IATA Safety Report (Turboprop) 2000

Issued 2001

International Air Transport Association

IATA Safety Report (Turboprop) 2000

Prepared by the IATA Safety Committee

Issued 2001

International Air Transport Association
Montreal – Geneva

IATA Safety Report (Turboprop) 2000
For Airline Safety use only

Montreal — Geneva

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EXECUTIVE SUMMARY

OVERVIEW

The IATA Safety Report (Turboprop) 2000 focuses mainly on accidents suffered by Western-built turboprop aircraft with a Maximum Takeoff Weight (MTOW) of more than 3,900 kg (8,500 lb). Unlike other safety reviews, this report does not dwell on the number of casualties resulting from aviation accidents. Rather it aims to identify and address the underlying factors that cause fatal accidents and substantial damage to property. It will present the facts, set out the contributory factors, and then make recommendations.

Accidents involving aircraft engaged in operations with non-airline related activities, such as private operators, corporate operations, brokers, government or the military are excluded, as are acts of sabotage and war or terrorism. For comparison, figures from the previous year are shown in square brackets [ ] .

In 2000, there were 25 [38] Total Loss (TL) accidents in this MTOW category of which 20 [31] were classified as operational TLs. Of these, 12 [17] were fatal accidents resulting in 117 [174] fatalities (21 crew and 96 passengers) [43 crew and 131 passengers]. The operational TLs comprised 14 aircraft in passenger service, 5 aircraft engaged in cargo operations and 1 ferry flight. Additionally, there were 16 [17] Substantial Damage (SD) accidents, 13 [9] of which were operational.

ANALYSIS OF OPERATIONAL TURBOPROP ACCIDENTS

- Of the 33 [36] operational accidents - significantly less than 1999 - 12 [17] were fatal accidents - also a significant reduction over last year
- There were 20 Approach and Landing Accidents (ALAs). This category represents the greatest threat to air safety.
- Five TL [7] and 11 SD [11] occurred during the Landing phase, some 50% of all TL+SD accidents.
- There were 4 [14] Controlled Flight Into Terrain (CFIT) accidents, this being a dramatic reduction compared with last year.
- Four TL accidents involved in-flight loss-of-control.
- Four accidents were Situational Awareness related.
- Human Factors dominant in terms of proficiency, skill and misjudgement. Skill and airmanship failures featured strongly.
- There were 15 accidents in which weather/night was a factor.
- Of the 33 [36] operational TL and SD accidents, 4 [8]occurred in the Asia/Pacific region, 8 [10] occurred in the European region, 12 [11] in North America, 4 [2] in the South American region, and 5 [5] in the African region.
- There were 10 (5 TL, 5 SD) Cargo operations accidents.
- Technical factors relating to undercarriage collapse or failure were significant. Also failure to select gear down was evident.
- There were 7 runway excursions (3 TL, 4 SD)
- One runway incursion.

RECOMMENDATIONS

It is recommended that, IATA and Operators together:

- Promote the use of just, non-punitive air/ground safety reporting and investigation systems.
- Further promote the use of Flight Operations Quality Assurance (FOQA), the ICAO Line Operations Safety Audit (LOSA) programme, and the IATA Operational Safety Audit (IOSA) system.
- Increase awareness of the external and environmental pressures affecting pilots.
- Review training practices and quality of training devices in terms of the particular skills required by a pilot during the landing phase.
- Review training practices and SOPs to ensure that those basic flying skills which are first taught are not subsequently trained out of pilots by the implementation of specific procedures or the inappropriate use of automated systems.
- Review training policy and practices with the aim of ensuring that specific training is given to pilots regarding situational awareness i.e. during initial conversion training as well as during recurrent training exercises.
- Highlight the threat to situational awareness of using language other than English in the ATC environment and pursue wider use of English through ICAO, States, and Regions.
- Counter punitive intrusion into Safety Monitoring Systems by protection of accident/incident data to promote greater reporting freedom to contribute to improved safety performance.
- Co-ordinate with organisations such as ICAO, FSF, and other professional institutions the legislative defence against the criminal prosecution of flight crews.
- Investigate the capture of serious incident data for analysis in the IATA Safety Report (Turboprop).
- Develop a template, which could form part of Service Level Agreements, for operational safety performance monitoring of airline Service Providers (Ground Handling and Maintenance).
- Review training emphasis and loading procedures to ensure that cargo shifts cannot occur in flight on dedicated freighter operations.
- Encourage greater use of the IATA Safety Information Exchange system.

1. INTRODUCTION

1.1 GENERAL

The IATA Safety Report (Turboprop) 2000 was prepared for the IATA Safety Committee (SAC) by the Classification Working Group - Turboprop (CWG) under the chairmanship of Captain Tom Croke/EI and comprising Mr. Alan Rohl/BA, Captain Deborah Lawrie/KL, Captain Thomas Baberg/LH, Captain Doug Stott/QF, Captain Jürg Schmid/SR, Captain. Carlos dos Santos Nunes/TP, Data support was provided by Mr. Paul Hayes of Airclaims Ltd. Ms. Jill Sladen and and Mr. David Mawdsley acted as the CWGT facilitators and developed the report. Captain Donald Van Dyke of IATA assisted with the research, data basing and other support aspects.

1.2 OBJECTIVES

The mandate of the CWGT is to identify trends and matters of concern in aviation safety worldwide from the accident data available, to advise SAC on these areas, and to make relevant recommendations.

1.3 SCOPE

The analysis contained in the IATA Safety Report (Turboprop) 2000, except where specifically noted, are concerned solely with accidents to Western-built Turboprop aircraft with a Maximum Takeoff Weight (MTOW) of more than 3,900 kg, in commercial airline service. Accidents to turboprop aeroplanes in operation with non-airline concerns, e.g. private operators, brokers, government/military etc. are excluded.

1.4 CONTENT

The IATA Safety Report (Turboprop) 2000 contains a factual record and statistics of the year's accidents, with summaries of the details that are available. Since the related formal accident investigations are seldom completed when this Safety Report is written, the information given may not always be supported by the final accident report.

This Safety Report provides an overview of all accidents in a simple format, with graphs and illustrations that should prove helpful for general use by airline management, crew members, training organisations and safety staff.

The Safety Report also contains a subjective commentary written by practising airline Safety Managers. This commentary is intended to identify areas where airline action, either internal or by the trade association, IATA, might reduce accidents.

1.5 DEFINITIONS

Definitions of the terminology used in the IATA Safety Report (Turboprop) 2000 are included in Appendix A.

1.6 CONVENTIONS

Unless otherwise indicated, figures shown in square brackets [ ] relate to 1999 data. Values and costs are presented in US dollars.

2. STATISTICS FOR WESTERN-BUILT TURBOPROPS

2.1 DATA FOR 2000

NOTE: *Except where otherwise indicated, figures in square brackets [ ] relate to the data for the previous calendar year.*

2.1.1 World Fleet – Aircraft-years Flown

World fleet (year-end 2000):

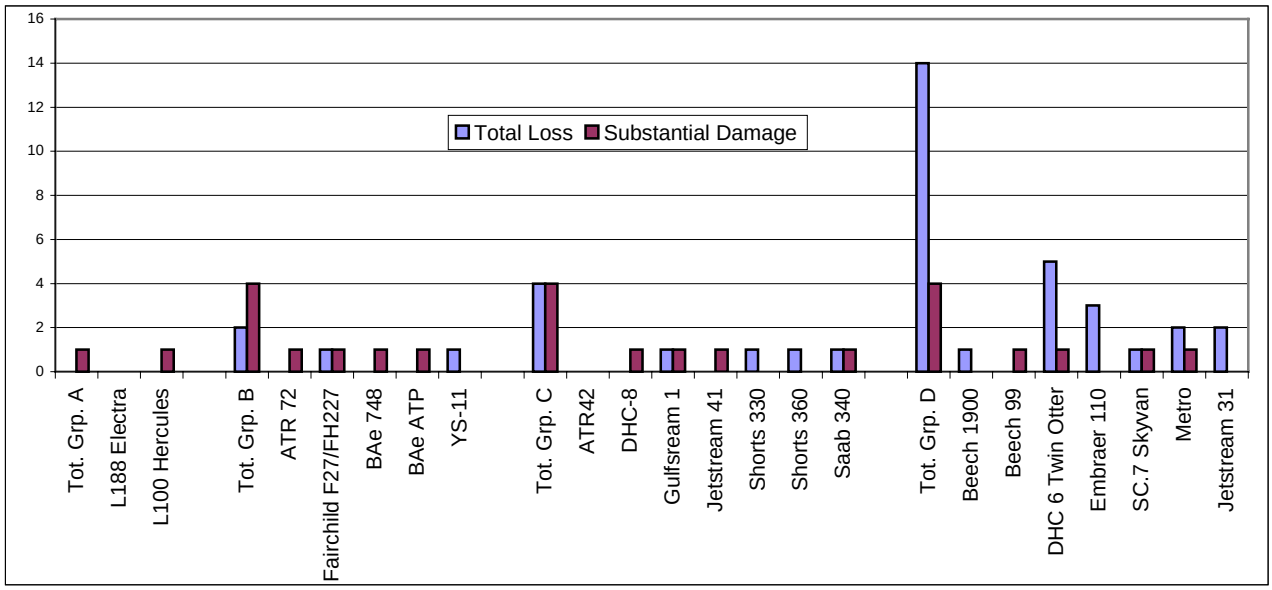
Passenger		4699
All-cargo		715
	Total	**5414 [5367]**

Aircraft-years flown 2000: 5385 [5351]

2.1.2 Accidents – Total Loss and Substantial Damage

All known Total Loss accidents:	25 [38]
Operational Total Loss accidents:	20 [31]
All known substantial damage accidents:	16 [17]
Operational substantial damage accidents:	13 [9]

The following chart shows Total Loss and Substantial Damage accidents by aircraft type:



2.1.3 Operational Loss Rates

There is insufficient data to calculate turboprop operational loss rates on a per million sectors or per million hours basis. Hence, as in previous annual reports, the operational loss rate is expressed per 1000 aircraft-years. (See definition of aircraft-years in Appendix A).

Total losses per 1000 aircraft-years 2000 = 3.7 [5.61]

2.1.4 Fatal Accidents/Fatalities

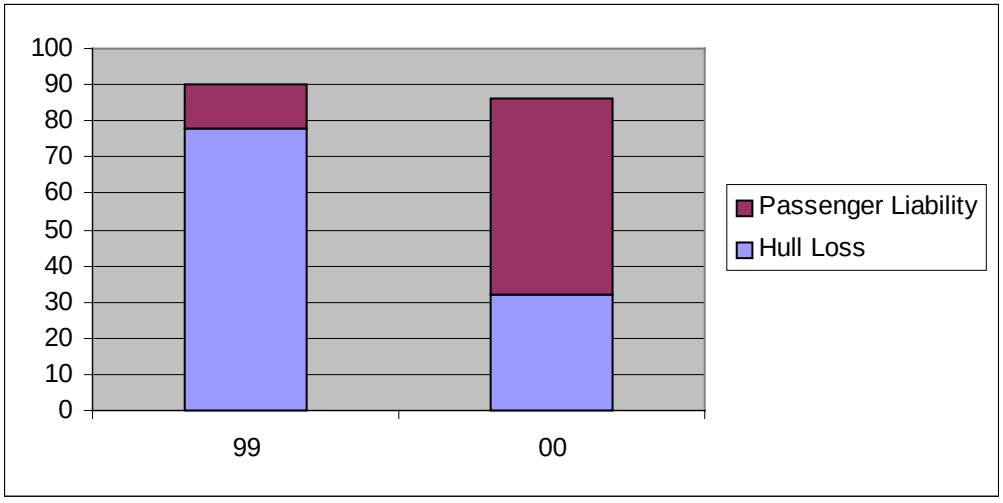
There is once again insufficient data to calculate a fatality rate per million passengers. However, in 2000 there were: -

Fatal accidents: 12 [17] (all Total Loss accidents)

Fatalities:	Passengers:	96	[131]
	Crew:	21	[43]
	Total	**117**	**[174]**

2.1.5 Estimated Cost (Operational Losses)

The direct cost (excluding lost revenue and indirect costs) for turboprop airliner losses in 2000 is estimated at $32 million [$78 million] for Total Hull Losses and $20 million [$12 million] for Substantial Damage accidents. Passenger liability is estimated at $54 million [$12 million].



Total liability is therefore $106 million ($102 million), an increase of 4% on 1999.

2.1.6 Operational Total Loss accidents – 2000

The following table lists the 20 operational Total Loss (TL) accidents which occurred during 2000. The narrative numbers (Nr.) indicated correspond to the narrative numbers provided in Appendix C.

OPERATIONAL TOTAL LOSS ACCIDENTS - 2000

No.	Date	Registration	State of Operator	IATA Region	State of Occurrence	IATA Region	Nr.
PASSENGER							
1	05.01.2000	5N-AXL	Nigeria	AF	Nigeria	AF	1
2	10.01.2000	HB-AKK	Switzerland	EU	Switzerland	EU	2
3	13.01.2000	HB-AAM	Switzerland	EU	Libya	AF	3
4	08.02.2000	C9-AUH	Mozambique	AF	Mozambique	AF	4
5	10.02.2000	F-GUTH	France	EU	France	EU	5
6	15.02.2000	JA8727	Japan	FE	Japan	FE	6
7	17.03.2000	5N-AXM	Nigeria	AF	Nigeria	AF	7
8	17.03.2000	HP-1267A	Panama	SA	Panama	SA	8
9	17.05.2000	TR-LFK	Gabon	AF	Gabon	AF	9
10	21.05.2000	N16EJ	USA	NA	USA	NA	10
11	08.07.2000	N912FJ	Mexico	SA	Mexico	SA	13
12	27.07.2000	9N-ABP	Nepal	FE	Nepal	FE	15
13	06.09.2000	HP-1276A	Panama	SA	Panama	SA	16
14	01.11.2000	C-GGAW	Canada	NA	Canada	NA	18
ALL-CARGO							
1	25.05.2000	G-SSWN	United Kingdom	EU	France	EU	11
2	01.07.2000	G-JEAP	United Kingdom	EU	United Kingdom	EU	12
3	19.07.2000	C-GNAK	Canada	NA	USA	NA	14
4	08.10.2000	C-FSDZ	Canada	NA	Canada	NA	17
5	09.11.2000	N731AC	USA	NA	USA	NA	19

2.1.7 Operational Substantial Damage Accidents – 2000

The following table lists the 13 operational Substantial Damage (SD) accidents which occurred during 2000. The narrative numbers (Nr.) indicated correspond to the narrative numbers provided in Appendix C.

OPERATIONAL SUBSTANTIAL DAMAGE ACCIDENTS – 2000

No.	Date	Registration	State of Operator	IATA Region	State of Occurrence	IATA Region	Nr.
PASSENGER							
1	18.02.2000	ZS-JIY	South Africa	AF	Australia	FE	2
2	21.03.2000	N353SB	USA	NA	USA	NA	3
3	05.05.2000	N241SA	USA	NA	USA	NA	7
4	16.05.2000	G-MANJ	United Kingdom	EU	United Kingdom	EU	8
5	25.05.2000	LN-RDB	Scandinavia	EU	Denmark	EU	9
6	08.10.2000	AP-BAL	Pakistan	FE	Pakistan	FE	11
5	10.10.2000	G-BYTP	United Kingdom	EU	United Kingdom	EU	12
6	29.12.2000	N323UE	USA	NA	USA	NA	13
ALL-CARGO							
1	28.01.2000	N245DH	USA	NA	USA	NA	1
2	23.03.2000	C-FKCG	Canada	NA	Canada	NA	4
3	05.04.2000	N549WB	USA	NA	USA	NA	5
4	28.04.2000	G-BVOV	United Kingdom	EU	Ireland	EU	6
5	28.07.2000	C-GPTG	Canada	NA	Canada	NA	10

2.1.8 Accident Summaries

Summaries of known turboprop Total Loss and Substantial Damage accidents are included in Appendix C.

2.2 DATA FOR LAST 10-YEAR PERIOD (1991-2000)

2.2.1 Introduction

In order to obtain a more complete picture of current turboprop operations, a ten-year period is considered sufficiently long to indicate significant trends yet short enough to eliminate the influence of superseded practices and procedures.

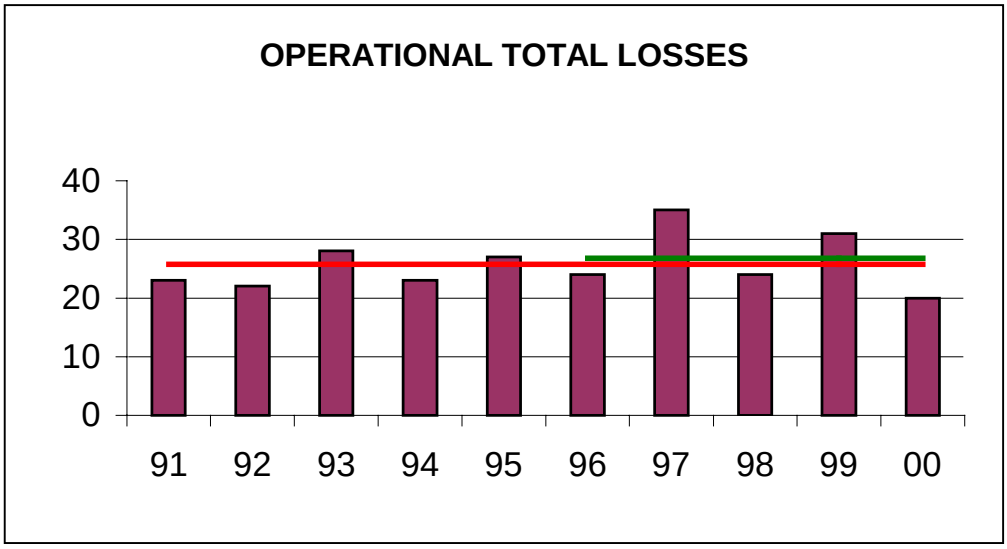
2.2.2 Accident Statistics and Rate 1991-2000

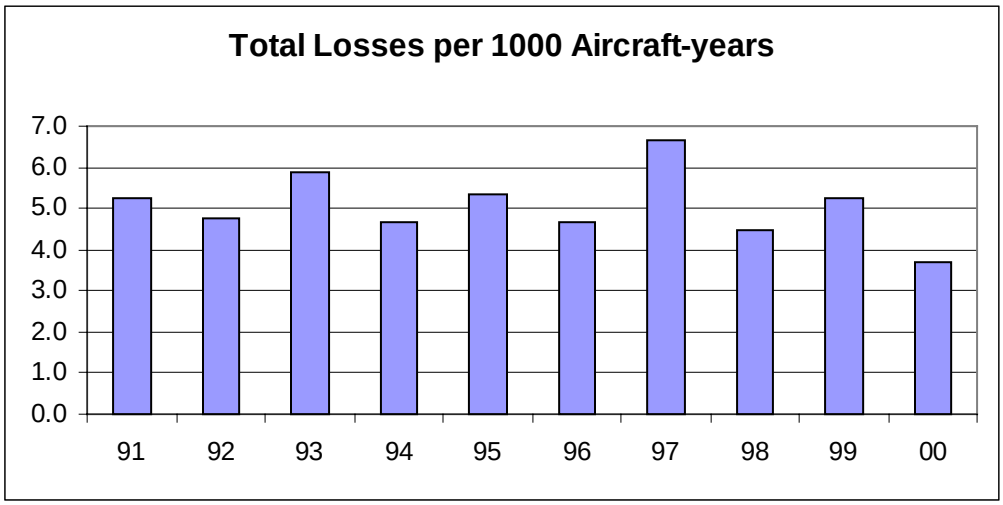
In the ten-year period 1991-2000, turboprop aircraft flew 50,242 aircraft-years.

In this same period, there were 257 operational Total Loss accidents.

The ten-year average rate was 5.12 Total Losses per 1000 aircraft-years.

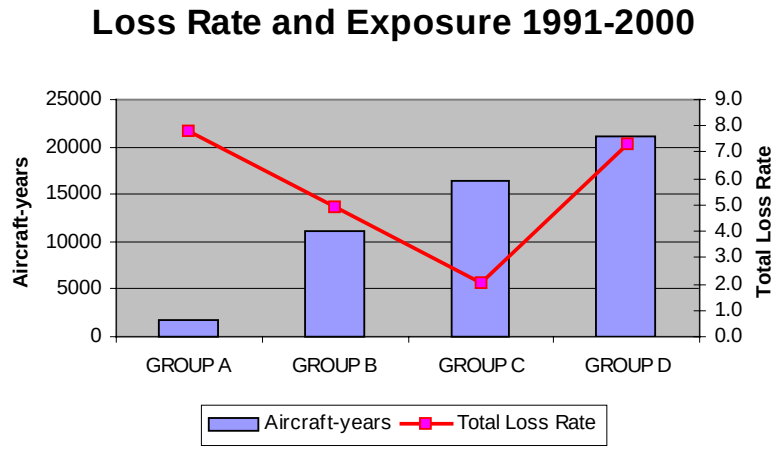
The following chart shows the number of operational Total Loss turboprop accidents for the period 1991-2000.





2.2.3 Total Loss Rate

The following chart shows the annual Total Loss rate per thousand aircraft-years from 1991 to 2000 and the total aircraft-years flown for the same period, by aircraft group.



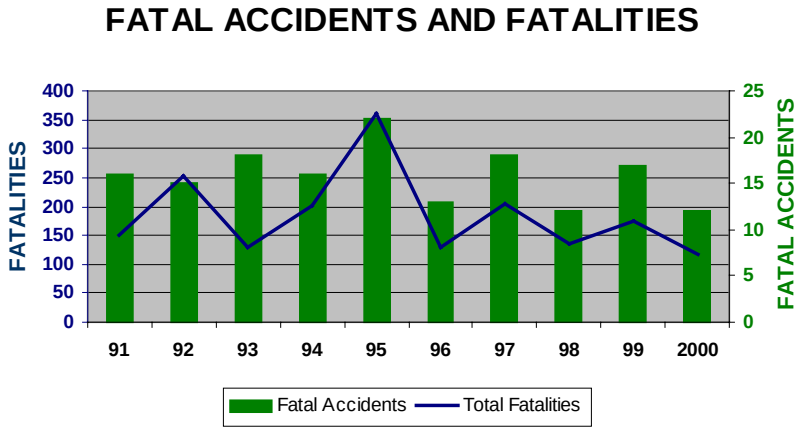
2.2.4 Passenger/Crew Fatalities 1991-2000

Fatal Accidents: 159

Fatalities:	Passengers:	1499	Pax on board fatal flights:	2200
	Crew:	358	Crew on board fatal flights:	452
	Total:	**1857**	**Total:**	**2652**

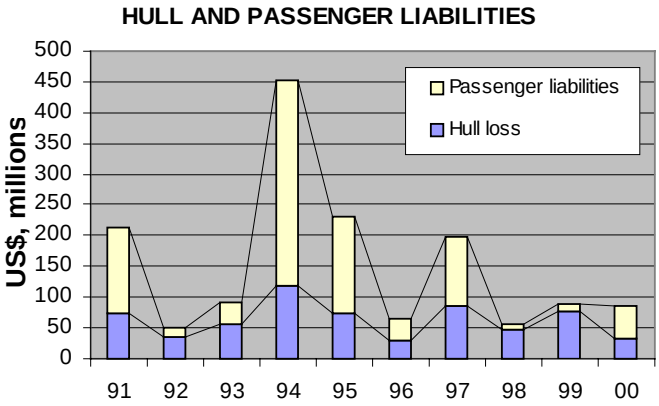
% Passenger Fatalities vs Passengers on Board 68%

% Crew Fatalities vs Crew on Board 79%



2.2.5 Estimated Cost

Costs of operational Total Loss accidents for the ten-year period 1991-2000 are shown graphically as follows:



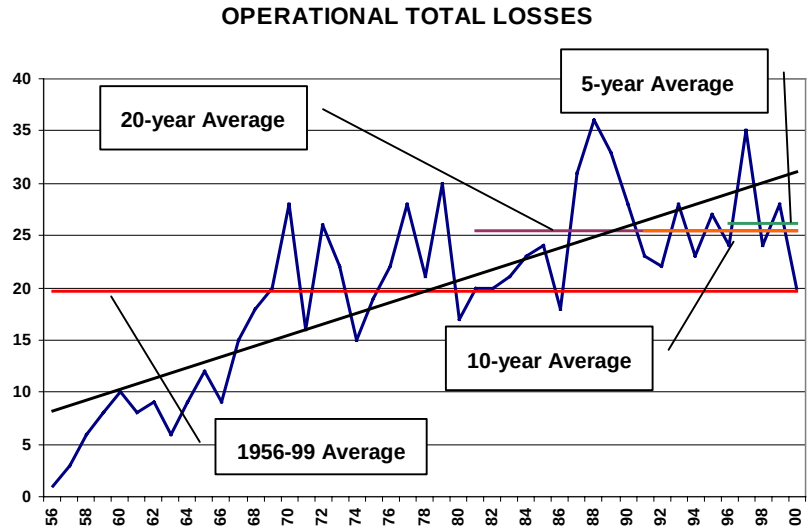
Estimated costs related to operational Total Loss accidents during this period (1991-2000) are:

Hull losses:	US$ 587 million
Passenger liabilities:	US$ 813 million
TOTAL	US$ 1400 million

2.3 HISTORICAL RECORD

2.3.1 Operational Total Losses 1956-2000

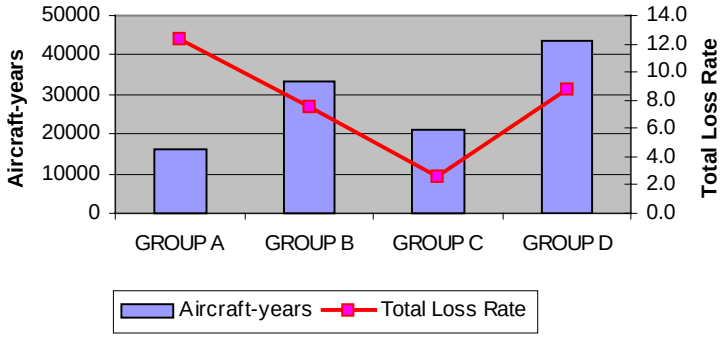
The first Operational Total Losses involving turboprop aircraft occurred in 1956. Since then there have been 890 Total Loss accidents. The following graph charts the annual Total Loss accidents by year, with a trendline and five-, ten-, 20- and 44-year averages.



2.3.2 Aircraft-years v Total Loss Rate

Since entry into service, turboprop aircraft have accumulated 114,433 aircraft-years and have suffered 890 Operational Total Loss Accidents. This gives an average Total Loss Rate for the period of 7.77 per 1000 aircraft-years. The chart below shows the aircraft-years flown by each aircraft group and the corresponding Total Loss Rate.

Loss Rate and Exposure 1950-2000



2.3.3 Total Loss Accidents since 1956

Operational 890
Test/Training.....79
Violence 28
Non-Operational 61
Non-Airline 97
Not-Known 24
Total.....1179

2.3.4 Total Loss Accidents by Phase of Flight

The following chart shows the Total Loss accidents by phase of flight for the periods 1981-1990 and 1991-2000.

WESTERN-BUILT TURBOPROPS			
Total Losses by Phase of Flight			
	1981 - 90	1991 - 00	1981 – 00
GND	9	10	19
TOF	47	39	86
CLB	12	10	22
CRS	36	35	71
DES	20	18	38
APP	66	78	144
GOA	12	11	23
LDG	51	54	105
Not Known	1	1	2
Totals	**254**	**256**	**510**

2.3.5 Fatal Accidents by Phase of Flight

The following chart shows the Fatal Accidents by phase of flight.

WESTERN-BUILT TURBOPROPS			
Fatal Accidents by Phase of Flight			
	1981 - 90	1991 - 00	1981 – 00
GND	0	2	2
TOF	26	23	49
CLB	10	10	20
CRS	32	29	61
DES	19	17	36
APP	46	61	107
GOA	9	8	17
LDG	3	7	10
Not Known	1	1	2
Total	**146**	**158**	**304**

3. ACCIDENT CLASSIFICATION - WESTERN-BUILT TURBOPROPS

3.1 INTRODUCTION

This safety report includes a subjective assessment of causal factors. The advantage of this is that it facilitates early identification of emerging problems. The disadvantages are that some accidents cannot be assessed at all because of insufficient data, and that no updates of these initial assessments are made.

3.2 TYPES OF ACCIDENT

The most relevant events identified in 2000 that resulted in an operational TL or SD accident were:

- 20 Approach and Landing Accidents (ALAs).
- 5 TL and 11 SD [7 TL and 8 SD] occurred during the landing phase.
- 4 [14] Controlled Flight Into Terrain (CFIT) accidents resulting in 57 fatalities (8 crew and 49 passengers [141 fatalities (28 crew; 113 passengers)].
- 3 TL and 4 SD accidents [3TL and 4 SD] were caused by runway excursions (events where the involved aircraft unintentionally abandoned the paved runway surface), all in the landing phase.
- 4 TL and 0 SD accidents [5 TL; 1 SD] apparently resulted from loss of control.
- 15 [20] accidents in which weather was a factor.

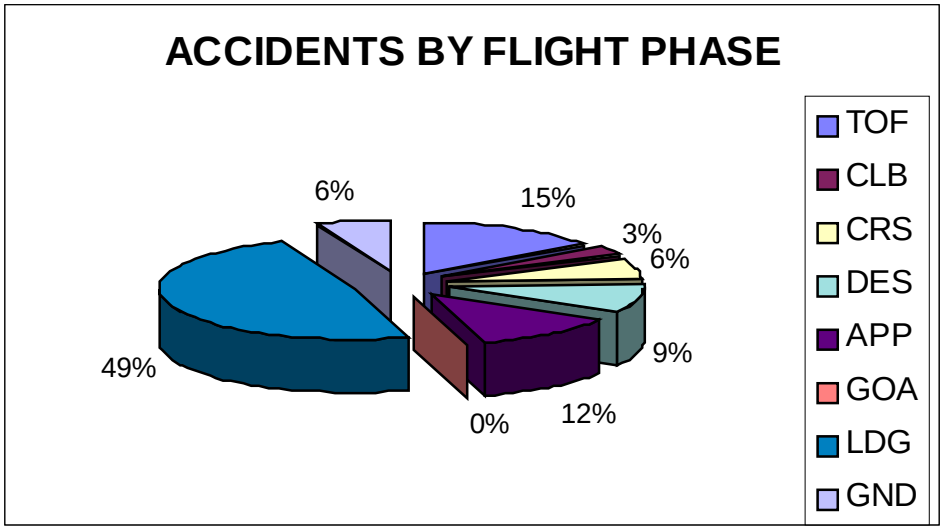
3.3 CARGO V PASSENGER SERVICE ACCIDENTS

Total Loss (TL) and Substantial Damage (SD) accidents were grouped according to passenger and cargo categories. The overall breakdown by aircraft type is shown on page 7. The cargo aircraft involved were:

Type	TL	SD
Metro	2	1
Beech 99		1
SC.7 Skyvan	1	1
HS748		1
Gulfstream 1	1	1
Shorts 330	1	
Total	**5**	**5**

3.4 ACCIENTS BY PHASE OF FLIGHT

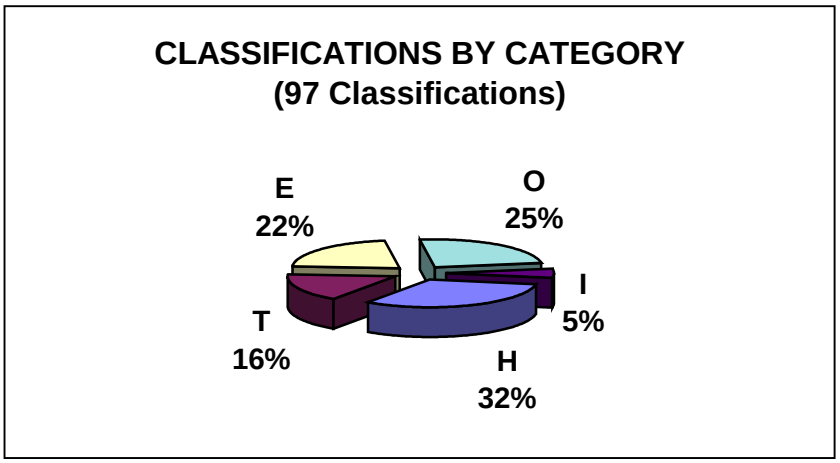
The following chart shows the distribution of operational Total Loss accidents by phase of flight.



All but two Substantial Damage accidents occurred in the landing phase.

3.5 IATA CAUSAL FACTOR CODING

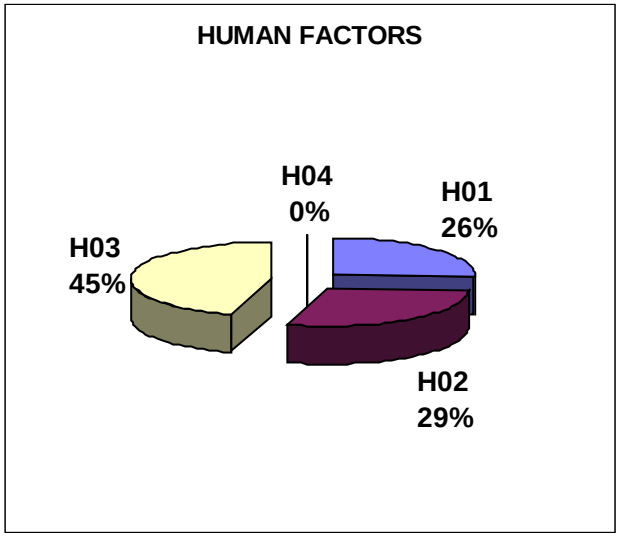
Of the 33 operational Total Loss **and** Substantial Damage accidents, there was sufficient information to classify all but 5. This resulted in 97 classifications.



These were further subdivided as indicated in the following subsections.

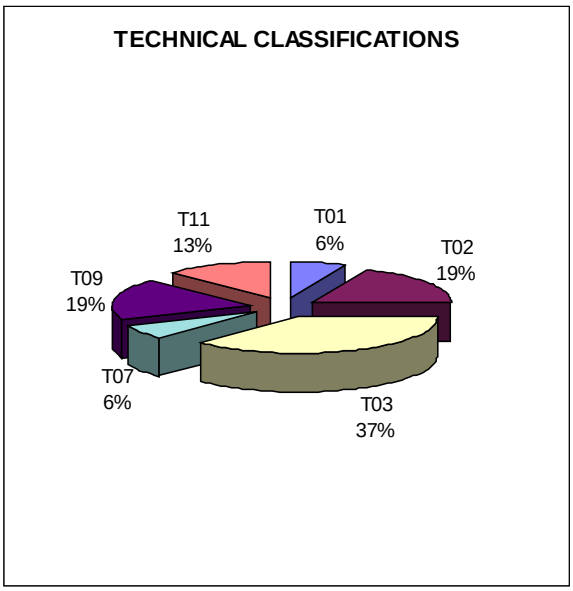
3.5.1 Human Factors

Clearly, H3 (proficiency/ skill failure) was the predominant human factor identified in the 2000 classifications.



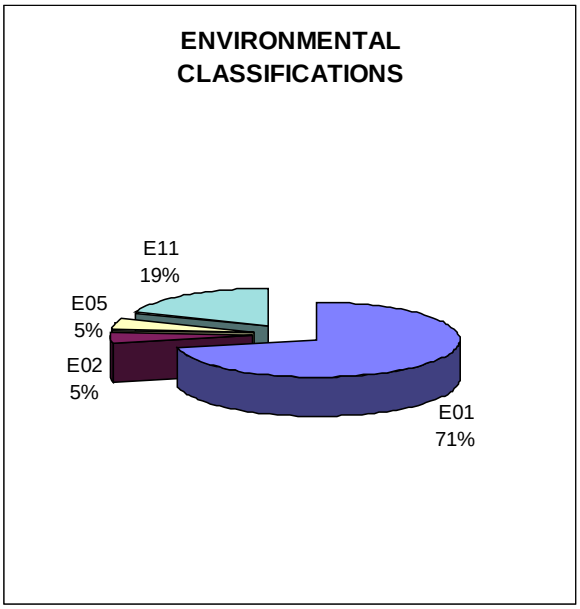
3.5.2 Technical Factors

The pre-eminent technical factor identified in the subject accidents was T03 (Gear and Tyre), accounting for 37% of the technical classifications.



3.5.3 Environmental Factors

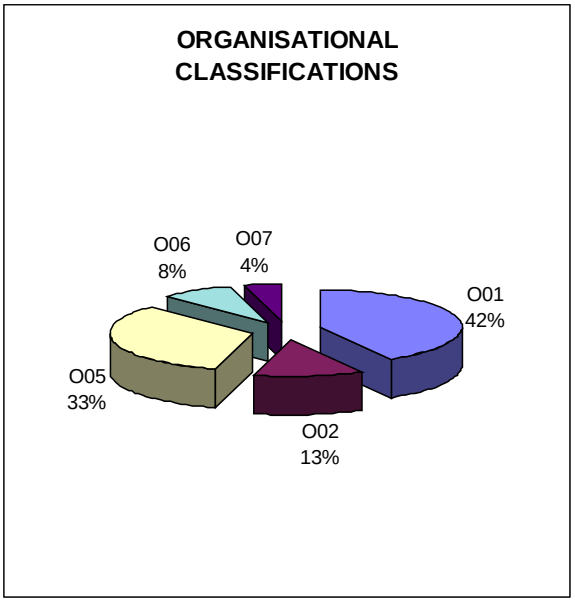
Three-quarters of the environmental factors identified with the 2000 accidents are associated with adverse weather.



Lack of regulatory oversight (E11) was identified as a factor in 19% of the accidents.

3.5.4 Organisational Factors

The preponderance of the O1 organisational factor associated with a number of 2000 accidents suggests that crew selection and/or training presents considerable opportunities for improvement.



4. STATISTICS FOR EASTERN-BUILT TURBOPROPS

4.1 GENERAL

This part of the safety report deals with Eastern-built turboprop aircraft, generally those manufactured in the former Soviet Union.

4.2 DEFINITIONS APPLICABLE TO EASTERN-BUILT TURBOPROP AIRCRAFT

4.2.1 Other Operations

Airline operators of Eastern-built turboprops that are based outside the Soviet Union.

4.2.2 Total Hull Loss

Accidents to Eastern-built aircraft have been classified as Total Hull Losses where the aircraft was either destroyed or otherwise never repaired. This is not the same definition used for Western-built turboprops. (See Appendix A)

4.3 DATA FOR 2000

4.3.1 Hours and Sectors Flown

No accurate exposure data is available for Eastern-built aircraft. However, broad estimates have been made for passenger aircraft in operation with Commonwealth of Independent States (CIS) airlines as follows:

	2000	**1999**	**1991-2000**
Hours, million	0.25*	0.27*	5.75*
Landings, million	0.19*	0.21*	4.4*

* Estimated

4.3.2 Total Hull Losses

There were 11 known Total Hull Loss accidents to Eastern-built turboprops compared with 11 in 1999. All of these were classified as operational, compared with 7 operational losses in 1999.

4.3.3 Fatal accidents

Nine [5] of the operational Total Hull Loss accidents involved fatalities (31 crew and 189 passengers [10 crew and 31 passengers].

4.3.4 Loss Rate

Due to the lack of accurate exposure data, it was not possible to establish a loss rate for Eastern-built aircraft in 2000.

4.3.5 Accidents by Phase of Flight - 2000

Flight Phase	Operational Total Hull Loss	Fatal Accidents	Fatalities	
			Crew	Passengers
TOF	4	4	9	80
CLB				
CRS	2	2	12	63
DES		-		
APP	4	3	10	46
GOA				
LDG	1			
GND				
Total	**11**	**9**	**31**	**189**

4.4 ACCIDENTS: STATE OF OPERATOR/STATE OF OCCURRENCE

The following table lists the eleven operational Total Hull Loss and Substantial Damage accidents which occurred during 2000. The narrative numbers (Nr.) indicated correspond to the narrative numbers provided in Appendix C.

No.	Date	Registration	State of Operator	IATA Region	State of Occurrence	IATA Region	Nr.
Total Hull Loss							
	Passenger						
1	15.01.2000	YS-09C	Costa Rica	SA	Costa Rica	SA	1
2	25.03.2000	D2-MAJ	Angola	AF	Angola	AF	4
3	19.04.2000	TL-ACM	Central African Republic	AF	Congo (Democratic)	AF	5
4	22.06.2000	B-3479	China	FE	China	FE	6
5	12.08.2000		Congo (Democratic)	AF	Congo(Democratic)	AF	7
6	19.10.2000	RDPL-34130	Laos	FE	Laos	AF	9
7	31.10.2000	D2-FD1	Angola	AF	Angola	AF	10
8	15.11.2000	D2-FCG	Angola	AF	Angola	AF	11
	All-cargo						
1	19.03.2000	UR-26586	Ukraine	EU	Congo(Democratic)	AF	2
2	24.03.2000	RA-11302	Sri Lanka	FE	Sri Lanka	FE	3
3	15.08.2000	LZ-ITC	Bulgaria	EU	Congo(Democratic)	AF	8
Substantial Damage							
	Passenger						
2	19.09.2000	RA-28950	Russia	EU	Russia	EU	3
3	05.11.2000	RA-46499	RU	EU	Russia	FE	4
	All-cargo						
1	07/06.2000	UR-48054	Ukraine	EU	Sudan	AF	1

4.5 ACCIDENTS TO EASTERN-BUILT TURBOPROP AIRCRAFT 2000

Descriptions of accidents involving Eastern-built aircraft are presented as Appendix C.

4.6 DATA FOR LAST 10-YEAR PERIOD 1991 -2000

4.6.1 Fatal Accidents/Fatalities - Eastern-built Turboprop Aircraft

The following chart shows the total number of fatal accidents and crew and passenger fatalities for 1991 – 2000.

Eastern-built Turboprops, 1991-2000 - Fatal Accidents vs Loss of Life

Year	Fatal Accidents	Pax Fatalities	Crew Fatalities	Pax On Board	Crew On Board	% Pax Fatalities	% Crew Fatalities
1991	3	71	13	100	13	71	100
1992	8	61	31	80	39	76	79
1993	5	130	20	131	20	99	100
1994	2	21	15	21	15	100	100
1995	5	87	18	144	26	60	69
1996	8	66	21	94	35	70	60
1997	4	101	15	104	17	97	88
1998	8	80	33	88	46	91	72
1999	5	31	10	59	16	53	63
2000	8	136	26	180	37	76	70
Total	**56**	**784**	**202**	**1001**	**264**	**78.3**	**76.5**

5. ANALYSIS AND CONCLUSIONS

5.1 GENERAL

In 2000, there was a 0.88% increase in the world's turboprop fleet to 5,414 aircraft. The aircraft-years flown also increased by 0.64% to 5,385.

There were 20 operational Total Loss (TL) accidents recorded. This is 13 less than in 1999 and 6 less than in 1998. The annual average for the ten-year period 1991 - 2000 is 25.6. In this regard, 2000 was the best year since 1986. The worst year in the period was 1997 with 35 TLs. The loss rate per 1000 aircraft-years, at 3.5, is also the best for the previous 10-year period.

Additionally, there were 13 operational SD accidents in 2000, 4 more than in 1999.

The 12 fatal accidents represent the lowest number of fatal accidents over the ten-year period 1991 - 2000. In terms of fatalities (total crew and passenger), the year was also the best of the last ten-year period. The ten-year annual average for fatal accidents is 15.9.

5.2 EASTERN-BUILT AIRCRAFT

The 11 TL accidents involving Eastern- built turboprop was the same as last year. Of these accidents, 9 resulted in fatalities.

5.3 PHASE OF FLIGHT

5.3.1 Approach and Landing (ALA)

Along with Control Flight Into Terrain (CFIT), Human Factors, and Loss of Control, Approach and Landing (ALAs) have been identified as being one of the four principal aviation safety priorities. The Approach and Landing accident Reduction (ALAR) task force defines ALAs as events that occurred in flight phases after initiation of the descent (approach and landing, circling manoeuvres, missed approach).

The need for improvement in the ALAs record is reflected in the year 2000 statistics where the data indicate that, once again, the approach, landing, and go-around phases seem to pose the greatest threat to safety. The 20 accidents occurring in these phases represents 60% of all accidents. Considering the limited time spent in these phases of flight, it is apparent that this area presents particular difficulties to crews. Some 45% of the year 2000 accidents involved an H3 Human Factor (proficiency/skill failure and/or incorrect decision-making) with regard to continuing the approach. The landing phase, with 16 accidents (5 TL and 11 SD Damage) is the particularly vulnerable period. All but 2 of the total number of SD accidents occurred in the landing phase.

The reluctance of many crews to go-around is still apparent, as are the difficulties of doing so in poor weather. Go-around training should be enhanced.

These operational factors were sometimes accompanied by technical factors. For example, Gear and Tyre accounted for 37% (undercarriage collapse or failure) of the technical classification. The failure to select gear down was also evident. There were 7 runway excursions.

Viewing these ALA factors collectively, it is apparent from the year 2000 statistics that this category represents the greatest threat to air safety. Therefore the ALA Reduction scrutiny, particularly of the landing phase and go-around phase, must be continued. Moreover, it is apparent that those airlines being in the first division of aviation safety are not immune from the landing accident. Nor are the best pilots.

5.3.2 Takeoff, Climb and Cruise Accidents

Of all the TL accidents, 15% occurred during take-off, a further 3% occurred in the climb, and 6% in the Cruise. All but 2 SD accidents occurred in the landing phase.

5.4 REGIONAL VARIATIONS

Of the 33 operational accidents, 4 occurred in the Asia/Pacific region, 8 in the European region, 12 in North America, 4 in the South America, and 5 in the African region. Like the large jet transport fleet, the greatest improvement therefore occurred in the Asia/Pacific region.

5.5 IATA CAUSAL FACTORS

Analysis of the 33 operational TL and SD accidents identified 97 classifications in the 5 categories addressed, namely Human (HUM), Organisational (ORG), Environmental (ENV), Technical (TEC) and 5 Insufficient Data (I). HUM was dominant (32%), followed by ORG (25%), ENV (22%) and TEC (16%).

Within the HUM category, proficiency/skill failure is predominant, attracting 45% of the factors identified. The high percentage of Active Failures (26%) – non adherence to SOPs/violations) is also significant.

The ORG category scored highly in terms of selection and training of cockpit crew (42%) but inadequate control and monitoring also featured strongly. Coupling the latter with the 19% scored under ENV for lack of regulatory oversight this oversight issue represents a concerning area of aviation safety. Moreover, these dominant features of both the HUM and ORG category point to the value of the new ICAO safety initiatives such as Line Operations Safety Audit (LOSA) and the IATA Operational Safety Audit (IOSA).

Predictably, by far the most dominant feature of the ENV category is the 71% of factors attributable to meteorology (MET). Night operations result in more difficulties caused, for example, by fewer visual cues or by spatial disorientation. Where night operations may have been a contributory factor, the CWG therefore included the event with MET. Weather/night factors were evident in 15 accidents, mostly in the approach and landing phase.

The TEC factors point to not only undercarriage concerns (37%) but also to design and manufacturing (19%) downfalls with this category of aircraft (plus 3,900 kg MTOW) and also to a lack of engine reliability (19%).

5.6 CONTROLLED FLIGHT INTO TERRAIN

The CWG's definition of a Controlled-Flight-Into-Terrain (CFIT) accident is that of an accident in which an otherwise serviceable aircraft with fuel, under the control of the crew, lands (crashes) short of the runway, or is flown into terrain, obstacle(s) or water with no prior awareness on the part of the crew of the impending disaster. The industry CFIT Task force definition of this type of accident is broadly similar. It is one in which an airworthy aircraft has been inadvertently flown into terrain (ground), obstacle, or water, off the runway with no or little awareness by the pilot (s), but sufficient time existed to effect a safe recovery. Both definitions have been taken into consideration in this analysis of CFIT accidents.

There were 4 Controlled Flight Into Terrain (CFIT) accidents involving turboprop aircraft, this being a dramatic reduction compared with the 14 CFIT accidents which occurred last year.

Undoubtedly the propagation of Ground Proximity Warning Systems (GPWS) and enhanced CFIT avoidance training is having a beneficial effect on the accident rate but the momentum of the industry wide campaign to minimise CFIT accidents must be maintained.

5.7 LOSS OF CONTROL

Four TL accidents involved in-flight loss of control. The principal concern arising from these accidents is the mismanagement in the cockpit of an airworthiness related fault.

5.8 SITUATIONAL AWARENESS

Helmreich & Foushee (1993) identify situational awareness as an 'outcome rather than a specific set of mission management behavior'. They nominate preparation, planning, vigilance, workload distribution and distraction avoidance as key factors when considering effective situational awareness. Orasana later describes situational as the interpretation of 'situational cues'. Alternatively it has been described as, a state of awareness – a dynamic mental model of relevant aspects of the 'world'. The CWG accepted these views, adding that situational awareness is not lost. Pilots are always forming some idea of what the system or process is doing. They always give a meaning to incoming cues and interpret data on the basis of what they already know, what they have just done, what they have set out to do, and what they expect to happen. When a mismatch occurs between how pilots understand their situation to be and how the situation actually is, this can be termed loss of situational awareness.

Poor situational awareness was identified as a contributory factor in 4 accidents reaffirming the need for particular attention to this area of concern. The pilot must be aware that the source of information, or cues, may differ from aircraft to aircraft, and from flight to flight. Like other CRM concepts, situational awareness may have become a vague concept to many pilots and the early evidence of the accidents during 2000 suggests this would be a most unfortunate trend. Acknowledging the outstanding contribution to aviation safety made by the CFIT and the ALA task forces in recent years it is important to recognise that the ensuing training packages must be fully integrated into the overall training programme, which should include training in situational awareness. The essential tool for CFIT or terrain avoidance, along with other threats such as wind-shear and mid-air collision avoidance, is situational awareness. A CFIT accident is th result of a situational awareness failure. It is considered that safety would be enhanced by providing pilots with specific situational awareness training both during their initial conversion training as well as during recurrent training programmes such as Line Oriented Evaluation (LOE) exercises.

5.9 RUNWAY INCURSIONS

Although only one accident can be attributed in part to a runway incursion, the CWG were concerned about the risk which was showing through into incident statistics. For example, the FAA had received reports of 429 runway incursions during the past year and was anxious to reverse this trend. Emerging technologies to reduce runway incursions must be identified. However, there must be no relaxation in current programmes to increase training and awareness for controllers, commercial and general aviation pilots and airport operators.

5.10 SAFETY OVERSIGHT

As mentioned earlier in this analysis, a lack of regulatory oversight was identified as an area of concern. Combined with inadequate safety or quality oversight this organisational issue at airline level is seen as being only one step away from scoring as a lack of regulatory oversight. Inadequate safety oversight is also apparent in terms of Ground Support related events.

5.11 GROUND SUPPORT

It is clear from this analysis that ground damage and loading errors represent a serious threat to aviation safety. Ramp safety failures are now showing through in the turboprop accident statistics. A particular area of concern is is the ground damage caused by ground servicing vehicles. There is evidence that such damage has had serious consequences when not reported and assessed prior to flight. As mentioned in previous IATA Safety Reports, the need for operators to ensure that all ground damage is reported within a non-punitive reporting environment is essential. This

requirement to establish and preserve an effective safety reporting culture is apparent elsewhere in the ground support areas such as cargo loading, catering, and maintenance.

5.12 ALL-CARGO OPERATIONS (DEDICATED FREIGHTER AIRCRAFT)

The CWG wish to refer to this category in future as Dedicated Freighter aircraft. There were 5 Cargo operations accidents. The combination of aged freighter aircraft operated in a less than comprehensive support infrastructure is presenting a higher risk scenario. Moreover, the threat of a cargo load shift in flight remains one of the most concerning risks in dedicated freighter operations. A review of training emphasis and loading procedures to ensure that cargo shifts cannot occur in flight on dedicated freighter operations is recommended.

6. OTHER FLIGHT SAFETY ISSUES

6.1 GENERAL

The mandate of the CWG is to identify threats to safety and, where viable, to offer recommendations. It is difficult, if not impossible, to evaluate flight safety solely in terms of factors arising from accidents. This section provides an opportunity for the safety managers participating in the CWG to express their concerns, perhaps those which are reflected in incidents of which they have knowledge, or other safety issues with which they are currently confronted.

6.2 EXTERNAL AND ENVIRONMENTAL PRESSURES

The analysis of this safety report shows that 60 % of the TL and SD accidents combined occurred in the approach and landing phase. Assuming a direct correlation between the results and risk levels, then ground operations and the take-off phase, with a combined total of 24% represents less than half the risk that is associated with the approach and landing phase. It is considered therefore that during the approach and landing phases that risk levels are more likely to increase because of the rising number of safety trade-offs that pilots are compelled to make.

Increasing traffic congestion, more politically influential environmental lobbyists, slot pressures, more demanding operational goals, company priorities and customer expectations, create a demanding environment in which the pilot must juggle these requirements in parallel with the demands for safety. In particular, late runway changes, ATC requests for high speeds to the outer marker, and landings on less favourable runways due to noise abatement procedures will require certain compromises to be made. The pilot must evaluate these compromises and judge the effect they will have upon the safety of the flight. In the extreme case these judgements may have to be made with inadequate knowledge or experience and may be influenced unduly by schedules and commercial pressures.

The pilot will always have to make decisions and choices but if accident reduction in the approach and landing phases is to be achieved, it is critical that external pressures and influences are kept under control. Pilots must be able to make ‘reasonable’ choices and should not be forced to compromise beyond personally acceptable minimum level of safety. It may well be that the industry should take a more positive stand against environmentalists and other groups who, perhaps unwittingly, are causing erosion of levels of safety.

6.3 PUNITIVE IMPEDIMENTS TO SAFETY SYSTEMS - CRIMINAL PROSECUTION OF CREWS

The need to establish and promote reporting cultures and systems, including confidential reporting and flight data monitoring programmes, that do not lead to punitive action is considered paramount to the success of any flight safety programme. The role of the Regulator in oversight of flight safety programmes must not impinge on voluntary company initiatives to enhance reporting and safety monitoring of their operation. Actions by the Operator, Regulator, Government or other external party that may result in prosecution and penalty must be seen as a disincentive to such reporting and thereby place at risk any improvement in the air safety and reporting culture.

Particular concern was expressed by the CWG about the manner in which several accident investigations had progressed. The Judicial Precedence and trend to criminal prosecution of crews involved are considered prejudicial to safety enhancement and contrary to the principles of ICAO Annex 13. There are great benefits to be gained by introducing legislation that would allow inadvertent mistakes made by air and ground crews to be reported without fear of retribution. This is not to protect egregious errors, deliberate breaking of the rules, or illegal acts that cannot be tolerated and must be dealt with accordingly. Rather this is to do with legislation that should protect from punitive action those who make inadvertent errors and give information in confidence to help the cause of accident prevention.

6.4 SITUATIONAL AWARENESS – LANGUAGE OTHER THAN ENGLISH IN ATC

A loss or lack of situational awareness, defied under Section 5, has been identified as a significant factor in a number of accidents. A major factor in situational awareness is clear and unambiguous communications. The use of language other than English in ATC communications is identified as depriving crews of appropriate situational awareness.

6.5 SAFETY OVERSIGHT OF AIRLINE SERVICE PROVIDERS ON THE RAMP

As mentioned in the analysis section of this report, ground damage by servicing vehicles or equipment during turnarounds is now showing not only in the incident statistics but is being cited as a contributory factor in aircraft accidents. There is evidence that such damage has had serious consequences when not reported and assessed prior to flight. The need for operators to ensure that all ground damage is reported within a non-punitive reporting environment is essential. Open loops in the safety management system in this particular area of ground handling are dangerous. It is vital that safety feedback from the front line continues, firstly to understand why these hazards exist and next to establish what can be done to control them. It follows that senior airline managers have a responsibility to ensure that non-punitive safety reporting systems are put in place to assist in their understanding of the safety performance of their ground handling agents and service providers. Although the reporting culture on the ramp has improved in recent years there is much more to be done to ensure that there are no impediments to the reporting of ground damage.

The non-punitive reporting of incidents is but part of the Safety Management System that should be embraced by airside ground handling agents and service providers. As it is, airlines are reporting an alarming increase in both the number and severity of ground accidents that occur Airside involving people and property. Those senior airline managers responsible for overseeing the safety performance of their service providers and contractors must understand the nature of the ground handling business. Central to this understanding is an appreciation of the intense time and commercial pressure to which today's ground handlers are subjected. No longer is the work all under one organisation but more typically there is a complex web of separate contractors, each dealing with different aspects of the turnaround, all working alongside one another, and is susceptible to conflict. Too often there is no one in overall control of the turnaround of the aircraft or the ramp operation. With the ramp contractor situation being so competitive, there is a growing tendency for service providers to limit their responsibilities for safety related activities. Airport managers and regulators are increasingly faced with the problem of overseeing the safety performance of a disparate collection of contractors, most of whom are essential to improving customer service but whose business interests, agendas and requirements are not always conducive to effective safety management.

There are business benefits to be gained from good safety management on the ramp. The cost of damage and injury on the ramp has recently been estimated to be costing the airline industry USD2 Billion each year. For savings to be made it is necessary for the nature of the operation, particularly the pressures on the ramp, to be clearly understood. The ramp is not an area where competency and skill levels are consistently high. Whilst engineering and flight crew training and standards are mostly well developed, many airside ground handling staff do not have the same understanding, for example, of airworthiness and operational standards which must be adhered to in order to achieve a safe operation. Turnover of staff on the ramp is reportedly high, supervision often falls to the inexperienced, all amidst the certain and ever present pressure of on time performance. A better balance of the task and resources, consisting of properly trained staff, would pay dividends in cost saving and accident prevention.

The disparate nature of airside operations makes the training and oversight task all the more challenging. Whilst the standards required are well documented, Airport Authorities and regulators are less able to oversee safety in the march to "contractorisation. With this has come an increase in the power of the airline community as the direct customer of ground handling services. However, while many airlines are only too happy to use this power to reduce costs and improve service quality and efficiency, there is less evidence that it is being used to control safety on the ramp. In this situation there is a need for airlines to require their ground handling agents and service

providers to establish their own Safety Management Systems. The respective Ground Handling Agreements should stipulate safety performance targets and the essential components of the Safety Management System that must be incorporated. Such requirements could be developed from the IATA Standard Ground Handling agreements and Standard Catering Services Agreement. Above all, a Senior Corporate Manager of the airline must be held accountable by his/her CEO for reviewing the safety performance of the service providers/ground handling agents and monitoring the effectiveness of corrective action.

6.6 SERIOUS INCIDENTS

During this review of accidents occurring in the year 2000, the CWG was acutely aware of a number of other serious incidents as defined in ICAO Annex 13 which were not addressed as part of the safety review. Runway excursions and tail strikes, for example, may not have involved substantial damage but often avoided the accident statistics by good fortune alone. Similarly the underlying factors associated with serious incidents such as air proximity “near- misses” and intrusions on to the flight deck, have not been embraced by this report. The CWG felt that such incidents should be tracked, analysed and addressed by the Safety Report (Turboprop).

IATA is aiming to capture more information on serious incidents to include in the next edition of the Safety Report. This work is in parallel with the Safety Trend Evaluation and Analysis Data Exchange System (STEADES) which will be used by IATA to mine incident- related information provided by a large number of airlines participating in the scheme.

6.7 IATA SAFETY STRATEGY 2000+

This analysis of the accidents which occurred in the year 2000 has confirmed that the industry safety priorities aimed at preventing Controlled-Flight-Into-Terrain accidents, Approach-and-Landing accidents, Loss of Control accidents and Human Factors, are the right ones. Conscious of these, and other emerging safety hazards, IATA has launched an enhanced and comprehensive safety strategy, to be known as Safety Strategy 2000+ which has been developed by the IATA Safety Committee. IATA’s primary goal is to lead the global airline efforts to achieve a continuous improvement in safety.

Safety Strategy 2000+ calls for consolidation and integration of safety efforts at IATA with other industry organisations for greater effect, including regional airline organisations, aircraft manufacturers and the Flight Safety Foundation. The strategy will not only focus on the hazards evident from this report but it will also maintain awareness of other hazards through the integration and evaluation of safety data from various sources.

Under Safety Strategy 2000+ regional safety priorities will be established and best means for regional safety initiatives determined and implemented. Proper evaluation of the impact of safety initiatives in conjunction with constant monitoring of the industry safety performance will be key in ensuring the strategy is effective and delivers the desired continuous improvement in safety. This will include the development of an industry-wide standard that will ensure all Member airlines meet stringent operational criteria.

Safety must permeate the industry at all levels, from the shop floor all the way to the boardroom. With the full support of the IATA Board of Governors, Safety Strategy 2000+ therefore aims to reinforce the airline CEO role for safety accountability and actively promote safety initiatives and achievements through a sustained and effective industry-wide communications campaign.

7. RECOMMENDATIONS

Recommendations provided in previous IATA Safety Reports must often be reiterated, especially since much of the readership may be new to the airline industry. Additionally, experienced airline managers, flight and ground personnel will often benefit from revisiting the recommendations made in this and previous IATA Safety Reports. It is therefore recommended that reference is made to Appendix F.

For the year 2000 it is recommended that IATA and the Operators together:

7.1 Promote the use of just, non-punitive, air and ground safety reporting and investigation systems.

7.2 Further promote the use of Flight Operations Quality Assurance (FOQA), the ICAO LOSA programme and the IATA Operational Safety Audit (IOSA) system.

7.3 Review training practices and quality of training devices in terms of the particular skills required by a pilot during the landing phase.

7.4 Review training practices and SOPs to ensure that those basic flying skills which are first taught are not subsequently trained out of pilots by the implementation of specific procedures or the inappropriate use of automated systems.

7.5 Review training policy and practices with the aim of ensuring that specific training is given to pilots regarding situational awareness i.e. during initial conversion training as well as during recurrent training exercises.

7.6 Highlight the threat to situational awareness of using language other than English in the ATC environment and pursue wider use of English through ICAO, States, and Regions.

7.7 Counter punitive intrusion into Safety Monitoring Systems by protection of accident/incident data to promote greater reporting freedom to contribute to improved safety performance.

7.8 Co-ordinate with organisations such as ICAO, Flight Safety Foundation, and other professional institutions, the legislative defence against the criminal prosecution of flight crews.

7.9 Investigate the capture of serious incident data for analysis in the IATA Safety report (Turboprop).

7.10 Develop a template, which could form part of Service Level Agreements, for operational safety performance monitoring of airline Service Providers (Ground Handling, Catering and Maintenance).

7.11 Review training emphasis and loading procedures to ensure that cargo shifts cannot occur in flight on dedicated freighter operations.

7.12 Encourage greater use of the IATA Safety Information Exchange system.

8. SIE REPORTS

Safety Information Exchange Reports were received on the following subjects:

4386 B757 Passenger Overhead Oxygen Mask Release Panels Deficiency
4387 A300 Flight Control Malfunction
4388 GPS Navigation Anomaly
4389 A320 Full-Face Oxygen Mask Goggles Anomaly
4390 B737-200 Uncommanded Left Rudder Movement
4391 BAE3200 Double Engine Power Failure
4392 B767 Bulkhead Airphone Electrical Short
4393 A319 Uncommanded Climb
4394 DC9-30 Depressurization Anomaly
4395 Avro RJ85 Runaway Electric Trim Incident
4396 B737-300 Rudder Pedal Jamming Incident
4397 B737-800 Antenna Location Anomaly
4398 CL65 Stabilizer and Mach Trim Failure
4399 ACAS High Vertical Speed Encounters
4400 Mobile Interference
4401 Taxiing Incident, Valencia, Venezuela
4402 MD80 Loss of Control Incident
4403 Jet Blast Incident at MIA
4404 EMB 145 Stabilizer Trim Failure
4405 CL65 Cabin Smoke Incident
4406 CL65 Anti-ice Duct Overheat Warning
4407 B737-200 Uncommanded Yaw Movements
4408 B767 Uncommanded Roll Incident
4409 Correction to SIE 4408
4410 B737-200 Hydraulic Systems Failure
4411 B767-300ER Engine Shut Down
4412 CL65 Elevator Split Problem
4413 Issue B of Report into TCAS Incident between BAW & KAL on 28 June 1999
4414 ILS Erroneous Glideslope Capture Apia
4415 B777 Passenger Seat Adjustment Wiring Incident
4416 B777 Hydraulic Brake Line Problem
4417 TCAS II Conflict Incident
4418 PA-44 Incorrect Heater Installation
4419 Mexico City Security Incident
4420 B777 Intercom System Anomaly
4421 B757-200 Air to Ground Communication System
4422 A320 Flight Control Incident

4423 Laptop Computer Navigation Interference
4424 Rolls Royce RB11 Engine Spinner Fairing Cracks
4425 A300 Uncommanded Rudder Movement
4426 CL65 In Flight Windshield Failure
4427 B757-200 Loss of Both Engine Bleeds

APPENDIX A — DEFINITIONS

Aircraft-years: means, for purposes of this report, the average fleet in-service during the year. The figure is calculated by counting the number of days each aircraft is in the airline fleet during the year and then dividing by 365. Periods during which the aircraft is out of service (for repair, storage, parked, etc) are then excluded.

Controlled Flight into Terrain (CFIT): An accident, in which an otherwise serviceable aircraft with fuel, under control of the crew, lands (crash) short of the runway, or is flown into terrain, obstacles or water with no prior awareness on the part of the crew of the impending disaster.

Crewmember: means anyone on-board a flight who has duties connected with the sector of the flight during which the accident happened. It excludes positioning or relief crew, security staff, etc. (see definition of "passenger" below).

Eastern-built turboprop: The main types in current service and considered in this Safety Report are An-12, An-24, An-26,An-28, An-32, L-410 and Y-12.

Fatal accident: A fatal accident is one where at least one passenger or crew member is killed or later dies of their injuries as a result of an "operational" accident.

Events such as slips and falls, food poisoning, turbulence or accidents involving on-board equipment, which may involve fatalities but where the aircraft sustains minor or no damage, are excluded.

Most fatal accidents also result in the aircraft becoming a Total Loss but this is not necessarily always the case and there have been a number of substantial damage accidents where deaths have occurred.

Fatality: A fatality is a passenger or crewmember who is killed or later dies of their injuries resulting from an operational accident. Injured persons who die more than 30 days after the accident are generally excluded, however, one or two cases where death came later but could reasonably be shown to have been a direct result of injuries sustained in the original accident, are included. (This does not conform to the ICAO Annex 13 definition but, in this context, is thought to be more meaningful).

Flight phase: means a description of the situation or stage of flight in which the involved aeroplane suffered the accident or incident. The IATA flight phase codes are as follows:

CODE	DESCRIPTION	CONDITION(S)
TOF	Take-off	Start of take-off roll to 1500 ft AGL
CLB	Climb	1500 ft AGL to top of climb
CRS	Cruise	Top of climb to top of descent
DES	Descent	Top of descent to 3000 ft AGL
APP	Approach	3000 ft to crossing threshold
GOA	Go around	Discontinued approach and Landing
LDG	Landing	Crossing threshold to end of roll out (reaching proper taxi speed)
GND	Ground	Taxi or stationary with cockpit crew on board

IATA Accident Classifications: Classifications are groupings of factors attributable to accidents. They have been devised to help airlines develop training programmes for flight crew, cabin staff and other airline employees. These classifications can help identify the main areas of concern where remedial action should be taken.

IATA accident classifications are arranged in five categories: human, technical, environmental, organisational, and insufficient data.

It is generally difficult to classify accidents or incidents in only one category because they are often the result of a combination of different factors. Therefore, a single event may be classified under more than one category.

Human (HUM). The Human **(**HUM) category relates only to flight crew. However, the equivalent human factors implications are also present in the technical, environmental and operational areas. The H3 factor especially is often a consequence of an operational error or latent failure.

CODE	DESCRIPTION	EXAMPLE EVENT(S)
H1	Active Failure	Non-adherence to standards and procedures - this can include non adherence to SOP, law violations, failure to follow written instructions, failure to manage cockpit resources, gross lack of appropriate vigilance, laziness
H2	Passive Failure	Unawareness – Including possible breakdown of coordination, misunderstanding, communication failures, lack of expected support. It can be exacerbated by high workload, distraction, complacency, forgetfulness, boredom, and/or low arousal level, fatigue
H3	Proficiency / skill Failure	Inappropriate handling of aircraft or its systems - this can include misjudgement, making an incorrect decision. It can be exacerbated by lack of experience, lack of training or simple incompetence.
H4	Incapacitation	Flight crew member unable to perform his/her duty due to physical or psychological inability or impairment.

Technical (TEC).

CODE	DESCRIPTION
T1	Extensive engine failure, uncontained engine fire
T2	Engine failure, malfunction, fire warning
T3	Gear and tire
T4	Flight controls
T5	Structural failure
T6	Fire, smoke (cockpit, cabin, cargo)
T7	Company maintenance, servicing, (incl. human error)
T8	Avionics
T9	Design, manufacturer
T10	Other
T11	System failure
T12	Autoflight

Environmental (ENV).

CODE	DESCRIPTION
E1	Meteorology (MET)
E2	Air Traffic Services (ATS)/Communications (COM)/conflicting traffic
E3	Ground-crew, cabin-crew, passengers
E4	Birds / Foreign Object Damage (FOD)
E5	Airport facilities
E6	Ground support (Procedures, Training**)**
E7	Navaids
E8	Dangerous goods
E9	Security
E10	Other
E11	Regulatory Oversight

Organisational (ORG).

CODE	DESCRIPTION
O1	Selection or training of crewmembers
O2	**Inadequate SOPs, regulations**
O3	Administrative deficiencies
O4	Latent failures
O5	Inadequate control and monitoring
O6	Incompatible goals
O7	Inadequate communications
O8	Other

Insufficient Data (I).

CODE	DESCRIPTION
I	Insufficient data to make any classification

Non-operational accident : This definition includes acts of deliberate violence such as sabotage, war etc. and (an IATA constraint) accidents which occur during crew training; demonstration and test flights. (Sabotage, etc. is believed to be a matter of security rather than flight safety, and crew training, demonstration and test flying are considered to involve special risks inherent to these types of operation).

Also included in this category are:

- Non-airline operated aircraft (e.g. military or government operated, survey, aerial work or parachuting flights); and/or
- Accidents where there has been no intention of flight

Operational accident : means an accident is one which is believed to represent the risks of normal commercial operation, generally accidents which occur during normal revenue operations or positioning flights.

Passenger : means anyone on-board a flight who, as far as may be determined, is not a crew member. Apart from normal revenue passengers this includes off-duty staff members, positioning and relief flight crew members etc. who have no duties connected with the sector of the flight during which the accident happened. Security staff are included as passengers as their duties are not concerned with the operation of the flight.

Substantial Damage: means damage or structural failure which adversely affects the structural strength, performance or flight characteristics of the aircraft, and which would normally require major repair or replacement of the affected component.

Note: *Engine failure (damage limited to an engine), bent fairing or cowling, dented skin, small punctured holes in the skin or fabric, ground damage to rotor or propeller blades, minor damage to landing gear, wheels, tires, flaps, engine accessories, brakes, or wing tips are not considered "substantial damage" for purpose of this Safety Report.*

The ICAO Annex 13 definition is unrelated to cost and includes many incidents in which the financial consequences are minimal.

Total Loss : refers to accidents in which the aircraft has been destroyed or damaged according to the following definitions -

(a) **Western-built aircraft.** A total loss is defined as an aircraft which has been destroyed or otherwise damaged beyond economical repair (as generally determined by the insurance contract). It should be noted that on rare occasions an aircraft may actually be repaired after having been a total loss, however, they are still counted as having been total losses.

(b) **Eastern-built aircraft.** Accidents to the Eastern-built aircraft have been classified as "total hull losses", a term used in the former Soviet Union to denote an accident where the aircraft was either destroyed or otherwise never repaired. This is not the same as the definition used for Western-built aircraft.

A total loss does not necessarily mean a "fatal" accident (e.g. a loss due to post-crash fire).

Western- built Turboprop : Commercial turboprop transport aeroplane with a maximum takeoff weight (MTOW) of more than 3900 Kg., designed and manufactured in the western world countries. They have been arranged into four groups, depending on maximum takeoff weight of the basic model.

GROUPS AND REPRESENTATIVE TYPES (BY MTOW)			
GROUP A (60,000 lbs and over)			
Super Guppy	Bae Vanguard	L100 Hercules	Shorts Belfast
BAe Argosy	Bae Viscount	L-188 Electra	Transall C160
BAe Brittania	Canadair CL44		
GROUP B (Over 40,000 lbs and under 60,000 lbs)			
ATR72	DHC Dash 7	Convair 580	NAMC YS-11
BAe 748	Fokker F27/F227	HP Dart Herald	Saab 2000
BAeATP	Fokker 50		
GROUP C (Over 20,000 lbs and under 40,000 lbs)			
Nord 262	DHC Dash 8	Gulfstream 1	Saab 340
ATR 42	Dornier 328	Jetstream 41	Shorts 330/360
CASA CN235	EMB 120		
GROUP D (Up to 20,000 lbs)			
ASTA Nomad	CASA 212	EMB 110	Jetstream 31
Beech 99	DHC-6 Twin Otter	Fairchild Metro	Saunders ST27
Beech 1300/1900	Dornier 228	IAI Arava	Shorts Skyvan

APPENDIX B — IATA REGIONS

The geographic areas currently assigned to the respective IATA Regional Technical Conferences and respective Regional Offices are defined by countries as set out in the IATA Handbook as of January 1999. The designators assigned are shown in brackets.

AF - AFRICAN REGION (AFI)

Algeria, Angola
Benin, Botswana, Burkina Faso, Burundi
Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo - Peoples Republic of, Cote d'Ivoire
Djibouti
Eritrea, Ethiopia, Eq. Guinea
Gabon, Gambia, Ghana, Guinea, Guinea Bissau
Kenya
Lesotho, Liberia, Libya
Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique
Namibia, Niger, Nigeria
Reunion, Rwanda
Sao Tome & Principe, Senegal, Seychelles, Sierra Leone, Somalia,
South Africa, Spain (Canary Is.), Western Sahara, Sudan, Swaziland
Tanzania, Togo, Tunisia
Uganda
Zaire, Zambia, Zimbabwe

SA - CARRIBEAN/SOUTH AMERICAN REGION (LATAM/CAR)

Argentina, Aruba
Bahamas, Barbados, Belize, Bolivia, Brazil
Cayman Is., Chile, Colombia, Costa Rica, Cuba
Dominican Republic
Ecuador, El Salvador
French Antilles, French Guiana
Grenada, Guatemala, Guyana
Haiti , Honduras
Jamaica
Mexico
Netherlands Antilles, Nicaragua
Panama, Paraguay, Peru, Puerto Rico
Surinam
Turks & Caicos Is., Trinidad & Tobago
Uruguay
Venezuela, Virgin Islands
West Indies Associated States

EU - EUROPEAN REGION (EUR)

Albania, Armenia, Austria, Azerbaijan
Belarus, Belgium, Bosnia/Herzegovina, Bulgaria
Croatia, Czech Republic
Denmark
Estonia
Finland, France
Georgia, Germany, Gibraltar, Greece
Hungary
Ireland, Italy
Latvia, Lithuania, Luxembourg
Malta, Moldova-Republic of
Netherlands, Norway
Poland, Portugal
Romania, Russian Federation (West of Moscow)
Slovenia, San Marino, Slovak Republic, Spain, Sweden, Switzerland
Turkey
United Kingdom, Ukraine
Yugoslavia, (Serbia/Montenegro)

NE - MIDDLE EAST REGION (MID)

Bahrain
Cyprus
Egypt, Arab Republic of
Iran, Iraq, Israel
Jordan, Hashemite Kingdom of
Kuwait
Lebanon
Oman, Sultanate of
Qatar
Saudi Arabia, Syrian Arab Republic
Turkey (Anatolia only) (Interface with MID)
United Arab Emirates

NA - NORTH ATLANTIC/ NORTH AMERICA REGION (NAT/NAM)

Bermuda
Canada
Iceland
United States of America

FE - ASIA/PACIFIC REGION (AS/PAC)
Afghanistan, Australia (including Cocos Is.),
American Samoa
Bangladesh, Brunei
China, Cook Islands
Easter Islands (Chile)
Fiji
Hong Kong

India, Indonesia
Japan
Korea, Kampuchea, Kiribati, Kazakstan, Kyrgystan
Laos
Malaysia, Maldives, Mariana Is., Marshall Is.,
Micronesia-Federated States of, Mongolia,
Myanmar
Nepal, New Zealand, New Caledonia, Nauru
Pakistan, Papua Niugini, Philippines
Russian Federation (East of Moscow)

SINGAPORE, SOLOMON ISLANDS, SRI LANKA

Tahiti, Taiwan, Thailand, Tonga, Tajikistan,
Turkmenistan
Guam, Hawaii, Line Islands
Uzbekistan
Vanuata, Vietnam
Western Samoa

APPENDIX C — ACCIDENT NARRATIVES 2000

WESTERN-BUILT TURBOPROPS

OPERATIONAL TOTAL LOSSES 2000

1. DATE OF LOSS : 2000-01-05

Aircraft Manufacturer : Embraer
Aircraft Type : EMB-110 Bandeirante
Year of Build : 1984
Operator : Skypower Express Airways
Registration : 5N-AXL
Accident Location : Abuja International Airport, Abuja, Nigeria
Service : Domestic non-scheduled pass.
Phase of Flight : Landing - Approach
Classification : Total Loss
Loss % : 100
Crew on Board : 3
Crew Dead : 0
Crew Injured : 1
Pax on Board : 13
Pax Dead : 1
Pax Injured : 0

During a visual approach to Runway 22 at Abuja, the aircraft appears to have stalled while turning onto final approach and subsequently pancaked into the scrubland short of the runway. The aircraft reportedly came to rest some 400ft short of the runway threshold and 400ft to the right of the extended centreline of the runway. The accident happened in daylight and in VMC. Wind, calm. The aircraft was operating a flight from Lagos to Ilorin via Abuja.

2. DATE OF LOSS : 2000-01-10

Aircraft Manufacturer : Saab
Aircraft Type : 340
Year of Build : 1990
Operator : Crossair
Registration : HB-AKK
Accident Location : Niederhasli, (near) Zurich, Switzerland
Service : Int'l. scheduled passenger
Phase of Flight : Take Off - Climb to Cruise
Classification : Total Loss
Loss % : 100
Crew on Board : 3
Crew Dead : 3
Crew Injured : 0
Pax on Board : 7
Pax Dead : 7
Pax Injured : 0

The aircraft was destroyed when it crashed shortly after take-off from Runway 28 at Zurich. The point of impact was near the village of Niederhasli, approximately on the extended centreline of the runway and some 3.5nm. from the airfield. The accident happened in darkness (1756L) and in IMC. Wind 310deg./3kt., visibility 5km. in light rain and broken cloud base at 500ft. Temp 2C and dew point 1C. The aircraft was operating a flight (LX498) to Dresden. It is understood that the flight was expected to follow the (Zue?) SID which calls for a left turn at 2.3DME from the KLO VOR (located on the airfield) and had been cleared to an initial altitude of 5,000ft. However, it would seem that, as the aircraft climbed through about 3,000ft., it was seen on radar to be turning right. ATC attempted to contact the flight but the crew apparently replied with 'standby.' The aircraft apparently reached a maximum height of 3,300ft before entering a steep dive. The aircraft impacted the ground at high speed in a 70deg nose-down inverted (130deg) attitude.

3. DATE OF LOSS : 2000-01-13

Aircraft Manufacturer : Shorts
Aircraft Type : 360
Year of Build : 1990
Operator : AVISTO
Registration : HB-AAM
Accident Location : in sea, off Marsa el Brega, Libya
Service : Domestic non-scheduled pass.
Phase of Flight : Landing - Approach
Classification : Total Loss
Loss % : 100
Crew on Board : 3
Crew Dead : 1
Crew Injured : 0
Pax on Board : 38
Pax Dead : 22
Pax Injured : 0

During the final stage of an approach to Marsa el Brega, as the aircraft was descending through about 2,000ft some 6 miles from the airfield, both of its engines reportedly lost power. The pilot subsequently apparently carried out a forced landing in the sea some distance from the coast. The accident happened in daylight (1230L) and in apparently normal weather. The aircraft was operating a flight from Tripoli on behalf of Sirte Oil Co of Libya.

4. DATE OF LOSS : 2000-02-08

Aircraft Manufacturer : Embraer
Aircraft Type : EMB-110 Bandeirante
Year of Build : 1978
Operator : Sabin Air
Registration : C9-AUH
Accident Location : (near) Maputo International Airport, Maputo, Mozambique
Service : Int'l. non-scheduled pass.
Phase of Flight : Take Off - Initial Climb
Classification : Total Loss
Loss % : 100
Crew on Board : 2
Crew Dead : 0
Crew Injured : 2
Pax on Board : 16
Pax Dead : 0
Pax Injured : 0

On take-off, shortly after getting airborne, the aircraft began to veer to the left. The aircraft's left wing struck a tree and the aircraft crashed into houses. The accident happened in daylight (1007L) and apparently in 'normal' weather. The aircraft was operating a flight to Matsapa, Swaziland.

5. DATE OF LOSS : 2000-02-10

Aircraft Manufacturer : de Havilland
Aircraft Type : DHC-6 Twin Otter
Year of Build : 1971
Operator : Alp Azur
Registration : F-GUTH
Accident Location : Courchevel Airport, Courchevel, France
Service : Domestic ferry
Phase of Flight : Take Off Run
Classification : Total Loss
Loss % : 100
Crew on Board : 2
Crew Dead : 0
Crew Injured : 0
Pax on Board : 0
Pax Dead : 0
Pax Injured : 0

At the start of the take-off roll at Courchevel, as the aircraft accelerated through about 60kt., it yawed to the left. The pilot attempted to correct the swing but the aircraft collided with a snow berm at the side of the runway. It then bounced into the air before falling back, hard, onto its left wing which subsequently failed and broke away. The aircraft came to rest inverted. The accident happened at 1800L. Weather, reported as 'good' and wind calm. The aircraft was being ferried to Lyon.

6. DATE OF LOSS : 2000-02-15

Aircraft Manufacturer : NAMC
Aircraft Type : YS-11
Year of Build : 1969
Operator : Air Nippon
Registration : JA8727
Accident Location : Okadama Airport, Sapporo, Japan
Service : Domestic scheduled passenger
Phase of Flight : Landing - Landing Roll
Classification : Total Loss
Loss % : 100
Crew on Board : 4
Crew Dead : 0
Crew Injured : 0
Pax on Board : 37
Pax Dead : 0
Pax Injured : 0

During the landing roll at Sapporo, the aircraft failed to stop before the end of the runway and, in order to avoid overrunning into the approach lights, the pilot steered it off to the right. The arcraft subsequently struck a snow berm sustaining substantial damage. The accident happened in daylight (1242L) and in light snow. The aircraft was operating a flight (ANK354) from Hoko

Date.

7. DATE OF LOSS : 2000-03-17

Aircraft Manufacturer : Embraer
Aircraft Type : EMB-110 Bandeirante
Year of Build : 1984
Operator : Skypower Express Airways
Registration : 5N-AXM
Accident Location : Kaduna Airport, Kaduna, Nigeria
Service : Domestic scheduled passenger?
Phase of Flight : Landing - Approach
Classification : Total Loss
Loss % : 100
Crew on Board : 3
Crew Dead : 0
Crew Injured : 0
Pax on Board : 3
Pax Dead : 0
Pax Injured : 0

Sometime after take-off from Abuja en route to Jos, the crew became aware of an apparent engine problem which they assessed would eventually require shutting down the engine. The pilot elected to divert to Kaduna. On arrival at Kaduna, when about eight miles from the airport with the undercarriage still retracted, the pilot shut

down the engine. However, after this the aircraft reportedly would not maintain height. The approach was continued but they were unable to reach the runway. The aircraft touched down on level hard ground with its undercarriage retracted some 600m short of the runway threshold and was substantially damaged. The accident happened in daylight (1047L).

8. DATE OF LOSS : 2000-03-17

Aircraft Manufacturer : de Havilland
Aircraft Type : DHC-6 Twin Otter
Year of Build : 1979
Operator : Aeroperlas
Registration : HP-1267APP
Accident Location : Pico Carreto, (near) Quince, Panama
Service : Domestic scheduled passenger
Phase of Flight : Landing - Approach
Classification : Total Loss
Loss % : 100
Crew on Board : 2
Crew Dead : 2
Crew Injured : 0
Pax on Board : 8
Pax Dead : 8
Pax Injured : 0

The aircraft disappeared towards the end of a flight from Panama City to Puerto Obaldia and was later found to have crashed. The point of impact was at the 2,790ft level some 12.7nm from Puerto Obaldia. The crash site is said to be on the normal inbound route to the airfield. The accident happened in daylight (about 0930L) but apparently in poor weather.

9. DATE OF LOSS : 2000-05-17

Aircraft Manufacturer : Raytheon Aircraft Co
Aircraft Type : 1900
Year of Build : 1990
Operator : Avirex
Registration : TR-LFK,
Accident Location : (near) Moanda, Gabon
Service : Domestic non-scheduled pass.
Phase of Flight : Landing - Approach
Classification : Total Loss
Loss % : 100
Crew on Board : 2
Crew Dead : 1
Crew Injured : 1
Pax on Board : 8
Pax Dead : 2
Pax Injured : 1

The aircraft was destroyed when it apparently flew into rising ground during the final stage of a visual approach to Runway 14 at Moanda. The point of impact was some 150ft below the airfield elevation (Moanda is on a plateau), on the extended centreline of the runway but about 1nm short of the airfield. The accident happen in daylight (about 1120L) but reportedly in poor weather with low cloud and reduced visibility in ground fog. The aircraft was operating a charter flight from Libreville.

10. DATE OF LOSS : 2000-05-21

Aircraft Manufacturer : Jetstream Aircraft
Aircraft Type : Jetstream 31/S31
Year of Build : 1988
Operator : Executive Airlines
Registration : N16EJ
Accident Location : Bear Creek Township, (near) Wilkes-Barre, Pennsylvania, USA
Service : Domestic non-scheduled pass.
Phase of Flight : Landing - Approach
Classification : Total Loss
Loss % : 100
Crew on Board : 2
Crew Dead : 2
Crew Injured : 0
Pax on Board : 17
Pax Dead : 17
Pax Injured : 0

The aircraft was destroyed when it crashed in woods while being vectored for an ILS approach to Runway 04 at Wilkes-Barre, Scranton International Airport. The point of impact was reported as about 11 miles South of the airport. The accident happened in daylight (1128L) but in poor weather with low cloud and reduced visibility in light rain and fog. The aircraft was being positioned for a second approach after the first was broken off for unreported reasons. Just before the crash the pilot reported that they had lost both engines. The aircraft was operating a charter flight on behalf of Ceasars Hotel & Casino from Atlantic City.

11. DATE OF LOSS : 2000-05-25

Aircraft Manufacturer : Shorts
Aircraft Type : 330
Year of Build : 1981
Operator : Streamline Aviation
Registration : G-SSWN
Accident Location : Charles de Gaulle Airport, Paris, France
Service : Int'l. non-scheduled cargo
Phase of Flight : Ground, Taxi

Classification : Total Loss
Loss % : 100
Crew on Board : 2
Crew Dead : 1
Crew Injured : 1
Pax on Board : 0
Pax Dead : 0
Pax Injured : 0

While taxiing for departure, the aircraft apparently began to enter Runway 27 at a taxiway intersection about halfway down the runway. At this point it was struck by the left wing of Air Liberte MD-83 (F-GHED) which was in the process of taking off.

12. DATE OF LOSS : 2000-07-01

Aircraft Manufacturer : Fokker
Aircraft Type : F.27
Year of Build : 1971
Operator : Channel Express
Registration : G-JEAP
Accident Location : Baginton Airport, Coventry, United Kingdom
Service : Domestic ferry
Phase of Flight : Landing - Landing Roll
Classification : Total Loss
Loss % : 100
Crew on Board : 2
Crew Dead : 0
Crew Injured : 0
Pax on Board : 0
Pax Dead : 0
Pax Injured : 0

Following an ILS approach to Runway 23 at Coventry, the aircraft reportedly landed long and subsequently overran the end of the runway. After leaving the runway the aircraft veered to the right and its nose undercarriage struck the base of an ILS installation and collapsed. The aircraft continued further to the right, through the airport perimeter fence and eventually came to rest part way across a small road. The accident happened in daylight (0608L) but in poor weather with rain. Wind 130deg./6kt. Runway 23 is 1,615m. long. The runway was wet.

13. DATE OF LOSS : 2000-07-08

Aircraft Manufacturer : Jetstream Aircraft
Aircraft Type : Jetstream 31/S31
Year of Build : 1990
Operator : Aerocaribe
Registration : N912FJ
Accident Location : (near) Villahermosa, Mexico
Service : Domestic scheduled passenger
Phase of Flight : En Route
Classification : Total Loss
Loss % : 100
Crew on Board : 2
Crew Dead : 2
Crew Injured : 0
Pax on Board : 17
Pax Dead : 17
Pax Injured : 0

The aircraft was destroyed when it apparently flew into the side of a hill towards the end of a flight from Ocozocoatla to Villahermosa. The point of impact was reportedly at the 4,000ft. level some 37 miles SE of Villahermosa. According to press reports, the flight had earlier altered course after encountering bad weather.

14. DATE OF LOSS : 2000-07-19

Aircraft Manufacturer : Gulfstream Aerospace
Aircraft Type : Gulfstream I
Year of Build : 1965
Operator : Airwave Transport
Registration : C-GNAK
Accident Location : Meduxnekeag River, (near) Linneus, Maine, USA
Service : Domestic scheduled cargo
Phase of Flight : En Route
Classification : Total Loss
Loss % : 100
Crew on Board : 2
Crew Dead : 2
Crew Injured : 0
Pax on Board : 0
Pax Dead : 0
Pax Injured : 0

While en route from Moncton, New Brunswick to Montreal, Quebec, about 45min. after take-off, shortly after the flight had been cleared to climb to FL160, the aircraft's left engine apparently failed. The crew declared an emergency and asked for vectors towards the nearest airport. However, a few seconds later, there was a broadcast, 'cannot maintain altitude,' and then, 'lost control.' The aircraft subsequently entered a steep dive and crashed beside the Meduxnekeag River. An initial inspection of the wreckage discovered two of the blades from the left engine. The blades appeared to be in a feathered or near feathered position. The accident happened in darkness (0030L) and in IMC with some reports of thunderstorms and turbulence in the area. The captain was the owner and president of the airline.

15. DATE OF LOSS : 2000-07-27

Aircraft Manufacturer : de Havilland
Aircraft Type : DHC-6 Twin Otter
Year of Build : 1979
Operator : Royal Nepal Airlines
Registration : 9N-ABP
Accident Location : Chure Hill, (near) Dhangarhi, Nepal
Service : Domestic scheduled passenger
Phase of Flight : Landing - Initial Descent
Classification : Total Loss
Loss % : 100
Crew on Board : 3
Crew Dead : 3
Crew Injured : 0
Pax on Board : 22
Pax Dead : 22
Pax Injured : 0

The aircraft was destroyed when it apparently flew into the side of a hill shortly after commencing its descent into Dhangarhi. The point of impact was at the 4,300ft. level, 18nm. northwest of the airport. It is understood that the flight had arrived 'in the Dhangarhi area' at around 1030L and at 1031L the pilot advised ATC that they were 'crossing the last ridge' and starting the descent. ATC responded by advising the flight that the landing runway was Runway 09. There was then no further contact with the flight, which is believed to have crashed shortly afterwards. The accident happened in daylight (about 1031L) but in poor weather with cloud and rain. Dhangarhi airport elevation is 690ft. The aircraft was operating a flight from Bhajang.

16. DATE OF LOSS : 2000-09-06

Aircraft Manufacturer : de Havilland
Aircraft Type : DHC-6 Twin Otter
Year of Build : 1975
Operator : Aeroperlas
Registration : HP-1276APP
Accident Location : Rio Sidra Airport, Rio Sidra, Panama
Service : Domestic scheduled passenger
Phase of Flight : Landing - Landing Roll
Classification : Total Loss
Loss % : 100
Crew on Board : 2
Crew Dead : 0
Crew Injured : 0
Pax on Board : 20
Pax Dead : 0
Pax Injured : 0

The aircraft was substantially damaged when it veered off the runway on landing and ground looped. The aircraft was operating a flight from Albrook.

17. DATE OF LOSS : 2000-10-08

Aircraft Manufacturer : Shorts
Aircraft Type : SC.7 Skyvan
Year of Build : 1977
Operator : Summit Air Charters
Registration : C-FSDZ
Accident Location : (near) Port Radium, Northwest Territories, Canada
Service : Domestic non-scheduled cargo?
Phase of Flight : Landing - Approach?
Classification : Total Loss
Loss % : 100
Crew on Board : 3
Crew Dead : 3
Crew Injured : 0
Pax on Board : 0
Pax Dead : 0
Pax Injured : 0

The aircraft disappeared (while en route from Coppermine to Port Radium?) and was later found crashed at a point some 3nm. to the North of Port Radium. The accident happened in daylight (1730L).

18.. DATE OF LOSS : 2000-11-01

Aircraft Manufacturer : de Havilland
Aircraft Type : DHC-6 Twin Otter
Year of Build : 1967
Operator : West Coast Air
Registration : C-GGAW
Accident Location : Coal Harbour Seaplane Base, Vancouver, British Columbia, Canada
Service : Domestic scheduled passenger
Phase of Flight : Take Off - Initial Climb
Classification : Total Loss
Loss % : 100
Crew on Board : 2
Crew Dead : 0
Crew Injured : 0
Pax on Board : 15
Pax Dead : 0
Pax Injured : 0

Following an apparently normal take-off run, 'within seconds of lift-off,' flames were seen to be coming from the aircraft's right engine and there was a 'loud bang.' Power was lost on the right engine and the pilot subsequently attempted to put the aircraft down on the water straight ahead.

However, it impacted the surface of the water in a shallow right turn and in a nose down attitude. The right wing broke away and both floats were substantially damaged but the aircraft initially remained afloat. The passengers and crew escaped and were rescued shortly afterwards. The accident happened in daylight (1515L). The aircraft was operating a flight to Victoria.

19. DATE OF LOSS : 2000-11-09

Aircraft Manufacturer : Fairchild (Swearingen)
Aircraft Type : Metro
Year of Build : 1978
Operator : Superior Aviation
Registration : N731AC
Accident Location : (near) Smith Field, Fort Wayne, Indiana, USA
Service : Domestic non-scheduled cargo
Phase of Flight : Take Off - Initial Climb
Classification : Total Loss
Loss % : 100
Crew on Board : 1
Crew Dead : 1
Crew Injured : 0
Pax on Board : 0
Pax Dead : 0
Pax Injured : 0

The aircraft was destroyed when it crashed shortly after take-off from Runway 14 at Fort Wayne. The aircraft came down amongst trees about 0.25sm. from the airfield. The accident happened in darkness (0120L) and in poor weather with a 200ft. overcast ceiling. The aircraft was operating a flight to Milwaukee.

20. DATE OF LOSS : 28-11-2000

Aircraft Manufacturer : Fairchild (Swearingen)
Aircraft Type : Metro
Year of Build : 1981
Operator : Aero Condor
Registration : N3107P
Accident Location : Trujillo International Airport, Trujillo, Peru
Service : Domestic scheduled cargo
Phase of Flight : Landing - Landing Roll
Classification : Total Loss
Loss % : 100
Crew on Board : 2
Crew Dead : 0
Crew Injured : 0
Pax on Board : 0
Pax Dead : 0
Pax Injured : 0

While inbound to Trujillo, prior to starting the approach, the crew reported a complete loss of hydraulic power and, later, that they were unable to extend the right main undercarriage. The aircraft subsequently landed on a foamed runway with its right main undercarriage retracted. The accident happened in darkness (0625L) but in VMC. The aircraft was operating a flight from Lima. A preliminary inspection found a leak in a hydraulic line in the right main undercarriage wheel well.

WESTERN-BUILT TURBOPROP AIRLINERS 'OPERATIONAL' SUBSTANTIAL DAMAGE 2000

1. DATE OF LOSS : 2000-01-28

Aircraft Manufacturer : Fairchild (Swearingen)
Aircraft Type : Metro
Year of Build : 1985
Operator : Ameriflight
Registration : N245DH
Accident Location : Drake Field, Fayetteville, Arkansas, USA
Service : Domestic non-scheduled cargo
Phase of Flight : Landing - Landing Roll
Classification : Substantial Damage
Loss % : 50
Crew on Board : 2
Crew Dead : 0
Crew Injured : 0
Pax on Board : 0
Pax Dead : 0
Pax Injured : 0

On landing at Fayeteville, the aircraft touched down with its undercarriage retracted. According to the operator, the crew fogot to lower the undercarriage prior to landing. The pilot reported that the co-pilot had called 'gear down' on final approach but that he had been distracted by 'runway environment and communications problems' and had failed to lower the undercarriage. The accident happened in darkness (2230L) but in VMC.

2. DATE OF LOSS : 2000-02-18

Aircraft Manufacturer : Lockheed
Aircraft Type : Hercules
Year of Build : 1976
Operator : Safair
Registration : ZS-JIY
Accident Location : Darwin Airport, Darwin, Norlthern Territories, Australia
Service : Int'l. non-scheduled pass.
Phase of Flight : Landing - Landing Roll
Classification : Substantial Damage
Loss % : 38
Crew on Board : 5
Crew Dead : 0
Crew Injured : 0
Pax on Board : 25
Pax Dead : 0
Pax Injured : 0

On arrival at Darwin, when the undercarriage was selected down, the aircraft's left main undercarriage indicated as unsafe. The crew recycled the undercarriage but without success. The approach was broken off while further attempts to extend the undercarriage were made. The crew first attempted to lower the undercarriage hydraulically by overriding the undercarriage selector valve but without success. They then attempted to extend it manually but the emergency engaging handle could not be moved. The manual selection system appeared jammed and consequently the selection could not be made. They then attempted to lower the undercarriage by disconnecting the universal joints on the vertical torque shafts. However, the castellated nuts on the rear wheel joint could not be unwound without the use of spanners and, after about 30min., only two of the four bolts had been undone. By this time the aircraft's fuel state was low and the captain decided that there was not enough time to undo the remaining bolts before he would have to land. The nose and right main undercarriage were retracted and a belly landing was carried out on Runway 29 at Darwin. The aircraft was operating a flight on behalf of the United Nations from Dili, East Timor.

3. DATE OF LOSS : 2000-03-21

Aircraft Manufacturer : Saab
Aircraft Type : 340
Year of Build : 1993
Operator : American Eagle Airlines
Registration : N353SB
Accident Location : Killeen Municipal Airport, Killeen, Texas, USA
Service : Domestic scheduled passenger
Phase of Flight : Landing - Landing Roll
Classification : Substantial Damage
Loss % : 50
Crew on Board : 3
Crew Dead : 0
Crew Injured : 0
Pax on Board : 33
Pax Dead : 0
Pax Injured : 0

Following an ILS approach to Runway 01 at Killeen, the aircraft apparently landed long and fast, touching down some 1,200 to 2,500ft. along the runway. The aircraft subsequently overran and came to rest in a ditch 150ft. beyond the departure end of the runway. The accident happened in darkness (1914L) and in poor weather. Wind 110deg./14kt., gusting to 18kt., visibility 1.75sm. in

light rain and mist and 200ft. overcast ceiling. Runway 01 at Killeen is 5,500ft. long and has an asphalt surface. The runway was wet. The aircraft was operating a flight (EGF789) from Dallas/Ft.Worth.

4. DATE OF LOSS : 2000-03-23

Aircraft Manufacturer : Raytheon Aircraft Co
Aircraft Type : Beech 99
Year of Build : 1968
Operator : Prince Edward Air
Registration : C-FKCG
Accident Location : Dorval International Airport, Montreal, Quebec, Canada
Service : Domestic non-scheduled cargo
Phase of Flight : Landing - Landing Roll
Classification : Substantial Damage
Loss % : 0
Crew on Board : 2
Crew Dead : 0
Crew Injured : 0
Pax on Board : 0
Pax Dead : 0
Pax Injured : 0

Following an apparently normal approach to Runway 24R at Dorval International Airport, the aircraft touched down 'firmly' and bounced. (The aircraft did not leave the ground but bounced on its main undercarriage to the full extention of the shock absorbers). The landing was continued but, shortly after the aircraft's nose wheel touched down, its right main undercarriage collapsed, followed immediately afterwards by the left. The aircraft came to rest on the runway. The accident happened in darkness (0221L). The aircraft was operating a flight from Moncton.

5. DATE OF LOSS: 2000-04-05

Aircraft Manufacturer : Shorts
Aircraft Type : SC.7 Skyvan
Year of Build : 1973
Operator : Allwest Freight
Registration : N549WB
Accident Location : Ft Greely Airstrip, (near) Delta Junction, Alaska, USA
Service : Domestic non-scheduled cargo
Phase of Flight : Landing - Landing Roll
Classification : Substantial Damage
Loss % : 50
Crew on Board : 1
Crew Dead : 0
Crew Injured : 0
Pax on Board : 0
Pax Dead : 0
Pax Injured : 0

During the landing roll at a remote airstrip some 46 miles East of Delta Junction, the aircraft was reportedly caught by a strong gust of wind and veered to the right. The pilot attempted to regain control but the aircraft's nose wheel struck a snow berm by the side of the strip before he had time to realign it with the runway heading. The accident happened in daylight (1700L) and in VMC but in left crosswind conditions. The aircraft was landing to the North, while the wind was from the Southwest at 20kt, gusting to 30kt. The airstrip was covered with ice. The aircraft was operating a flight from Delta Junction.

6. DATE OF LOSS : 2000-04-28

Aircraft Manufacturer : BAE SYSTEMS (HS)
Aircraft Type : 748
Year of Build : 1980
Operator : Emerald Airways
Registration : G-BVOV
Accident Location : Dublin Airport, Dublin, Ireland
Service : Int'l. scheduled cargo
Phase of Flight : Ground, Taxi
Classification : Substantial Damage
Loss % : 71
Crew on Board : 2
Crew Dead : 0
Crew Injured : 0
Pax on Board : 0
Pax Dead : 0
Pax Injured : 0

Following a reportedly normal pushback and taxi to the holding point for Runway 10, after a brief stop, the pilot released the brakes in order to taxi forward onto the runway. At this point the aircraft began an uncommanded swing to the right. The pilot attempted to correct this by the use of nose wheel steering but to no avail and he therefore stopped the aircraft again. The pilot then increased power on the right engine and released the right brakes but, at this point, the nose undercarriage collapsed rearwards. The accident happened at night (2248L) at the start of a flight to Liverpool.

7. DATE OF LOSS: 05-05-2000

Aircraft Manufacturer : DHC
Aircraft Type : Twin Otter 300
Year of Build : 1977
Operator : Scenic Airlines
Registration : N241SA

Accident Location: Monument Valley Airport, Monument Valley, Utah, United States
Service: Domestic scheduled passenger
Phase of Flight: Take-off roll
Classification: Substantial damage
Loss %: ?%
Crew on Board : 2
Crew Dead : 0
Crew Injured : 0
Pax on Board : 15
Pax Dead : 0
Pax Injured : 0

During the take-off roll on Runway 34 at Monument Valley, the aircraft was reportedly caught by a gust of wind. Control was lost and the aircraft ran off the left side of the runway onto rough ground where its nose undercarriage failed and collapsed. The accident happened in daylight (1447L) and in VMC. Runway 34 at Monument Valley is 4,000ft x 75ft. and has an earth surface.

8. DATE OF OSS : 2000-05-16

Aircraft Manufacturer : BAE SYSTEMS (HS)
Aircraft Type : ATP
Year of Build : 1988
Operator : British Regional Airlines
Registration : G-MANJ
Accident Location : Liverpool International Airport, Liverpool, United Kingdom
Service : Domestic scheduled passenger
Phase of Flight : Landing - Landing Roll
Classification : Substantial Damage
Loss % : 33
Crew on Board : 4
Crew Dead : 0
Crew Injured : 0
Pax on Board : 44
Pax Dead : 0
Pax Injured : 0

On departure from Manchester, on a flight to Belfast, when the undercarriage was selected up there was apparently an indication of a problem with the left main undercarriage. After assessing the situation, the pilot elected to divert to Liverpool where a flyby of the control tower confirmed that the left undercarriage was not extended. The aircraft subsequently entered a holding pattern for some three hours to use up fuel prior to returning to Liverpool where it landed with its left main undercarriage still retracted.

9. DATE OF LOSS : 2000-05-27

Aircraft Manufacturer : de Havilland
Aircraft Type : Dash 8
Year of Build : 2000
Operator : SAS Commuter
Registration : LN-RDB
Accident Location : Aalborg Airport, Aalborg, Denmark
Service : Domestic scheduled passenger
Phase of Flight : Landing - Landing Roll
Classification : Substantial Damage
Loss % : 5
Crew on Board : 6
Crew Dead : 0
Crew Injured : 0
Pax on Board : 67
Pax Dead : 0
Pax Injured : 0

The aircraft suffered a tail strike while landing at Aalborg, sustaining substantial damage. The accident happened in daylight but in gusting wind conditions. The aircraft was operating a flight (SK215) from Copenhagen.

10. DATE OF LOSS : 2000-07-28

Aircraft Manufacturer : Gulfstream Aerospace
Aircraft Type : Gulfstream I
Year of Build : 1968
Operator : Airwave Transport
Registration : C-GPTG
Accident Location : Dorval International Airport, Montreal, Quebec, Canada
Service : Domestic non-scheduled cargo
Phase of Flight : Landing - Landing Roll
Classification : Substantial Damage
Loss % : 50
Crew on Board : 2
Crew Dead : 0
Crew Injured : 0
Pax on Board : 0
Pax Dead : 0
Pax Injured : 0

During the final approach, when the undercarriage was selected down, the left main undercarriage would not extend. The crew recycled the undercarriage and carried out the emergency undercarriage extension procedure but without success. Various flight manoeuvres to free the undercarriage were also tried but to no avail. The crew subsequently remained in the holding pattern to use up fuel before returning to Montreal for an emergency landing on Runway 06R. During the

subsequent landing roll the aircraft veered to the left and eventually came to rest some 60ft. from the runway. The accident happened in darkness (0058L).

11. DATE OF LOSS : 2000-10-08

Aircraft Manufacturer : Fokker
Aircraft Type : F.27
Year of Build : 1964
Operator : Pakistan International Airlines
Registration : AP-BAL
Accident Location : Lahore Airport, Lahore,Pakistan
Service : scheduled domestic passenger
Phase of Flight : Landing - Landing Roll
Classification : Substantial Damage
Loss % : 50
Crew on Board : 4
Crew Dead : 0
Crew Injured : 0
Pax on Board : 40
Pax Dead : 0
Pax Injured : 0

During the approach to Lahore, when the undercarriage was selected down, there was an unusual noise and no green light came on for the right main undercarriage. A susbsequent visual inspection of the undercarriage showed that the 'strut was broken.' During the landing the right main undercarriage collapsed. The aircraft was operating a service (PK604) from Bahawalpur.

12. DATE OF LOSS : 2000-10-10

Aircraft Manufacturer : ATR
Aircraft Type : ATR 72
Year of Build : 1996
Operator : CityFlyer Express
Registration : G-BYTP
Accident Location : Hurn Airport, Bournemouth, Hampshire, United Kingdom
Service : Domestic scheduled passenger
Phase of Flight : Landing - Landing Roll
Classification : Substantial Damage
Loss % : 35
Crew on Board : 4
Crew Dead : 0
Crew Injured : 0
Pax on Board : 40
Pax Dead : 0
Pax Injured : 0

The aircraft was operating a service from London (Gatwick) to Jersey but, on arrival, it was unable to land due to the bad weather. The flight diverted, initially towards Southampton but then, once the aircraft's fuel state had been confirmed, back to Gatwick. However, meanwhile, the runway at Gatwick had become blocked and the decision was made to divert to Bournemouth. On landing, after the initial touchdown, the aircraft bounced a number of times. At some point in the landing sequence the aircraft touched down hard on its nose undercarriage which failed. The accident happened in darkness (2000L) and in poor weather with strong winds and rain. The aircraft had encountered turbulence during the approach to Bournemouth and another aircraft, which had landed just before the ATR 72, reported 'windshear.'

13. DATE OF LOSS: 2000-12-29

Aircraft Manufacturer :
Aircraft Type : Jetstream 41,
Operator : Atlantic Coast Airlines
Registration : N323UE
built 1995
Accident Location :Charlottesville/Albemarle Airport, Charlottesville, Virginia, USA
Service : Domestic scheduled passenger
Phase of Flight: Landing - landing roll
Classification: Substantial damage
Loss % : (damage % not yet determined but acft said to be 'badly damaged'
Crew on Board : 3 crew
Crew Dead : 0
Crew Injured : 0
Pax on Board : 14
Pax Dead : 0
Pax Injured : 0

Following a visual approach to Runway 21 at Charlottesville, on landing, the aircraft was not stopped before the end of the runway and, in an apparent attempt to avoid overrunning, the pilot steered it off to the left onto a taxiway at the end. However, the aircraft was travelling too fast to complete the turn and it went off the side of the taxiway and down an embankment. The accident happened in darkness (2234L) but in VMC. Wind, calm. Runway 21 at Charlottesville is 6,000ft. long with a grooved asphalt surface. The aircraft was operating a flight from Dulles International Airport, Washington.

Following the accident, in a telephone interview, he pilot reported - 'I couldn't tell you (what happened). It was a textbook landing. We landed in the touchdown zone, on speed. I pulled both throttles to idle and got a bad reverser on the right

side. I got a red beta light. It's policy not to use reverse when you get the red light.' '...I got on the wheel brakes harder, and the brakes didn't slow us down. I just decided to do a high-speed turn off onto the taxiway. I didn't get any other bad indications. I didn't get any with the anti-skid, but the plane just wouldn't slow down.'

A subsequent inspection of the runway found 'skid marks', believed to from the left main wheel, starting at a point some 2,500ft before the end of the runway. Similar marks, apparently from the right main wheel, start about 1,500ft before the end of the runway and marks for the nose wheel about 1,000ft from the end. These marks apparently continue for the remainder of the runway, across the taxiway and onto the ground beyond.

An initial review of the data from the FDR suggests that, during the landing, the engine RPM remained at or near 100% right up to the point where the aircraft left the runway.

EASTERN-BUILT TURBOPROPS
OPERATIONAL TOTAL LOSS 2000

1. DATE OF LOSS : 2000-01-15

Aircraft Manufacturer : Let
Aircraft Type : L-410 Turbolet
Year of Build : 1986
Operator : Aviones Taxi Aereo
Registration : YS-09C
Accident Location : Pavas District, San Jose, Costa Rica
Service : Domestic non-scheduled passenger
Phase of Flight : Take Off - Initial Climb
Classification : Total Loss
Loss % : 100
Crew on Board : 3
Crew Dead : 0
Crew Injured : 2
Pax on Board : 15
Pax Dead : 4
Pax Injured : 1

The aircraft was destroyed when (it failed to climb?) after take-off from Tobias Bolanos Airport, San Jose. One of the aircraft's wings reportedly struck the roof of a building and it crashed amongst houses in the Pavas district of San Jose. The accident happened in daylight (1310L) and apparently in 'normal' weather. The aircraft was operating a service to the Tortuguero National Park.

2. DATE OF LOSS : 2000-03-19

Aircraft Manufacturer : Antonov
Aircraft Type : An-26
Year of Build : 1985
Operator : Air Urga
Registration : UR-26586
Accident Location : Goma Airport, Goma, Congo (Democratic Republic)
Service : Domestic non-scheduled cargo
Phase of Flight : Landing - Approach
Classification : Total Loss
Loss % : 100
Crew on Board : 5
Crew Dead : 0
Crew Injured : 0
Pax on Board : 5
Pax Dead : 0
Pax Injured : 0

During the final stage of the approach to Goma, when about 1,000m. from the runway threshold, the aircraft encountered windshear. The pilot elected to carry out a go around. He selected take-off power and retracted the undercarriage but the aircraft continued to settle. The aircraft subsequently touched down to the left of the runway with its undercarriage retracted.

3. DATE OF LOSS : 2000-03-24

Aircraft Manufacturer : Antonov
Aircraft Type : An-12
Year of Build : 1968
Operator : Sky Cabs
Registration : RA-11302
Accident Location : Kadirana, (near) Colombo, Sri Lanka
Service : Int'l. non-scheduled cargo
Phase of Flight : Landing - Approach
Classification : Total Loss
Loss % : 100
Crew on Board : 8
Crew Dead : 6
Crew Injured : 2
Pax on Board : 0
Pax Dead : 0
Pax Injured : 0

The aircraft was operating a cargo flight from Bangkok to Katunayake International Airport, Colombo. It is understood that the flight to Sri Lanka was uneventful, however, as the aircraft approached the island, it encountered deteriorating weather. ATC subsequently advised the flight that visibility at Katunayake had decreased markedly and instructed it to enter a holding pattern. It is unclear how long the flight was delayed in the hold but it was eventually cleared for an ILS approach to Runway 04. However, during the approach, the crew were unable to establish visual contact with the runway and carried out a go around from about 80m. agl. A second approach to Runway 04 was carried out but again had to be broken off at a low height when visual contact with the runway could not be established. During the go around from the second approach the 'critical fuel reserve' warning came on. The crew subsequently attempted an approach to Runway 22 but, during the final leg, while descending through about 300m. agl. some 4 to 5km. from the airfield, the aircraft's No.4 engine shut down followed shortly afterwards by the other three engines. The crew attempted to turn the aircraft away towards the left in order to avoid houses directly in front of them. The aircraft eventually struck trees and crashed amongst houses in the village of Kadirana. The accident happened in darkness and in poor weather with low cloud and poor visibility in heavy rain associated with local thunderstorm activity.

4. DATE OF LOSS : 2000-03-25

Aircraft Manufacturer : Antonov
Aircraft Type : An-32
Year of Build : 1992
Operator : Uralex
Registration : D2-MAJ
Accident Location : Huambo Airport, Huambo, Angola
Service : Domestic non-scheduled pass.
Phase of Flight : Take Off Aborted
Classification : Total Loss
Loss % : 100
Crew on Board : 4
Crew Dead : 0
Crew Injured : 0
Pax on Board : 29
Pax Dead : 3
Pax Injured : 0

The aircraft was destroyed when it reportedly overran the end of the runway and fell into a ditch during an aborted take-off. The aircraft was operating a flight to Luanda.

5. DATE OF LOSS : 2000-04-19

Aircraft Manufacturer : Antonov
Aircraft Type : An-8
Year of Build : 1959
Operator : Centrafrican Airlines
Registration : TL-ACM
Accident Location : Pepa, Congo (Democratic Republic)
Service : Int'l. non-scheduled pass.
Phase of Flight : Take Off - Initial Climb
Classification : Total Loss
Loss % : 100
Crew on Board : 4
Crew Dead : 4
Crew Injured : 0
Pax on Board : 20
Pax Dead : 20
Pax Injured : 0

One of the aircraft's engines reportedly suffered a bird strike shortly after take-off from Pepa. The engine (was shut down?) however, it would seem that the aircraft could not maintain height and it crashed while apparently attempting to return to the airstrip. The aircraft was operating a flight to Kigali, Rwanda

6..DATE OF LOSS : 2000-06-22

Aircraft Manufacturer : Xian
Aircraft Type : Y-7
Year of Build : 1988
Operator : Wuhan Air Lines
Registration : B-3479
Accident Location : (near) Wuhan, China
Service : Domestic scheduled passenger
Phase of Flight : Landing - Approach
Classification : Total Loss
Loss % : 100
Crew on Board : 4
Crew Dead : 4
Crew Injured : 0
Pax on Board : 38
Pax Dead : 38
Pax Injured : 0

The aircraft was destroyed when it crashed on the banks of the Han River during the approach to Wuhan. The accident happened in daylight (1600L) but in poor weather with heavy rain associated with local thunderstorm activity. The aircraft was operating a flight (WU343) from Enshi.

7. DATE OF LOSS : 2000-08-12

Aircraft Manufacturer : Antonov
Aircraft Type : An-26
Year of Build : 1980
Operator : Unknown operator
Registration : ?
Accident Location : 63km. from Tshikapa, Congo (Democratic Republic)
Service : Domestic non-scheduled pass.?
Phase of Flight : En Route
Classification : Total Loss
Loss % : 100
Crew on Board : 6
Crew Dead : 6
Crew Injured : 0
Pax on Board : 21
Pax Dead : 21
Pax Injured : 0

On arrival at Tshikapa on completion of a flight from Kinshasa, the aircraft was reportedly unable to land due to some unstated 'technical problem.' The pilot subsequently elected to return to Kinshasa but the aircraft crashed shortly afterwards. The accident happened in daylight.

8. DATE OF LOSS : 2000-08-15

Aircraft Manufacturer : Antonov
Aircraft Type : An-12
Year of Build : 1970
Operator : Inter Trans Air
Registration : LZ-ITC
Accident Location : Kisangani Airport, Kisangani, Congo (Democratic Republic)

Service : Domestic non-scheduled cargo
Phase of Flight : Landing - Landing Roll
Classification : Total Loss
Loss % : 100
Crew on Board : 7
Crew Dead : 0
Crew Injured : 0
Pax on Board : 0
Pax Dead : 0
Pax Injured : 0

The aircraft overran on landing and was destroyed by fire.

9. DATE OF LOSS : 2000-10-19

Aircraft Manufacturer : Harbin
Aircraft Type : Y-12
Year of Build : 1994
Operator : Lao Aviation
Registration : RDPL-34130
Accident Location : , (near) Sam Neua, Laos
Service : Domestic scheduled passenger
Phase of Flight : Landing - Approach
Classification : Total Loss
Loss % : 100
Crew on Board : 2
Crew Dead : 0
Crew Injured : 0
Pax on Board : 15
Pax Dead : 8
Pax Injured : 0

The aircraft was destroyed when it apparently flew into high ground while on approach to Sam Neua. The point of impact was at the 4,800ft. level (1,800ft. above the airfield elevation), about 200ft. below the top of a ridge on the right side of a narrow valley, some 10 miles from the airfield. This location is said to be about two or three miles to the North of the normal approach path. The last contact with the flight, when it was 27 miles from the airfield, is understood to have been routine with no indications of any problems. The accident happened in daylight (just after noon) but in poor weather with thick cloud building up on the mountains around Sam Neua. The aircraft was operating a flight (QV701) from Vientiane.

10. DATE OF LOSS : 2000-10-31

Aircraft Manufacturer : Antonov
Aircraft Type : An-26
Year of Build : 1982
Operator : Air Ancargo
Registration : D2-FDI
Accident Location : 50km. from Saurimo, Angola
Service : Domestic non-scheduled pass.
Phase of Flight : En Route
Classification : Total Loss
Loss % : 100
Crew on Board : 6
Crew Dead : 6
Crew Injured : 0
Pax on Board : 42
Pax Dead : 42
Pax Injured : 0

The aircraft was destroyed when it crashed shortly after take-off from Saurimo on a flight to Luanda. The accident happened in daylight (about 1130L) and in fine, clear weather. The wreckage is said to be contained within a small area and suggests that the aircraft impacted the ground in a steep, high speed dive. It is understood that a military patrol reported seeing the aircraft 'coming down with smoke.' There was no distress call.

The aircraft had departed Saurimo at 1118L. The last contact with the flight was at 1127L when the pilot reportedly advised being at FL200 and said goodbye, presumably on leaving Saurimo control. The aircraft crashed shortly afterwards. Normal departure procedure for Saurimo is to climb overhead the airfield to 15,000ft before setting course. There is said to be some question as to the aircraft's actual height during the last contact and it has been suggested that it may have been flying considerably lower.

Following the crash UNITA claimed to have shot the aircraft down but this was subsequently denied by the Angolan Government, which claimed that the crash had been due to 'technical problems.'

11. DATE OF LOSS : 2000-11-15

Aircraft Manufacturer : Antonov
Aircraft Type : An-24
Year of Build : ?
Operator : Asa Pesada
Registration : D2-FCG
Accident Location : (near) Luanda, Angola
Service : Domestic non-scheduled pass.
Phase of Flight : En Route
Classification : Total Loss
Loss % : 100
Crew on Board : 5
Crew Dead : 5
Crew Injured : 0
Pax on Board : 52
Pax Dead : 52
Pax Injured : 0

It is understood that, on take-off from Luanda, shortly after getting airborne, the aircraft began to

veer to one side. It apparently failed to gain height and crashed in an area of open ground about two miles from the airfield. The aircraft was destroyed by impact and fire. The accident happened in daylight (1210L) and apparently in 'normal' weather. The aircraft was operating a flight to Namibe. The accident is understood to have been attributed to 'engine failure.'

EASTERN-BUILT TURBOPROPS
OPERATIONAL SUBSTANTIAL DAMAGE

1. DATE OF LOSS : 2000-06-07

Aircraft Manufacturer : Antonov
Aircraft Type : An-32
Year of Build : 1991
Operator : Aviatrans K
Registration : UR-48054
Accident Location : not reported, Sudan
Service : Int'l. non-scheduled cargo
Phase of Flight : Landing - Landing Roll
Classification : Substantial Damage
Loss % : ?
Crew on Board : 4
Crew Dead : 0
Crew Injured : 0
Pax on Board : 4
Pax Dead : 0
Pax Injured : 0

During the landing run at a bush strip in Southern Sudan, two people reportedly came out of the scrub and began to walk across the runway in front of the aircraft. The pilot took avoiding action but during this manoeuvre the aircraft (went off the side of the strip?) and its nose undercarriage failed and collapsed.

2. DATE OF LOSS : 2000-08-24

Aircraft Manufacturer : Let
Aircraft Type : L-410 Turbolet
Year of Build : 1985
Operator : West Coast Airways
Registration : 9L-LBN
Accident Location : (near) Lungi International Airport, Freetown, Sierra Leone
Service : Domestic ferry
Phase of Flight : Take Off - Initial Climb
Classification : Substantial Damage
Loss % : ?
Crew on Board : 2
Crew Dead : 0
Crew Injured : 0
Pax on Board : 0
Pax Dead : 0
Pax Injured : 0

The aircraft was substantially damaged when it came into collision with a Mil Mi 8 (RA-22248 of Nefteyugansk Air Enterprise) shortly after take-off from Lungi International Airport. Despite the collision, both aircraft landed safely. It is reported that the Let 410 had taken off from Runway 12 and had commenced a climbing right turn. However, while passing through about 500ft., the aircfta entered a patch of cloud. On leaving the cloud, the pilot suddenly saw the Mil Mi 8 and took immediate avoiding action. The aircraft came into collision with the Mil Mi 8's main rotors cutting into the Let 410's empennage. At the time of the accident the Mil Mi 8 had been inbound for a landing on Runway 30. On departure, the Let 410 had initially been cleared to take-off from Runway 30 but, apparently beacause it was positioning to the near by Hastings Airport, the pilot requested Runway 12. ATC reportedly subsequently changed the clearance to use Runway 12 and, in due course, cleared the aircraft to take-off on that runway. It is understood that both aircraft were communicating with ATC on the same frequency and that there was only one controller on duty at the time. It is alleged that the controller was unlicensed. The accident happened in daylight. Weather; scattered cloud and rain showers.

3. DATE OF LOSS : 2000-09-19

Aircraft Manufacturer : WSK-PZL Mielec
Aircraft Type : An-28
Year of Build : 1991
Operator : Koryak Air Enterprise
Registration : RA-28950
Accident Location : Tigil Airport, Tigil, Russia
Service : Domestic scheduled passenger
Phase of Flight : Take Off Run
Classification : Substantial Damage
Loss % : ?
Crew on Board : 3
Crew Dead : 0
Crew Injured : 0
Pax on Board : 8
Pax Dead : 0
Pax Injured : 0

On departure from Tigil, at the start of the take-off roll, the pilot found that he was unable to maintain directional control due to the soft, waterlogged surface of the unpaved runway. The take-off was aborted and the aircraft taxied back to the start of the runway. A second take-off was then attempted, somewhat to the right of the track of the first, where the pilot thought the condition of the runway was better. However, as the aircraft accelerated through about 100 - 120kmph, it suddenly veered sharply to the left. The pilot attempted to regain directional control and abort the take-off but without success. The aircraft ran off the left side of the runway and struck an earth embankment some 30m. from the runway.

4. DATE OF LOSS : 05-11-2000

Aircraft Manufacturer : Antonov
Aircraft Type : An-24
Year of Build : 1972
Operator : Cheboksary Air Enterprise
Registration : RA-46499
Accident Location : Cheboksary Airport,
Cheboksary, Russia
Service : scheduled domestic passenger
Phase of Flight : Take-off - Take-off Aborted
Classification : Substantial Damage
Loss % : ?
Crew on Board : 8
Crew Dead : 0
Crew Injured : 0
Pax on Board : 27
Pax Dead : 0
Pax Injured : 0

The take-off was reportedly being conducted by a 'trainee'. During the take-off run, 12 sec after V1, the 'inspector' took over control and gave the instruction to abort the take-off. During attempts to stop the aircraft (all?) the tyres failed and it overran by about 270m. After leaving the runway the nose undercarriage failed and collapsed rearwards.

APPENDIX D — HISTORICAL TABLES

Group A											
	1950-80	1981-90	1991-00	2000	End 2000	1950-00	1950-80	1981-90	1991-00	2000	All
Type	**AC Years**	**AC Years**	**AC Years**	**AC Years**	**Fleet size**	**A/C Years**	**Losses**	**Losses**	**Losses**	**Losses**	**Losses**
Aero Spacelines Guppy	16.5	30.4	0.0	0.0	0	46.9	0	0	0	0	0
BAe (AW) Argosy	201.7	61.8	0.0	0.0	0	263.5	2	1	0	0	3
BAe (Bristol) Britania	864.4	74.9	7.3	0.0	0	946.6	10	0	0	0	10
BAe (Vickers) Vanguard	618.9	103.4	16.5	0.0	0	738.8	3	2	0	0	5
BAe (Vickers) Viscount	6274.9	697.3	177.9	8.1	8	7150.1	91	10	6	0	107
Canadair CL-44	485.7	142.2	64.0	6.0	6	691.9	13	2	0	0	15
Lockheed Hercules	478.5	625.0	718.2	57.9	58	1821.7	11	7	4	0	22
Lockheed L-188 Electra	2831.7	888.1	593.7	49.9	50	4313.5	23	12	3	0	38
Shorts Belfast	10.8	50.0	27.8	2.0	2	88.6	0	0	0	0	0
Transall C 160	34.6	78.1	55.9	6.0	6	168.6	0	0	0	0	0
Totals	**11817.7**	**2751.2**	**1661.3**	**129.9**	**130**	**16230.2**	**153**	**34**	**13**	**0**	**200**
Group B											
	1950-80	**1981-90**	**1991-00**	**2000**	**End 2000**	**1950-00**	**1950-80**	**1981-90**	**1991-00**	**2000**	**All**
Type	**AC Years**	**AC Years**	**AC Years**	**AC Years**	**Fleet size**	**A/C Years**	**Losses**	**Losses**	**Losses**	**Losses**	**Losses**
ATR 72	0.0	12.3	1460.0	241.8	248	1472.3	0	0	3	0	3
BAe (HS) 748	1717.7	1519.3	1226.3	117.3	117	4463.3	25	19	13	0	57
BAe ATP	0.0	38.5	496.2	55.9	57	534.7	0	0	2	0	2
DHC Dash 7	32.7	862.8	742.4	66.4	66	1637.9	0	2	1	0	3
Fairchild F-27	1267.4	454.9	348.7	26.0	26	2071.0	18	4	0	0	22
Fairchild FH-227	805.9	529.7	327.1	21.4	21	1662.7	9	5	3	0	17
Fokker 50	0.0	153.2	1631.0	186.6	178	1784.3	0	0	1	0	1
Fokker F-27	4281.7	3202.0	2692.5	240.2	238	10176.2	46	23	25	1	94
GD Convair 540/580/600/640	2369.5	1467.2	1173.1	107.2	107	5009.8	14	9	4	0	27
HP Dart Herald	579.2	224.5	91.7	1.0	1	895.4	7	2	1	0	10
NAMC YS-11	1597.9	1137.5	751.0	50.3	50	3486.4	12	3	2	1	17
Saab 2000	0.0	0.0	240.8	53.9	53	240.8	0	0	0	0	0
Totals	**12652.0**	**9601.9**	**11180.8**	**1168.0**	**1162.0**	**33434.7**	**131**	**67**	**55**	**2**	**253**

Group C											
	1950-80	1981-90	1991-00	2000	End 2000	1950-00	1950-80	1981-90	1991-00	2000	All
Type	**AC Years**	**AC Years**	**AC Years**	**AC Years**	**Fleet size**	**A/C Years**	**Losses**	**Losses**	**Losses**	**Losses**	**Losses**
Aerospatiale (Nord) 262/298	515.5	268.2	141.4	11.0	11	939.6	7	0	1	0	8
ATR42	0.0	448.8	2668.7	320.1	328	3113.9	0	1	6	0	7
CASA/IPTN CN235	0.0	26.2	240.1	25.5	27	1420.1	0	0	1	0	1
DHC Dash 8	0.0	521.7	3839.8	513.6	543	4319.6	0	2	2	0	4
Dornier 328	0.0	0.0	411.9	93.0	97	405.6	0	0	1	0	1
EMB120 Brasilia	0.0	418.7	2731.9	293.8	291	3183.8	0	2	6	0	8
Gulfstream 1	108.0	339.9	496.7	37.1	37	964.9	0	3	4	1	7
Jetstream 41	0.0	0.0	531.4	93.2	93	531.1	0	0	1	0	1
Saab 340	0.0	598.2	3537.4	417.0	416	4136.4	0	1	5	1	6
Shorts 330	96.8	768.1	482.1	34.8	34	1354.7	1	1	5	1	7
Shorts 360	0.0	750.2	1236.2	114.9	114	1972.8	0	4	1	1	5
Totals	**720.3**	**4140.0**	**16317.6**	**1954.0**	**1991**	**21177.9**	**8**	**14**	**33**	**4**	**55**
Group D											
	1950-80	1981-90	1991-00	2000	End 2000	1950-00	1950-80	1981-90	1991-00	2000	All
Type	**AC Years**	**AC Years**	**AC Years**	**AC Years**	**Fleet size**	**A/C Years**	**Losses**	**Losses**	**Losses**	**Losses**	**Losses**
ASTA (GAF) Nomad	80.1	333.7	207.6	16.0	16	620.8	3	3	6	0	12
Beech 1300	0.0	17.6	83.0	11.0	11	100.8	0	0	0	0	0
Beech 99	1500.2	1624.1	1345.6	125.5	125	4472.4	18	9	8	0	35
Beech Commuter 1900	0.0	499.4	3465.2	489.5	503	3930.7	0	2	10	1	12
CASA 212	50.9	964.8	963.0	85.3	85	1965.1	0	8	9	0	17
DHC-6 Twin Otter	3780.8	4946.4	4286.9	384.3	381	12965.7	47	58	52	5	157
Dornier 228	0.0	501.1	1226.5	128.6	129	1723.4	0	2	13	0	15
Embraer EMB 110 Bandeirante	351.6	2254.8	2193.5	203.2	201	4791.1	6	22	19	3	47
Fairchild Metro/Expediter	360.7	3042.2	4133.2	411.9	411	7499.8	3	23	22	1	48
IAI Arava	24.0	91.7	65.4	6.0	6	158.6	0	0	0	0	0
HP Jetstream	131.0	109.2	53.7	4.0	4		2	1	0	0	3
Jetstream 31	0.0	932.3	2747.0	234.4	228	83684.1	0	4	7	2	11
Saunders ST27	62.0	64.0	0.0	0	0	126.0	1	0	0	0	1
Shorts Skyvan	390.9	336.9	332.2	31.1	31	1060.0	7	6	9	1	22
Totals	**6732.2**	**15718.2**	**21102.8**	**2130.8**	**2131**	**43553.2**	**81**	**138**	**155**	**13**	**380**

Turboprop Total Losses

	Op. TL	Test/Trn	Violence (Op)	Non Op.	Non Airline	Not Known	Total
1952					1		1
1953							0
1954		1			1		2
1955							0
1956	1	2		1			4
1957	3				2		5
1958	6	2	1		1		10
1959	8	2					10
1960	10					1	11
1961	8						8
1962	9	2			1		12
1963	6	1					7
1964	9		1				10
1965	12	3					15
1966	9	1					10
1967	15	5	1	1	3		25
1968	18	1		2	1		22
1969	20	2			3	1	26
1970	28	1	1		3	3	36
1971	16	3	2	3		1	25
1972	26	2		1	1	1	31
1973	22	4			1	1	28
1974	15	1		6	4	1	27
1975	19	1		2	2		24
1976	22		1	1	3		27
1977	28	1		3	1	2	35
1978	22	4	1	2	1	3	33
1979	30	3	1	1	4	1	40
1980	17	2		1	4	1	25
1981	20	2	1	1	2	2	28
1982	20	2		5	1	1	29
1983	21	1		3	1		26
1984	23	4		2	1		30
1985	24	1		1	3		29
1986	18		2	2	2	1	25
1987	31	4	2	1	3		41
1988	36	1		1	6	1	45
1989	33	1	2	3	4	1	44
1990	28	1	2	1	6		38
1991	23	2	4	3	4		36
1992	22	4		1	4		31
1993	28	4		1	4		37
1994	23	1	1	1	2		28
1995	27	2	2		1	1	33
1996	24	4		1	3	1	33

	Op. TL	Test/Trn	Violence (Op)	Non Op.	Non Airline	Not Known	Total
1997	35			2	1		38
1998	24		1	3	5		33
1999	31	1	2	4	3		41
2000	20			1	4		25
TOTAL	890	79	28	61	97	24	1179

APPENDIX E — POWERPOINT PRESENTATION

A PowerPoint presentation is available on request to the Director, Flight Operations and Safety Services, IATA.

APPENDIX F — RECOMMENDATIONS FROM PREVIOUS SAFETY REPORTS

Given the flow of labour in air commerce, recommendations provided in previous Safety Reports should often be reiterated, especially since much of its readership may be new to the industry. There will always be a new cadre of managers who will benefit from the recommendations made herein.

A. CONFIDENTIAL AND NON-PUNITIVE REPORTING SYSTEMS

The Safety Report should include a recommendation to encourage development and use of confidential reporting systems.[i] Confidential reporting schemes - when run by clearly independent non-state authority agencies, provide a valuable "last resort" safety net. They can often reveal problems that would otherwise remain hidden, particulary in cultures (airline or regional) where admission of errors to management provokes punitive measures or humiliation.

Unfortunately, these schemes do suffer from certain limitations. Reporters and investigators are often unaware of significant aspects known only to airline safety managers. Their ability to resolve problems on their own is sometimes limited by their dependence on State agencies.

Such airline schemes do not duplicate existing mandatory national schemes but extend them.

Practical experience has shown that significant advances in proactive accident avoidance can result from the implementation of certain types of airline operated confidential reporting schemes. One airline (some 300 aircraft fleet) reports that within the first year of such a confidential scheme, 700 reports were received, of which 550 provided useful human factors information.

However, they depend critically upon clearly a clearly-stated, non-punitive Company Policy which encourages participation and protects the reporter. Unfortunately, the culture, aviation legislation and legal systems in many States mitigate against this freedom. Given certain state-mandated and operated confidential reporting schemes in some regions, it appears IATA and operators might pursue suitable changes to facilitate such airline operated schemes.

B. APPLICATION OF QUALITY ASSURANCE TO AIRLINE SAFETY

B.1. Flight Operations Quality Assurance

FAA Issues Policy On FOQA Programs

FAA Administrator Jane Garvey said yesterday (September 22, 1998) the agency will not use "deidentified" digital flight data recorder information to undertake enforcement actions "except in egregious (eg: those involving fraud or criminal intent) cases." A rulemaking will follow, Garvey said. The new policy is similar to FAA's position during a three-year test of the Flight Operations Quality Assurance (FOQA) program in cooperation with major airlines and pilots unions. Garvey said the safety benefits derived from using the data "are in the public interest."[ii]

The policy statement says the demonstration study has "provided substantial documentation of the benefits of FOQA," and the findings are "very similar to the results obtained by foreign air carriers, many of whom have long experience in the use of this technology." Use of the data is made possible by a new generation of digital flight data recorders that can routinely provide information concerning unusual auto-pilot disconnects, ground proximity warning system activation, excessive rotation rates on takeoff, unstabilized approaches, hard landings and compliance with standard operating procedures. Garvey said the data also have been used for monitoring fuel efficiency, enhancing engine condition monitoring, noise abatement compliance, rough runway surfaces and aircraft structural fatigue.

This information can be used to identify needed improvements in flight crew performance, in air carrier training programs, operating procedures, air traffic control, airport maintenance and design, and aircraft operations and design," Garvey said. This, she said, "clearly enhances safety. The FAA therefore finds that encouraging the voluntary implementation of FOQA programs by U.S. operators is in the public interest." Garvey earlier told The DAILY that FAA was working with the Justice

Department concerning immunity issues. "I am suggesting a policy at the same time as a rulemaking," she said (DAILY, Sept. 22). She said there was no need for legislation.

The test program, recommended by the Aviation Safety Commission, included the participation of United, US Airways, Continental and Alaska at numerous airports. Air Transport Association President Carol Hallett welcomed the policy statement, saying the "FOQA concept holds great promise for improving aviation safety, provided that the process receives broad support from the aviation community both within and outside of government.

Your policy statement will generate strong support for FOQA throughout commercial aviation." Hallett said the program permits industry to play an "active role in objectively identifying potential safety threats" and encourages companies to "fully and honestly participate in FOQA without fear of retaliation or punishment."

There is clear evidence that where information from a DFDR incident analysis programme is fed back to flight crew there is a reduction in the number of exceedances leading to a safer operation. The benefits can only be quantified by the improvement in safety resulting from the reduction of operating trends that would otherwise go unnoticed until an accident. Because these are proactive programmes, the results are not easy to quantify in dollar terms, but can only be related to the current costs of a major accident (see 2.3.3).

IATA intends to take the lead in promotion of the use of the DFDR analysis programmes in the upcoming Safety Seminars and continue to share the findings of these programmes in the annual IATA Safety Reports.[iii]

It is accepted that individual airlines may set differing trigger points. These should be perhaps surveyed to identify those areas of commonality.

B.2. Encourage the development of corporation-wide quality systems.

While useful, FOQA remains too technically focussed. Airline executives should be encouraged to develop policies of greater management accountability.

There is evidence that certain operations are conducted in violation of Standard Operating Procedures (SOPs). The Safety Report should recommend that companies establish corporation-wide quality assurance systems which demand compliance.

This will also serve to ensure that airline growth is not unaccommodated in terms of management oversight.

C. ATA Safety Information Exchange

The Safety Report should encourage participation in and use of the IATA Safety Information Exchange (SIE) to exchange operational information and experience.

D. Controlled Flight Into Terrain

IATA regards prevention of CFIT accidents as a major priority and encourages the use of any effective means to enhance aviation safety.

D.1. **GPWS and TAWS.** The effectiveness of Ground Proximity Warning Systems (GPWS) in further reducing the level of CFIT accidents could be improved by encouraging more widespread implementation to the latest revision status or replacement with advanced Terrain Avoidance Warning Systems (TAWS).

D.2. **CFIT Education and Training Aid.** Both the IATA Director General and the Senior Director, Operations & Infrastructure have identified the ICAO Controlled Flight Into Terrain (CFIT) Education and Training Aid as a useful tool in the industry's combined efforts to enhance aviation safety.

D.3. **MSAW.** IATA recognises and endorses the recommendation of the ICAO and Industry CFIT Task Force regarding the Minimum Safe Altitude Warning (MSAW) system, and supports the proposal to introduce MSAW as a standard. Members are requested to encourage implementation of this system through their national aviation authority.

Implementation of these systems, as aids in preventing CFIT accidents, should be promoted in the Safety Report.

E. Approach and Landing Accidents

The approach and landing phase have been identified as being responsible for approximately 25% of all Operational Total Losses.

It is noted that non-precision approaches appear to have greater associated risk. The Safety Report should endorse replacement of non-precision approach aids with precision approach aids as well as encourage the design and approval of GPS-based approaches.

F. Go-around accidents

Projected traffic increases will result in an increased number of go-around accidents. Go-around training is provided along defined structures and criteria.

Our analysis indicates that a significant number of go-arounds occur outside these trained parameters.

The Safety Report should recommend that training departments be aware of these and provide greater variety in go-around training scenarios.

G. Major partial losses.

Substantial damage accidents (as defined in ICAO Annex 13) cannot be used as a basis for the IATA Safety Report since most of the less serious events go unreported, especially if they fall below the deductible amount on hull insurance policies.

In terms of new, high-value jets (eg wide-body), a loss of US$1 million represents only 2% to 3% damage and may therefore seem trivial. Where such accidents involve, for example, the loss of a flap section, they would be defined as substantial under Annex 13. Others may not.

Damage costs, expressed as a percentage of theoretical new aircraft prices at the time of loss, might provide a better indication of the actual extent of the damage suffered. Whether or not historical data could be restated to the new definition would have to be addressed by the data warehouse.

H. Qualifying weight limit for turboprop aircraft.

The minimum qualifying weight (mass) considered by the CWG is presently 3900 kg. It is proposed that this be increased to 5700 kg which, in many countries, is the weight above which an Airline Transport Pilot License (ATPL) is required for command.

I. Solicit readership feedback using the Safety Report Survey.

A survey questionnaire, similar to the example provided on page 19, should accompany each IATA Safety Report (Jet and Turboprop).

J. Evaluate inheritance effects and management influences.

In circumstances where financial pressures are especially severe, the IATA Safety Report should recommend that regulatory oversight be increased to ensure adequate resourcing of safety matters.

The way we do things here (JAR – JAR transfers); corporate culture.

K. Promote implementation of TCAS/ACAS

IATA policy. AIRPROX data. The Safety Report should recommend that its remit be revisited to include a review of AIRPROX data worldwide.

L. Focus on human factors

M. Assess the safety and other benefits of aiming to achieve cockpit commonality

N. Benchmark statistics

Forecast against corporate goals.

O. Aircraft Design

It is recommended that line cockpit crew be more heavily involved in the design of new aeroplanes.

P. Flight Safety Buddy System

Offer technical assistance.

Q. Promotion of Safety Information Feedback

R. Reduction of Controlled Flight Into Terrain Accidents

S. Human Factors

Certain aspects of flight operations should be referred to the Flight Simulator Working Group and the Flight Crew Training Working Group for further analysis and comment, including:

- Inappropriate crew response to confusing audio cues (e.g. compressor stall vs burst tyres);
- Training for parallel approach breakout procedures;
- Training for the go-around procedure.

T. Analyse Vulnerability of Highly Automated Aircraft to Human Factor Type Accidents

Unannounced mode changes (e.g. green and yellow hydraulic systems on A310).

U. Distribution

The Safety Report should be given wider distribution, including to non-IATA airlines and the internet.

V. On-going reporting

Certain high-profile accidents (e.g. TWA 800, SR 111, etc) should receive on-going treatment in subsequent issues of the Safety Report.

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[i] Press release by Mr. Pierre Jeanniot.

[ii] The Daily, Sept. 22, 1998.

[iii] Overflying the Final Frontier, address by Mr. Pierre Jeanniot, Director-General – IATA to the 1998 IFALPA Annual Conference. INTERpilot 1998 No. 2, pg. 12.

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PRINTED IN CANADA