



AIA /ATA/ ASD S1000D Users Forum

“S1000D: Realizing the Benefits of Integrated Logistics Support”

**October 12- October 15, 2009
Crown Plaza Hilton Head Resort, Hilton Head, SC, USA**

***S4000M – Scheduled maintenance program data – the
entry to LSA task data***

by

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S4000M Development of Scheduled Maintenance Programs for Military Aircraft

ASD S4000M

INTERNATIONAL PROCEDURE HANDBOOK FOR DEVELOPING SCHEDULED MAINTENANCE PROGRAMS FOR MILITARY AIRCRAFT.

Brussels 24 June 2009

Presentation based on
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C O N T E N T

- **PRIOR TO S4000M**
- **NEED OF S4000M**
- **APPLICABILITY.**
- **MAIN ACHIEVEMENTS USING S4000M.**
- **S4000M CONTENT.**
- **LOCATION OF THE S4000M WITHIN THE ILS CONCEPT**
- **S4000M AVAILABILITY**



S4000M Development of Scheduled Maintenance Programs for Military Aircraft

PARTICIPANTS IN S4000M DEVELOPMENT

- **AIRBUS**
- **AIRBUS MILITARY (EADS-CASA)**
- **DASSAULT**
- **EADS-MAS GERMANY**
- **EADS-MAS SPAIN**
- **SAAB**



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PRIOR TO S4000M:

- **MIL STD 1843 RELIABILITY CENTRED MAINTENANCE (RCM):
Cancelled without replacement from August 9, 1995.**
- **MIL STD 2173 RELIABILITY CENTRED MAINTENANCE
REQUIREMENTS FOR NAVAL AIRCRAFT, WEAPONS SYSTEMS AND
SUPPORT EQUIPMENT.**
- **MIL HDBK 266 APPLICATION OF RELIABILITY CENTRED
MAINTENANCE TO NAVAL AIRCRAFT WEAPON SYSTEMS AND
SUPPORT EQUIPMENT.**

.....
**ALL PROCEDURES OBSOLETE, COMPARED WITH CIVIL AIRCRAFT
MSG-3* IS UPDATED EVERY YEAR**

* The ATA MSG-3 publication outlines a decision-logic process for determining initial scheduled maintenance requirements for new aircraft and/or power plants. This document presents a means for developing maintenance tasks and intervals acceptable to regulatory authorities, operators and manufacturers



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NEED OF S4000M:

CURRENT PROBLEMS DEVELOPING SCHEDULED MAINTENANCE PROGRAMS FOR MILITARY AIRCRAFT.

- **INTERNATIONAL CIVIL PROCEDURE AVAILABLE.**
- **MILITARY OPERATION AND ADVERSE ENVIRONMENT NOT FULLY COVERED BY CURRENT PROCEDURES.**
- **LAST REQUIREMENTS SFAR88 *, L/HIRF **, ... NOT COVERED.**
- **CERTIFICATION OF SCHEDULED MAINTENANCE PROGRAMS LEADS TO A PROGRAM SPECIFIC PREPARATION OF A CUSTOMISED POLICY AND PROCEDURE HANDBOOK (PPH, GUIDELINES, ETC,.) THAT NEEDS TO BE AGREED AMONG “CUSTOMER, AUTHORITIES AND MANUFACTURER”.**
IN GENERAL A LONG PROCESS.
- **WHEN ACCEPTED, THE PROCEDURE IS ONLY APPLICABLE TO THIS SPECIFIC “PROGRAM”.**



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IN GENERAL TWO DIFFERENT CERTIFICATIONS.

CIVIL CERTIFICATION (EASA/FAA/DGAC/Other Civil Certification Authorities):

- **AIRCRAFT ANALYSED WITHOUT MILITARY EQUIPMENT / MILITARY FUNCTIONALITIES**
- **ONLY CIVIL OPERATION IS ACCEPTED**
- **ATA MSG-3 DOCUMENT AND PROCESS APPLIES TO CIVIL AIRCRAFT**



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MILITARY CERTIFICATION: Based on Civil Certification plus:

- **DEVELOPMENT OF A NEW DEDICATED PPH FOR THE MILITARY CERTIFICATION**
- **REVISION OF CIVIL ANALYSIS TO COVER SPECIFIC ISSUES OF MILITARY OPERATION**
- **DEVELOPMENT OF ANALYSES FOR SPECIFIC MILITARY EQUIPMENT / MODIFICATIONS BASED ON MSG-3.**



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MAIN ACHIEVEMENTS USING S4000M WHEN DEVELOPING MAINTENANCE PROGRAMS FOR MILITARY AIRCRAFT VERSUS CIVIL APPROACH.

- **MILITARY OPERATION (E.G. OPERATION ON UNPAVED RUNWAYS, SEARCH & RESCUE OPERATIONS, ETC)**
- **INTRODUCTION OF THE MISSION AS A CRITICAL INPUT IN THE MILITARY OPERATION**
- **ANALYSIS OF TYPICAL “MILITARY” ACCIDENTAL DAMAGES (HOT GASES DUE TO MISSILE EJECTION, GUNFIRE VIBRATION, EJECTION OF CHAFF AND FLARES, ...)**



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- **OPERATION DURING CONTINGENCY PERIODS AND CRISIS TIME, E.G. ONLY TASKS RELATED WITH SAFETY AND MISSION ACCOMPLISHMENT MUST BE PERFORMED**
- **OPERATION IN ADVERSE ENVIRONMENT MUST BE CONSIDERED FROM THE BEGINNING (NAVY OPERATIONS, DESSERT,)**
- **ECOLOGICAL EFFECTS ANALYZED**
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APPLICABILITY

“This procedure establishes the methodology and decision logic that will form the basis for the development of scheduled maintenance programs for military aircraft, focusing on safety, reliability, mission accomplishment and ecological aspects at reasonable cost.

Although the procedure has been developed to be applied for new military aircraft it also can be applied to major aircraft modifications such as installation of new defensive systems, Radar warning system, air-to-air refueling modifications, etc. ,,).



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.... APPLICABILITY

“Although the procedure has been prepared for military aircraft and specifically developed to meet aircraft certification requirements, there is no reason to limit the application only to aircraft vehicles and not applying to other products such as weapon systems, military/civil vehicles, ships, etc under ASD today’s coverage. Therefore this procedure could be applied to any equipment that needs to meet safety and operational requirements at minimum cost and hence justify the applications of the methodology.

Based on this approach and in order to facilitate the application of the handbook the word “aircraft” has been replaced in general by “product”.



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S4000M CONTENT:

(same structure as civil MSG-3 with military additions)

- **GENERAL**
- **SYSTEMS AND POWER PLANT**
- **STRUCTURES ANALYSIS**
- **ZONAL ANALYSIS**
- **GLOSARY: TERMS, ABBREVIATIONS AND ACRONYMS**



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GENERAL:

- **USE OF MSG-3 ANALYSIS PROCEDURE (latest issue)**
- **INCLUDES MISSION, OPERATIONAL AND ECOLOGICAL EFFECTS**
- **DIFFERENT SCENARIOS (crisis, war, deployment)**
- **HIGH/LOW UTILIZATIONS**
- **DEFINITION OF RESPONSIBILITIES AND INTERFACES (multi-national programs)**
- **IMPLEMENTATION OF CONFIGURATION DATA FOR ANALYSED/ REQUIRED INSPECTION TASKS (design baseline and built standard)**
- **POSSIBILITY TO DEVELOP CUSTOMIZED PPH USING EXAMPLE SHEETS**



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SYSTEMS & POWERPLANT:

- **EXTENTION OF L2 TASKS (in line with DIN/EN)**
- **NO LIMITATION REGARDING BEST APPLICABLE AND EFFECTIVE L2 TASKS**
- **STRATEGY / GUIDELINE TO FIND AND DETERMINE THE TASK INTERVALS**



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STRUCTURE ANALYSIS:

- **STRUCTURE DIVIDED IN SSI (Structural Significant Items), SD (Significant Details) AND OTHER STRUCTURE**
- **SD: LIMITED AREA OF A SSI (FATIGUE CRITICALITY, HIGH DAMAGE PROBABILITY)**
- **RATING SHEET PROPOSAL FOR COMPOSITE ITEMS/PARTS**
- **NEW ACCIDENTAL DAMAGES AS RESULT OF MILITARY EQUIPMENT/OPERATION (CHAFF & FLARES, AIR CARGO DELIVERY, AIR TO AIR REFUELLING, ...)**



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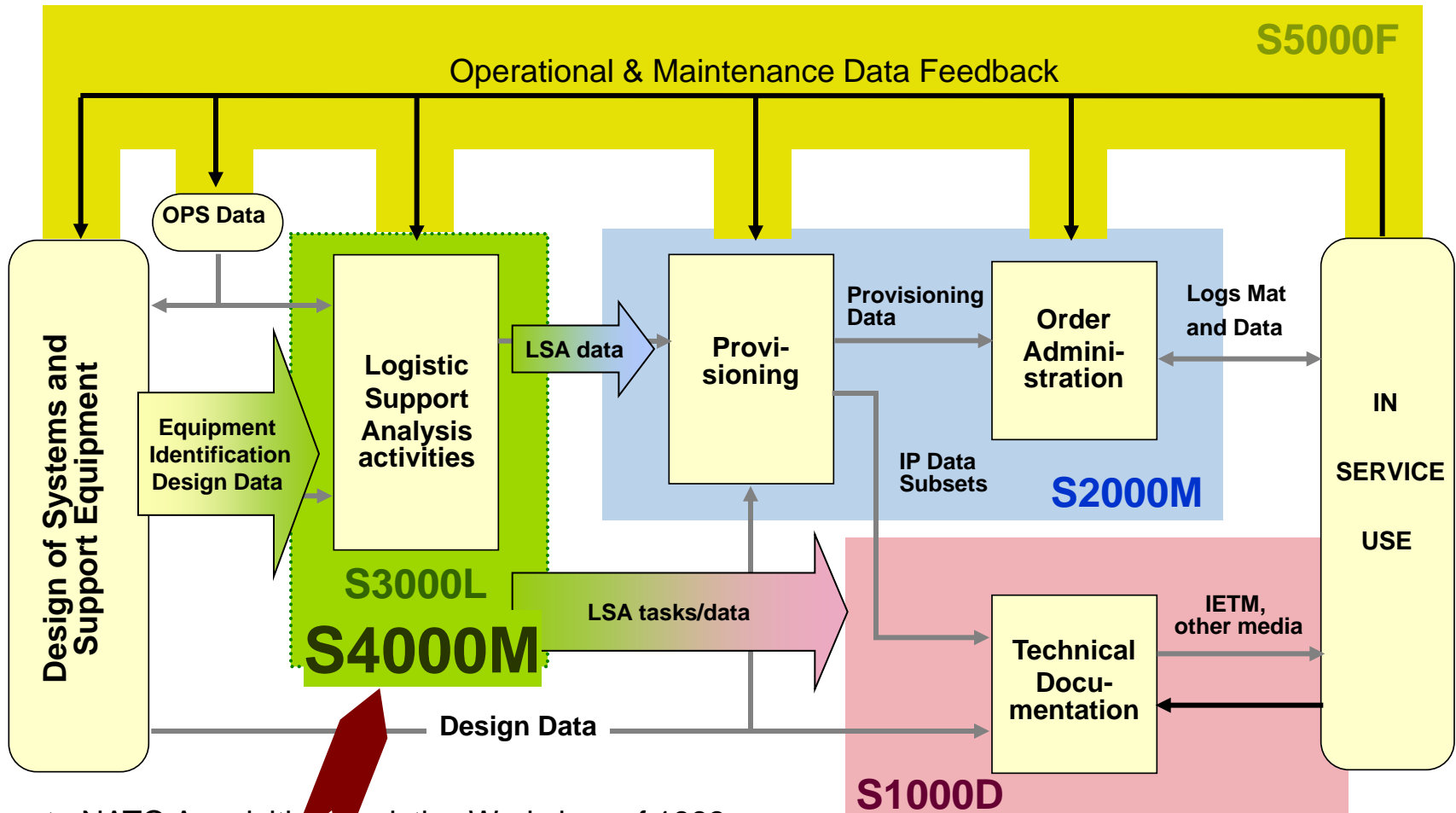
ZONAL ANALYSIS:

- L/HIRF AND EZAP (ENHANCED ZONAL ANALYSIS) INCLUDED
- ACCIDENTAL DAMAGES AS RESULT OF MILITARY EQUIPMENT AND OPERATION INCLUDED
- NO LIMITATION REGARDING BEST APPLICABLE AND EFFECTIVE L2 TASKS
- GUIDELINE TO DEFINE / SELECT ZONES (CONSIDERING MILITARY INPUT)



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Integration of S4000M into the ILS Concept



acc. to NATO Acquisition Logistics Workshop of 1993



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Way ahead:

- **ISSUE 0.1 OF S4000M AVAILABLE AT ASD WEBSITE**
www.asd-stan.org
publication event at 2009-06-24 at ASD in Brussels
- **FOUR MONTHS FOR COMMENTING**
(2009-06-25 thru 2009-10-31)
- **TWO MONTHS FOR COMMENTS REVISION**
- **FIRST “OFFICIAL” ISSUE 1.0 IS FORESEEN FOR 1st QU 2010**



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Thank you very much

Questions?