

# NASA TECH BRIEF



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## Maintainability Methodology and Maintenance Analyses

In planning the assembly, checkout, and launch of a space vehicle having the sophistication and complexity of the Saturn V, the area of maintenance takes on importance of staggering proportions. The interrelationship and interdependence of thousands of subassemblies and assemblies, made up of millions of components, impose the requirement of planning and analysis, in the field of maintenance, that cannot tolerate the slightest omission or neglect.

The initial approach involves a detailed description of the methodology used in performing maintainability studies. This is accomplished by evaluation of problem areas by empirical means, further analysis to identify maintainability factors involved, and performance of studies to provide solutions with high probability of success. Components are ranked for scheduling of maintainability tasks, and maintainability analyses are made to interrogate the features of system design in terms of maintenance feasibility.

Based on maintainability studies, maintenance analyses are formulated for system, subsystem, and component levels. Schedules, procedures, and forms are produced, reviewed, and finalized. These analyses are performed to ensure that complete, integrated, logistics system support elements are identified. They are based upon a systematic study of the functional requirements for maintenance of the equipment. For every function requiring maintenance support, a complete set of maintenance requirements is formulated.

These requirements cover maintenance ground equipment criteria, personnel tasks, personnel type and skill levels, spares, facilities, expendables, and technical support data. Subsequent action by logistics organizations translates these requirements into elements of appropriate types and quantities to provide complete system logistics support.

### Notes:

1. These two studies could be useful as instructional media in systems engineering and maintenance analysis.
2. Inquiries concerning these studies may be directed to:

Technology Utilization Officer  
Marshall Space Flight Center  
Huntsville, Alabama 35812  
Reference: B68-10075

### Patent status:

No patent action is contemplated by NASA.

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