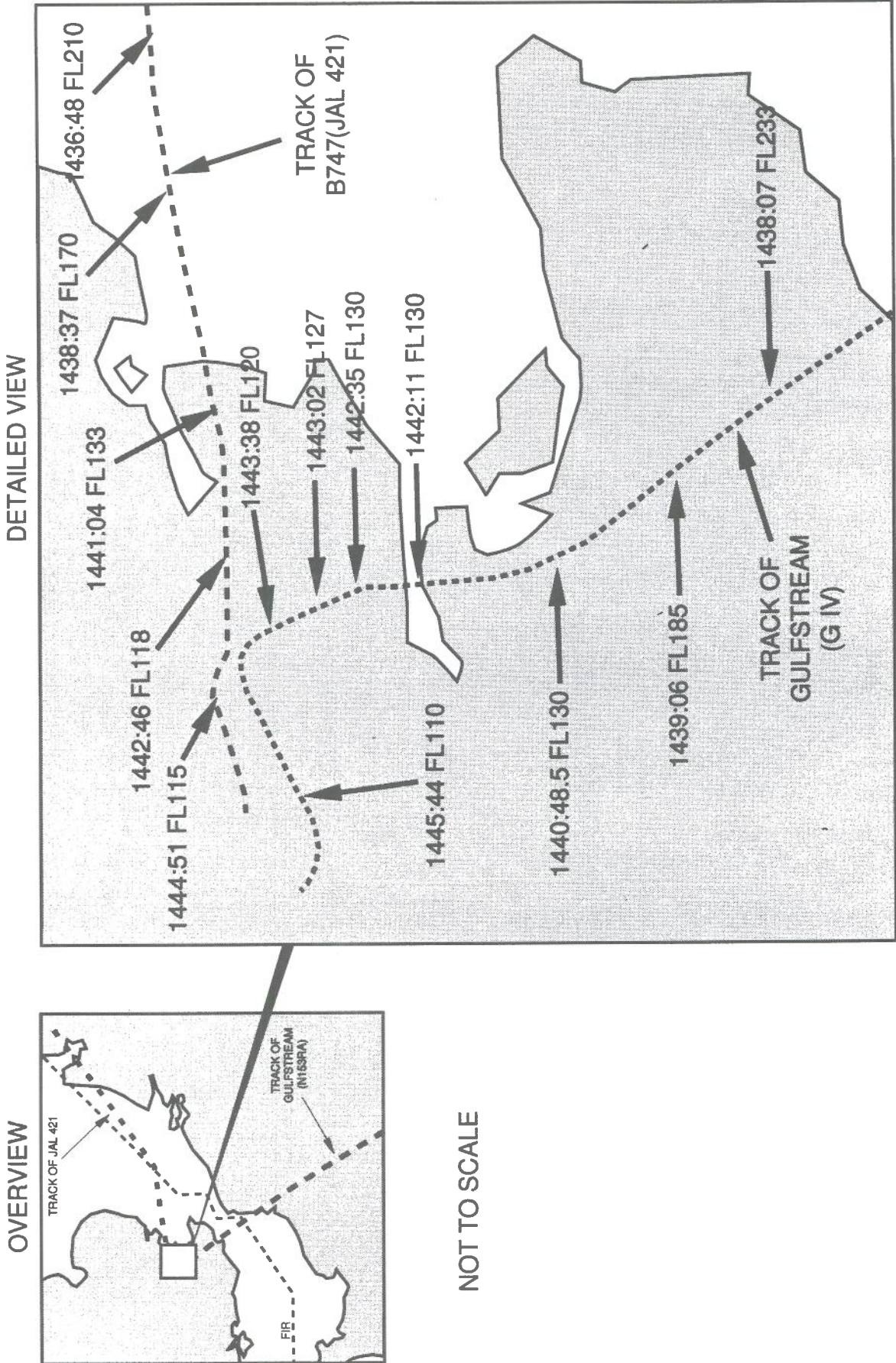


TRACK PLOTS

MULTIRADAR PLOT (HEATHROW 23CM / DEBDEN) OF JAL 421 AND GULFSTREAM (N153RA)



ATC TRANSCRIPTS

Sequence:

B 747—»Clacton —»Heathrow Intermediate North  
 (JAL421) —» Lambourne  
 G IV —»Lydd -----»became NE Departures/Lambourne\*  
 (N153RA) Δ

Δ = Time of Airprox  
 \* = Banded

**Area Control Clacton Westbound Sector:118.475 MHz**  
 (Callsign: LONDON)  
**Boeing 747:** (Callsign: JAL 421)

To	From	Recorded intelligence	Time
JAL421	LONDON	JAPANAIR FOUR TWO ONE CONTINUE DESCENT TO FLIGHT LEVEL ONE FIVE ZERO	
LONDON	JAL421	JAPANAIR FOUR TWO ONE CONTINUE TO ONE FIVE ZERO	1431
JAL421	LONDON	JAPANAIR FOUR TWO ONE WHAT IS YOUR SPEED	1432:30
LONDON	JAL421	IS THREE TWO ZERO KNOTS	
JAL421	LONDON	ROGER REDUCE TO TWO NINE ZERO KNOTS PLEASE	
LONDON	JAL421	ROGER JAPANAIR FOUR TWO ONE REDUCE TWO NINER ZERO	1433
JAL421	LONDON	JAPANAIR FOUR ZERO ER CORRECTION FOUR TWO ONE REPORT YOUR SPEED NOW TO LONDON ON ONE TWO ONE DECIMAL TWO TWO	1437
LONDON	JAL421	JAPANAIR FOUR TWO ONE ONE TWO ONE TWO TWO GOOD DAY	
JAL421	LONDON	BYE BYE	

**Area Control Lydd Sector 128.425 MHz**  
 (Callsign: LONDON)  
**Gulfstream IV** (Callsign: N153RA)

To	From	Recorded intelligence	Time
LONDON	N153RA	ER GOOD AFTERNOON LONDON CONTROL NOVEMBER ONE FIVE THREE ROMEO ALPHA WERE JUST OUT OF FOUR ZERO EIGHT FOR THREE FIVE ZERO	1427

N153RA	LONDON	NOVEMBER ONE FIVE THREE ROMEO ALPHA LONDON MAINTAIN FLIGHT LEVEL THREE FIVE ZERO ON REACHING ABBEVILLE DETLING LOREL THREE ECHO FOR LUTON	1428
N153RA	LONDON	NOVEMBER ONE FIVE THREE ROMEO ALPHA DESCEND TO FLIGHT LEVEL TWO SIX ZERO	1430
LONDON	N153RA	CLEAR DOWN TO TWO SIX ZERO ER ROMEO ALPHA	
N153RA	LONDON	NOVEMBER ONE FIVE THREE ROMEO ALPHA CONTINUE YOUR HEADING UNTIL ADVISED	
LONDON	N153RA	OKAY MAINTAIN PRESENT HEADING UNTIL ADVISED ROMEO ALPHA HEADING IS TWO TWO THREE TWO SEVEN	
N153RA	LONDON	ROGER	1431
N153RA	LONDON	NOVEMBER ROMEO ALPHA DESCEND FLIGHT LEVEL TWO ONE ZERO	1433
LONDON	N153RA	DOWN TO TWO ONE ZERO FOR FIVE THREE ROMEO ALPHA	
LONDON	N153RA	ER ONE FIVE THREE ROMEO ALPHA CLEAR DOWN TO TWO ONE ZERO	
N153RA	LONDON	NOVEMBER THREE ROMEO ALPHA THATS CORRECT BREAK ..... (non pertinent instruction to another aircraft)	
N153RA	LONDON	NOVEMBER ROMEO ALPHA DESCEND FLIGHT LEVEL ONE NINE ZERO	
LONDON	N153RA	CLEAR DOWN TO ONE NINE ZERO ROMEO ALPHA	1435
N153RA	LONDON	NOVEMBER ROMEO ALPHA INCREASE RATE OF DESCENT TO FLIGHT LEVEL ONE NINE CORRECTION TO FLIGHT LEVEL ONE NINE ZERO YOU CAN EXPECT ONE THREE ZERO AT DETLING	
LONDON	N153RA	OKAY ER INCREASING DESCENT DOWN TO ONE NINE ZERO AND WERE CLEAR DOWN TO ONE THREE ZERO AFTER DETLING	1436
N153RA	LONDON	YOU ARE NOW CLEAR TO FLIGHT LEVEL ONE THREE ZERO BE LEVEL AT DETLING	
LONDON	N153RA	OKAY ONE THREE ZERO BE LEVEL AT DETLING ROMEO ALPHA	
N153RA	LONDON	NOVEMBER ROMEO ALPHA EXPEDITE THROUGH FLIGHT LEVEL TWO FOUR ZERO PLEASE	1437
LONDON	N153RA	OKAY WERE EXPEDITING NOW WERE DOING ABOUT FOUR THOUSAND FEET A MINUTE THROUGH TWO FOUR ZERO	
LONDON	N153RA	ROMEO ALPHAS OUT OF TWO FOUR ZERO NOW FOR ONE THREE ONE THREE ZERO	1438



JAL421	LONDON	JAPANAIR FOUR TWO ONE DESCEND FLIGHT LEVEL ONE THREE ZERO	
LONDON	JAL421	JAPANAIR FOUR TWO ONE DESCEND TO ONE THREE ZERO	1440
JAL421	LONDON	JAPANAIR FOUR TWO ONE DESCEND FLIGHT LEVEL ONE TWO ZERO	
LONDON	JAL421	JAPANAIR FOUR TWO ONE DESCEND TO ONE TWO ZERO	
LONDON	N153RA	HELLO LONDON GULFSTREAM ONE FIVE THREE ONE NOVEMBER ONE FIVE THREE ROMEO ALPHA LEVEL ONE THREE ZERO PROCEEDING ROUTE TO BOYSI	1441
N153RA	LONDON	NOVEMBER ONE FIVE THREE ROMEO ALPHA ROGER YOU CAN KEEP UP HIGH SPEED MAINTAIN FLIGHT LEVEL ONE THREE ZERO	
LONDON	N153RA	MAINTAIN ONE THREE ZERO ROMEO ALPHA	
JAL421	LONDON	JAPANAIR FOUR TWO ONE ROUTE DIRECT LAMBOURNE DESCEND FLIGHT LEVEL ONE ONE ZERO	1441:21
LONDON	JAL421	JAPANAIR FOUR TWO ONE DIRECT LAMBOURNE ER DESCEND TO ONE ONE ZERO	
JAL421	LONDON	JAPANAIR FOUR TWO ONE CONTACT HEATHROW ONE NINE DECIMAL SEVEN TWO GOOD BYE	1441:32
LONDON	JAL421	JAPANAIR FOUR TWO ONE ONE ONE NINE DECIMAL SEVEN TWO GOOD BYE	

**Terminal Control Heathrow Intermediate Director (North)**  
 (Callsign: HEATHTROW) 119.725 MHz  
**Boeing 747 (Callsign: JAL 421)**

To	From	Recorded intelligence	Time
HEATHROW	JAL421	HEATHROW GOOD DAY SIR JAPANAIR FOUR TWO ONE LEAVING FLIGHT LEVEL ONE TWO ZERO FOR ONE ONE ZERO A BOEING SEVEN FOUR SEVEN THREE HUNDRED	1441:49
JAL421	HEATHROW	-PANAIR FOUR TWO ONE THANK YOU DESCEND TO FLIGHT LEVEL NINE ZERO AND LEAVE LAMBOURNE HEADING TWO SEVEN ZERO DEGREES REDUCE YOUR SPEED NOW TO TWO TEN KNOTS	1441:58
HEATHROW	JAL421	JAPANAIR FOUR TWO ONE ROGER DESCEND TO NINE THOUSAND TO NINE THOUSAND LEAVE ERRRR LAMBOURNE HEADING TWO SEVEN ZERO DESCEND ERR SPEED REDUCE TO TWO ONE ZERO KNOTS	
JAL421	HEATHROW	-PANAIR FOUR TWO ONE JUST CONFIRM THAT'S CLEARED AT FLIGHT LEVEL NINE ZERO	
HEATHROW	JAL421	LEVEL NINER ZERO JAPANAIR FOUR TWO ONE	

JAL421	HEATHROW	-PANAIR FOUR TWO ONE MAKE AN IMMEDIATE RIGHT TURN HEADING THREE ONE ZERO DEGREES AVOIDING ACTION TURN	1444
HEATHROW	JAL421	LONDON JAPANAIR THREE FOUR TWO ONE HEADING THREE ONE ZERO	
JAL421	HEATHROW	AND YOU HAVE TRAFFIC WHICH INDICATES TWO HUNDRED FEET BELOW YOU IN YOUR TEN O'CLOCK RANGE OF ONE AND A HALF MILES IT'S JUST TURNED WEST BOUND NOW	
JAL421	HEATHROW	JAPANAIR FOUR TWO ONE THAT TRAFFIC'S GONE AWAY NOW YOU CAN ROUTE DIRECT TO LAMBOURNE	
HEATHROW	JAL421	JAPANAIR FOUR TWO ONE NOW DIRECT LAMBOURNE THAT (????unintelligible words) BY T CAS	
JAL421	HEATHROW	-PANAIR FOUR TWO ONE THAT TRAFFIC'S NOW CLEAR WELL IN YOU'RE LEFT HAND SIDE AND IS CURRENTLY MAINTAINING FLIGHT LEVEL ONE TWO ZERO BUT IS ER NOW THREE MILES DISTANT HEADING WESTBOUND	
JAL421	HEATHROW	JAPANAIR FOUR TWO ONE DESCEND ER STOP YOUR DESCENT NOW FLIGHT LEVEL ONE HUNDRED	
HEATHROW	JAL421	JAPANAIR FOUR TWO ONE ER CONFIRM DESCENT TO ONE ZERO ZERO	1445
HEATHROW	JAL421	HEATHROW DIRECTOR ER JAPANAIR FOUR TWO ONE CONFIRM DESCENT TO FLIGHT LEVEL ONE ZERO ZERO	
HEATHROW	JAL421	HEATHROW THIS JAPANAIR FOUR TWO ONE	
JAL421	HEATHROW	-PANAIR FOUR TWO ONE DISREGARD MY LAST DESCEND FLIGHT LEVEL NINER ZERO	
HEATHROW	JAL421	ROGER JAPANAIR FOUR TWO ONE DESCEND TO NINER ZERO	1446

**Terminal Control** [Bandboxed with Lambourne Sector at 1442 hrs]\*  
**Heathrow North East Departures**  
(Callsign: LONDON)  
**118.225 MHz / 121.225 MHz (Cross coupled)\***  
**Boeing 747** (Callsign: JAL 421)  
**Gulfstream IV** (Callsign: N153RA)

N531RA	LONDON	NOVEMBER ONE FIVE THREE ROMEO ALPHA TURN LEFT HEADING THREE FOUR ZERO	1442
LONDON	N531RA	LEFT TO THREE FOUR ZERO ROMEO ALPHA	
N531RA	LONDON	NOVEMBER ONE FIVE THREE ROMEO ALPHA DESCEND FLIGHT LEVEL ONE TWO ZERO	1442:38

LONDON	N531RA	DOWN TO ONE TWO ZERO ROMEO ALPHA OUT OF ONE THREE ZERO NOW	1442:41
LONDON	N531RA	AND ROMEO ALPHA WE HAVE ER TRAFFIC HERE AT ONE O'CLOCK	
N531RA	LONDON	ROMEO ALPHA AFFIRM THAT TRAFFIC ER MAINTAINING A THOUSAND BELOW	
LONDON	N531RA	AND WE GOT ONE INDICATING ABOUT THREE HUNDRED FEET DIFFERENCE SIR	1443
N531RA	LONDON	NOVEMBER ONE FIVE THREE ROMEO ALPHA TURN LEFT HEADING THREE ONE ZERO	
LONDON	N531RA	THREE ONE ZERO ROMEO ALPHA	
N531RA	LONDON	THREE ONE ER ROMEO ALPHA AVOIDING ACTION NOW TURN LEFT HEADING TWO NINER ZERO	
LONDON	N531RA	TWO NINE ZERO ROMEO ALPHA	
N531RA	LONDON	NOVEMBER ONE FIVE THREE ROMEO ALPHA THAT ER TRAFFIC CORRECTION AVOIDING ACTION NOW TURN LEFT HEADING TWO FIVE ZERO	
LONDON	N531RA	TWO FIVE ZERO ROMEO ALPHA	
N531RA	LONDON	NOVEMBER THREE ROMEO ALPHA TRAFFIC IN YOUR THREE O'CLOCK RANGE HALF A MILE	1444
LONDON	N531RA	YEAH WERE IN THE TURN	
N531RA	LONDON	NOVEMBER FIVE ONE THREE ROMEO ALPHA TRAFFIC NOW IN YOUR FOUR O'CLOCK RANGE OF HALF A MILE	
LONDON	N531RA	YEAH WERE IN ER V WERE IN A BIT OF CLOUD SO CANT SEE HIM SIR	
N531RA	LONDON	ROGER	
LONDON	N531RA	GOT HIM ON T CAS	
N531RA	LONDON	ROGER THAT TRAFFIC NOW ER TURNING RIGHT ER OUT OF THE WAY	
N531RA	LONDON	NOVEMBER ONE FIVE THREE ROMEO ALPHA YOU'RE CLEAR OF THE TRAFFIC NOW DESCEND FLIGHT LEVEL ONE HUNDRED	
LONDON	N531RA	DOWN TO ONE HUNDRED WERE ON A HEADING OF TWO FIVE ZERO	
N531RA	LONDON	ROGER CONTINUE THAT HEADING FOR THE MOMENT	
N531RA	LONDON	NOVEMBER THREE ROMEO ALPHA STOP DESCENT FLIGHT LEVEL ONE ONE ZERO	1445
LONDON	N531RA	DOWN TO ONE ONE ZERO ROMEO ALPHA	

N531RA	LONDON	NOVEMBER ONE FIVE THREE ROMEO ALPHA TURN RIGHT ONTO A HEADING OF THREE THREE FIVE	
LONDON	N531RA	RIGHT TURN TO THREE THREE FIVE ROMEO ALPHA LEVEL ONE ONE ZERO	
N531RA	LONDON	THANKS MAINTAIN FOR THE MOMENT WERE GONNA POSITION YOU TOWARDS THE LIMA UNIFORM TANGO FOR LANDING TWO SIX AT LUTON	1446
LONDON	N531RA	OKAY WE HAVE THE TRAFFIC WE HAVE INFORMATION MIKE	
N531RA	LONDON	NOVEMBER ONE FIVE THREE ROMEO ALPHA DESCEND TO ALTITUDE FIVE THOUSAND FEET SET LUTON Q N H ONE ZERO ZERO EIGHT	1447
LONDON	N531RA	FIVE THOUSAND ONE ZERO ZERO EIGHT ROMEO ALPHA	
N531RA	LONDON	ROGER YOU'VE GOT APPROXIMATELY TWENTY FIVE MILES TO GO AND YOU'RE ON A LONG BASE LEG FOR TWO SIX	
LONDON	N531RA	ROMEO ALPHA THANK YOU	1448
N531RA	LONDON	NOVEMBER ONE FIVE THREE ROMEO ALPHA YOU CAN KEEP UP YOUR SPEED IF IT HELPS TO GET YOUR HEIGHT OFF TURN RIGHT ONTO A HEADING THREE FOUR FIVE	
LONDON	N531RA	RIGHT TURN TO THREE FOUR FIVE ROMEO ALPHA	
N531RA	LONDON	ROMEO ALPHA REPORT HEADING AND PRESENT SPEED TO LUTON APPROACH ONE TWO EIGHT DECIMAL SEVEN FIVE	
LONDON	N531RA	TWENTY EIGHT SEVEN FIVE GOOD DAY SIR	1449
N531RA	LONDON	BYE BYE	



STARs via LAMBOURNE

LONDON HEATHROW

GENERAL INFORMATION

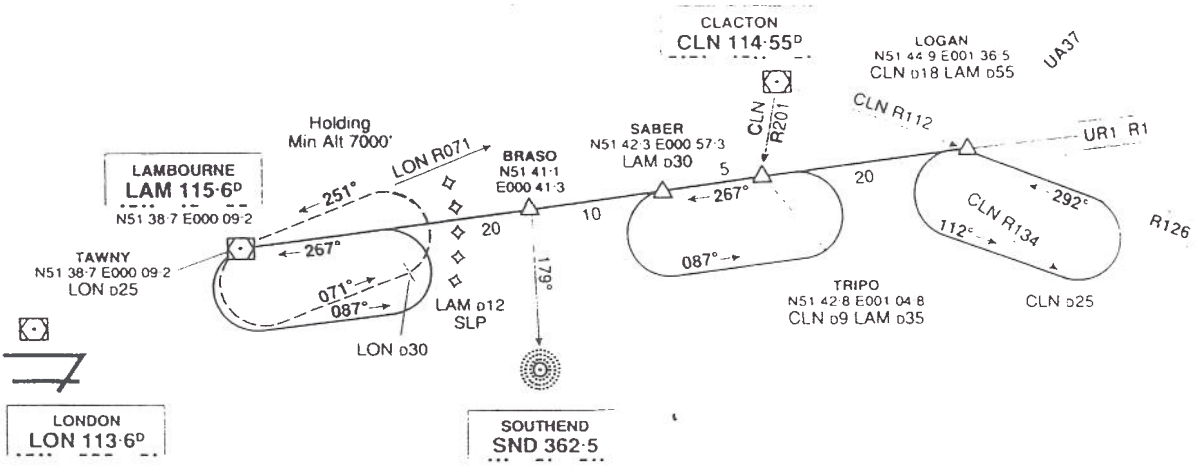
- 1 Standard Routes may be varied at the discretion of ATC.
- 2 Cross SLPs or 3 min before holding facility at 250KT IAS or less
- 3 Due to proximity of Danger Area EG D138 do not fly south of track Abeam CLN VOR until BRASO
- 4 When LAM VOR is out of service inbound aircraft approaching from East will proceed to TAWNY. Designators become TAWNY 3A (TNY 3A)
- 5 As lowest level in LAM/TAWNY holding stacks (7000') is above transition altitude, aircraft will be instructed by ATC to fly at the appropriate flight level.
- 6 The routes shown also apply to aircraft inbound to Northolt.

NOT TO SCALE

TRANSITION LEVEL - ATC

TRANSITION ALT 6000'

**HOLDING SPEEDS**  
 Maximum holding speed in the LTMA up to and including FL140 is 220KT IAS. At FL150 and above standard ICAO holding speeds apply.



**DESCENT PLANNING**  
 Pilots should plan for possible descent clearance as detailed in the table below.  
**ACTUAL DESCENT CLEARANCE WILL BE AS DIRECTED BY ATC.**

STAR DESIGNATOR	VIA	ROUTE	DESCENT PLANNING
LAMBOURNE 3A (LAM 3A)	UA37, UR1/R1 R126	LOGAN - LAM VOR	FL 150 by SABER

CHANGE NEW FORMAT.

502

# STARs via LOREL (east)

# LONDON LUTON

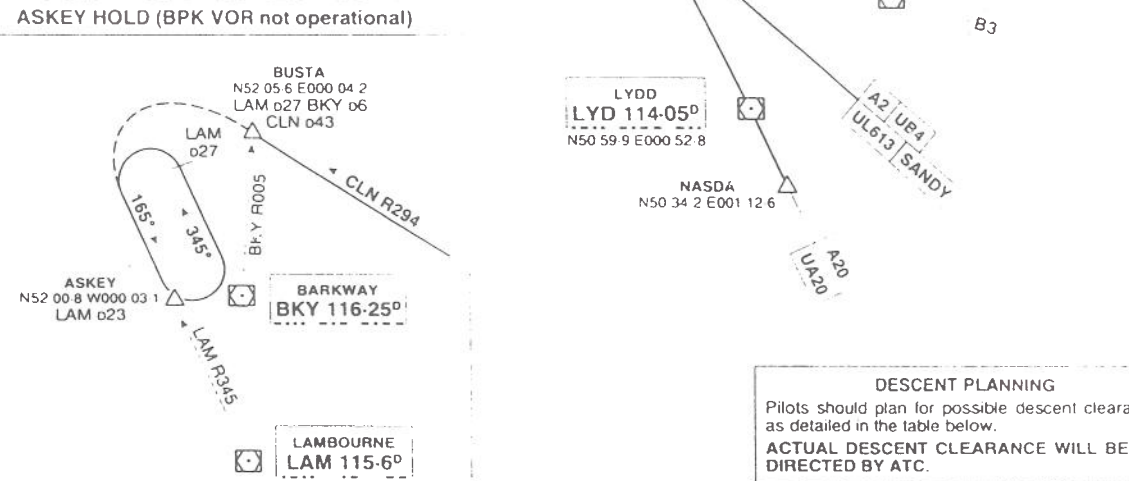
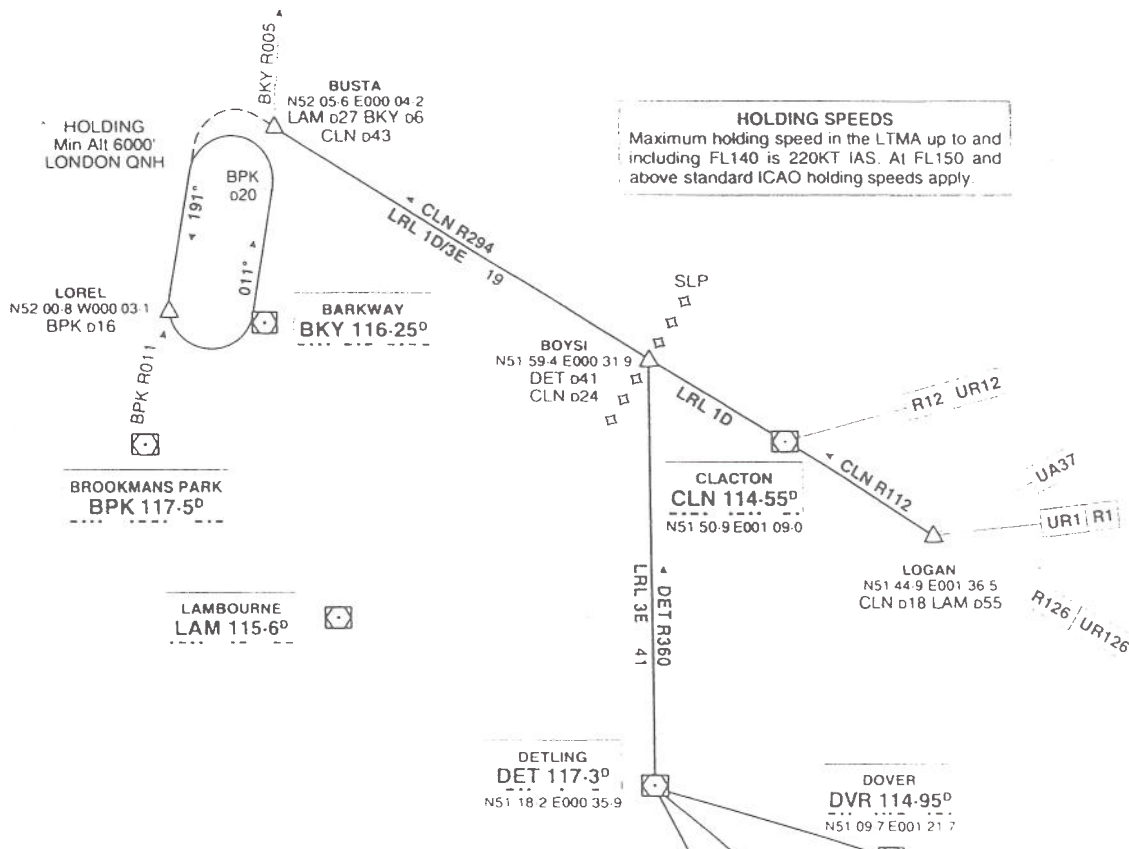
**GENERAL INFORMATION**

- 1 Standard Routes may be varied at ATC discretion.
- 2 Cross SLPs or 3 minutes before holding facility at 250KT IAS or less.
- 3 When **BPK VOR** is out of service routes terminate at **ASKEY** and designators become **ASKEY 1D, 3E**

NOT TO SCALE

TRANSITION LEVEL - ATC

TRANSITION ALT 6000'



STAR DESIGNATOR	VIA	ROUTE	DESCENT PLANNING
LOREL 1D (LRL 1D)	UA37, UR1/R1 UR126/R126, UR12/R12	CLN VOR - BUSTA - LOREL	FL140 by CLN
LOREL 3E (LRL 3E)	UA20/A20, B3, A2,UB4, UL613	DET VOR - BOYSI - BUSTA - LOREL	FL130 by DET

**CHANGE** LOREL 1B STAR WITHDRAWN LOREL 1D ALSO SERVES R12 & UR12 555

## SMF Separations for Encounter L7703ABL of 03/07/97

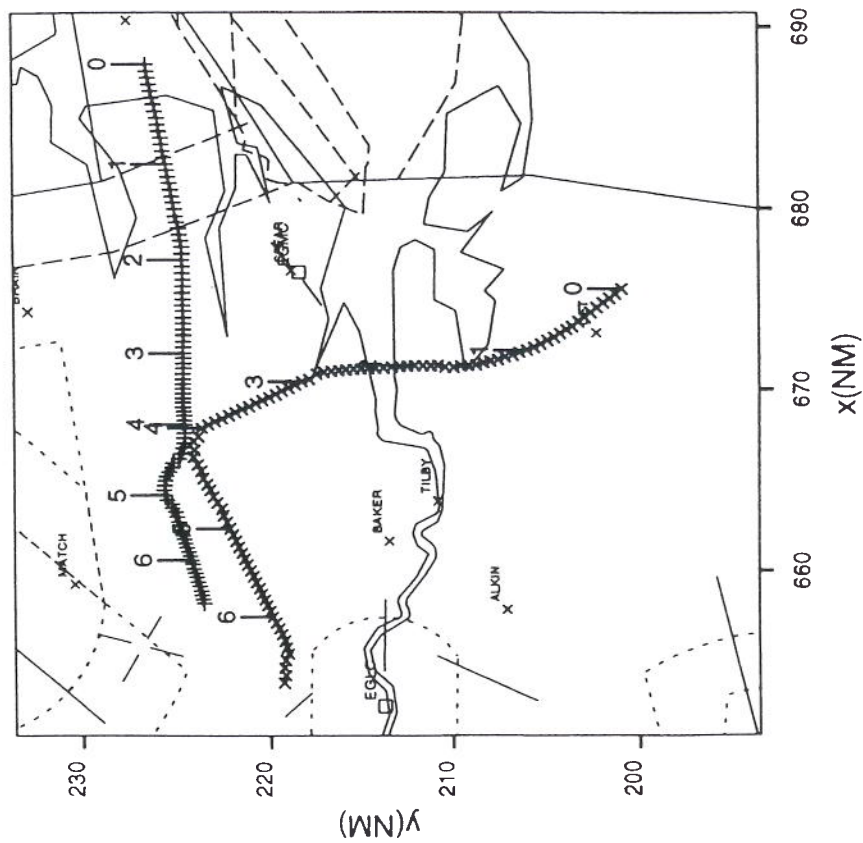
Time	Lateral (Nm)	Vertical (Feet)
14:42:02	12.81	1000
14:42:06	12.29	1000
14:42:10	11.76	1000
14:42:14	11.26	1000
14:42:18	10.74	1100
14:42:22	10.24	1100
14:42:26	9.75	1100
14:42:30	9.24	1200
14:42:34	8.77	1200
14:42:38	8.29	1200
14:42:42	7.81	1200
14:42:46	7.37	1200
14:42:50	6.98	1200
14:42:54	6.52	1200
14:42:58	6.18	1200
14:43:02	5.80	1200
14:43:06	5.43	1000
14:43:10	5.09	900
14:43:14	4.69	700
14:43:18	4.34	600
14:43:22	3.97	500
14:43:26	3.59	400
14:43:30	3.21	400
14:43:34	2.83	300
14:43:38	2.45	300
14:43:42	2.06	300
14:43:46	1.63	400
14:43:50	1.27	400
14:43:54	0.93	100
14:43:58	0.83	100
14:44:02	0.66	200
14:44:06	0.83	200

The separations above are based on predicted data and therefore may not accurately represent the true separations.

SEPARATION MONITORING FUNCTION  
03/07/97 - 14:39:54

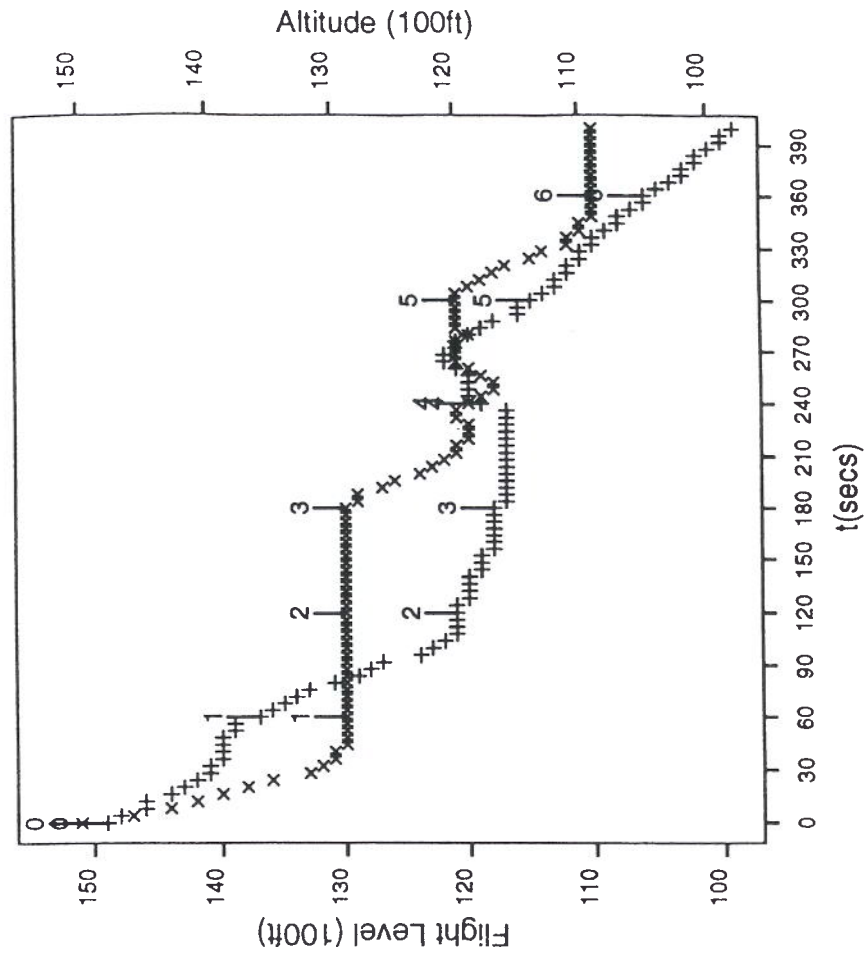
Ref: L7703ABL

HORIZONTAL



Incident occurred  
9 nm NW SPEAR

VERTICAL



N153RA JAL421  
4073 0761  
plot x +

## AIRPROX REPORTING

## APPENDIX 5

[Extract from UK AIP RAC 3-1-24 (13 Feb 97) - not complete]

### 14.1 AIRPROX Reporting - General

14.1.1 An AIRPROX Report should be made whenever a pilot or controller considers that the distance between aircraft as well as their relative positions and speed have been such that the safety of the aircraft involved was or may have been compromised. Where the event involves a UK public transport aircraft over 2,200 kg it must be reported in order to comply with the Air Navigation Order (as amended) and the Air Navigation General Regulations (as amended) in respect of Mandatory Occurrence Reporting (MOR).

### 14.2 AIRPROX in UK Airspace

14.2.1 AIRPROX reports initiated by pilots (known as an AIRPROX (P)) will be handled by the Joint AIRPROX (P) Section (JAS) and AIRPROX initiated by controllers (known as an AIRPROX (C)) will be handled by the CAA's Safety Data unit 3 (SDU 3) under the auspices of the MOR Scheme.

### 14.3 AIRPROX (C) and (P) Reporting Procedures

14.3.1 Investigations are sometimes made difficult because the correct reporting procedure has not been followed. In some cases it has not been possible to trace the other aircraft involved owing to the time taken for the initial details of the occurrence to reach the appropriate handling authority. Pilots and controllers are therefore reminded that the appropriate procedure for reporting an AIRPROX occurrence is as follows. *[not included here, see source document for full details]*

### 14.4 Investigation of AIRPROX (C) and (P)

14.4.1 The primary reason for investigating reports is to determine the cause of an AIRPROX, thereby leading to action to reduce the possibility of collisions. The Joint AIRPROX (P) Working Group (JAWG) comprising civil and military pilots, controllers and operators from diverse aviation backgrounds review each AIRPROX (P) report submitted by a pilot to assess cause, degree of risk and make any safety recommendations as appropriate. AIRPROX (C) reports submitted by controllers follow Mandatory Occurrence Reporting (MOR) processing and investigation. When completed and the occurrence is closed, the whole casefile is submitted to the independent Joint AIRPROX (C) Assessment Panel (JAAP), comprising civil and military pilots and controllers, for a review in the same manner as the JAWG.

14.4.2 When the investigation is complete and a review has been made by the appropriate assessing agency (JAWG or JAAP) the pilots, controllers and their respective operating bodies involved in the AIRPROX will be advised of the findings. Additionally all AIRPROX reports involving civil air transport aircraft are published in book form at regular intervals.

Note: The conclusions reached by the JAWG and the JAAP have no legal significance and the anonymity of individuals and companies involved in an AIRPROX is preserved throughout the investigation and the subsequent publication process.