UH-60
Computations Results
and Simulation Data

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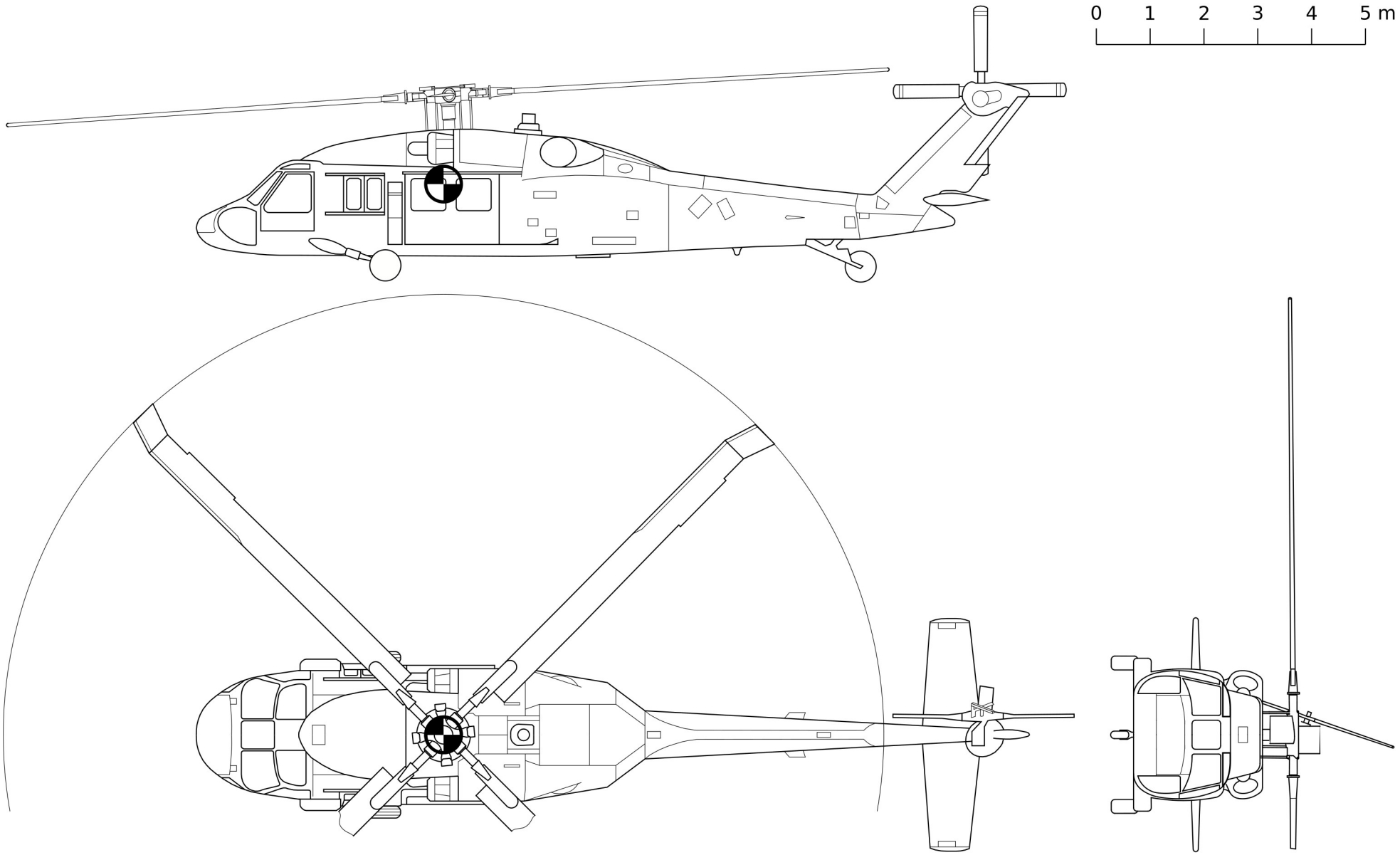
Table of Contents


0 1 2 3 4 5 m

1. General Data

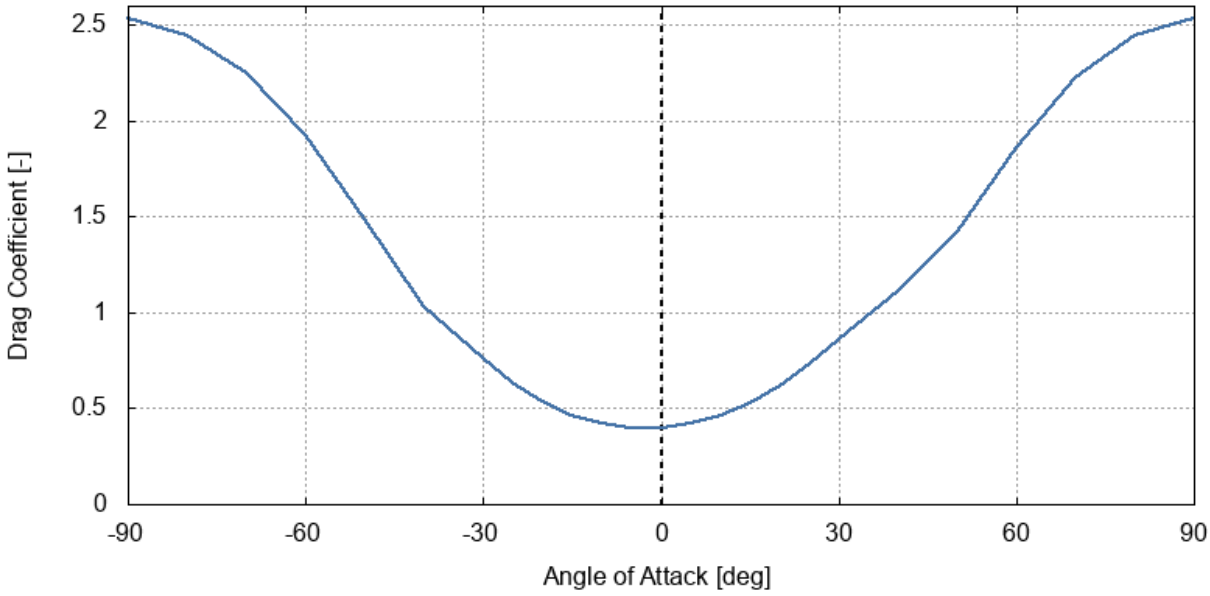
Parameter	Value	Reference
Main rotor diameter	16.36 m	[1, 2]
Main rotor blade chord	0.53 m	[1, 3]
Main rotor blade airfoil	SC 1095	[3]
Main rotor solidity	0.0826	[3]
Main rotor shaft inclination angle	3.0°	[3]
Main rotor nominal rotation speed	258 RPM	[3]
Main rotor hinge offset	0.38 m	[3]
Main rotor blade tip loss factor	0.97	[3]
Main rotor lift curve slope	5.73 1/rad	[4]
Main rotor maximum thrust coefficient	0.1846	[4]
Main rotor single blade weight	116.5 kg	[3]
Main rotor single blade moment of inertia about flapping hinge	2 058.8 $kg \cdot m^2$	[3]
Main rotor hub stationline	8.67 m	[5]
Main rotor hub waterline	8.00 m	[5]
Tail rotor diameter	3.35 m	[1, 2]
Tail rotor blade chord	0.25 m	[3]
Tail rotor blade airfoil	SC 1095	[3]
Tail rotor solidity	0.1875	[3]
Tail rotor cant angle	20.0°	[2]
Tail rotor nominal rotation speed	1 190 RPM	[3]
Tail rotor blade tip loss factor	0.92	[3]
Tail rotor blade section lift curve slope	5.73 1/rad	[3]
Tail rotor stationline	18.59 m	[5]
Tail rotor waterline	8.25 m	[5]
Fuselage length	15.43 m	[2]
Fuselage width	2.36 m	[2]
Fuselage aerodynamic reference point stationline	8.78 m	[4]
Fuselage aerodynamic reference point waterline	5.94 m	[4]
Cockpit floor waterline	5.46 m	[5]
Cabin floor waterline	5.25 m	[5]

Parameter	Value	Reference
Horizontal tail area	4.18 m^2	[1, 3]
Horizontal tail airfoil	NACA 0014	[3]
Horizontal tail stationline	17.79 m	[4]
Horizontal tail waterline	6.20 m	[4]
Horizontal tail deflection limit	up 30°, down 35°	[2]
Vertical tail area	3.00 m^2	[1, 3]
Vertical tail airfoil	NACA 0021	[3]
Vertical tail stationline	17.65 m	[4]
Vertical tail waterline	6.93 m	[4]
Lateral cyclic output at rotor	±8.0°	[3]
Longitudinal cyclic output at rotor	aft 16.5°, forward -12.3°	[3]
Pedals	left 29.9°, right 0.1°	[3]
Collective	low 9.9°, high 25.9°	[3]
Empty weight	5 118 kg	[1]
Internal fuel tanks capacity	1 361 l	[1, 2]
Internal fuel tanks stationline	10.69 m	[2]
Center of mass stationline (for 7,258 kg)	9.09 m	[3]
Center of mass waterline (for 7,258 kg)	6.38 m	[3]
Moment of inertia I_x (for 7,258 kg)	7 406 kg·m^2	[3]
Moment of inertia I_y (for 7,258 kg)	53 513 kg·m^2	[3]
Moment of inertia I_z (for 7,258 kg)	50 012 kg·m^2	[3]
Cross product of inertia I_{xz} (for 7,258 kg)	2 134 kg·m^2	[3]
Engine manufacturer	General Electric	[1]
Engine model	T700-GE-700	[1, 2]
Engine maximum power output	1 163 kW	[1]
Engine weight	207 kg	[6]
Engine specific fuel consumption at maximum continuous power	279.2 g/(kW·h)	[6]

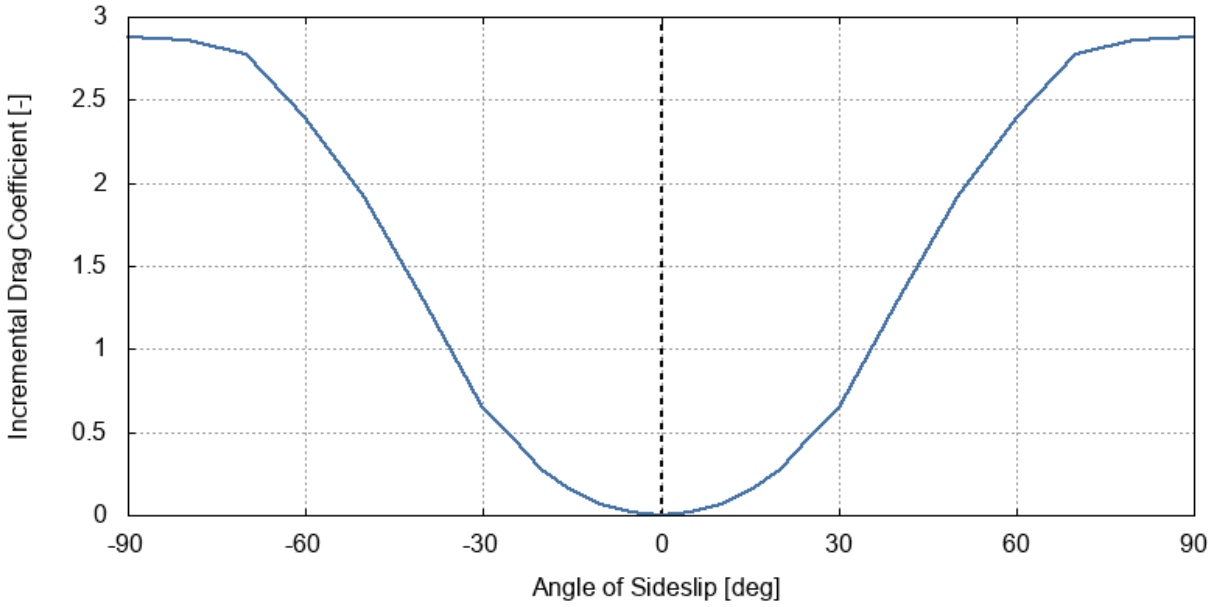
UH-60 data

2. Aerodynamic Characteristics

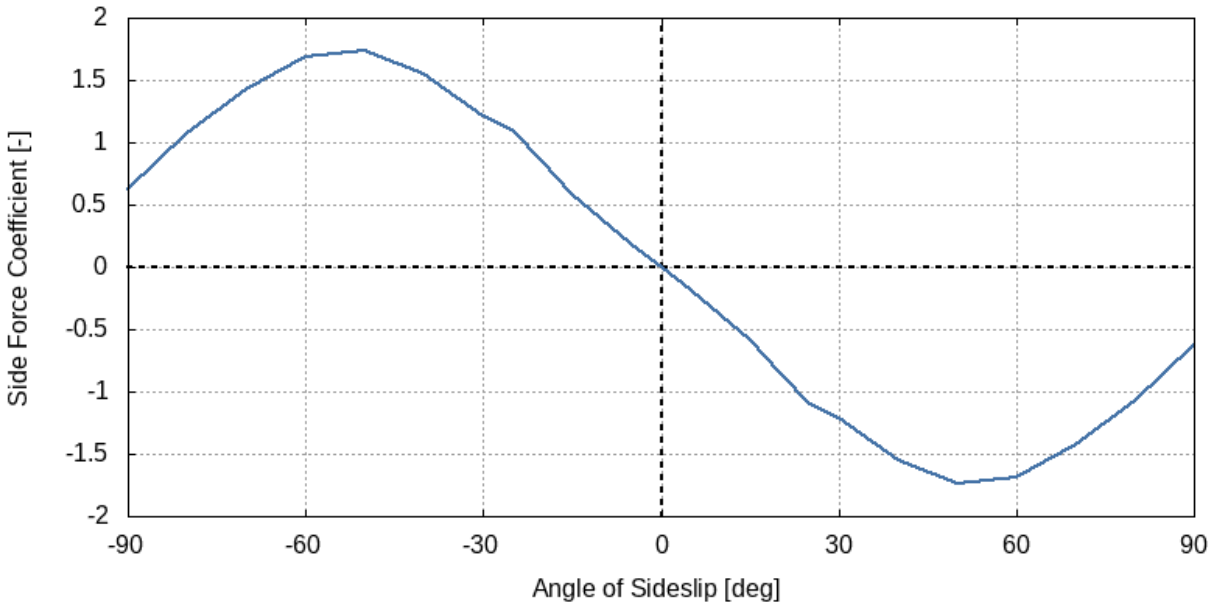
Aerodynamic characteristics are given in [3].



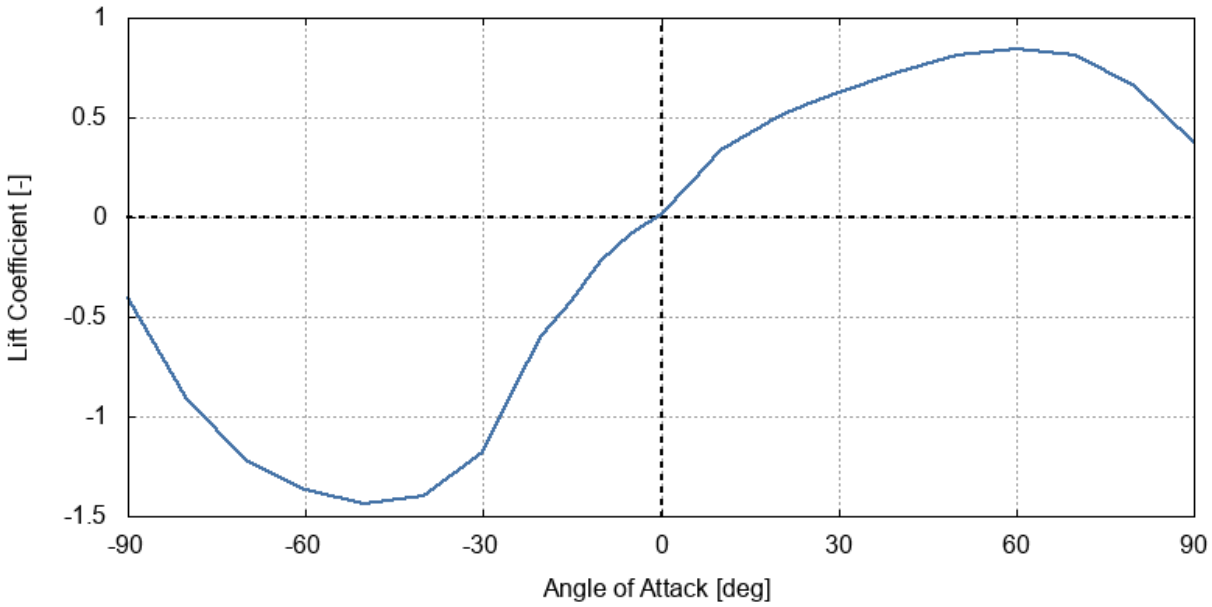
Fuselage drag coefficient due to angle of attack [3]



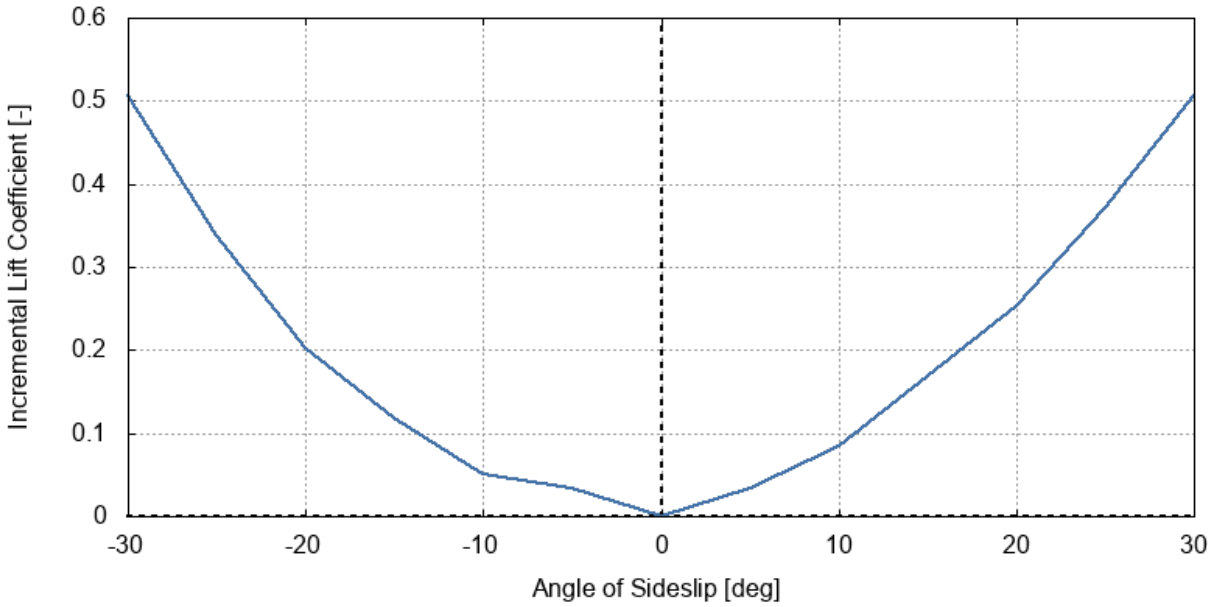
Incremental fuselage drag coefficient due to angle of sideslip [3]



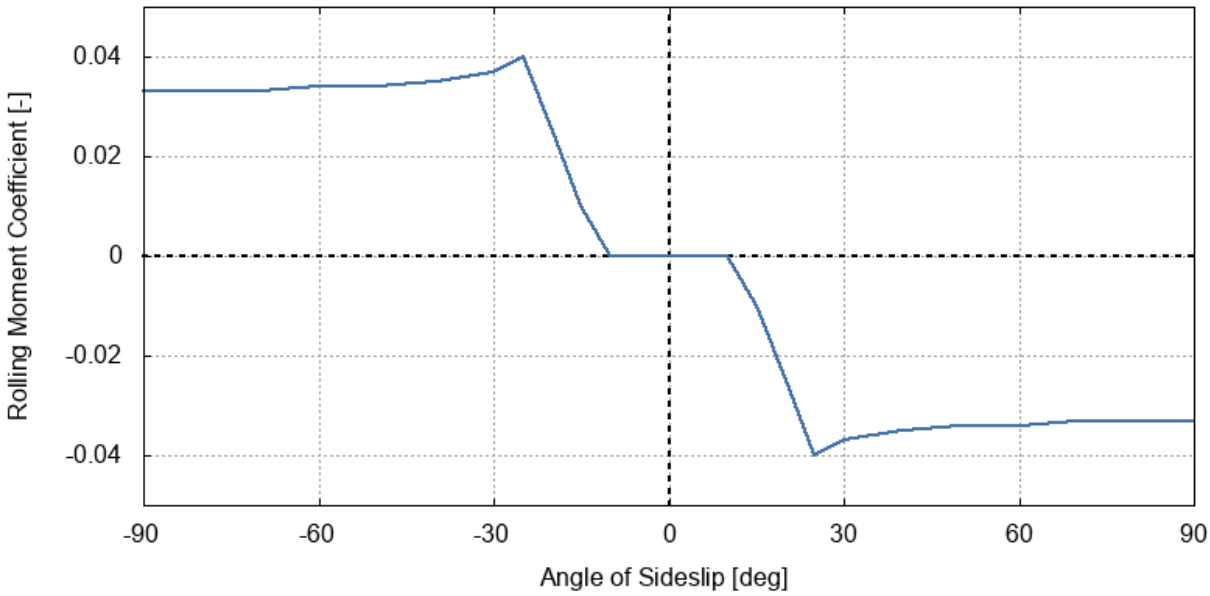
Fuselage side force coefficient due to angle of sideslip [3]



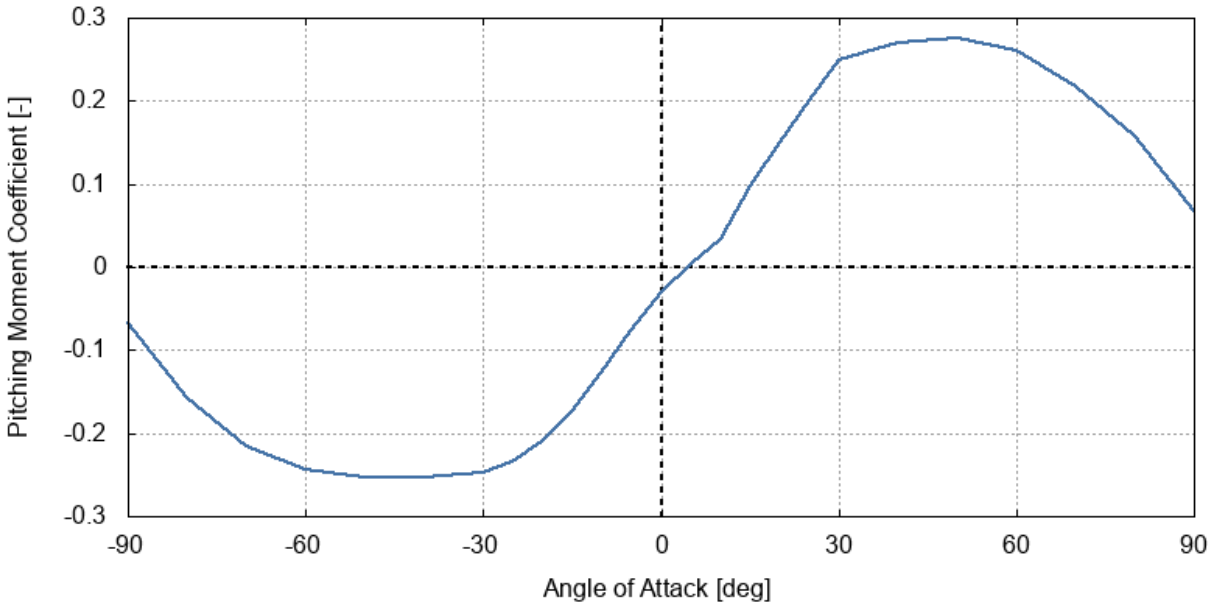
Fuselage lift coefficient due to angle of attack [3]



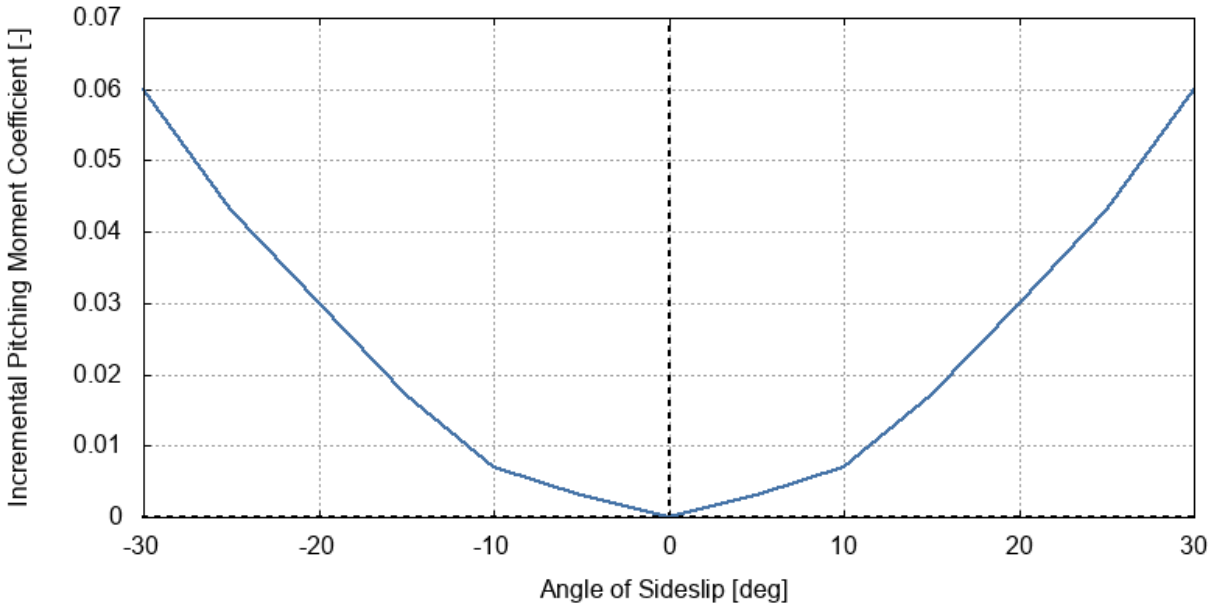
Incremental fuselage lift coefficient due to angle of sideslip [3]



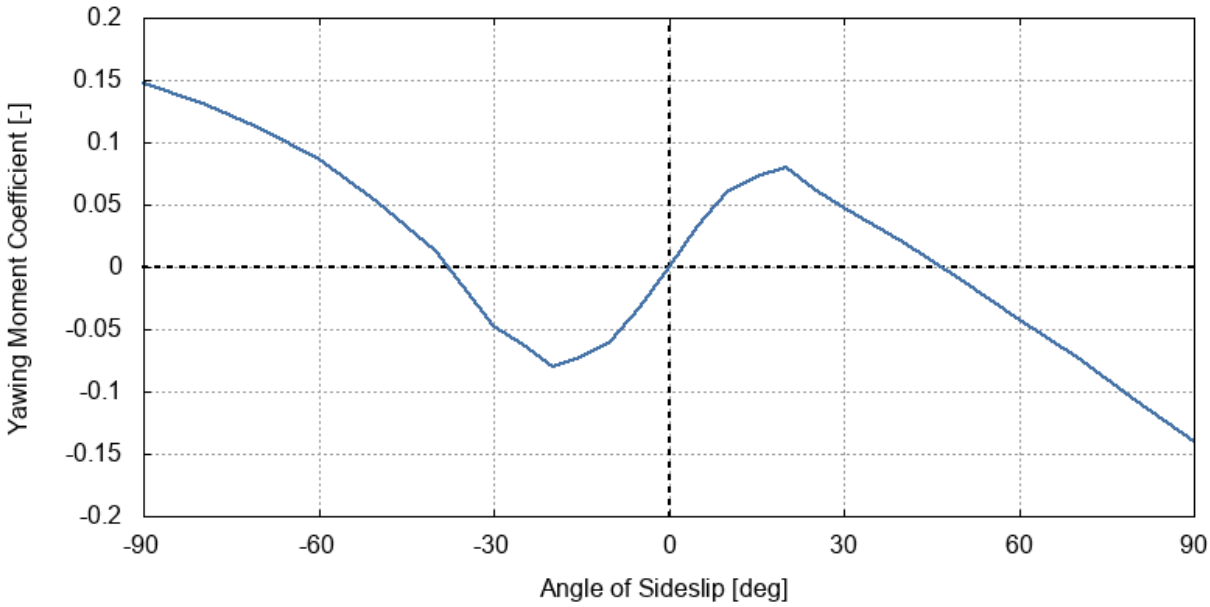
Fuselage rolling moment coefficient due to angle of sideslip [3]



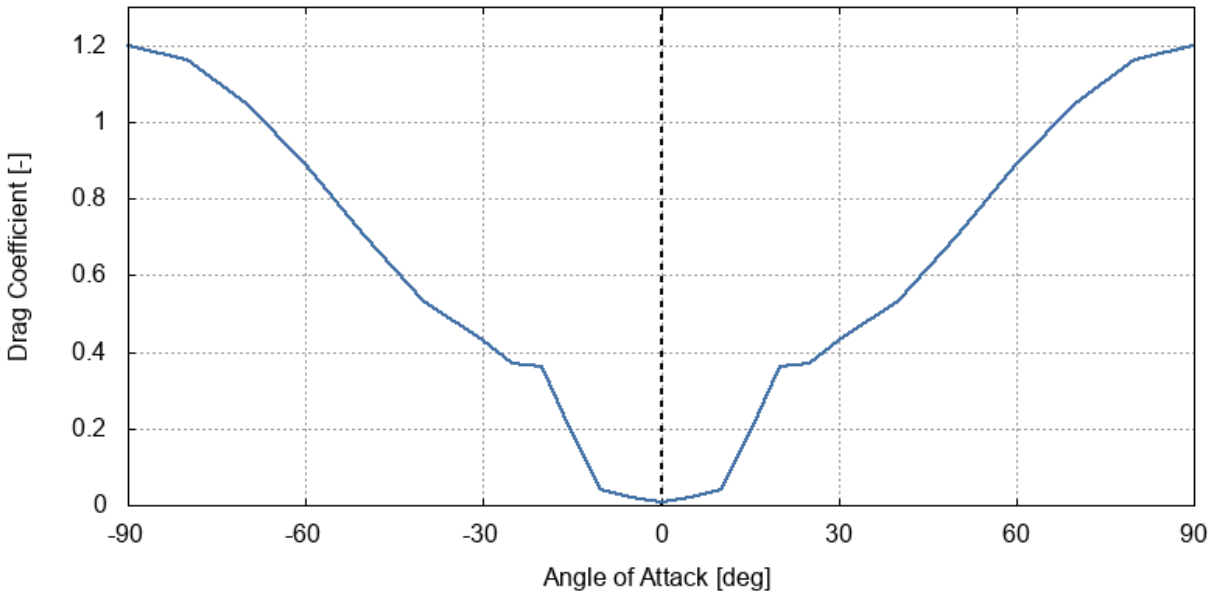
Fuselage pitching moment coefficient due to angle of attack [3]



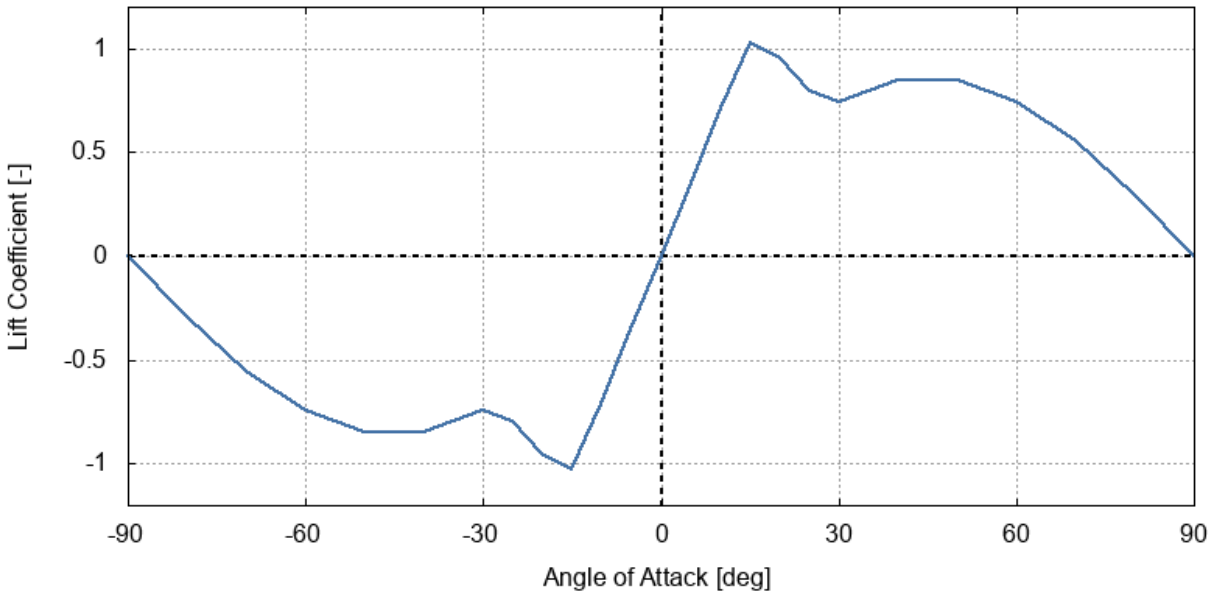
Incremental fuselage pitching moment coefficient due to angle of sideslip [3]



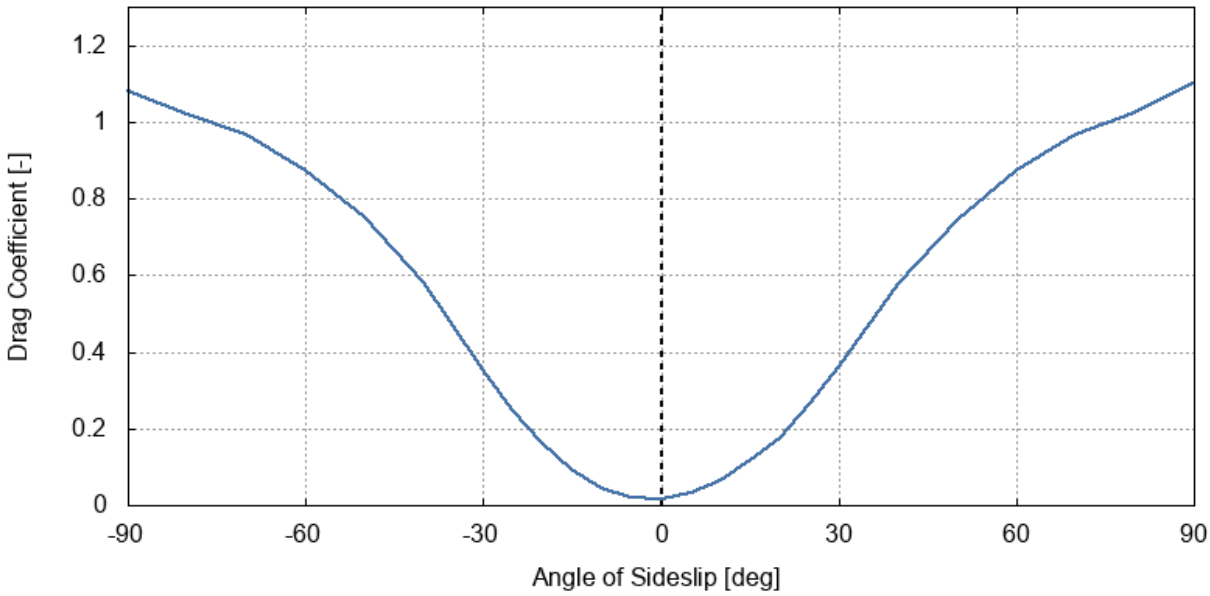
Fuselage yawing moment coefficient due to angle of sideslip [3]



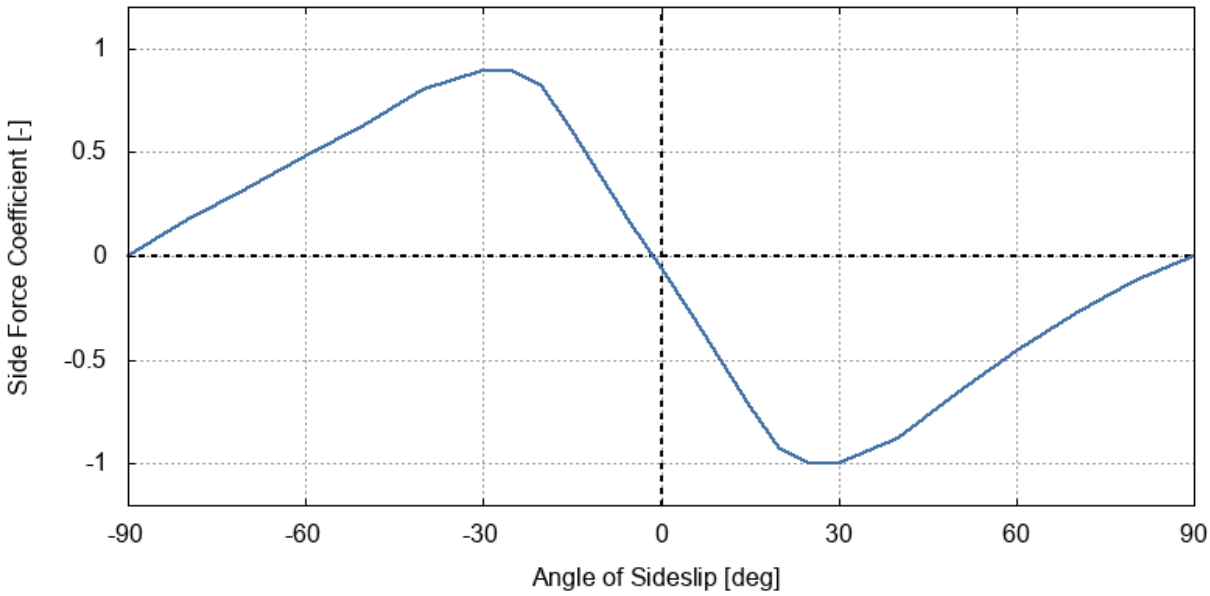
Horizontal tail drag coefficient due to angle of attack [3]



Horizontal tail lift coefficient due to angle of attack [3]



Vertical tail drag coefficient due to angle of sideslip [3]



Vertical tail side force coefficient due to angle of sideslip [3]

3. Mass Data

Data given in [2], [3] and [5] were used to calculate empty aircraft inertia tensor and center of mass coordinates. Results are given in the following table.

Parameter	**Value**
Center of mass x-coordinate	-0.15 m
Center of mass y-coordinate	0.00 m
Center of mass z-coordinate	-0.25 m
Moment of inertia I_x	6 543.0 kg·m^2
Moment of inertia I_y	46 293.1 kg·m^2
Moment of inertia I_z	43 498.3 kg·m^2
Cross product of inertia I_{xy}	0.0 kg·m^2
Cross product of inertia I_{xz}	-3 753.0 kg·m^2
Cross product of inertia I_{yz}	0.0 kg·m^2

UH-60 empty aircraft inertia tensor and center of mass coordinates

Structure group	**Weight [kg]**	**Coordinates [m]**			**First moment of mass [kg·m]**			**Moment of inertia (Body Axis System) [kg·m^2]**					
		x	y	z	S_X	S_Y	S_Z	I_x	I_y	I_z	I_{xy}	I_{xz}	I_{yz}
Empty aircraft	5 118	-0.15	0.00	-0.25	-791.9	0.0	-1 274.0	6 543.0	46 293.1	43 498.3	0.0	-3 753.0	0.0
Pilot (left)	80	2.90	-0.70	0.40	232.0	-56.0	32.0	52.0	685.6	712.0	162.4	-92.8	22.4
Pilot (right)	80	-0.70	0.70	0.40	232.0	56.0	32.0	52.0	685.6	712.0	-162.4	92.8	-22.4
Fuel	1 100	-2.02	0.00	0.70	-2 222.0	0.0	770.0	539.0	5 027.4	4 488.4	0.0	1 555.4	0.0
Personnel (4th row)	440	0.04	0.00	0.50	15.6	0.0	220.0	110.0	110.6	0.6	0.0	-7.8	0.0
Personnel (5th row)	440	-1.17	0.00	0.50	-514.1	0.0	220.0	110.0	710.7	600.7	0.0	257.0	0.0
Gross weight	7 258	-0.42	0.00	0.00	-3 048.4	0.0	0.0	7 406.0	53 513.0	50 012.0	0.0	-2 134.0	0.0

UH-60 mass data intermediate results

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