

e-CONTRAILS

ISSUE NO. 207

NOVEMBER 2018



*Employees are the History
of
Northwest Airlines*

*Click
here for
Video*

RETIRED NORTHWEST AIRLINES PILOTS' ASSOCIATION



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**RNPA
CONTRAILS**

EDITORS IN TRAINING

Jay Sakas
jaysakas@gmail.com
360-731-0871

Dick Dodge
dick@rcdodge.us
828-489-9027

OBITUARY EDITOR

Bill Day
wlday@comcast.net

**CONTRIBUTING
COLUMNISTS**

*Any and all willing to
Contribute.....*

REPORTERS

Each Member

**ADRESS & PHONE
CHANGES**

Howie Leland
14541 Eagle Ridge Dr
Fort Meyers Fl 33912
howieleland@gmail.com



From here on out the most critical thing is *NOT* to

FLY THE AIRPLANE.

Instead, you *MUST*
KEEP YOUR EMAIL UP TO DATE.

The only way we will have to communicate directly with you as a group is through emails.

Change yours here ONLY:

NEW

RNPAnews@gmail.com



If you use and depend on the
RNPA Directory

you must keep your mailing address(es) up to date. The ONLY place that can be done is to send it to:

The Keeper Of The Data Base:

Howie Leland

howieleland@gmail.com

(239) 839-6198

*Change phone
numbers here
too*

"Heard about the RNPA FORUM?"

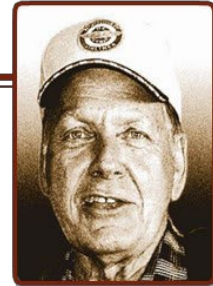
PSSST...!



Click the "NEWS" drop down menu, then click "RNPA Forum":

Posted comments will go out to over 840 RNPA members the same day.

President Reports

*Gary Pisel*

E-CONTRAILS Nov 2018

Greetings Fellow Pilots and Members of RNPA

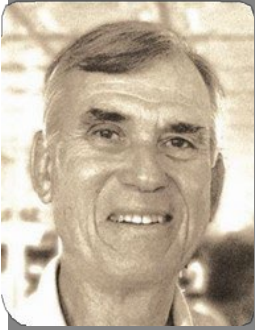
E-CONTRAILS is becoming more and more popular as the members remember to log on and read it. Jay is doing a bang-up job as the Editor.

Don't forget the Christmas parties in both SEA and MSP. This year they are on the same day, so guess I can't make both. Get your reservations in early to help the planners. ALSO, if you are planning to attend the RNPA REUNION in New Orleans it is time to send in your money.

At last count we have over 120 signed up. Our max limit is 160 based on the size of the dining room at the hotel. Ron Vandervort has organized many things for you to do while in town. Not the least of which is the WWII museum. This is a MUST during your visit. Also, a must is a visit to the French Quarter Beignets. Order of them and a chicory coffee will make your day.

Jay is always looking for stories and ideas for publication. Send him articles written by you or even just letters or notes.

At present we have no Dues for RNPA. It is our plan to continue that in the future. There is a small one-time charge for new members to cover the cost of name tags.



Treasurer's Report: *Howie* **LELAND**

Our expenses are much lower since we switched to "E-CONTRAILS" from the printed "CONTRAILS". Thus our reserve funds remain high enough that we will not have to charge dues in 2019.

We continue to recruit new members. Applications are available at "RNPA.ORG" under the News heading. When completed, send the application along with a check payable to RNPA to: RNPA Howie Leland
14541 Eagle Ridge Dr. Ft. Myers, FL 33912 New member dues are \$25 for regular members or \$20 for affiliate members.

If you have a change of address or phone number, please notify me at the above address, or call my phone, 239-758-3789 or by email at: howieleland@gmail.com We want to stay in touch with everyone.

I encourage you to sign up to attend the RNPA Reunion in New Orleans in May 7, 8 and 9, 2019.

Thank you for your continued support and commitment to RNPA.



Suggestion are Welcome



NWA— A Look Back

As the memory of Northwest Airlines recede, it is time to review what made our airline a great airline. In doing research into our history, I found employees are the key to Northwest's greatness. From the Founders, through the difficult times, to the passing of the torch to Delta, employees were key to our success. Most of us came to the airline at the start of the golden age, when the airline grew at a rapid rate and history was unimportant. In the next couple of issues of eContraails will look back.

In this issue, as you have seen by the cover page, we are now able to bring video into the conversation. Any videos you would like to contribute, send them to econtraailseditor@gmail.com in mp4 format.

In doing research on our history, I came across a book written by one our own. "Final Approach - Northwest Airlines Flight 650, Tragedy and Triumph" by Lyle Prouse. I never knew that Lyle had written a book about that fateful incident. After reading it, I realized how an important part of our history it has become.

It is a story not only of the grim events, but a story of the greatness of the pilots and employees of NWA who gave support to Captain Prouse and his

family in those trying days. Some may not think kindly of the story; reading it may change their minds.

I needed to get Lyle's permission to print excerpts from the book. Lyle was gracious enough to give permission with a couple of stipulations. To which I complied.

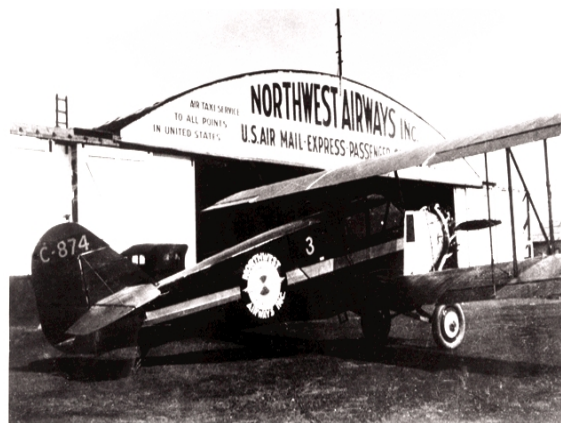
It is impossible to reprint the whole book; however, we will run excerpts over the next couple of issues.

If you would like to read the whole book, it is available through Amazon's Kindle and it is free.

We will be starting a new series with the March Issue.

“Historical Memories”

We want to know from members, any experiences or stories they may have had in a historical moment. ie. Strikes, Hijacking



We included in this issue, stories by our members, which may be true or **not...**

Thanks for reading.....J--



Northwest Airlines A History....

Northwest added five Ford Tri-Motors between 1928 and 1931. Known as the "Tin Goose," the Tri-Motor was billed as the first commercial airplane with all-metal construction.



THE BIRTH OF AN AIRLINE

The year was 1926 and the opportunity was Contract Air Mail Route 9, the run between Chicago and the Twin Cities.

Col. Louis H.

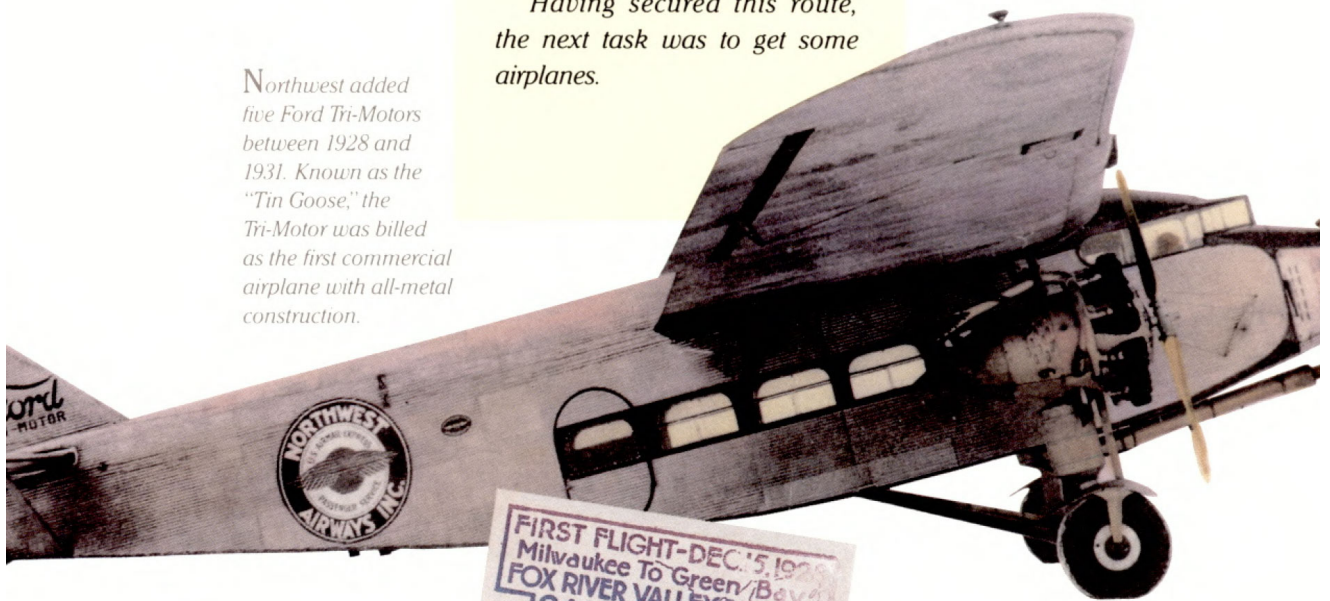
Brittin raised \$300,000 from a consortium of St. Paul and Detroit investors, including Henry Ford, to establish an airline to serve the route.

Organized in August 1926, this new airline was named Northwest Airways.

Northwest was a Michigan corporation, reflecting the infusion of Detroit capital, but its operational base would be the Twin Cities' Speedway Field, later renamed Wold-Chamberlain Field.

A month later, the Post Office Department awarded Contract Air Mail Route 9 to Northwest for a bid of \$2.75 per pound.

Having secured this route, the next task was to get some airplanes.



This is the stamped portion of the letter carried on the inaugural flight to Wisconsin's Fox River Valley cities Dec. 15, 1928. "C.A.M. No. 9" refers to Contract Air Mail Route 9. Northwest pilot L.S. "Deke" DeLong autographed the letter.



Starting in 1929, Northwest was one of the first airlines to uniform its flight crews. Pilots wore navy blue uniforms with double-breasted coats sporting brass buttons and gold trim.

This problem was solved by renting a pair of open-cockpit biplanes, a Thomas Morse Scout and a Curtiss Oriole. So equipped, Northwest Airways carried the first sacks of airmail from the Twin Cities to Chicago Oct. 1, 1926.

Airmail was the initial step, but everyone could see that passenger service was a looming possibility. With this in mind, Northwest ordered four Stinson Detroiters. The first Detroiters joined the fleet in November 1926, but it was not until July 5, 1927, that Northwest carried its first passenger to Chicago, charging \$50 one-way.

Northwest became an international airline in 1928, introducing weekly service to Winnipeg, Manitoba, via Fargo, N.D. That same year, Northwest also became the first airline to provide coordinated air-rail service, transferring freight

A noted race and stunt pilot, Charles W. Holman became the first pilot of Northwest Airways in 1926. He served as Northwest's chief pilot until 1931, when he lost his life in an air-show accident in Omaha, Neb.



and passengers between the major railroads in Chicago and the Twin Cities.

At the same time, Northwest began to expand its fleet. Between 1928 and 1931, the company purchased five 14-passenger Ford Trimotors, known affectionately as the Tin Goose. These would prove to be an extremely wise purchase, providing Northwest the needed flexibility for future route development. Also in 1928, Northwest acquired the first of nine Hamilton Metalplanes.

Company records indicate that Northwest aircraft flew more than 1 million miles between the company's founding in 1926 and the end of 1929. The fledgling airline, born of Contract Air Mail Route 9, was off to a flying start.



chased five 14-passenger Ford Trimotors, known

This letter was carried on the first night airmail flight between the Twin Cities and Chicago Aug. 1, 1929.



Northwest became the first airline to provide coordinated air-rail service, starting Sept. 1, 1928. Here, freight is being transferred to a Hamilton Metalplane in St. Paul for air delivery to rail heads in Chicago.



Starting out with only Twin Cities to Chicago airmail service in 1926, the route system of Northwest Airways had expanded to 10 cities, including Winnipeg, Manitoba, by 1929.



The first of 36 Douglas DC-3s joined Northwest's fleet in early 1939. Known as the first of the truly modern airliners, the DC-3 became an industry standard for many years.

On April 16, 1934, Northwest Airways was reincorporated as Northwest Airlines, Inc. This ticket counter display reflects the name change and the new Northwest logo.



**GO WEST,
YOUNG
MAN**

The decade of the Thirties was a period of tremendous expansion for Northwest in spite of the Great Depression.

To start it off, Northwest moved its headquarters to the downtown St. Paul airport after a group of Minnesota financiers bought the company. With this accomplished, Northwest started its great push westward.

Having spanned most of North Dakota with the inauguration of service to Bismarck in 1931, Northwest turned its sights on Montana. By the fall of

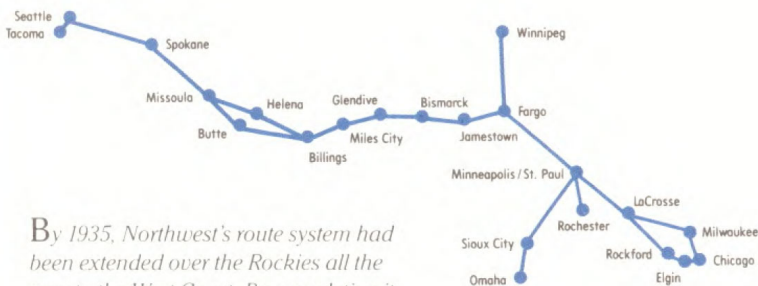


1933, Northwest had reached the Rockies with service to several Montana cities.

From there, it was on to Spokane, Wash., in October, and on Dec. 3, 1933, a Waco taper wing touched down in Seattle. Northwest was now a truly important carrier, its system spanning more than half the continent and providing a vital air link from Chicago to the Pacific.

On April 16, 1934, Northwest Airways, Inc. was reincorporated in Minnesota as Northwest Airlines, Inc. As a new company logo was introduced, Northwest started modernizing its fleet with the Lockheed 10-A Electra, a twin-engine aircraft capable of carrying 10 passengers at 140 mph. Using its 10-As, Northwest cut the flying time from the Twin Cities to Seattle to only 13 hours.

Croil Hunter assumed leadership at Northwest and as storm clouds gathered over Europe introduced what has been called the most successful aircraft in aviation history, the Douglas DC-3.

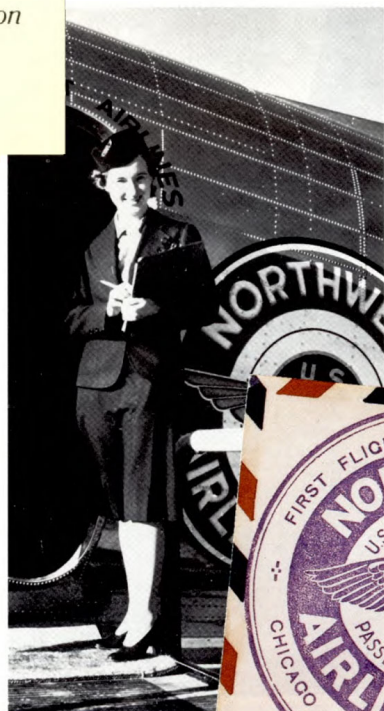


By 1935, Northwest's route system had been extended over the Rockies all the way to the West Coast. By completing its northern route to the West Coast, Northwest's system spanned more than half the continent.



Northwest became the first airline to fly the Lockheed 10A Electra, which reduced the flying time on the Chicago-Seattle route to 13 hours.

This flight cover commemorated Northwest's first night airmail service March 16, 1935, along the northern transcontinental route from Chicago to Seattle.



The DC-3 was the first Northwest aircraft to feature "stewardess" service.



One thing **YOU** can do to help win the war . . .

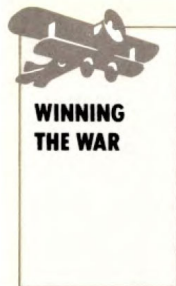
Here's what we are doing:
 With a number of our planes gone to war under the army's command, we are carrying on the best we can with limited equipment, maintaining as many flights as possible . . .

We are moving by air many tons of army supplies and materials for our industries . . .

We are saving precious hours for thousands of "priority" passengers—people for whom it is literally a life and death matter for somebody, that they do their jobs with all possible speed . . .

Still a portion of our seats are available to "non-priority" travelers.
 To best serve our country we must make the best possible use of our facilities. Here's how you can help:
 If you hold tickets or reservations for a flight you are not going to make, cancel at the earliest possible moment. Give the other fellow a chance to go.
 We know that you will cooperate with us.

CROIL HUNTER, President



WINNING THE WAR

The Second World War exploded over Europe in 1939, although America did not enter the conflict for another two years. During this interval, Northwest became a publicly held corporation and passenger revenues exceeded mail revenues for the first time.

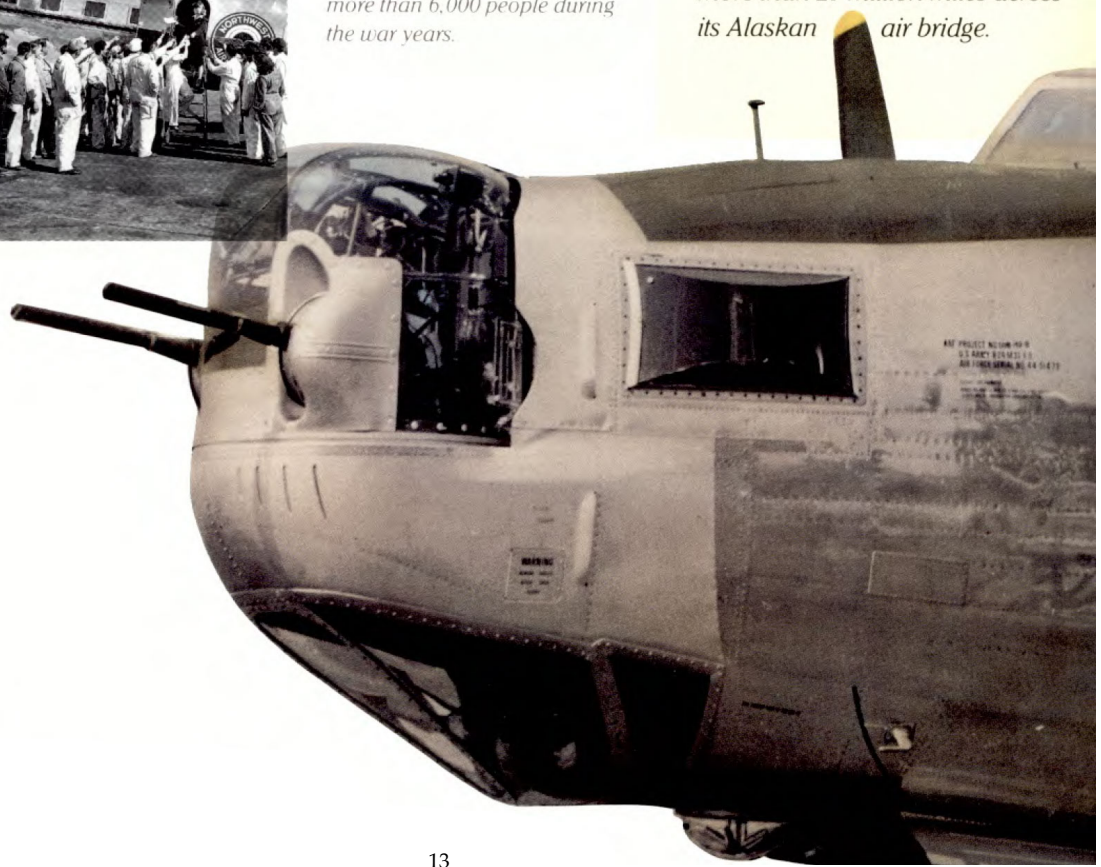
Nearly half of Northwest's fleet was appropriated by the U.S. Army for war duty. The Army compensated airlines by contracting with them to conduct operations for the Air Transport Command. Based on its experience with cold weather flying, Northwest was chosen to establish an aerial supply route to Alaska and the Aleutian Islands.



Operating its own fleet as well as military transports, Northwest provided essential support to troops in the Alaskan theater. By 1945, Northwest pilots had flown more than 21 million miles across its Alaskan air bridge.

A statement by company President Croil Hunter in this 1942 flight schedule explained how Northwest and its passengers could pitch in together on wartime efforts.

Northwest's St. Paul bomber modification facility employed more than 6,000 people during the war years.



Northwest also operated bomber modification plants in St. Paul and Vandalia, Ohio. At the St. Paul facility, 6,000 employees engineered and installed special equipment for more than 3,000 combat bombers. In addition, Northwest was called upon to conduct a variety of aviation research projects.

As the war in Europe ended, Northwest helped redeploy troops to the Pacific theater for the final assaults that would end the war. Using 14 military transports, Northwest operated a separate airline that carried more than 30,000 GIs from the East Coast to embarkation points on the West Coast.

Northwest received numerous military commendations for its help in winning the war. So decorated, Northwest stood poised for its next peacetime challenge—conquering the Northwest Passage.

One of Northwest's assignments during World War II was to run a bomber modification facility in St. Paul. Northwest outfitted more than 3,000 B-24 Liberators, B-25 Mitchells and B-26 Marauders with special equipment, including secret radar.





**CONQUERING
THE
NORTHWEST
PASSAGE**

Having honorably discharged its Alaskan wartime duty, Northwest intended to use its experience to operate over the Northwest Passage

to the Orient.

Following the war, Northwest opened commercial routes to Alaska based on two of its former military routes. On Sept. 1, 1946, service was inaugurated on the Outside Route, from Seattle up the rugged Pacific coastline to Anchorage. The following January, service was started on the Inside Route, from the Twin Cities to Anchorage via the Canadian prairie and Yukon.

The next step to the Orient was Shemya Island, in the Aleutians. Northwest introduced service from here to Tokyo, Seoul, Shanghai and Manila July 15, 1947, by way of the Great Circle Route.

The Northwest Passage to the Far East finally became a reality

Symbolizing its conquest of the Northwest passage to the Orient, Northwest adopted a new corporate logo in 1948, shown here on a baggage tag. The logo consisted of an arrow pointing in the northwest compass heading. At the same time, the famous red tail came into being.



The Boeing Stratocruiser was the largest and most luxurious airliner of its day. The first of 10 double-deck Stratocruisers was delivered in June 1949, and over the next decade these huge aircraft were featured on both trans-continental and Orient service.



when the first Northwest DC-4 touched down in Tokyo. Northwest Airlines had earned the right to be called Northwest Orient.

Even before turning to the Orient, Northwest had become the nation's fourth transcontinental airline in July 1945 by inaugurating service from the Twin Cities to New York. On Dec. 2 of that year Northwest became the first certificated airline to link the Pacific Northwest with Hawaii.

Given the company's enormous expansion in the post-war years, it was only natural for it to also adopt a new corporate logo. Early in 1948, the emblem that had remained largely intact since Northwest's founding was changed to a circular field with an arrow pointing to the northwest compass heading. At the same time, Northwest's aircraft were repainted with the now-famous red tail.

With its new logo pointing to a bright future, Northwest was positioned for its next period of expansion and growth.



The Northwest passage via the "Great Circle Route" was conquered when a Northwest DC-4 touched down in Tokyo in July 1947.



This flight cover commemorated the inauguration of Northwest's Tokyo-Seoul-Shanghai-Manila service in 1947.



**ENTERING
THE JET AGE**

The decade of the 1960s signaled the end of piston-engine propeller aircraft at Northwest and the beginning of jet transportation.

Northwest entered the jet age in 1960, when it purchased five Douglas DC-8s. Each DC-8 carried 127 passengers and cruised at 550 mph—about 50 percent more seats and 200 mph faster than a DC-7C.

Northwest next bought 17 medium-range Boeing 720Bs in 1961, and used them primarily for domestic service. The company also purchased 41 Boeing 707-320s beginning in 1963. The intercontinental 707-320s were used for Far East destinations and long domestic runs.

By 1964, Northwest began adding new domestic capacity with the Boeing 727. Over the years, Northwest bought 85 of these popular, three-engined aircraft.

Northwest next upgraded its international fleet by taking delivery of its first Boeing 747 jumbo jet in 1970.

Northwest entered the era of the jumbo jet April 30, 1970, when its first Boeing 747 was delivered to the Twin Cities. The economies of the 400-passenger 747 revolutionized Northwest's Pacific passenger and freight service. The accompanying flight cover commemorated Northwest's inaugural 747 flight July 1, 1970.



Featuring the stylized tail of a Northwest jet, the company's current corporate logo was introduced in 1969.

The 747's passenger capacity was equal to nearly five Strato-cruisers, and with a range of 6,000 miles it was ideally suited to the demands of Northwest's growing Pacific system. By the end of 1986, Northwest was operating 38 747s, one of the largest 747 fleets in the world.

Finally, in 1971, the company received the first of 22 McDonnell Douglas DC-10 jumbo jets for use on Northwest's longer domestic routes.

Between 1960 and 1971, Northwest's piston-engine aircraft were phased out and the company ordered 179 new jet aircraft. The significance of Northwest's entry to the jet age was embodied in a new cor-

porate logo unveiled in 1962—the outline of a 707 tail within a red circle.



Northwest took delivery of its first Boeing 727 in late 1964. The most successful jetliner of all time, these tri-engined jets were purchased by Northwest over the years for domestic service.

In 1963 Northwest ordered its first Boeing 707-320 aircraft. The 707-320 was the replacement aircraft for the company's earlier and less efficient DC-8 jets. The first 707 went into service in mid-1963 on Northwest's Pacific system.



**LEADING
THE WAY IN
THE PACIFIC**

Northwest pioneered the Great Circle Route to the Orient in 1947, and with this success under its belt, the company was determined to

become the leading U.S. airline in the Pacific.

The 1960s was a period of steady expansion in transpacific markets. Hong Kong service was inaugurated in 1966; Osaka, Japan, was added to the system in 1967; and in 1969 the long-sought California-Honolulu-Tokyo route was added.

By the mid-1970s, Northwest was carrying U.S. passengers to its hub in Tokyo, with spokes extending to six Far Eastern cities.

The pace of transpacific development picked up considerably in the 1980s.



These magazine and streetcar ads plus inaugural flight covers demonstrate Northwest's strong presence in transpacific markets over the years.

By 1986, daily nonstop service to Tokyo was operating from Northwest's six transpacific gateways. Seoul was connected to North America with nonstop service from Chicago, Los Angeles and Seattle.

At the end of 1986, Northwest was the leading U.S. flag carrier in the Pacific, operating an extensive network of six U.S. gateways and 11 Asian destinations, including hubs in Tokyo and Seoul. During the summer of 1986, this large transpacific complex carried passengers and freight to and from the Orient on 77 round-trip Boeing 747 flights per week.

Northwest has plans for continued growth in this important region. In 1987, the airline will begin service to Bangkok, Thailand, via Tokyo. In addition, nonstop service will be offered between Tokyo and Detroit, Northwest's largest domestic U.S. flight center.



Northwest's transpacific system has grown steadily since the first Anchorage-Tokyo flight in 1947. Today, Northwest is the largest U.S. airline in the Pacific.

新しい物語が、始まりそうです。

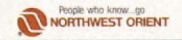
広がる翼。フロリダへ

毎日/東京発 4:35pm → ロサンゼルス着 8:55am → フロリダ(タンパ)着 9:05pm



ふれど乗せて、ノーザウェスト航空 747 が飛び立ち、この空からフロリダ州タンパまで飛行。これからは、有数の遊楽地として、飛びたい日はいつでも飛べぬのも、みんなファーストクラスとまでは、ゆとりシート、豪華な食事のサービスインベリタムサービスで、その時々の旅は、快適で便利になった。ノーザウェスト航空のサービスは、お客様に満足していただくまで、断りなくサービスいたします。

- LOS ANGELES(A): 8:55am
- NEW YORK(A): 3:20pm
- CHICAGO(A): 1:25pm
- SAN FRANCISCO(A): 12:40pm
- SEATTLE/TACOMA(A): 9:30am
- HONOLULU(A): 8:55am
- HONOLULU(A): 6:40am



Passengers disembark from a Northwest DC-7C in Tokyo in the late 1950s. The company earned the right to call itself Northwest Orient Airlines in 1947 with the advent of the Great Circle Route service to Asia.



**SPANNING
THE
ATLANTIC**

With a strong domestic system and growing transpacific operation in place, Northwest next turned its attention across the Atlantic.

Transatlantic service was introduced in 1979 and became profitable in just four years. The first transatlantic service involved 747 freighter flights from Boston and New York to Glasgow, Scotland, and Copenhagen, Denmark. Passenger service was introduced later in 1979 from the U.S. to Stockholm, Copenhagen and Glasgow. The following year, passenger service was added to Shannon, Ireland, and Oslo, Norway.

The next round of transatlantic expansion provided Twin Cities travelers with unparalleled service to Europe. In mid-1980, direct service began between Minneapolis/St.

Northwest inaugurated nonstop service between the Twin Cities and Oslo, Norway, June 10, 1980.

This letter commemorates Northwest's inaugural flight from the Twin Cities to Copenhagen and Stockholm via New York March 31, 1979.



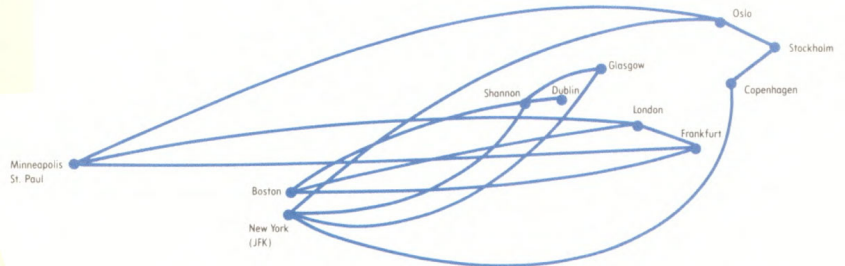
Paul and London. This was bolstered a year later with nonstop service to Oslo. Then in 1984 Northwest linked the Twin Cities to Frankfurt and Boston to Dublin.

Among the 50 transatlantic carriers, Northwest ranked sixth largest in terms of passengers carried across the Atlantic by the end of 1986. During the 1986 peak summer season, Northwest operated 39 round-trip transatlantic flights per week to eight European cities from its gateway cities of New York, Boston and Minneapolis/St. Paul.

Overseeing the transatlantic route development was M. Joseph Lapensky, who was elected president and chief operating officer of the airline Oct. 1, 1976. He was named president and chief executive officer in 1979, and in 1983 was elected chairman of the board and chief executive officer.



Northwest's Atlantic system currently encompasses eight cities in England, Ireland, Scotland, West Germany, Sweden, Norway and Denmark. In 1986, Northwest ranked sixth largest among the 50 transatlantic carriers in terms of passengers carried to and from Europe.





**EVERYTHING
FROM
COMPUTERS
TO CATTLE**

Over the years, a third Northwest business has been developed in addition to passenger and air-mail service—air freight—and today

Northwest runs the seventh largest air freight operation in the world.

Northwest became an early pioneer in the Pacific air freight business when it introduced all-cargo service in 1961 from New York to Tokyo using a converted DC-7C. Pacific freight operations were later spurred by the long-range Boeing 707-320, each carrying the entire cargo tonnage of a DC-7C freighter plus 112 passengers. This enabled Northwest to expand its transpacific cargo service throughout the 1960s, resulting in the decision to order Boeing 747F freighters.

The first three 747Fs were received in 1975, and they quickly revolutionized North-

Northwest is the only U.S. combination passenger/freight airline to operate a fleet of Boeing 747F all-cargo freighters, each with a payload of 130 tons. The company's six 747Fs operate in transpacific markets. Two more freighters will be placed in service in 1987.



Over the years, Northwest's 747 freighters have carried just about every conceivable type of cargo. Filling the mammoth hold of a 747F with Midwest breeding livestock for transport to Asia has become a routine operation for Northwest.



west's air freight business. With a payload of 261,000 pounds, the 747F's main deck has three times the cargo volume of an entire 707-320. With this capability, Northwest quickly developed the largest cargo operation by a wide margin among all U.S. passenger/freight combination carriers. At the end of 1986, the 747F fleet totaled six, with two more on order.

Used in Northwest's extensive transpacific system, the 747Fs have carried everything from computer parts and medical supplies, to perishable goods such as blue fin tuna and asparagus, to live cattle.

Freight is also carried in the bellies of passenger aircraft on Northwest's Pacific, Atlantic and domestic systems. To facilitate this worldwide cargo network, Northwest has developed automated freight facilities in several key markets.

Serving North America, Asia and Europe, Northwest's air cargo operation is the largest by a wide margin among all U.S. combination carriers. Northwest also runs the seventh largest air freight operation in the world.



Northwest is the launch customer for the new-generation Boeing 747-400, the first of which will arrive in 1988. Developed specifically to meet Northwest's transpacific requirements, the 747-400 will set the standards for efficiency and passenger comfort in the Pacific through the 1990s.

Northwest ordered up to 100 new-technology Airbus A320 jetliners in 1986, with delivery of the first 10 in 1990 and 1991. The other 90 aircraft orders are subject to confirmation for delivery between 1991 and 1995. Designed to be one of the quietest and most efficient aircraft in the world, the 150-seat A320 can be used as a replacement aircraft or to add capacity to the fleet.



THE NEXT GENERATION OF AIRCRAFT

Throughout its 60-year history, Northwest has operated the most modern aircraft available. Recent orders totaling more than \$5 billion dollars ensure that state-of-the-art aircraft will remain a distinguishing characteristic of Northwest.

The new-technology Boeing 757 was the first jetliner selected for Northwest's future domestic fleet. By the end of 1986, 26 757s were in service with another 10 on order.

The 184-seat 757 is the most advanced and fuel-efficient jetliner currently in use. On a Twin Cities to New York flight, the 757 burns 46 percent less fuel per seat than a 727-200 and 40 percent less than a DC-10. This efficiency is enabling Northwest to compete effectively in the deregulated marketplace.

To meet future domestic system needs, Northwest has ordered up to 100 Airbus A320-200 jetliners, the first 10 of which will be delivered in

The Boeing 757 is the most efficient jetliner now in use. Northwest currently operates these 184-seat aircraft on domestic routes.

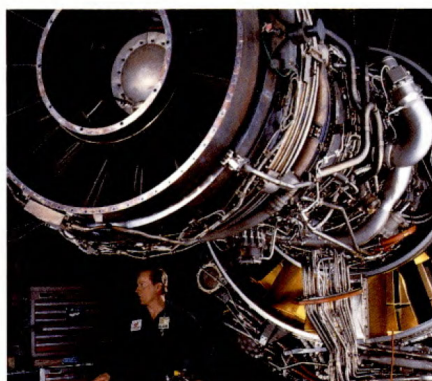


1990 and 1991. The flexibility in this agreement will allow Northwest to add capacity as required or to replace older Boeing 727s and DC-9s.

The new-technology Airbus A320 will seat 150 passengers and burn 50 percent less fuel than the 727. The A320 also will be one of the quietest aircraft in the world.

For future transpacific service, Northwest has ordered 10 Boeing 747-400s. Northwest is the launch customer for this new-generation aircraft, scheduled to enter service in 1988.

Developed specifically to Northwest's own set of requirements, the 747-400 will use 20 percent less fuel per seat than existing 747s. It will fly 432 passengers, up from the current 400, and have a 60-ton cargo capacity. With a longer range than current models, the 747-400 will easily operate the longest transpacific routes without payload restrictions. And, like the 757, the 747-400 will be operated with a two-pilot flight deck crew.



The state-of-the-art technology of the 757 enables it to be operated by two-person flight-deck crews, rather than the customary three. The advanced technology of the 757 allows it to cruise 6,000 feet higher than a 727 and conduct operations from runways that were previously unusable by comparably sized aircraft.



SPEED
BRAKE

DISPLAY COMPUTER THRU F SET



THE NEW NORTHWEST

The year 1986 marked Northwest's 60th anniversary. Under ordinary circumstances, this would have been a time to look back on six decades of growth and service. However, these were not ordinary times, because 1986 also marked the birth of the New Northwest.

On July 29, 1986, the government approved Northwest's acquisition of Republic Airlines, creating the nation's fourth largest airline.

In addition to Minneapolis/St. Paul, Northwest was now operating two additional hubs at Detroit and Memphis. Northwest's fleet increased to 314 aircraft, and the airline was serving 135 cities in 18 countries and employing more than 33,000 people.



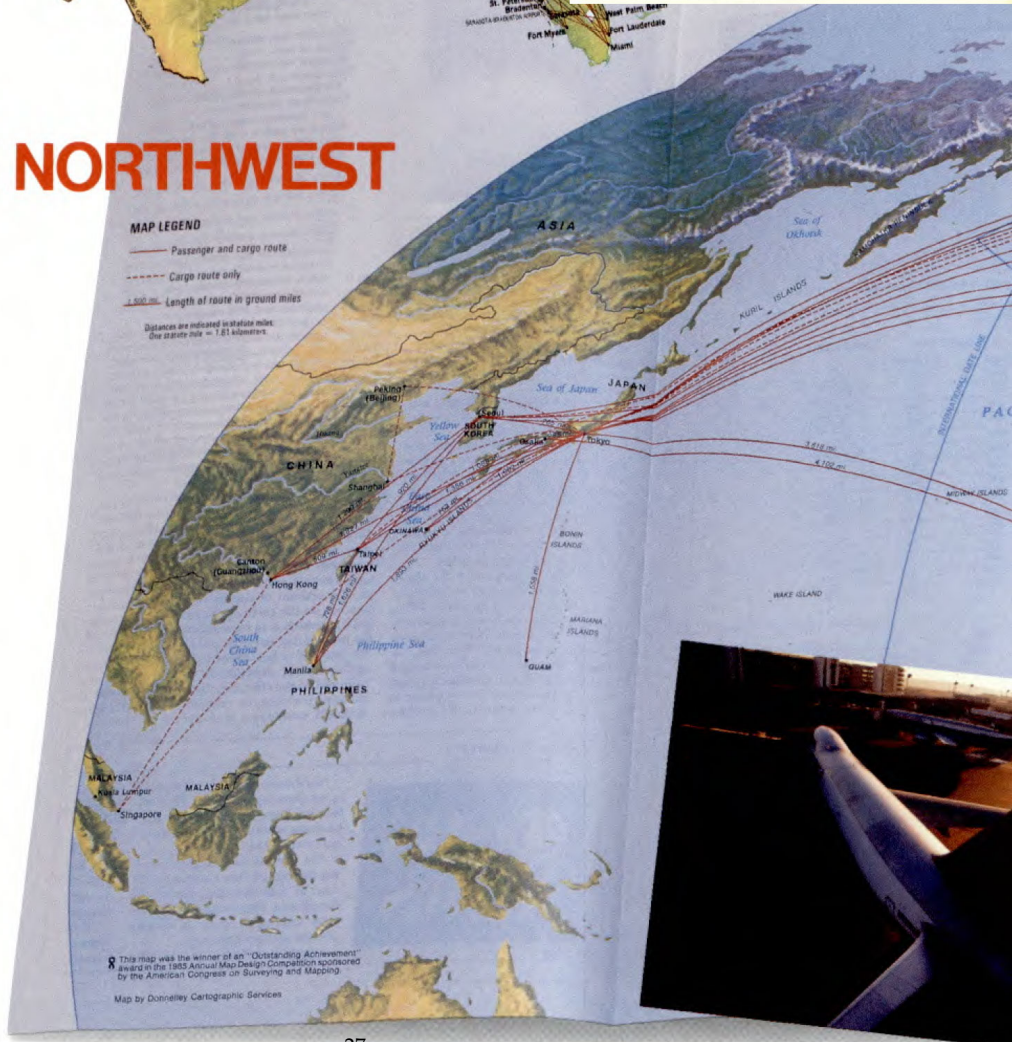
The merger of Northwest and Republic created one of the largest U.S. airlines. Whereas Northwest previously operated only one major domestic hub, in Minneapolis/St. Paul, the combined operation also includes hubs in Detroit and Memphis.



NORTHWEST

MAP LEGEND

- Passenger and cargo route
 - - - Cargo route only
 - 1,000 mi Length of route in ground miles
- Distances are indicated in statute miles. One statute mile = 1.61 kilometers.



This map was the winner of an "Outstanding Achievement" award in the 1985 Annual Map Design Competition sponsored by the American Congress on Surveying and Mapping.
Map by Donnelley Cartographic Services



The combination of two medium-sized airlines with complementary fleets and route systems gave Northwest the size it needed to compete effectively in the deregulated airline industry. For the traveling public, this merger spelled more service and more destinations.

However, Northwest was "new" for other important reasons as well.

Heading into its 60th anniversary year, a holding company was formed to facilitate growth and diversification. Under NWA Inc., Northwest Airlines and five other companies operate as subsidiaries.

Northwest had a new chairman and chief executive officer, Steven G. Rothmeier, at age 40 the youngest chairman in the airline industry. John F. Horn, a 19-year veteran of the airline, was named president and chief operating officer.



Once the Northwest/Republic merger was finalized, work began on the massive job of repainting the former Republic's 171 aircraft in Northwest's colors.



Reflecting its global stature, the company dropped the word "Orient" from its airplanes and advertising, and is using only "Northwest."

Northwest moved into a new \$17 million World Headquarters facility. And Northwest acquired a half-interest in PARS, one of the largest computerized reservations systems.

The new Northwest of 1986 was a far cry from tiny Northwest Airways, which started out in 1926 by flying Contract Air Mail Route 9 with two rented biplanes.

But some things never change, such as Northwest's commitment to providing the best and safest air transportation. This dedication will remain a Northwest hallmark as it flies into the future.

Northwest
World Headquarters
1986



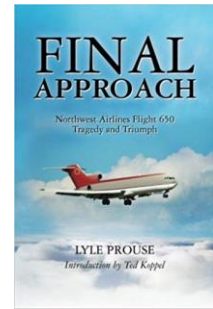
Steven G. Rothmeier became Northwest's
President and Chief Executive Officer in 1986.





Disclaimer: The following articles are excerpted from:

{Permission was requested by the editor and received from Lyle Prouse. Only stipulation; the excerpts be as written, and no editing allowed. Lyle did not initiate this article, your editor did and made the selection of the excerpts.}



Prologue

Life can change so suddenly - an auto accident, a random shooting, a tornado or hurricane, or some other completely unanticipated happening. Each time I watch the six o'clock news I see the faces of people whose lives have suddenly been unalterably changed in the blink of an eye. For me, it was none of those events, but mine was just as surreal and shocking.

One moment I was an airline captain, a husband and father, and thought I was doing well. The next moment I felt as though I'd stepped on a land mine. The explosion confused and bewildered me; I was bleeding from a hundred wounds, dazed, alone, and dying from the inside out. But it was my alcoholism that triggered the blast. I never thought I'd ever be an alcoholic.

This story began on the morning of March 7, 1990, with no hint that this would be the last day of one life and the beginning of another. It would mark a before and after that would find me drowning in the depths of a personal hell before slowly and painfully emerging into a new life in a new world. I landed in Fargo, North Dakota, that day as the captain of a Northwest Airlines Boeing 727. A former Marine Corps pilot and Vietnam veteran, I was living out my dream of reaching the highest pinnacle in commercial aviation. The previous two years had been difficult for our family, but my wife Barbara and I had survived it together and we were two days away from our 27th wedding anniversary. I had no reason to think it would be anything but a typical

layover; I'd have some drinks, get a meal somewhere, and get back to my hotel room in time to rest up for the early morning flight the next day.

But I stayed at The Speak Easy and I drank way too much. When the alarm sounded at 4:15 the next morning, I was hung over. I shaved, showered, put my uniform on, and headed downstairs for crew pickup at 5:15 AM. As the door swung closed behind me there was no way to know nothing in my world would be routine again. A mere two hours later my nightmare would begin. As we turned for the final approach I had no idea what lay waiting for me upon landing. When Northwest Airlines Flight 650 touched down in Minneapolis I was arrested.

Mere months later I was the first airline pilot ever convicted of flying while impaired—in other words, drunk. The last segment of any flight is the final approach phase; it didn't take long for me to realize I had just flown my very last final approach. My story exploded onto the national and international news scene with an unbelievable fury, and it remained a front-page item for weeks. I became a national pariah, the object of scorn, contempt, and anger. Shame, disgrace, humiliation, pain, horror, and hopelessness became my daily companions in the days and years that followed. And the worst part - I knew I deserved all of it. I had worked hard to achieve a good life for my wife Barbara and our three children. But now I was a national disgrace and a joke. I came to redefine my personal margins for human suffering and endurance in a manner and degree never before imagined. Feelings inside me were intensified by my own inability to forgive myself. The self-torture I grimly inflicted came in unceasing and relentless ways that was impossible for me to handle. I came from an alcoholic home but I'd vowed I would never become one of them. But suddenly I was faced with the question of being an alcoholic, something I found repugnant and nearly impossible to accept or digest.

One of the greatest battles of my life would not take place in a cockpit or in Vietnam. The only time I ever pondered suicide was in

Vietnam as I considered what course of action I'd take if shot down and faced with capture. Captured pilots in my sector never survived long enough to make it to North Vietnam. The Viet Cong had neither the logistics nor the motivation to transport pilots several hundred miles north. So captured pilots were usually paraded from village to village as propaganda pieces until they were finally tortured and killed as an example to the local populace.

I wrestled with the option of suicide or capture and could never reach a permanent decision. But within days of the arrest in Minnesota, I found myself planning my own demise as the only available way to stop the pain that quickly reached an intolerable level. There can be no greater sense of hopelessness than when suicide becomes seductively attractive. I never thought I would ever be jailed or go to prison. Clearly, the only possibility of that had been as a POW in Vietnam if we were to take on targets north of the DMZ. As my nightmare unfolded, I was forced to accept the probability of becoming a federal convict in an American penitentiary. I was a proud man, proud of my Native American heritage, proud of my Marine Corps service, and proud of my personal reputation.

Humility had never been a character attribute I had sought but it came to me through another form of the word - humiliation. It came from the media, the nighttime monologue of comics like Jay Leno and others, and from anyone looking for a topic to provoke laughter. I watched nearly everything I'd worked a lifetime to achieve evaporate within a thirty day period after the arrest. Having come from a hardscrabble life, it had been a long climb to the top. Nothing was easy, but Barbara and I had finally achieved success and a level of comfort that allowed us to relax just a bit. My descent to the bottom was almost instantaneous - everything was destroyed and lost overnight.

In the process, I became acquainted with an attorney unlike any I'd ever heard about. Our relationship, forged in the midst of intense adversity, changed each of us in ways neither of us anticipated. I walked

into the depressing gray cloud of federal prison on December 5, 1990, became inmate 04478-041, a convicted felon wearing the drab khaki uniform of a federal convict. I was broke, publicly stripped of my airline career, my FAA flying certificates, and my FAA medical certificate. I had nothing left. The judge put sanctions on me that guaranteed I would never fly again. It was an extra layer of concrete over the top of my coffin and sealed my fate.

Surrounded by drug dealers and petty criminals, I took on life in a prison work camp. Living in the 24-hour insanity of the prison system severely challenged me. Nothing could have prepared me for the sickness and obscenity of our penal system. I looked about me and there was nothing to hope for. I'd destroyed nearly everything. I knew Barbara was still with me, yet I felt so alone. My children hugged me and I drew strength from knowing they were there, but I still felt so alone. I was hearing from many friends and knew it took courage for them to even admit they knew me, much less acknowledge our friendship. And while my heart was touched by their letters and cards, I could not shake the feeling of cold isolation.

As the years passed, I experienced the absolute worst of humanity and the absolute best of it. As I endured one horror after the other, I slowly made my way from the darkness into the shadows. All suffering eventually ends but I never expected to see the sunlight again. In the months and years ahead I experienced miracles that left me awestruck. Impossible events occurred that defied all manner of odds and took my breath away. None came quickly or easily as I slowly turned my eyes skyward once more. In the aftermath there would be no way I could deny the existence of a God who provided such grace to someone who never expected or deserved it.

I never fought my termination. A grievance had been automatically filed but never activated. My termination was justified, fair, and appropriate. Nearly four years later, intervention from the President/CEO

of Northwest Airlines, a man I'd never met or seen in person, brought the two of us together. Over the next several years we shared some moving and emotional meetings in the privacy of his office. He took an enormous chance as he risked his own career by believing in me.

In yet another twist, the tough Federal judge I'd drawn, the man who tried, sentenced, and sent me to prison, would one day many years later become one of my strongest advocates. He would become one of the remarkable parts of my story. Looking back at those first awful days spiraling out from March 8, 1990, it is nearly impossible for me to believe the events that followed the horror and devastation.

This is my story. It's my wish that it might bring hope to someone who has none. I have learned from others that failure often takes the path of least persistence. They taught me that life is not merely playing the hand you're dealt, it's learning to play a poor hand well. But above all, I hope my story illustrates the beauty of a constantly unfolding universe over which some Higher Power can, and does, perform miracles in the face of sheer impossibility.



Lyle Prouse

Captain, Retired, Northwest Airline

Prouse, Lyle. Final Approach - Northwest Airlines Flight 650, Tragedy and Triumph (Kindle Locations 209-269). Lyle Prouse. Kindle Edition



THE FALL

For nearly twenty-two years at Northwest I enjoyed the same reputation I had in the Marine Corps. I loved what I did and the people I worked with whether they were in the cockpit or back in the cabin. I loved going to work and eagerly looked forward to my trips. I had a reputation as an excellent aviator and a good Captain. I ran a relaxed ship in that I didn't micromanage the other cockpit crewmembers. I paid attention and knew what was going on, but there was simply no need to parade my four stripes. For twenty years I watched other captains as I came up through the ranks from second officer (flight engineer) and copilot. I took from the best and learned from the worst. With extremely rare exception, everyone in the cockpit performed at a high level of competency and that was the norm at Northwest. It was routine. I thought being a captain was easy and enjoyable. The entire job of flying airplanes was fun and I loved it. Pilots are just like other professions. Some are excellent, some are average, and some are marginal. That's also true for doctors, lawyers, electricians, plumbers, and all other callings. But the level of excellence at Northwest was routinely very high. We had an outstanding training

department and the screening process for new hires was quite good. But no system is foolproof.

Over the course of thirty-nine years of flying and instructing, I saw the occasional person who dearly wanted to fly but simply had no aptitude for it. Back in my cadet days, some of my friends fit that profile and my heart ached for them as I watched them depart when they washed out. I recognize the dichotomy of talking about good flying performance on one hand while drinking alcoholically on the other. I know doctors, sports superstars, attorneys, ministers, priests, factory workers, plumbers, electricians, and myriads of others who performed brilliantly but were alcoholics. The progressive nature of this disease guarantees that excellent performance eventually deteriorates to unacceptable performance and finally the bottom falls out. The time element can vary with each alcoholic, but the end result is almost always the same. That one may perform adequately, or even excellently, while being an alcoholic does not make it okay or remotely acceptable.

The FAA had a "bottle to throttle" rule - no alcohol consumption within eight hours of flight. Northwest had a twelve hour requirement. For much of my career I played by the rules and honored the twelve hour requirement. As the years slid by and my alcoholism progressed, I found myself compromising that rule, sometimes a little and sometimes a lot. I didn't always do it and tried not to, but there were times when drinking became more important than the rule. I could always rationalize that I would be in flying condition the next day. Once I got sober I could only wonder what insanity led me to think in that manner. But as a practicing alcoholic it seemed both reasonable and logical. There were numerous times when I was hung-over and clearly felt it. I also wondered if there was more to the twelve hour rule than the time line alone but I didn't really want to know. There was. It was a Blood Alcohol Content (BAC) limit of .04 and I seriously doubt more than a handful of pilots were aware of that at the time of my arrest.

On March 7, 1990, I and my two other cockpit crewmembers arrived in Fargo, North Dakota on Northwest flight 217. We landed on schedule at 10:05A.M. at the Hector International airport. It was a beautiful day and I flew the inbound leg, landing smoothly on runway 17 as we rolled out toward the terminal at the far end of the airport.

Three days earlier the trip began as most trips did. I had never met either of the two crewmembers and knew nothing about them. The mood was lighthearted as the trip began with the normal cockpit conversation taking place. Both of the other two pilots were from a civilian aviation background and I was the only one with military experience. We had three first-rate flight attendants who were with us the entire time. Everyone got along well as we headed out on a four day schedule. The copilot was an excellent aviator and I knew that from the moment he flew his first leg with me. It was clear this would be one of the more enjoyable trips since he was extremely competent. The Second Officer was allegedly experienced as a flight engineer due to his previous background at Eastern Airlines, so I had every reason to believe he would do his job well. He was also on probation, which meant I would have to provide an evaluation of his performance, a practice that hadn't changed since I was a new-hire.

Typically, the setting inside the cockpit is relaxed and enjoyable. Airline training and screening is such that crewmembers routinely perform in an excellent manner - it's the expected norm. Each crewmember has a distinct area of responsibility and is interdependent upon the others. However, there is no place in the work force where errors don't occur from time to time, whether it's in the operating room, the courtroom, the cockpit or any other professional or lay endeavor. The public has a particular sensitivity to the subject of errors, especially if they involve a doctor with a scalpel in his hand, a dentist with a drill, an attorney in a capital murder case, or a pilot in a cockpit. But the human condition is such that, like it or not, errors do occasionally occur. In nearly

all cases they're quickly noticed, caught, and rectified. They generally turn out as no big deal.

Aviation has established procedures such as our "challenge and respond" checklists that tend to minimize errors, and the read back of all clearances and instructions between the pilots and Air Traffic Control is for that purpose. Additionally, each crew member monitors the others and functions as an additional safeguard. But altitudes are occasionally "busted," headings are occasionally misunderstood, radio frequency changes are sometimes missed, and other situations occur. Human beings are simply human beings and no environment is 100% error free. Normally, these are quickly seen and corrected, usually with the help of ATC or another part of the cockpit team, and are taken in stride. Good instrument flying is merely a continuum of constant, small, corrections. For the most part, flight operations go very smoothly and professionally. A visual approach is one that gives the pilot the authority to fly to the airport on his own, without the normal ATC procedures and instrument requirements. Obviously, the weather and other airport traffic has to be conducive to this. At one point during this trip, after being cleared for a visual approach I misidentified an airport because there were several of them between my position and point of intended landing. The first officer was not able to help since he was on the blind side and we were some distance out. The second officer was out of the loop and busy with his panel. I always set up for an instrument approach, even when I was cleared for a visual, but the angle and distance did not yet allow for an ILS lock on. I simply looked at the wrong airport. Any error is embarrassing, whether it's a firm landing, wrong heading, or misunderstood clearance, and the correct airport was pointed out by ATC as we proceeded for the approach. I was not accustomed to making mistakes and was not pleased with this one. I always acknowledged a mistake, usually with a self-deprecating comment, because I wanted the other crew members to know that I knew when I erred. Conversely, when

others did something, I usually just laughed it off because I knew they were upset with themselves and nothing more needed to be said.

Our second officer (flight engineer) was having difficulties since the first day of the trip. Since the second officer is the junior man in the crew and is sometimes fresh out of training, it's not uncommon for them to need help or assistance as they settle into the job. Most captains and first officers are glad to help. But this situation was a bit different. The second officer let us know he was very experienced so I assumed he would have no difficulty. It became clear on our first flight segment that he did not understand the aircraft systems when I noticed a pressurization problem and drew his attention to it. I had to stop him from doing something that would have exacerbated the situation, which occurred from inattention to his panel. It was the beginning of the trip and I didn't think much about it since I had seen that situation before and we easily corrected the problem. What bothered me slightly was the fact that he seemed oblivious to what occurred. The following day he gave us takeoff numbers that were off by ten thousand pounds and could have created a problem. I did the thumb rule math check that Captains are taught to do for a rough approximation of takeoff weight and caught the error. This was before data was furnished to the flight crews via computer. We corrected the problem, but I again observed he was not particularly concerned by what he'd done. That was bothersome and I began to pay a bit more attention to what he was doing.

The following day one of his friends rode the cockpit jump seat on his way home. It was a long segment and we had full fuel in all three tanks. In that configuration the fuel would need to be balanced between the three tanks as the flight progressed. Once in cruise flight, the second officer turned his seat completely around to talk with his friend, with his back to the flight engineer panel. It was unprofessional and I thought to myself, "I would never do something like that, especially if I was on probation!" I probably should have said something to him but my *modus operandi* was to avoid micro managing other crew members. The first

officer was flying and as we progressed I noticed he kept adding more and more rudder trim. Finally, I looked down at the rudder indicator and was surprised to see we were way out of trim. I glanced back at the second officer's panel and was astounded to see that we were out of lateral balance by more than two thousand pounds of fuel. The FAA limitation was one thousand pounds between tanks one and three I never saw anyone get anywhere near that limitation. And we were now more than twice the FAA limitation for lateral unbalance. I didn't know if we had enough flight time remaining to get back within normal operating limits. I was irritated at this point because the second officer was still engaged in conversation with his friend and completely ignoring his duties at the panel. I tersely told him to take a look at his fuel panel and get us back in balance. The first officer was excellent, with a good personality, and I was pleased to be flying with him. We got along well and got together a couple of times on layovers during this trip. We had not included the second officer although we discussed his performance.

Frankly, I found the second officer's performance puzzling. Pilots are extremely competitive and very jealous of their professional reputations. It was bewildering that he was not making more of an attempt to do the job well - especially since he was still on probation. I believed most of his difficulty came from inattention, seemingly due to a continual need to engage in stories about himself that were meant to impress. As he did so, he ignored what was going on at his work station and that was causing problems. I was certainly on alert by now and under no impression that I could rely upon him to do his job.

We were approaching the end of the trip, departing Detroit at dusk. The second officer is charged with reading aloud the normal flow of checklists with a response from the two pilots up front. I called for the Before Taxi Checklist and when the second officer responded with "Before Taxi Checklist complete" I glanced at his panel over my shoulder prior to taxiing. I saw six amber lights indicating that six of the eight fuel boost pumps were off when they would normally have been on. The

second officer saw me turn and look and said he was going to balance some fuel during our taxi out. After the fuel fiasco the day before, I guessed he was trying to show me he was on top of things. However, this was bizarre because no fuel will be burned and balanced at taxi power. He should have known that, but again I said nothing. My thought was to let him do whatever he wished as long as it did no damage. As we turned onto the runway I called for the final items checklist and after the appropriate challenges and responses the second officer called "Takeoff Check Complete." Routinely, I glanced over my shoulder expecting to see no lights on his panel, which would be a normal indication prior to takeoff. Instead, I saw the same six amber lights indicating the six boost pumps were still off. The boost pumps were on the checklist he had just told me was completed.

The boost pumps supply fuel under pressure to the engines and two of our three engines were currently devoid of boost pump pressure. The engines will operate normally during taxi or in cruise flight with only suction power. Indeed, we configure the fuel system using the fuel manifold with selected pumps on and off in order to balance fuel. But no one I know is sure that a flameout won't occur at maximum takeoff power and a nose high attitude with no boost pump pressure to the engines. My patience exhausted at this point, I angrily said, "Turn the f---g boost pumps on!" He did and we took off. It's not certain and we'll never know, but we could conceivably have lost two of our three engines during takeoff, right at the most critical time. And the worst emergency a 727 can have is loss of two engines.

In training we failed two engines for the Captain checkride, but those were always done in flight and never at takeoff. I fully intended to have a heart to heart discussion with the second officer after this trip was over but it ended unexpectedly and the opportunity never came. Over the years I flew with a few second officers whose names circulated among the pilot community as having some competency problems. I found they

did an acceptable job if I put them at ease and assured them there was no rush or hurry to get through anything.

During my Marine Corps time I was a flight instructor in the Advanced Jet Training Command and used the same approach there when needed, although we didn't have some of the luxuries the airline environment provided. I never had an experience like the one on this flight, especially with someone who claimed to have prior airline experience. It was baffling and proved to be a once-in-a-career situation. Several of the second officer's classmates at Northwest told me he continually interrupted the ground school instructors to explain how they did things at Eastern. He'd done that so much he was dubbed "Tom Eastern."

During one of his walkarounds on our trip, he wanted to down the aircraft for something that Eastern did not consider adequate but was perfectly acceptable under Northwest Maintenance criteria. When he became insistent about it, I told him we worked for Northwest, not Eastern, and we used the Northwest criteria. Although I didn't say it, I had been a 727 second officer for over eight years and was very knowledgeable about pre-flighting the aircraft and the maintenance requirements. What was normally a lighthearted, fun, and relaxed cockpit setting, became strained and required an abnormal amount of my attention toward the Second Officer's panel. The dynamics formed in the cockpit would spill over later into the courtroom.

It was the next to the last day of our trip. We would finish tomorrow and go home. I had just unpacked in my hotel room when the copilot called and asked if I would like to meet for a light lunch. I said yes and the three of us had a sandwich and some soup, talked briefly, and adjourned back to our rooms. We'd had an early launch that morning and I was going to get a short nap. Around 3:00 P.M. the copilot called, inviting me to the Speak Easy Restaurant and Lounge to have a couple of beers and some hors d'oeuvres. The Second officer was also going.

Typically, I was a loner on layovers but for whatever reason I decided to join them. We talked as we walked the several blocks to the Speak Easy, a place I'd never been before, and I paid little attention as we made our way there. A pitcher of beer was ordered, but I ordered a rum and coke, which was one of my preferred drinks. I had no intention of staying and getting drunk, nor did they, as far as I knew. Several hours passed, pitchers of beer were consumed, and I kept the waitress busy bringing rum and cokes. The second officer was strongly showing the effects of the beer while the copilot showed no sign of intoxication. The second officer suddenly appeared at our table with a guy named "Charlie," whom he met at the urinal. Charlie was purportedly a Vietnam vet. He began helping himself to the beer and I quickly pegged him as a phony as I listened to some of his comments and exploits. I never talked about Vietnam unless it was with close friends who also served there. I was not interested in chatting with Charlie about Vietnam and it was clear to me he was never there and was an imposter.

A short while later I politely asked Charlie to leave, but he ignored me. I asked again, this time a bit firmer and less politely. Again he ignored me. Finally I told him to "get the f—k back to the bar and leave our table," and he left because I was now angry. Although I thought I was low key and discrete, several nearby patrons overheard me and they later testified in court about this incident. We continued to drink.

I came back from the restroom to find the second officer involved in a verbal clash with two men sitting nearby. As I approached our table and heard the comments, I told him he was out of line and to be quiet. Then I apologized to the two patrons and offered to buy them a drink, which they declined.

If I went anywhere on layovers I normally went by myself and the primary reason for doing so was to remain anonymous from a professional standpoint. I didn't want to be identified as an airline pilot. In the midst of crew gatherings in public conversations by flight

attendants complaining about a passenger or talking about flights made it too easy to be overheard. Flight crews who were identified while out drinking were on dangerous ground. To my dismay, the second officer had openly bragged to these two men that we were airline pilots. It was a reckless disclosure. I was extremely angry because he put all of us in serious jeopardy. He appeared intoxicated at this point and I told the copilot to get him out of the bar and back to the hotel. They left with the copilot assisting the second officer out. The second officer paused long enough to declare that he could beat their ass, and the copilot hustled him on out of the bar. I knew this was a bad situation and I tried to smooth things over with the two men.

They were pleasant enough and asked if I knew a certain Northwest pilot who lived in Fargo, Captain George Lund. I said I did and that he was a good friend. It was too late to try to deny who we were. I was hoping our mutual association with George might provide us a pass on possible adverse consequences. Although the second officer's behavior was reckless, my own was not good either. I was drinking at a time and place forbidden by regulations. I have no idea how much longer I stayed after the other two pilots left, but it was at least several hours more. Although I didn't feel drunk, I lost my balance as I stood to leave and fell, the chair skittering across the floor as people turned to look. I drew more unwanted attention.

I left the bar and returned a few moments later, asking directions back to the hotel. Since I'd left my watch in my hotel room and had not seen a clock in the bar I was unaware of the time. I believed it was still fairly early in the evening and I would get a decent night's sleep. Pick up had originally been set for 5:00AM. We needed to be at the Fargo airport one hour before our departure time. The flight attendants asked if we could slide it fifteen minutes and get a few minutes more sleep. I said okay since it would be very early, traffic wouldn't be a factor, and it was an easy ride to the airport. I stressed that no one should be late as we'd be cutting it close and could not afford to wait on someone. The next

morning all of us showed up ready to go except the second officer. We tried to rouse him twice, waiting as long as we could, then left instructions that he would have to catch a cab to the airport. The morning was not off to a good start.

We arrived at the airport and a Northwest agent told me the FAA was waiting for us. I assumed it was merely an FAA inspector going on an observation ride with us and I was okay with that. Some pilots didn't particularly like FAA observation rides but I never had a problem with it. It was just part of the job and I was simply never concerned about it. The FAA inspector was Verle Addison, but he wasn't interested in an observation ride. He immediately told me he had a report about a Northwest crew who were drunk at the Speak Easy. I responded that we had been there but I didn't think anyone was drunk. At the time I actually believed that. But all the nerve endings in my body came to full alert because alcohol issues at Northwest Airlines were deadly.

At that time, Northwest Airlines was the only major carrier with no alcohol program for its pilots. Decades earlier, a former CEO, Donald Nyrop, was approached by representatives of other airlines in an attempt to get Northwest to join the rest of the industry by implementing a program. Nyrop, angrily responded that "Northwest didn't have any alcoholic pilots, and if they did they'd fire them." Then he showed them out of his office. One of the four pilots present related that story to me. The idea that there were no alcoholics pilots at NWA was beyond absurd. Alcoholism is an equal-opportunity disease and there is no vocation or profession, no line of work anywhere that is free of alcoholism. Northwest policy was to fire anyone who came into the public eye or drew any attention because of alcohol. Over the years, I saw a number of people terminated due to drinking situations. Those situations were rare and infrequent, but when they occurred they ripped through the airline like wildfire. The people involved left a legacy of disgrace and their names were permanently etched on our individual walls of shame. None ever returned; termination was swift and irrevocable.

We were in deep trouble and I knew it. I was hung-over but felt sure I was up to the task. Verle Addison checked my licenses, as well as the copilot's, and talked to us about the eight-hour rule. He did not appear concerned about our appearance and never suggested we were not in fit condition to fly. I took that as a good sign. I was sure we were okay on the FAA eight-hour rule but I knew I had violated the NWA twelve-hour policy. As it turned out I violated both, but the other crewmembers had only violated the twelve hour rule; still, enough for termination.

Addison left the operations office and I completed the paperwork for the flight. I called and asked flight dispatch to put on more fuel due to the weather. The copilot had gone to the aircraft to perform his preflight duties. I joined him and asked what he thought we should do. We were both uncertain. I was not at all sure what Addison's position was. He was not telling us not to fly and never suggested anything in that regard. Addison was nowhere to be seen and I had no idea what he was doing. Our second officer was still a no-show, so I told the copilot to do the walk around, the exterior preflight, once he had completed his cockpit checks. I completed my own checks, preflighted the second officer's panel, and configured it for engine start. The aircraft was facing the terminal and we could see the gate area through the large glass windows. The second officer finally arrived in the gate area and we could see him talking with Addison. Addison departed once again and the second officer made his way to the cockpit. I told him we'd done his walk around and that I had set his panel up. I told him to check what I had done, then get the checklist out so we could accomplish the "before engine start" procedures.

It was push back time and Addison was nowhere to be seen. Since he was not specifically preventing us from flying I assumed he was tacitly giving us the okay to go. It appeared his only concern was the eight-hour rule. I responded to the push back crew, released the brakes, and began the push back. When cleared, we started the engines. The push back crew disconnected and we called for taxi. I tensed and waited for ground control to tell us to return to the gate. At that point we had fully operated

the aircraft and if Addison was setting us up, then we had completed the process. Nothing came. We were told to taxi to runway 17, a long distance away, and I kept waiting for a radio call instructing us to return to the gate. There was nothing. The Fargo tower then cleared us for takeoff and the copilot took the controls, since it was his turn to fly. It had taken seventeen minutes from push back to the takeoff point and we'd heard nothing from Addison.

Later, Addison and the prosecution would claim we pushed back and immediately got airborne which was untrue. We were scheduled to land at Minneapolis, change airplanes, go to Newark, and return to Minneapolis. It would be a long day. I felt sure there would be no alcohol in our systems by the end of it. But what was going to happen in the meantime? I desperately hoped this would somehow drop through the cracks. It was delusional thinking, but my mind was racing. Perhaps we would be called in some days later, after Addison's report reached the company, and we could come up with some story that would prevent termination. Unlikely, but I was hoping with the desperation of a dying man.

I make no excuses for what took place. It was wrong and I was wrong, period. As all of this was occurring, I was reacting as any alcoholic would and was willing to do anything to avoid the consequences - and escape the situation. Once, I lived by a code of honor but my alcoholism slowly sabotaged my values and I was willing to do anything to avoid what was in front of me. I will say it again - what I did was wrong and there is no excuse for it, period. Alcoholism does not give me or any other alcoholic a free pass for anything we do. As we climbed through 20,000 feet the second officer tapped me on the shoulder and motioned to the radio panel. I switched to the frequency he used for company reports and heard the radio operator instructing us to report to the Vice President of Flight Operations when we landed. We were dead in the water. My mind raced. The general offices were a few miles from the airport. I didn't care

if I had to invent a story saying Martians kidnapped us, but we had to buy enough time to let the alcohol metabolize out of us.

As it turned out, we wouldn't need the Martians. We landed at approximately 7:00 A.M., on runway 11 Right at Minneapolis. The copilot did his usual good job of flying. Since the steering tiller was on the Captain's side I took the airplane, exited the runway, and began taxiing to gate 21. The weather was not good, there was ice on the ramp area, and gate 21 was the most difficult gate on the airport to park at. It angled in and there were crowded parking spots on either side, making it dicey when aircraft were at those other gates. As luck would have it, both gates were occupied as I headed into gate 21. I managed to get us in, stopping precisely on the centerline and right on the spot where the nose wheel was supposed to rest. Perhaps God actually does watch over fools and drunks. The fifty-eight passengers deplaned and I walked off the airplane. Coming out of the jet way, my heart stopped as I saw Northwest company officials, FAA personnel, and two uniformed airport police. An overweight FAA agent with a pockmarked face approached me and asked if I was Captain Prouse. I said yes, and he asked me to step over to the side. His ID badge identified him as Doug Solseth. The copilot and second officer followed, and were also asked to step over to the side. Passengers were starting to notice the unusual activity so we were taken to a room on the second floor. There, Mr. Solseth informed me I was under arrest and presented me with an arrest document, which I signed. The copilot and second officer repeated the process.

It was early morning, March 8, 1990. It was to become a twelve-hour ordeal unlike any I had ever experienced. Of all the feelings that overwhelmed me that day, shame was the greatest. Although I experienced a surreal sense of fear and dread, shame and humiliation surged through my very marrow. During that day I had many moments of sheer out of body experience. There were times I was sure this couldn't be happening to me and I was suspended high in the room watching it occur to someone else. Then I would suddenly be transported back to

reality and the gut-grinding impact that this was happening to me. It was a twelve-hour day of blurred events.

At one point, the head of our Air Line Pilot Association, Captain Pete Dodge, was called and his face was lined with deep concern when he arrived. I always liked Pete and had great respect for him. I could hardly meet his eyes as he spoke with us. An ALPA attorney talked with us but I have no memory of what was said. We went to two different medical facilities, escorted by two uniformed police officers, and submitted blood samples both times. At one of those facilities a reporter saw three uniformed airline pilots escorted by police officers and that was our entry into what would soon become a media blitzkrieg.

Finally, Northwest Airline attorneys deposed us. I drew Mr. Doug McKeen, known to be a brutal interrogator. Strangely, my recollection of him was a gentle one. He did his job, was thorough, prodding, and methodical. But his demeanor was calm and he appeared sorry that he had to question me. I was defeated, completely broken. I never experienced such humiliation and with it, humility. My body language echoed my disgrace and I sat as if compressed, seemingly much smaller than my normal size. I only remember one specific question Mr. McKeen asked, "Captain Prouse, do you think you abuse alcohol?" I had never been asked that before. My head was down and I slowly looked up, pausing as I considered the question. I replied quietly, "I don't know." And I didn't. In the aftermath, how could I not know? But at that moment, I truly didn't know the answer to that question.

Later, I saw Mr. McKeen in court and approached him. I wanted him to know I held no hard feelings and truly understood he had a job to do. I really wanted to tell him I appreciated how kindly he treated me that day, but I didn't have the words.

After the deposition we were driven back to the airport. It had been an interminably long day and was finally over. The three of us sat in a car

driven by the assistant chief pilot, Captain Gene Frampton. No one spoke. I looked out the window and it was pitch black. It was almost dark when we landed a thousand years earlier.

A thought seeped through my mind "All the light in my life has gone out. It's been forever extinguished and I will live in this darkness forever." The shame was overwhelming and it was only just beginning. In the days, weeks, and months ahead it would become exponentially worse. It was exacerbated by the fact that I had not lived my life doing shameful things. To the contrary, I was the standard bearer in my family for duty, honor, country. To my children I espoused honesty, character, and integrity. I grew up trying always to bring honor, pride, and dignity to all my endeavors. That was true whether I was donning a Marine Corps uniform, representing my heritage, my family, my profession, or my airline. And now I brought shame and disgrace to my entire life - everything I treasured and valued.

I was having a difficult time dealing with what had just occurred. I went to my commuter apartment, a nice place near the airport. Fortunately, none of my other three pilot roommates were there. For the first time that day I thought about calling Barbara. Suddenly, it dawned on me that I was supposed to be home that night; I should have landed in Atlanta by now. I phoned home and the answering machine picked up. Barbara spent four hours at the Atlanta airport waiting for me before finally heading home. I listened to my voice on the answering machine, and when it stopped for the incoming message I didn't know what to say. I managed a mumbled message to Barbara that a disaster had taken place that day and I thought I had lost my job. I said I would be in on the first flight in the morning and hung up. Thankfully, she didn't return my call and I will never understand why. It was the biggest gift she could have given me. I was sick and didn't want to talk.

I spent a sleepless night tossing about while reliving the day's events. There was no way to escape the relentless torture. The next

morning I donned my uniform and walked through the Minneapolis-St. Paul terminal for the flight to Atlanta. Every time someone glanced my way I flinched and felt the blow of shame. Soon they would all know. Everyone would know. How had my life come to this? I worked hard to establish and achieve an honorable trajectory through life. Suddenly my life had been hijacked and I found myself in a smoking crater with wreckage all around me. I came a long way in life, through many struggles, and thought I had emerged victorious. A lifetime of effort was gone and all I could feel was shame, disgrace, and dishonor.

Prouse, Lyle. Final Approach - Northwest Airlines Flight 650, Tragedy and Triumph (Kindle Locations 374-614). Lyle Prouse. Kindle Edition

More Excerpts in Future Issues.....

The HIMS Program

The purpose of the HIMS program is to effectively treat the disease of chemical dependency in pilot populations in order to save lives and careers while enhancing flight safety. The HIMS concept is based on a cooperative and mutually supportive relationship between pilots, their management, and the FAA. Trained managers and peer pilots interact to identify and, in many cases, conduct an intervention to direct the troubled individual to a substance abuse professional for a diagnostic evaluation. If deemed medically necessary, treatment is then initiated. Following successful treatment and comprehensive continuing care, the pilot is eligible to seek FAA medical re-certification.

The FAA requires the pilot to be further evaluated by a specially trained FAA Aviation Medical Examiner (AME) who then acts as the Independent Medical Sponsor (IMS) to coordinate the FAA re-certification process. The medical sponsor provides oversight of the pilot's continuing care. This care includes a monthly interview by a trained flight manager and by a pilot peer committee member, as well as periodic follow-up observations. Because of the relapse potential of chemical dependency, the monitoring will typically continue for several years after the pilot resumes his duties. The HIMS program is designed to ensure the pilot maintains total abstinence and to protect flight safety.

For more information regarding the HIMS program, view: <http://www.boaf.org/>



NEAR MISSES



A Day, Never to Forget....

As we say, flying is hours of boredom,
punctuated by moments of stark terror.

Unfortunately, Tex Johnson is not the only person
to roll a 707.. he did it on purpose. I had no
no choice.



Flight 7, SEA HND. Vint Hansen is Captain, I am Copilot. Vint gave me the leg.

All is normal until over King Salmon. FL350, above the trop.

Suddenly, the OAT warms 22° C and the bottom falls out. I point her down to
recover airspeed, then the opposite ... colder and we are going too fast.

Climb, climb, then the bottom falls out again and down we go again. Vint is running the power on command and I've got a hand full of aluminum. I'm trying to alert ARINC Anchorage what's going on.

ARINC asks if we need altitudes above and below cleared: on tape later "If anyone is above us, they are way above us. If they are below, they are way below..Ooooooo" I had to drop the Mike and recover.

This Damn shear was so sharp, it hit one wing and not there other and tipped us over about 120°. There was no choice but continue the momentum and complete the roll or paste everything on the ceiling.

From the left seat comes..."Jesus Christ" but we are back wings level by then.

Second Officer was watching his panel and didn't realize what had happened.

We fought the roller coaster for a while more; seemed like an eternity.

When we were finally out. I told ARINC: "Don't let any other Damn fool through this area!" on tape

All birds were re-routed.

Not about to go back towards ANC, so continued to Haneda.

Flight recorder was pulled, and bird inspected. Not bent, no popped rivets.

Turns out, we were in it for 22 minutes and on the limits of positive and negative Gs. As high as 37,200 and as low as 33,100...just trying to keep flying.

Danny Sowa, our meteorological genius, figured out that we had hit a heretofore unknown mountain wave.

Vint bought the beer that night..... Darrel

Story of my Life-Skip Foster



I was flying an F-102 into Buckley ANG base in the early 1970's. I believe there was a single long runway: 32/14. I was inbound from the Southwest and had just switched over to the tower from approach control after calling runway 32 in sight. I was making a descending left turn to pattern altitude--those of you that flew the "Deuce" know that the visibility was not great! When I rolled out on initial, all I saw were 2 propellers and a cockpit. I pulled up as hard as I could, then rolled inverted to see if I could see anything--I hadn't felt any impact. I didn't see anything, so I reentered the pattern and weakly asked tower if they had any outbound traffic. They said no, but that a C-131 had departed runway 14 some time ago. I said that I believed I had just had a near miss with him.

When I got on the ground, I filled out an incident/near miss report and asked to speak to the base Safety Officer. His office said that he was the pilot of the C-131 that had just departed! I finally got him on the phone later that day, and he said they had switched from tower to departure control, and neither departure or the tower had said anything about inbound traffic. I said the same story with approach control and tower for me. He said all he saw was my nose and intakes and he thought they were all going to be dead! That was my closest call in all my military or airline flying.

---Skip Foster

Near Misses the kind that afterwards leave you kind of dumbfounded or recovering.

I am thinking about aircraft ...

I had one that doesn't count ...

When I was in kindergarten I chased a loose paper onto the street while I was waiting in front of the school for my mother to pick me up.

A sand truck hit me and knocked me out ... I broke the front headlight with my head.

The near miss part was that the truck straddled me ..

I woke up, in the hospital looking at my Mom and Dad and a uniformed policeman.

I don't even remember a headache.

Near Miss

But in aviation I had several in the training command and a few later in USMC squadrons.

At Northwest as a copilot we were in the DC-6B en-route from MSP eastbound to New York.

It was daytime ... weather good ... departing MKE.

The Capt. was flying, and we had been discussing what you say just before you hit the ground in a crash.

Oh Shit!! was agreed the most likely.

We took off West and were cleared to make a right turn to head East when we were clear of a Bonanza ... taking off West also on a nearly parallel runway and paralleling our departure.

Sitting in the right seat I was watching the Bonanza and answering the Captain's. "Are we clear yet", as he leaned over to try and take a look too.

At about 1000 feet the damn Bonanza was still almost keeping up with us and we still could not turn.

Then we both looked up and filling the windscreen was a Cessna 180 ... I could see dirt on the rivets and the door handle.

As the Cessna went overhead I waited for a thump as it hit the tail

No thump no shit no control movement nothing we were dumbfounded.

LAST RIDE ON MY HARLEY



While riding my Harley, I swerved to avoid hitting a deer, lost control and landed in a ditch, severely banging my head.

Dazed and confused I crawled out of the ditch to the edge of the road when a shiny new convertible pulled up with a very beautiful woman who asked, "Are you okay?"

As I looked up, I noticed she was wearing a low-cut blouse with cleavage to die for...

"I'm okay I think," I replied as I pulled myself up to the side of the car to get a closer look.

She said, "Get in and I'll take you home, so I can clean and bandage that nasty scrape on your head."

"That's nice of you," I answered, "but I don't think my wife will like me doing that!"

"Oh, come now, I'm a nurse," she insisted. "I need to see if you have any more scrapes and then treat them properly."

Well, she was really pretty and very persuasive. Being sort of shaken and weak, I agreed, but repeated, "I'm sure my wife won't like this."

We arrived at her place which was just few miles away and, after a couple of cold beers and the bandaging, I thanked her and said, "I feel a lot better but I know my wife is going to be really upset so I'd better go now."

"Don't be silly!" she said with a smile. "Stay for a while. She won't know anything. By the way, where is she?"

"Still in the ditch with the Harley, I guess."

Gar Bensen

Near Miss 3

. I can remember one that happened to me while flying F/O on the B-727 across Montana. It was a beautiful day and we were just relaxing when the controller said, "Northwest 72 descend NOW"! The Captain (I can not remember who it was) reached forward and shoved the yoke forward. Two seconds later, a B-52 flew over us! Guess it wasn't not our time to Fly West!

Dick Dodge

A Close Call-4

We were young, enthusiastic, naive, and probably a bit uninformed. Our "Wings of Gold" had been won, indicating that we could now be called Naval Aviators but there was still so much to learn. Flying modern jets, there were so many hidden dangers that we had no idea were lurking.

This early flying in our Marine Corps careers was a calculated risk. The system allowed us new pilots to push ourselves and our aircraft to the limit.

We learned so much by trial and error. We were engaged in a very dangerous game that hopefully would prepare us for our upcoming participation in the war in Vietnam.

I had been assigned as the leader of a two-plane flight, which was to launch just minutes before another flight led by Major G. The major was a wiry, dark-complexed man who seemed to be very intense. As my wingman and I left the briefing room I casually said to him, "Watch your six." Pilots are always taught to watch for enemy aircraft attacking from behind, the six o'clock position. My comment, even though attempted bravado, was rather stupid in that my knowledge of air-to-air combat was very limited.

Upon becoming airborne, I led my wingman in a full power climb to altitude. We circled over the field and watched as the major and his wingman made their takeoff runs. They switched to our tactical radio frequency as we watched them climb. As they gained altitude we also continued to climb. At all times we had the advantage since we were well above them.

At what I thought was the proper time, I pressed the mic button and announced, "The fight is on." The major and his wingman did not have us in sight and were desperate to gain visual contact. Finally, they realized that we were above and working toward an attack position.

Major G maneuvered aggressively trying to get us off their tail. We had the advantage and were able to maintain our attack position. In desperation he applied full power and pointed their jets skyward. We followed! My wingman and I had closed to a simulated "kill" position.

We had them in our sights and seemed to have won the engagement! Their aircraft appeared very large as we closed. Major G had chosen to "go vertical." All four aircraft were at full power as we climbed. Somehow, a slight difference in the noise level caused me to check my airspeed. I was shocked to see that the gauge indicated zero.

I had never been involved in such a situation. There were now four beautiful modern attack aircraft free-falling, initially tail first, within a very small bit of airspace. I feel it was a miracle that there was no collision since none of us had control of our planes. We fell until our aircraft slowly pointed toward the earth like arrows. We were still at full power therefore the airspeed and

controllability quickly returned. There was no radio chatter as the flights separated and resumed their originally assigned missions. Upon returning to base this event was never debriefed or even mentioned. All pilots had learned a lesson and were lucky to have survived.

Darrell





Travels of Gary Pisel



Map of Iceland and the route we took with the tour bus.

The blue line is our flight back to Reykjavik



This photo shows the reflection on Lake Myvatn.

Beautiful clear day



This is a photo of the Northern lights above our hotel in Borgarbyggjo



One of the many waterfalls we saw.

With glaciers and thermal areas waterfalls are plentiful.



One of the high points. This is the Blue Lagoon.

A large area that is filled with heated water from the geothermal springs. The temperature is between 96 -

108 a year. Reservations must be made; the capacity is determined by the changing rooms. Lagoon is never crowded.



No native trees in Iceland, Fences and houses were made from cutting sod, 12 inches thick, and building the walls.

<https://www.travelandleisure.com/travel-guide/iceland>

A Visit to the Spruce Goose

by Jay Sakas

As editor of this fine magazine, it has become a necessity to always be on the lookout for stories that would entertain the readers. Last year my wife and I decided that we have seen the USA from 36000 ft, why not see it from 6ft (well 5'11")

We bought a 34ft travel trailer, a F-350 diesel truck and have hit the road. A recent trip took us south and we stopped in McMinnville, OR to check out the Evergreen Museum.

It is a great little museum with a lot of history packed into it. The Spruce Goose envelopes its building and it is jaw dropping. Around it and under it are some of the most beautifully restored airplanes.

There are additional buildings that hold a space museum and a theater

For RVers, there is a rv park next door or you can cold camp in the back 40 parking lot.

There is enough to see and do for a whole day. Highly recommend the visit.



The Spruce Goose

At the center of our museum stands the original Spruce Goose. Built entirely of wood due to wartime restrictions on metals, this massive airplane stands as a symbol of American industry during World War II. Learn more about the history, first flight, and legacy of this mammoth plane.

Its History



The largest wooden airplane ever constructed, and flown only one time, the Spruce Goose represents one of humanity's greatest attempts to conquer the skies. It was born out of a need to move troops and material across the Atlantic Ocean, where in 1942, German submarines were sinking hundreds of Allied ships. Henry Kaiser, steel magnate and shipbuilder, conceived the idea of a massive flying transport and turned to Howard Hughes to design and build it. Hughes took on the task, made even more challenging by the government's restrictions on materials critical to the war effort, such as steel and aluminum. Six times larger than any aircraft of its time, the Spruce Goose, also known as the Hughes Flying Boat, is made entirely of wood.

Originally designated HK-1 for the first aircraft built by Hughes-Kaiser, the giant was re-designated H-4 when Henry Kaiser withdrew from the project in 1944. Nevertheless, the press insisted on calling it the "Spruce Goose" despite the fact that the plane is made almost entirely of birch.

The First Flight



The winged giant made only one flight on November 2, 1947. The unannounced decision to fly was made by Hughes during a taxi test. With Hughes at the controls, David Grant as co-pilot, and several engineers, crewmen and journalists on board, the Spruce Goose flew just over one mile at an altitude of 70 feet for one minute. The short hop proved to skeptics that the gigantic machine could fly.

Perhaps always dreaming of a second flight, Hughes retained a full crew to maintain the mammoth plane in a climate-controlled hangar up until his death in 1976.

Its Legacy



The Spruce Goose was kept out of the public eye for 33 years. After Hughes' death in 1976, it was gifted by Hughes' Summa Corporation to the Aero Club of Southern California. The Aero Club then leased it to the Wrather Corporation, and moved it into a domed hangar in Long Beach, California.

The Disney Company acquired the Wrather Corporation, thus taking over the lease of the Spruce Goose. Evergreen subsequently bought the aircraft from the Aero Club.

In 1992, Evergreen Aviation & Space Museum co-founders Michael King Smith and Delford M. Smith submitted the winning proposal to provide the aviation icon with a proper home. The Flying Boat was disassembled and transported by barge up the West Coast, then up the Columbia and Willamette Rivers, to Portland, Oregon. It remained there for several months, until water levels permitted the huge structures to safely pass under the Willamette's many bridges.



Finally, in February 1993, the aircraft was transported by truck for the last 7.5 miles to McMinnville, Oregon. Temporary hangars were built as housing for the aircraft, while volunteers worked on the aircraft's restoration. In 2001, re-assembly of the Hughes Flying Boat was completed in its new home.

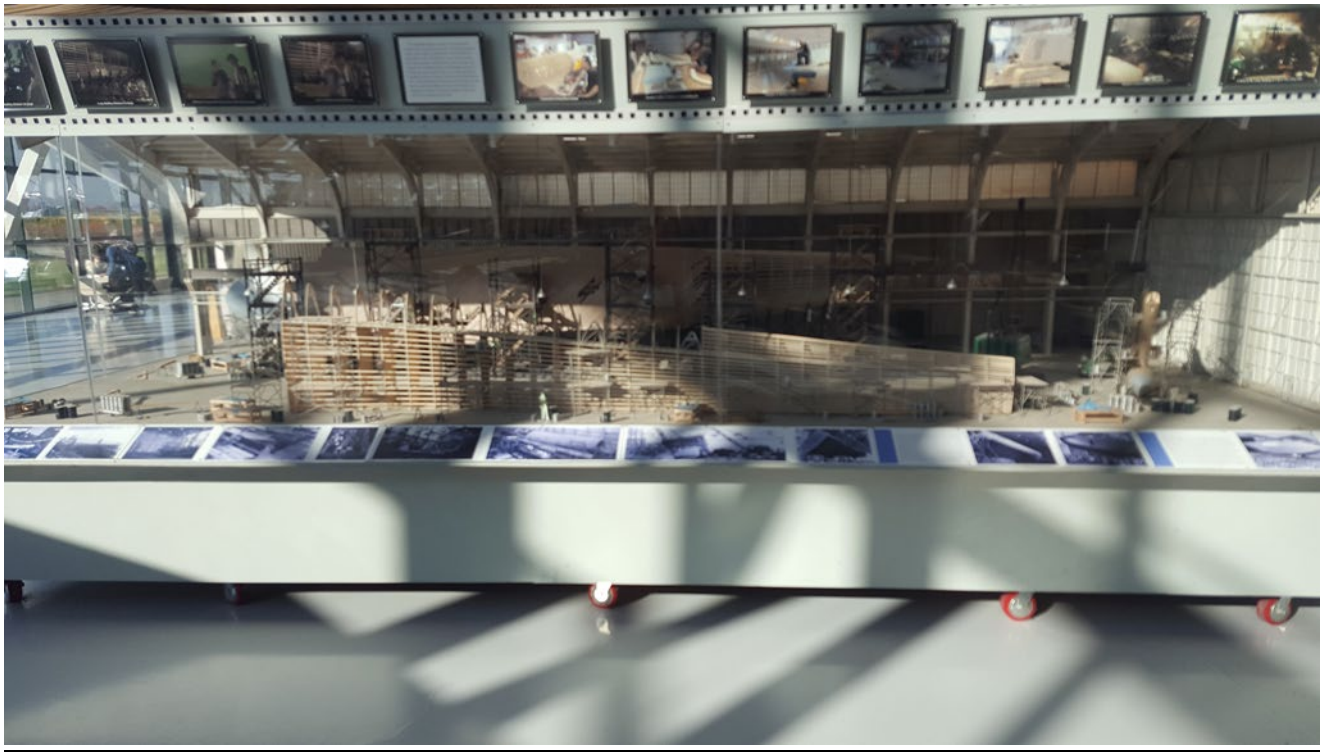




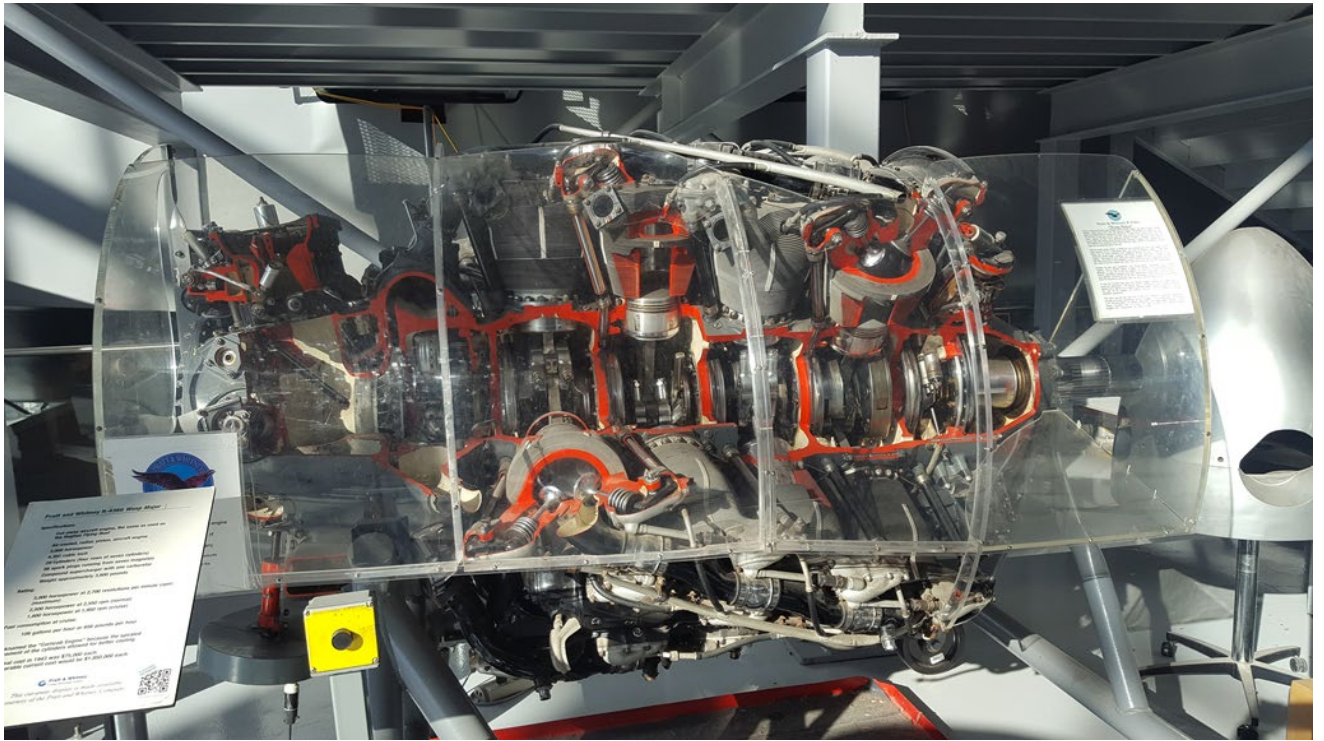
Evergreen Museum



The Spruce Goose



Model of H4 used during planning



Pratt & Whitney R-4360 Wasp Major



Aft Section with Fire Bottles



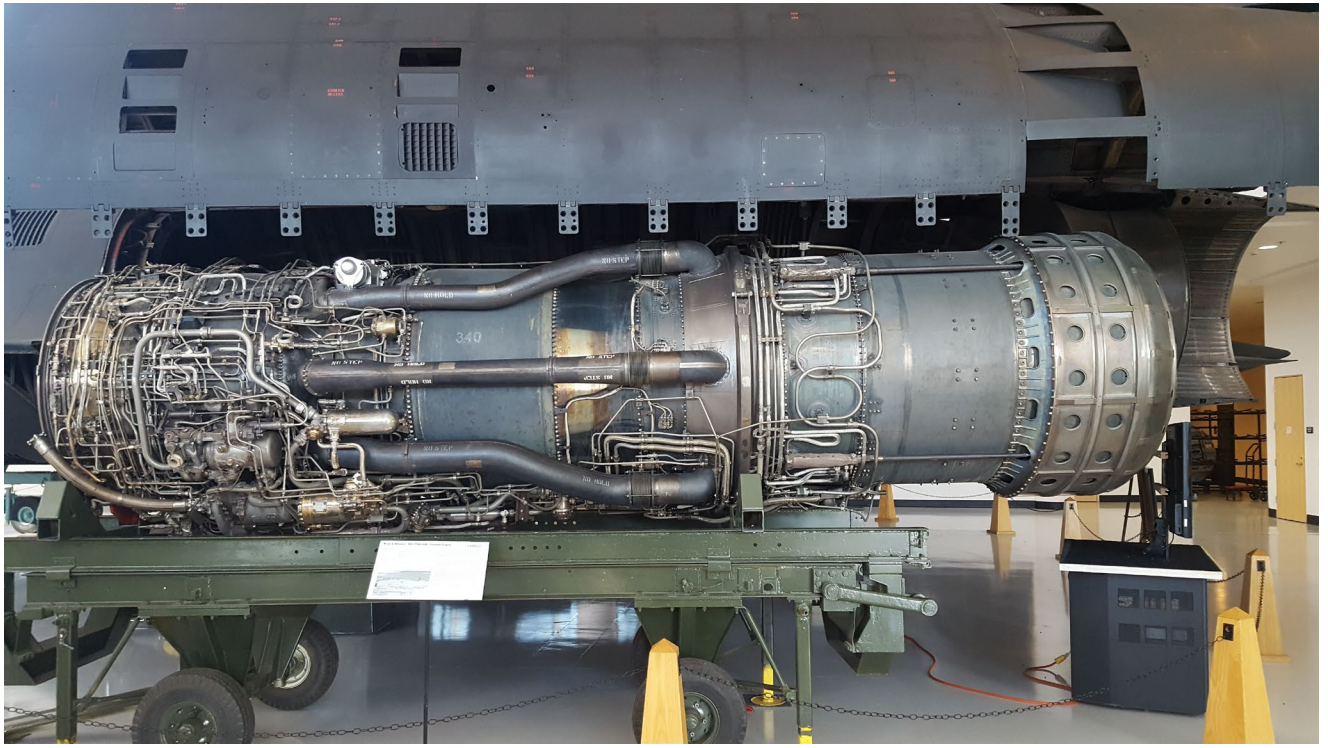
Fore Section with Steps to Cockpit



Flight Engineers positions



SR 71



Pratt & Whitney J58



X-15





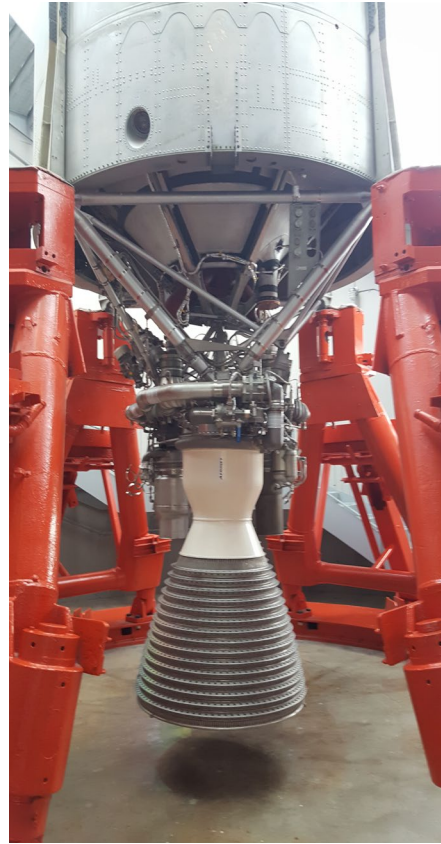
Main Floor Displays



C-46



Space Museum Shuttle





Capsule



Rover

<https://www.evergreenmuseum.org/>



See you in the March Issue

Comments and critiques are welcome at econtrailseditor@gmail.com.