



# Reflections

The Quarterly Journal of the Northwest Airlines History Center



December 2019  
Volume 17, number 4

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Seattle's South  
Satellite  
expanded and  
"abridged"

Ding Ding! When  
747s roamed the  
streets of Hong  
Kong

MSP Airline Show  
recap

Hey! We'll be on  
the Travel  
Channel!

## Our Mission:

To preserve and  
display the memory  
of Northwest  
Airlines' colorful  
history.

To tell the stories of  
carriers merged and  
allied with NWA, and  
the stations and  
regions they served.

To show how the  
legacy of NWA  
carries on into the  
future.



## Flash of Inspiration

**Captain Atkins' insight and persistence, with the cooperation of Northwest and North Central, improved flight safety for all**

--by Scott Norris

Dappled sunshine fell on the bobbing waters at the confluence of the Colorado and Little Colorado Rivers at the bottom of the Grand Canyon as lazy cumulus clouds blossomed during the morning of June 30, 1956. The quiet burbles of the water and low chitter of insects and birds were intermittently joined by the distant drumming of light sightseeing aircraft far above and out of view; no hikers or tourists ever made it down here due to the difficult terrain. The clouds looked like they might bring rain.

At 10:30 a flash of light appeared above the canyon walls and a low boom echoed across. Perhaps one of the animals glanced up thinking it might be desert lightning preceding a thunderstorm. There was rain, in fact, but it was flaming, shredded parts of TWA Flight 2, an L-1049 Constellation bound for Kansas City, and United Flight 718, a DC-7 headed for Chicago. Both had departed Los Angeles on parallel tracks, were flying on visual in uncontrolled airspace, and had independently been dodging the growing clouds.

Turn up the strobe: to page 8

[www.northwestairlineshistory.org](http://www.northwestairlineshistory.org)

## Flight Plan



**From Director Jeff Schwalen**

About eight years ago a friend of mine asked me if I wanted to get involved with a group of folks who were trying to preserve the history of Northwest Airlines. He knew I had been employed with the company quite a few years back and he also knew I was fascinated by anything aviation. Well, it just so happened that I was retiring from my real job and might have some spare time on my hands. So he made his pitch again. And I bit! You see I've known Jerry Neilson since 1987 when he and the other folks running the NWA Federal Credit Union (now Wings Financial) asked me to help with the mortgage lending for their members. Yeh, I'm a member there as well.

It's been five years now volunteering with wonderful people keeping the spirit of Northwest Airlines alive. I'm grateful that Pete Patzke and others had the foresight and commitment to start up the History Center. I'm grateful to see all the many artifacts being donated to the NWAHC. And I'm grateful for the many volunteers who selflessly work at the History Center so our many visitors can enjoy. The displays our volunteers have put together hopefully provide a sense of how proud we were to work for our "hometown airline".

Two years have gone by so fast. Yes, the Northwest Airlines History Center has been at the Crowne Plaza Aire Hotel for two years now. The Hotel has been very generous in donating the space for our museum. That said, a refresh of the displays is in order. We want your next visit to the History Center to have something that you haven't seen yet. We have many artifacts in our storage area out at our archive facility at Flying Cloud airport. At our last History Center Board meeting all Board members agreed that in this upcoming year we should strongly attempt to bring out more archive material and change out the displays to maintain the high level of interest. We hope to have this started in the first quarter of 2020.

Please remember the Northwest Airlines History Center in any year-end charitable contributions you may be able to make. They are tax-deductible! Also, if you have an interest in aviation, please consider volunteering to be a hostess or host during History Center hours or joining our volunteer Board. It is a great way to keep that aviation spirit alive. You meet all kinds of people at the History Center, but they all have one thing in common – a love of aviation!

This is my first column as a substitute writer for our executive director Bruce Kitt. Hope you liked it and hope to see you soon at the History Center!



### **Shopping on Amazon helps the NWAHC!**

0.5% of every sale is contributed when you shop via this link:  
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## **THE NORTHWEST AIRLINES HISTORY CENTER, INC.**

We are an independent, not-for-profit 501(c)(3) corporation registered in the State of Minnesota.

### **Founder:**

Henry V. "Pete" Patzke (1925-2012)

Executive Director: Bruce Kitt

Museum Director: [open]

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Retail Sales: Fay Kulenkamp

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# Preflight Briefing



## From the Editor

Following on to Jeff's comments - with the physical locations of the Center's museum and archives secure, financial position on good footing with steady membership, and a large and growing collection of artifacts, the next phase of building this nonprofit to better fulfill its mission - the one you, dear reader, consider important - is to grow our base of volunteers. For the next several issues of REFLECTIONS, on the opposite page you'll see columns from several Board members you may not have had a chance to meet previously - they've all come to the Center from different places and not all of them are ex-airline folks! We hope their stories will inspire others to contribute time and talents.

Without doubt, we would love to expand the days and hours the Bloomington, MN museum location is open and would do so with a bigger roster of volunteers. Being located so close to MSP Airport and the Mall of America helps us attract in-town and out-of-town tourists, but we could capture more of them if we were open Sunday-Tuesday. Group visits (youth groups, seniors, business associations, etc.) are also an area we could expand with just a bit more staffing.

The center spread of this issue (and the expanded content on our blog) is a great example of the fascinating stories and presentations we can bring forward out of our archive, again echoing what Jeff talked about. The number of photographs and slides squirreled away in file cabinets and storage boxes is stunning - and much of the cataloging has already been accomplished. We need help to digitize all those photos so we can share them with the world - but that takes time and volunteers to do it right.

The photos in this issue of Hong Kong's trolleys call up memories of friends, food, and pleasant times in that crossroads city. My wife, daughter, and I spent a week there several years ago, and fell in love with the can-do, self-reliant attitude of its citizens, as well as its natural beauty and man-made wonders. I'm sure I share the same worries of many retired Northwest and current Delta staff who've served or visited there, and wish the city's people safety, good luck, and hope.

Looking ahead to 2020, there are several key historical milestones we will want to honor, including the 50th anniversary of Northwest's 747 debut, the 40th anniversary of flights to London, as well as the 40th year since the Republic - Hughes Airwest merger. We'll also aim to add context from NWA's experience around current-day events such as Delta's closure of the Tokyo Narita hub, and their proposed launch of Minneapolis - Shanghai nonstops. The NWAHC archive has many photos and artifacts, but we'd love to hear from you to give life to these stories! Hop on our Facebook page, comment on our blog, or drop me a note at [norjet@comcast.net](mailto:norjet@comcast.net) with your ideas, memories, and questions!

Cross-check and prepare for departure. --Scott

### Have items you'd be interested in donating to the NWAHC?

Please contact our collections manager, Bruce, at [bruce.kitt@northwestairlineshistory.org](mailto:bruce.kitt@northwestairlineshistory.org) with details of your items, photos if possible, and how we can reach you.

## VISITING THE MUSEUM

### Current schedule:

Wednesday - Saturday 11 am - 5 pm  
Closed Sunday-Tuesday, and major holidays.

### Admission and parking are FREE

(Special events may incur a charge.)

### Directions:

#### FROM MSP INTERNATIONAL AIRPORT:

Use the Metro Blue Line light rail from either Terminal 1 or Terminal 2. Take the southbound train (towards the Mall of America) and exit at the American Boulevard station, which is the stop immediately beyond Terminal 2. The Crowne Plaza Aire Hotel is immediately east, across the street from the station. Trains run every 10 minutes and fares are \$2.50 peak / \$2.00 off-peak. A ticket is good for 2.5 hours of unlimited travel, so depending on the length of your visit to the museum, a separate return ticket may not be necessary.

#### FROM THE TWIN CITIES METRO AREA:

Head toward MSP International Airport.  
From I-494, get off at the 34th Ave. S. exit (second exit east of Hwy 77/Cedar)  
Go south on 34th Ave. S. for one block to American Blvd.  
Turn left (east) onto American Blvd.  
Crowne Plaza Aire Hotel is on your right. Free parking is available on the top two floors of the hotel's ramp.

The museum is on the third floor, across from the Fitness Center.

## ANNUAL MEMBERSHIP

\$30 level - receives the REFLECTIONS digital edition early access via email

\$35 level - receives the REFLECTIONS print edition via U.S. Postal Service. (Be sure to give us your email address if you'd also like the early online access.)

## Compass Readings

### Remodeling of former Northwest gates at Sea-Tac goes above and beyond

To no one's surprise, Delta's "Tokyo bypass" strategy of building up Seattle longhaul and domestic connecting service has put a major strain on gate utilization and especially Customs & Border Patrol arrival facilities. SEA has also successfully courted additional Asian and European carriers, but with all this traffic bundled into Northwest's former South Satellite digs, foreign arrivals are now sometimes taking well over an hour to process.

The \$1 billion South Satellite / Concourse A re-build to relieve these issues is well underway, with the base towers of its signature skybridge now in place as well as most of the international arrival facility under and along the A-gates. Throughput for foreign arrivals will more than double the current rate, to 2,600 passengers per hour (when fully staffed) and 20 gates will be able to accept international flights, up from the current 12.

The skybridge is 85 feet tall and 900 feet long, with enough clearance for a 747 to taxi underneath. The expected opening date for the new facility is Fall 2020.



*Artistic impression of the completed skybridge from the Port of Seattle. The view from the bridge will be unmatched - but for international arrivals only!*



*Gates in the South Satellite have now all been converted to CUTE (common-use) status for use by any airline. (Photo by author.)*

### MSP Airline Show Recap

In spite of a dire weather forecast, this year's event was a satisfying success, staying busy from 9 am all the way to 4 pm. We counted 218 paying attendees, marking our 3rd best tally overall.

All tables were reserved and nine vendors exhibited; all were pleased with both the turnout and their sales. The NWAHC also moved a good amount of surplus items, especially dishes and serving items (always satisfying to clear up space at the Archive!) as well as our own logo'd merchandise.

A H-U-G-E shoutout to Julie Cohen, Linda From, Elaine Hemke, Dave McCarthy, Bill Marchessault, Nancy Rasmussen, and Vince Rodriguez for being there. It's not too early to put next year's show on your calendar. Save Saturday, October 10, 2020 for our 10th consecutive show at the Best Western Plus.





# Your NWAHC In Focus

We participated in several exciting opportunities to spread the word about the NWAHC to broader audiences this past quarter.

## American Association of Airport Executives:

This year's conference was hosted in the Twin Cities by the Metropolitan Airports Commission (MAC), operator of MSP International and several regional airports, including the downtown St. Paul Holman Field (STP - Northwest's base of operations for many years), where we were invited to attend and present information at a dinner on Sept. 9th. About 50 participants learned about your Museum that evening.



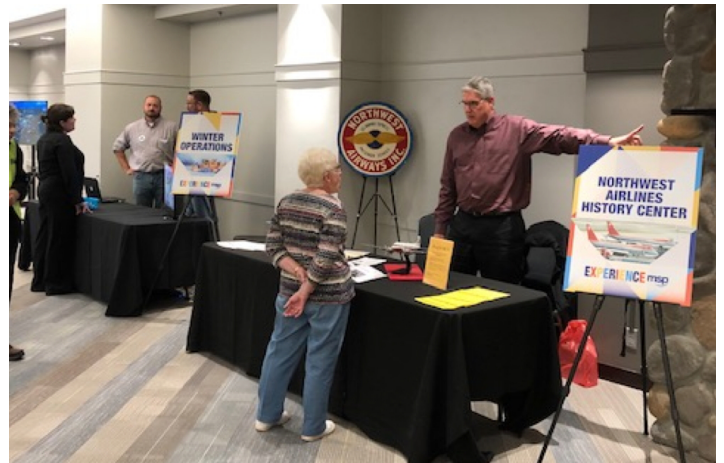
L-R: Evan Stone (cameraman), Josh Gates, Bruce Kitt of the NWAHC, Brian Weld (cameraman), and Mike Curtis (soundman).

## The Travel Channel's Expedition Unknown:

We were pleased to host Josh Gates and his camera and sound crew at our Bloomington, MN museum for several hours of interviewing and background shooting on August 30th. The footage is intended for an episode to air in January 2020. Josh has already done a D.B. Cooper story, but there are certainly other mysteries involving Northwest worthy of discussion - we'll have to tune in to learn how we fit in to the narrative!

## MAC Experience Community Meeting at the Mall of America:

On October 2nd, the Metropolitan Airports Commission kicked off a quarterly event series to help Twin Cities residents learn more about MSP Airport and the MAC's planning process. Several of the airport's restaurants were on hand with samples, and children's activities were available. MAC invited the NWAHC to talk to attendees about the history of the airport and its hometown carriers. We got to introduce the Museum to over 100 attendees!





# Photo Feature

## Advertising on Hong Kong's iconic trams - doubling up on double-deckers



The Hong Kong Tramways started operation in 1904. With its convenience and ease of use, demand was strong and by 1912 the first two-level cars were deployed. In the 1950s, tracks were doubled and locally-manufactured trams were introduced.

The NWAHC archive has uncovered slides from sometime in late 1973-mid 1974 from when Northwest commissioned a full-wrap paint job of a "ding ding" tram in addition to the space advertising already being used on several other vehicles. Here are some of the pictures of its preparation process and vintage street views.



Car No. 70 in the Shek Tong Tsui shops getting prepared.



ALL the artwork was done by hand - no decals, no printed graphics.







*This is at the turnaround on Yee Wo Street next to Victoria Park and near Causeway Bay. Only a few buildings in this shot still stand in 2019!*



*"Northwest Orient flies from Hong Kong to Tokyo, Seoul, Osaka, Okinawa, Taipei, and Manila."*

*View the full Hong Kong Trams photo gallery in the Blog section of [northwestairwayshistory.org](http://northwestairwayshistory.org)*



## Feature Article

It took days for recovery crews to reach the biggest recognizable parts, such as the Connie's tailplane, stripped of its triple fins. Without the benefit of radar replays or flight data recorders, CAB investigators could only use the physical evidence the scorched, twisted, widely scattered fragments provided to build an understanding of how the DC-7's left wing and outboard engine severed the 1049's tailplane and cut through its fuselage, and at what angle. It was clear from the geometry of the parts on the ground that the United aircraft's pilots had seen the TWA flight only a second or two before the collision, and tried to veer away, but too late. They had been flying almost parallel and on opposite sides of the same cloud. Some aircraft parts and personal effects still remain undiscovered on the cliffides of the Painted Desert and Temple Butte.

Follow the desert trails east and south, and backward in time about 12 years to Roswell, New Mexico, where the US Army Air Force was training crews on the B-17. A young but talented lieutenant Instructor was leading his cadets on a nighttime mission in high overcast night skies at ten thousand feet. During cruise at 175 miles per hour, he noticed a small single red dot some distance beyond his cockpit window, hanging almost completely still in the air. Within two seconds the light grew bright and large and zoomed over his aircraft with less than twenty feet to spare!

Bill Atkins was impeccably trained and well-respected for being a talented teacher, was alert and watchful on the flight deck, but did not have the time or information to take any corrective action. He and his crew were alive only by chance. He would use this incident to inform how he trained as he was promoted and set up programs in Colorado, Arizona, and Texas. At the conclusion of World War II, Bill joined Northwest, and flew his first trip in December 1945.

### Renaissance Man

Bill's inquisitive nature and desire to apply his knowledge led him to check out and be certified on all the types in the Northwest fleet of the era: DC-3, DC-4, DC-6, DC-7C, Stratocruiser, and Martin 202, only missing the Constellation.

While he slowly built up his seniority time, the spaces in between were occupied with raising five sons with his wife, Grace; helping his father operate a small factory in southern Minnesota producing mobile homes; and later visiting him in Pensacola, FL to help with designing and running an ice-cream shop. While in Florida, he tinkered with the new soft-serve equipment and invented the valve and selector assembly to create the world's first "twist cones", which he patented and earned a tidy sum from.

His interests also included photography and astronomy, from his college days at the University of Minnesota through the Army and into the airlines. His love of stargazing and using telescopes taught him about relative brightness and what colors and frequencies of light would be easiest on his eyes as he consulted charts and looked back to the night sky. He also witnessed the upgrades to personal cameras, especially in flash photography where xenon condenser discharge lighting, which could be triggered electronically, was replacing earlier magnesium flash bulbs.

These engineering and leisure interests, running on parallel tracks, would also intersect in midair - but would lead pilots away from tragedy.

### Why traditional red / green / white beacons aren't sufficient for visual flight separation



In Captain Atkins' own words:

*"Common navigation or position lights were adapted for aviation from the traditions of sailing ships at sea. These lights are seen in three 120-degree sectors around the ship beginning from straight ahead. They reveal, between two craft in the water, whether the other is on a port tack or starboard tack. From the forward sector, two ships meeting would see either a red or green light. This is useful and sufficient information when both ships' keels are in the same water and sailing in the same wind. Of course, ships are traveling at 15 knots and not 180. Also, ships have the alternatives of reefing sails, dropping anchor, or blowing a fog horn.*

*"Airplanes have neither a keel in the water nor a sail in the wind so there is no logic transferred to a plane's three-dimensional locomotion. With red, green, and white navigational lights, all that can be seen from any direction is one colored light in that zone. If it is getting brighter, the two airplanes are getting closer. If dimmer, the distance is expanding.*

*"The rotating red beacon on the fuselage transmits the same ambiguous signal in all directions. It is brighter and may double the distance it can be seen but does not give any information as to direction or maneuvering. It is not a valid "anti-collision" light because the color red is too generally used as a warning - over a city or airport it could just as easily be a fire truck, ambulance, water tank, tall building, or TV tower.*

*"Red light wavelengths do not travel as far - only up to 3 miles reliably - and are more easily absorbed by vegetation, buildings, and water vapor in the atmosphere, as opposed to blue and green wavelengths. White combines all colors and is more readily seen from a long distance as a result.*

*"The foveal area (center) of the human eyeball, where cones sense red light, has less than 25 degrees of side vision. Unless you are looking directly at it, the rods in the eyeball will not see the red light. Your side vision will sense a blue-white flash long before it will sense rotating red lights. Note how wide your sensitivity is to a distant electrical thunderstorm 90 degrees off your wingtip. That peripheral vision is essential to a warning system, and red light cannot deliver it."*



## Inspiration in a Flash

During a night approach into New Orleans in Spring 1952, Bill aimed his camera at the twinkling lights of Mardi Gras ten miles distant, snapped the shutter, and was struck both metaphorically and literally with insight: the blue-white lights of the city below were distinctly visible from tens of miles away - and the split-second flash of his camera flash did not take away his night vision or leave after-images on his retinas.

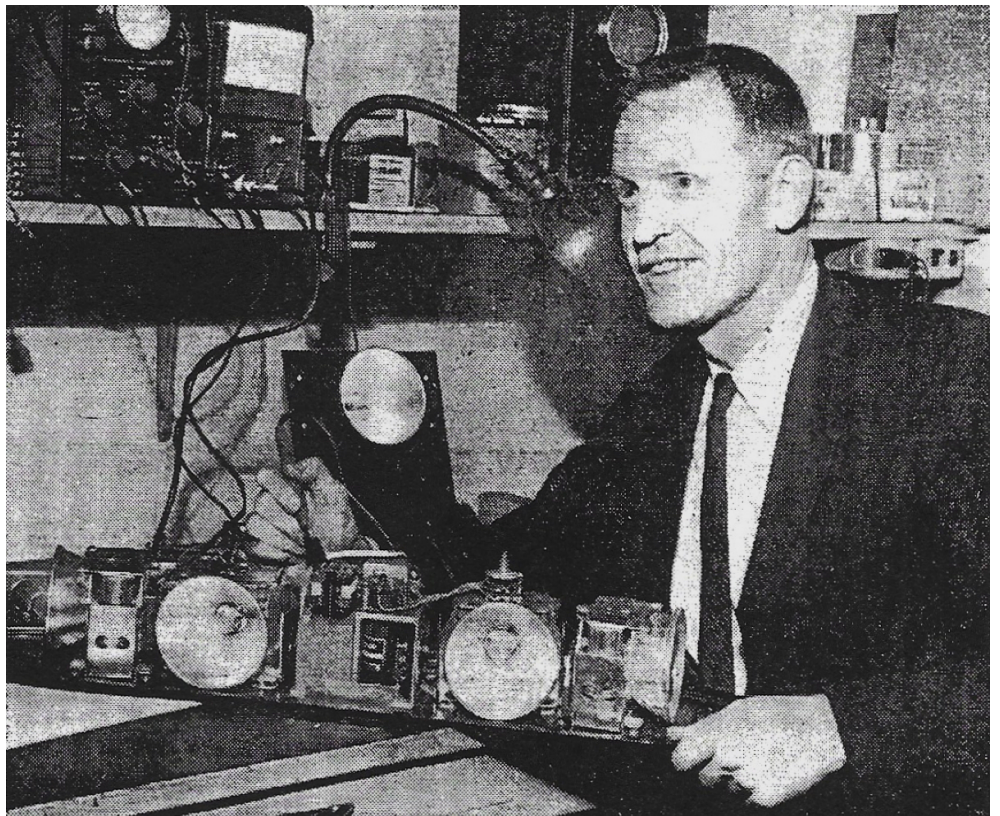
Bill dove into CAB reports and news coverage of near-misses and aircraft strikes in the post-war era: from 1948 to 1955, there were 105 mid-air collisions, with 90% occurring within five miles of an airport and at or below 3,000 feet altitude. With so many accidents happening in the area of greatest traffic density - and where radio coverage was assured, and early radar systems were coming on line - he concluded pilots weren't getting the warning information they needed.

He examined the various kinds of collisions: head-on, side-by-side (like the Grand Canyon crash), and overtaking. There were very few direct 90-degree incidents, as intersecting aircraft moved so quickly through the potential contact zone there was little opportunity to crash (and no opportunity for quick reaction by a pilot to make a difference.) But the other three kinds of collision had enough time involved that if there were only warning, a pilot could react in time to get out of the way: two airliners 3 miles apart, both flying 300 mph straight toward each other would have 15 seconds before colliding.

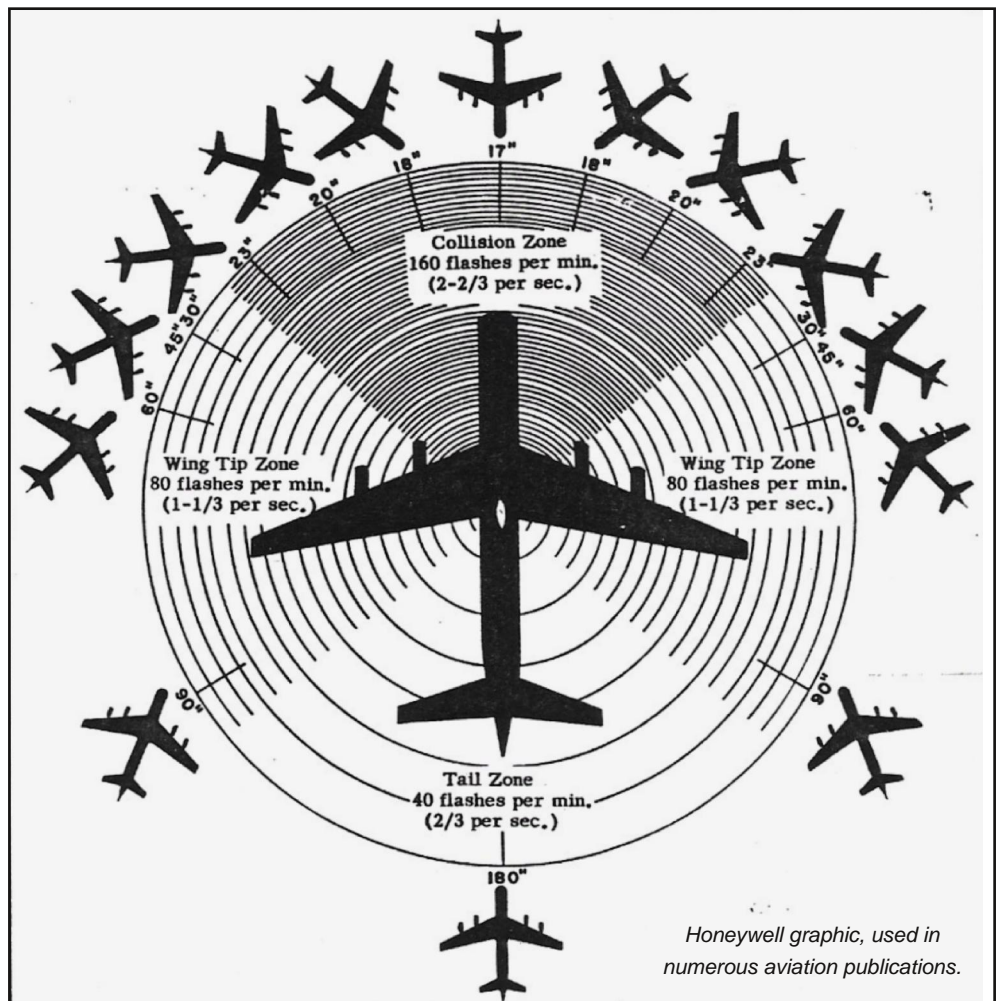
And that 15 seconds would be just enough for a pilot to identify and react to the warning, push on the stick, have cables transmit the force to control surfaces, and get the airplane out of danger.

Atkins broke the issue into (1) how to display light more than 3 miles, (2) where pilots could see it without looking directly at it, (3) without blinding them, and (4) in a way to display relative direction.

First, Bill decided on using the new condenser discharge "strobe lighting" bulbs, whose blue-white spectrum could be seen at least 10 miles distant in twilight and 30-50th miles at night - solving the first problem - and that could register on pilots' retinas readily within 100 degrees of their field of vision, even peripherally, solving the second.



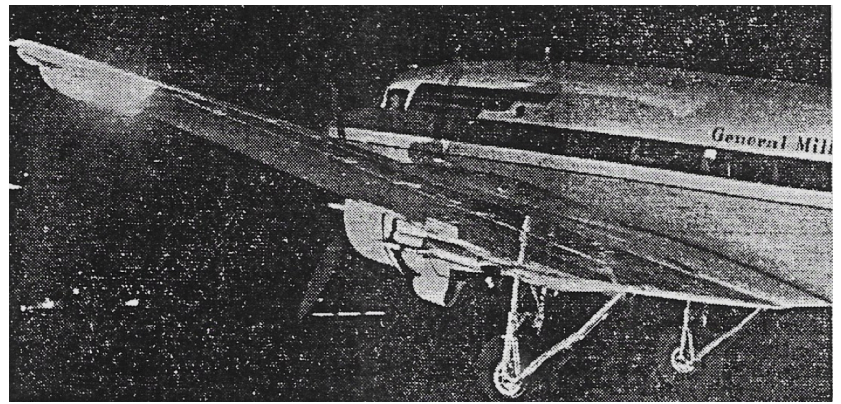
*Atkins demonstrates the mechanisms of a wingtip-mounted Relative Danger Light. The electronic components would fit on a microchip today! Photo credit: St. Paul Pioneer Press.*



*Honeywell graphic, used in numerous aviation publications.*

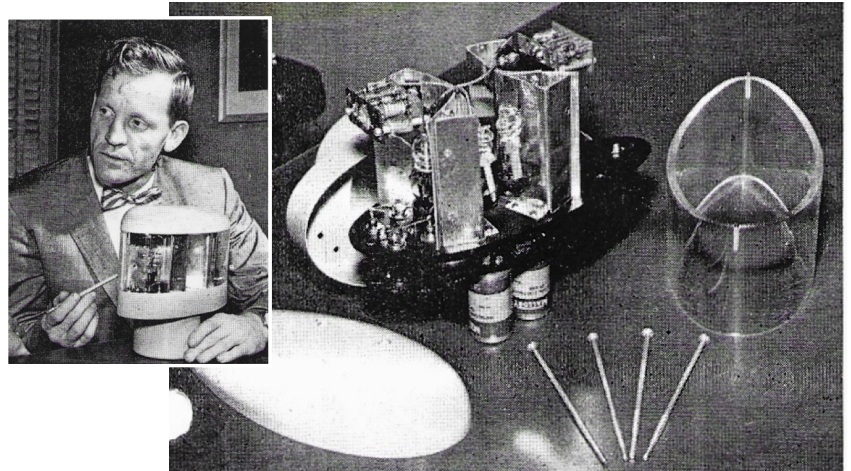


The third issue was akin to driving along a highway at night against oncoming traffic whose headlights were on "bright" - sustained exposure is painful and blinding. There was also the issue of "halation" while flying in clouds: light reflecting off the water droplets in the cloud and flooding the cockpit with light from all directions. Both issues were solved by a limitation of the strobe lighting, in that the condenser flash would only last one one-thousandth of a second - not enough time to "burn" the retinas but just long enough to register. Xenon strobe lights in the 1950s were only rated to produce about 10,000 flashes but continuous improvement brought lifespan up and cost down.



General Mills' corporate DC-3 testing in Denver, October 1957. Photo: Denver Post.

The fourth issue of displaying direction and attitude was solved by moving synchronized flashing lights out to the wingtips, pointing forward, to the sides, and to the rear. Again using a driving example, it is much easier to gauge distance of an approaching vehicle with two headlights versus a motorcycle or car with one headlight burned out, as the lights of a car coming toward you will appear to grow further apart. Information on direction was conveyed by electronically timing the flashing rate of each direction's lamps: forward-facing bulbs flashed at 160 times per minute; sideways-facing bulbs lit at 80 per minute; and those facing rearward lit at just 40 per minute.



Newer-generation components allowed for more compact units; this assembly was ment for ventral and dorsal placement on the fuselage. Photos: Minneapolis Star.

In three dimensions, combining the flash frequencies of observable lights and noticing if the lights are getting closer together or farther apart would tell a pilot if he was overtaking another aircraft, viewing it from a banked angle, or on a head-on trajectory.

### Testing and roll-out

Bill outfitted his own Piper Cub in 1953-1954, gathering feedback from the tower at Midway Airport as well as from other flying pilots. Minneapolis Honeywell (who would license and manufacture the device starting in 1958) added it to a corporate DC-3 to show the system to the FAA in Washington, DC in Fall 1955. Northwest was providing engineering support to Bill, and installed a test rig on DC-6B #656 in October 1955. Other Minnesota companies including 3M, General Mills, and Pillsbury did not wait for Federal approval and several dozen sets were in the air by late 1957 using "experimental" type certificates.



Northwest DC-6B at Chicago MDW, from the Midway Historians collection.

North Central Convair 580s at Chicago ORD, August 1973, with integrated wingtip Atkins Lights.  
Image by Piergiuliano Chesi via Wikimedia Commons, CC 3.0 license





Atkins gave presentations to the Airline Pilots Association, National Business Aircraft Association, international conferences, and the military. Meanwhile, Hal Carr of North Central Airlines was an avid backer (as well as engineering staff), and incorporated the system as standard on conversions of Convair 340/440s into Convair 580s - 33 aircraft in all.

Government testing and evaluation took 4-1/2 years but by 1960 the world aviation community (pilots, management, and even accountants) had solidly agreed on the effectiveness of the Maximum Safety Light system, first for wingtip installations and then also to supplement dorsal and ventral placement. Northwest ordered their incoming 727-100s to be outfitted with the Atkins Light and American Airlines quickly followed.

Retrofitting of airline, corporate, and military transports gave Honeywell plenty of business through the 1960s, and the DC-10 debuted with the Atkins Light as standard equipment - as have all Western airliners since. While the patents Bill and Honeywell had on the system have long since expired, this has allowed more producers to innovate and field LED and even holographic technology, making the skies safer for all at lower cost of installation and upkeep - and it all started with the Northwest Family.

*Editor's note: the Atkins family kept extensive clippings of news coverage, sales brochures, and Bill's own writing. This article draws heavily on those resources and the NWAHC thanks the family for access to them. Bill was a gifted storyteller, and penned several gripping tales from his Northwest days that I will lightly edit and publish in upcoming editions of REFLECTIONS.*



Photo credit: Airbus.



Wingtip strobe light installation on a modern Cirrus SR20, using LEDs. The entire assembly is only 1-1/2" top to bottom. Photo by author.

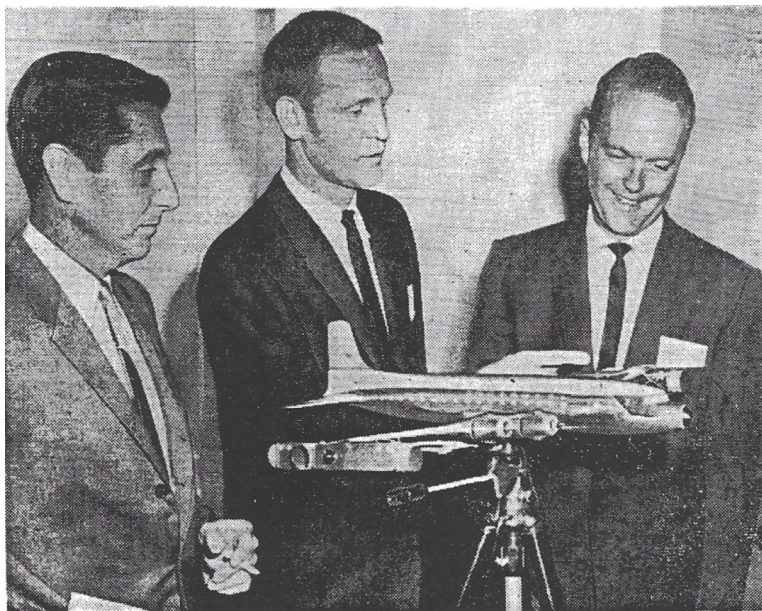
## Restored Demonstration Model DC-6B to be housed at the NWAHC Museum in early 2020

As reported in the September 2018 REFLECTIONS, the Douglas-made model Captain Atkins used to demonstrate his concept to airlines, private operators, Congress, and on TV is being donated by his family to the NWAHC. Jim Striplin, known to many in the #avgeek community for his museum-quality model restorations and frequent attendance at airliner shows, has been working on the model this year at his Alabama workshop.



Striplin's photo from Sept. 27 shows the model stripped and wet-sanded, but not yet polished. New aluminum prop bushings had just been fabricated and installed in the engine nacelles.

Underwritten by retired NWA pilot Bob Horning and his wife, Sue, the process is moving into its final stages: CAD-printed decals have arrived, propellers have been fabricated, and a new stand is being diecast in Jim's foundry. We plan to display the model in the Bloomington, MN museum where the large Electra II currently stands; watch our Facebook for announcements on the debut and updated exhibits, hopefully in January 2020.



Capt. Atkins, center, discussing his demonstrator model with X-15 pilot Scott Crossfield at left, and Capt. J.D. Roberts, pioneer of helicopter battle tactics, at a symposium at Edwards AFB in October 1958. Photo: L.A. Examiner





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# GIVE WINGS TO YOUR HEART

**Volunteering with the NWAHC can take many forms!**

*Do you have talents in any of these areas - and time to share?*

- Photography
- Social media
- Grant applications
- Document scanning
- E-commerce
- "People skills" and the gift of conversation?
- Exhibit & display building
- Event planning & outreach

As our collection and membership grows, so do our opportunities to help communicate the Northwest Family history - from greeting visitors at our Bloomington, MN museum, to digitizing our archives, building community links, and strengthening our base of funding.



***Now boarding!***

- Click on the "Join Us" tab at [www.northwestairlineshistory.org](http://www.northwestairlineshistory.org)
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