Colorado
Division of Fire Prevention and Control
Discussion for Night Vision Goggles

27 - 28 January 2016
Rifle, CO
Night Operations Summit
Bottom-line Up Front

• ASU seeks to provide a clearer understanding of the way forward for NVGs and Night Fire Fighting
  – Why NVGs
  – Aircraft Modifications
  – Training
  – NVG Service
Agenda

• Overview of ASU
• NVGs in Civil Aviation
• NVGs and Night Firefighting
• NVG Program Implementation
• White Phosphor NVGs
• Wrap-up
ASU Introduction

- Industry pioneers, founded in 1995 as a night vision provider for civil, public use and military operators
- Headquartered in Boise
  - With a service center in Bogota, Colombia supporting US and Colombian counter narco-terrorism efforts
- A global leader in night vision
  - Sales of 20,000 NVGs (ground and aviation)
  - Service & repair of NVGs
  - Tech transfer to establish repair centers
  - Training – flight and continued airworthiness
  - Aircraft modification – in Boise or at the customers facility
  - With a customer base in 50 countries
- FAA 145, 141, 135 (and 133/137) certificates
- Approaching 50 employees
- Facility
  - 15,000 square feet in hangar space
  - 4,000 square feet in manufacturing area
  - 8,000 square feet in administrative office space
NVG Lighting Solutions

- Customized design engineering
- FAA Parts Manufacturing Authority
- FAA Part 145 field installation
- FAA & EASA certification
  - STC and supporting documentation
- Return to service
- Field maintainability

ASU will complete its 1,000th aircraft modification in early 2016
NVG Training Solutions

• Part 141 & 135 Initial, Advanced, Re-currency
  – Pilot, crewmember, instructor, maintainer

• In Boise, Idaho, USA
  • Fixed-wing (Cessna 206); Rotary-wing (Bell 206)
  • Vast training area: mountains & high desert areas

• In the customers aircraft
  • In their training area

3,800 trained crewmembers
NVG Hardware and Maintenance

- ITT & L-3 Aviation NVG
  - Over 5,500 aviation NVGs placed in service
- Hoffman Test Equipment
- ASU Common & Special Tooling
- Maintain, repair & recertify
  - Over 2,000 NVGs annually
  - Via our Part 145 repair station
- Established dozens of repair stations
  - Across the America’s and Europe
- ASU also intends to introduce an improved mount & power source assembly in 2016
  - To be approved via TSO or PMA
NVGs in Civil Aviation

• Helicopter Air Ambulance
• City, County & State
  – Law Enforcement
  – SAR
  – Fire
  – Pest Control / Mosquito / Natural Resource
• Other
  – Corporate Part 91
  – Commercial Part 135
  – Agricultural Part 137
NVGs and Night Firefighting

• Why Night Vision Goggles?
  – They allow us to see...
Farm House in Dombas Norway
NVGs and Night Firefighting

- Why Night Vision Goggles?
  - They allow us to see...
  - *Typically:*
    - Cooler temperatures
    - Higher humidity
    - Lower winds
    - Better aircraft performance
    - Better retardant performance / persistence
NVGs and Night Firefighting

• Why Night Vision Goggles?
  – They allow us to see...
  – @40% increase in potential fighting fire time
    – 15 August – Colorado Springs, CO
      » SR: 06:13 / SS: 19:53 – @14.0 hours of daylight
      » @10 hours of darkness
      » Expands Initial Attack window
  – Increased asset utilization
Implementation

• Aircraft survey and Program Quote
• Purchase Order
  – NVGs
  – Aircraft modification
    • STC
  – Training
    • Operations and Training manuals
    • Academic Training
    • Flight Training
  – NVG Inspections and Servicing
About ASU Supplied NVGs

- Normally sold with ASU NVIS Lighting System
- ASU kits the NVG
  - Binocular comes from L-3
    - DO-275 statements of conformance for green/white
    - A-Test data sheet for system & tube
  - Power source & base mount come from ITT
  - ASU manufactures (or purchases) the counter weights and mount adapter assembling the mount in-house
  - ASU performs 100% testing on all components, twice
    - Initial acceptance and final inspection prior to shipment
- ASU maintains a listing of FAA approved NVGs
  - App. A & B of our Flight Manual Supplement (as part of the STC)
- ASU services and repairs NVGs
  - Factory trained/certified by L-3 and ITT
White Phosphor

• Introduced by L-3 to US Special Forces
  – Exelis (ITT) will introduce in 2015
• Change of phosphor material used on the phosphor screen (from P-43 to P-45)
  – Phosphor provides more of a b/w image
  – More pleasing to the eye – provides better (sharper) image clarity
  – P45 has a faster response time
• Still packaged in an MX-10160 image tube
  – Form-fit-function still the same & interchangeable
• L-3 has provided statements of conformance (DO-275) for both the image tube and the M949 system
• DO-275 is (intentionally) silent on phosphor type
• L-3 M949 with white phosphor tubes has been evaluated by FAA
• L-3 M949 with white phosphor is superior in performance
  – 28 minimum SNR, 2000 minimum Photocathode Response, 15,000 reliability
  – Industry response has been overwhelming
• ASU will retrofit legacy, lower performing NVGs – both ITT and L-3 – to Class B configuration and white phosphor image tubes – providing operators with exceptional performance
Wrap-up

• *NVGs dramatically improve night firefighting situational awareness*
• Best NVGs available in the world
• Proven track record in night firefighting
• Clear path to implement an NVG program
• Broad industry base for operator support:
  – Aircraft modification
  – Crew training
  – NVG service