Our RFID Journey
Where to next?

IATA 4th Paperless Aircraft Operations Conference 2017

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Airline Engineering and Planning

AIR NEW ZEALAND
Kia Ora Welcome

RFID Tool Control
5 years

RFID Emergency Equipment
8 months
Inefficient and Ineffective process
Goal 100% compliance

Safe
• Minimise risk

Efficient
• 80% time reduction for tool-box checks
  • minimise time searching
  • minimise duplication

Compliant
• Standard process for personal tools
• Robust 24/7 process to control company tools
Deep-Dive Review

How? (What is the Fix?)

What are we Proposing?

- Standard layout for personal tool boxes - 80% of tools
  Company C130 Kits

- Tools Cribs + kits - 20% of tools

- Portals for unmanned remote stores

- Replace shift trolleys and Team cribs

CAPEX Approved 18\textsuperscript{th} Dec 2012
Personal Tool Kits Standardised

1 Lean layout

2012

2013 - 2016
Point of Use Tool Cribbs

2 PinPoint™ cribs

2014

2015
Self-help Tool Store

3 Autocrib Inteliports

2013

2017
Achieved 100% Tool Check Compliance

Safe
✓ Zero tools lost from tool cribs

Efficient
✓ Tool-box checks < 30 secs
✓ Lost tools immediately identified
✓ Improved Just Culture reporting

Compliant
✓ Standard process for personal tools
✓ Robust 24/7 process to control company tools
Epoxy UHF Tag into Milled Slot
A Place for Everything
Positive Indication When Tools are **IN** or **OUT**

![Tool Tracking Report](image-url)

**Tool Audit Report ~ Aircraft NZD**

<table>
<thead>
<tr>
<th>B. Floc Issue</th>
<th>Equipment</th>
<th>Equipment Type</th>
<th>Description</th>
<th>Tool Description</th>
<th>Ok-out Date</th>
<th>Ok-out Time</th>
<th>Ok-in Date</th>
<th>Ok-in Time</th>
<th>Order</th>
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<tbody>
<tr>
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<td>Plug Set EXHAUST VENT, THER</td>
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<td>17.05.2017</td>
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- **from H2 Intelliport A201**
- **from crib ANZ016**
Learnings

Clearly define problem(s)
Inconsistent data measures
Fix the measures
Resource commitment
Team workshop gets results
Go See!
POC trial for user feedback

Beware long contract negotiations
4 months to sea freight
No combined solution
2 s/w systems
Governance – need Digital (IT) on-board
SAP integration was hard work!
competing priorities/limited resource
Positive Acceptance and Culture Shift
Manage Cabin Emergency Equipment
Expected Benefits – Time Savings

Maintenance Inspections 1500 m/hrs
TSA Security inspections 1800 m/hrs
Pre-boarding inspections 8300 m/hrs
A320D 60-Day Trial

- Life jackets
- O2 generators
- Head of Base Maintenance scans cabin
- OXK RFID-enabled & ready for service
## Delivering Results

### RFID trial

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<th>OXK</th>
<th>Manual Inspection man-hrs</th>
<th>RFID Scan Inspection mins ave</th>
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<th>Tag Failures</th>
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- No discrepancies found.
## Delivering Results

### RFID trial - Cabin Equipment

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**RFID trial**

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<tr>
<td>Tamper Security Seals</td>
<td>Sample 7 seals</td>
<td>2.58</td>
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</table>

*No discrepancies found.*
## Deploy Plan

*Install time will improve with experience*

<table>
<thead>
<tr>
<th>Aug</th>
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<th>Oct</th>
<th>Nov</th>
<th>Dec '17</th>
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<tbody>
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<tr>
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<td>C or A-Checks</td>
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<tr>
<td>OXK</td>
<td></td>
<td></td>
<td></td>
<td>A320D</td>
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*Validation Trial*
The measured pull force to extract the plastic package containing the life preserver from the nylon container in all four configurations was 4 to 5 pounds.

Subject Selection. The human subjects for this study were participating in a concurrent research activity at CAMI related to emergency egress. The subjects for the life preserver retrieval study comprised of 132 healthy adults between the ages of 18 and 65 years, were selected from the pool of subjects in the egress research project. In addition to “average” size subjects selected randomly from the pool, small females and large males were deliberately picked from the groups of people arriving for the egress study. The rational for selection of specific small female and large male subjects in the life preserver retrieval study was based on assumptions that data from subjects in these two physical ranges would likely bound the performance characteristics of the general population.

RECOMMENDATIONS

This study has identified several difficulties that test participants experienced during life preserver donning tests conducted in accordance with TSO-C13f. Additional problems were identified as being products of the test method itself. The following recommendations result from these findings.

Package Opening

The pull force necessary to operate the opening mechanism should be mechanically demonstrated not to exceed 40 N (9 lbs), or demonstrated in less than 7 seconds by at least 8 of 10 females over the age of 60, without preview of instructions. Timing should start when the test participant has both hands on the package, ready to open, and end when the package is fully opened (e.g., the pull tab/strip is completely removed). A nick or cut should not be introduced in the edge of the material at the tear line unless it is normally a part of the package design.

Package opening should be tested separately from donning. Operation of the opening mechanism should be demonstrated within 10 seconds by 8 of 10 females with reduced dexterity.

Inflatable Emergency Equipment I: Evaluation of Individual Inflatable Aviation Life Preserver Donning Tests

must complete package opening within the allowed time.
RFID - Where to next?

GR iMotion

Tools / GSE
Emerg Eqmt
Rotables
Logistics
Repair -ables
Airplanes
Operations
Paperless

.....that’s why I’m here
Questions?
Mā te wā
‘Farewell – See you again’