JHSAT Canada

IHSS Montreal 2009

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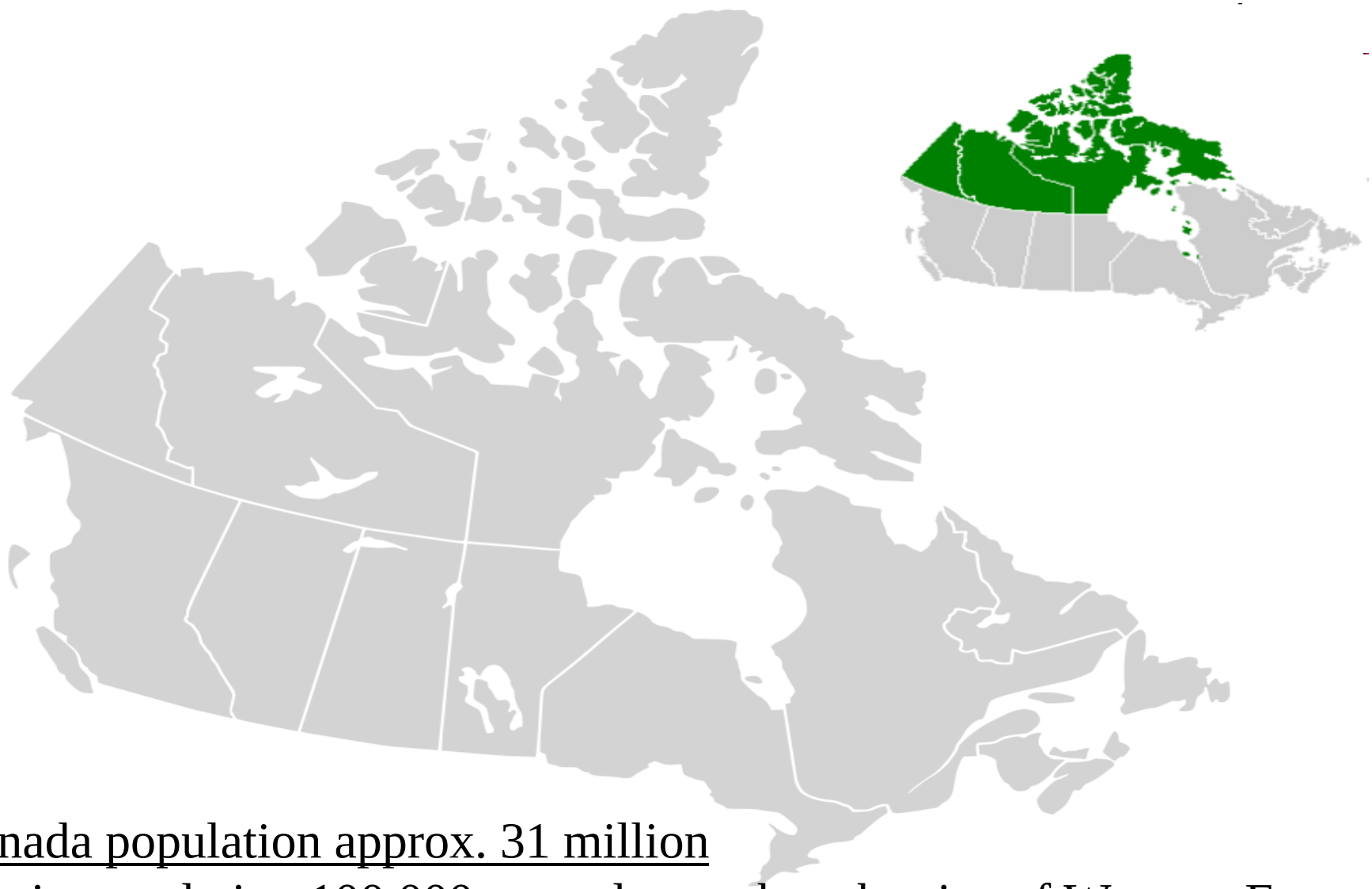
VP Safety & Quality Canadian Helicopters
JHSAT(C) Co-chair

JHSAT-Joint Helicopter Safety Analysis Team

- Canadian JHSAT Committee structure
- Canadian Geography
- Dataset being reviewed
- Progress report
- JHSIT

Canadian JHSAT(C) Team Membership:

1. Bill Taylor - Transport Canada Co-chair
2. Sylvain Seguin - Canadian Helicopters Co-chair
3. Brian MacDonald – TSB
4. Bill Jupp – Transport Canada Certification
5. Major Martin Leblanc –DFS (Directorate of Flight Safety)
6. Jack Suttle - Bell Helicopters
7. Rob Gallagher - Skyline Helicopters
8. Grant Lauden – Skyline Helicopters
9. Dave Tommasini - Four Season Aviation
10. Guy Bonaud - Turbomeca
11. Gary Krebs – Eurocopter



Canada population approx. 31 million

Arctic population 100,000 - area larger than the size of Western Europe


First Day of Summer
Dewar lakes, Fox-3, Nu
Kevin Budgell with C-GNCH
Canadian
C-GNCH
2007/6/21 1:28pm
Photo Courtesy of Derek O'Brien


C-FBIN


Canadian

Dataset

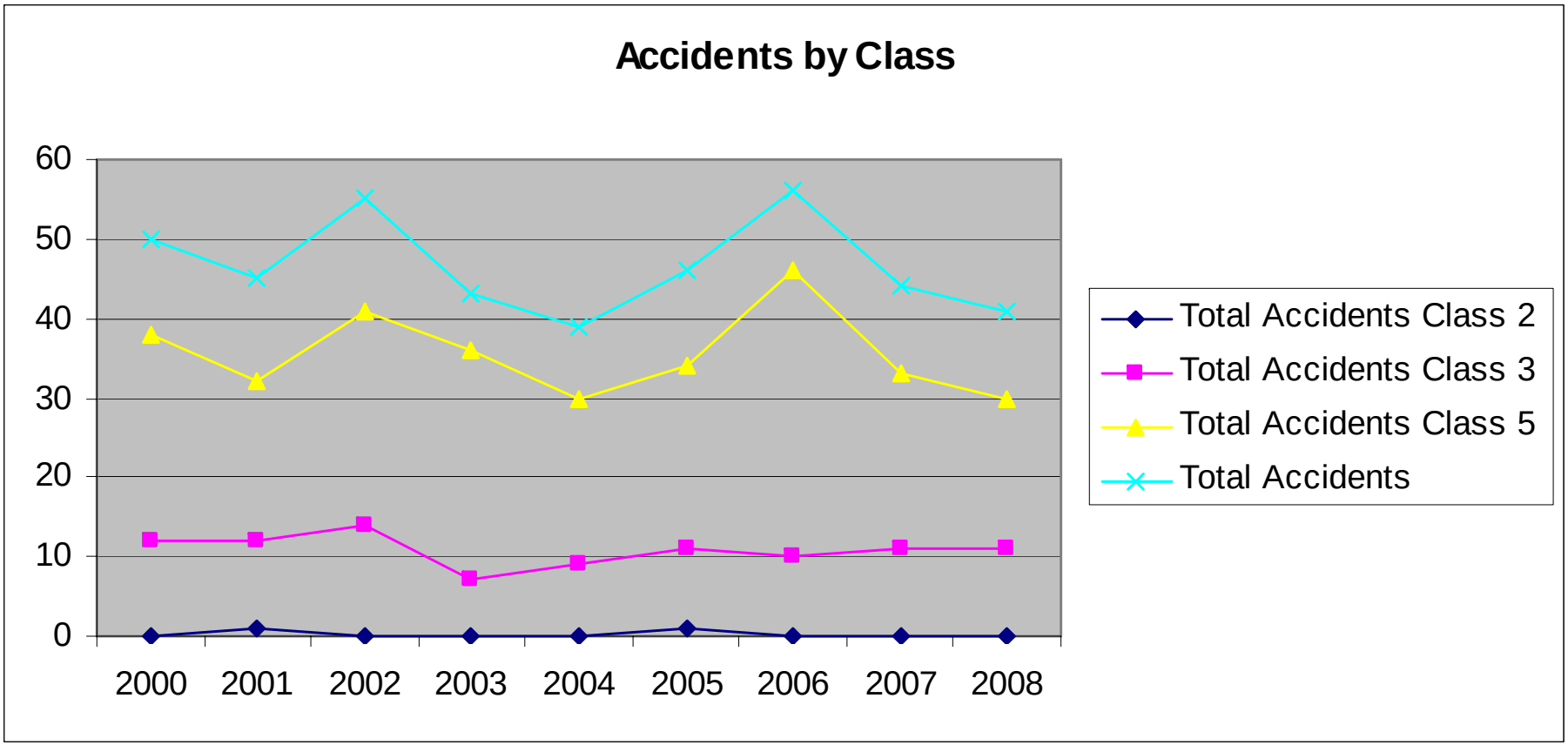
Data set - 2000

- 53 Helicopter accidents
- 3 Experimental (Rotorway Exec)
- ----------
- 50 Civil accidents to be analyzed
- 1 DND Accident (Department of National Defense)
- 1 accident in US
- 52 total

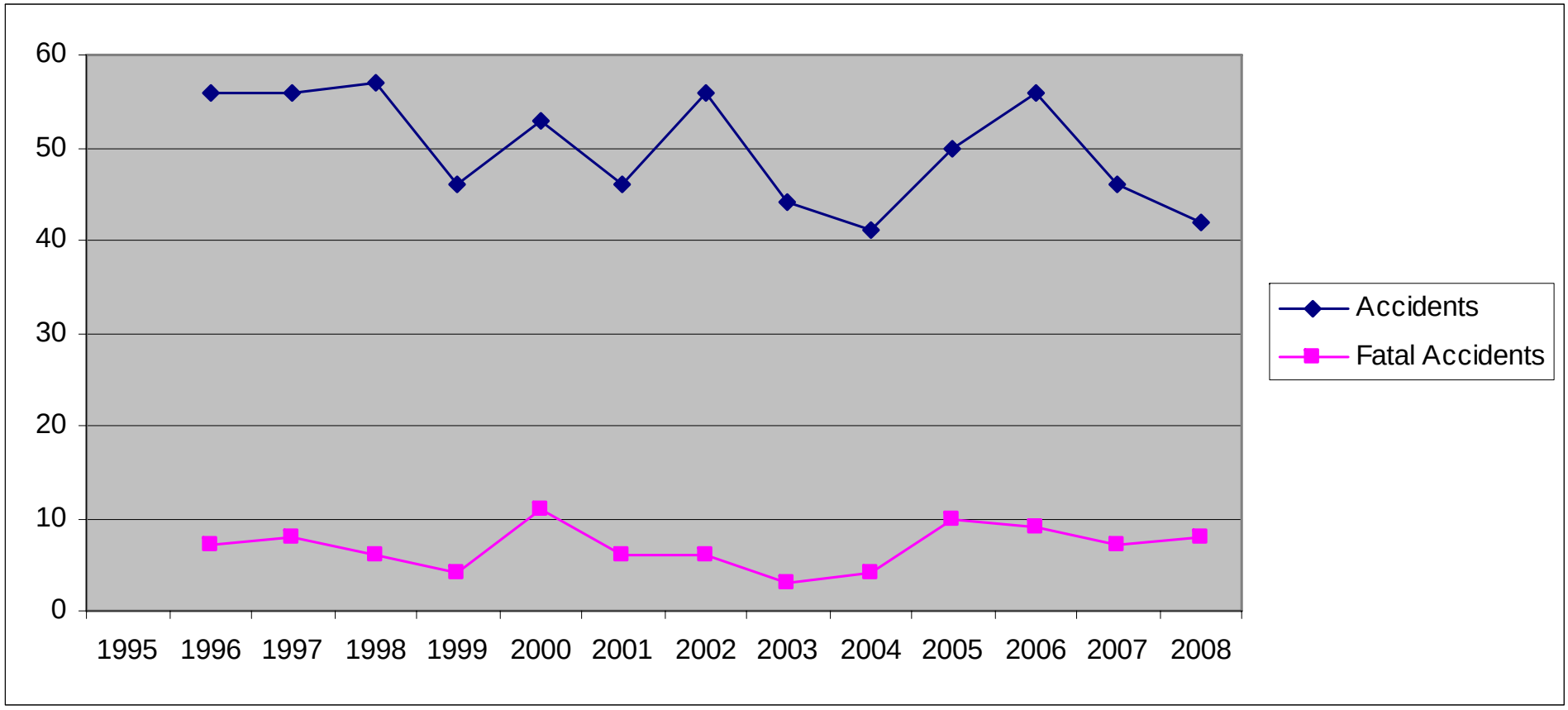
TSB Analysis
Dataset - 2000

- 39 Class 5 reports
- 12 Class 3 reports
- 1 DND

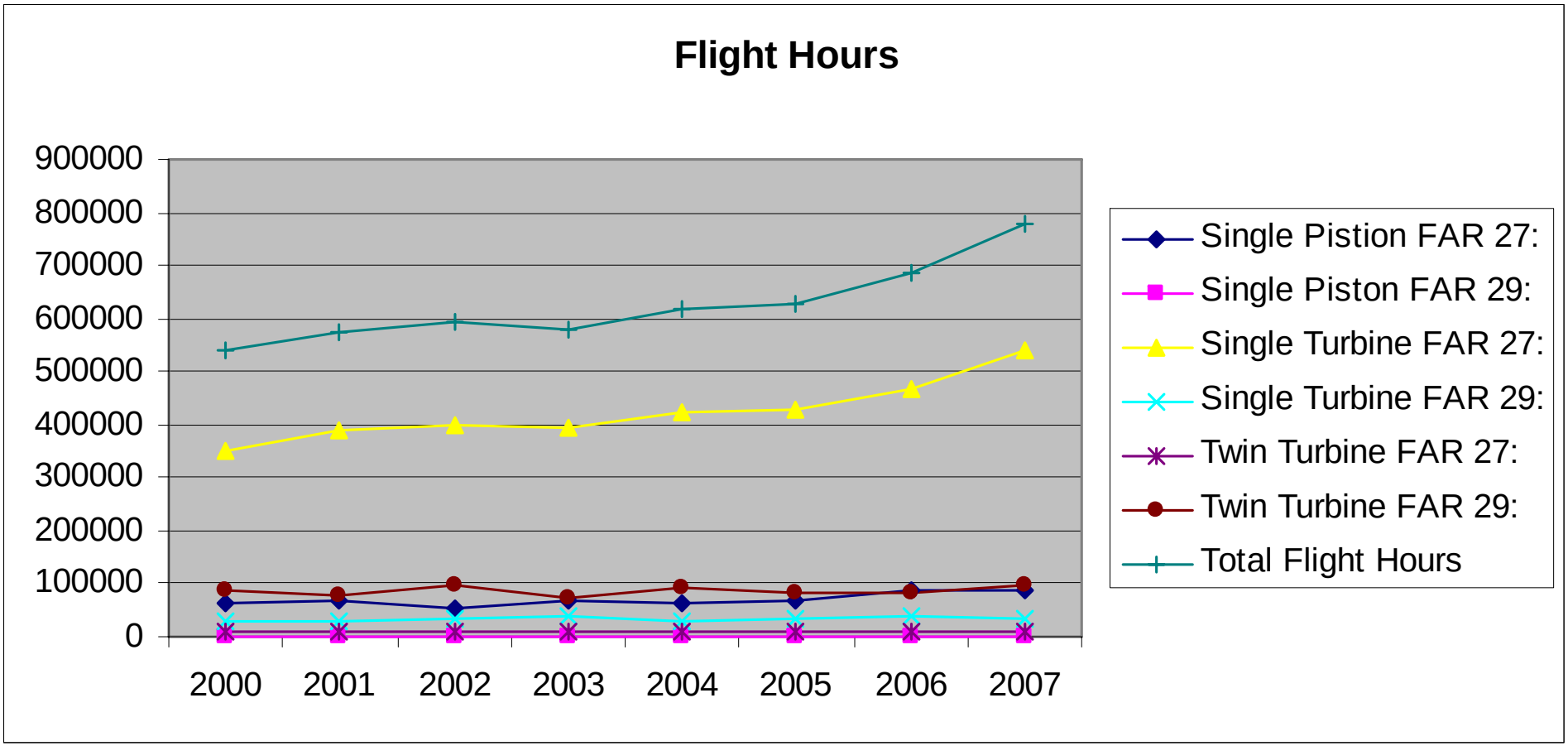
TSB accident classification



Helicopter Accidents vs. Fatal



Industry Flight Hours



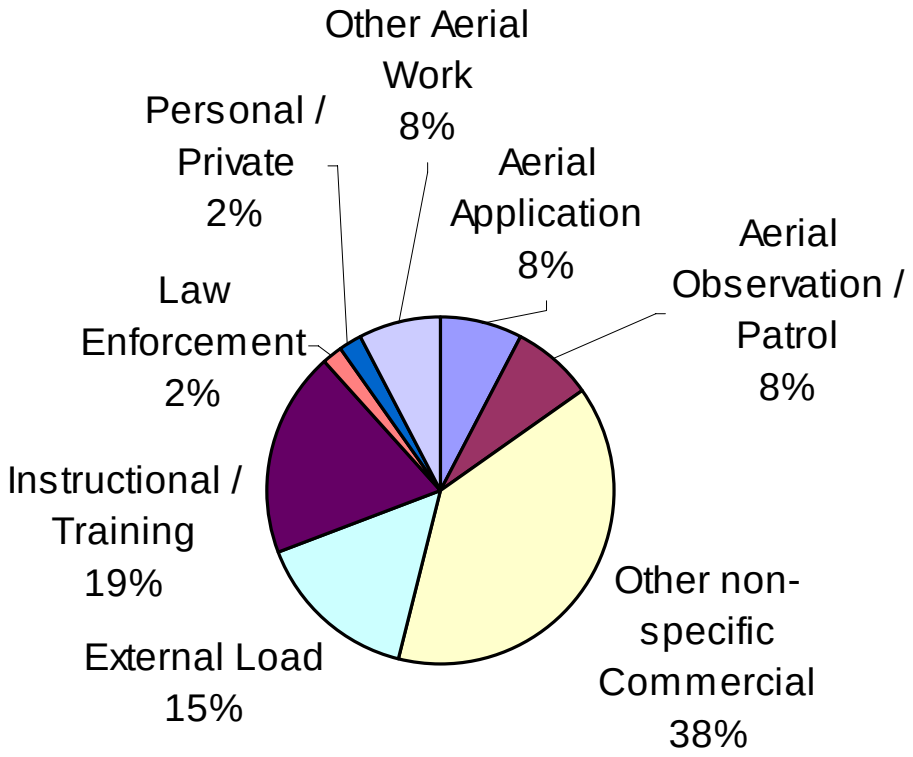
FAR 27: 7000 or less pounds and 9 or fewer passengers,
FAR 29: Over 7000 pounds or Over 9 passengers.

Aircraft Data

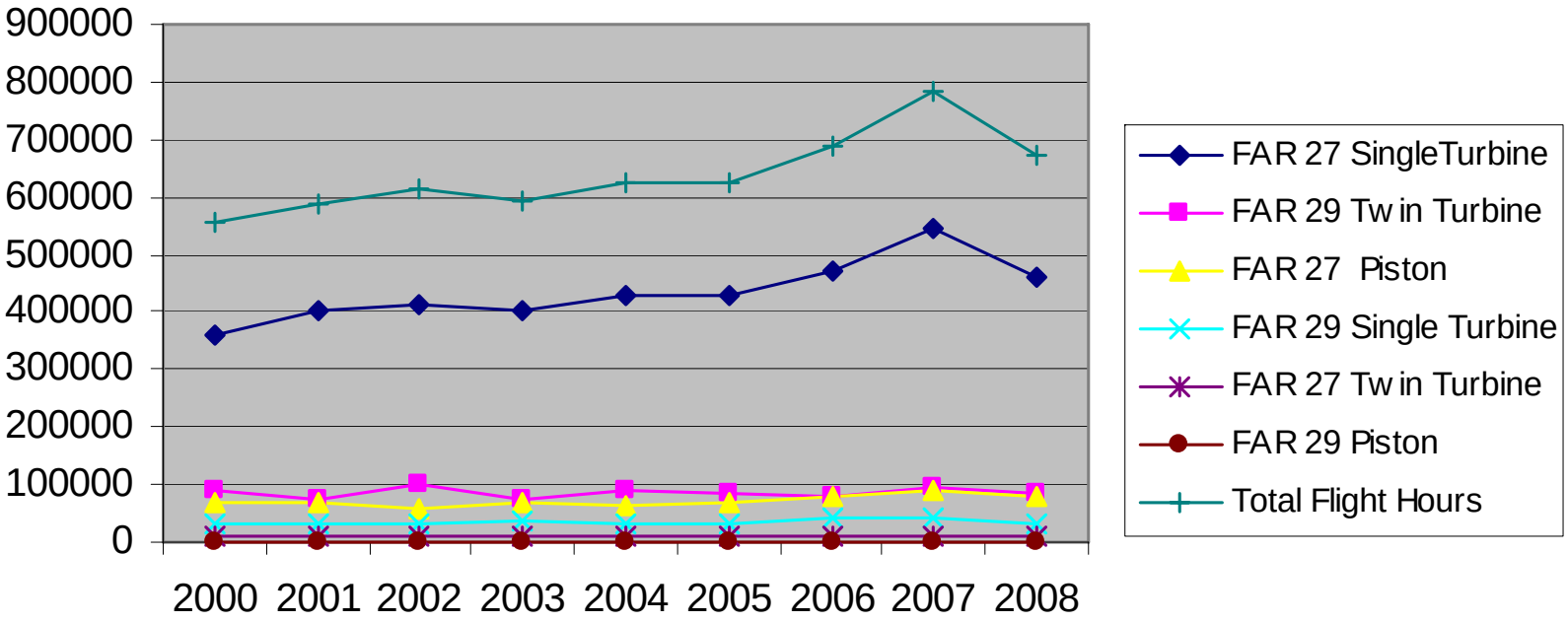
Aircraft Data									
	2000	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
FAR 27:Single Turbine	888	990	991	1119	1137	1173	1238	1323	1372
FAR 29:Twin Turbine	129	135	143	170	150	168	181	200	216
FAR 27:Single Piston	310	316	325	407	419	477	532	592	616
FAR 29:Single Turbine	81	76	76	97	94	97	97	101	99
FAR 27:Twin Turbine	38	34	32	38	37	35	43	47	53
FAR 29:Single Piston	3	3	0	0	0	0	0	0	0
Total	1449	1554	1567	1831	1837	1950	2091	2263	2356

Data from 2000 to 2008	% Of Aircraft Registered	% Of Fleet Hours Flown	% Of Fleet Accidents
FAR 27 SingleTurbine	60.5	68.3	63.6
FAR 29 Twin Turbine	8.8	13.4	6.9
FAR 27 Piston	23.6	11.3	24.9
FAR 29 Single Turbine	4.8	5.5	4.1
FAR 27 Twin Turbine	2.1	1.6	0.5
FAR 29 Piston	0.0	0.0	0.0

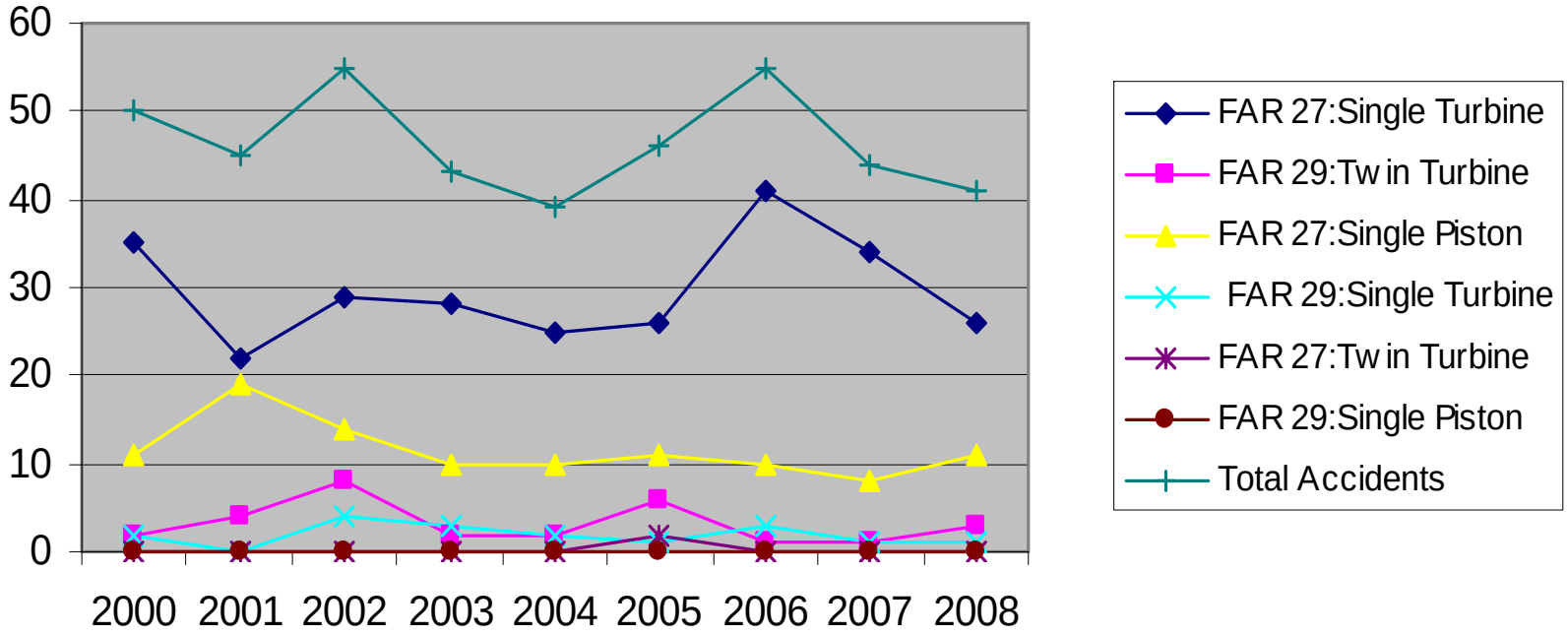
Percentage of Accidents By Primary Mission



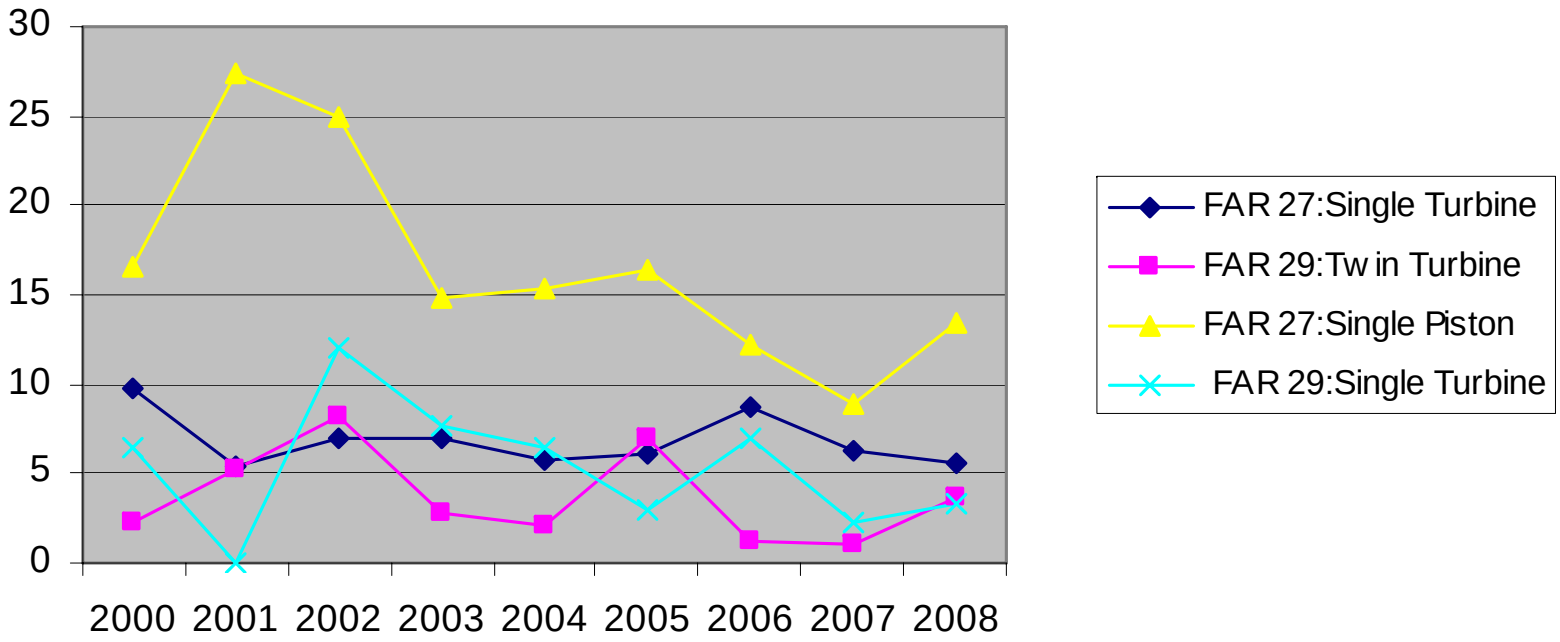
Flight Hours by Type



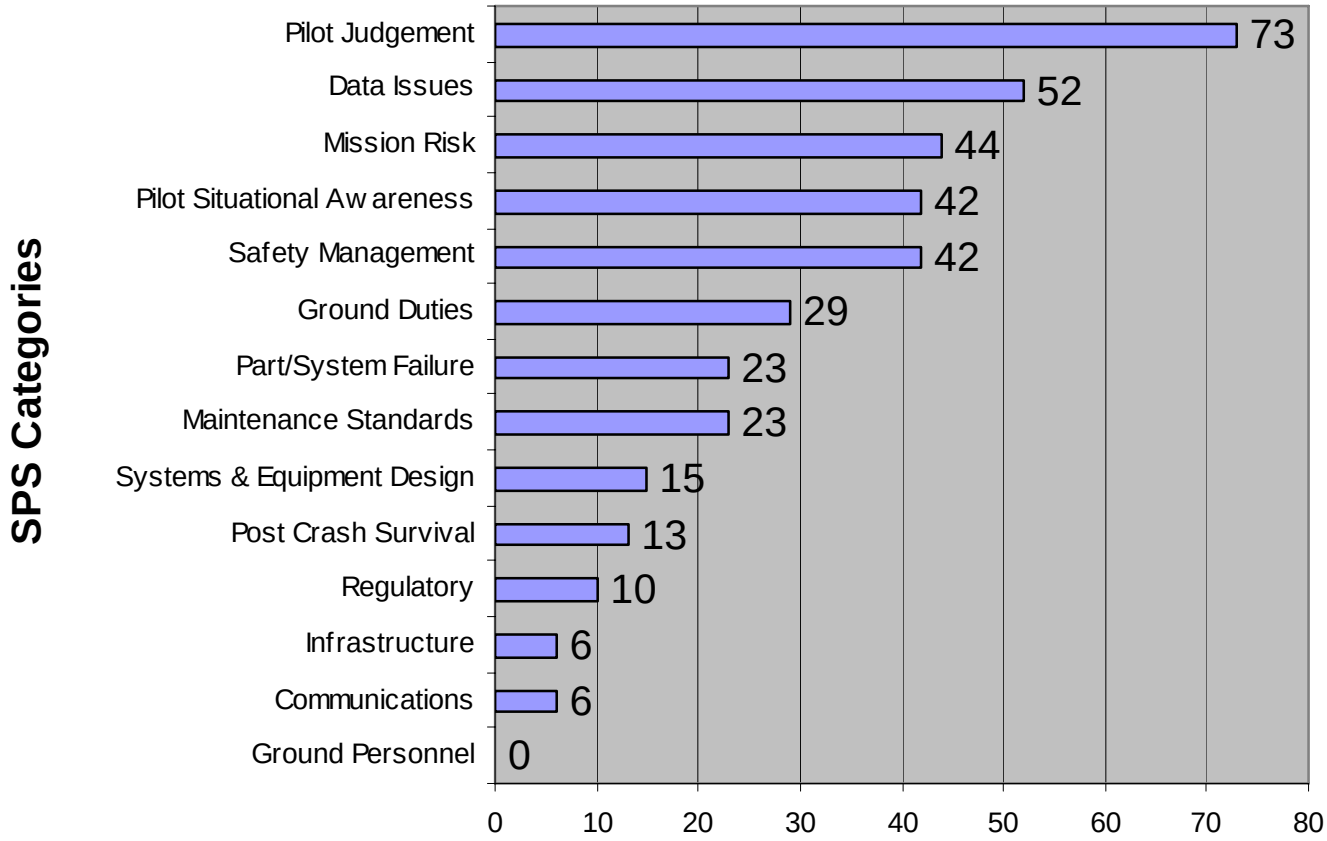
Accidents by Type



Accident Rate/100K by Type



% of Accidents That SPS Category is Cited At Least Once



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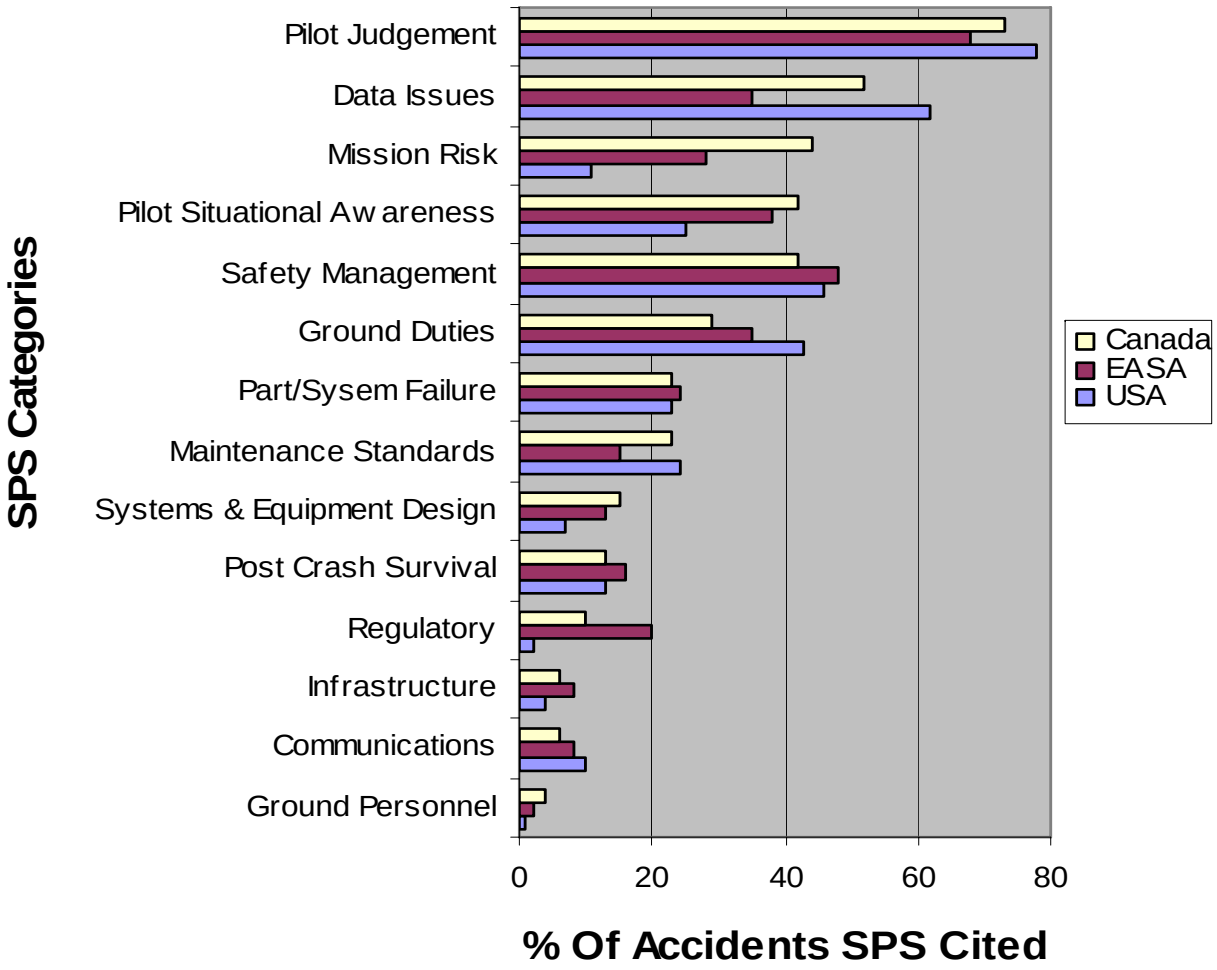
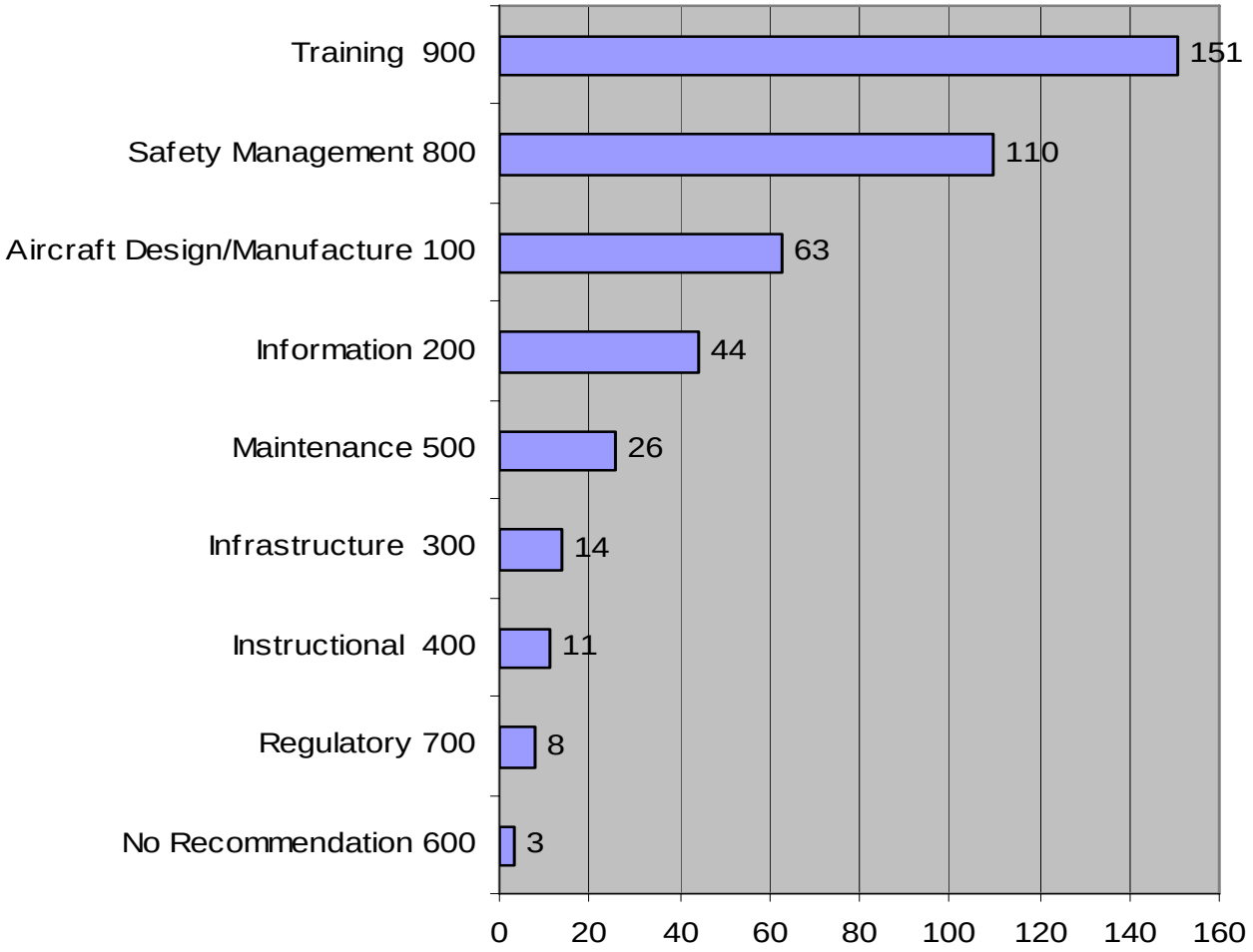


Interventions



Standard Problem Statement VS Interventions	Plt Judgment	Safety Culture	Pilot Sit Awareness	Data Issues	Mission Risk	Maintenance	Grnd Duties	Parts/ Syst Failure	Post Crash Survival	A/C Design	Regulatory	Communication	Infrastructure	Ground Personnel	Total Interventions
Training	72	19	31		15		8	1	1			1		3	151
Safety Management	27	31	5	1	13	3	18	1	6		1	2		1	109
A/C Design & Manufacture	3	4	13		6	5		10	6	15					62
Information	1	1		37					1		2		2		44
Maintenance					1	24				1					26
Infrastructure		2	3				1	1	3			2	2		14
Instructional		10			1										11
Regulatory	1	1						2			4				8
No Recommendation			1				1	1							3
Total Standard Problem Statements	104	68	53	38	36	32	28	16	17	16	7	5	4	4	

Training

- Pilot mission planning
- Preflight risk assessment
- In-Flight risk assessment to adapt for unexpected mission changes.
- Use of training devices (e.g., decision making)
- Training area selection
- Improve auto-rotational proficiency for trainers.
- Formal training for qualification of company training pilots.
- Pilot recognition of critical cues and recovery (LTE, Inadvertent IMC, dynamic rollover, VRS)
- Increase pilot aircraft type specific knowledge
- Pilot Decision Making and Crew Resource Management
- Task priority management (i.e., when multi-tasking)
- Threat and error management
- Plan and monitor aircraft performance to minimize risk exposure (e.g., HOGE, H-V, and WAT charts)
- Competency based training program for specific operations
- Obstacle proximity awareness
- Customer training on operational limitations.
- Safety Management program training

Safety Management

- Industry Association to develop best practices specific to operational activities. (Heli-logging, EMS, Oil & Gas, Fire Fighting, etc.)

- Ensure a company safety management system that will –
  - Establish a company risk management process.
  - Involve clients in risk management process
  - Establish duty day limitations based on operational intensity for Aircrew, Aircraft Maintenance Engineers and Ground Crew.
  - Establish operational oversight protocols for remote operations

- Establish company SOP's based on industry best practices, for all areas of operational activities to encompass:
  - Specific limitations (e.g., Weather, duty, obstacle clearance)
  - Unprepared landing zone standards.
  - Identifying the role of management, flight, ground crews, and clients
  - Provide pilots with tools to assess and predict aircraft performance.
  - Provide pilots with tools to assess specific operational risk.
  - Required safety equipment and clothing to be worn for flight conditions (e.g., helmets, safety glasses, boots, fire retardant flight suits.

Aircraft Design & Manufacture

- Effective design performance monitoring to identify in-service difficulties with trend monitoring through the use of Service Difficulty Reporting system.
- Operators and industry associations to promote development and installation of systems for all helicopters to warn of impending failures. (e.g., HUMS, simpler vibration monitoring for airframe dynamic and engine components.
- Industry committee to be established to address a strategy to require new derivative designs and legacy production aircraft to incorporate safety enhancements specified in later design standards.
- Industry associations to encourage design and installation of equipment to improve pilot situational awareness
  - Devices to indicate to pilot that control limitations are being approached, either through aural or visual cues
  - Tail rotor guard or proximity detection warning device
- Introduce automatic recording means to record operating usage data to be used to determine the life of components and associated maintenance..

Information

- Industry and operators promote the use of:
  - Flight recording devices appropriate to the design and operation of the aircraft.
  - In-flight monitoring systems.
- Transportation Safety Board should:
  - Develop procedures, policies and tools to enable the timely collection and recording of all available relevant data for all Canadian accidents. (i.e., similar to Transport Canada's web-based reporting of Service Difficulty Reports)
  - Make accident data readily accessible and searchable to all operators in support of their safety management risk assessment process.
  - Promote the development of an international database to share accident information.

Maintenance

Develop Industry Best Practice for maintenance on the following topics:

- Oversight of maintenance
  - At remote locations
  - Fatigue management plan for personnel
- Introduction of annual compliance monitoring and recurrent training
  - Establish industry best practices.
- Oversight of mechanics in training (apprentice)
- The conduct of maintenance
  - Develop and introduce use of “Stage/Task Cards” as a SOP.
- Release of aircraft for flight after maintenance.
  - Briefing of Pilots after maintenance has occurred.
  - Completion of paperwork.
- Care and use of equipment particularly from third parties.
  - Refueling equipment
  - Maintenance tools
  - To ensure proper quality of fuel at all sources.

Review of Flight Hour Data and Analysis

- Data reporting / collection legislated in Canada
- The number of AAIR forms sent to owners of registered aircraft does not equate to the number of forms received. This may be due to changes in the aircraft registry or non-compliance to the regulation to report the data.
- Since 2003, the Flight Hours estimates provided by Transport Canada Strategic Information do not utilize the AAIR data since the estimates are due prior to the receipt of the AAIR data and there are concerns with the accuracy of reporting due to missing data in addition to conflicts with other dominate indicators based on Growth & Movement Data. The current methodology is inherently prone to inaccuracies.

Conclusion

- JHSIT implementation
- JHSAT next 5 years of data to be analyzed

Ongoing

- SMS - being legislated
- Industry best practices being developed
- Other JHSIT initiatives

Questions