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File No. 1-0019

CIVIL AERONAUTICS BOARD

AIRCRAFT ACCIDENT REPORT

MS-110

ADOPTED: March 9, 1962 **RELEASED:** March 15, 1962

PACIFIC NORTHERN AIRLINES, INC., LOCKHEED CONSTELLATION, L-749, N 1554V, MT. GILBERT, ALASKA
JUNE 14, 1960

SYNOPSIS

At approximately 0447 a. s. t., June 14, 1960, a Pacific Northern Airlines Lockheed Constellation L-749, N 1554V, crashed into the sheer face of Mt. Gilbert, Alaska, at the 9,000-foot level. All nine passengers and five crew members aboard were fatally injured.

Pacific Northern Flight 201 failed to maintain its intended track after taking off from Cordova, Alaska, bound for Anchorage, Alaska. Mt. Gilbert is approximately 28 nautical miles to the right of the flight's first intended checkpoint and is 9,646 feet in elevation.

The Board determines that this accident was the result of the crew's failure to use all available navigational aids in establishing the aircraft's position on Amber I Airway thereby allowing the aircraft to proceed off course over dangerous terrain. The Board also determines that a contributing factor to the accident was the failure of air defense radar, which had been tracking the aircraft, to notify either ARTCC or the crew that the aircraft was proceeding on a dangerous course.

Investigation

Pacific Northern Airlines Flight 201 (PN201), a Lockheed Constellation L-749, N 1554V, was a second section and departed Seattle Tacoma Airport at 0023 p. s. t., for Anchorage, Alaska, with a scheduled stop at Cordova, Alaska. The crew consisted of Captain Richard H. Chamberlain, First Officer Duane G. Easterly, Second Officer Larry L. Stevenson, and Stewardesses JoAnn Saylor, and Naomi L. Marts. The flight from Seattle to Cordova was routine.

Following the arrival at Cordova at 0346,[1/] the speedpak was lowered, and Cordova baggage and cargo removed. Two hundred gallons of fuel were added to the tanks to bring the total to 1,160 gallons. PN201 was on the ground at Cordova for approximately 20 minutes.

At 0400, Cordova weather was 2,800 feet broken clouds; visibility 15 miles; surface wind from the east-northeast at 15 knots. Flight 201 neither asked for

1/ All times in the remainder of this report are Alaska standard based on the 24-hour clock.

USCOMM-DC-18176

nor received a weather briefing by the Cordova U.S. Weather Bureau Airport station. No weather briefing for the flight from Seattle to Anchorage was furnished by U.S. Weather Bureau personnel at Seattle; however, routine briefing of the pilot on the weather he could encounter, the flight facilities and field conditions en route, were accomplished by the company dispatcher at Seattle prior to departure. The Pacific Northern operations office at Cordova has no weather briefing facilities.

At takeoff from Cordova the aircraft was loaded to 79,488 pounds, which was within allowable limits and properly distributed.

PN201 taxied out for takeoff on runway 8 at 0413 and requested clearance to Anchorage. The pilot was queried as to what altitude he desired and he requested 10,000. Clearance was issued to the crew of PN201 at 0415 and was as follows: "ATC clears Pacific Northern two zero one to Anchorage Low Frequency range via direct Egg Island, Amber One, maintain one zero thousand."

The Cordova Flight Service Station specialist began his Cordova scheduled weather broadcast at 0415 during which PN201 began its takeoff. The communicator stated the departure appeared to be normal. When he came to the Anchorage International Airport weather during his scheduled broadcast, he included the 126.7 mcs. transmitter so PN201 could copy the Anchorage weather. When the Anchorage weather observation was completed he shut down the 126.7 transmitter and the pilot of PN201 was heard to say "Thanks, Cordova." The operator then instructed the pilot of PN201 to contact the Anchorage Air Route Traffic Control Center (ARTCC) on 118.9 mcs. PN201 then contacted Anchorage ARTCC and advised that they were off Cordova at 0417, that they were climbing to 10,000 feet and were estimating Hinchinbrook at 0425. At this time PN201 was cleared to maintain 9,000 feet altitude, which was acknowledged.

PN201 was next heard to report to Anchorage ARTCC as being over Hinchinbrook at 0427, 9,000 feet on instruments, and that they were estimating Whittier at 0447. The flight was instructed to contact Anchorage Approach Control at 0452 on 118.1 mcs. PN201 then advised that they would like to have 11,000 feet if it was available. The flight was advised that Anchorage ARTCC could approve 11,000 feet; however, there was company traffic inbound to Anchorage which would be descending. PN201 was then asked when he would begin his descent. PN201 then advised Anchorage ARTCC to disregard the request. The 0400 weather was then broadcast to the flight.

The Anchorage ARTCC then exchanged some traffic information between PN201 and the other inbound Pacific Northern Flight 3 on 118.9 mcs. This exchange of traffic information was acknowledged by PN201 at 0432 and was the last radio contact between Anchorage ARTCC and PN201.

Alaskan Air Command Regulation 55-33, dated March 30, 1959, entitled "Operations USAF Radar Advisory Service and Flight Monitoring Service in Alaska"[2/] provides for a radar advisory service ("Stargazer") which may be requested by a pilot and for radar flight monitoring in the absence of a request from the pilot. This regulation is supplemented by a "Joint Agreement Between the Fifth Region, Federal Aviation Agency and the Alaskan Air Command in Relation to the USAF Radar Advisory Service in Alaska,"[3/] effective July 10, 1959, which establishes the policy and procedures for the provision of radar assistance by USAF Air Defense Radar units in Alaska to military and civil aircraft in flight, so as to assist "aircraft in flight to avoid existing areas of potentially hazardous weather, terrain, restricted areas, and other conditions hazardous to flight."

2/ See Attachment I.
3/ See Attachment II.

The instrument flight plans of PN201 were passed on to the USAF Air Defense Radar station located at Middleton Island by the FAA Anchorage Air Route Traffic Control Center located at Elmendorf Air Force Base, Anchorage, Alaska. This information, which consisted of the type of aircraft, the IFR flight altitude, the flight plan route and the estimated time of departure, was received and recorded by the USAF Chief Radar Operator at Middleton Island. The surveillance operator was immediately advised that an L-749 Constellation would depart Cordova at approximately 0420. The radar operator observed the blip representing PN201 as it departed Cordova and continued to observe it by tracking. The radar operator's log and testimony indicate that he had the aircraft under radar surveillance for approximately 30 minutes. Plots of the flight's radar return were made at 0422, 0423, and 0425. At 0427, Flight PN201 reported over the Hinchinbrook low-frequency range station. Three additional plots were made of PN201 position at 0430, 0435, and 0440. The 0435 plot placed PN201 approximately 20 nautical miles to the right of its intended course along Amber One Airway. The 0440 plot placed PN201 approximately 28 nautical miles to the right of its intended course and headed into glacial terrain with elevations above 10,000 feet. No attempt was made by the Air Defense Radar Station controller to contact Flight PN201 nor did he notify the Air Defense Direction Center (ADDC) of the hazardous situation as required by the joint agreement of July 10, 1959. This controller estimated Flight PN201's altitude at 0423 as 8,000 feet.

Following the 0440 plot, the radar image of PN201 disappeared from the scope of the Middleton Island Air Defense Radar Station and no further plots could be made.

Numerous attempts were made to contact PN201 when it did not report over Whittier. Query was also directed to two aircraft which were proceeding to Anchorage via Middleton and Whittier. Both Pacific Northern Flight 3, which was 7 minutes behind PN201's estimate to Whittier, and Northwest Airlines Flight 581, which was 10 minutes behind PN3, indicated they had not heard PN201 report over Whittier. At 0503, ATC instituted emergency procedures. At 0534, U.S. Coast Guard and U.S. Air Force rescue units were alerted and started search operations.

The wreckage of PN201 was found and positively identified June 14, at 1830 by rescue units who were transported to the site by helicopter. Investigation disclosed that PN201 struck the 70-degree ice slope of Mt. Gilbert just below the summit at the 9,000-foot level, at approximately 0447 on a collision path of approximately 255 degrees magnetic. Mt. Gilbert (elevation 9,646 feet) is located in the Chugach Mountains approximately 50 miles east of Anchorage, Alaska.

The aircraft disintegrated on impact and the wreckage settled into deep snow below the impact area. A snow slide, resulting from the crash, carried pieces of wreckage down to the lower slope and buried most of it in an area extending from about 8,500 feet down to about 7,500 feet. The angle of repose of the slide was estimated to be about 30 degrees. Only one body, that of a passenger, could be found.

It was determined that the location of the wreckage precluded further investigation because (1) most of the aircraft wreckage was buried in the snowfield; (2) large outcroppings of snow were hanging loosely over the scene ready to fall at any moment which could have created extensive snowslides and covered the remaining wreckage; and (3) ground parties would have had to proceed up a 45-degree slope over the crevasse-filled glacier. There were no eyewitnesses to the accident.

The aircraft maintenance program and records for N 1554V were examined and found to be comprehensive and in good order. All airworthiness directives were complied with and records revealed that all communications and electronic equipment were operating satisfactorily before the departure from Seattle.

The navigation aids from Cordova, Alaska, to Anchorage, Alaska, were flight-checked by FAA flight inspection following the accident and were found to be operating normally and within tolerances.

Subsequent to the accident, bench and flight tests were conducted on equipment similar to that aboard PN201 to simulate possible errors in the remote magnetic indicating (RMI) system which could be induced by open or shorted circuits. These tests revealed that erroneous readings on the RMI of as high as 70 to 80 degrees could be obtained. This type of failure results in a "fixed" cord presentation. These tests were conducted at only one of the many places within the system wherein errors could be introduced.

Analysis and Conclusions

At no time during the flight from Seattle was the aircraft reported unairworthy by the crew. The crew was found to be properly certificated and qualified for this flight and they appeared to be in good spirits and without any signs of worry or agitation. The crew did not report any discrepancies to the Cordova Station Manager.

During the early morning hours of June 14, 1960, there was a thermal low pressure area over the interior of Alaska. A trough of low pressure extended southwestward from the low to southwestern Alaska, then southward into the Gulf of Alaska near Chirikof Island. A weak ridge of high pressure was oriented northwest-southeast over the north Gulf coast and southeast Alaska. There were no fronts on or near the route from Seattle to Cordova, or to Anchorage.

Along the route from Cordova to Anchorage there would have been scattered to occasionally broken clouds 600 to 1,000 feet above mean sea level, a second cloud deck broken to overcast at 2,000 to 3,000 feet, and broken to overcast layered alto-stratus and alto-cumulus above. The tops of these layered clouds would have extended to approximately 15,000 feet, and the bases of the layers would have been at 5,000 to 6,000 feet, 8,000 to 9,000 feet, and at 12,000 feet. There was little or no precipitation in the Middleton Island, Cordova, Whittier, Anchorage area. What little precipitation did exist was of a light nature rather than the heavy type precipitation conducive to the generation of static interference. The other two aircraft flying in the area did not advise ARTCC of any static interference. The winds along the Cordova to Anchorage route at 9,000 feet would have been southeasterly 20 to 30 knots. If the crew of PN201 had had the forecasts which were issued by the U.S. Weather Bureau at Anchorage, they would not have encountered any unusual or unanticipated conditions, since the actual weather was substantially as forecast.

Captain Chamberlain had flown the route from Seattle to Anchorage by way of Cordova frequently for approximately 15 years and was familiar with terrain, communication and navigation aids, weather characteristics, and airports along this route. Several PNA pilots, when queried, stated that they used and depended mostly on the aural signals of the low-frequency range when flying between Cordova and Anchorage but that they also used the ADF as a cross check. One of the pilots who had flown with Captain Chamberlain on numerous occasions over this same route segment said that Chamberlain always flew along the edge of the on course where he could hear the "A" signal, and that he used the ADF as a cross check. The company's Operations Manual

also states that both aural signal and ADF must be used when flying on low-frequency airways.

There was no evidence of malfunctioning of the powerplants and the aircraft PN201 struck Mt. Gilbert at the 9,000-foot level, which was its assigned altitude. Mt. Gilbert is approximately 28 nautical miles north-northeast from the flight's intended reporting point of Whittier.

The takeoff and departure of PN201 from Cordova was normal and nothing of an unusual nature occurred that could be detected either through radio communications or radar tracking. The flight made a normal position report over the Hinchinbrook low-frequency radio station at 0427, and a radar plot 3 minutes later placed PN201 on Amber One Airway.

After having passed Hinchinbrook low-frequency range, radar plots made by the Middleton Island Air Defense Radar Station indicated PN201 proceeded on a track of approximately 295 degrees magnetic which is approximately 35 degrees to the right of the intended track to Whittier along Amber One Airway. The low-frequency range course from Hinchinbrook to Whittier is 258 degrees magnetic.

Two successive radar plots were made of PN201 by the Air Defense Command Radar Station; one at 0435 which placed the aircraft over Bligh Island, 60 degrees, 50 minutes north latitude, 146 degrees, 50 minutes west longitude, a point approximately 20 nautical miles right of course; and one at 0440 which placed the aircraft at 61 degrees, 5 minutes north latitude, 147 degrees, 20 minutes west longitude, a point approximately 28 nautical miles right of course. Before the controller could make the next 5-minute radar plot the radar target faded from view.

The impact area on Mt. Gilbert is located at 61 degrees, 10 minutes north latitude, 148 degrees, 15 minutes west longitude, a position approximately 28 nautical miles right of course.

It is apparent that whatever directional difficulty occurred began in the vicinity of the Hinchinbrook range. At this point PN201 was at its flight altitude of 9,000 feet, was apparently on instruments, and would be receiving its heading information from a fluxgate compass. Fluxgate compass headings are passed to a master direction indicator (MDI) which in turn furnishes headings to each of the radio magnetic indicators positioned in the captain's and copilot's instrument panels. The MDI also passes on directional information to the autopilot. Additional heading information would be received from the magnetic compass located in the center of the windshield and the two directional gyro compasses located on the instrument panel. However, the magnetic compass in northern latitudes would be subject to magnetic disturbances.

Although such directional errors could have existed, the Board is aware that additional apparatus was available to the pilots to assist in their navigation.

The tests conducted on the RMI revealed that it could produce erroneous indications, and that the RMI card could assume a heading and remain steady even with a 90-degree change of heading of the aircraft. However, in order to accept the theory of the erroneous reading on the RMI card, one has to conclude that both crew members were oblivious to all other indications and that their attention was focused entirely on the RMI, and that they did not cross check any other instruments.

Erroneous fluxgate indications can occur for several reasons among which are:

1. Failure of an electrical component in either the fluxgate or the RMI amplifier.

2. A malfunctioning of the gyro caging mechanism.

3. Cycling of the gyro caging system with the aircraft not in level flight.

In one type of fluxgate compass malfunction the radio magnetic indicator card will not follow the turn and consequently heading information will be erroneous. This type of malfunction will result in a straight line course on an erroneous heading. In view of the fact that radar plots of the flightpath of PN201 indicate a gradual turn from a northwesterly heading to a west-southwesterly heading and the winds aloft were not of a magnitude or from a direction which would have resulted in such a curved flightpath, a malfunction resulting in a "dead RMI card," does not seem likely. A second type of fluxgate malfunction involves a tilting of the stabilizing gyroscope. This results in heading error whereby the indicated heading is not the actual heading. The size of the error depends upon the amount and direction of tilt. The fluxgate compass contains a mechanism which automatically corrects gyro tilt. Therefore the flightpath obtained by holding a constant indicated heading on the RMI will result initially in a curved flightpath until the erection of the stabilizing gyro has been completed, at which time the flightpath again becomes straight and will remain straight as long as the heading is maintained and a crosswind is not present. The radar plots indicate that the aircraft was on a heading of 255 degrees approximately 7 minutes prior to impact and that this heading paralleled within 3 degrees of the original intended course. This would indicate that if a gyro tilt error had occurred in the vicinity of Hinchinbrook the self erecting mechanism had corrected the error at this time. The ADF pointer would point to the selected station regardless of any fluxgate error. At the position indicated by radar at 0440, some 7 minutes prior to the crash, the ADF pointer would have indicated an approximate 35 degree deflection, indicating that the aircraft was substantially to the right of course.

Of particular significance is the fact that Amber I Airway between Cordova and Anchorage is established by means of low-frequency radio ranges located at Hinchinbrook and Anchorage. Such radio ranges are constructed to send out a figure eight signal pattern. The transmitted signals overlap to form four distinct courses which are approximately three degrees wide. A continuous audible tone is heard when in this on course area. The appropriate radio range course is used to establish a particular airway segment. Bi-signal zones of low-frequency radio ranges are formed by overlapping "A" and "N" code signals. These zones surround each course of the range and are approximately 15 degrees in width on each side of the centerline of the on course signal in ranges oriented in the manner of the Hinchinbrook Radio Range. When flying on course, a solid tone is heard. When flying in the bi-signal zone, one signal is predominant. When a predominant "N" signal is received with a solid background tone, the aircraft is slightly off the on course area and in the "N" bi-signal zone. Outside of the on course or bi-signal zone only one signal is audible and the aircraft is then outside of the signal overlap area and well off the on course area. The rapidity with which signal changes are apparent and the increase or decrease in total volume, together with the signal being received, indicate where the aircraft is with respect to the on course and the nearness to the station.

An alternate method of flying the on course area of a low-frequency radio range is to fly a track on the appropriate magnetic heading, utilizing the radio compass and considering the radio range as a radio beacon. The principal value of the radio compass is its ability to determine magnetic bearings to or from any radio station within the frequency and sensitivity range of the receiver. It may also be used for the reception of the audible radio range signals. When the radio compass is combined with the radio magnetic indicator, a single bar bearing indicator needle overlies the direction indicator card on the RMI. To establish an aircraft on a course outbound from a radio station from over that station, the aircraft is turned to the desired outbound heading and the desired course maintained under the heading index on the RMI. Under conditions of no crosswind the tail of the bearing indicator needle of the radio compass will then overlie the course heading and be in line with the heading index on the radio magnetic indicator. As a result, any error in heading information received from the RMI will not be immediately apparent to the crew unless the actual heading of the aircraft is checked by the crew through the use of the directional gyro or magnetic compass.

Amber I Airway is established between Cordova and Anchorage by the west course of the Hinchinbrook Radio Range and the east course of the Anchorage Radio Range. Along Amber I Airway, utilizing the west course of the Hinchinbrook Radio Range, the "N" signal is north of the on course and the "A" signal is south of the on course area.

As previously stated, it was Captain Chamberlain's procedure to fly the Cordova-Anchorage segment of Amber I along the on course area where he could hear the "A" signal. In this instance it is apparent he did not. Had the crew been utilizing the aural signal to establish the flight on Amber I, any failure of the RMI and consequent erroneous heading would have been immediately apparent. The crew was in contact with Anchorage ARTCC and acknowledged receipt of company traffic information at 0432. At this time the aircraft was approximately 20 miles from the Hinchinbrook Radio Range and considerably away from the on course and even outside the bi-signal zone. The only signal which would be received at this point would be a clear "N" and the station identification. Had the crew utilized the aural signals to establish the aircraft on course on Amber I, this solid "N" signal would have alerted them to their off course position. The aircraft continued off course, however, despite the fact that a monitoring of the aural signal at any time during the flight would have alerted the crew to their perilous position and allowed them to return to the proper course. It is reasonable to believe, therefore, that the audible signal was not being utilized, despite the fact that the PNA Operations Manual requires that both the aural signal and the radio compass shall be utilized when flying on low-frequency airways.

During the investigation of this accident, the sergeant-in-charge of the radar unit at Middleton Island testified that the radar operator observed a blip on the radar screen for 30 minutes and that he checked with the radar officer. He also observed the blip. However, he did not think it necessary to contact the flight because he assumed the pilot was deviating from his course so as to show his passengers a certain glacier, as pilots allegedly often did. However, it is doubtful that the ground was visible since the aircraft would have been flying in or above clouds along the entire trip from Hinchinbrook Radio to Anchorage.

Although the aircraft struck the mountain because of a deviation from its intended course, the Board believes the accident could have been prevented had the provisions of Alaskan Air Command Regulation 55-33 of March 30, 1959

(Attachment I), and the Joint Agreement effective July 10, 1959 (Attachment II), for radar flight monitoring in the absence of a request from the pilot, been carried out.

Probable Cause

The Board determines that the probable cause of this accident was the failure of the crew to use all available navigational aids in establishing the aircraft's position on Amber I Airway, thereby allowing the aircraft to deviate from course and fly over hazardous terrain. A contributing factor was the failure of Air Defense Radar, which had been tracking the aircraft, to notify either ARTCC or the crew that the aircraft was proceeding on a dangerous course.

BY THE CIVIL AERONAUTICS BOARD:

/s/ ALAN S. BOYD
Chairman

/s/ ROBERT T. MURPHY
Vice Chairman

/s/ CHAN GURNEY
Member

/s/ G. JOSEPH MINETTI
Member

/s/ WHITNEY GILLILLAND
Member

S U P P L E M E N T A L D A T A

Investigation and Depositions

The Civil Aeronautics Board was notified of the accident at 0630, June 14, 1960. After an extensive air, ground, and sea search, the wreckage was discovered at the 9,000-foot level of Mt. Gilbert, Alaska. Positive identification was made at 1900, June 14, 1960. Visual observations plus extensive photographs of the area indicated it would not be feasible or practical to put an investigation group into the accident scene due to the rugged terrain, danger of snow slides, and inaccessibility of the wreckage. Depositions, ordered by the Board, were taken in Seattle, Washington, August 9, 1960, and at Anchorage, Alaska, August 11, 1960.

Flight Personnel

Captain Richard H. Chamberlain, age 38, was employed by Pacific Northern Airlines on December 23, 1945. He had a total of 14,460:46 hours of flying time, 4,318:21 of which were in Lockheed Constellation aircraft. He held a valid airman certificate with an airline transport pilot rating for airplane multiengine land, and DC-3, DC-4, and Lockheed Constellation aircraft type ratings. His last first-class physical examination taken May 18, 1960, was satisfactory with no waivers. He had flown a total of 181:45 hours in Lockheed Constellations in the last 90 days. His last line check was accomplished on August 21, 1959, and his last instrument check was accomplished April 7, 1960.

First Officer Duane G. Easterly, age 27, was employed by Pacific Northern Airlines on April 1, 1959. He had a total of 2,258:51 hours of flying time, 563:10 of which were as copilot or second officer in Lockheed Constellation aircraft. He held a valid airman certificate with commercial privileges for airplane single and multiengine land, and rotorcraft, an airframe and powerplant certificate, and a flight engineer certificate. His last physical was accomplished April 29, 1960. His last instrument check was accomplished May 16, 1960.

Second Officer Larry L. Stevenson, age 25, was employed by Pacific Northern Airlines on March 28, 1960. He had a total of 630:34 hours of flying time, 30:34 of which were in Lockheed Constellation aircraft. He held a valid airman certificate with commercial privileges for airplane single-engine land, and a temporary flight engineer certificate. His last first-class physical examination, taken March 21, 1960, was satisfactory with no waivers. His last engineer flight check was accomplished on May 9 and 23, 1960.

Stewardess JoAnn Saylor, age 22, was employed by Pacific Northern Airlines on July 30, 1958. She had a total of 1,225:58 hours of flying time, 634:28 of which were in Lockheed Constellation aircraft. She had received the company's standard training and checkout on equipment, including emergency equipment.

Stewardess Naomi L. Marts, age 23, was employed by Pacific Northern Airlines on April 18, 1960. She had a total of 57:02 hours of flying time, all of which were in Lockheed Constellation aircraft. She had received the company's standard training and checkout on equipment, including emergency equipment.

The Aircraft

Lockheed Constellation, model L-749, N 1554V, bore manufacturer's serial number 2555. It was manufactured September 29, 1947, and had accumulated a total of 30,560:22 flying hours. The aircraft was powered by four Wright model R-23350-BDI which were equipped with four Curtiss model 634S-C-400-830 propellers.

ATTACHMENT I

*AACR 55-33
1-3

AAC REGULATION
NO. 55-33

HEADQUARTERS ALASKAN AIR COMMAND
APO 942, SEATTLE, WASHINGTON
30 March 1959

Operations

USAF RADAR ADVISORY AND FLIGHT MONITORING SERVICE IN ALASKA

PURPOSE: This regulation establishes both the policy and the procedures for providing and requesting in-flight radar advisory and flight monitoring services.

1. Scope. The provisions of this regulation apply to air defense radar units of the Alaskan Air Command and to Air Force units operating aircraft within the Alaskan theater.

2. General. The USAF radar advisory and flight monitoring services in Alaska are designed to assist in-flight aircraft in avoiding existing areas of potentially hazardous weather, terrain, restricted areas, antiaircraft artillery zones, and other conditions dangerous to flight. These procedures in no way alter emergency assistance procedures required by AACR 55-83, Search and Rescue (SAR) Alerting Procedures for Overdue Aircraft, or as outlined in the Radio Facility Chart (Alaska, Canada, and North Atlantic).

3. Radar Advisory Service. The radar advisory service in Alaska may be requested by a pilot, using the procedures and frequencies laid down in the Radio Facility Chart (Alaska, Canada, and North Atlantic). Radio frequencies allocated to radar advisory service communications will be monitored by air defense radar units as required by current Alaskan Air Command Communications-Electronics Instructions. Whenever a radar unit cannot furnish radar advisory service for any reason, the unit will reply to requests with the procedural work "Unable". The receipt of this word will be final and no further explanations will be required. Radar advisory service will be provided subject to the following conditions:

a. In providing the service to in-flight civilian aircraft, no liability will be incurred by the United States Air Force nor will the defense

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*This regulation supersedes AACR 55-33, 27 August 1957.
OPI: O
DISTRIBUTION: A,X
2 - EA ACW Sq
4 - FAA, 5th Region

mission of the Alaskan Air Command be compromised. However, once it is determined that radar advisory service can be provided, every effort will be made to insure that it is of the highest quality.

b. The service will be made available only when it does not interfere with the air defense mission or with normal air traffic control functions of the Federal Aviation Agency (FAA), except in cases when aircraft are observed to be approaching a hazardous condition. All information provided will be advisory in nature and will not relieve the pilot or aircraft commander of the responsibility for the safety of the aircraft.

c. The Alaskan Air Command accepts no responsibility for the provision of separation between aircraft other than tactical aircraft under the control of an air defense radar unit. Responsibility for the separation of aircraft within controlled airspace remains with the FAA, and pilots or aircraft commanders not under the control of an air defense radar unit will retain responsibility for operations outside controlled airspace.

4. Radar Flight Monitoring.

a. Air defense radar units in Alaska will perform radar flight monitoring for all IFR flights by military aircraft. The flight plans for all such flights will be passed to air defense radar units by Air Movement Information Service personnel and, on identification, the aircraft will be monitored continuously while within radar cover. IFR flights originating and remaining in the free area as defined in AACR 55-30, Identification of Air Traffic, will be included in this procedure. Flight following will be regarded as secondary in importance to the air defense mission of the radar units and will not be allowed to interfere therewith.

b. In order to establish positive identification for radar monitoring, pilots of aircraft under the operational control of Alaskan Air Command units will, on reaching cruising height and heading, request the permission of the Air Traffic Control agency to leave ATC frequency to make a communications and IFF check call to the radar unit; this call will be made on radar advisory service frequency shown in the Radio Facility Chart (Alaska, Canada, and North Atlantic). This procedure will be made known to pilots of other USAF aircraft, through base operations sections and other flight briefing facilities, and their compliance will be requested.

c. Alaskan Air Command Combat Operations Center will provide radar flight monitoring information to AACS Flight Following Centers or the Rescue Coordination Center whenever this information is requested in connection with a communications search for an overdue or missing aircraft.

d. Whenever an aircraft is observed by an air defense radar to be progressing off course and/or approaching hazardous terrain or any condition which may jeopardize the safe conduct of the flight, the radar unit concerned will immediately notify the pilot, using Guard channel. If direct communication cannot be established immediately, the radar unit will continue its calls and simultaneously notify the associated Air Defense Direction Center (ADDC) of the situation; the ADDC will relay the information to the appropriate Air Route Traffic Control Center (ARTCC) for transmission to the aircraft concerned. Whenever direct contact is made, the ADDC exercising operational control of the radar unit involved will immediately inform the appropriate ARTCC of the circumstances and action taken.

FOR THE COMMANDER:

/s/ F. J. MATHEWS
Lt. Colonel, USAF
Director of Administrative Services

ATTACHMENT II

*JOINT AGREEMENT BETWEEN THE FIFTH REGION, FEDERAL AVIATION AGENCY AND THE ALASKAN AIR COMMAND IN RELATION TO THE USAF RADAR ADVISORY SERVICE IN ALASKA

Effective 10 JUL 1959

1. PURPOSE. This agreement establishes policy and procedures for the provision of radar assistance by USAF air defense radar units in Alaska to military and civil aircraft in flight. This service is known as the USAF Radar Advisory Service and is similar in principle to the USAF Radar Advisory Service provided by the Air Defense Command in the Continental United States.

2. SCOPE. Procedures outlined in this agreement will be used by air defense radar units and all civilian and military pilots using the USAF Radar Advisory Service.

3. GENERAL. The USAF Radar Advisory Service in Alaska is designed to assist aircraft in flight to avoid existing areas of potentially hazardous weather, terrain, restricted areas, and other conditions hazardous to flight. The procedures outlined in this agreement in no way change the emergency radar assistance procedures outlined in current aeronautical information publications.

4. RESPONSIBILITIES.

a. In the USAF Radar Advisory Service program no liability will be incurred by the United States Air Force in respect to assistance rendered to civil aircraft.

b. The responsibility for separation of aircraft within controlled airspace remains with the Federal Aviation Agency. Pilots or aircraft commanders not under the control of an air defense radar unit will retain responsibility for operations outside controlled airspace.

c. The USAF Radar Advisory Service will not be made available when the provision of such service interferes with the primary mission of the Alaskan Air Command or with normal FAA air traffic control functions.

5. PROCEDURES FOR RADAR ADVISORY SERVICE INITIATED BY PILOTS.

a. A pilot will request Radar Advisory Service through use of the call sign "STARGAZER" using the radio frequency published for this use in current aeronautical information publications. Example: "STARGAZER, THIS IS (Ident., Position, Heading), IFR/VFR FLIGHT PLAN, OVER." Thereafter the pilot will use the call sign of the radar unit which responds.

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*This Agreement supersedes Joint Agreement, Subject: CAA/USAF Radar Advisory Service to In-flight Aircraft, effective May 13, 1957 and a similar agreement dated 10/13 May 1957 signed by G. A. Whittaker for CAA and J. T. Shields for AAC.

b. Whenever airborne equipment permits, the pilot on an IFR flight plan will continue to guard the normal en route ATC frequency while in contact with the radar unit. When this is possible, it will not be necessary for the pilot to advise the ATC guard station that he is about to contact the radar unit for advisory service.

c. If it is necessary to leave the normal en route ATC frequency in order to contact the radar unit, the pilot on IFR flight plan will request permission (direct or via appropriate communications station) from ARTCC to leave the ATC frequency.

d. Except as outlined under paragraph 6a, vectoring of aircraft involving deviation from current IFR clearance will require prior ARTCC approval.

e. The pilot should immediately return to the normal en route frequency on receipt of one of the following:

(1) The procedural word "UNABLE" (used by radar units when advisory service cannot be furnished for any reason). The receipt of this word will be final and no further explantions will be required.

(2) Hazard information only, followed by "UNABLE".

f. The pilot should return to the normal en route frequency and report:

(1) When radio contact with the radar unit is lost.

(2) When notified by the radar unit that radar contact has been lost.

(3) When the advisory service is completed.

6. RADAR ADVISORY SERVICE INITIATED BY AN AIR DEFENSE RADAR UNIT.

a. Whenever an aircraft is observed by an air defense radar unit to be progressing off course and/or approaching hazardous terrain or any known condition which may jeopardize the safe conduct of the flight, the radar unit will immediately notify the pilot, using Guard frequency. Whenever this direct contact is made, the radar unit will immediately inform the appropriate ARTCC, through ADDC, of the circumstances and action taken.

b. If direct communication cannot be established immediately, the radar unit will continue its calls and simultaneously notify the associated ADDC of the situation; the ADDC will relay the information to the appropriate ARTCC for transmission to the aircraft concerned.

7. COMMUNICATIONS. Air defense radar units will monitor frequencies as directed by current Alaskan Air Command Communications - Electronics instructions.

Frequencies authorized for radar advisory service requests are published in the following aeronautical information publications:

a. FAA Alaska Flight Information Manual.

b. FAA Alaska Airman's Guide.

c. USAF/USN/RCAF/RCN Radio Facility Charts (Alaska, Canada and N. Atlantic).

d. USAF Jet Flight Information, Alaska - Enroute and Terminal Flight Information (High Altitude) - Alaska.

/s/ G. A. Whittaker
Chief, Air Traffic Control Division
FAA, Fifth Region

Date July 6, 1959

/s/ Clinton C. Wasein
Deputy Chief of Staff/Operations
Alaskan Air Command

Date July 7, 1959