

ICAO

CIRCULAR

Circular 170-AN/107



ACCIDENT/INCIDENT REPORTING (ADREP)

ANNUAL STATISTICS — 1980

*Approved by the Secretary General
and published under his authority*

**INTERNATIONAL
CIVIL AVIATION
ORGANIZATION
MONTREAL • CANADA**

Published in separate English, French and Spanish editions by the International Civil Aviation Organization. All correspondence, except orders and subscriptions, should be addressed to the Secretary General.

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INTRODUCTION

General

This is the fourth publication of statistics from the ICAO Accident/Incident Reporting (ADREP) System. These statistics are based on 841 accidents and incidents which occurred in 1980 to aircraft of a maximum take-off weight of more than 2 250 kg (5 000 lb). The statistics were compiled in November 1982.

Purpose

The purpose of the ADREP statistics is to provide simple data which may be useful for general safety studies and accident prevention. For more specific needs the ADREP system provides information in response to specific ADREP requests.

Data Base

These statistics are based on 841 reported occurrences. Of these, 778 were Data Reports. Unfortunately 63 occurrences were reported only as Preliminary Reports, which do not include factors and cannot be used for statistics on factors.

Limitations

When considering the information presented, the reader must be aware of the following limitations:

- a) Only occurrences reported to ICAO on the ADREP system are included;
- b) The ADREP Manual contains specific coding instructions. Nonetheless there may be some unintentional bias on the part of persons coding since ultimately the coding must be done by humans one cannot assume that judgemental bias has been totally eliminated in the ADREP reporting forms, particularly with respect to the coding of factors;
- c) Factors statistics are based only on the 778 Accident/Incident Data Reports received from States;
- d) Some accidents are reported to ICAO on computer tapes and are processed through a conversion programme before they are entered in the ADREP data bank. Since the data so reported may not be fully compatible with the ADREP system recording precision is not attainable in all cases. For example, the ADREP system for type of occurrence subdivides "Gear Collapsed" into "Nose gear, Main gear, Complete gear and Other gear" with a specific code for each. However, the information received on a computer tape may indicate only "Gear collapsed".

Notes on the Statistical Tables

For each accident or incident there may be two Types of Occurrence, two Phases of Operation, and up to 13 factors. Thus, the totals within these categories will frequently exceed the total number of accidents or incidents reported.

Additionally, factors may be related to the first type of occurrence, the second type of occurrence or to both. Accordingly, the same factor may be listed twice for each accident or incident.

Percentages are rounded off to the nearest full number. Numbers less than one are shown as zero.

Format

There are three parts:

- Part I Accidents to Aeroplanes,
- Part II Accidents to Helicopters, and
- Part III Incidents

Each part is divided into separate sections for "Airline Operations" and "General Aviation".

The format within each section or sub-section is the same, showing the following:

- The ten most frequent phases of operation for that section.
- The ten most frequent types of occurrence for that section.
- The most frequent factors related to each of the types of occurrence.

Aircraft Weight Categories

The aircraft weight categories used are for Airline Operations; "over 27 000 kg" and "2 250 to 27 000 kg" and for General Aviation; "over 5 700 kg" and "2 250 to 5 700 kg".

TABLE 1 - ACCIDENTS AND INCIDENTS BY TYPE OF OPERATION AND AIRCRAFT WEIGHT (1980)

	Number of Reports		Number of Occurrences			Number of Fatalities				Number of Aircraft Destroyed
	1) P.R.	2) D.R.	Fatal	Non-fatal	Total	Crew	Pax.	Others	Total	
I. ACCIDENTS TO AEROPLANES										
Scheduled Airline Operations										
Aeroplanes over 27 000 kg	11	30	10	31	41	60	635	1	696	10
Aeroplanes between 2 250 and 27 000 kg	7	21	9	19	28	20	92	0	112	11
Non-scheduled Airline Operations										
Aeroplanes over 27 000 kg	2	7	2	7	9	12	141	0	153	5
Aeroplanes between 2 250 and 27 000 kg	10	70	18	62	80	17	43	0	60	17
Other Airline Operations										
Aeroplanes over 27 000 kg	1	3	0	4	4	0	0	0	0	0
Aeroplanes between 2 250 and 27 000 kg	3	5	2	6	8	5	0	0	5	4
Airline Operations (Total by weight)										
Aeroplanes over 27 000 kg	14	40	12	42	54	72	776	1	849	15
Aeroplanes between 2 250 and 27 000 kg	20	96	29	87	116	42	135	0	177	32
General Aviation										
Aeroplanes over 5 700 kg	5	48	21	32	53	37	45	0	82	24
Aeroplanes between 2 250 and 5 700 kg	9	457	121	345	466	126	210	1	337	165
II. ACCIDENTS TO HELICOPTERS										
Airline Operations	4	2	3	3	6	6	19	0	25	3
General Aviation	10	42	19	33	52	21	51	2	74	17
III. INCIDENTS										
Airline Operations	0	59	0	59	59	0	0	0	0	0
General Aviation	1	34	0	35	35	0	0	0	0	0

1) Preliminary Report

2) Accident/Incident Data Report

TABLE II - ACCIDENTS AND INCIDENTS TO AEROPLANES BY TYPE OF OPERATION AND POWERPLANT (1980)

	Number of Reports		Number of Occurrences			Number of Fatalities				Number of Aircraft Destroyed
	1) P.R.	2) D.R.	Fatal	Non-fatal	Total	Crew	Pax.	Others	Total	
Scheduled Airline Operations										
Jet	12	57	10	59	69	58	625	1	684	10
Turbo-Prop	4	23	4	23	27	15	87	0	102	6
Piston	2	14	5	11	16	7	15	0	22	5
Non-Scheduled Airline Operations										
Jet	2	6	2	6	8	10	140	0	150	3
Turbo-Prop	1	15	1	15	16	4	3	0	7	2
Piston	9	67	17	59	76	15	41	0	56	17
Other Airline Operations										
Jet	2	4	1	5	6	2	0	0	2	1
Turbo-Prop	1	1	1	1	2	3	0	0	3	1
Piston	1	5	0	6	6	0	0	0	0	2
General Aviation										
Jet	0	21	7	14	21	11	3	0	14	7
Turbo-Prop	2	74	18	58	76	18	45	1	64	20
Piston	12	440	117	335	452	134	207	0	341	162

1) Preliminary Report

2) Accident/Incident Data Report

PART I

ACCIDENTS TO AEROPLANES

ACCIDENTS TO AEROPLANES

SCHEDULED AIRLINE OPERATIONS

TEN MOST FREQUENT PHASES OF OPERATION	TOTAL		OVER 27 000		2250 TO 27 000	
	NO.	%	NO.	%	NO.	%
APP & LANDING/LANDING ROLL	18	17	11	17	7	17
APP & LANDING/LEVEL OFF/TOUCHDOWN	17	16	11	17	6	15
ENROUTE/NORMAL CRUISE	11	11	6	10	5	12
ENROUTE/CLIMB TO CRUISE	9	9	9	14	0	0
ENROUTE/DESCENDING	9	9	4	6	5	12
APP & LANDING/FINAL APP - VFR	7	7	4	6	3	7
TAXIING TO TAKE-OFF	5	5	5	8	0	0
TAKE-OFF ABORTED	5	5	3	5	2	5
TAKE-OFF INITIAL CLIMB	4	4	2	3	2	5
STANDING/IDLING ENGINE(S)/RUN-DOWN	3	3	2	3	1	2
* TOTAL ABOVE *	88	84	57	90	31	75
* TOTAL REMAINING *	16	15	6	9	10	24
*** TOTAL ***	104	100	63	100	41	100

TEN MOST FREQUENT TYPES OF OCCURRENCE	TOTAL		OVER 27 000		2250 TO 27 000	
	NO.	%	NO.	%	NO.	%
MAIN GEAR COLLAPSED	8	8	6	10	2	5
ENGINE FAILURE	7	7	2	3	5	12
HARD LANDING	6	6	4	6	2	5
COLLISION HILL/MOUNTAIN-CONTROLLED	6	6	3	5	3	7
LOSS OF CONTROL IN FLIGHT/OTHER	5	5	3	5	2	5
DAMAGE IN FLIGHT/SEVERE TURBULENCE	5	5	5	8	0	0
OVERRUN	4	4	4	6	0	0
UNDERSHOOT	4	4	3	5	1	2
INJURIES IN FLIGHT/TURBULENCE	4	4	4	6	0	0
WHEELSUP LANDING/INTENTIONAL	3	3	1	2	2	5
* TOTAL ABOVE *	52	50	35	56	17	40
* TOTAL REMAINING *	52	50	27	43	25	59
*** TOTAL ***	104	100	62	100	42	100

ACCIDENTS TO AEROPLANES

SCHEDULED AIRLINE OPERATIONS

TYPE OF OCCURRENCE RELATED FACTORS	CASES	PERCENT
MAIN GEAR COLLAPSED OCCURS 8 TIMES (8 PERCENT) OF TOTAL 104		
LANDING GEAR/M. GEAR-SHOCK ASSEMBLY, STRUTS, ETC.	4	28
MAINT. SER., PERS./INADEQUATE MAINT./INSPECTION	2	14
PILOT:ATTEMPTED OPERATION BEYOND EXPERIENCE/ABILITY	1	7
MAINT. SER. PERS./IMPRPER MAINT./MAINT. PERS.	1	7
LANDING GEAR/G. LOCKING MECHANISM (INCLUDES DRAG LINKAGE)	1	7
AERODROME COND./WATER/ICE/SLUSH ON RUNWAY	1	7
STRESS CORROSION	1	7
FAILURE/FAILED	1	7
FATIGUE FRACTURE	1	7
OVERLOAD FAILURE	1	7
*** TOTAL ***	14	100
ENGINE FAILURE OCCURS 7 TIMES (7 PERCENT) OF TOTAL 104		
PILOT:INADEQUATE SUPERVISION OF FLIGHT	1	14
CO-PILOT:DELAYED ACTION IN ABORTING TAKE-OFF	1	14
CO-PILOT:FAILED TO FOLLOW PROCEDURES, INSTRUCTIONS, ETC.	1	14
CO-PILOT:IMPROPER OPERATION, POWERPLANT CONTROLS	1	14
ENGINE STRUCTURE-RECIPROCATING/CRANKSHAFT	1	14
ENGINE STRUCTURE-RECIPROCATING/MASTER & CONNECTING RODS	1	14
MISC./UNDETERMINED	1	14
*** TOTAL ***	7	100
HARD LANDING OCCURS 6 TIMES (6 PERCENT) OF TOTAL 104		
PILOT:IMPROPER LANDING FLARE	2	11
PILOT:FAILED TO USE OR INCORRECTLY USED EQUIPMENT	1	5
PILOT:FAILED TO FOLLOW PROCEDURES, INSTRUCTIONS, ETC.	1	5
PILOT:IMPROPER IN-FLIGHT DECISION OR PLANNING	1	5
PILOT:LACK OF FAMILIARITY WITH A/C	1	5
PILOT:MISJUDGED DISTANCE AND ALTITUDE	1	5
PILOT:MISJUDGED SPEED	1	5
PILOT:FAILED TO INITIATE GO-AROUND/MISSED APPROACH/OVERSHOOT	1	5
WEATHER/RAIN	1	5
WEATHER/ICING CONDITIONS-AIRFRAME ICING	1	5
* TOTAL ABOVE *	11	64
* TOTAL REMAINING *	6	35
*** TOTAL ***	17	100

ACCIDENTS TO AEROPLANES

SCHEDULED AIRLINE OPERATIONS

TYPE OF OCCURRENCE RELATED FACTORS	CASES	PERCENT
COLLISION HILL/MOUNTAIN-CONTROLLED OCCURS 6 TIMES (6 PERCENT) OF TOTAL 104		
PILOT:CONTINUED VFR FLIGHT INTO ADVERSE WEATHER	2	12
PILOT:EXERCISED POOR JUDGEMENT	2	12
PILOT:BECAME LOST/DISORIENTED	1	6
PILOT:FAILED TO SEE OR AVOID OTHER A/C	1	6
PILOT:FAILED TO FOLLOW PROCEDURES, INSTRUCTIONS, ETC.	1	6
PILOT:IMPROPER IFR OPERATION	1	6
PILOT:IMPROPER IN-FLIGHT DECISION OR PLANNING	1	6
PILOT:ENCOUNTERED UNFORSEEN CIRCUMSTANCES BEYOND HIS CAPABILITY	1	6
PILOT:MISJUDGED DISTANCE AND SPEED	1	6
PILOT:MISJUDGED HORIZONTAL/VERTICAL CLEARANCE	1	6
★ TOTAL ABOVE ★	12	75
★ TOTAL REMAINING ★	4	25
*** TOTAL ***	16	100
LOSS OF CONTROL IN FLIGHT/OTHER OCCURS 5 TIMES (5 PERCENT) OF TOTAL 104		
FLIGHT CONT. SYS./ELEVATOR & ELEVATOR TAB CONT. SYS. DISCONNECTED	2	18
PILOT:ATTEMPTED OPERATION BEYOND EXPERIENCE/ABILITY	2	18
PILOT:FAILED TO FOLLOW PROCEDURES, INSTRUCTIONS, ETC.	1	9
PILOT:IMPROPER IN-FLIGHT DECISION OR PLANNING	1	9
PRODUCTION/DESIGN/OTHER	1	9
HYDRAULIC SYS./RESERVOIR, LINES, FITTINGS	1	9
FLIGHT CONT. SYS./RUDDER & RUDDER TAB CONT. SYS. LEAK	1	9
*** TOTAL ***	11	100
DAMAGE IN FLIGHT/SEVERE TURBULENCE OCCURS 5 TIMES (5 PERCENT) OF TOTAL 104		
FLIGHT ATTENDANT	2	15
WEATHER/TURBULENCE IN CLOUDS, THUNDERSTORMS	2	15
WEATHER/THUNDERSTORM ACTIVITY	2	15
SEAT BELT SIGN ON AND NOT OBEYED	2	15
SEAT BELT NOT FASTENED	2	15
PILOT:FAILED TO FOLLOW PROCEDURES, INSTRUCTIONS, ETC.	1	7
MISC. PERS./PASSENGER	1	7
APPROACH POORLY PLANNED	1	7
*** TOTAL ***	13	100

ACCIDENTS TO AEROPLANES

SCHEDULED AIRLINE OPERATIONS

TYPE OF OCCURRENCE RELATED FACTORS	CASES	PERCENT
OVERRUN OCCURS 4 TIMES (4 PERCENT) OF TOTAL 104		
PILOT:FAILED TO MAINTAIN ADEQUATE ROTOR R.P.M.	1	14
PILOT:FAILED TO FOLLOW PROCEDURES, INSTRUCTIONS, ETC.	1	14
PILOT:MISJUDGED DISTANCE AND SPEED	1	14
AERODROME COND./WET RUNWAY/STRIP-OIL ON MOVEMENT AREA	1	14
WEATHER/UNFAVOURABLE WIND CONDITIONS	1	14
RAN OFF RUNWAY END	1	14
HYDROPLANING	1	14
*** TOTAL ***	7	100
UNDERSHOOT OCCURS 4 TIMES (4 PERCENT) OF TOTAL 104		
PILOT:MISJUDGED DISTANCE AND ALTITUDE	2	50
PILOT:FAILED TO FOLLOW PROCEDURES, INSTRUCTIONS, ETC.	1	25
PILOT:LACK OF FAMILIARITY WITH A/C	1	25
*** TOTAL ***	4	100
INJURIES IN FLIGHT/TURBULENCE OCCURS 4 TIMES (4 PERCENT) OF TOTAL 104		
WEATHER/TURBULENCE IN CLOUDS, THUNDERSTORMS	3	23
MISC. PERS./PASSENGER	2	15
FLIGHT ATTENDANT	2	15
WEATHER/THUNDERSTORM ACTIVITY	2	15
SEAT BELT SIGN ON AND NOT OBEYED	2	15
SEAT BELT NOT FASTENED	2	15
*** TOTAL ***	13	100
WHEELSUP LANDING/INTENTIONAL OCCURS 3 TIMES (3 PERCENT) OF TOTAL 104		
MAINT. SER. PERS./INADEQUATE INSP. OF A/C MAINT. PERS.	1	10
WINGS/WHEEL WELL DOORS	1	10
LANDING GEAR/NORMAL RETRACTION/EXTENSION ASSEMBLY	1	10
HYDRAULIC SYS./SEALS	1	10
JAMMED (RESTRICTION)	1	10
INTENTIONAL WHEELS UP	1	10
LANDED ON FOAMED RUNWAY	1	10
SEPARATION IN FLIGHT	1	10
MISSING NUT, BOLT, PIN ETC.	1	10
MATERIAL FAILURE	1	10
*** TOTAL ***	10	100
TOTAL NUMBER OF FACTORS ABOVE	111	52
TOTAL NUMBER OF FACTORS REMAINING	102	47
TOTAL NUMBER OF ALL FACTORS	213	100

ACCIDENTS TO AEROPLANES

NON-SCHEDULED AIRLINE OPERATIONS

TEN MOST FREQUENT PHASES OF OPERATION	TOTAL		OVER 27 000		2250 TO 27 000	
	NO.	%	NO.	%	NO.	%
APP & LANDING/LANDING ROLL	44	33	1	8	43	36
TAKE-OFF INITIAL CLIMB	17	13	1	8	16	13
APP & LANDING/LEVEL OFF/TOUCHDOWN	13	10	0	0	13	11
ENROUTE/NORMAL CRUISE	11	8	2	15	9	8
TAKE-OFF RUN	10	8	0	0	10	8
ENROUTE/EMERGENCY DESCENT	5	4	1	8	4	3
APP & LANDING/FINAL APP • IFR	4	3	4	31	0	0
TAXIING TO TAKE-OFF	3	2	2	15	1	1
FINAL TURN	3	2	0	0	3	3
TAXIING FROM LANDING	2	2	0	0	2	2
★ TOTAL ABOVE ★	112	84	11	84	101	84
★ TOTAL REMAINING ★	20	15	2	15	18	15
*** TOTAL ***	132	100	13	100	119	100

TEN MOST FREQUENT TYPES OF OCCURRENCE	TOTAL		OVER 27 000		2250 TO 27 000	
	NO.	%	NO.	%	NO.	%
OVERRUN	11	8	0	0	11	9
MAIN GEAR COLLAPSED	10	8	1	8	9	8
ENGINE FAILURE	9	7	1	8	8	7
LOSS OF CONTROL • GROUND/WATER	7	5	0	0	7	6
LOSS OF CONTROL IN FLIGHT/MUSH	7	5	1	8	6	5
NOSE GEAR COLLAPSED	6	5	1	8	5	4
LOSS OF CONTROL IN FLIGHT/OTHER	6	5	0	0	6	5
FORCED/PRECAUTIONARY LANDING	6	5	2	15	4	3
WHEELS UP LANDING/UNINTENTIONAL	5	4	0	0	5	4
LOSS OF CONTROL IN FLIGHT/SPIN	5	4	0	0	5	4
★ TOTAL ABOVE ★	72	54	6	46	66	55
★ TOTAL REMAINING ★	60	45	7	53	53	44
*** TOTAL ***	132	100	13	100	119	100

ACCIDENTS TO AEROPLANES

NON-SCHEDULED AIRLINE OPERATIONS

TYPE OF OCCURRENCE RELATED FACTORS	CASES	PERCENT
OVERRUN OCCURS 11 TIMES (8 PERCENT) OF TOTAL 132		
PILOT:MISJUDGED DISTANCE AND SPEED	3	12
AERODROME COND./WET RUNWAY/STRIP-OIL ON MOVEMENT AREA	2	8
PILOT:CONTINUED VFR FLIGHT INTO ADVERSE WEATHER	1	4
PILOT:IMPROPER OPERATION, POWERPLANT CONTROLS	1	4
PILOT:IMPROPER OPERATION OF BRAKES OR FLIGHT CONTROLS ON GROUND	1	4
PILOT:IMPROPER COMPENSATION FOR WIND	1	4
PILOT:INADEQUATE PRE-FLIGHT PREPARATION OR PLANNING	1	4
PILOT:LACK OF FAMILIARITY WITH A/C	1	4
PILOT:OPERATED CARELESSLY (UNINTENTIONAL, FORGOT)	1	4
PILOT:SELECTED UNSUITABLE TAKE-OFF, LANDING, TAXIING AREA	1	4
* TOTAL ABOVE *	13	52
* TOTAL REMAINING *	12	48
*** TOTAL ***	25	100
MAIN GEAR COLLAPSED OCCURS 10 TIMES (8 PERCENT) OF TOTAL 132		
LANDING GEAR/M. GEAR-SHOCK ASSEMBLY,STRUTS,ETC.	3	11
PILOT:IMPROPER OPERATION, POWERPLANT CONTROLS	1	3
PILOT:SELECTED UNSUITABLE TAKE-OFF, LANDING, TAXIING AREA	1	3
PILOT:MISJUDGED DISTANCE AND SPEED	1	3
PILOT:MISJUDGED DISTANCE AND ALTITUDE	1	3
PILOT:FAILED TO ABORT TAKE-OFF	1	3
PILOT:APPROACH HIGH AND FAST	1	3
MAINT. SER. PERS./IMPRPER MAINT./MAINT. PERS.	1	3
MAINT. SER.. PERS./INADEQUATE MAINT./INSPECTION	1	3
LANDING GEAR/FLOAT ASSEMBLIES (PONTUONS)	1	3
* TOTAL ABOVE *	12	46
* TOTAL REMAINING *	14	53
*** TOTAL ***	26	100
ENGINE FATLURE OCCURS 9 TIMES (7 PERCENT) OF TOTAL 132		
PILOT:IMPROPER IN-FLIGHT DECISION OR PLANNING	2	6
FATIGUE FRACTURE	2	6
FUEL EXHAUSTION	2	6
PILOT:ATTEMPTED OPERATION BEYOND EXPERIENCE/ABILITY	1	3
PILOT:LACK OF FAMILIARITY WITH A/C	1	3
PILOT:FUEL MTSMANAGEMENT	1	3
MAINT. SER. PERS./INADEQUATE INSP. OF A/C MAINT. PERS.	1	3
MAINT. SER.. PERS./INADEQUATE MAINT./INSPECTION	1	3
SUPERVISORY PERS./INADEQUATE SUPERVIS./FL. CREW	1	3
SUPERVISORY PERS./INADEQUATE DIRECTIVES,MANUALS, EQUIP.	1	3
* TOTAL ABOVE *	13	40
* TOTAL REMAINING *	19	59
*** TOTAL ***	32	100