



Cessna Aircraft Company Raytheon Missile Systems AIAA Foundation

The 2009 Cessna Aircraft Company/Raytheon Missile Systems Design/Build/Fly Competition Flyoff was held at TIMPA Field in Tucson, AZ on the weekend of April 17-19, 2009. This was the 13th year the competition was held. A total of 54 teams submitted written reports to be judged. 41 teams attended the flyoff, 39 of which completed the technical inspection. Approximately 600 students, faculty, and guests were present. Near ideal weather allowed for near non-stop flights to be conducted each day. Of the 133 official flight attempts, 49 resulted in a successful score divided among 32 teams. The quality of the teams, their readiness to compete, and the execution of the flights continues to improve each year.

The first two mission objectives for this year were to fly a high-drag payload, a simulated external fuel tank, both empty at high speed and full for endurance. The third mission was to fly an asymmetric load of wing stores, simulated missiles. The flight score was the sum of the three flight scores. In addition to the flight tasks, teams had to design their complete system for the minimum weight with a constrained package size, and were timed on how quickly they could prepare their aircraft for flight. As usual, the total score is the product of the flight score and written report score. More details can be found at the competition website: <http://www.ae.uiuc.edu/aiaadbfbf>

The top places were taken by teams from two universities: Oklahoma State University and The University of Southern California. Oklahoma State University Team Black scored first place with an excellent written report score, very low System Complexity Factor score, and successful scores for all three flight Missions. Oklahoma State University Team Orange finished in Second place, and The University of Southern California team Turbo Encabulator finished in Third. A new feature for the contest was the Design Engineering TC sponsored award for the Best Paper Score, which was won by the Wichita State University sUAVe entry with a score of 97.50. The complete standings are listed in the table below.

The fastest pre-mission assembly was 11.60 seconds by OSU Team Black. That surprised us. But then, the students always surprise us. The asymmetric loading mission was a challenge, as expected, with only three teams successfully completing the mission; OSU Team Black, USC team Turbo Encabulator and Georgia Tech Team Buzzed. Note that this year the difference between 2nd and 3rd place was a higher report score, not a higher flight score. This confirms the importance the contest places on a teams ability to document their design work as well as demonstrate successful flight performance.

Raytheon Missile Systems hosted another great DBF event. We owe our thanks for the success of the DBF competition to the efforts of many volunteers from Cessna Aircraft, Raytheon Missile Systems, the Naval Research Lab, and the AIAA sponsoring technical committees: Applied Aerodynamics, Aircraft Design, Flight Test, and Design Engineering. These volunteers collectively set the rules for the contest, publicize the event, gather entries, judge the written reports, and organize the flyoff. Thanks also go to the Corporate Sponsors: the Raytheon Missile Systems, Cessna Aircraft, and the AIAA Foundation for their financial support.

Finally, this event would not be nearly as successful without the hard work and enthusiasm from all the students and advisors. If it weren't for you, we wouldn't keep doing it.

Greg Page
For the DBF Governing Committee

2009 Design/Build Fly Competition Final Results

University	Entry Name	Report Score	RAC	SCF	Mission 1 Score	Mission 2 Score	Mission 3 Score	Total Flight Score	Final Score
Oklahoma State University	Black	97.00	36.15	7.64	49.8	75.0	100.0	224.8	21807
Oklahoma State University	Orange	95.00	36.60	5.14	28.9	50.5	0.0	79.4	7540
University of Southern California	Turbo Encabulator	87.43	35.40	3.00	20.8	29.5	33.4	83.7	7317
Massachusetts Institute of Technology	Just Wing It	92.50	28.00	10.00	50.0	0.0	0.0	50.0	4625
University of California, Irvine	Zot Rocket	88.00	32.40	3.10	17.9	30.5	0.0	48.4	4258
University of Oklahoma	Team OU	91.00	34.30	2.90	18.2	28.5	0.0	46.7	4247
University of Ljubljana	Edvard Rusjan Slovenian Team	85.00	37.25	3.22	16.9	31.6	0.0	48.5	4120
Pennsylvania State University	Hope of the Jackalope	84.50	33.65	2.42	14.5	23.8	0.0	38.3	3234
Purdue University	Team Astro-Nots	90.18	28.55	6.99	32.7	0.0	0.0	32.7	2953
University of Washington	Montlake Marauder	76.00	35.75	3.51	16.0	0.0	0.0	16.0	1212
Rensselaer Polytechnic Institute	Redhawks	58.50	39.80	1.25	7.4	12.3	0.0	19.7	1151
Georgia Institute of Technology	Team Buzzed	70.50	29.55	0.80	3.8	7.8	3.7	15.3	1080
Wichita State University	WU Stryker Unit	91.00	34.50	2.82	9.7	0.0	0.0	9.7	881
University of Colorado at Boulder	Buff-2 Bomber	89.00	31.75	3.01	8.0	0.0	0.0	8.0	713
San Diego State University	B.A.M.	70.50	30.30	2.28	8.5	0.0	0.0	8.5	597
Technion Israel Institute of Technology	Tech-Away	82.50	37.00	1.27	6.6	0.0	0.0	6.6	547
Pennsylvania State University	The Penn State Express	83.00	35.40	1.28	5.9	0.0	0.0	5.9	494
University of Texas at Austin	Team B.O.B.	88.50	33.40	1.20	4.6	0.0	0.0	4.6	404
University of California Los Angeles	The Blue Bearons	80.25	46.85	1.03	4.5	0.0	0.0	4.5	358
Virginia Polytechnic Institute	Angle of Attack	82.50	32.50	0.64	3.7	0.0	0.0	3.7	308
University of Central Florida	TK-40%	85.50	60.65	0.27	0.9	2.6	0.0	3.6	304
Rose-Hulman Institute of Technology	Team Phoenix	76.00	38.90	0.89	3.5	0.0	0.0	3.5	269
Western Michigan University	Dromedary	92.75	53.35	0.61	2.1	0.0	0.0	2.1	191
Clarkson University	Knighthawks	74.50	42.90	0.98	2.1	0.0	0.0	2.1	153
Cal Poly San Luis Obispo	I See BM's	52.50	27.45	0.62	1.9	0.0	0.0	1.9	102
Universidad Pontificia Bolivariana	Black Jack	77.50	59.95	0.38	1.2	0.0	0.0	1.2	91
University of Kansas	RC Bomber	84.50	51.80	0.20	0.6	0.0	0.0	0.6	54
University of New York at Buffalo	Daedalus	71.00	59.69	0.20	0.7	0.0	0.0	0.7	53
University of Strathclyde Glasgow	The Claymore Pigeon	91.00	86.30	0.18	0.6	0.0	0.0	0.6	53
Turkish Air Force Academy	Cevheri	67.00	74.30	0.14	0.3	0.0	0.0	0.3	18
University of Kentucky	BIGBLUE Flyer	72.50	107.80	0.05	0.2	0.0	0.0	0.2	13
University of Arizona	Up To No Good	56.25	133.80	0.05	0.2	0.0	0.0	0.2	11
Wichita State University	Suave	97.50	25.90	0.00	0.0	0.0	0.0	0.0	0
University of Texas at Austin	Bevotron	93.25	34.05	0.00	0.0	0.0	0.0	0.0	0
Auburn University	The Planesmen	89.50	24.60	0.00	0.0	0.0	0.0	0.0	0
Ohio Northern University	The Black Swan	88.50	67.25	0.00	0.0	0.0	0.0	0.0	0
University of Illinois at Urbana-Champaign	Shenanigans	84.95	27.25	0.00	0.0	0.0	0.0	0.0	0
Anadolu University	Vecihi	78.00	35.95	0.00	0.0	0.0	0.0	0.0	0
University of Miami	UM AIAA	33.88	81.25	0.00	0.0	0.0	0.0	0.0	0
Daniel Webster College	Team m dot	83.50	998.00	0.00	0.0	0.0	0.0	0.0	0
Cal Poly Pomona	The Flying Warthogs	49.00	998.00	0.00	0.0	0.0	0.0	0.0	0
Embry-Riddle University Prescott Campus	Thunderhorse	88.00	999.00	0.00	0.0	0.0	0.0	0.0	0
Case Western Reserve University	Gavuzga	87.25	999.00	0.00	0.0	0.0	0.0	0.0	0
University of Florida	UFO	86.00	999.00	0.00	0.0	0.0	0.0	0.0	0
Istanbul Technical University	ATA-10	79.00	999.00	0.00	0.0	0.0	0.0	0.0	0
West Virginia University	Murphy's Phoenix	77.50	999.00	0.00	0.0	0.0	0.0	0.0	0
Columbia University	The Fu Fighter	66.50	999.00	0.00	0.0	0.0	0.0	0.0	0
Parks College at St. Louis University	The Design of A^2	65.50	999.00	0.00	0.0	0.0	0.0	0.0	0
Iowa State University	CyFly	65.00	999.00	0.00	0.0	0.0	0.0	0.0	0
University of Alabama	Team Subsonic Shocks	65.00	999.00	0.00	0.0	0.0	0.0	0.0	0
University of Arkansas	Flying Razorbacks	59.00	999.00	0.00	0.0	0.0	0.0	0.0	0
University of Arizona	Team Attack Cat	53.23	999.00	0.00	0.0	0.0	0.0	0.0	0
Washington State University	Team HellCoug	39.00	999.00	0.00	0.0	0.0	0.0	0.0	0
City College of New York	Joe Carty	30.85	999.00	0.00	0.0	0.0	0.0	0.0	0