

FAR EAST AIR FORCES
APO 925

SUBJECT: Utilization of LORAN in the Western Pacific¹

Aug. 20, 1948

To: The Commandant of the Coast Guard
Washington 25, D.C.

1. This Headquarters takes sincere pleasure in passing along the attached personalized reports concerning LORAN utilization by the airmen of this command to the operation personnel of the LORAN units in the Western Pacific.

2. The continued efficiency and reliability of these LORAN rates have never faltered, throughout the critical shortages of personnel, funds, and in many cases, extremely unfavorable and isolated working conditions. This Headquarters wishes to make grateful acknowledgement to those LORAN personnel who have made this record possible.

3. It is recommended that the attached narrative reports receive wide dissemination among the interested personnel of your command, and it is the desire of the Headquarters, that these testimonials by the Air Navigators who are daily flying the vast ocean expanses of the Western Pacific, will in some way convey to the LORAN operation and maintenance personnel, an appreciation of the magnificent task they are accomplishing in providing this essential means for the safe completion of instrument flight.

FOR THE COMMANDING GENERAL:

/s/ T. J. Brogan
T. J. BROGAN
Colonel, USAF
ADJUTANT GENERAL

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¹ Transcribed from original documents located in Washington DC NARA

"THE FOLLOWING IS FACTUAL ACCOUNTS OF LORAN AID DURING LONG OVER WATER FLIGHTS BY THIRTEENTH AIR FORCE NAVIGATOR:

2nd Lieut. Frank S. Wingert was navigator aboard a 22nd Troop Carrier Squadron C-54 on June 16, 1948, enroute to Naha, Okinawa from Haneda Air Force Base. This flight is normally of seven hours duration. In this particular instance Loran was the only means of navigation at hand. During the flight, high head winds were encountered and without Loran, no means of determining position was available due to climate conditions. The accuracy in navigation made possible by the use of Loran could not have been improved on and ETA and course calculations were excellent. The '54 had dependents aboard and the safe arrival of ship, crew and passengers was largely due to the new Loran coverage provided, according to the ship's navigator.

Lieut. V. V. Kirby, of the 2nd Rescue Squadron, Flight "C" at Clark Air Force Base has commented that, "due to limited and unreliable radar facilities in the southwest Pacific area, the use of Loran in aerial navigation is necessary. I have made many flights involving day and night navigation in which the entire route was overcast with high clouds which blotted out the stars and sun. This condition renders celestial navigation impossible. We naturally refer to Loran as the only form of navigation available over long stretches of water."

I should like to go on record in stating that Loran is a must for long over water flights to help insure the safe completion of every flight. It is the navigation aid that can be depended on when all other methods fail."

'Over water flights at night in the southwest Pacific are never easy, armchair flights, but the flight we made on 10th of July was a little rough, to underestimate the matter. We saw the sky for a few minutes after we left Clark Air Force Base. Then we ran into weather.

Weather. A short word which surely does not describe the turbulence, rain and lightning which we flew through for approximately five pitch-black hours.

If we made this flight a few years ago, all of the members of the crew would have been extremely worried. If we had not turned back to wait for a better time, which would have been the wisest decision, there would have been three outcomes of the trip. First, being lost in the clouds, we might have crashed into the mountains which towered to 13,000 feet but 120 miles from our course. Or we would have climbed to 20,000 feet to avoid weather and the high peaks. This would have been very difficult, if not impossible, for one of the engines of our heavily loaded ship was not performing perfectly. Lastly, we could have flown through the black, rough, clouds all night, and when dawn broke found that we were lost.

None of these possibilities occurred, for Loran, wonderful Loran, was aboard and working perfectly. Each few minutes we obtained fixes, showing that we were on course and

in a safe area. These fixes were so accurate that, using them alone, we flew right over our destination, right on time."

"Stories of aircraft flights over vast stretches of water in the Far East invariably contain a tribute to Loran navigation aid. Captain William G. Ryan of the 5th Photo Recon. Group, CAFB, related the story with appropriate gestures.

Loran was brought into play on July 4th of this year when typhoon "pearl" settled in the northeast of Luzon with an affected area of weather and high velocity winds extending south of the course, between Guam and Manila.

Late in the evening of July 4th, 1st Lieut. Ford M. Garvin, navigator in the 22nd Troop Carrier Squadron at Clark Air Force Base checked with the weather officer at Hermon Field, Guam prior to taking off for Clark Field, in a C-54. The weather officer informed him that almost direct headwinds of 40 to 50 MPH would be encountered along the entire route. The route was also completely overcast. The navigator relied on Loran entirely to guide him into Clark Field.

The navigator took a Loran fix every twenty minutes and due to this a complete weather report and position could be sent by radio every hour. The winds were found to be cross winds and not headwinds. The information received solely due to Loran, not only greatly aided the weather service, but, in the opinion of the navigator, the mission could not have safely been performed without the aid of Loran.

Clark Air Force navigators, especially those who participate in the long over water flights, are unanimous in their praise of Loran as a navigational aid."

LORAN USAGE INCIDENTS

Prepared by

NAVIGATORS OF THE 540TH AIR TRANSPORT WING PACIFIC DIVISION, MILITARY AIR TRANSPORT SERVICE

1. HAROLD L. ANDERSON: 1st Lt., USAF, Transpac Navigator, 3rd Air Transport Squadron:

"In my past three years of duty in the Pacific area I have used LORAN on 95% of my missions with complete confidence and accuracy. I feel that any navigator in the area would back me up saying that this type of navigation aid is the most important navigation factor in completing our mission.

"In June 1946 while on a daylight search for a lost aircraft off Guam we found a small object which seemed to be a boat. When we lost sight of it our only way to find it again was to fly down the same LORAN Line of Position that we had used in spotting the object originally.

We made three passes and each time found our object. This, and many other times, LORAN has shown and proved that it is our best means of navigation.”

2. ROBERT L. JOHNSON, 1st Lt., USAF, Transpac Navigator. 3rd Air Transport Squadron:

“In my opinion LORAN, as an aid to navigation in the Far East Command is the most important, reliable and necessary navigational facility that exists at present. Many flights made on schedule at present would have to be cancelled, were it not for LORAN, due to instrument weather conditions making celestial navigation impossible. I believe that any cancellation or reduction of LORAN stations and LORAN operations would have a very drastic adverse effect on the safety of all flight operations.

3. GARDNER L. HUTCHINS, 1st Lt., USAF, Transpac Navigator. 3rd Air Transport Squadron:

“On 2 February 1948, on an ATS flight between Guam and Tokyo, Japan, LORAN fixes were the sole factor in determining our positions. Upon reaching Iwo Jima we entered solid instrument conditions precluding the use of celestial navigation. One hundred per cent instrument conditions existed all the way to Tokyo. About one hundred miles out of O’Shima, the O’Shima radio range became inoperative, and, due to atmospheric conditions, the radio compass was not reliable on any of the other Tokyo stations. Having visited the LORAN station on O’Shima, and knowing the caliber of its personnel and the reliability of stations 4-H-4 and 4-H-5 from past experiences, we decided to enter the Tokyo area solely by the use of LORAN. LORAN fixes were taken every three minutes until we entered the bay area and were picked up by Kaneda GCA and the flight was brought to a successful conclusion.

“This is only one of many incidents where LORAN was the determining factor in a successful flight. Having been a navigator in the Pacific for the last three years, I want to show due respect and praise for LORAN and its operators. Keep up the good work as you have done so well in the past.”

4. JAMES A. MACKENIZE, 1st Lt., USAF, Transpac Navigator. 3rd Air Transport Squadron:

“The weather forecaster at Naha, Okinawa, hummed softly to himself as thought of the nurse who had consented to accompany him to the club that night. Only one more flight to clear and he would be off duty. the POMAR weather code was ready and he could see the MATS crew approaching his Quonset.”

“Capt. Con Frank, pilot, and Capt. Jack Schults, his navigator, swung into the weather office; they were glad to be on their way to Guam, one step closer to their home base in Tokyo. Perfunctorily, they listened to their briefing – seven-tenths high clouds,

alto-stratus at ten thousand feet, three-tenths lower cumulus, bases two thousand with tops at seven thousand feet. Winds easterly at 15 to 20 knots.

"The gaunt C-54 Skymaster strained to the vibrations from the engines as Capt. Frank skillfully guided the plane off the long runway at Naha. Capt Schults, after giving the pilot his first heading, busied himself with the paperwork necessary for the safe conduct of the flight. He took pride in the HOW-GO-ZIT graph with its red, green and black lines.

"The sky outside the curising Skymaster was darkening as they cleared the Okinawa control area. Capt. Frank fastened his seat belt and signaled for the flight clerk to have the passengers secured as they approached the towering black cumulus ahead.

"Capt. Schults turned on the LORAN and checked its adjustments. He had been on instruments for the past three-quarters of an hour with no sign of a break. He flipped the switches and spun the dials with the dexterity and assurance born of long experience. He swiftly plotted the fix and checked his speed – 138 knots. A frown came across his face as he checked gas consumption against the distance traveled. Running the engines in rich mixture in the rain clouds, with turbulence that was by now moderate to heavy, was cutting heavily into the gas supply.

"Capt. Frank anxiously scanned the weather form for some explanation of the unexpected weather but found nothing. For four hours the ship labored through weather at ground speeds as low as 110 knots. Capt. Schults figured the wind to be 145 degrees at 60 knots.

"Ten and one-half hours from the time the big plane had waddled to the end of the runway at Okinawa, the passengers caught the glimpse of Guam for which they had been so anxiously waiting since the start of the descent 20 minutes before. The eight and one-half hour estimated flight time having run out two hours ago, they would be happy to feel solid ground again.

"After circling briefly, the Skymaster settled to the end of the runway at Henmon Field and taxied toward the myriad lights of the MATS terminal.

"An hour later, after a few hundred telephone calls, An Air Force weather plane took off from North Field, Guam to reconnoiter the scourge of the Pacific, the Typhoon.

"This story shows the facts of but many flights. This incident happened about April 1948; and was narrated to me by Captain Jack Schults. It is evident to us all that the LORAN stations and the crews that man them are our refuge. The safe completion of any instrument flight lies with them along."

5. JOSEPH C. KINKEAD, 1st Lt., USAF, Transpac Navigator. 3rd Air Transport Squadron:

“During my last MATS trip to Guam I had the pleasure of meeting one of the ladies who was with the Coast Guard on the first LORAN operation in the Atlantic. She was very much surprised at the progress that has been made in LORAN transmissions, steadiness and accuracy of signals. I demonstrated the accuracy of our APN-9 set while flying directly over the island of “Tori”, on LORAN Chart 210, between Iwo Jima and Tokyo. The fix covered the island completely and my audience was amazed at its accuracy. But to the navigators who fly from 65 to 100 hours a month this is the usual result rather than the unusual.

“During the winter months when weather conditions in the Far East are really bad, and solid instrument conditions are often encountered, LORAN enables the navigator to come into the Tokyo Bay area with confidence, although 12,400 feet Mt. Fuji is but 50 miles off course. The navigator can feel secure in the knowledge that he is on course and that his ETA is accurate.

“LORAN also gets full credit for the accurate winds and velocities that the navigator turns in to weather. It is the writer’s personal opinion that the improved weather forecasting is due in part to the accurate winds and air mass movements that LORAN enables us to find. Typhoon spotting and high winds are easily and accurately determined by LORAN.

“To discontinue the LORAN stations would throw modern Air Navigation back to the horse and buggy age where airplanes flew at 90 miles per hour instead of at supersonic speeds.”

6. EDWARD W. LUBY, 1st Lt., USAF, Transpac Navigator. 3rd Air Transport Squadron:

“During the past two and half years I have continuously flown in the Pacific area and have found that LORAN is not only a very valuable aid to navigation but at times is the only form of navigation available. On many of our flights where adverse weather conditions prevail the only possible means of getting a definite position is through the use of LORAN and I feel certain that many of our flights, especially through the winter months, would have to be cancelled if it were not for this invaluable navigational aid. It is not uncommon to depart on a long over water journey, making celestial navigation impossible; and then toward destination find that the radio compass is homing on a thunderstorm rather than our destination.

“An example of LORAN’s value was shown on 3 April of this Year. We departed Bangkok at 2300 for Manila at 9,000 feet. Weather forecasting in this area is extremely difficult and the weather forecaster at Bangkok predicted north winds for the first part of the flight. Upon reaching altitude we found a solid overcast and were on instruments about the 50% of the time. After waiting for approximately tow hours for a “break” in the clouds which would make celestial navigation possible, I decided to try to get a LORAN fix from stations 1L6 and 1L7 even though reception of LORAN waves in this area is usually poor and only sky waves can be obtained. The

fix showed that the wind was from the south and we were 35 miles off course, heading directly for a ten thousand foot mountain. Needless to say we altered course immediately and the flight was completed successfully – thanks to LORAN.

“I would like thank all of the men who are in any way connected with LORAN operations, especially those who have to sit on lonely islands keeping the stations operating properly, for the reliable and efficient service that they are giving, unknowingly, to the navigators, of Trans-Pacific operations.”

7. THEODORE J. SIRRADSKI, 1st Lt., USAF, Navigator, GHQ Air Detachment, QHQ Staff Airplane 9099:

“Since 1943 – 1944 when LORAN came into general use throughout the world, its value as a navigational aid has been acclaimed by all navigators with whom I have had contact. Naturally a responsible air navigator never relies solely on this type of plot, but in conjunction with celestial and radio line of position a positive check is always obtained. I’ve found in many instances that LORAN was the only means for the successful completion of flights when instrument conditions prevailed. I’ve been in many situations where the only source of ground speed, wind direction and velocity, was obtained through LORAN fixes. LORAN’s valuable aid to navigation, as well as the valuable data it helped furnish the weather service is an outstanding factor contributing to safe air and surface navigation.

“A perfect example, and there are many, is a flight of last June in which I was around a typhoon. The weather service has a difficult task in plotting storms where weather coverage is scarce. Naturally, in such situations an airplane is invariably on solid instruments. The plots obtained by LORAN give an accurate picture of winds; and when used with the radio altimeter the storm can be very accurately plotted.

“The United States Coast Guard is to be highly commended for the efficient maintenance of world-wide LORAN facilities, and the deepest appreciation is felt by all long range navigators for the men on the lonely islands who make this service possible.”

8. LESLIE D. SHAPTON, Captain USAF, Chief Navigator, 3rd Air Transport Squadron:

“In checking the navigation logs of 70 recent flights where passengers, mail and cargo, and air evacuation trips were flown, it was found that 441 LORAN fixes were taken. On the average eight hour flight this means six and a third LORAN fixes, or one LORAN fix per hour from level off until let-down. On the same flights twenty-nine celestial fixes were taken showing a preference for LORAN in a ratio of fifteen to one.

“LORAN is a fast positive means of determining a position. It does away with blindly groping for destination in instrument weather situations. LORAN lines are often crossed with radio bearings and celestial line of position for fixes that would otherwise be unavailable.

"Accuracy with LORAN is exceptional when used carefully by an experience operator. It is more the rule than the exception that three line LORAN fixes fall in a common point, even when taken 1,000 miles from LORAN stations. This cannot be duplicated by any other means of navigation.

"On regular check rides the LORAN technique of crew navigators is checked thoroughly because LORAN, today, is progress in navigation. It is the all-around most usable form of navigation available. LORAN can be given a good share of credit for the high safety record of passenger flight in the Pacific Area.

"A year ago in September all navigators present on the base made a boat excursion to the LORAN station at O'Shima. We were interested in seeing how the station operated and in meeting the personnel assigned. At that time we expressed our appreciation for their fine work and for the service that they were providing for us. In the succeeding months we have flown with a mutual respect and admiration for LORAN and its stations operators."

9. Possibly of further interest are the following PACD, MATS clearance policies governing the clearances of MATS flights without operative LORAN set:
 - a. MATS aircraft without operating LORAN set will be cleared for flight only upon joint concurrence of Aircraft Commander and MATS Operational Officer after having first carefully considered the possibilities of celestial navigation, availability and reliability of enroute navigational aids and all other factors affecting the safe navigation of the flight.
 - b. No MATS aircraft shall be cleared over the Great Circle Route (Northern route Tokyo to Anchorage, Alaska) without operative LORAN set."