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c) NOAA Eastern Region Computer Programs
and Problems NWS ERCP - No. 27



TRAJ - SINGLE STATION TRAJECTORY PLOT

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Scientific Services Division
Eastern Region Headquarters
December 1984

**U.S. DEPARTMENT OF
COMMERCE**

/ National Oceanic and
Atmospheric Administration

/ National Weather
Service

NOAA TECHNICAL MEMORANDUM

National Weather Service, Eastern Region Computer Programs and Problems

The Eastern Region Computer Programs and Problems (ERCP) series is a subset of the Eastern Region Technical Memorandum series. It will serve as the vehicle for the transfer of information about fully documented AFOS application programs. The format ERCP - No. 1 will serve as the model for future issuances in this series.

- 1 An AFOS version of the Flash Flood Checklist. Cynthia M. Scott, March 1981. (PB81 211252).
- 2 An AFOS Applications Program to Compute Three-Hourly Stream Stages. Alan P. Blackburn, September 1981. (PB82 156886).
- 3 PUPPY (AFOS Hydrologic Data Reporting Program). Daniel P. Provost, December 1981. (PB82 199720).
- 4 Special Search Computer Program. Alan P. Blackburn, April 1982. (PB83 175455).
- 5 Conversion of ALEMBIC\$ Workbins. Alan P. Blackburn, October 1982. (PB83 138313).
- 6 Real-Time Quality Control of SAOs. John A. Billet, January 1983. (PB83 166082).
- 7 Automated Hourly Weather Collective from HRR Data Input. Lawrence Cedrone, January 1983 (PB83 167122).
- 8 Decoders for FRH, FTJ and FD Products. Cynthia M. Scott, February 1983. (PB83 176057).
- 9 Stability Analysis Program. Hugh M. Stone, March 1983. (PB83 197947).
- 10 Help for AFOS Message Comp. Alan P. Blackburn, May 1983. (PB83 213561).
- 11 Stability and Other Parameters from the First Transmission RAOB Data. Charles D. Little, May 1983. (PB83 220475).
- 12 TERR, PERR, and BIGC: Three Programs to Compute Verification Statistics. Matthew R. Peroutka, August 1983. (PB84 127521).
- 13 Decoder for Manually Digitized Radar Observations. Matthew R. Peroutka, June 1983. (PB84 127539).
- 14 Slick and Quick Data Entry for AFOS Era Verification (AEV) Program. Alan P. Blackburn, December 1983. (PB84 138726).
- 15 MDR--Processing Manually Digitized Radar Observations. Matthew R. Peroutka, November 1983. (PB84 161462)
- 16 RANP: Stability Analysis Program. Hugh M. Stone, February 1984.(PB84 1614
- 17 ZONES. Gerald G. Rigdon, March 1984. (PB84 174325)
- 13 Automated Analysis of Upper Air Soundings to Specify Precipitation Type. Joseph R. Bocchieri and Gerald G. Rigdon, March 1984. (PB84 174333)

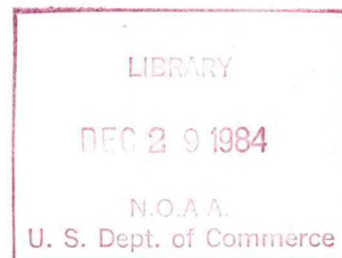
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NOAA EASTERN REGION COMPUTER PROGRAMS AND PROBLEMS - No. 27

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I. Introduction

A. Purpose

This program generates an AFOS plot of the NMC Three Dimensional Trajectory forecast for a single station.

B. Benefits to the User

The Three Dimensional Trajectory Model (Technical Procedures Bulletin No. 25) was developed to attain greater accuracy in the prognosis of temperature and moisture distribution below 700mb. Prior to AFOS, the forecaster routinely plotted up the information manually from the trajectory bulletin. With the advent of AFOS, it is possible to plot the data automatically. More important, however, is the ability to overlay the Trajectory graphic onto other compatible AFOS graphics. The trajectory forecast becomes a more valuable product because it can be used interactively with other NMC products that are stored as AFOS graphics.

II. Methodology and Software Structure

The program will plot any station that is part of one of 8 trajectory bulletins that cover the United States. An example of the trajectory bulletin is shown in Figure 1.

The user determines which station to plot with the command line at an ADM. The command line tells the program which of the 8 bulletins to search for, and the station that you want to plot from the bulletin. The structure of the command line is explained below. To run the program:

```
RUN:TRAJ CCCFTJXX SSS
```

where: CCC is your WSFO
XX is one of the 8 FTJ bulletins
SSS is the station you want plotted

As an example, refer back to the trajectory bulletin in Figure 1. To run the trajectory for Albany at the WSFO Buffalo, the following command is used:

```
RUN:TRAJ BUFFTJ53 ALB
```

The program searches the data base for the product BUFFTJ53. If it does not find it, the program stops and lets the user know with an error message at the ADM. After the program finds and opens the product, it searches for the station to be plotted. Again, if it does not find the station, the program stops and lets the user know with an error message at the ADM.

Once the file and station are located, the plotting routine begins. Subroutines from AG.LB (MacDonald, 1981) are used. Twenty-four hour forecasts of smoothed trajectories are plotted at three levels; the surface, 850 mb. and 700 mb. Next to the plot temperature, dewpoint and K-index are tabulated, as well as the station name, and valid time and date of the FTJ product. These values are all listed in double-size character format. Below the K-index, the parcel pressure changes are listed for each standard level at six hour intervals. These are in standard-size character format (Figure 2). When the graphic is zoomed to 16:1 or 25:1 ratio, the six hourly pressure change values are also plotted next to the trajectories (Figure 4).

For stations in the eastern half of the U.S., data is tabulated on the left hand side of the graphic, and for stations in the western half of the U.S., data is tabulated on the right hand side. For high level stations, such as Reno, only the Sfc. and 700 mb. levels are plotted and tabulated (Figure 3).

The output plot is stored in graphic NMCGPHFTJ (assign map background 02).

III. Examples of Interactive Use

The trajectory model is used as a supplement to the standard MOS and LFM guidance in forecasting. A couple of examples of interactive AFOS use are listed below, in addition to the examples in NOAA Technical Procedures Bulletin No. 225.

The twenty-four hour maximum and minimum temperature forecast can be supplemented by overlaying the trajectory onto observed 24 hour max/min temperatures from the present day (Figure 4). Cloud and ceiling forecasts can also be improved by overlaying the trajectory plots onto observed weather depictions (Figure 5). Over the Great Lakes, the trajectory aids in determination of over water fetch for lake effect snow forecasts.

Of course there are many other techniques incorporating trajectory data that are in use at field offices today. With the single station trajectory plot now available on AFOS, it is anticipated that even more techniques will be developed in the future.

IV. References

Brehem, F., 1975: FORTRAN Utility Library - UTIL.LB. AFOS Systems Programming Note No. 16.

MacDonald, A.E., 1981: AFOS Graphics Creation from FORTRAN. NWS Western Region Computer Programs and Problems No. 18, NOAA, U.S. Department of Commerce.

Reap, R., 1978: Techniques Development Laboratory Three-Dimensional Trajectory Forecast. NWS Technical Procedures Bulletin No. 225, NOAA, U.S. Department of Commerce.

Peroutka, M., 1981: Accessing the AFOS Database. NWS Western Region Computer Programs and Problems No. 23, NOAA, U.S. Department of Commerce.

V.

EASTERN REGION CP #27

11/30/84

AN AFOS PLOT OF THE THREE DIMENSIONAL TRAJECTORY FORECAST

PART A: PROGRAM INFORMATION AND INSTALLATION PROCEDURE

PROGRAM NAME: TRAJ.SV

AAL ID: XXXXXXXX
REVISION NO.: 1.00

PURPOSE: TRAJ plots the three dimensional trajectory forecast for a single station from the cccFTJxx products. Temperature, dewpoint, K index and pressures are tabulated alongside the plot.

PROGRAM INFORMATION

DEVELOPMENT PROGRAMMER(S):
T. NIZIOL
LOCATION: WSFO BUF
PHONE: FTS 437-4800
LANGUAGE: DG FORTRAN IV/5.20
DATE: 02/23/84
RUNNING TIME: 30 SECONDS

MAINTENANCE PROGRAMMER(S):
T. NIZIOL
LOCATION: WSFO BUF
PHONE: FTS 437-4800
TYPE: STANDARD
REVISION DATE: NA

DISK SPACE:	PROGRAM FILES	46 RDOS BLOCKS
	DATA FILES	7 RDOS BLOCKS

PROGRAM REQUIREMENTS

PROGRAM FILES:

<u>NAME</u>	<u>COMMENTS</u>
TRAJ.SV	

DATA FILES:

<u>NAME</u>	<u>DP LOCAT.</u>	<u>READ/WRITE</u>	<u>COMMENTS</u>
TRAJ.01	DP0	WRITE	RDOS file of graphic (left on disk)

AFOS PRODUCTS:

<u>ID</u>	<u>ACTION</u>	<u>COMMENTS</u>
cccFTJxx	DECODED	Specified in run line
NMCGPHFTJ	CREATED	Output graphic

Originally Parts A and B were used as ERCP Brief #7; therefore, binder inserts are not included.

LOAD LINE

RLDR TRAJ OUT <AG AFREAD BG UTIL FORT>.LB

PROGRAM INSTALLATION

- 1- Put TRAJ.SV on DPØF and link from DPØ (WSO'S may have more room on DPØ).
- 2- Put NMCGPHFTJ into the database and assign it map background 2.

AN AFOS PLOT OF THE THREE DIMENSIONAL TRAJECTORY FORECASTPART B: PROGRAM EXECUTION AND ERROR CONDITIONSPROGRAM NAME: TRAJ.SVAAL ID: XXXXXXXX
REVISION NO.: 1.00PROGRAM EXECUTION

1. The run line for TRAJ is RUN:TRAJ cccFTJxx sss, where cccFTJxx is one of the trajectory forecast products and sss is the city in the FTJ product that you want the plot for.

2. An ADM alert "JOB TRAJ COMPLETED: OUTPUT IN NMCGPHFTJ" will signal routine program completion.

ERROR CONDITIONS

ADM MESSAGES		MEANING
1.	ERROR CONDITION: BAD FILE	TRAJ cannot access the FTJ product--it may be bad or missing from your database. Check the product.
2.	ERROR CONDITION: BAD CITY	TRAJ can't find the city in the run line in the given FTJ product. Check city.
3.	ERROR CONDITION: BAD LINE	TRAJ can't read a line in the FTJ product. Check the product. You may have to re-enter it into the system.

Originally Parts A & B were used as ERCP Brief #7; therefore, binder inserts are not included.

VI. Figures

FOUS53 KWBC 210000

TRAJECTORY FCST

	210000Z	210600Z	211200Z	211800Z	220000Z	
	LATLONPPP	LATLONPPP	LATLONPPP	LATLONPPP	TEMP DEWPT	K
DCA 700	437817665	424801675	411788686	399777695	4.5 -14.0	3
850	429773829	417770834	405768842	396768848	12.1 -1.0	
SFC	423749982	411754982	400756985	391761987	984 20.2 9.3	
IPT 700	470840660	454818671	439800682	425783692	3.3 -18.2	0
850	448792824	439784832	429778840	420772846	10.3 -1.5	
SFC	442766968	432767966	423766967	416767970	970 18.5 7.0	
BUF 700	491863664	473840675	458821684	443802693	2.4 -16.2	4
850	463821831	455810837	447801843	438791847	9.5 -.4	
SFC	452795981	447793983	442789986	436785987	985 18.2 7.1	
BTV 700	529844657	506816671	483789680	463760689	-1.2 -16.9	9
850	487802837	478783838	468764841	456746845	6.7 .0	
SFC	470771983	464763979	459752977	452740978	978 17.2 6.1	
ALB 700	502844660	482815671	462789680	444762689	1.0 -17.6	4
850	468790827	458777833	449763839	438749844	8.2 -1.5	
SFC	457758977	448755974	441749974	433742977	978 18.5 5.8	
LGA 700	473824652	456798664	439775677	423754688	2.5 -16.8	2
850	453767819	441758827	430749835	418742843	9.4 -1.6	
SFC	444735978	432735976	422734988	412735999	003 19.6 6.7	
CAR 700	530800680	511772686	493742689	479711694	-4.8 -14.4	18
850	505760846	495740843	485720843	476699846	4.4 -.3	
SFC	493735984	485724986	479709989	474693994	996 15.7 4.8	
PWM 700	509826663	489794672	469764680	452733689	-.8 -15.2	11
850	478767830	467751833	457734838	446718843	6.7 -.4	
SFC	467733980	457728978	448720978	441711982	994 18.2 5.4	
BOS 700	495823658	475792668	456764678	439735688	.5 -16.6	5
850	468760823	457747829	446733836	435720842	7.6 -1.3	
SFC	459726982	447723980	437717986	428713000	005 19.1 5.7	
CON 700	507833661	486802671	466773680	448743688	-.2 -16.3	8
850	474774828	463760833	453744838	443728843	7.2 -.8	
SFC	463740981	453736978	444728978	437721985	995 18.5 5.5	

Figure 1.

BUF

TRAJECT. VALID

DATE:22

TIME:00Z

LVL TEMP DWPT

700 2.4 -16.2

850 9.5 - .4

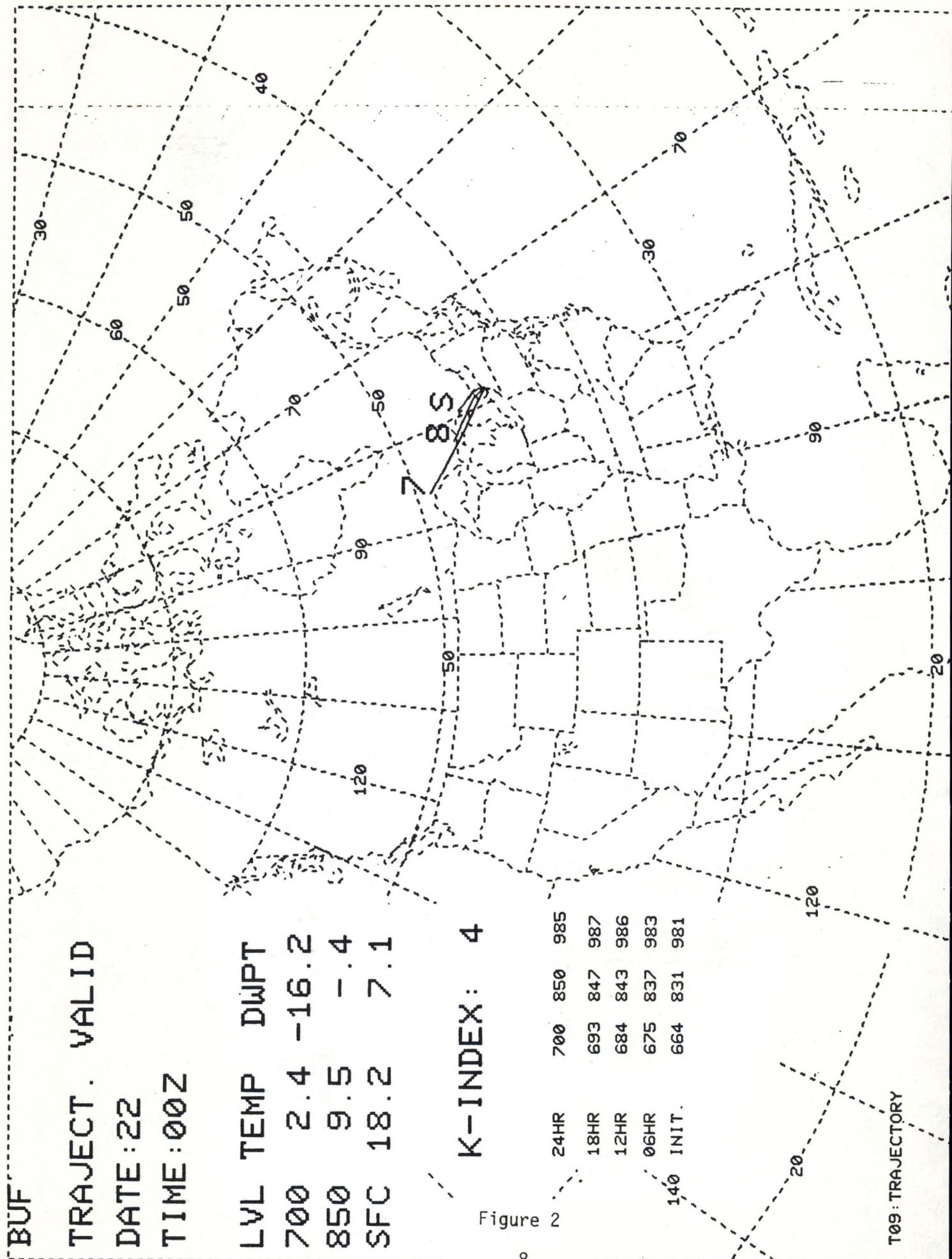
SFC 18.2 7.1

K-INDEX: 4

24HR	700	850	985
18HR	693	847	987
12HR	684	843	986
06HR	675	837	983
140 INIT.	664	831	981

Figure 2

T09: TRAJECTORY



RNO

TRAJECT. VALID

DATE:22

TIME:00Z

LVL TEMP DWPT

700 - .5 -2.8

SFC 5.8 4.0

K-INDEX: 27

24HR	700	823
18HR	715	839
12HR	730	854
06HR	766	903
INIT.	797	955

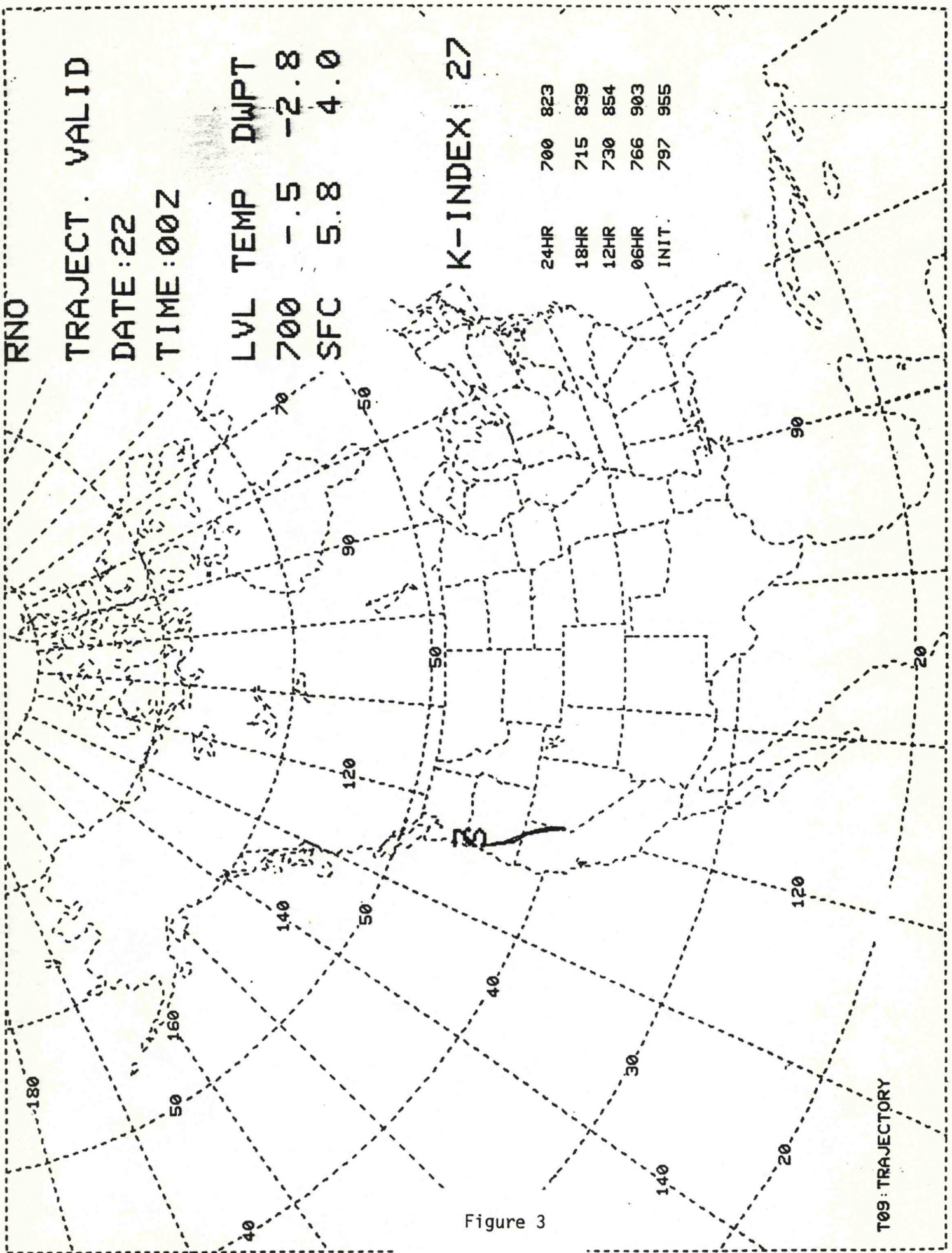


Figure 3

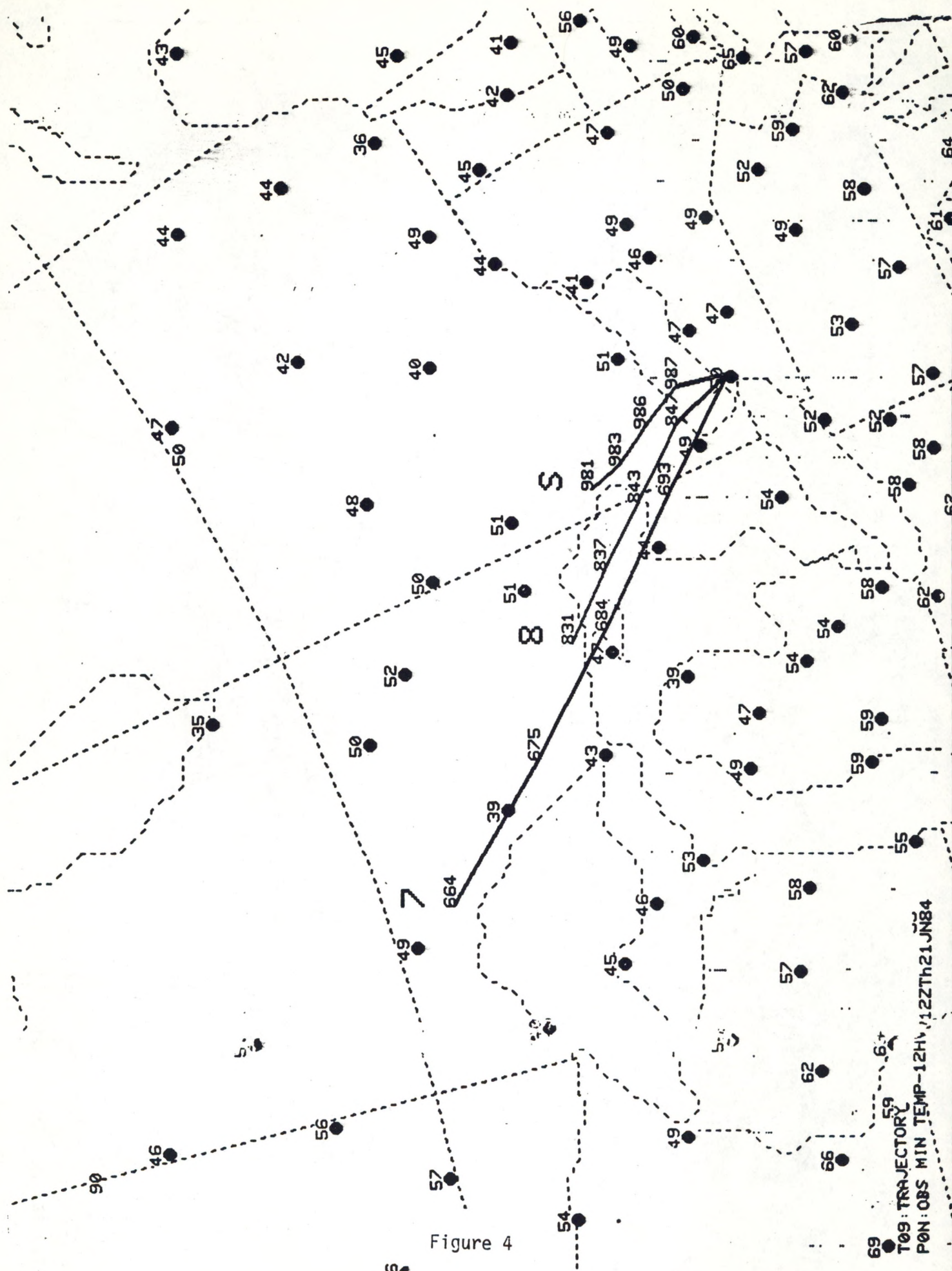


Figure 4

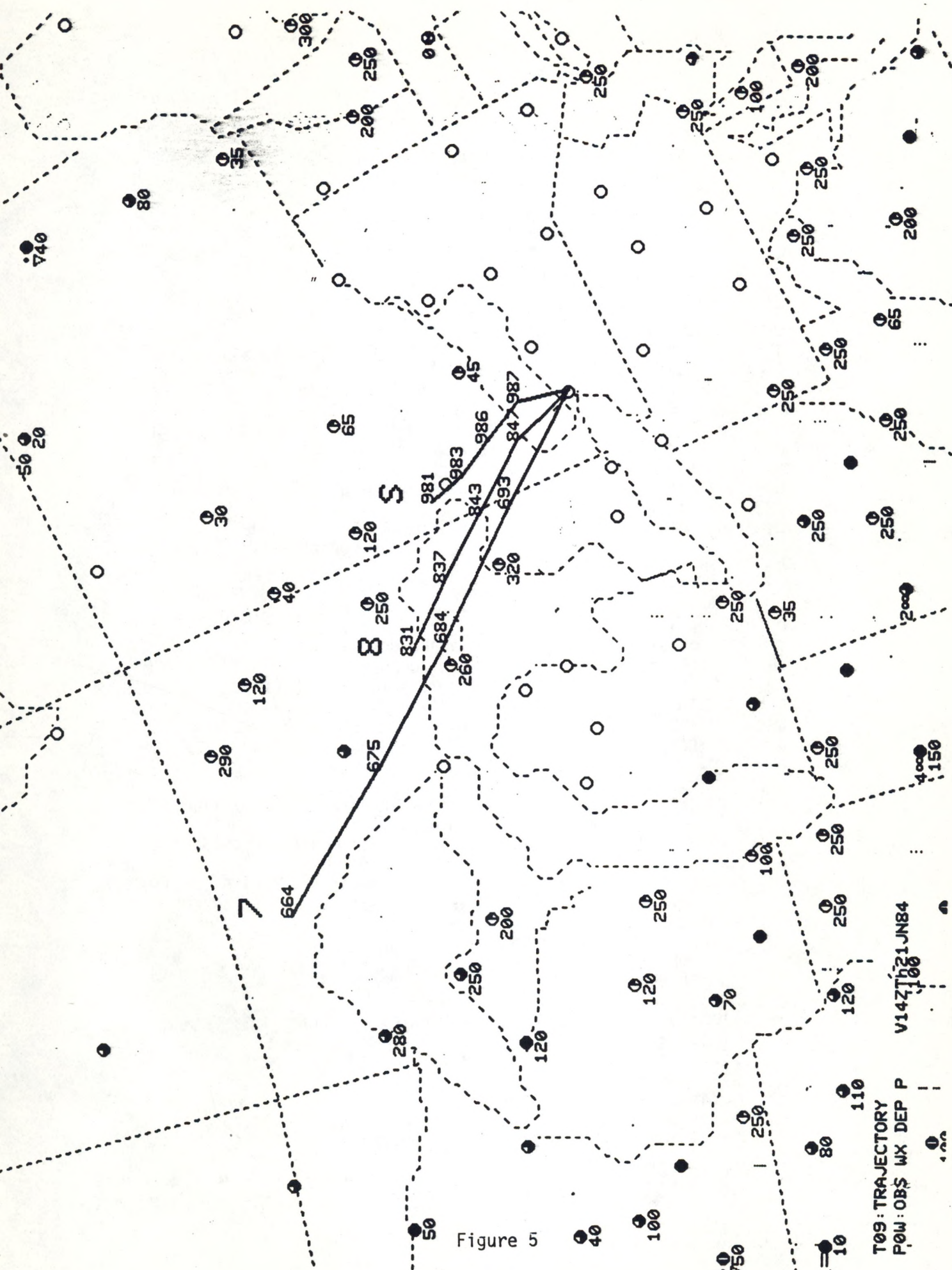


Figure 5

T09: TRAJECTORY
 POW: OBS WX DEP P
 V1471021JN84

VII. Complete Program Listings

```

C      PROGRAM TRAJ.FR                                REV 01.00
C      JAN 1984                                NIZIOL, THOMAS A.    BUF WSFO/FTS 437-4800
C      FORTRAN IV/ REV 5.20  DG ECLIPSE (S230)  RDOS/ REV 6.17
C      LOAD LINE:  RLD R TRAJ AG.LB AFREAD.LB OUT.RB BG.LB UTIL.LB
C                      FORT.LB AFOSE.LB
C
C      PURPOSE
C          PLOTS THE TRAJECTORY FORECAST FOR SINGLE STATIONS FROM THE
C          NMCFTJXX PRODUCT
C      EXTERNALS
C          FCOM COMCM AFREAD
C          UNPACK PACK FORK
C          FORKE FORKO TEXT
C          CART.LINES UTF
C      CHANNELS/FILES
C          IC - READS COMMAND LINE
C      VARIABLES
C          IHGT          - HEIGHTS AT EACH PRESSURE LEVEL
C          IHDR          - LABEL FOR EACH LEVEL
C          ISTN          - UNPACKED NAME OF STATION
C          JSTN          - PACKED NAME OF STATION
C          IDWPT         - DEW POINT
C          ITEMP         - TEMPERATURE
C          IKDX          - K INDEX
C          ISYM          - TRAJECTORY LABEL
C          IDAT          - FILE DATE
C          ITIM          - FILE TIME
C          ISFC          - MODEL TERRAIN PRESSURE
C      EXITS
C          STOP 'BAD CITY'
C
C.....
C      TRAJ      SINGLE STATION TRAJECTORY PROGRAM
C      WRITTEN BY TOM NIZIOL WSFO BUFFALO
C      SUBRTNS:AG.LB AFREAD.LB OUT.RB BG.LB UTIL.LB FORT.LB AFOSE.LB
C      THIS PROGRAM PLTS TRAJECTORY FORECAST FOR SINGLE STATIONS
C      FROM THE NMCFTJ PROD. MAP BACKGROUND NA(2) OR US(3)
C      GRAPHIC STORED ON AFOS FILE NMCGPHT09..RDOS FILE TRAJ.01
C.....
C.....
C      DIMENSION IHGT(4),IHDR(4),ISTN(4),JSTN(2),IDWPT(6),ITEMP(6),
C      1ISYM(2),IDAT(3),ITIM(3),IKDX(4),ISFC(4)
C      DIMENSION LX(5),LY(5),IOUT(40),IUP(80),RLAT(5),RLON(5),JLAT(4),
C      1KLAT(4),JLON(4),KLON(4),LDAT(80)
C      COMMON /ILABL/  I1(14),I2(8),I3(8),I4(14),I5(13),I6A(17),I6B(12)
C      2,I7A(24),I7B(33),I8(4),I9(4),I10(4),I11(5),JST(5),IH(10)
C      COMMON /KDIR/  ISTA(136)
C      COMMON /LDIR/  ILON(136)
C      COMMON /MDIR/  ILAT(136)
C      INTEGER DAT(40),SW(2),A
C.....
C      DATA I1/"TRAJECT. VALID"/,I2/"DATE:  "/,I3/"TIME:  Z"/
C      DATA I4/"K-INDEX:  "/,I5/"LVL TEMP DWPT"/
C      DATA I6A/"24HR      700  850"/,I6B/"24HR      700"/
C      DATA I7A/"              "/
C      DATA I7B/"              "/
C      DATA I8/"18HR"/,I9/"12HR"/,I10/"06HR"/,I11/"INIT."/
C      DATA IH/1,21,29,75,77,83,86,87,89,95/
C.....
C      DATA ISTA/"80","I ","GE","G ","GT","F ","MF","R ","PD","X ","SE",
C      1"A ","YK","M ","BI","L ","BI","S ","DS","M ","DE","N ","MS","P "

```

```

2"IN","L","LB","F","LN","D","RA","P","CL","E","CR","W","FN"
3"T","IN","D","LO","U","GR","B","PI","A","SS","M","PI","T"
4"AL","B","BO","S","BU","F","BT","V","CA","R","CO","N","DC"
5"A","IP","T","LG","A","PW","M","LA","X","PH","X","PI","H"
6"RN","O","SA","N","SF","O","SL","C","UC","C","AB","Q","AL"
7"S","BR","O","DD","C","EL","P","FT","W","OK","C","SA","T"
8"BH","M","HO","U","LI","T","JA","N","ME","M","MS","Y","ST"
9"L","TO","P","UM","N","AT","L","CA","E","IL","M","LA","L"
A"GS","O","MI","A","TL","H","TY","S"/

```

C.....

```

DATA ILAT/"43","6","47","6","47","5","42","4","45","6","47",
1"5","46","6","45","8","46","8","41","5","39","8","38","0",
2"48","6","41","1","42","8","44","0","41","4","38","4","43",
3"0","39","7","38","2","44","5","40","7","46","5","40","5",
4"42","8","42","7","42","9","44","5","46","9","43","2","38",
5"6","41","3","40","8","43","7","33","9","33","4","42","9",
6"39","5","32","7","37","6","40","8","36","7","35","0","37",
7"5","25","9","38","8","31","8","32","8","35","4","29","5",
8"33","6","29","7","34","7","32","3","35","1","30","0","38",
9"8","39","1","36","9","33","7","34","0","34","2","27","9",
A"36","1","25","8","30","4","35","8"/

```

C.....

```

DATA ILON/"11","62","11","75","11","14","12","29","12","26","12",
1"23","12","05","10","85","10","08","09","36","10","49","07","98",
2"09","34","10","07","10","09","10","30","08","19","08","16","08",
3"38","08","63","08","57","08","81","08","97","08","44","08","02",
4"07","38","07","10","07","87","07","32","06","80","07","15","07",
5"70","07","69","07","39","07","03","11","84","11","20","11","26",
6"11","98","11","72","12","24","11","20","11","64","10","67","10",
7"59","09","74","10","00","10","64","09","74","09","76","09","85",
8"08","78","09","53","09","22","09","01","09","00","09","03","09",
9"04","09","56","09","39","08","44","08","11","07","79","08","16",
A"08","00","80","03","08","44","08","40"/

```

C.....

A=0

IMAP=2

;SET YOUR MAP BACKGROUND HERE

C.....

C.....READ COMMAND LINE FOR FILE AND STATION

CALL FCOM(IC,IER)

CALL COMCM(IC,DAT,11,SW,IER)

CALL COMCM(IC,DAT,11,SW,IER) ;READ THE FTJ FILE

DO 10 I=1,4

10 JST(I)=DAT(I)

JST(5)=20040K

CALL AFREAD(1,JST,\$100)

CALL COMCM(IC,DAT,22,SW,IER) ;READ THE STATION YOU WANT

CALL UNPACK(DAT,44,LDAT)

ISTN(1)=LDAT(1)

ISTN(2)=LDAT(2)

ISTN(3)=LDAT(3)

ISTN(4)=040K

CALL PACK(ISTN,4,JSTN)

ISTN(4)=0

IC1=3

JX1=0

C.....SEARCH DATA ARRAY FOR STATION

DO 300 IX1=1,135,2

JX1=JX1+1

IF(ISTA(IX1).EQ.JSTN(1).AND.ISTA(IX1+1).EQ.JSTN(2))GOTO 400

300 CONTINUE

```

C.....ALERT ADM IF YOU CANT FIND STATION
    CALL FORKE("TRAJ","BAD CITY",IER)
    STOP
C.....SEARCH FOR HIGH ALTITUDE STATION ONLY 2 LEVELS
400  DO 310 IX2=1,10
      IF(IX1.EQ.IH(IX2))GOTO 312
310  CONTINUE
      GOTO 314
312  IC1=2
C.....GET DATE AND TIME GROUP FROM FTJ FILE
314  DO 15 I=1,4
      CALL AFREAD(2,IOUT,$900,$110)
15   CONTINUE
      CALL UNPACK(IOUT,80,IUP)
      IDAT(1)=IUP(57)
      IDAT(2)=IUP(58)
      IDAT(3)=0
      ITIM(1)=IUP(59)
      ITIM(2)=IUP(60)
      ITIM(3)=0
      CALL AFREAD(2,IOUT,$900,$110)
      CALL AFREAD(2,IOUT,$900,$110)
C.....SEARCH FOR STATION IN FTJ FILE
      DO 320 IX3=1,10
      CALL AFREAD(2,IOUT,$900,$110)
      CALL UNPACK(IOUT,80,IUP)
      IF(IUP(2).EQ.ISTN(1).AND.IUP(3).EQ.ISTN(2).AND.IUP(4).EQ.ISTN(3))
1GOTO 410
      CALL AFREAD(2,IOUT,$900,$110)
      CALL UNPACK(IOUT,80,IUP)
      IF(IUP(6).NE.56)GOTO 315
      CALL AFREAD(2,IOUT,$900,$110)
315  CALL AFREAD(2,IOUT,$900,$110)
320  CONTINUE
C.....ADM ALERT IF STATION IS NOT IN FTJ FILE
      CALL FORKE("TRAJ","BAD CITY",IER)
410  IKDX(1)=IUP(65)           ;GET K INDEX
      IKDX(2)=IUP(66)
      IKDX(3)=IUP(67)
      IKDX(4)=0               ;SET END OF EACH TEXT TO ZERO
      ISFC(4)=0
      ISYM(2)=0
      IHGT(4)=0
      ITEMP(6)=0
      IDWPT(6)=0
      IHDR(4)=0
      IY=2100
C.....GET STATION LAT/LON FROM DATA ARRAY AND CONVERT TO INTEGER
      JLAT(1)=ILAT(IX1)
      JLAT(2)=ILAT(IX1+1)
      JLON(1)=ILON(IX1)
      JLON(2)=ILON(IX1+1)
      CALL UNPACK(JLAT,4,KLAT)
      CALL UNPACK(JLON,4,KLON)
      SLON=((KLON(1)-48)*100)+((KLON(2)-48)*10)+(KLON(3)-48)+
2(KLON(4)-48)*.1
C.....IF STATION WEST OF LON 100 MOVE TEXT TO RIGHT HAND SIDE
      IF(SLON.GT.100)A=2890
C.....CLEAR BACKGROUND FOR TEXT ON GRAPHIC
      DO 5 IS=600,1820,40

```

```

CALL TEXT(17A,A+310,IS,1,1,0,0)
CALL TEXT(17B,A+10,IS+1220,1,1,0,0)
5  CONTINUE
   IHX=680+A
C.....TWO LOOPS WORK ON BODY OF DATA FROM FTJ FILE
   DO 30 IC=1,IC1                      ;LOOP GETS DATA AT 3 LEVELS
   M=0
   N=10
   IHY=900
   DO 40 K=1,5                          ;LOOP GETS DATA AT 5 TIMES
   IF (K.LT.5)GOTO 200
C.....GET LAT/LON AND CONVERT TO INTEGER
   RLAT(K)=((KLAT(1)-48)*10)+(KLAT(2)-48)+(KLAT(3)-48)*.1
   RLON(K)=((KLON(1)-48)*100)+((KLON(2)-48)*10)+(KLON(3)-48)
   1+(KLON(4)-48)*.1
   GOTO 210
200  RLAT(K)=((IUP(N)-48)*10)+(IUP(N+1)-48)+(IUP(N+2)-48)*.1
   RLON(K)=((IUP(N+3)-48)*10)+(IUP(N+4)-48)+(IUP(N+5)-48)*.1
   IF(RLON(K).GT.55)GOTO 210
   RLON(K)=RLON(K)+100
210  M=M+1
C.....CALCULATE PIXEL LOCATION OF LAT LON
   CALL CART(RLAT(K),RLON(K),IMAP,LX(K),LY(K),IER)
   IX=A+290
   IX0=A+50
C.....GET HEIGHTS AND WRITE TO TEXT
   IHGT(1)=IUP(N+6)
   IHGT(2)=IUP(N+7)
   IHGT(3)=IUP(N+8)
   IF(K.EQ.5)GOTO 220
   CALL TEXT(IHGT,LX(K),LY(K),1,4,0,0)
   CALL TEXT(IHGT,IHX,IHY,1,1,0,0)
C.....GET TEMP AND DWPT NEXT
220  ITEMP(K)=IUP(K+52)
   IDWPT(K)=IUP(K+58)
   N=N+10
   IHY=IHY+90
40  CONTINUE
   LIDX=LX(1)
   LIDY=LY(1)+20
   J=J+1
   IHDR(1)=IUP(6)
   IHDR(2)=IUP(7)
   IHDR(3)=IUP(8)
   ISYM(1)=IUP(6)
C.....WRITE SFC PRESSURE AT 24 HRS TO TABLE
   IF(IC.NE.IC1)GOTO 420
   ISFC(1)=IUP(50)
   ISFC(2)=IUP(51)
   ISFC(3)=IUP(52)
C.....WRITE TEMP AND DWPT TO TEXT AND LABEL LINE WITH LEVEL
420  CALL TEXT(IHDR,IX0,IY,3,1,0,0)
   CALL TEXT(ITEMP,IX,IY,3,1,0,0)
   IX=IX+430
   CALL TEXT(IDWPT,IX,IY,3,1,0,0)
   CALL TEXT(ISYM,LIDX,LIDY,3,1,0,0)
C.....DRAW TRAJECTORIES
   CALL LINES(LX,LY,5,1,0)
   DO 50 ID=1,5
   LX(ID)=LX(ID)+1

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50    CONTINUE
      CALL LINES(LX,LY,5,1,0)
      CALL AFREAD(2,IOUT,$900,$110)
      CALL UNPACK(IOUT,80,IUP)
      IY=IY-130
      IHX=IHX+175
30    CONTINUE
C.....
C.....WRITE THE HEADERS AND DATA TO THE GRAPHIC
      CALL TEXT(I1,50+A,2800,3,1,0,0)
      CALL TEXT(I2,50+A,2650,3,1,0,0)
      CALL TEXT(I3,50+A,2500,3,1,0,0)
      CALL TEXT(I4,350+A,1550,3,1,0,0)
      CALL TEXT(I5,50+A,2250,3,1,0,0)
      CALL TEXT(I8,350+A,1170,1,1,0,0)
      CALL TEXT(I9,350+A,1080,1,1,0,0)
      CALL TEXT(I10,350+A,990,1,1,0,0)
      CALL TEXT(I11,350+A,900,1,1,0,0)
      CALL TEXT(IDAT,400+A,2650,3,1,0,0)
      CALL TEXT(ITIM,400+A,2500,3,1,0,0)
      CALL TEXT(IKDX,900+A,1550,3,1,0,0)
      CALL TEXT(ISTN,50+A,3000,3,1,0,0)
      IF(ICI.NE.3)GOTO 430
      CALL TEXT(I6A,350+A,1280,1,1,0,0)
      CALL TEXT(ISFC,1040+A,1280,1,1,0,0)
      GOTO 440
430   CALL TEXT(I6B,350+A,1280,1,1,0,0)
      CALL TEXT(ISFC,850+A,1280,1,1,0,0)
C.....
C.....WRITE THE ENTIRE DATA SET TO THE GRAPHIC
440   CALL UTF("NMGPH09","TRAJ.01",IER)
C.....ADM ALERT FOR FINISHED PROGRAM AND LOCATION OF GRAPHIC
      CALL FORKO("TRAJ","NMGPHFTJ",IER)
      STOP
C.....ADM ALERT FOR FAILURE TO OPEN FILE
100   CALL FORKE("TRAJ","BAD FILE",IER)
      STOP
C.....ADM ALERT FOR FAILURE TO READ A LINE
110   CALL FORKE("TRAJ","BAD LINE",IER)
900   STOP
      END

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Eastern Region Computer Programs and Problems (Continued)

- 19 Verification of Asynchronous Transmissions. Lawrence Cedrone, March 1984. (PB84 189885)
- 20 AFOS Hurricane Plotter. Charles Little, May 1984. (PB84 199629)
- 21 WARN - A Warning Formatter. Gerald G. Rigdon, June 1984. (PB84 204551)
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- 24 WXR, Harold Opitz, August 1984. (PB84-23722)
- 25 FTASUM: Aviation Forecast Summaries, Matthew Peroutka, August 1984. (PB85-112977)
- 26 SAOSUM: A Short Summary of Observations. Matthew Peroutka, October 1984. (PB85-120384)

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