TRANSPORT CANADA'S RISK BASED SURVEILLANCE AND PLANNING SYSTEM
COMPONENTS OF TCCA’S SURVEILLANCE PROGRAM

- Staff Instruction (SI) SUR 001 – Surveillance Policy
- SI SUR 002 – Enhanced Monitoring
- SI SUR 009 – National Surveillance Planning Standard
- Civil Aviation Directive (CAD) 008 – Surveillance Policy
- National Aviation Safety Information Management System (NASIMS)
- Civil Aviation Surveillance Information Management System (CASIMS)
BACKGROUND TO RISK INDICATOR DATABASE (NASIMS)

➢ In May 2007, a working group, comprised of various technical specialties, was formed to develop a comprehensive risk indicator program.

➢ As a result of the working group’s recommendations, the risk module of NASIMS was developed.

➢ The working group recommended the use of generic risk questions to help quantify risk within a set of specific hazard areas.
OVERVIEW OF THE RISK INDICATOR DATABASE

Hazard Areas:
1. Labour Difficulties;
2. Management Practices;
3. Quality Assurance;
4. Change In Scope, Product Line Or Facility;
5. Change In Contracting For Goods And/Or Services;
6. Turnover in personnel;
7. Change in key personnel;
8. Safety record;
9. Regulatory record; and
10. Seasonal or specialized operations
HOW THE DATABASE WORKS

- Each of the hazard areas is further defined by a set of specific yes or no questions.
- There is an identical set of questions for each certificate held by an enterprise.
- Each question has been weighted based on the nature of its subject matter and its importance relative to other questions.
There are three stages of data entry:

**Baseline**
Conducted when a new certificate is entered in the system.

**Day-to-day**
On going database updates whenever risk information is detected.

**Annual Validation**
A review carried out on or before the regional planning date to ensure risk scores are valid and therefore appropriate for use in surveillance planning.
The database produces two types of risk scores:

- Enterprise Score
- Certificate Score

The certificate score is generated directly from answering the risk questions as they relate to each of an enterprise’s certificates.

The enterprise score is calculated automatically by combining answers from all enterprise certificates and using only the highest responses to answer the questions.
Airline operators with aircraft 100+ seats

Relative risk score
### EXAMPLE QUESTIONS

#### Hazard Category 01: Labour Difficulties

<table>
<thead>
<tr>
<th>Questions</th>
<th>Last Update</th>
<th>By</th>
<th>Answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 - Have there been recent negative changes in salaries, work rules and/or benefits? (Help - Preview)</td>
<td>2010-01-06</td>
<td>Seguin, Jacques</td>
<td>No</td>
</tr>
<tr>
<td>02 - Are workers attempting to organize a union? (Help - Preview)</td>
<td>2009-06-25</td>
<td>Richard, Jean-Marie</td>
<td>No</td>
</tr>
<tr>
<td>03 - Is there conflict between two or more unions? (Help - Preview)</td>
<td>2009-06-25</td>
<td>Richard, Jean-Marie</td>
<td>No</td>
</tr>
<tr>
<td>04 - Does the certificate holder have any Labour Canada interventions? (Help - Preview)</td>
<td>2009-06-25</td>
<td>Richard, Jean-Marie</td>
<td>No</td>
</tr>
<tr>
<td>05 - Is the certificate holder experiencing a labour-management conflict? (Help - Preview)</td>
<td>2009-06-25</td>
<td>Richard, Jean-Marie</td>
<td>No</td>
</tr>
</tbody>
</table>
SUMMARY OF KEY POINTS

- The database is intended to be a real time tool. It should be updated as information is received.
- Standardized approach to the use of key risk indicators
- Limit the use of ‘unknown’ as a response. Inspectors are expected to contact the company, review records, etc., in order to gather the information needed to update the database.
- Record sufficient details when changes are made to the database, its validity relies on having enough details recorded to support the risk score.
SURVEILLANCE PLANNING PROCESS
OVERVIEW

CAD SUR-008 - Surveillance Policy
And
SI SUR-009 - National Planning Standard
INTRODUCTION

Purpose:

- Provides a standardized, risk-based approach to surveillance planning
- Takes into account all available safety information
- Includes all TCCA certificate holders
- Provides a 5-Year Outlook
- Utilizes Surveillance Intervals based on a safety risk profile
Surveillance intervals are moving from a fixed intervals to individual intervals determined by risk level for each enterprise.

The interval is set using the Safety Risk Profile of the company.

A 5 year regional surveillance plan is then put in place and updated annually.

Enterprise surveillance intervals can be changed as risk changes.

*On-going unplanned monitoring continues on a regular basis*
The Safety Risk Profile is a composite of two parts.

1. Risk Indicator Level; and
2. Impact
The RIL is derived from:

- the Risk Score from the Risk Indicator Database;
- results of pervious surveillance (i.e. severity of findings);
- availability of surveillance information (i.e. CADORS and/or Internal reporting systems); and
- whether or not the enterprise has implemented a Safety Management System.
The impact value of an enterprise is generated considering the size and scope of an operation and includes:

- How many certificates in different categories are held;
- The number of employees and bases;
- The number and different types of aircraft;
- The type of operations (e.g. specialized AMO, 704, international, etc)
**RISK PROFILE**  Interval of Surveillance  
*National Planning Standard (NPS)*

<table>
<thead>
<tr>
<th>Name of Certificate Holder</th>
<th>Vince’s Imaginary Flying Club</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Enterprise</td>
<td>Operating Certificate Holder</td>
</tr>
</tbody>
</table>

**Risk Indicator Level (RIL)**

- **NASIMS Risk Indicator Number (Current Year)**: 1209
- **Surveillance Results (Previous PVI/Assessment)**: Minor Finding(s) [Administrative]
- **CADORS or independent Source of Safety Intelligence available to TC**: Yes
- **Safety Intelligence Utilized by Certificate Holder**: No
- **TC Recognized Safety Management System**: No

\[ \text{Likelihood} = (5) \]
### Impact Value

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Impact Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Certificates in Different Categories</td>
<td>3 or more</td>
<td>+ 3</td>
</tr>
<tr>
<td>Number of Employees</td>
<td>11 - 50</td>
<td>+ 2</td>
</tr>
<tr>
<td>Number of Domestic Bases</td>
<td>1 - 2</td>
<td>+ 1</td>
</tr>
<tr>
<td>Number of Aircraft</td>
<td>0 - 3 (AMO, ATO, Aerodrome, ANS)</td>
<td>+ 1</td>
</tr>
<tr>
<td>Number of Aircraft Types</td>
<td>0 - 1 (AMO, ATO, Aerodrome, ANS)</td>
<td>+ 1</td>
</tr>
<tr>
<td>Type of Operations (Highest Certificate)</td>
<td>406</td>
<td>+ 1</td>
</tr>
<tr>
<td>International Operations (Equipment &amp; facilities outside Canada)</td>
<td>No</td>
<td>+ 0</td>
</tr>
<tr>
<td>Number of Specialized Ratings</td>
<td></td>
<td>+ 0</td>
</tr>
</tbody>
</table>

**Impact** = (B)
SURVEILLANCE INTERVAL MATRIX

<table>
<thead>
<tr>
<th>IMPACT VALUE</th>
<th>Extensive</th>
<th>1E</th>
<th>2E</th>
<th>3E</th>
<th>4E</th>
<th>5E</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>D</td>
<td>1D</td>
<td>2D</td>
<td>3D</td>
<td>4D</td>
<td>5D</td>
</tr>
<tr>
<td>Moderate</td>
<td>C</td>
<td>1C</td>
<td>2C</td>
<td>3C</td>
<td>4C</td>
<td>5C</td>
</tr>
<tr>
<td>Low</td>
<td>B</td>
<td>1B</td>
<td>2B</td>
<td>3B</td>
<td>4B</td>
<td>5B</td>
</tr>
<tr>
<td>Negligible</td>
<td>A</td>
<td>1A</td>
<td>2A</td>
<td>3A</td>
<td>4A</td>
<td>5A</td>
</tr>
</tbody>
</table>

RISK INDICATOR LEVEL

- Very Low
- Low
- Moderate
- High
- Very High
# Surveilliance Intervals

<table>
<thead>
<tr>
<th>SIM Value</th>
<th>Non-SMS Enterprise</th>
<th>SMS Enterprise</th>
</tr>
</thead>
<tbody>
<tr>
<td>1A, 1B, 1C, 2A, 2B</td>
<td>5 year PVI</td>
<td>5 year Assessment</td>
</tr>
<tr>
<td>1D, 1E, 2C, 2D, 2E, 3A, 3B</td>
<td>4 year PVI</td>
<td>4 year Assessment</td>
</tr>
<tr>
<td>3C, 3D, 3E, 4A, 4B, 5A, 5B</td>
<td>3 year PVI</td>
<td>3 year PVI, 5 year Assessment</td>
</tr>
<tr>
<td>4C, 4D, 4E, 5C</td>
<td>2 year PVI</td>
<td>2 year PVI, 4 year assessment</td>
</tr>
<tr>
<td>5D, 5E</td>
<td>1 year PVI</td>
<td>1 year PVI, 3 year assessment</td>
</tr>
</tbody>
</table>
SURVEILLANCE PLANNING BASED ON RISK

- Planning is done in accordance with Staff Instruction SUR-009
- The planning process takes into consideration realistic available hours for inspectors and the complexity of enterprises.
- Surveillance intervals and plans are reviewed at least annually, however,
- Significant changes in risk indicators or impact levels could result in immediate changes to surveillance intervals and scheduling taking place.
Surveillance Planning Calculations

Complexity of Enterprise
  » Low, Medium or High

Type of Enterprise
  » AOC Holder, AMO, Airports

Type of Activity
  » PVI or Assessment

Number of Inspectors (required) on Team

Team Composition (Specialty, knowledge)
  » Team Member or Manager
CONCLUSIONS

- National, standardized risk-based approach to surveillance planning
- Considers complexity of the enterprise and its impact on the aviation system
- More accurate and realistic planning tool
- Provides predictability in order to anticipate future resource requirements
- Allows flexibility to develop options and run scenario analysis for resource optimization
QUESTIONS?