

2.8. BIRD STRIKES 1970 IN GERMAN AIR FORCE

DR. J. HILD, W-GERMANY

Incidents depending on bird-strike in air traffic of the F.D.F. (Federal Defence Forces) in 1968 - 1970, by ORR Dr. Hild, GAF.

1. Bird-strikes in 1968 - 1970 systematized in flight-phases, month, geographical area and air field/air base

tabulation I

flight phase	quantity of bird-strikes		
	1968	1969	1970
low level flight and cruise	147	144	<u>184</u>
take off	25	27	<u>19</u>
landing	22	21	<u>24</u>
traffic pattern, approach and departure	32	22	<u>40</u>
unknown	8	14	<u>19</u>
total	234	228	286

In consideration of total flying hours during the base years the quantity of bird-strikes increased seriously in 1970 compared to preceding years. The monthly distribution of incidents shows maximal results dependent on weather in march, april (= bird migration in spring), in july/august (= intermediate bird migration) as well in october (= bird migration in autumn).

The geographical distribution of bird migration during flight proves a clear focal point in area north of the highlands, besides relative high values as well in Sardinia (Frasca Range), Denmark (Rømø) and Netherlands (Terschelling).

The distribution of bird-strikes in comparison with the particular airfields/air bases showed highest values in Fürstenfeldbruck, Decimomannu, Oldenburg, Jagel and Leck. In most of the air-fields the movement was downward or constant in 1970, serious increase exclusively noticeable in Oldenburg, Nörvenich, Jever and Hohn compared to the preceding years. This

total positive result is doubtless explained by the correct performance of the ordered measures..

2. Bird-strikes in 1968 - 1970, altitude and bird species

tabulation 2

altitude FT	quantity of bird-strikes		
	1968	1969	1970
0 - 99	45	54	44
100 - 299	15	21	19
300 - 499	8	6	12
500 - 699	37	55	69 (mostly G 91)
700 - 899 etc.	43	26	43)
900 - 1299	32	26	28)(mostly F 104)
1300 - 1499	2	0	2
1500 - 1999	16	12	23
2000 - 2499	7	6	9
more than 2500	10	9	12

Maximal altitude of bird-strike was at 8000 ft at this time (bird species unknown), Highest altitude of bird migration in 1970- ascertained by help of radar - was obtained with 15000 ft (lapwings and small birds). Though most of the bird-strikes were still caused in 1968 by gulls, crows, water-fowls, pigeons, lapwings and hawks, but obvious decrease of their attendance in favour of small birds (swallows, finches, titmice) and starlings. - The measures against the characteristic air-field bird population are to suppose as reason as well the improved practicabilities of control for extended bird migration.

3. Damages depending on bird-strikes and its distribution to aircraft types

tabulation 3

damaged parts	quantity of bird-strikes			± 1970 to 1969	
	1968	1969	1970	%	quantity
without damage	140(60%)	128(56%)	184(64,3%)	+ 8,3%	+ 56
petty damage x)	37(16%)	24(11%)	61(21,4%)	+10,4%	+ 37
petty engine damage	4(1,7%)	6(2,6%)	12(4,2%)	+ 1,6%	+ 6
serious engine damage	2(0,7%)	2(0,8%)	- -	- 0,8%	- 2
change of engine	4(1,7%)	4(1,7%)	- -	- 1,7%	- 4
cockpit	8(3,4%)	10(4,3%)	5(1,7%)	- 2,6%	- 5
wings	4(1,7%)	5(2,1%)	4(1,4%)	- 0,7%	- 1
infrared	3(1,2%)	5(2,1%)	2(0,7%)	- 1,4%	- 3
air frame	12(5,1%)	121(9,2%)	14(4,9%)	- 4,3%	- 7
chassis	4(1,7%)	1(0,4%)	- -	- 0,4%	- 1
besides accidents	12(5,1%)	19(8,4%)	- -	- 8,4%	- 19
	4(1,7)	3(1,4%)	4(1,4%)	+ 0,0%	+ 1
<b>total</b>	<b>234</b>	<b>228</b>	<b>286</b>		

x) cost of repairs less than 10 working hours.

The total number of bird-strikes increased in 1970 indeed, 1 total loss F 104 was noticed besides the 4 mentioned accidents, but damage quota showed obvious decrease. There is an indication that more than 80% of the incidents were caused by low weighty small birds, and the preventive measures seem to be successful.

Decrease of damage quota of bird-strikes in 1970 (compared to 1969) about 35% = ratio corresponding to 10000 flying hours = 0,9 (in 1969 = 1,7), total bird-strikes ratio in 1968 = 6,0, in 1969 = 5,3, in 1970 = 6,3, ratio bird-strikes take off/landing in 1968 = 0,43, in 1969 = 0,43, in 1970 = 0,35. The distribution of the incidents in comparison with the different aircraft types results from the following tabulation 4, essentially corresponding with list tabulation 3.

tabulation 4

Incidents depending on bird-strikes in 1968-1970 systematized in aircraft types and damages

aircraft types	wings			fuselage			cockpit			engine			besides			no damage			accident			total		
	68	69	70	68	69	70	68	69	70	68	69	70	68	69	70	68	69	70	68	69	70	68	69	70
F 104	1	0	0	5	7	7	6	5	2	1(+2)	3(+2)	7	25	8	25	84	76	108	4	3	4	128	104	153
G 91	1	1	2	2	9	3	0	4	1	5(+2)	5(+2)	5	18	28	18	42	31	58	0	0	0	70	80	97
NORPD 2501	0	2	2	5	4	0	0	0	1	0	0	0	1	6	0	10	10	1	0	0	0	16	22	4
AL II	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UH-1 D	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	2	8	0	0	0	5	6	3
F 33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BR 1150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	4	0	2	4
Do 27	0	1	0	0	0	0	0	0	0	0	0	0	2	1	2	1	1	0	0	0	3	0	0	0
C 160	1	0	0	0	0	0	0	0	0	0	0	0	3	0	0	1	0	0	0	0	0	4	3	0
C 140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
B 707	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0
Pi 149	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	2
MK 54	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFB 320	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CV 440	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U 16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
H34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2	0	0
AL SE 3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0
H 21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CH 53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
TOTAL	4	5	4	12	21	14	8	10	5	6(+4)	8(+4)	12	56	49	63	140	128	184	4	3	4	234	228	286

(+ . . .) = Change engine