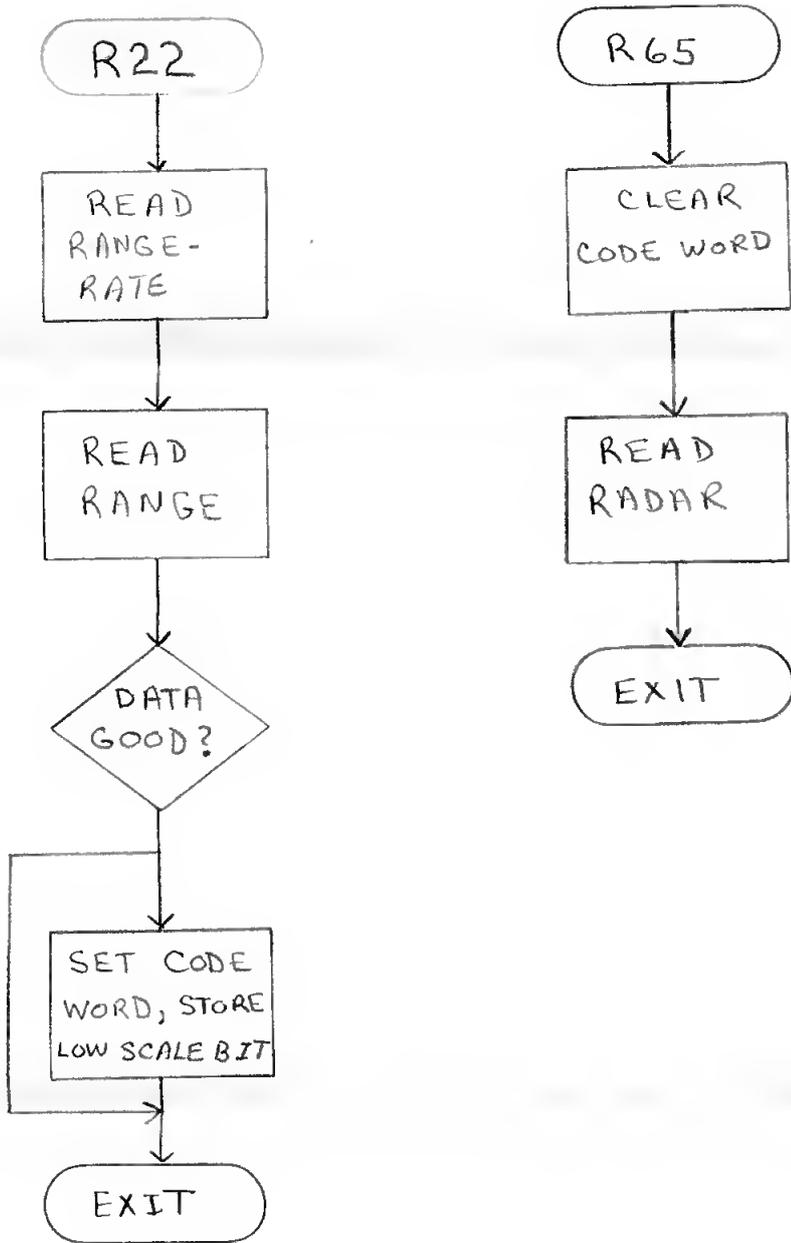
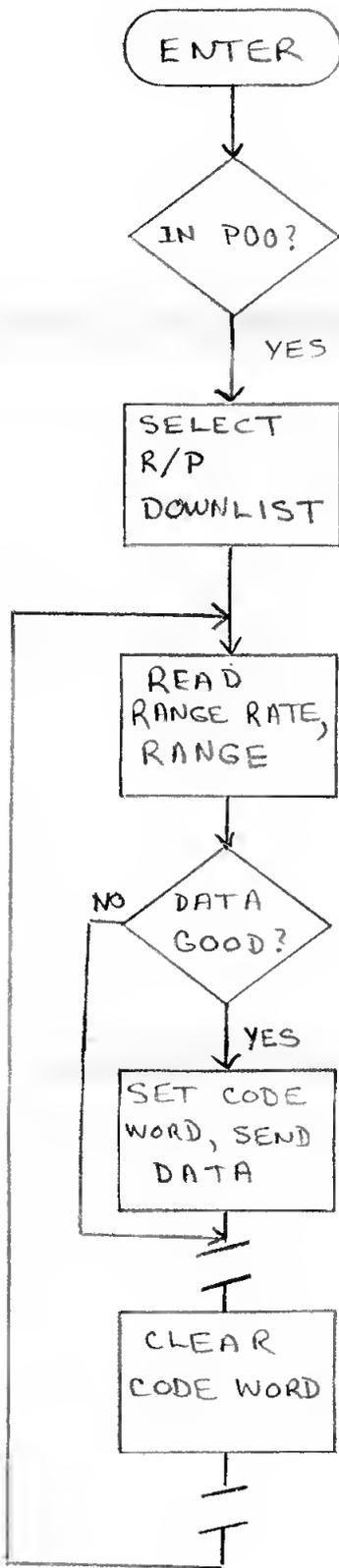


Figure 2

# AGS Radar Data Routine



Called by extended verb

Restrict to P00.

Rendezvous / Prethrust Downlist is necessary for AGS to monitor data

The codeword indicates that the data has been successfully read and indicates the low scale discrete.

10 Second Delay

The AGS will accept data only if the code word changes to the "set" state. Therefore it must be "cleared" after used.

50 Second Delay

The routine is terminated by V37.