

DOCKETED
USNRC 

State's Exhibit 76
F-16 Crash Rate Calculations

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OFFICE OF THE SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

A. F-16 Lifetime Crash Rates, Total Crashes/Total Miles

Total F-16 Crashes (Class A + B) per Total Flight Hours, FY1975-FY2000

Total F-16 Crashes (Class A and B Mishaps) per Total Flight Hours for 1975 to FY 2000	Total Flight Hours	Total Crashes/Flight Hours
316	6313941	5.0048E-05

Source: <http://www.afsc.saia.af.mil/AFSC/RDBMS/Flight/stats/f16mfs.html>

	Lifetime Total Crash Rate
crashes/hour (calculated above)	5.0048E-05
Velocity of aircraft in miles per hour	471.85
C = crashes/hour * velocity of aircraft in miles/hour = crashes/mile	1.06E-07

Note:
Assumed velocity based *Data Development Technical Support Document for the Aircraft Crash Risk Analysis Methodology (ACRAM) Standard ("ACRAM Report")*(1996), Kimura et al., Tables 4.7 and 4.8.

	Projected FY2001 Total Crash Rate
C = 1.08989E-08 x (Year-1994) + 4.81815E-08 in crashes/mile	1.24E-07

Note:
Based on linear regression of data from FY95-FY00.

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B. Calculation of "Normal Flight" Crash Rates, Crashes/Mile

To develop a crash rate under "normal flight conditions, the following equation was used:

$$C_{\text{normal}} = C_{\text{total}} \times f_{\text{normal}} / f_{\text{flight}}$$

where,

- C_{normal} = F-16 crash rate under "normal flight conditions", crashes/mile
- C_{total} = Total F-16 crash rate under all flight conditions, crashes/mile
- f_{normal} = Fraction of crashes occurring under "normal flight conditions"*
- f_{flight} = Fraction of flights flown under "normal flight conditions"*

*Source: ACRAM Report

	Lifetime F-16 Crash Rate	2001 Projected F-16 Crash Rate
Total Crash Rate, crashes/mile	1.06E-07	1.24E-07
f_{normal}	0.1509	0.1509
f_{flight}	0.4718	0.4718
Normal Conditions Crash Rate, crashes/mile flown in "normal" mode	3.39E-08	3.98E-08

Note:

fractions, f_{normal} and f_{flight} , estimated in the ACRAMS.

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C. Calculation of "Special Flight" Crash Rates, Crashes/hour

The following equation was used:

$$C_{\text{special, per hour}} = C_{\text{total, per hour}} \times f_{\text{special}} / f_{\text{flight, special}}$$

where,

- $C_{\text{special, per hour}}$ = F-16 crash rate under "special flight conditions", crashes/hour
- $C_{\text{total, per hour}}$ = Total F-16 crash rate under all flight conditions, crashes/hour
- f_{special} = fraction of crashes occurring under "special flight conditions"*
- $f_{\text{flight, special}}$ = fraction of flights flown under "special flight conditions"*

*Source: ACRAM Report

	Lifetime F-16 Crash Rate	2001 Projected F-16 Crash Rate
Total Crash Rate, crashes/hour	5.00E-05	5.87E-05
f_{special}	0.4906	0.4906
f_{flight}	0.5284	0.5284
Special Conditions Crash Rate, crashes/hour flown in "special" mode	4.65E-05	5.45E-05

Note:

fractions, f_{special} and $f_{\text{flight, special}}$, estimated ACRAMS Report.

NUCLEAR REGULATORY COMMISSION

Docket No. _____ Official Exh. No. 76
In the matter of RFS

Staff _____ IDENTIFIED _____
Applicant _____ RECEIVED
Intervenor REJECTED _____
Other _____ WITHDRAWN _____
DATE 5/15/02 Witness _____
Clerk pad