



## ***Cessna Aircraft Company Raytheon Missile Systems AIAA Foundation***

The 2012 Cessna Aircraft Company/Raytheon Missile Systems/AIAA Design/Build/Fly Competition Flyoff was held at Cessna East Field in Wichita, KS on the weekend of April 13-15, 2012. This was the 16<sup>th</sup> year the competition was held. A total of 68 teams submitted written reports to be judged. At least 57 teams attended the flyoff, 54 of which completed the technical inspection. Approximately 500 students, faculty, and guests were present. Attendance was down this year due to a new rule limiting universities to a single team, however, the quality of the teams, their readiness to compete, and the execution of the flights was extremely high.

The primary design objectives for this year were performance based:

- Mission 1 was scored on the number of laps which could be flown in 4 minutes, so speed was important
- Mission 2 simulated carrying a specified passenger load for three laps, testing load-carrying ability.
- Mission 3 measured airplane time to climb with a two-liter water payload.

Total flight score was the sum of the three mission flight scores. As usual, the total score is the product of the flight score and written report score, divided by airplane empty weight. More details can be found at the competition website: <http://www.aiaadbf.org>

This year the flyoff was affected by significant weather events. Flights were suspended Saturday at 12:45PM by high winds, and when they did not subside by 2PM activities were terminated for the day. That night, a severe storm cell hit southeast Wichita and a tornado passed approximately  $\frac{1}{4}$  mile from Cessna East Field (see below). The hangar escaped damage – except for the food vendor trailer which was flipped – but downed power lines forced closure of the road to the site and prevented normal access. It was determined that the flyoff could not continue and a recovery plan was implemented to provide access through the main Cessna plant for teams to recover their property. We are all thankful that none of the teams experienced any property loss, and also that there weren't serious injuries to any of the Wichita population.

Despite this unprecedented weather event, two complete rotations through the flight queue were completed, and there were ten attempts at a third flight. By unanimous consensus of the DBF Organizing Committee, it was ruled that the winners of the competition would be based on the scores from the two complete rotations. This was considered the most fair, as the overwhelming majority of teams did not get an opportunity for a third attempt.

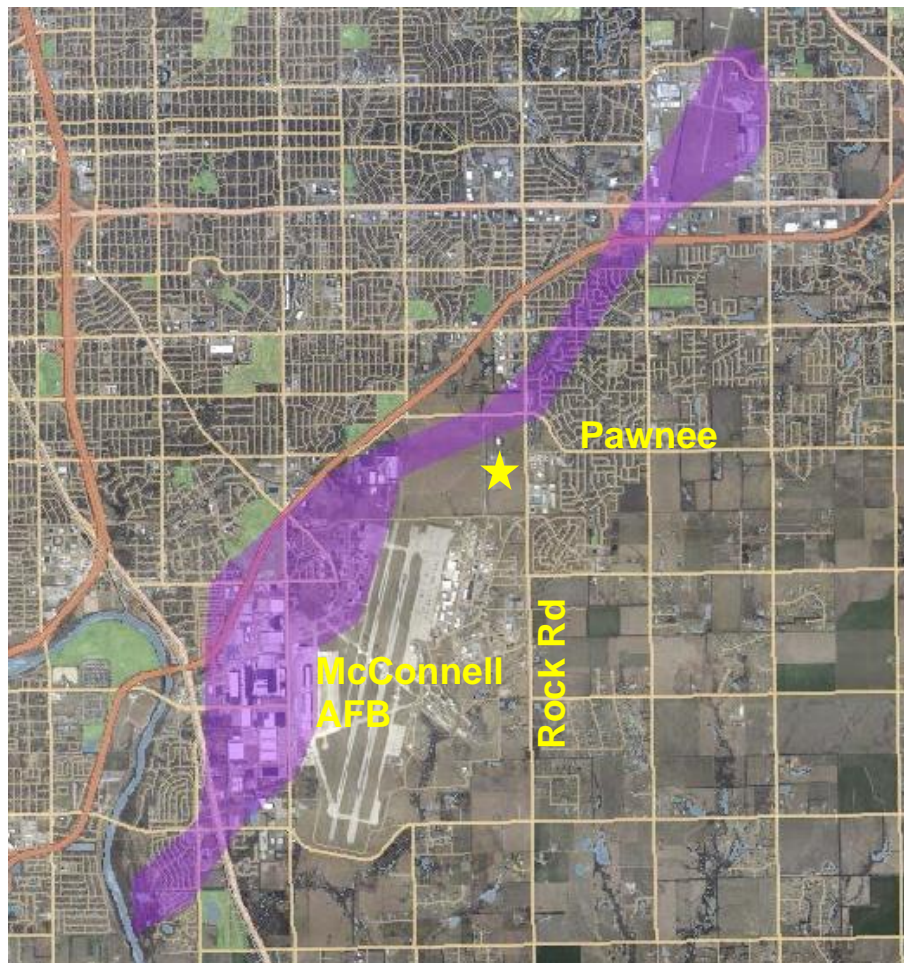
First place is awarded to San Jose State University: Team PhalanX, with the second highest report score, excellent flight scores, and second lowest RAC. Second place goes to University of California at Irvine: Angel of Attack, and third place to University of Colorado: H2Buffalo. It

should also be noted that Colorado and Irvine were the only two teams to complete all three missions, even though the third score ultimately was not used. This is a testament to their readiness to fly and to their final execution of the missions. Finally, special mention goes to Wichita State University for the highest report score at 96.50 (WSU also had the low RAC at 1.72 lb). The complete standings are listed in the table below.

We owe our thanks for the success of the DBF competition to the efforts of many volunteers from Cessna Aircraft, the Raytheon Missile Systems, 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: Cessna Aircraft, Raytheon Missile Systems, and the AIAA Foundation for their financial support. Special thanks go to Cessna Aircraft for hosting the flyoff this year.

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.

David Levy  
For the DBF Governing Committee



**Path of Tornado near 2012 DBF Competition Site, 4/14/2012**

## 2012 AIAA Design/Build/Fly Competition Final Results

Place	Team #	University	Report Score	M 1	M 2	M 3	Flight Score	RAC	Final Score
1	3	San Jose State University Team PhalanX	94.00	2.17	2.16	0.00	4.33	1.74	308.34
2	9	University of California at Irvine Angel of Attack	90.50	2.00	1.99	0.00	3.99	3.74	186.76
3	12	University of Colorado H2Buffalo	90.00	1.67	2.01	0.00	3.67	3.48	177.16
4	6	Istanbul Technical University ATA	91.95	1.67	1.97	0.00	3.64	4.00	167.41
5	15	University of Oklahoma Crimson Skies	88.00	2.00	1.94	0.00	3.94	4.58	162.15
6	18	Cornell Evil Dr Porkchop	85.00	1.67	1.98	0.00	3.64	3.98	155.30
7	1	Wichita State University WSU DBF	96.50	1.83	0.00	0.00	1.83	1.72	134.90
8	45	University of Illinois at Chicago	72.00	2.00	1.93	0.00	3.93	4.86	128.32
9	37	West Virginia University WVU Gold	76.50	2.00	1.89	0.00	3.89	5.74	124.18
10	48	Technion Spitwater	70.75	2.00	1.91	0.00	3.91	5.22	121.14
11	10	The University of Texas-Austin BEVO	90.38	1.83	0.00	0.00	1.83	2.60	102.76
12	8	MIT Aquarium Falcon	91.00	2.00	0.00	0.00	2.00	3.18	102.06
13	2	Cal Poly SLO	95.50	2.00	0.00	0.00	2.00	3.52	101.80
14	7	Virginia Tech Maroon Monsoon	91.00	1.83	0.00	0.00	1.83	2.96	96.97
15	21	Georgia Tech	84.00	1.83	0.00	0.00	1.83	2.56	96.25
16	42	University of Southern California PoSCeidon	73.50	2.17	0.00	0.00	2.17	2.76	95.86
17	22	University of Ljubljana Edvard Rusjan Slovenian Team	83.75	2.17	0.00	0.00	2.17	3.60	95.64
18	5	Purdue University	93.50	2.17	0.00	0.00	2.17	4.62	94.25
19	59	Penn State University Hurricane	58.00	1.83	1.90	0.00	3.73	5.50	92.26
20	4	University of Notre Dame	94.00	2.00	0.00	0.00	2.00	4.90	84.93
21	23	Johns Hopkins University	83.50	1.83	0.00	0.00	1.83	3.48	82.06
22	14	University of California Los Angeles Jet Bruin	88.50	1.67	0.00	0.00	1.67	3.24	81.94
23	26	Middle East Technical University Nymph Noir	82.00	1.50	0.00	0.00	1.50	2.58	76.58
24	61	University of Central Florida Aeroknightical	52.50	1.83	1.84	0.00	3.68	6.96	73.17
25	43	San Diego State University Mini Monty	73.00	1.83	0.00	0.00	1.83	3.38	72.80
26	46	La Sapienza Sapienza Flight Team	71.00	1.50	0.00	0.00	1.50	2.22	71.48
27	13	Auburn University	89.50	1.83	0.00	0.00	1.83	6.02	66.88
28	35	Daniel Webster College Significant Figures	77.00	1.83	0.00	0.00	1.83	4.56	66.11
29	47	Rensselaer Polytechnic Institute Redhawks	71.00	1.67	0.00	0.00	1.67	4.06	58.73
30	32	Arizona State University Air Devils	78.25	1.67	0.00	0.00	1.67	6.02	53.15
31	24	University of Arizona	83.00	1.50	0.00	0.00	1.50	7.12	46.66
32	36	The University of Alabama High Tide	77.00	1.67	0.00	0.00	1.67	7.82	45.89
33	41	Monroe Community College Flying Tribunes	74.00	1.33	0.00	0.00	1.33	4.94	44.39
34	39	University of Arkansas Swine Flew	74.50	1.50	0.00	0.00	1.50	6.34	44.38
35	55	Western Michigan University Pegasus	64.25	1.67	0.00	0.00	1.67	6.12	43.29
36	28	Turkish Air Force Academy Scorpion Team	80.00	1.50	0.00	0.00	1.50	8.02	42.37
37	44	North Dakota State University Bison Bombers	72.00	1.33	0.00	0.00	1.33	6.36	38.07
38	31	University at Buffalo	79.00	1.17	0.00	0.00	1.17	8.78	31.10
39	63	New Mexico State NMSU 3.0 TFF	49.25	1.33	0.00	0.00	1.33	8.24	22.88

## 2012 AIAA Design/Build/Fly Competition Final Results (Cont'd)

Place	Team #	University	Report Score	M 1	M 2	M 3	Flight Score	RAC	Final Score
40	11	Embry-Riddle Aeronautical University Phoenix	90.00	0.00	0.00	0.00	0.00	70	Flight Attempt
41	19	Anadolu University Kasif-2	84.25	0.00	0.00	0.00	0.00	70	
42	30	Rose-Hulman Aeolus	79.50	0.00	0.00	0.00	0.00	70	
43	33	University of Florida SLUF	78.00	0.00	0.00	0.00	0.00	70	
44	38	University of Nebraska-Lincoln	75.50	0.00	0.00	0.00	0.00	70	
45	50	CASE WESTERN RESERVE UNIVERSITY	69.50	0.00	0.00	0.00	0.00	70	
46	53	Khalifa University KUSTAR Team	67.75	0.00	0.00	0.00	0.00	70	
47	54	New Mexico Tech Flying Miners	67.00	0.00	0.00	0.00	0.00	70	
48	57	University of Alaska Fairbanks Polar Thunder	60.66	0.00	0.00	0.00	0.00	70	
49	16	Erciyes University AirErciyes2 Team	86.70	0.00	0.00	0.00	0.00	80	Completed Tech
50	17	Washington State University Stall & Fall	86.00	0.00	0.00	0.00	0.00	80	
51	27	UCSD TLARXII	80.05	0.00	0.00	0.00	0.00	80	
52	29	Columbia University	79.50	0.00	0.00	0.00	0.00	80	
53	52	TOBB University of Economics and Technology Hezarfen 2 Team	68.36	0.00	0.00	0.00	0.00	80	
54	62	Ghulam Ishaq Khan Institute Of engineering sciences and Technology Pakistan Avrocar	52.00	0.00	0.00	0.00	0.00	80	
55	34	University of Alabama in Huntsville Charging for Flight	77.63	0.00	0.00	0.00	0.00	90	Partial Tech
56	64	University of Massachusetts Lowell River Hawk	48.25	0.00	0.00	0.00	0.00	90	
57	65	University of Miami Flying Shalala	46.50	0.00	0.00	0.00	0.00	90	
58	20	CCNY FlyingBeaver	84.00	0.00	0.00	0.00	0.00	100	Did not Attend Flyoff
59	25	Duke University	82.00	0.00	0.00	0.00	0.00	100	
60	40	Concordia University The Stinger	74.00	0.00	0.00	0.00	0.00	100	
61	49	NATIONAL INSTITUTE OF TECHNOLOGY JAMSHEDPUR TEAM PHOENIX	69.50	0.00	0.00	0.00	0.00	100	
62	51	Syracuse University Team Flying Orange	68.70	0.00	0.00	0.00	0.00	100	
63	56	Chulalongkorn University Team Knight Hawk	63.50	0.00	0.00	0.00	0.00	100	
64	58	University of Maryland	59.50	0.00	0.00	0.00	0.00	100	
65	60	Ohio State University	57.00	0.00	0.00	0.00	0.00	100	
66	66	Indian Institute for Aeronautical Engineering & Information Technology The Falcons	40.00	0.00	0.00	0.00	0.00	100	
67	67	University of New Hampshire Wildcats	30.00	0.00	0.00	0.00	0.00	100	
68	68	Lehigh University	22.75	0.00	0.00	0.00	0.00	100	





***First Place Winner: San Jose State University: Team PhalanX.***



***Second Place Winner: University of California at Irvine: Angel of Attack.***



***Third Place Winner: University of Colorado: H2Buffalo.***