Civil Aviation Administration of China
Flight Standards Oversight System

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Flight Standards Department CAAC
BACK GROUND

● Challenge from the Development of Chinese civil aviation industry
  ▪ Airlines
    ◆ 55 air operators by the end of June, 2011
    ◆ Increasing year by year
  ▪ Airplanes owned by airlines
    ◆ 1825 transport airplanes by the end of 2011
  ▪ Other relevant data
    ◆ Total air transport turnover reached 57.74bn ton-km in 2011.
    ◆ The average annual growth of air transport turnover of China was 15.6% during the 11th five-year plan.
  ▪ China has become the world's second largest aviation market.
Potential Challenge: Inspection resources (workload) can’t catch up with the development of the aviation industry.

- Quantity increasing
  - Traffic increase: Increasing of airlines, fleet, total operating time, etc.

- Routine work is becoming more and more complicated
  - Airlines’ organizational structure (merges, alliance, foreign employees, etc.), route structures,
  - More category operations of airline (complexity of inspection task)
  - New technologies in use (EFB/RNP/ADSB/HUD/EFVS/SVS);
  - Workload brought by the amendments and revisions from regulations, such as ICAO English Language Proficiency requirements, SMS implementation, new ETOPS policies, Advanced Qualification Program (AQP), Flight Operational Quality Assurance (FOQA), Fatigue Risk Management (FRM), etc.

Main Contributions for the challenge
WHAT IS FSOP
FSOP是什么
WHY FSOP
为什么建立FSOP

◆ CAAC working platform
局方工作平台
◆ SMS IMPLEMENTATION TOOL
SMS实施工具
What is FSOP----a house with a complete structure

FSOP system is a system focusing on transport airlines certification and continuous surveillance, supporting pilot certificate, maintenance management, e-regulation and medical certificate management, and integrating 12 sub-systems.

- Operation Specs
- SDR
- Pilots Certificate
- Basic Info
- Maintenance Management
- Dispatcher License
- E-Regulation
- AEG
- Medical Certificate
- Inspector Info
- Certification Oversight System
- Performance Analysis System
What is FSOP—a house with a complete structure
REFORM and INNOVATION

- SOLUTION:
  Efficiency Improvement

FSOP IS IT (Internetwork) TOOLS for Inspectors’ Routine Job, New Oversight Concept for CAA

（FSOP是基于网络的工作平台，使用全新的监管理念为监察员日常工作服务。）
GETTING GRIPS WITH SAFETY

把握安全

Balance the efficiency and quality of oversight!
Balance the development and safety of industry!

• Pivot 支点 (change the moment by improving efficiency smarter)
• Weight 砝码 basic law

SAFETY

Innovation

RESOURSE

recruit + tool
Certification & Oversight System

— mainly for certification and routine oversight of large air carrier

Scientific tools change the oversight pattern

Info sharing
Analysis and decision-making
Business Collaboration
Oversight and Control

See what couldn’t be seen before;
Know what couldn’t be known before;
Info sharing & Collaboration

Management of operation

1. Continuou S Safety
2. Collaboration
3. Analysis & Assessment
4. Decision Making
5. Other business

TEAM WORK and RELATION COORDINATION,
PROBLEM SHOOTING by COMMUNICATION

The blind men feel an elephant -- to take a part for the whole.
Complementary by FSOP (break the geographical/time limitation)
System Building

Work Style Reform

Flight Standards Oversight System

- Oversight Plan posted online
- Oversight worksheet posted online
- Specific oversight task designation
- Oversight record posted online

Input the Airline safety performance

Input the CAAC oversight performance fringe benefit

plan in entirety
Decision Based on Data, Risk Prevention

Finding Rate of the Top Four Air Carriers

<table>
<thead>
<tr>
<th></th>
<th>China Southern Airlines</th>
<th>China Eastern Airlines</th>
<th>Hainan Airlines</th>
<th>China International Airlines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check Times</td>
<td>17387</td>
<td>13817</td>
<td>5704</td>
<td>10049</td>
</tr>
<tr>
<td>发现问题次数</td>
<td>206</td>
<td>145</td>
<td>47</td>
<td>80</td>
</tr>
<tr>
<td>比例</td>
<td>1.18%</td>
<td>1.05%</td>
<td>0.82%</td>
<td>0.80%</td>
</tr>
</tbody>
</table>

Statistics of the Findings

- Control
- Policy
- Human resource
- Tools
- Others
- Process measure
- Expected result
- Interface
- Technical material
Oversight with Concept of SMS
FLIGHT STANDARD OVERSIGHT PROGRAMME (FSOP)

• FSOP implementation with the SMS safety assurance pillar
• FSOP support the following CAAC tasks:
  ■ Certification
  ■ Surveillance
  ■ Resolution of safety issues
Underlying Concepts

- **SMS**
- **SMS Pillars**
- **Risk Management**
- **System Model**
- **Safety Assurance Model**
The integration of resources
Improving the efficiency of safety oversight by SMS
Relief the work load of CAA

- With FSOP, the resource allocation of inspection can be optimized and thus the efficiency of oversight can be improved.
- They wouldn’t make the same mistakes before since they could get enough Information and share experience at anytime/anywhere by internet.
**IMPLEMENTATION of SMS CONCEPT**

### System / Subsystem

<table>
<thead>
<tr>
<th>Aircraft Configuration</th>
<th>Manuals</th>
<th>Flight Operations</th>
<th>Personnel Training and Qualification</th>
<th>Route Structures</th>
<th>Flight, Rest and Duty Time</th>
<th>Administration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aircraft</td>
<td>Manual Management</td>
<td>Programs and Procedures</td>
<td>Maintenance Personnel</td>
<td>Approved Routes and Areas</td>
<td>Airman and Crewmember Limitations</td>
<td>Key Personnel</td>
</tr>
<tr>
<td>Records and Reporting Systems</td>
<td>Dispatch and Release</td>
<td>Training Program</td>
<td>Crewmember and Dispatch Qualifications</td>
<td>Maintenance Personnel</td>
<td>Other Programs</td>
<td></td>
</tr>
<tr>
<td>Maintenance Organization</td>
<td>Mechanical and Maintenance Personnel Qualifications</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CASE** 90%×90%×90%×90%×90% = 59% **product**
closed-loop management

4 PHASES, 8 STEPS
For Safety Assurance

SMS FOR AUTHORITY
Regulations and policy define the acceptable level of safety. System description begins with the Air Carrier Oversight Profile.

Identify areas where conditions in the system or operating environment may be creating hazards. Plan, report, and review data collection in those areas.

**Analysis and Assessment**
Analyze data to identify hazards

**Analysis and Assessment**
Take action to control the effects of the hazard and/or mitigate unacceptable levels of risk.
A clearly identifiable, qualified, and knowledgeable person who has the authority to set up and change a process.

Checks and restraints designed into a process to ensure a desired result.

Used to validate a process and identify problems or potential problems in order to correct them.

Interactions between processes that must be managed in order to ensure desired outcomes.

**SOUL OF SMS**

- **Procedures**
- **Controls**
- **Process Measures**
- **Interfaces**
- **Responsibility**
- **Authority**

**System Safety Attributes**
SMS should identify any hazard in the air carrier’s operating environment or systems, focuses on **Systemic hazards rather than isolated incidents**, significant changes in the operating environment and any other peculiar elements, and initiate RMP when it is necessary. These cases may not constitute regulatory noncompliance, but may be attributed to the design of safety attributes or deficiency of performance (missing attributes, patterns of repeated noncompliance with procedures, etc.).

**ASK WHY?**
Evaluating system safety from both inside and outside

- Breakthrough Point: An item is added to every checklist to evaluate the safety of an airline system.

**Checklist**

- Objective: ......
- Task: ......
- Items to be checked:
  - 1.1 ...... Yes No
  - 1.1.1 ...... Yes No
  - 2.2 ...... Yes No
  - 2.2.1: ...... Yes No

**Part I: Procedures**

- Law Compliance
- Controllability
- Continued improvement
- Correlation Link

**Part II: Control**

- Surface Layer

**Part III: Process Measurement**

- 6 elements combined

**Part IV: Interface**
Protection

FSOP (Flight Standards Oversight Programs)

SMS (Safety Management System) and CAA OP (Oversight Programs)

CAAC oversight

Airline Operations

procedures
Authority
Responsibility
Controls
Process Measures
Internal surveillance
大数据时代的飞行标准监督管理

Big Data: Flight Standards Oversight
# FINDINGS of the TOP10 FOREIGN OPERATORS

## YEAR 2014

<table>
<thead>
<tr>
<th>Operators</th>
<th>FINDINGS</th>
<th>Rate of findings</th>
<th>Quantity of inspections</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastar Jet Co. Ltd/韩国易斯达航空</td>
<td>35</td>
<td>6.93%</td>
<td>505</td>
</tr>
<tr>
<td>Hawaiian Airlines, Inc./夏威夷航空公司</td>
<td>13</td>
<td>30.95%</td>
<td>42</td>
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<tr>
<td>Jin Air Co. Ltd./韩国真航空股份有限公司</td>
<td>10</td>
<td>7.30%</td>
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<tr>
<td>Air Busan/釜山航空股份有限公司</td>
<td>8</td>
<td>2.35%</td>
<td>341</td>
</tr>
<tr>
<td>Dynamic Airways/Dynamic Airways</td>
<td>8</td>
<td>9.52%</td>
<td>84</td>
</tr>
<tr>
<td>Turkish Airlines Inc/土耳其航空公司</td>
<td>7</td>
<td>3.06%</td>
<td>229</td>
</tr>
<tr>
<td>Korean Airlines Co., Ltd./大韩航空</td>
<td>7</td>
<td>0.66%</td>
<td>1067</td>
</tr>
<tr>
<td>Asiana Airlines Inc./韩亚航空公司</td>
<td>6</td>
<td>0.80%</td>
<td>746</td>
</tr>
<tr>
<td>Jeju Air, Co., Ltd/韩国济州航空</td>
<td>5</td>
<td>6.85%</td>
<td>73</td>
</tr>
<tr>
<td>Aeromexico/墨西哥航空公司</td>
<td>5</td>
<td>4.59%</td>
<td>109</td>
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</tbody>
</table>
### 2014年**FSOP**

#### data statistic of findings

<table>
<thead>
<tr>
<th></th>
<th>华东局</th>
<th>中南局</th>
<th>西南局</th>
<th>华北局</th>
<th>新疆局</th>
<th>东北局</th>
<th>西北局</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2014年发现问题数量</strong></td>
<td>663</td>
<td>602</td>
<td>450</td>
<td>305</td>
<td>236</td>
<td>219</td>
<td>163</td>
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<tr>
<td><strong>2013年发现问题数量</strong></td>
<td>406</td>
<td>344</td>
<td>333</td>
<td>162</td>
<td>11</td>
<td>108</td>
<td>223</td>
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<tr>
<td><strong>2014年发现问题率</strong></td>
<td>1.15%</td>
<td>0.74%</td>
<td>1.25%</td>
<td>0.96%</td>
<td>2.46%</td>
<td>0.90%</td>
<td>1.44%</td>
</tr>
<tr>
<td><strong>2013年发现问题率</strong></td>
<td>0.80%</td>
<td>0.80%</td>
<td>1.00%</td>
<td>0.55%</td>
<td>1.33%</td>
<td>0.68%</td>
<td>2.14%</td>
</tr>
</tbody>
</table>
The Essence of SMS is cooperation—All industry involved, That's including:

- Operators (CCAR121+CCAR135) + Training Centers (CCAR142) + maintenance organizations (CCAR145) + … (FLIGHT STANDARDS)
- Manufacturers
- Airports
- ATC
- … Planning Dpt. + Finance Dpt. + Authority … ICACO/COSCAP?

STAKEHOLDER
Future Prospect

Flight Standards Oversight System
(Secondary Phase)

**Inspectors Certificate Management**
**Pilots Certificate Management**
**Aircraft Dispatcher Management**
**Service Difficulty Report Management**

**大型商业承运人监管**
**通用航空运营商监管**
**小型运营人监管**
**外航监管**

**机场航务管理**
**飞行签派员培训机构**
**驾驶员学校监管**
**飞行训练中心监管**

**维修单位监管**
**维修人员资质管理**
**委任代表与委任单位代表**

**体检合格证管理**
**电子规章**
**飞行模拟训练设备管理**
**航空器评审**

**民航电子政务外网应用支撑平台**
Expanding the applicability of oversight system from large air operator to small air operator and GA operator. Further standardizing and strengthening certification (administrative permit issuance) to establish a user-friendly and standard online certification platform.
Future Prospect

New oversight tools

Remove time and space barrier
“Know the world by touching a screen”

Develop a full-service electronic oversight package
Portable
Take photographic evidence
THANK YOU

谢谢
감사합니다
баярлалаа, гялайлаа
What is FSOP----a house with a complete structure

FSOP is a system focusing on transport airlines certification and continuous surveillance, supporting pilot certificate, maintenance management, e-regulation and medical certificate management, integrating 12 sub-systems.

- Aircraft Certification
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- Inspectors
- Basic Info
- Maintenance Management
- Medical Certificate
- SDR
- Pilot's Certificate
- Dispatcher License
- User difficulty Report
- Certification Oversight System
- Performance Analysis
- Decision
- Service
- Tech Support
- Performance Analysis System Regulations

What is FSOP----a house with a complete structure.