



# Newsletter

Volume 33 , Number 2, October 2002

## Building a Reproduction Douglas World Cruiser

*Speaker: Bob Dempster – Founder, Seattle World Cruiser Association*



In 1924, four Douglas World Cruisers piloted by US Army Air Service pilots left Seattle's then-Municipal Airport at Sand Point to attempt the first round-the-world flight. The airplanes were updated versions of

the Douglas DT-2 Navy torpedo plane, designed in 45 days by Donald Douglas and Jack Northrup to carry more fuel and land on wheels or floats.

The open-cockpit biplanes battled weather and mechanical difficulties through both the freezing Arctic and sweltering tropic climates. Throughout the 175-day trip, an engine change was required about once every 62 hours! One airplane got lost in bad Alaskan weather and crashed. The rest of the expedition soldiered on to Japan, Calcutta, Baghdad, Turkey, Paris, and London, the crew receiving adulation at every stop. The praise didn't ease the rough North Atlantic crossing, however, as the flight almost ended due to fog and yet more mechanical trouble. The three aircraft finally alit in Labrador and pressed on to Boston, Washington, DC, and home to Seattle.

The Seattle World Cruiser Association, a nonprofit educational foundation, is reconstructing a replica World Cruiser to be flown around the world in 2004, the 80<sup>th</sup> anniversary of the first circumnavigation. The presentation will discuss the first voyage and the progress being made on the replica.

Bob Dempster was born in Hanover, Pennsylvania. Son of a WWII Air Cadet, Bob grew up in Upstate New York, around the airplanes that his father used in his flight instruction business. The Dempsters moved to tropical, art deco Miami, where Bob became enamored with flying boats, architecture, and travel.

After studying architecture in Miami, Bob attended San Francisco Art Institute, completing Master studies in Italy, majoring in marble sculpture. Returning to his love of aviation,



Bob earned his FCC first class license and radar endorsement, and earned an avionics degree in Seattle. Careers in avionics, hardware and software integration testing at

The Boeing Company, commercial aviation, and fatherhood have kept Mr. Dempster hopping over the years.

And then, there's flying. Bob was in his mid-30s when he became a licensed pilot. His first lessons were in a 1939 Taylorcraft on floats, with Lana Kurtzer, on Seattle's Lake Union. With his second (current & last!) wife, Diane, Bob has enjoyed the pleasures of cross-country flying by Super Cub, to twenty-five countries around the planet.

Currently, Mr. Dempster is founder of the Seattle World Cruiser Association and serves as Vice President of the Washington Seaplane Pilots Association. You may read about the Seattle World Cruiser project and history on its website: [www.seattleworldcruiser.org](http://www.seattleworldcruiser.org).



## Joint AIAA/SFTE Lecture - Dinner Meeting

Date: **Tuesday, October 22, 2002**  
Place: **Old Spaghetti Factory, 2801 Elliott Avenue, Seattle**  
**Entrée choices are fettuccini Alfredo or chicken parmigiana. Please specify choice when making reservations.**  
Time: 6:00 PM Social, No-Host Bar  
6:30 PM Dinner  
7:00 PM Program – **Douglas World Cruiser**

Dinner Reservations: Call anytime (425) 342-0988 or send email to [vera.a.martinovich@boeing.com](mailto:vera.a.martinovich@boeing.com) or [paul.l.clement@boeing.com](mailto:paul.l.clement@boeing.com)  
Dinner Price: \$15 AIAA/SFTE Members and Guests  
\$18 Non-Members  
\$12 Students  
Program Only: \$5 (Free for persons 17 and under)

*Please make reservations by 10/18. A reservation is a commitment to pay!*

# 12 hp From 180 Pounds, The Story Of The Wrights Flyer's Engine

By Charles E Taylor

*The following is the **Second** installment of a **six-part** article written by Charles E Taylor, as told to Robert S Hall when Orville Wright died January 30<sup>th</sup>, 1948. Charles E Taylor then became the only surviving member of the three who built the first airplane. Charlie Taylor was the only employee and intimate associate of Wilbur and Orville Wright throughout the critical years. Without precedent or fanfare, Taylor built the engines for the Wright's first planes to their designs. The article below was written in 1948 while Taylor was living in retirement in California, it was first published in Collier's, December 2nd, 1948 and was reprinted in the Airline Pilot, December 1978. Charles E Taylor died January 30<sup>th</sup>, 1956.*



My only experience with a gasoline engine was an attempt to repair one in an automobile in 1901. The first engine we didn't make any drawings. One of us would sketch out the part we were talking about on a piece of scratch paper, and I'd spike the sketch over my bench. It took me six weeks to make that engine. The only metalworking machines we had were a lathe and a drill press, run by belts from the stationary gas engine. The crankshaft was made out of a block of machine steel 6 by 31 inches and 15/8 inch thick. I traced the outline on the slab, and then drilled through with the drill press until I could knock out the surplus pieces with a hammer and chisel. Then I put it in the lathe and turned it down to size and smoothness. The body of the first engine was of cast aluminum and was bored out on the lathe for independent cylinders. The pistons were cast iron, and these were turned down and grooved for piston rings. The completed engine weighed 180 pounds and developed 12 horsepower at 1,025 revolutions per minute. While I was doing all this work on the engine, Will and Orv were busy upstairs working on the airframe. They asked me to make the metal parts, such as the small fittings where the wooden struts joined the spars and the truss wires were attached. There weren't any turnbuckles in the truss wires, so the fit had to be just so. It was so tight we had to force the struts into position. The fuel system was simple. A one-gallon fuel tank was suspended from a wing strut, and the gasoline fed by gravity down a tube to the engine. The fuel valve was an ordinary gaslight petcock. There was no carburetor, as we know it today. The fuel was fed into a shallow chamber in the manifold. Raw gas blended with air in this chamber, which was

next to the cylinders and heated up rather quickly, this helping to vaporize the mixture. The engine was started by priming each cylinder with a few drops of raw gas. The ignition was the make-and-break type. No spark plugs. The spark was made by the opening and closing of two contact points inside the combustion chamber. These were operated by shafts and cams geared to the main camshaft. The ignition switch was an ordinary single-throw knife switch we bought at the hardware store. Dry batteries were used for starting the engine, and then we switched onto a magneto bought from the Dayton Electric Company. There was no battery on the plane. Several lengths of speaking tube, such as you find in apartment houses, were used in the radiator. The chains to drive the propeller shafts were specially made by the Indianapolis Chain Company, but the sprockets came ready-made. Roebling wire was used for the trusses. Propellers I think the hardest job Will and Orv had was with the propellers. I don't believe they were ever given enough credit for that development. They had read up on all that was published about boat propellers, but they couldn't find any formula for what they needed. So they had to develop their own, and this they did in the wind tunnel. They concluded that an air propeller was really just a rotating wing, and by experimenting in the wind box, they arrived at the design they wanted. They made the propellers out of three lengths of wood, glued together at staggered intervals. Then they cut them down to the right size and shape with a hatchet and drawshave. They were good propellers. We never did assemble the whole machine at Dayton. There wasn't room enough in the shop. When the center section was assembled, it blocked the passage between the front and back rooms, and the boys had to go out the side door and around to the front to wait on the customers. We still had bicycle customers. The Wright brothers had to keep the business going to pay for the flying experiments. There wasn't any other money. While the boys always worked hard and there never was any horseplay around the shop, they always seemed to find time to stop and talk with a customer or humor the neighborhood children who wandered in.

# PNW Aerospace Timeline

## Dinner Meeting and Lecture

### Fourth Tuesday Dinner Meeting

Topic	Building a Reproduction Douglas World Cruiser.
Date/Time:	22, October 2002, Social at 6:00 p.m.
Location:	<b>Old Spaghetti Factory, 2801 Elliott Ave, Seattle (Note New Location)</b>

### Past

1867-1868	Lilienthals experiment with flapping wings
1874	Kites and powered models
1891-1896	2000 manned gliding flights, one fatal crash
1900-1939	Lindbergh crossed Atlantic
1940-2000	V-2, B-17, B-52, 707, Sputnik 727, DC-9, DC-10, 737, 47, 67, 57, Apollo, ICBM,
2002	First flight of the Boeing 747-ER, which can carry 15,000 more pounds of people or cargo and can fly about 410 nautical miles farther than existing 747-400s

## Retired Members Brunch

### Third Saturday Every other month at MOF

Speaker:	TBD
Date/Time:	16 <sup>th</sup> November 2002 9 am
Location	Museum of Flight, Seattle
Contact	Tom Holgate

### Future

24 October	Mentor Day, Seattle U (6:00 PM)
6 <sup>th</sup> . November	Mentor Day, UW (6:00 PM)
Mentor Days	For more information, please Contact Eric Lester at 425-294-6979 or e-mail: <a href="mailto:eric.s.lester@boeing.com">eric.s.lester@boeing.com</a> for info.
5 <sup>th</sup> – 6 <sup>th</sup> October	AIAA 1903 Wright Flyer Centennial Tour and Exposition, Nellis Air Force Base Air Show Las Vegas, NV
19 <sup>th</sup> November	Program to be announced by Vera Martinovich

## Chairman's Corner

Since this is my first opportunity to address our Pacific Northwest Section members as your chairman, I would like to say best wishes to you all. I would also like to thank the past council members for their years of dedicated service to the AIAA, I am sure they will continue to serve the AIAA, and the Pacific Northwest Section in particular, in other capacities. I would also especially like to thank our outgoing chair for her years of service and her help in making the transition a smooth one. As chair, I plan to continue the outreach programs my predecessors started, especially those dedicated to our young people. They are indeed the future of our aerospace industry here in the United States.

From the advent of the Wright Brothers to the International Space Station, the aerospace industry has always captivated the minds and imaginations of the American people. However lately we have become more and more complacent, and as a result, we have seen an erosion of our aerospace dominance by our competitors from around the world. If we are to continue our leadership and dominance in the aerospace sciences, and therefore reap the rewards, which comes from

this supremacy, we must rededicate ourselves to pursuing excellence in this field. As your Chairman and with your help, I intend to pursue such a course of action with all my strengths and efforts.

I would also like to direct your attention to the message below written by our past chairman Laura Kistler, it is of paramount importance that all members who are able to receive the newsletter by e-mail sign up for newsletter distribution by that means, the cost of snail mail is becoming more and more prohibitive.

Our new program director Vera Martinovich has changed our dinner meeting venue to the Old Spaghetti Factory, on Elliott Avenue. We also have several vacant Director positions on the Council; please contact me if you are interested in volunteering. ([eric.s.lester@boeing.com](mailto:eric.s.lester@boeing.com), or tel: 425-294-6979.

Eric S. Lester  
Chairman

## Choose Email Only Receipt of Newsletter

As noted in the Chairman's corner, the Pacific Northwest Section is getting with the times and offering email only receipt of the section newsletter. To take advantage of this opportunity to reduce paper waste, just jot a note to Secretary Joe Dortwegt at [joseph.dortwegt@boeing.com](mailto:joseph.dortwegt@boeing.com) with the Subject line 'AIAA Section News Email Only'. Please be sure that your email address is correct and updated in the AIAA

National records. You can view your records and make changes on-line at <http://www.aiaa.org>. Just click Members Only then Change/Update Member Information. You will need your member ID to log in. You may also update your email and records by calling AIAA Customer Services at 1-800-639-2422. The Section Council encourages all members with email to switch to email only receipt of the newsletter.

Section website: [http://www.geocities.com/aiaa\\_2000/index.html](http://www.geocities.com/aiaa_2000/index.html)  
 National website: <http://www.aiaa.org>

Please submit newsletter materials to  
 Charity by the tenth of October for the  
 November Newsletter.

<b>Outstanding Section Awards</b>	<b>Membership Award</b>
1972-1973	1997-1998
1977-1978	<b>Young Member</b>
1978-1979	<b>Activity Awards</b>
1991-1992	1990-1991
1993-1994	1991-1992
1994-1995	1994-1995
	1995-1996
<b>Section Special Event Awards</b>	<b>Career Enhancement Award</b>
1976-1977	1997-1998
1977-1987	<b>Newsletter Awards</b>
1978-1979	1994-1995
1982-1983	1995-1996
1987-1988	1996-1997


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**Address Corrections**

Send to: **AIAA** Now make corrections on-line at  
**1801 Alexander Bell Drive** <http://www.aiaa.org>  
**Reston, VA 22091** (Members Only). Membership ID needed

## Section Officers and Directors

Position	Name	Address (Mail stop if Boeing*)	Phone	Email address
<b>Council</b>				
Chairman	Eric Lester	0R-RA	425-294-6979	eric.s.lester@boeing.com
Vice-Chairman	Vera Martinovich	0R-RK	425-342-0988	vera.a.martinovich@boeing.com
Secretary	Joe Dortwegt	0R-RM	425-342-5089	joseph.dortwegt@boeing.com
Treasurer	Paul Moorehead	67-65	425-237-5176	paul.j.moorehead@boeing.com
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Advisory Council	Billy Roeseler	0R-HH	425-294-2810	wm.g.roeseler@boeing.com
Advisory Council	Doug Ball	67-LH	425 234-1016	douglas.n.ball@boeing.com
Advisory Council	Scott Eberhardt	P.O. Box 352400, UW, Seattle, WA 98195	206-543-6508	scott@aa.washington.edu
Past Chairman	Laura Kistler	0R-HH	206-544-0507	laura.s.kistler@boeing.com
<b>Elected, non-voting</b>				
Vice-Chairman-Elect	Ben Sarao	1432 242 <sup>nd</sup> Place SE, Sammamish, WA. 98075	206-768-7166	bmsarao@hotmail.com
Secretary-Elect	Charity Lawson	12422 94 <sup>th</sup> Ave NE, Kirkland, WA		charity.lawson@rocket.com
Treasurer-Elect	Brian Eagleheart	Portland, OR	425-237-5176	brianeagleheart@hotmail.com
<b>Appointed</b>				
Webmaster	Jane Kuta	43-19	206-662-2820	jane.kuta@JSF.boeing.com
Honors & Awards	Scott Eberhardt	P.O. Box 352400, UW, Seattle, WA 98195	206-543-6508	scott@aa.washington.edu
Retired Members	Tom Holgate	2704 SW 314th, Federal Way, WA 98023-7842	253-838-0333	holgatz@aol.com
Newsletter	Charity Lawson	12422 94 <sup>th</sup> Ave NE, Kirkland, WA 98034	425-885-5010	Charity.lawson@rocket.com
Nominations	Laura Kistler	0R-HH	206-544-0507	laura.s.kistler@boeing.com
PSEC Liaison	Eric Lester	0R-RA	425-294-6979	Eric.s.lester@boeing.com
PSEC Liaison	Vera Martinovich	0R-RK	425-342-0988	vera.a.martinovich@boeing.com
Evolution Of Flight	Ben Sarao	1432 242 <sup>nd</sup> Place SE, Sammamish, WA. 98075	206-768-7166	bmsarao@hotmail.com
Museum of Flight Liaison	Doug Chappelle	8M-03	253-773-3878	douglas.e.chappelle@boeing.com
Pre-College Outreach	Rich Hepler	4A-03	206-544-0507	richard.a.hepler@boeing.com
Young Professionals	Open			

\* All Boeing people have the address of P.O. Box 3707, Mail Code xx-xx, Seattle, WA 98124-2207



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