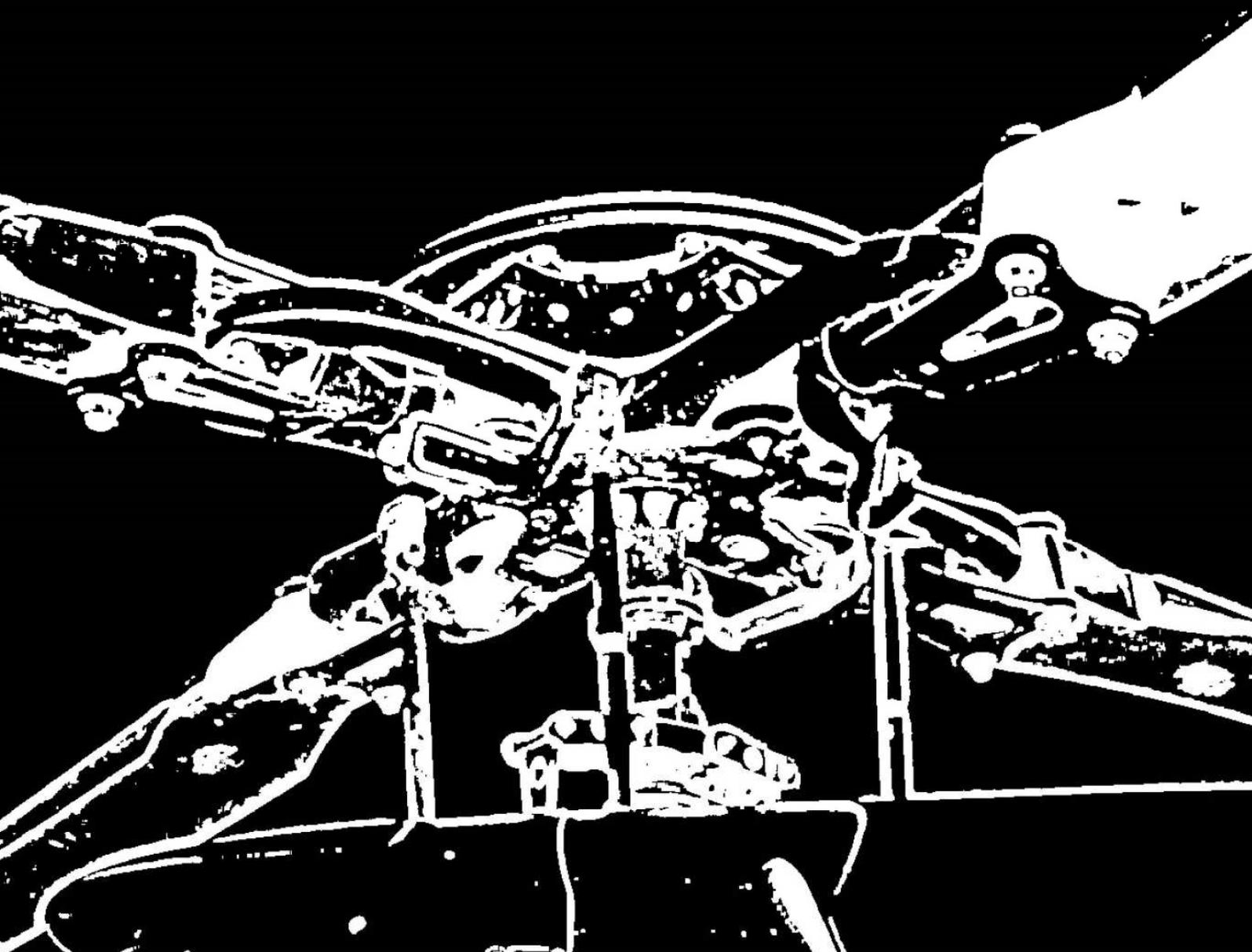

HELICOPTER SAFETY & LOSSES

ANNUAL REVIEW

2014



2014 – An improvement at last?

Provisional figures for the number of civil helicopter¹ accidents, fatal accidents and fatalities in 2014 appear to show a significant improvement over recent years and might suggest that, as far as safety is concerned, the industry is now getting somewhere.

In 2014, civil Western-built turbine helicopters suffered 170 known accidents, of which 38 resulted in fatalities; killing 96 passengers and crew. In 2013, there were 229 known accidents including 61 with fatalities, giving rise to 145 passenger and crew deaths. The year 2014 also showed significant improvement over the annual averages for the last five years of 205 accidents, 54 fatal accidents and 137 fatalities.

Compared with 2013, 2014 was also a better year for deaths to third parties in helicopter accidents. During the year there was only one known accident which killed people on the ground. On 3 August, the manager of The Last Resort near Tatopani, Nepal was killed when he reportedly “ran into the tail rotor” of a Fishtail AS350 (9N-AJI) that had just landed on the resort’s helipad.

Fatal Accident Rates

The Western-built turbine helicopter fatal accident rate in 2014, at about one per 550 helicopters in service², was some 40% better than in 2013 when the rate was one per 350 helicopters and, on this basis, probably made 2014 the safest year ever for this class of helicopter.

The 2014 fatal accident rate compares very favorably with earlier years – the turbine helicopter fatal accident rate for the decade of the 1990s was one per 230 helicopters while that for the 2000s was one per 310 helicopters. The rate for the first five years of this decade (2010-2014), was one per 385 helicopters. On average, Western-built turbine helicopters are now about twice as safe as they were at the start of the 1990s.

The fatal accident rate for multi-engine helicopters in 2014 was one per 910 helicopters. During the decade of the 1990s, the rate was one per 245 helicopters while that for the 2000s was one per 350. The rate for the first five years of this decade (2010-2014) was one per 500 helicopters.

The fatal accident rate for single-engine helicopters in 2014 was one per 455 helicopters, markedly better than the annual average for the first five years of this decade (2010-2014) at one per 320 helicopters. The fatal accident rate for the 1990s was one per 225 helicopters and for the 2000s one per 295 helicopters.

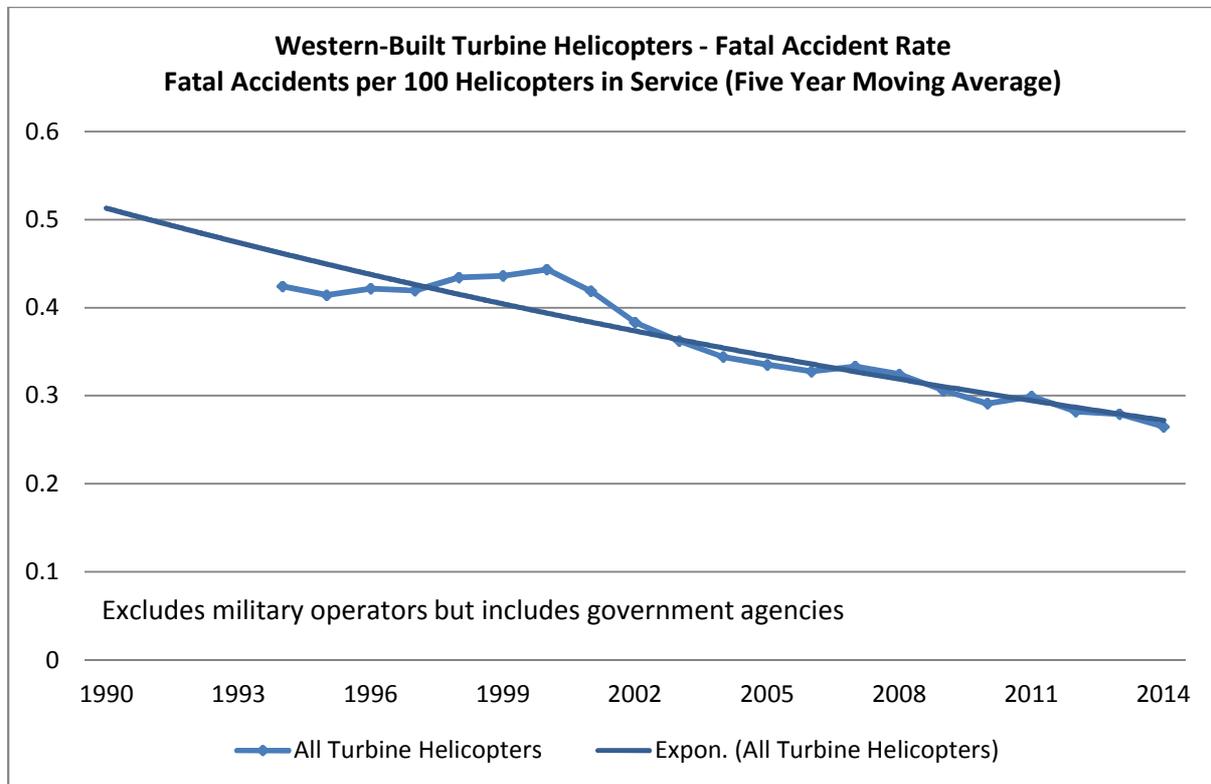
¹ Western-built turbine helicopters only. Includes helicopters operated by government agencies whether civil registered or not. Excludes deliberate acts of violence.

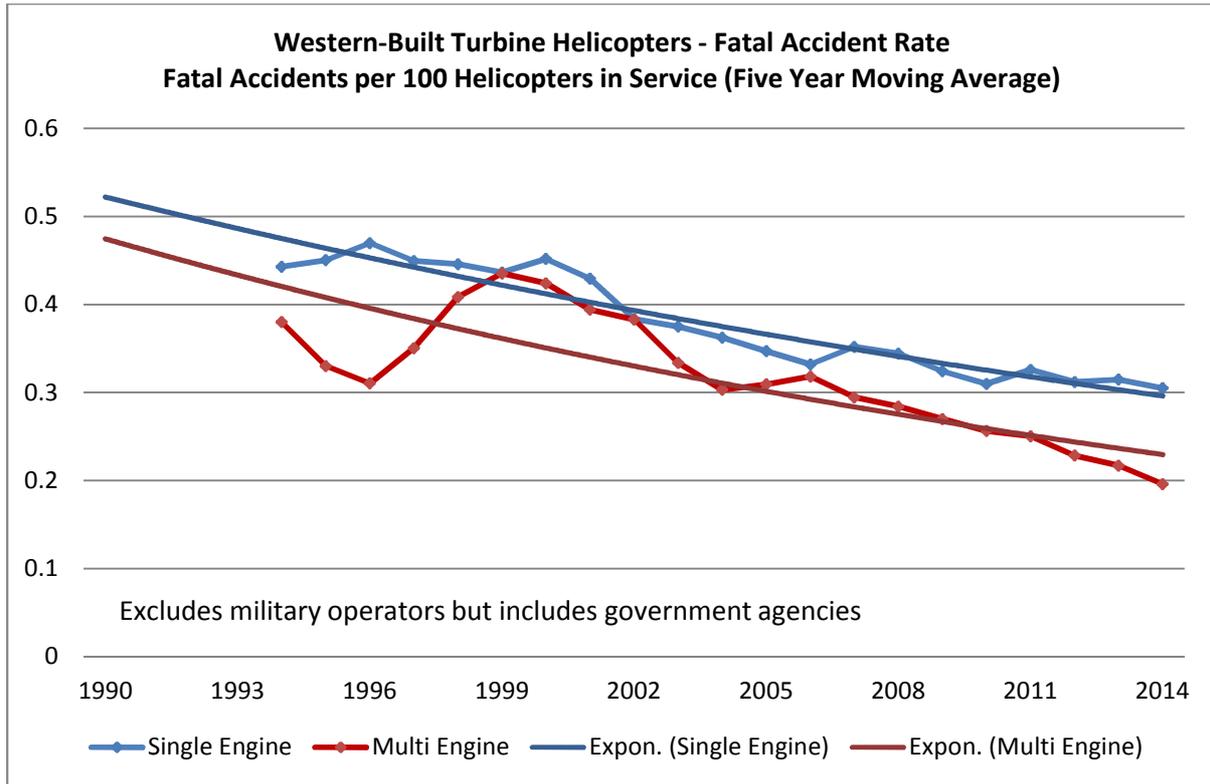
² Accident Rates. Currently we do not have good data for the number of flights etc on a global basis for this class of aircraft to allow us to calculate accident rates in the form of, for instance, “fatal accidents per million flights”. However, we do have good fleet data and this allows us to use “aircraft 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.

Annual Fatal Accident Rates (Western-built Turbine Helicopters) – Last 10 Years										
Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014P
All	0.36	0.31	0.32	0.31	0.24	0.29	0.34	0.24	0.29	0.18
Single	0.40	0.29	0.36	0.33	0.26	0.32	0.37	0.29	0.34	0.22
Multi	0.29	0.35	0.24	0.26	0.21	0.23	0.30	0.15	0.20	0.11

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 in recent years and, over the last five years, the multi-engine helicopter fatal accident rate has been more than 30% better than that for the singles.





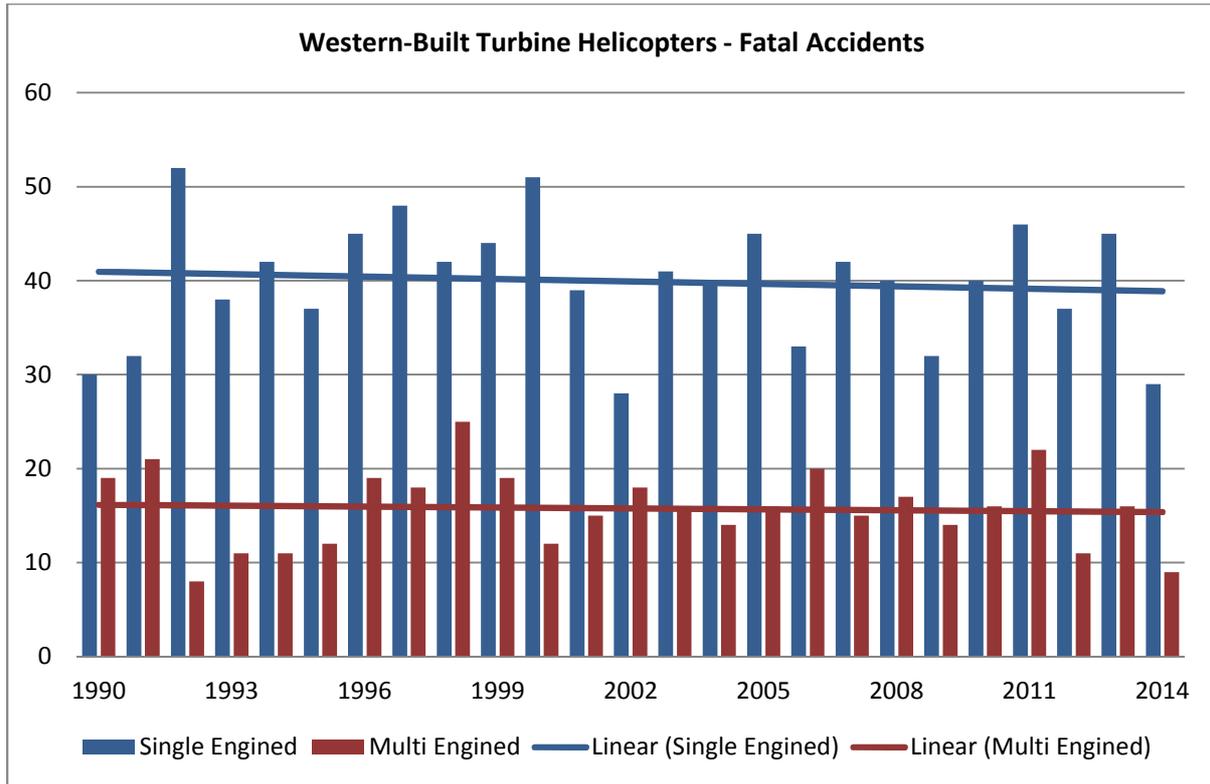
Fatal Accidents

Turbine helicopters suffered a total of 38 fatal accidents last year, 23 fewer than in 2013 when there were 61 fatal accidents and 10 fewer than in 2012 when there were 48. There were fewer fatal accidents in 2014 than in any year since at least 1990. The year 2011, with 68 fatal accidents, was the worst year since 1990.

Despite the improving fatal accident rate and the relatively good result for 2014, there has been no significant improvement in the annual number of fatal accidents for many years with, on average, still about 55 a year. The number of helicopters in operation has been increasing so safety must, currently, be keeping up with the expansion of the industry, but has not improved to the point where the number of fatal accidents in a year begin to decline.

Single-engine helicopters suffered 29 fatal accidents in 2014, 16 less than in 2013 and the lowest number in any year since 2002 when there were 28. The number of single-engine fatal accidents in 2014 was also well below the long-term trend of about 39 per year.

There were only nine fatal accidents to multi-engine helicopters in 2014, seven less than in 2013 and the lowest number in any year since 1992 when there were only eight. The 2014 result again falls well below the long-term trend of about 16 per year. Although there have been individual good and bad years, neither single nor multi-engine helicopters have shown any significant improvement in the frequency of fatal accidents for more than 20 years.



Annual Fatal Accidents (Western-built Turbine Helicopters) – Last 10 Years										
Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014P
All	61	53	57	57	46	56	68	48	61	38
Single	45	33	42	40	32	40	46	37	45	29
Multi	16	20	15	17	14	16	22	11	16	9

Fatal accidents involving passenger and/or crew deaths

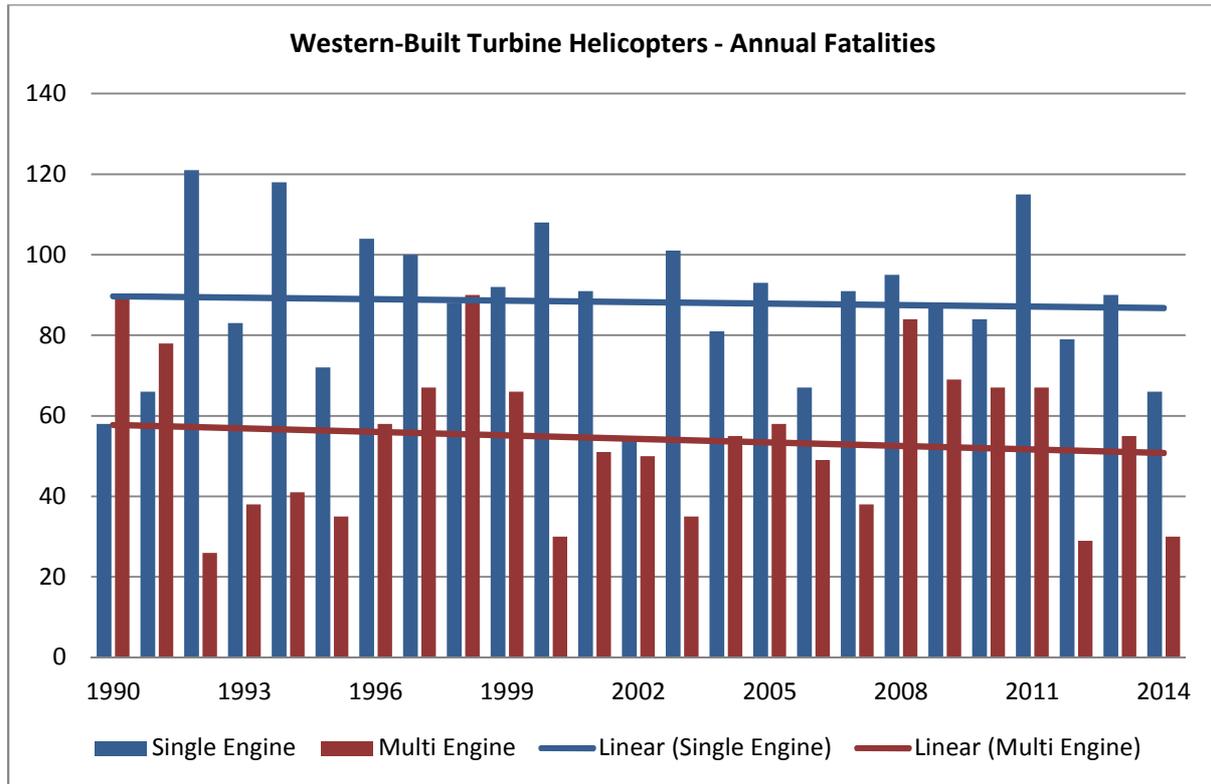
Fatalities

A total of 96 passengers and crew died in the 38 fatal accidents during 2014, giving a simple average of about 2.5 fatalities per accident. There were 49 fewer fatalities in 2014 than in 2013 and fewer people were killed last year in Western-built turbine helicopter accidents than in any year since at least 1990. The best previous year in the data set was 2002 when 105 passengers and crew were killed. The long-term trend is currently at about 130 fatalities per year.

Some 66 passengers and crew died in the 29 fatal accidents suffered by single-engine helicopters in 2014, giving a simple average of about 2.3 fatalities per fatal accident. This is slightly up on the average for 2013, when this class of helicopter suffered 45 fatal accidents killing 90 passengers and crew. The 2014 result was very considerably better than the long-term trend of about 85 fatalities per year but, as with the trend in the number of fatal accidents, there has been no significant improvement in the number of fatalities per year on this class of helicopter for more than 20 years.

Only 30 passengers and crew died in the nine fatal accidents suffered by multi-engine helicopters in 2014, giving a simple average of 3.3 fatalities per fatal accident. The 2014 death toll was a considerable improvement on 2013, when 55 people died in 16 fatal accidents, and was only slightly worse than 2012, which saw 29 fatalities from 11 fatal accidents. However, despite last year's relatively good result, as with single-engine

helicopters, there has been little improvement in the annual number of fatalities in accidents involving multi-engine helicopters at least since 1990.



Annual Fatalities (Western-built Turbine Helicopters) – Last 10 Years										
Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014P
All	151	116	129	179	157	151	182	108	145	96
Single	93	67	91	95	88	84	115	79	90	66
Multi	58	49	38	84	69	67	67	29	55	30

Passenger and crew fatalities

The worst accidents in 2014 included:-

- Planalto Industria Mecanica AS350BA (PT-YJJ) on 7 June, which killed the pilot and four passengers when it crashed shortly after take-off at night from a remote location near Aruana, Brazil.
- South Korea National Rescue Services AS365N3 (HL9461) on 17 July, which entered a steep dive and crashed on a street in Gwangju, Korea, killing the two crew and three rescue personnel on board. The helicopter was returning to its base at Gangneung after having taken part in search operations, looking for the remains of 11 people still missing after the MV Sewol ferry disaster on 16 April.
- Heli Lausanne SA EC130B4 (HB-ZJC), on 2 October, which hit trees and crashed while landing at a location near Montbeliard, France, in poor weather, killing the pilot and four of the six passengers on board. The two passengers who survived were seriously injured.
- Nano StroyInvest Jsc AS350B3 (RA-04032) on 20 November, which hit trees and crashed while landing at a location near Nizhny Novgorod, Russia, in darkness and in poor weather, killing all five onboard.

- Helimarte Taxi Aereo AS350B (PT-HNC) on 27 December, which crashed, killing the pilot and four passengers, shortly after take-off from Condo Iporanga northeast of Guarujá, Sao Paulo.

Although not included in these statistics, a Sasa SA Colombia Bell 206L3 (HK-4462) crashed on 9 January, killing the pilot and four passengers after coming under small arms fire near Anori, Colombia.

Fatality Rates

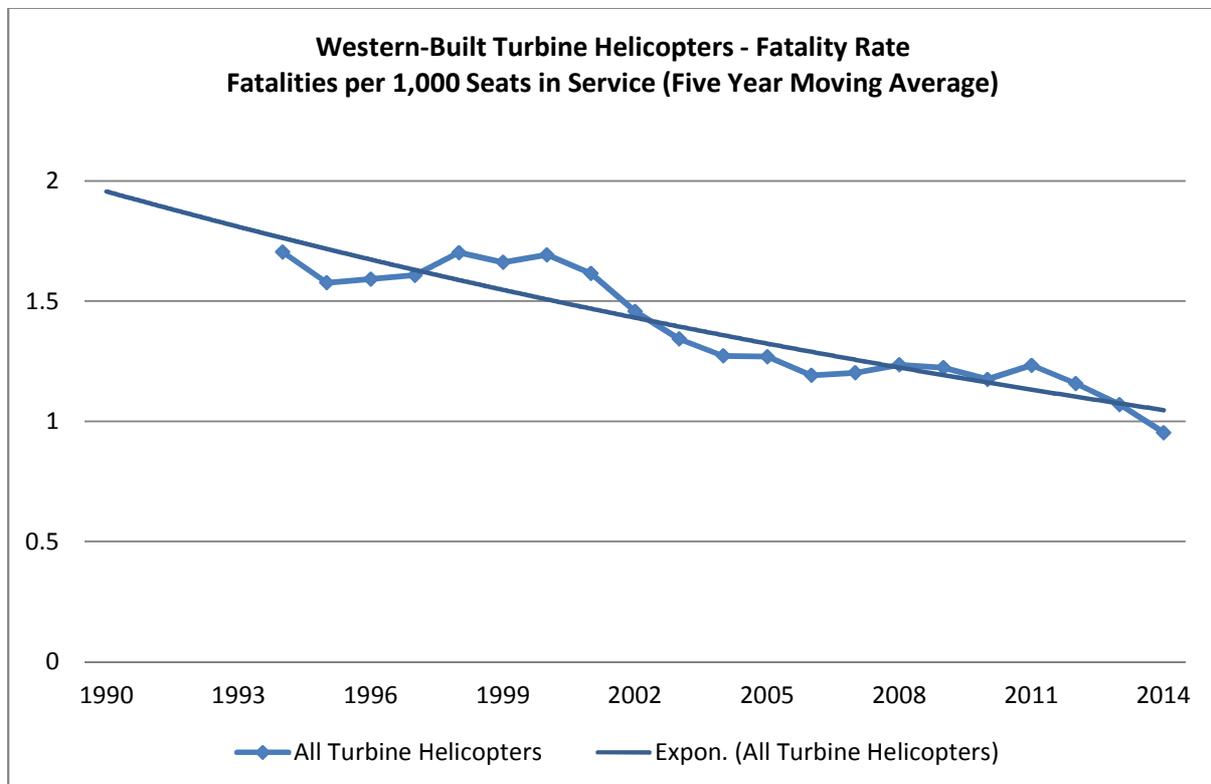
Fatality rates in 2014, on a deaths per 1,000 seats basis, generally followed the pattern shown for fatal accidents, with both single and multi-engine helicopters producing a relatively good result.

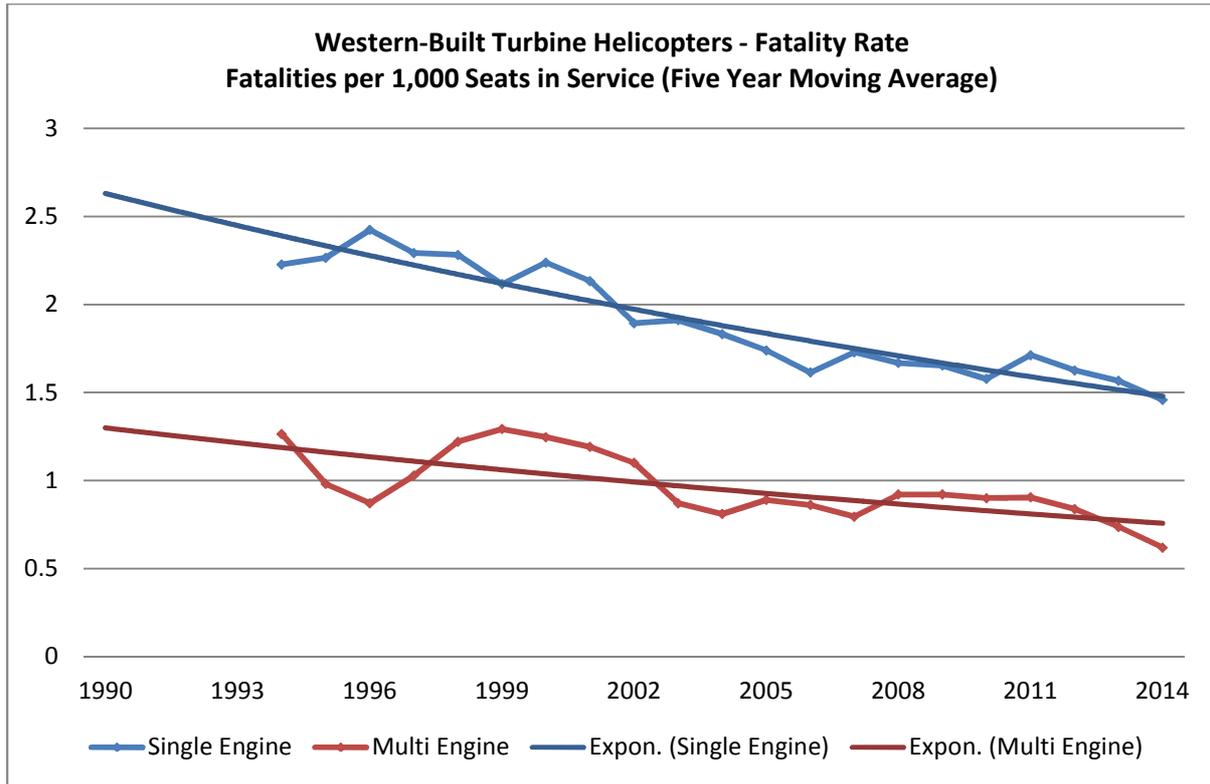
Single-engine helicopters showed a significant improvement in 2014, going from about one death per 680 seats in 2013, to about one per 940 seats last year. Multi-engine helicopters also improved very considerably with a fatality rate in 2014 of one per 2,800 seats compared with one per 1,470 in 2013. Fatality rates for both single and multi-engine Western-built helicopters in 2014 were better than any year since at least 1990.

Annual Fatality Rates (Western-built Turbine Helicopters) – Last 10 Years

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014P
All	1.37	1.01	1.09	1.43	1.20	1.12	1.32	0.76	0.98	0.63
Single	1.87	1.32	1.74	1.76	1.58	1.48	1.99	1.33	1.47	1.06
Multi	0.98	0.81	0.60	1.23	0.95	0.87	0.85	0.36	0.68	0.36

Fatalities (passengers and crew) per 1,000 seats in service





Paul Hayes, London, 10 February, 2015

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