

| Program Phase | F-1 | S-IC | S-II | S-IVB | IU | CSM | LEM |
|-------------------------|-----|------|------|-------|----|-----|-----|
| Conceptual | | | | | | | |
| % Complete | 68 | 68 | 68 | 68 | 68 | 100 | 68 |
| % Initiated | 32 | 32 | 32 | 32 | 32 | 0 | 32 |
| % Unreported | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Design | | | | | | | |
| % Complete | 43 | 29 | 57 | 57 | 0 | 42 | 29 |
| % Initiated | 57 | 71 | 29 | 43 | 71 | 29 | 57 |
| % Unreported | 0 | 0 | 14 | 0 | 29 | 29 | 14 |
| Development | | | | | | | |
| % Complete | 32 | 0 | 0 | 32 | 36 | 32 | 0 |
| % Initiated | 68 | 100 | 100 | 68 | 32 | 68 | 100 |
| % Unreported | 0 | 0 | 0 | 0 | 32 | 0 | 0 |
| GSE and Goss unreported | | | | | | | |

Figure 2-7. Reliability and Quality Program Status
Apollo-Saturn Manned Lunar Landing Mission

2.3.4 **Single Point Failure Analysis.** Active attention to single point failure analysis has been reported on all equipment areas except GSE, GOSS, and MCC. Most single point failure analyses of Apollo-Saturn 500 series mission hardware have not progressed to the point of identifying the most critical items, with the exception of those presented in Figure 2-8 below.

| S-IC | S-IVB |
|------------------------|----------------------------------|
| 1. Fuel Pressurization | 1. Selector Switch |
| 2. Fluid Power | 2. Attitude Control Engines |
| 3. Fuel Delivery | 3. Helium Fill Modules |
| 4. LOX Delivery | 4. Electronics Assembly |
| 5. Retro Rocket | 5. Hydraulic Pump |
| 6. LOX Pressurization | 6. Auxiliary Propulsion Engine |
| 7. Control Pressure | 7. Electrical Distribution Cable |
| 8. Engine Purge | 8. Sequencer |
| | 9. Separator |

Figure 2-8. Most Critical Items Apollo-Saturn Manned Lunar Landing Mission