# Addendum 1

to FDR Group Chairman Factual Report - 10

## **DCA96MA070**

submitted September 9, 1998

### **NATIONAL TRANSPORTATION SAFETY BOARD**

Office of Research and Engineering Washington, D.C. 20594

January 31, 1997

## Flight Data Recorder - 10

#### Addendum to Group Chairman's Factual Report

### (Additional Parameters for Flt. 800 and Prior Landing)

by Dennis R. Grossi

#### A. ACCIDENT

Location: East Moriches, N.Y. Date: July 17, 1996

Time: 2031 local standard time

Aircraft: Trans World Airlines (TWA) Flt. 800. B-747-131. N93119

NTSB Number: DCA96MA070

#### **B. SUMMARY**

On July 17, 1996, about 2031 eastern daylight time, a Boeing 747-131, N93119, operated as Trans World Airlines Flight 800 (TWA800), crashed into the Atlantic Ocean, about 8 miles south of East Moriches, New York, after taking off from John F. Kennedy International Airport (JFK), Jamaica, New York. All 230 people aboard the airplane were killed. The airplane, which was operated under Title 14 Code of Federal Regulations (CFR) Part 121, was bound for Charles De Gaulle International Airport (CDG), Paris France. The flight data recorder (FDR) and cockpit voice recorder (CVR) ended simultaneously, about 13 minutes after takeoff.

The FDR, a Sundstrand Model UFDR (s/n 6707), was recovered from the Atlantic Ocean on July 24, 1996, and transported to the Safety Board's FDR Laboratory in the custody of the Federal Bureau of Investigation (FBI). The FDR arrived at the Safety Board's Laboratory at approximately 3:00 AM, on July 25, 1996. The damaged recorder was disassembled and the magnetic tape recording medium removed for playback. The initial readout of the recorded data was performed on July 25, 1996.

The DFDR Factual Report did not contain all of the data recorded during flight 800, nor any data for the prior landing. The attached tabular listings contain the parameters recorded during flight 800 and not listed in the DFDR Factual Report, and the DFDR data recorded during the landing at JFK. DFDR elapse time was used as the time base for data recorded during the landing prior to flight 800.

Dennis R. Grossi

National Resource Specialist Flight Data Recorders

TWA Fit. 800

B747-131, Takeoff to End of Data Tabular Data No. 2, Date Printed: January 10, 1997

National Transportation Safety Board

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Rt. Eng 1 Eng 2 Eng 3 Eng 4 (1 T/R) 333 Leading Reverser Reverser Edge Rt. Eng 1 Eng 2 Set 4 (discrete) (1-T/R) (1-T/R) STO STO 2 22 979 972 972 973 2 25 STOR 355 355 555 S SOTS 5104 5104 5104 5104 \$104 \$7078 STC. \$ 55 55 3 33 \$10k 366 232 222 3 33 5 55 5 55 5 53 # ## # ## £ £ £ # ## 3 55 3 3 EEE 222 353 Edge Rt. Set 3 (discrete) £ 55 5 55 £ 55 £ £5 ¥ 25 E EE 3 33 3 33 £ £ £ 555 \*\*\* 255 | Leading | Leading | Li | Edge Rt | 5 55 ¥ \$\$ 5 55 5 55 5 55 \* \*\* \* \* \* \* \* \* \* \$ 35 3 5 3 2 3 4.4.4 225 TWA Fit 800, B747-131, Takeoff to End of Data Tabular Data No. 2, Date Printed: January 10, 1997, National Transportation Safety Board Ext 3 33 5 55 3 33 3 33 £ 55 3 \$ 55 5.5.5 3.53 3.83 Fde Lt. 5 # ## # ## 5 ## # ## `ಪ್ರಪತ್ತ ಕ್ಷಮ್ಮ # ## 5 55 5 55 5 55 555 333 | Tiep pos [teading teading training [dog [t] outs] | Set 1 | Outs] | Set 2 | Set 3 | Outs] | Outs | £ ££ 5 55 Ext EE 2 22 # ## 3 33 ¥ 55 X X X ¥ ## # EE × 353 111 £ 55 \$ 55 Ext 5 55 # ## 3 22 3 53 3 33 3 55 £ ££ 3 222 :::: 1× £ 55 5 55 33 \$ \$5 5 55 3 33 3 33 £ £ £ £ £ £ \$ \$5 ž 550 222 Inbd (degrees) Afteron F Position T R intd (degrees) 0 21 13.0 3.7 40.0 7 70 8 3 15 E 2 6 6 Rudder Position (lower) (degrees) - -ALTC | Flevator R Position P Left (FEET) (degrees) ( 7 6.8 2615 2700 2835 2835 2835 2700 2700 2700 35.55 76.75 8 58 356.3 25 25 20 19 09 20:19:14 20:19 15 20 19 73 20 19 32 20:19 11 19 16 . इ. इ. इ. इ. इ. इ. 0.0 26. 5 ζ, 3 6 6 51 92 51 92 20 13 22 22 4: 1:

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TWA Fit 800, B747-131, Takeoff to End of Data Tabular Data No. 2, Date Printed. January. 10, 1997, National Transportation Safety. Board

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TWA Fit 800\_B747-131, Takeoff to End of Data Tabular Data No. 2, Date Printed: January 10, 1997, National Transportation Safety Board

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Ebding Leading Leading Reverser Reverse 8 8 8 STOW STOW 8 8 3 50 25 355 366 383 555 333 S 20 S STOP STOP ST 25 STOW STO STO 6 355 88 8 8 88 ಕ ಕರ | <u>ಕ್ಷಕ್ಷಕ್ಷ</u> Ĕ 33 # ## ¥ \$\$ 5 33 3 33 K KK 3 3 3.55 535 888 555 \$ 55 3 33 # ## £ ££ 5 55 ¥ ±± 3 33 불불 5 5 **EEE** 335 255 ¥ 55 X 55 3 33 3 33 £ ££ 5 55 ¥ 25 7 77 ž ž 333 555 \*\*\* 222 TWA Fit 800, 8747-131, Takeoff to End of Data Tabular Data No. 2, Date Printed: January 10, 1997, National Transportation Safety Board Leading Topics Reserved (415crete) £ £5 35 3 55 # ## 3 33 8 88 3 33 3 3 fatt Tans Tr. 205 Tr. 205 EEE EEE Fdge If ( **5** 55 3 33 X 55 5 55 5 55 E 55 E 55 5 35 3 53 8 8 255 222 225 Leading Edge Lt. F Set 3 (discrete) 5 55 E 55 5 5 # ## 3 33 5 55 £ ££ 5 55 5 55 3 35 35,5 535 555 leading Land Good Control (Control Control Con £ 5£ # 55 5 55 # ## E 55 5 55 5 3 523 3 33 £ 55 555 ESE Set 1 (d'screte) 2 22 E EE & EE, £ žž £ £5 ž 33 E 5 5 5 5 3 55 53,5 Flap pos Trailing DUTBC (degrees) Flap pos Traf fog Inod (degrees) Rudder Alleron F Position Position II (lower) R inbd II (degrees) (degrees) ( 9 7 7 00 7.9 7 6 6 9.3 800 11.4 C 05 2 0 5 25.5 200 0.00 000 0. 0 00 Ø 5,₹ E 61-1 ALTC Elevator Ru Postton Po Left (1 (FEET) (degrees) (d 0 00 \$ 23<del>4</del> 0 0 0 92250 12.12.1 1350 St. 15.25 23 21 37 14043 18**1**2 16605 16605 16605 16470 16335 16335 16200. 15363 5930 05747 15. 17635 166.3 16635 1667 5255 455) 16605 16605 16305 3567 25:21:22 62.12.00 4 4 4 4 6 5 21.16 20:21:26 50:01:00 51:01:00 51:01:00 20:21:24 21.38 :∓ :: 4 ~ 3758 5

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Leading Reverser Reve 232 435 325 \$35 585 233 335 STON STON STON 9012 9012 252 252 555 2012 2012 2012 2012 202 STOR STOR \$10x STORE 999 255 ABE. S104 Hetro: Hetro: 1111 15 to Retigi Retigi Retrot Retro Retrot T T T #### #### Leading Edge Rt Set 1 (discrete) Retrot Retrot Retrot Retrot Retrot 10 to Leading Edge Rt. Set 2 (discrete) TWA Fit. 800, B747-131, Takeoff to End of Data Tabular Data No. 2, Date Printed: January 10, 1997, National Transportation Safety Board Retornal Retrot Retrot Leading Edge Rt. Set 1 (discrete) Retrot Leading Edge Lt. Set 4 Set 4 (discrete) Retnot Retnot Retrot Pett. Tring 200 Leading foge Lt. Set 3 (discrete) Trans Trans Trans \$ 1. \$ 1. \$ 1. Trans Trans Trans Trans 11.375 Trans 200 ans ans Retroit Retroit Retrot Retrot Retrot Retrot Retrot Retrot t t t | Leading | Edge 11 | Set 2 | (discrete) Retrot Retrot Retrot Retrot Retrot ATC Elevator Rudder Atternor Fiap pos Fiap pos Pration Positron Positron Positron Positron Positron Positron Positron Positron (Positron (Appres) (degrees) (degrees) (degrees) 5 Z2 200 m 9075 4 5 2 7000 -5 - 00 m m c **8 8** 8, 0 0 8 6 50 6 66 7 00 2 0 00 0 00 16 24 45 12450 21 24 45 12420 135351 23 24 44 12825 8100 5670 5670 610 540 1620 20.24 41 -118PG 1:370 9585 9180 3243 500 4455 2700 3780 4725 3692 10800 11070 23 44 52 23 44 52 25.25.25 22 24 34 28, 35 23:24:29 20.24:30 22 24 37 3.0 3.5 27.24.25 20:24.25 22.22 25 S 20.24.2 2 2 2 ± 5 €

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ding Leading Beverser Reverser Reverser Reverser Reverser 28 Rt. 2004 L. 1 Lng 2 Eng 3 Eng 4 Lng 1 Screete) (Giscrete) (G \$ 3<u>\$</u> \$10 \$10 \$10 \$10 25 S 1012 1012 1012 1013 510 2002 555 S S S S 505 STOR 200 2572 2599 2012 2012 2525 2529 \$10 \$70 \$70 \$4 255 256 256 STOK STOK 25 310 36 510 510 510 510 3 33 2 55 Š 5.66 8 8 88 5 5 5 5 5 5 10. 222 2012 2012 255 255 255 2022 55 6.5 17.5 Ĉ 55 5 2022 2022 Petro: 1111 fetra: Retrot Setret Setret Petrot i i i i Fetra Retrot Retrict Retrict Retrot Retrot SE SE Leading Edge Rt. Set 2 Set 2 (discrete) Retros Retrot ttt Retrot Leading Edge Rt. Set : Retrot Retrot Retrot Retrot Retrit 1000 Leading Leading Le Edge Lt. Edge Lt. Edge Lt. Set 3 Set 3 Set 4 Set 4 Set 3 (discrete) (discrete) (c Retrot Retrot Retrot Retrot Retrot Retrot Retrot 2001 200 2087 2087 2087 7-805 7-805 7-805 Trans Trans Trans rans Trans Trans 10805 7875 7.805 7.805 , **8**rs 3.18.1 Retrati Retrot Fetrot Retrot Retrot Retrot Retrot Retrot Hilton Flab pos Flab pos leading leading Post: on Train granting Grape Lt. Edge Lt. flage Lt. flab incd flab flab Set 2 Set 2 (degrees) (degrees) (degrees) (degrees) (descrete) # 10 10 F Retrot Retrot Retrot Prtret Retrot Retrot Retrot Retrot Retrot 000000 5-22 3-32 19 11 5 4 80.8 555 000 80 RO 000 80. #/c 6 ALTC Elevator Rudder Postrica Postton Left (lower) (FEET) (degrees) 6. 6.0 ب ب مه E 80 6 66 000 - 3 50 0 -0.3 0.0 38, 5 25.53 26.59 26.59 26.59 6615 6615 6615 66.55 64.80 6345 6210 6345 Jesus Jesus Jesus 6615 6345 6345 6480 13.6 18 18 E 05 62 27 36 33 27 36 33 29 3B 20 29 41 20 29 42 13 62 ₹ ₹. 22.53 20:23.37 20:23.39 3 5. 4 £ \$ ÷ \$ Ş -5 52 E 3458 3 20 29 52 29 \$2 5 91 × 22 38

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TWA Fit. 800, B747-131, Takeoff to End of Data Tabular Data No. 2. Date Printed: January 10, 1997, National Transportation Safety Board

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TWA Fit. 800, B747-131, Takeoff to End of Data Tabular Data No. 2, Date Printed: January 10, 1997, National Transportation Safety Board

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ALTC Eleveron Rudder Afteron Flap pos Telating Leading 270 2012 2000 2000 553 \$100 E 35 955 555 252 2012 POTS STON 200 252 252 90T2 90T2 335 200 2012 2012 2018 ST0 STORY 222 STON STON 200 200 Retrot Retrot Retrot Retro tri tri Retrin Retra TTT TTT Retrot Retrot Petro france # # # # # # # # A Printer tut tut ttt Retra Retro TVVA Fit. 800, B747-131, Takeoff to End of Data Tabular Data No. 2, Date Printed: January 10, 1997, National Transportation Safety Board A T T T Met da 1000 E Retrot Retrot A COLOR Retrat Retrat retra gerra Retrot Retrot Retrot Retrot Retrot Trens Trens rans Rans Trans Trans Trans Trans Trans Trans Trans Trans 555 Retrot Retron Retrot ttt ttt 444 Retrot Retrict 23.7 23.7 23.7 13.0 2 22 6 00 6 00 0 00 0 00 8 80 80 80 KG 9.0 7.0 0 0 0 0.0 4.0 20:31:04 -18495 1963s 1917a 17010 17145 16605 17550 17685 17820 18765 18765 18900 19035 19172 16740 1809C 18225 18360 18495 23.11.2 70.33.07 00:11:02 20.31.05 30:57 30.55 20 31 01 33:56 35.5 2 2

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TWA FIt. 800

B747-131, Landing At JFK TABJFK1, Created: January 31, 1997

National Transportatin Safety Board

FDR Lapse	HSC ATE.	1.85	Pitch Angle	Elevator Position Right	Hag. Heading	Roll Angle	Rudder Position	Angle of Attack	EPR Engine 1	EPR Engine 2	EPR Engine 3	EPQ Engine 4	Long Acce)	Vert. Acce	WHE	Pitch Tr:⊪ Stat
Time (sec.)	(FEET)	(KHOTS)	(degrees)	(degrees)	(degrees)	(deprees)	(upper) (degrees)	(degrees)	(ratio)	(ratio)	(ratio)	(ratio)	(\$)	(g) [		Pos (degnees)
_ 7 3	612.00 632.00	145	1.4	9.0 -5.3	308 306	·1 ·1	0.18 0.00 0.09 0.18	;	1 52	1.04	ा.ह्य	1 67	0.05 0.05 0.05 0.05	0 38 0 98 0 99 0 99 1 00 1 01 1 01	<u> </u>	
1 0	622.00	141 140	1.8	0.0	306	-1	0.18 0.27	7	1 32 1 32	1.04 1.04	1.04	1 07 2 07	0 05 0 05 0 05 0 06 0 06	1.02	off	ĩ
2 0	617.00 607.00	141	2.2	0.1 0.0	306 306	.2	0.27 0.36 0.54	? ? ? ?	1 32	1 04	1 63	1 07	0.05 0.05 0.05 0.05 0.06 0.06 0.06 0.06	1 03 1 03 1 04 1 04	011	6
3.0	662.00	141 142	2.9	0.0	305	- 2	0.54 0.45 0.36	7	1.02 1.03	1.04 1.04	1.04 1.04	1.07 1.08	C 96 C 96 C 96 C 97	1.04 1.05 1.05 1.05	0*1	6
4.0	592.00 587.00	142	2.9 2.9	:1.5 :1.7	305 305	.3 .2	0.54 0.63 0.90	7 7 7	1.04	1.05	1.05	1.08	0.07 0.07 0.07 0.07 0.07 0.07	1.06 1.06 1.06 1.05	٥٠٠	6 6
5.0	577.00	134 141	2,5	-1.6	305	.3	0.99 0.99 0.99	7 7 6	1.04	1.05 1.05	1.05 1.05	1 09 1 09	0.07	1.03 1.02 1.05 0.99	err Err	6
5.0	\$72,00 567.00	141	2.5 2.2	).C	305 305	.25	0.99 1.08 1.08	7 7 7	1.04	1.05	1.05	1 09	0 06 0 06 0 06 0 06 0 06 0 06 0 06	0.99 0.98 0.97 0.98 0.98	crr	6
7.0	557.00	141 141	2.5	-0.5	305	-1	1.08 1.08 0.99	7 7 7	1.04	1.05	1 č5 1.05	1 09 1 09	0.06 0.06 0.06	0.98 0.98 0.99 1.01	577 577	
8.0	552.0℃ 547.0℃	142	2.5 2.2	-1.5 -2.1	305 305	:	0.72 0.54 0.72	7 7 7	: 04	1.05	1.CS	1.09	0.06 0.07 0.06 0.06	1.02 1.02 1.03 1.02	grr	6
9.0	537.∞	142 134	2.2	.2.2	305	-1	0.72 0.72 0.72	7 7 6	1.04 1.04	1.05 1.05	1.05 1.05	1 . 09 1 . 09	55 55 55 55 55 55 55 55 55 55 55 55 55	1.02 1.01 1.00 0.99 0.98 0.98 0.98	31:	6
10.0	527.00 522.00	142	1.8 1.4	·2.1 ·1.7	305 305	-1 0	0.90 0.90 0.99	6 6	1.04	1.05	1.05	1.05	0.06 0.06 0.05	0.98 0.98 0.98	orr	6
11.0	517.00	142 142	1.1	-1.3	305	o	0,99 1,08 1,08	6 6 6	1.04 1.04	1.05 1.05	1.05 1.05	1.08 1.08	0.05 0.05 0.05 0.05 0.05	0.97 0.97 0.97 0.97 0.97 0.98	orr orr	5 5
12.0	507.00 497.00	142	1.1	36.9	305 305	0	0.9C 6.9C 0.72	- 6 6 6	1.04	1 05	1 25.	1 29	0.05 0.05 0.05 0.05	2.98 2.98 5.98 5.98	orr	5
13.0	487.00	142 142	1.1	-0.3	305	0	0 . 72 0 . 81 0 . 90	6 6 6	1 04 1 04	1.05 1.05	1 05 1 05	1 39 1 36	0.05 0.05 0.05 0.05 0.06	5.96 5.96 5.96 5.96 5.96 5.96 5.98 5.98	orr	5
14.0	477.00 467.00	136	1.4 1.4	0.4	305 305	0	1.08 1.08 0.99	] ] ]	1.04	ाङ्	1.35	1 38	0.06 0.06 0.06	1 00	718	£
15.0	457.00	143 144	1.8	-0.5 -0.4	305	1	0 . 99 0 . 90 0 . 90	7 7 7 7	1,04 1:04	1.05 1.05	1 05 1 05	1 26	0.05 0.06 0.06 0.06 0.06 0.06 0.06 0.06	1.03 1.03 1.04 1.03 1.03	Grs Off	6
16.0	442.00 437.00	143	2 2 2.2	-0.3	305 305	1	0.72 0.54 0.54	) ) 6	1.04	1.05	1.05	1 08	D.06 0.06 0.06	1.02 1.02 1.03 1.04 1.03	011	6
17.0	432.90	144 142	2.2	·0.7 ·1.3	305	0	0.36 0.27 0.18	6 7 7	1.04 1.04	1 05 1 05	1.05 1.05	1 08 1 08	0.06 0.06 0.05	1 03 1 02 1 02	51,	£
18.0	412.00	142	2.2	1.3	305 305	0	0.27 0.36 0.45	) 8 7	1 04	1 05	1.64	1 08	0 05 0 05 0 05 0 07	1 00 1 00 1 02 1 03	211	6
19 0	402.00	134 141	2 2 2.2	-1 6 -2.1	305	0 1	0.45 0.54 0.54	7 7	1 04 1 04	1 05 1 05	: 05 : 05	1 08 1 08	0.07 0.07 0.06 0.06 0.06 0.06 0.06	1 04 1 07 1 05 1 03 1 01	511	5 5
20 0	392 00 387 00	142	1.4	-2 1	306	1	0.54 0.54 0.54	7 7 6	1 04	1 05	: 05	1 08	0.06 0.06 0.06	1 01 1 00 0 99 0 98 0 98	stt	6
21.0	377.00	142 144	1.1 8.7	1.5	306 306	1	0.54 0.54 0.54	6 6	1 04	1 05 1 04	- 1.64 1.64	1 08 1 58	0 04 0 05 0 05 0 05 0 05	0.98 0.97 0.98 0.98 0.98	211 E11	5
22 0	367 00	144	0.7	a . c	306	a	0.54 0.54 0.54	6 6 7	1 03	1 54	1 04	1 CB	0.05 0.05 0.05 0.05 0.06	0.98 0.98 0.98 1.00 1.00	C*f	5
23.0	357.00 352.00	144 136	1.4	₫.c 2.3	306	0	0.54 0.72 0.81	7	1 03	1 04	1.04	1.05	0 06 0 06 0 06 0 06	1.04; 1.05; 1.05	571	· · · · · · · · · · · · · · · · · · ·
24.0	342 00	144	1.8	-i.c	306	-1	0.72 0.63 0.90	6 6	1.03	; 64	1 04	1 06	0 06 0 06 0 06 0 06 0 05 0 06 0 06	1 05 1 04 1 03 1 03 1 03	:"	· ·

FOR Lapse Time	HSL ATE.	TAS	Pitch Angle	Elevator Position Right	Hag Heading	Roll	Rudder Position	Angle of Attack	EPR Engine 1	EMR Engine 2	EPR Engine 3	EMR Engline 4	Long. Acce	Vert.	V:#	Fitch -1m Stab
(sec.)	(FEET)	(KUNOTS)	(degrees)	(degrees)	(degrees)	(degrees)	(upper) (degrees)	(degrees)	(ratio)	(ratio)	(ret10)	(ratio)	(g)	(g)		Pos (degrees)
25.0	332.00 327.00	144	1.8 1.8	:1.0	306 306	0	0 99 1 26 1 26	6 6 6	1.03	1.04	1.04 1.34	1 38 1 36	0.05 0.05 0.05 0.05	1.03 1.03 1.02 1.01	orr orr	7
26.0	317.00	144	1.8	-1.3	336	0	1.26 1.35	6	1.03	1.04	1.04	1.08	0.05 0.05	1.01 1.01 1.00 1.00	orr	7
27.C	307.00 302.00	144 144	1:4 1:4	-1.5 0.5	306 306	0	1.17 1.08 0.81 0.81	5 5 6	1.03 1.03	1.04 1.04	1.04 1.03	1 08 1 08	0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05	1.00 0.98 0.98 0.99 0.99	orr	7 b
28.0	292 00	142	1.4	0.0	306	0	0.63	6	1.03	1,04	1 03	1 08	0.04 0.05 0.05	0.98 0.98 0.98 0.98 0.98	Dff	
29.0	282 00 272 00	142 142	1 8 2.5	0.0	306 306	· 1 · 2	0.00 0.00 0.00	7 7 7 8	1.03 1.03	: 04 :.04	1 . 03 1 . 03	1.08	0.05 0.05 0.06 0.06 0.06	1.00 1.03 1.04	0ff 0ff	;
38.6	262.60	142	2.9	-1.3	306	- 2	0.18 0.18	8	1.03	ा स्व	1 03	1.07	0.07	1.07 1.08 1.11 1.12	077	7
31.0	252.00 247.00	146 144	3.2 2.9	-2.5 -3.1	306 306	. 3 : - 2	C .09 C .27 C .72 C .54	9 B 6	1.03	1 64 1 64	1 03 1 03	1.07	0.08 0.67 0.08 0.07 0.07 0.07	1.12 1.11 1.11 1.13 1.13	0ff	;
32.0	247.00	144	2.2	-3.3	306	-1	1.17 1.53	£ 6	1 03	1.04	1 03	1.07	5. 65 0. 65 0. 64	1.08	011	?
33.0	242.00 222.00	144 143	1.4 1.8	0.4	306 309	0	2.07 2.07 2.07 2.07	5 6 6	1.03	1.04 1.04	1.03 1.03	1.07	0.05 0.05 0.04 0.03 0.04 0.04 0.05 0.05 0.05 0.05	0.96 0.94 0.94 0.93 0.95 0.95	orr	:
34.0	222.00	142	1.8	-C.2	306	٥	1.44 0.72	6	1.03	1 34	1 23	1,07	0.04 0.04 0.05	0 98 0 98 0 99	orr:	7
35 0	222.03 212.03	142 143	2.2 2.5	-0.2 -2.2	306 306	1	0.00 0.00 5.18	7 6 8	1.03 1.03	1 34 1 34	1 03 1 03	1.06	0.05 0.05 0.05	1.00 1.03	011	
36.0	202.00	144	2.5	-2.4	306	-1	0.36 0.27 0.18	6	1 03	: 04	1 03	1 07	0.06 0.05 0.06 0.05 0.05 0.04	1.04 1.05 1.04	0ff 0ff	7
37.0	197.00 192.00	142	2 2 1 8	-1.6 -0.5	306	-1	0.54 0.90 1.08	7	1.03	1.03 1.04	1.03	1.07	0.04 0.04 0.04	0.97 0.98 0.98	orr	
38.0	172.00	142 142	1.8	-1.1	309	-1	0.90 0.54	6 5 7 8	1.03	1.03	1.03	1.67	0.04 0.05 0.04 0.04 0.05 0.05 0.05	1.03 0.99 0.97 0.98 0.99 0.99 0.99 0.99 1.02	orr orr	7
39.3	172.00 162.00	144	1.8	0.5	306 306	1	0.36 0.54 0.54 0.72	6 6 7	1.03	1.53	1.03	1.07	0.05 0.05 0.05	7 75	877	7
40.0	162.00	142 142	2.2	-1 5	306	- 1	0.72 0.81 0.72	7 7 6 6	1.02	1 03	1 . 03 1 . 02	1.07 1.07	0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05	1.02 1.03 1.02 1.03 1.03 1.04 1.04	011	,
41.0	152.00 142.00	142	2.2	1.5 0.2	306 306	1 3	1 26 1 53 1 71 1 71	6 6 6	1 02	: 33	1 02	1 07	3333	0.99 0.99 0.98 0.98 0.98 0.98	off	;
42 0	137 00	147 140	2.2	.0.3	305	3	1.08 0.72	7 7	1 02 1 02	1 03 1 03	1.02 1.02	1.07 1.07	0.05	. 07	0ff 0ff	
43.0	122.00 117.00	140	2.5 2.5	0.0	308 305	0	0.63 0.72 0.54 0.18	8 7 7	1.02	1.03	1.02	1.07	0.05 0.05 0.06 0.06 0.05 0.05	01 02 06 06 05	011	Ž
44.0	107,00	142 140	2.5	-0.4	305	- 1	0.00	7	1.02	1.03	1.02	1.07		1.02	011	
45.0	102.00 92.00	142	2.5 2.9	0.9 1.1	305 305	1	0.45 0.54 0.63	7	1.02	1.03	1 02	1.07	0.05 0.05 0.06 0.06 0.06	1.02 1.02 1.02 1.02 1.04 1.04 1.05	Gff	-
46.0	87 00	140 140	2.9	0.5	305	1	0.72 0.54 0.72	7 7 7	1.02	1.53	1.02	1.07	0.06 0.06	1 05 1 04 1 04	077°	··- · -
47.0	77.00 72.00	140	2.9	0 0	305 308	0	1.26 1.08 0.45	8. 7. 7.	1 02	1 03	1 92	1 07	0.06 0.06 0.06 0.06 0.06 0.07 0.06 0.06	04 04 03 04 1 04 1 04 1 02 1 02 1 02	0111	;
48.0	62 00	138 142	2.9	2.5	305	1	0.54 1.17 1.53	7 7 8	1 02	1 03	1 32 1 1 32	1 07	0 05 0 06 0 06 0 06 0 06	1 02 1 02 1 01 1 03 1 03	011	7
49.0	57.00 52.00	140	3 2 3.6	2 7 4.1	305 306	0	1 .62 1 .53	7	1.02	1 63	1 03	1.07	3.05 3.05 3.06 3.07	1.01	211	

FDR Lapse	PSC ATE.	185	Pitch Angle	Elevator Position	Hag Heading	Roll	Rudder Position	Angle of Attack	EPR Engine 1	EMR Engine 2	EPR Engine 3	EPR Engine 4	Long. Accel	Vert Accel	W.	Pitch (Trim Stab
Time (sec.)	(FEET)	(KMOTS)	(degrees)	Right (degrees)	(degrees)	(degrees)	(upper) (degrees)			(ratio)	(natio)	(ratio)	(g)	(9)		(Pos (degrees)
50.0	47.00	139 138	3.6	2.0	306	:	2.52 2.61 4.32 7.92	7 7 7	1.02	1.03 1.03	1.03	1.07 1.07	0 36 0 06 0 06 0 07 0 06 0 07	1.04 1.04 1.05 1.06 1.06	3(, 3(,	,
51.0	42.00 37.00	134	4.0	6.3 3.3	307 307	1 0	9.27	7	1.02	1 63	1 03	1 07	0.07 0.06 0.07	1.04	orr	7
52.0	37.00	136 134	5.0	4.6	311	0	6.75 -0.63 -1.53 0.18 0.99	8 7 8 €	1.02 1.02	1.63 1.63	1.03 1.03	1 27 1 37	0 08 0 08 0 09 0 09 0 09 0 09 0 09	1.02 1.06 1.11 1.08 1.09 1.05 1.05	0ff 0ff	, , , , , , , , , , , , , , , , , , , ,
53.0	37 30 32 00	134	5.0 5.0	7.1 6.5	309 309	-1 -1	0.90 0.72	7		1 01	1.01	1.04	80 0 80 0 80 0 70 0	1.03	011	<del></del>
54.0	27.00	132 133	5.4	3.6	109	-1	0.72 0.90 1.35 1.35	6 7 7	1.00	1.01 1.01	1.01	1 03 1 03	0.06 0.06 0.06 0.06	1.01 1.03 1.05 1.03 1.02 1.03	orr orr	,
55.0	27.00 22.00	132	5. <b>4</b> 5.0	6.9 4.9	309 308	·1 ·1	1 17 1 17 1 26	7	1.00	1.01	1 31	1 03	0.06 0.06	1.04	orr	,
56.0	22.00	132 130	4.7	5.0	307	-1	1 17 0.81 0.54	) ) 1	1 00 1 00	1.01 1.01	1.01 1.01	1.03	0.07 0.06 0.06 0.06 0.06 0.06 0.06 0.06	1.02 1.04 1.05 1.03 1.03	off off	7
57.0	22.00 27.00	124	4.3 4.3	5.6	307 307	0	4.43 5.49 5.40	7 6 6	1.01	1.01	1.01	1 03	0.05 0.04 0.03 0.00 0.01	1.06 1.00 1.00 1.01 0.99 0.96 0.99	011	ī
58.0	22.00	128 129	4.3	5.3 5.1	307	3	6.21 7.65 7.83	6 6	1.01	1. <b>€</b> 1 1. <b>€</b> 1	1.01 1.01	1 32	0.01 0.00 0.02 0.00 0.00	0.96 0.99 1.02	orr orr	
59.C	27 00 27 00	124	4.3	0.4	308 309	3 4	7 83 7 20 2 70	5 6 6;	1.00	: c1	1 01	1.02	0 00 0 00 0 02 0 01 0 01 0 00	1.07 1.05 1.06 1.00	<b>3</b> f*	,
60.0	27 00	124 124	4.3	-0.8 2.9	310	4	2.88 3.60 6.93	7 6 7	1.01	1.01 1 02	1.01	1.05	3 61	0.96 0.97 0.97	017 577	7
61.0	22.00 22.00	124	4 3	4.3	31¢	2	6.93 11.07 11.97	6 5 5	1.01	1.03	1.01	1.06	0.02 0.01 0.02 0.00 0.02 0.01	1 01 0 96 0 97 0 97 0 98 1 01 1 06 1 08 1 09	orr	,
62.0	22.00	118 120	5 0	2.3	1110	. 1	10.80 4.50 6.66	8 7 7	1.02	1.83	1.51	1.27	0.03	1.04 1.00 1.01 1.00	orr orr	7
63.C	22.00 22.00	120	5.0	6.8	311	-1	12.69 14.94 12.60	5 7 5	1,15	: 64	1 01	1 17	0.07 0.07 0.06 0.07 0.06 0.07 0.06	1.00 1.03 1.00 0.99	011	,
64.c	22.00	110 112	5.0 5.4	7.4 3.2	311 313	. 2	13.25 7.38 3.60	5! 5 6	1 19 1 23	04 04	1.01	1.22	0.07 0.05 0.07 0.07 0.07	1.01 1.06 1.08 1.05 0.99 0.97	911	;
65 C	17 00	110	5.0	9.2	312	· 1	2.52 5.04	6 51	1.24	1.05	1.01	1.25	0 04 0 04 0 04	1.07:	24.	7
66.0	17.00 17.00	106 105	4.7 5.0	11.1 11.4	312 311	0	6.12 11.61 13.05 13.77	6 5 7	1.25 1.25	1.06	1.01	1.26	0.05 0.05 0.07 0.07 0.04 0.04 0.04 0.03 0.03 0.03	1.02 1.01 1.00 1.06 1.02 0.98 1.03 1.02	orr	7
67.0	22.00	110	5.4	9.7	311	1	14.76 17.01	7	1.26	1.67	1.01	1.27	0 03 0 03 0 02	1 03	011	7
68.0	17.00 17.00	104 100	5. B 5. B	8.9 7.3	31C 31C	CO	16.56 14.67 14.31 14.22	7 5 6	1 25 1.26	1 (9) 1.11	1 51 1 51	1 27 1 26	0 03 0 04 0 03 0 01 0 02 0 02 0 02	0.96 0.96 1.03 1.03	orr orr	?
69.0	17.00	101	5.0	10.7	310	1	17.10 18.45	8	1.23	1.11	1.51	1 75	0.02	1.01 0.99 1.02 1.06	orr	<del>y</del>
70.0	22.00 17.00	101	4 3	11.4 11.3	310 310	1	16.02 16.74 16.83 17.64	6 5 5 5	1.22 1.21	1.12	1 31	1 23 1 24	D. 01 0. 02 0. 03 0. 02 0. 04 0. 04 0. 04 0. 04 0. 05 0. 03	1.06 0.98 1.00 1.04 1.01	3ff 3ff	7
71.0	17.00	93	3.2	11.€	311	1	25 .25 25 .83	3 3	1.21	1 12	1 31	1 24.	0.04 0.04 0.05	0.96 1.01 1.03	011	7
72.0	22 . 00 22 . 00	90 96	2.9 1.8	8.6	311 311	0	25.38 25.38 25.29	3 4	1 . 21 1 . 21	1 12 1 13	: 8:	1 24 1 24		1 02   1 05 1 02 2 97 2 98	orr ur	,
73.0	22 00	92	0.4	8.7	311	0	26.51 26.46 26.82	3	1 21	1 13	. c:	1 23	0 05 0 04 0 05 0 05 0 06 0 06 0 06 0 08 0 10 0 09	5 92 1 03 1 02 0 99 1 03	crr	,
74.0	17 CO 22 OO	92 88	0.7	5 <b>8</b> -0.21	312. 312	·1 ·1	21 33 20 43	? ?	1 21 1 17	1 13 1 13	18	1 74	0 10 0 09 0 10	1 01 1 00,	 	

FDR Lapse Time	PSU ATE.	ZAT	Pitch Angle	Elevator Position Right	Mag. Heading	Roll Angle	Rudder Position	Angle of Attack	EPR Engine 1	EPR Engine 2	EPR Engine 3	EPR Engine 4	Long. Accel	Vert Accel.	yar I	Pitch Irle Stab
(sec )	(FEET)	(KMOTS)	(degrees)	(dégrees)	(degrees)	(degrees)	(upper) (degrees)	(degrees)	(rat10)	(ratio)	(rat10)	(ratio)	(g)	(g)		Pos (degrees)
						:	19.71 14.64		Į.				C.13 -0.14 -0.16	1.04 1.01 0.99		
75.9	22.00	90	-0.7	-4.8	312	-1	1. <b>08</b> 1.17	2	1.13	1.13	1.01	1.16	0.16 0.14 0.16 0.13		011	?
76.0	22.00 22.00	86 82	-1.1	-7.6 -7.3	312 312	- 1	54.36 7.02	1 0		1.12	1.01 1.01	1 15	-0 13 -0 14 -0 15	1 777	017 577	,
							10.53 12.96	- <u>1</u>					0 14 C 15	1.00 0.99 1.00 1.00		,
77.0	22.00	78	-1.1	.7.6	311	0	8.73 4.95	0   1	1.09	1.12	1.01	1.14	0 14 0 15 0 18 0 20 0 21 0 18	1 00 1 03 1 01	σι·	,
78.0	22.00 27 00	77	1:1	-7.6 -7.5	311 311	-1	9.59 10.26 3.96 0.54	1 0 1	1.08	1.12	1.01	I 13 1 13	-0 25 0 22 -0 23	0 97 1 81 1 01 1 01	err	;
79.0	27.00	74	-1.1	-12.1	312	-1	1.71 0.18	0	1 07	1:1	i ei	1 13	0 21 0 19 0 20	1 03 1.01 1 00 1.00 1.00	3ff 3ff	1
80.0	22.00 22.00	68	-1.1 -1.1	-12.6 -12.7	312 312	:1	-0.90 -2.25 -0.27	- 1 0 1	1.07	1,11 1,11	1. ¢1 1. ¢1	1 15	0 18 0 17 0 15 0 14	0.99 0.98 1.03	200	7
81.0	27.00	70 <b>66</b>	-1.1	-11.8	312	-1	2.16 3.69 3.78	·1 ·1 ·3	1.07	1.11	1.01	1.13 1.13	0 20 0 22 0 23 0 23 0 21 0 17 0 20 0 20 0 14 0 12 0 19 0 19	1.03 0.99 1.63 1.01 0.98	err err	7
82.0	27.00 27.00	61	41.1 -1.1	-11.9 -10.4	311 311	:1	3,42 3,06 2,88	D -2 -1	1.04 1.02	1.09	1.01	1.11	0.27 0.29 0.29 0.26 0.22 0.19 0.16	1.86 1.60 2.97 1.04	crr	7 7
D. 4	22.00	(1)					6.48						0 22 0 19 0 16	1.00 1.02 1.01		
83.0	22.00	90 62	1.1	6.9	311	1	7.74 5.49	- 2	1 01	1.05	1. C1 1. C1	: C9 : 10	0 19 0 25 0 21	1 00	31,	
84.0	27.00 27.00	57	:1.1	4.5 -3.2	311 311	-1	3.78 3.24 0.36 -0.54	- 2 - 2 - 2 - 1	1.01	1.04	1.01	1.09	0 23 0 21 0 22 0 23 0 25 0 27 0 27 0 27	1.02 0.99 1.00 1.01 1.00 0.99 1.02	211	7
85.0	27.00	54 52	-1.1	-3 5	311	-1	-0.72 -0.45	-1 -2	1.00	1.03	1.01	1.09	0.27 0.27 0.27	1.02 1.03 1.00	err	7
86.0	27.00 27.00	49	1.1	-4.6 -4.6	311 311	:1	0.18 0.63 1.17	-5 -6 -6	1.01	1.02	1.01	1.09	0.30 0.32 0.33 0.29 0.27 0.27	1 02 1 04 1 01	orr	7
87.¢	27 . 00	46 44	-1.1	-4.5	311	-1	1.17 1.17 1.26	- 7 - 8 - 8	1 01 1 01	1 02 1.02	1.01	1.07 1.06	0.27 0.27 0.25 0.25 0.25	1.02 0.99 1.02 1.00 0.98	011	7
88.0	27.30 27.50	43	:1.1 :1.1	4.3	311 311	-1 -1	1.08 1.08 1.35	-8 -6 -5	1.01	1.02	1.01	1.05	0 26 0 26 0 26 0 25	0.98 1.03 1.00 1.00 1.01 1.00	orr	7
89.0	22 00	43 43	-1.1	3.6	311	-1	1.62	-5	1.01	1.01	1.0	1.05	0 27 0 26 0 26 0 26 0 26 0 25 0 27 0 27 0 23 0 23 0 23 0 21 0 21 0 20 0 18	1 50 1 50 1 60 1 00	err err	,
90.0	22 00 22 00	43	-1.1:	-2.8 2.3	310	: i	2.25 2.41!	.6	1 00	1 0:	1 61	1 04	0.21 0.21 0.20	1 01	orr	,
-	22,00		1_1,	2.3	310	-1	2.52 2.70	10					0.18 0.18	1 00 1 05 1 02		······································
91.0	22.00	43 43	1.1	·2.5	309	1	2.70 2.43 2.25	-10 11 -11	1 01	1.01	1.61	1.04;	C 16 C 16 O 16 O 17	1 01 1 00 1 00 1 01 1 00	Cff	,
92.0	27.00 27.00	43	:I.I :1:1	1.8	308 308	·1	1.89 1.80	12	1 51	1.81	1.61	1.03	0.17 0.17 0.17	1.01	CFF	7,
93.0	27.00	42 42	-0.7	-1.6	306	-1	1.80 2.07 2.70 3.60 3.96	14 14 17 18	1 01 1 01	1 01 1 01	1 . C1	1 C3 1 C3	0 17 0 16 0 14 0 12	1.00 1.01 1.01	311	7
94.0	32.0C 37.0C	42	·1.1 1.1	1.3	304 302	·1 ·1	4.41 4.50 4.50	19	1 01	1 01	1.01	1 03	0 36 0 35 0 34 0 33	1.00 0.99 1.01 1.02 1.00	24.	7
95 0	37.00	42 42	-1.1	0.9	302	·1	4 50 4 50 4 41 4 41	73 27	1 01 1 01	1.01	1.01	1.05 1.05	0 32 0 32 0 32 0 31	1 01 1 01 1 01 1 01	500	7
<del>36</del> 0	32 CC 27.CC	42	·1.1 ·1.1	0.9	297 293	-1	4 . 50 4 . 32	- 28 - 28 - 29	1 01	1.01	1.01	1.03	0 32 0 32 0 33 0 34 0 35	1 01 1 01 1 02 1 02 1 00	2**	7
97.0	27 00	42 42	-1 1	-0.7	290	-1	4.32 4.32 4.05	28 -28 -28	1.00 1.01	1 01 1 01	1 61 1 61	1.03 1.03	0 05  0 04 0 02 0 02	1 01 1 01 1 01 1 01	0*f	
98.0	22.00 22.00	42	1 1 1 1	0.£ 0.7	286 283	- 1 - 1	3.78 3.06 2.52 2.07	28 27 27 26	1 01	1 01	1.01	1.03	0 14 0 14 0 12 0 12 0 12 0 12 0 12 0 12 0 12 0 12	1.00 1.01 1.01 1.01 1.01	0-1	7
99 0	27.00	42	-1.1	0 9	279	-1	1.89	19	1 01	1 01	1 01	: 03	0 05	1 01 1 01 1 01	ore	, ,

The column   Column	和 Langse	PEL ATE.	T IXS	Fitch Angle	Elevator Position	Mag. Heading	Roll Angle	Rudder	Anote of	EPR Engine 1	Engloe 2	EPR Engine 3	EPR Engine 4	Long.	Vert.	VHP.	TRIESENT This Stat
195   6   77   78   42   0   7   0   0   275   1   1   1   1   1   1   1   1   1	Lmpse Time (sec )	(FEFT)	(KMOTS)		iRiaht		_	(upper)					1	ı	ł		Pos (degrees)
101.0   122.00   42		-	42					1.71	-14 -16	1.01	1 61	1 01	1 03		1 11	<u> </u>	•
101.0   122.00   42	100.C	22.00 22.00	42	: 0 . 7 : 0 . 7	-0.9	275 271	.1	1.17 0.90 0.36	- 14 - 13 - 9	1 00	: 01	1 01	1 03	0 C2 0 C2 0 C2 0 C2	1.02 1.02 1.00 1.01 1.02	1	7
160   6   27   20   42   -0   -0   -0   275   -0   -0   -0   -0   -0   -0   -0   -	101.0	22.50	42 42	-5.7	-0.7 -0.4	267	-1	0.00	- 8	. 00 . 00	1 01 1 01	1.01	1.03	-0.02 -0.02 -0.02	1 01	orr orr	·
104.6	102.0	22.00 22.00	42	· D . 7 · D . 7	-0.7	264 261	·1 ·1		. 6 . <b>6</b>	1.01	1.01	i 1.01	1.03	0.02 0.02 0.02 0.01	C.99 1.00 1.01	orr	,
105.6 27.80 42 0.7 46.5 222 0 1.17 5 1.00 1.01 1.01 1.01 1.01 1.01 1.01 1.	103.0	22.00	42 42	-0.7	-0.7 -0.5	258	·1	-7 88		1.01 1.01	1.01 1.01	1.01	1 03 1 03	0 02 0 02 0 02 0 02	1.02 1.01 1.01 1.02	011	,
106.0	164.6	27.00 27.00	42	.0.7	.0.9	255. 252	٥	·2.70 ·2.43	- 4	1.01	1 31	1.01	1.03		1.02	011	, ,
107.0 27.00 42	105.0	27.00	42 42	:0.7 :0.7	·0.5 ·0.6	250	00	1.71		1.01	1 01 1 01	1.01 1.01	1.03 1.03	-0.01	1.00 1.01 1.01 1.00 1.00	off Key	7
107.0 27.00 42 3.7 6.5 242 0 1.17 5 1.00 1.31 1.01 1.03 0.00 1.00 0.07 1.00 1.00 1.00 0.00 1.00 0.07 1.00 1.00	106.0		42	-0.7	-0.5	247	0	-1,17	-5	1.01			1.03	0.00 0.00 0.00	1 02 1 01 1 00 7 56	Key	7
115.0   22.00   42   0.7   0.4   225   1   1.17   0   1.01   1.01   1.01   1.03   0.01   1 01   0.01   0.07	107.0		42 42	-0.7 -3.7	-¢.5 -¢.5	245 242	·1			1.00		1 01	1 03 1 03	0.01	1 01 1 02 1 02 1 01 1 00	Off Orf	7 7
115.0	108.0	27.00	42	-0.7	-0.4	240	5	-0. <b>1</b> 1 -0.99	-5 -5	1.01	1.31	1.81	1.03	6.00 6.00	1.01 1.01 1.01	- <del>67</del> 7	7
115 0	109.0	22.00 22.00	42 50	-0.7 -0.7	-0.4 -0.5	238 236	0 - 1	-1.17	- 4	1.00 1.00	1 01 1 01	1.01 1.01	1.03 1.03	0.00 0.00 0.00 0.00	1 00 1 07 1 01 1 01 1 02	011	7
115 0	110.0	22.00	42	-5.7	-0.4	234	-1	-0.63	-5	: 00	1 01	1.01	1.03	0.00 0.00 0.00	1 01	011	
115 0	111 0	27.00 27.00	42 42	3.7 -0.7	0.6 -0.5	233 231	· 1 · 1	0.09	4	00	1 31 1 31	1.01 1.01	1 03 1 03	0.00 0.00 0.00 0.00	1 02 1 02 1 00 1 01	0ff 0ff	?
115.0   22.00   42   0.7   0.4   225   1   1.17   0   1.01   1.01   1.01   1.03   0.01   1 01   0.01   0.07	112 5	27.00	42	- 0 . 7	· C 5	229	-1		?	1 20	1 31	1.01	T 03	0 00 0 00 0 00	1 01 1 00 1 00 1 01	01	7
115.0   22.00   42   0.7   0.4   225   1   1.17   0   1.01   1.01   1.01   1.03   0.01   1 01   0.01   0.07	113.5	27.00 27.00	42 42	· 0 . 7 · 0 . 7	-0.4 -0.4	228 227	-1	0.00	0; 0	1 00 1 01	1 01 1 01	1.01	1.03 1.03	0.00 0.00 0.00	1 00 1 01 1 01 1 01	0;;	;
115.0   22.00   42   0.7   0.4   225   1   1.17   0   1.01   1.01   1.01   1.03   0.01   1 01   0.01   0.07	114.C	22.00	5.2	0.7	-0.5	226	-1	0.45	0	1.01	1.01	1.01	1.03	0.00 0.00 0.00 0.00	1 01 1 01 1 01 1 01 1 00	orr	I
117.0 22.00 83 -0.7 0.5 136 0 0.27 81 1.01 1.01 1.01 1.01 0.00 0.96 0.76 1.00 0.27 81 1.01 1.01 1.01 1.01 0.00 0.96 0.76 1.00 0.27 81 1.01 1.01 1.01 1.01 0.00 0.96 0.76 0.27 80 1.01 1.01 1.01 1.01 0.00 0.96 0.76 0.27 80 1.01 1.01 1.01 1.01 0.00 0.96 0.76 0.27 80 1.01 1.01 1.01 1.01 1.01 0.00 0.96 0.76 0.27 81 1.01 1.01 1.01 1.01 0.00 0.96 0.76 0.27 80 1.01 1.01 1.01 1.01 0.00 0.96 0.76 0.27 80 1.01 1.01 1.01 1.01 1.01 0.00 0.96 0.76 0.27 80 0.27 80 1.01 1.01 1.01 1.01 1.01 0.00 0.96 0.76 0.27 80 1.01 1.01 1.01 1.01 1.01 0.00 0.96 0.76 0.27 80 0.27 80 0.00 0.96 0.96 0.76 0.27 80 0.00 0.96 0.96 0.76 0.27 80 0.00 0.96 0.96 0.76 0.27 80 0.00 0.96 0.96 0.96 0.96 0.96 0.96 0.9	115.0	22.00 22.00	42 42	0.7		225 225		- 1 58	I					0.01	1 01	orr orr	
117.0 22.00 42 5.7 6.4 224 0 0.54 2 1.00 1.01 1.01 1.01 1.01 0.00 0.00 1.01 0.07 1.00 0.00 0	116.0	22.00	42	0.4	-0.7	224	-1	0.00	1	1.01	1.01	1.01	1.03	0.00:	1 00	orr	7
118 0 27 00 83	117.0	22 00	42	- 5 , 7	-0.4	224	0	0.54 0.72	2	1.00	1.51	1.51	1 53	0.01	1.01	677	
0.00 0 96 0.00 0 97	118.0	22.00	83	-9.7	G . 0	136	٥			1.01	1 🗙	1.31	1.01	0.00 0.00 0.00	1 01 0.96 0.96	orr	6
0.00 0 96 0.00 0 97	119 0	22.00 22.00	63 80	-0.7 0.7	0 0 0 1	136 136	0 0	0.27	81	1.01	1 01	1 01 1 01	1 01 1 01	0.00 0.00 0.00	0.96 0.96 0.96	011 011	6
0.00 0 96 0.00 0 97	120.0	22.00	83	- 5 7	<b>c</b> o	136	0	0.27	- 80 76	1.01	1 50	1 01	1 01	0.00 0.00 0.00 0.00	0.96 0.96 0.96 0.96		6
0.00 0 96 0.00 0 97	121.0	22.00 22.00	83 83		C 0		1	0.27 0.27 0.27	80 80 81	1.01	1 oc		1.01	0.00 0.00 0.00 0.00	0.96 0.96 0.96	Key,	6
	122.0	22.00	B3	-0.7	C.0	136	- 1	0.27	8.0	1.01	1 55	1 51	1.01	0.00 0.00 0.00	0.96 0.97 0.96 0.97	key Key	ŧ
22:00 0 0 0 136 0 136 1 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	123 6	22.03 22.00	83	0.7 0.7	C 0	136 136	0 1	0.27 0.27 0.27	81	1.01	1 50	1 31	1 61	0.00 0.00 0.00		Yey	
123 C 22.03 83 C 7 C 0 136 0 0 27 81 1.01 5 C 1 21 1 01 0.00 0 57 Fey 0 27 81 0 27 81 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	124 C	Ì	83 42					0 27	81				1 01 1 01	0 00 0 00 0 00 0 00 0 00	0 97 0 97 0 96 0 96	Key' Key	6

FOR Lapse Time	PSL ATE.	JAS	Pitch Angle	Elevator Position Right	Rag. Heading	Ac 11 Argle	Rudder Position (upper)	Angle of Attack	EMR Engine 1	EPR Engine ?	EPR Engline 3	EPR Engine 4	Lorg.	Vert. Accel	794	Prich Tole Stab
(sec.)	(FEET)	(KNOTS)	(degrees)	(degrees)	(degrees)	(degrees)	(dégrees)	(degrees)	(ratio)	(ratio)	(ratio)	(rat10)	ι <b>φ</b> )	(0)	1	(degrees)
125.0	22.00 22.00	8.3	-0.7	0,0 0.0	136 136	C	0.27 0.27 0.27 0.27	-76 -51 -81 -80	1 01 1 01	1.00	1.01	1 01	0.00 0.00 0.00 0.00	0.96 0.96	Key	5 5
126.0	22.00	42 83	-0.7	0.0	136	0	1	- <b>8</b> 0 - 80	1.01	1.01	1.01	1.01 1.01	0.00 0.00	0.96 0.96 0.97 0.96 0.96 0.96	Key Cit	6
127.0	22.00 22.00	84	-0.7 0.7	0 C 0 0	136 136	-1 C	0.27 0.27 0.27 0.27 0.27	- 80 - 80 - 80 - 81	1.01	1.00	1.01	1 01	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.97 0.97 0.96 0.96 0.96 0.96 0.96	crr	6 5
128.0	?2 ∞	83 83	-0.7	0.0	136	c		- BC BC		1.00	1.01 1.01	3.01 1 01	00.00 00.00 00.00	0.97 0.96 0.97 0.97 0.97	211 311	5
129.0	22 00 22 00	80	- 0.7 - 0.7	0.0	136 136	c o	0.27 0.27 0.27 0.27	81 81 - 75	1 01	1.00	1.01	1.01	3 00 3 00 3 00 3 00	0.97 0.96 0.96 0.96 0.96 0.96	orr	6
135.6	22.00	ស ស	-67	0.5	136	0	0.27 0.27	81 80 81	1.02	1.01	1.01	1.51	0.00	0.97	ζ <b>ι</b> ,	
131.0	22 DG 22 DG	83	·0.7 -0.7	0.0 0.0	136 136	c c	0.27 6.27 6.27	- 81 - 81 - 80	1.01	1.01	1.01	1 01	0 00 0 00 0 00 0 00 0 00 0 00 0 00 0 0	0.97 0.97 0.97 0.97 0.96 0.96	or,	6 6
132.0	22 50	83 83	-0.7	<b>0</b> .0	136	1	C.27 C.27 C.27	- 80 - 81 - 80	1.01 1.01	1.01 1.01	1.C1 1.01	1.01	5.83 2.00 3.00	0.97 0.96 0.96	211 211	6
133.0	22 . 00 22 . 00	83	-0.7 -0.7	0.0 0.0	136 13 <b>6</b>	0	0.27 0.27 0.27	- 81 - <b>8</b> 0 - 81	1.02	1.01	1.01	1.01	0.00	0.97 0.96 0.96 0.96 0.96 0.96 0.96 0.96	011	6
134.0	22.00	42 83	-0.7	0.0	136	-1	0.27 0.27 0.27 0.27	- 81 - 75 - 80	1.01 1.01	1.00 1.01	1.01 1.01	1 01	0.03 0.03 0.03 0.03 0.03	0.96 0.96 0.96 0.96 0.96 0.96 0.96	orr	b
135.0	22 3C	83	·0.7	0.0 0.0	136 136	9	C 27 C 27 C 27	- 81 - 81 - 80	1.01	1 00	; 01	1 01	0.03 0.03 0.03 0.00	0.96 0.97 0.96 0.96	211	
136.0	22.00	83 83	-0.7	0.0	136	o	C.27 C.27 C.27	80 -81 -81	1.01	1.01	1.01	1 01 1 01	0.00 0.00 0.00 0.00	0.96 0.96 0.97 0.96 0.97	or:	6
137.0	22.00 22.00	83	0.7	0.0	136 136	8	0.27 0.27 0.27	80 81 80	1.02	1 60	1 51.	1 31	0.00 0.00 0.00	3.96 3.96 3.96 3.97	317	5
138.0	22.00	83 83	0.7	o.c.	136	C	0.27 0.27 0.27	80 - 80 - 77	1.02 1.02	1.00 1.01	1 61	1 01 1 01	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.96 0.97 0.96 0.97 0.96 0.97 0.96 0.96 0.96 0.96 0.96 0.96 0.97	orr	é 6
139.0	22 00 22 00	84	-0.7	0.0 0.0	136 136	C C	0.18 0.18 0.27	80 76 81	1 01	1.00	1 01	1 01	0.00 0.00 0.00	0.96 0.97 0.97 0.96	211	6
140.0	22 00	83 83	-0.7	0.0	136	c <sub>i</sub>	C . 27 C . 27 C . 27	BC BC BC	1 02 1.02	: C1 : C0	1 01	1 01 1 01	0.00	0 97	3;;	6
141.0	22 00 22 00	83	· 0.7	0.0 0.0	136 136	C	0.27 0.27 0.18	80 81	1 01	: 01	; 011	1 01	5 05 2 00 3 00 3 00 2 00 3 00	0.96 0.97 0.96 0.97 0.96 0.97	311	Ó
142.0	22 OC	83 83	0 7	0.0	136	С	0.09 0.09 0.18	8C 80	1.01	1.00 1.00	1.01 1.01	1.01	0 00 0 00 0 00 0 00	0.97 0.97 0.96 0.97	<u> </u>	6
143 0	72 00 22 00	as	· 0 . 7 · 0 . 7	0.0	136 136	0	0.18 0.18 0.18	81 81 81	1.01	1 0:	1 (1	1 91	0 00 0 00 0 00	0 97 0 96 0 96 0 96 0 96 0 97 0 96	Sff	6
144 0	22.00	82	- 6.7	0.0 0.5	136	0	0.18 0.18 0.18	- 76 - 80 - 81	1.02	1.00	1 51	1 31	0 00 0 00 0 00 0 00	0.97 5.97	Cff	- 5
145 0	22 .00 22 .00	8.3	G.7 - D.7	0.0	136 136	0 - 1	0.18 0.18 0.18	81 81 80	1.02	1 t:	1 (1	1 31	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.96 0.96 0.96 0.96 0.97 0.97 0.97 0.97 0.97	err	5
145 0	22 00	83 83	- 6.7	0 0	136	0	0.18 0.18 0.18	-80 61 -61	1 32	1 00	1 81	1 51	0 00 0 00 0 00 0 00	0.96 0.96 0.97	- <u> </u>	5 6
147 0	22 30 22 30	83	-0.7	o c	136 136	0	45 36 0.18 0.18	81 81	1 23	1 30	1 61	1 51	0.00	3 97 3 96 3 96 3 97	crr	5
148.0	22 00	82 81	0.7	0 0 0.0	136	c c	0.18 0.18 0.18	78 81 76	1 23	1 31	1 CI 1 CI	1 53	0 00 0 00 0 00 0 00 0 00 0 00 0 00 0 0	3 96 3 96 3 97↓	Cii	t t
149 [	22.00 22.00	83	0.7	0 0	136	1	0.18 0.18	51 8.	1.34	1 01	1 (1)	1 22	0.00	96 96 96 5 96	err.	t

TWA Fit. 800, B747-131, Landing At JFK TABJFK1, Created: January 31, 1997, National Transportatin Safety Board

FOR Lapse	REL XT.	TAS .	Pitch Angle	Elevator Position	Hag Heading	Ro 11 Angle	Rudder Position	Angle of Attack	EPR Engine 1	EPR Engine 2	EPR Engine 3	EPR Engine 4	Long.	Vert Accel	रुङ	Pitch Iri≡ Stao
Time (sec.)	(FEET)	(RUNOTS)	1	Right (degrees)	(degrees)	(degrees)	(upper) (degrees)	(degrees)	(catfo)	(natio)	(natio)	(ratio)	(g)	(6)		Pos (degrees)
150.0	22.00	83 83	.b.7 .0.7	0.0	136 136	1	0.18 0.18 0.18 0.18	-61 -81 -81 -80	1.05	1.02 1.02	1.01	1.03	0.00 0.00 0.00 0.00 0.00	0.97 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96	off off	6 6
151.0	22.00	83	-0.7	0 <u>.</u> C	136		0.18 0.18	81 •80	1.05	1.02	1.01	1.03	0.00 0.00 0.00	0.96 0.96 3.96	orr	6
152.0	22 .00 22 .00	83 83	· 0.7 · 0.7	a.c	136 136	8	0.18 0.18 0.18 0.27	-81 -81 -81 -75	1.05	1.03 1.03	1:01	1 03 1 03	0.00 0.00 0.00 0.00 0.00 0.01 0.01 0.01	0.97	off	6
753.6	22 30	ы	-5.7	0.0	136	0	0.18 0.18	-81	1 ७५	1.63	7.62	1.04	0.01 0.01 0.01	0.96 5.96 0.96	577	6
154.0	22.00 22.00	83 83	, 0.7 0.7	0.0 0.0	136 136	0	0.18 0.18 0.15 0.18	-80 80 -61 -81	1.05 1.05	1 03	1.01	1 24	0.01	3.97	err err	6 6
155.0	22.00	B3	-0.7	0.0	136	0	0.18 0.18	80 81	1.05	1.03	1.01	1 24	0.02	3.96 3.97 3.96	orr	6
156.0	22.00 22.00	83 83	0.7	0.C 0.C	136 136	0	0 18	-81 -81 -81	1.04 1.04	1 03	1 C1 1 C1	1 04 1 04	0.02 0.02 0.02 0.02 0.03 0.03 0.03 0.03	3.96 0.96 0.96 0.97 0.96 0.96	011	6
157.0	22.00	83	-0.7	0.0	136	-1	C.18 C.18		1 04	1 03	; c:	1 04	0.02	0.97	011	ь
158.0	22 00 22 00	83 83	.0 7 -0 7	0.0	136 136	0	0.18 0.18 0.18	81 -81	1.04 1.04	1.03	1.01 1.01	1.04 1.04	0.02 0.02 0.02	0.96 0.96 0.96 0.97	off off	5 5
159.0	22.00	83	-0.7	0.C	136	-1	0.18 0.18 0.18	80 81 81	: ! 1.04	1.03	1.01	. 1 25	0.02 0.02 0.02 0.02 0.02 0.02 0.03 0.02	3.97 2.96 3.96 3.96 3.97 0.97	orr	ь
160.0	22.00 22.00	83	-0.7	0.0	136 136		0.1e	81 81	1.04 1.54	1.03	1.01 1.01	1 05 1 05	0.02 0.02 0.02 0.02	0.96 0.96 0.96	01.0 01.0	6
161.0	22.00	83	0.7	0.0	136	-1	0.18 0.27 0.18 0.18	81 81 80 81	1 04	1 03	1 61	1 05	0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02	0.96 0.97 0.96 0.96 0.96 0.96 0.97 0.97 0.97	orr	6
162.0	22 00 22 00	83 83	:0.7 :0.7	0.0	136 136	1	0.27 0.18 0.18	80 81 78 81	1 54 1.04	1.03	1.01	1.05 1.05	0.02 0.02 0.02	3.96 3.96 3.97	077 011	6
163.0	22.00	83	-0.7	0.0	136	-1	0.18 0.18 0.18	-81	1.04	1.03	1.01	1 05	0.02 0.02 0.02 0.02 0.02	0.96 0.97 0.96 0.97 0.97	arr	6
164.0	22 . 00 22 . 00	83 83	-0.7 -0.7	0.C 0.C	136 137	·1	0.18 0.18 0.18 0.18	80 -81 -80 -80	1.04 1.04	1.03	1.01 1.01	1 05 1 05	0.02 0.02 0.02 0.02 0.02 0.02	3 96 2.96 2.97 2.97 0.96 0.96 0.96 0.96 0.97 0.97	011	6 6
165.0	22.00	83	-0.7	0.0	137	-1		80 80	1 04	1.03	1,01	1 04	0.02 0.02 0.02	0.97 0.96 0.96	3ff 3ff	6
165.0	22.00 22.00	83	0.7	0.0 0.0	137 137	0		- BC - B1 - B1 - B1	1 04 1 04	1 03 1.03	1 C1	2 04	0.02 0.02 0.02 0.02 0.02 0.02	0.96 0.97 0.96 0.96 0.96 0.96	or <b>'</b>	6 6
167.0	22 <b>3C</b>	83	.0.7	0.0	137	0		.19		1 03	; c1	: 04			31. 31.	<u> 6</u>
168.0	22 0C 22 0C	83	.0.7	0.0	137	0	0 36	-76	1 04	1 03 1 02	1.01	1.04	0 02 0 02 0 02 0 02 0 02 0 02	0.96 0.97 0.96 0.97 0.97	311	<b>6</b>
759.0	22.00	83 83	-6.7	5.5	137	-1	L	80	1 84	1 02	1.01	1 07 1 03	C 02	0 97	<u></u>	<u>.</u> τ
173 0	22 .00 22 .00	B3	l i	0.0	13/ 136	0	0.72 0.81 0.81 0.72	80 -81 -81 -81	1 04	1 02	1.01	1.03	C 01 0 01 0 01 0 02 0 01 0 01	0.96	311	6
:71 0	22 00	A3 83	-0.7	: 0,0	136	0				1 02	1 01	1.03	C 01 C 01 C 02 C 01	0.96 0.96 0.95 0.95	Crr	ь
172.0	17.00 22.00	74	0.7	0.0	136 136	0	0.18	81 76	1 03	1 02	: 01	1.63	0 01 0 01 0 01	0.95	ā* <b>*</b>	ť 6
173 G	22.00	8.3 80	-0.7	0.0	136	٥	0.09	Ī	: 03 : 03	1 02	1 0i 1 0i	1.03	0 01 0 01 0 02 0 02 0 03 0 05	0 97 0 96 0 96 0 96 0 96 0 96 0 96 0 96 0 96	orr Urr	
174.0	22.00 22.00	8.3	.0.7	0.6	136	0	2.54 0.72	80 -61	1 03	. 1 01	1 01	1.02	C 03 -0 05 -0 04	0.97 0.96 0.97	011	t.

Lapse Time	(FEET)	İ	Pitch Angle (degrees)	Elevator Position Right (degrees)	Heading	Roll Angle (degrees)	Position (upper)	Angle of Attack (degrees)		] -	EPR Engine 3 (ratio)		Long. Accel	Vent. Accel		Pitch Trim Stap Pos (degrees)
							0.81	80					-0.01			
175.0	22.00	83 83	-0.7	0 0	136	0	0 72 C.81 1.08	- 81 - 80	1 03	1 61	: c:	1 02 1 02	0.00 6.00 0.00 0.00	2.96 3.97 3.97 0.96	011	
176.0						0	1.89		1.03	1.01	1.01	1.02			011	6
177.0	22.00		-0.7	0.0	134	°	3.78	. 81 81					3.01 3.01 -3.01	0.97 0.97 0.96 0.96		6

TWA FIt. 800

B747-131, Landing at JFK TABJFK2, Date Printed: January 31, 1997

National Transportation Safety Board

Leading Leading Leading Reverser Revers STOWN STOR STOR STOK STOK STOK STOK STOK Edge Rt. Set 1 (discrete) TWA FIt. 800. B747-131, Landing at JFK TABJFK2, Date Printed: January 31, 1997, National Transportation Safety Board Set 4 Sorete) ( Leading Edge Lt. Set 3 (discrete) Leading Edge Lt. Set 2 (discrete) **EEEEEEEEEE** Leading Edge Lt. Set 1 (discrete) Flap pos Trasiling OUTBO (degrees) 8 × 3 Rudder Alleron F Position Position II (lower) R inbd II (degrees) (degrees) (d Elevator Position Left (degrees) ŝ 2.1 FDR Sess ALTC The Teconds) == =; = = Z = 0 = 0 50.20

Eng 1 Eng 2 Eng 3 Eng 4 (1 1/R) (1.1/R) Leading Leading Reverser Edge Rt. Edge Rt. Set 3 (discrete) (discrete) (1.17R) Leading Leading Leading (60° R: Set 4 Set 1 Set 2 (discrete) (discrete) TWA Fit 800. B747-131, Landing at JFK TABJFK2, Date Printed: January 31, 1997, National Transportation Safety Board Leading LE Edge LE Set 3 S Leading Edge Lt. Se: 2 (discrete) Set 1 Traffing June (degrees) ευνημερικού με το περικού το περικού το προσφορικού το προσφορικού το προσφορικού το περικού το προσφορικού το Επικού το προσφορικού το περικού το περικού το προσφορικού το περικού το περικού το περικού το περικού το περικ Postton Rudder Atleron Flap pos Postton Postton Postton Traffing Left Comercial Thoughton (degrees) (degrees) (degrees) 0 0 0 0 0 6 9 7 0 7 0 1 8 3.6 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1:00 | 1: 

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TWA Fit. 800, B747-131, Landing at JFK TABJFK2, Date Printed: January 31, 1997, National Transportation Safety Board

TWA Fit. 800, B747-131, Landing at JFK TABJFK2, Date Printed: January 31, 1997, National Transportation Safety Board

Eng 4 (1.1/R)		<u> </u>	צ	<u>.</u> 8	Š	Š	8	8	Z.		<b>E</b> 5	<u>.</u>	2	8	<u>.</u>	8	TEMES	TRAME	ZAMS	TRANKS	TEMES	TAMES	ST.	STO	STOR	STOW	Ş.	STO	200	STO	STON	S704	STO	STO	ST0	Store	100	Š	3
(1.1/R)						3	2		2	200		1	200	TEARS	TEAMS	TRANS	STOO	STOR	STO	NOTE	PELS.	ADL.	STON	STON	STOR	STON	STO	STOW	STOR	<b>₹</b>	¥0LS	STO	STOR	STOK	STON	¥0±S	Suga	ACTZ	STON
(1.T/R)	2	\$ \$				<u> </u>	3 5	3 8	Ì	8	2 2	8	8	8	2	9	TOUS	TRANS	TRANS	TUNES	SAUG:	S S	STOR	STO	2012	STO	STO	STO	TOT	STO	ST2	570	2100	STOR	STQ.	STOR	2000	STQ.	STO
Eng 1 Eng 2 (1-T/R) (1.T/R)	2					<b>k</b> 8			ķ )	3 2	3 8	8	d W	å	TRAMES	TRANS	TELLES	TRANS	TRANS	STON	20.5	STO	S10	ST3#	E.	STZ	SCT2	Š.	Ē	STO.	STOR	\$TQ¥	305	STOR	STO	<b>1</b> C.3	25	Š	Ē
Set & Rt. (6/screte)		į	: :	EX EX	1	i i	5 3	3 3	3	ž 3	3 3	3	Ext	Ext	H	5	ixi	Ext	Ext	3	E	¥	3	3	33	¥	£	£	1	¥	Ŧ	Ex	ž	3	Ex	Ext	ä	Ex.	\$
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Set 2 (discrete)	T.	3	ž	¥	1	1	1	<u> </u>	3 3	3 3	5 5	ž	3	3	£	3	13	Ext	Ä	£X.	Ext	ĮX.	ž	EX	¥	Ext	Ĭ	£ .	Ext	5	Ext	Ħ	25	£.	3	Fat	F.	Ξ .	5
Set 1 (discrete)	E	E	¥	Ext	1.	t	1	1	1	<u> </u>	5 5	£	E	Ext	¥	¥	×	Ext	E.	ž.	1 1	ž	ž	5	Ext	Ext	Ext	t;	Ext	Ext	r.	ĭ	E	3	Fxt	Ext	3	Ext.	Ĭ
(discrete)	13	ž	3	5	12.5	, Y	3	13		j <u>E</u>	5	3	W.	ž,	£	ន័	3	5	3	¥	¥ 3	ž	£	ž.	ž,	<u> </u>	¥ .	ž	<u>.</u>	ţ.	ž	ន័	Ŧ	Ext	E	H	Ë	£	3
ofscrete)	13.	5	H	E	TX.	ij	ij	Et	1	5	E	E	tat	ž	\$	5	Į.	£	£	Ext	¥.	EX.	<u>.</u>	5	5 .	5 1	i i	ž	<u> </u>	5	5	E	15	5	£	ij	<u></u>	<u> </u>	5
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