

## Why use MSG-3 Methodology?

### MSG-3 Methodology:

- Provides maximisation of equipment availability:
  - Now resulting in a major positive trend in Aircraft Availability
  - Extended inspection intervals frees up assets
- Safeguards inherent safety and reliability
- Ensures Operational Safety, Suitability, & Effectiveness
- Reduces Costs / Cost Avoidance
- Creates program credibility and instills confidence by involving all stakeholders
- Integrates all levels of maintenance activity
- Outcome has logic that is defensible at all levels of scrutiny
- Assures that all equipment is thoroughly covered with the proper level of inspection. Utilising in-service experience MSG-3 can also be used to help extend the intervals between Maintenance Tasks.

MSG helps to have a 'LEAN' Overall Maintenance Program  
The table below shows improvements in product availability and reduction in maintenance man-hours following the implementation of MSG-3 analysis:

		Pre MSG-3		Post MSG-3	
Check	Interval (month)	Flow Days	Man Hours	Flow Days	Man Hours
Light	18	16	12000	7	5250
Heavy	36	40	30000	30	25000
Major	108	50	37500	40	30000
Reliability		96.8% >>>		98.5%	

#### Notes

- Man-hours based on an average 750 man-hours per day
- Goal to reduce maintenance costs and maintain Pre MSG-3 reliability
- Outcome reduced maintenance costs and increased reliability
- Large reduction in Light Checks due to incorporating enhanced zonal program, e.g. proper time to find, proper time to fix.

This information taken from a presentation on the C-5 program.

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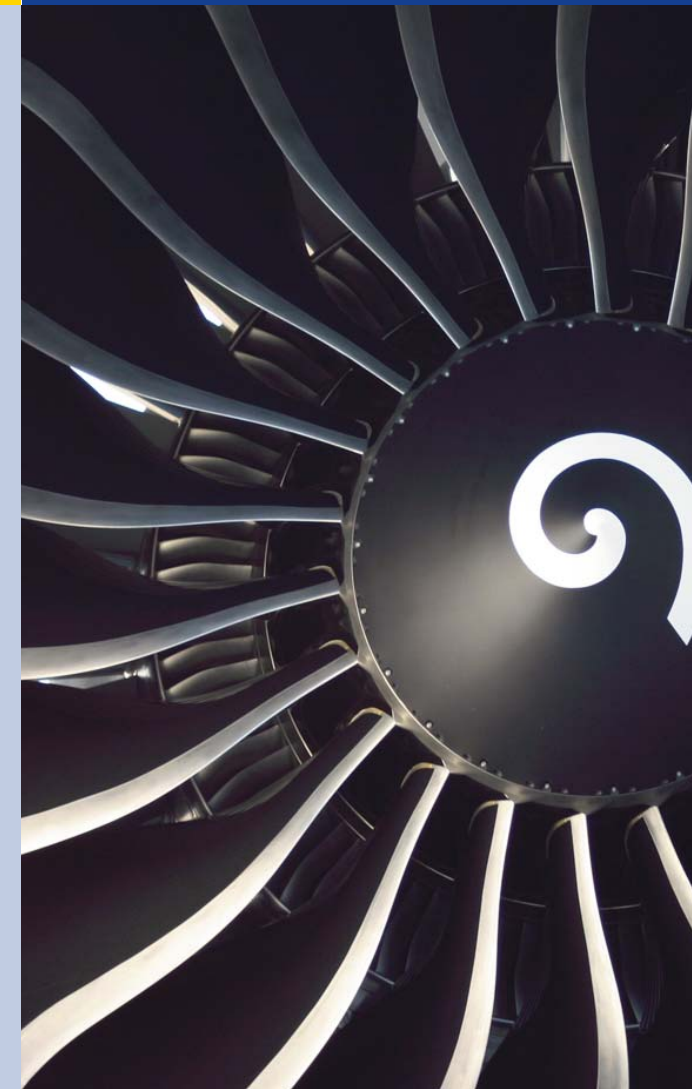
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## MSG-3 Analysis





## What is MSG-3 Analysis?

The Maintenance Steering Group (MSG) system has evolved over many years since it was initially applied to the first generation of air carrier maintenance programs.

The original MSG system approach was based on the belief that each part on an aircraft required periodic overhaul, however it became apparent that this premise was not correct and so new methods of maintenance control were developed. Condition monitoring was thus introduced in the decision logic of the initial maintenance steering group document (MSG-1), which was applied to the Boeing 747 aircraft.

Over the years the MSG system evolved considerably. The most recent update to the system, referred to as MSG-3, was initiated in 1980. This evolution of the system prescribes a different approach in the assignment of maintenance requirements. Instead of the process categories typical previous iterations of the MSG system, MSG-3 logic identifies maintenance requirements.

In 1991, industry and regulatory authorities began working together to provide additional enhancements to MSG-3. As a result of these efforts, Revision 2 was submitted to the FAA in September 1993 and accepted a few weeks later.

Major enhancements include:

- Expansion of the Systems/Powerplant definition of inspection
- Guideline for the development of a Corrosion Prevention and Control Program (CPCP)
- Increased awareness of aging aircraft requirements
- Extensive revision to the structure logic

## Service & Expertise

MSG-3 analysis is becoming more widely used outside of the Aerospace sector. This analytical approach is suitable for projects where planned maintenance is applicable. Applications where MSG-3 analysis has already been incorporated include projects in the Maritime, Defence, Energy Generation & Industrial sectors.

Voith Engineering Services can offer Systems, Structures & Zonal/LHIRF RCM/MSG3 analyses.

- Systems are analysed against its Functions, Functional Failures, Failure Effects and Failure Causes (Modes) of a system, sub-system and/or component;
- Structures are analysed for damage and reduced corrosion protection, whilst taking into account its environment;
- A Zonal/LHIRF analysis is a general overview of an area for leaks, minor damage and component integrity.

All the results of the above analyses are combined to help produce the Maintenance Planning Document (MPD). This enables an operator/user to schedule Manpower, Hanger Space, Spares, Replacement aircraft