About The Organizer

T.U.N International was formed with the objective of truly understanding the needs of each individual organization’s training requirements. Our strength lies in our ability to listen to our clients, understand their unique business issues and assisting them to deliver the appropriate training solution based on the business challenges in the current market situation.

Our vision is to be the No. 1 preferred training provider for all corporate companies by providing an innovative approach to your training requirements. We facilitate a training solution that is not only cost effective, but tailored to yield maximum benefits. We deeply value our working relationship with our clients and constantly dedicate ourselves to exceed your expectations of us. Besides customizing in-house training solutions for corporate companies, we also offer public courses and conferences in various industries.

About The Trainer

Mr. S.Nadeem Ahmed has 20 years plus of diverse engineering experience in Industrial sectors as a Mechanical Engineer with Manufacturing and Engineering MRO Industry. For the past 15 years, he has worked with PK Engineering MRO facility on Maintenance Repair, Overhaul, Testing and Evaluation of Turbo Machinery including Aero and Aero derivative Gas Turbine Power Plants and has diversified experience on General Electric, Rolls Royce and Pratt & Whitney Machines. As an international conference speaker & trainer globally addressing Gas Turbine Power Plants, Rotating equipment, Reliability engineering & lean Six Sigma topics, he has also trained numerous professionals in the same area within and outside his organization.

Nadeem has also provisioned Process companies (Power Generation, Oil and Gas etc) on Effective Reliability Improvement Programs, Maintenance Management Strategies, Lean Maintenance and Six Sigma Process Improvement Strategies integrating the same with reliability solutions. He holds a Masters in Mechanical Engineering with Major in Thermal Power Systems Engineering, is a Certified Six Sigma Master Black Belt from USA & is well versed with the Quality, Six Sigma and Power Plant Equipment Reliability Analysis Software’s. He has also conducted training for the following companies: Lao Airlines, Miat Mongolian Airlines, ST Aerospace Supplies Pte Ltd, Air Niugini Limited, Myanmar Airways International, Berjaya Air Sdn Bhd and Brunei Department of Civil Aviation.

Ageing Aircraft Maintenance Management

25 - 29 November 2013, Singapore
The Today's Aviation world is dominated by the state of the art cutting edge technologies, using composites for aircraft structure and highly reliable Alloys for Aero engines of the B-787 Dreamliner and A380, however at the same time we cannot overlook the workhorses of Boeing and Airbus - your 747s, 767s, 737s, A320s, A330s and even DC-10 and MD 80... etc, and to a certain extent the other planes used by commercial airlines today.

These old variants have a proven track record and have matured over the passage of time gracefully and are still continuing to maintain the same. Keeping in view economic turndown and tight operating financial margins, older variants and models cannot simply be excluded.

As with any other giants of engineering, the highly critical, medium and low critical systems will fail, get damaged or simply consumed their useful lives. The undertaking to maintain the airworthiness of an ageing aircraft fleet represents a considerable and concerted effort along with challenges. With growing age the probability and combination of failures within system and components complexes and as such needs thorough and alert reviews during routine maintenance work.

Ageing Aircraft by TUN will provide the airline and MROs, with the platform to get into a position where you can improve your maintenance methodologies, Reduction in direct and indirect operating costs, understand failure variables and constants within systems and components. Integration of MSG3 Programs and important picks as applicable to critical systems/components of Ageing fleet will be given a thorough insight.

This Course emphasizes in detail on the background of Aircraft Maintenance Program as part of the operator’s maintenance program and will specifically emphasize on issues related to development, implementation and control of maintenance with additional emphasis on ageing aircraft performance, reliability and cost analysis.

Asset Management Concept as applied to ageing Aircraft, its structure and components will be discussed in detail. Maintenance strategy and various concepts may reduce cost, but the integrated to ensure high reliability levels. Continued compliance with the update regulatory requirements, while fulfilling the challenges of cost reductions and effective maintenance programs, is of paramount importance. Regulatory Authorities and Operators should be on the same level of understanding for new as well as aged fleet. This course will also provide an insight into such understandings.

Within a 5-days period you will be provided with guidance for the implementation of Maintenance Program and will focus on the monitoring task and the relevance of the efficiency of the Maintenance Program for ageing fleet, in order to fulfill the regulatory requirements and to avoid unnecessary maintenance cost. Case studies with practical examples will complement this course.

In order to establish an operator’s maintenance programme, the tasks and periods (interval/frequencies) at which each part of the ageing aircraft, engines, APU’s, components, accessories, equipment, instruments, electrical and communication apparatus, and associated systems and installations should be inspected. Such implementation includes the periods at which items as appropriate should be checked, cleaned, lubricated, replenished, adjusted and tested as well.

**Benefits of Attending This Course**

- Understanding the maintenance and reliability program for Ageing Aircraft Fleet
- Cost Models for Ageing Fleet
- Determining failures which are specific to aircraft models (Ageing)
- Controlling frequency of doing maintenance work on older aircraft
- Studying the implications of ageing fleet and its parts
- Identifying the biggest challenges faced by commercial Aviation sectors
- Reviewing the setup and engineering challenges to maintain ageing aircrafts
- Maintenance policy and regulations as applicable to ageing fleets
- Analyzing the risks and benefit assessments of deferring maintenance and/or decommissioning old aircrafts

**Who Should Attend**

- Airworthiness Inspectors / Staff
  - Civil Aviation Authorities
  - Operators
- Airline Maintenance Management
  - Managers
  - Engineers
- Service or Design Engineering Personnel
- Technical Support Staff
- MRO Line and Base Maintenance Staff
- Workshop Personnel
- Maintenance Planning Personnel
- Fleet Managers
- Quality Assurance Personnel
- Maintenance Program Engineers
- Reliability Engineers
- Technical Staff from Leasing Companies
Ageing Aircraft Maintenance Management
25 - 29 November 2013, Singapore

Testimonials
“Good Basic Reliability training who would like to establish reliability program in their organization.”
Berjaya Air SDN BHD

“Very good sharing of knowledge and enlightening.”
ST Aerospace Supplies Pte Ltd

“A Better insight to how operator operates and what is in place.”
ST Aerospace Supplies Pte Ltd

“It was a good experience and useful.”
MIAT Mongolian Airlines

“The Training is very useful & highly recommended. The training was clear and helped me understand the importance of having a good reliability programme, and how to do proper calculation and evaluation of our current reliability programme.”
Air Niguni Limited

“ I get a lot of knowledge on aviation & Aircraft Reliability.”
Myanmar Airways International

Course Outline

Day 1

Aircraft Operator / Aviation
- Aircraft Manufacturers, Aircraft Operators
- Regulatory Authorities
- Terminologies

General Introduction to Aircraft Maintenance
- Maintenance Organization
- Maintenance Philosophy
- Maintenance Strategy general
- Asset Management Concept / What is Reliability
- Regulatory Requirements of EASA, FAA

Explanation of Continuing Airworthiness
- Aircraft Life Cycle understanding
- Contents of the Maintenance
- Types of Maintenance Strategies
- FAA and EASA requirements / Detailed Comparison

Maintaining Airworthiness of Ageing Fleet
- Life limitations for ageing aircraft
- AD’s and certification assessment
- Continuing airworthiness system
- Aircraft design validation
- Recommended inspection program
- Aircraft maintenance program
- Reporting defects and operational experience
- Airworthiness information
- Crashworthiness and material issues
- Maintenance schemes:
  - Supplementary Inspection Programs (SIPs) (Boeing Airworthiness Limitations
  - Structural inspections)
    - Repair assessment programs
    - Airframe Structural Integrity Programs (ASIP)
    - Improper maintenance work, Common mistakes
    - Damage detection, structural health monitoring systems
    - Permanent installation of sensors on airframe structure

International Maintenance Standards and Recommended Practices
- Aviation regulator authority and programs
- ICAO aging aircraft SARPs
- Operational readiness with ageing aircraft
- FAA aging aircraft programme
- Inspections and import/export issues with ageing aircraft

Day 2

Failure Considerations and Analysis in Ageing Fleet
- Definitions, Philosophy
- Fall Safe Design Concept
- System Configuration and Redundancy
- Non Redundant Single Path System
- Redundant Parallel System, Multiple Path System
- Life Cycle Process, Classification of Failures
- Probability (Qualitative and Quantitative)
- Safety Objective
- MSG, MSG-2 Maintenance Process and Decision Logic
- MSG-3 Maintenance Tasks and Decision Logic as applicable to Ageing Fleet
- Failure Effect Categorization
- Time-to-Failure, Failure scenario’s
- Unscheduled Removals
- Case Studies

Maintenance Data Collection for Ageing Aircraft
- Prime sources of Information, Data Collection System
- Information Sources and Data Collected
- Process Flow Diagram, Pilot Reports and Repeaters
- Delays and Cancellations
- Component Removals and Failures, Cannibilization
- Service Difficulty, Occurrence Report
- Structural Irregularity Report
- Types of Data in Aircraft Operation
- Data Analysis Techniques, Six Sigma Tools
- Weibull Analysis, Distribution Fitting for Data’s

Reporting Schemes in Aircraft Operation
- Data Display and Reporting
- Monthly Fleet Reliability Report
- Fleet Performance Report, Statistics Summary
- NFF, Statistics, Variations, Critical Failure Report
- Technical Delays and Cancellations
- Dispatch Reliability, Delays and Cancellation per 100 Departures
- Engine In-flight Shutdowns and Unscheduled Removals
- ETOs requirements
- Fleet Corrective Action Status
- Case Studies

Maintaining ageing aircraft – Setup and Engineering Changes & Challenges
- Scheduled maintenance of ageing Fleet
- Inspecting the structure for fatigue and corrosion
- Replacement of life-limited components
- Rectifying general wear and tear
- Structural modifications, Replacement of older parts
- Life extension strategies
- Restrictions on Rejuvenation
- Re-Engine upgrade for the ageing fleet
- Engineering support and approval control
- Case Studies
Day 3

Corrosion issues of Ageing Fleet
- Corrosion types:
  - Inter-layer corrosion, Uniform or general
  - Localized (Pitting, Crevice, Filiform)
  - Intergranular (Exfoliation), Galvanic
  - Erosion corrosion, Fretting corrosion
  - Environmental Cracking (Corrosion fatigue, high temperature, hydrogen attack, hydrogen Embrittlement, liquid metal cracking and stress corrosion)
  - De-alloying (Dezincification)
  - Stress Corrosion Cracking (SCC)
- Corrosion Prevention and Control Program (CPCP)
- Corrosion control methods
  - Material selection, Material coatings, Joint design
  - Use of water drainage

Prevention of fatigue failure in engine, component, and structure of the aged aircraft
- Introduction to fatigue failure, analysis, and prevention
- Fatigue failure and prevention
- Power-Plant / Parts: HPT blades, APUs, LPT blade, Disks
- Component / Parts
- Structure Parts
- Case Studies

Maintenance Cost
- Direct and Indirect Cost Associated with Ageing Aircraft
- Maintenance Cost Baselines
- Maintenance Contracts – Cost Aspects
- Maintenance Cost Reporting, Data Analysis
- Cost Benefit Model, Change Proposals
- Cost Analysis
- Case Studies

Considering the cost and implications of ageing airframes
- Lifecycle cost analysis of the airframe maintenance
- Definition of age: Flight hours and cycles
- Correlation of cost and age
- Ageing Airframe maintenance cost data
- Costs axed after exceeding designed service life
- Materials replacement
- Material and secondary market
- Selection criteria, Composite materials
- Calculating probability of unscheduled maintenance
- Number of repairs, Maturity curves

Minimizing Engine Maintenance cost in Ageing Fleet operation
- Calibrating the spending based on the length of the maintenance strategy
- Effects of wear and tear on fuel consumption
- Relation between levels of degradation on cost
- Maintainability and Incremental cost reductions

Day 4

Data Monitoring & Reliability Program
- Reliability Analysis
- Performance Measurement and Parameters
- Alert Definitions, Status, Exceptions
- Airplane Alerts, Structures reliability
- Upper Control Limits & Establishment
- Revision of Control Limits, Examples & Case Studies

Maintenance Program Implementation
- Source documents (AD, SBs, ARB, APD, CRM etc.)
- Operator's Maintenance Programme, General Requirements
- Scheduled Maintenance (Check Intervals, Thresholds, Sample Checks, Permitted Variation etc.)
- Task / Function Codes (ATA Spec 100)
- Logistics and Man hour planning aspects (Access Panels, Zones, Skills, Tool and Equipment, Material etc.)
- Maintenance Task Packaging (Blocked Checks, Equalized Programs, Phased Programmes)
- Maintenance Task Cards, Computerized Systems
- Maintenance Program Implementation and Development (Staggered Implementation Plan, Service Experience, Periodic Review, Amendments, Interval Escalations etc.)
- Lean Maintenance Concepts and integration with existing programs.
- Efficiency & Effectiveness of maintenance Program
- Inventory Monitoring to Support Maintenance Program

Day 5

Future management of ageing aircraft
- Retirement and higher Feet utilization
- Lack of higher manpower resources: Trainings are essential
- Configuration management
- Cooperation between the aircraft owners and operators, type certificate holders, designers, modifiers and repairers and regulators
- Fleet reduction
- Component redesign and parts re-engineering
- Aircraft flight control system - Fly-by-wire control
- Mechanical controls

Maintenance Organization Exposition
- Documents / manuals
  - Overall Exposition manual
  - Engineering procedures manual
  - Associate maintenance procedures
  - Reliability Reports

Human Factors in Aviation Maintenance Organization
- Human behavior
- Change Management / Culture
- Understanding Human error factors
- No Blaming culture

Case Studies
- Reliability Improvement for Aged Aircraft (Example)
- Regulatory Requirements for Continued Airworthiness
- Continued Airworthiness Management Organization
- Maintenance Planning (Case Study / workshop)
- Maintenance Cost Analysis (Workshop)
- Maintenance Outsourcing for Aged Airframe, Engines and Components

Conclusion
Ageing Aircraft Maintenance Management
25 - 29 November 2013, Singapore

4 EASY WAYS TO REGISTER

Phone: +65 6376 3177
Fax: +65 6271 9029
Email: sue@tun.sg
Online: www.tun.sg

VENUE & ACCOMMODATION

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317 Outram Road Singapore, 169075
Tel: 6733 0188

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Hotel accommodation & travel costs are not included in the registration fee. A reduced corporate room rate has been arranged at the hotel for attendees at this conference. To take advantage of this special rate, please process the hotel room reservation form provided upon confirmation of your attendance.

Payment Policy

Full payment of course fee to be received by the stipulated date of training, failing which T.U.N INTERNATIONAL will exercise the right to refuse entry to the delegate. Any late payment will be subjected to a 5% late payment fee if the full payment is not received before the commencement date of the course.

Program Change Policy

T.U.N INTERNATIONAL reserves the right to replace or modify the advertised speakers/topics should there be circumstances beyond the control of the organizers before the event. Any changes will be updated on our website as soon as possible.

Cancellations

If you are unable to attend the training course for which you have registered, you may send a substitute or otherwise need to cancel your class registration, please provide written notice to us via e-mail at admin@tun.sg. Cancellation requests received by T.U.N INTERNATIONAL seven (7) days or fewer days before the course start date will receive full credit for use in another future course with no time limit. Credit is not available for cancellation requests received by T.U.N INTERNATIONAL seven (7) or fewer days before the course start date. T.U.N INTERNATIONAL reserves the right to alter or change any part of the course. In the event T.U.N INTERNATIONAL cancels a course due to inclement weather, or other events beyond our control, the fees will be credited to a future seminar of the registrants choice. Upon registration, the registrant acknowledges that T.U.N INTERNATIONAL will not be held liable for any charges or fees incurred due to the cancellation of travel or accommodation reservations.

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RESERVE A SPACE NOW!

Yes! I/We Will attend Ageing Aircraft Maintenance Management on 25 - 29 November 2013, Singapore

☐ I would like to purchase the course documentation at sgd 500 per set.

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Delegate 3
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