EATHTECNA
AIRCRAFT INTERIOR SOLUTIONS

members of the Britax Group

Aviation Maintenance Human Factors i a small organisation

Heath Tecna

Part of PAIG [Premier Aircraft Interior Group] in turn a division of the Britax group

Heath Tecna Bellingham USA – FAA approvals

Heath Tecna Camberley UK – EASA/CAA approvals

Heath Tecna Avalon Australia – CASA approvals

Aircraft Interior Furnishings

From the late 90’s introduction of business and first class lay flat bed seats took place.

Furnishings saw the introduction of more sophisticated units to include bars and beautician units

Operators looked for technical support and maintenance off site at theirs or third party facilities.

Safety System

i **Quality**

ii **Health and Safety**

iii **Training**

Human Factors & Health & Safety

- In most instances where there are Aviation Maintenance Human Factors issues there will be a breach of UK Health & Safety Legislation.
- Memorandum of Understanding between the CAA and the HSE [ref: Annex No 5 Aircraft Maintenance]with interface.
- A need to be proactive and also reactive when issues are identified.

Tools / Proactive

Training:

Procedures -– Health & Safety

- Short management courses

- Human Factors integrated

- **Risk assessment**:

  Look at in-conjunction with H & S

- **Coaching:**

  Supplements training - toolbox talks

  Feedback/debriefing

  [more found out here than in a class room].

Tools / Reactive

Internal Audits - CAR

PQS [Production Query Sheet] - Planning and Engineering

Accident Reports – All investigated

[Look at these and any trends]

Incident / Near Miss Report

Control Measures Working Party

Created an initial Working Party Manual in 2000

Trained personnel

Audits were carried out against the process

Risk assessments were carried out off site to produce generic and specific site assessments.

Reviewed and amended the manual several times a living document

Copy always with a working party

Issues from Internal Audits

Riding Shotgun

Refers to a person travelling as the front seat passenger and staying awake to
nsure the driver does not fall a sleep

A working party consisting of eight personnel were carrying out a series of mo
anned for 3 X 12 hour shifts.

Travelling to Cambridge daily and it can take up to 3 hours travelling one way

Root cause: the working party support coordinator thought they would save th
ompany money on hotel bills.

There was a training need for the support coordinator, manager and technicia
n fatigue and responsibilities.

At this point of time they were also exempt from the Working Time Regulation

The significance of the Selby rail crash is also a strong point to stress.

Issues from Internal Audits

•Pressure from Hangar Managers

•Refers when all the staff went to lunch together and then the manager berated the supervisor for taking a lunch break.

Toolbox talk

ommunicate with the hangar manager at the outset establish if i is a problem.

lternative solution – Positive perception

iscuss with team and allow 2 staff to go at a time never allow a erson to go on their own.

- Site Induction – only one voluntarily given in 2000

Issues from Internal Audits

- Insufficient preparation time

Some CMMs consist of two volumes the illustrated parts list being Volume 2

Found not to be with the working party

Wiring diagram at the rear of the manual you can not read in A4 format needs to be A3

Arranged training on effective use of the CMM by our Tech Pubs department

Ask questions on internal audits: “Can you explain what you are doing / show me the instructions to do it?”

Control Measures

Working Party Manual incorporates:

- Working Party Report Form
- Health & Safety Form
- Tool log
- Shift handover form
- Documentation list
- Spare parts list – additional to what is on the EASA FORM ONE
- Managers/Supervisors check list

Health & Safety Form

- exits
- embly points
- t Aid
- orting Accidents/incidents
- ndatory PPE
- hing
- bile phones usage/authorisation
- cific safety requirements for this site
- oking

- Food/ drink consumption
- Toilets
- Car parking
- Lunch break/Canteen
- Safe area to walk around hangar/airc
- List of personnel present
- Signatures for induction
- First aider name

Possible Stressors / Distractions

Finance

Additional days away

Accommodation

Communication – mobile phone contact out of hours - home

Dehydration - lack of water

Thermal / foul weather clothing

Medical assistance

Inoculations

Fatigue - Dehydration

Work area is too hot so the task is carried out quickly.

Extremely high temperatures cause fatigue

Heat Stress & Dehydration

Tiredness	Pale skin
Headaches	High Temperature
Nausea	Dizziness
Vomiting	Aching Joints
Muscle weakness	Stress
Cramps	Indigestion

Drink liquid even if you do not feel thirsty water – fruit juice are best. Avoid tea and coffee they make dehydration worse.

Go outside use shade of aircraft for break

Lighting

Insufficient for reading instructions, placards etc.

Insufficient for visual inspections.

Insufficient for general maintenance activity.

Under seats – Behind seat back access panel

Maglite Torch

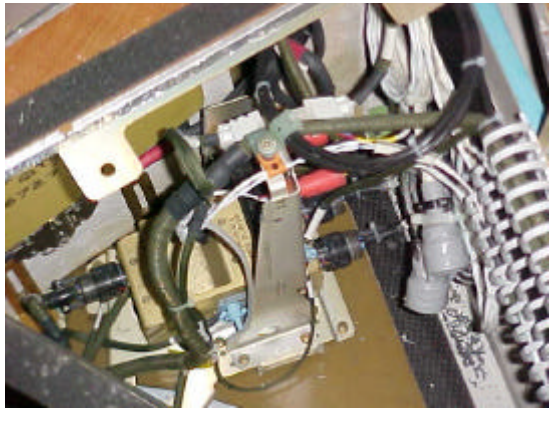
zl head lamp with 4 LED's

Body Size/Strength

bnormal reach, unusual fit, or unusual strength required for he task.

nability to access confined spaces.

need to select staff fit and capable of working beneath the seats – behind seat back through access aperture.



Noise

- *High noise levels impacts the communication necessary to perform a task .*
- *Extended exposure to noise reduces ability to concentrate and makes one tired*
- *Failure to use hearing aids or ear plugs.*
- Noise in the cabin not found to be a problem
- However going in or coming out of the aircraft noise can be an issue
- Ear muffs found not practical for working parties
- Corded plugs in individual containers ideal

Noise -Training

- Risk assessment and noise measurements

- Issue ear protection need to train employees

  CAP 716 Advice – HSE L108 Reducing noise at work guidance on how to comply with the law.

- Noise at Work Regulations 1989 Reg 3 Provision of information to employees.

- Effect of noise on performance –

  Show 3M's video Sound Advice.

Wind

Moves stands and other equipment [creates instability].
Interferes with the ability to climb up or down stands.

Consider effect of wind if in open and climbing up access steps with parts / tools and the use of the handrails.

Large gap between aircraft and gantry caused by high winds buffeting the aircraft

Room to Work

Area too crowded with maintenance technicians and/other personnel

- Other personnel working directly above technicians

- Consider where tool boxes etc are put.

Hazards on Aircraft

Head strikes on overhead bins

Hazardous/Toxic Substances

xposure causes general concern about long term effect on ealth.

otential for disease from humans

Examples	**Recommended Inoculations**
Body Fluids	Tetanus
Nappies	Polio
Hypodermic Needles	Hepatitis B

Care to be taken when removing cushions wear gloves

Look for debris below seats

HEATHTE
AIRCRAFT INTERIOR
members of the

Fatigue / Manual Handling

arried out Manual Handling Training

ternal Audit discovered team walking
mile from car park to hangar with
ols and parts.

een to rest 4 times on the walk.

oolbox talk – no one had requested
lvice – common problem on many
es.

Personal Protective Equipment [PPE]

The Personal Protective Equipment at Work Regulations 1992, ealth and Safety (Miscellaneous Amendments) Regulations 002.

HT legal responsibility - to provide PPE.

Employee's legal responsibility - to wear all PPE.

PPE must be compatible and fit for purpose

Slippery or Unsafe Conditions

- Access equipment [outdoors]
- Safety footwear:-not effective in the wet.

-uncomfortable when working in the cabin.

If employees are not using PPE look to see if there is a root cause.

Slips / HSE

Photograph courtesy of

The Health & Safety Laboratories

Attended a HSE Seminar in Autumn 2003

HSL [Health & Safety Laboratory] were currently doing research into Slips and Fall Accidents and Aspects of Footwear.

The standard for safety footwear [EN 345 & EN 346] does not cover slip resistance and the majority of safety footwear manufacturers use the same compound in the sole.

Slips / HSL

One manufacturer had been carrying out tests with HSL using different compounds and cleat patterns.

Trials were carried out in the food industry with footwear that had been successful in reducing slips.

Contacted Shoes for Crews and obtained samples for evaluation in HT.

The following 4 slides are courtesy of Shoes for Crews

References


ve Thorpe, Paul Lemon and Michelle Hawkins, Health and Safety Laboratory

ndustrial
Slip and
Fall Accidents

an footwear make a difference?

Health & Safety Laboratory Report

By Steve Thorpe, Paul Lemon & Michelle Hawkins

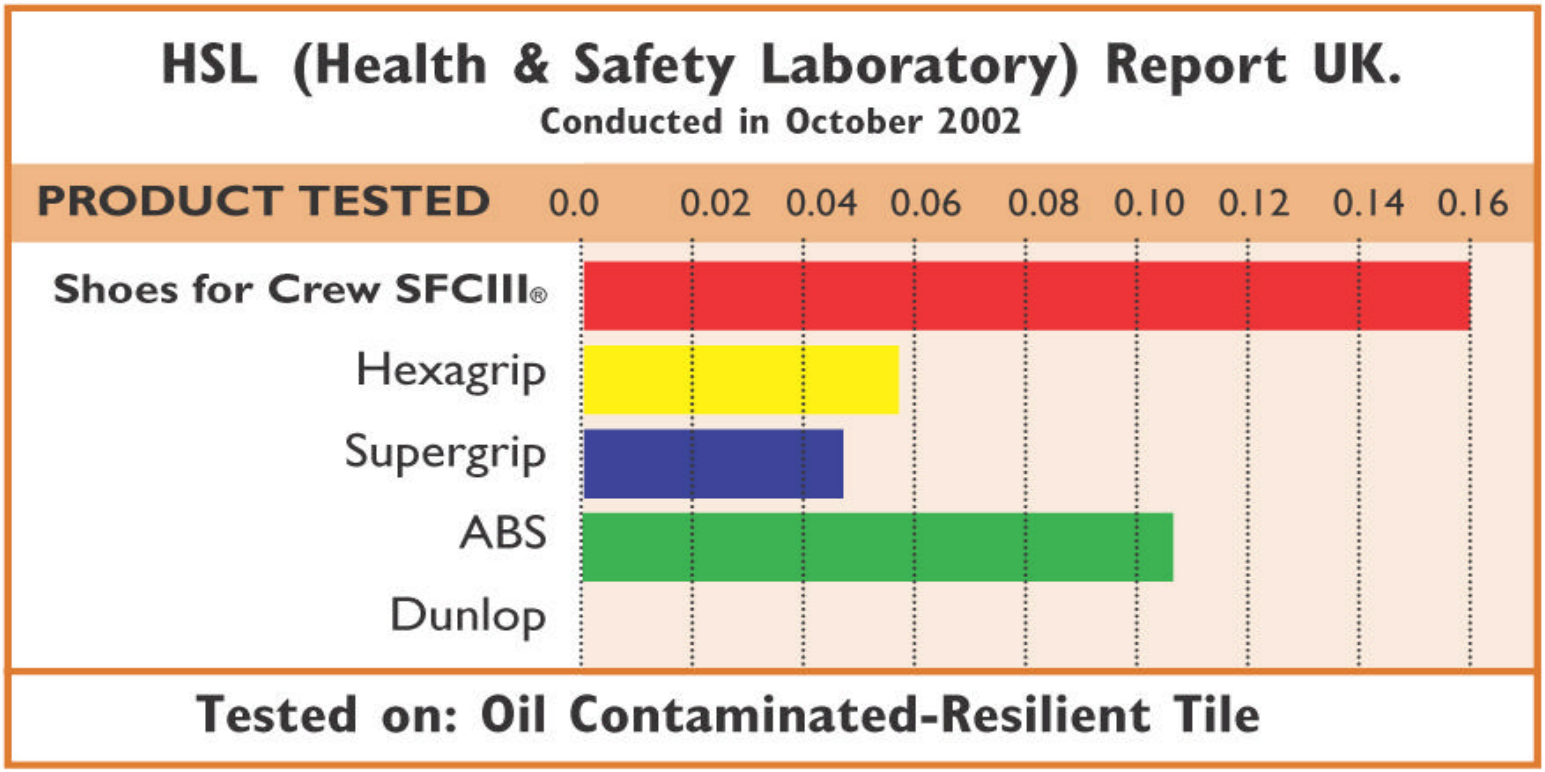
Industrial Slip & Fall Accidents

"Can Footwear Make A Difference?"

Published Health & Safety International Magazine- May 2003

HSL (Health & Safety Laboratory) Report UK.

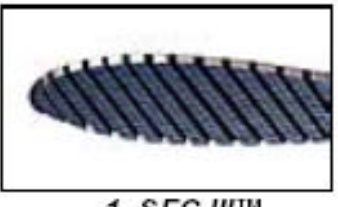
Conducted in October 2002



Tested on: Oil Contaminated-Resilient Tile

SFC™

ES FOR CREWS (EUROPE) Ltd.

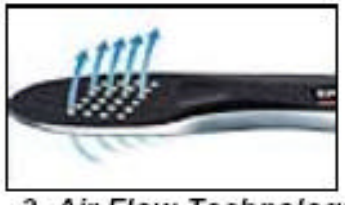


1. SFC III™ Slip-Resistant Sole

Our exclusive micro-channel tread pattern and innovative rubber compound grips wet and greasy floor surfaces with unbelieveable traction.

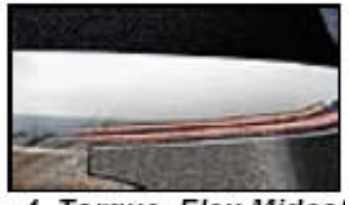
2. Superior Manufacturing

The sole is either stitched or Injection molded to the upper for added durability.



3. Air Flow Technolog

SFC insoles are designed to keep your feet cool. They are ergonomically constructed for optimal support and comfort.



4. Torque-Flex Midsol

Developed for controlled flexibility and added support.

5. SFC Shock Absorber

Anti-fatigue insert reduces heel stress by dampening impact.

- Technologically advanced Outsole rubber formulation
- Uniquely constructed outsole grid pattern
- Chemically Resistant to Oils / Acids / Food Fats etc.
- Energy absorbent outsoles
- Impact resistant cushioned insoles
- All Products certified to EN345 standards
- High Anti-fatigue properties
- Anti-Static

Cold

- *Work area is too cold so the task is carried out quickly.*
- *Long exposure to low temperature decreases senses of touch and smell.*

Hi-viz clothing with with removable hi-viz body warmers.

Breaks in warmth:

Terminals - crew rooms – restaurants - canteens

Availability of hot food and drinks

Dangerous Goods by Air

Need to ensure technicians are aware of the consequences of taking dangerous goods by air






Dangerous Goods / Health and Safety

Seat belts are now being introduced with airbags incorporated into them.

Includes a gas generator under the seat [Class 9 Explosive].

A need to ensure maintenance staff are trained on the safe installation and safety requirements and also aware of Dangerous Goods by Air

Use the Value jet accident Florida as example

Dangerous Goods / Health and Safety

The inflator assembly contains helium gas compressed to 6250 *psi* and is supplied by the manufacturer with a safety clamp and cap assembly fitted.

This assembly must be not be removed until just prior to installation and replaced on the unit being taken off.

HR Human Factor Issues

Pre-existing disease.

Personal injury.

Adverse affects of medication

Drug or alcohol abuse

Complaints of frequent muscle/soft tissue injury

Chronic joint pain in hands/arms/knees

- Working Time Regulations
- Vacations, Absenteeism, Medical leave.
- Stress
- Return to work from long term illness

Training

- JAR/PART 145 Overview Training – AN47
- Company Procedures
- Working Party Training
- Health & Safety
- Health & Safety [Off site Airports]
- Risks - inform the team
- Risk Assessment training [Dynamic environment]
- Tool box talks – issues from internal audits
- Product training
- Management training
- CMM – Effective use of