



Final Report
of the Investigation Committee
of the Libyan Civil Aviation
Authorities

concerning the

accident of the aircraft Shorts SD3-60, HB-AAM

on 13.01.2000

nearby Marsa Brega, Libya

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**FINAL REPORT OF THE ACCIDENT OF SIRTE OIL COMPANY
A/C SD3-60 REG HB-AAM IN THE SEA NEAR BY MARSА BREGA
COAST ON JAN. 13TH2000**

OWNER	SIRTE OIL COMPANY	
OPERATOR	AVISTO CO LTD	
A/C MANUFACTURER	SHORT BROTHER'S	
A/C MODEL	SD3-60 (100)	
NATIONALITY AND REG.MARK'S	SWISS HB-AAM	
PLACE OF ACCIDENT	MARSА BREGA	30 23.457N 019 28.953E
DATE OF ACCIDENT	13-01-2000	

SYNOPSIS

A/C HB-AAM TOOK OFF FROM TRIPOLI INTERNATIONAL AIRPORT ENROUTE TO MARSА BREGA AT 0929 UTC WITH 38 PAX PLUS 3 CREW MEMBERS WHILE THE A/C WAS AT FINAL APP. PREPARING FOR LANDING AT ABOUT 4.5 NM FROM THE AIRPORT, LEFT ENGINE FLAMED OUT FOLLOWED BY THE RIGHT ENGINE, THE A/C DITCHED IN THE SEA AND SANK IN FEW MINUTES

1- FACTUAL INFORMATION

1.1 HISTORY OF FLIGHT

A/C HB-AAM TOOK OFF AT 0929 UTC FROM TRIPOLI INT. AIRPORT WITH TWO FLIGHT CREW, ONE CABIN CREW AND 38 PAX OF WHICH THREE CHILDREN AND ONE INFANT WITH 3200LBS OF FUEL ON BOARD, A/C FLEW ON THE ROUTE TRIPOLI-BENIWALID-TILAL DIRECT TO MARSА BREGA, DURING FLIGHT THE CREW HAVE NOTICED FUEL IMBALANCE SO THEY DID A CROSS FEEDING UNTIL FUEL BALANCED AT 11:17:12 UTC

AT 11:25:51 UTC A/C STARTED DESCEND FROM FL. 70 AT 40 NM. FROM MARSА BREGA

AT 11:36:57 UTC LEFT ENGINE FLAMED OUT AND THE CAPTAIN ASKED HIS F/O TO CONFIRM LEFT ENGINE FAILURE

AT 11:37:27 UTC F/O CONFIRMED LEFT ENGINE FAILURE

AT 11:37:28 UTC RIGHT ENGINE FLAMED OUT

AT 11:37:39 UTC PIC. ASKED HIS F/O TO INFORM SOC OPERATION AT MARSА BREGA ABOUT THE TWO ENGINES FAILURE AND HIS DECISION TO DITCH

AT 11:37:57 UTC PIC. ASKED HIS F/O TO RELIGHT THE ENGINE

AT 11:38:05 UTC GPWS. ACTIVATED SINCE A/C IS IN UNSAFE SITUATION

AT 11:38:34 UTC A/C DITCHED IN THE SEA AT 30 23.457N 019 28.953E

1.2 INJURIES TO PERSONS

INJURY	CREW	PAX	OTHERS	TOTAL
FATAL	1	20	0	21
SERIOUS	2	11	0	13
MINOR/NON	0	6	0	6
MISSING	0	1	0	1

1-3 DAMAGE TO A/C

A/C DESTROYED BY IMPACT AND SANK IN FEW MINUTES

1-4 OTHER DAMAGE

NIL

1-5 PERSONAL INFORMATION

1-5-1 PILOT IN COMMAND

LIBYAN CITIZEN

AGE 42 YEARS
 LICENCE TYPE ATPL (SWISS)
 LICENCE NUMBER CH21262
 VALIDITY OF LICENCE 10-04-2000
 MEDICAL CLASS AND DATE I / 27-09-1999
 RATING S&MEL, SD3-60
 MANDATORY CHECKS I/R
 FLYING HOURS TOTAL 8814 HOURS
 ON TYPE 3840 HOURS
 DUTY TIME IN THE LAST 24 HOURS 7:30 HOURS

1-5-2 FIRST OFFICER

LIBYAN CITIZEN

AGE 49 YEARS
 LICENCE TYPE ATPL (SWISS)
 LICENCE NUMBER CH 18251
 VALIDITY OF LICENCE 20-03-2000
 MEDICAL / DATE I / 27-9-1999
 RATINGS S&MEL, SD3-60, F28
 MANDATORY CHECKS I/R
 FLYING HOURS TOTAL 10422 HOURS
 ON TYPE 1950 HOURS
 DUTY TIME ON THE LAST 24 HOURS 05:00 HOURS

1-5-3 OTHER CREW MEMBERS (CABIN CREW)

TUNISIAN CITIZEN

AGE 35 YEARS
 CERTIFICATE RENEWED ON AUG. 18TH 1999
 RATINGS F28, SD3-60
 FLYING HOURS IN THE LAST 24 HOURS 03:00

1-5-4 OTHER INFORMATION

NO ATC TOWER AT HLMB, IT'S A PRIVATE AIRPORT OWNED AND OPERATED BY SOC AND NOT EQUIPPED WITH A RECORDING FACILITY AND COMPANY OPERATIONS FACILITATE AIRTRAFFIC BY PROVIDING AVAILABLE WEATHER INFORMATION, MAINTENANCE FACILITY IS AVAILABLE ALSO

1-6A- A/C INFORMATION

A/C TYPE SHORT BROTHER'S
 A/C MODEL SD3-60 (100)
 NATIONALITY AND REGISTRATION SWISS HB-AAM
 A/C S/N. SH 3763
 VALIDITY OF C OF A NO EXPIRY DATE FOR SWISS C OF A
 A/C FLYING HOURS 7138 HOURS

THIS A/C IS EQUIPPED WITH TWO P&W ENGINES

DESCRIPTION	ENGINE 1	ENGINE 2
TYPE	PT6A-67R	PT6A-67R
S/NUMBER	PCE 106141	PCE 106135
DATE OF MANUFACTURE	SEP. 1989	JUL. 1989
DATE FITTED ON A/C	02-07-1999	11-12-1999
TOTAL FLYING HOURS	4063	4029
LAST OVERHAUL	12-12-1997	21-08-1996

THIS A/C IS EQUIPPED WIHT TWO HARTZELL PROPS.

DESCRIPTION	PROP 1	PROP 2
TYPE	HCA6A3/A10460E	HCA6A3/A10460E
S/NUMBER	GP113	GP153
DATE OF MANUFACTURE	10-03-1989	31-10-1990
HOURS SINCE O/H	851	2335
DATE FITTED ON A/C	02-07-1999	11-12-1999

B) A/C LOADING

BASIC OPERATING EMPTY WEIGHT	17710 LBS
FUEL ON BOARD	3200 LBS
PAY LOAD	6040 LBS
FUEL USED FOR TAXI AND T/O	100 LBS
T/O WEIGHT	26850 LBS
A/C WEIGHT AT TIME OF ACCIDENT	24640 LBS

A/C C.G WAS WITHIN PRESCRIPED LIMITS AT T/O, ENROUTE AND AT TIME OF ACCIDENT

C) TYPE OF FUEL USED JET A1

1-7 WEATHER INFORMATION

A) ACTUAL WEATHER

WIND	120 / 15 KTS
TEMP.	13 VIS.
OK PRESSURE (QNH)	1021 Mb

WEATHER AVAILABLE TO THE CREW

WIND	120/15
TEMP.	13
VIS.	OK
PRESSURE (QNH)	1021 Mb

B) NATURAL LIGHT

DAY LIGHT

1-8 NAV.AIDS

NDB 403 KHZ OPERATING NORMAL

1-9 COMMUNICATION

HF & VHF OPERATING NORMAL

1-10 A/D INFORMATION

AIRPORT ID.	HLMB
REF.POINT	30 25.1 N 19 34.4 E
ELEV.	50 FEET AMSL
RWY.ORIENTATION	15/33
RWY. LENGTH	2200 M
RWY. WIDTH	30M
SURFACE	ASPHALT

FREQ.	HF 7888 VHF 131.5
WIND DIRECTION INDICATOR	YES
MAINTENANCE	YES

1-11 FLIGHT RECORDERS

THIS A/C IS EQUIPPED WITH A CVR & DFDR. BOTH RECOVERED FROM THE A/C WRECKAGE UNDER THE SEA WATER RESERVED IN DISTILLED WATER AND TAKEN TO AAIB LABS FOR READ OUT

1-12 WRECKAGE AND IMPACT INFORMATION

A/C HAS COLLIDED WITH SEA WATER SURFACE AT 10 DEG NOSE UP ATTITUDE IN DIRECTION OF 157 DEG RESULTED IN TAIL UNIT BREAK DOWN AT STATION 508 WHERE THE ONLY TRIPLE SEAT IS FITTED WHICH BROKE OF AND FOUND FLOTAING ABOVE SEA WATER

ALSO A/C NOSE WAS DESTROYED AT STATION 47 AND THE LOWER SKIN PANEL HAS SEPARATED, SEA WATER CAME INTO A/C FROM BOTH FORWARD AND AFT OPENINGS, WRECKAGE SANK IN FEW MINUTES AND RESTED ON SEA BED UPSIDE DOWN AT 38 METERS DEEP, SOME DIVERS HAVE BEEN BRIEFED AND DOVE TO GIVE GOOD IDEA ABOUT WRECKAGE WHICH WAS VALUABLE DURING PREPARATION FOR RECOVERY, AND WRECKAGE HAS BEEN RECOVERED NINE DAYS AFTER THE ACCIDENT

1-13 MEDICAL AND PATHOLOGICAL INFORMATION

TWENTY ONE PASSENGERS DIED IN THE ACCIDENT MAINLY DUE TO DROWNING, ALL RECOVERED BODIES HAVE NOT BEEN VIEWED BY INVESTIGATION TEAM BUT HAVE BEEN POSITIVELY IDENTIFIED, ONE CHILD NOT RECOVERED, TWO FLIGHT CREW MEMBERS AND ELEVEN PASSENGERS SUFFERED SERIOUS INJURIES, ONLY SIX PASSENGERS RECEIVED MINOR INJURES

1-14 FIRE

NO SIGNS OF FIRE BEFORE AND AFTER THE IMPACT

1-15 SURVIVAL ASPECTS

THIS A/C IS OPERATED WITH A CABIN CREW WHICH IS THE MINIMUM REQUIRED BY LAW AND EQUIPPED WITH 4 EMERGENCY EXITS, ONE COCKPIT EMERGENCY HATCH, SAFETY INSTRUCTION

CARDS AND THREE LIFE JACKETS, SEAT CUSHIN CAN BE USED AS FLOATING DEVICE

1-16 TEST & RESEARCH

FUEL SAMPLES WERE COLLECTED FROM THE WRECKAGE FROM FUEL LINES, COLLECTOR TANKS, ANALYZED FOUND UP TO JET A1 SPECIFICATION.

1-17 ADDITIONAL INFORMATION

A/C HAS FLEW (5) LEGS AT THAT DAY AND THE SIXTH WAS THE ACCIDENT FLIGHT WITH OUT ANY DESCRIPENCY

2- ANALYSIS

SIRTE OIL COMPANY OPERATES A NUMBER OF A/C TO TRANSPORT IT'S EMPLOYEES AND THEIR FAMILIES BETWEEN TRIPOLI, BENGHAZI AND SOME OTHER COMPANY LOCATIONS STARTING FROM MARSA BREGA.

NORMALLY F-28 IS OPERATED TO/FROM TRIPOLI WHILE SHORTS AND TWIN OTTERS ARE OPERATED ON SHORT ROUTES AND DESERT AIRFIELD, BUT SHORTS MAY BE OPERATED FROM TIME TO TIME BETWEEN MARSA BREGA. AND TRIPOLI DUE TO HIGH NUMBER OF PAX AT TRIPOLI MORE THAN F-28 CAPACITY IT HAS BEEN DECIDED TO OPERATE AN EXTRA FLIGHT BY SHORTS TO TRIPOLI.

SHORTS HAVE BEEN FUELED AND PREPARED FOR FLIGHT TO TRIPOLI AND TOOK OFF WITH ONLY TWO FLIGHT CREW MEMBERS ON BOARD

AT TRIPOLI INT. AIRPORT THE CABIN CREW HAS JOINED THE CREW 38 PASSENGERS OF WHICH 3 CHILDREN AND ONE INFANT WERE ON BOARD A/C TOOK OFF WITH NO LUGGAGE, AND FLEW ON THE ROUTE (G659) TRIPOLI-BENI WALID-TILAL-DIRECT TO MARSA BREGA.

THE INVESTIGATION COMMITTEE HAS NOTICED THAT THE FLIGHT CREW WERE BUSY WITH THE F-28 SYSTEMS SINCE IT HAS BEEN PLANNED TO SEND THE CAPTAIN ABROAD FOR F-28 TYPE RATING WHILE THE F/O WAS ALREADY QUALIFIED AND RATED ON THE F-28, DISCUSSION TOOK THE MAJOR PART OF THE FLIGHT TIME WHICH PROBABLY RESULTED TO THE CREW UNNOTICED THE ICE FORMATION ON THE WIND SHIELD FROM THE BEGINNING, THEN THE CREW OPERATED THE ICE DETECTION AND ANTI-ICING OF PITOT STATIC AND WIND SHIELD BUT NOT ENGINE ANTI-ICING

CREW HASN'T NOTICED THE A/C INCREASE ON SPEED DURING DESCENT.

SIRTE OIL COMPANY OPERATES SHORTS A/C BY A FLIGHT CREW CONSISTS OF TWO CAPTAINS DUE TO LACK OF FIRST OFFICERS, ALTHOUGH THIS HAS NOT AFFECTED THE CREW CO-ORDINATION AND PERFORMANCE, PILOTS GOT USED WITH THIS AND THE CREW OF THIS FLIGHT DID THE SAME.

WEATHER BRIEFING FACILITIES ARE AVAILABLE AT TRIPOLI INT. AIRPORT WHICH PROVIDES WEATHER INFORMATION AT AERODROME OF DEPARTURE, ENROUTE AT DIFFERENT LEVELS FOR INTERNATIONAL AND DOMESTIC FLIGHT.

SINCE THE LIBYAN CLIMATE IS MORE OR LESS STABLE ALONG THE YEAR AND NO SIGNIFICANT WEATHER CHANGES FREQUENTLY OCCURRED WHICH MAY ENDANGEROUS THE SAFETY OF FLIGHT IN MOST CASES. THE PILOTS GOT USED SPECIALLY IN DOMESTIC FLIGHT JUST TO HAVE THE WEATHER REPORTS AND DID NOT CARE MUCH ABOUT WEATHER STUDY OR ASK THE METEO OFFICE PERSONNEL TO EXPLAIN ANY OUT STANDING POINTS.

THE PIC HAS BEEN INTERVIEWED AFTER THE ACCIDENT AND QUESTIONED ABOUT THIS, HE ANSWERED THAT WEATHER BRIEFING IS NOT AVAILABLE AT LIBYAN AIRPORTS WHICH IS NOT CORRECT AND WEATHER BRIEFING IS AVIALABLE FOR BOTH DOMESTIC AND INTERNATIONAL FLIGHTS

THERE WAS ONE CABIN CREW ON BOARD THIS FLIGHT WHICH IS THE MINIMUM REQUIRED BY LAW, WHO IS QUALIFIED AND CERTIFICATED ON TYPE, ONE OF CABIN CREW MAIN DUTIES IS PASSENGER BRIEFING FOR SAFETY EQUIPMENT ON BOARD WHICH IS ENOUGH TO BE VERBALY REGARDING THAT THE POSSIBLITY OF USE OF SEAT CUSHINS AS A FLOATING DEVICE INSTEAD OF LIFE JACKETS HAS NOT BEEN BROUGHT TO THE PASSENGERS KNOWLEDGE.

AT AN INTERVIEW WITH PIC. AFTER THE ACCIDENT HE SAID THAT HE HAS NOT BEEN INFORMED ABOUT THE USE OF SEAT CUSHINS AS FLOATING DEVICE BUT HE THOUGHT THAT HE HAS GOT SOME INFORMATION LIKE THIS BUT NOT DURING HIS TRAINING. THE COMMTTE WAS WORRIED ABOUT THIS POINT THE CREW, AVISTO COMPANY AND SWISS ACCRECATED REPRESENTITIVE SAID THAT FLOATING DEVICE ARE ONLY REQUIRED FOR FLIGHTS FLYING AT 50 MILES OR MORE FROM THE LAND. BUT WHEN THE COMMITTE REVIEWED THE ENGLISH TRANSLATION OF THE GERMAN VERSION OF THE SWISS AIRLAW IT HAS BEEN NOTICED THAT IT IS NOT REQUIRED IF THE A/C FLYING AT 50 NM OR LESS FROM THE LAND OR IT'S T/O, INITIAL CLIMB OR LANDING IS OVER WATER AND A SAFE LNDING CAN BE PERFORMED.

ALTHOUGH A/C ISN'T EQUIPED WITH LIFE JACKETS THE SAFETY INSTRUCTION CARDS WAS EXPLAINING THE USE OF LIFE JACKETS IN ADDITION TO THAT IT IS CLEARLY WRITTEN ON THE BACK OF SEATS (LIFE VEST UNDER YOUR SEAT) THE COMMITTEE FOUND IN THE CREW MANUAL THAT THE SAFETY INSTRUCTION CARD SHOULD INCLUDE THE PRECISE INSRUCTIONS AND USE OF EMERGENCY EQUIPMENT AND IT IS THE RESPONSIBILITY OF THE OPERATOR TO PROVIDE THESE CARDS.

THE PIC HAS INFORMED THE CABIN CREW TO PREPARE FOR EMERGENCY LANDING AFTER THE TOTAL POWER LOSS THE COMMITTEE COULDN'T FIND ANY THING ABOUT THE CABIN CREW PREPARATION FOR EMERGENCY LANDING BUT SOME EYE

WITNESSES OF THE A/C PASSENGERS CONFIRMED THAT THE CABIN CREW HAS DECLARED EMERGENCY IN ARABIC AND ENGLISH LANGUAGES.

A/C CREW HAS DECLARED EMERGENCY ON THE COMPANY FREQUENCY 131.5 AND NO EMERGENCY CALLS AS MAYDAY HAS BEEN TRANSMITTED, DUE TO A/C AT LOW ALTITUDE IN AN AREA OF LOW TRAFFIC DENSITY, THE A/C GLIDING DID NOT ENDANGER ANY OTHER AIR TRAFFIC

THE CREW INITIATED THE DITCH WITH FLAPS UP DUE TO NO POWER AVAILABLE TO OPERATE THE FLAPS AND WHEN THE COMMITTEE REVIEWED THE A/C MANUAL IT HAS BEEN FOUND THAT DITCHING CAN BE PERFORMED BY 30 DEG. FLAPS AND NO INFORMATION ABOUT DITCHING WITH ZERO FLAPS WHILE IN THIS CASE THE CREW TRIED TO DO THEIR BEST TO DITCH WITH ZERO FLAPS.

ALL EYE WITNESSES WHICH HAVE BEEN INTERVIEWED AFTER THE ACCIDENT AGREED ABOUT THE TWO ENGINES FLAME OUT

ALTHOUGH SOME OF THEM WERE NOT SURE ABOUT THE TIME BETWEEN THE FIRST AND THE SECOND ENGINE FLAME OUT FLIGHT CREW ALSO AGREED ABOUT THE TWO ENGINE FLAME OUT WHILE IT IS A VERY RARE CASE BUT IT HAS HAPPENED THIS TIME.

ALL AGREED THAT NO UNUSUAL SOUND OR NOISE HAS BEEN HEARD JUST BEFORE OR DURING BOTH ENGINES FLAME OUT WHICH INDICATES THAT NO MECHANICAL OR METAL FAILURE OCCURED.

AFTER THE READ OUT OF THE CVR. IT HAS BEEN CONFIRMED THAT BOTH ENGINES FLAME OUT WAS ALL OF A SUDDEN AND NO METAL OR MECHANICAL FAILURE IN ANY OF THE ENGINES OR ASSOCIATED SYSTEMS.

SINCE THERE IS NO VOLCANIC ACTIVITY IN THIS AREA SO THE TOTAL POWER LOSS DUE TO VOLCANIC ASH IS REJECTED

BOTH ENGINES HAVE BEEN TAKEN TO AAIB AT U.K. AND THREE SPECIALIST FROM THE ENGINE MANUFACTURER HAVE COME AND ASSISTED IN ENGINE AND ACCESSORIES INVESTIGATION IN THE PRESENCE OF INVESTIGATION COMMITTEE AND IT HAS BEEN FOUND AND CONCLUDED THAT THERE WERE NO MECHANICAL OR METAL FAILURE CAUSED THE FLAME OUT OF ANY OF THE ENGINES.

SOME FUEL SAMPLES HAVE BEEN COLLECTED FROM THE WRECKAGE AFTER RECOVERED FROM THE SEA, SAMPLES ANALYZED FOUND UP TO JET A1 SPECIFICATION AND FREE OF

WATER AND OR ANY CONTAMINATION WHICH MAY CAUSE ANY OF THE ENGINES FLAME OUT.

SHORT FUEL WAS NOT THE CAUSE OF BOTH ENGINE FLAME OUT SINCE THE FUEL DETOTALIZER READS 850 LBS REMAINING FUEL AND THE FISHER MEN AND DIVERS HAVE NOTICED A FUEL SPILLED FROM THE A/C OVER WATER AND THIS TRACES HAVE BEEN USED BY BOTH DIVERS AND FISHER MEN TO LOCATE THE WRECKAGE LOCATION WHERE SOME BODIES HAVE BEN RECOVERED FROM THE A/C WRECKAGE UNDER WATER AND NEAR BY AREA ON THE SEA BED A/C FUEL HAVE BEEN RECALCULATED AND FOUND AROUND 900 LBS SHOULD BE ON BOARD AT TIME OF ACCIDENT AND CONFIRMED BY 850 LBS FOUND IN THE FUEL DETOTALIZER, SO FUEL MISSMANGEMENT IS CONFIRMED NOT A FACTOR IN THE ENGINES FLAME OUT

THE COMMITTEE TOOK INTO ACCOUNT THE POSSIBILITY OF CREW MISSHANDLING OF THE RIGHT ENGINE AFTER THE LEFT ENGINE FLAME OUT BUT WE FOUND THAT AFTER THE LEFT ENGINE FLAME OUT THE CREW INCREASED THE POWER OF THE RIGHT ENGINE AND THE ENGINE RESPONDED. WHEN THE CAPTAIN ASKED HIS F/O TO SHUT DOWN THE LEFT ENGINE SUDDENLY THE RIGHT ENGINE RAN DOWN WITH OUT ANY AN USUAL INDICATION. THE CREW HAVE BEEN INTERVIEWED AFTER THE ACCIDENT AND SAID NO ONE OF THEM HAS DONE ANY THING IN SHUTTING DOWN THE ENGINE, IT IS ALSO CONFIRMED BY THE CVR. THAT THE COMMITTEE COULDN'T FIND ANY EVIDENCE OF CREW IMPLEMENTATION OF IN FLIGHT SHUT DOWN CHECK LIST

SPECTROM ANALYSIS OF THOSE SECONDS DOES NOT SHOW ANY EVIDENCE OF CREW MISSHANDLING SO THIS POSSIBILITY IS NOT LOGIC.

AFTER THE READ OUT OF DFDR IT HAS BEEN FOUND THAT THE A/C HAS NEVER BEEN SUBJECTED TO A HEAVY NEGATIVE G'S FOR PROLONGED PERIOD OF TIME WHICH MAY CAUSE CUT OFF IN THE FUEL SUPPLY DUE TO NEGATIVE G'S VALVES, IT IS ALSO CONFIRMED BY CREW AND PASSENGERS, SO THE POSSIBILITY OF FUEL SHUT OFF DUE TO THE ACTIVATION OF NEGATIVE G. VALVE IS NOT A FACTOR.

BECAUSE OF THE SHORT RANGE OF THIS A/C AND IT IS NOT PRESSURIZED SO IT IS UNSUITABLE FOR HIGH ALTITUDE FLIGHTS AND THE MINIMUM LEVEL TO FLY OVER WATER IN THIS AREA IS FL130, SO SOC DOESN'T USUALLY OPERATE THIS A/C TO TRIPOLI BECAUSE IN THIS CASE A/C WILL FLY THE ROUTE TRIPOLI-BENI-WALID-TILAL-DAHRA FOR REFUELING THEN MARSA BREGA BUT THIS TRIP IS A LONG TRIP AND ISN'T COMFORTABLE FOR BOTH THE CREW AND THE PASSENGERS SO TO AVOID THIS THERE IS A POSSIBILITY OF SHORT CUT THE ROUE BY FLYING DIRECT FROM

POSITION TILAL TO MARSA BREGA AFTER CO-ORDINATION WITH THE AIR DEFENCE WHICH THEY DID IN THIS CASE AND THE A/C FLEW OVER WATER SOME TIMES UP TO 10 NM FROM THE COAST LINE.

THE COMMITTEE HAS REVIEWED THE ENGINE RELIGHT IN FLIGHT WHICH CONSISTS OF (STARTER-MOTOR) APPLICATION WHICH REQUIRES AS LONG TIME AS 30 SECONDS IN THIS CASE, SO IT WASN'T PRACTICAL TO START THE ENGINE AFTER THE SECOND ENGINE FLAME OUT (36 SECONDS) BEFORE IMPACT, THE PROCEDURE OF ENGINE OPERATION DOESN'T INCLUDE TO PUT IGNITORS ON DURING DESCENT BUT SHORT BROTHERS REQUIRE TO TURN IGNITION SWITCH TO EMERGENCY TO PROVIDE CONTINUOUS IGNITION WHEN ENTERING VISIBLE MOISTURE .

BOTH A/C FLIGHT MANUAL AND THE CREW MANUAL EMPHASIZE TO PUT ENGINE ANTI-ICING ON WHEN THE A/C IS FLYING IN MIST, FOG, CLOUDS , RAIN, SNOW ,HAIL OR WHEN FLYING 500FT VERTICALLY FROM CLOUD BASE OR ANY COMBINATION OF THESE OR WHEN IN OR NEAR PRECIPITATION WHEN INDICATED OUTSIDE AIR TEMP. IS 6DEG OR BELOW.

THE COMMITTEE COULDN'T FIND ANY EVIDENCE OF FLIGHT CREW IMPLICATION OF THESE WHILE THE A/C WAS FLYING IN IMC CONDITION FOR SOME AND THE OUTSIDE AIR TEMP. WAS WELL BELOW 6 DEG.

A/C FLIGHT MANUAL SAYS NOT TO RELAY ON AIRFRAME VISUAL ICING CUES BEFORE TURNING ENGINE ANTI-ICING ON, AND THE DELAY OF USE OF ENGINE ANTI-ICING UNTIL BUILD UP IS VISIBLE FROM THE COCPIT MAY RESULT IN SEVERE ENGINE DAMAGE. IN THE CVR READ OUT HAS BEEN FOUND THAT BOTH PILOTS HAVE POSITIVELY CONFIRMED PRESENCE OF ICE FORMATION ON THE WIND SHIELD

ALTHOUGH THE FREEZING LEVEL AT THAT DAY IS 5200FT AND ENGINE INTAKE ICING IS EXPECTED WHEN THE OUT SIDE TEMP. IS 6 DEG OR BELOW, THE A/C WAS FLYING IN OUT SIDE AIR TEMP. OF -2 DEG, THE CREW DIDN'T ACTIVATE THE ENGINE ANTI-ICING SYSTEM BUT THEY TURNED ON THE ICE DETECTION, PITOT STATIC AND THE WIND SHIELD WHERE THE POSSIBILITY OF ENGINE ICING IS EXIST DURING CRUISE THIS POSSIBILITY REMAINED UNTIL THE A/C DESCENT TO 2000 FT OR BELOW AT THAT TIME THE ICE MAY MELT SUDDENLY AND FLOODS THE ENGINE RESULT IN BOTH ENGINES FLAME OUT WHICH MAY BE AVOIDED IF THE IGNITORS OF THE LIFE ENGINE WERE PUT ON AFTER THE FIRST ENGINE FLAME OUT WHICH MAKE THE LIFE ENGINE TO DEVELOP POWER UNTIL A SAFE LANDING IS PERFORMED.

THE COMMITTEE HAS DISCUSSED THIS MATTER WITH THE ENGINE MANUFACTURER AND SAID THEY WILL TAKE THIS REMARK INTO CONSIDERATION AND WILL BE TESTED

IF WE ASSUMED THAT ICE HAS BEEN FORMED AT THE ENGINE INTAKE SCREEN THEIR SHOULD BE AN INCREASE IN THE ENGINE TEMP. BUT THE CREW DIDN'T NOTICE ANY ENGINE TEMP. RISE, THE COMMITTEE OPINION IS THAT THE PILOTS DIDN'T NOTICE THAT TEMP. RISE BECAUSE THEY WERE BUSY MOST OF THE TIME WITH F-28 SYSTEMS DISCUSSION AND THE INDICATORS ARE STILL WITHIN THE PRESCRIBED LIMITS WHICH LED THE CREW NOT TO CARE MUCH ABOUT THAT TEMP. RISE

3-CONCLUSION

3-1 FINDINGS

- THE CREW WAS PROPERLY CERTIFICATED AND QUALIFIED FOR THE FLIGHT.
- THERE WAS NO EVIDENCE OF FACTORS WHICH WOULD HAVE DETRACTED FROM THE CREWS PHYSICAL ABILITY TO OPERAT THE A/C.
- THE A/C IS PROPERLY CERTIFICATED.
- CERTIFICATE OF AIR WORTHNESS HAS NO EXPIRY DATE ACCORDING TO SWISS REGULATIONS AND CONSIDRED TO BE VALID AND OF TRANSPORT CATEGORY.
- CERTIFICATE OF MAINTENANCE IS VALID.
- INSURANCE POLICY CERTIFICATE IS VALID.
- A/C WEIGHT AND C.G. WERE WITHIN PRESCRIBED LIMITS.
- A/C FLEW FIVE SECTORS ON THAT DAY BEFORE THE CRASH FLIGHT.
- EMERGENCY DOORS WERE NOT USED EXCEPT THE COCKPIT EMERGENCY HATCH.
- FUEL SAMPLES ANALIZED AND FOUND UP TO JET A1 SPECIFICATION
- A/C WAS NOT IN LANDING CONFIGRATION, LANDING GEAR UP AND FLAPS UP.
- PASSENGERS WERE NOT INFORMED ABOUT A/C DITCHING.
- TAIL UNIT AND A/C NOSE HAS DESTROYED WHICH LED THE A/C TO SINK IN FEW MINUTES.

- A/C IS EQUIPPED WITH GPWS.
- A/C MAINTENANCE SCHEDULE IS NOT APPROVED BY FOCA.

3-2 PROBABLE CAUSES

- MELTING OF ICE FORMED AT ENGINES INTAKE RESULTED IN WARE INGESTION AND BOTH ENGINE FLAME OUT.
- FLIGHT CREW FAILED TO OPERATE ENGINE ANTI-ICING SYSTEM.
- FLIGHT CREW WERE BUSY WITH A DISCUSSION NOT RELEVANT TO THEIR FLIGHT OR THE A/C.

4-SAFETY RECOMMENDATION

- FLIGHT CREW SHOULD HAVE ALL WEATHER INFORMATION NECESSARY FOR FLIGHT AND DISCUSS WITH THE WEATHER BRIEFING AS MAY BE REQUIRED.
- A/C FLIGHT MANUAL SHOULD INCLUDE DITCHING TECHNIQUE IN CASE OF TOTAL POWER LOSS AT ZERO FLAPS
- FLIGHT CREW SHOULD SPECIFY THE EMERGENCY CASE AND INFORM THE CABIN CREW ACCORDINGLY.
- THE USE OF IGNITORS WHILE IN APPROACH PHASES AND OR IN ENGINE FLAME OUT IS RECOMMENDED
- SAFETY INSTRUCTION CARDS INFORMATION HAS TO BE CORRECT AND PRECISE.
- LEGAL REQUIREMENTS FOR A/C OPERATION HAS TO BE STRICTLY FOLLOWED

APPENDICES

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- 2- CVR. TRANSCRIPT
- 3- WRECKAGE PICTURES
- 4- WEATHER INFORMATION
- 5- PAX DISTRIBUTION
- 6- CERTIFICATE OF AIR WORTHINESS
- 7- CERTIFICATE OF REGISTRATION
- 8- INSURANCE CERTIFICATE
- 9- A/C FLYING PATH
- 10- RADIO LICENCE

ABBREVIATIONS AND CODES

AAIB	AIRCRAFT ACCIDENT INVESTIGATION BRANCH
A/C	AIRCRAFT
AMSL	ABOVE MAIN SEE LEVEL
ATC	AIR TRAFFIC CONTROL
ATPL	AIR LINE TRANSPORT PILOT LICENCE
C	CAPTAIN
C.C	CABIN CREW
C.G	CENTER OF GRAVITY
C OF A	CERTIFICATE OF AIRWORTHINESS
CVR	COCKPIT VOICE RECORDER
DFDR	DIGITAL FLIGHT DATA RECORDER
ELEV	ELEVATION
F-28	FOKKER F28
F/O	FIRST OFFICER
FT	FEET
GPWS	GROUND PROXIMITY WARNING SYSTEM
HLMB	MARSA BREGA FOUR LETTER CODE
INT	INTERNATIONAL
I/R	INSTRUMENT RATING
KTS	KNOTS
LBS	POUNDS
MB	MARSA BREGA
Mb	MILLIBAR
NAV	NAVIGATION
NDB	NON DIRECTIONAL BEACON
NM	NAUTICAL MILE
PAX	PASSENGERS
PIC	PILOT IN COMMAND
P&W	PRATT & WHITNEY
RWY	RUNWAY
S/N	SERIAL NUMBER
S&MEL	SINGLE AND MULTI ENGINE LAND
SOC	SIRTE OIL COMPANY
TEMP	TEMPERATURE
T/O	TAKE OFF
VIS	VISIBILITY

APPENDIX

(1)



الجمهورية العربية السورية الشعبية الاشتراكية العظمى

قرار رقم (4) لسنة 2000 إفرنجي

بشأن التحقيق في حادث الطائرة شورتس ذات حروف التسجيل (HB-AMM)

أمين لجنة الإدارة

- بعد الاطلاع على قانون الطيران المدني رقم (2) لسنة 1965 ف .
- وعلى قرار اللجنة الشعبية العامة رقم (421) لسنة 1987 ف بشأن إنشاء الهيئة العامة للطيران المدني

(قرار)

مادة (1)

تشكل لجنة للتحقيق في الحادث على النحو التالي:-

- | | |
|--------|----------------------------|
| رئيساً | 1. مهندس عمر محمد كريم |
| عضواً | 2. مهندس ناجي رمضان ضوء |
| عضواً | 3. مهندس محمد محمد الكموشي |
| عضواً | 4. مهندس فوزي أحمد أبوغريس |
| عضواً | 5. م ج / عبدالرحمن بن يوسف |
| عضواً | 6. مستشار قانوني محسن وفاء |
| عضواً | 7. مندوب عن شركة سرت للنفط |

وللجنة في سبيل أداء أعمالها الاستعانة بمن ترى الاستفادة من خبرته في هذا المجال ..



الجمهورية العربية الليبية الشعبية الاشتراكية العظمى

مادة (2)

- تقوم اللجنة بموجب المادة السابقة بالتحقيق في حادث الطائرة شورتس ذات الحروف التسجيل (HB - AAM) التابعة لشركة كفسرت للنفط بتاريخ 13/1/2000 ف وأعداد تقرير بالنتائج التي توصلت إليها وذلك فور الانتهاء من أعمالها ..

مادة (3)

- على رئيس اللجنة أخطار المعنيين بهذا القرار وتحديد مكان وزمان الاجتماع ويعمل به من تاريخ صدوره ..

"م" محمد عمر أبوغريس

أمين لجنة إدارة المهينة



صدر في : 6/ شوال

الموافق : 2000/1/13 ف

ب إشارة ب

APPENDIX

(2)

TIME	STATION	TRANSCRIPT
11:05:32	C	(ILY HOWA HADA SHINO HADA)
:34	C	INCREASE FUEL (WA HADA ILY) LOWER OK.
:40	C	YES OK MAIN AND SERVO FULE
:40	F/O	(MAXNAHA) DRAIN (YSSEKER)
:42	C	MAIN AND SERVO FUEL (ILY HOA MIN HANA)
:46	C	MAIN AND SERVO ANOTHER A/C
:50	F/O	(HADI TATLAX BAXDEAN YREED ILY HOUA) (YXAQEB HANA YAWALEE YA XABBAR)
:55	C	(NAXM ,ILY HOA HANA) PRIMARY FUEL AUX. PUMP
:57	A/C	(IL HAMDU LILAAH. SHIN HALKUM INTUM)
11:06:06	F/O	MANI FOLD (HADI)(XALA) DRAIN
:06	C	AH
:09	F/O	(LAKEN HNE IL) PRIMARY FUEL (YAKUSH)MANIFOLD (HADA)
:17	A/C	A/C ON 123.5 5-KE MARSABRGA TO ZULTIN VACATING LEVEL 3.5 DESCENDING
:20	C	I DONOT THINK (ANA ILY HANA YARD)
:29	A/C	ALL STATION LIBYAN 755 WE ARE FROM BENINA TO JUFRA VIA MB AND DAHRA APPROACHING POSITION MB,DAHRA (IN SHA ALAAH NEXT 1135
:32	A/C	LIBYAN 844 (ASSALAM XALIKUM)
:50	A/C	HAVE AGOOD ONE 5-KE APPROACHING ZULTIN VACATING 3.5
:54	F/O	AN HB-AAM IS PRSENTLY 91 MILES TO MB ON THE 094 IN BOUND MAINTAINING FL70 AND ESTIMATING MB AT TIME 37 HB-AAM
11:07:18	A/C	STATION PROCEDING TO JUFRA CAN YOU SAY AGAIN(LAW SAMAHIT)
:21	C	LET US GO ON CROSS FEEDING (YA BASHIR)
:25	F/O	OK
:32	C	OK
:38	F/O	CROSS FEEDING OK
:40	C	OK
:42	F/O	NOW WHICH ONE (INTA ILY BETAKED)
:45	C	(SHOOF) HIGHER TO LOWER
:46	F/O	(HADA ILY)HIGHER
:48	C	AH
:49	F/O	(BAHI ILY HOA HADA)
:50	C	EXACTLY
:51	F/O	(BAHI WA HADA ILY)LOWER
:52	F/O	(HADA ILY BINUTFEEH)
:53	C	EXACTLY (BAHI)
:55	C	OK CHECK
:56	F/O	OFF

11:07:59	C	PRESSURE REMAINS ON (LEE ANA MAXINDIKSH) LOW PRESSURE CAUTION LIGHT
11:08:07	F/O	OK SIR SET
:08	F/O	(KIM XINDNA)
:11	F/O	IS NOT MUCH OK.
:11	C	JUST FOR BALANCING
:16	C	PRIMARY FULE IN LET
:21	A/C	GLT. CORECTION JAMAHYRYA 031 IN ROUT TO M3 APPROACHING TO CROSS OVER HEAD MB MAINTAINING 6.5
:30	F/O	(ILY FI) START (BESS YAFTAH)
:31	C	YAH
:34	C	(HADI) DEPENDING ON THE POSITION OF HP COCK
:36	F/O	(AH. BE ALDABIT)
:37	C	(EDA KAN INTA)
:37	F/O	(HEA) GEAR,GEAR (AH BAH) (HEYA KULHA) ONE SET
:42	C	ONE SET
:43	F/O	AS IT MOVES UP
:43	C	(BAHI) GEAR (BAHI) RIGHT THERE (YA TARGA YA TENZEL)
:44	F/O	YAH
:46	C	(EDA KAN TARGA) IT CLOSES SOME AND OPENS SOME (WA EDA KAN TENZEL) AS SOME WHERE IN BETWEEN
:50	F/O	EVERY CERTAIN PARATION (AWAY BE AL DABIT)
:52	C	THERE IS SOME WHERE IN BETWEEN AND OK VERY GOOD
:57	C	OK DURING,ONCE IT CLOSES OR FEEL ALL THE WAY BACK
:59	F/O	YES
:59	C	BOWER LEVERS BACK
:59	F/O	YA
11:09:01	C	DURING START PORTION FUEL MID POSITION
:05	F/O	(AYWAH. BEE ALDABIT YAFTAH IL) PRIMARY
:07	C	(WA BAXDEAN)OPEN
:08	C	(INTUM) DURING START (TEKALOW FIHA XAL) START ONCE START IS COMPLETED YOU GO OPEN(AWALAN)
:11	F/O	(AYWAH)
:12	C	(AW) ITS OPEN IS APART OF START
:14	F/O	(TABXIN HADI KAI TAWA) THAT IS WE WILL DO
:17	C	JUST FOR GENRAL (HEKI MAXUMA) NOT IN DETAILS JUST ANSWER (ILY HENEY)
:21	F/O	YES ONCE IT'S STARTING (WA SAAR LEEK)LIGHT UP AT CERTAIN RPM YOU GO TO OPEN
:26	C	YOU JUST GO OPEN
:27	F/O	YAH (LEE ANA) START COMPLETED (WA BAXDEAN SHIN BE SEER) IT WILL OVER HEAT.

11:09:31	C	OVER HEAT MEANING (LEE ANA)
:33	F/O	TGT(INTA LE ANAK)YOU ARE IN THIS CASE
:36	C	LIMITED FUEL
:37	F/O	(LE ANA XINDIK) MORE (XINDIK) MORE FUEL AS YOU APPLY THE LEVER YOU GET MORE FUEL(LE ANA HADA BROHA MAFTUH)WHEN YOU MOVE THE LEVER YOU GET MORE FUEL AND LESS AIR, AS YOU GET OVER HEAT YOU GET HEATING (FI) T.G.T THIS IS WHY YOU MUST HAVE IT OPEN.
:57	C	OKYOU MUST HAVE IT OPEN TO ALLOW MORE FUEL
11:10:02	F/O	LA
:03	C	AH,ONLY YOU INCREASE
:04	F/O	(INTAA ASHBAH KAM XINDIK FATHA) YOU HAVE MORE FUEL (INTAA FI AL) START (BASH TSSAKER HADA) YOU HAVE TO GO TO OPEN (BASH TSSAKER AL) IN LET (HADI)
:11	F/O	OK THIS IS AN INTERMEDIAT
:16	C	YES
:18	F/O	YES, YOU HAVE TO GO OPEN INORDER TO SHUT DOWN EXTRA FUEL (ILY JAY)
:18	F/O	OK, (LE ANA XINDIK HINA)INCREASE (FI) FUEL I INCREASE FLOW SO DURING START AT INTIAL IT IS INCREASED (WA BAXDEEN) YOU GO OPEN POSITION TO SHUT FUEL(ILY JAY MIN HINA) AND YOU WILL HAVE ONLY THROTTLE,GOVERNER,IN CASE YOU FORGET (WA INTA TAZEED)
:22	C	LEVER (MTAXK INTA).....(LE ANAH AL LEVER)DOESN'T CONTROL THIS.
:32	F/O	NO IT DOESN'T
:37	C	SO YOU ADDING MORE FUEL YOU HAVE MORE FUEL
:38	F/O	YES,EXACTLY
:40	F/O	SO, THIS IS ONLY YOU MAKE SURE (INAK INTA)IS OPENSO YOU OPEN ONCE YOU GET LIGHT UP (MTAXK)(BAH) YOU MUST GO TO OPEN
:48	A/C	GLT. CORRECTION JAMAHYRYA 031 APPROACHING TO CROSS OVER HEAD (ARADA) LEAVING 6.5 DESCENDING DISTANCE 24.5 EN ROUT TO GO TO MB
11:11:02	F/O	ONLY DURING START
:03	C	ONLY DURING START
:03	F/O	YES,
	A/C	(MAZELT LAK AL WAHDA YA IBRAHIM)
	A/C	(NAXM)
	A/C	(QULTLIK KUL WAHDA TAXTI FIHA)
	A/C	(MA XLISHE AL RADIO MTAXI TAXBAN SHOYA FA MA FHAMTIKSH)
	A/C	OK

11:11:20	F/O	YOU GOT IT NOW BUT
:20	A/C	YAH
:22	A/C	OK
:25	F/O	YOU GOT IT YOU GOT IT AH SO THIS IS YAH
:35	F/O	ONCE YOU START OPEN
:37	C	THIS WILL GO FURTHER DOWN THEN START AND THAT WILL CLOSE FUEL FROM THE REGULATOR FROM THE HP REGULATOR AND YOU WILL HAVE FROM SHAFT GOVERNER.
:47	F/O	YES, (BE ALDABIT)
:48	C	SO THE FUEL WILL COME FROM THE SHAFT GOVERNER ONLY NOW
:50	F/O	YES, (BEALDABIT) THAT WHY THEY CALL IT MAIN.
:53	C	YAH.....CONTROL.....YAH
:58	F/O	(FI AL)START THIS ONLY ITIAL (BASS)
11:12:02	C	YAH
:03	F/O	(HADERNI)
:03	C	THAT IS GOOD (WA ALLAH)
:04	F/O	YAH
:08	C	(AL ARQAAM HADUM ILY 10-11 MAKTUBA XINDK FI AL ANNEX MAFISH FI KTAAB AKKAR)
:11	F/O	(UMALA ALASH DERTLIK HADI)
:13	C	(FI ALKTAAB HADA MA FISH)
:14	F/O	LA LA MAFISH
:16	F/O	(LESH MA INJAMAXLIK WA NLAGOLTLIK)HANA BAS
:18	C	(BASS IL ARQAAM HADEAN THEY CORROSPONDING TO THESE NUMBERS
:19	F/O	YES, YAH YES, YES,
:23	C	(LAYARETIK MAGULTHASH LAW KAN HADA TISHABA)TWO DIFFERENT THING (LA AW KUL HAJA TASILNEE XALIHA)JUST LOOK AT THE NUMBER (INGOUL LIK HANA HANA HANA)
:29	C	I REFER TO THIS
:30	F/O	(LA) NOT ALL REALY
:31	C	BY LOGIC NOT REFER TO THE NUMBER (HANA) (LAMA DOATE LIK XLIHUM GOLTLIK)I TRY TO ORIENTATE MY SELF (HANA)I DIDN'T LOOK AT NUMBERS I JUST CAN FOLLOW
:39	F/O	(LAKEN HATA HOMA HATEEN XLAYHIM IL)MAINS IT IS THE SAME
:43	C	I DIDN'T WANT TO FOLLOW (HANA)DIGRAM(NBI NAXRFA)ACTUALY (BI IL) LINE (NBEE NAXRFA) PHYSICLLY IT'S SELF
:50	F/O	AH PHYSICLLY YOU HAVE TO FIND IT FROM HERE
:52	C	AH
:53	F/O	(MIN HANA MAFESH)
:54	C	AH
:55	F/O	YOU FIND IT FROM HERE
11:13:05	C	THIS IS CIRRECT YA BASHIR(MIN)LP FUEL COOL IS

11:13:14	F/O	IT (WA ALLAH) FUEL COOL YAH IT'S OIL COOL (HADI) COOLING THE OIL (BIL) FUEL
:18	C	FUEL HEATED- NOT COOLED
:21	F/O	YAH (HADA) IS FUEL COOLED COOLED BY THE FUEL AY THE SAME IS
:31	C	(EL) COLD FUERL(KHASH LIL) TO BE HEATED
:33	F/O	YAH LA LA QASSDY (EL) OIL IS FUEL COOLED
:37	C	FUEL COOL OIL COOLER AH.
:39	F/O	YES, YES, (MAXA BAXDHUM)
:40	C	(TAXRIF HADOON) TWO SENTENCES
:43	F/O	YES, YES,
:44	C	DOESN'T MAKE SENCE (WAHANA EL) TEMPRATURE BULIP THIS (TAXTI)LIMITATION IMMEDIATELY (FI) OUT LET
:50	F/O	YAH YAH (BE ELDABIT BASH TAXRIF INK..)YAH YAH NORMALY (HOA) ABOVE 90 DEGREE
:55	C	.HEATING(FI) LP FUEL
:59	F/O	YOU GET THE TEMPRATURE (LAKEN)YOU GET WARNNING AT 90 DEGREE
11:14:02	C	ACUTALY THE FUEL COMING FROM THE COLLECTOR CELLS THIS IS LP FUEL BUMP
:05	F/O	YES, YES,
:06	C	AND THEN THERE IS (SAAR XINDK EL) AIR FRAM (EL)BOOSTER BUMP (HADOON BE RAOHEN)
:15	F/O	(LA HADIKAI EL) BOOSTER BUMPS SOCKED IN THE COLLECTOR TANK THIS IS WHY (HADEKA EL FATTRA NAHNINA MWAQIFENHA LE ANAH XINDINA)WIRING (LE ANHA XLAASH)IN SIDE THE YANK
:28	C	AND NOW THIS IS ADIFFRENT THING NOW
:30	F/O	(HADA XLA) ENGINE ALL NOW HADA EL ENGINE (KUALLA ENGINE)
:33	C	(GOLNA) LP FUEL PUMP LP FUEL PUMP.
:36	F/O	YAH.YAH TI HEAT EL TEMP CONTROLLER
:38	C	AEH BELDABIT
:39	F/O	(KULLA FI JANEEP BAXDAH) YES
:41	C	AND THEN IT COOL OIL IN FUEL COOLER
:42	F/O	HEYA ACTUALLY (RAET KULHUM MXA BAXDH WA)FUEL.....
:45	C	IN THE A/C FUEL TANK THIS IS IT'S GOING BACK
:52	F/O	AOH (MITAX EL) BY BASS(HADIKA BROHA)
:53	C	OH ICING (YA CI BASHIR)
:56	F/O	AH
:56	C	WIND SHIELD HEAT
:58	F/O	(LA)
	C
:59	F/O	AH
11:15:01	C	YOU KNOW THIS IT SHOULDN'T ACCUMULATE ICE, THAT IS ODD

11:15:06	F/O	YAH(FIHSHAIA MAHO FIH)PROBLEM
:08	C	HERE LOOK AT THIS (LINA) ELEMENT(YABDA MIN HANA)
:11	F/O	YES.(BELDABIT)
:12	C	IT SHOULDN'T CREAT ICE (WA RAHI) IT WAS CREATING ICE(WEEN MA FIH)BURNS
:16	F/O	YA(BL DABIT) YA,YA (WEEN MA FIH)BURNS
:18	C	IT IS REALY COLD(TAXRIF HAZAKA EL NHAAR SHIN SAAR TARIF) ICE (HANA XALA)WIND SHIELD (BARAH)
:23	F/O	YAH
:24	C	(MAXNAHA)THIS PART UN SERVICABLE
:25	F/O	(BLDABIT) IS THAT OPEN? YES YAH
:30	C	KNOW I UNDERSTAND THIS PERFECT
:33	F/O	YAH
:33	C	(WALLHI ALXADIEM)
:38	F/O	(LINA) NOW I CAN RELATE TO THE BLOCK DIGRAM YES,
:42	C	THE BLOCK DIGRAM HADA
:45	F/O	THE FLOW CONTROL I CAN RELATE TO THIS YES
:48	C	(AO TAWA ENJEEPLIC EL)BLOCK DIAGRAM (ILI XINDY)IT IS REALLY NICE
:50	F/O	YAH(JEEPHLLY)
:58	C	(HADI ILY QUTLIK XEND) LP WARNING LIGHT
11:16:00	F/O	YES
:00	C	SOME WHERE (HATLQAHA HANA)
:58	F/O	HE GOT IT,HE GOT IT
11:17:01	C	OK
:01	F/O	OK(AFOWAN)EXCUSE ME
:05	C	BACK ON
:07	F/O	BACK ON CHECKED
:08	C	LP FUEL COCK
:12	C	CAUTION LIGHTS OUT AND VALVES SHUT
:14	F/O	YES,
:19	C	AH,AH (KAALEENA NAHWLO MIN HADI)
:21	F/O	(XINK) 61 MILES(WA XINDK) 10MILES
:27	C	(BALIK)IT SHOULD BE V-40 (ALMAFROUD)
:31	F/O	(BAHI)
:35	C	AH,6 MILES AH(LAHAWALI) 6 MILES
:37	F/O	6MILES AH OK (XLA KAM)
:38	C	AH
:39	F/O	(XLA KAM EL)COURSE
:44	C	(HADA ILMATAR MAXNAHA AL HAQL WRA ILWAHED)
:52	F/O	((INHOTO EL)COURSE (BAS) COURSE 086
:53	C	NO
	F/O	YAH.YAH
	C	IT IS WEATHER(WA BAXDEEN XENDK)TILT ABOUT 5DEG I JUST TAKE HER SLIGHTLY TO THE RIGHT

11:17:58	C	(NAXM YA DALILA)
:59	C,C	(ISSAXA QAM NOSLO)
11:18:00	C	(FI ASSAXA ASSAXEDA IN SHA ALLAH) AT TIME 35
:02	C,C	35
:03	C	YES, AN OTHER 17 MINUTES.YES
:08	C,C	OK
:08	C	ALLRIGHT
:09	C,C	(SHUKRAN)
:10	C	SEAT BELT SIGN ON YA BASHIR, TIGHTEN YOUR SELF YA DALILA
:14	C,C	OK
:15	C	(ORBTI)
:15	C,C	OK
:17	C	YAH, THAT'S GOOD
:20	F/O	YAH, NOT MUCH YAH
		NOT RELVENT
:46	C	OK (YA) BASHIR I THINK I'M GOING TO SLOW HER DOWN(LIANA)THIS IS GOING TO BE APUMPY
:54	F/O	(MAXQULA)
:55	C	YES,
:57	C	(AXTINI) 25MILES (BLAAHI)
:59	F/O	I DON'T THINK SO
11:19:00	C	AH
:00	F/O	I DON'T THINK SO
:01	C	YOU DON'T THINK SO, IS NOT SO MUCH (SAAH)
		NOT RELEVANT
:18	F/O	(FIH BADI SHWAIA LAKEN QREEB NATLAXO MINH)
:21	C	IT IS NOT MUCH
:22	F/O	YAH
:24	C	(ATTAYARA HADI MTAXIK)JUST CONTROL SPEED WITH IN 160KTS YOU WILL BE OK
:34	C	MAKE SURE YA BASHIR ICING (T KUSHLA BI)14 NEVER 15 AH
:39	F/O	HIGHER RPM
:40	C	ALWAYS
:40	F/O	YES
:43	C	(WA NWADAH LAK ILAMAR MARA ANA WAIK KAN TITDAKAR)WE HAVE TO PUT PROP MAX.(TITDAKRHA)
:48	F/O	I THINK SO, I THINK SO,YES,
:51	C	(QAXDNA) DESCENDING,DESCENDING WE ONLY CLIMB(WEEN HATENA) PROP MAX.
:53	F/O	YES
:55	C	(ILY KAN MAXANA) CHAIRMAN CHECK RAS LANOUF BACK TO MARSA BREGA (KALAMET HADUM KHALAS KHALID)
11:20:10	F/O	OK (LA OALLI) CONTINUE (MXA TRABULS)

11:20:29	F/O	(HAK)
:32	C	HAK MANHEBISH KALMAT AAK QASSDY YA BASHIR)
:36	F/O	(ILA BETDEER IL) COMPASS YES, YAH,YAH
:38	C	THIS IS REALLY SOME THING
:41	F/O	NOTICE FOR THAT
:42	C	AH YES,
:44	F/O	(HADA MIL IL)GOVERNER (JAE LIL LIL)FAILURE BICK UP
:48	C	(HADA)
:49	F/O	(BAHI MNIEH HOWA HADA IL)ARM CONNECTED(LIL)HP SHUT OFF
:54	C	AHA THIS WHY IF WE HAVE THIS PROBLEM THE ENGINE WILL SHUT DOWN
:59	F/O	IT WILL LOCK (IL HADAKIH) (IL VALVE NAFSHA)
11:21:05	C	(IL)VALVE(NAFSEHA MTX IL)REGULATOR
:06	A/C	123.5 ICE FROM ZULTIN TO RAGUBA THROUGH 2000FEET TO MAINTAIN 3500FEET AND DESTINATION RAGUBA AT TIME 1140 5-KE
:15	C	IT WILL LOCKS,CLOSE POSITION
:20	F/O	NOW(MAO QASDI IL)LEVER (MTAXK LIANA YAH)
:27	C	IT IS ACTUALY LOCKING VALVE (NAFSHA) REGARDING(LIL) POSITION (MTAX IL....)
:33	F/O	IT SHUT IT DOWN
:36	C	THIS IS HOW COME(HADA IL)MECHANESM
:37	A/C	031,4.5 MAINTAINING APPROACHING TO CROSS ABEAM RAGUBA ENROUTE TO M3 AT TIME 40
11:22:44	F/O	(EL WAHED HADA) (LEANA)CONNECTED (BROHA HADA HOWA IL) CONNECTION(MTAX IL)LEVER(BAS LAKEN FIH) CONNECTION (TANI)
:54	A/C	V-40 HAMADA ROUTE CROSSING ABEAM SIRTE AT THE MOMENT ESTMATING ABEAM TILAL.....
11:23:10	A/C	OK.KE WE ARE APPROACHING TO CROSS ABEAM ... ABOUT 2 MINUTES WILL CROSS ABEAM RAGUBA, SHOULD BE NO CONFLICT WE ARE MAINTAINING 4.5 UNTILL WE ARE SOUTH OF RAGUBA
:34	A/C	TRAFFIC OPERATING ON 123.5 JAMHHIRYA 051 FROM BENINA TO A100 40 MILES FROM051
:43	A/C	RAGUBA(ASSALAM XLIKUM 5-KE)
:51	C	(CHOOF LI IL MASHIA LIL BREGA, IL MASHIA LIL V-40ABEAM TILAL
:55	A/C	KE THIS IS S-21
11:24:00	F/O	(HADAKA HOWA ILY QAL)ABEAM SIRTE (TOWA)
:02	C	LEVEL 8 (WALLA) 6
:04	F/O	80
:05	C	(IN SHALLAH GHEER MANZAL WALLAHI)
:07	F/O	(LAKEN) ALREADY PASSED AH
:08	C	AH
:09	F/O	HE ALREADY PASSED

11:24:10	C	YOU SURE
:11	F/O	YES YES
:11	C	(RAH BI NABDA)DESCEND YA BASHIR JUST CONFIRM
:15	F/O	TRAFFIC TO CROSS TILAL, THIS IS HB-AAM
:24	A/C	AM. THIS IS 067 WE ARE 30 MILES ABEAM TILAL AND MAINTAINING 080 WE ARE CROSSING ABEAM SIRTE TWO MINTUES AGO
:38	F/O	(SHUKRN BARKA ALLAHO FEEK)
41	F/O	TRAFFIC ON 123.5 HB-AAM ,40 MILES TO MB WE ARE LEAVING 070 DESCENDING FOR CIRUIT HIGHT LANDINGF R/W 15(IN SHA ALLAH)
11:25:13	F/O	11 BUG SPEED.
:21	C	AH
:21	F/O	SORRY BUG SPEED 101
:23	C	101
:25	F/O	(AMTA IN SHA ALLAH BETDEER DESCEND
:26	C	RIGHT NOW
:26	F/O	OK
:27	F/O	APPROACH BRIFING
:29	C	VISUAL APPROACH RIGHT BASE ENTRY 15
:32	F/O	OK
:34	F/O	SEAT BELT SIGN (SOUND OF SEAT BELT ON)
:36	C	ON
:37	F/O	ALTIMETERS 1021
:40	C	YAH
:47	F/O	21,21 REPORTED 090/18KTS ,090/15-18,12/03 1021
:48	C	YES,1021
:51		21
:52	C	(ALT. ALERT SOUND)
:53	F/O	ALT.CHECK
:56	F/O	OK, CHECKED
:57	A/C	POWER
11:26:03	F/O	031 CROSSING QDR120 FROM RAGUBA LEAVING 4.5 SHALLW DESCENT IN BOUND TO DESTINATION M3 WILL BE USING 01 TO LAND LANDING AT TIME 30 (IN SHA ALLAH)
:09	F/O	AIRCONDITIONING
:11	F/O	THEY ARE ON
:13	C	101 SET
:14	F/O	FUEL
:15	C	SUFFICIENT
:18	F/O	ANTI-ICING
:26	C	PITOT STATIC.WIND SHIELD.ICE DETECTOR
:27	C.C	YES AND TO HARNESS MY SELF
:27	C	(AIWA YA DALILA)
:28	C.C	CABINES READY
		(SHUKRAN)
		(CAM DARAJAT AL HARARA FI MARSA BREGA)

11:26:29	C	12
:31	C.C	(SHUKRAN)
:32	C	OK
		<u>GENRAL TALK</u>
11:28:31	C	(SHOOF KEEF TALAX)
:40	C	SHUT OFF CONTROL RIGHT
:42	F/O	YES
:43	C	(ILY HOWA HADA)
:44	F/O	YAH
:45	C	SHUT OFF VALVE.....
:49	C	PILOT PICK UP LEVER
:53	C	CLOSE,OPEN
11:29:00	C	LP SHAFT
:02	C	FAILURE POISTION
:05	F/O	IT COULD BE LIKE THIS (IL) MECHANESM(MTAXHA)
:07	C	(HADA HADA SHINO YA)BASHIR(HADA IL) PICK UP YOU ARE OPERATING SHUT OFF VALVE
:13	F/O	(LA,LA IL HEA AH ZAE,..... .MAXNAHA HAJA TEMSHI MXA IL WAHED LAMA SYSTEM MOVES {HADIKAI)IT MOVES (ZAE IL)PENDOLUM(HEKI)
:39	C	JUST KEEP IT UP.....SPEED
:49	F/O	(TAXRAF WALLHI ITQOOL) HALF AN HOUR (M SHINA O JEENA).
:52	C	YES IT WAS
:53	F/O	(WALLAI ALXADEEM)
11:30:05	F/O	(WEEN YASSER) BRAKE OR OVER SPEED (YASSER) LOAD (XLA) ACTUATOR ... IT KIKS (HADI) WA BAXDEEN SHIN BI YASSEER TAS HAB HADI HEKI BAHI) IT MOVES (LEANA) CABLE AH, (HADI) MOVES (LEANA) FLY WHEEL WEEN TOBRM HEKI TASSHAB MXAHA
:33	C	(TAS HAB MXAHA HADA)
:35	F/O	(ILY HOWA IL) LEVER (HADA)
:36	C	MECHANISM HADA,..... ROD , SHUT OFF CONTROL ROD
:38	F/O	AI WAH
:38	C	IT POLLS BACK AND ONCE IT BULLS BACK VALVE CONTROL ROD
:43	F/O	(AIWAH HEA HADI)
:50	C	FOR ONE SECTION (ILY HOWA MIN HANA)AND THIS IS ATURN BULKLE
:59	F/O	YAH (BI ZABAT), WHAT WILL HAPPEN IL (ACTUATOR (NAFSA IL MIN HANA)
11:31:03	C	(HADA FI) LEFT (AW FI) RIGHT SIDE
:06	F/O	LEFT SIDE LEANY ANY THING IS ON

11:31:12	C	(OH, OH, IDONOT LIKE THIS , KAM) SPEED (MTAXK)
:16	F/O	(ANA) ALMOST 200 (ANA)
:19	C	(MA TLAXLINASH IL) HORN (TAXRIF) I AM VERY PARTICULAR ABOUT SPEED NOW (QABL MA YATLXIL) HORN (MANXDELISH)(LAKN TOWA) IAM VERY PARTICULAR (LI) SPEED(FIH QREET XLA) KING AIR
:28	F/O	YA.YAH
:29	C	(TITDAKE RHA)!!
:31	F/O	(KHEER HA IL) KDNG AIR
:31	C	SHATERED TO PIECES
:34	F/O	(HADAKAI IL MOSHKILA SHNI DAIMN) THIS HAPPENS(YA ABDUL HAFEED XLA ATTAYRAT ILLY FI) HIGH ALTITUDE(YAXNI DAIMN XLA IL) EDGE (HATA)F-28 (KHAUSA WAATYTA XLA) EDGE OF THE SPEED REALLY YOU HAVE TO TAKE IMMEDIATE ACTION TO SLOW IT DOWN (LIANK) YOU ARE ALREADY (XLA) LIMIT YOU CAN BREAK SOME THING.
11:32:09	F/O	YOU GOT IT NOW
:12	A/C	031,3.5 DESCENDING FOR STRAIGHT IN APPROACH R/W IN USE 17 AT M3 WILL BE LANDING AT 40, WE ARE PRESENTLY CROSSING QDR 180FROM RAGUBA.
:25	F/O	(SHABAHT HADI)... IT MOVES (LAKEN FIH WAHDA TAANIA MXAHA) (ATANIA SHINI IL HYA) POSITION (RYTAX IL) HP
:36	C	HP (NAFSHA)
:37	F/O	(AIWAH FA HOOMA BL. ...IDA KAN)OUT SIDE (FAHADIKAI) IT MOVES IRRELEVANT (LAKENSHINI)
:41	C	WHICH ONE WHICH ONEYOU ARE POINTING HP (NAFSHA)
:43	F/O	(XLA HADI)SO WHAT HAPPES WHEN THAT MOVES IT WILL LOCK (ILWAHED) AT ANY POSITION BUT NORMALLY IN THE OPEN POSITION IT WILL LOCKS ,(IDAKAN) MOVED IT LOCKS THIS.
:57	F/O	YAH,YAH
:58	C	NOW THIS IS VERY GOOD
:59	C	BAS HANA FIH HAJA THIS IS LP SHAFT GOVERNER SO IT PASSES THROUGH WHERE IS IT SENSING (LYANH) IN THE REAR OF THE ENGINE (OU LA)
11:33:07	F/O	AIH
:08	F/O	(HADA.MAHO HADA) EXERCISE (MAZBOOT) WA SHINT BI YSSEER ANTA
:12	C	(LA QASDIL) SENSOR (QAXED XLA IL) LP (FI) TURBINE
:14	A/C	5-KE WE ARA VACATING 2.5 QESCENDING
:15	F/O	(FI ENNEHAYA MTAXA BUKL)

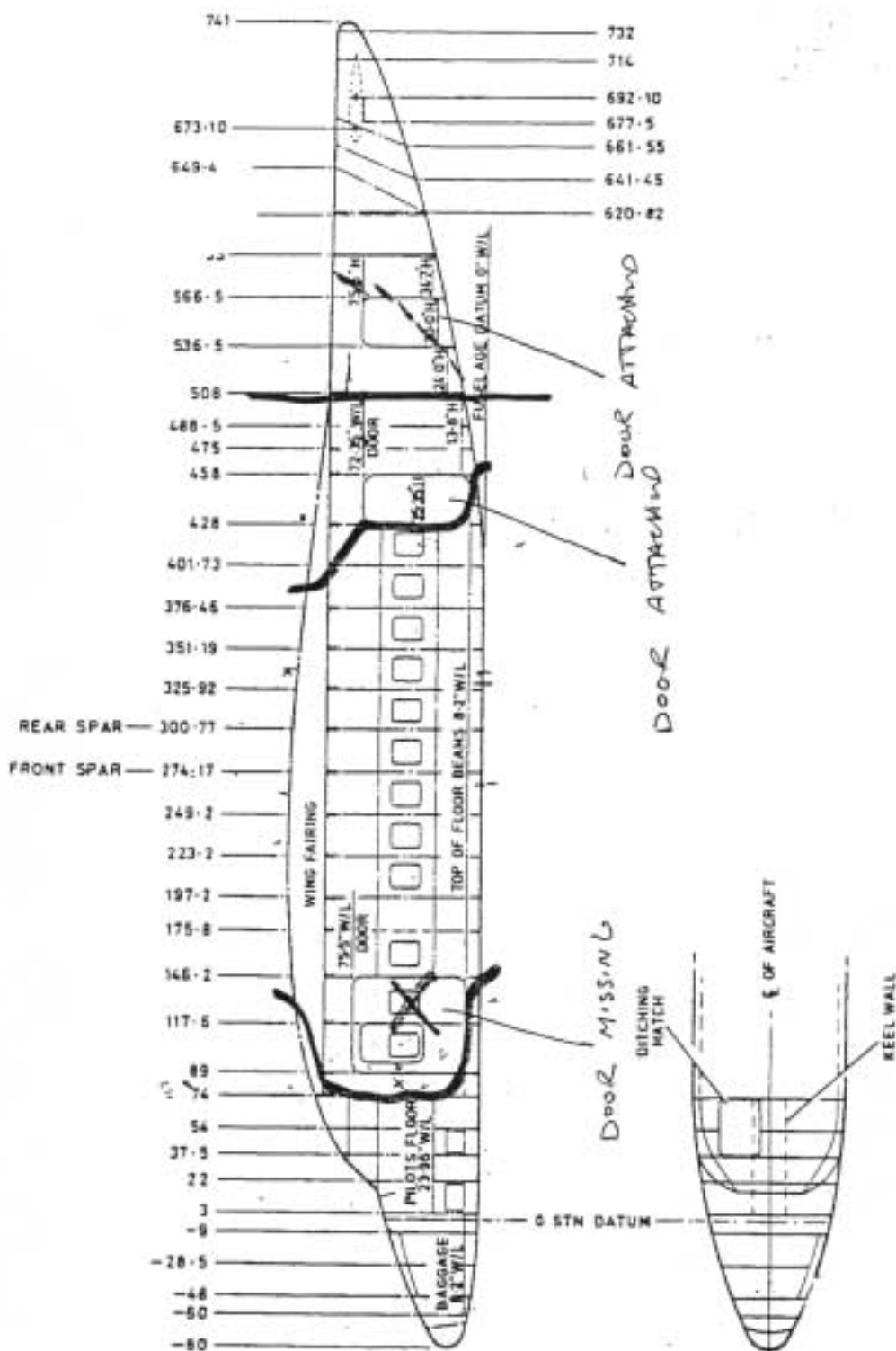
11:33:20	F/O	YES LP TURBINE
:21	C	YA LANA HOUA....
:22	F/O	YAH ,YES
:23	C	(...QABL IL) EXHAUST.
:24	F/O	SORRY(HADI)EXHAUST AREA
:25	C	AH
:26	F/O	(OU HADA FI AL)TAIL (MATAXA BEZABT)
:29	C	(YAH YA FI AL....FI IL) LP
:30	F/O	YES ,YA FIFI ALKHALF BEZABT)
:32	C	IT SEWSES OUT PUT (MTAXI ANA) BROKEN OR (WALLA SAR LIK) ENGINE OVER HEAT
:36	F/O	YES ,EXERCISES LOAD (XLA) SPRING HADA
:40	C	(HADA FIH) CABLE INSIDE
:41	F/O	(YAH o BAXDEEN) CABLE, YA YES.....
:49	C	YES,.....CABLE (HANA),OK,SPRSNG,
:54	F/O	IT WILL BRING THE CABLE, II WILL TOUCH THE CABLE.
:57	CTHE SPRING WILL THE TENSION CABLE AND IT WILL WORK AGAINST (IL) BULLY (HADI) , (BEZABAT AIWAH), YES
11:34:02	F/O	(IL) CABLE AT FOREWARD SECTION IT WILL PULL BACK AGAIN ,THERE FOR PULLING (IL) ROD , (IL) SHUT OFF VALVE ROD IN THE CLOSE POSTION, NOW IT IS OK
:06	C	
:21	F/O	KAALAS...HA,HA....
:22	C	(MAFEESH FAYDA FIHM)
:23	F/O	(HA,HA QAREEHM EJJMAXA WAKHALAS)
:28	C	(INQAREE DEEN ASALHUM)
:37	C	(BAS TAXREF TOWA) WE ARE COMMMITTED AH (WE DERNA IL) RESERVATION ...
:42	F/O	(IN SHALLA KHAIR MXNAH)
:44	C	(TAXREEF COMMITTED SHINO)
:45	F/O	AH
:45	C	(FI IL) CONTRACT, WE PAY UP TO 80%
:50	F/O	(LA KHALAS)
:51	C	(KHA LEHM)
:56	F/O	O SHINI, WHAT (SHINI ILMUSHK IL A ILY XNDKM ANTUM
:57	C	NOT OUR PROBLEM, CHAIRMAN
:58	F/O	KHEERA
:59	C	MAWAQAXSH
11:35:00	F/O	(LA QANXOOH) SERIES WA SAXAD SAHBA WA KADA IY KALMAH.....
:21	F/O	OK.....
:22	CFOCA(HAJA)
:27	F/O	OK
:27	C	OK
:34	F/O	APPROACH ?
:36	C	AS BRIEFED, VISUAL APPROACH RIGHT BASE ENTRY R/W 15

11:35:39	F/O	(QASDI) APPROACH
:41	C	APPROACH CHECKS YES
:43	F/O	AIR CONDITIONING OK ARE OFF
		OK SEAT BELT SIGN
:50	C- F/O	ON
:51	F/O	LANDING LIGHTS
:51	C	BOTH ON
:54	F/O	WEATHER RADAR
:55	C	ON STAND BY MODE
11:36:01	F/O	CABIN REPORT
:03	C	NEXT
:18	F/O	S21, AM
:21		HORN SOUND
:22	S-21	GO AHEAD
:24	F/O	OK (YAXBODA) WIND CHECK PLEASE
:29	S-21	090 VARIABLE 120 AT 20 KTS
:32	F/O	SHUKRN
:57	C	AH, AH
:57	F/O	(SHINO HADA)
:58		AUTO PILOT DIS CON NENTING SOUND
:58	C	WE JUST HAD AN ENGINE FAILURE
11:37:00	F/O	YOU ARE NOT KIDDING.
:01	F/O	OIL PRESSURE GOING LOW
:03	C	POWER
:04	F/O	OK
:05	C	OK POWER OM THE RIGHT ENGINE
:11	F/O	OK,CHECKED
:12		WARNING SOUND
:21	C	OK GEARS &, FLAPS ARE UP
:23	F/O	YES
:25	C	CONFIRM LEFT ENGINE FAILURE
:26	F/O	CONFIRMED.
:27	C	SHUT DOWN LEFT ENGINE
:28	F/O	OK
:28		SOUND OF ENGINE RUNING DOWN
:29	C	OH,OH, MY GOD
:33	F/O	WHAT HAPPENED
:34	F/O	RIGHT GENERATOR
:35	C	BOTH FAILURES, TWO ENGINE FAILURES
:38	F/O	YES
:39	C	JUST CALL CALL MARSA BREGA
:40	F/O	YAH,S21 AAM
:45	C.C	(NAXM)
:45	C	DALILA, PREPARE FOR EMERGENCY LANDING WE
		HAVE TWO ENGIN FAILURES
:46		WARNING SOUND
:48	F/O	OK, WE LOST ENGINE (YA) ABDO SSALAM
:50	C	TWO ENGINES
:52	F/O	TWO ENGINES, WE LOST TWO ENGINES (WANAHNA)
		APPROALHING THE COAST LINE

11:37:56	C	MY GOD
:57	C	TRY TO RESTART
:57	F/O	OK
:58	C	TRY TO RESTART
11:38:00		WARNING SOUND
		WARNING SOUND
		SINK RATE
		TOO LOW GEAR
		TOO LOW GEAR
:10	C	OH, MY GOD
		TOO LOW GEAR
		TOO LOW GEAR
		TOO LOW GEAR
		TOO LOW GEAR
:17	C	OPEN THE EMERGENCY EXIT HATEH (YA) BASHFR
		TOO LOW GEAR
:19	F/O	OK (HADI) ?
		TOO LOW GEAR
:21	C	YES
		TOO LOW GEAR
:22	S-21	(YA) BASHIR
:23		SOUND OF ERYERGENCY HATCH OPEN
:25	F/O	(AIWA)
:26	F/O	OK WE ARE DETCHING (FI ALBAHR) YA
:30	F/O	(YA RAB)
:32	S-21	CONFIRM EMERGENCY
:34	F/O	EMERGENCY (FI ALBAHR)
11:38:34		SOUND OF IMPACT AND END OF RECORDING

APPENDIX

(3)



Fuselage Stations
Figure 2

6-10-00















APPENDIX

(4)

حالة الطقس السائدة يوم 2000/1/13 ف خلال الفترة من الساعة
12:00 الى الساعة 16:00 بتوقيت محلي على منطقة البريقة .

ملخص لتوزيعات الضغط .

منخفض ضعيف للضغط الجوي 1011 هكتوباسكال على شمال مدينة سبها يتحرك ببطء ناحية الشمال الشرقي .

الرياح .

سادت الرياح من القطاع الجنوبي الشرقي خفيفة الى معتدلة السرعة تراوحت بين (10-15) عقدة

الحرارة .

تراوحت بين (14-16) م .

السحب .

سحب متفرقة ارتفاعها لا يقل عن 3500 قدم .

درجة الحرارة البحر .

من خلال متوسطات مناخية عالمية فإن درجة الحرارة خلال هذه الفترة من السنة على هذه المنطقة هي 16.9 درجة مئوية .

حالة البحر : غير متوفر .

حالة الموج : غير متوفر .

إدارة التنبؤات والأرصاد البحرية



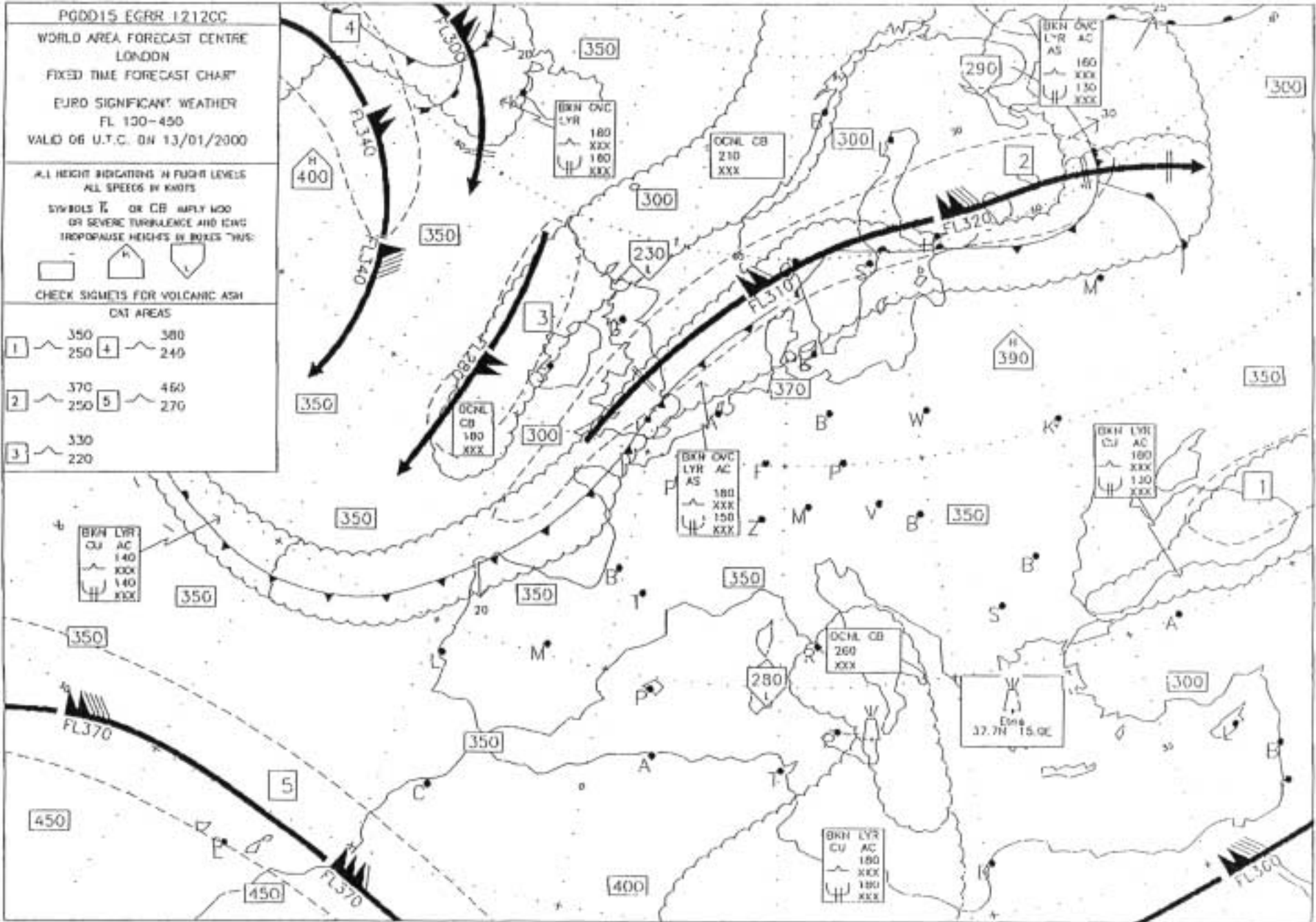
م / أبو غفة /// ط / القبلي *

PGDD15 EGRR 1212CC
 WORLD AREA FORECAST CENTRE
 LONDON
 FIXED TIME FORECAST CHART
 EURD SIGNIFICANT WEATHER
 FL 130-450
 VALID 06 U.T.C. ON 13/01/2000

A.L. HEIGHT INDICATIONS IN FLIGHT LEVELS
 ALL SPEEDS IN KNOTS
 SYMBOLS T or CB imply MOO
 OR SEVERE TURBULENCE AND ICAO
 TROPOPAUSE HEIGHTS IN BOXES "TMS"
 CHECK SIGNETS FOR VOLCANIC ASH

ONT AREAS

1	350	380
	250	240
2	370	460
	250	270
3	330	
	220	



PGDE15 EGRR 121200
 WORLD AREA FORECAST CENTRE
 LONDON
 FIXED TIME FORECAST CHART
 EURO SIGNIFICANT WEATHER
 FL 100-450
 VALID 12 U.T.C. ON 13/01/2000

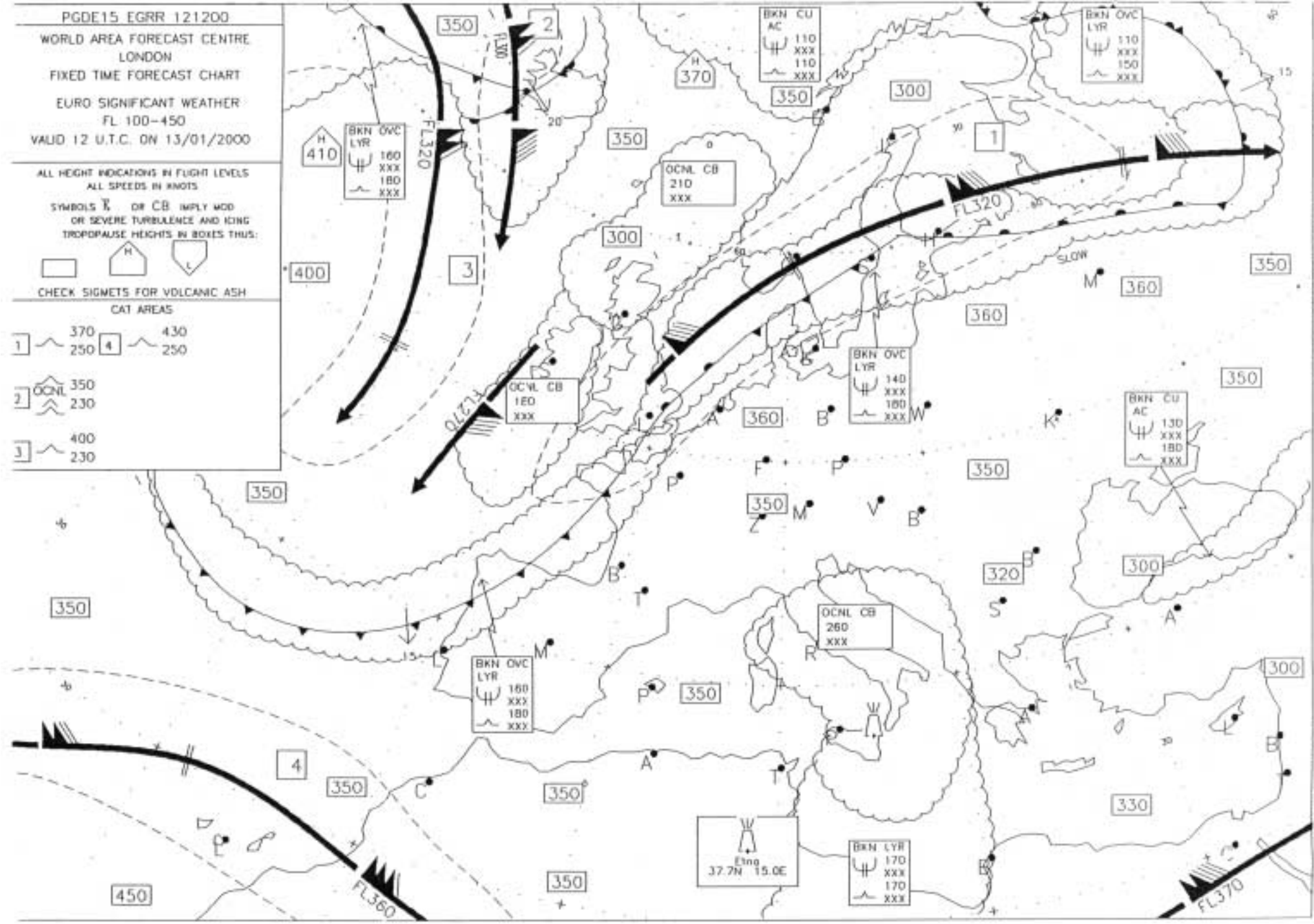
ALL HEIGHT INDICATIONS IN FLIGHT LEVELS
 ALL SPEEDS IN KNOTS

SYMBOLS or CB IMPLY MOD OR SEVERE TURBULENCE AND ICING
 TROPOPAUSE HEIGHTS IN BOXES THUS:

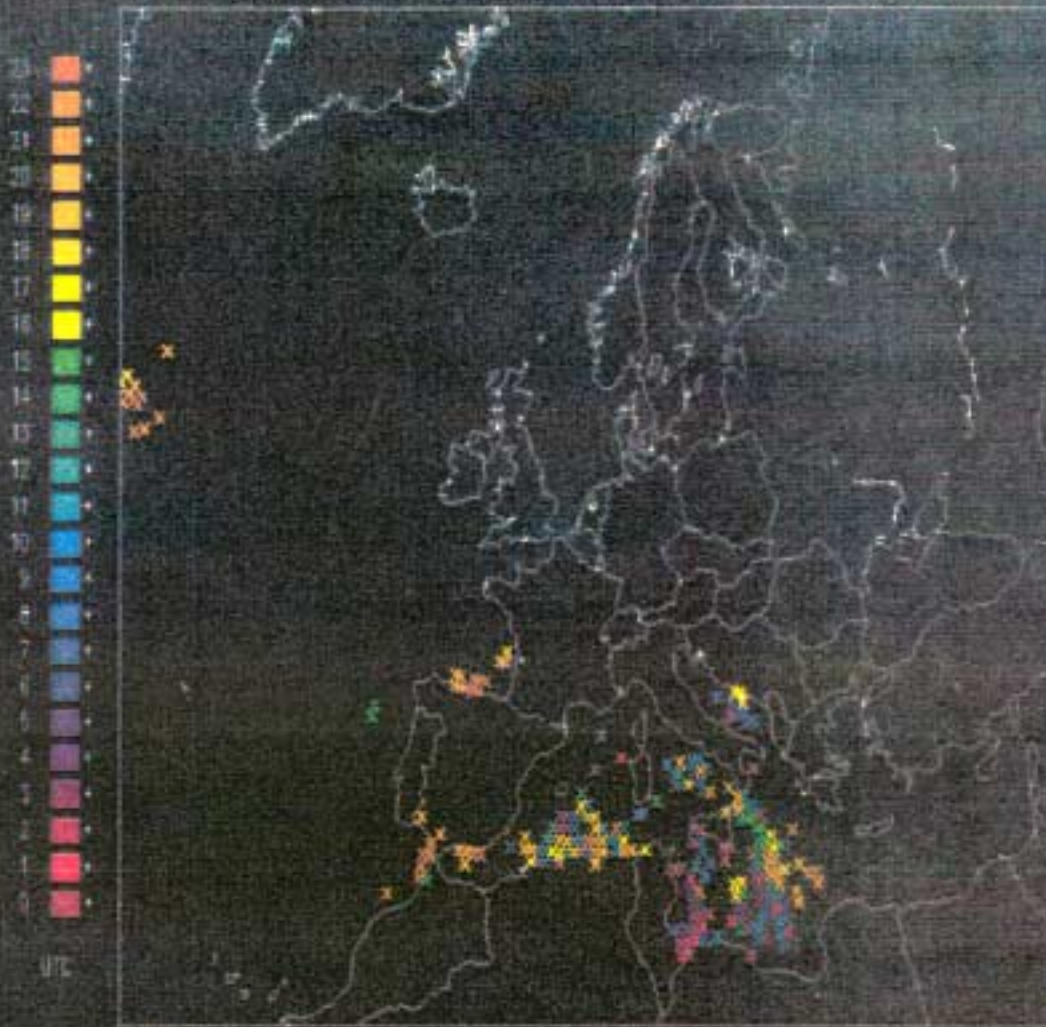
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CHECK SIGMETS FOR VOLCANIC ASH
 CAT AREAS

1	370	4	430
	250		250
2	OCNL		
	350		
	230		
3	400		
	230		



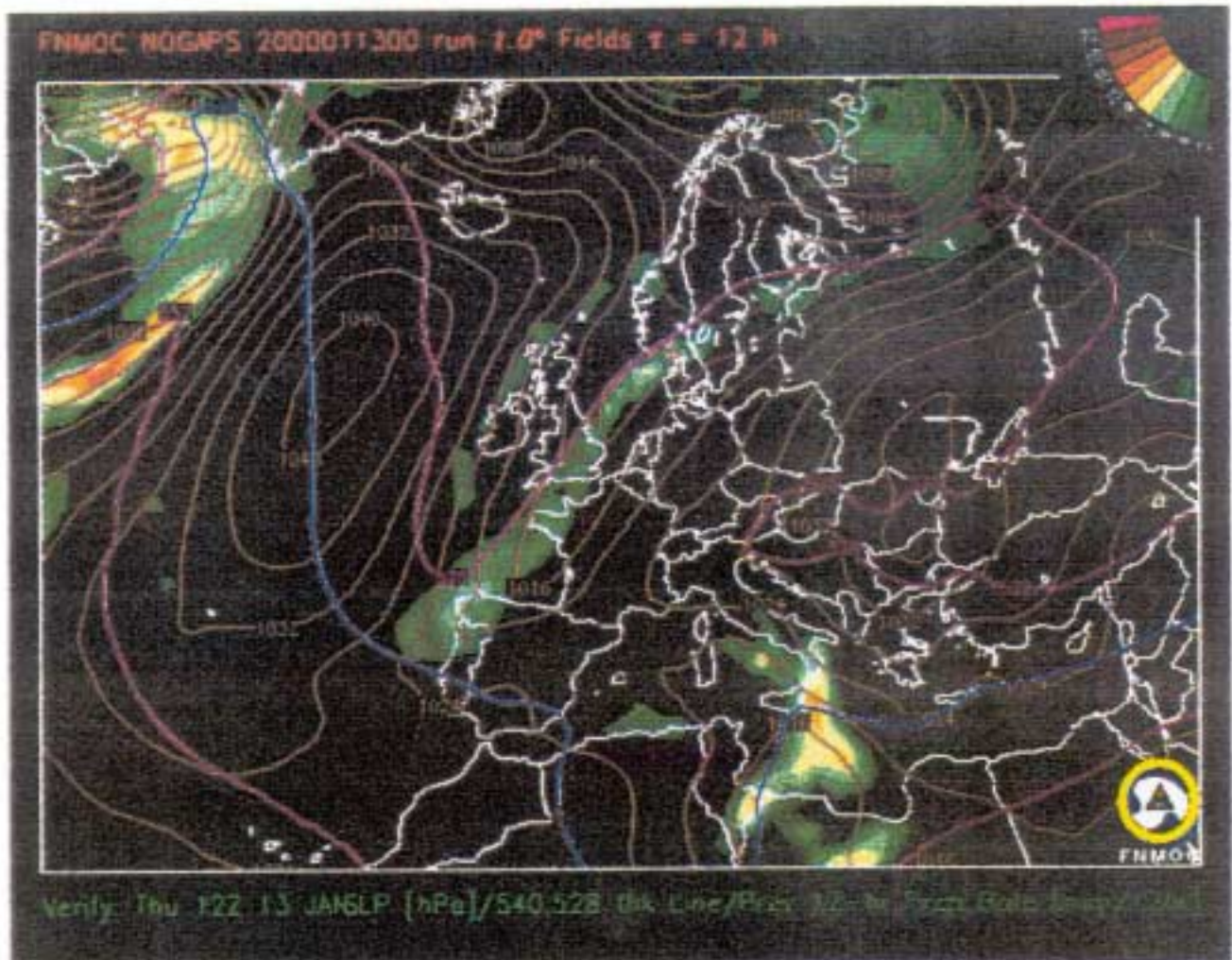
Sferics (Blitze) 13Jan2000 00 – 23 UTC



Georg Mueller, Wetterzentrale Vorlesung
Top Karten: <http://www.wetterzentrale.de/topkarten/>
Nur fuer nicht-kommerziellen Einsatz - For noncommercial use only.
Information on SFLC: <http://www.tems.org.uk/sflc.htm>

FNMOG NOGAPS 2000011300 t = 12 h forecast of Previous 12-hr Precipitation Rate [mm/12hr] and Sea Level Pressure [hPa]

Other times/parameters:	prp -12hrs	prp +12hrs	w30	500	850	wav
More Options:	prp movie	All Maps	All Times	NGP Home	Wxmap Home	Help



Click on the buttons above and to the right of the map to maneuver through the data and go to other maps

When in doubt, hit the **HELP!** button.

Send Comments to FNMOG Webmaster webmaster@fnmoc.navy.mil FNMOG Disclaimers

NRL Monterey Images with NOGAPS Overlays

Nav: [Sat. Home](#) [Overlay Home](#)

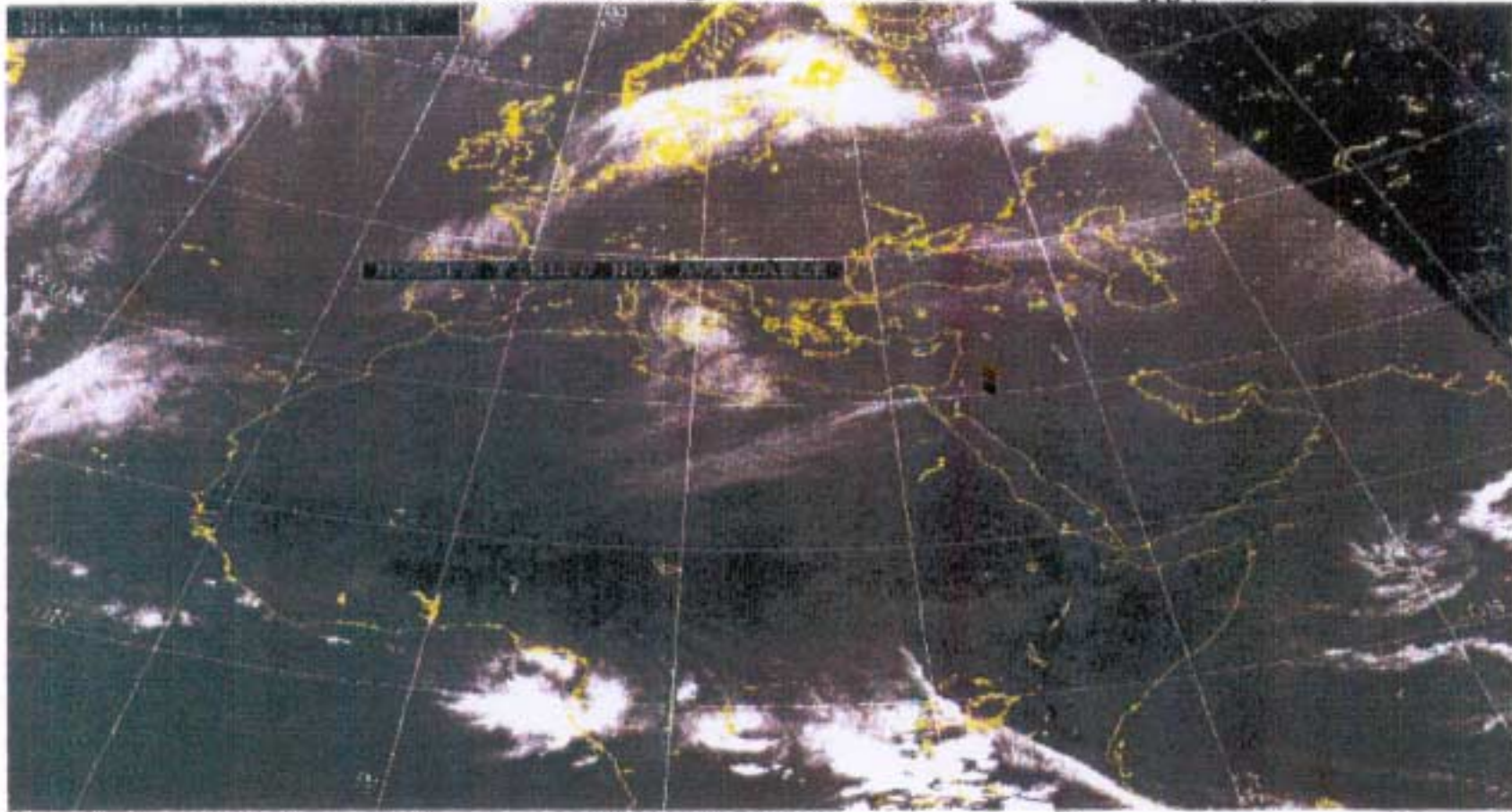
Display: [Mosaic](#) [Latest](#) [Previous](#) [Animation](#)

Info: [sfcwind Tutorial](#) [General Info](#)

Areas: [West Pacific](#) [East Pacific](#) [Atlantic](#) [Europe](#)

Prods: [IR & 300mb Wind](#) [IR & 500mb](#) [IR & Sea Level Pres.](#) [IR & Sfc Wind](#)

20000113.1230.meteo-7.IR.MODEL_OVERLAY.SFC_WIND.NOGAPS.jpg (75 K)



FNMOC NOGAPS 2000011312 t = 0 h forecast of Previous 12-hr Precipitation Rate [mm/12hr] and Sea Level Pressure [hPa]

Other times/parameters:	prp +12hrs	w30	500	850	wav	
More Options:	prp movie	All Maps	All Times	NGP Home	Wxmap Home	Help

FNMOC NOGAPS 2000011312 run 1.0° Fields t = 0 h



Verify Thu 12Z 13 JANGLP [hPa]/540.528 thk Line/Pres 12-hr Prec Rate [mm/12hr]

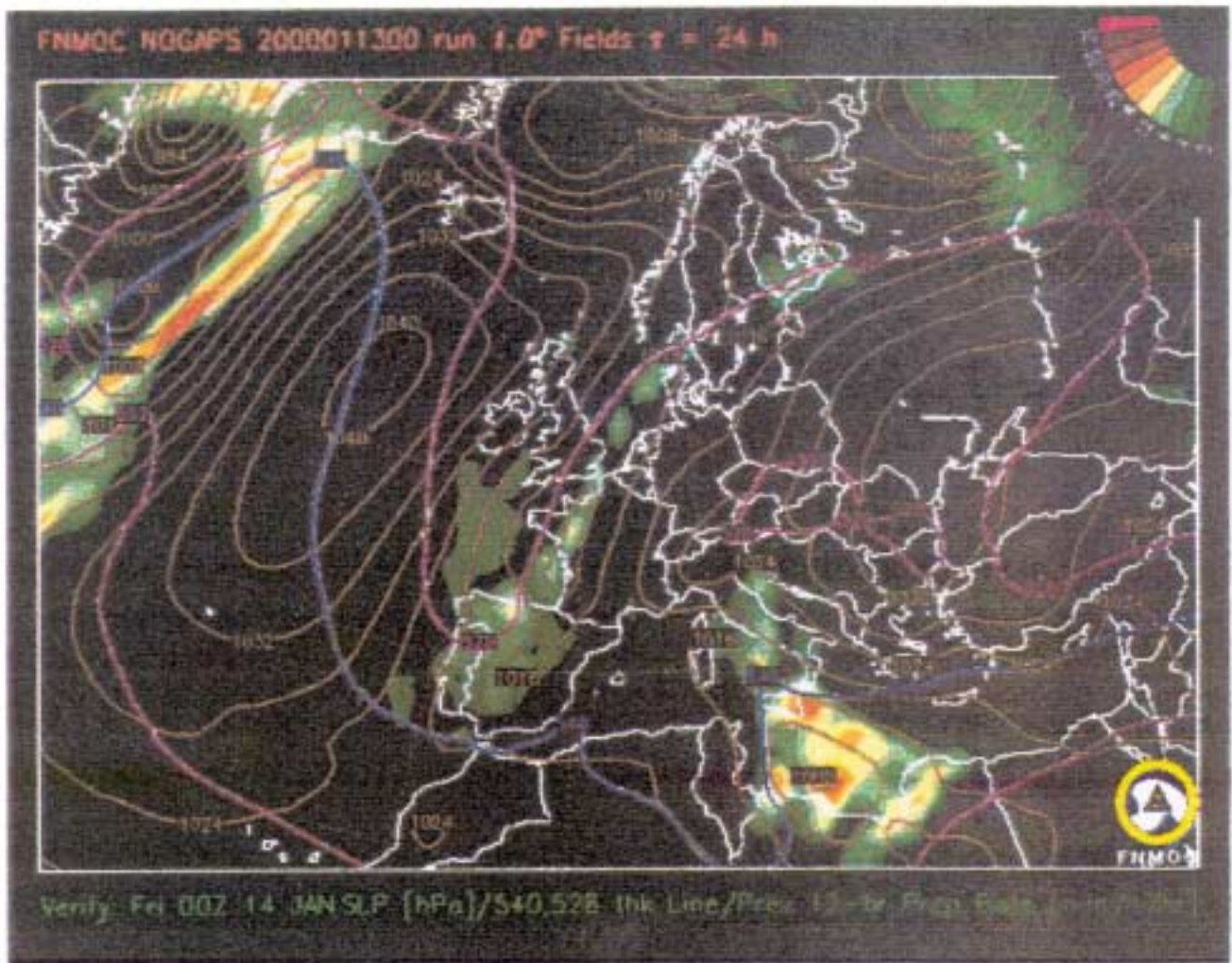
Click on the buttons above and to the right of the map to maneuver through the data and go to other maps

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FNMOG NOGAPS 2000011300 t = 24 h forecast of Previous 12-hr Precipitation Rate [mm/12hr] and Sea Level Pressure [hPa]

Other times/parameters:	prp -12hrs	prp +12hrs	w30	500	850	wav
More Options:	prp movie	All Maps	All Times	NGP Home	Wxmap Home	Help



Click on the buttons above and to the right of the map to maneuver through the data and go to other maps

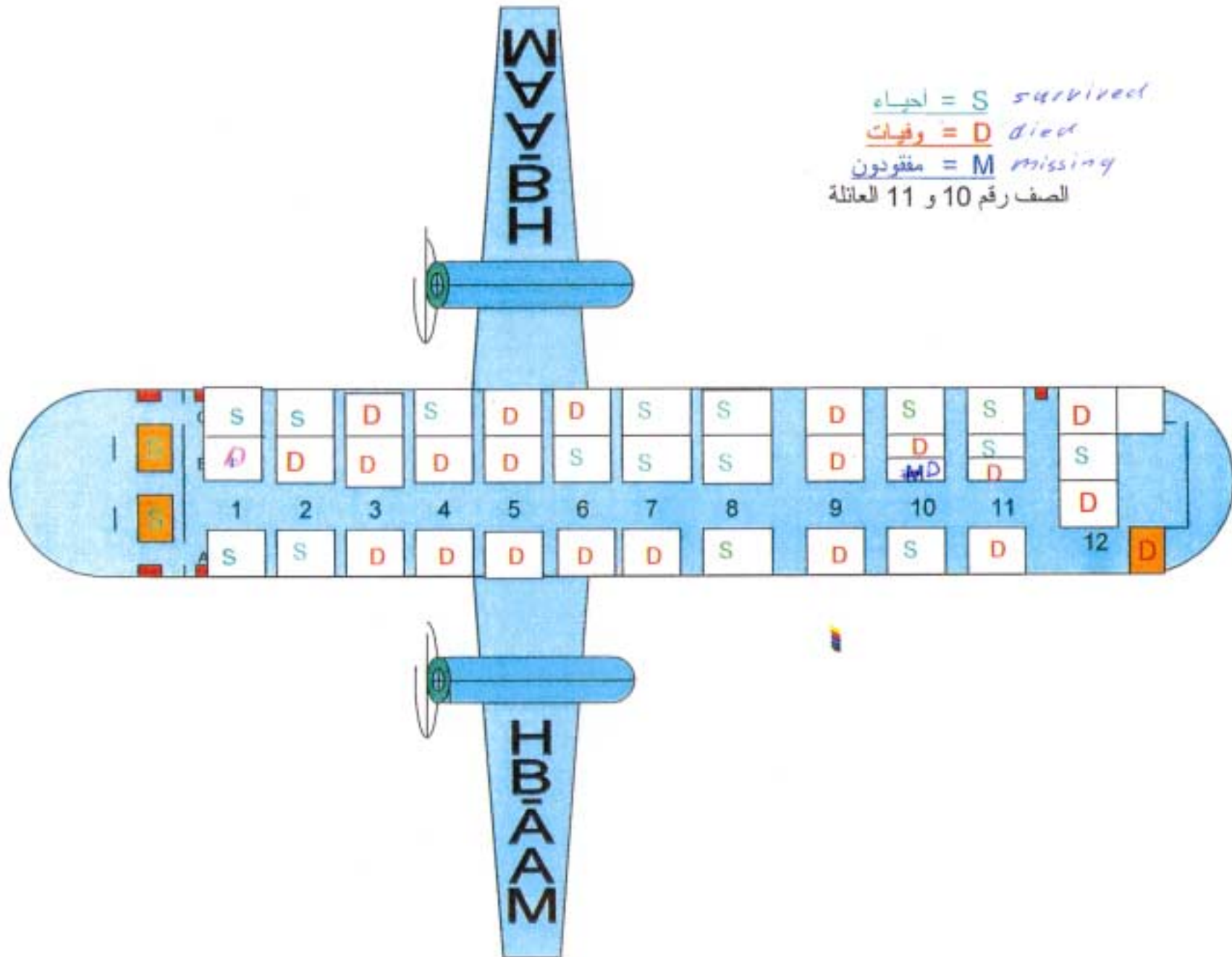
When in doubt, hit the **HELP!** button.

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APPENDIX

(5)

احياء = S survived
 وفيات = D died
 مفقودون = M missing
 الصف رقم 10 و 11 للعائلة



APPENDIX

(6)

SCHWEIZERISCHE EIDGENOSSENSCHAFT
CONFEDERAZIONE SVIZZERA
Bundesamt für Zivilluftfahrt
Ufficio federale dell'aviazione civile
LUFTTÜCHTIGKEITSZEUGNIS
CERTIFICATO DI NAVIGABILITÀ



CONFEDERATION SUISSE
SWISS CONFEDERATION
Office fédéral de l'aviation civile
Federal Office for Civil Aviation
CERTIFICAT DE NAVIGABILITE
CERTIFICATE OF AIRWORTHINESS

1. Kennzeichen Marque d'immatriculation Censignu d'immatriculaziun Registration Marka HB-AAM	2. Hersteller, Muster Constructeur, type Constructura, tipu Manufacturera, type SHORT BROTHERS PLC SD3-03 VARIANT 100	3. Serie-Nr. No de serie No di serie Serial No. 0M3703
4. Kategorie Categorie Categori Category STANDARD	5. Unterkategorie Sous-categorie Sottocategoria Subcategory Transport	
<p>6. Dieses Lufttüchtigkeitszeugnis ist in Übereinstimmung mit dem Abkommen vom 7. Dezember 1944 über die Internationale Zivilluftfahrt und dem Randprotokoll vom 21. Dezember 1944 über die Luftfahrt für das verkehrsrechtliche Luftfahrzeug ausgestellt. Dieses wird als Lufttüchtigkeitszeugnis ausgestellt, solange es gewissen den geltenden Vorschriften, dem zugehörigen Luftfahrzeug-Flughandbuche und den entsprechenden Überfluchtunterlagen befolgt wird und es sich in einem Zustand befindet, der die Einhaltung der geltenden Vorschriften der ICAO ermöglicht.</p> <p>Le présent certificat de navigabilité est établi pour l'aéronef précité, conformément à la Convention de 7 décembre 1944 relative à l'aviation civile internationale et à la loi fédérale de 21 décembre 1944 sur la navigabilité aérienne. Celui-ci est considéré en état de navigabilité et délivré à la condition que l'aéronef employé et exploité selon les prescriptions réglementaires, son manuel de vol et ses documents d'exploitation nécessaires.</p> <p>Il presente certificato di navigabilità è rilasciato per l'aeromobile menzionato conformemente alla Convenzione del 7 dicembre 1944 sull'Aviazione Civile Internazionale e alla legge federale del 21 dicembre 1944 sull'avigazione aerea. Questo può essere considerato in stato di navigabilità a condizione che l'aeromobile sia impiegato e mantenuto in efficienza a seconda le prescrizioni aeree, suo manuale di volo e suoi documenti di manutenzione necessari.</p> <p>This Certificate of Airworthiness is issued for the above-mentioned aircraft, pursuant to the Convention of December 7, 1944 on International Civil Aviation and to the Federal Law of December 21, 1944 on Air Navigation. It is considered airworthy and delivered to operation when operated and maintained in accordance with the foregoing, its Aircraft Flight Manual and its relevant maintenance documents.</p> <p>Dieses Zeugnis gilt nur, wenn der Luftfahrzeugführer sich an die Bestimmungen der Luftfahrzeugführer-Handbuche und die Vorschriften der ICAO hält und die Vorschriften der ICAO befolgt.</p> <p>Ce certificat n'est valide que si l'aéronef employé est en état de navigabilité et si les prescriptions réglementaires, son manuel de vol et ses documents d'exploitation nécessaires.</p> <p>La navigabilità di questo aeromobile è concessa all'Ufficio federale dell'aviation civile nell'ambito delle disposizioni del regolamento concernente l'aereo degli aerei.</p> <p>La navigabilità di questo aeromobile è concessa dall'Ufficio federale dell'aviation civile nell'ambito delle disposizioni del regolamento concernente l'aereo degli aerei.</p> <p>The airworthiness of this aircraft is supervised by the Federal Office for Civil Aviation in accordance with the applicable provisions of the ICAO.</p> <p>The airworthiness of this aircraft is supervised by the Federal Office for Civil Aviation in accordance with the applicable provisions of the ICAO.</p> <p>Gültig bis auf Widerruf Valable jusqu'à nouvel ordre Valido fino a nuovo ordine Valid until revocation</p>		
Ausgestellt am (Tag/Monat/Jahr) Établi le (jour/mois/année) Emissu il (giornu/mese/annu) Issued on (day/month/year) 07.06.95 / Nr. 1	Stempel, Unterschrift Timbre, signature Bolla, firma Stampo, criteura Bundesamt für Zivilluftfahrt Berne PL	

<p>SCHWEIZERISCHE EIDGENOSSENSCHAFT CONFEDERAZIONE SVIZZERA Bundesamt für Zivilluftfahrt Ufficio federale dell'aviazione civile ZULASSUNGSBEREICH DES LUFTFAHRZEUGES IM NICHT-GEWERBEMÄSSIGEN EINSATZ CHAMP D'UTILISATION DE L'AERONEF DANS L'EXPLOITATION NON COMMERCIALE AMBITO D'IMPIEGO DELL'AEROMOBILE NEL TRAFFICO NON COMMERCIALE SCOPE OF UTILIZATION OF THE AIRCRAFT IN NON-COMMERCIAL OPERATION</p>	<p>CONFEDERATION SUISSE SWISS CONFEDERATION Office fédéral de l'aviation civile Federal Office for Civil Aviation</p>		
HB-AAM			
Anhang zum Luftfahrzeug-Flughandbuch - Annexe au manuel de vol de l'aéronef Annexo al manual di volo dell'aeromobile - Appendix to the Aircraft Flight Manual			
1. Das Luftfahrzeug ist nur für die nachstehend beschriebenen Einsatzarten zugelassen - L'aéronef n'est admis que pour les genres d'exploitation attestés ci-après - L'aeromobile è ammesso soltanto per i generi d'impiego autorizzati - The aircraft is admitted only for the following certified types of operation.			
Einsatzarten .VFR bei Tag .VFR bei Nacht .IFR Cat. I	Genres d'exploitation .VFR de jour .VFR de nuit .IFR Cat. I	Generi d'impiego .VFR di giorno .VFR di notte .IFR Cat. I	Types of operation VFR by day VFR by night IFR Cat. I
2. Besondere Einschränkungen in Bezug auf Lärm, siehe Lärmzeugnis - Restrictions particulières quant au bruit, voir certificat de bruit - Restrizioni particolari in quanto al rumore, vedi certificato di rumore - Special restrictions with regard to noise, see noise certificate			
Ausgestellt am (Tag/Monat/Jahr) Établi le (jour/mois/année) Emissu il (giornu/mese/annu) Issued on (day/month/year) 07.06.95 / Nr. 1	Stempel, Unterschrift Timbre, signature Bolla, firma Stampo, criteura Bundesamt für Zivilluftfahrt Berne PL		

APPENDIX

(7)

SCHWEIZERISCHE EIDGENOSSENSCHAFT
 CONFEDERAZIONE SVIZZERA
 Bundesamt für Zivilluftfahrt
 Ufficio federale dell'aviazione civile
 EINTRAGUNGSZEUGNIS
 CERTIFICATO D'IMMATRICOLAZIONE



CONFEDERATION SUISSE
 SWISS CONFEDERATION
 Office fédéral de l'aviation civile
 Federal Office for Civil Aviation
 CERTIFICAT D'IMMATRICULATION
 CERTIFICATE OF REGISTRATION

1. Kennzeichen Marques d'immatriculation Contrassegno d'immatricolazione Registration Marks	2. Hersteller, Muster Constructeur, type Costruttore, tipo Manufacturer, type	3. Serie-Nr. No de série No. di serie Serial No.		
4. Name und Adresse des Eigentümers Nom et adresse du propriétaire Nome e indirizzo del proprietario Name and address of the owner	SIRTE OIL COMPANY, P.O. Box 385, Tripoli Avisto Ltd, Eichweg 6 / P.O. Box 61, 8154 Oberglatt ZH			
6. Hiermit wird bescheinigt, dass das vor- bezeichnete Luftfahrzeug, in Ueber- einstimmung mit dem Abkommen vom 7. Dezember 1944 über die internationale Zivilluftfahrt und dem Bundesgesetz vom 21. Dezember 1948 über die Luftfahrt, im schweizerischen Luftfahrzeugregister an- getragen ist.	Le présent certificat atteste que l'aéronef précité est inscrit dans le registre matricule suisse des aéronefs, conformément à la Convention du 7 décembre 1944 relative à l'aviation civile internationale et à la loi fédérale du 21 décembre 1948 sur la navigation aérienne.	Con il presente certificato si attesta che l'aeromobile sopra menzionato è iscritto nella matricola svizzera degli aeromobili conformemente alla Convenzione del 7 dicembre 1944 relativa all'aviazione civile internazionale e alla legge federale del 21 dicembre 1948 sulla navigazione aerea.		
Ausgestellt am (Tag/Monat/Jahr) Etabli le (jour/mois/année) Rilasciato il (giorno/mese/anno) Issued on (day/month/year)	Stempel, Unterschrift Timbre, signature Bollo, firma Stamp, signature	Bundesamt für Zivilluftfahrt Luftfahrzeugregister		
Aircraft Address	Decimal 4916212	Binary 010010110000000000001100	Octal 22600014	Hexadecimal 48000C

74/36.90/16.8.90 020

APPENDIX

(8)

CERTIFICATE OF INSURANCE

We, the undersigned, herewith certify that the aircraft

SD3-60-300 Variant

is covered worldwide within the scope of aircraft-policy no. 3.319.305

Coverage period:	01.12.1999 – 24.05.2000
Immatriculation:	HB-AAM
Policyholder / Operator:	Avisto Ltd. Eichweg 3 8154 Oberglatt, Switzerland
Maximum take off weight:	12'292 kg
Geographical Extent:	worldwide Including flights in Lybia (with reservation to the allowance of the Swiss government) – flights to and from Lybia in accordance to the UN-regulations
War risk:	not insured
Additional Insured:	Syrte Oil Co. Marsa El Brega, Lybia

SUBJECTS AND AMOUNTS

1. Limit of Liability

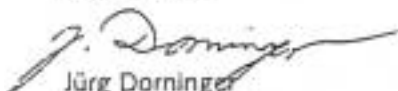
Combined Single Limit (CSL) CHF 250'000'000.—
(third party liability including passenger liability)


2. Hull All Risks Insurance

Agreed value: CHF 5'500'000.—
Deductible: In case of partial loss (FTIG) USD 100'000.— ; nil in case of total loss.

Winterthur Insurance
Head Office

Winterthur / Switzerland
06.12.1999

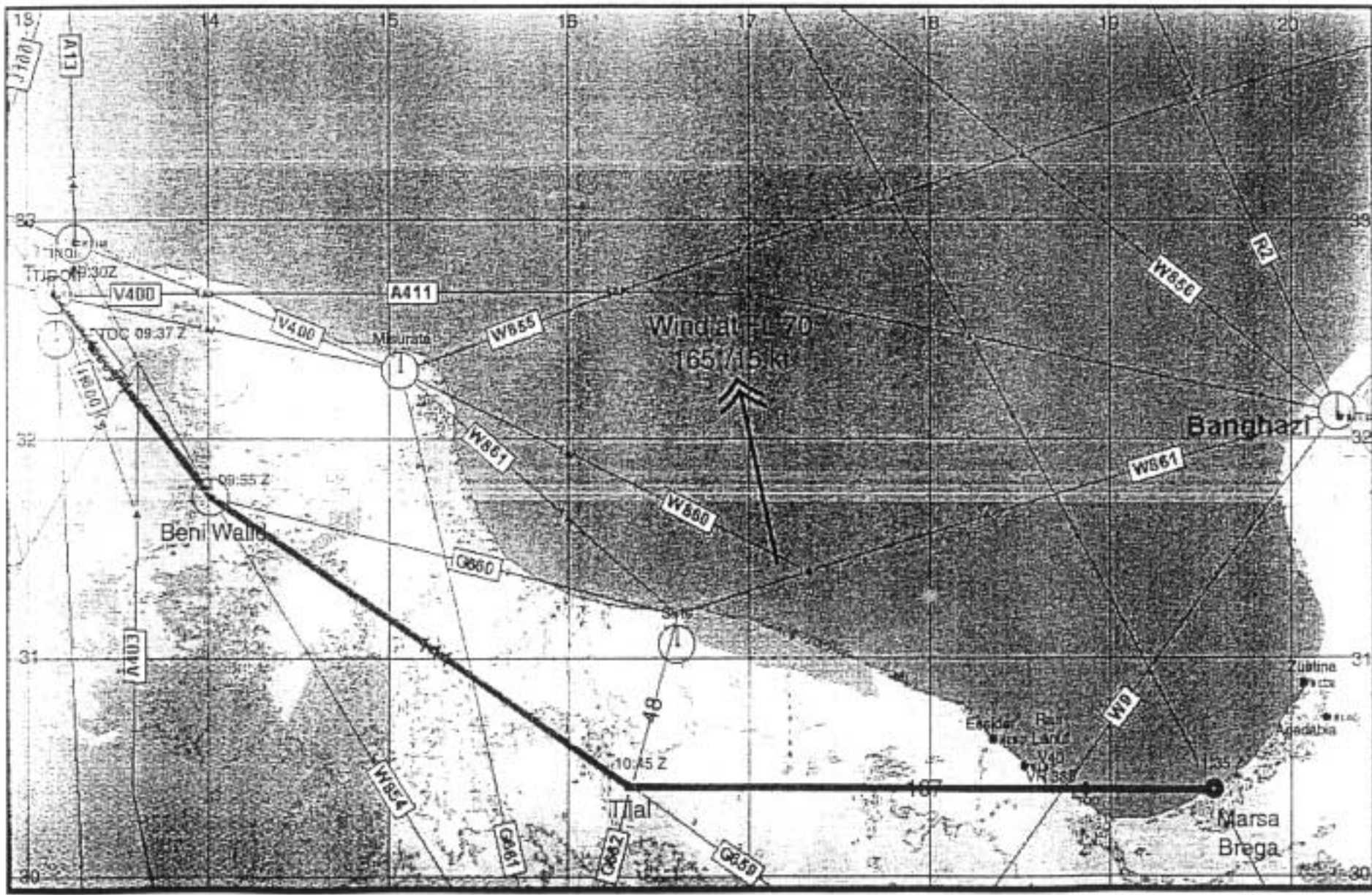

Jürg Dorninger
Manager Aviation


Urs Spiegelberg
Specialist Aviation Insurance

This Certificate of Insurance is issued as a matter of information only and all conditions as per Original Policy Wording shall apply. Changes remain reserved.

APPENDIX

(9)



APPENDIX

(10)

ENTREPRISE DES POSTES, TELEPHONES ET TELEGRAPHES SUISSES

KONZESSION FUER FLUGZEUGSTATION
FUER DIE TEILNAHME AM
BEWEGLICHEN FLUGFUNKDIENST



LICENCE DE STATION D'AERONEF
POUR LA PARTICIPATION AU
SERVICE MOBILE AERONAUTIQUE

LICENCIA DE ESTACION
DE AERONAVE

NO 791501398.02

AIRCRAFT STATION
LICENSE

Conformément aux articles 1 et 2 de la loi fédérale du 14 octobre 1927 réglant la correspondance télégraphique et téléphonique et au Règlement des radiocommunications annexé à la Convention internationale des télécommunications actuellement en vigueur, la présente autorisation est délivrée pour l'installation et pour l'utilisation de l'équipement radio-électrique décrit ci-dessous.

NATIONALITE ET SIGNES D'IMMATRICULATION D'AERONEF	INDICATIF D'APPEL	TYPE DE L'AERONEF	PROPRIETAIRE DE L'AERONEF
S U I S S E HB-AAM	HB-AAM	SHORT 360 MODEL SD3-60-300	Herr Frau Firmst. Mrs. Messrs/Ms. Sig. r/o Otto AWISTO LTD. POSTFACH 54 EICHWEG 3 8154 OBERGLATT ZH.

APPAREIL	TYPE	UISS. WATTS	CLASSE D'EMISSION	BANDES DE FREQUENCES / FREQUENCES ASSIGNEES
COMMUNICATION HF 1 TX/RX	COLLINS HF-230	100	J3E	2.00 - 29.9999 / MHZ
COMMUNICATION VHF 2 TX/RX	COLLINS VHF-21A	16	A3E	118.00 - 136.975
NAVIGATION VHF 2 RX	COLLINS VIR-32			108.00 - 117.95 MHZ 75 MHZ 329.15 - 335.0 MHZ
RADIO-COMPASS 2 RX	COLLINS ADF-60A			190 - 1750 KHZ
DME-INTERROGATOR 2 TX/RX	COLLINS DME-62	300	V1D	960 - 1215 MHZ
ATC-TRANSPONDER 2 TX/RX	COLLINS TDR-90	500	V1D	RX 1030 TX 1090 MHZ
WEATHER-RADAR 1 TX/RX	COLLINS WXR-220	5-KW	P0N	9375 +/- 40 MHZ
RADIO-ALTIMETER 1 TX/RX	HONEYWELL VG7500	100	F1N	4300 MHZ
EMERGENCY-EQUIPMENT 1 TX	DORNE-MARQUIN DM-ELT-8	0.075		121.50 + 243.00 MHZ

DIRECTION DES
TELECOMMUNICATIONS ZURICH

ZURICH, LE 09.12.61

ANNEXE(S)

PRESCRIPTIONS SUR LES CONCESSIONS

Lomé

Chief Konzeptionen

PTT 605.26 (12/50) 5-11 001 1014 P.000