

FlightGlobal



HELICOPTER SAFETY & LOSSES

ANNUAL REVIEW

2017



2017 – Not too bad a year but...

The safety of civil turbine helicopters¹ improved again in 2017 but, as noted before, this improvement is still only just keeping up with the growth of the industry. While accident rates, on average, have been getting better over the last 15 or 20 years, the frequency of accidents - the number of fatal accidents and fatalities suffered by this class of aircraft each year - is only reducing slowly.

In 2017, civil western-built turbine helicopters suffered some 147 known accidents, of which 44, about 30 per cent of the total, resulted in fatalities. These accidents killed 118 passengers and crew. In 2016, there were 172 known accidents including 50 involving fatalities, giving rise to 136 passenger and crew deaths. The year 2017 does show an improvement over 2016 and also over the annual averages for the last five years of 50 fatal accidents and 132 fatalities but it is not marked. Improvement, by this measure, is coming slowly.

During 2017 there were no known accidents involving deaths to people on the ground although there were three accidents where people on the ground were seriously injured. In the last five years, there have been 10 known accidents where people were killed or seriously injured on the ground. These accidents resulted in nine ground fatalities and 20 people being seriously injured.

Fatal Accident Rates

The western-built turbine helicopter fatal accident rate in 2017, at one per 500 helicopters in service², was some 10% better than in 2016, when the rate was about one per 450 helicopters and considerably better than in 2015 when it was one per 370 helicopters. However, this was still worse than in 2014 when the rate was about one per 560 helicopters. Nevertheless, on this basis, 2014 was the safest year ever for this class of helicopter and 2017's result makes it the second best year ever. The annual average for the last five years is now one fatal accident per 435 helicopters in service.

The western-built turbine helicopter fatal accident rate for the decade of the 1990s was one per 224 helicopters while that for the 2000s was one per 300 helicopters. The rate for this decade so far (2010-2017), is one per 400 helicopters. On average, Western-built turbine helicopters are now about twice as safe as they were in the 1990s.

The fatal accident rate for multi-engine helicopters in 2017 was one per 770 helicopters. During the decade of the 1990s, the rate was one per 230 helicopters while that for the 2000s was one per 332. The rate for this decade (2010-2017) is one per 560 helicopters.

¹ Western-built turbine helicopters only. Includes helicopters operated by government agencies whether civil registered or not. Excludes deliberate acts of violence.

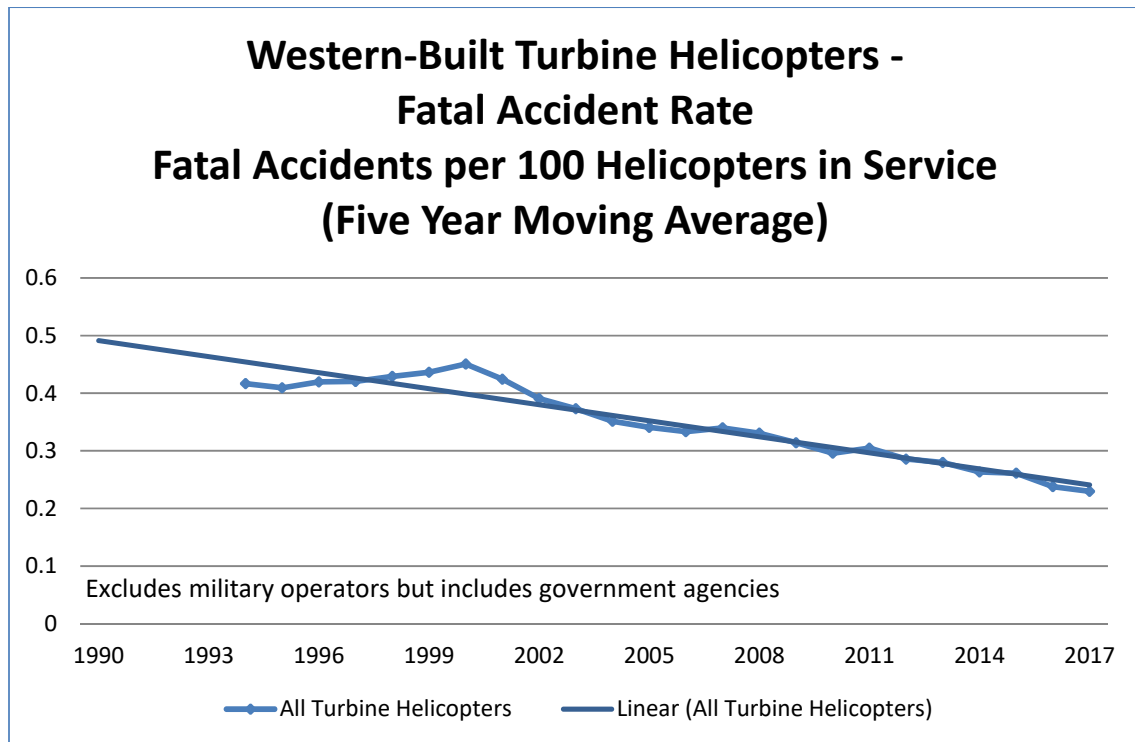
² Accident Rates. Currently we do not have good data for the number of flights etc on a global basis for this class of aircraft to allow us to calculate accident rates in the form of, for instance, "fatal accidents per million flights". However, we do have good fleet data and this allows us to use "aircraft years" (average number of aircraft in the fleet) and "seat years" as measures of exposure when calculating accident rates. Nevertheless, although these rates do give a good indication of trends over the longer term, possible changes in utilisation from year to year should be borne in mind when comparing one year to another.

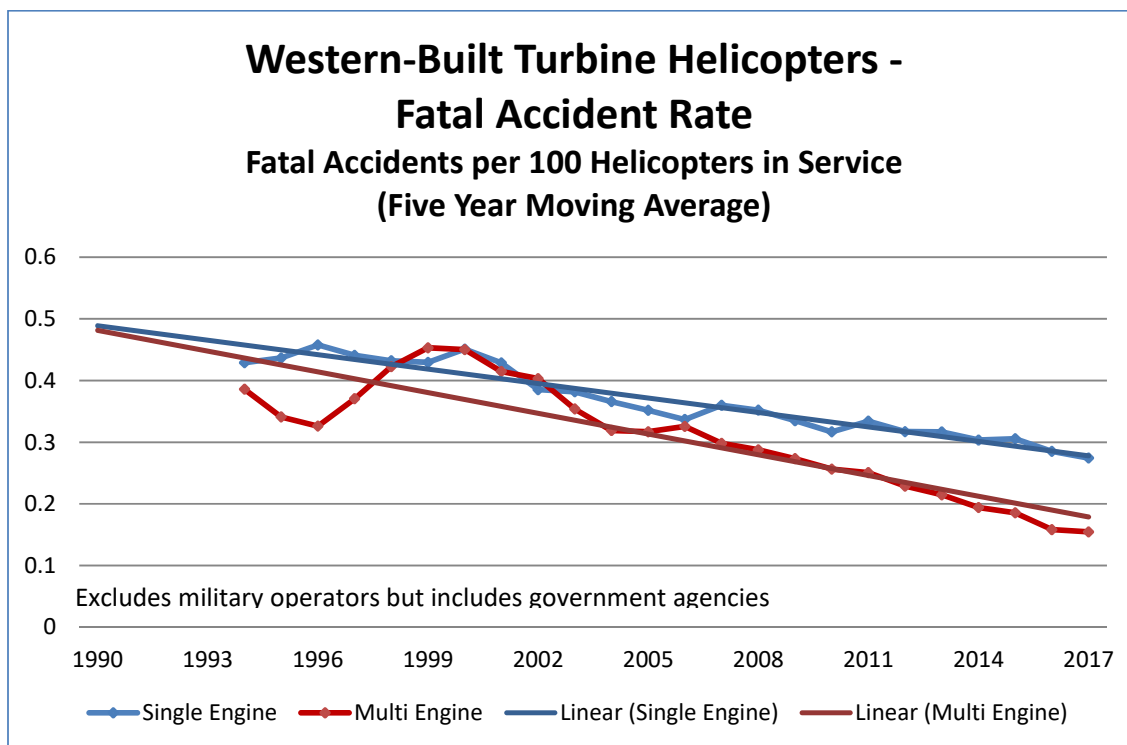
The fatal accident rate for single-engine helicopters in 2017 was one per 435 helicopters, considerably better than the annual average for the first eight years of this decade (2010-2017) which was one per 340 helicopters. The fatal accident rate for the 1990s was one per 222 helicopters and for the 2000s one per 286 helicopters.

Annual Fatal Accident Rates (Western-built Turbine Helicopters) – Last 10 Years										
Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
All	0.31	0.25	0.29	0.35	0.24	0.28	0.18	0.27	0.22	0.20
Single	0.34	0.27	0.32	0.37	0.29	0.33	0.21	0.33	0.27	0.23
Multi	0.26	0.21	0.23	0.30	0.15	0.19	0.11	0.18	0.16	0.13

Fatal accidents per 100 helicopters at risk

The underlying trend in the fatal accident rate for western-built turbine helicopters, both as a whole and separately for single and multi-engine helicopters, is down and has been improving since about 2000. However, the fall in the accident rate for single-engine helicopters as a whole has not been keeping up with that for multi-engine helicopters. Both classes of helicopter had similar fatal accident rates ten to 15 years ago but since then the multi-engine helicopters have improved considerably and their fatal accident rate is now markedly better than that of the single-engine helicopters.





Fatal Accidents

Western-built turbine helicopters suffered 44 fatal accidents last year, six fewer than in 2016, when there were 50 such accidents, and 16 fewer than in 2015. There were fewer fatal accidents in 2014, when there were 38 such accidents but that year produced the best result of any year since at least 1990. The year 2011, with 69 fatal accidents, was the worst year since 1990.

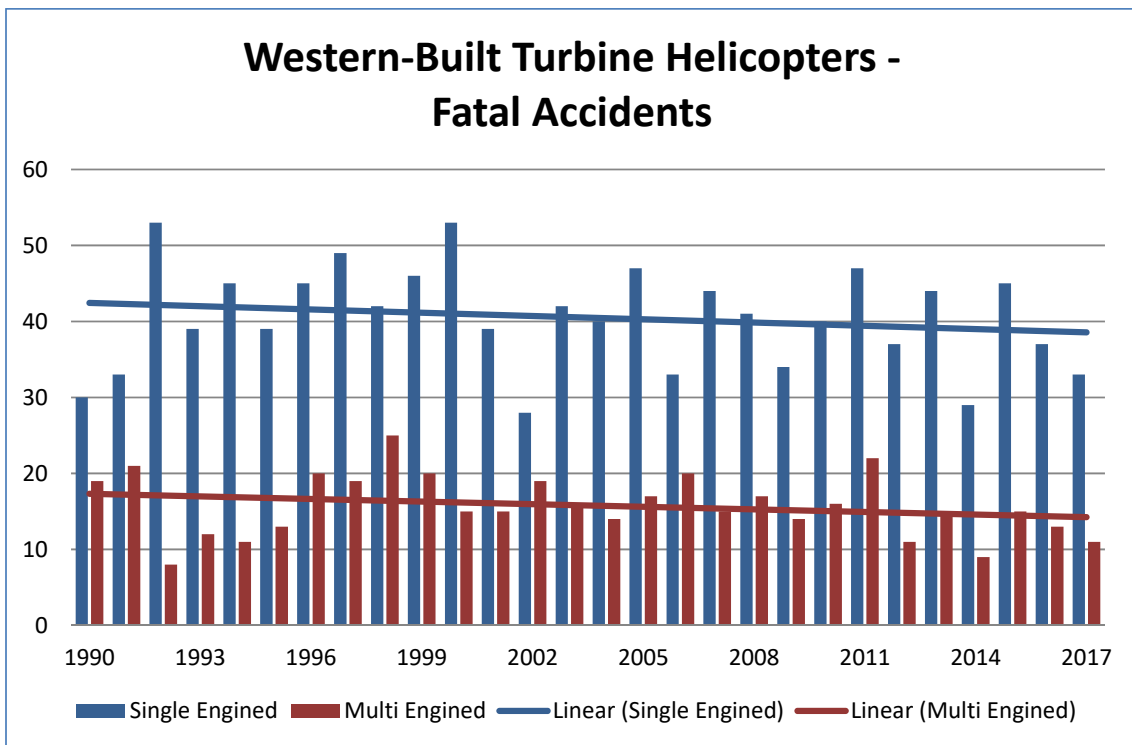
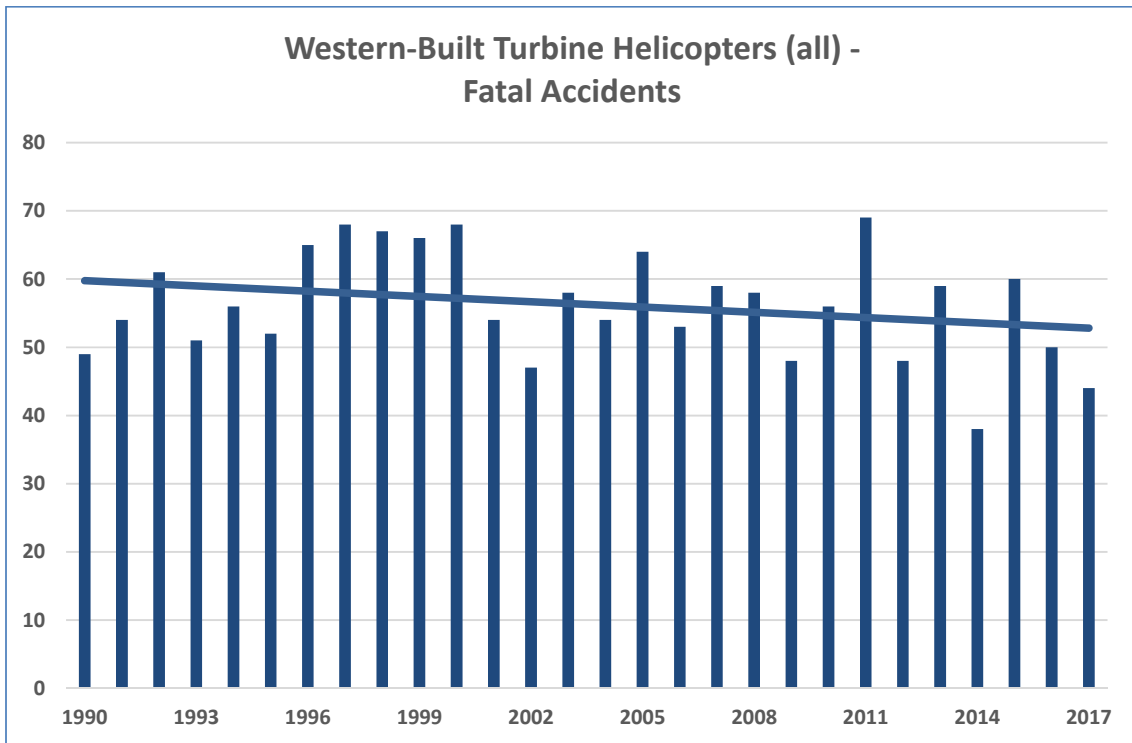
The 2017 was better than the long term trend, which stood at around 52 fatal accidents last year, down from an average of about 60 fatal accidents per year in 1990.

Despite the improving fatal accident rate, there has been no significant reduction in the annual number of fatal accidents for many years with, on average, still about 52 per year. The number of helicopters in operation has been increasing so safety is keeping up with the expansion of the industry, but has not improved to the point where the frequency has declined markedly.

Single-engine helicopters suffered 33 fatal accidents in 2017, four fewer than in 2016 and 12 fewer than in 2015 but still four more than in 2014. The lowest number of fatal accidents in any year since at least 1990 was in 2002 when there were 28. The years with the most such accidents were 1992 and 2000 when there were 53. The number of single-engine fatal accidents in 2017 fell below the long-term trend which currently stands at about 39 per year.

There were 11 fatal accidents to multi-engine helicopters in 2017, two less than in 2016 and four less than in 2015. The long-term trend is currently at 14 to 15 fatal accidents per year.

Although there have been individually 'good' and 'bad' years, single and multi-engine helicopters have shown only a slight improvement in the frequency of fatal accidents over the last 25 years.

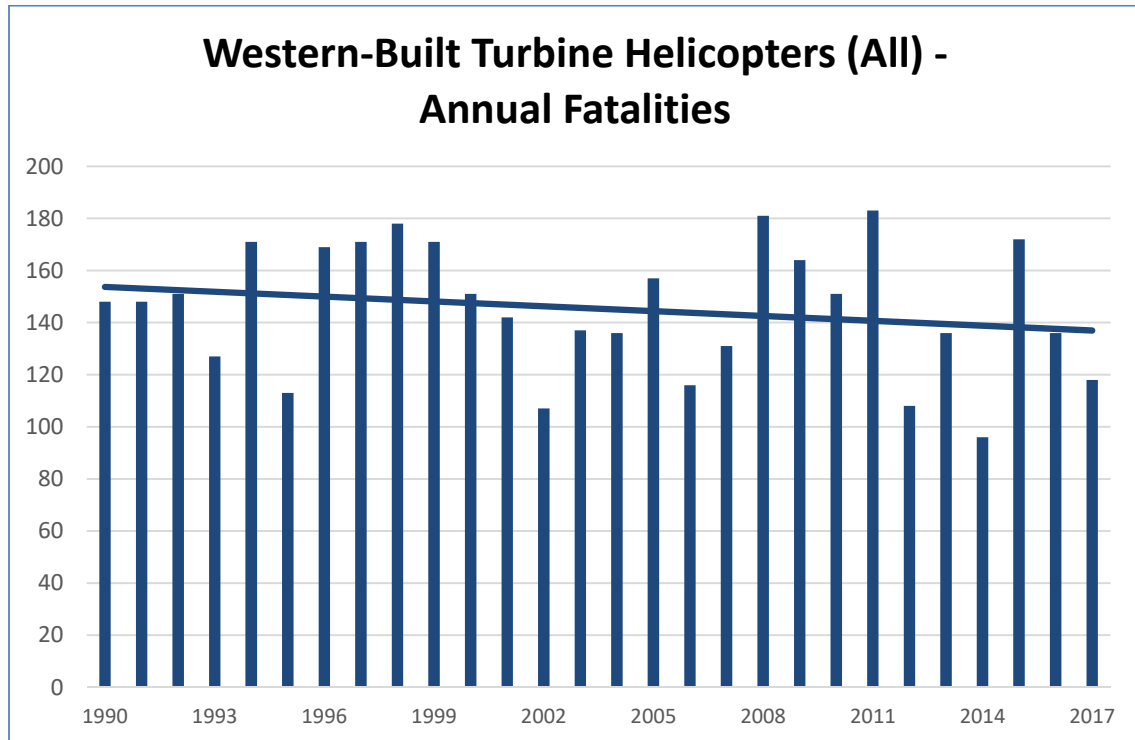


Annual Fatal Accidents (Western-built Turbine Helicopters) – Last 10 Years										
Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
All	58	48	56	69	48	59	38	60	50	44
Single	41	34	40	47	37	44	29	45	37	33
Multi	17	14	16	22	11	15	9	15	13	11

Fatal accidents involving passenger and/or crew deaths

Fatalities

A total of 118 passengers and crew died in the 44 fatal accidents during 2017, giving a simple average of about 2.7 fatalities per accident, the same average number of fatalities per accident as in 2016. However, there were 18 fewer fatalities in 2017 than in 2016 and 54 fewer than in 2015. There have been better years, in 2014 only 96 passengers and crew were killed in this class of helicopter but last year's result was markedly below the long-term trend, which is currently at about 140 fatalities per year.

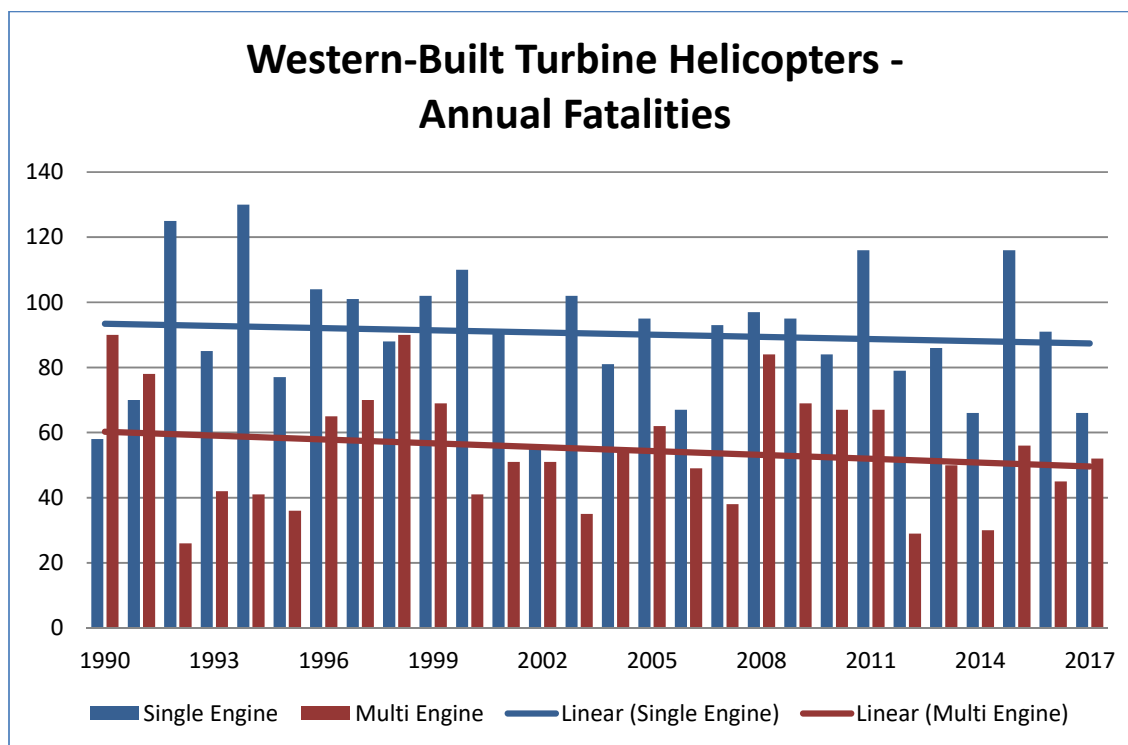


Some 66 passengers and crew died in the 33 fatal accidents suffered by single-engine helicopters in 2017, giving a simple average of about 2.0 fatalities per fatal accident. This is down on 2016, when this class of helicopter suffered 37 fatal accidents killing 91 passengers and crew and on 2015 when there were 45 fatal accidents involving single-engine helicopters killing 116. The 2017 result is significantly below the long-term trend, which now stands at about 90 fatalities per year, but is the same as in 2014.

Despite 2017's good result the trend in the number of annual fatalities on board single-engine helicopters, has only improved by about 5 per cent, decreasing from about 95 per year on average to about 90 per year now in the more than 25 years since 1990.

Fifty-two passengers and crew died in the 11 fatal accidents suffered by multi-engine helicopters in 2017, giving a simple average of 4.7 fatalities per fatal accident. This is a worse death toll than in 2016 when 45 people were killed in 13 fatal accidents but did still show a small improvement over 2015 when 56 people died in 15 fatal accidents. 2017's result was more or less on the long term trend line.

There has been a greater improvement in the annual number of fatalities in accidents involving multi-engine helicopters than in single-engine helicopters, with the trend falling almost 15 per cent in the last twenty-five years or so, from about 60 per year in 1990 to about 50 per year now.



Annual Fatalities (Western-built Turbine Helicopters) – Last 10 Years										
Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
All	181	164	151	183	108	136	96	172	136	118
Single	97	95	84	116	79	86	66	116	91	66
Multi	84	69	67	67	29	50	30	56	45	52
Passenger and crew fatalities										

The worst accidents in 2017 included:-

- **Nagano Air Bell 412 (JA97NA)** on 5 March which killed the two crew and seven passengers on board when it crashed on Mount Hachibuse, near Matsumoto City, Japan during a mountain rescue exercise.
- **National SAR Agency AS365N3+ (HR-3602)** on 2 July, which apparently flew into high ground near Temanggung, Indonesia while en route from Semarang to Banjarnegara, killing the two crew and six passengers on board. The helicopter was supporting rescue operations following a volcanic eruption in the area.
- **Kugu Havacilik Sikorsky S76C++ (TC-HEZ)**, on 10 March, which crashed in a district of Istanbul, Turkey after apparently colliding with the Endem TV tower in poor visibility, killing the two crew and five passengers on board.
- **Babcock MCS Italia (formerly Inaer) AW139 (EC-KJT)** on 1 January, which crashed in the mountains, reportedly in 'thick fog', near Casamaina, Italy shortly after collecting an injured skier. The pilot and five passengers on board were killed.

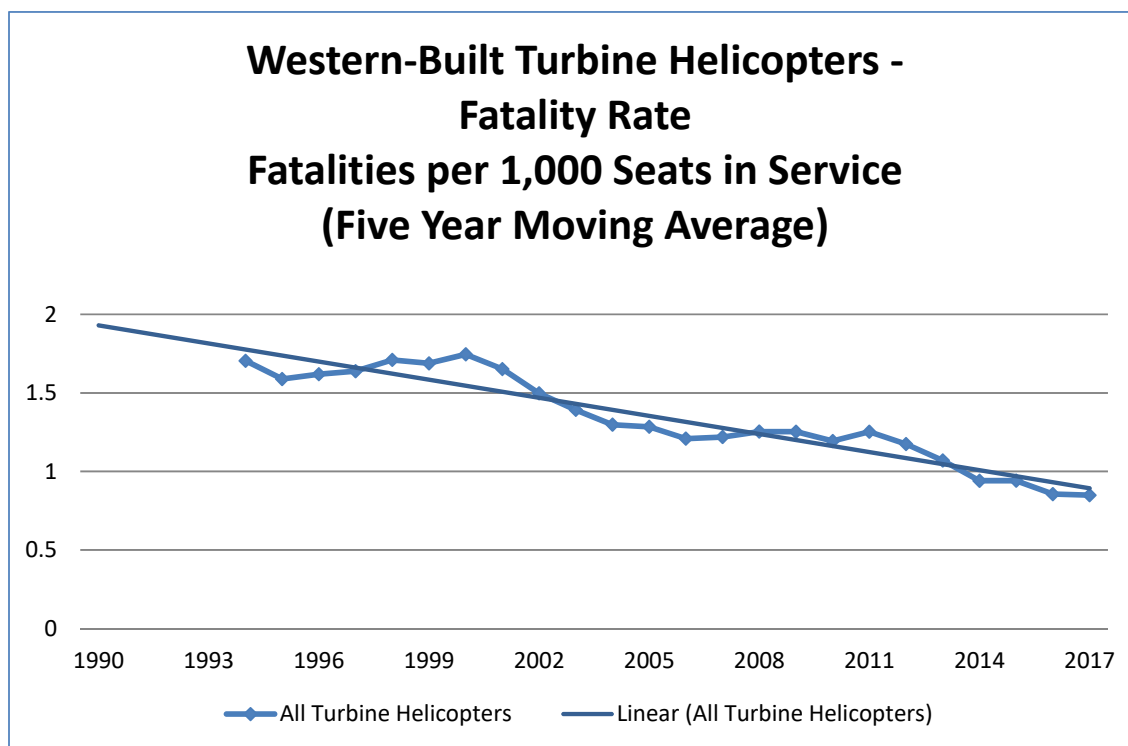
- **Altay Avia** Robinson R66 (RA-06375) on 12 February, which crashed into Lake Telekskoye, Altai Republic, Russia in darkness and poor weather killing the pilot and four passengers.
- **Staske Construction Ltd** AS355F1 (G-OHCP) on 29 March, which crashed in poor weather on high ground in Snowdonia, Wales, United Kingdom killing the pilot and four passengers on board.
- **Flex Air Charters** AS350B3e (5Y-NMJ) on 21 October, which crashed into Lake Nakuru, Kenya shortly after take-off killing the pilot and four passengers on board.

Fatality Rates

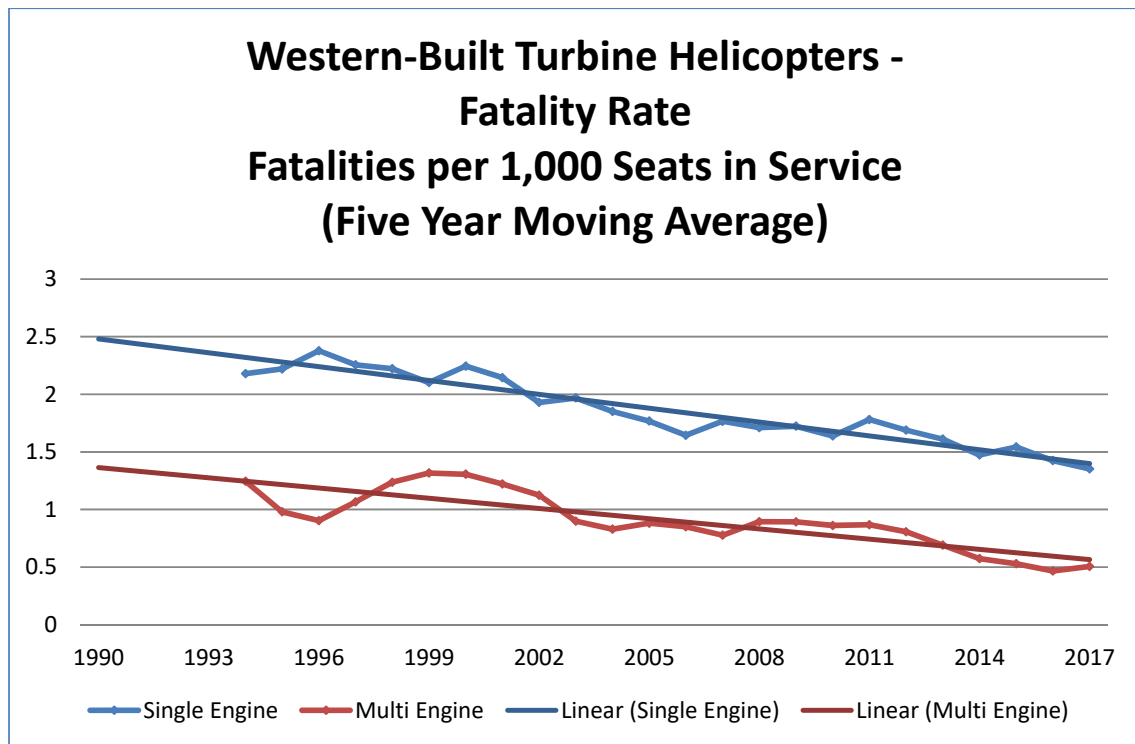
The fatality rate in 2017, on a deaths per 1,000 seats basis, overall, showed an improvement on 2016 going from one death per 1,150 seats that year to one per 1,350 in 2017.

Single-engine helicopters also produced a better result than in 2016, going from about one death per 700 seats, to about one per 980 seats last year. However, multi-engine helicopter performance deteriorated from one per 2,080 seats in 2016 to one per 1,820 in 2017.

Annual figures can be volatile, going up or down from one year to another; however, despite an occasional poor year, the trend in western-built turbine helicopter safety as measured by this fatality rate has shown an improvement over the years and, on this basis, the class is about twice as safe now as it was 25 years ago.



Annual Fatality Rates (Western-built Turbine Helicopters) – Last 10 Years										
Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
All	1.45	1.26	1.12	1.33	0.76	0.92	0.63	1.09	0.87	0.74
Single	1.82	1.73	1.50	2.06	1.36	1.43	1.07	1.82	1.42	1.02
Multi	1.17	0.92	0.85	0.82	0.34	0.57	0.33	0.60	0.48	0.55
Fatalities (passengers and crew) per 1,000 seats in service										



Paul Hayes, London, 17 January, 2018

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