



# Flying By Ear

A Father and Son Conversation  
by  
Captain Douglas H. Parrott





**Editor's Note:** It has been almost a quarter of a century since I met Jeff Parrot, when we both showed up for our first day of Basic Indoc at a major airline, a place that would see us starting out flying the mighty NAMC YS-11, while later we both logged time flying the Douglas DC-9 and DC-8, and finally the Boeing 767. Over the years, hanging out in pilot crew rooms around the world, Jeff would occasionally tell me some of the stories that his dad Douglas, a former Naval Aviator and a long serving senior pilot at Northwest Airlines, had told him. I loved listening to these stories, and pestered Jeff mercilessly to get his dad to write some of these tales down. I am happy to present here a conversation between father and son - this is great aviation history.

Thanks very much Captains Douglas and Jeff Parrott.

### Dad, what is "Flying By Ear?"

This is kind of the way we did it back in the early 1950s, flying DC-3s across the mountains from Seattle, Washington to Billings, Montana, across the Cascades and across the Rockies. Into Billings it was all low frequency radio ranges at that time. These were the low frequency radio ranges that you heard in your headset. You kind of flew by ear. That's the old "flying the beam" where you had the "A"s and the "N"s [Morse code letters] in all four quadrants, where they met you

**Above:** Northwest Airlines' (NWA) Douglas DC-3 - N28697, Fleet Number 381. Like many DC-3s that served post-war with the airlines, this airliner started out in the military, in this case as a Douglas C-47A-50-DL, built at Douglas Long Beach, and delivered to the United States Army Air Forces - as 42-24173 - on 10 August 1943. It was purchased by NWA on 24 December 1945. NWA sold it on 28 February 1951, after which it served for years in various capacities and with various companies. As of 2017, this aircraft was still reported as operational. Photo: NWA History Centre

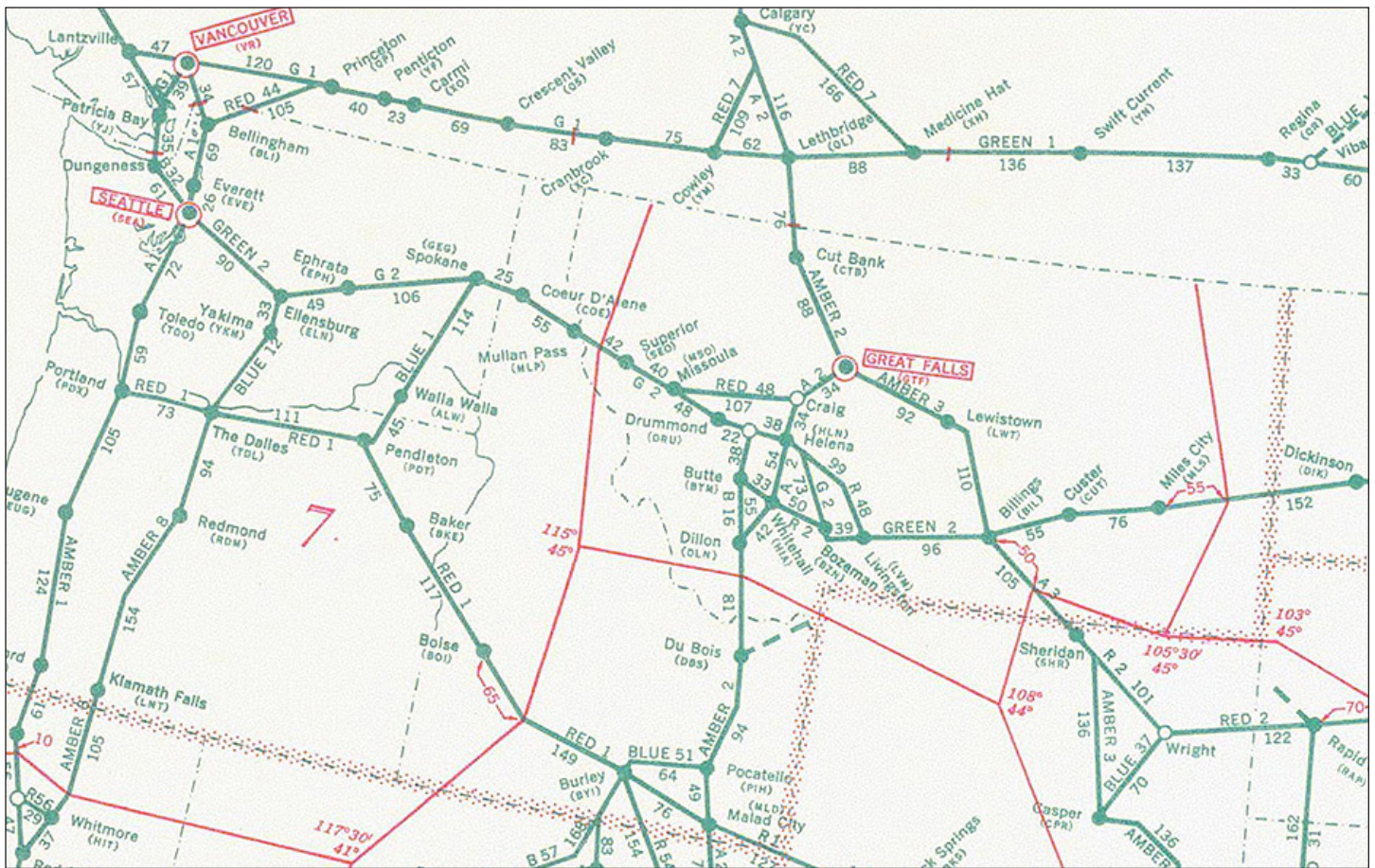
**Opening Page:** Captain Douglas Parrott, stands with a young First Officer, his son Jeff Parrott. Today, Jeff is a senior airline Captain, flying global routes.

Photo: Douglas Parrott

get a steady null. "A" was a "dit dah" and "N" was a "dah dit," where they meshed was a "daaaa."

The range legs had a heading on them and you would follow that and correct your heading for any drift to stay on course. The location of the "N" or the "A" depended on what side of the range you were on. There were four course lanes with an "A" and an "N" on each lane. When you crossed the range station on the beam there would be a cone of silence - no sound at all - then when you got on the other side you would be up the





beam again. A little different from the way it is done now, but it worked well. Along the airways would also be [radio] marker beacons. Anyway, the airways would follow these radio ranges and most of your east/west you would be a red or a green airway and on north/south you would be on a amber or blue airway. Of course, we were flying an east/west airways going to Billings so we were usually on Green 2.

We'd climb up out of Seattle, and usually Seattle was cloudy and rainy so we'd climb up to altitude. The altitude going to Spokane from Seattle was 8,000 feet, and usually we would get just barely get on top at 8,000. We'd get up on top crossing the Cascades if it would be clear up there you would see all these mountains - Rainier, Adams and Saint Helens, and Hood (RASH) - a RASH of mountains. And we'd proceed along the airway and land at Spokane.

Leaving Spokane for Kalispell, which was the next stop, there was no airway to Kalispell so it was either VFR [Visual Flight Rules] Spokane to Kalispell or IFR [Instrument Flight Rules] Spokane to Missoula, then go VFR up across Flathead Lake into Kalispell.

### How did you communicate with Air Traffic Control (ATC) back then?

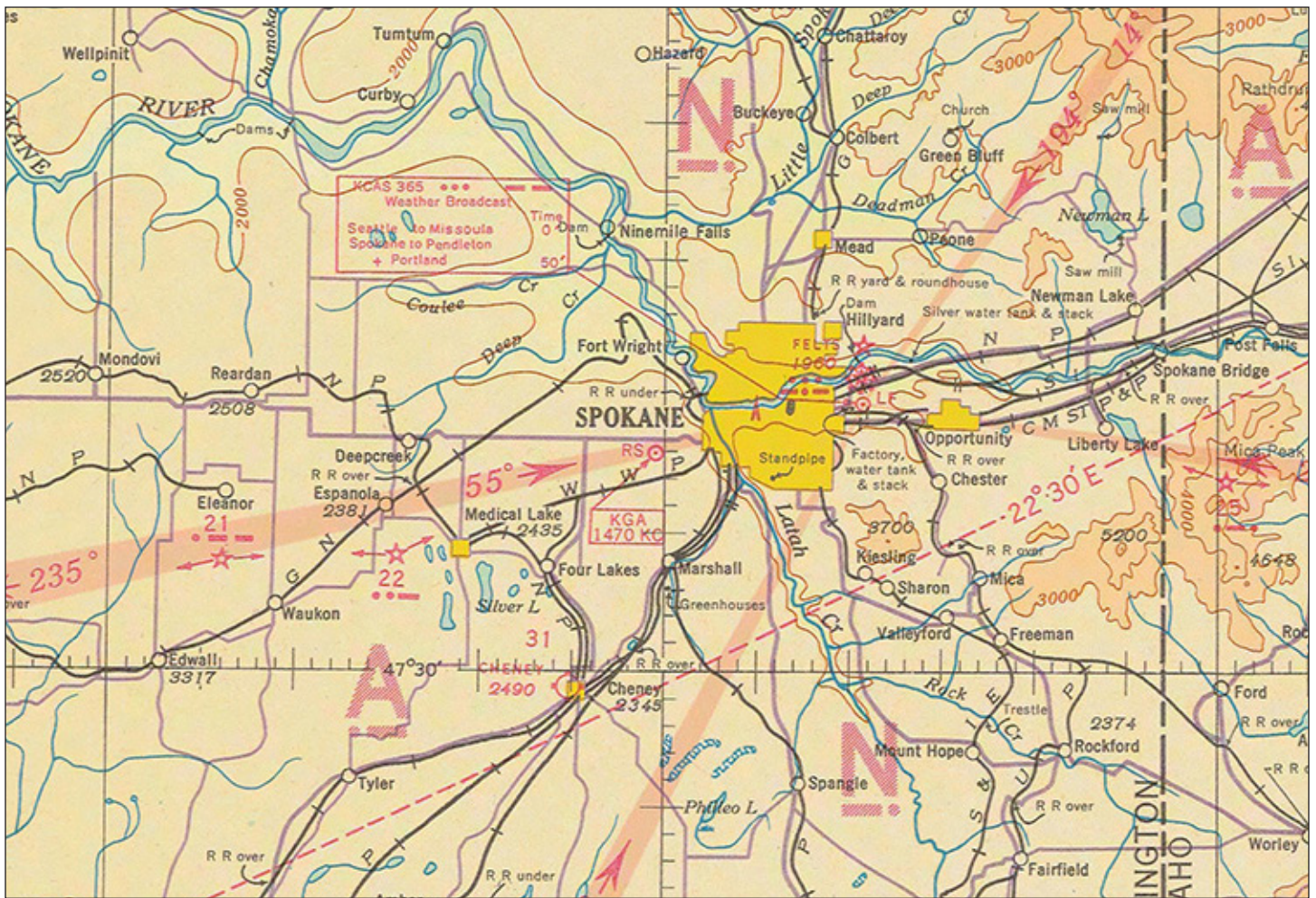
During that time there were Air Traffic Centers, al-

A portion of the Civil Airways and Mileage Chart, published by the Department of Commerce, 1 September 1948. By using this chart, one can follow Captain Parrott's flight from Seattle, Washington to Billings, Montana. As mentioned in the text, this flight followed an airway designated Green 2 (abbreviated G 2). Note that the North/South airways are designated either Amber or Blue, while the East/West airways are designated either Green or Red. Image: A.A.S.

though communication along the route was with INSAC [Interstate Airway Communication] stations. They were communication stations that you would give your position to, and they would send it to the Center via telephone. Or, we would give our position to the company on HF [high frequency] radio and they would forward it to Center. A little different from now where you talk directly with center and they have radar and all those goodies.

[At this point in the interview, Captain Parrott's son Jeff - also an airline Captain - notes the fact that flying across the North Atlantic today is much the same. The flight crew would make a position report via HF radio to a radio operator who would forward the report to the Air Traffic Control Center, i.e. Gander over the western Atlantic or Shanwick over the eastern portions. Of course, with satellite data links between pilots and controllers fast becoming the norm, even this





form of flight control is quickly becoming a thing of the past.]

INSAC later became Flight Service Stations [FSS]. INSAC stations did the same thing as today's FSS. You could go in there and look at all the weather sequences, get a weather briefing, see your NOTAMS [Notices to Airmen] or whatever you needed. INSAC stations would be all along your route, though not necessarily where you stopped. For example Spokane to Missoula there would be one at Mullan Pass, and another one at Livingston.

### How did you navigate in VFR conditions in those days?

We also had the lighted airway beacons along the way, with codes on them. There would be a beacon every ten miles that would flash a different Morse code. Airway beacon lights flashed a Morse code, whereas a regular beacon would just go around and around. When you were on course you could see the Morse code beacon every ten miles, and every beacon would have a new name and a new code. They started out - going west to east - the first one would have the Morse code "W" or dit dah dah, the next one would be "U"

A portion of Spokane Aeronautical Sectional Chart, circa 1940, showing the low frequency radio ranges, in this case emanating from the low frequency radio station at Spokane, Washington. Note the letter - either A or N - assigned to each quadrant, as well as the Morse code identifier that would have been heard in that quadrant. Note also the heading - both inbound and outbound from the station. For example, the western airway out of Spokane had an outbound heading of 235 degrees and an inbound heading of 055 degrees. Finally, near that same airway, just under the town of Eleanor, note the symbol for a lighted airway beacon.

Image: A.A.S.

- dit dit dah, then "V" - dit dit dit dah, and so on. To remember them we had a little deal - When-Undertaking-Very-Hard-Routes-Keep-Corrections-By-Good-Methods [W-U-V-H-R-K-C-B-G-M]. And that would give you the order of the beacons. Each ten miles was a different letter - 100 miles. Then after the "M" beacon they would start over with the "W. Anyway, it worked

At that time, however, we used the low frequency range as our main method of navigation. We would use the lighted beacons a lot at night as a reference to descent points. Because the DC-3 was not pressurized we could only descend, or we tried to descend at 300 feet, maybe 500 feet per minute at the most. If you knew the airport elevation you could cross a beacon, start down





and get down to your destination without any great rate of descent. Which was important coming through the Rockies. Although much of our flying was VFR, if the weather was bad it was IFR, like anyplace.

The VORs [very high frequency omni-directional range] or as we called them “the omni-ranges” were just being installed, but none of them had been certificated yet. So we were strictly flying by ear, but playing with the omni-ranges to see how

they were going to work. Some of the older captains didn’t think much of those omni-ranges, they thought those mountain were really going to foul up the VHF radio signals. But anyway, VOR were coming in.

So we would proceed on with all the stops from Seattle to Billing using the low frequency radio ranges, and en route marker beacons. These radio marker beacons were also very handy. They were places where once you crossed them you could descend to a lower altitude, or if you were climbing out you should be at a certain

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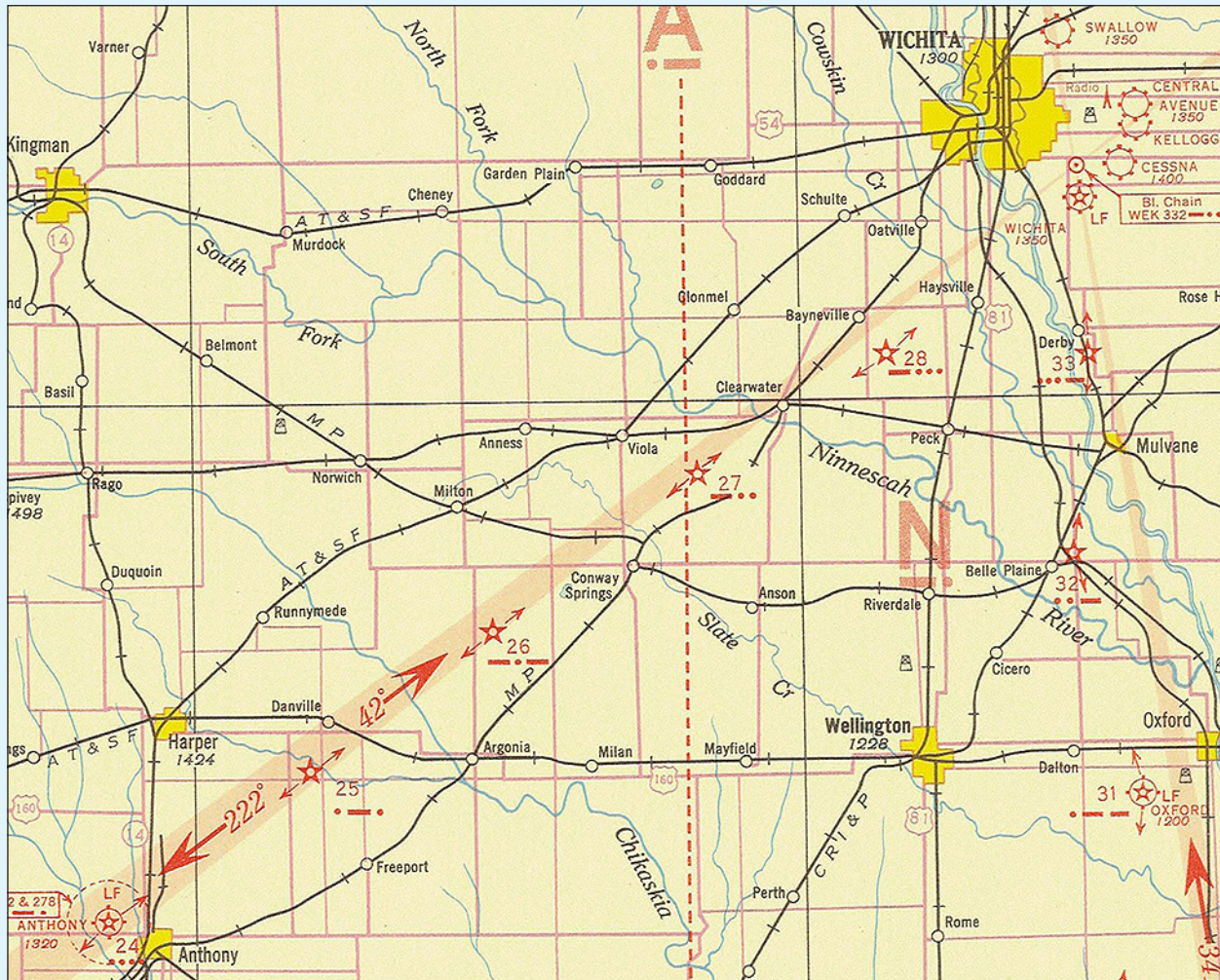
**Top:** NWA took delivery of this factory-new Douglas DC-3A-269 in June 1939, and flew it until it was sold off on 20 February 1950. This airframe was last noted flying domestic livestock out a Miami, Florida in 1971, and has since presumably been scrapped. Note the reference to a U.S. Air Mail route on the vertical stabilizer.

Photo: NWA History Centre

**Above:** Douglas DC-3A-208A - NC21745 - was delivered to American Airlines on 18 February 1939. It was briefly leased to NWA - from 24 February to 30 April 1939, before being returned to American, who ultimately sold it to Colonial Airlines on 13 October 1948. Like many old DC-3, this airframe flew for a number of different operators before finally disappearing from the registry in 1975.

Photo: A.A.S.





### The Lighted Airway System

In the text of this article, Captain Parrott also describes a form of visual cross-country navigation based on a series of beacon towers marking the airway. By this method, one simply flew from one lighted beacon to the next, keeping track of one's location by following a standard sequence of codes emitted by each beacon (see table to the right), plus using an appropriate chart.

For example, if one was flying past the town of Anthony, Kansas, up to Wichita, the first beacon seen - denoted by the "star" symbol - would be Number 24 (Letter H, ....). Then, flying northeastward, Number 25 (Letter R -.-), then Number 26 (Letter K -.-), and so on up to Wichita.

### Beacon Course Light Codes

Beacon Letter	Morse Code	Memory Hint
1. W	.-	When
2. U	..-	Undertaking
3. V	...-	Very
4. H	....	Hard
5. R	.-.	Routes,
6. K	-.-	Keep
7. D	..	Directions
8. B	-...	By
9. G	-.	Good
10. M	-	Methods
11. W	.-	When
And, Repeat...		

altitude before you crossed it. And that helped us clear the terrain, especially if we were inside the cloud.

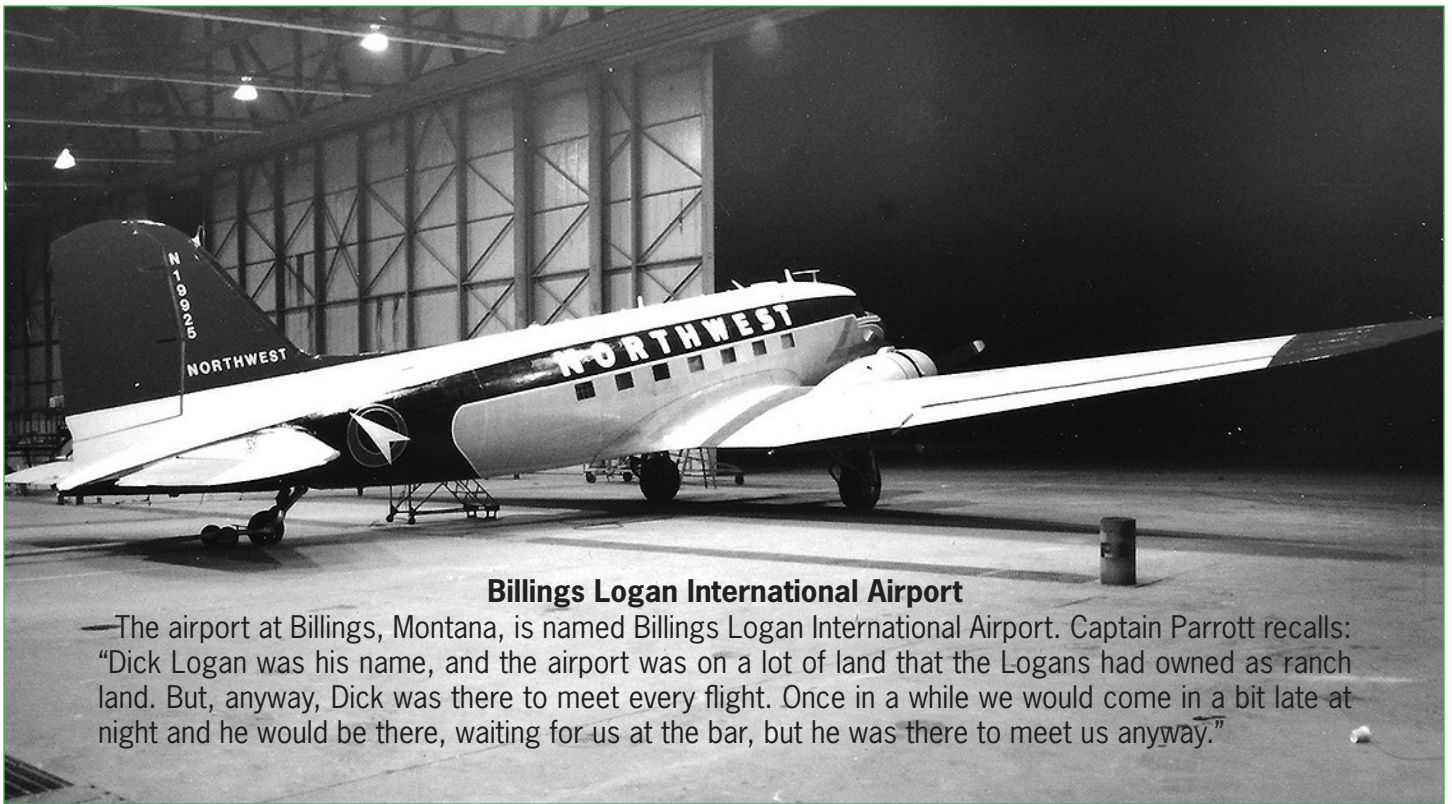
### What sort of maps did you use?

Back then we had Jeppesen charts like we have today. Additionally, Montana put out a nice sectional style chart, actually a WAC [World Aeronautical Chart]-size

chart, which cost one silver dollar. It had all the radio ranges on it, all the airway beacons, all the airports, all the fan markers - everything you needed. All the airport information was just like on a WAC chart, it was right on the chart.

They had some additional things on those [Montana] charts. All the Forest Service station lookout stations





### Billings Logan International Airport

—The airport at Billings, Montana, is named Billings Logan International Airport. Captain Parrott recalls: “Dick Logan was his name, and the airport was on a lot of land that the Logans had owned as ranch land. But, anyway, Dick was there to meet every flight. Once in a while we would come in a bit late at night and he would be there, waiting for us at the bar, but he was there to meet us anyway.”

would have a big number painted on top of it, and these stations would be depicted on the map at their proper location with the number. So if you were flying along and you past a lookout station and read the number you could tell right where you were. So there were lots of ways of navigating back then, before we had GPS.

The ILS [Instrument Landing System] we used was very similar to what we have today. You had ADF [Automatic Direction Finder] to get to the outer marker and then outer fan markers, and some even had inner fan markers. The minimums were about what they are today - 200-feet and 1/2 mile of visibility. If you didn't have an ILS you would fly a low frequency range approach, and that was a deal where you flew to the station and then from there you took a heading to the airport where you would fly off on a leg and do a procedure turn and come in across the station at a lower altitude, and took a heading to the airport. These stations were the same four-legged A/N stations used on the low frequency airways, so you were flying this approach all by ear.

We flew VFR a lot of the time, so once we broke out we had some good landmarks ready to use to find the airport. At Missoula there was a sugar factory with a big tall smoke stack, and we would just swing around that smoke stack and take the runway heading and there the airport would be. In Helena, there were some junk cars, but actually before that we went over near the smelter and past it, with its big smoke stack there,

and then started our descent and we would cross those old cars. If you saw them you could go on down and the runway would be right in front of you. So you used a lot of VFR techniques.

Of course, airport lighting has improved a lot since then. A lot of the airports did not have runway lights, per se. Along the ends they had runway end lights in the direction of the runway. It might have four green lights on one end and four green lights on the other end, and you would line up that way at night. To pick the right runway you would want, say for Runway 29, it would have four green lights on one end, and on Runway 11, the other way, would be four green lights, so you would line up that way, four and four. Another runway might have three green lights on each end, so you didn't want to line up three lights with four lights or you would end up out in the boonies. Of course later we started getting lights on the edge of the runway, and that was a big improvement.

Once in Bozeman we had to have smudge pots lit. They had plowed up the snow on both sides of the runway pretty high - like a couple of feet or more. They put smudge pots along the tops of that ridge of snow, just so you didn't swerve out into the snow, but they acted a little like runway lights. In Missoula one time, they put a bunch of pine boughs in the snow banks along the runway. This was a big help because everything is white and your depth perception is pretty poor, but having those pine boughs along you could grease the landing

on pretty nice, especially on a snowy, icy runway. Every landing in the DC-3 was a wheel landing, it was a good airplane to land.

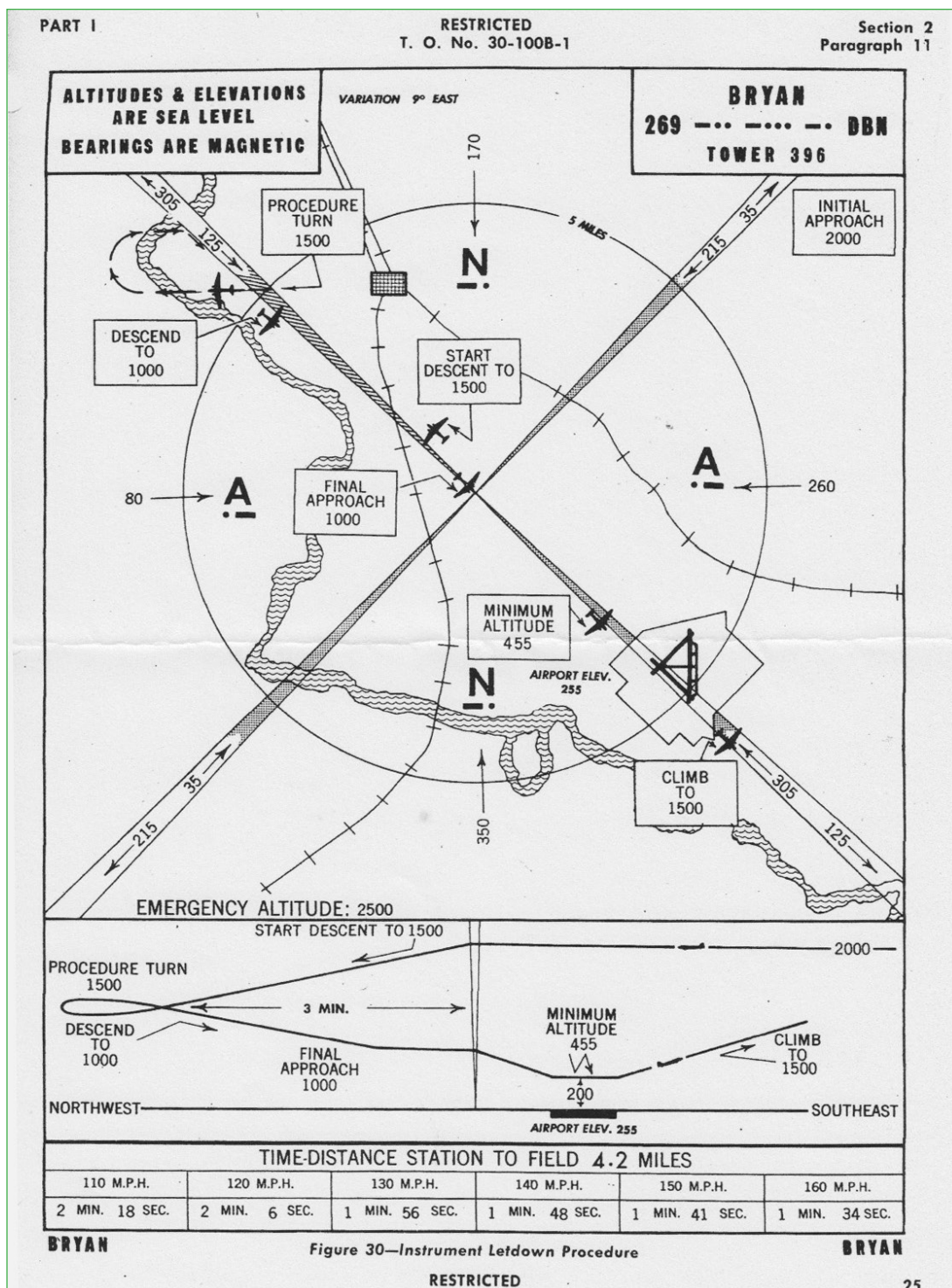
**I've always loved the DC-3. What was it like flying this machine through the mountains?**

The DC-3 flying at that time was pretty much barnstorming, a lot of seat of your pants. It was a fun era. I had one trip from Spokane to Kalispell, we had to go to Missoula and let down VFR up the Lake [Flathead Lake], up the valley. There was another aircraft ahead of us going the other way and he had been to Kalispell and he was coming back down the lake, down the valley. So we asked him how the weather was along the way. He said it wasn't too bad but he suggested we follow his tracks along the lake. The lake was frozen over in the winter and it had a lot of snow of it - so he told us just to follow his tracks.

We used to have, at our altitudes, a lot of icing, so we had to watch for

ice. The DC-3 was very good at carrying ice. You always leave the ice pretty much on until you could descend out of it, and then you would shed it. If you started using the boots while you were icing they would just expand and make cracks, and those cracks would fill up with more ice, and you would be in deeper trouble.

I was on one flight east-bound from Spokane to Missoula, and I was at 9,000 feet - "east is least" [odd altitude], there was a west-bound flight from Missoula to Spokane, and he was at 10,000 - "west is



The low frequency A/N radio ranges could also be used to conduct instrument approach procedures. Illustrated here is a generic instrument approach plate taken from a circa-1940 U.S. Navy training manual. Image: A.A.S.

best" [even altitude]. You had lots of these things to remember what was right. But anyway, I had very little ice as we crossed Mullan Pass, and he started really icing up at 10,000 feet, just 1,000 feet above us. He went on into Spokane, and he was using METO power - Maximum Except Take Off power - on final



## Blue Card - Blue Sky

"I got my initial flight training in the Navy, and we did some instrument flying, but we actually didn't do enough for me to be qualified for a civilian instrument rating when I was discharged from the Navy, but I was allowed a commercial license.

"Anyway, the Navy had several types of instrument ratings. The blue card was the lowest, and that was the one brand new graduating cadets had, and as you got more experienced you would get a green card.

"So I went into the executive officer one day, and I told him I wanted to make an instrument flight to some place. Well, he asked which card I had, and I told him I had a blue card. He said OK, and took my blue instrument card and punched a hole in it with a paper punch. And, he said that when the sky matches the hole in the card, you can go - blue card-blue sky."

Captain Douglas Parrott was born Spokane, Washington, in 1926. It was over that city that he took his first hop in an airplane, when at the age of five his father bought them both a quick ride with a local pilot. In February 1944, Parrott was accepted in the Naval Aviation Cadet Program (NAVCAD), and later, with a total of 296 hours in his logbook, pinned on his Wing-Of-Gold. He was assigned to a torpedo squadron (VT), flying the Grumman TBF Avenger. His carrier - the USS Ticonderoga (CV-14) - was en route from Jacksonville, Florida to the Pacific Theatre when the war ended. Parrott was discharged from the U.S. Navy in June 1946.

After the war, aviation was booming, but with hundreds of aviators like himself looking for work, Parrott found the flying job market somewhat difficult. He worked various jobs, both on the ground and in the air, before finally signing on with a major airline. In February 1953, Parrott was hired by Northwest Airlines, logging his first flight as a co-pilot - in a Douglas DC-3 - on 28 March 1953. Captain Parrott went on



to log time in the DC-4, DC-6/7, DC-8 and DC-10, the Boeing 707, 720, 727 and 747. He retired in January 1985.

Captain Parrott flew for Northwest Airlines for 32 years, but as he likes to say, "I never worked a day."

approach into Geiger Field. So you could really get some bad ice flying across there.

On our DC-3s we had 21 passengers, there was seven rows - one seat on one side and two seats on the other, so there was lots of room in the cabin. We had stewardesses then on all the flights, and they served meals and what not. At that time stewardesses were supposed to be pretty, and, the maximum age of the stewardess was 32 years, or if she got married, which ever happened first. The company would check them all the time for their weight to see if they were proper. If they got over weight they had to go on a diet until they got back down to proper weight, before they could go back on line. On the DC-3 we had a [elevator] trim tab that was very sensitive, and actually when a stewardess walked to the back of the airplane you would have to put some trim in to keep the tail up. As she walked forward you would take the trim back out. To tease them, we would say, "My gosh, you took two notches of trim when you went to the back. You

had better be careful or you will be on weight check." After that we didn't get anymore coffee.

Mechanical problems on the DC-3 did not happen very often. The maintenance was very good on the DC-3. The biggest thing would maybe be a bad set of plugs, or not getting a good mag [magneto] check. The DC-3 had 18 plugs all around so it took them a little time to change them all. The heater on the DC-3 was a Janitrol-type heater, and could be temperamental. They gave all the copilots a tool kit that had a screwdriver, a pair of pliers, and what not, and a crescent wrench. Well, it turned out to get that heater going good you hit the control box with that crescent wrench and that usually jarred it into action.

Most of the crews flew every other leg. There were some captains that flew all the legs or would let the copilot once in a while fly a leg. But generally it was just like now, with everybody sharing legs.

Of course, every station en route that we went into had a station manager and an agent to check in the passengers. Usually, the manager or the agent would





load baggage and unload baggage from the airplane, and fuel the plane. We had a station agent in Helena one day - we were late - and I don't know what he had been doing, but I think he was a wee bit tipsy. Anyway he got up on the wing to fuel this airplane, and he fell down and slid off. So I went out fueled the airplane on both side. We helped out a lot, the crew would get out and help load baggage, and whatever, to get the flight on time.

A lot of the stops were one engine stops, you would just shut down one engine, and load the passengers on and off and take the cargo out from just the one side. We would just leave the other side idling. Those were five-minute stops. When we were running DC-4s on the same route we would just shut down both engines on left side and leave the other two running on the right side. The -4 was a ten-minute stop.

It was good flying and we learned a lot. There were accidents, and we learned from these accidents. It was that record of learning from these accidents and studying them, figuring out what went wrong, what the pilot did wrong, or what was wrong with the airplane or the navigation aides. We corrected them, and now we have the safest mode of transportation the world has ever had. Back then it was not all that safe, and accidents were not uncommon.

Northwest bought a fleet of 25 Martin 202s, and in about a five- year period, they lost five of them, some due to pilot error, some due to the airplane, failures and what not. Anyway, after the fifth accident the pilots re-

fused to fly them anymore. So, when the Martin 202 went haywire the company got rid of them and bought DC-3s back.



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**Above:** After the DC-3, Captain Parrott flew the Douglas DC-4 Skymaster. This aircraft - N79000 - was originally delivered to the USAAF on 8 February 1943, as a C-54-DO. After the war it was purchased by the Civil Aeronautics Administration, who sold it in April 1951, to Eastern Air Lines. In June 1955, it was bought by NWA, who flew it for only a few years, selling it in February 1958, to Transocean Air Lines. It was subsequently operated by a number of companies before being bought in July 1963, by Aviation Traders Ltd, and converted to an ATL-98 Carvair. Registered as G-ASKN, then as TR-LWP, it was stored for several years in Brazzaville, Congo, and was later scrapped in May 1986

**Opposite Page, Top:** Sporting the message "Coast to Coast," this Douglas DC-3 started out as a C-53-DO, being delivered to the USAAF on 12 September 1942. NWA picked it up in April 1945, later selling it in September 1956. It was last seen in Mexico in the early 1970s.

**Opposite Page, Bottom:** This Douglas DC-3A-269 - NC21716 - was delivered factory new to NWA in June 1939. It was sold in February 1950, to Turner Air Lines, before being bought by Lake Central Airlines in September of that year. In 1967, it moved down to the Miami, where it was operated by a few obscure outfits, the last known being a company called Finca de Animale Domesticos in 1971. The whereabouts and fate of this airframe are not known. All Photos: NWA History Centre



