WP 28.

The 14th Meeting of Bird Strike Committee Europe

The Hague, The Netherlands

22 to 26 October 1979

ICAO Activities Related to Bird Strikes

by

Kenneth K. Wilde, Chief, Airports Section

The following paragraphs summarize recent ICAO activities related to bird strikes.

Reporting of Bird Strikes

The ICAO bird strike system originated in 1965 when the Airworthiness Committee decided it needed more information on bird strikes to aircraft for improvement of airworthiness criteria. The information received in response to this programme has been most useful and the airworthiness criteria have been developed and included in the Airworthiness Technical Manual.

In ICAO current activity related to bird strikes on aircraft emphasis is being given to the identification of areas/locations where the risk of a bird strike is high and to the study of other factors related to the prevention of collisions between aircraft and birds. Since 1965 many States have had considerable experience with the ICAO form and a number have developed reporting forms of their own. It was, therefore, considered timely to review the need for changes to the ICAO form.

In July 1978 all ICAO Member States were requested to submit their views on the ICAO reporting form. Response to a questionnaire sent to States was unusually good. The replies received indicated a need to change nearly every question on the form. A small Advisory Group was established within ICAO with experts provided by Australia, Canada, France, the United Kingdom and the United States. This Group met in August 1979 and developed the new form shown at Attachment A which will be soon distributed to States for use.

Under the new reporting programme it is not intended to prohibit the use by States of their own national forms. The Advisory Group recognized that certain States may wish to undertake particular national studies which would require additional questions. States intending to develop such additional questions are requested to include them after the standard questions developed by ICAO so as to facilitate analysis of the international questions.

Analysis of Strike Reports

Although the reports received from States have been useful in developing airworthiness criteria, their analysis has been on a somewhat hit or miss basis. Also, since introduction of the reporting programme the number of reports submitted has continued to rise. It is now estimated that in 1980, 6 000 reports might be received. Obviously, manual analysis of so much data is not practicable and computer programmes for storage and retrieval of the data are required. ICAO is now prepared to undertake such activity.

The Advisory Group, which was formed to revise the bird strike report form, also considered the requirements for computer programmes. You will note that the report form includes to the right of each question a small number. This number is actually the last two digits of the field identification number for computer storage. The provisional master file for each bird strike report is shown at Attachment B. As can be seen, the file includes considerably more data than the questions included on the report form. Some of this information, such as aircraft characteristics, will automatically be included in the stored data when the aircraft model is entered. Other data, which might be included under remarks on the form, is to be coded so as to facilitate its extraction.

The field developed for the international questions includes 355 characteristics. Actually, the computer programme reserves a field of 500 characteristics for each report. These additional fields can be used for storage of information derived from future questions and from questions included on national forms. The Advisory Group recommended that States desiring to include additional questions on their own national forms should co-ordinate such questions internationally in order to facilitate the exchange and use of the information by other States.

At the present time it is anticipated that Australia, Canada, France and the United Kingdom are likely to develop their own computer programmes. To facilitate the storage of reports these States (and other that may develop computer programmes) will be requested to transmit their strike report data to ICAO via computer tape.

In order to stimulate reporting it is hoped to make the reporting procedure as simple as possible. For those States receiving only a few strike reports they can submit copies of the reports direct to ICAO as the State receives them. States which develop computer programmes will be requested to submit the tapes quarterly. Naturally, States will also be able to tabulate their data for sending on to ICAO and these States will be requested to use the computer code to simplify ICAO's work.

A manual is currently being written in ICAO explaining the computer programme. Copies of this manual will be distributed to States around mid-1980.

In addition to explaining the input programme the manual will also explain the formats for output. At the present time five different types of output are envisaged. There are: 1) State record print; 2) serious strikes brief print; 3) world standard array; 4) State standard array; and 5) special arrays.

The State record print would be an annual print provided to each ICAO State (except those which have advised ICAO they have their own computer programme). It would be a complete print-out of all data submitted on strikes occurring in that State.

The serious strikes brief print, as the name implies, would summarize serious strikes to aircraft. As it would be relatively short and the information would be of timely interest, a semi-annual print-out has been selected.

The world standard array would be an annual print which would show a general overview of the bird strikes to aircraft problem. The exact form of the array is still being developed but basically it will compare the type of birds

struck (on the horizontal axis) with other factors such as light conditions, flight phase, parts struck (on the vertical axis).

The State standard array would be an annual print directed towards providing States with information identifying where bird strikes are occurring within their countries. Its purpose would be to permit a State to take action to reduce the strikes. The horizontal axis would be similar to that for the world standard array, the vertical axis would include information related to the conditions under which the strikes occurred.

The special arrays have not yet been developed but these will be used for analysis of particular problems such as strikes to aircraft engines. Actually, the ICAO programme is being developed so that any State can request ICAO for any particular analysis which it may be interested in.

The present schedule is for the computer programmes to become operational around mid-1980. This should permit the first serious strikes brief print to be published before the end of 1980 and the first world and States' standard arrays for the 1980 strike data.

Bird Control on Aerodromes

At your 13th meeting a report was submitted on the ICAO workshop on bird hazards to aircraft held in Bangkok, Thailand. The results of this workshop were encouraging and ICAO has investigated the usefulness of convening similar workshops in other parts of the world. The present intent is to hold one such workshop annually in a different region. Planning is now going ahead for a meeting of African States south of the Sahara which will be held in the ICAO Regional Office in Dakar during the week of 10 March 1980. BSCE States which assisted ICAO in the Bangkok workshop are again being requested to support the Dakar workshop.

As a follow-up to the Bangkok workshop, the ICAO Regional Office in Bangkok is investigating the interest of States to hold a second workshop for the Asia/Pacific area. No plans have yet been laid for this meeting, but a meeting near the end of 1980 is being considered.

Airport Services Manual

Guidance material for use by States in combating the bird hazard problem is published by ICAO in the Airport Services Manual, Part 3 entitled "Bird Control and Reduction". Thanks to comments from BSCE, the old ICAO manual was revised and a new edition published in 1978. ICAO has a programme for updating its manuals and it looks forward to further contributions by BSCE for improving this manual. As a result of the new bird strike reporting system and computer programme, it is anticipated that an amendment to the manual will be published during 1980 or '81.

Audio Visual Aids

The ICAO approach to combating the bird hazard programme has been that much is already known to reduce bird strikes but more needs to be done to implement what is known (thus the ICAO workshops). In support of this approach ICAO has under its Acquired Rights Programme reissued the Canadian film "Operation Bird Strike" including versions with French and Spanish soundtracks. It is now in the process of distributing an audio visual slide programme developed by the United States, which is aimed at publicizing the bird strike to aircraft problem. Another current project is to produce a poster for installation at airports calling attention to the need

for pilots to report bird strikes. In the near future work will be undertaken to bring up-to-date the film "Operation Bird Strike" which was made in the early '60s. Arrangements have been made with the Canadian government to undertake this work jointly.

Annex 14 Specifications

This paper has covered reporting of bird strikes, provision of guidance material to States and other matters, but it has said nothing about development of international specifications for control of birds at airports. Annex 14, which contains international Standards and Recommended Practices for aerodromes contains only the following single specification related to birds:

> "9.5.1 Recommendation.- The appropriate authority should take action as necessary to decrease the number of birds constituting a hazard to aircraft operations by adopting measures for discouraging their presence on or in the vicinity of an aerodrome."

This single specification was included in Annex 14 in 1969 as a result of discussions at the Fifth Air Navigation Conference. Since that time ICAO has not been able to develop one single additional specification that would assist in reducing the probability of a bird strike at an airport. What can be done? Certainly after ten years of experience it should be possible to develop more definitive specifications as to what measures should be taken, what equipment should be provided at an airport to reduce bird strikes. Cannot BSCE take the lead in this work? ICAO needs advice on how to expand its specifications to reduce bird strikes at airports.

- - - - - - - - - -

ATTACHMENT A

Bird Strike Reporting Form

Send to:

Operator _____ 01/02

Aircraft Make/Model _____ 03/04

Engine Make/Model _____ 05/06

Aircraft Registration _____ 07

Date day_____ month_____ year_____ 08

Local Time _____ 09

dawn☐A day☐B dusk☐C night☐D 10

Aerodrome Name _____ 11/12

Runway Used _____ 13

Location if Enroute _____ 14

Height AGL _____FT 15

Speed IAS _____KT 16

Phase of Flight 17

- parked ☐A
- taxi ☐B
- take-off run ☐E
- climb ☐F
- enroute ☐G
- descent ☐P
- approach ☐Q
- landing roll ☐R

Part(s) of Aircraft

	Struck		Damaged	
radome	☐	18	☐	
windshield	☐	19	☐	
nose (excluding above)	☐	20	☐	
engine no.1	☐	21	☐	
2	☐	22	☐	
3	☐	23	☐	
4	☐	24	☐	
propeller	☐	25	☐	
wing/rotor	☐	26	☐	
fuselage	☐	27	☐	
landing gear	☐	28	☐	
tail	☐	29	☐	
lights	☐	30	☐	
other (specify)	☐	31	☐	

Effect on Flight

- none ☐ 32
- aborted take-off ☐ 33
- precautionary landing ☐ 34
- engines shut down ☐ 35
- other (specify) ☐ 36

Sky Condition 37

- no cloud ☐A
- some cloud ☐B
- overcast ☐C

Precipitation

- fog ☐ 38
- rain ☐ 39
- snow ☐ 40

Bird Species* _____ 41

Number of Birds

	Seen	Struck
1	☐A	☐
2-10	☐B	☐
11-100	☐C	☐
more	☐D	☐

Size of Bird 44

- small ☐S
- medium ☐M
- large ☐L

Pilot Warned of Birds 45

yes ☐Y no ☐N

Remarks (describe damage, injuries and other pertinent information) 46/47

_____

_____

_____

_____

_____

Reported by_____

(optional)

*Send bird remains to:

THIS INFORMATION IS REQUIRED FOR AVIATION SAFETY

- - - - - - - - - - - - - - - - - -

ICAO BIRDSTRIKE INFORMATION SYSTEM - / FIELD IDENTIFIER

FIELD IDENT	FIELD NAME	CODING SPECS	START POS'N	FIELD LENGTH	REMARKS
0001	ICAO FILE NUMBER	YR + 6 DIGITS	001	08	ADREP FORMAT
0002	STATE FILE NUMBER		009	06	
0003	STATE SUBMITTING REPORT	ADREP	015	04	
0004	STATE OF OCCURRENCE	ADREP	019	04	
0005	STATE OF REGISTRY	ADREP	023	04	
0006	DATE OF LAST RECORD CHANGE	DDMMYY	027	06	AUTOMATIC
0007	'FLAG' - ERRORS	ADREP	033	01	AUTOMATIC
0008	'FLAG' - STATES DIFFERENT	Y OR BLANK	034	01	AUTOMATIC
0009	AIRCRAFT MAKE	PLAIN LANGUAGE	058	11	AUTOMATIC
0010	AIRCRAFT MODEL	PLAIN LANGUAGE	069	06	AUTOMATIC
0011	AIRCRAFT CLASSIFICATION	ADREP	075	01	AUTOMATIC
0012	AIRCRAFT WEIGHT CATEGORY	ADREP	076	01	AUTOMATIC
0013	NUMBER OF ENGINES	ADREP	077	01	AUTOMATIC
0014	TYPE OF POWER	ADREP	078	01	AUTOMATIC
0015	BIRD SCIENTIFIC NAME	PLAIN LANGUAGE	197	20	AUTOMATIC
0016	BIRD COMMON NAME	PLAIN LANGUAGE	217	20	AUTOMATIC
0017	BIRD MEAN WEIGHT	IN GRAMS	237	04	AUTOMATIC
0018	ENGINE BYPASS RATIO	V. FERNY	248	01	AUTOMATIC
0019	ENGINE - WING POD BELOW	1/2/3/4/BLANK	249	01	AUTOMATIC
0020	ENGINE - WING POD ABOVE	1/2/3/4/BLANK	250	01	AUTOMATIC
0021	ENGINE - WING ROOT	1/2/3/4/BLANK	251	01	AUTOMATIC
0022	ENGINE - WING SUSPENDED	1/2/3/4/BLANK	252	01	AUTOMATIC
0023	ENGINE - AFT FUSELAGE	1/2/3/4/BLANK	253	01	AUTOMATIC
0024	ENGINE - AFT CENTRAL	1/2/3/4/BLANK	254	01	AUTOMATIC
0025	ENGINE - NOSE CENTRAL	1/2/3/4/BLANK	255	01	AUTOMATIC
0101	OPERATOR NAME	DIRECT ENTRY	035	15	
0102	OPERATOR CODE	ICAO 8885	050	03	VERIFY LENGTH
0103	AIRCRAFT MAKE CODE	ADREP	053	03	
0104	AIRCRAFT MODEL CODE	ADREP	056	02	
0105	ENGINE MAKE CODE	ADREP	079	02	
0106	ENGINE MODEL CODE	ADREP	081	02	
0107	AIRCRAFT REGISTRATION	DIRECT ENTRY	083	08	
0108	DATE OF OCCURRENCE	DDMMYY	091	06	
0109	LOCAL TIME OF OCCURRENCE	HHMM	097	04	
0110	LIGHT CONDITIONS	A TO D	101	01	
0111	AERODROME NAME	DIRECT ENTRY	102	20	
0112	AERODROME CODE	ICAO 7910	122	04	
0113	RUNWAY USED	DIRECT ENTRY	126	03	
0114	LOCATION IF ENROUTE	DIRECT ENTRY	129	20	
0115	HEIGHT AGL (FEET)	DIRECT ENTRY	149	05	

ICAO BIRDSTRIKE INFORMATION SYSTE - BY FIELD IDENTIFIER

FIELD IDENT	FIELD NAME	CODING SPECS	START POS'N	FIELD LENGTH	REMARKS
0116	SPEED (IAS - KNOTS)	DIRECT ENTRY	154	03	
0117	PHASE OF FLIGHT	A TO H	157	01	
0118	S/D RADOME	S OR D	158	01	
0119	S/D WINDSHIELD	S OR D	159	01	
0120	S/D NOSE (EXCLUDING ABOVE)	S OR D	160	01	
0121	S/D ENGINE 1	S OR D	161	01	
0122	S/D ENGINE 2	S OR D	162	01	
0123	S/D ENGINE 3	S OR D	163	01	
0124	S/D ENGINE 4	S OR D	164	01	
0125	S/D PROPELLER	S OR D	165	01	
0126	S/D WING/ROTOR	S OR D	166	01	
0127	S/D FUSELAGE	S OR D	167	01	
0128	S/D LANDING GEAR	S OR D	168	01	
0129	S/D TAIL	S OR D	169	01	
0130	S/D LIGHTS	S OR D	170	01	
0131	S/D OTHER PART	S OR D	171	01	
0132	EFFECT - NONE	Y OR BLANK	176	01	
0133	ABORTED TAKE-OFF	Y OR BLANK	177	01	
0134	PRECAUTIONARY LANDING	Y OR BLANK	178	01	
0135	ENGINE(S) SHUT DOWN	1/2/3/4/BLANK	179	01	
0136	EFFECT - OTHER	Y OR BLANK	180	01	
0137	SKY CONDITION	A TO C	188	01	
0138	WEATHER - FOG	Y OR BLANK	189	01	
0139	WEATHER - RAIN	Y OR BLANK	190	01	
0140	WEATHER - SNOW	Y OR BLANK	191	01	
0141	BIRD SPECIES CODE	PENDING	192	05	
0142	BIRDS SEEN	A TO D	241	01	
0143	BIRDS STRUCK	A TO D	242	01	
0144	BIRD SIZE	S/M/L	243	01	
0145	PILOT WARNED	Y OR X	244	01	
0146	REMARKS (1)	DIRECT ENTRY	401	50	
0147	REMARKS (2)	DIRECT ENTRY	451	50	
0201	AIRCRAFT DAMAGE	D/S/M/BLANK	245	01	ICAO DEF'N
0202	INJURY INDEX	F/S/M/BLANK	246	01	
0203	S/D PITOT STATIC	S OR D	172	01	
0204	S/D ANTENNA(E)	S OR D	173	01	
0205	S/D TAIL ROTOR	S OR D	174	01	
0206	S/D HELICOPTER TRANSMISSION	S OR D	175	01	
0207	FORCED LANDING	Y OR BLANK	181	01	
0208	FIRE	Y OR BLANK	182	01	

ICAO BIRDSTRIKE INFORMATION SYSTEM - BY FIELD IDENTIFIER

FIELD IDENT	FIELD NAME	CODING SPECS	START POS'N	FIELD LENGTH	REMARKS
0209	PENETRATION OF WINDSHIELD	Y OR BLANK	183	01	
0210	PENETRATION OF AIRFRAME	Y OR BLANK	184	01	
0211	VISION OBSCURED	Y OR BLANK	185	01	
0212	ENGINE INGESTION	1/2/3/4/BLANK	186	01	
0213	ENGINE UNCONTAINED FAILURE	1/2/3/4/BLANK	187	01	
0214	SPECIES CONFIRMED	Y OR BLANK	247	01	

- END -