Best Practices and Lessons Learned Applying CAST

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CAST Structure
30,000 ft. Overview

Prep-work
On Site Visit
Interviews
Leadership De-Brief
Recommendations
Monitoring for Effectiveness
Documentation

Prep-Work

CAST Analysis Document

Manuals, Job Cards, etc.

PowerPoint Presentation

Shared-Folder for all documentation (established templates)
**Project Sponsors**

**Prep-work**

- Identify Key Stakeholders
- Schedule Kick-Off Call
- Set Expectations

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**How to plan for an ONSITE VISIT**

**Interviews**
- Identify all interviewees and time that they are available to meet.

**Conference Room**
- Where will the interviews and meetings be held?
- Does the room need to be private?
- Reserve conference room ahead of visit.

**Checklist**
- Date of Arrival and Departure
- Airfare/Departure Flights
- Transportation
- Hotel
- In Brief
- Out Brief
- Communication Methods

**Escort**
- Identify who the escort will be.
- Are any badges required for entry?
- Coordinate where and when to meet the person with escort access.

**Union**
- Should the union be involved?
- Do we need a union representative to assist in the event?
- Coordinate with a person onsite who can fill this role.

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**On-site visit checklist**

- Internal Meeting
- Identify Sponsors
- Collect Event Information
- First Sponsor Meeting
- Kickoff Meeting

**30,000ft overview of CAST Process**

- Identify Onsite Sponsors
- What We Need
- CAST Review
- Business Recommendations Owners
- SAME and SMS
- Continuous Reporting

- What We Do
- Executive Summary
- Generate Report

- Next Steps
- Debrief Project Sponsors
- Transition Recommendations

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**Project Initiation**

**Onsite**

**Post Onsite**

**Debrief / Close Out**
Immersed in Operations

Understand the environment in which work is conducted

Engage front-line team members to gain perspective

Identify differences between manuals/training vs actual operations
Interviews

Create the control structure together

Union partnership is imperative

Don’t pretend like you know what their job is
Analyzing the Information

Turn your interview notes and control structure drawing into CAST
Now that we have completed the onsite and conducted our analysis - what's next?
Control Structure

Leadership De-Brief

Show actions that contributed to the event (contributing control actions)

Shows the missing and incorrect actions and feedback
Control Structure (cont.)

Leadership De-Brief

The physical level (Aircraft, equipment, etc.)

The “Decision Makers” aka leaders

The “Doers” aka front-line
Physical Level

Leadership De-Brief

Ineffective Feedback on Engine

No visible feedback on engine

Ineffective Feedback In Flight Deck
"The Do’ers"

Leadership De-Brief

Work Oversight

No formal debrief of open work between Crew Chiefs during leadership change

Crew Chief and Lead were both new to role (within 3 months)

No formal training for Leads or Crew Chiefs

Insufficient feedback for open safety critical work

MROs do not have access to AA QC Sharepoint. This breaks control of work card oversight

LOTTO Control Log

Lockout Tag Out (LOTTO) Control Log

BORESCOPE INSPECTION CARD

AA Lock Out Tag Out (LOTTO) Tag

"Dock" where job cards are located for aircraft BOW
"The Decision Makers"

Leadership De-Brief

Timeline - Decisions Made

1. 8/3 Draft Bill of Work (BOW) submitted to by AA Planning
2. 8/30 Final BOW submitted to by AA Planning
3. 9/12 Fuel Nozzle work assigned to by AA Planning
4. 9/12 rejects the fuel nozzle work due to high risk
5. 9/12 Aircraft inducted into 1 (East Bay Hangar 7)
6. 9/12 Boreoscope inspection work assigned to by AA Planning
How do we track system-improvement recommendations generated from CAST?
Tracking & Accountability

Recommendations

Sharepoint that hosts all recommendations for CAST (owned by business)

Project Planner board to track recommendation status (Safety Systems Engineering Owned)
Analysis Output

Recommendations

CAST Analysis Document

Executive Summary

Project Title: CAST — Engine Fire

AA Safety Systems Engineering Project Lead:
On-Site Coordinator:

Project/Event Background/Summary
On during a high-power engine run of 787-8 aircraft, the #1 and #2 engines caught fire. Six engine borescope plugs on each engine were not reinstated prior to the engine run up, causing flames to erupt from the open borescope ports. Extensive damage was sustained inside and around the engine and thrust reversers.

Recommendations
Below is a summary of the project recommendations.

REC-3: Establish a minimum streamer length streamer that cannot be hidden when thrust reversers / cowlings are closed.

- Rec Context: Currently there is no standard length for streamers when borescope plugs are removed. This leads to no visibility when the thrust reversers are closed. [See Appendix B]
- Business Owner: AA -
- Status: Implemented
  ○ Date: TBD

REC-2: Create a checklist to be conducted to inspect engine prior to any engine run-ups (Post Maintenance, Pre-Engine Run Check List)

- Rec Context: The high-power engine run was assigned while the borescope plugs were removed. The thrust reversers were closed up and unlatched which was insufficient feedback to the ground crew that the aircraft was unsafe to start engine.
- Business Owner: AA -
- Status: Implemented
  ○ Date: TBD

REC-9: Update the Lock Out Tag Out program to enhance oversight of safety critical tags, including responsibilities for removing tags. Include verification of work cards against LOTO to ensure work has been completed for the tags they are removing.

- Rec Context: Current LOTO process is manual and requires searching through binder of hundreds of papers. Also, current LOTO tags are paper and taped to critical systems in the flight deck. Current policy and procedure is to throw away paper tag after signing it back in, which eliminates any oversight or control. [See Appendix C]
- Business Owner: AA -
- Status: Accepted
Recommendations – SMS Flow

Monitoring for Effectiveness

Data Validation and Measuring

- Safety Metrics
- LOSA
- ASAP Reports
- FOQA
- Other Reports / data

SMS Meetings

Recommendation

Leadership Briefings
Managing Perceptions

“What is the Root Cause”?

“We need action taken now”

“We could have learned that without CAST”

“The employee still didn’t follow procedures”
Questions?

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StaySafe.