

A320

ETOPS TRAINING MANUAL

AIRBUS ETOPS COURSE

TRAINEE'S MANUAL

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GENERAL

The system design and the reliability of the engine installation of this airplane comply with the criteria for Extended Twin Operations (ETOPS) flights set forth in IL N° 20 (JAA) or AC 120-42 A (FAA) or CTC 20 (DGAC) or CAP513 (CAA UK) when the aircraft is configured, maintained and operated in accordance with the provisions of the appropriate Airbus Industrie document « Standard for Extended Range Operations » in the latest approved revision which is the Airbus CMP (Configuration, Maintenance and Procedure) document. This statement of ability does not constitute an approval to conduct Extended-Range Operations.

The section 6 of the Flight Manual refers to the approved Standard for Extended-Range Operations and the applicable limitations, procedures and performance references.

R The operator is responsible for showing that he is complying with the regulation of his nation and for obtaining operational approval from his national authorities. The operator R may amend this chapter, as needed.

The airplane must be configured in accordance with the Airbus Industrie Standard for Extended-Range Operations. However, the authorities may under certain conditions allow the operator to conduct ETOPS flights with limited maximum diversion time (for example, 75 minute diversion time in a benign area of operation) without showing full compliance with these standards.

OPERATIONAL LIMITATIONS**DEFINITIONS**

For the purpose of AC 120-42A and IL N° 20 (or CAA CAP 513), Extended-Range Operations are those intended to be conducted over a route that contains a point more than 60 minutes from an adequate airport at the selected one-engine-inoperative speed in still air and ISA (or prevailing delta ISA) conditions.

An adequate airport is an airport which satisfies the aircraft performance requirements applicable at the expected landing weight, and sufficiently equipped to be safely used. In particular, at the anticipated time of use, it should be available and equipped with the necessary services, including ATC, weather information and at least one let down aid for an instrument approach.

A suitable airport is a confirmed adequate airport which satisfies the dispatch weather minima requirements for ceiling and visibility within the required validity period. Airport conditions should also ensure that a safe landing with one engine and/or airframe system inoperative is possible.

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AREA OF OPERATION

The maximum distance from an adequate airport must be determined for ISA (or prevailing delta ISA) and no-wind conditions, taking into account aircraft performance with one engine inoperative and the remaining engine operating at not more than MCT.

To determine the maximum distance from an adequate airport, the operator must define a diversion speed strategy as well as an aircraft reference weight for performance computation.

The same diversion speed strategy (Refer to FCOM 3.06) must be considered for :

- establishing the area of operation ;
- calculating the single-engine fuel planning,
- conducting the diversion in case of engine failure (conditions permitting).

The operator establishes the ETOPS reference gross weight for each route or area of operation. This must be a representative but conservative value of the aircraft gross weight at the critical point of the route or at the various critical points of all the routes included in the area of operation.

The-one-engine-inoperative descent and cruise speed law must be chosen so that the associated net flight path clears the enroute obstacles with the regulatory margin.

FCOM section 3.06 gives data for three speed schedules. The associated approved net flight paths are published in the section 6 of the Flight Manual.

When the diversion strategy is chosen, the maximum distance from a diversion airport, can be directly determined for different maximum diversion times, with the help of the tables provided in this section. The area of possible ETOPS operation can then be drawn on plotting charts.

Another way to determine the maximum distance to a diversion airport is to read the one-engine-inoperative cruise TAS (for the reference gross weight and at the FL for best TAS) in the cruise tables in section 3.06 taking into consideration the appropriate speed strategy and the minimum altitude for clearing possible obstacles. The maximum distance the aircraft can travel to a diversion airport is this one-engine-inoperative-TAS multiplied by the maximum allowed diversion time granted to the operator.

Operators whose authorities require that an approved one-engine-inoperative speed be published in the Flight Manual must use this approved speed.

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DISPATCH CONSIDERATION**MMEL**

The MMEL has been approved taking into consideration the duration of the average ETOPS flight and the maximum diversion time granted to the airframe/engine combination.

The MMEL published by Airbus Industrie and approved by the French DGAC can be used to establish the airline MEL, which must be approved by the operator's national authorities. This MEL will probably be adapted to the airline network, environment and organization. Other determining parameters will be :

- The maximum and the average diversion times on the route.
- The equipment of the enroute alternates.
- The navigation and communication facilities.
- The average meteorological conditions.

COMMUNICATION AND NAVIGATION FACILITIES

The aircraft communication system has provision to install three VHF transceivers and two HF radios ensuring full compliance with ETOPS requirements on any kind of route.

The aircraft navigation system meets the ETOPS requirements for en route navigation.

The aircraft has three inertial reference systems which, in conjunction with 2 FMS comply with MNPS criteria and this combination of systems is approved as the sole means of navigation for flight up to the maximum aircraft range.

See the MEL for a definition of the authorized dispatch configuration.

Note : For operation within the MNPS area, airlines must obtain approval from their national authorities.

FUEL AND OIL SUPPLY

The aircraft fuel and oil supply must be adequate to allow the aircraft to reach its destination or a planned alternate after the combined failures of an engine and pressurization or the failure of pressurization alone at the critical point on the route. Planners must consider forecast wind and temperature conditions, as well as forecast icing conditions.

The operator must establish a routine for ETOPS critical fuel planning and compare it with the standard (non-ETOPS) fuel planning.

R ELECTRICAL GENERATORS

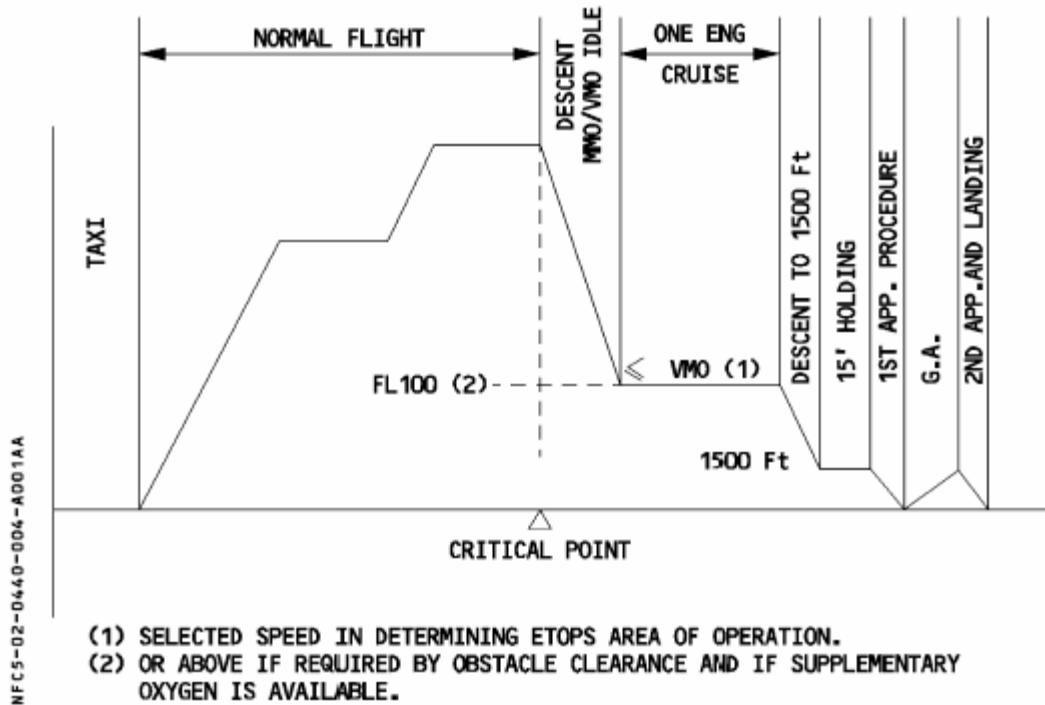
- R Three generators are required for dispatch.

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ETOPS FUEL SCENARIOS

For establishing the ETOPS critical fuel reserves, the planner must consider two diversion scenarios.

Pressurization failure + engine failure



Pressurization failure

Same flight profile, but with 2 engines operating and diversion cruise set at LRC.

Fuel requirements

For each scenario, the required block fuel must be computed in accordance with the operator's ETOPS fuel policy and using the regulatory ETOPS critical fuel reserves described below.

Depending on the strategy and the one-engine-inoperative speed selected for the single-engine diversion scenario, either of these two scenarios may result in the higher fuel requirement.

The scenario resulting in the higher fuel requirement is the ETOPS critical fuel scenario, and the associated minimum block fuel requirement is the ETOPS critical fuel plan.

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ETOPS CRITICAL FUEL RESERVES

For the computation of ETOPS critical fuel reserves and of the complete ETOPS critical fuel planning, the diversion fuel must include the following fuel provisions :

- fuel burn-off from the critical point to the end of descent (for example 1500 feet) at the diversion airport,
- 5 % of the above fuel burn-off as contingency fuel,
- fuel for 15 minutes of holding at 1500 feet and green dot speed,
- fuel for first (IFR) approach, a go-around and a second (VFR) approach,
- 5 % fuel mileage penalty or a demonstrated performance factor,
- effect of any Configuration Deviation List (CDL) or MEL item,
- if icing conditions are forecast :
 - * effect of Nacelle Anti Icing (NAI) and Wing Anti Icing (WAI) systems,
 - * effect of ice accretion on the unheated surfaces of the aircraft :

The fuel provisions associated with the effects of NAI and WAI systems and of ice accretion on the unheated surfaces are adjusted to take into account the horizontal extent of the forecast icing areas (exposure time).

The fuel provision factor for ice accretion on the unheated surfaces is a percentage equal to five times the forecast exposure time in hours. For example, assuming a one-hour exposure en route to and (e.g. the 15 minute holding) at the diversion airport, the fuel provision is 5 % of the fuel burned during the considered exposure time. If moderate icing is forecast, the above fuel provision is divided by two.

- If the APU is needed as a power source (MEL), its fuel consumption must be considered: 80 kg/h (APU GEN ON, APU BLEED OFF).

In view of our experience, Airbus Industrie recommends that the operator considers the following non mandatory fuel practices :

- Include the effect of a demonstrated performance factor, in all standard and ETOPS fuel requirement computations,
- Include a contingency fuel provision from departure to the Critical Point (CP), when computing the ETOPS critical fuel planning.

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The complete ETOPS critical fuel planning for the ETOPS critical fuel scenario (from the departure to the Critical Point and then from the Critical Point to the diversion airport) must be compared with the standard fuel planning (for example, from the departure to the destination and alternate) computed in accordance with the company fuel policy and applicable operational requirements. The higher of the two fuel requirements must be considered as the minimum required block fuel for the flight.

DISPATCH FUEL REQUIREMENT FROM CRITICAL POINT TO LANDING

ETOPS diversion fuel requirements for dispatch are provided at the end of this section. Data for the engine failure case alone are not provided as this scenario is never critical.

WEATHER MINIMA

- R Weather forecasts for en route alternates must meet the operator's applicable weather minimum requirements. If the applicable requirement is AC 120-42A or IL 20 the following applies :
- An airplane cannot be dispatched unless the meteorological forecasts at en route alternate airports meet the weather minimums listed here for a period starting one hour before the earliest expected time of landing and ending one hour after the latest expected time of landing.
- A. AC 120-42A dispatch weather minima (FAA)

AIRPORT EQUIPMENT	Ceiling (ft)	Visibility (m)
1 ILS/MLS	DH + 400	Greater of (3200, published minima + 1600)
2 ILS/MLS on separate runways *	DH + 200	Greater of (1600, published minima + 800)
Non precision approach	Greater of (800, MDH + 400)	Greater of (3200, published minima + 1600)
CAT II/CAT III capability with engine failure	Lower than above minima, approved on a case-by-case basis considering aircraft performance under failure conditions	

* separate runways are runways that do not touch each other.

DH : decision height

MDH : minimum descent height

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R **B. IL 20 dispatch weather minima (JAA)**

R The operator must use either table 1 or table 2, but not a combination of both.

Table 1

Approach Facility Configuration	Alternate Airfield Ceiling	Weather Minima Visibility
For aerodromes with at least one operational navigation facility, providing a precision or non-precision runway approach procedure or a circling manoeuvre from an instrument approach procedure	A ceiling derived by adding 400 feet to the authorised DH, MDH (DA/MDA) or circling minima	A visibility derived by adding 1500 meters to the authorised landing minima
The weather minima below apply at airports which are equipped with precision or non-precision approaches on at least two separate runways (two separate landing surfaces)		
For airports with at least two operational navigation facilities providing a precision or non-precision runway approach procedure to separate suitable runways	A ceiling derived by adding 200 feet to the higher of the two authorised DH/MDH (DA/MDA) for the approaches	A visibility derived by adding 800 meters to the higher of the two authorised landing minima

Table 2

Type of Approach	Planning Minima (RVR visibility required and ceiling if applicable)		
Aerodrome with			
at least 2 separate approach procedures based on 2 separate aids serving 2 separate runways	at least 2 separate approach procedures based on 2 separate aids serving 1 runway	or	at least 1 approach procedure based on 1 aid serving 1 runway
Precision Approach Cat II, III (ILS, MLS)	Precision Approach Cat I Minima	Non-Precision Approach Minima	
Precision Approach Cat I (ILS, MLS)	Non-Precision Approach Minima	Circling minima or, if not available non-precision approach minima plus 200 ft/1000 m	
Non-Precision Approach	The lower of non-precision approach minima plus 200 ft/1000 m or circling minima	The higher of circling minima or non-precision approach minima plus 200 ft/1000 m	
Circling Approach	Circling minima		

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DIVERSION DURING EXTENDED RANGE OPERATIONS

DIVERSION DECISION MAKING

The technical criteria governing a re-routing or diversion decision can be classified into four categories, as follows :

- Loss of MNPS capability, before entering the MNPS area (as applicable).
- Weather minima at diversion airport(s) going below the company/crew en-route minima, before reaching the ETOPS Entry Point, or diversion airport(s) becoming unsuitable for any reason.
- Failure cases requiring a diversion to the nearest airport (cases leading to a LAND ASAP message on the ECAM and/or in the QRH).
- Failure cases resulting in increased fuel consumption, exceeding the available fuel reserves.

Comments and recommendations

- Electrical generation

If one IDG fails, diversion is required in case of :

- blue hydraulic low level or
- APU no start or
- APU or APU generator inoperative or
- second IDG failure

- Fuel system

Some failure cases may lead to fuel gravity feeding which implies flight at lower altitude or to some fuel being unusable. The flight crew's evaluation of the actual situation and the fuel remaining may lead to the decision that a diversion is required.

DIVERSION PERFORMANCE DATA

FCOM section 3.06 gives three single engine descent and cruise procedures :

1. The standard strategy.
2. The obstacle strategy.
3. Fixed speed strategies (ETOPS).

For ETOPS operations, any one of the above diversion strategies can be used provided that the selected strategy and speed schedule are used in:

- establishing the area of operation (maximum diversion distance),
- calculating the diversion fuel requirements for the single-engine ETOPS fuel scenario,
- demonstrating the applicable obstacle clearance requirements (net flight path and net ceiling).

During the diversion, the flight crew is expected to use the planned speed schedule. However, based on the evaluation of the actual situation, the pilot in command has the authority to deviate from this planned one-engine-inoperative speed.

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GUIDELINES FOR DIVERSION PROCEDURE

- Complete the related failure procedure.
- Inform ATC.
- Initiate the descent.
- Determine which enroute alternate is the most suitable (per company procedure).
- Divert to the chosen enroute alternate.
- Comply with the pre-planned diversion strategy and speed schedule, or adjust the speed schedule, as dictated by the evaluation of the actual situation.

Note : For detailed guidelines and procedures in conducting the diversion (lateral and vertical navigation), see the FMGS Pilot's Guide (FCOM Volume 4).

PROCEDURES

The SOP (FCOM 3.03) and ABN and EMER procedures (FCOM 3.02) apply. For ETOPS flights, the flight crew must complete them using the procedures given below :

COCKPIT PREPARATION

R **Fuel**

Before each flight, the flight crew must check that the fuel crossfeed valve is operating correctly :

- **FUEL X FEED** **ON**
On the ECAM FUEL page check that the fuel crossfeed valve is open (indication is inline green).
- **FUEL X FEED** **OFF**
Check that the fuel crossfeed valve is closed.

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ABN AND EMER PROCEDURES**ELECTRICAL EMERGENCY CONFIGURATION :**

In case of electrical emergency configuration, it may be better to study the STATUS on the paper checklist, after having applied ECAM actions.

The flight crew must complete the ECAM procedure using the following :

Air conditioning :

R As cockpit and cabin temperature control is lost, it is recommended to open the cockpit door.

Fuel :

As all fuel pumps are lost, the engines are fed by gravity. Refer to 3.02.28 (Fuel gravity feed procedure).

Engine anti-ice :

Engine anti-ice valves are permanently open, although the ECAM memo ENG A. ICE is not displayed on the ECAM (except if the ENG A. ICE pushbutton is at ON).

Wing anti-ice :

If only one ENG BLEED is available, PACK 1 must be switched OFF, to avoid having both packs and wing anti-ice supplied by a single bleed source.

Engine :

As the engines are in N1 unrated mode, the power setting has to be done using tables given in FCOM 3.05.06 page 11 and following.

AVIONIC VENTILATION

Disregard the message : "MAX FLT TIME 2 HOURS", which is displayed on the ECAM in some failure cases.

BLUE HYDRAULIC LOW LEVEL

Start the APU to ensure availability of the APU generator.

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ENGINE OR IDG FAILURE

Start the APU and use the APU electrical channel.

PERFORMANCE

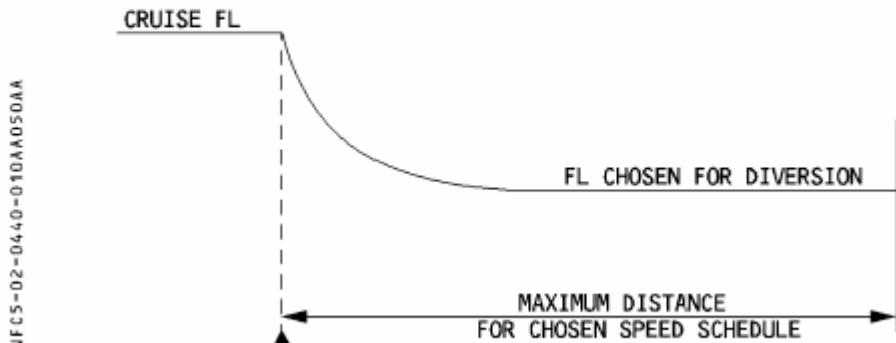
ONE ENGINE NET CEILINGS

In case of electrical emergency configuration, the remaining engine reverts to N1 unrated mode. Consequently the penalties on net ceilings given in FCOM 3.05.06 page 11 must be taken into account for ETOPS part of the flight.

The two following cases result in a fuel consumption increase :

- RAT extended (Refer to ELEC EMER proc. 3.02.24).
- in electrical emergency configuration, the engine anti-ice valves are permanently open.

MAXIMUM DISTANCE (Still air) TO DIVERSION AIRPORT IN NAUTICAL MILES



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Determination of 60 minutes maximum diversion distance (JAR-OPS 1.245)

Use the distance given within the table below to decide if a route is an ETOPS one according to JAR-OPS 1.245.

The following computation conditions have been used in accordance with the interpretation of the JAR-OPS 1.245 :

- Reference weight : the aircraft gross weight after one hour of flight having taken off at sea level at the maximum structural takeoff weight given by the flight manual
- ISA conditions
- No wind
- Diversion level after engine failure : FL170
- Single engine diversion speed schedule : VMO/MMO

Note : using the JAR-OPS 1.245 method, obstacles have not to be considered to determine if a route is or is not an ETOPS route.

R

Aircraft	MTOW		Distance (NM)
	(kg)	(lb)	
A320-111 CFM56-5A1	66000	145504	393
	68000	149913	390
A320-211/212 CFM56-5A1/A3	66000 to 67000	145504 to 147708	391
	68000 to 70000	149913 to 154322	388
	71500	157629	385
	73500	162038	382
	75500	166447	379
	77000	169754	376
A320-214 CFM56-5B4	70000	154322	406
	71500	157629	406
	73500 to 77000	162038 to 169754	397
A320-231 IAE V2500-A1	66000 to 68000	149913 to 154322	414
	70000 to 71500	154322 to 157629	411
	73500	162038	408
	75500	166447	405
	77000	169754	403
A320-232-233 IAE V2527E-A5	70000	154322	400
	71500	157629	398
	73500	162038	405
	75500 to 78000	171959	392

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MAXIMUM DISTANCE (Still air) TO DIVERSION AIRPORT IN NAUTICAL MILES (cont'd)

SPEED SCHEDULE	A/C WEIGHT AT CRITICAL CP(KG)	FL FOR DIVERSION	ISA				
			60	90	120	150	180
MCT/VMO	50000	170	413	614	816	1017	1219
	55000	170	412	613	813	1014	1216
	60000	170	411	611	811	1011	1211
	65000	170	410	608	807	1006	1205
	70000	140	411	608	805	1002	1200
	75000	130	411	606	802	998	1194
	80000	130	408	602	796	991	1186
MCT/320 KT	50000	170	413	614	816	1017	1219
	55000	170	412	613	813	1014	1216
	60000	170	411	611	811	1011	1211
	65000	170	410	608	807	1006	1205
	70000	160	409	606	803	1000	1198
	75000	140	406	601	796	991	1186
	80000	130	403	595	787	979	1171

SPEED SCHEDULE	A/C WEIGHT AT CRITICAL POINT (KG)	FL FOR DIVERSION	ISA + 10				
			60	90	120	150	180
MCT/VMO	50000	170	421	626	831	1036	1242
	55000	170	421	625	829	1033	1238
	60000	170	420	623	826	1030	1233
	65000	170	418	620	822	1024	1227
	70000	150	418	619	819	1020	1222
	75000	130	419	618	817	1016	1216
	80000	130	417	614	811	1009	1208
MCT/320KT	50000	170	421	626	831	1036	1242
	55000	170	421	625	829	1033	1238
	60000	170	420	623	826	1030	1234
	65000	170	418	620	822	1025	1227
	70000	150	417	617	817	1018	1220
	75000	140	415	613	812	1010	1209
	80000	140	412	608	806	1004	1202

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ETOPS FUEL REQUIREMENT FROM CRITICAL POINT TO LANDING

ALL ENGINES-LONG RANGE CRUISE

Including: emergency descent-Long range cruise at FL100

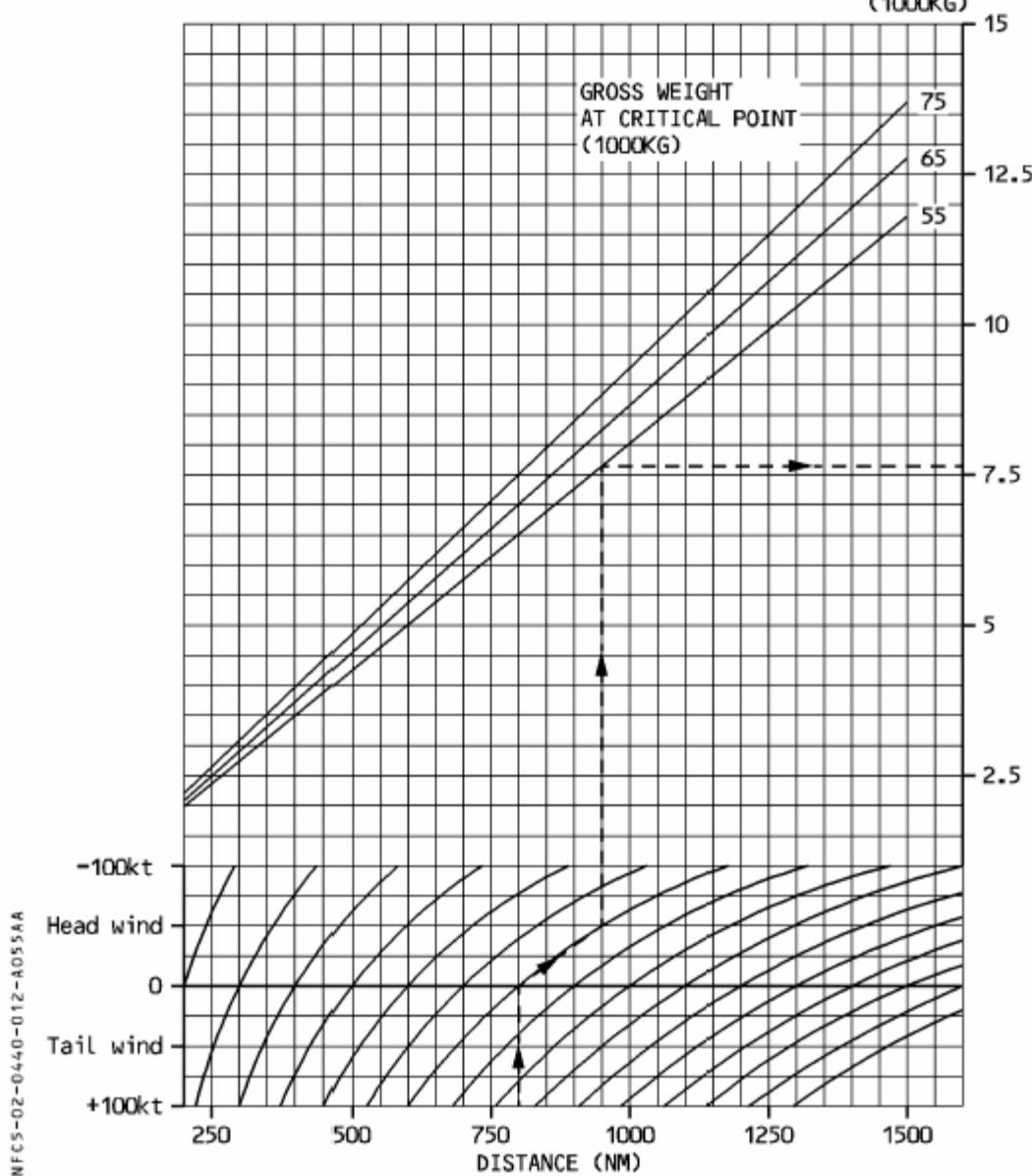
final descent 250kt-holding 15 min at FL15

IFR procedure-Go Around-2nd VFR procedure

5% allowance for wind errors

(NAI + WAI + effect of ice accretion + performance factor not included)

FUEL CONSUMPTION (1000KG)



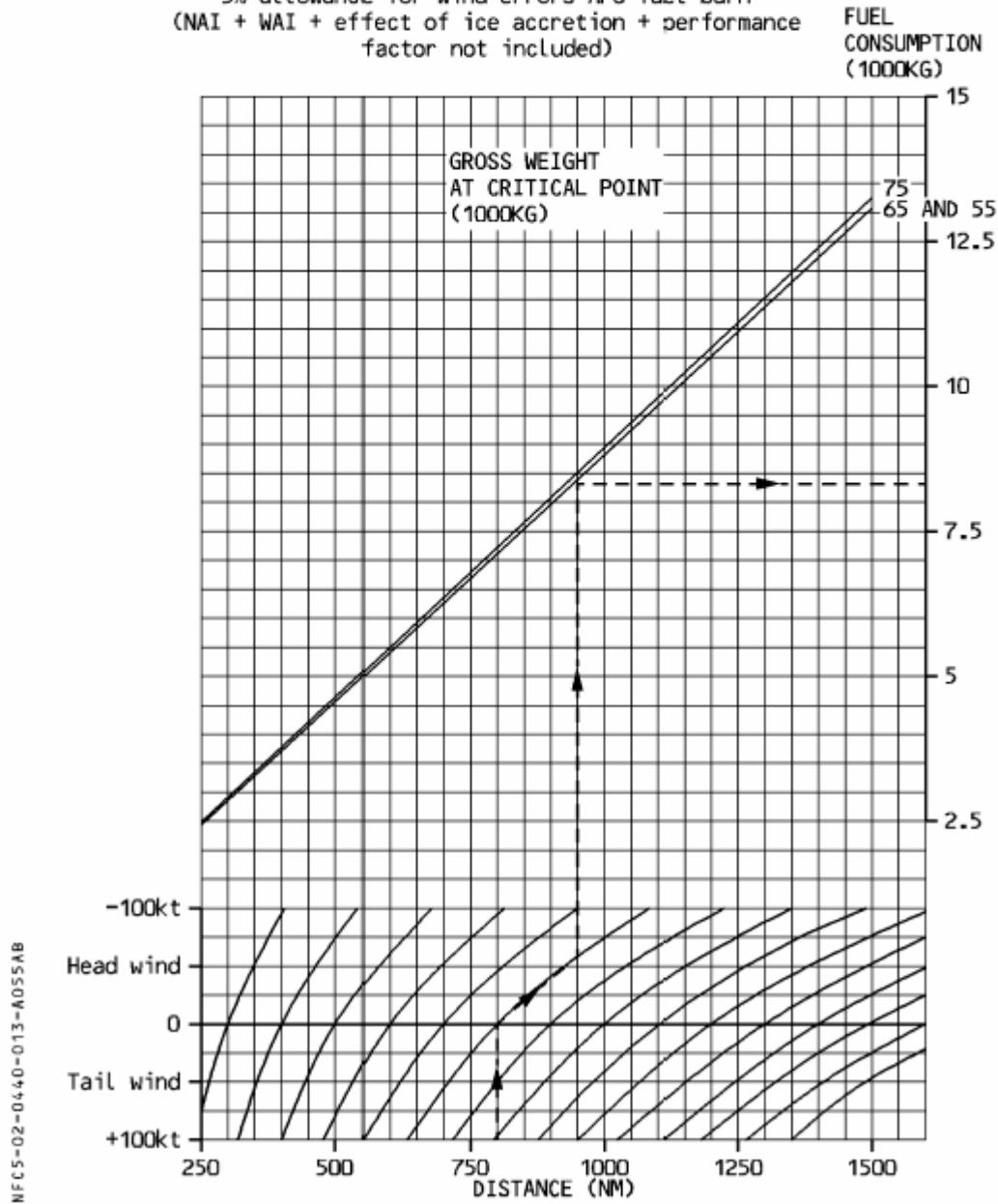
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ETOPS FUEL REQUIREMENT FROM CRITICAL POINT TO LANDING ONE ENGINE OUT-CRUISE AT 350KT

Including: emergency descent-cruise 350kt at FL100
 final descent 250kt-holding 15 min at FL15
 IFR procedure-Go Around-2nd VFR procedure
 5% allowance for wind errors-APU fuel burn
 (NAI + WAI + effect of ice accretion + performance
 factor not included)

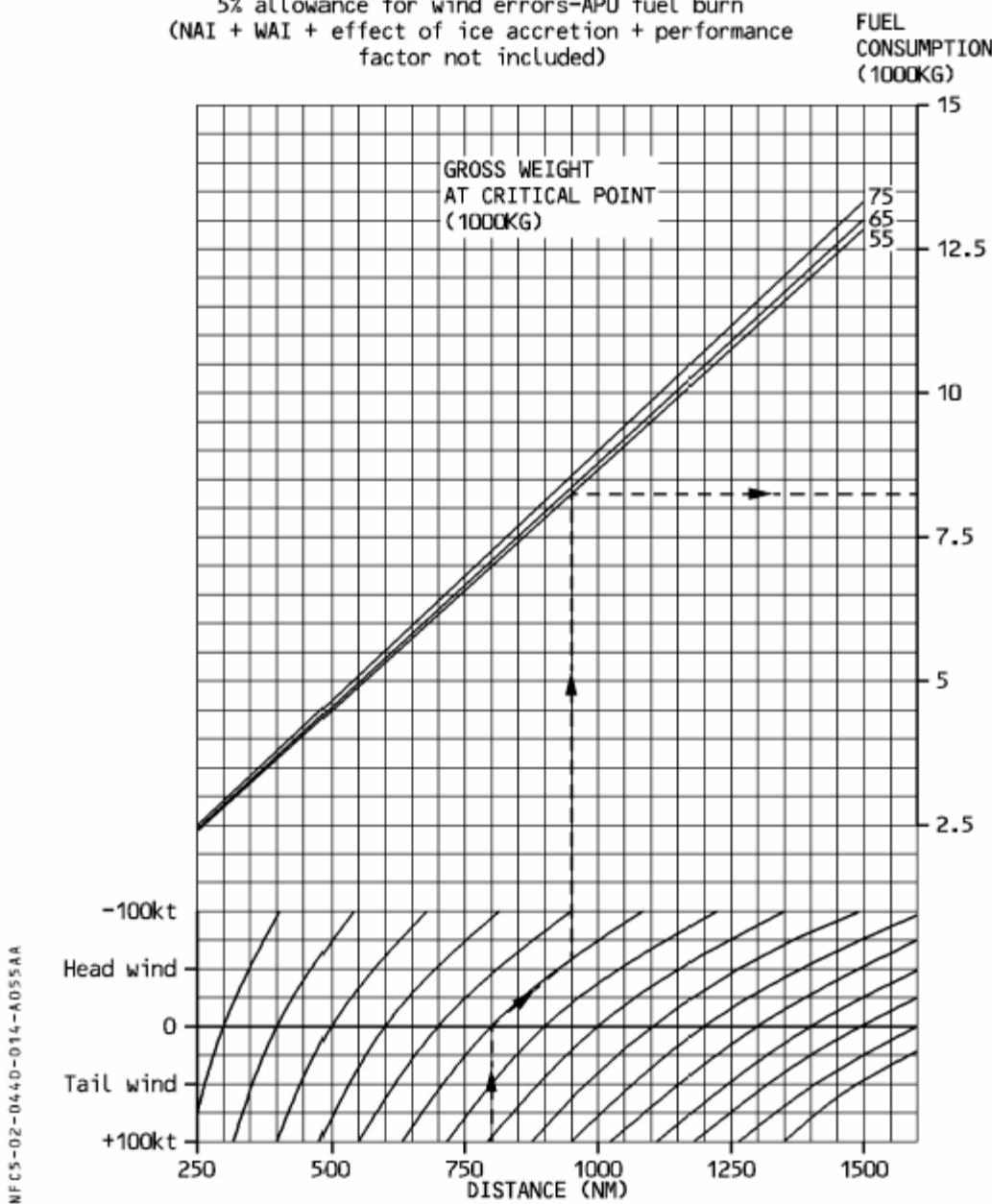


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ETOPS FUEL REQUIREMENT FROM CRITICAL POINT TO LANDING ONE ENGINE OUT-CRUISE AT 320KT

Including: emergency descent-cruise 320kt at FL100
 final descent 250kt-holding 15 min at FL15
 IFR procedure-Go Around-2nd VFR procedure
 5% allowance for wind errors-APU fuel burn
 (NAI + WAI + effect of ice accretion + performance
 factor not included)



ETOPS DISPATCH CHECKLIST

AIRCRAFT	REGISTRATION
DATE	FLIGHT N°
ETD	DESTINATION
ETOPS STATUS	
ETOPS APPROVED : COMPANY	
ETOPS APPROVED : CREW	
ETOPS APPROVED : ROUTE	
MAINTENANCE RELEASE STATEMENT	
MEL/CDL	
NOTAMS	
Departure Airport	
Destination Airport	
En route alternates	
En route	
WEATHER FOLDER	
TAF METARS SIGMETS:	
Departure Airport	
Destination Airport	
En-route Alternate	
WINDS AND TEMP CHARTS	
Cruise FL	
Diversion FL	
TEMSI charts	
ICING FORECAST	
SUITABLE AIRPORT FORM	
SELECTION OF SUITABLE A/P	
SPECIFIC NAVIGATION REQUIREMENTS	
MNPS/ NOPAC/ TRANSPAC	
RVSM	
CAT II/ CAT III	
ROUTING	
2 PLOTTING CHARTS	
ETOPS AREA	
ETOPS COMPUTERIZED FLIGHT PLAN	
PERF FACTOR	
COST INDEX	
ETOPS SCENARIOS	
EN ROUTE ALTERNATE	
EEP ETP EXP CP	
PROVISION FOR ICING CONDITIONS	
CRITICAL FUEL SCENARIO	
EXTRA FUEL FOR ETOPS	
EXTRA FUEL MEL/CDL	
FINAL FUEL ORDER	

AIRBUS ETOPS LONG HAUL CHECKLIST**1. ON GROUND****AT DISPATCH OFFICE**

- Check the NOTAMS
- Take your CFPs
- Take the WEATHER folder with:
 - Destination, alternates, METARS and forecasts
 - The upper wind synoptic charts
 - The upper winds and t° at your different route way points
 - Sigmets
- Take 2 plotting charts and draw or check your track drawn on the first one
- **For ETOPS flights**
 - **Check if you are ETOPS approved for this flight**, company, crew and aircraft
 - Check your MEL if A/C failures
 - Check your ETPs, EEP, CP and EXP
 - Check the VALIDITY, WEATHER and NOTAMS for your SUITABLE airports
 - Remember your increased weather minima and your runway crosswind limitations for pre-flight dispatch
 - Note the PERF factor applicable to your A/C
 - Verify, decide and CROSS CHECK your fuel uplift
 - Trip and block fuel Vs your CFP
 - Different flight / fuel scenarios
 - Critical fuel scenario, eventual additional ETOPS fuel
 - Check the Cost Index , MACH number and Flight speed scenario adopted for this flight
- Take, if available and necessary, an LRNS, a TRACK clearance and an ALTIMETER RVSM company check form

AT PILOTS ROOM

- Cross check your CFP Vs average WV component, GND dist, NAM and your accurate TRIP Fuel with FCOM vol 2 FUEL sheet
- Check your first FLPLAN CRZ LEVEL Vs your first PERF OPT FL possible
- Note your average TROPOPAUSE LEVEL and T° on your CFP
- Compute and cross check the RTLOW limits of your data

IN THE COCKPIT

- **For ETOPS flights**
 - Verify the technical log book for
 - ETOPS release by maintenance
 - Deferred items concerning the ETOPS MEL
 - Prepare your MASTER CFP
 - Check UTC time
 - Check HF, ACARS and SELCAL
 - Make a full alignment of your LRNSs
 - **For ETOPS flights**
 - Check if the STBY GEN has been checked (1st flight)
 - Check the FUEL Xfeed
 - **In the FMGS (FMGES for A330)**
 - Check or enter the PERF factor (ARM to change)
 - **Have an independent pilot gate position check, make a full alignment of your IRSs**
 - Enter the Cost Index, the first CRZ FL and T°, average TROPOPAUSE
 - Fill up the FL Plan in the MCDU **and cross check with the other pilot**
 - Check the **total Ground distance** Vs your CFP
 - Enter the **Step Climbs** along your flight
 - Fill in the 2nd INIT page and the average Wind component
 - Wind and T° can be entered for the entire flight, if time available
 - Cross check the **trip fuel** and the **trip time** Vs the CFP
 - **For ETOPS flights**
 - If time available, enter as stored way points in data page
 - EEP, ETPs, EXP, CP
- Secondary FL PLAN copy active
 Make a print of your flight plan through the FMGS (FMGES for A330) if available

2. IN FLIGHT APPROACHING THE ETOPS ENTRY PONT

- **After ATC clearance reception NO alterations or changes are authorized on the PRIMARY / ACTIVE FLIGHT PLAN after it has been checked!**
- Copy the active flight plan on the secondary, make any change or information on this one
- If not inserted before
 - Insert t° and the cruise winds at, or below and above your intended flight levels
 - For each leg of restricted segments to have correct ETAs
 - WV and t° according to FCOM procedures afterwards
- Ask for your assigned primary and secondary HF frequencies, tune them and **make a SELCAL check**, listen to the HF frequency if negative SELCAL

- Cross check your **LRNSs** Vs ground navigation aids
- Cross check your **ALTIMETERS** (RVSM requirements)
- Check and / or plot your **cleared TRACK** on the plotting chart
- Select and listen to 121,50MHz on VHF1, XXX, XXMHz on VHF2, ACARS on VHF3
- Select A2000 or other assigned ATC code
- **For ETOPS flights**
 - If not introduced before
 - Insert as stored way points your EEP, ETPs, CP, EXP in the proper format
 - Verify that your **SUITABLE ARPTS** are still valid before the EEP
 - Vs your cleared track
 - Vs the weather forecasts (JEPESSEN or cpy min)
 - Verify your FUEL on board in accordance with the flight plan
 - All FUEL scenarios must be fulfilled before the EEP
 - **Appropriate course of action must be taken if ETOPS requirements are not fulfilled before the EEP**
 - **Contact your flight dispatch if needed**
- As reminders, insert in the FMGS as stored way points, A2000 and LL XSSING/INCR/N° points in the secondary flight plan, TIME reminders are also available
- Select EFIS way point button on PF side ,CSTR on PNF side, NAV on adequate range each side, TRUE NORTH ref, if needed
- **SELECT your cleared Mach number on the FCU if cleared so by ATC, otherwise use MANAGED SPD**
- **Make a print of your flight plan through the FMGS (FMGES for A330) if available**

3. APPROACHING AND OVER FLYING A WAY POINT

- **A short time before the crossing way point**
 - Check the present position ETA and the actual FOB
 - Verify the next 2 way point co-ordinates, track and distance Vs the CFP
 - **Check the aircraft turn, heading and track towards the new track**
- Check that the auto-pilot is still coupled on NAV
- Transmit the position report **read on the navigating MCDU**, send WX report if requested
- Report any over moderate or severe TURBULENCE at RVSM levels
- Make a survey of the weather at ALTERNATE and DESTINATION airports
- **For ETOPS flights**
 - Make a survey of your SUITABLE airports
 - Keep in mind the different scenarios Vs the ETPs and the status of the aircraft
 - Watch your FUEL on board Vs the ETPs and the CP
 - +/- 10' later check your position

4. APPROACHING THE LANDFALL OR THE ETOPS EXIT POINT

- Check the NAV accuracy and the updating of the LRNSs
- Deselect TRUE NORTH ref, if used

5. ON GROUND POST FLIGHT

- Check and report the LRNSs accuracy
- Report any failure that can affect the RVSM flights
- **For ETOPS flights**
 - Report any failure that can affect the ETOPS flights

6. MEMOS

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COMPUTERIZED F-PLN

PLAN 8304 EINN TO KJFK 320V M78/F IFR 04/13/99
 NONSTOP COMPUTED 0843Z FOR ETD 1200Z PROGS 1300ADF ED320IAE LBS

ATTN CAPT.
 FLT RELEASE AIB320 EINN/KJFK ON 04/13/99

//// THIS LOG INCORPORATES THE ETOPS 120 MIN RULE ////

FLT/DAY	ORG /DEST	TTL NAM	PRF	ROUTE	AVG WIND/	AVG TEMP /	AGT TT
AIB320 /13	EINN/KJFK	3171	F	ED	M049 /	M53 /	255

PERFORMANCE FACTOR = 1% AIRCON NORMAL
 MEL/CDL STATUS : APU INOP.

	E.FUEL	A.FUEL	E.TME	NM	NAM	FL
DEST KJFK	033703	07/14	2792	3171	350/MASIT 360/5740
RESV 0.05	001685	00/25			
ALT KBOS	002554	00/32	0183	0184	240
HOLD	002646	00/30			
ETOPS RES	000000	00/00			
ETOPS XPRT	000000	00/00			
XTR	000000	00/00	CAPT.SIGN	
TOF	040588	08/41			
TAXI	000441	CORR.	+ / -			
BLOCK	041029	08/41	BLOCK FUEL	

FUEL BURN ADJUSTMENT FOR 4000FT DECREASE IN CRZ ALTITUDE : LBS

FUEL BURN ADJUSTMENT FOR 1000LBS INCREASE/DECREASE IN TOW : 0176 LBS

	E.WT	CORR.	OP.LIMIT	STRUC.	REASONS FOR OP.LIMIT
BASIC WT	093696			
EPLD	011020			
EZFW	104716	ZFW 134482 / . . ZFCG . . 35.7% .	
TOF	040588			
ETOW	145304	OTOW 166449 / . . TOCG . . 29.0% .	
EB/O	033703			
ELAW	111601	LAW 142198 /	

EINN UG4 DEVOL UN546 MASIT..5515..5620..5730..5740..5550..FIR..CARPE
 CARPE..YAY J571 CONAY J581 ENE ENE4 KJFK

BLOCK IN LDG FU1 FU3

BLOCK OFF T.OFF FU2 FU4

BLOCK TIME F.TIME

ENROUTE ALTERNATES

EINN TO BE SUITABLE FROM 1200 UTC / TO 1557 UTC
 BIKF TO BE SUITABLE FROM 1342 UTC / TO 1754 UTC
 BGSF TO BE SUITABLE FROM 1530 UTC / TO 1816 UTC
 CYQX TO BE SUITABLE FROM 1554 UTC / TO 2013 UTC

MOST CRITICAL FUEL SCENARIO AT : ETP3 FUEL DEFICIT WAS 00000 LBS
 ETP1 EINN/BIKF 01/35 0560NM P040/M031 BURN 11507/11634 DIS 0551/0455
 ETP2 BIKF/BGSF 03/04 1110NM P001/P006 BURN 14826/14811 DIS 0662/0672
 ETP3 BGSF/CYQX 03/29 1266NM P016/M041 BURN 14351/14608 DIS 0672/0571

WPT FLT WIND TAS OTT OMT DST NAM E.T. E.TA ECB0 EFOB. E.WT.
 AWY MSA OAT GS ITT IMT RDST RNAM C.T. A.TA ACBO AF0B.

EINN ELEV 00046FT

 DEVOL / . . . 323 330 090 128 0018 003.6 037.5 142.2
 UG4 322 330 2702 3043 0018

 TOC 350 309/085 451 298 306 008 010 0002 003.8 037.2 141.9
 UG546 038 M53 367 297 306 2694 3033 0020

 FIR 350 309/085 451 298 306 051 063 0009 004.6 036.5 141.2
 UN546 038 M53 367 297 305 2643 2970 0029

 MASIT 350 309/085 451 298 306 003 004 0001 004.6 036.4 141.2
 UN546 038 M53 367 297 305 2640 2966 0029

 5515 360 309/083 449 291 300 111 135 0018 006.1 034.9 139.6
 .. 010 M54 369 289 299 2529 2831 0047

 5620 360 309/080 448 291 302 181 219 0029 008.5 032.57 137.2
 .. 010 M55 371 287 301 2348 1612 0116

 5730 360 306/077 445 284 298 338 403 0054 012.9 028.2 132.9
 .. 010 M58 373 276 295 2010 2209 0210

 5740 360 283/080 443 274 293 328 399 0054 017.1 023.9 128.7
 .. 010 M60 364 266 289 1682 1810 0304

 5550 380 248/066 441 255 278 357 420 0057 021.4 019.7 124.4
 .. 010 M63 375 246 271 1325 1390 0401

 FIR 380 210/063 443 233 258 068 078 0011 022.1 018.9 123.6
 .. 010 M61 384 230 255 1257 1312 0412

CARPE	380	210/063	443	233	258	117	135	0018	023.5	017.5	122.3
..	010	M61	384	230	255	1140	1177	0430
YAY	390	190/058	446	217	242	126	143	0019	024.9	016.1	120.9
..	053	M58	394	215	239	1014	1034	0449
FIR	390	167/052	451	240	263	241	251	0034	027.3	013.7	118.4
J571	053	M53	433	235	258	0773	0783	0523
HITOR	390	167/052	451	240	263	016	017	0002	027.5	013.6	118.3
J571	053	M53	433	235	258	0757	0766	0525
FIR	390	156/034	458	215	237	023	024	0003	027.7	013.3	118.0
J571	038	M47	440	213	234	0734	0742	0528
CONAY	390	156/034	458	215	237	150	156	0021	029.2	011.8	116.6
J571	038	M47	440	213	234	0584	0586	0549
YFC	390	157/018	459	244	265	108	108	0014	030.2	010.8	115.5
J581	035	M46	458	243	262	0476	0478	0603
FIR	390	198/012	459	240	259	051	052	0007	030.7	010.3	115.0
J581	029	M46	450	239	258	0425	0426	0610
TOPPS	390	198/012	459	240	259	014	014	0002	030.8	010.2	114.9
J581	029	M46	450	239	258	0411	0412	0612
BGR	390	272/010	458	239	258	057	058	0008	031.4	009.6	114.4
J581	076	M47	450	238	256	0354	0354	0620
ENE	390	307/014	456	222	240	113	113	0015	032.4	008.6	113.3
J581	037	M48	455	221	238	0241	0241	0635
ASPEN	390	307/022	455	200	217	039	038	0005	032.8	008.2	112.9
ENE4	037	M49	461	200	216	0202	0203	0640
PVD	390	304/027	455	200	216	069	068	0009	033.4	007.6	112.3
ENE4	037	M49	461	199	213	0133	0135	0649
TOD	390	304/030	455	220	234	022	022	0003	033.6	007.4	112.1
ENE4	023	M49	451	220	234	0111	0113	0652

 TRAIT / ... 220 234 012 012 0002 033.7 007.3 112.0
 ENE4 220 235 0099 0101 0654

 PARCH / ... 220 235 015 015 0003 033.8 007.3 112.0
 ENE4 219 234 0084 0086 0657

 CCC / ... 252 267 032 033 0006 033.9 007.1 111.8
 ENE4 251 264 0052 0053 0703

 ROBER / ... 216 229 018 017 0004 034.0 007.0 111.8
 ENE4 216 230 0034 0036 0707

 FIR / ... 265 279 017 018 0004 034.1 007.0 111.7
 ENE4 265 277 0017 0018 0711

 JFK / ... 265 279 017 018 0004 034.1 006.9 111.6
 ENE4 265 277 0000 0000 0714

 KJFK / 000 000 0000 034.1 006.9 111.6
 ENE4 0000 0000 0714

WP	NAME	CO-ORDINATES				WP	NAME	CO-ORDINATES			
..	EINN	N52	42.1	W008	55.5	..	DEVOL	N53	53.4	W010	26.1
..	FIR	N54	21.0	W011	55.2	..	MASIT	N54	22.0	W012	00.0
..	5515	N55	00.0	W015	00.0	..	EFP	N55	55.0	W012	00.0
..	5620	N56	00.0	W020	00.0	..	ETP1	N56	26.4	W023	22.8
..	5730	N57	00.0	W030	00.0	..	ETP2	N57	00.0	W040	00.0
..	ETP3	N56	13.8	W044	30.0	..	EXP	N55	19.0	W048	50.0
..	5550	N55	00.0	W050	00.0	..	FIR	N54	18.6	W051	33.0
..	CARPE	N53	05.0	W054	05.0	..	YAY	N51	23.6	W056	05.0
..	FIR	N49	14.4	W061	22.2	..	HITOR	N49	05.1	W061	42.0
..	FIR	N48	46.8	W062	01.8	..	CONAY	N46	41.9	W064	05.7
..	YFC	N45	53.7	W066	25.1	..	FIR	N45	27.6	W067	27.6
..	TOPPS	N45	20.4	W067	44.3	..	BGR	N44	50.5	W068	52.4
..	ENE	N43	25.5	W070	36.8	..	ASPEN	N42	49.0	W070	54.7

.. PVD N41 43.5 W071 25.8	.. TRAIT N41 17.1 W071 55.1
.. PARCH N41 06.0 W072 07.2	.. CCC N40 55.8 W072 47.9
.. ROBER N40 41.1 W073 02.0	.. FIR N40 39.6 W073 24.0
.. JFK N40 38.0 W073 46.3	.. KJFK N40 38.4 W073 46.7

FIRS EGGX/0029 CZQX/0210 ADIZ/0412 CZUL/0523 CZQM/0528
FIRS KZBW/0610 KZNY/0711

(FPL-AIB320-IX
-A320/M-SXDHIRWY/C
-EINN1200
-N0451F350 UG4 DEVOL UN546 MASIT/M078F360 DCT 55N015W 56N020W
57N030W 57N040W/M078F380 DCT 55N050W/N0443F380 DCT
CARPE/N0446F390 DCT YAY J571 CONAY J581 ENE ENE4
-KJFK0714 KBOS
-EET/EGGX0029 MASIT0029 15W0047 20W0116 CZQX0210 40W0304
50W0401 ADIZ0412 CARPE0430 CZUL0523 CZQM0528 KZBW0610 KZNY0711
REG/F-GELY SEL/HSCE RMK/TCAS EQUIPPED
-E/0841 P/TBN R/VE S/M J/LF D/ C
A/WHITE)

EINN/BIKF - EQUAL TIME POINT DATA - ETP1

DIVERSION SUMMARY -				EINN	BIKF
TIME	01.24				
F.L.	0100				
FOB	031016				
G/C DIST		0551		0455	
AVG W/C		P040		M031	
TEMP @ FL100		M017		M019	
BURN SUMMARY FL100 ...		1 ENG.	2 ENG.	1 ENG.	2 ENG.
DIVERSION SPEED		360 KT	LRC	360 KT	LRC
DIVERSION TIME		1.15	1.25	1.14	1.24
DIVERSION	008178	01.24	007717	008078	007884
HOLD	001140	00.15	001144	001141	001142
MAP	000661		000661	000661	000661
CONSERV.	000818		000772	000808	000788
ICE DRAG	000673		000611	000657	000638
ANTI-ICE	000164		000154	000162	000158
APU	000000		000000	000000	000000
TOTAL	011634		011059	011507	011271
FOB	031016				
QTY DIFF.	+019382				

BIKF/BGSF - EQUAL TIME POINT DATA - ETP2

DIVERSION SUMMARY -				BIKF	BGSF
TIME	01.51				
F.L.	0100				
FOB	023947				
G/C DIST		0662		0672	
AVG W/C		P001		P006	
TEMP @ FL100		M019		M016	
BURN SUMMARY FL100 ...		1 ENG.	2 ENG.	1 ENG.	2 ENG.
DIVERSION SPEED		360 KT	LRC	360 KT	LRC
DIVERSION TIME		1.39	1.51	1.41	1.54
DIVERSION	010638	01.51	010109	010638	010087
HOLD	001072	00.15	001075	001072	001075
MAP	000661		000661	000661	000661
CONSERV.	001064		001011	001064	001009
ICE DRAG	001178		001100	001178	001101
ANTI-ICE	000213		000202	000213	000202
APU	000000		000000	000000	000000
TOTAL	014826		014158	014826	014135
FOB	023947				
QTY DIFF.	+009121				

BGSF/CYQX - EQUAL TIME POINT DATA - ETP3

DIVERSION SUMMARY -		BGSF	CYQX			
TIME	01.49					
F.L.	0100					
FOB	022075					
G/C DIST		0672	0571			
AVG W/C		P016	M041			
TEMP @ FL100		M016	M001			
BURN SUMMARY FL100 ...		1 ENG.	2 ENG.	1 ENG.	2 ENG.	
DIVERSION SPEED		360 KT	LRC	360 KT	LRC	
DIVERSION TIME		1.36	1.48	1.35	1.49	
DIVERSION	010488	01.49	009742	010277	009999	010488
HOLD	001059	00.15	001064	001061	001063	001059
MAP	000661		000661	000661	000661	000661
CONSERV.	001049		000974	001028	001000	001049
ICE DRAG	001141		001037	001118	001070	001141
ANTI-ICE	000210		000195	000206	000200	000210
APU	000000		000000	000000	000000	000000
TOTAL	014608		013673	014351	013993	014608
FOB	022075					
QTY DIFF.	+007467					

ONE ENGINE INOP DIVERT SUMMARY

CRZ	LAT	LONG	FOB	TO	BURN	FL	MSA	TO	BURN	FL	MSA	W
-----	-----	------	-----	----	------	----	-----	----	------	----	-----	---

WPT . . . AT .. HOURS .. MINUTES FROM DEPARTURE
 1LE N56450 W026300 029664 EINN 008034 180 012 BIKF 007864 180 012

WPT . . . AT .. HOURS .. MINUTES FROM DEPARTURE
 1LE N56570 W040198 023815 BIKF 009260 200 002 BGSF 009225 200 090

WPT . . . AT .. HOURS .. MINUTES FROM DEPARTURE
 1LE N56102 W044492 021943 BGSF 008960 200 067 CYQX 008918 200 007

WARNING FLAGS: M-MSA, D-FUEL DUMP REQ., F-DIVERT FUEL REQ.

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SUITABLE AIRPORT SELECTION FORM

JAR MINIMA (Table 1)

DATE: 13 April 1999
AIRCRAFT: A320
ROUTE: SNN-JFK
Maximum Tail Wind: 10 kt
MAX RECOMMENDED CROSS WIND

ICAO Code Airport name	RWY HDG Mag(true)	APPROACH Category	LANDING aids	WEATHER MINIMA				PERIOD	
				EN ROUTE		ETOPS		FROM H:MIN	TO H:MIN
				Ceil ft	VIS m	Ceil ft	VIS m		
EINN SHANNON	24 (23)	Precision	ILS full	200	550	600	2050		
		non Precision		604	2400	1004	3900		
	06 (05)	Precision	ILS DME full	200	700	600	2200		
		non Precision	VOR DME	404	1400	804	2900		
		non Precision		604	2400	1004	3900		
BIKF KEFLAVIK	02 (36)	non Precision	VOR DME	253	1500	653	3000		
		Precision	ILS full	200	550	600	2050		
		non Precision	VOR DME	259	720	659	2220		
	11 (09)	non Precision	NDB	399	1200	799	2700		
		non Precision		259	1500	659	3000		
	29 (27)	non Precision	LOC DME	259	1500	659	3000		
		non Precision	VOR DME	259	1500	659	3000		
		Precision	ILS DME full	200	800	600	2300		
BGSF SONDRE STROM	10 (06)	non Precision	VOR DME	257	720	657	2220		
		non Precision	NDB	387	1200	787	2700		
CYYR GOOSE BAY	08 (05)	Precision	ILS DME full	200	800	600	2300		
		non Precision		540	3200	1040	4700		
	26 (23)	non Precision	LOC (back crs)	287	1600	687	3100		
CYQX GANDER	04 (01)	Precision	ILS DME full	200	800	600	2300		
	13 (11)	Precision	ILS full	200	800	600	2300		
		non Precision	NDB	452	1609	852	3109		
	31 (29)	non Precision	LOC (back crs)	360	2000	760	3500		
	22 (19)	non Precision	LOC (back crs)	321	1600	721	3100		
		non Precision	VOR	341	1600	741	3100		

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A318/319/320/321	MASTER MINIMUM EQUIPMENT LIST	MASTER MINIMUM EQUIPMENT LIST	01-49	P 1
		AUXILIARY POWER UNIT	SEQ 100	REV 29

1 . SYSTEM AND SEQUENCE NUMBERS		2 . RECTIFICATION INTERVAL		
ITEM		3 . NUMBER INSTALLED		
49-00 MAINTENANCE MESSAGE DISPLAYED ON ECAM STATUS PAGE		4 . NUMBER REQUIRED FOR DISPATCH		
49-10 POWER PLANT		5 . REMARKS OR EXCEPTIONS		
R	10-01 Power Plant (APU)	C	1	0 *(o) a) Except for ER operations, may be inoperative. - or -
R		A	1	0 *(o) b) Except for ER operations beyond 120 minutes, may be inoperative for four flights. - or -
R		D	1	0 *(o)(m) c) Except for ER operations, may be inoperative provided the APU is deactivated or removed.
DAT				
				OPS

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NOTAM

EINN APT 19990412778V01 A0426/99 99 12APR1400/99 16APR1730
ILS RWY06 OUT OF SERVICE

EINN APT 19990409492V01 A0416/99 99 15APR0700/99 15APR1900
CRANE MAX HGT 45M/148FT AGL OPR PSN 524301.88N0085127.12W
LIGHTED RED

EINN APT 19990409474V01 A0415/99 99 15APR1900/99 30DEC1700 EST
CRANE MAX HGT 40M/131FT AGL OPR PSN 524301.88N0085127.12W
LIGHTED RED

EINN APT 19990407715V01 A0407/98 99 15APR0700/99 15APR1900
CRANE MAX HGT 45M/148FT AGL OPR PSN 524301.88N0085127.12W LIGHTED
RED

EINN APT 19990405791V01 A0395/99 99 06APR0815/99 13APR1700 EST
RESCUE LAUNCH UNSERVICEABLE
REF AIP EINN AD 2-3

EINN APT 19990226312V01 A0187/99 99 22FEB1920/99 30JUN1600 EST
REF AIP PAGES EINN AD 2-18
EINN AD 2-20 EINN 2-21
AIP SECTION EINN AD 2-22
INTRODUCTION OF SURVEILANCE RADAR APPROACHES DEFERRED.

EINN APT 19990130504V01 A0053/99 99 19JAN1230/99 30APR1600 EST
CAUTION ADVISED WHEN TURNING ON TURNING AREA AT END RWY24
DUE POSSIBILITY OF LOW FRICTION PARTICULARLY IN WET CONDITIONS)

EINN APT 19980732208V01 A1078/98 98 29JUL1000/ PERM
AMEND MSA AS FOLLOWS
SECTOR 150 TO 240 - 2800FT
SECTOR 240 TO 330 - 3400FT
SECTOR 330 TO 060 - 2800FT
SECTOR 060 TO 150 - 2400FT
REF PAGES EINN AD 2.24-7, EINN AD 2.24-8, EINN 2.24-9.

EINN APT 19980732206V01 A1077/98 98 29JUL1000/ PERM
AMEND VISUAL MANOEUVRING OCA/H FOR CAT C TO READ 650 (604).
REF PAGES EINN AD 2.24-7, EINN AD 2.24-8, EINN 2.24-9.

EINN APT 19980732190V01 A1076/98 98 29JUL1000/ PERM
AMEND VISUAL MANOEUVRING OCA/H FOR CAT A TO READ 480 (434).
REF PAGES EINN AD 2.24-7, EINN AD 2.24-8, EINN AD 2.24-9.

EINN APT 19970316141V01 A0230/97 97 14MAR1530/ PERM
RWY 06/24 RUNWAY CENTRELINES INSTALLED.

EINN APT 19970316125V01 A0229/97 97 14MAR1530/ PERM
RWY 06/24 TOUCHDOWN ZONE LIGHTS INSTALLED.

EINN FD DATA BASED ON 130000Z.
6000 9000 12000 18000 24000 30000 34000 39000

BIKF APT 19990210037V01 A0022/99 99 08FEB1800/99 30JUN1700 EST
N-4 TAXIWAY CLOSED BETWEEN E-4 AND C-3 DUE
TO CONSTRUCTION

BIKF APT 19970829251V01 A0120/97 97 29AUG0900/ PERM
NEW PAPI LIGHTS HAVE BEEN INSTALLED
FOR RWYS 29 AND 02 AND HAS CHANGED
TO 3DEG GLIDEPATH

BIKF FD DATA BASED ON 130000Z.
6000 9000 12000 18000 24000 30000 34000 39000

BGSF APT 19990304159V01 A0053/99 99 04MAR0000/ PERM
REF AIP GREENLAND AND FAROE ISLANDS COM 2-1-2:
TWR SONDERSTROM TOWER FREQ 126.200 MHZ CHANGED TO 118.300 MHZ

A320 ETOPS COURSE

BGSF APT 19990304158V01 A0052/99 99 04MAR0000/ PERM
REF AIP GREENLAND AND FAROE ISLANDS COM 2-1-2:
APP SONDRESTROM APPROACH FREQ 118.300 MHZ CHANGED TO 126.200 MHZ

BGSF FD DATA BASED ON 130000Z.
6000 9000 12000 18000 24000 30000 34000 39000

CYYR APT 19990413562V01 04/004 99 13APR1100/99 13APR1300
YYR 8/26 CLOSED LNDG WEF 9904131100-9904131300

CYYR APT 19990413547V01 A1321/99 99 13APR1100/99 13APR1300
RWY 08/26 CLOSED FOR LANDINGS AVAILABLE FOR TKOF

CYYR APT 19990412443V01 A1306/99 99 12APR0157/99 31MAY2359
RWY ID LIGHTS 16 UNSERVICEABLE

CYYR APT 19990412398V01 A1305/99 99 12APR0012/99 31MAY2359
DISTANCE TO GO MARKERS FIRST 3000 FT RWY 26 LAST 3000 FT RWY 08
UNSERVICEABLE

CYYR APT 19990338942V01 A1136/99 99 30MAR2104/99 01OCT2359 EST
REF CFS: SERVICES: CFR: ICAO CAT 8 AVAILABLE 24/7. CANMIL/STANAG
CAT

7 MON-SAT 1200-0400 (1100-0300 DT). O/T CAT 5 (INCREASE TO
CANMIL/STANAG CFR
AVAILABLE WITH 24 HR PN THRU WING OPS FOR RAF, GAF,
RNLAf AND CANFORCE AIRCRAFT

CYYR APT 19990338589V01 A1123/99 99 30MAR1452/99 23APR2359 EST
CANMIL OPS HF RADIO UNSERVICEABLE

CYYR APT 19990338320V01 A1118/99 99 30MAR1337/99 01OCT2359 EST
24 HR PN LOX. COORDINATE REQUESTS THRU MCC 709-896-6900 EXT 7331
OR CSN 568-7331 OR CELL PHONE 709-896-1847.

CYYR APT 19981122797V01 11/003 98 19NOV1831/ UFN
YYR AMEND CFS: OPR: MIL WING OPS 709-896-6900 EXT 7331,
CSN 568-7331 OR GOOSE BAY AIRPORT CORPORATION 709-896-5445,
FAX 709-896-5466, MON-FRI 12-21Z, O/T 709-896-5755.

CYYR APT 19981122758V01 A4629/98 98 19NOV1743/ PERM
AMEND CFS: OPR: MIL WING OPS 709-896-6900 EXT 7331,
CSN 568-7331 OR GOOSE BAY AIRPORT CORPORATION 709-896-5445,
FAX 709-896-5466, MON-FRI 12-21Z, O/T 709-896-5755.

CYYR APT 19981122435V01 A4623/98 98 19NOV1417/99 31MAR2359 EST
REF CFS: SERVICES: CFR: ICAO CAT 8 AVAILABLE 24/7.
CANMIL/STANAG CAT 7 MON-SAT 1200-0400 (1100-0300 DT).
O/T CAT 5 (INCREASE TO CANMIL/STANAG CFR
AVAILABLE WITH 24 HR PN
THRU WING OPS FOR RAF, GAF, RNLAf AND CANFORCE ACFT))

F

CYYR APT 19980930450V01 A3833/98 98 28SEP1448/99 10APR2359 EST
24 HR PN LOX. COORDINATE REQUESTS THRU MCC 709-896-6900 EXT 7331
OR CSN 568-7331 OR CELL PHONE 709-896-1847

CYYR FD DATA BASED ON 130000Z
6000 9000 12000 18000 24000 30000 34000 39000

CYQX APT 19990228970V01 A0662/99 99 24FEB1719/99 29APR2359 EST
ARRESTOR CABLE RWY 13/31 AVAILABLE ONLY WITH 48 HRS PN

KJFK APT 19990338562V01 03/012 WIE / UFN
JFK 13R FIRST 772 CLOSED

KJFK APT 19970814391V01 157/97/A/18 WIE / UFN
JFK PARA-SAIL AND BANNER TOWING OPERATIONS 1000FT AND BELOW IN
UPPER AND LOWER NEW YORK BAYS INCLUDING ROCKAWAY INLET
INDEFINITELY.

KJFK APT 19970708991V01 130/97A15A 97 08JUL1936/ UFN
JFK TWY J CENTERLINE LIGHTS OUT OF SERVICE BETWEEN RWY 22L AND
TAXIWAY Z INDEFINITELY.

KJFK FD DATA BASED ON 130000Z.
6000 9000 12000 18000 24000 30000 34000 39000

KBOS APT 19990315033V01 9/1398 WIE / UFN
GENERAL EDWARD LAWRENCE LOGAN INTL, BOSTON, MA.

ILS RWY 4R, AMDT 9 ...
ILS RWY 15R, ORIG-A ...
ILS RWY 22L, AMDT 6 ...
ILS RWY 27, AMDT 1 ...
ILS RWY 33L, AMDT 1A ...
VOR/DME OR GPS-A, ORIG ...
NDB OR GPS RWY 22L, AMDT 1 ...
GPS RWY 4R, ORIG ...

CIRCLING MDA 680/HAA 660 ALL CATS.

TEMPORARY CRANE 380 MSL 1.3 NM SW OF RWY 4R.

VOR/DME RWY 27, AMDT 2 ...

S-27 MDA 540/HAT 523 ALL CATS, CAT A/B RVR 5000,
CAT C VIS 1 1/2, CAT D VIS 1 3/4.

CIRCLING MDA 680/HAA 660 ALL CATS.

VDP 1.63 DME, VDP DISTANCE TO THRESHOLD 1.52 NM.

VOR/DME RWY 33L, AMDT 2A ...

S-33L MDA 540/HAT 523 ALL CATS, CAT A/B RVR 2400,
CAT C RVR 5000, CAT D 6000.

CIRCLING MDA 680/HAA 660 ALL CATS.

VDP 1.52 DME, VDP DISTANCE TO THRESHOLD 1.46 NM.

TEMPORARY CRANES 284 MSL 1.5 NM AND 285 MSL 1.6 NM SE OF RWY 27;
380 MSL 1.3 NM SW OF RWY 4R.

KBOS APT 19990206506V01 02/001 00 05FEB1422/ UFN
WYLYY TWO DEPT ADD NOTE: ENGAGE LATERAL NAV MODE AT 400FT AGL OR AS
SOON AS PRACTICABLE.

KBOS APT 19980916886V01 USNTA/NE-9 WIE / UFN
BOSTON-LOGAN INTERNATIONAL AIRPORT - INTERSECTION DEPARTURES DURING
PERIODS OF DARKNESS. AIR TRAFFIC CONTROL RULES AND PROCEDURES
PROHIBIT AN AIRCRAFT FROM BEING PUT INTO 'POSTION AND HOLD' AT AN
INTERSECTION DURING PERIODS OF DARKNESS. BOSTON-LOGON AIRPORT AIR
TRAFFIC CONTROL TOWER HAS BEEN GRANTED A WAIVER TO DO THIS
PROCEDURE THAT CAN BE EXERCISED AT CERTAIN INTERSECTIONS ON THE
AIRFIELD. THIS WAIVER WILL ALLOW BOSTON ATCT TO TAXI THE AIRCRAFT
INTO 'POSTION AND HOLD' DURING PERIODS OF DARKNESS AT ALL
LOCATIONS/INTERSECTIONS ON THE AIRFIELD. AFFECTED
RUNWAYS/INTERSECTIONS - RWY 27 AT TAXIWAY CHARLIE, RWY 4R AT
TAXIWAY CHARLIE, RWY 22L AT TAXIWAY CHARLIE. WHEN THE PROVISIONS OF
THE WAIVER ARE BEING EXERCISED, THE AFFECTED RUNWAYS WILL NOT BE
UTILIZED TO ACCOMODATE ARRIVING AIRCRAFT. THOUGH THE PROVISIONS OF
THE WAIVER CAN ONLY BE EXERCISED AT THE LOCATION LISTED ABOVE,
INTERSECTION DEPARTURES CAN STILL TAKE PLACE AT OTHER LOCATIONS
DURING PERIODS OF DARKNESS. AT INTERSECTIONS OTHER THAN THE ONES
LISTED ABOVE, THE AIRCRAFT CANNOT BE PUT INTO POSTION AND HOLD
PRIOR TO BEING ISSUED ITS TAKEOFF DEPARTURE CLEARANCE.

KBOS APT 19980517789V04 USNTA/NE-3 WIE / UFN
PREFERRED TAXI ROUTES AT BOSTON-LOGAN AIRPORT. THESE ROUTES HAVE
BEEN PUBLISHED TO AID FLIGHT CREWS IN THERE PRE-TAXI PLANNING. THE
ROUTES AND ARE BEING PUBLISHED IN UNSTA, PAGE NE-8.

KBOS APT 19980415512V01 6 A245 98 16JUN0020/ UFN
BOS 4R ILS CAT 2/3 NA

WEATHER

EINN TAF 130400Z 131206 32020G26KT 9999 BKN020 TEMPO 1220 SHRA
BKN020CB

EINN TAF 130600Z 130716 32022G28KT 9999 SCT020 TEMPO 0716 SHRAGS
BKN020CB
EINN TAF 130600Z NIL

EINN METAR 130830Z 30019G36KT 8000 -SHRA FEW008 BKN018CB BKN045 07/00
Q1013 NOSIG

EINN METAR 130800Z 31016KT 9999 FEW020 SCT045 07/M01 Q1013 NOSIG

EINN METAR 130800Z NIL

EINN METAR 130730Z 31016KT 9999 FEW020 SCT045 07/M02 Q1013 NOSIG

EINN METAR 130700Z 32014KT 9999 FEW020 06/M02 Q1013 NOSIG

12Z	3145M10	3153M16	3166M20	3195M26	8110M38	8110M50	3192M55	3069M54
18Z	3135M10	3140M17	3155M21	3087M28	8004M40	8001M51	3082M53	3160M52
00Z	3427M12	3426M19	3336M25	3159M35	3079M42	3074M46	3164M48	3150M49
06Z	3337M11	3437M18	3438M26	3340M41	3344M47	3248M45	3249M46	3243M47

BIKF TAF 130400Z 130606 01020KT 9999 SCT025 BECMG 0002 33005KT
CAVOK

BIKF TAF 130700Z 130918 01020KT 9999 SCT018

BIKF METAR 130830Z 02022KT 9999 BKN028 M03/M09 Q1028

BIKF METAR 130800Z 02022KT 9999 BKN030 M03/M09 Q1027

BIKF METAR 130730Z 01023KT 9999 BKN030 M03/M11 Q1027

BIKF METAR 130700Z 01023KT 9999 BKN030 M04/M11 Q1027

12Z	0126M18	0128M22	0137M27	3655M37	3567M45	3469M50	3460M49	3349M49
18Z	0022M16	0021M19	3632M24	3558M33	3573M45	3576M52	3466M53	3454M52
00Z	3422M14	3426M17	3435M21	3557M29	3471M43	3482M54	3473M55	3461M54
06Z	3123M14	3227M16	3232M20	3343M30	3361M42	3369M55	3365M57	3355M54

BGSF TAF 130511Z 130606 VRB08KT 9999 SCT180 BECMG 0911 SCT035 BKN090
PROB30 1218 4000 SNRA VV030

BGSF METAR 130750Z 06005KT 9999 BKN180 M08/M10 Q1022

BGSF METAR 130650Z 06005KT 9999 BKN200 M08/M10 Q1021

12Z	2222M09	2223M13	2226M18	2333M28	2449M39	2459M52	2450M58	2638M54
18Z	2223M10	2228M15	2230M20	2333M29	2343M40	2345M52	2447M56	2535M53
00Z	2120M11	2124M17	2224M21	2419M29	2424M41	2531M52	2538M54	2635M51
06Z	2212M11	2313M17	2414M22	2818M30	2629M41	2637M52	2641M53	2738M51

CYYR TAF 130333Z 130404 17005KT P6SM SCT050 SCT080 TEMPO 0408 BKN040
BECMG 0810 08007KT FM1000Z 06007KT P6SM BKN030 OVC090 TEMPO 1215 45M
-SN OVC020 FM1500Z 06015G25KT 11/2SM -SN SCT008 OVC012 FM1800Z
06012G22KT 2SM -PL BKN008 OVC012 FM2100Z 08015G25KT 3SM -RA BR OVC015
RMK NXT FCST BY 10Z

CYYR METAR 130800Z 16006KT 15SM FEW028 BKN040 BKN080 M01/M04 A2983
RMK SC1SC4AC1 /BLUE/ SLP105

CYYR METAR 130700Z 12002KT 15SM BKN040 BKN080 M01/M04 A2981 RMK
SC5AC1 /BLUE/ SLP097

A320 ETOPS COURSE

12Z	1318M08	1724M11	1834M14	1958M23	1972M36	1979M51	2063M52	2032M50
18Z	0930M05	1329M05	1433M09	1742M19	1756M33	1772M49	1875M58	1843M53
00Z	1228M01	1532M02	1535M07	1543M19	1656M34	1676M49	1670M56	1745M53
06Z	1323P01	1431M03	1440M09	1457M21	1573M35	1688M49	1673M53	1644M51

CYQX TAF AMD 130708Z 130704 12015G25KT P6SM -RA SCT004 OVC010 TEMPO
 0720 2SM -RA BR OVC002 BECMG 0911 13020G25KT FM2000Z 16020G28KT 3SM
 -RA BR OVC010 TEMPO 2002 1SM -RA BR OVC004 FM0200Z 17015KT P6SM
 OVC010 RMK NXT FCST BY 10Z

CYQX SPECI 130849Z 09020G28KT 7SM -RA BKN004 OVC010 RMK SF7SC1
 CYQX SPECI 130821Z 10020G25KT 6SM -RA BR OVC003 RMK SF8
 CYQX METAR 130800Z 10023G26KT 6SM -RA BR BKN004 OVC011 02/01 A2967
 RMK SF7SC1 CIG 3-5 SLP052
 CYQX METAR 130700Z 11019G25KT 6SM -RA BR BKN004 BKN010 OVC029 02/01
 A2972 RMK SF6SC2SC1 SLP068

FACN31 CYQX 130530
 06-18
 OTLK 18-06

HGTS ASL UNLESS NOTED
 CB TCU AND ACC IMPLY SIG TURBC AND ICG. CB IMPLIES LLWS.

PROG
 AT 06Z E-W UPR RDG VC GANDER MOVG NWD 25 KTS. ALSO AT 06Z E-W WRM FNT
 VC SPRINGDALE. WRM FNT QS TIL MID PD THEN MOVG NWD 25 KTS. MDT-STG
 SELY FLO OVR RGN.

CYQX FD DATA BASED ON 130000Z.

6000	9000	12000	18000	24000	30000	34000	39000	
12Z	1755P05	1754M00	1855M06	1857M17	1858M30	1970M45	1978M56	1962M59
18Z	1756P05	1757M00	1758M05	1760M17	1770M30	1783M45	1787M56	1861M57
00Z	1745P04	1753M00	1758M06	1767M18	1784M31	1697M46	1792M56	1766M55
06Z	1841P01	1754M02	1662M07	1674M19	1693M32	6610M47	6700M55	1765M53

KJFK TAF 130530Z 130606 33012KT P6SM SKC FM1400 33018KT P6SM SCT040
 FM1700 33020G30KT P6SM SCT040 TEMPO 1723 BKN040 FM2300 33018KT P6SM
 SKC

KJFK METAR 130851Z 30015KT 10SM CLR 06/M06 A2981 RMK A02 SLP093
 T00561056 55005

KJFK METAR 130751Z 30012KT 10SM CLR 06/M06 A2980 RMK A02 SLP092
 T00611056

12Z	3433M06	3337M08	3338M13	3238M24	3331M38	3230M51	3136M52	3040M49
18Z	3330M07	3338M08	3340M13	3340M24	3326M38	3127M50	3136M52	3140M49
00Z	3337M07	3442M09	3443M14	3341M25	3233M38	3235M50	3139M53	3040M50
06Z	3437M07	3438M09	3338M15	3138M26	3140M39	3141M50	3044M52	3039M50

KBOS TAF 130527Z 130606 31012G20KT P6SM SCT150 BECMG 1415 30015G28KT
 SCT040 TEMPO 1722 BKN050 FM2300 30012G20KT P6SM SKC

KBOS METAR 130756Z 32012G20KT 10SM FEW150 06/M09 A2965 RMK A02 SLP039
 T00561089

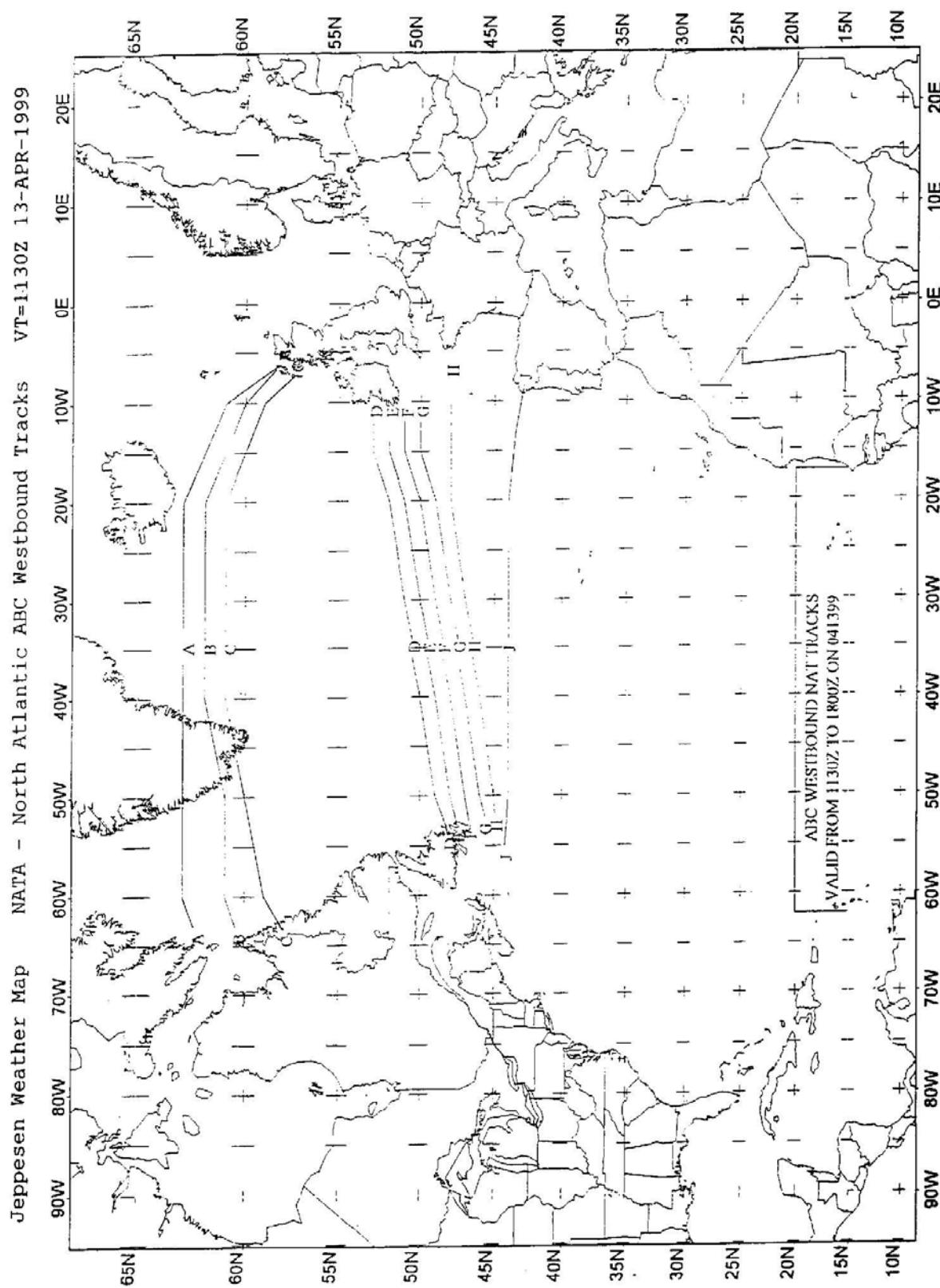
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T00611083

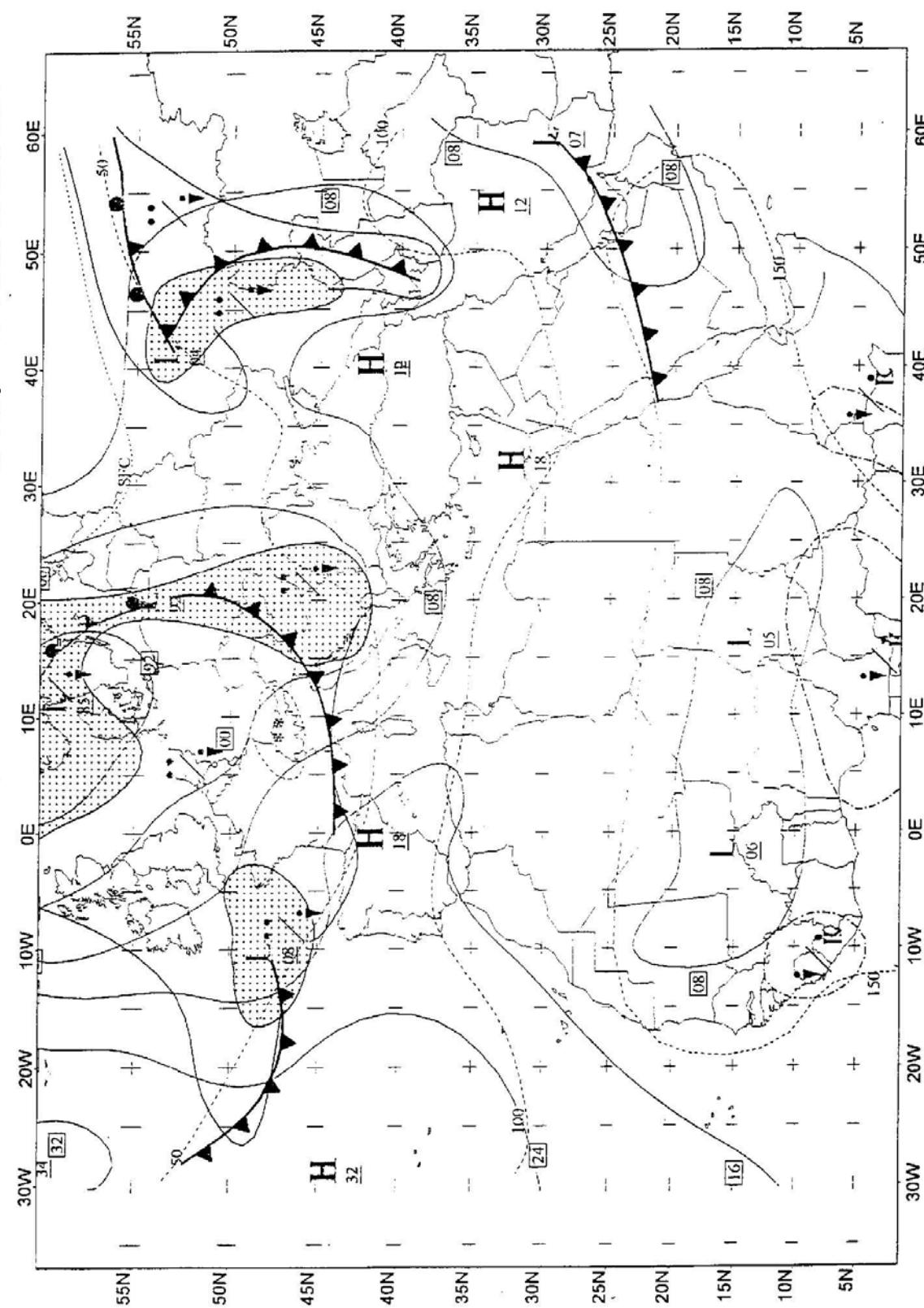
WINDS ALOFT EINN-KJFK

13 APRIL 1999
VALID 1200Z 0000Z

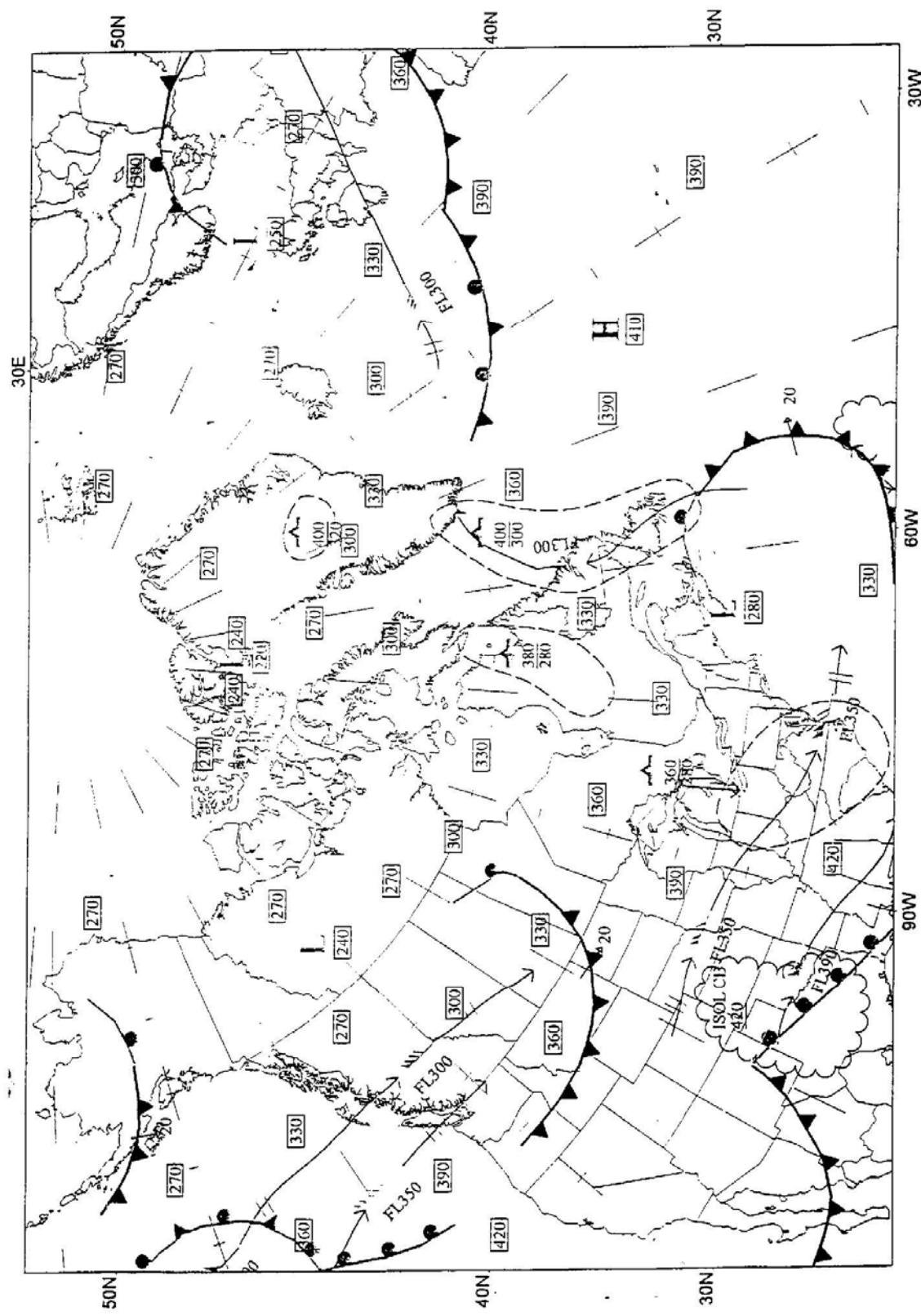
	FL100	FL300	FL340	FL390	
	330/35	330/83	320/89	323/62	-46
5515N	355/48	320/77	324/67	315/66	-45
5620N	330/53	331/86	333/98	320/62	-46
5730N	335/26	318/86	312/88	306/82	-59
5740N	271/31	288/66	292/84	276/62	-60
5550N	192/28	241/46	228/67	248/54	-62
CARPE	178/38	188/52	196/64	202/56	-61
YAY	173/49	178/72	175/75	180/61	-60
HITOR	174/52	164/82	163/83	176/56	-50
CONAY	171/52	162/86	164/81	170/52	-49
YFC	114/25	146/67	159/64	157/36	-48
TOPPS	098/16	144/43	156/53	154/32	-47
BGR	060/12	142/23	138/25	159/18	-46
ENE	006/23	356/21	344/17	332/8	-46
ASPEN	354/27	344/23	347/20	352/15	-47
PVD	343/29	338/27	333/25	332/18	-47
PARCH	343/37	334/24	337/26	341/24	-47
CCC	344/41	333/22	338/28	345/31	-48
KJFK	341/36	330/21	340/32	244/36	-48



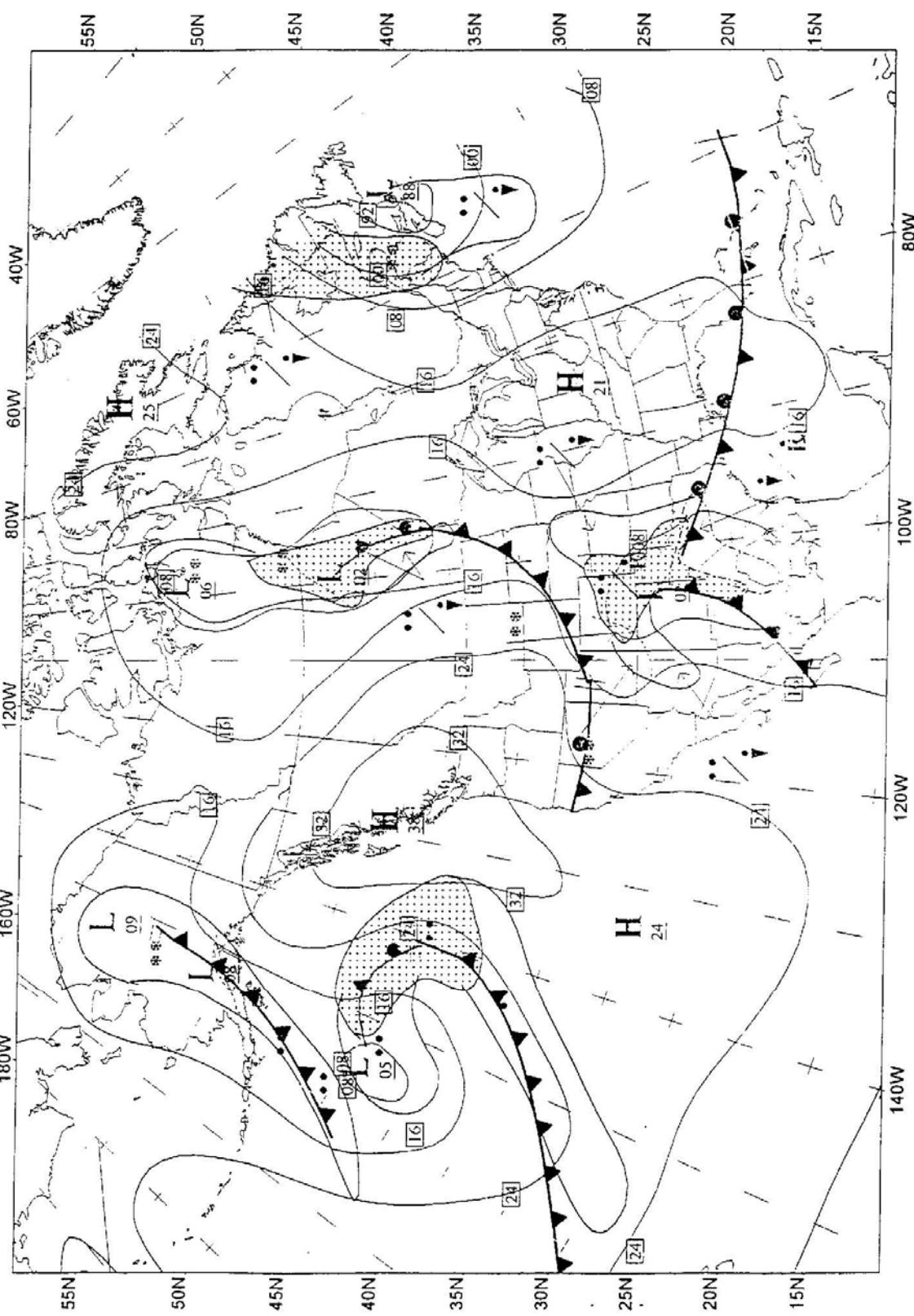
Jeppesen Weather Map EU03 - Europe 24 Hour Surface Weather Prog VT=0000Z 14-APR-1999

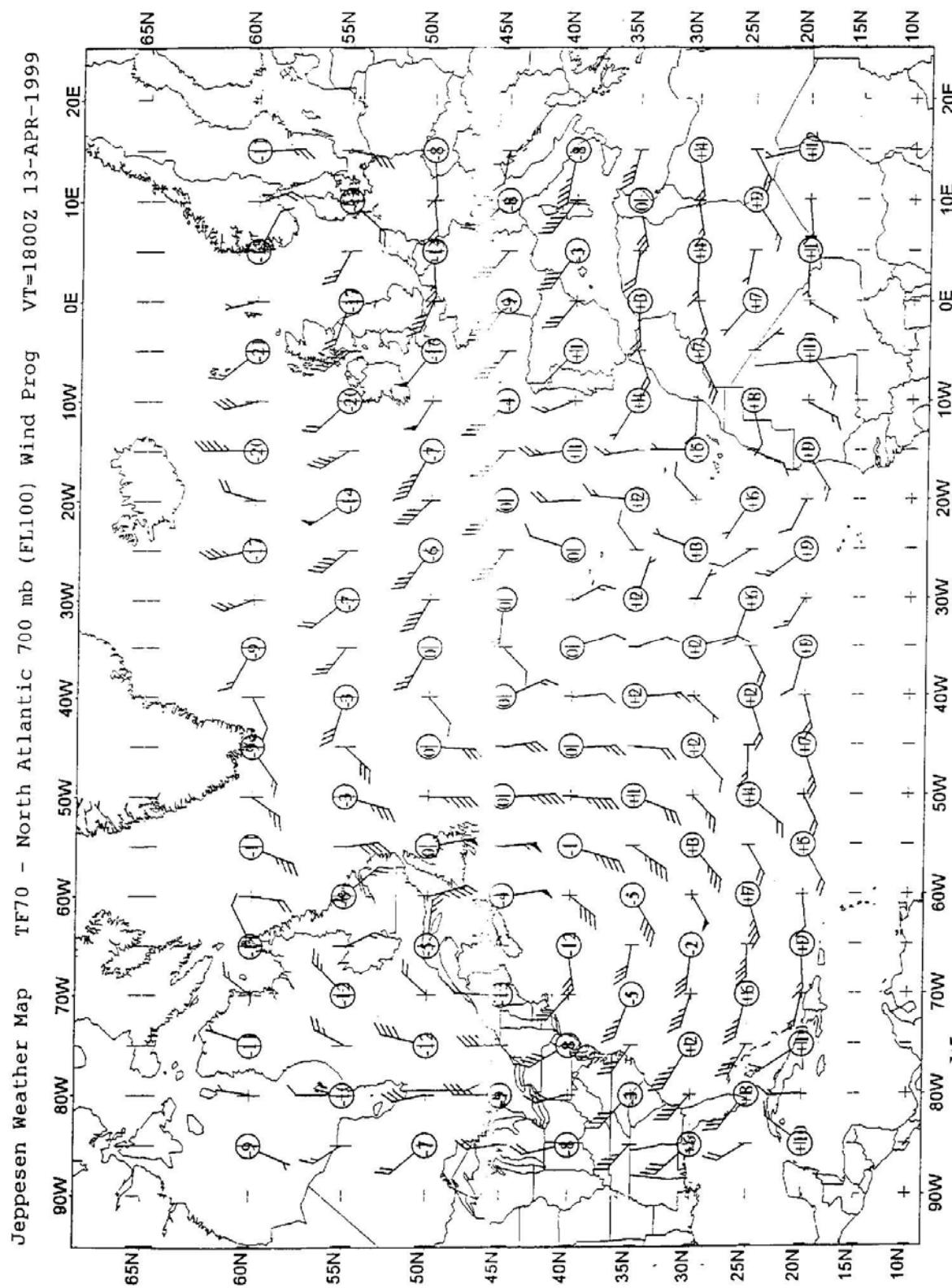


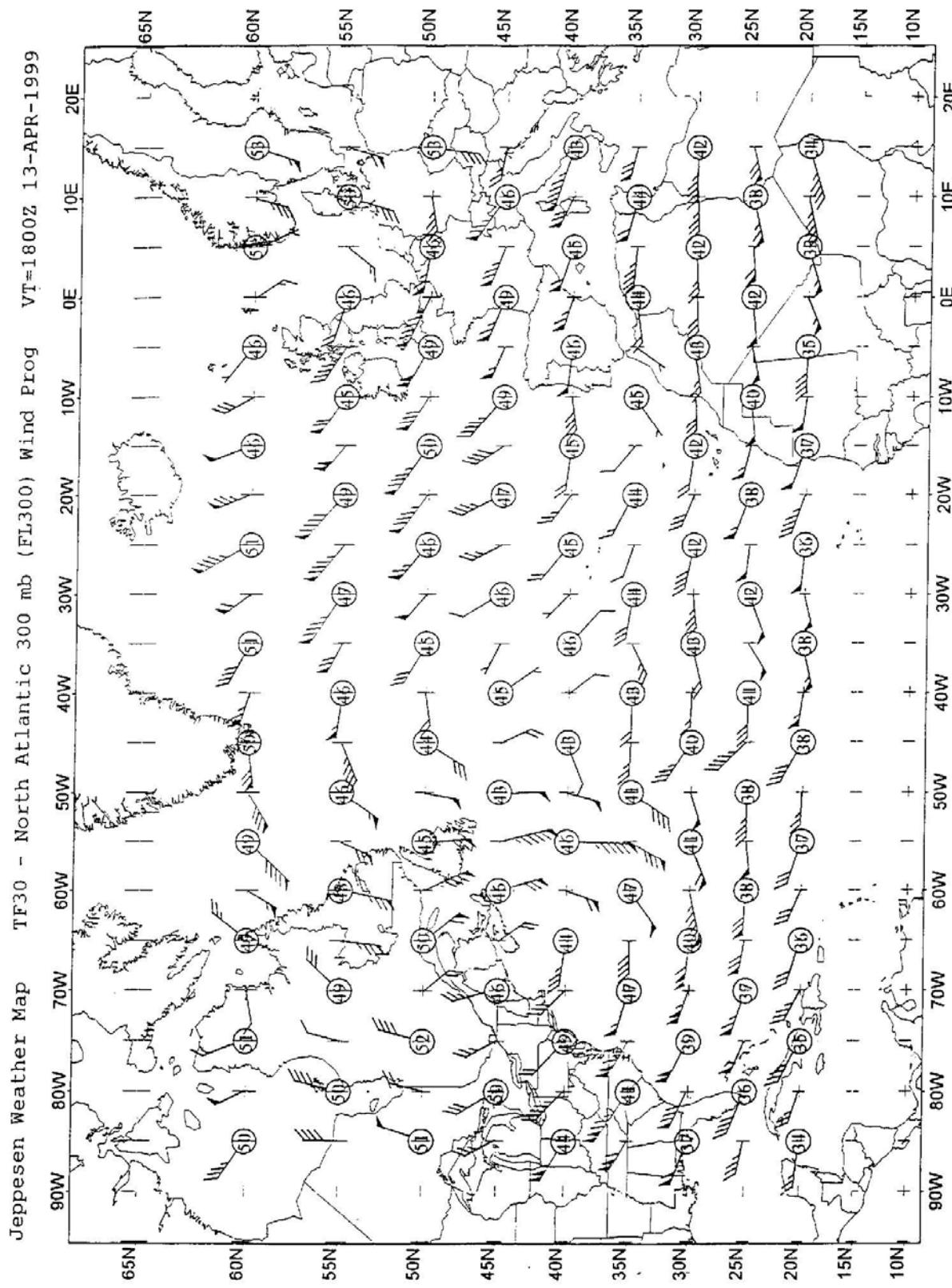
Jeppesen Weather Map NA10 - North Atlantic Polar High Level Sig Wx Prog VFT=1800Z 13-APR-1999

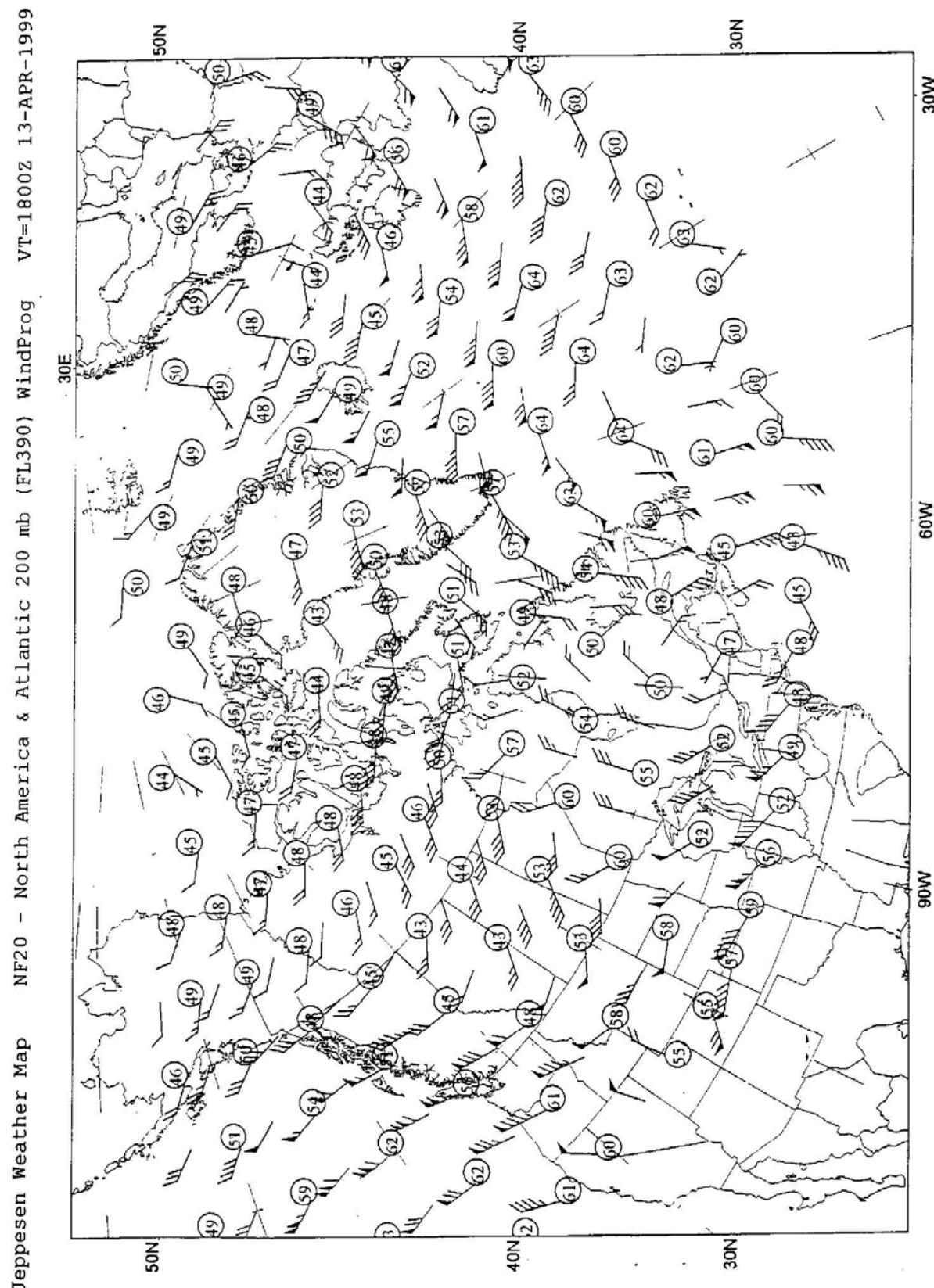


Jeppesen Weather Map CN03 - Canada 24 Hour Surface Weather Prog VT=0000Z 14-APR-1999

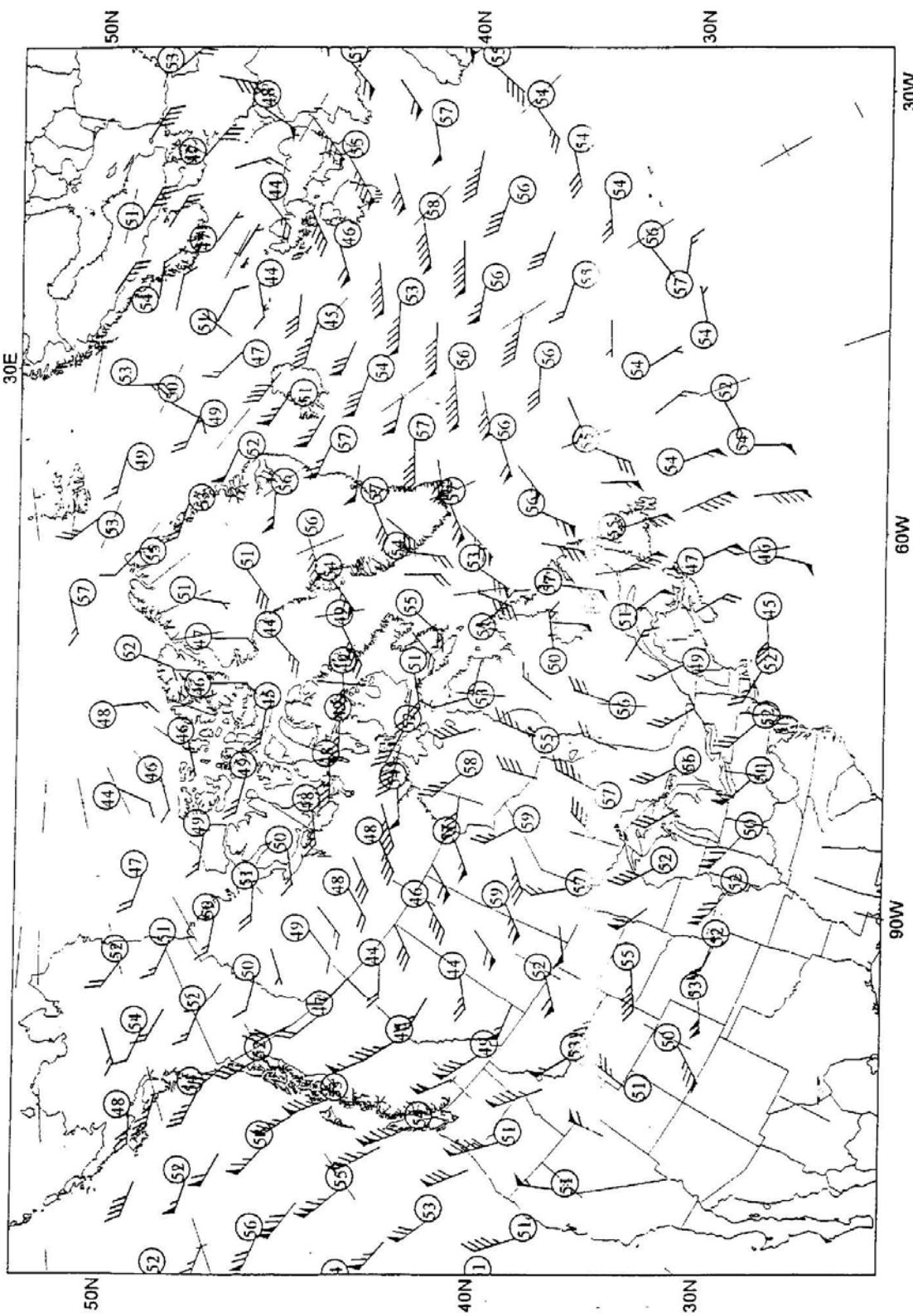


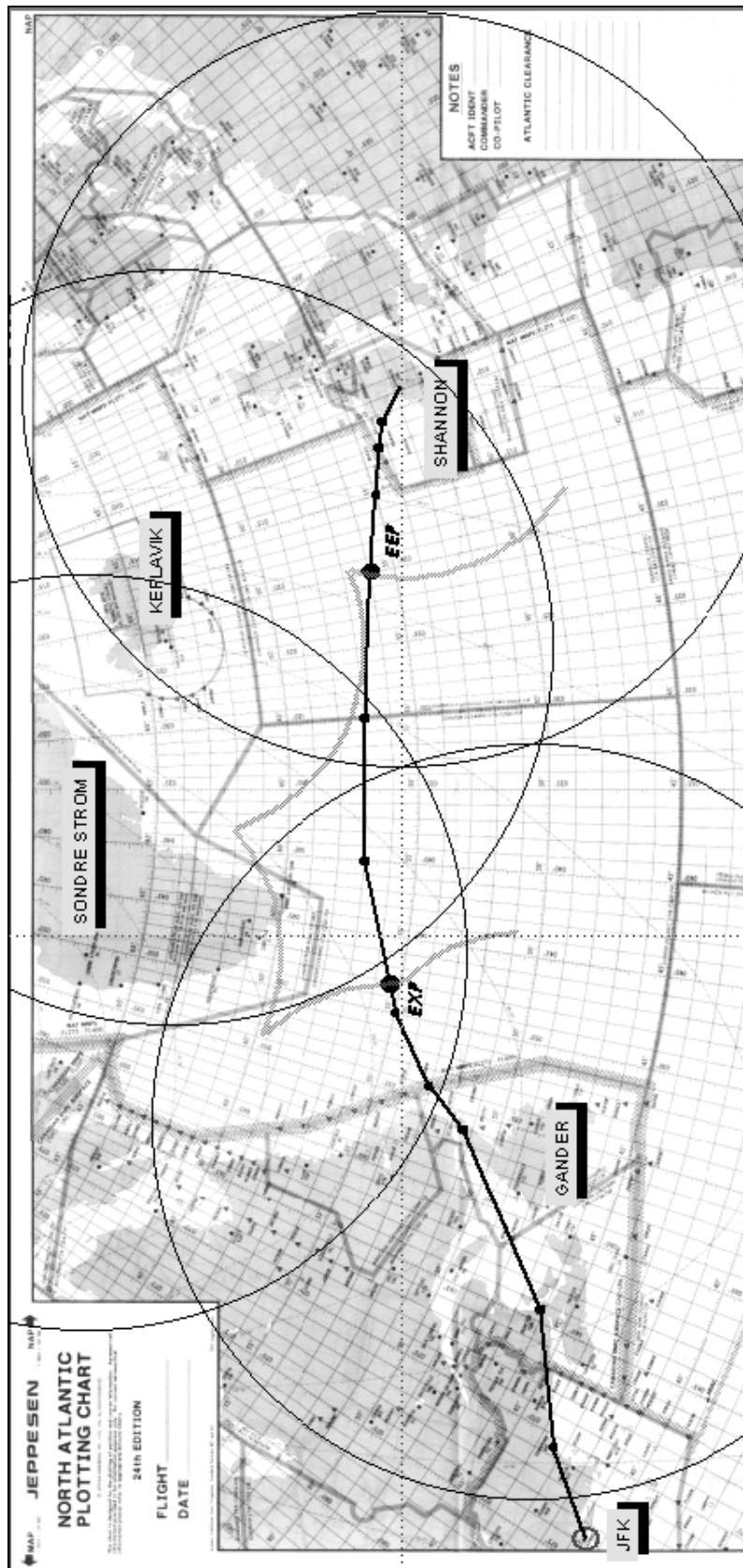






Jeppesen Weather Map NFM - North America & Atlantic 250 mb (FL340) Wind Prog VT=1800Z 13-APR-1999





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