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NATIONAL SEVERE STORMS PROJECT

REPORT No. 14

Field Operations of the National Severe Storms Project in Spring 1962

by
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CONTENTS

FIELD OPERATIONS OF THE NATIONAL SEVERE STORMS PROJECT IN SPRING 1962

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I. INTRODUCTION

The 1962 field operations of the National Severe Storms Project (NSSP) were carried out in Oklahoma during the period, April 23 to June 8. These operations involved the active collaboration of several agencies whose activities were coordinated by NSSP through a field office situated at Will Rogers Field, Oklahoma City. The agencies which participated in the 1962 program under the code name, "Project Rough Rider", are the U.S. Air Force's Aeronautical Systems Division (ASD), Geophysics Research Directorate (GRD), Air Defense Command (ADC), and Air Weather Service (AWS), the Federal Aviation Agency (FAA), the 3rd Target Acquisition Battalion, U. S. Army Artillery and Missile School, Fort Sill, Okla., the U. S. Naval Research Laboratory (NRL), and the U. S. Weather Bureau's National Severe Storms Project (NSSP), Research Flight Facility (RFF), and various field stations. Important technical and financial support to the project was provided by the National Aeronautics and Space Administration (NASA). Participating under Weather Bureau contracts were the University of Chicago, the Cornell Aeronautical Laboratory (CAL), the Electronics Division of General Mills, Inc. (GM), and the University of Oklahoma, which also provided space and facilities for the Weather Bureau's continuous-wave Doppler, and M-33 radars.

As indicated in previous reports in this preprint series [1, 2, 3], this project has evolved from the Weather Bureau's earlier Tornado Research Airplane Project (1956-1959) and the cooperative National Severe Local Storms Research Project (1960) into the present joint effort by several governmental agencies to study the structure of, and phenomena associated with, the severe Great Plains thunderstorms, and the environments in which these storms grow. The participating groups were drawn together by common interests in various aspects of the severe local storm problem and have complementary objectives and facilities without which a project of this scope could not be undertaken.

The purpose of this report is to indicate the scope of the field operations conducted in 1962, and to indicate what data are available for research use as a result of these operations. No attempt has been made at this time to present actual data or findings based thereon. Such research results will appear later in the NSSP Report (preprint) series, as publications of the participating agencies, and as formal articles in the regular scientific journals. It should be stated that the volume of data collected is such that the existing Weather Bureau staff of NSSP cannot adequately research all the data on a current basis and consequently must at present confine itself to the cases which appear to hold the most promise for advancing our knowledge of severe convective storms. It is to be hoped that other interested research groups will avail themselves of the data for research use.

2. PLANNING AND OBJECTIVES

The basic objectives of NSSP have been outlined in NSSP Report No. 1 [3]. An Operational Guide [4] which was prepared for use in the 1961 field operations contains basic operational plans which have been revised each year on the basis of current observational facilities and the experience gained in the preceding years. A joint meeting of the NSSP Advisory Panel and operational groups was held at Norman, Okla. on February 16, 1962, to review the results of the 1961 field program and to develop plans and objectives for the 1962 season. A list of Advisory Panel members and other participants at this meeting is given in Appendix V.

3. FACILITIES

The 1962 operations saw a number of significant changes in the facilities which had been available in 1961. These included (1) the discontinuance of the AWS sferics network, (2) the loss (through reassignment elsewhere) of the AWS mobile "Tornado Alley" rawinsonde stations, (3) the addition of an M-33 radar set sited on the north campus of the University of Oklahoma at Norman, (4) the addition of a new CAL pulsed-Doppler radar sited at Chickasha, Okla., (5) the addition of two sets of General Mills "SPARSA" 500 kilocycles per second sferics equipment situated so as to permit triangulation on sferics activity over the NSSP surface networks, (6) the addition of a program (NRL-RFF) to test the feasibility of using instrumented drone aircraft as thunderstorm probes, (7) the addition of a WV-2 aircraft of NRL instrumented primarily for electric field and related studies, and (8) changes in aircraft and in their instrumentation. A description of the observational facilities follows.

A. *Staging Area*

The staging area for the 1962 season was Oklahoma City. Operational headquarters were located in Hangar 2 at Will Rogers Field, on the opposite side of the hangar from the Weather Bureau Airport Station. The four aircraft of the U. S. Weather Bureau's Research Flight Facility (RFF) were based at Will Rogers Field in an adjacent hangar. Military aircraft, including the T-33 and F-100F of ASD, the C-130 of GRD and the WV-2 of NRL, made use of Tinker Air Force Base. The U-2 was stationed at Edwards Air Force Base, Calif., and was available upon request. A launch site for the KDB-1 drone aircraft was provided on the Fort Sill Military Reservation. At the Oklahoma City WSR-57 radar site, VHF and UHF dual radio communications were used for aircraft control. "Hot line" communications connected the operational headquarters with the Severe Local Storms Forecast Center (SELS) in Kansas City and with the various field operation sites. Weather teletypewriter and facsimile equipment, and a repeater scope from the WSR-57 radar were installed at the headquarters and were used, in conjunction with information received from SELS, in the planning and conduct of each day's operation.

B. *Radar*

The WSR-57 at the Oklahoma City Weather Bureau station and a synchronized AN/MPX-7 IFF interrogator were used in control of the aircraft during cloud penetrations and during other flights in range of the radar. Precipitation echoes, IFF, and "skin paint" returns from aircraft were displayed, jointly with a video map of the high altitude airways, on a repeater scope utilized

by FAA controllers assigned to NSSP. The same information, minus the airways map, was photographed on the WSR-57 scope. Use of radar in control of penetration aircraft has been described earlier by Van Thullenar [5].

Other radars (CPS-9, FPS-6 and FPS-10) in the Oklahoma City area having both PPI and RHI capability took part in a coordinated program designed for quantitative studies of precipitation intensities. Automatic video attenuation on the Weather Bureau's WSR-57 and the Air Weather Service's CPS-9 made reflectivity studies possible during cumulonimbus penetrations and throughout prearranged radar programs. The tracking capability of the M-33 radar was used for serial low-level wind soundings in the vicinity of convective activity, and for vertical echo height measurements. The results of the M-33 operations are presented in a contract report to the Weather Bureau by the University of Oklahoma Research Institute [6]. Scope photography (35 mm.) was provided on four radars in the Oklahoma City area. Additional coverage in the area of operational interest was provided by other radar sites as shown in figure 1. Scope photography was requested from these stations on the basis of the expected areas of convective activity.

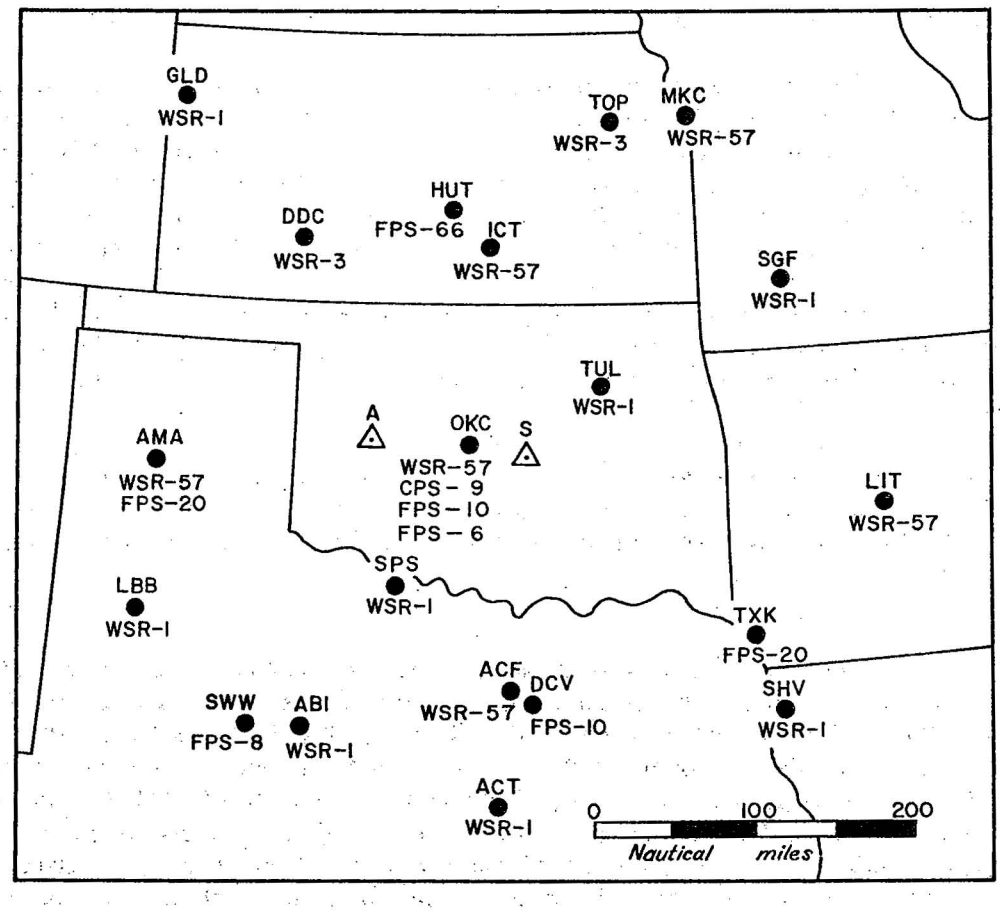

Figure 1.— Types of radars and locations where scope photography was available during 1962 operations of NSSP. Locations of "SPARSA" sferics sites at Arapaho (A) and Shawnee (S) are indicated by triangles.

In addition to the weather search radars, two Doppler radar sets were operated to determine their capability of observing the horizontal and vertical wind speeds in thunderstorms from the motion of water particles. The Weather Bureau's CW Doppler set was located on the north campus of the University of Oklahoma at Norman. An experimental pulsed Doppler radar was operated by personnel of Cornell Aeronautical Laboratories from a site at Chickasha, Okla. (25 n. mi. southwest of OKC), under contract to the Weather Bureau. Some operational difficulties were experienced with both sets, and the significance of the data obtained has not yet been verified. Results of the CAL Doppler radar operation are presented in a contract report to the Weather Bureau [7].

C. *Upper-Air Network*

The removal of eight Air Weather Service rawinsonde stations formerly within the area of figure 2 reduced the network in 1962 to the regular Weather Bureau stations supplemented by the Army station at Fort Sill, Okla. where special observations were provided on request. Within a 250-n. mi. radius of Oklahoma City, the number of stations making regular twice-daily soundings (plus special observations on request) was reduced from 10 in spring 1961 to 5 in spring 1962.

Regularly scheduled rawinsonde observations at the Weather Bureau Stations (0000 and 1200 GMT) were supplemented by (a) nearly 150 special or serial ascents made, usually at 90-minute or 3-hour intervals, by selected stations upon request from NSSP, (b) 195 special observations at 1800 GMT (noon CST) upon request from the Severe Local Storms Forecast Center, and (c) more than 100 special or serial observations provided by Fort Sill either in response to requests by NSSP or in fulfillment of their own requirements. In addition, records from a large number of serial low-level wind soundings made for local needs at Fort Sill have been provided to NSSP. The 1962 upper-air network is shown in figure 2, in which the stations providing serial soundings on request are indicated by the letter "S".

The rawinsonde data were supplemented by dropsonde releases made in areas of interest by the DC-6 aircraft. A total of 38 successful dropsonde releases was made during the season. The times and the positions of the releases are tabulated in Appendix III-A.

D. *Sferics Network*

Two sets of "SPARSA"[1] sferics equipment were installed and operated during the operational season by personnel of the Electronics Division of General Mills, Inc. The locations of the units at Shawnee, Okla., (39 st. mi. east of OKC) and at Arapaho, Okla. (80 st. mi. west of OKC) were selected with the objective of permitting triangulation over the NSSP "Alpha and Beta" surface networks with angles of intersection near 90° and also of permitting correlation with radar observations at Oklahoma City (see fig. 1). This equipment monitors sferics at 500 kilocycles per second with a maximum range of about 200 miles and provides an output of sferics count rate in each 5.6° sector of the azimuth circle. Data from each sector are usually recorded once every 8 minutes. Operation was continuous, 24 hours daily. A description of

[1] A contraction for "Sferics Position Azimuth Rate and Spectrum Analyzer."

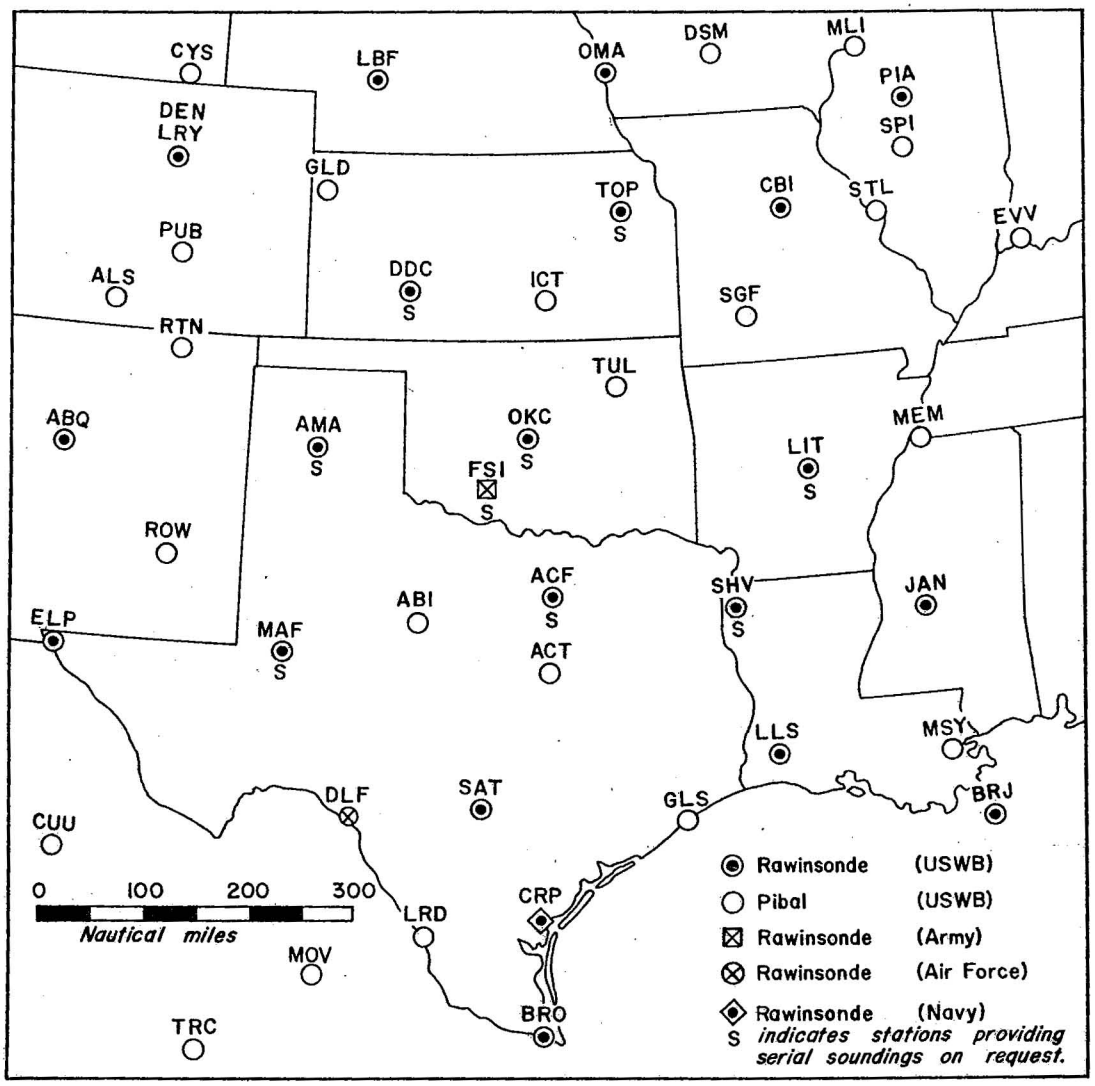

Figure 2.- Upper-air network during 1962 NSSP operations. Stations which provided serial rawinsondes on request are designated by the letter "S" beneath the station circle.

the operation of these units and partial analyses of some of the data collected are presented in a contract report to the Weather Bureau by the General Mills Electronics Group [8]. An abridgement of the General Mills report has been published as NSSP Report No. 13 [9].

E. *Aircraft*

Nine instrumented aircraft actively participated in the 1962 operations. Two other GRD aircraft (B-47 and U-2) provided additional high-level photographic coverage on five days. Two Beech KDB-1 drone aircraft with instrumented wing tip pods were used for feasibility tests to determine whether unmanned radio controlled aircraft could satisfactorily be used for high-level (25,000 to 40,000 ft.) penetrations of thunderstorms. One DC-6 (39C) which was equipped to serve as a control aircraft for the drones made 15 flights on 10 days in support of this program. The drone program did not yield any meteorological information in 1962.

A total of 102 meteorological flights was made on 33 days, involving from 1 to 7 aircraft on a single day. The ASD penetration aircraft (T-33 and F-100F) made a total of 23 flights on which a total of 115 thunderstorm penetrations was made. In general, the use made of the aircraft was dictated by their altitude capabilities and instrumentation. The B-26 was used at the lower altitudes (4,000 to 10,000 ft.), the DC-6's and WV-2 at low to medium altitudes (5,000 to 20,000 ft.), the C-130 at low, medium, and high altitudes (up to 30,000 ft.), and the T-33 and F-100F at altitudes from 15,000 to 40,000 ft. The B-57 was normally operated at 30,000 to 45,000 ft. and the U-2 above 60,000 ft. Table 1 indicates the period during which each aircraft was available, while table 2 gives a listing of the meteorological and navigational data observed and/or recorded on each aircraft.

Table 1. Availability of Observing Facilities[2]

B-26 (WB-RFF)	April 23 - June 8
DC-6 (39C) (WB-RFF)	April 23 - May 25
DC-6 (40C) (WB-RFF)	April 23 - May 25
B-57 (WB-RFF)	April 23 - June 6
T-33 (ASD)	May 4 - June 6
F-100F (ASD)	May 4 - June 6
U-2 (GRD)	May 21 - June 8
C-130 (GRD)	May 11 - June 1
WV-2 (NRL)	April 25 - May 10
KDB-1 Drones (NRL)	April 23 - May 11
Radar Program	
OKC WSR-57	April 21 - June 8
TIK CPS-9	April 26 - June 1
OKC FPS-6	April 26 - June 6
OKC FPS-10	April 27 - May 16
Other Stations	April 26 - June 8
Pulsed Doppler radar (CAL)	April 30 - June 15
CW Doppler radar (WB)	May 20 - June 7
M-33 radar (WB - Univ. of Okla.)	May 16 - June 15
Sferics (General Mills)	May 12 - June 29
Rawinsonde serials (WB & U.S. Army)	April 26 - June 8
Alpha surface network	March 1 - June 30
Beta surface network	March 1 - June 30
Tiros IV cloud photography	March 30 - June 10 (intermittent coverage of area)

[2]Not all aircraft were available on every day of the indicated periods. Maintenance and other commitments resulted in various aircraft being unavailable for approximately 28 aircraft-days.

Table 2. NSSP Aircraft Observational Capability

ATMOSPHERIC PARAMETERS	DC-6	B-57	B-26	T-33	F-100F	C-130	U-2	WV-2
Temperature	DP	DP	AP	A	A	A	A	U
Humidity (or dew point)	DP		AP			A		U
Wind Speed and Direction	DP	DP	C				C	
Pressure (absolute)	DP	DP	A					
Pressure Altitude	P	P	P	A	A	A	A	U
Radar Altitude	DP	DP				M	M	
"D" Value	DC	DC						
Gusts (lateral & vertical)				A	A			
Refractive Index						A		U
Electrical Field Strength (3-dimensional)					A	A		U
Electrical Field Strength (vertical)							A	
Space Charge								U
Aircraft Charge						A		
Atmos. Electr. Conductivity								U
Static Discharge Current				A	A			
Condensation Nuclei Count								U
Liquid Water Content					A	A		
Drop Size Camera				F	F			
Droplet Sampler						A		
Luminous Intensity in Cloud						A		
Hail Mass (strain gage)				A				
Hail Camera					F			
Infrared Radiometer							A	
Ozone Concentration							A	
Weather Search Radar	F	F	F			F		
Cross-Section Radar	F							
Cloud Photography								
Time Lapse	F	F				F	70 mm.	
Movie			F					
Still	F		F			F	F	
Dropsondes	M							
In-Flight Comments	M	M	T	T	T	T	T	M

D = Digital Recorder
A = Analog Recorder
P = Photopanel
M = Manually Recorded
F = Film
C = Computed From Recorded Data
T = Tape Recorder
U = Recording Method Not Known

Table 2. (Cont'd) NSSP Aircraft Observational Capability

AIRCRAFT PARAMETERS	DC-6	B-57	B-26	T-33	F-100F	C-130	U-2	WV-2
Position.....	DP	DP	AP				A	
Heading (magnetic).....	DP	DP	AP			A	A	
Track.....			AP			A		
Drift.....	DP	DP	AP				A	
Pitch.....	DP	DP				A		
Roll.....	DP	DP				A		
Air Speed (indicated)...	DP	DP	AP	A	A	A	A	
Air Speed (true).....	DP	DP	C	C	C	C	C	
Ground Speed.....	P	P	AP				A	
Distance Traveled.....	D	D						
Time.....	DP	DP	AP	A	A	A	A	
IFF Transponder.....	X	X	X	X	X	X	X	
Doppler Radar Navigation	X	X	X				X	

D = Digital Recorder
A = Analog Recorder
P = Photopanel
M = Manually Recorded
F = Film
C = Computed From Recorded Data
T = Tape Recorder
U = Recording Method Not Known

F. *Surface Networks*

The NSSP Alpha and Beta networks were in continuous operation from March 1 through June 30, 1962. Except for improved wind recorders at the Beta network stations, the networks were essentially the same as in 1961. A detailed index and description of the 1961 networks has been prepared by Fujita [10].

Stations in the Alpha network (fig. 3) are spaced at intervals of 30-50 n. mi., and the network covered Oklahoma, the southern half of Kansas, and the northern two-thirds of Texas. The approximately 200 stations were all instrumented with 12-hour microbarographs, and approximately 150 of these were also instrumented with 12-hour hygrothermographs and 24-hour recording rain gages.

Stations in the Beta network (fig. 4) are spaced in oblique checkerboard fashion in a 6 by 6 array at intervals of 10-15 n. mi. The network covered that portion of southwest-central Oklahoma that lies between Oklahoma City, Okla., and Wichita Falls, Tex. The 36 stations were instrumented with 12-hour microbarographs and hygrothermographs, 24-hour recording rain gages, and wind recorders. Wind speed was continuously recorded, and wind direction was recorded at 1-minute intervals to 16 points of the compass.

Appendix IV contains further discussion of the Alpha and Beta network data along with a condensed tabulation of significant features revealed by a preliminary examination of the 1962 data. Examples of analyses of some of these interesting features are also presented.

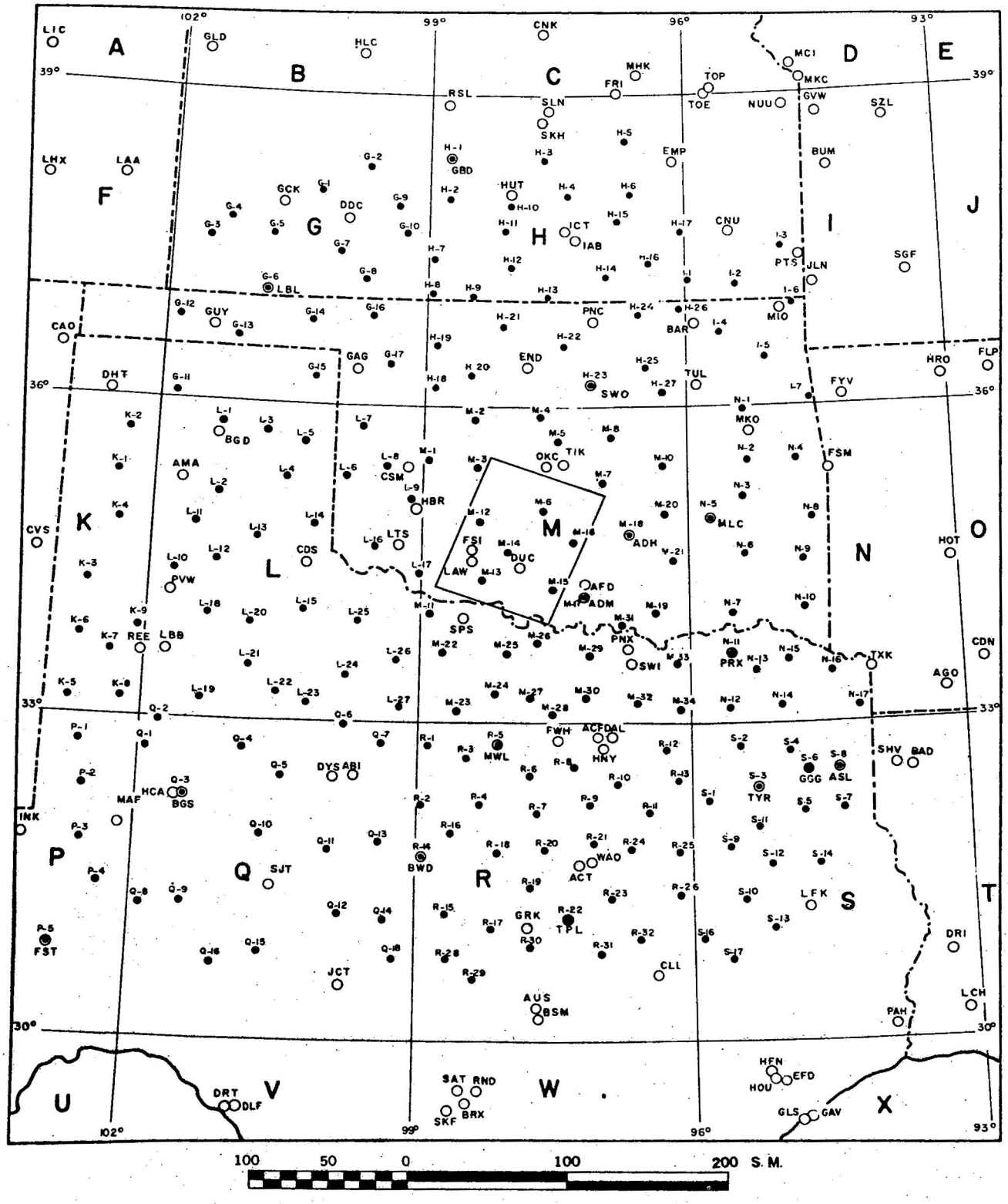

Figure 3.- NSSP Alpha surface network, 1962. Quadrilateral outlines the Beta surface network (see fig. 4).

During the 1962 season the Soil and Water Conservation Research Division, Agricultural Research Service, U.S. Department of Agriculture, Chickasha, Okla., operated a network of 170 recording rain gages, which were spaced at 3-mile intervals. The network was located partly in the northwest portion of the NSSP Beta network covering the Washita watershed. These data are very accurate and very complete. Although the Agricultural Research Service has had no formal association with NSSP, arrangements can be made to obtain the rain gage data.

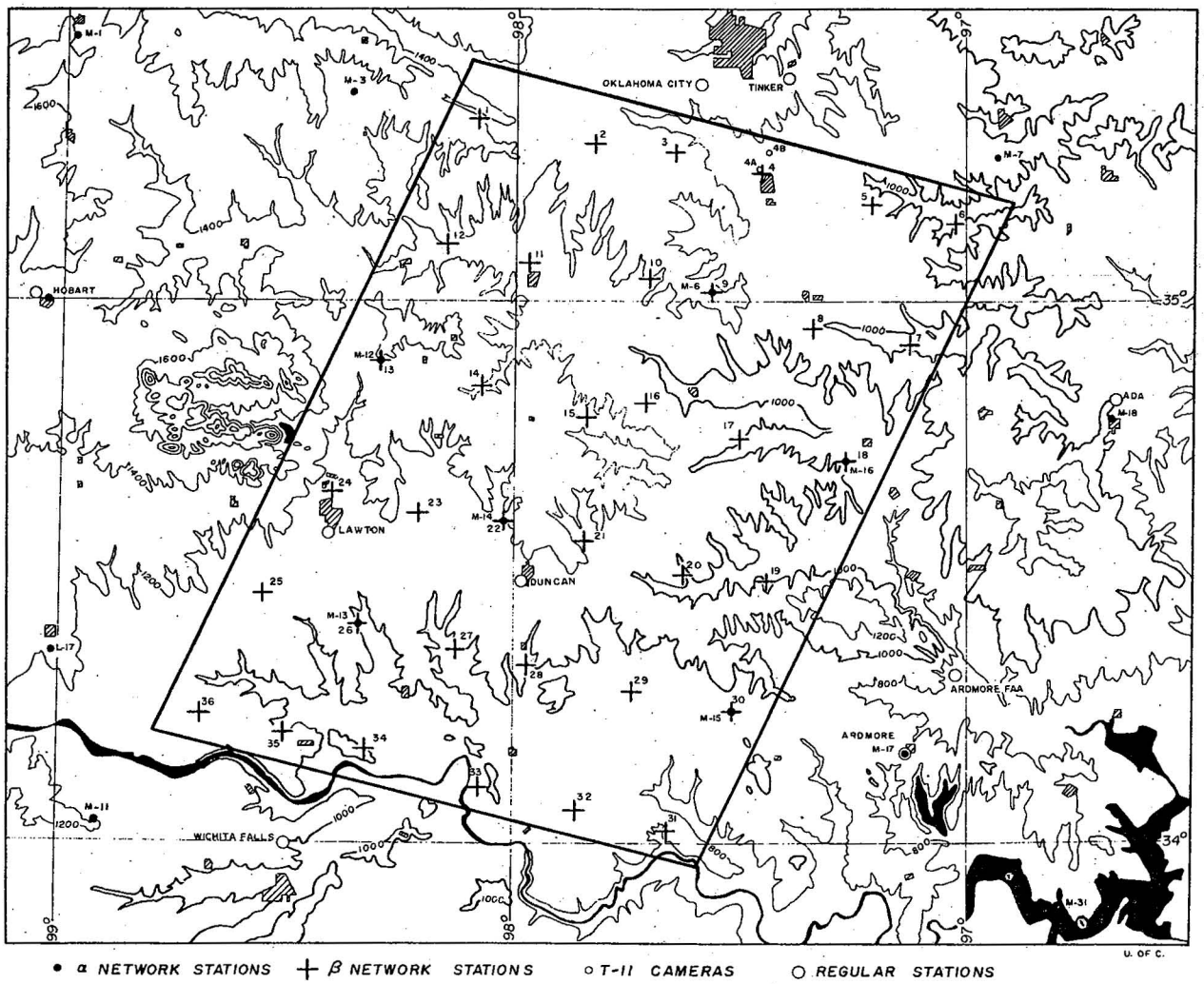

Figure 4.– NSSP Beta surface network, 1962

4. OPERATIONS

The planned operational period for the aircraft investigations and for most other phases of the field program was from April 23 through June 8. Exceptions were the Alpha and Beta surface networks which were operated for the longer period of March 1 through June 30 and certain other facilities that were operational over different periods as indicated in table 1. The

operational period encompasses the two distinct peaks in the frequency of occurrence of tornadoes and hail in Oklahoma which are centered near the end of April and near May 20.

Each day's operations involved the analysis of pertinent surface and upper-air synoptic charts and soundings and the utilization of severe storm forecasting procedures to determine the probable areas of organized convective activity, or of other objectives for aircraft investigation. The objectives for the day were determined on the basis of the nature of the expected activity. Requests were then made for the desired supplemental observations such as radar scope photography, serial rawinsondes, etc. A briefing for the flight crews and meteorologists was held to discuss the meteorological situation and the day's flight objectives. Flight patterns were prepared for the participating aircraft, designed to meet these objectives. In many cases where these involved data sampling in or near mature convective cells, the decision on flight patterns necessarily awaited the convective development as observed on radar. This applied in particular to the ASD penetration aircraft (T-33 and F-100F) and occasionally to the GRD C-130. Following the termination of each mission, debriefings were conducted which were tape recorded for later transcription.

The aircraft of each participating agency (ASD, GRD, NRL, WB-RFF) were instrumented differently to accomplish certain primary objectives as well as to contribute to the program as a whole. These differences in instrumentation and objectives determined to some extent the type of investigation for which each aircraft was used. In spite of the diverse, but nevertheless complementary, objectives of the participating groups, a very high degree of cooperation was evidenced by all. The basic meteorological observations made by each aircraft are indicated in table 2.

Appendix I, NSSP Aircraft Operations, is a list of the dates on which the aircraft were flown and brief summary of the flight objectives.

Appendix II is a list showing the individual aircraft and the days on which flights were made.

Appendix III is an operational log which indicates the observational activity on each day and the times that aircraft were flying or that other observational facilities were in use. This covers all facilities except the NSSP surface networks which were in continuous operation.

5. DATA PROCESSING AND ARCHIVING

The general plan is to process the 1962 data as rapidly as possible and to archive it either at the National Weather Records Center (NWRC) at Asheville, N.C., or at NSSP, Kansas City, Mo. Users may obtain data from regular surface, upper-air, and radar programs directly from NWRC. Aircraft data and data from special programs (e.g., Doppler radar, sferics, etc.) may be obtained through NSSP, Kansas City, Mo. At the time of this report, some of the aircraft data are still being processed. Also, some of the data from the surface networks are being retained by NSSP, Kansas City, for research use. Inquiries regarding availability of data may be addressed to Director, NSSP, U.S. Weather Bureau, Room 710 Federal Office Building, Kansas City 6, Mo.

The following is a listing of the data gathered, its form, and its availability.

A. *Radar*

Film from Weather Bureau radar stations is archived at NWRC. Film from other radar stations is filed at NSSP, Kansas City. Aircraft radar film is, for the present time, archived at NSSP, Kansas City. Data from the Weather Bureau CW Doppler radar, which was operated at Norman, Okla., is on magnetic tape and polaroid scope photographs which are stored at NSSP, Kansas City. Data from the CAL pulsed Doppler radar has been analyzed by CAL and results published in a contract report to the Weather Bureau [7]. Observational data from the M-33 radar which was operated at Norman, Okla., by the Atmospheric Research Laboratory of the University of Oklahoma Research Institute, are presented in a contract report to the Weather Bureau [6].

B. *Special and Serial Rawinsonde Observations*

Original Forms WBAN-31A, -31B, and -31C (WB Forms 610-14A, -14B, and -14C) and WBAN-20 (WB Form 610-12) for the Weather Bureau stations are archived at NWRC. The original records for the observations made at Fort Sill are filed at NSSP, Kansas City.

C. *Sferics Data*

Original observational records from the sferics stations operated at Shawnee and Arapaho, Okla., by the General Mills Electronics Group have been retained by that organization. These data have been processed and some results presented in a final contract report submitted to NSSP [8] and in NSSP Report No. 13 [9]. Original observational data can be obtained through NSSP, Kansas City.

D. *Aircraft Data*

A substantial portion of the aircraft data have now been processed. The majority of the data will be archived at NSSP, Kansas City.

Many of the aircraft crews maintained flight logs, recorded in-flight comments, or participated in debriefing sessions. Transcripts of these are on file at NSSP, Kansas City. Specific additional data from the various aircraft are handled as follows:

(1) ***RFF B-26.*** Visicorder and photopanel data have been digitized and machine processed at NSSP. Ten-second printouts of meteorological and navigational parameters are on file at NSSP. Airborne-radar film and cloud camera film are archived at NSSP, Kansas City.

(2) ***RFF DC-6 (39C), DC-6 (40C), and B-57.*** Digitally recorded data from these aircraft have been machine processed by RFF at Miami, Fla. to yield printouts of meteorological and navigational parameters. Two sets of printouts will be provided to NSSP, one at 1-sec. intervals, the other at 10-sec. intervals. Airborne PPI and vertical cross-section radar film and nose and side cloud camera film are archived at NSSP, Kansas City. Dropsonde observations and WBAN-31A's are archived at NSSP, Kansas City.

(3) ***ASD T-33 and F-100F.*** Data from these aircraft are being processed by ASD. The data will be studied by ASD first, but portions of the reduced data will be supplied to NSSP, Kansas City, as soon as they become available.

Because of the complexity of data reduction from these aircraft, the complete data may not be available until the latter part of 1963.

(4) *GRD U-2.* Flight logs and prints or film copies of the 70 mm. film from the 180°-sweep tracking camera are archived at NSSP, Kansas City. Printouts of meteorological and navigational data will be supplied to NSSP when available.

(5) *GRD C-130.* Copies of radar film, microfilm of oscillograph recorder traces and calibration charts, and prints of cloud photographs from the T-11 cameras will be archived at NSSP, Kansas City. Selected portions of the data will be reduced and analyzed by GRD and may be published in reports prepared by that organization.

(6) *GRD B-47.* Prints of cloud photographs made on the single flight by this aircraft will be archived at NSSP, Kansas City.

(7) *NRL WV-2.* Data are being retained and analyzed by the Naval Research Laboratory. Reports will be published by NRL.

E. *Surface Network Data*

Original barograms, hygrothermograms, wind recorder charts, and rain gage charts of the Alpha and Beta networks have been edited, microfilmed, and bound by days. These charts and the microfilm will be retained at NSSP, Kansas City, while being used for research. The original charts will be deposited at NWRC at a later date.

Charts from the recording rain gage network operated by the Soil and Water Conservation Research Division, Agricultural Research Service, U.S. Department of Agriculture, Chickasha, Okla., are retained by that group. Copies of these charts for selected cases have been obtained by NSSP and will be archived at Kansas City. Arrangements to obtain data for other dates can be made through NSSP, Kansas City.

F. *TIROS Photography*

Information regarding TIROS satellite photography presented in this report has been extracted from the series of catalogue preprints issued by the National Weather Satellite Center, U.S. Weather Bureau, Washington 25, D.C. Preliminary nephanalyses and additional information are given in the catalogues. The procedure for obtaining copies of the TIROS master films either in the form of positive transparencies or duplication negatives is indicated in the catalogues.

6. ACKNOWLEDGMENT

I am indebted to Mr. D. T. Williams for the compilation of material relating to the NSSP surface networks presented in the body of this report and in Appendix IV. The assistance of Mr. A. B. Arnett in the preparation of the daily operational log and the summary of aircraft operations is also gratefully acknowledged.

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APPENDIX I

1962 NSSP AIRCRAFT OPERATIONS

April 23 DC-6 (39C) flew to Fort Sill to participate in feasibility test of KDB-1 drones.

April 24 DC-6 (39C) flew in conjunction with drone tests at Fort Sill.

April 26 B-57 flew investigation of wind and temperature fields and turbulence at 40,000 ft. over western Oklahoma and northern Texas. B-26 and DC-6 (40C) made low- and middle-level meteorological measurements in area of convective activity in northwestern Oklahoma and Texas Panhandle. DC-6 (39C) flew in support of drone test flight at Fort Sill. WV-2 flew a cloud physics mission in advance of a squall line in southwestern Oklahoma.

April 27 B-57 flew an investigation of high-level wind and temperature fields and clear-air turbulence in a zone of strong horizontal wind shear over southern Oklahoma, northern Texas, and southwestern Arkansas.

April 29 WV-2 flew in southwestern Oklahoma and Texas Panhandle to investigate "dry-line" and obtain a fair-weather profile of atmospheric electrical parameters.

April 30 DC-6's (39C and 40C) flew cloud photography, airborne radar, and dropsonde missions, and B-26 investigated low-level moisture-temperature-wind field in vicinity of active line of thunderstorms in south central Oklahoma and northeastern Texas. B-57 investigated high-level wind and temperature fields over southeastern Oklahoma.

May 1 DC-6 (39C) flew in support of drone feasibility test. WV-2 flew a mission to obtain fair-weather profile of atmospheric electrical parameters.

May 2 B-26 flew a low-level investigation of moisture, temperature, and wind in area of suspected moist tongue between Ardmore and Amarillo. WV-2 investigated an isolated finger of space charge south of Fort Sill.

May 3 DC-6 (39C) flew in support of drone tests at Fort Sill.

May 4 B-26 flew a step pattern to sample the moisture and temperature field beneath convective cloud bases between Ardmore and Lawton, Okla. DC-6 (40C) flew a cloud photography-dropsonde-radar mission in southern Oklahoma and north central Texas. B-57 sampled high-level wind and temperature field between Tulsa and Waco. WV-2 investigated electrical parameters in an area of forecast convective activity which failed to develop. T-33 and F-100 made test flights.

May 5 B-26 and DC-6 (40C) performed a "dry-line" investigation in southwestern Oklahoma and the Texas Panhandle at 4,000 ft. to 7,000 ft. MSL with dropsondes in moist and dry air. F-100F and T-33 flew a penetration mission with three penetrations of a cell 145 n. mi. SW of OKC.

May 6 B-26 flew an investigation of the low-level moisture field across southern Oklahoma while DC-6 (40C) made 6 dropsondes in same area.

May 7 DC-6 (39C) flew in support of drone tests at Fort Sill.

May 8 T-33 and F-100F flew 4 penetrations each of a thunderstorm 120 n. mi. west of Oklahoma City. (T-33 sustained slight hail damage.) WV-2 flew an investigation of an active squall line in western Oklahoma. DC-6 (39C) flew to Fort Sill for drone tests.

May 9 WV-2 flew an investigation of a dry line in the Texas Panhandle. DC-6 (39C) flew in conjunction with drone tests at Fort Sill.

May 11 DC-6 (39C) flew in conjunction with drone tests at Fort Sill.

May 14 DC-6 (40C) flew dropsonde-cloud photography mission in southwestern Oklahoma and Texas Panhandle while B-57 made high-level meteorological measurements and cloud photography over the same area and in the vicinity of cumulonimbus tops. C-130 flew a photographic and electric field investigation of growing cumulus.

May 15 T-33 and C-130 flew a coordinated mission investigating a thunderstorm 100 n. mi. northwest of Oklahoma City. Cloud top measurements by T-33 were correlated with height measurements by WSR-57, CPS-9, and FPS-6 radars at Oklahoma City. C-130 provided electric field and photographic support for T-33 penetrations of cumulus clouds in the developing stage. U-2 flew over western Oklahoma and Kansas, passing over area of penetrations. B-26 flight with objective of statoscope and accelerometer measurements in vicinity of precipitating cell was terminated due to lack of suitable cells.

May 16 B-57 and DC-6 (40C) investigated an active squall line between Amarillo and Lubbock, Tex. B-57 conducted meteorological sampling and photography around the top of a strong cell which exhibited a hook echo on aircraft radar. DC-6 made cross-section radar photography and meteorological sampling with dropsonde releases on both sides of line and near edge of cells. C-130 and F-100F flew coordinated penetrations and electric field investigation of small cumulus buildups west of Oklahoma City.

May 17 B-26 and DC-6's (39C and 40C) flew missions over northwestern Oklahoma and northern Texas Panhandle to sample environment on east side of an active squall line. Dropsonde releases were made by DC-6 (40C). B-57 investigated a difluent region in the high-level wind field over southwestern Oklahoma and northwestern Texas.

May 18 DC-6's (39C and 40C) and B-57 flew missions over western Oklahoma in an area of expected convective activity which did not develop. DC-6 (39C) and B-57 terminated mission while 40C proceeded northward, making cloud photography and cross-section radar investigation of back side of squall line extending from south central Kansas into southeastern Nebraska. Several funnel clouds sighted by aircraft crew. C-130 investigated an apparent radar "thin line" 125 mi. southeast of Oklahoma City and found it to be a narrow band of growing altocumulus.

May 20 T-33, F-100F, and C-130 flew a coordinated penetration mission 70 mi. northwest of Oklahoma City. A second penetration mission was flown by T-33 and F-100F about 100 mi. southwest of Oklahoma City.

May 21 B-26, DC-6 (40C) and C-130 flew a "dry-line" investigation in western Oklahoma and Texas Panhandle. The C-130 and DC-6 (39C) then proceeded to the southern end of a squall line in southern Kansas where C-130 made radar and electric field observations and DC-6 flew a radar and dropsonde mission. Photography and electric field measurements were also made in the same area by the U-2.

May 22 B-26 and DC-6 (39C) flew meteorological and radar investigation of active squall line in northeastern Oklahoma and southeastern Kansas, with DC-6 continuing investigation of squall line northward to Kansas City. Hail and tornadoes were reported in this line. B-57 made measurements in vicinity of tops of strong cells in southeastern Kansas. C-130 made electric field measurements in connection with penetration missions of T-33 in eastern Oklahoma. T-33 made 17 penetrations on two flights.

May 23 T-33 made 10 penetrations of a cell 50 mi. southeast of Oklahoma City and made cloud top measurements for correlation with WSR-57, CPS-9, and FPS-6 radar height determinations. Aircraft encountered hail during penetrations. Three-inch hail was reported from this cell.

May 24 DC-6 (39C) conducted low-level pre-activity sampling in northwestern Oklahoma, southwestern Kansas, and Texas Panhandle, and then investigated strong cells in vicinity of Childress, Tex. and Altus, Okla., making four dropsondes near cells. B-26 flew statoscope investigation in southwestern Oklahoma, encountering severe turbulence and hail. T-33 and F-100F made penetrations in same area, with both aircraft sustaining hail damage. U-2 made cloud top temperature and electric field measurements and photography in the same area. Tornadoes were reported from the cells investigated.

May 25 B-26 and DC-6's (39C and 40C) flew a mission to obtain a vertical cross-section of meteorological parameters between Wichita, Kans., and Little Rock, Ark., between 850 and 500 mb. B-57 and U-2 conducted a cloud-top sampling and photographic mission in western Oklahoma. Photography was also made in this area by GRD B-47 after departing Tinker Field and by a second U-2.

May 26 C-130 flew photographic and cloud physics investigation of severe squall-line activity in southwestern Oklahoma.

May 28 U-2 flew a mission over a squall line in the vicinity of Oklahoma City. Squall-line activity at Oklahoma City prevented use of other aircraft.

May 29 B-57 flew a mission to study the kinematic properties of the jet stream between Little Rock, Oklahoma City, and Garden City, Kans.

May 30 T-33 made 7 penetrations of strong cells 120 mi. north of Oklahoma City, sustaining hail damage and lightning strikes. U-2 made high-level photography on a flight across northern Texas.

May 31 B-26 made meteorological measurements in the sub-cloud layer in the "Caprock" area of the Texas Panhandle while B-57 investigated the high-level wind and temperature fields in this area. The T-33 and F-100F each flew 2 penetration missions with a total of 15 penetrations of thunderstorm cells in south central Kansas, supported by the C-130. DC-6 (40C) made a night-time flight with east-west traverses across northern Texas at 3,000 and 8,000 ft. to collect data on the low-level jet stream. The U-2 investigated an area of severe thunderstorm activity over southwestern Oklahoma and northern Texas.

June 1 U-2 flew a cloud photography mission between Little Rock, Ark. and Amarillo, Tex.

June 2 F-100F flew a penetration and cloud height mission 50 mi. northeast of Oklahoma City, making 8 penetrations.

June 4 U-2 investigated squall-line activity over eastern New Mexico and eastern Colorado.

June 5 B-26, T-33, F-100F, and U-2 investigated a very intense cell in northwestern Oklahoma. Statoscope and accelerometer measurements were made by B-26. A total of 12 penetrations were made by T-33 and F-100F in which severe turbulence, hail, and lightning were encountered. Two tornadoes were observed and photographed by the B-26 crew. Cloud-top measurements and photography were made by the U-2 at the time of the penetrations.

June 6 F-100F made penetrations of a weak thunderstorm cell in southwestern Oklahoma. B-26 was unable to complete its mission due to lack of activity, and B-57 aborted because of mechanical trouble. U-2 flew a photographic mission between Amarillo, Tex., and Little Rock, Ark.

June 8 B-26 made two flights in southern Oklahoma for statoscope measurements beneath rain showers. U-2 investigated intense squall-line activity in west Texas.

APPENDIX II

INDIVIDUAL AIRCRAFT FLIGHT DAYS[3]

DC-6-39C.....April 23*, 24*, 26*, 30, May 1*, 3*, 4*, 7*, 8*, 9*, 11*, 17, 18, 21, 22, 24, 25.

DC-6-40C.....April 26, 30, May 4, 5, 6, 14, 16, 17, 18, 21, 25, 30-31.

B-57.....April 26, 27, 30, May 4, 14, 16, 17, 18, 22, 25, 29, 31, June 6.

B-26.....April 26, 30, May 2, 4, 5, 6, 15, 17, 21, 22, 24, 25, 31, June 5, 6, 8.

T-33.....May 8, 15, 20, 22, 23, 24, 30, 31, June 5.

F-100F.....May 5, 8, 16, 20, 24, 31, June 2, 5, 6.

U-2.....May 15, 21, 24, 25, 28, 30, 31, June 1, 4, 5, 6, 8.

C-130.....May 14, 15, 16, 18, 20, 21, 22, 26, 31.

WV-2.....April 26, 29, May 1, 2, 4, 8, 9.

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[3] Test flights and aborted missions known to have collected no useful data have been omitted from this tabulation.

* Non-meteorological flights in support of KDB-1 drone feasibility test.

APPENDIX III

NSSP OPERATIONAL LOG, 1962

The data collected by NSSP during the spring of 1962 are indicated in the following pages. Even though some radarscope photography was obtained before 1100 CST and after 2400 CST, and an occasional aircraft was dispatched before 1100 CST, the hours shown in these tables cover the bulk of irregularly collected data. The Alpha and Beta surface networks, which have been omitted from this tabulation, were in continuous operation from March 1 to June 30. Times shown for aircraft are the total flight times and do not necessarily indicate the period of data collection. Each aircraft did not necessarily record on every flight all meteorological parameters for which it was instrumented, this depending upon the flight objectives and the operational status of the instrumentation.

The following notes refer to specific types of data:

1. *Aircraft.* Participating aircraft were provided by the following agencies:

DC-6's, B-57, B-26	- U.S. Weather Bureau, Research Flight Facility;
C-130	- U.S. Air Force, Geophysics Research Directorate;
WV-2	- U.S. Naval Research Laboratory;
T-33, F-100F	- U.S. Air Force, Aeronautical Systems Division;
U-2	- U.S. Air Force, Geophysics Research Directorate.

Additional GRD aircraft which, although not formally participating, did provide additional photographic storm coverage were a B-47 (May 25) and a second U-2 (on five occasions).

2. *Radar.* Times shown are periods of radarscope photography. In cases where photography continued after midnight the times and dates of ending are shown at the right. The radar locations are shown in figure 1. The pulsed Doppler radar was owned and operated by Cornell Aeronautical Laboratories. The CW Doppler radar was operated by the Weather Bureau. The Weather Bureau M-33 radar was operated by the University of Oklahoma, and was used mainly for serial low-level wind soundings. The periods of M-33 operation are shown by the horizontal bars, and the times of wind soundings are indicated by vertical marks.

3. *Serial and Special Rawinsondes.* With the exception of Fort Sill (FSI), all stations listed are Weather Bureau stations from which NSSP serial ascents were authorized. Release times are shown for all serial or special rawinsonde ascents requested by NSSP, for all special observations requested by the Severe Local Storms Forecast Center (SELS) from these authorized stations, and for all regularly scheduled observations (1800 CST) which constitute part of a series. SELS specials were often made by additional stations not included in this listing, usually at 1200 CST and, ocasionally, at other times.

4. *Dropsondes.* Dropsondes were released from Weather Bureau DC-6 aircraft with the observations made by an operator provided by the Air Force. Times, positions, and release pressures are tabulated in Appendix III-A.

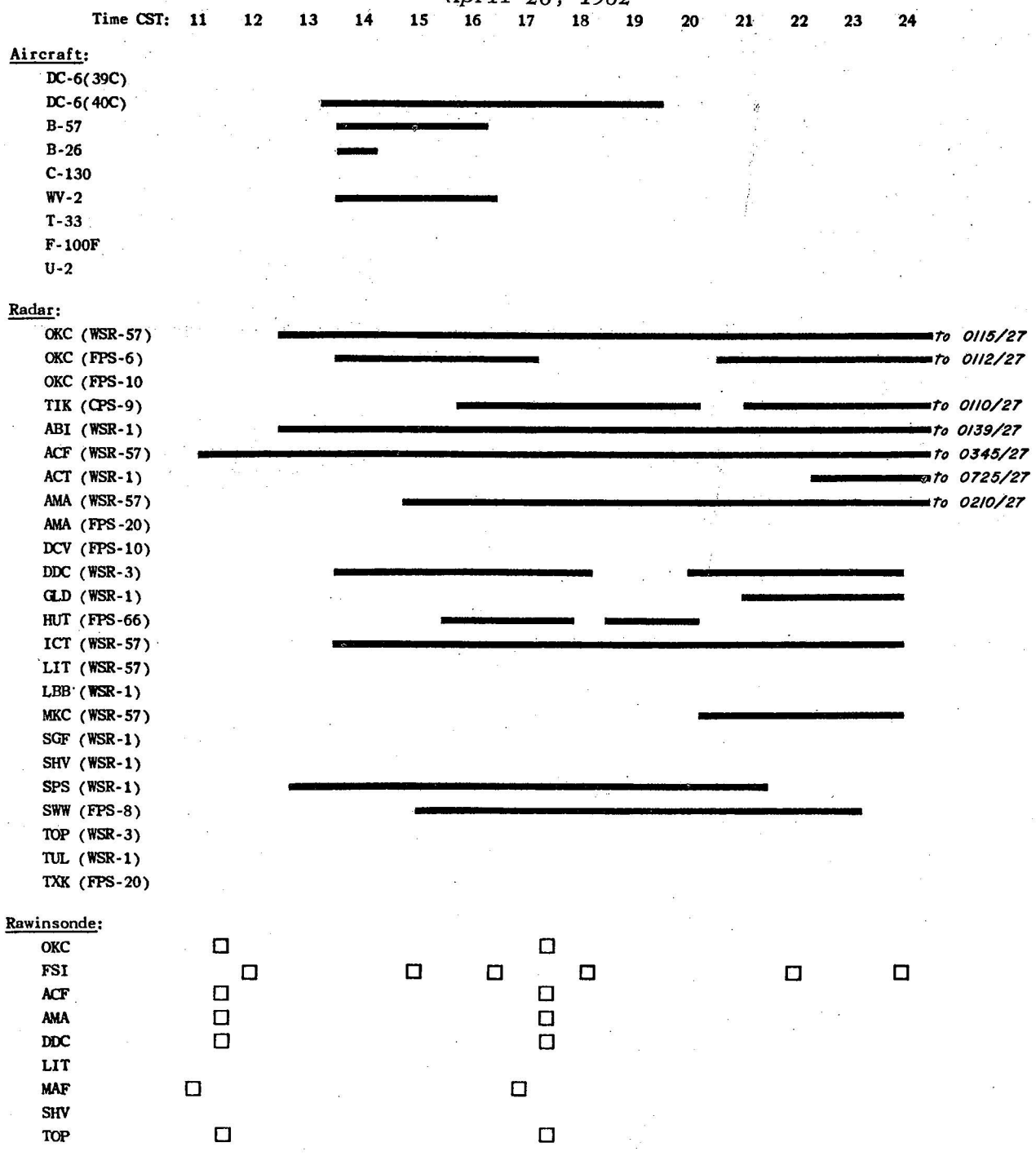
5. *Sferics.* All sferics data were collected by the General Mills Electronics Group. Observations were made 24 hours daily at two sites.

6. *TIROS.* Photographic coverage of part or all of the NSSP operational area by TIROS IV is shown in Appendix III-B. Dates, times, and pass numbers were tabulated from catalogues of TIROS cloud photography.

7. *Station Identification Letters:*

ABI - Abilene, Tex.
ACF - Fort Worth, Tex.
ACT - Waco, Tex.
AMA - Amarillo, Tex.
DCV - Duncanville, Tex.
DDC - Dodge City, Kans.
FSI - Fort Sill, Okla.
GLD - Goodland, Kans.
HUT - Hutchinson, Kans.
ICT - Wichita, Kans.
LBB - Lubbock, Tex.
LIT - Little Rock, Ark.
MAF - Midland, Tex.
MKC - Kansas City, Mo.
OKC - Oklahoma City, Okla.
SGF - Springfield, Mo.
SHV - Shreveport, La.
SPS - Wichita Falls, Tex.
SWW - Sweetwater, Tex.
TIK - Tinker AFB, Okla.
TOP - Topeka, Kans.
TUL - Tulsa, Okla.
TXK - Texarkana, Ark.

April 26, 1962



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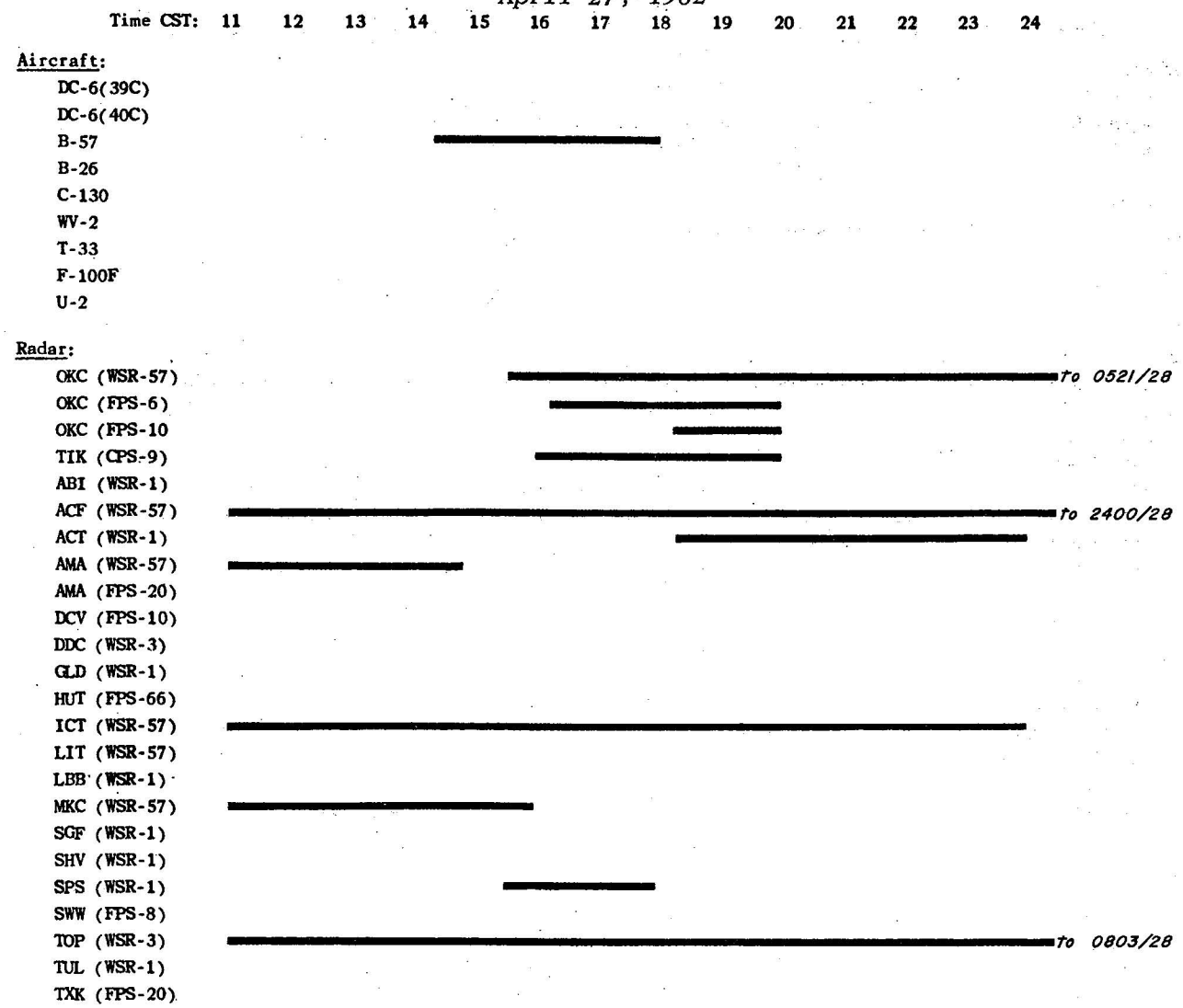
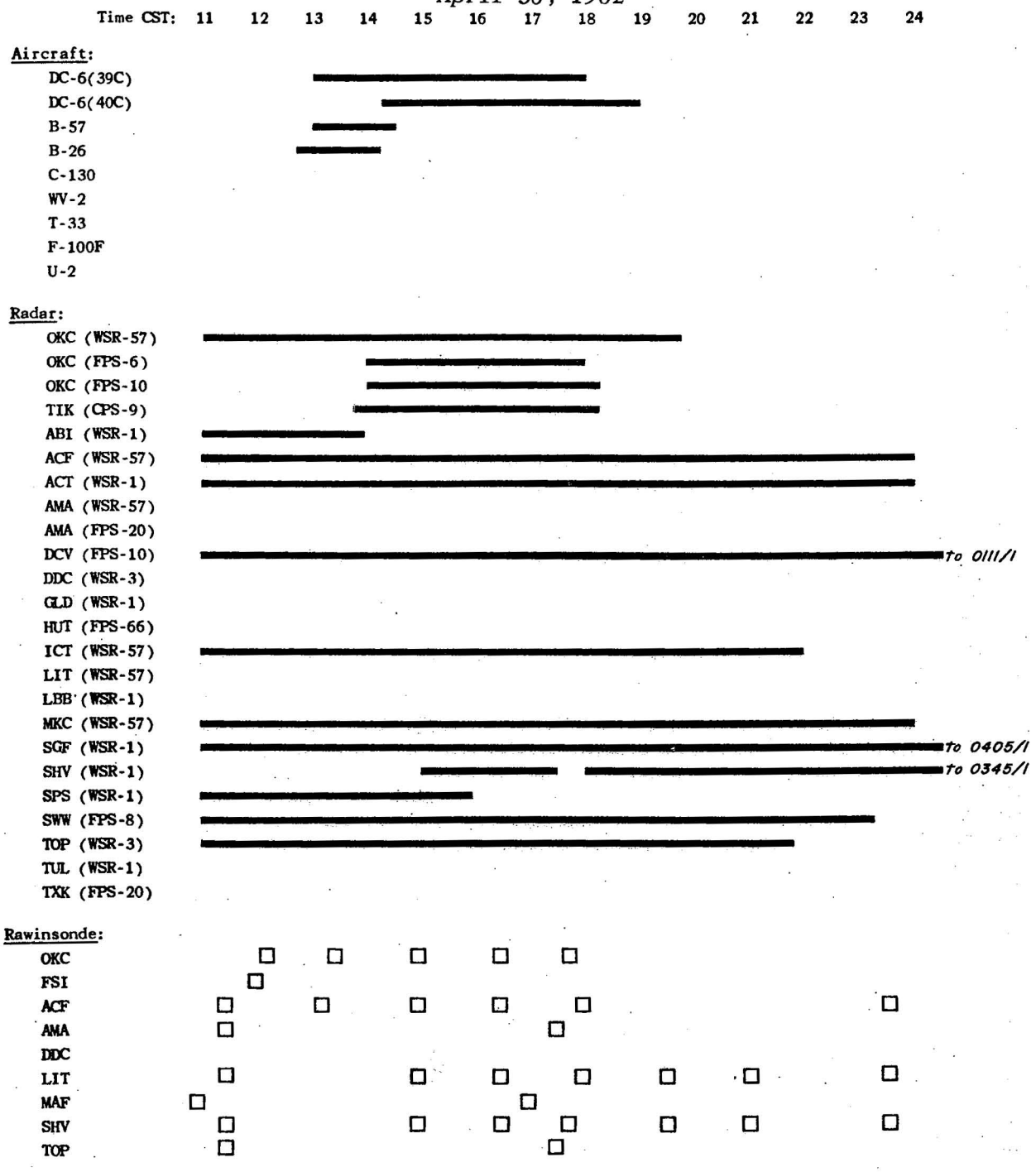


April 29, 1962

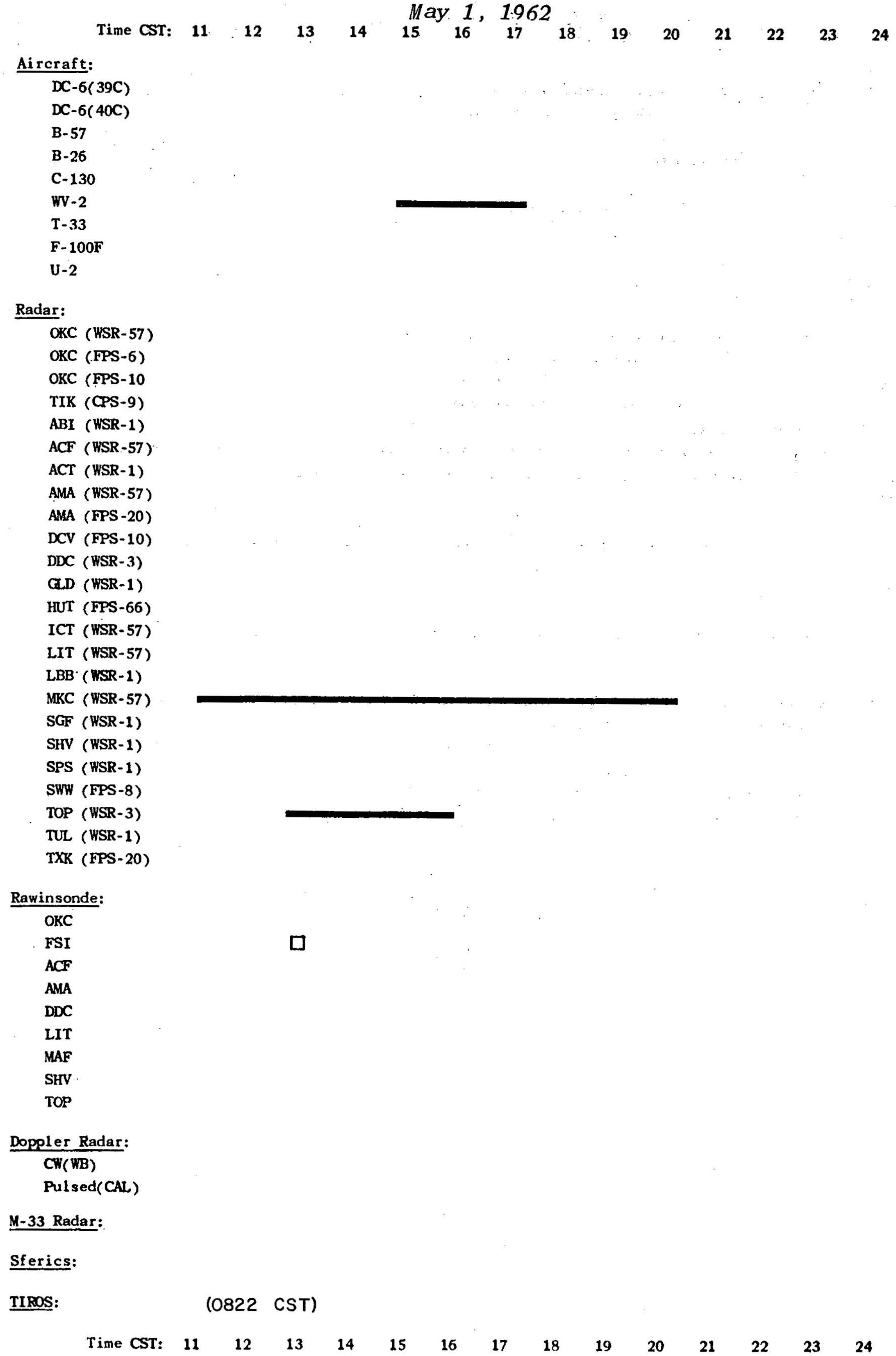
	Time CST: 11	12	13	14	15	16	17	18	19	20	21	22	23	24
Aircraft:														
DC-6(39C)														
DC-6(40C)														
B-57														
B-26														
C-130														
WV-2	━━━	━━━	━━━	━━━	━━━									
T-33														
F-100F														
U-2														
Radar:														
OKC (WSR-57)												━━━	━━━	
OKC (FPS-6)														
OKC (FPS-10														
TIK (CPS-9)														
ABI (WSR-1)														
ACF (WSR-57)														
ACT (WSR-1)														
AMA (WSR-57)														
AMA (FPS-20)														
DCV (FPS-10)														
DDC (WSR-3)														
GLD (WSR-1)														
HUT (FPS-66)														
ICT (WSR-57)													━━━	to 0600/30
LIT (WSR-57)														
LBB (WSR-1)														
MKC (WSR-57)										━━━	━━━	━━━	━━━	to 2400/30
SGF (WSR-1)														
SHV (WSR-1)														
SPS (WSR-1)														
SWW (FPS-8)														
TOP (WSR-3)														
TUL (WSR-1)														
TXK (FPS-20)														
awinsonde:														
OKC														
FSI														
ACF														
AMA														
DDC														
LIT														
MAF														
SHV														
TOP														
oppler Radar:														
CW(WB)														
Pulsed(CAL)														
-33 Radar:														
ferics:														
IROS: (0935 CST)														

	Time CST: 11	12	13	14	15	16	17	18	19	20	21	22	23	24

April 30, 1962



May 1, 1962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DC-6(40C)
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B-26
C-130
WV-2
T-33
F-100F
U-2
Radar:
OKC (WSR-57)
OKC (FPS-6)
OKC (FPS-10
TIK (CPS-9)
ABI (WSR-1)
ACF (WSR-57)
ACT (WSR-1)
AMA (WSR-57)
AMA (FPS-20)
DCV (FPS-10)
DDC (WSR-3)
GLD (WSR-1)
HUT (FPS-66)
ICT (WSR-57)
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MKC (WSR-57)
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SHV (WSR-1)
SPS (WSR-1)
SWW (FPS-8)
TOP (WSR-3)
TUL (WSR-1)
TXK (FPS-20)
Rawinsonde:
OKC
FSI
ACF
AMA
DDC
LIT
MAF
SHV
TOP
Doppler Radar:
CW(WB)
Pulsed(CAL)
M-33 Radar:
Sferics:
TIROS:
(0822 CST)
Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24

May 2, 1962

Time CST:	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Aircraft:														
DC-6(39C)														
DC-6(40C)														
B-57														
B-26		▬▬▬	▬▬▬	▬▬▬										
C-130														
WV-2					▬▬▬	▬▬▬	▬▬▬							
T-33														
F-100F														
U-2														
Radar:														
OKC (WSR-57)														
OKC (FPS-6)														
OKC (FPS-10														
TIK (CPS-9)														
ABI (WSR-1)														
ACF (WSR-57)														
ACT (WSR-1)														
AMA (WSR-57)														
AMA (FPS-20)														
DCV (FPS-10)														
DDC (WSR-3)														
GLD (WSR-1)														
HUT (FPS-66)														
ICT (WSR-57)														
LIT (WSR-57)														
LBB (WSR-1)														
MKC (WSR-57)						▬▬▬	▬▬▬	▬▬▬	▬▬▬	▬▬▬	▬▬▬	▬▬▬	▬▬▬	▬▬▬
SGF (WSR-1)														
SHV (WSR-1)														
SPS (WSR-1)														
SWW (FPS-8)														
TOP (WSR-3)														
TUL (WSR-1)														
TXK (FPS-20)														
Rawinsonde:														
OKC														
FSI			□											
ACF														
AMA														
DDC														
LIT														
MAF														
SHV														
TOP														
Doppler Radar:														
CW(WB)														
Pulsed(CAL)														
M-33 Radar:														
Sferics:														
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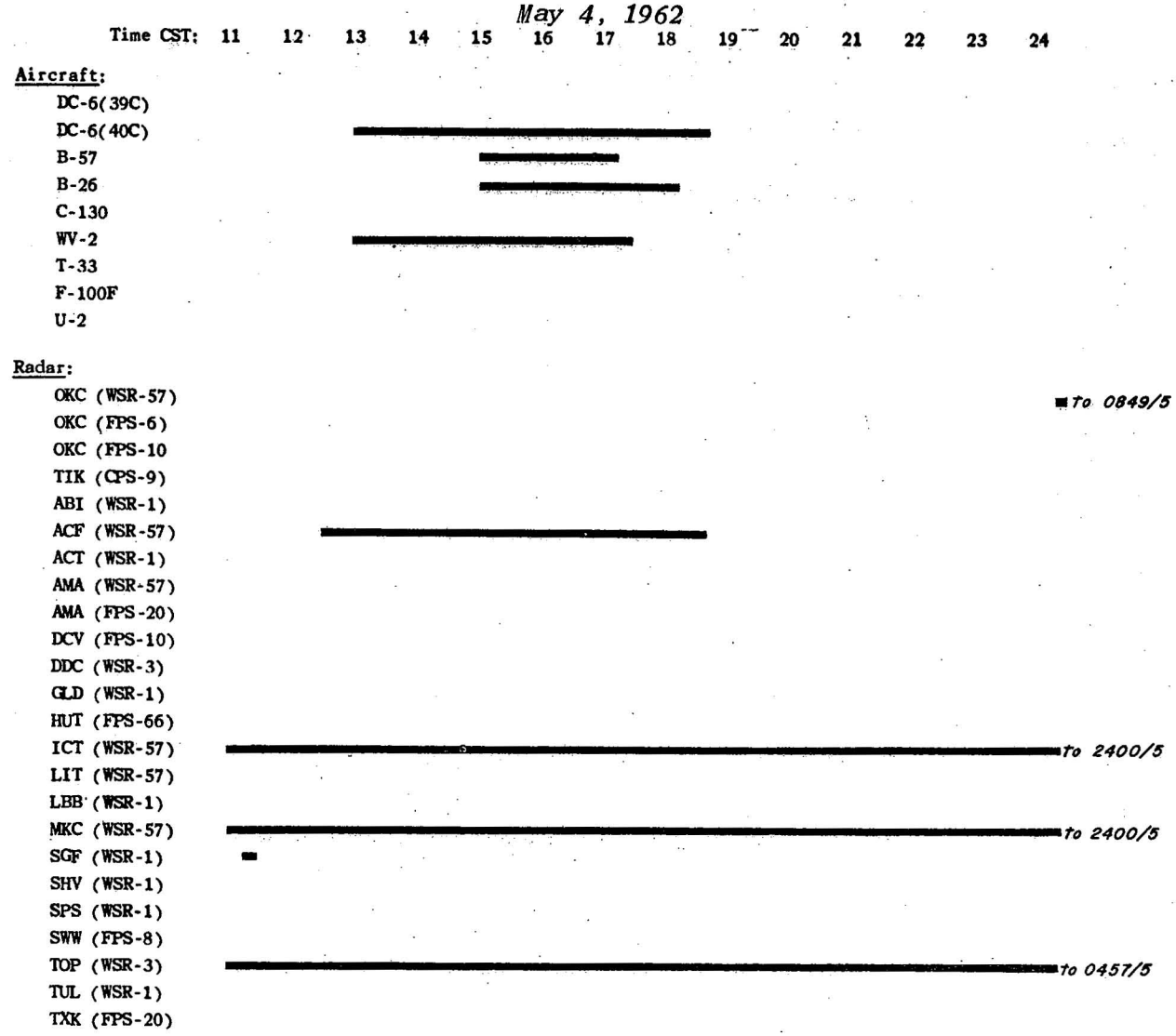
May 4, 1962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B-26
C-130
WV-2
T-33
F-100F
U-2
Radar:
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OKC (FPS-6)
OKC (FPS-10)
TIK (CPS-9)
ABI (WSR-1)
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TOP (WSR-3)
TUL (WSR-1)
TXK (FPS-20)
to 0849/5
to 2400/5
to 2400/5
to 0457/5
Rawinsonde:
OKC
FSI
ACF
AMA
DDC
LIT
MAF
SHV
TOP
Doppler Radar:
CW(WB)
Pulsed(CAL)
M-33 Radar:
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TIROS:
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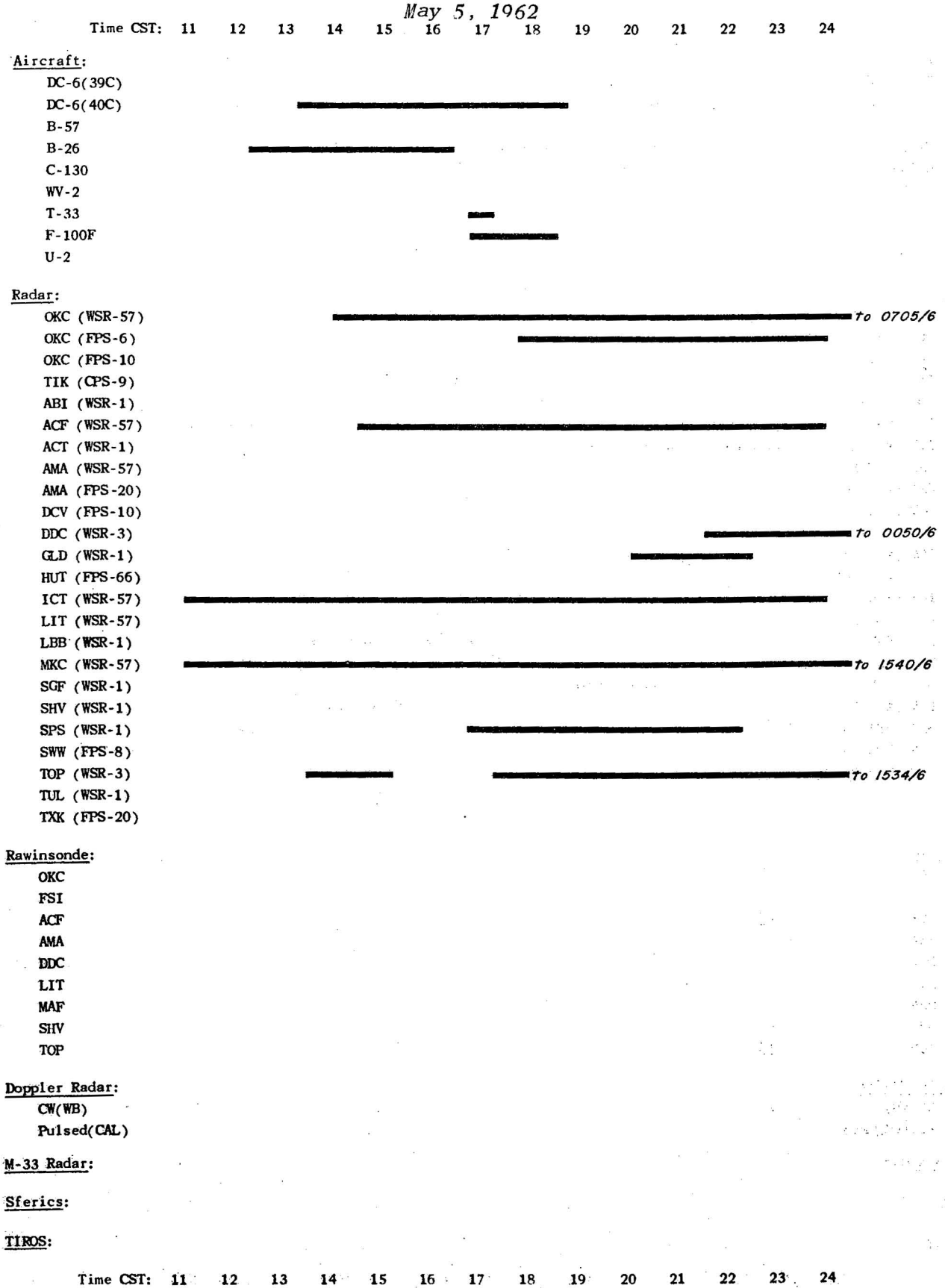
May 5, 1962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B-26
C-130
WV-2
T-33
F-100F
U-2
Radar:
OKC (WSR-57)
OKC (FPS-6)
OKC (FPS-10
TIK (CPS-9)
ABI (WSR-1)
ACF (WSR-57)
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TOP (WSR-3)
TUL (WSR-1)
TXK (FPS-20)
to 0705/6
to 0050/6
to 1540/6
to 1534/6
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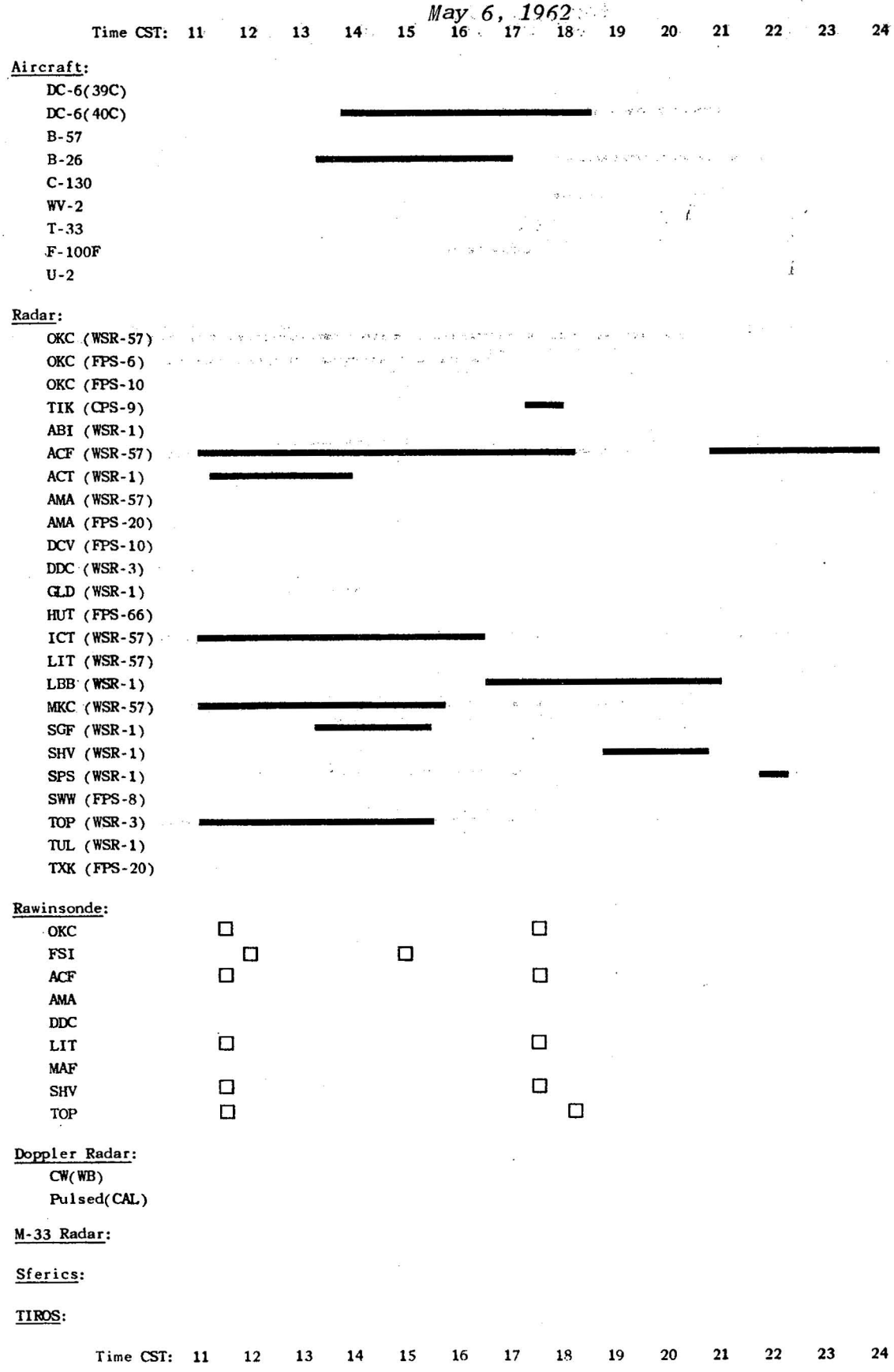
FSI
ACF
AMA
DDC
LIT
MAF
SHV
TOP
Doppler Radar:
CW(WB)
Pulsed(CAL)
M-33 Radar:
Sferics:
TIROS:
Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24

May 6, 1962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B-26
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WV-2
T-33
F-100F
U-2
Radar:
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OKC (FPS-10
TIK (CPS-9)
ABI (WSR-1)
ACF (WSR-57)
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GLD (WSR-1)
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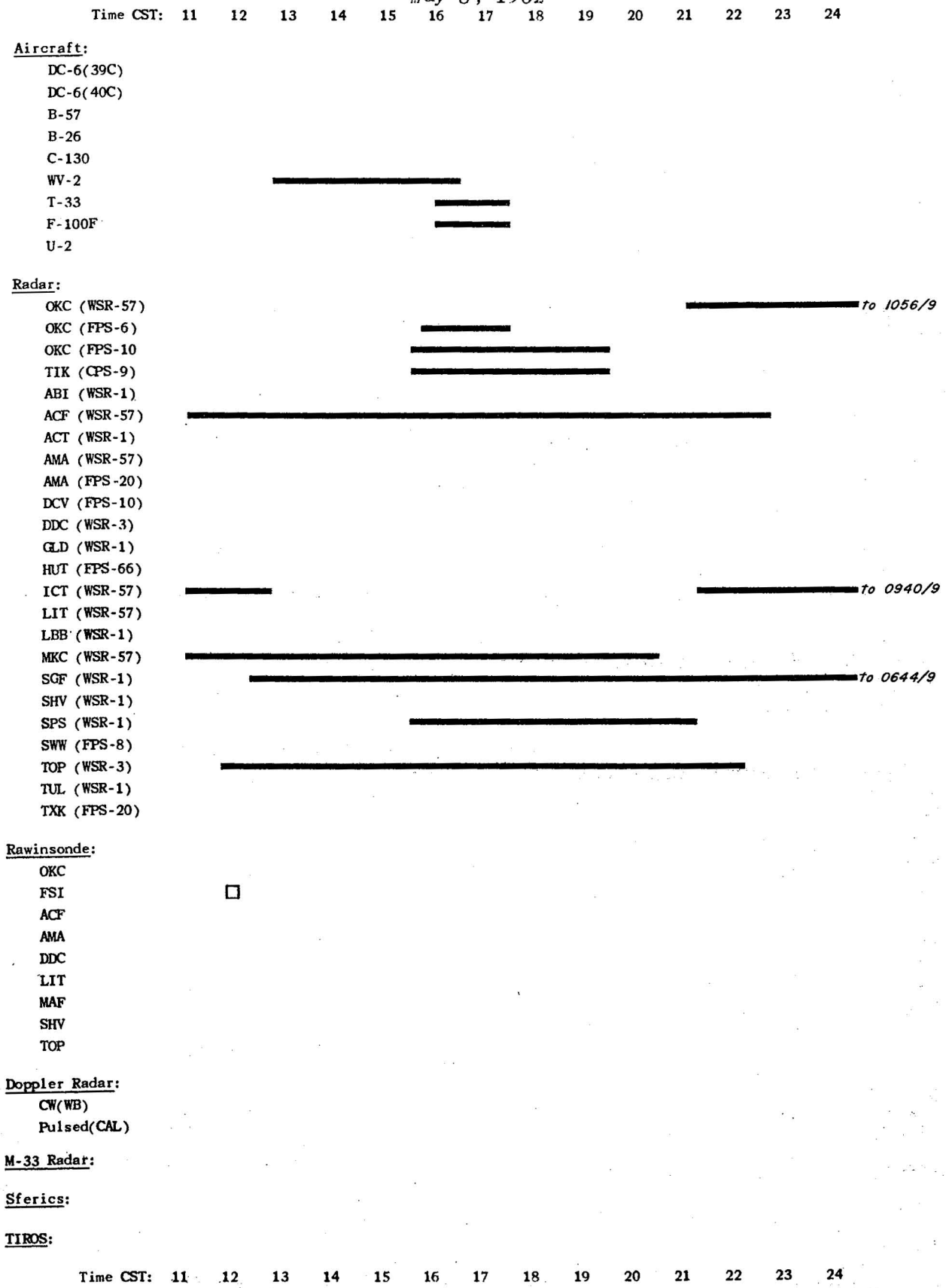
ICT (WSR-57)
LIT (WSR-57)
LBB (WSR-1)
MKC (WSR-57)
SGF (WSR-1)
SHV (WSR-1)
SPS (WSR-1)
SWW (FPS-8)
TOP (WSR-3)
TUL (WSR-1)
TXK (FPS-20)
Rawinsonde:
OKC
FSI
ACF
AMA
DDC
LIT
MAF
SHV
TOP
Doppler Radar:
CW(WB)
Pulsed(CAL)
M-33 Radar:
Sferics:
TIROS:
Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24

May 8, 1962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Aircraft:
DC-6(39C)
DC-6(40C)
B-57
B-26
C-130
WV-2
T-33
F-100F
U-2
Radar:
OKC (WSR-57)
OKC (FPS-6)
OKC (FPS-10
TIK (CPS-9)
ABI (WSR-1)
ACF (WSR-57)
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AMA (FPS-20)
DCV (FPS-10)
DDC (WSR-3)
GLD (WSR-1)
HUT (FPS-66)
ICT (WSR-57)
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LBB (WSR-1)
MKC (WSR-57)
SGF (WSR-1)
SHV (WSR-1)
SPS (WSR-1)
SWW (FPS-8)
TOP (WSR-3)
TUL (WSR-1)
TXK (FPS-20)
to 1056/9
to 0940/9
to 0644/9
Rawinsonde:
OKC
FSI
ACF
AMA
DDC
LIT
MAF
SHV
TOP
Doppler Radar:
CW(WB)
Pulsed(CAL)
M-33 Radar:
Sferics:
TIROS:
Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24

May 9, 1962

Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24

Aircraft:
- DC-6(39C)
- DC-6(40C)
- B-57
- B-26
- C-130
- WV-2
- T-33
- F-100F
- U-2

Radar:
- OKC (WSR-57)
- OKC (FPS-6)
- OKC (FPS-10)
- TIK (CPS-9)
- ABI (WSR-1)
- ACF (WSR-57)
- ACT (WSR-1)
- AMA (WSR-57)
- AMA (FPS-20)
- DCV (FPS-10)
- DDC (WSR-3)
- GLD (WSR-1)
- HUT (FPS-66)
- ICT (WSR-57)
- LIT (WSR-57)
- LBB (WSR-1)
- MKC (WSR-57)
- SGF (WSR-1)
- SHV (WSR-1)
- SPS (WSR-1)
- SWW (FPS-8)
- TOP (WSR-3)
- TUL (WSR-1)
- TXK (FPS-20)

Rawinsonde:
- OKC
- FSI
- ACF
- AMA
- DDC
- LIT
- MAF
- SHV
- TOP

Doppler Radar:
- CW(WB)
- Pulsed(CAL)

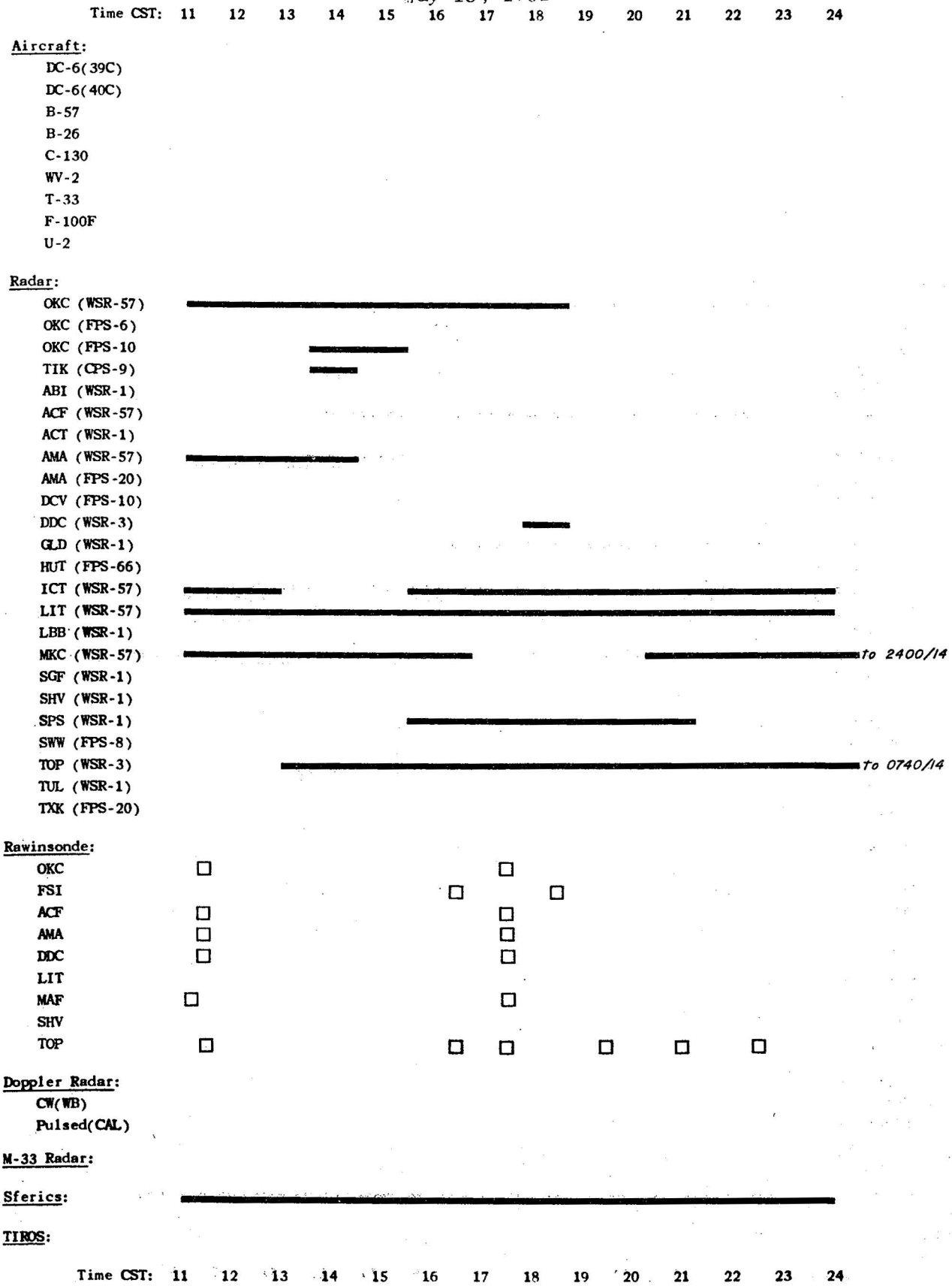
M-33 Radar:

Sferics:

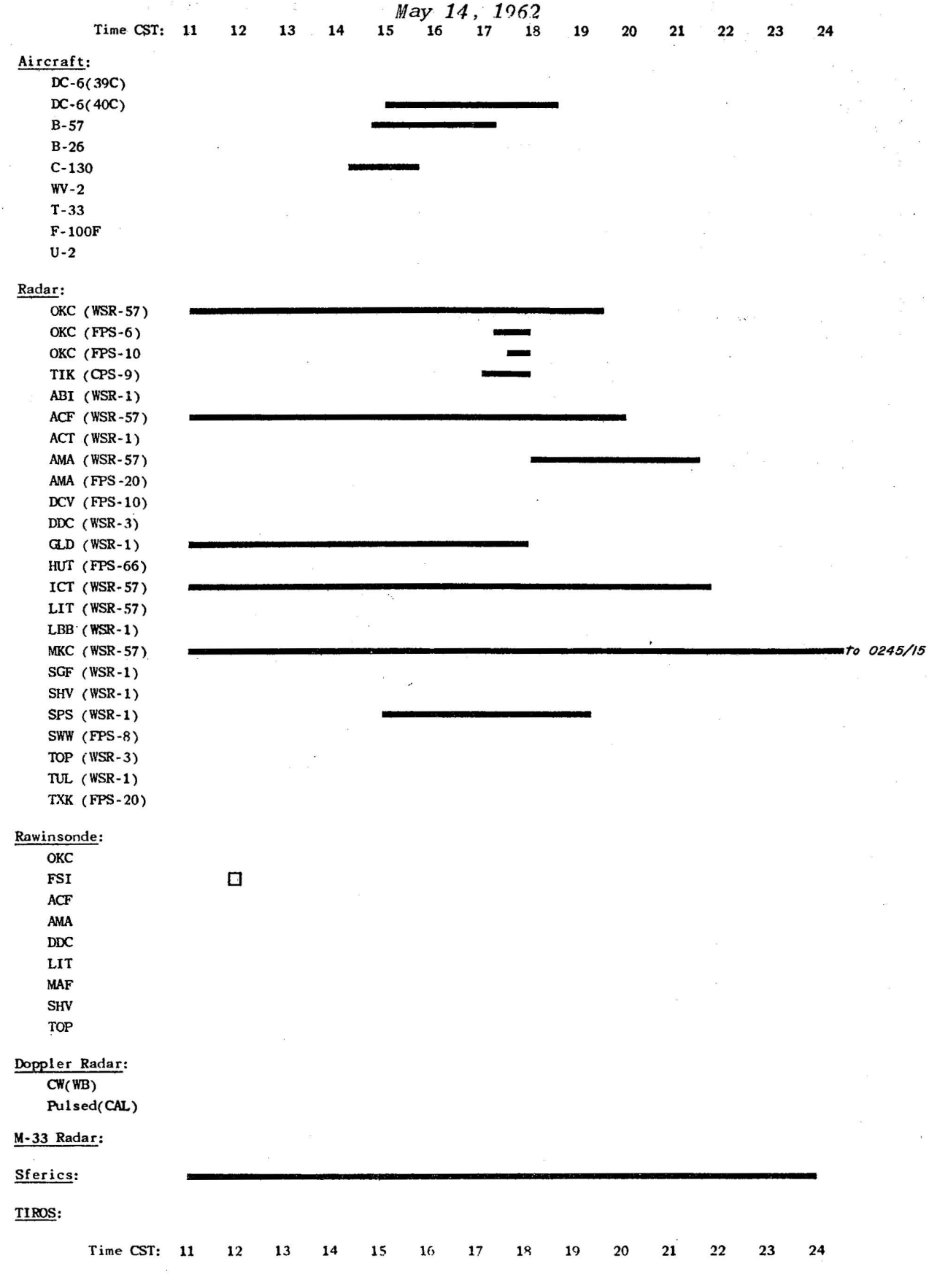
TIROS:

Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24

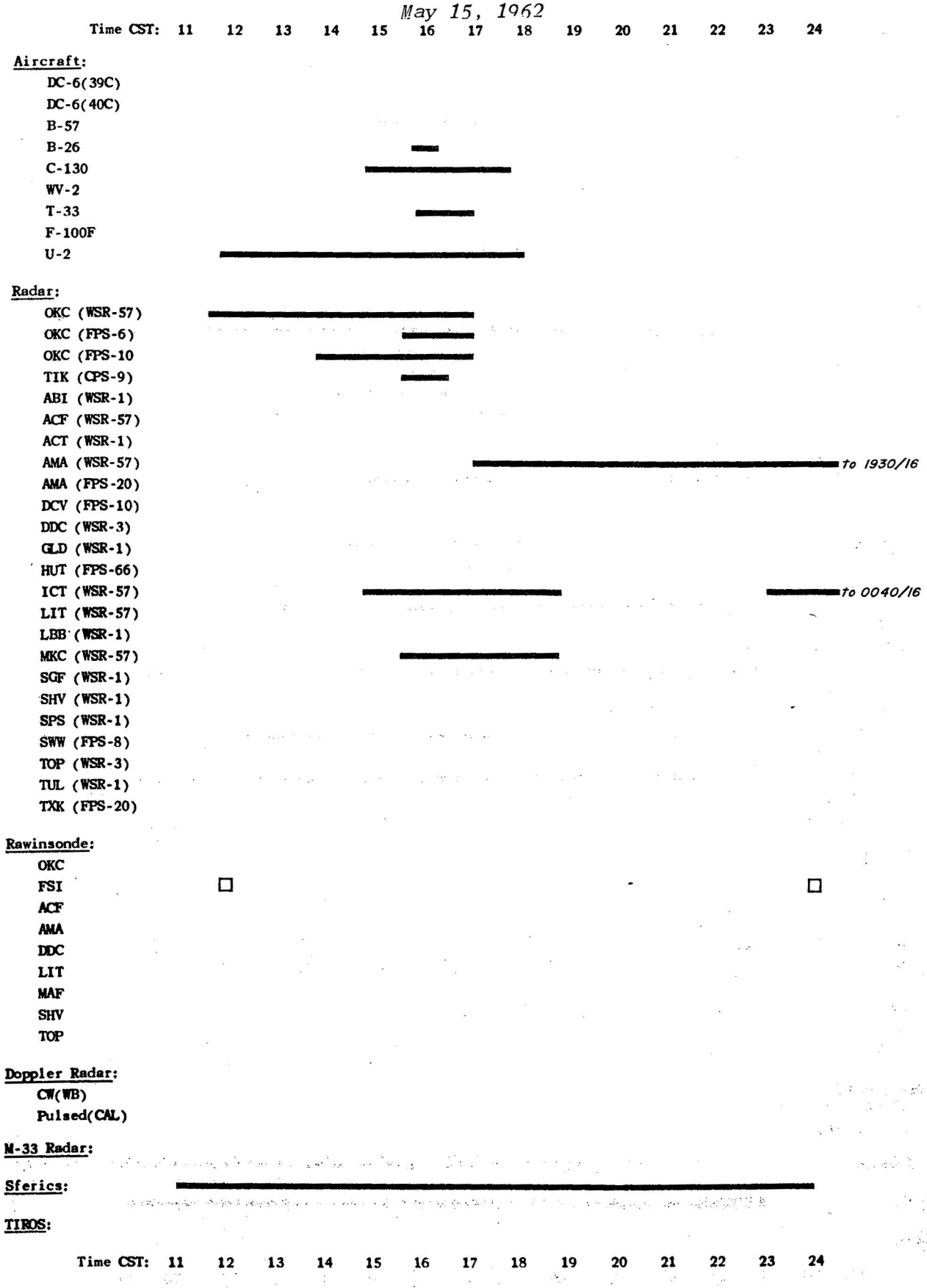
May 13, 1961


Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Aircraft:
DC-6(39C)
DC-6(40C)
B-57
B-26
C-130
WV-2
T-33
F-100F
U-2
Radar:
OKC (WSR-57)
OKC (FPS-6)
OKC (FPS-10
TIK (CPS-9)
ABI (WSR-1)
ACF (WSR-57)
ACT (WSR-1)
AMA (WSR-57)
AMA (FPS-20)
DCV (FPS-10)
DDC (WSR-3)
GLD (WSR-1)
HUT (FPS-66)
ICT (WSR-57)
LIT (WSR-57)
LBB (WSR-1)
MKC (WSR-57)
to 2400/14
SGF (WSR-1)
SHV (WSR-1)
SPS (WSR-1)
SWW (FPS-8)
TOP (WSR-3)
to 0740/14
TUL (WSR-1)
TXK (FPS-20)
Rawinsonde:
OKC
FSI
ACF
AMA
DDC
LIT
MAF
SHV
TOP
Doppler Radar:
CW(WB)
Pulsed(CAL)
M-33 Radar:
Sferics:
TIROS:
Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24

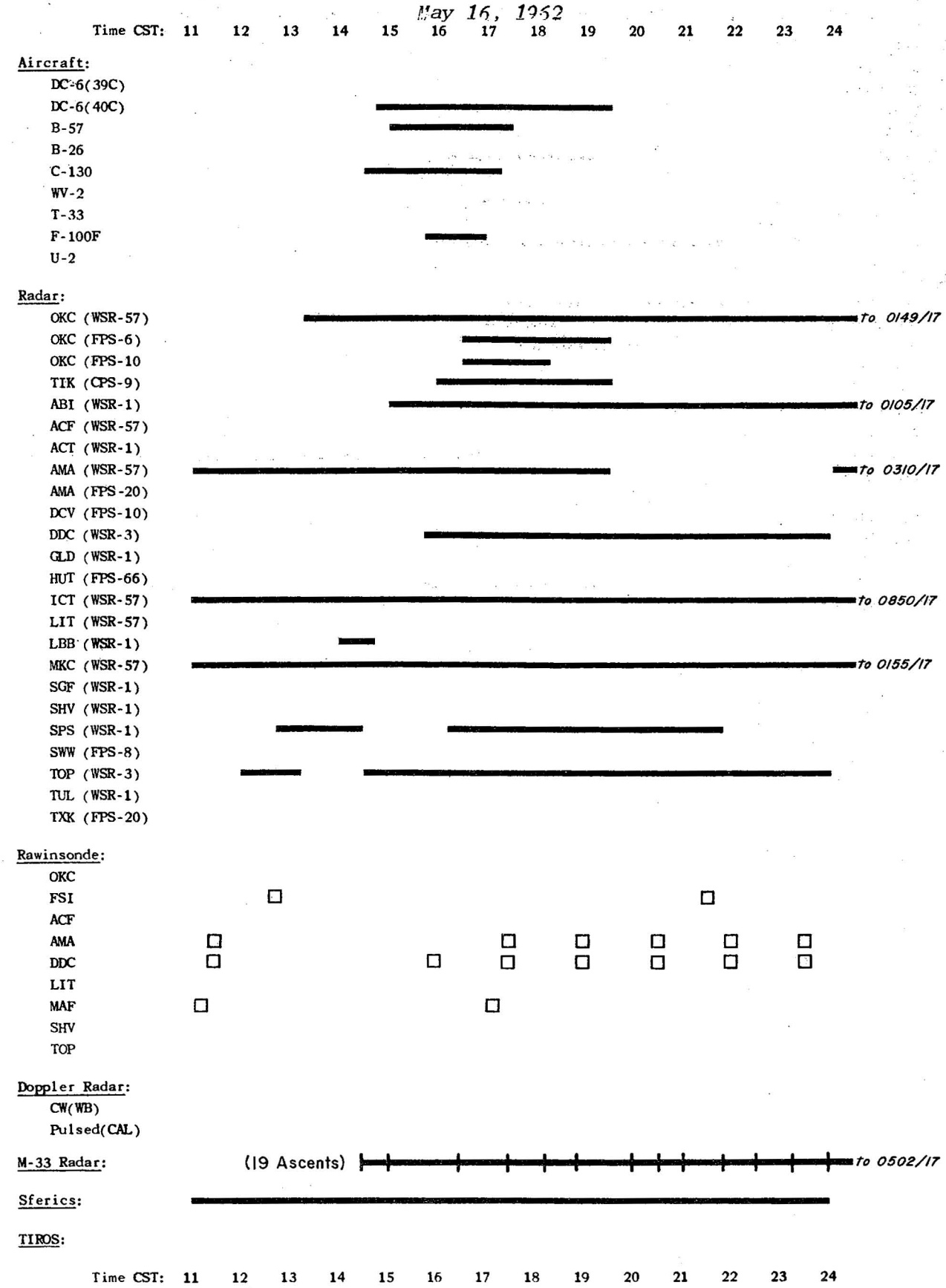
May 14, 1962


Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Aircraft:
DC-6(39C)
DC-6(40C)
B-57
B-26
C-130
WV-2
T-33
F-100F
U-2
Radar:
OKC (WSR-57)
OKC (FPS-6)
OKC (FPS-10
TIK (CPS-9)
ABI (WSR-1)
ACF (WSR-57)
ACT (WSR-1)
AMA (WSR-57)
AMA (FPS-20)
DCV (FPS-10)
DDC (WSR-3)
GLD (WSR-1)
HUT (FPS-66)
ICT (WSR-57)
LIT (WSR-57)
LBB (WSR-1)
MKC (WSR-57)
to 0245/15
SGF (WSR-1)
SHV (WSR-1)
SPS (WSR-1)
SWW (FPS-8)
TOP (WSR-3)
TUL (WSR-1)
TXK (FPS-20)
Rawinsonde:
OKC
FSI
ACF
AMA
DDC
LIT
MAF
SHV
TOP
Doppler Radar:
CW(WB)
Pulsed(CAL)
M-33 Radar:
Sferics:
TIROS:
Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24

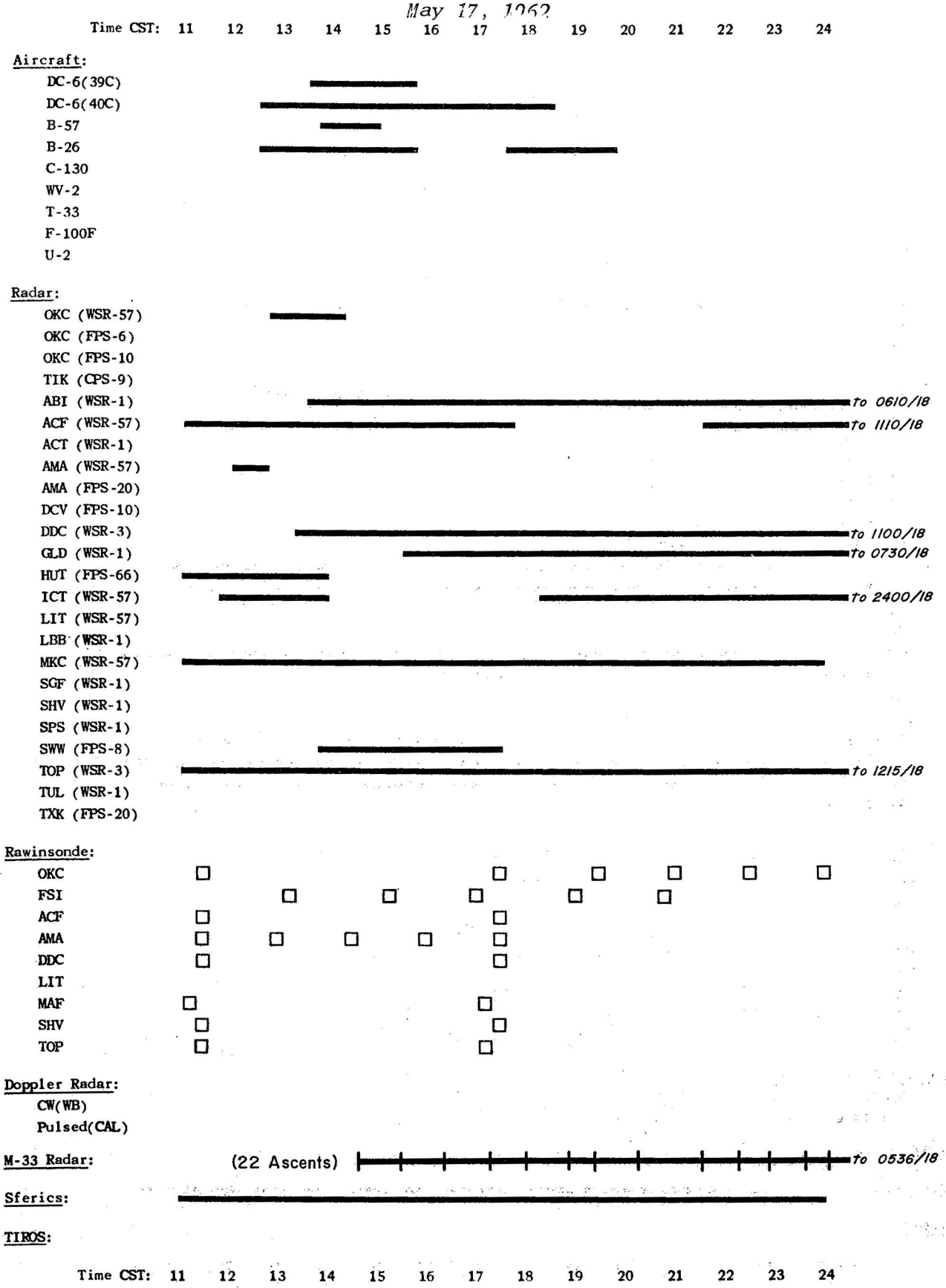
May 15, 1962


Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Aircraft:
DC-6(39C)
DC-6(40C)
B-57
B-26
C-130
WV-2
T-33
F-100F
U-2
Radar:
OKC (WSR-57)
OKC (FPS-6)
OKC (FPS-10
TIK (CPS-9)
ABI (WSR-1)
ACF (WSR-57)
ACT (WSR-1)
AMA (WSR-57)
to 1930/16
AMA (FPS-20)
DCV (FPS-10)
DDC (WSR-3)
GLD (WSR-1)
HUT (FPS-66)
ICT (WSR-57)
to 0040/16
LIT (WSR-57)
LBB (WSR-1)
MKC (WSR-57)
SGF (WSR-1)
SHV (WSR-1)
SPS (WSR-1)
SWW (FPS-8)
TOP (WSR-3)
TUL (WSR-1)
TXK (FPS-20)
Rawinsonde:
OKC
FSI
ACF
AMA
DDC
LIT
MAF
SHV
TOP
Doppler Radar:
CW(WB)
Pulsed(CAL)
M-33 Radar:
Sferics:
TIROS:
Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24

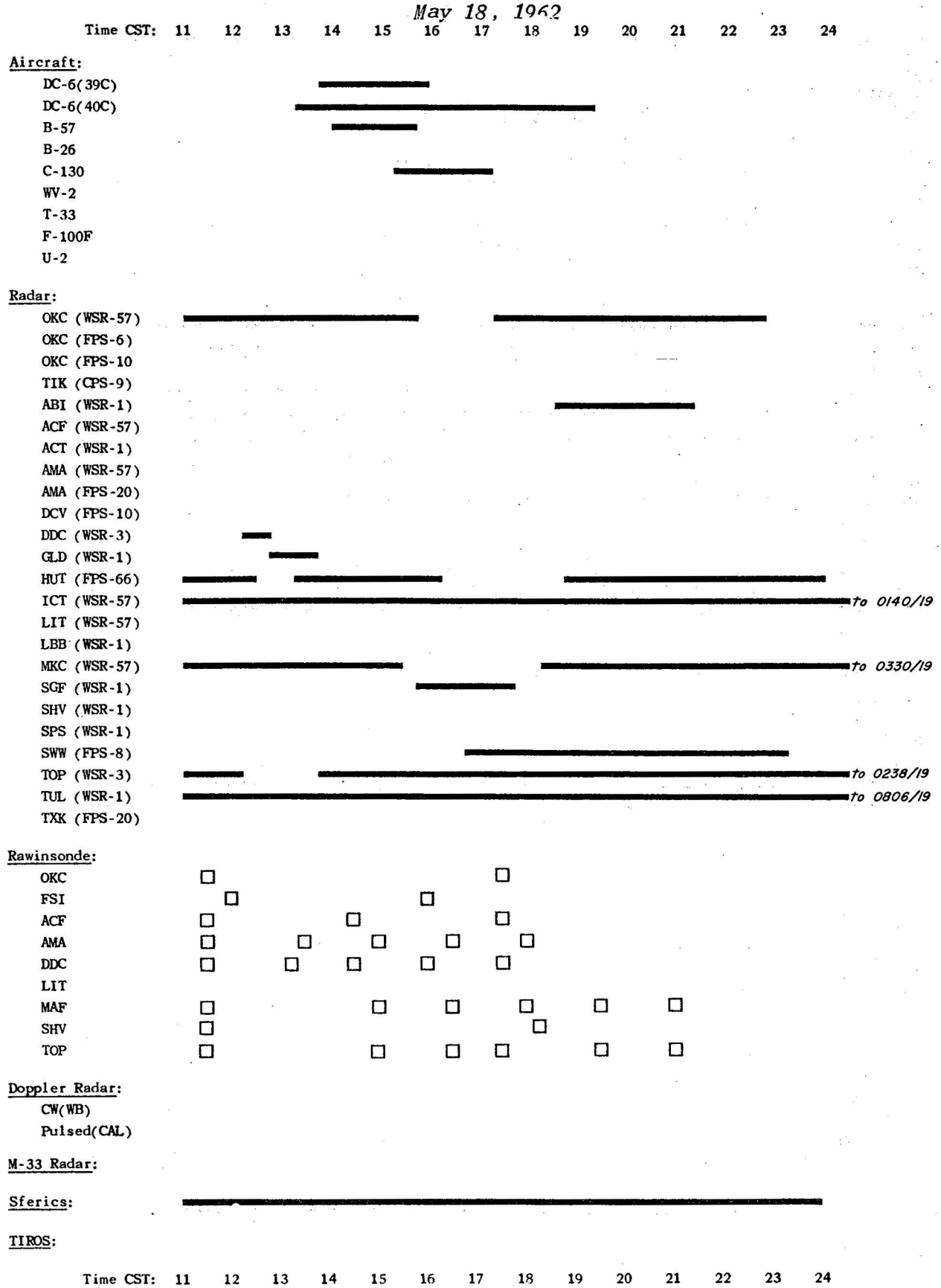
May 16, 1952


Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Aircraft:
DC-6(39C)
DC-6(40C)
B-57
B-26
C-130
WV-2
T-33
F-100F
U-2
Radar:
OKC (WSR-57)
OKC (FPS-6)
OKC (FPS-10
TIK (CPS-9)
ABI (WSR-1)
ACF (WSR-57)
ACT (WSR-1)
AMA (WSR-57)
AMA (FPS-20)
DCV (FPS-10)
DDC (WSR-3)
GLD (WSR-1)
HUT (FPS-66)
ICT (WSR-57)
LIT (WSR-57)
LBB (WSR-1)
MKC (WSR-57)
SGF (WSR-1)
SHV (WSR-1)
SPS (WSR-1)
SWW (FPS-8)
TOP (WSR-3)
TUL (WSR-1)
TXK (FPS-20)
to 0149/17
to 0105/17
to 0310/17
to 0850/17
to 0155/17
Rawinsonde:
OKC
FSI
ACF
AMA
DDC
LIT
MAF
SHV
TOP
Doppler Radar:
CW(WB)
Pulsed(CAL)
M-33 Radar:
(19 Ascents)
to 0502/17
Sferics:
TIROS:
Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24

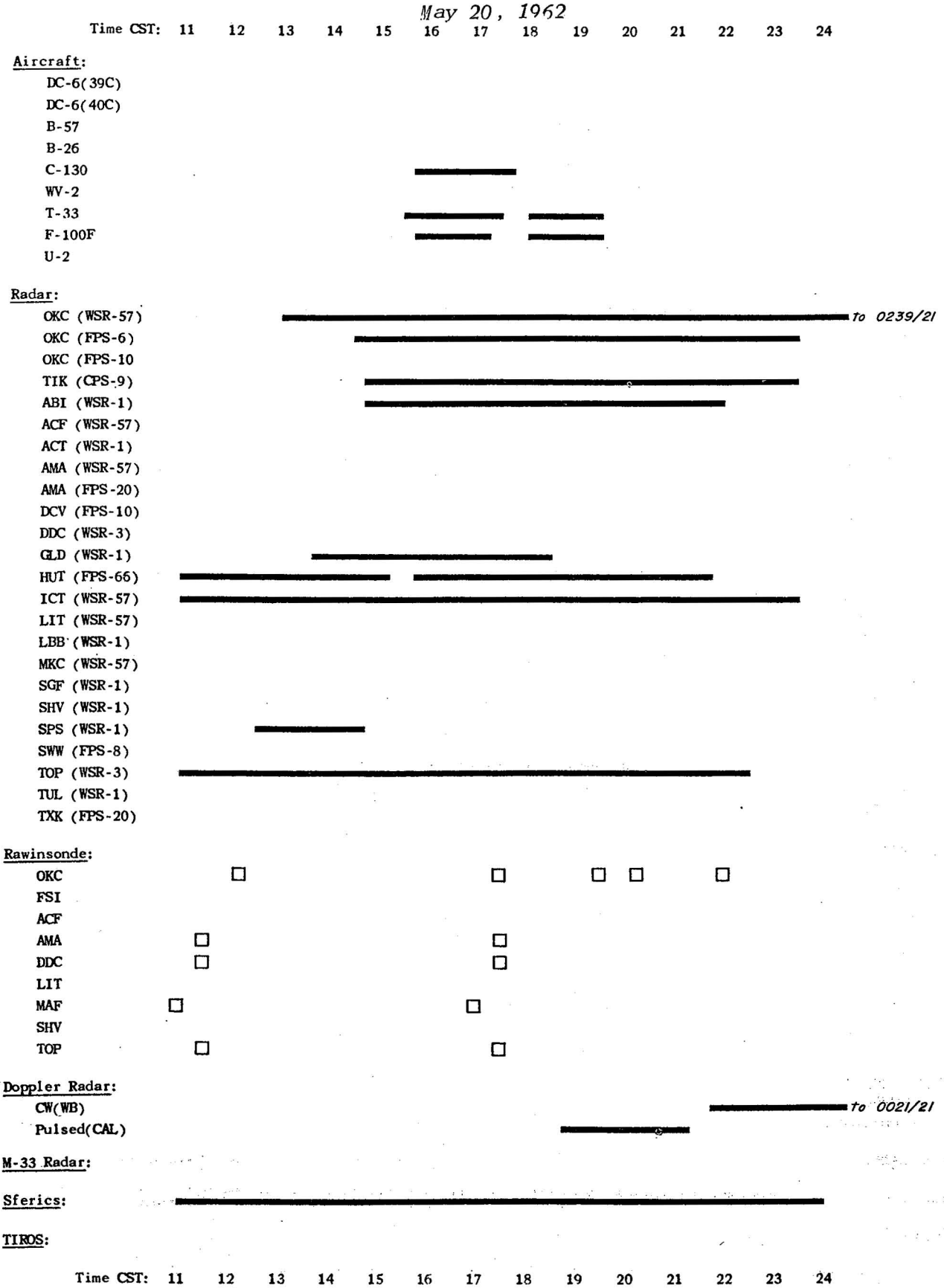
May 17, 1962


Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Aircraft:
DC-6(39C)
DC-6(40C)
B-57
B-26
C-130
WV-2
T-33
F-100F
U-2
Radar:
OKC (WSR-57)
OKC (FPS-6)
OKC (FPS-10
TIK (CPS-9)
ABI (WSR-1)
ACF (WSR-57)
ACT (WSR-1)
AMA (WSR-57)
AMA (FPS-20)
DCV (FPS-10)
DDC (WSR-3)
GLD (WSR-1)
HUT (FPS-66)
ICT (WSR-57)
LIT (WSR-57)
LBB (WSR-1)
MKC (WSR-57)
SGF (WSR-1)
SHV (WSR-1)
SPS (WSR-1)
SWW (FPS-8)
TOP (WSR-3)
TUL (WSR-1)
TXK (FPS-20)
to 0610/18
to 1110/18
to 1100/18
to 0730/18
to 2400/18
to 1215/18
Rawinsonde:
OKC
FSI
ACF
AMA
DDC
LIT
MAF
SHV
TOP
Doppler Radar:
CW(WB)
Pulsed(CAL)
M-33 Radar:
(22 Ascents)
to 0536/18
Sferics:
TIROS:
Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24

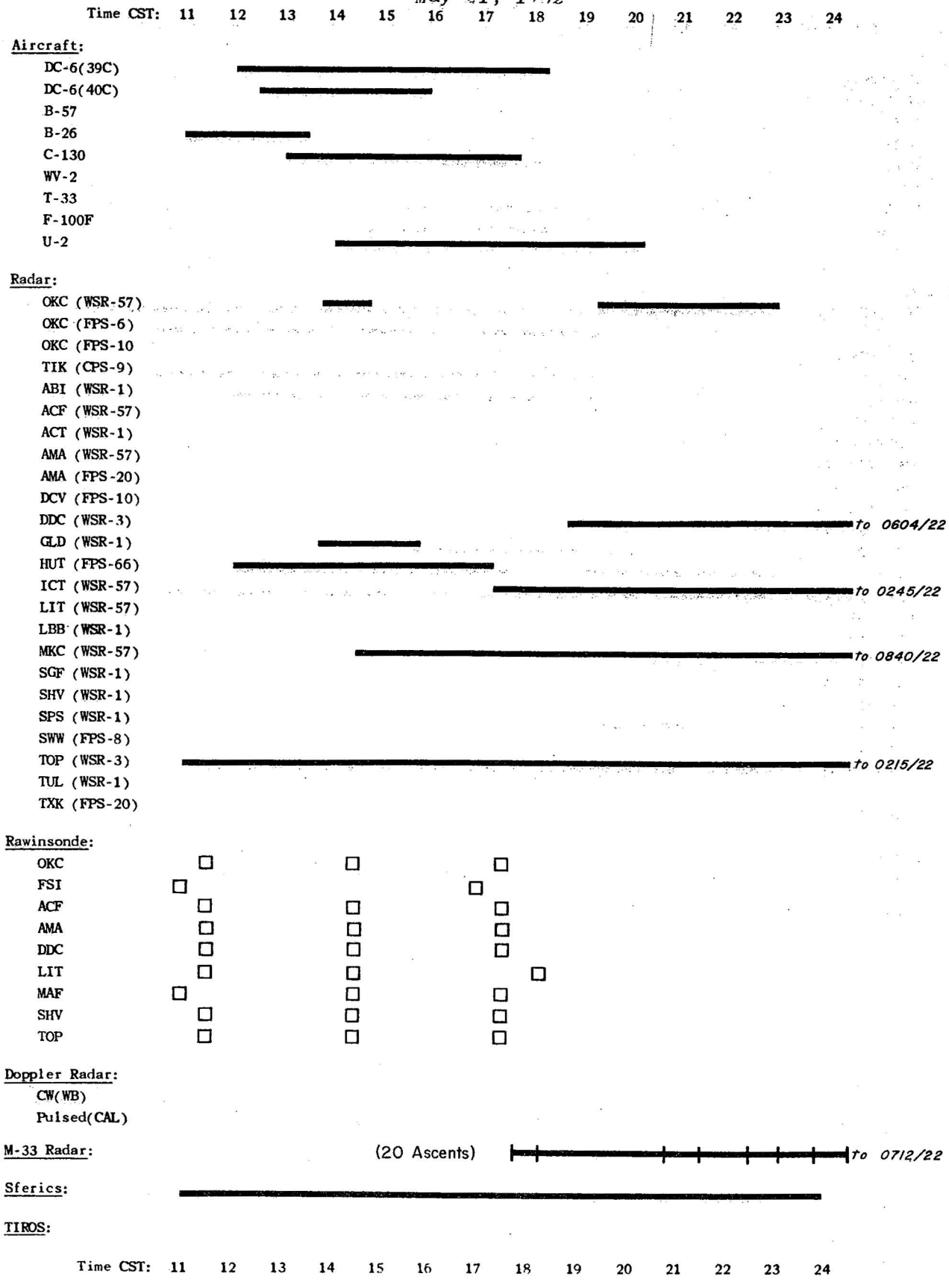
May 18, 1962


Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Aircraft:
DC-6(39C)
DC-6(40C)
B-57
B-26
C-130
WV-2
T-33
F-100F
U-2
Radar:
OKC (WSR-57)
OKC (FPS-6)
OKC (FPS-10
TIK (CPS-9)
ABI (WSR-1)
ACF (WSR-57)
ACT (WSR-1)
AMA (WSR-57)
AMA (FPS-20)
DCV (FPS-10)
DDC (WSR-3)
GLD (WSR-1)
HUT (FPS-66)
ICT (WSR-57)
LIT (WSR-57)
LBB (WSR-1)
MKC (WSR-57)
SGF (WSR-1)
SHV (WSR-1)
SPS (WSR-1)
SWW (FPS-8)
TOP (WSR-3)
TUL (WSR-1)
TXK (FPS-20)
to 0140/19
to 0330/19
to 0238/19
to 0806/19
Rawinsonde:
OKC
FSI
ACF
AMA
DDC
LIT
MAF
SHV
TOP
Doppler Radar:
CW(WB)
Pulsed(CAL)
M-33 Radar:
Sferics:
TIROS:
Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24

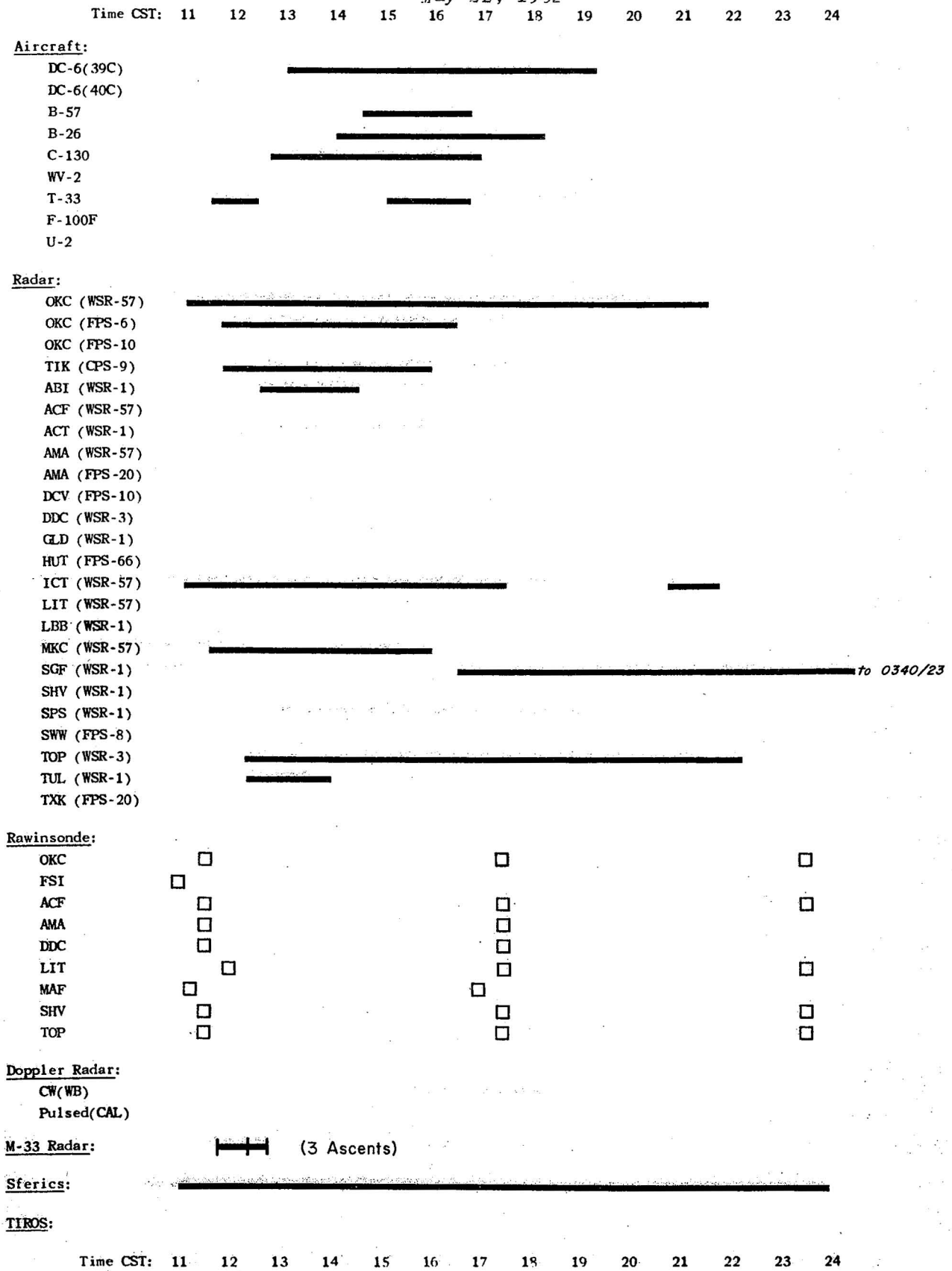
May 20, 1962

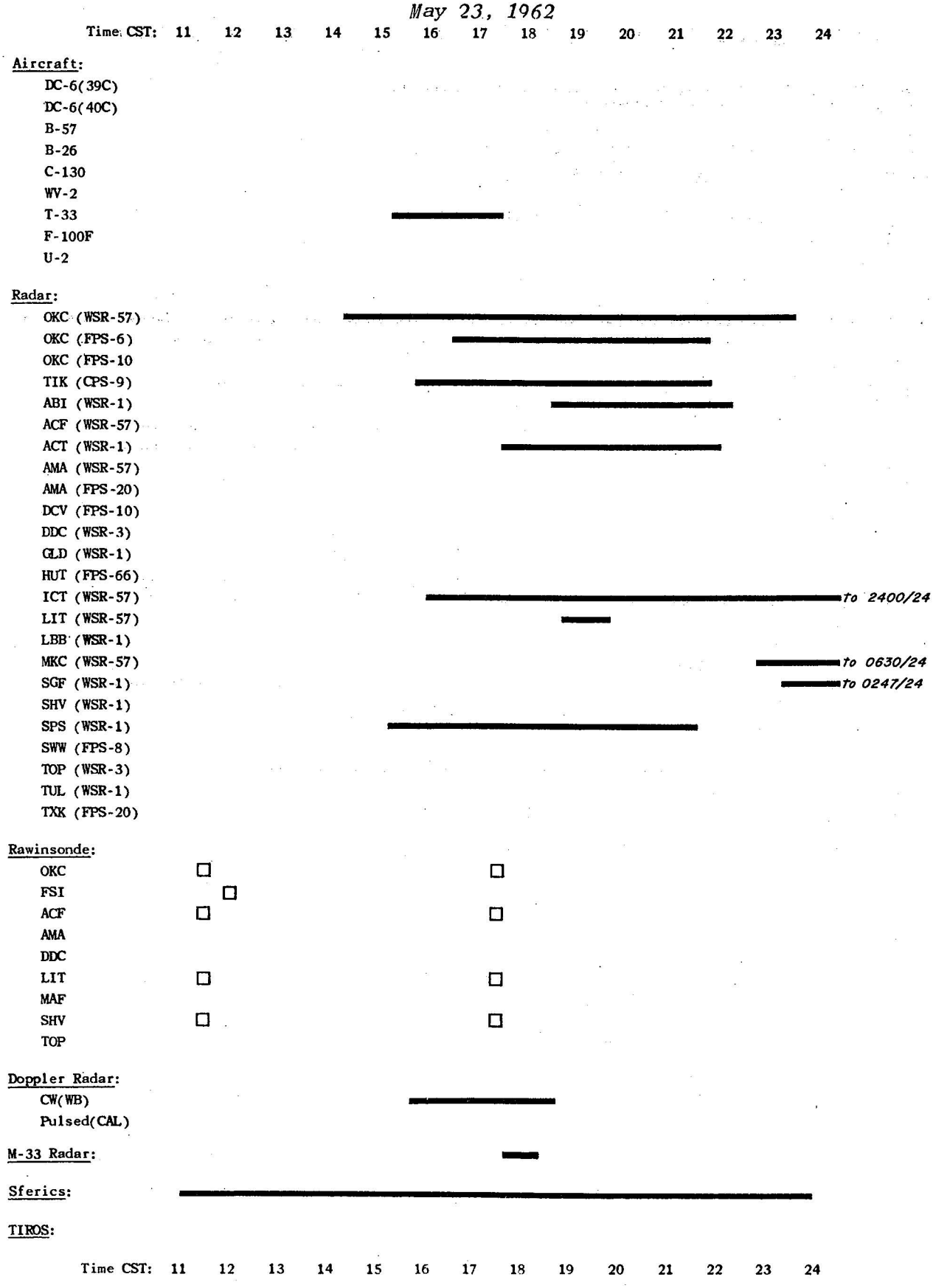

Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Aircraft:
DC-6(39C)
DC-6(40C)
B-57
B-26
C-130
WV-2
T-33
F-100F
U-2
Radar:
OKC (WSR-57)
to 0239/21
OKC (FPS-6)
OKC (FPS-10
TIK (CPS-9)
ABI (WSR-1)
ACF (WSR-57)
ACT (WSR-1)
AMA (WSR-57)
AMA (FPS-20)
DCV (FPS-10)
DDC (WSR-3)
GLD (WSR-1)
HUT (FPS-66)
ICT (WSR-57)
LIT (WSR-57)
LBB (WSR-1)
MKC (WSR-57)
SGF (WSR-1)
SHV (WSR-1)
SPS (WSR-1)
SWW (FPS-8)
TOP (WSR-3)
TUL (WSR-1)
TXK (FPS-20)
Rawinsonde:
OKC
FSI
ACF
AMA
DDC
LIT
MAF
SHV
TOP
Doppler Radar:
CW(WB)
to 0021/21
Pulsed(CAL)
M-33 Radar:
Sferics:
TIROS:
Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24

May 21, 1962

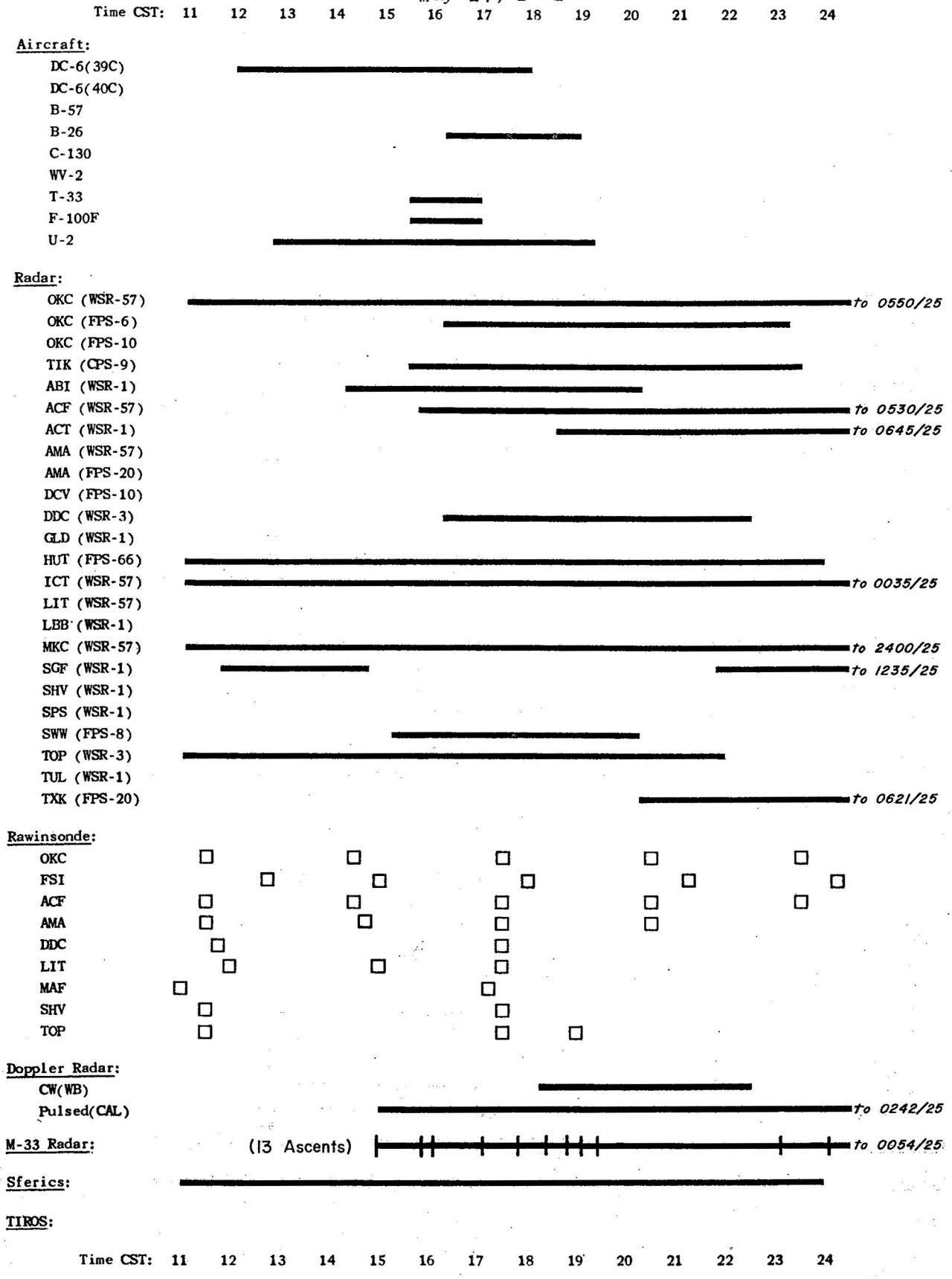

Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Aircraft:
DC-6(39C)
DC-6(40C)
B-57
B-26
C-130
WV-2
T-33
F-100F
U-2
Radar:
OKC (WSR-57)
OKC (FPS-6)
OKC (FPS-10
TIK (CPS-9)
ABI (WSR-1)
ACF (WSR-57)
ACT (WSR-1)
AMA (WSR-57)
AMA (FPS-20)
DCV (FPS-10)
DDC (WSR-3)
GLD (WSR-1)
HUT (FPS-66)
ICT (WSR-57)
LIT (WSR-57)
LBB (WSR-1)
MKC (WSR-57)
SGF (WSR-1)
SHV (WSR-1)
SPS (WSR-1)
SWW (FPS-8)
TOP (WSR-3)
TUL (WSR-1)
TXK (FPS-20)
to 0604/22
to 0245/22
to 0840/22
to 0215/22
Rawinsonde:
OKC
FSI
ACF
AMA
DDC
LIT
MAF
SHV
TOP
Doppler Radar:
CW(WB)
Pulsed(CAL)
M-33 Radar:
(20 Ascents)
to 0712/22
Sferics:
TIROS:
Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24

May 22, 1962

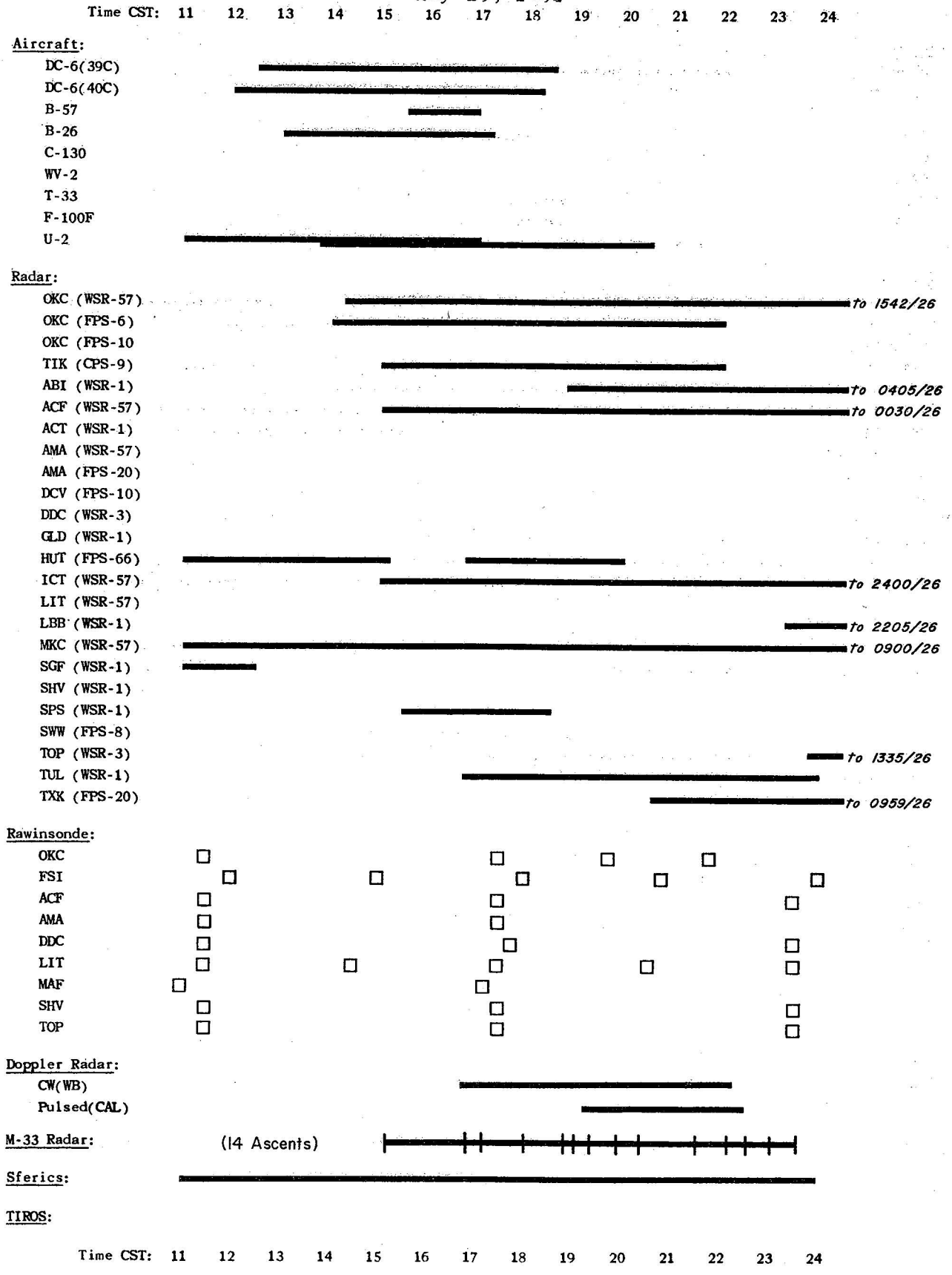

Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Aircraft:
DC-6(39C)
DC-6(40C)
B-57
B-26
C-130
WV-2
T-33
F-100F
U-2
Radar:
OKC (WSR-57)
OKC (FPS-6)
OKC (FPS-10
TIK (CPS-9)
ABI (WSR-1)
ACF (WSR-57)
ACT (WSR-1)
AMA (WSR-57)
AMA (FPS-20)
DCV (FPS-10)
DDC (WSR-3)
GLD (WSR-1)
HUT (FPS-66)
ICT (WSR-57)
LIT (WSR-57)
LBB (WSR-1)
MKC (WSR-57)
SGF (WSR-1)
to 0340/23
SHV (WSR-1)
SPS (WSR-1)
SWW (FPS-8)
TOP (WSR-3)
TUL (WSR-1)
TXK (FPS-20)
Rawinsonde:
OKC
FSI
ACF
AMA
DDC
LIT
MAF
SHV
TOP
Doppler Radar:
CW(WB)
Pulsed(CAL)
M-33 Radar:
(3 Ascents)
Sferics:
TIROS:
Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24


May 23, 1962
Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Aircraft:
DC-6(39C)
DC-6(40C)
B-57
B-26
C-130
WV-2
T-33
F-100F
U-2
Radar:
OKC (WSR-57)
OKC (FPS-6)
OKC (FPS-10
TIK (CPS-9)
ABI (WSR-1)
ACF (WSR-57)
ACT (WSR-1)
AMA (WSR-57)
AMA (FPS-20)
DCV (FPS-10)
DDC (WSR-3)
GLD (WSR-1)
HUT (FPS-66)
ICT (WSR-57)
LIT (WSR-57)
LBB (WSR-1)
MKC (WSR-57)
SGF (WSR-1)
SHV (WSR-1)
SPS (WSR-1)
SWW (FPS-8)
TOP (WSR-3)
TUL (WSR-1)
TXK (FPS-20)
to 2400/24
to 0630/24
to 0247/24
Rawinsonde:
OKC
FSI
ACF
AMA
DDC
LIT
MAF
SHV
TOP
Doppler Radar:
CW(WB)
Pulsed(CAL)
M-33 Radar:
Sferics:
TIROS:
Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24

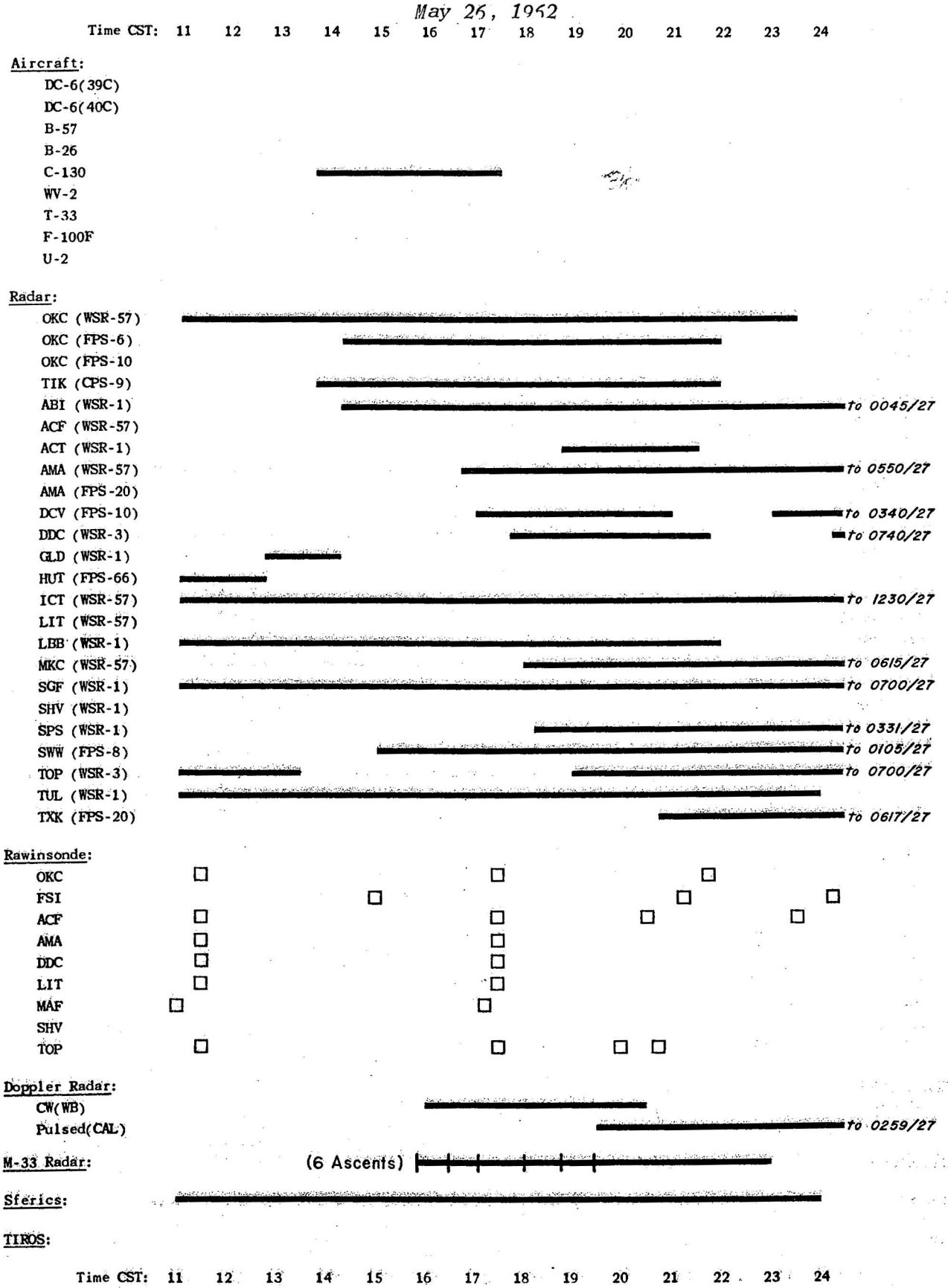
May 24, 1962


Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Aircraft:
DC-6(39C)
DC-6(40C)
B-57
B-26
C-130
WV-2
T-33
F-100F
U-2
Radar:
OKC (WSR-57)
OKC (FPS-6)
OKC (FPS-10
TIK (CPS-9)
ABI (WSR-1)
ACF (WSR-57)
ACT (WSR-1)
AMA (WSR-57)
AMA (FPS-20)
DCV (FPS-10)
DDC (WSR-3)
GLD (WSR-1)
HUT (FPS-66)
ICT (WSR-57)
LIT (WSR-57)
LBB (WSR-1)
MKC (WSR-57)
SGF (WSR-1)
SHV (WSR-1)
SPS (WSR-1)
SWW (FPS-8)
TOP (WSR-3)
TUL (WSR-1)
TXK (FPS-20)
to 0550/25
to 0530/25
to 0645/25
to 0035/25
to 2400/25
to 1235/25
to 0621/25
Rawinsonde:
OKC
FSI
ACF
AMA
DDC
LIT
MAF
SHV
TOP
Doppler Radar:
CW(WB)
Pulsed(CAL)
to 0242/25
M-33 Radar:
(13 Ascents)
to 0054/25
Sferics:
TIROS:
Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24

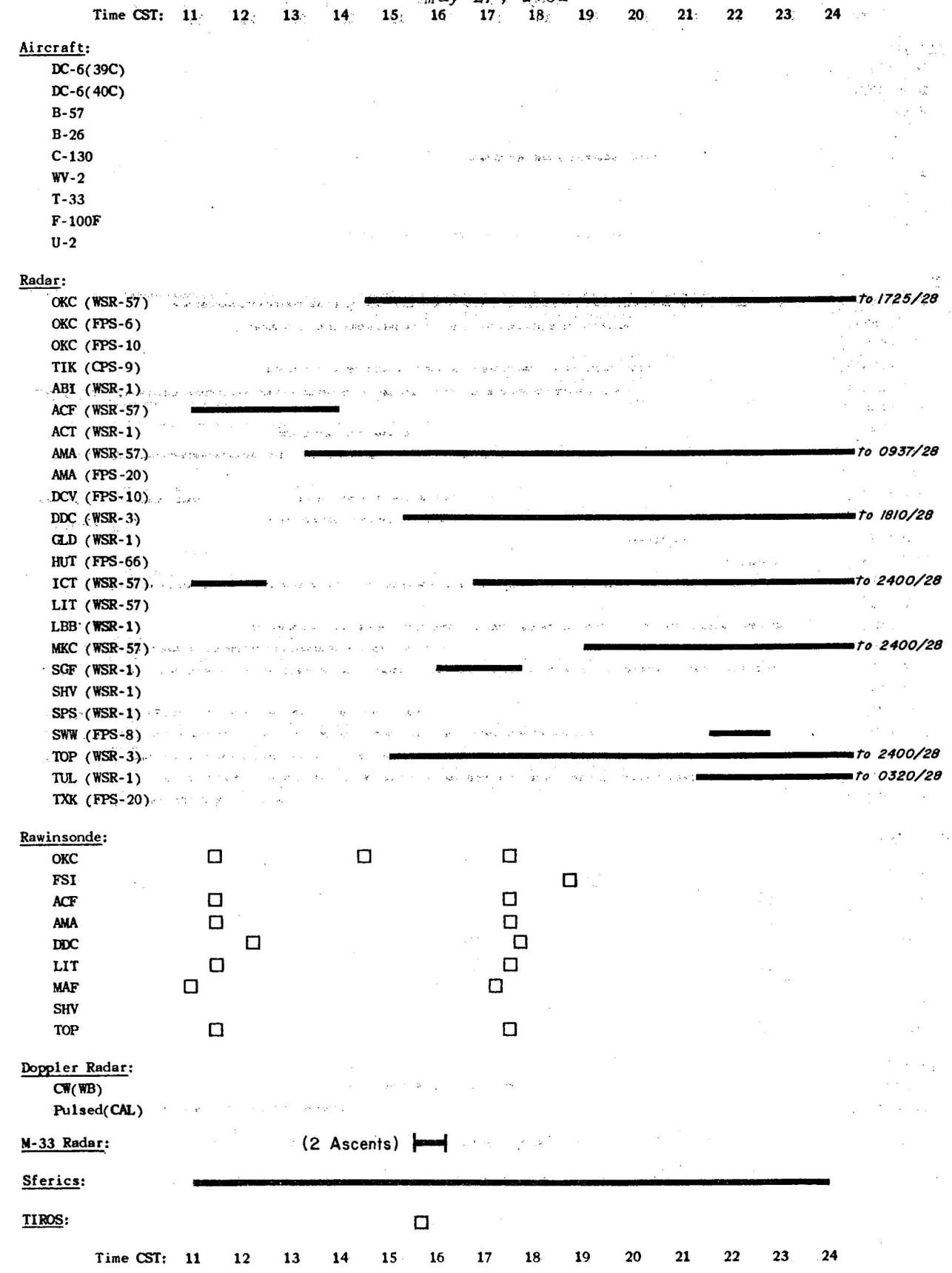
May 25, 1962


Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Aircraft:
DC-6(39C)
DC-6(40C)
B-57
B-26
C-130
WV-2
T-33
F-100F
U-2
Radar:
OKC (WSR-57)
to 1542/26
OKC (FPS-6)
OKC (FPS-10
TIK (CPS-9)
ABI (WSR-1)
to 0405/26
ACF (WSR-57)
to 0030/26
ACT (WSR-1)
AMA (WSR-57)
AMA (FPS-20)
DCV (FPS-10)
DDC (WSR-3)
GLD (WSR-1)
HUT (FPS-66)
ICT (WSR-57)
to 2400/26
LIT (WSR-57)
LBB (WSR-1)
to 2205/26
MKC (WSR-57)
to 0900/26
SGF (WSR-1)
SHV (WSR-1)
SPS (WSR-1)
SWW (FPS-8)
TOP (WSR-3)
to 1335/26
TUL (WSR-1)
TXK (FPS-20)
to 0959/26
Rawinsonde:
OKC
FSI
ACF
AMA
DDC
LIT
MAF
SHV
TOP
Doppler Radar:
CW(WB)
Pulsed(CAL)
M-33 Radar:
(14 Ascents)
Sferics:
TIROS:
Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24

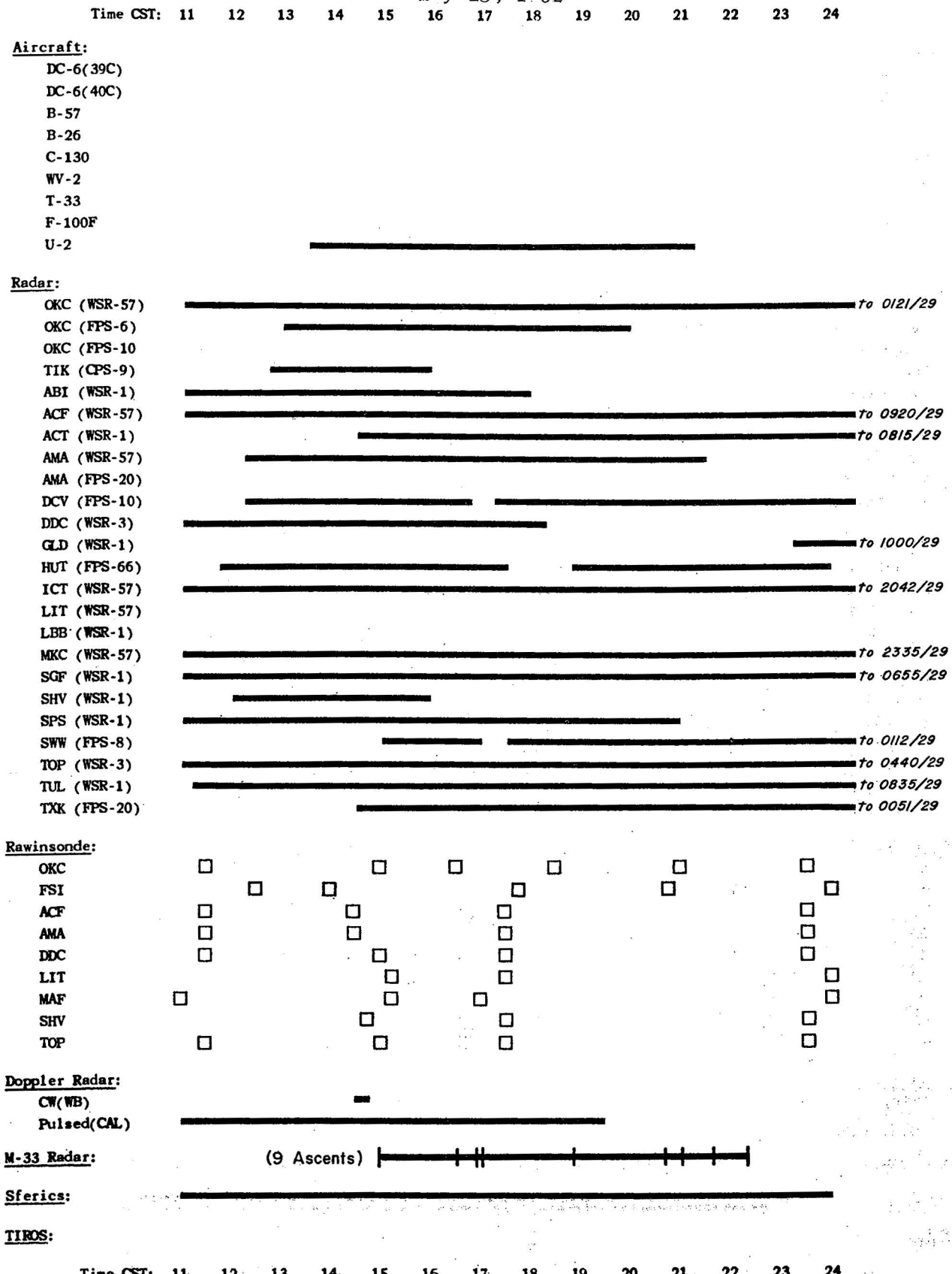
May 26, 1962


Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Aircraft:
DC-6(39C)
DC-6(40C)
B-57
B-26
C-130
WV-2
T-33
F-100F
U-2
Radar:
OKC (WSR-57)
OKC (FPS-6)
OKC (FPS-10
TIK (CPS-9)
ABI (WSR-1)
to 0045/27
ACF (WSR-57)
ACT (WSR-1)
AMA (WSR-57)
to 0550/27
AMA (FPS-20)
DCV (FPS-10)
to 0340/27
DDC (WSR-3)
to 0740/27
GLD (WSR-1)
HUT (FPS-66)
ICT (WSR-57)
to 1230/27
LIT (WSR-57)
LBB (WSR-1)
MKC (WSR-57)
to 0615/27
SGF (WSR-1)
to 0700/27
SHV (WSR-1)
SPS (WSR-1)
to 0331/27
SWW (FPS-8)
to 0105/27
TOP (WSR-3)
to 0700/27
TUL (WSR-1)
TXK (FPS-20)
to 0617/27
Rawinsonde:
OKC
FSI
ACF
AMA
DDC
LIT
MAF
SHV
TOP
Doppler Radar:
CW(WB)
Pulsed(CAL)
to 0259/27
M-33 Radar:
(6 Ascents)
Sferics:
TIROS:
Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24

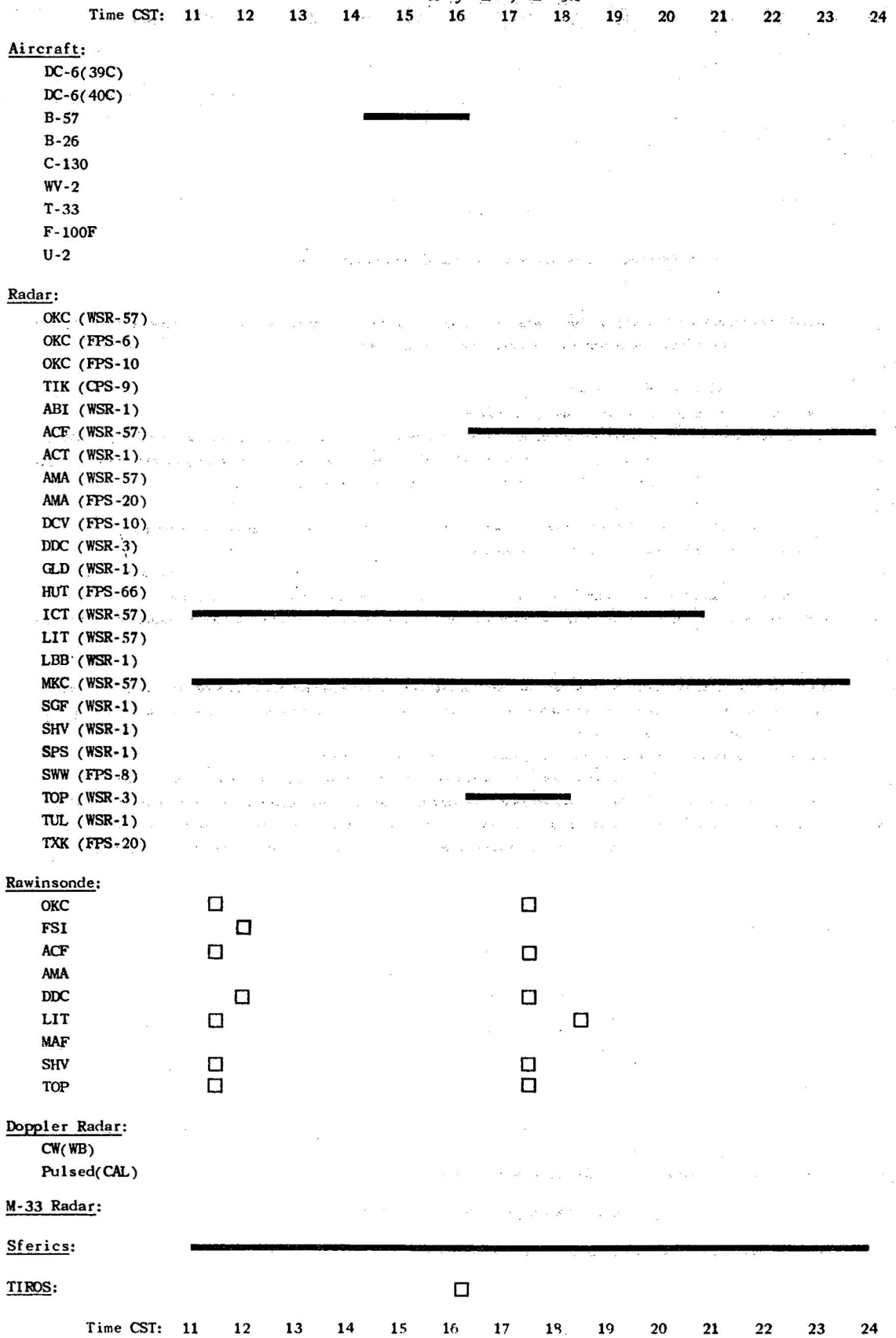
May 27, 1962


Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Aircraft:
DC-6(39C)
DC-6(40C)
B-57
B-26
C-130
WV-2
T-33
F-100F
U-2
Radar:
OKC (WSR-57)
OKC (FPS-6)
OKC (FPS-10
TIK (CPS-9)
ABI (WSR-1)
ACF (WSR-57)
ACT (WSR-1)
AMA (WSR-57)
AMA (FPS-20)
DCV (FPS-10)
DDC (WSR-3)
GLD (WSR-1)
HUT (FPS-66)
ICT (WSR-57)
LIT (WSR-57)
LBB (WSR-1)
MKC (WSR-57)
SGF (WSR-1)
SHV (WSR-1)
SPS (WSR-1)
SWW (FPS-8)
TOP (WSR-3)
TUL (WSR-1)
TXK (FPS-20)
to 1725/28
to 0937/28
to 1810/28
to 2400/28
to 2400/28
to 2400/28
to 0320/28
Rawinsonde:
OKC
FSI
ACF
AMA
DDC
LIT
MAF
SHV
TOP
Doppler Radar:
CW(WB)
Pulsed(CAL)
M-33 Radar:
(2 Ascents)
Sferics:
TIROS:
Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24

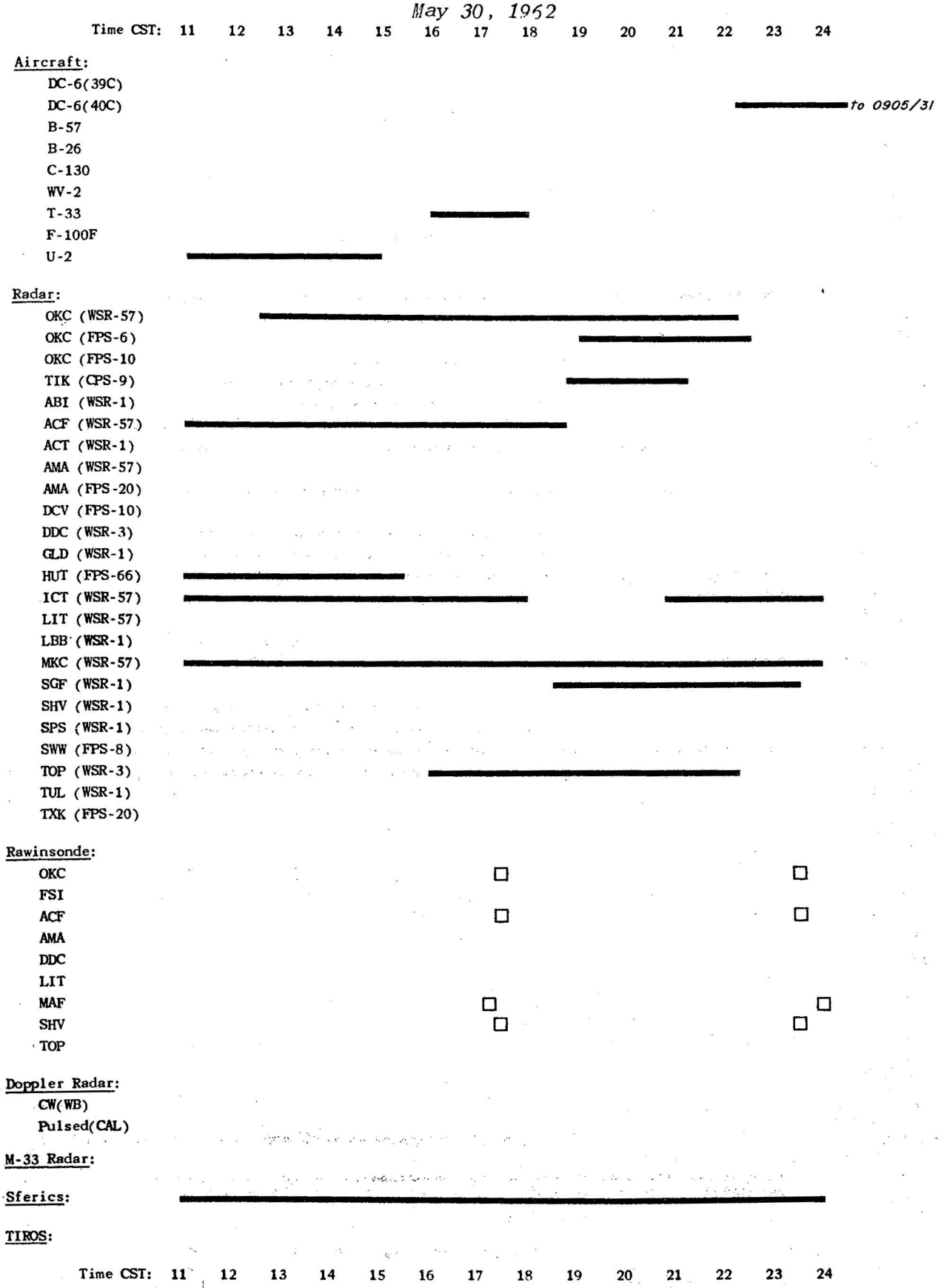
May 28, 1962

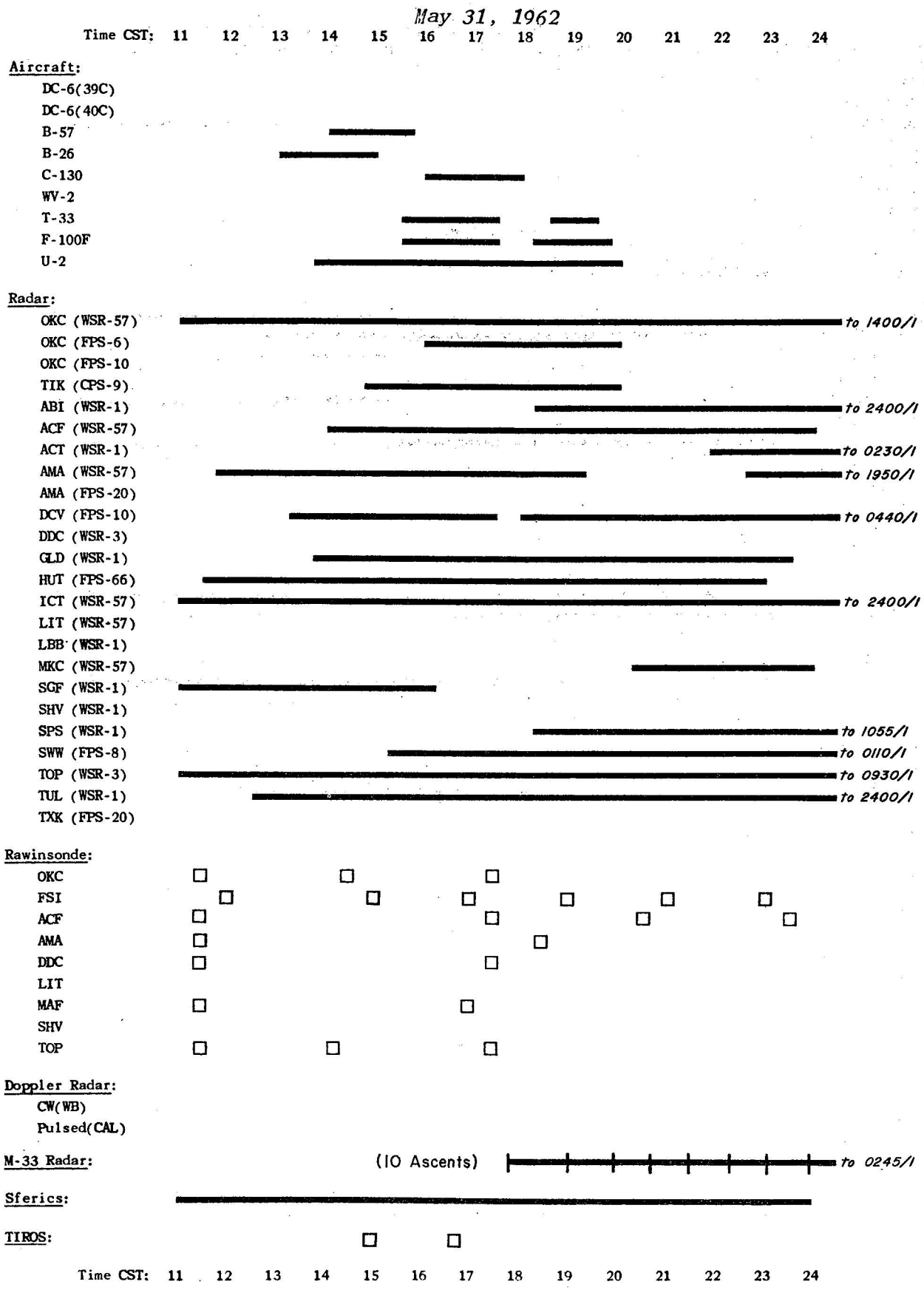

Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Aircraft:
DC-6(39C)
DC-6(40C)
B-57
B-26
C-130
WV-2
T-33
F-100F
U-2
Radar:
OKC (WSR-57)
OKC (FPS-6)
OKC (FPS-10
TIK (CPS-9)
ABI (WSR-1)
ACF (WSR-57)
ACT (WSR-1)
AMA (WSR-57)
AMA (FPS-20)
DCV (FPS-10)
DDC (WSR-3)
GLD (WSR-1)
HUT (FPS-66)
ICT (WSR-57)
LIT (WSR-57)
LBB (WSR-1)
MKC (WSR-57)
SGF (WSR-1)
SHV (WSR-1)
SPS (WSR-1)
SWW (FPS-8)
TOP (WSR-3)
TUL (WSR-1)
TXK (FPS-20)
to 0121/29
to 0920/29
to 0815/29
to 1000/29
to 2042/29
to 2335/29
to 0655/29
to 0112/29
to 0440/29
to 0835/29
to 0051/29
Rawinsonde:
OKC
FSI
ACF
AMA
DDC
LIT
MAF
SHV
TOP
Doppler Radar:
CW(WB)
Pulsed(CAL)
M-33 Radar:
(9 Ascents)
Sferics:
TIROS:
Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24

May 29, 1962

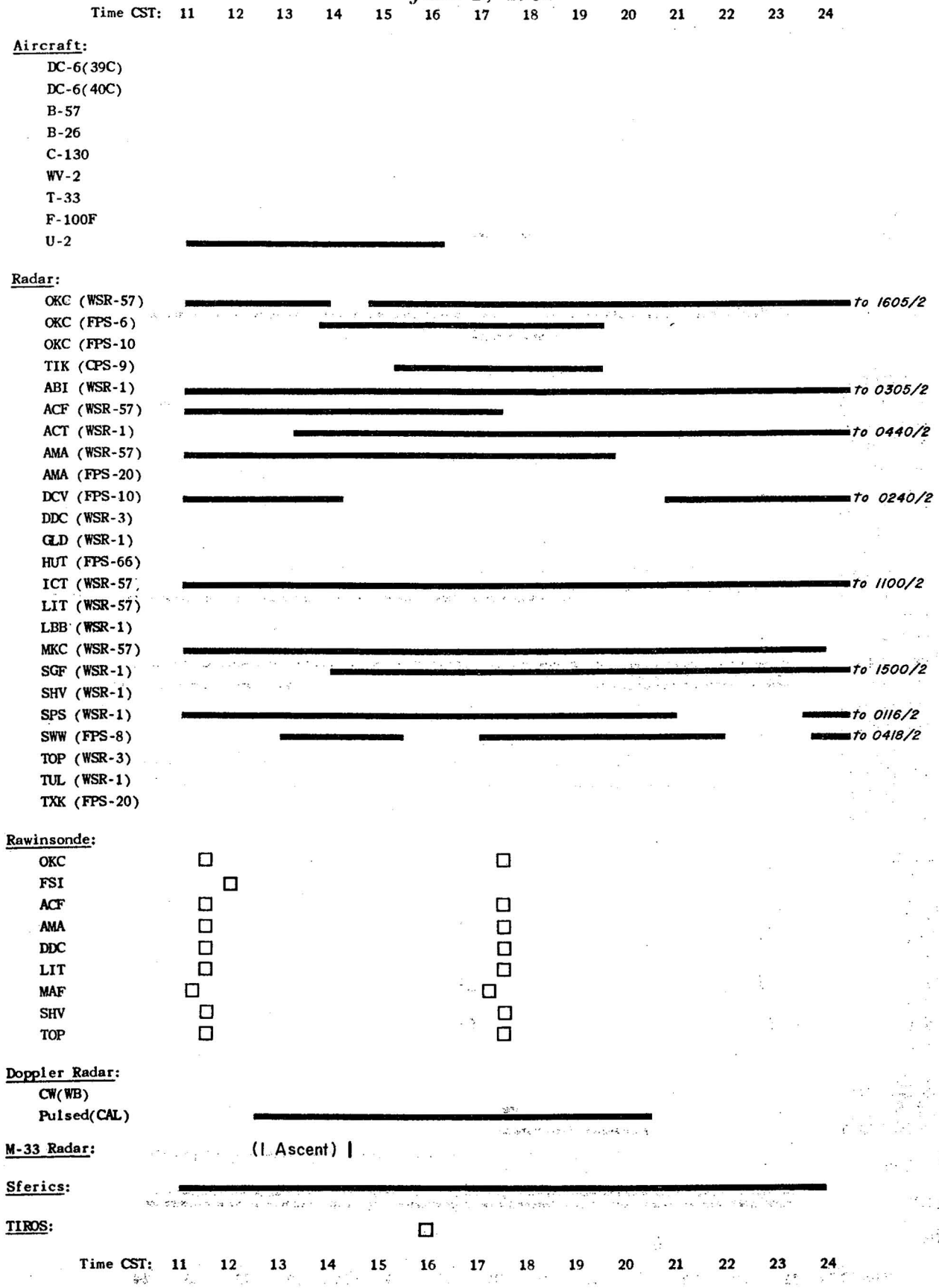

Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Aircraft:
DC-6(39C)
DC-6(40C)
B-57
B-26
C-130
WV-2
T-33
F-100F
U-2
Radar:
OKC (WSR-57)
OKC (FPS-6)
OKC (FPS-10
TIK (CPS-9)
ABI (WSR-1)
ACF (WSR-57)
ACT (WSR-1)
AMA (WSR-57)
AMA (FPS-20)
DCV (FPS-10)
DDC (WSR-3)
GLD (WSR-1)
HUT (FPS-66)
ICT (WSR-57)
LIT (WSR-57)
LBB (WSR-1)
MKC (WSR-57)
SGF (WSR-1)
SHV (WSR-1)
SPS (WSR-1)
SWW (FPS-8)
TOP (WSR-3)
TUL (WSR-1)
TXK (FPS-20)
Rawinsonde:
OKC
FSI
ACF
AMA
DDC
LIT
MAF
SHV
TOP
Doppler Radar:
CW(WB)
Pulsed(CAL)
M-33 Radar:
Sferics:
TIROS:
Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24

May 30, 1962

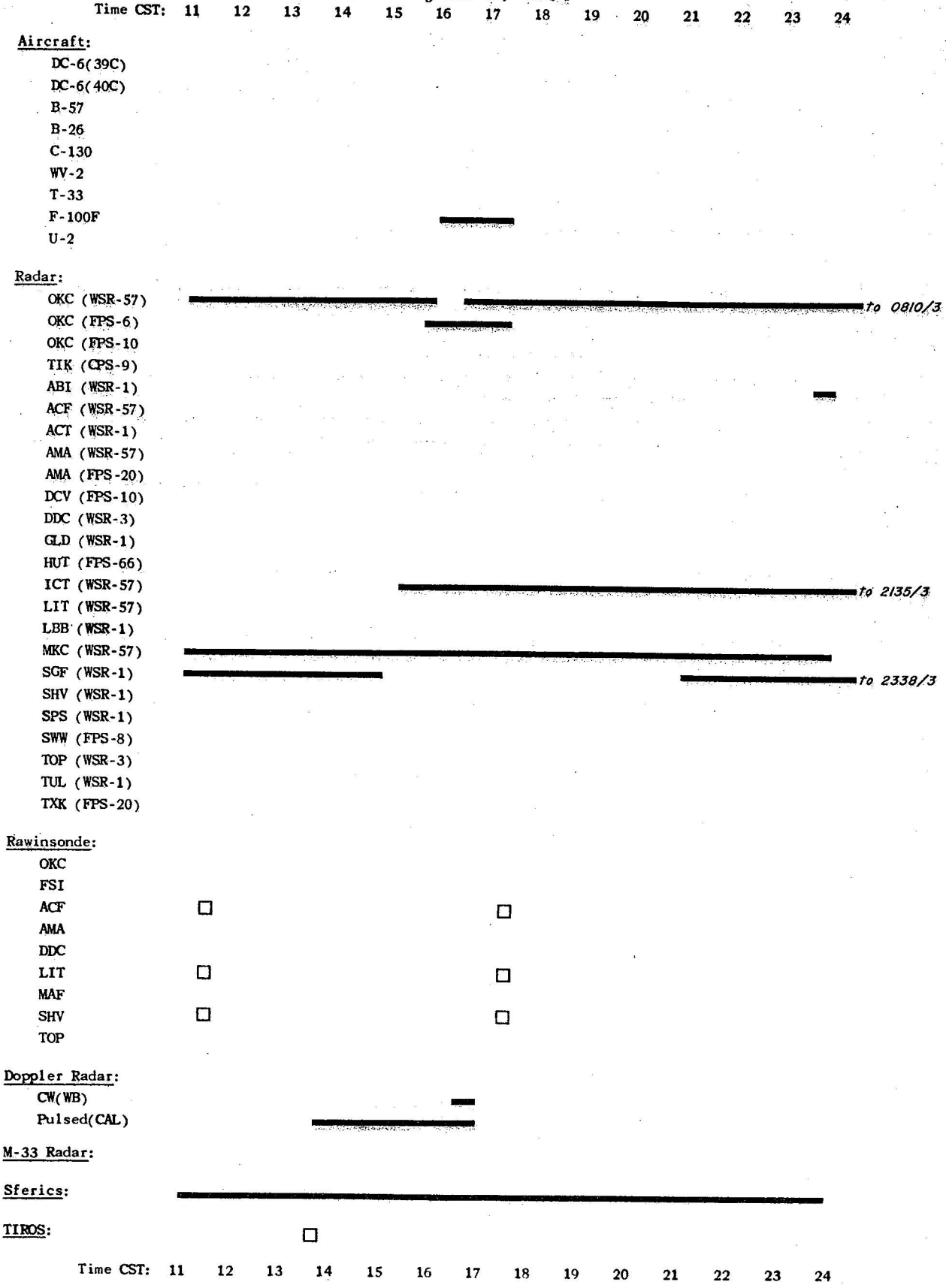

Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Aircraft:
DC-6(39C)
DC-6(40C)
to 0905/31
B-57
B-26
C-130
WV-2
T-33
F-100F
U-2
Radar:
OKC (WSR-57)
OKC (FPS-6)
OKC (FPS-10
TIK (CPS-9)
ABI (WSR-1)
ACF (WSR-57)
ACT (WSR-1)
AMA (WSR-57)
AMA (FPS-20)
DCV (FPS-10)
DDC (WSR-3)
GLD (WSR-1)
HUT (FPS-66)
ICT (WSR-57)
LIT (WSR-57)
LBB (WSR-1)
MKC (WSR-57)
SGF (WSR-1)
SHV (WSR-1)
SPS (WSR-1)
SWW (FPS-8)
TOP (WSR-3)
TUL (WSR-1)
TXK (FPS-20)
Rawinsonde:
OKC
FSI
ACF
AMA
DDC
LIT
MAF
SHV
TOP
Doppler Radar:
CW(WB)
Pulsed(CAL)
M-33 Radar:
Sferics:
TIROS:
Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24


May 31, 1962
Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Aircraft:
DC-6(39C)
DC-6(40C)
B-57
B-26
C-130
WV-2
T-33
F-100F
U-2
Radar:
OKC (WSR-57)
OKC (FPS-6)
OKC (FPS-10
TIK (CPS-9)
ABI (WSR-1)
ACF (WSR-57)
ACT (WSR-1)
AMA (WSR-57)
AMA (FPS-20)
DCV (FPS-10)
DDC (WSR-3)
GLD (WSR-1)
HUT (FPS-66)
ICT (WSR-57)
LIT (WSR-57)
LBB (WSR-1)
MKC (WSR-57)
SGF (WSR-1)
SHV (WSR-1)
SPS (WSR-1)
SWW (FPS-8)
TOP (WSR-3)
TUL (WSR-1)
TXK (FPS-20)
to 1400/1
to 2400/1
to 0230/1
to 1950/1
to 0440/1
to 2400/1
to 1055/1
to 0110/1
to 0930/1
to 2400/1
Rawinsonde:
OKC
FSI
ACF
AMA
DDC
LIT
MAF
SHV
TOP
Doppler Radar:
CW(WB)
Pulsed(CAL)
M-33 Radar:
(10 Ascents)
to 0245/1
Sferics:
TIROS:
Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24

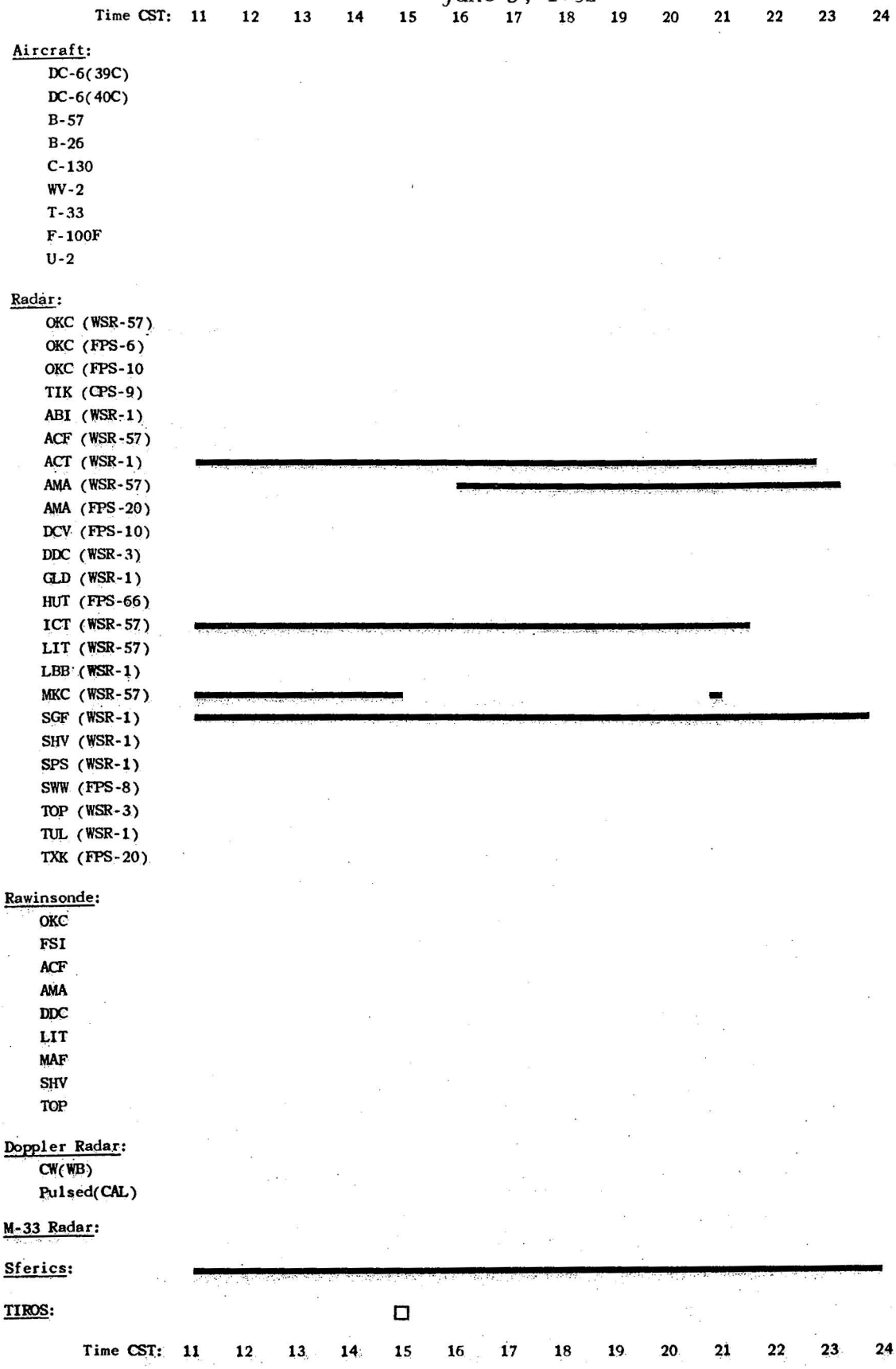
June 1, 1962


Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Aircraft:
DC-6(39C)
DC-6(40C)
B-57
B-26
C-130
WV-2
T-33
F-100F
U-2
Radar:
OKC (WSR-57)
OKC (FPS-6)
OKC (FPS-10
TIK (CPS-9)
ABI (WSR-1)
ACF (WSR-57)
ACT (WSR-1)
AMA (WSR-57)
AMA (FPS-20)
DCV (FPS-10)
DDC (WSR-3)
GLD (WSR-1)
HUT (FPS-66)
ICT (WSR-57)
LIT (WSR-57)
LBB (WSR-1)
MKC (WSR-57)
SGF (WSR-1)
SHV (WSR-1)
SPS (WSR-1)
SWW (FPS-8)
TOP (WSR-3)
TUL (WSR-1)
TXK (FPS-20)
to 1605/2
to 0305/2
to 0440/2
to 0240/2
to 1100/2
to 1500/2
to 0116/2
to 0418/2
Rawinsonde:
OKC
FSI
ACF
AMA
DDC
LIT
MAF
SHV
TOP
Doppler Radar:
CW(WB)
Pulsed(CAL)
M-33 Radar:
(I Ascent)
Sferics:
TIROS:
Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24

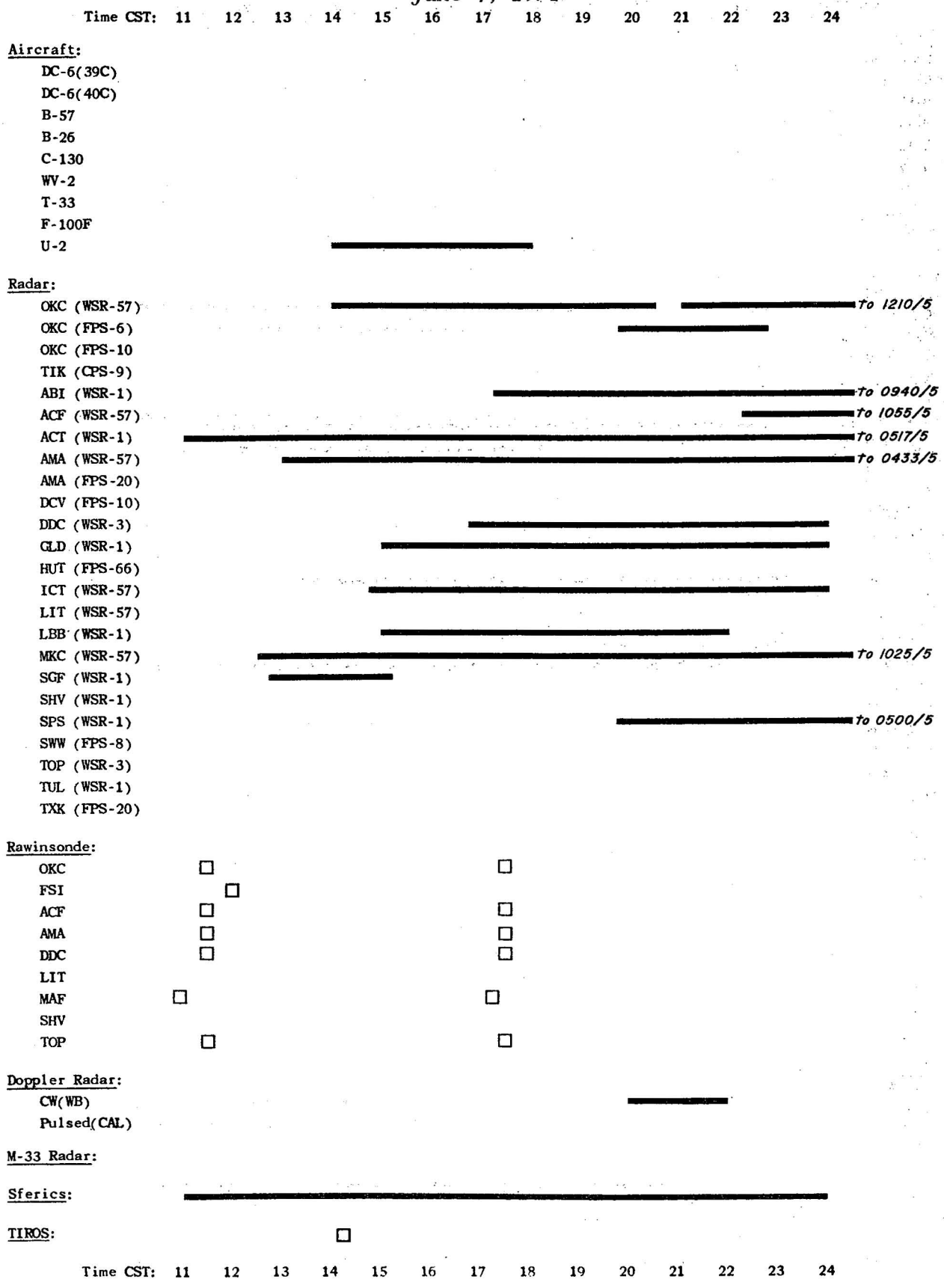
June 2, 1962


Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Aircraft:
DC-6(39C)
DC-6(40C)
B-57
B-26
C-130
WV-2
T-33
F-100F
U-2
Radar:
OKC (WSR-57)
to 0810/3
OKC (FPS-6)
OKC (FPS-10
TIK (CPS-9)
ABI (WSR-1)
ACF (WSR-57)
ACT (WSR-1)
AMA (WSR-57)
AMA (FPS-20)
DCV (FPS-10)
DDC (WSR-3)
GLD (WSR-1)
HUT (FPS-66)
ICT (WSR-57)
to 2135/3
LIT (WSR-57)
LBB (WSR-1)
MKC (WSR-57)
SGF (WSR-1)
to 2338/3
SHV (WSR-1)
SPS (WSR-1)
SWW (FPS-8)
TOP (WSR-3)
TUL (WSR-1)
TXK (FPS-20)
Rawinsonde:
OKC
FSI
ACF
AMA
DDC
LIT
MAF
SHV
TOP
Doppler Radar:
CW(WB)
Pulsed(CAL)
M-33 Radar:
Sferics:
TIROS:
Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24

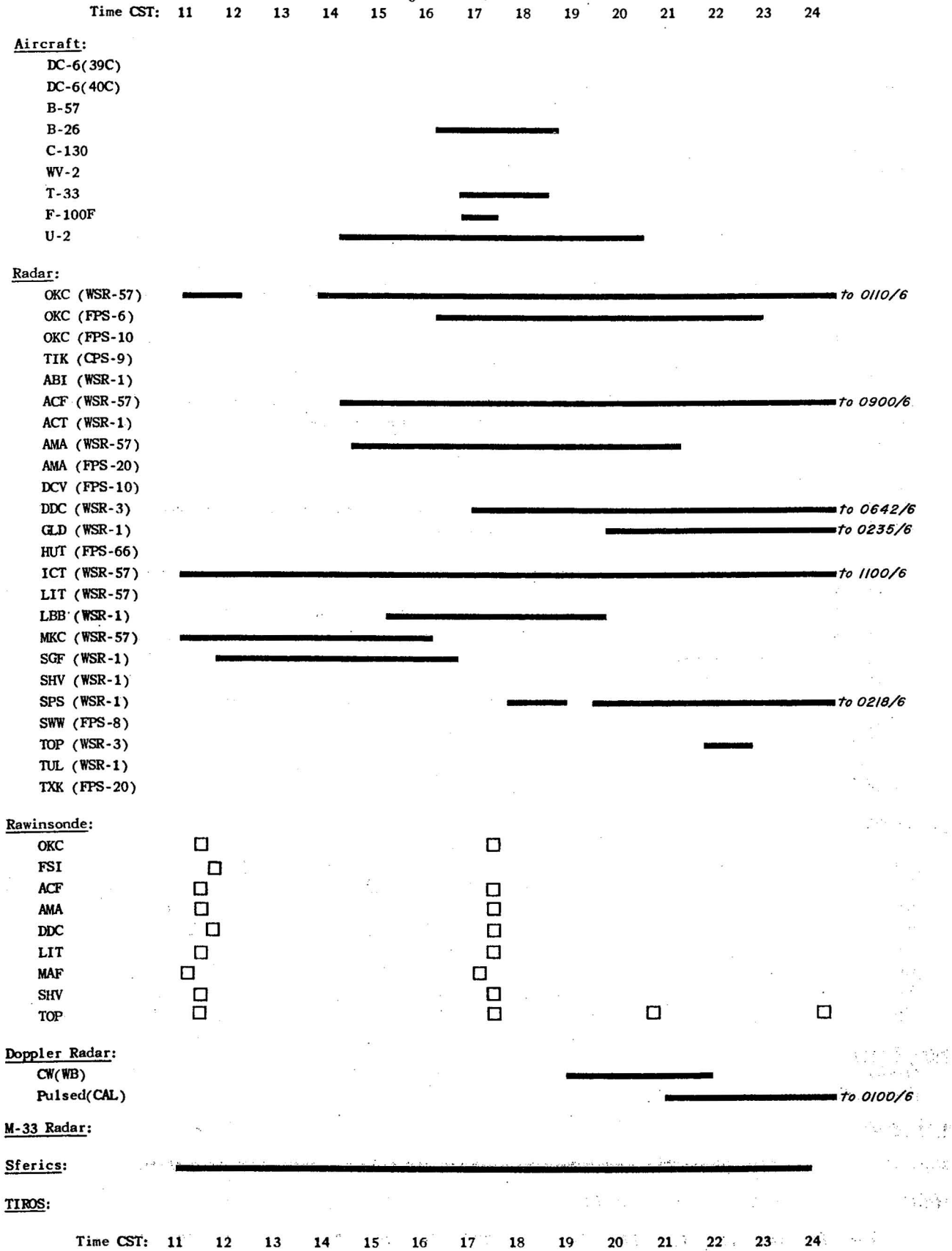
June 3, 1962


Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Aircraft:
DC-6(39C)
DC-6(40C)
B-57
B-26
C-130
WV-2
T-33
F-100F
U-2
Radar:
OKC (WSR-57)
OKC (FPS-6)
OKC (FPS-10
TIK (CPS-9)
ABI (WSR-1)
ACF (WSR-57)
ACT (WSR-1)
AMA (WSR-57)
AMA (FPS-20)
DCV (FPS-10)
DDC (WSR-3)
GLD (WSR-1)
HUT (FPS-66)
ICT (WSR-57)
LIT (WSR-57)
LBB (WSR-1)
MKC (WSR-57)
SGF (WSR-1)
SHV (WSR-1)
SPS (WSR-1)
SWW (FPS-8)
TOP (WSR-3)
TUL (WSR-1)
TXK (FPS-20)
Rawinsonde:
OKC
FSI
ACF
AMA
DDC
LIT
MAF
SHV
TOP
Doppler Radar:
CW(WB)
Pulsed(CAL)
M-33 Radar:
Sferics:
TIROS:
Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24

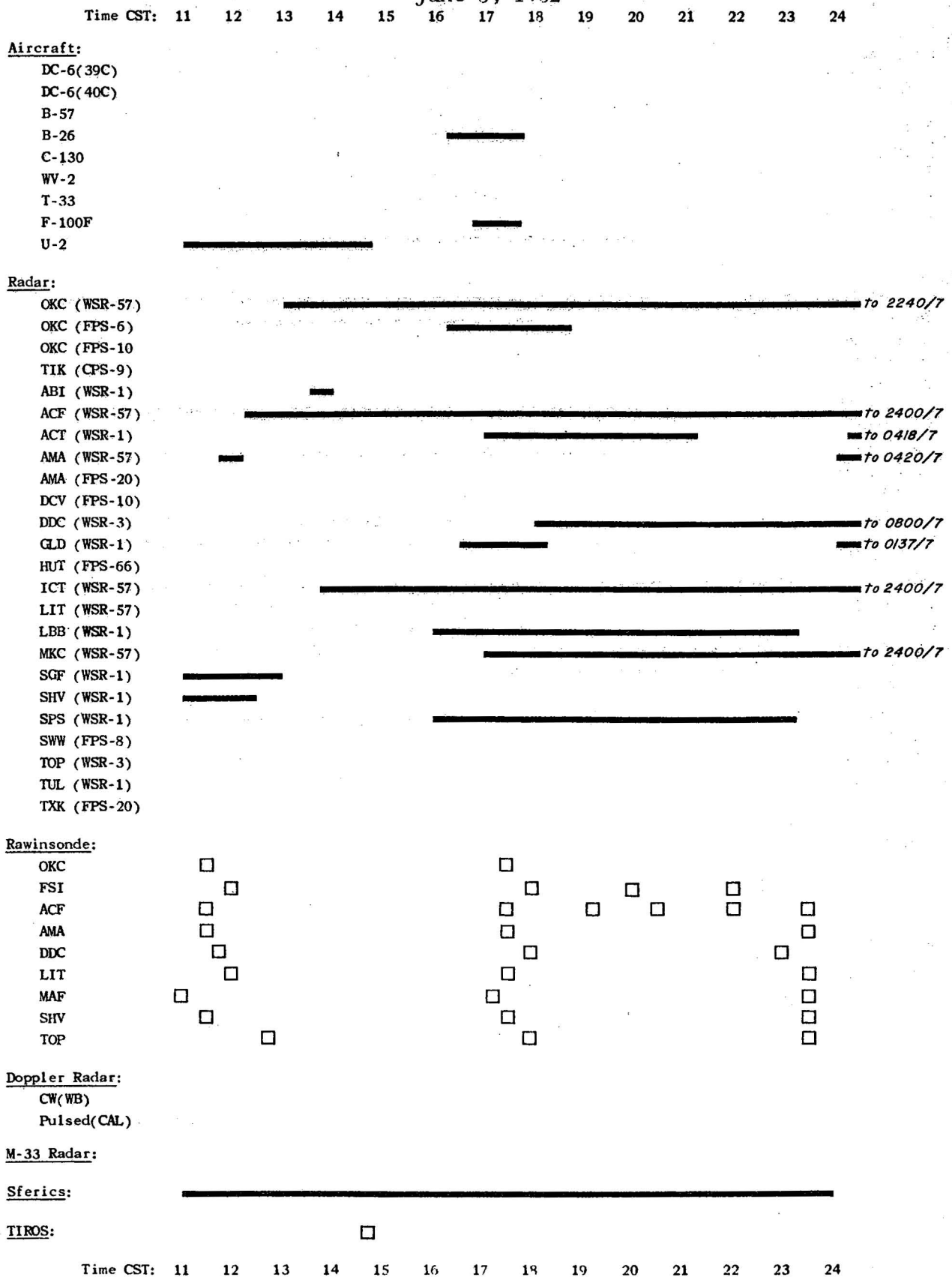
June 4, 1962


Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Aircraft:
DC-6(39C)
DC-6(40C)
B-57
B-26
C-130
WV-2
T-33
F-100F
U-2
Radar:
OKC (WSR-57)
OKC (FPS-6)
OKC (FPS-10)
TIK (CPS-9)
ABI (WSR-1)
ACF (WSR-57)
ACT (WSR-1)
AMA (WSR-57)
AMA (FPS-20)
DCV (FPS-10)
DDC (WSR-3)
GLD (WSR-1)
HUT (FPS-66)
ICT (WSR-57)
LIT (WSR-57)
LBB (WSR-1)
MKC (WSR-57)
SGF (WSR-1)
SHV (WSR-1)
SPS (WSR-1)
SWW (FPS-8)
TOP (WSR-3)
TUL (WSR-1)
TXK (FPS-20)
to 1210/5
to 0940/5
to 1055/5
to 0517/5
to 0433/5
to 1025/5
to 0500/5
Rawinsonde:
OKC
FSI
ACF
AMA
DDC
LIT
MAF
SHV
TOP
Doppler Radar:
CW(WB)
Pulsed(CAL)
M-33 Radar:
Sferics:
TIROS:
Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24

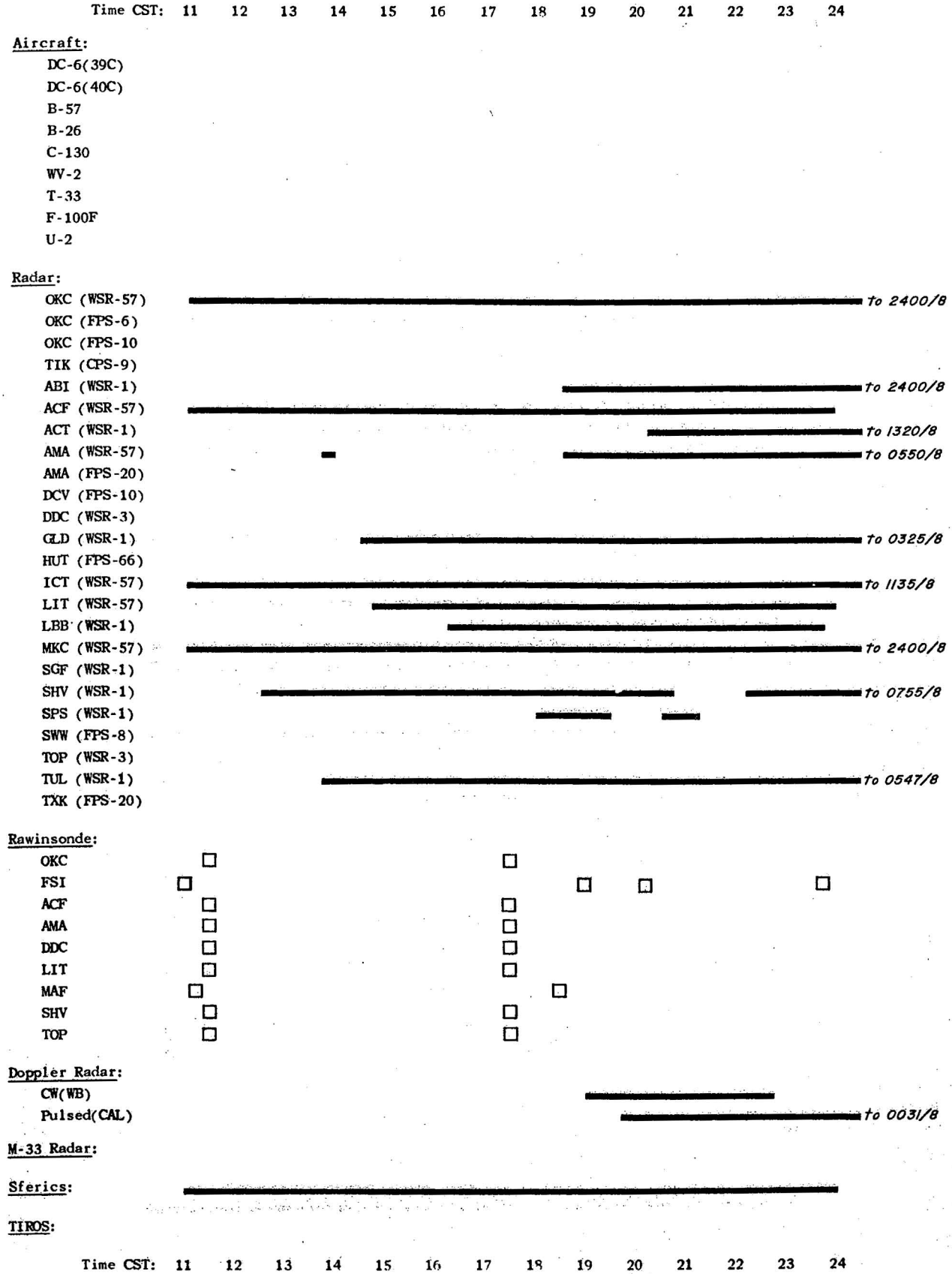
June 5, 1962


Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Aircraft:
DC-6(39C)
DC-6(40C)
B-57
B-26
C-130
WV-2
T-33
F-100F
U-2
Radar:
OKC (WSR-57)
to 0110/6
OKC (FPS-6)
OKC (FPS-10
TIK (CPS-9)
ABI (WSR-1)
ACF (WSR-57)
to 0900/6
ACT (WSR-1)
AMA (WSR-57)
AMA (FPS-20)
DCV (FPS-10)
DDC (WSR-3)
to 0642/6
GLD (WSR-1)
to 0235/6
HUT (FPS-66)
ICT (WSR-57)
to 1100/6
LIT (WSR-57)
LBB (WSR-1)
MKC (WSR-57)
SGF (WSR-1)
SHV (WSR-1)
SPS (WSR-1)
to 0218/6
SWW (FPS-8)
TOP (WSR-3)
TUL (WSR-1)
TXK (FPS-20)
Rawinsonde:
OKC
FSI
ACF
AMA
DDC
LIT
MAF
SHV
TOP
Doppler Radar:
CW(WB)
Pulsed(CAL)
to 0100/6
M-33 Radar:
Sferics:
TIROS:
Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24

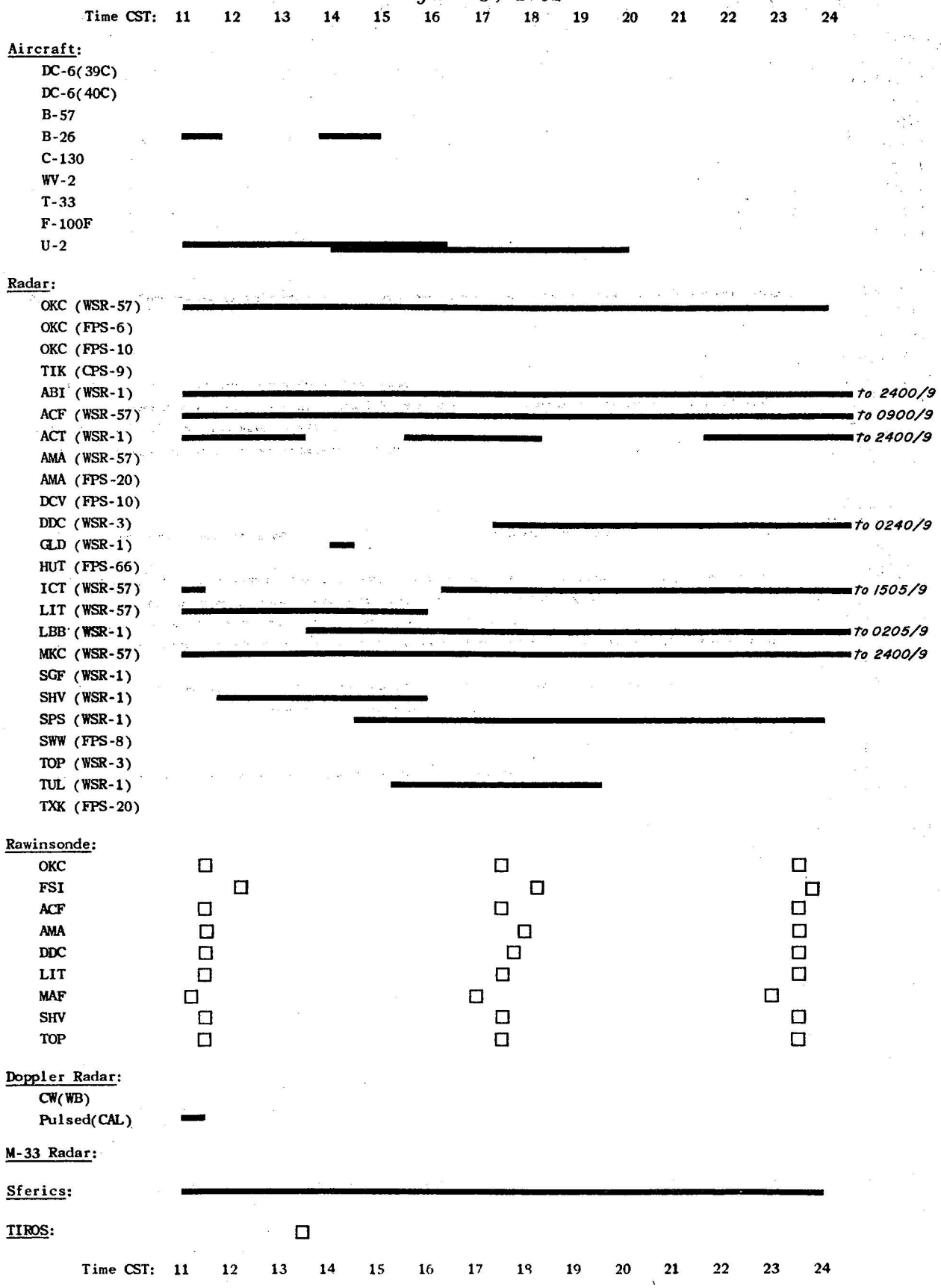
June 6, 1962


Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Aircraft:
DC-6(39C)
DC-6(40C)
B-57
B-26
C-130
WV-2
T-33
F-100F
U-2
Radar:
OKC (WSR-57)
OKC (FPS-6)
OKC (FPS-10
TIK (CPS-9)
ABI (WSR-1)
ACF (WSR-57)
ACT (WSR-1)
AMA (WSR-57)
AMA (FPS-20)
DCV (FPS-10)
DDC (WSR-3)
GLD (WSR-1)
HUT (FPS-66)
ICT (WSR-57)
LIT (WSR-57)
LBB (WSR-1)
MKC (WSR-57)
SGF (WSR-1)
SHV (WSR-1)
SPS (WSR-1)
SWW (FPS-8)
TOP (WSR-3)
TUL (WSR-1)
TXK (FPS-20)
to 2240/7
to 2400/7
to 0418/7
to 0420/7
to 0800/7
to 0137/7
to 2400/7
to 2400/7
Rawinsonde:
OKC
FSI
ACF
AMA
DDC
LIT
MAF
SHV
TOP
Doppler Radar:
CW(WB)
Pulsed(CAL)
M-33 Radar:
Sferics:
TIROS:
Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24

June 7, 1962


Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Aircraft:
DC-6(39C)
DC-6(40C)
B-57
B-26
C-130
WV-2
T-33
F-100F
U-2
Radar:
OKC (WSR-57)
OKC (FPS-6)
OKC (FPS-10)
TIK (CPS-9)
ABI (WSR-1)
ACF (WSR-57)
ACT (WSR-1)
AMA (WSR-57)
AMA (FPS-20)
DCV (FPS-10)
DDC (WSR-3)
GLD (WSR-1)
HUT (FPS-66)
ICT (WSR-57)
LIT (WSR-57)
LBB (WSR-1)
MKC (WSR-57)
SGF (WSR-1)
SHV (WSR-1)
SPS (WSR-1)
SWW (FPS-8)
TOP (WSR-3)
TUL (WSR-1)
TXK (FPS-20)
to 2400/8
to 2400/8
to 1320/8
to 0550/8
to 0325/8
to 1135/8
to 2400/8
to 0755/8
to 0547/8
Rawinsonde:
OKC
FSI
ACF
AMA
DDC
LIT
MAF
SHV
TOP
Doppler Radar:
CW(WB)
Pulsed(CAL)
to 0031/8
M-33 Radar:
Sferics:
TIROS:
Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24

June 8, 1962


Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Aircraft:
DC-6(39C)
DC-6(40C)
B-57
B-26
C-130
WV-2
T-33
F-100F
U-2
Radar:
OKC (WSR-57)
OKC (FPS-6)
OKC (FPS-10
TIK (CPS-9)
ABI (WSR-1)
ACF (WSR-57)
ACT (WSR-1)
AMA (WSR-57)
AMA (FPS-20)
DCV (FPS-10)
DDC (WSR-3)
GLD (WSR-1)
HUT (FPS-66)
ICT (WSR-57)
LIT (WSR-57)
LBB (WSR-1)
MKC (WSR-57)
SGF (WSR-1)
SHV (WSR-1)
SPS (WSR-1)
SWW (FPS-8)
TOP (WSR-3)
TUL (WSR-1)
TXK (FPS-20)
to 2400/9
to 0900/9
to 2400/9
to 0240/9
to 1505/9
to 0205/9
to 2400/9
Rawinsonde:
OKC
FSI
ACF
AMA
DDC
LIT
MAF
SHV
TOP
Doppler Radar:
CW(WB)
Pulsed(CAL)
M-33 Radar:
Sferics:
TIROS:
Time CST: 11 12 13 14 15 16 17 18 19 20 21 22 23 24

APPENDIX III-A

DROPSONDES

DATE	TIME (CST)	LATITUDE		LONGITUDE		RELEASE PRESS.
		°	' N	°	' W	mb.
April 30	1524	35	12	96	36	541
May 4	1603	33	54	96	44	460
4	1644	34	31	95	42	460
4	1738	33	34	99	19	460
4	1819	33	58	97	40	460
May 5	1612	35	47	99	06	499
5	1710	34	02	99	12	498
5	1746	34	43	100	29	511
5	1818	34	50	99	40	425
May 6	1432	34	56	97	32	544
6	1513	34	59.5	95	35	501
6	1606	35	00	98	26.5	501
6	1646	34	00	99	06	498
6	1725	34	54	96	43	498
6	1805	34	09	95	30	501
May 14	1638	34	54	99	34	660
14	1711	34	35	98	54	499
May 16	1647	33	53	101	41	499
16	1715	34	30	102	25	429
16	1742	34	56	101	17	449
16	1833	34	02	100	36	500
May 17	1330	36	04.5	100	21.5	498
17	1420	35	23	99	22	499
17	1540	36	06	99	48.5	499
May 18	1524	36	00	99	40	459
May 21	1239	36	43	99	47.5	516
21	1427	36	27	97	27	474
21	1612	37	10	97	45	495
May 22	1508	37	14.5	95	55	490
22	1639	38	15	95	08	492
May 24	1520	34	55	100	37	503
24	1613	35	50.5	99	08	495
24	1646	34	59	100	21	459
24	1726	34	48	98	09	568
May 25	1411	35	35	93	39	494
25	1516	36	02	94	40	495
25	1635	36	45	95	20	495
25	1710	35	18.5	92	47	495

APPENDIX III-B

TIROS IV PHOTOGRAPHIC COVERAGE OF NSSP OPERATIONAL AREA

DATE	TIME (GMT)[4]	PASS NO.[5]	DATE	TIME (GMT)	PASS NO.
	March 1962			(April Cont'd)	
22	0020	609	27	1638	1122
24	2128	636	28	1430	1135
24	2315	637	29	1535	1150
25	2238	652	30	1457	1164
26	2205	666		May 1962	
27	2130	680	1	1422	1178
29	2030	708	2	1534	1193
29	2202	709	3	1310	1206
30	1940	722	27	2148	1555
31	2050	737	29	2220	1584
	April 1962		31	2100	1612
4	1820	792	31	2250	1613
5	1755	807		June 1962	
9	1702	864	1	2205	1627
10	2337	882	2	1949	1640
11	2256	892	3	2058	1655
13	2150	924	4	2020	1669
18	1330	991	6	2049	1698
21	1325	1034	8	1935	1726
25	1245	1091	10	1653	1754

[4] Time shown is the approximate time of the middle frame in the sequence from which the nephanalysis was prepared.

[5] Orbit pass number on which the first picture of the sequence was taken.

APPENDIX IV

SIGNIFICANT FEATURES OF 1962 NSSP SURFACE NETWORK DATA

A. *Beta Network Data.*

All data from the Beta network for the period March 15-June 15, 1962, were examined and logs of pressure, temperature, and rainfall features have been prepared. The logs describe the lines along which characteristic changes occurred. They were prepared from preliminary isochrone-amplitude analyses. Examples of the analyses are shown in figures 5-7.

A condensed tabulation of the features is shown in the tables. The features have been classified as follows:

1. *Pressure.* Pressure rise lines (beginning of the pressure rise) are identified as "H." Pressure fall lines (ending of the pressure fall) are identified as "L." Maximum amounts of the rise and fall are given as:

"S"	Slight	0.05 in. Hg or less
"M"	Moderate	0.06 to 0.10 in. Hg
"L"	Large	0.11 to 0.15 in. Hg
"VL"	Very Large	0.16 to 0.20 in. Hg
"EL"	Extremely Large	0.21 in. Hg or more

A pressure rise line whose maximum amount of rise was 0.17 in. Hg would be listed as: "H-VL."

An example of an isochrone-amplitude analysis of an extremely large pressure rise that occurred from 1930-2100 CST on May 26 is shown in figure 5. Isochrones (solid lines) are drawn for each 30 minutes, and the amounts of rise (dashed lines) are drawn for each 0.05 inch.

2. *Temperature.* Temperature rise lines (beginning of the temperature rise) are identified as "W." Temperature fall lines (ending of the temperature fall) are identified as "C." Maximum amounts of the rise and fall are given as:

"S"	Slight	5° F. or less
"M"	Moderate	6° to 10° F.
"L"	Large	11° to 15° F.
"VL"	Very Large	16° to 20° F.
"EL"	Extremely Large	21° F. or more

A temperature fall line whose maximum amount of fall was 24° F. would be listed as: "C-EL."

An example of an isochrone-amplitude analysis of a moderate nocturnal temperature rise that occurred from 2245 to 0400 CST on June 4-5 is shown in figure 6. Isochrones (solid lines) are drawn for each 30 minutes, and the amounts of rise (dashed lines) are drawn for each 2° F. In this case the temperature rise began at a point south of station 11 and expanded outward with time.

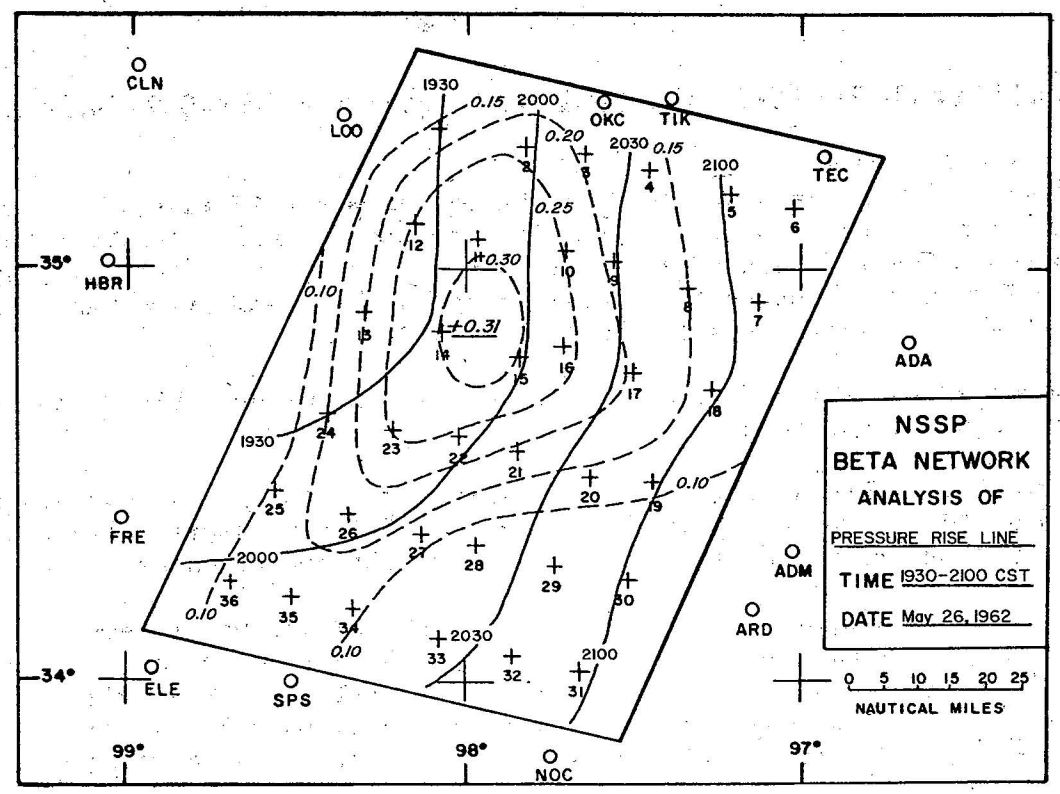


Figure 5.– Analysis of pressure rise line which passed over the Beta network on May 26, 1962. Solid lines are isochrones of beginning of rise in CST; dashed lines show amplitude of rise in in. Hg.

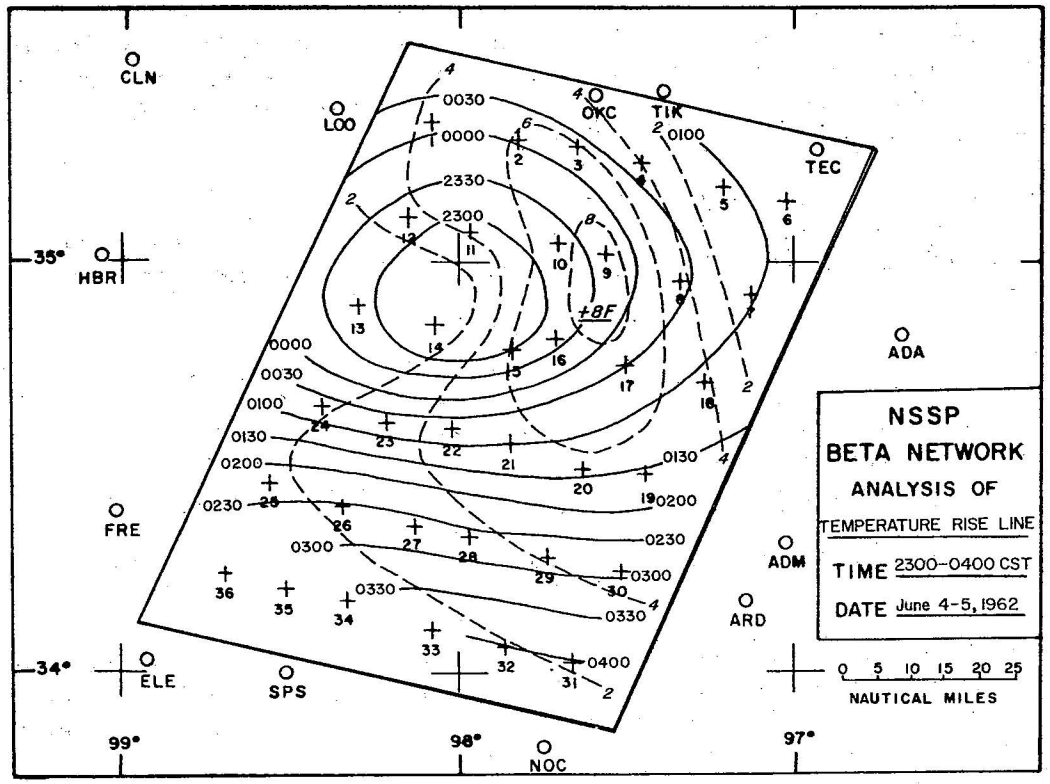


Figure 6.– Isochrone-amplitude analysis of a nocturnal temperature rise line which passed over the Beta network on June 4-5, 1962. Solid lines are isochrones of beginning of rise in CST; dashed lines show amplitude of rise in °F.

3. *Relative Humidity.* Changes in relative humidity were usually inverse to those in temperature. However, there were some cases in which pronounced humidity changes occurred without the corresponding changes in temperature. These have been described in the original logs but are not included in Table 3.

4. *Rainfall.* Rainfall lines (beginning of rainfall) are identified as "R." The maximum amounts of rainfall are given as:

"L"	Light	0.33 inch or less
"M"	Moderate	0.34 to 1.00 inch
"H"	Heavy	1.01 to 3.00 inches
"VH"	Very Heavy	3.01 inches or more

A rainfall line with a maximum of 0.55 inch would be listed as: "R-M."

An example of an isochrone-amplitude analysis of a heavy precipitation line that occurred from 2100 to 0000 CST, June 5, is shown in figure 7. Isochrones (solid lines) are drawn for each 30 minutes, and total amounts of rainfall (dashed lines) are drawn for each 0.50 inch. A primary maximum of 2.75 inches occurred near station 10, and there were secondary maxima of slightly over 1 inch near stations 6-7, 20, and 23.

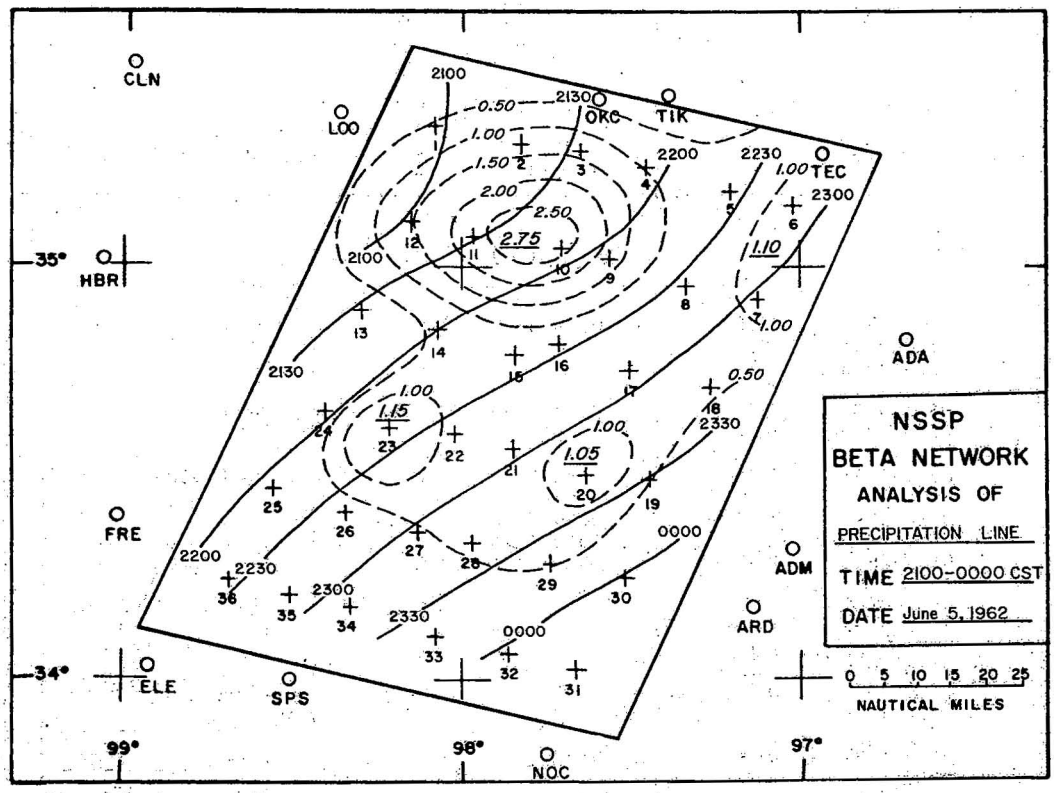


Figure 7.- Isochrone-amplitude analysis of a precipitation line which passed over the Beta network on June 5, 1962. Solid lines are isochrones of beginning of precipitation in CST; dashed lines are isohyets of total precipitation in inches.

5. *Wind Data.* Although some of the wind data were examined, and isochrone-amplitude analyses were made with respect to wind speed and wind direction, these analyses are not complete. Those made are described in the original logs, but are not included in Table 3.

The tables also show the inclusive hours CST during which the discontinuities were present over the network. In many instances the discontinuities covered only portions of the network. These portions are described in the original log, but have not been indicated in the tables.

Table 3. Tabulation of Beta Network Features

March 15-31, 1962

Date	Pressure		Temperature		Rainfall	
	Time (CST)	Feature & Magnitude	Time (CST)	Feature & Magnitude	Time (CST)	Feature & Magnitude
15	None		1909-2117	W-M	None	
20	0537-0735	L-L	1611-1738	C-S	0330-0555	R-H
	0828-0952	H-S			0720-1020	R-H
24	1208-1403	H-S	1014-1147	C-M	1130-1700	R-M
			1104-1235	W-L		
			1106-1410	C-L		
			1127-1400	W-VL		
			1535-1855	C-L		
29	0425-0624	H-S	0417-0717	C-L	None	
30	0719-0925	H-M	0719-0845	C-S	0700-1200	R-H
			1125-1255	W-S		

April 1962

8	0120-0323	L-M	0358-0453	W-S	None	
	0120-0323	H-M				
	0655-0953	H-M				
9	0548-0650	H-S	0045-0522	W-S	None	
	0658-0800	H-S				
10	0510-0625	L-M	0548-0750	C-S	0500-0800	R-H
	0550-0635	L-M	0622-0755	W-M		
	0550-0753	H-VL	0630-0823	C-M		
	0613-0806	L-VL	0900-1225	W-S		
	0615-0806	H-L	0954-1420	C-M		
	0632-0825	L-S				
	0640-0847	H-S				
	0745-0920	L-M				
	0758-0925	H-M				
	0820-0950	L-S				
	0843-1022	H-S				
	0910-1115	L-S				
11	0000-0134	H-M	None		None	
13	0420-0545	L-S	0024	W-M	None	
16	None		0329	W-S	None	
17	0055-0247	L-M	0125-0210	W-S	0245-0545	R-M
	0100-0257	H-M	0225-0457	C-S		
	0134-0347	H-M				
	0302-0358	L-M				
	0830-0940	H-M				
	1006-1052	L-M				

Table 3. Tabulation of Beta Network Features

April 1962 (cont'd)

Date	Pressure		Temperature		Rainfall	
	Time (CST)	Feature & Magnitude	Time (CST)	Feature & Magnitude	Time (CST)	Feature & Magnitude
19	None		0053-0315	W-M	None	
22	0430-0545	H-S	0825-1555	C-VL	1300-1435	R-H
			1310-1445	W-S		
23	None		None		1800-2359	R-H
24	None		1130-1254	W-S	0000-0300	R-H
26	2208-2359	H-L	2250-2359	C-L	2225-2359	R-H
27	0000-0108	H-L	0000-0127	C-L	0000-0210	R-H
	0107-0330	L-VL	1522-1716	C-M	1600-1810	R-H
	0245-0618	L-L	1608-1907	C-EL	1650-1740	R-M
	0635-0840	L-VV	1832-2015	C-M	1755-1915	R-H
	0652-0935	H-EL			1910-2140	R-H
	1715-2110	H-M				
30	None		0320-1040	C-L	None	

May 1962

1	None		2208-2305	W-M	None	
2	None		0008-0320	W-S	None	
			0025-0230	W-S		
			0305-0505	W-S		
3	2055-2333	H-M	None		None	
	2230-2359	L-M				
4	0000-0045	L-M	0229-0330	W-L	0345-0630	R-H
	0318-0510	H-M	0409-0520	W-S		
	0420-0725	L-L				
5	0445-0600	H-M	2130-2250	W-EL	None	
	2130-2325	H-S				
	2225-2335	L-M				
6	0943-1020	H-S	0225-0300	W-M	None	
	1100-1200	L-M				
8	1855-2024	H-S	None		None	
	2115-2145	L-L				
	2045-2110	L-S				
9	0545-0720	L-S	None		None	
16	None		1315-1525	C-M	None	
20	1655-1930	H-M	1758-1950	C-VL	1830-1900	R-H
	1942-2230	H-VL	2005-2155	C-M	1955-2235	R-H
	2015-2236	L-M	2015-2124	W-M		
	2053-2310	L-VL	2040-2300	C-L		
	2100-2235	H-M				
	2150-2335	L-L				

Table 3. Tabulation of Beta Network Features

May 1962 (cont'd)

Date	Pressure		Temperature		Rainfall	
	Time (CST)	Feature & Magnitude	Time (CST)	Feature & Magnitude	Time (CST)	Feature & Magnitude
22	0312-0450	H-S	2020-2245	W-M	None	
24	1740-2026	H-M	1822-2155	C-VL	2215-2359	R-VH
	1839-2203	H-VL	1845-2110	C-L		
	1908-2232	L-VL	1845-2145	C-L		
	2112-2317	L-VL	1940-2145	W-M		
			2240-2350	W-M		
			2345-2359	W-M		
			2254-2359	C-M		
			2300-2359	W-L		
25	1825-1854	H-M	0000-0100	W-M	0000-0020	R-VH
	1826-1930	H-VL	0000-0055	C-M	1840-2110	R-M
	1904-2010	H-VL	0000-0115	W-L	1945-2034	R-L
	1930-2106	H-VL	1755-2120	C-EL	2225-2359	R-M
	1947-2210	L-VL	1830-1925	C-L		
			1905-2010	W-S		
26	1912-2015	H-L	0023-0120	W-S	0000-0100	R-M
	1925-2105	H-EL	1908-2108	C-EL	1925-2130	R-H
	2032-2205	H-M				
	2248-2355	H-M				
27	0040-0152	L-EL	0030-0135	W-S	None	
28	1815-1926	H-L	1450-1747	C-L	1500-1750	R-M
	1905-2102	L-L	1835-2045	C-VL	1740-2100	R-H
31	2140-2359	H-L	2220-2359	C-L	2135-2359	R-H

June 1-15, 1962

1	0000-0133	H-L	0000-0158	C-L	0000-0255	R-H
	0152-0300	H-M	1202-1802	C-VL	1100-1925	R-VH
	0250-0425	L-S				
	0530-0720	L-VL				
	1555-1905	H-M				
4	1914-2055	H-M	2245-2359	W-M	2000-2255	R-M
	2055-2255	H-M				
5	0027-0210	L-L	0000-0400	W-M	1930-2355	R-H
	0155-0430	L-VL	0209-0255	W-M		
	2022-2330	H-L	0224-0545	W-L		
			2024-2340	C-VL		
6	0020-0332	L-EL	0002-0330	W-M	None	
	0106-0242	L-VL				
	0230-0408	L-EL				
	2220-2359	H-M				
7	0000-0045	H-M	2000-2348	C-VL	2000-2330	R-H
	0020-0245	H-M				
	1935-2311	H-VL				
	1935-2345	H-EL				
	2046-2311	L-M				
9	0120-0347	H-L	0100-0314	C-M	0040-0115	R-H
	0335-0442	L-M	0156-0445	C-M	0150-0355	R-H
	0408-0555	H-M			0255-0445	R-H
	0445-0612	L-L				
	0940-1128	L-L				

Table 3. Tabulation of Beta Network Features

June 1-15, 1962 (cont'd)

Date	Pressure		Temperature		Rainfall	
	Time (CST)	Feature & Magnitude	Time (CST)	Feature & Magnitude	Time (CST)	Feature & Magnitude
10	None		None		0155-0415	R-L
11	0250-0445	H-M	0230-0430	C-M	0315-0550	R-H
	0402-0720	H-L	0425-0609	C-M		
	0617-0730	L-L				
	0800-0930	L-VL				
12	1515-1835	H-M	1445-2020	C-EL	1350-1845	R-H
15	0355-0510	H-S	None		None	
	0435-0743	L-L				

B. *Alpha Network Data.*

Time did not permit examining the Alpha network data with respect to all the pressure, temperature, and rainfall lines that passed it. However, a few interesting features were noted, as follows:

1. *A Microbarogram in the Vicinity of a Tornado.* During the evening of May 24, 1962, a tornado passed within a short distance of the Alpha network station at Newton, Kans. The rather striking trace of the microbarograph is shown in figure 8. There were multiple pressure changes preceding the tornado, including a general fall in pressure until 1837 CST, a 0.06 inch pressure rise from 1837 to 1842 CST, and a marked pressure fall beginning at 1906 CST. The latter pressure fall appears to represent the micro-low in which the tornado was imbedded. The time of passage of this micro-low was 26 minutes (from 1906 to 1932 CST. During this time pressure fell from 29.78 to 29.00 inches, rising then to 29.94 inches. The fall was more rapid than the rise, the fall occurring in 9 minutes' time, and the rise occurring in 17 minutes' time. The portion of the trace from 29.32 to 29.00 inches appears to have been due to the tornado itself. Time for passage of this portion was 2-3 minutes, and the slight discontinuities in both the fall and the rise near 29.32 inches suggests that this portion of the depression was separate from the larger micro-low. It appears that pressure may have been lower than the 29.00 inches indicated; however, this is believed to have been the true depression at the station, since the microbarograph pen could have traced below this line a short distance, had the pressure actually fallen below 29.00 inches.

Although Newton Kans., was the only Alpha network station experiencing the tornado, the micro-low in which the tornado occurred was well shown by at least one other station, and the overall system producing the tornado was recorded by many stations.

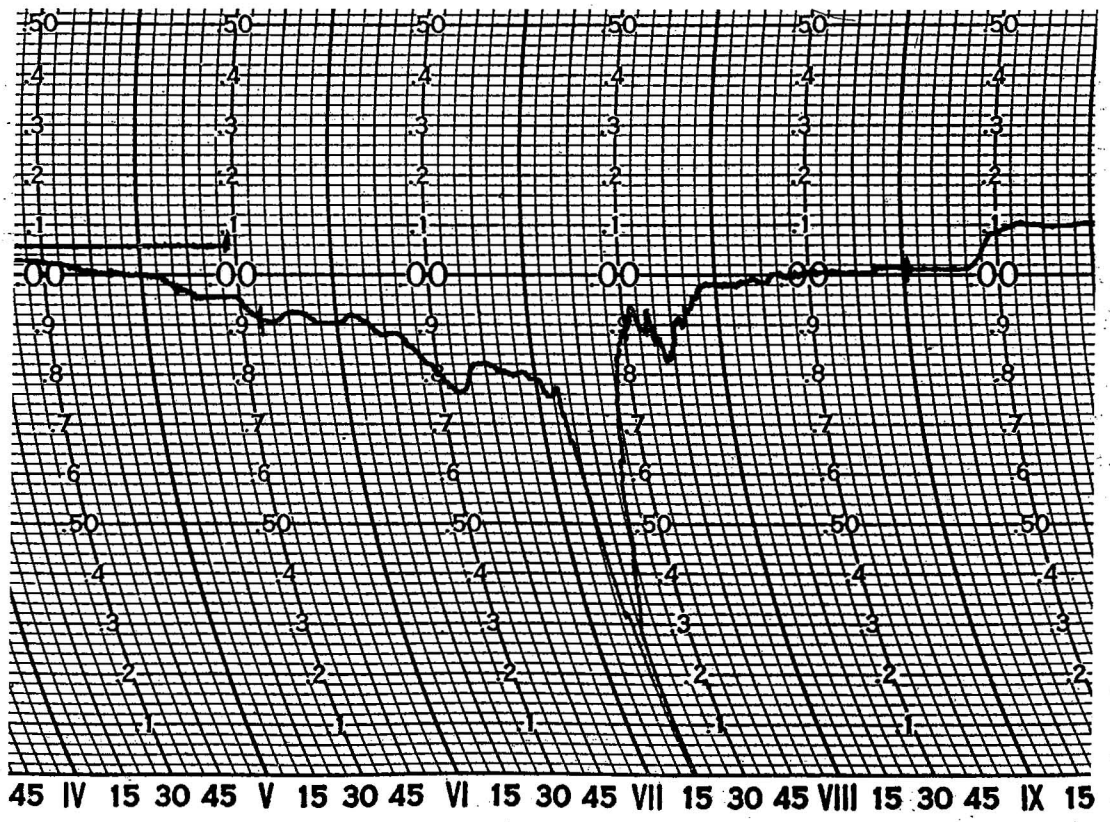


Figure 8.– Section of microbarogram from Alpha network station at Newton, Kans. on May 24, 1962 during passage of micro-low and tornado. Minimum pressure of 29.00 in. Hg occurred at 1914 CST.

2. *Heat Bursts.* Many of the nocturnal temperature rises that were noted over the Beta network were also noted with respect to the Alpha network. The larger rises have been termed "heat bursts"[6]. Two of these were specifically noted as follows:

March 18-19 --- Large nocturnal temperature rises that followed earlier falls in temperature occurred over portions of Kansas and the Texas Panhandle from 1900 to 0600 CST. The maximum rise was 12° F. at Sun City, Kans. The temperature rises were accompanied by falls in relative humidity. The maximum dessication was at Roll, Okla., where the relative humidity fell from 94 to 24%.

May 5 --- Extremely large nocturnal temperature rises occurred from 2130 to 2250 CST. Some of these were over the Beta network, where the maximum rise was from 72° to 93° F. at station 36. The associated fall in relative humidity at station 36 was from 88 to 22%. Many of the Alpha network stations experienced similar temperature and humidity changes. These stations were: Kiowa, Aetna, Sun City, and Kingman in Kansas; Miami, Gageby, Seymour, Lake Kickapoo, Jacksboro, Electra, and Wichita Falls in Texas; and Frederick in Oklahoma.

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[6]The term, "heat burst," has been coined by Mr. Richard Garrett, MIC, U. S. Weather Bureau, Topeka, Kans. Although the term probably is not technically correct, it is very descriptive. It is being used tentatively for those nocturnal temperature rises that are of large magnitude.

APPENDIX V

ATTENDEES AT MEETINGS OF ADVISORY PANEL AND OPERATIONAL GROUPS NORMAN, OKLAHOMA, FEBRUARY 16, 1962

(*Member of Advisory Panel)

Mr. L. V. Anderson
Naval Research Laboratories
Washington, D. C.

Dr. David Atlas
Air Force Cambridge Research
Laboratories
Bedford, Massachusetts

Mr. A. B. Arnett, Jr.
National Severe Storms Project
Kansas City, Missouri

*Dr. F. C. Bates
University of Kansas
Lawrence, Kansas

Mr. E. T. Binckley
Aeronautical Systems Division
Wright-Patterson Air Force Base, Ohio

Mr. D. Ray Booker
Pennsylvania State University
University Park, Pennsylvania

Captain D. E. Barbarick, USAF
4th Weather Wing
Colorado Springs, Colorado

Mr. Stuart Bigler
U. S. Weather Bureau
Washington, D. C

Mr. Allen Barnabei
Department of Commerce
Washington, D. C.

Cdr. Paul J. Bloom
Federal Aviation Agency
Atlantic City, New Jersey

Major Thomas Beauchamp, USAF
Air Defense Command
Oklahoma City, Oklahoma

Dr. Robert M. Cunningham
Air Force Cambridge Research
Laboratories
Bedford, Massachusetts

Mr. Chilcoti
Federal Aviation Agency
Ft. Worth, Texas

Mr. Anthony Chimera
Cornell Aeronautical Laboratories
Buffalo, New York

Mr. Mason T. Charak
National Aeronautics
& Space Administration
Langley Field, Virginia

Mr. George Dellert
U. S. Weather Bureau
Washington, D. C.

Mr. Robert Decker
Federal Aviation Agency
Washington, D. C.

Dr. J. E. Dinger
Navy Research Laboratories
Washington, D. C.

Mr. Ralph J. Donaldson, Jr.
Air Force Cambridge Research
Laboratories
Bedford, Massachusetts

Lt. Col. G. D. Dean
Army Signal Corps
Washington, D. C.

Dr. Tetsuya Fujita
University of Chicago
Chicago, Illinois

Mr. Brent B. Goddard
National Severe Storms Project
Kansas City, Missouri

Mr. Paul G. Goldberg
Air Force Cambridge Research
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*Mr. Henry T. Harrison
United Air Lines
Denver, Colorado

Major C. L. Hasseltine
U. S. Air Force
Scott Air Force Base, Illinois

Mr. W. C. Huyler
Headquarters, Air Weather Service
Scott Air Force Base, Illinois

Mr. William E. Hardy
National Severe Storms Project
Kansas City, Missouri

Mr. John Hamilton
U. S. Weather Bureau
Oklahoma City, Oklahoma

*Dr. Joachim Kuettner
National Aeronautics & Space
Administration
Huntsville, Alabama

Captain Joseph G. Kondracki
Aeronautical Systems Division
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Mr. H. E. Klieforth
Air Force Cambridge Research
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Edwards Air Force Base, California

Mr. Newton Lieurance
U. S. Weather Bureau
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Mr. Carl W. Miller
Cornell Aeronautical Laboratory
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Mr. Denver Mullins
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Captain Lyle B. Marshall
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Mr. H. H. Murphy
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Mr. Norman E. Prosser
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Mr. Robert L. Peace, Jr.
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