widerøe

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Conspicuous pied propellers – a new method for keeping birds away from the aircraft?

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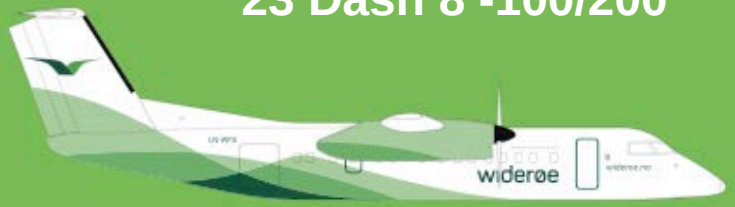
Widerøes Operation & fleet 2014

Fleet total :42

23 Dash 8 -100/200



8 Dash 8-300

11 Dash 8-Q400

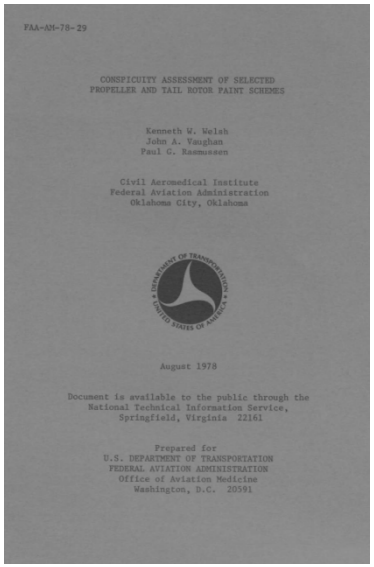
46 airports

- Almost all airports are located on the coastline.
- ”Special operations” on 24 airports, – short field, less than 800 meter RWY, with steep approach.
- Every other minute a Widerøe aircraft lands or departs.
- Bird strikes are a major safety issue, average 50 per year.

The propeller painting project

Lufttransport Coast Guard

FAA-AM-78-29


FAA-AM-78-29

CONSPICUITY ASSESSMENT OF SELECTED PROPELLER AND TAIL ROTOR PAINT SCHEMES

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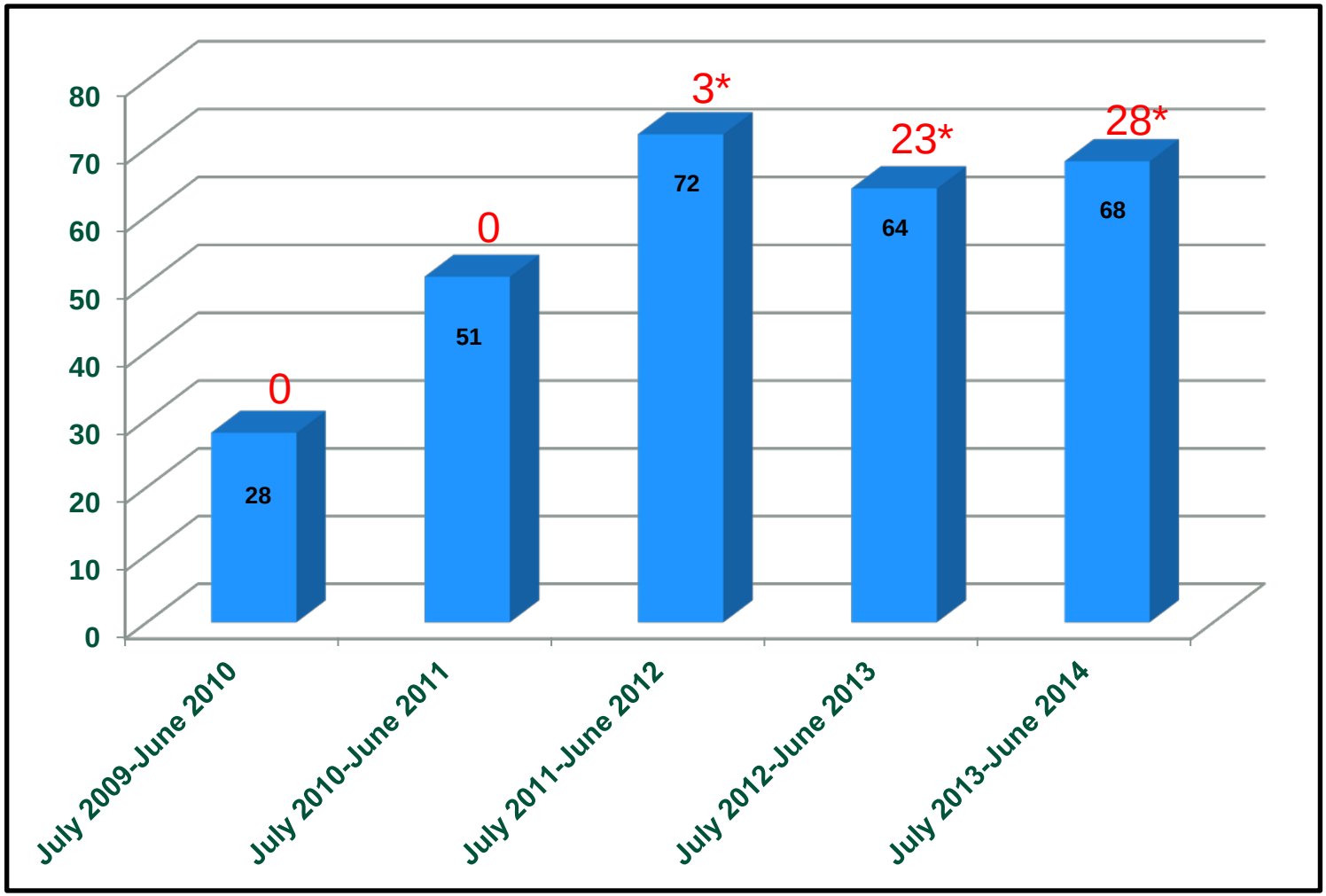
*** Propeller video ***

Bird strikes in Widerøe last 5 years



*** Number of aircraft with pied propellers**

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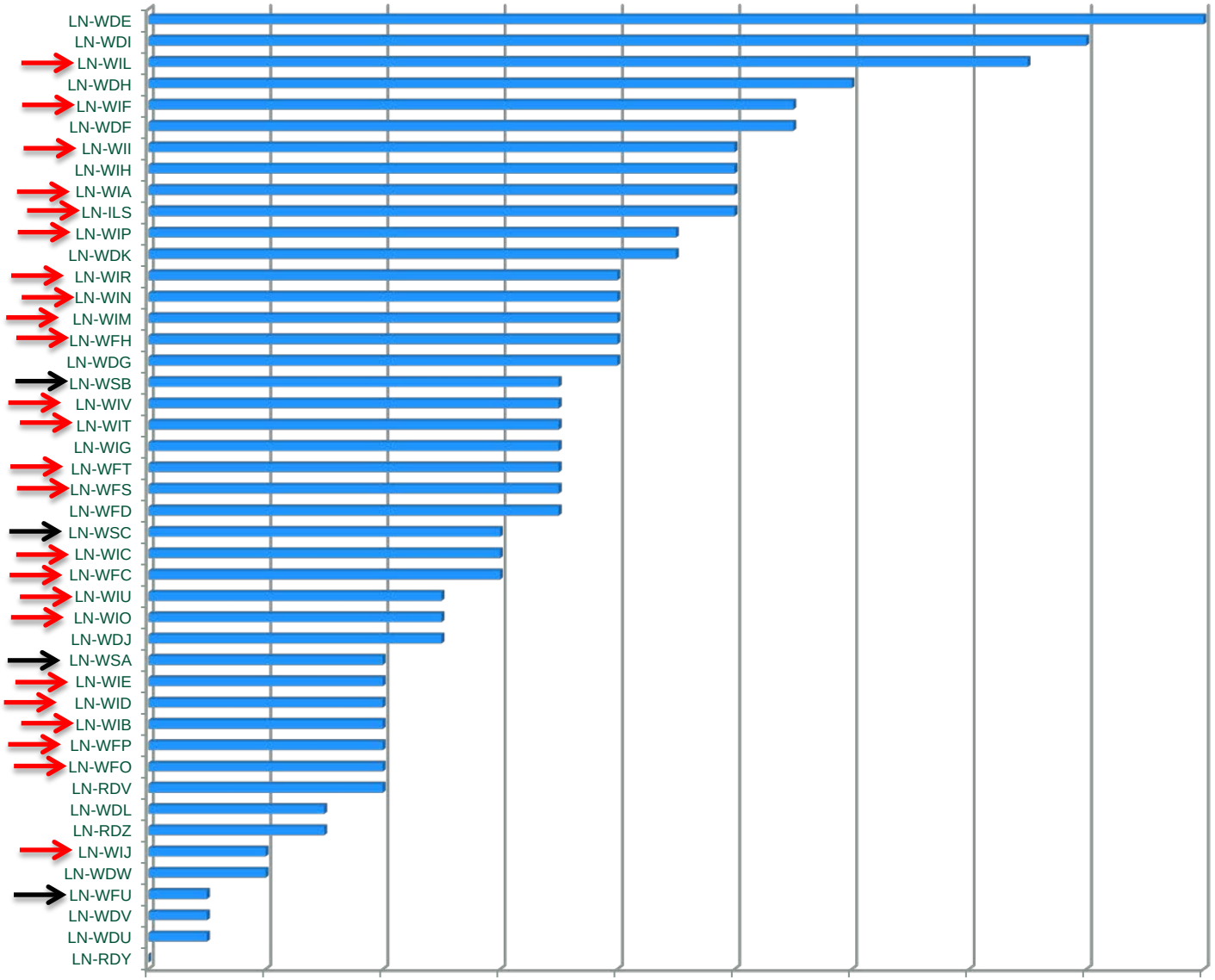
Bird strikes WF 2009-2014 by aircraft registration



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One peculiar WF bird strike

- Bird strike unnoticed by crew despite the size of the bird (1,0 kilo; Herring Gull *Larus argentatus*).
- Discovered on post flight check.
- Minor damages to the aircraft.
- Sept. 2014.

Preliminary results 2012

- The 5 aircraft included in the project struck birds 28 times prior to the project, and 3 times after the project was initiated.
- Results spring season only:
  - Before: 0,14 bird strikes per ”aircraft-spring-month”
  - After: 0,19 bird strikes per ”aircraft-spring-month”

Results 2014

- All 42 Widerøe aircraft struck birds 246 times without pied (black-and-white painted) propellers, and 58 times with pied propellers.
- Results 42 aircraft:
  - Before: 0,11 bird strikes per month
  - After: 0,11 bird strikes per month

- We looked at the 28 aircraft included in the propeller painting project, of which only 24 aircraft were associated with bird strike data both before and after initiation of the project.

Bird strike rate 2009-2014 (per 31 July) of the 28 Widerøe aircraft with pied propellers

No.	A/C Reg.	Type	Included?	Bs/mo. before T/O	Bs/mo. after T/O	Date of technical order (T/O)
1	ILS	A	1	0,19	0,04	28 November 2012
2	WIA	A	1	0,22	0,04	15 May 2012
3	WIB	A	1	0,07	0,00	1 October 2013
4	WIC	A	1	0,08	0,12	4 March 2013
5	WID	A	1	0,08	0,00	19 May 2013
6	WIE	A	1	0,09	0,00	27 November 2012
7	WIF	A	1	0,13	0,13	3 May 2013
8	WII	A	1	0,15	0,05	21 April 2012
9	WIJ	A	1	0,02	0,06	22 October 2012
10	WIL	A	1	0,22	0,12	2 March 2013
11	WIM	A	1	0,08	0,13	2 April 2013
12	WIN	A	1	0,14	0,00	23 October 2013
13	WIO	A	1	0,08	0,08	16 December 2012
14	WIP	A	1	0,16	0,04	31 August 2012
15	WIR	A	1	0,09	0,12	2 July 2013
16	WIT	A	1	0,12	0,07	4 March 2013
17	WIU	A	1	0,07	0,06	13 July 2012
18	WIV	A	1	0,10	0,06	23 March 2013
19	WSA	B	0	no data prior to technical order		28 September 2012
20	WSB	B	0	no data prior to technical order		3 May 2012
21	WSC	B	0	no data prior to technical order		15 September 2012
22	WFC	C	1	0,09	0,09	3 October 2012
23	WFH	C	1	0,13	0,09	29 December 2012
24	WFO	C	1	0,06	0,03	19 February 2013
25	WFP	C	1	0,05	0,10	24 September 2013
26	WFS	C	1	0,11	0,09	4 October 2012
27	WFT	C	1	0,13	0,00	27 August 2013
28	WFU	C	0	no data prior to technical order		22 October 2012
	A/C included		**24**			
	Average			**0,11**	**0,06**	**43 % reduction**
	Reduction in bs-rate			**5**	**16**	3 A/C no reduction or increase

Discussion

- The 24 aircraft with both before data and after data had a 43 % reduction in bird strike rate.
- For each of these 24 aircraft, 16 experienced a reduction in bird strike rate after inclusion in the propeller painting project, while 5 experienced an increase. For three aircraft the bird strike rate did not change.
- We did not see any effect when all 42 Widerøe aircraft were analysed, but we believe that the analysis with the 24 included aircraft gives a valid result.
- The operations of the 24 aircraft have not changed since they were included in the project, so we see a markedly positive effect of the black-and-white propellers.
- The project will stay on for another 3-4 years, after which we will decide whether painting the propellers black-and-white can be considered a new method for keeping birds away from the aircraft.


Thank you very much
for your attention!