



LAMP

Line Activity Monitoring Program

A look at PHI's *Non* "FAA Approved" Helicopter Flight Data Monitoring (HFDM) Program



Objectives

- Provide an overview of an active FDM program
- Provide insight into the decision of whether or not to pursue an “FAA Approved” FOQA program
- Highlight major elements of an effective FDM program





Overview

- What does FAA approved mean?
- Pros and Cons
- Applicable References
- Decisions, Decisions
- PHI's LAMP Program
- Summary (We Report, You Decide)





Approved vs. Accepted

- **Approved**
 - Dictionary-to consent or agree to; to confirm or sanction formally; ratify
 - FAA (Legal Interpretation)-"Approved" means approved in advance
- **Accepted**
 - Dictionary-widely encountered, used, or recognized; commonly approved or recognized
 - FAA-?
- ***Guess I will never have an FAA Approved program by this definition!***





Pros and Cons of FAA “Approved”

Pros

- Some protection from violations or sanctions under Part 193
- Good relations with the FAA
- Good P.R.

Cons

- May slow process of implementing program (Bureaucracy)
- Legal loopholes in Part 193 and FAR 13.401 protection
 - Ref. FOQA 2006 - Aviation Safety v. Legal Exposure, Phillip J. Kolczynski
- Current FAA FOQA guidance designed for large airplanes
- Current “Approved” helicopter participation is limited





Guidance Material

- AC-120-82 Flight Operational Quality Assurance
- CAA PAPER 2002/02 Final Report on the Helicopter Operations Monitoring Programme (HOMP) Trial
- CAA PAPER 2004/12 Final Report on the Follow-on Activities to the HOMP Trial
- CAP 739, Flight Data Monitoring, Civil Aviation Authority, 29 August 2003
- Role of analytical Tools in Airline Flight Safety Management Systems, Global Aviation Information Network (GAIN), Second Edition, September, 2004
- SAI System Specification Helicopter - Flight Data Monitoring Systems (HFDM) (FOQA/FDM/HOMP)
- ICAO, Transport Canada, EASA, Etc...
- More I missed and more every day!





Decisions, Decisions

- No PHI objections to an FAA Approved Program, and we may decide to move that direction in the future
- Our program has developed extremely well and has become quite robust
 - Has been very effective as is
 - Gained confidence of everyone involved
- Local FAA is aware of, and is kept aware of advancements





PHI's LAMP Program

What's in a name?

- n FOQA
- n FDM
- n HOMP
- n LAMP (My vote!)

Beginnings

- n Customer requirements
- n Next generation equipment
- n Next level of safety systems (SMS)
- n Employee acceptance and education
- n Security of information
- n Management commitment to assets and privacy
 - Pilots more concerned about what the company will do with data than what may happen from the FAA
- n Participation by line pilots (Crew Liaisons)
- n Program development





Key Decisions

- Commitment to FDM as non punitive, proactive, continuous improvement program
- Software Considerations
 - In house, contracted, combination
 - If in house, must select software that best suits your needs
- Hardware Considerations
 - FDR/MDC/Lightweight Recorder/QAR
 - Manual/Wireless download
 - Data processing equipment/IT Infrastructure
- Personnel Considerations
 - Management Oversight Group/Steering Committee
 - Program Manager
 - Crew Liaisons/“Gatekeeper”
 - Analysts/Specialists





The LAMP

- Development of LAMP Manual
- Information control process
- Integration with SMS
- Organizational Structure
- Roles and Responsibilities
- Interpretation and Use of Data
- Establishment of Reporting Parameters (Triggers)
- Closing the loop





The LAMP Manual



Line Activity Monitoring Program
LAMP

PHI's Flight Data Monitoring System

Program Management Procedures and Policies
General Operations Manual-Volume 7

PHI-969-LAMP-000

Initial Release-July 10, 2007

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Information Flow

2 System Description

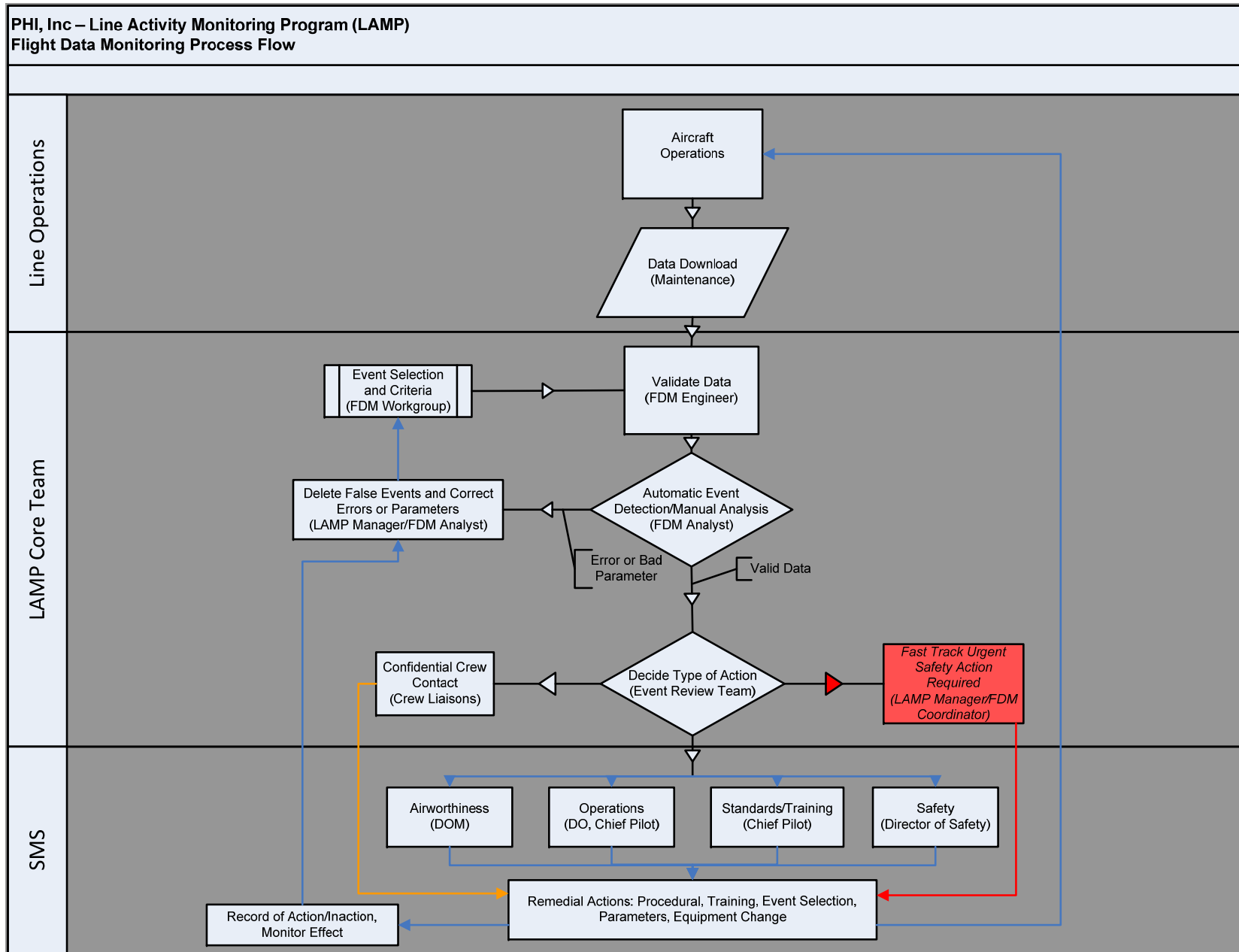
2.1 Information Flow Description

Data obtained from the aircraft sensors is collected in a data acquisition unit, and then is recorded by a Solid State Quick Access Recorder (SSQAR) which has a removable storage medium. The raw information is processed and validated by the FDM Engineer. The FDM Analyst/Coordinator processes the data against preset flight event parameters and takes prescribed actions depending upon risk category. The actions which may be taken range from routine transmission to the Event Review Team, to immediate notification for potential catastrophic risk. Crew contacts are performed as deemed necessary by the Event Review Team.





Process Flow





Integration With SMS

2.3 Integration with the Safety Management System (SMS)

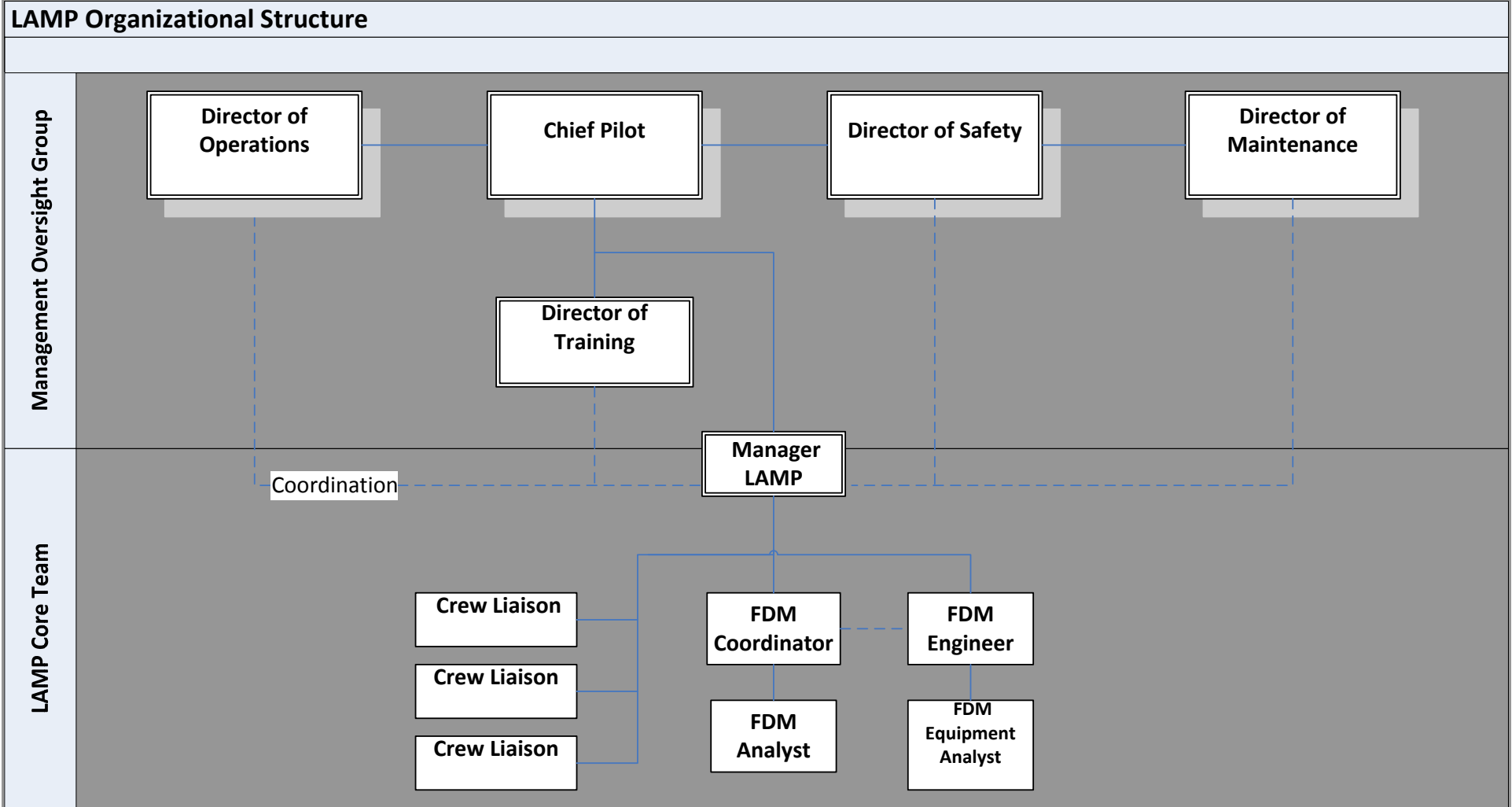
The LAMP is considered a vital tool in PHI's SMS.

To insure that the LAMP system is fully integrated into our SMS, the LAMP team coordinates with the Director of Safety, and the reports generated by the LAMP team are reviewed by the Safety Management Review Team (SMRT) at their regular review meetings. This review will insure that remedial actions are achieved, and that the LAMP remains a management priority.





LAMP Organization





Roles and Responsibilities

3.1 Overview

The Line Activities Monitoring Program consists of two functional teams:

- LAMP Core Team

- Management Oversight Group (Directorate)

3.2 Roles and Responsibilities

3.2.1 LAMP Manager

The LAMP Manager is accountable for ensuring that the program objectives are met in a timely manner. He is responsible for ensuring that flight data is collected and reviewed in accordance with program procedures and that appropriate actions are taken to maintain safe flight operations as well as to improve standardization, training and maintenance practices within the organization. The LAMP Manager reports directly to the Chief Pilot for his role in Operations.

The LAMP Manager has the responsibility to coordinate directly with the Director of Safety, Director of Training, Director of Operations, Director of Maintenance, Chief Pilot, Manager of Flight Safety and the Manager of Flight Standards as required.





Data Security and Control

4.2 Data Security and Control

4.2.1 Access to data

Access to raw, identifiable data is to be strictly controlled. Unless needed for accident or serious incident investigation, or urgent maintenance action, as determined by the LAMP Manager, the identifiable data shall only be available to the the LAMP Core Team and only to the extent necessary to perform job function.

If an individual exception to this policy is seen to be required by a member of the LAMP Core Team or Management Oversight Group, the Director of Safety shall convene a Safety Review Board (SRB) to determine if the release of data is appropriate. The SRB shall consist of the following members:

1. Director of Safety – Chairman – **Non-Voting Member**
2. Director of Operations – **Voting Member**
3. Chief Pilot – **Voting Member**
4. Director of Maintenance – **Voting Member**
5. Director of Training – **Voting Member**
6. LAMP Manager – **Voting Member**
7. Crew Liaison – **Voting Member**
8. Crew Liaison – **Voting Member**
9. Crew Liaison – **Voting Member**
10. FDM Analyst – Information – **Non-Voting Member**
11. FDM Engineer – Information – **Non-Voting Member**

All members of the SRB shall have an equal vote.....





Event Exceedences Example



S-92 Standard Profile

1/8/2009



Code	Title	Trigger	Rationale
LA01	Pitch Up Attitude Below 20'	15°	To detect the risk of a tail rotor strike.
LA01-	Pitch Down Attitude Below 30'	-10°	To detect excessive pitch down attitude during take off transition.
LA02	Pitch Up Attitude 30'-300'	18°	To detect excessive flare angle.
LA02-	Pitch Down Attitude 30'-300'	-10°	To detect excessive pitch down attitude during low level flight.
LA03	Pitch Attitude Above 300'	± 18°	To detect excessive pitch attitude in flight.
LA04	Pitch Rate 30'-300'	± 10°/sec	To detect excessive rate of change of pitch attitude during low level flight.
LA05	Pitch Rate Above 300'	± 10°/sec	To detect excessive rate of change of pitch attitude in flight.
LA09	Roll Attitude Below 300ft	± 30°	To detect excessive roll attitude during low level flight.
LA10	Roll Attitude Above 300ft	± 35°	To detect excessive roll attitude in flight.
LA11	Roll Rate	± 8°/sec	To detect excessive roll rate.
LE01	Max Continuous Torque (DEO) Airspeed >	89% 100 KIAS	To detect exceedence of the maximum torque limit.
LE03	Max Torque (OEI)	120%	To detect exceedence of single engine maximum continuous torque limit.
LE05	Take-Off Torque (5 min limit-DEO) Duration >	100% 240s	To detect exceedence of transient/take off torque limit.
LE11	Max Combined Torque	190%	To detect exceedence of 200% combined torque limit.
LE12	Single Engine Flight		To detect single engine flight.
LO01	High Rate of Descent Below 300'	-1000'/min	To detect an excessive rate of descent during low level flight.
LO02	High Rate of Descent Above 300'	-1500'/min	To detect an excessive rate of descent in flight.
LO03	Rate of Descent Below 30kts	-700'/min	To detect an excessive rate of descent at low speeds.
LO04	High Airspeed Below 100'	90 KIAS	To detect high speeds during low level flight.
LO05	Low Airspeed Above 500'	50 KIAS	To detect flight at an unusually low airspeed.
LO06	IAS Mode Engaged Below RFM Limit	50 KIAS	To detect engagement of flight director airspeed hold at low airspeeds.
LO07	ALT Mode Engaged Below RFM Limit	50 KIAS	To detect engagement of flight director altitude hold at low airspeeds.
LO08	HDG Mode Engaged Below RFM Limit	50 KIAS	To detect engagement of flight director heading hold at low airspeeds.
LO09	Lateral Cyclic Control	40%	To detect excessive lateral movement of the cyclic.
LO10	Longitudinal Cyclic Control	40%	To detect excessive longitudinal movement of the cyclic.
LO11	Flight Through Hot Gas	40°C	To detect if the aircraft flies through the turbine efflux or flare plume.
LO12	Hard Landing	1.5g	To detect a hard landing.
LO13	Low Rotor Speed - Power On	104%	To detect low rotor speed during power-on flight.



Activity Report to Management Oversight Group (Example)

Activity

- n Processed 16,000+ flights and 70,000+ events to date
- n Crew Liaisons have participated in regular event reviews
 - Reviewed all events and refined several events
 - Participated in remote incident studies using WebEx Software
 - Conducted Crew Contacts as necessary
- n Identified malfunctioning equipment
 - Assisted Maintenance in identifying and correcting discrepancies
- n Reconciled and corrected anomalies in analysis software programs
 - Identified numerous previously unknown OEM deficiencies
- n LAMP offers review/analysis services for all crew members






Closing the Loop (Example)

- 603 Event Definition Refinements
 - Developed, tested and implemented
- Several Standardization Changes
 - Parking Brake Operations
 - Flight Director Operations
 - DEO Overtorques
 - Rotor Brake Application
- Observation Checklist Changes
 - Taxi operations
 - Control positions
 - PC2 profile monitoring
- Training on S-92 Torque Limiting



Windows Internet Explorer
 http://lamp/index.php/contactus
 Contact LAMP Dept.




HOME TRENDS **CONTACT US**

Home > CONTACT US
 Contact LAMP Dept.
 Saturday, 26 July 2008 14:32


Request a Flight Analysis

You can submit a request online by clicking here. Alternatively, you can also request an analysis by downloading the

Windows Internet Explorer
 http://lamp.phihelico.com/



HOME TRENDS CONTACT US



Welcome to LAMP

PHI's LAMP Program reviews data from each of the monitored aircraft. The most robust system is the S92. The S76 has fewer parameters for review, however we are researching a system to increase those.

LAMP INFORMATION BULLETIN NEW!!!

Flight Director engagements are monitored to ensure proper use of the flight director and autopilot systems. To clarify, the RFM limits engagements of the flight director to above 50KIAS in the EC-135. The LAMP Department has established the triggering points for those events at 50KIAS as a high precedence.

Monitoring shows us that these are on the decline but a little work on proper use will all but eliminate these Flight Director events.

If you have any questions regarding this Bulletin please feel free to contact Paul Perkins or one of the crew liaison line pilots.

[Download the full bulletin.](#)

[Read More...](#)


EVENT SETS

Click below to view the events being monitored.

THIS INFORMATION IS ONLY TO BE VIEWED BY PHI EMPLOYEES!

- S-92a(p)
- S-76C(p)
- EC-135(p)
- 206/407(sp)
- 206/407(tp)

Sikorsky S-92A Sikorsky S-76C Eurocopter EC-135 Bell 407 Bell 206



The S-92 has been an excellent aircraft for PHI, Inc. and our customers. LAMP has seen a taxi-turn rate increase, but none in the high limits. This not an exceedance and demonstrates excellent performance by pilot staff.

We are seeing a few improper flight director engagements, decoupling events. Please review the RFM and Best Practices so we may correct and eliminate these.



search...

Recent LAMP Bulletins


- LAMP Bulletin #4
- LAMP Bulletin #3
- LAMP Bulletin #2
- LAMP Bulletin #1

Areas of Interest

- LAMP presentation from April 2008
- CHC Presentation 2008 - FDM Beyond the Challenges
- IATA IRM Bulletin
- IATA Q1-2008 Accident Brief
- Best Practices S92 04-24-2008
- Best Practices Supplement
- LAMP News and Views July 2008

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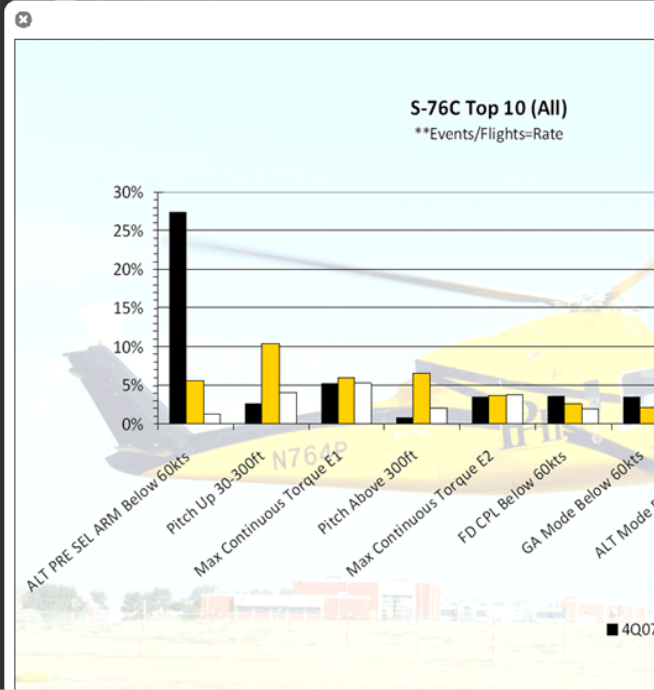
Local intranet 75%



Home > TRENDS

Below are thumbnails for available Trends. Click the thumbnail for a larger view.

Flash Player is required to view these presentations. You can get the plugin by visiting <http://www.adobe.com/go/getflashplayer>



Done



Morgan City Engine Out Animation

Saturday, 10 May 2008 20:48

This is an animation of an engine out in Morgan City.

If the video appears choppy, press pause and allow it to download fully before playing.



Last Updated (Tuesday, 13 May 2008 05:54)

search...

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Animations

- S-92 Rig Overshoot
- S-92 Engine Out





Summary

- This is an example of a large operator's program, and can be scaled down for smaller operations
- FAA Approved or not...your choice. The important thing is for the program to be effective
- Cannot overemphasize the importance of using the data to improve safety and operational performance, not for discipline
- FDM is an effective tool in moving an organization to a higher level of safety and organizational excellence





Thank You

Questions?

