DEALING WITH OPERATIONAL RISK

AN INFORMAL CASE STUDY DRAWN FROM REAL LIFE

JIM ELLIS
APRIL 8, 2016
A BIT OF HISTORY

OVER 100 YEARS OF OPERATING EXPERIENCE
BEGINNING
JANUARY 18, 1911
SAN FRANCISCO BAY
RISK MANAGEMENT?
IT HAS ALWAYS BEEN RISKY

“THE MOST DANGEROUS FOUR AND A HALF ACRES IN THE WORLD”
AN OPERATIONAL APPROACH TO RISK

• MEASURE IT

• MINIMIZE IT

• MANAGE IT

• MITIGATE IT
1. MEASUREMENT OF RISK

- OPERATING EXPERIENCE
  - DAY/NIGHT
  - BAD WEATHER
  - DECK MOTION
  - DIVERT FIELD AVAILABILITY
  - DECK CREW SKILLS
  - PILOT PROFICIENCY
1. MEASUREMENT OF RISK

• OPERATING EXPERIENCE
  - ACCIDENT RATES
Naval Aviation Mishap Rate

FY 50-97

- Angled decks
- Aviation Safety Center
- Naval Aviation Maintenance Program established in 1959 (NAMP)
- RAG concept initiated
- NATOPS Program initiated 1961
- Squadron Safety program
- System Safety Designated Aircraft

776 aircraft destroyed in 1954
39 aircraft destroyed in 1996
2. MINIMIZING RISK

• OPERATING POLICY
  - WEATHER
  - TRAINING REQUIREMENTS
  - DIVERT FIELD REQUIREMENTS
  - FUEL REQUIREMENTS
2. MINIMIZING RISK

• OPERATING POLICY

• DESIGN/TECHNOLOGY
2. MINIMIZING RISK

• OPERATING POLICY

• DESIGN/TECHNOLOGY
“AIRCRAFT CARRIER 101’
2. MINIMIZING RISK

• OPERATING POLICY

• DESIGN/TECHNOLOGY

• SAFETY FOCUS
2. MINIMIZING RISK

• OPERATING POLICY
• DESIGN/TECHNOLOGY
• SAFETY FOCUS
• COMMANDER ACCOUNTABILITY
3. MANAGING RISK

• TRAINING, TRAINING AND MORE TRAINING: CRAWL, WALK, RUN
  - PILOTS, SECTIONS, DIVISIONS
  - SQUADRONS
  - AIRWING
  - SHIP DIVISIONS
  - SHIP DEPARTMENTS
  - SHIP
3. MANAGING RISK

• TRAINING, TRAINING AND MORE TRAINING! SCHOOLS AND OJT

• PROMOTION FROM WITHIN
3. MANAGING RISK

- Training, training and more training! Schools and OJT
- Promotion from within
- Rigorous oversight/assessment/certification

- Formal safety team
- After-action reviews
- Qualification boards
3. MANAGING RISK

- TRAINING, TRAINING AND MORE TRAINING!
- PROMOTION FROM WITHIN
- RIGOROUS OVERSIGHT/ASSESSMENT/CERTIFICATION
- ORGANIZATIONAL STRUCTURE
FLIGHT DECK ORGANIZATION
3. MANAGING RISK

• TRAINING, TRAINING AND MORE TRAINING!
• PROMOTION FROM WITHIN
• RIGOROUS OVERSIGHT/ASSESSMENT/CERTIFICATION
• ORGANIZATIONAL STRUCTURE
• ACCOUNTABILITY
3. MANAGING RISK

• TRAINING, TRAINING AND MORE TRAINING!
• PROMOTION FROM WITHIN
• RIGOROUS OVERSIGHT/ASSESSMENT/CERTIFICATION
• ORGANIZATIONAL STRUCTURE
• ACCOUNTABILITY

IT IS ALL ABOUT THE CULTURE!
4. MITIGATION
(OR WHAT YOU DO WHEN ALL OF THE ABOVE FAILS)

• TRAINING, TRAINING AND MORE TRAINING (FOR EVERYONE!)
USS FORRESTAL FIRE 1967
4. MITIGATION
(OR WHAT YOU DO WHEN ALL OF THE ABOVE FAILS)

• TRAINING TO ESTABLISHED STANDARDS (FOR EVERYONE!)
• EQUIPMENT/TECHNOLOGY
THE STORY
BACKGROUND

- “ROUTINE” DEPLOYMENT TO THE ARABIAN GULF
- COMPLETED A FULL WORK-UP
- “TAG TEAM” RELIEF
- REQUIRED TO BE “READY ON ARRIVAL”
- HAD FLOWN PERIODICALLY WHILE CROSSING THE PACIFIC
NIGHT FLIGHT OPS, 7/20/93

- INDIAN OCEAN
- “BLUE WATER OPERATIONS”
- WEATHER CLEAR
- SOME DECK MOTION ~ 4 FT
- MIX OF PILOT EXPERIENCE
- 14 AIRCRAFT IN FIRST LAUNCH
RISK MANAGEMENT

• DECK MOTION INCREASED: 
  ~ 6-8 FT AND BUILDING
• CAPTAIN CANCELS SECOND LAUNCH
• DIRECTS EARLY RETURN OF THE 13 AIRCRAFT AIRBORNE
• THEY DUMP FUEL; BEGIN APPROACHES @ 2 MIN INTERVALS
MITIGATION

F-14 Ramp Strike

VF-213
EMERGENCY RESPONSE

- AIRCREW SAFETY
- FIRE ON THE FLIGHT DECK/HANGAR BAY
- UNEXPILODED ORDNANCE
- DAMAGE TO THE SHIP/EQUIPMENT
- CREW ACCOUNTABILITY
- AUTONOMOUS ACTION
THE REAL EMERGENCY

• TWELVE AIRPLANES AIRBORNE WITH NOWHERE ELSE TO LAND
• NEED FUEL; LAUNCH A TANKER?
• MORE THAN ONE?
• WHO GETS THE GAS? (LOAVES AND FISHES)

• .....AND THE ADMIRAL’S QUERY
THE AFTERMATH

• FIRES OUT IN TEN MINUTES
• ORDNANCE/WRECKAGE OVERBOARD
• ALL PERSONNEL ACCOUNTED FOR; 5,600 IN TEN MINUTES
• AIRCREW RECOVERED
• FLIGHT DECK CLEANED
• EQUIPMENT TESTED
THE AFTERMATH

- The first aircraft landed 26 minutes after the accident
- 12 followed a two-minute intervals without a miss
- Crew decorated/ship commended
- Repairs effected
- Highly successful deployment
LESSONS

• ACCIDENT INVESTIGATION
• LANDING SIGNAL OFFICER
• AIRCREW PROFICIENCY
• METEOROLOGICAL PREDICTIONS
• BLUE WATER OPERATIONS: RISK/BENEFIT TRADEOFF
• “SURGEON’S DILEMMA”
• WHAT IF ..........?
RESILIENT ORGANIZATIONS
(WEIK AND SUTCLIFFE)

- PREOCCUPATION WITH FAILURE
- RELUCTANCE TO SIMPLIFY
- SENSITIVITY TO OPERATIONS
- COMMITMENT TO RESILIENCE
- DEFERENCE TO EXPERTISE
THE ROLE OF LEADERS

• MANAGE ANXIETY/ABSORB FEAR

• BE BRUTALLY HONEST

• BE A CLOSER

• DO NOT CONFUSE MANAGEMENT WITH LEADERSHIP
THANK YOU FOR THE OPPORTUNITY TO SHARE A FEW THOUGHTS WITH YOU

QUESTIONS?
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YET ANOTHER STORY