

## APPENDIX C

Selected Representative Time History Plots for the 767 Elevator Dual Failure Phase I  
Ground Tests  
(Data Not Corrected for Column Force Instrumentation Bias)

Selected representative time history plots from the 767 Phase I ground test are included in Enclosure 3. The selected representative plots included Capt. P.D. Weston as either Pilot or First Officer. The test conditions are defined in the Ground Test TIP in Enclosure 2. The plots are described as follows:

For the below test conditions .001-.004 and .011- .014, the left PCA on the right elevator was disconnected. (data file VQ001.010\_05.4494.esb)

- Figure 1** Condition .001: Base elevator feel pressure, Pilot column sweep
- Figure 2** Condition .002: Base elevator feel pressure, First Officer's (FO) column sweep
- Figure 3** Condition .011: Base elevator feel pressure, Pilot column sweep, FO control column is held in a stationary position
- Figure 4** Condition .012: Base elevator feel pressure, FO column sweep, Pilot's control column is held in a stationary position
- Figure 11** Condition .003: Elev feel pressure 770 psi, Pilot column sweep
- Figure 12** Condition .004: Elev feel pressure 770 psi, FO column sweep
- Figure 13** Condition .013: Elev feel pressure 770 psi, Pilot column sweep, FO column is held in a stationary position
- Figure 14** Condition .014: Elev feel pressure 770 psi, FO column sweep, Pilot's control column is held in a stationary position

For test conditions .005 - .008, .and 025 - .029, the left PCA and center PCA on the right elevator were disconnected. (data file VQ001.010\_05.4630.esb)

- Figure 20** Condition .005: Base elevator feel pressure, Pilot column sweep
- Figure 21** Condition .006: Base elevator feel pressure, FO column sweep
- Figure 22** Condition .025: Base elevator feel pressure, Pilot column sweep, FO control column is held in a stationary position
- Figure 23** Condition .026: Base elevator feel pressure, FO column sweep, Pilot's control column is held in a stationary position
- Figure 32** Condition .007: Elev feel pressure 770 psi, Pilot column sweep
- Figure 33** Condition .008: Elev feel pressure 770 psi, FO column sweep
- Figure 34** Condition .017: Elev feel pressure 770 psi, Pilot column sweep, FO control column is held in a stationary position
- Figure 36** Condition .028: Elev feel pressure 770 psi, FO column sweep, Pilot's control column is held in a stationary position
- Figure 37** Condition .029: Elev feel pressure 770 psi, Autopilot Engaged, Pilot column sweep

For test conditions .031 - .034 and .041 - .044, all elevator PCAs were connected. (data file VQ001.010\_05.4631.esb)

- Figure 41** Condition .033: Elev feel pressure 770 psi, Pilot column sweep
- Figure 42** Condition .034: Elev feel pressure 770 psi, FO column sweep

**Figure 43** Condition .043: Elev feel pressure 770 psi, Pilot column sweep, FO control column is held in a stationary position

**Figure 44** Condition .044: Elev feel pressure 770 psi, FO column sweep, Pilot's control column is held in a stationary position

**Figure 45** Condition .031: Base elevator feel pressure, Pilot column sweep

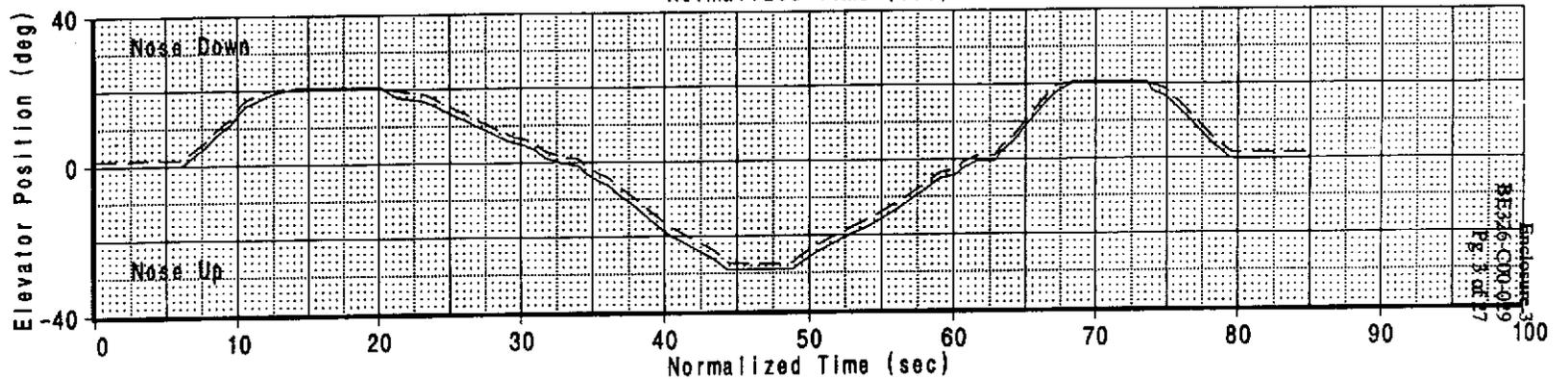
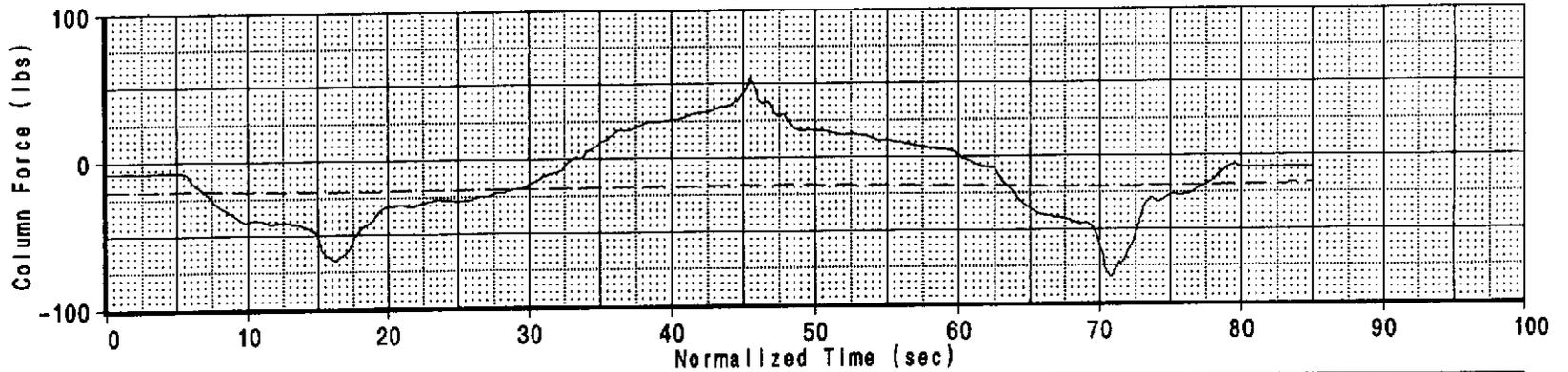
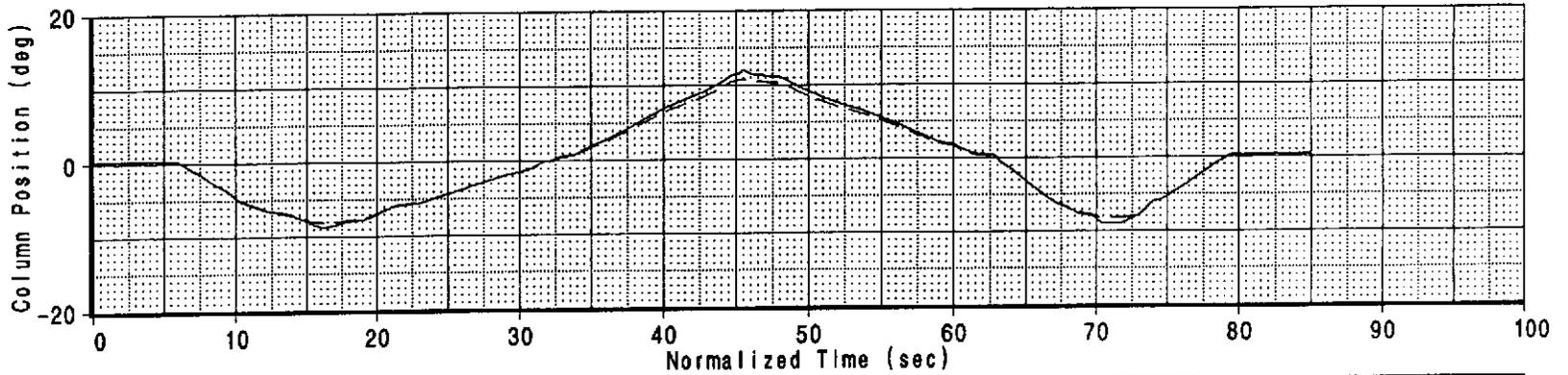
**Figure 46** Condition .032: Base elevator feel pressure, FO column sweep

**Figure 47** Condition .041: Base elevator feel pressure, Pilot column sweep, FO control column is held in a stationary position

**Figure 48** Condition .042: Base elevator feel pressure, FO column sweep, Pilot's control column is held in a stationary position

03/29/00 10:01:55.0000-10:03:20.0000 VQ001 010-05 767-400 BUCKLEY, KIMBERL

\_\_\_\_\_ Pilot Bill Tafs Base Elevator Feel Pressure  
 \_\_\_\_\_ First Officer PD Weston Ground Test

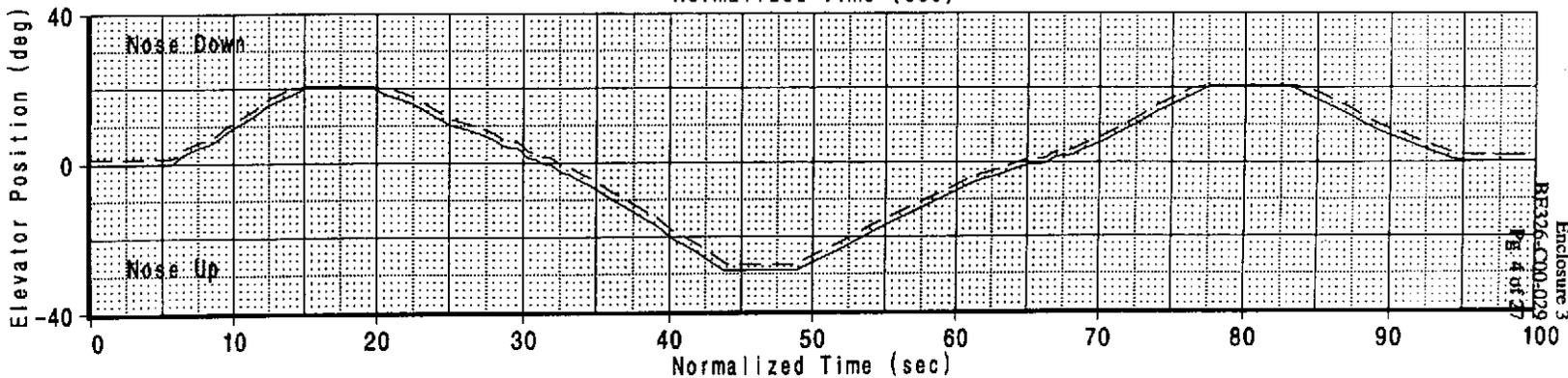
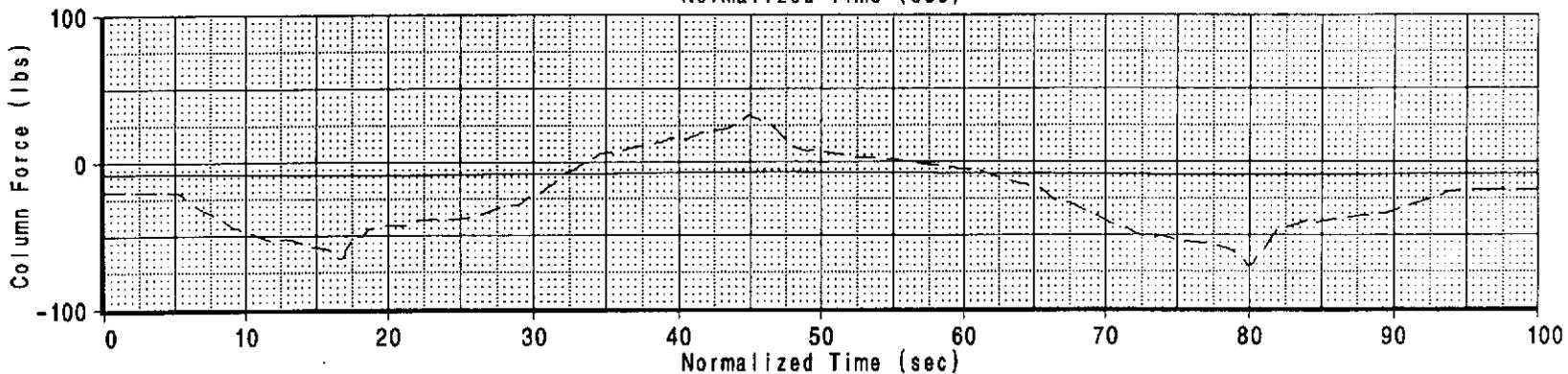
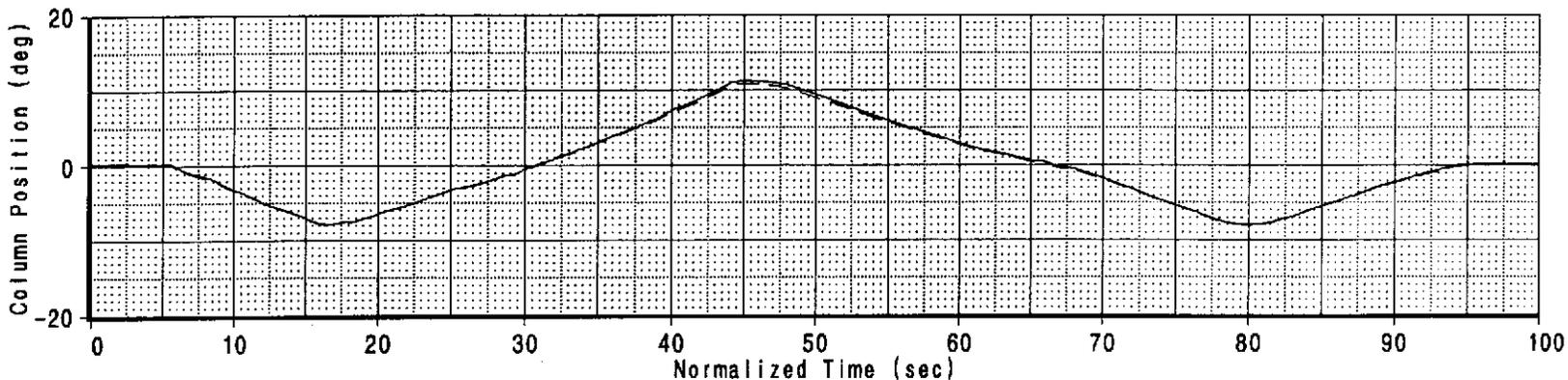


Enclosure 3  
 BE326-000-029  
 Pg. 3 of 27

CALC	Aerodynamics	1May00	REVISED	DATE
CHECK				
APPD.				
APPD.				
Egypt Air Investigation Pilot Sweeps Left PCU on Right Elevator Disconnected				
				767-400ER VQ001 BE326-000-029 Figure 1
				PAGE

03/29/00 10:03:25.0000-10:05:08.0000 VQ001 010-05 767-400 BUCKLEY, KIMBERL

\_\_\_\_\_ Pilot Bill Tafs Base Elevator Feel Pressure  
 - - - - - First Officer PD Weston Ground Test



Enclosure 3  
BE326-C00-029  
Pg. 4 of 27

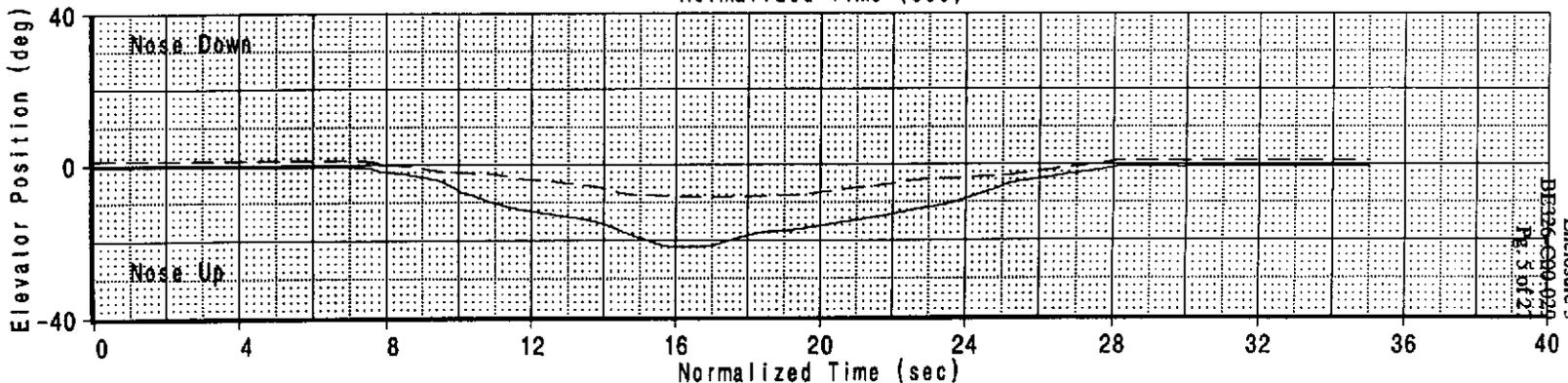
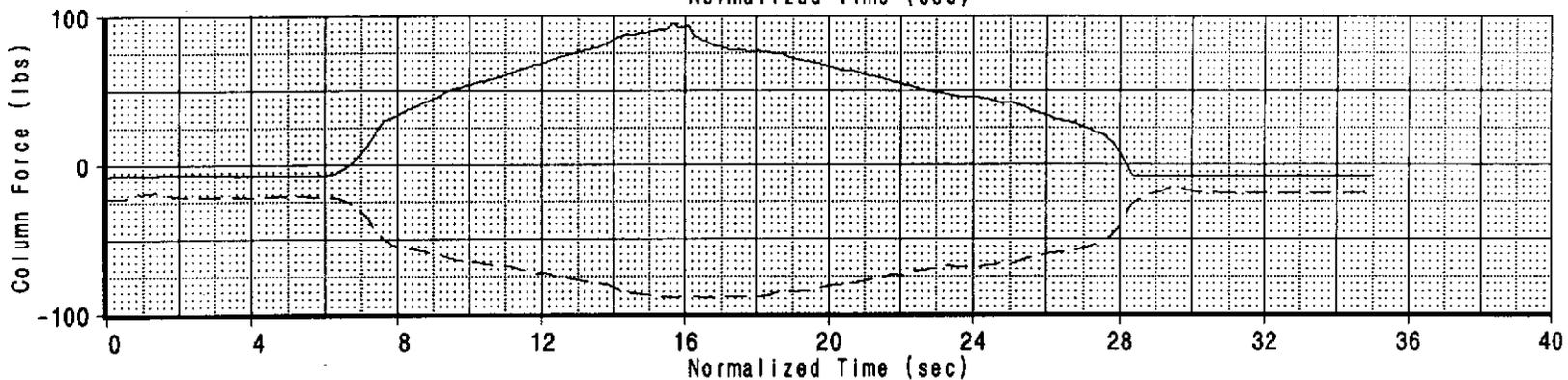
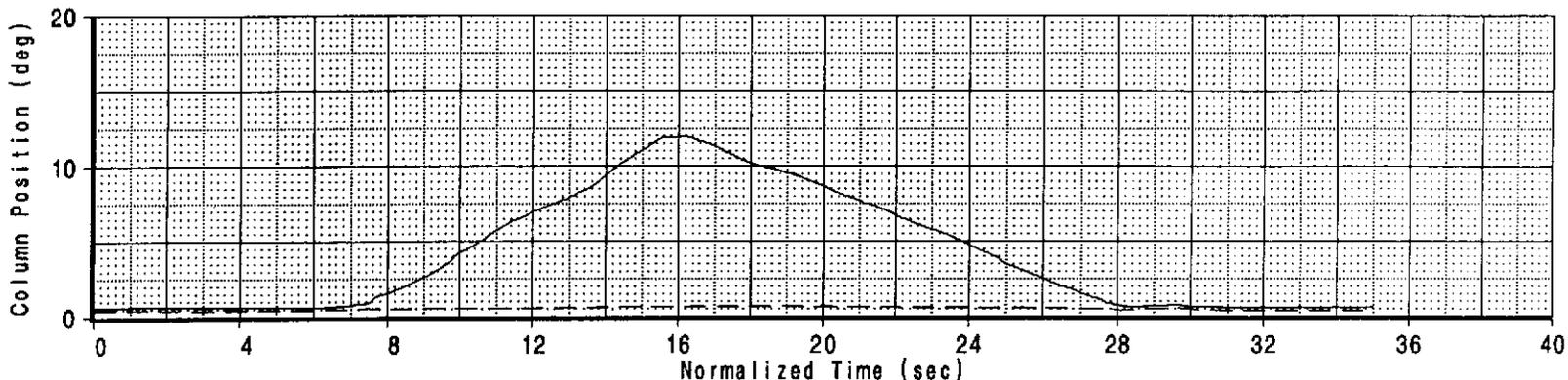
CALC	Aerodynamics	12Apr00	REVISED	DATE
CHECK				
APPD.				
APPD.				

Egypt Air Investigation  
 First Officer Sweeps  
 Left PCU on Right Elevator Disconnected  


PAGE	767-400ER VQ001
	BE326-C00-029 Figure 2

03/29/00 10:06:25.0000-10:07:00.0000 VQ001 010-05 767-400 BUCKLEY, KIMBERL

————— Pilot Bill Tafs Base Elevator Feel Pressure  
 - - - - - First Officer PD Weston Ground Test

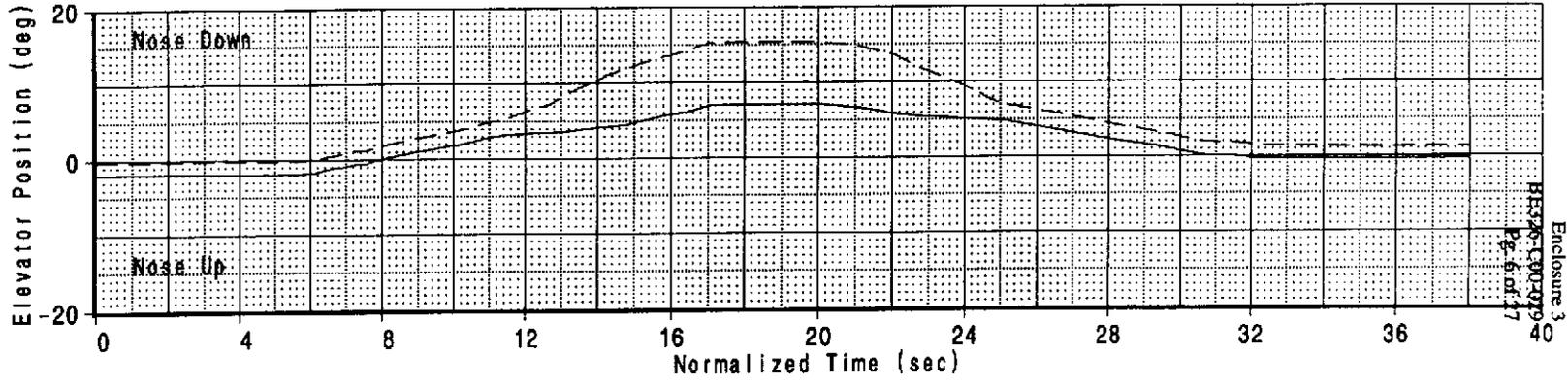
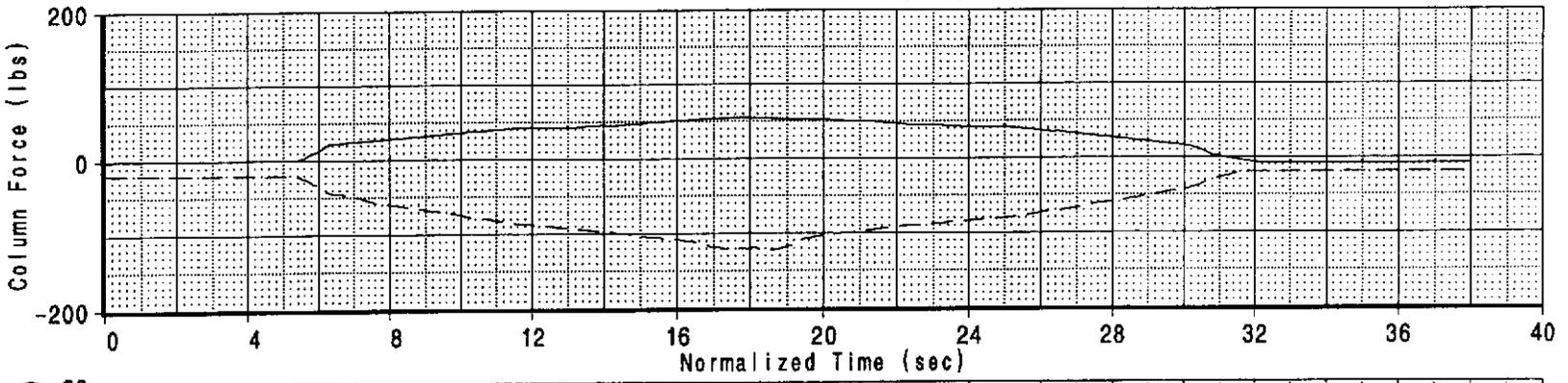
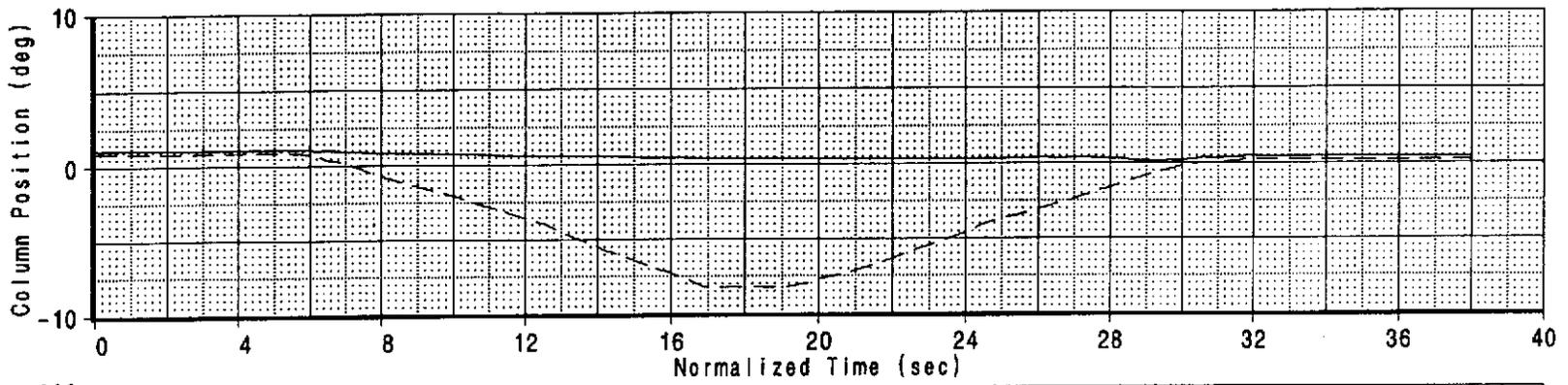


Enclosure 3  
 BE326-C00-029  
 Pg. 5 of 21

CALC	Aerodynamics	12Apr00	REVISED	DATE
CHECK				
APPD.				
APPD.				
Egypt Air Investigation Pilot Sweeps - L PCU on R Elev Disconnected Spill Column (Pilot moves column, FO holds)				
PAGE	767-400ER VQ001	BE326-C00-029 Figure 3		

03/29/00 10:07:55.0000-10:08:33.0000 VQ001 010-05 767-400 BUCKLEY, KIMBERL

\_\_\_\_\_ Pilot Bill Tafs Base Elevator Feel Pressure  
 - - - - - First Officer PD Weston Ground Test



Enclosure 3  
 BH326-100209  
 Pg. 6 of 17

APPD.			
APPD.			
CHECK			
ALC			
Aerodynamics		12Apr00	
REVISED			
DATE			
Egypt Air Investigation F O Sweeps - L PCU on R Elev Disconnected Split Column (FO moves column, Pilot holds)			
767-400ER		PAGE	
VQ001			
BE326-000-029			
Figure 4			

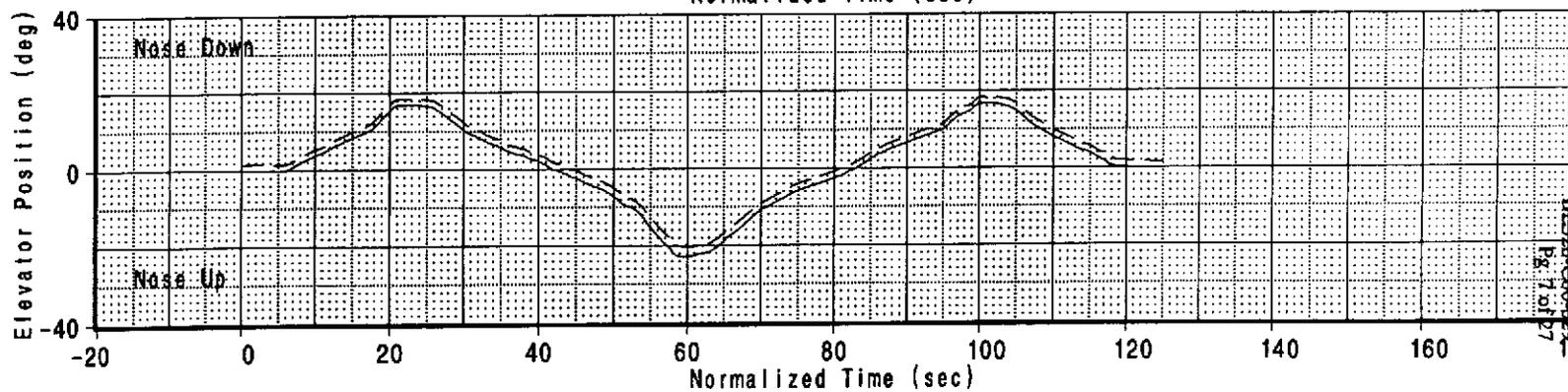
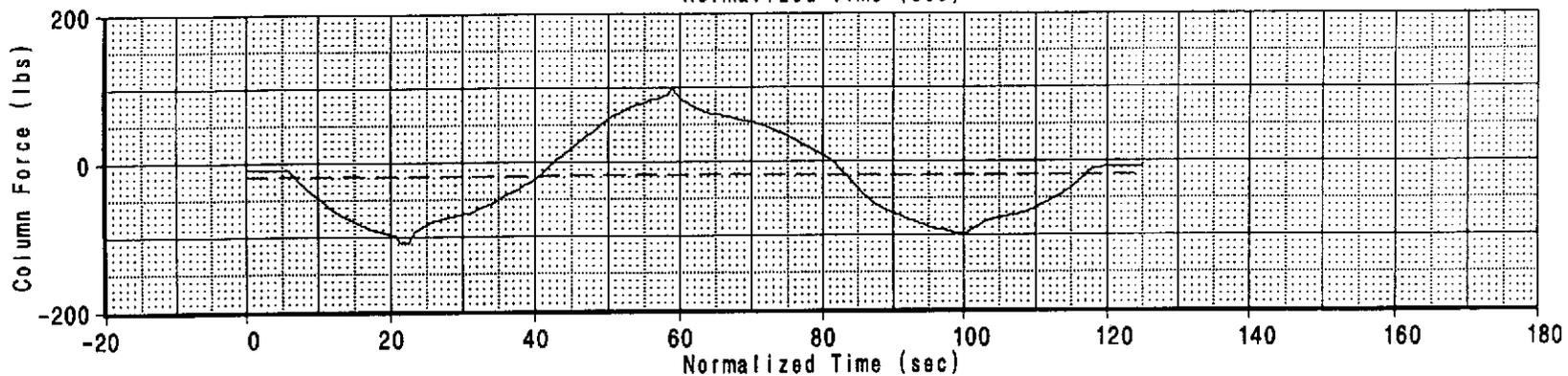
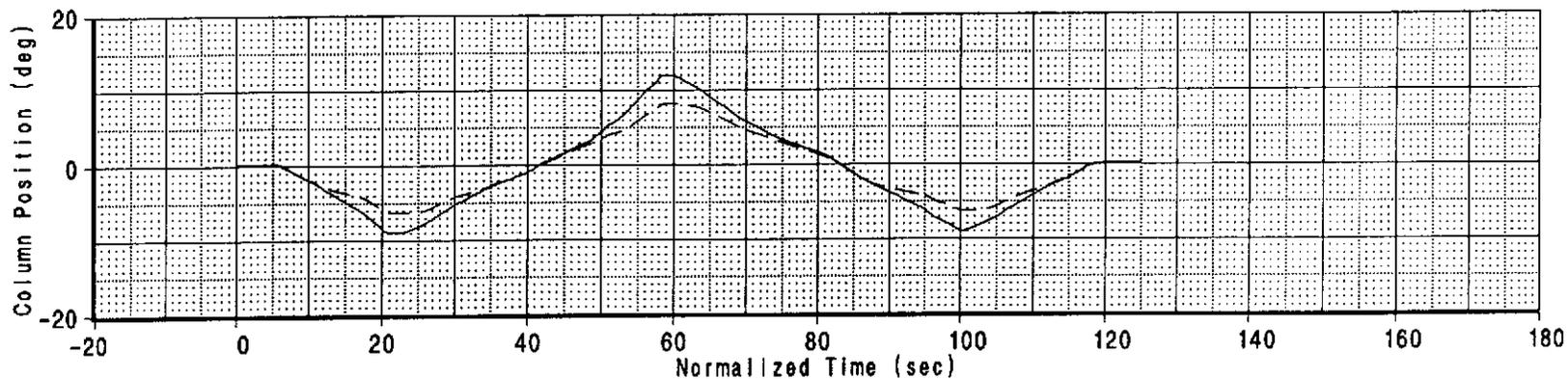
03/29/00 10:33:15.0000-10:35:20.0000 VQ001 010-05 767-400 BUCKLEY, KIMBERL

Pilot PD Weston

770 psi Elevator Feel Pressure

First Officer Bill Tafs

Ground Test



Enclosure 10  
BES26-C00-029  
Pg. 7 of 27

APPD.	
APPD.	
CHECK	
Calc	Aerodynamics 12Apr00
REVISED	
DATE	

Egypt Air Investigation  
Pilot Sweeps  
Left PCU on Right Elevator Disconnected

PAGE	767-400ER VQ001
	BES26-C00-029 Figure 11





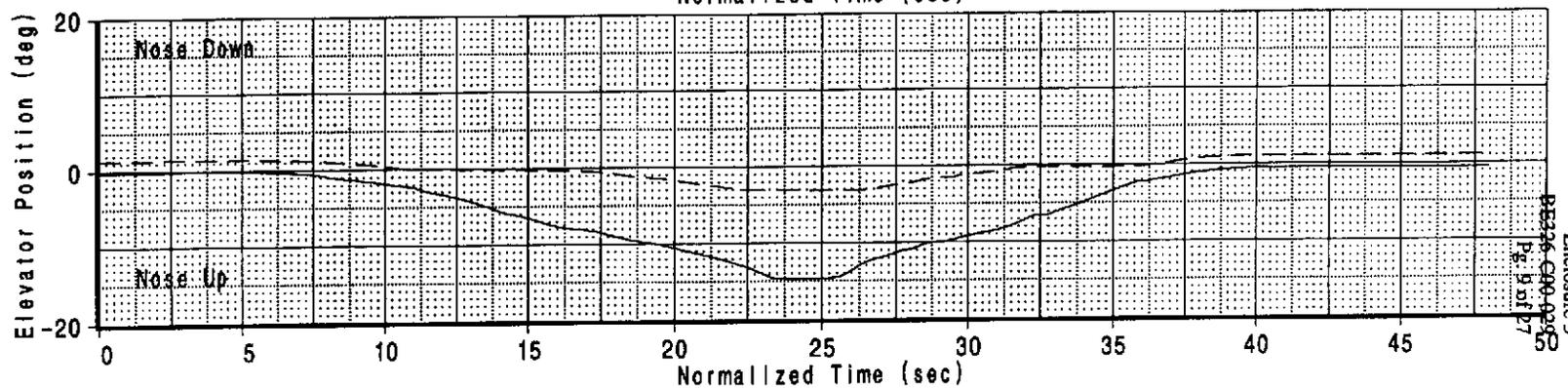
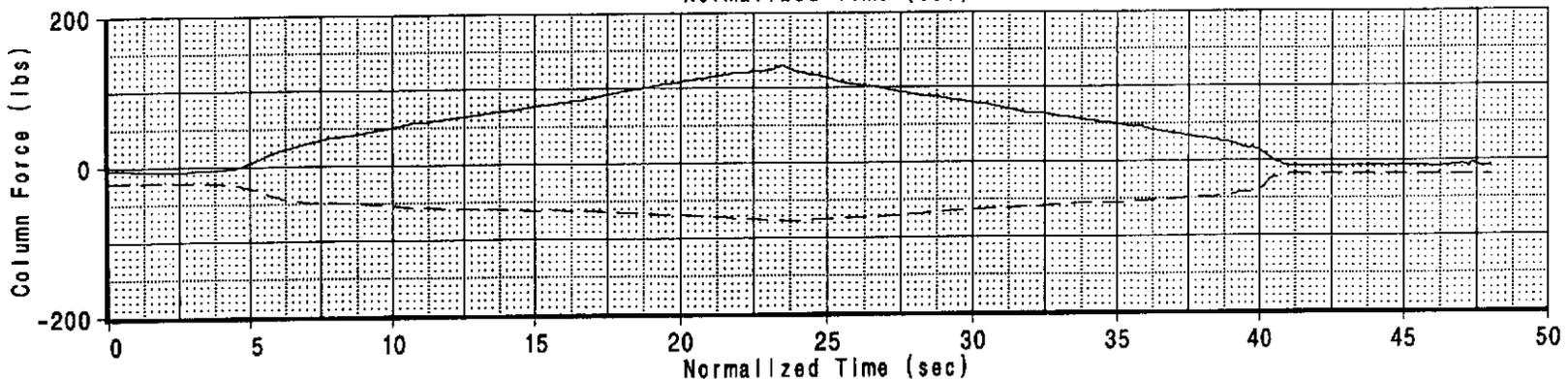
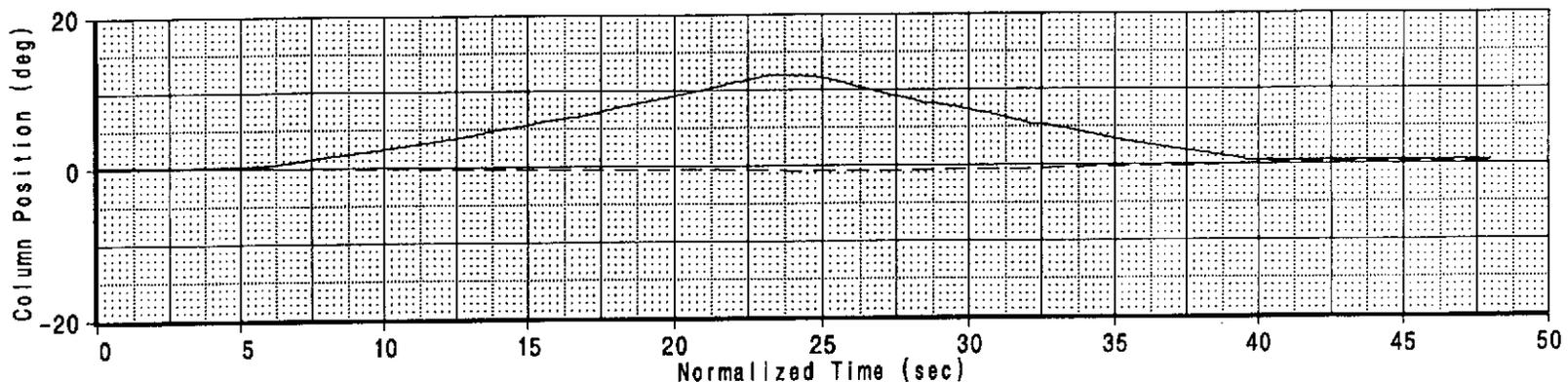
03/29/00 10:37:31.0000-10:38:19.0000 VQ001 010-05 767-400 BUCKLEY, KIMBERL

Pilot PD Weston

770 psi Elevator Feel Pressure

First Officer Bill Tafs

Ground Test



Enclosure 3  
B3326-C00-028  
Pg. 5 of 27

CALC	Aerodynamics	12Apr00	REVISED	DATE
CHECK				
APPD.				
APPD.				
Egypt Air Investigation Pilot Sweeps - L PCU on R Elev Disconnected Split Column (Pilot moves column, FO holds)				
PAGE	767-400ER VQ001			
	B3326-C00-028 Figure 13			



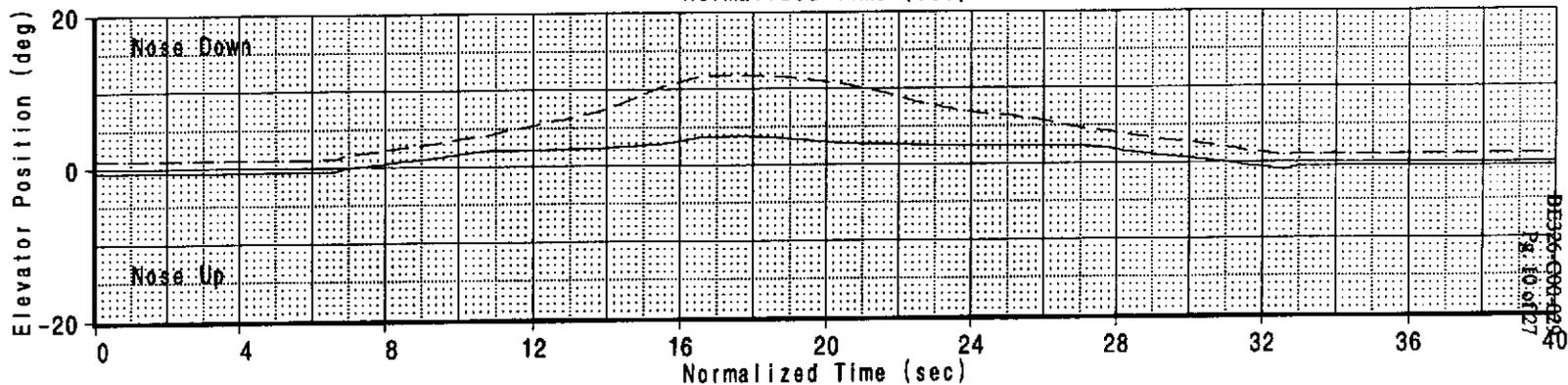
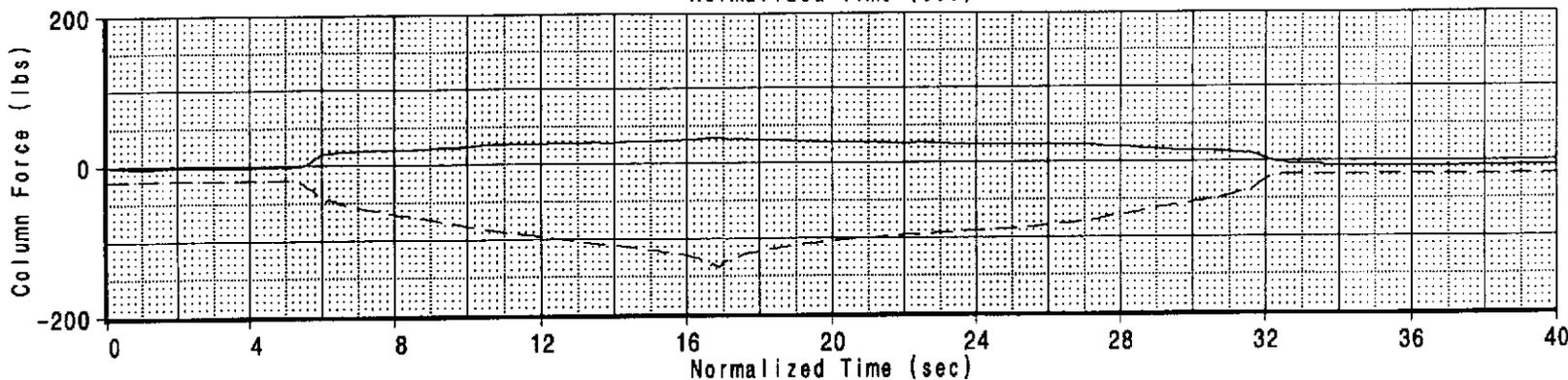
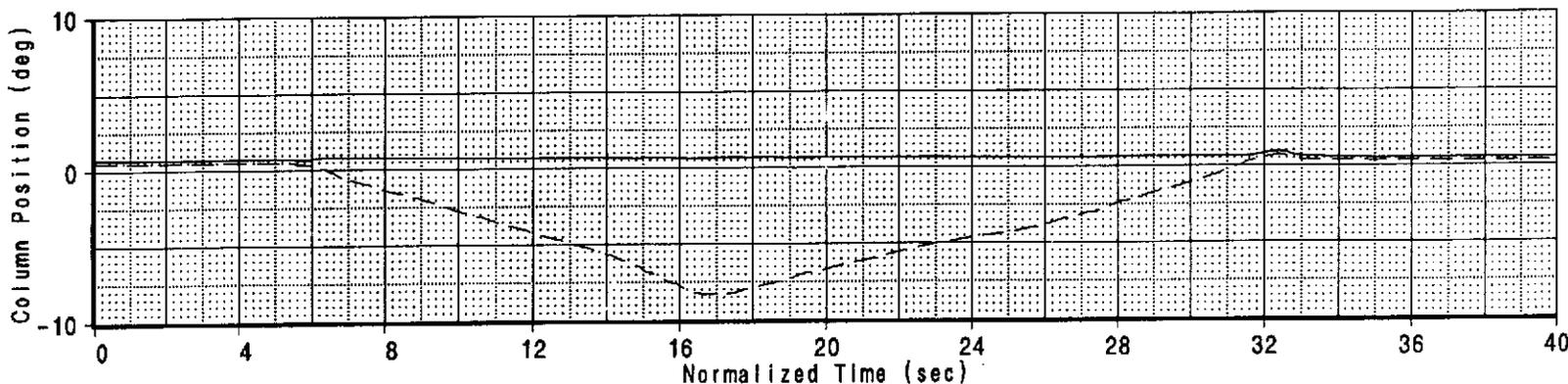
03/29/00 10:38:25.0000-10:39:05.0000 VQ001 010-05 767-400 BUCKLEY, KIMBERL

Pilot PD Weston

770 psi Elevator Feel Pressure

First Officer Bill Tafs

Ground Test



Enclosure 3  
BES26-000-029  
Pg. 10 of 27

Calc	Aerodynamics	12Apr00	REVISED	DATE
CHECK				
APPD.				
APPD.				

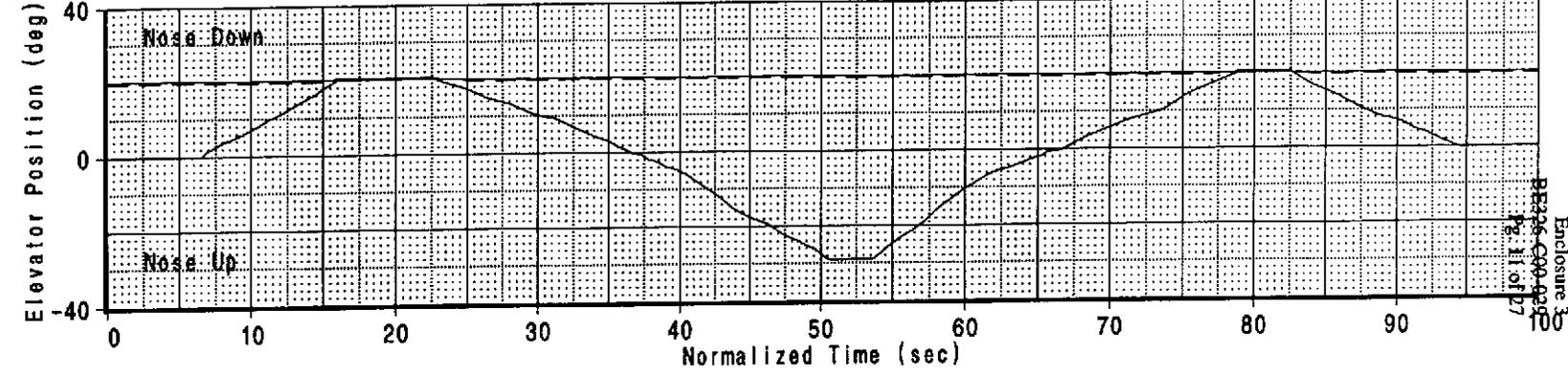
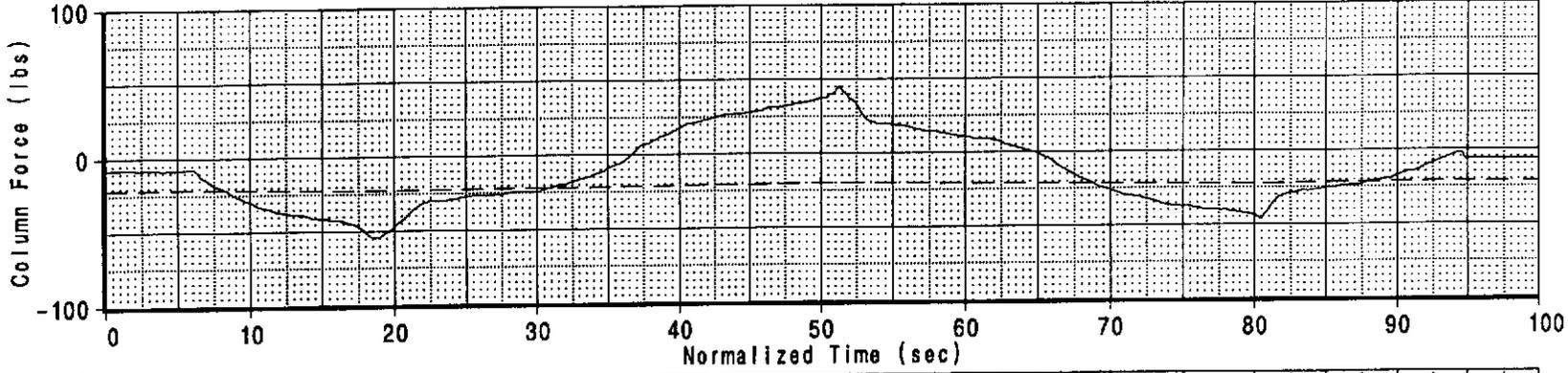
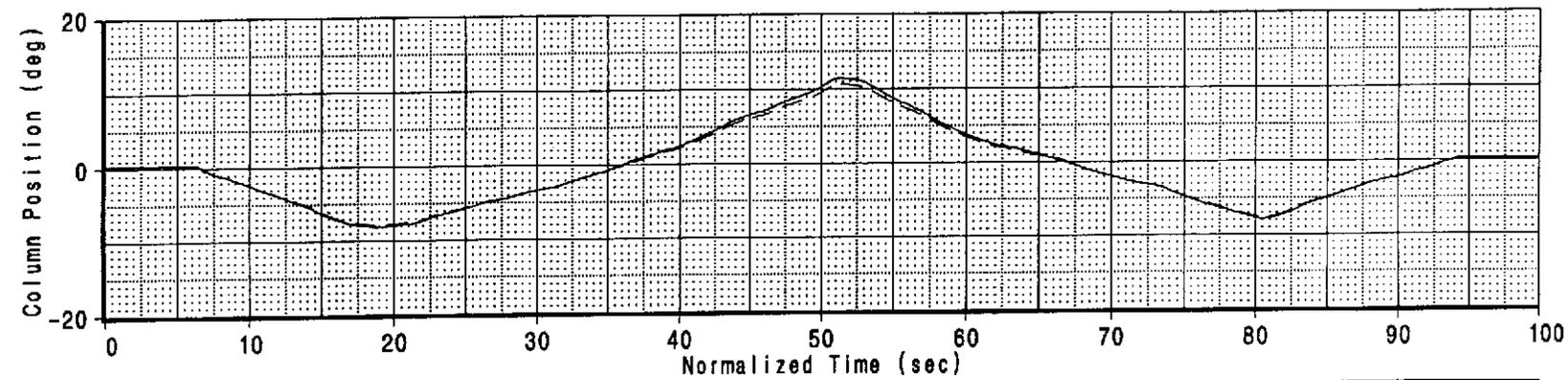
Egypt Air Investigation  
F O Sweeps - L PCU on R Elev Disconnected  
Split Column (FO moves column, Pilot holds)



PAGE	767-400ER VQ001
	BES26-000-029 Figure 14

03/29/00 11:26:40.0000-11:28:20.0000 VQ001 010-05 767-400 BUCKLEY, KIMBERL

Pilot Bill Tafs Base Elevator Feel Pressure  
 First Officer PD Weston Ground Test



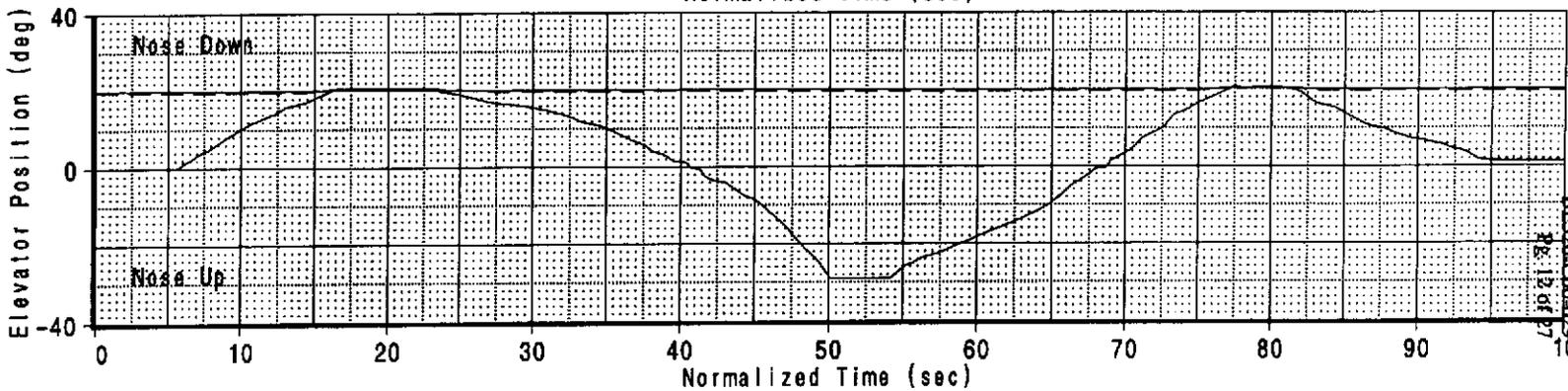
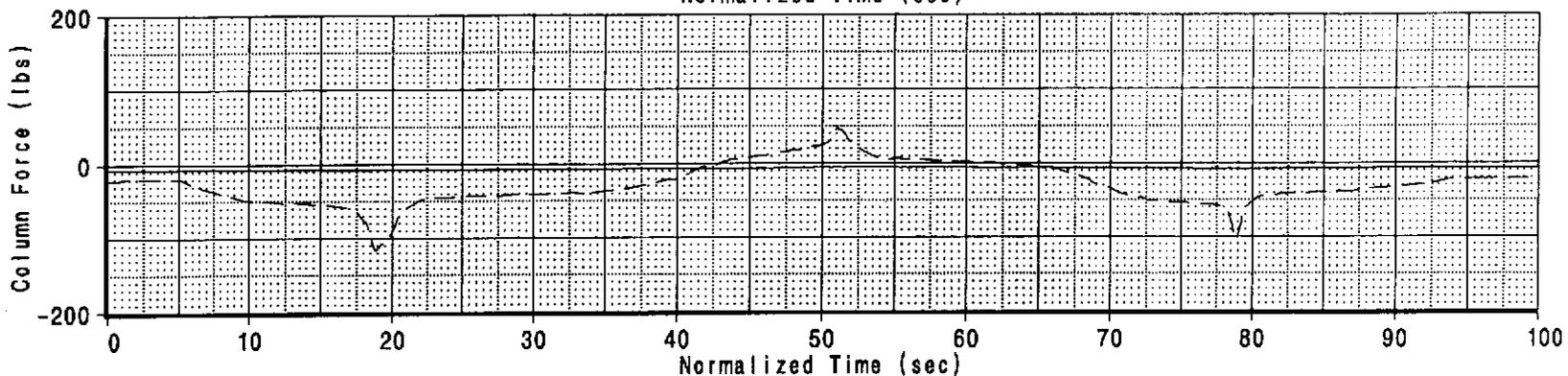
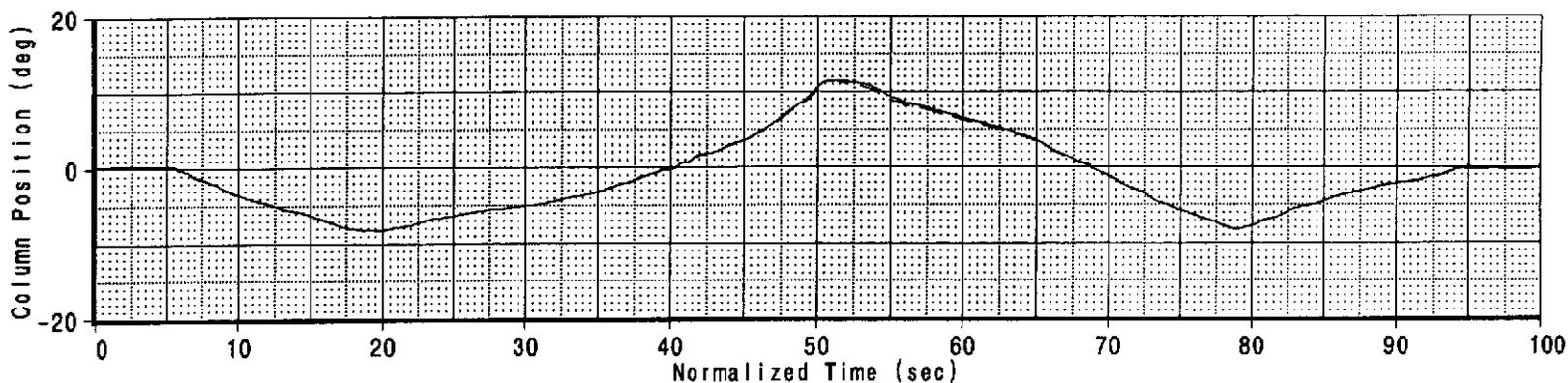
Enclosure 30  
 BE326-000-029  
 Pg. 11 of 27

CALC	Aerodynamics	12Apr00	REVISED	DATE
CHECK				
APPD.				
APPD.				
Egypt Air Investigation Pilot Sweeps				
L & C PCU on Right Elevator Disconnected				
				767-400ER VQ001
				BE326-000-029 Figure 20
				PAGE



03/29/00 11:28:25.0000-11:30:05.0000 VQ001 010-05 767-400 BUCKLEY, KIMBERL

\_\_\_\_\_ Pilot Bill Tafs Base Elevator Feel Pressure  
 - - - - - First Officer PD Weston Ground Test



Enclosure 3  
 RE336-00-029  
 Rev. 13 of 27

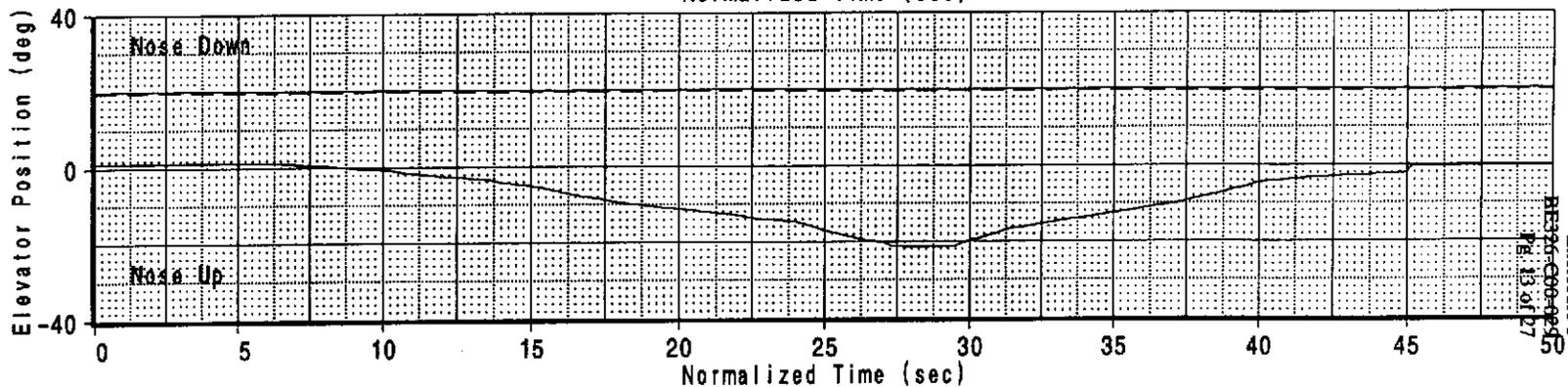
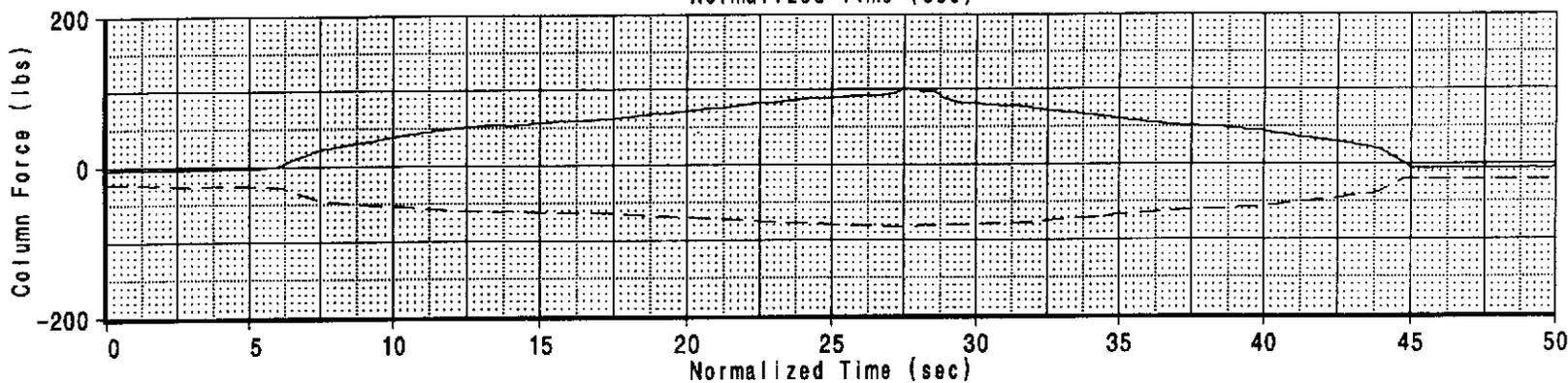
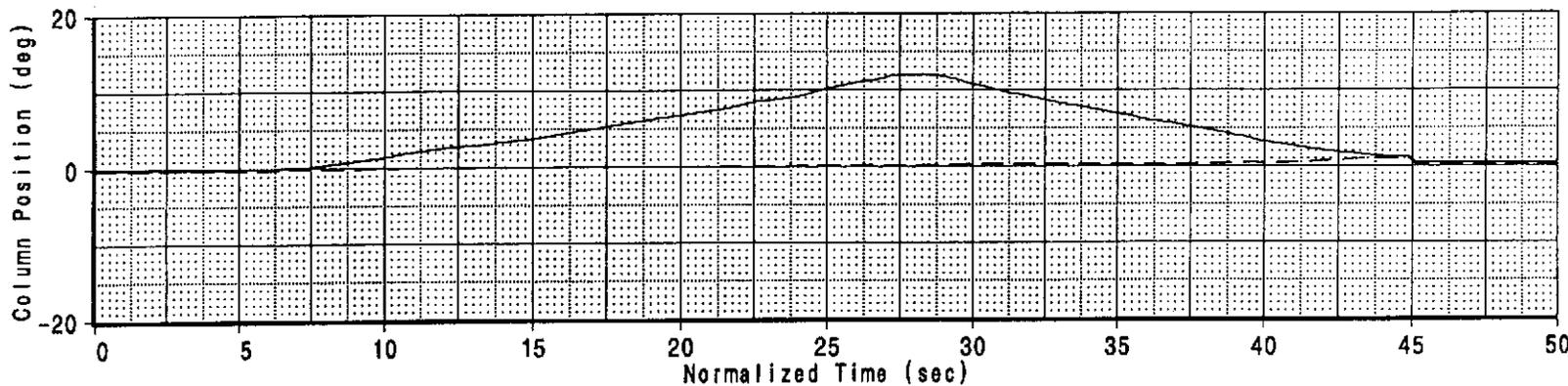
CALC	Aerodynamics	12Apr00
CHECK		
APPO.		
APPO.		
APPO.		

Egyptian Air Investigation  
 First Officer Sweeps  
 L & C PCU on Right Elevator Disconnected  
**BOEING**

PAGE	767-400ER VQ001
	RE336-00-029 Figure 21

03/29/00 11:30:40.0000-11:31:32.0000 VQ001 010-05 767-400 BUCKLEY, KIMBERL

— Pilot Bill Tafs Base Elevator Feel Pressure  
 - - - First Officer PD Weston Ground Test



Enclosure 3  
 BE326-000-029  
 Figure 22  
 14:13:07

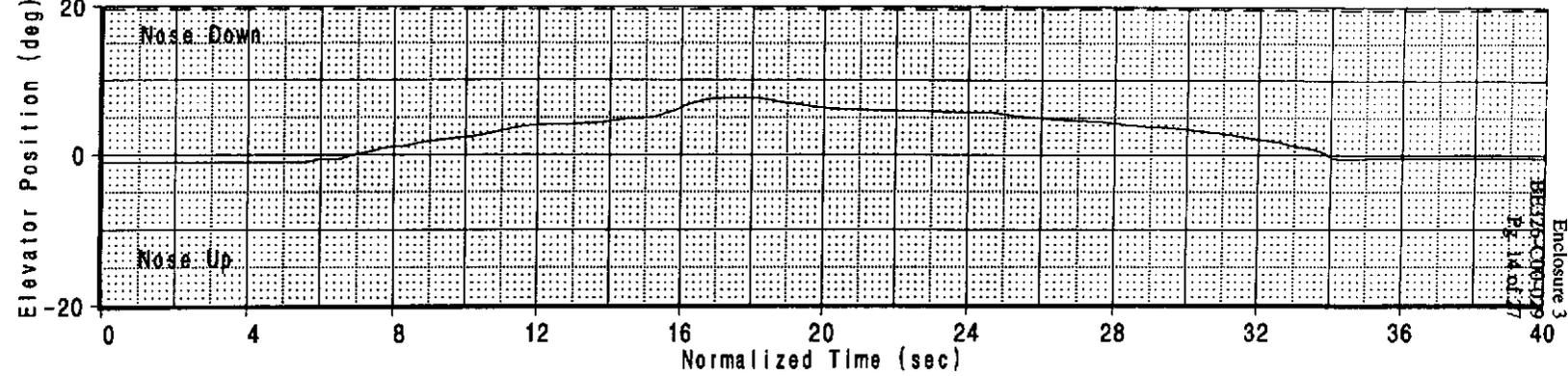
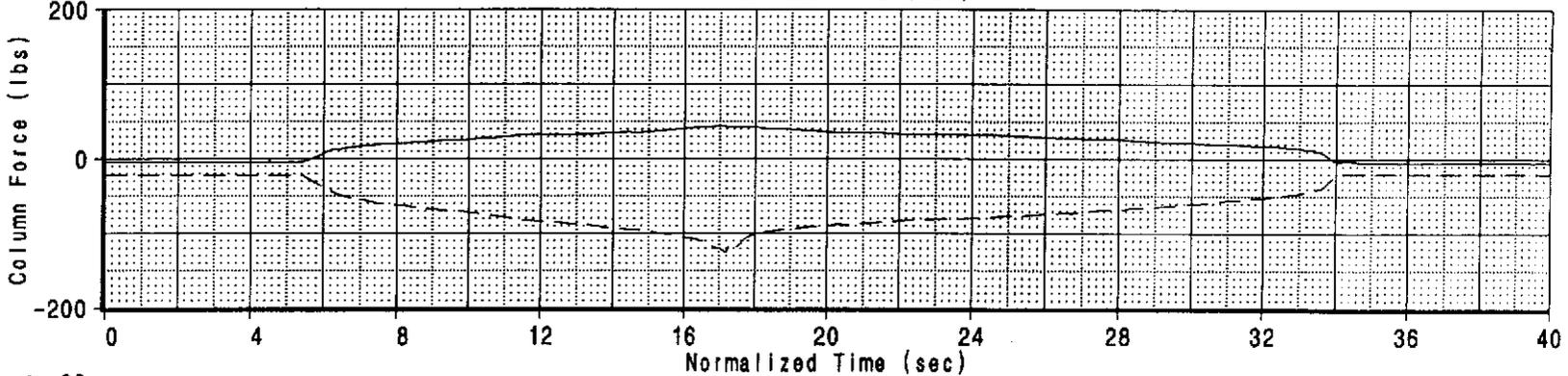
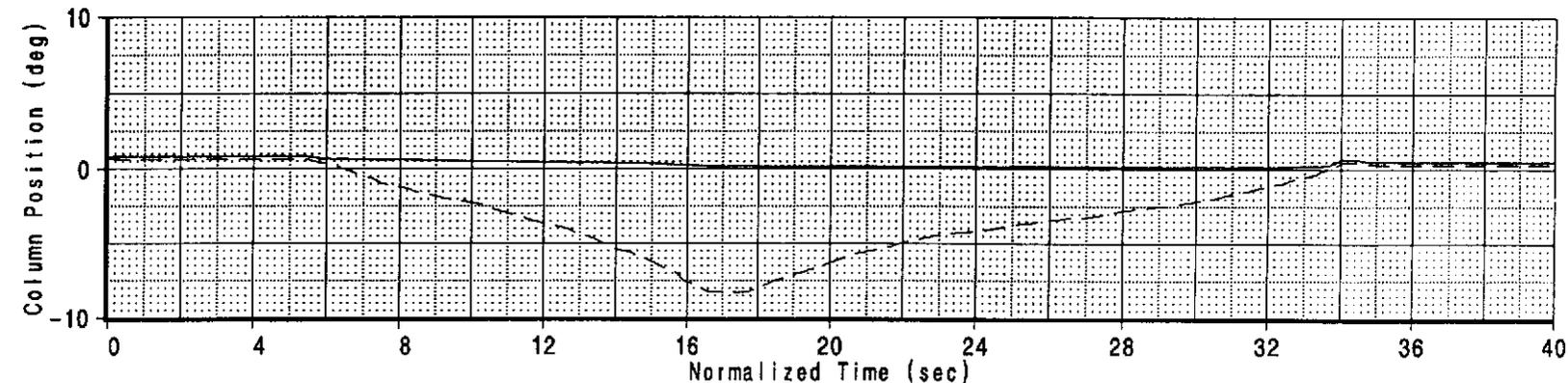
APPD.			
APPD.			
CHECK			
12Apr00	REVISIO	DATE	
Aerodynamics			
767-400ER			
VQ001			
BE326-000-029			
Figure 22			
PAGE			



Egypt Air Investigation  
 Pilot Sweeps-LAC PCU on R Elev Disconnected  
 Split Column (Pilot moves column, FO holds)

03/29/00 11:31:35.0000-11:32:16.0000 VQ001 010-05 767-400 BUCKLEY, KIMBERL

\_\_\_\_\_ Pilot Bill Tafs Base Elevator Feel Pressure  
 - - - - - First Officer PD Weston Ground Test

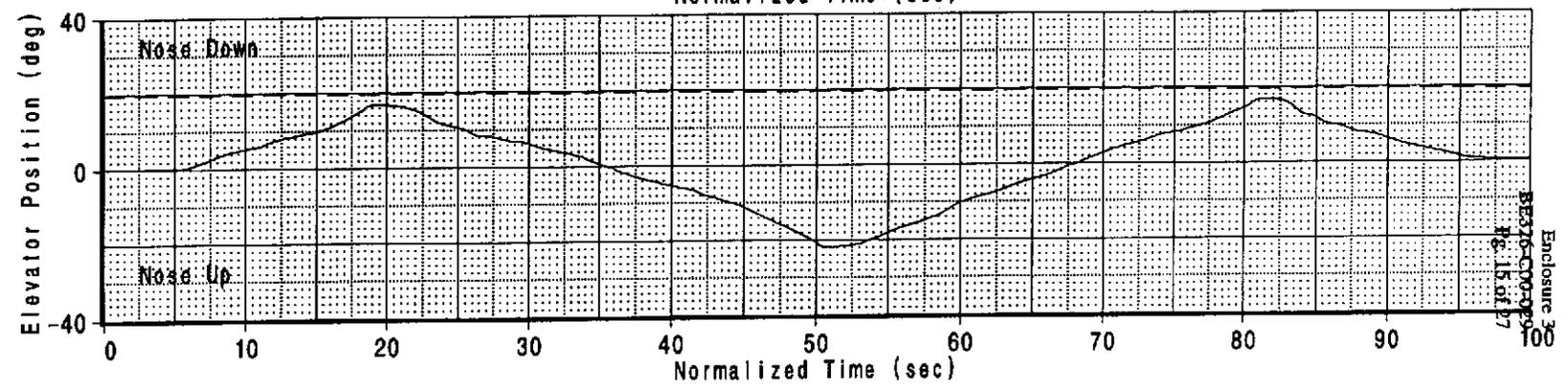
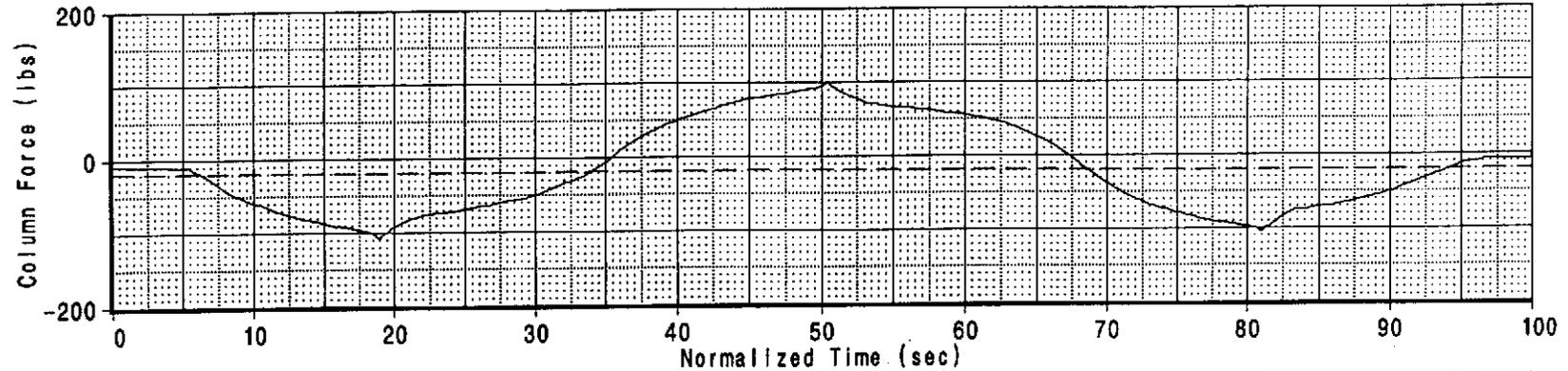
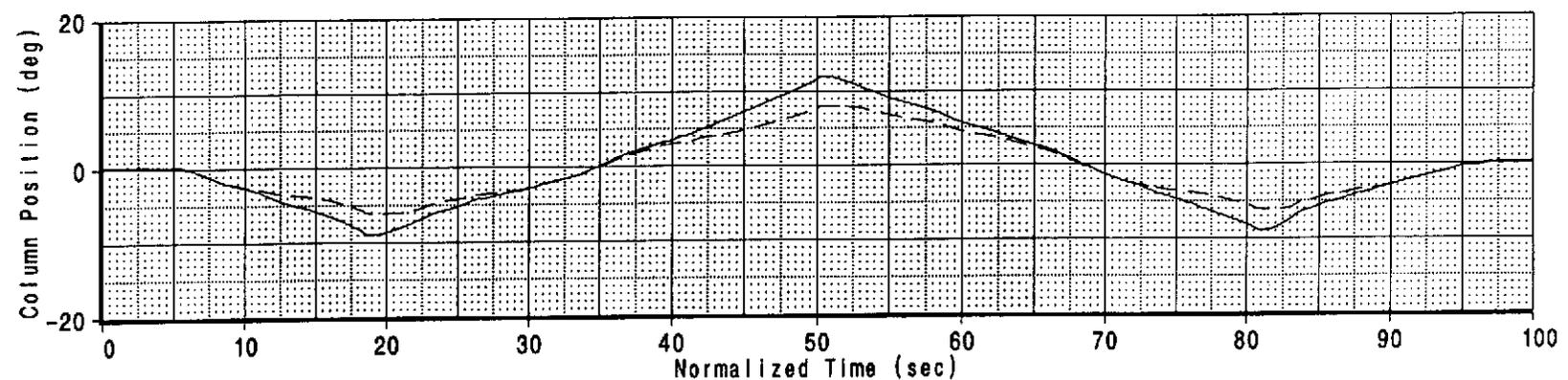


Enclosure 3  
 BE326-C00-029  
 Pg. 14 of 27

CALC	Aerodynamics	12Apr00	REVISION	DATE
CHECK				
APPD.				
APPD.				
Egypt Air Investigation <b>BOEING</b> F O Sweeps - L&C PCU on R Elevator Disconnected Split Column (FO moves column, Pilot holds)				
				767-400ER VQ001
				BE326-C00-029 Figure 23
				PAGE

03/29/00 11:52:55.0000-11:54:36.0000 VQ001 010-05 767-400 BUCKLEY, KIMBERL

\_\_\_\_\_ Pilot PD Weston 770 psi Elevator Feel Pressure  
 - - - - - First Officer Bill Tafs Ground Test



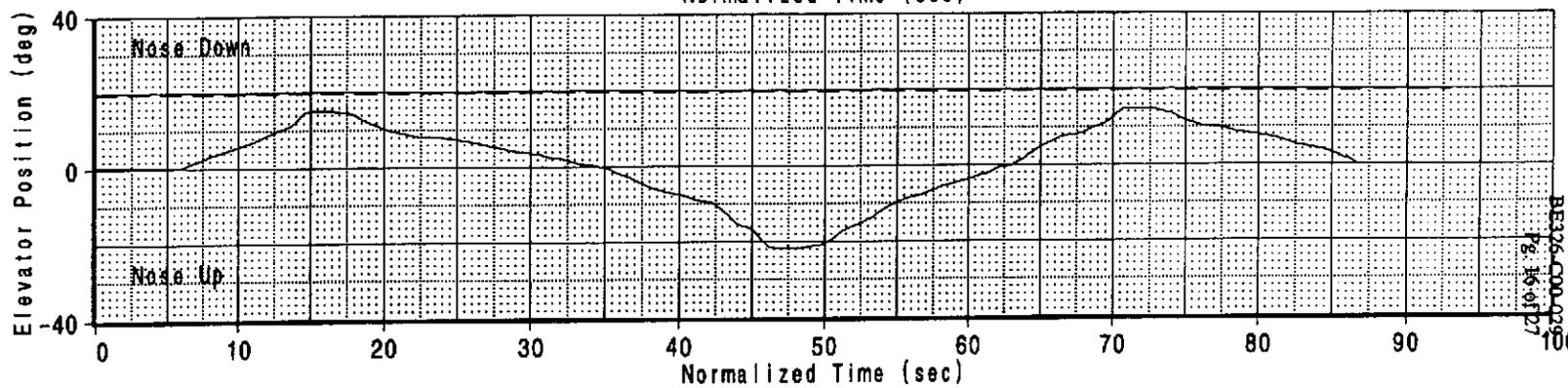
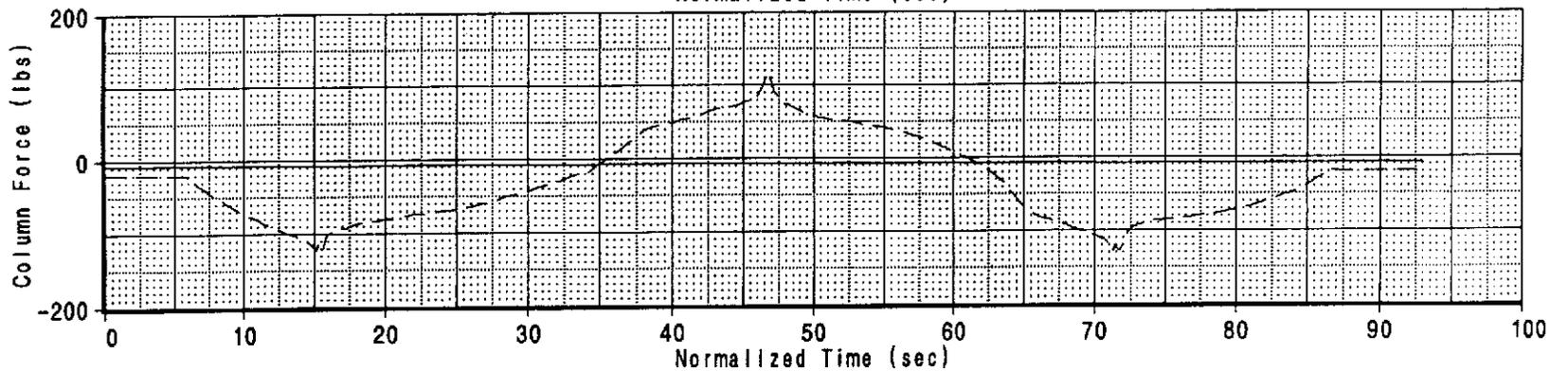
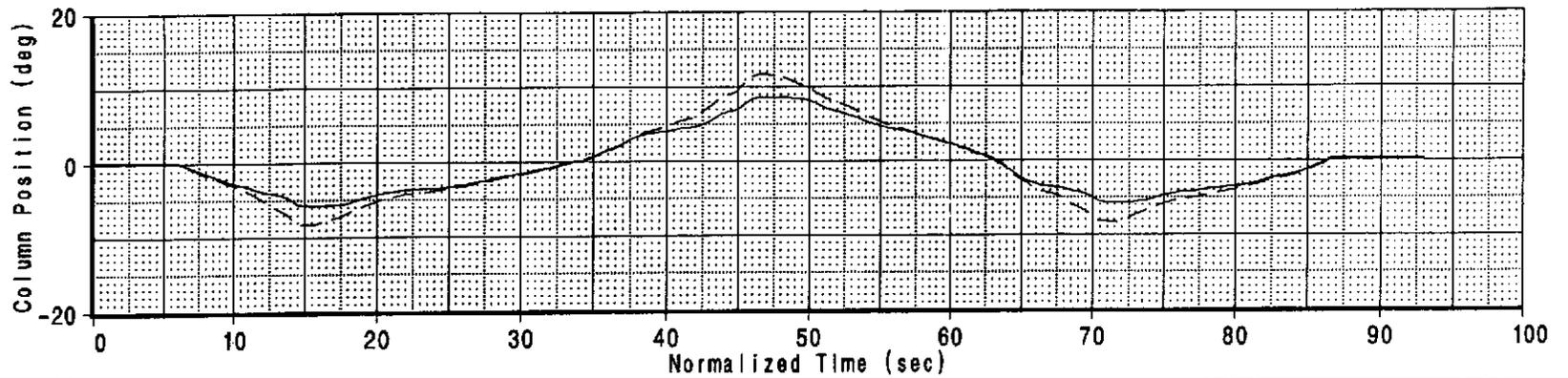
Enclosure 30  
BES326-C00-029  
Pg. 15 of 27

APPRO.				
APPRO.				
CHECK				
CALC	Aerodynamics	12Apr00	REVISED	DATE
Egypt Air Investigation Pilot Sweeps L & C PCU on Right Elevator Disconnected				
				767-400ER VQ001
				BES326-C00-029 Figure 32
				PAGE



03/29/00 11:54:40.0000-11:56:13.0000 VQ001 010-05 767-400 BUCKLEY, KIMBERL

\_\_\_\_\_ Pilot PD Weston 770 psi Elevator Feel Pressure  
 - - - - - First Officer Bill Tafs Ground Test



Enclosure 100  
 BE326-C00-029  
 Pg. 16 of 27

CALC	Aerodynamics	12Apr00	REVISED	DATE
CHECK				
APPD.				
APPD.				

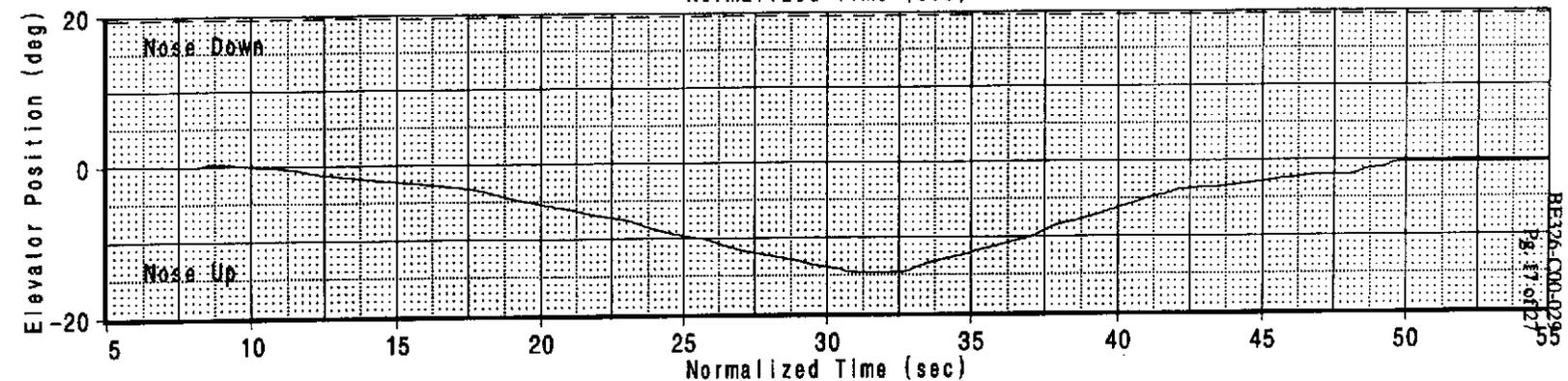
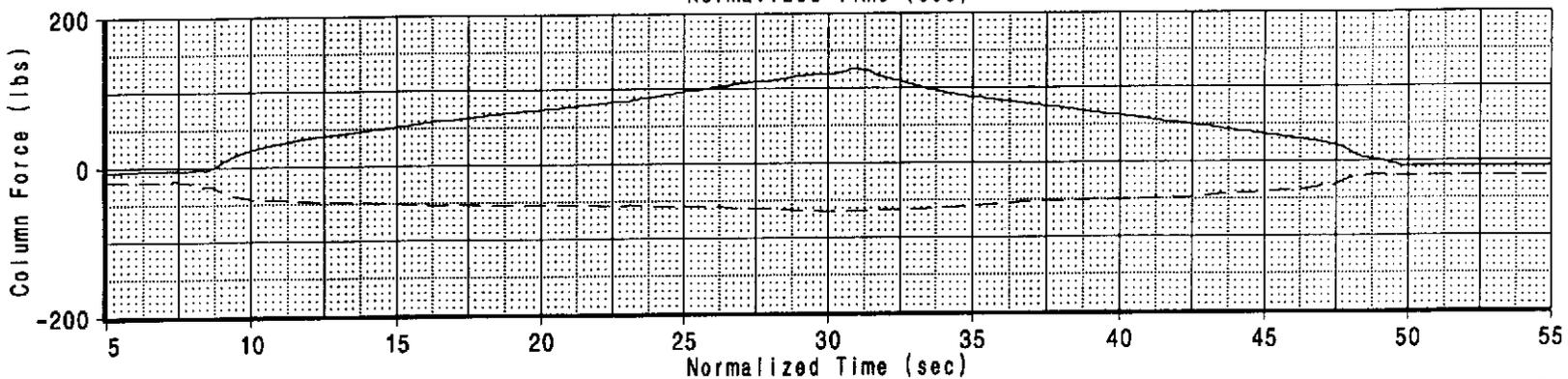
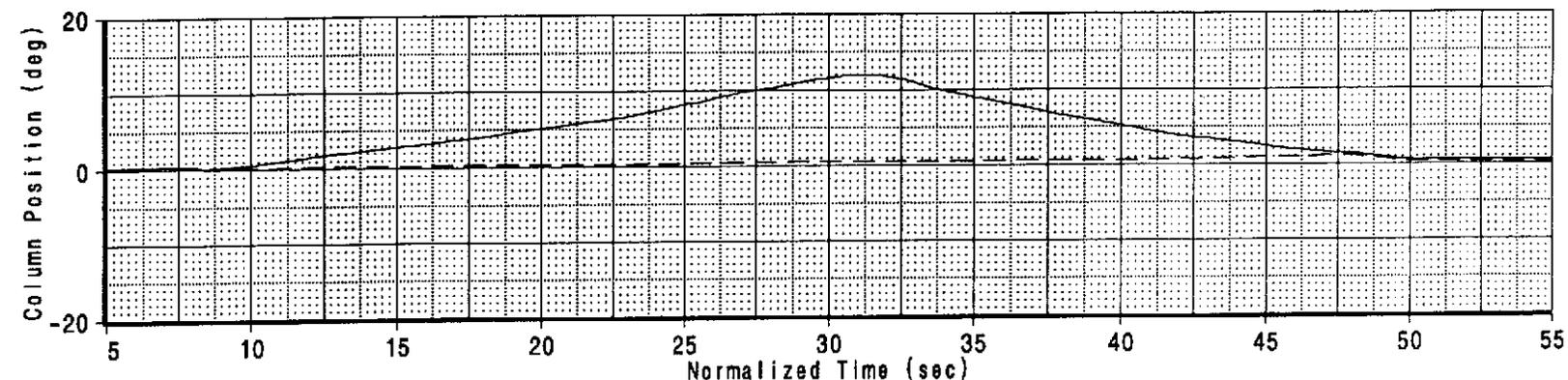
Egypt Air Investigation  
 First Officer Sweeps  
 L & C PCU on Right Elevator Disconnected

767-400ER  
 VQ001  
 BE326-C00-029  
 Figure 33  
 PAGE



03/29/00 11:56:25.0000-11:57:20.0000 VQ001 010-05 767-400 BUCKLEY, KIMBERL

\_\_\_\_\_ Pilot PD Weston 770 psi Elevator Feel Pressure  
 - - - - - First Officer Bill Tafs Ground Test



Enclosure 3  
BE326-000-029  
Pg. 17 of 27

CALC	12APR00	REVISED	DATE
CHECK			
APPD.			
APPD.			

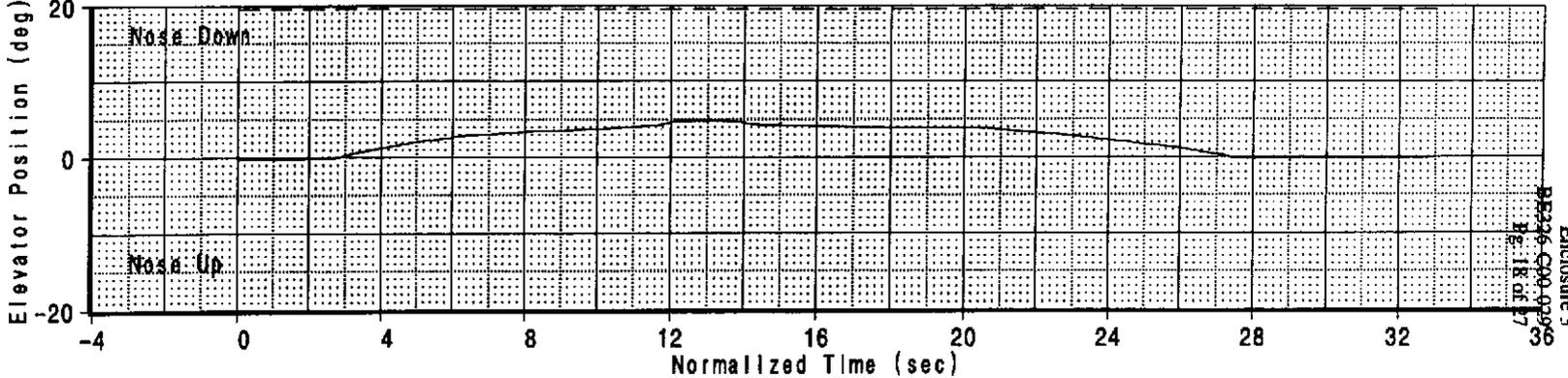
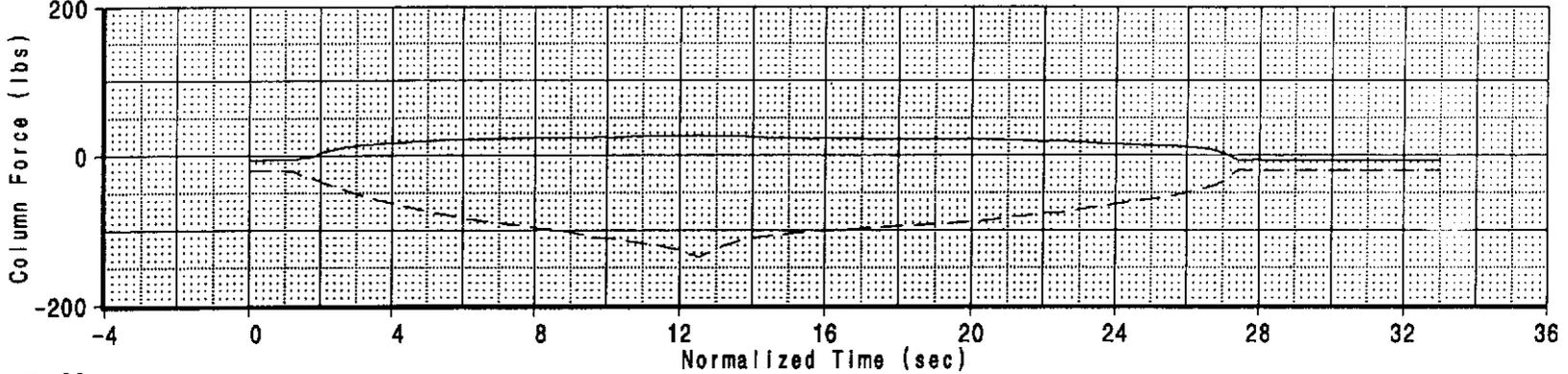
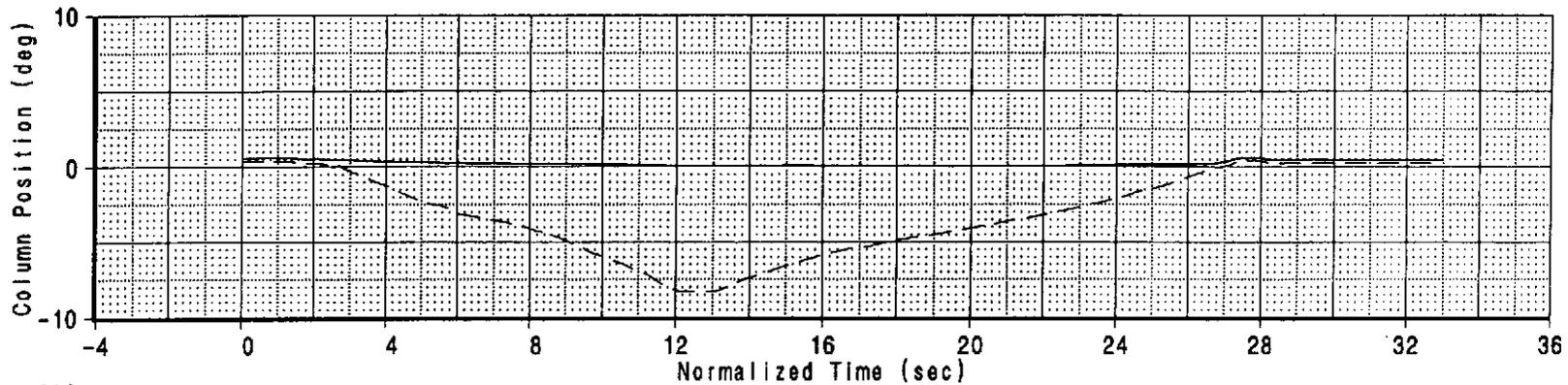
Egypt Air Investigation  
 Pilot Sweeps-L&C PCU on R Elev Disconnected  
 Split Column (Pilot moves column, FO holds)

767-400ER  
 VQ001  
 BE326-000-029  
 Figure 34  
 PAGE



03/29/00 11:58:15.0000-11:58:48.0000 VQ001 010-05 767-400 BUCKLEY, KIMBERL

\_\_\_\_\_ Pilot PD Weston 770 psi Elevator Feel Pressure  
 - - - - - First Officer Bill Tafs Ground Test



Enclosure 3  
 BE326-000-029  
 Fig. 18 of 17  
 36

CALC	Aerodynamics	12APR00	REVISED	DATE
CHECK				
APPD.				
APPD.				

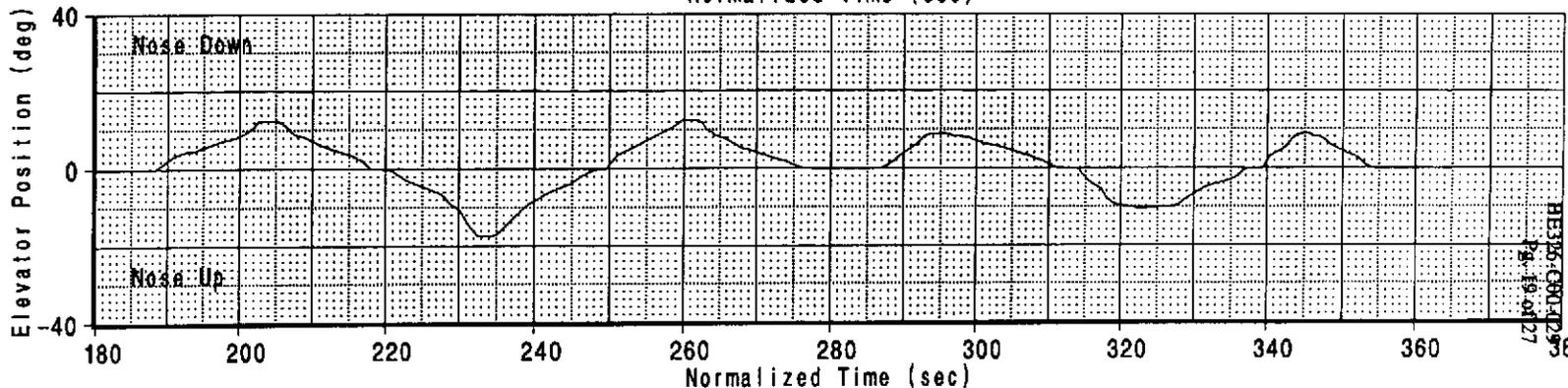
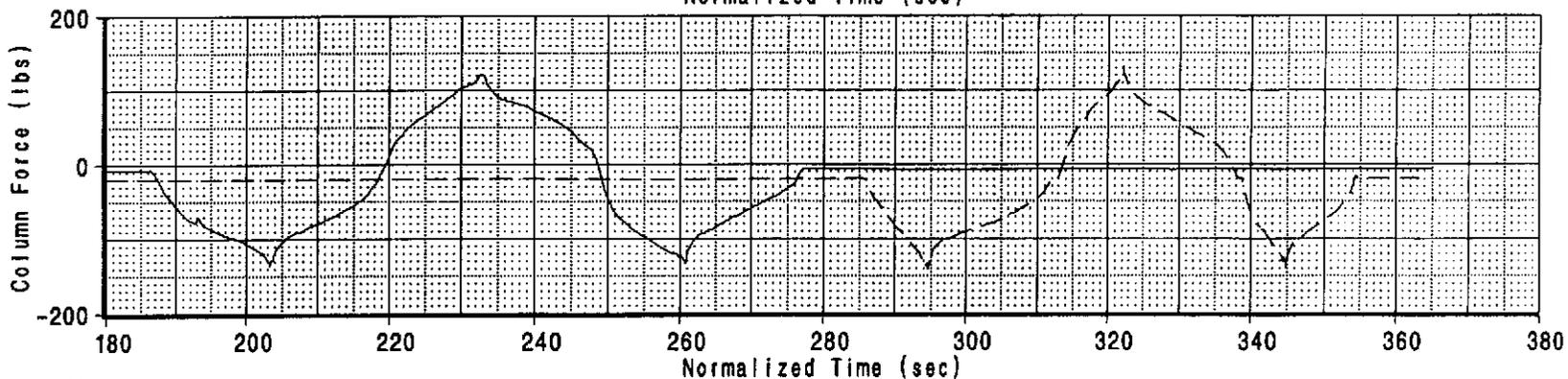
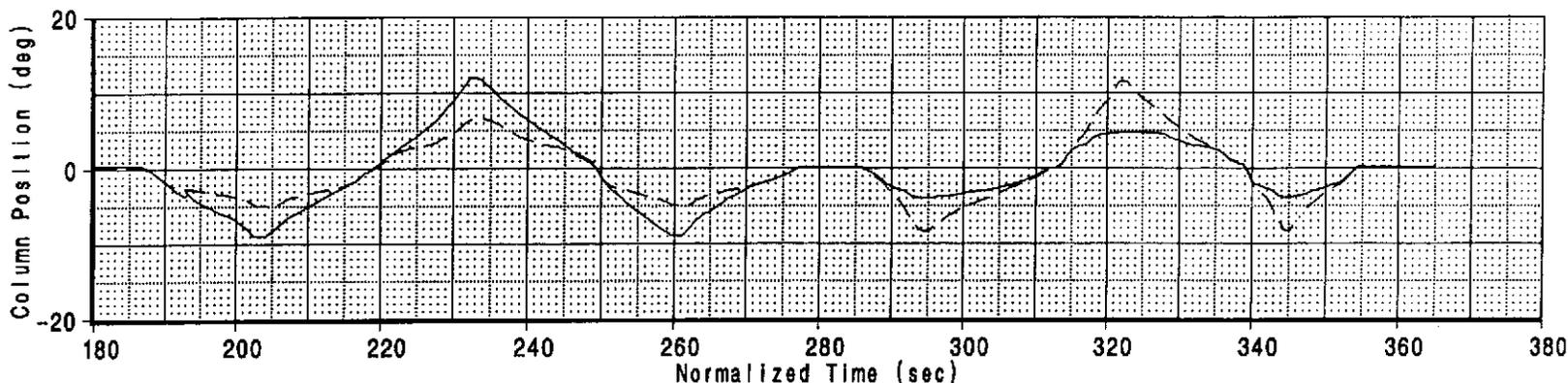
Egypt Air Investigation  
 F O Sweeps - L&C PCU on R Elev Disconnected  
 Split Column (FO moves column, Pilot holds)



PAGE	767-400ER VQ001
	BE326-000-029 Figure 36

03/29/00 12:13:30.0000-12:19:35.0000 VQ001 010-05 767-400 BUCKLEY, KIMBERL

\_\_\_\_\_ Pilot PD Weston Autopilot Engaged, 770 psi Elevator Feel Pressure  
 - - - - - First Officer Bill Tafs Ground Test



Enclosure 360  
 HES26:CRUIZ  
 Pg. 19 of 27

CALC	Aerodynamics	12AP/00	REVISID	DATE
CHECK				
APPD.				
APPD.				

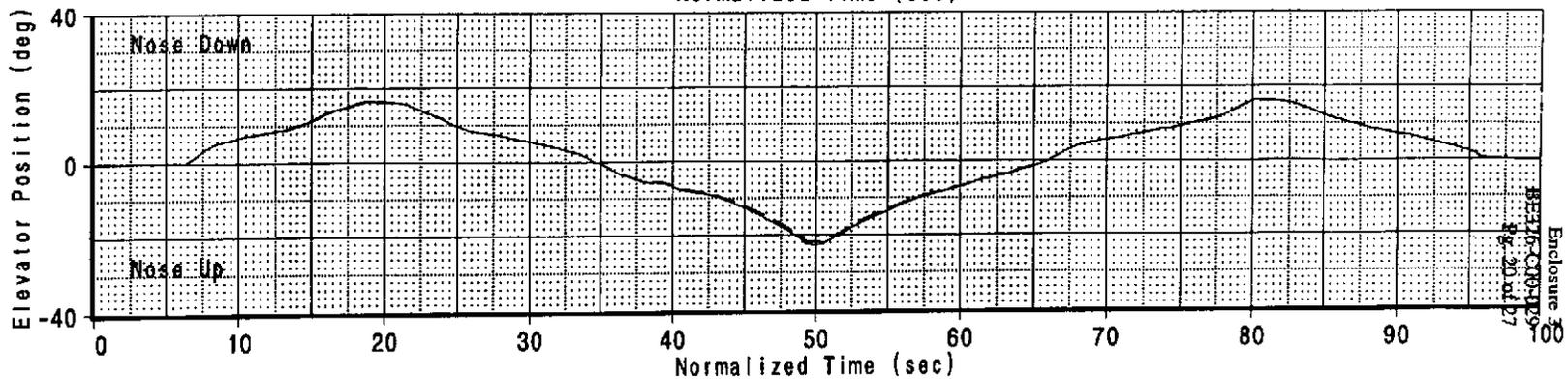
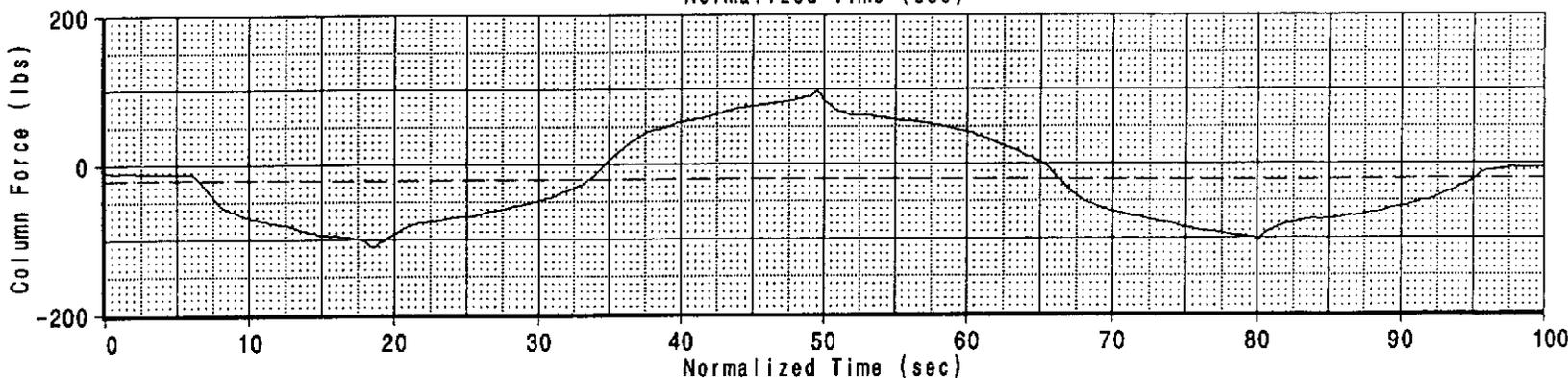
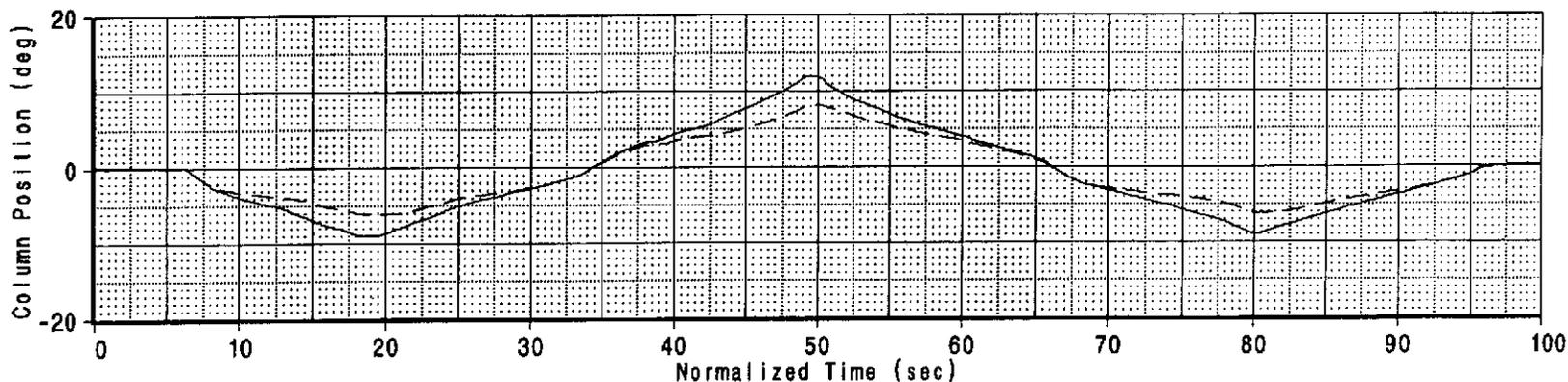
Egypt Air Investigation  
 Pilot and First Officer Sweeps  
 L & C PCU on Right Elevator Disconnected



PAGE	767-400ER VQ001
	BE326-000-029 Figure 37

03/29/00 12:56:10.0000-12:57:53.0000 VQ001 010-05 767-400 BUCKLEY, KIMBERL

\_\_\_\_\_ Pilot PD Weston 770 psi Elevator Feel Pressure  
 - - - - - First Officer Bill Tafs Ground Test



Enclosure 300  
BE326-000-029  
Fig. 30 of 37

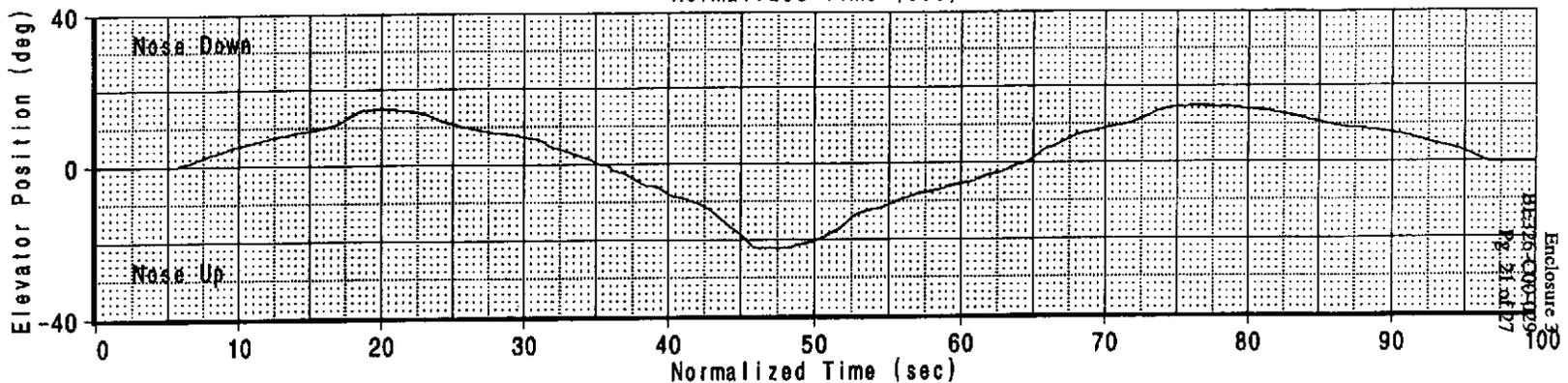
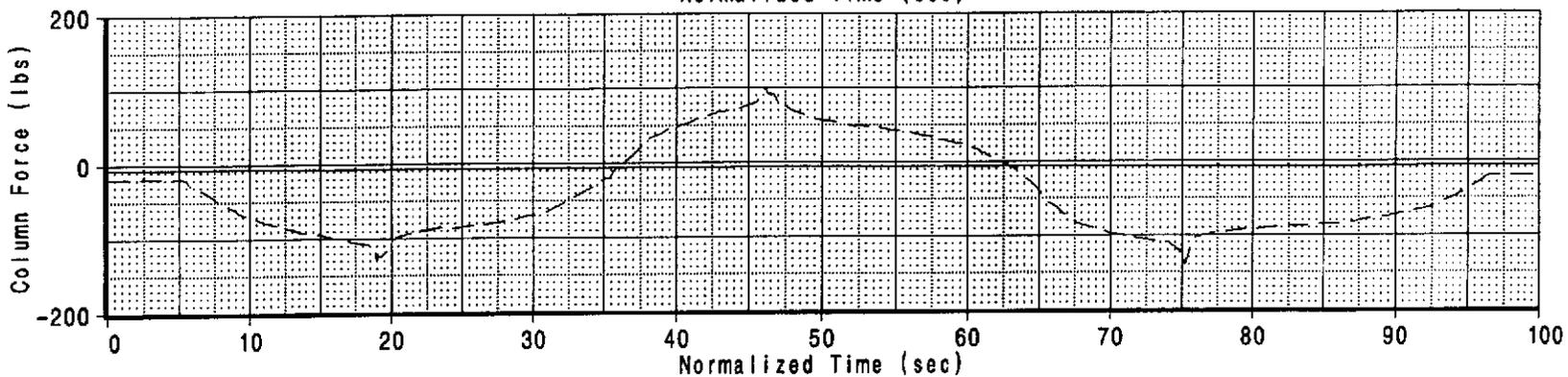
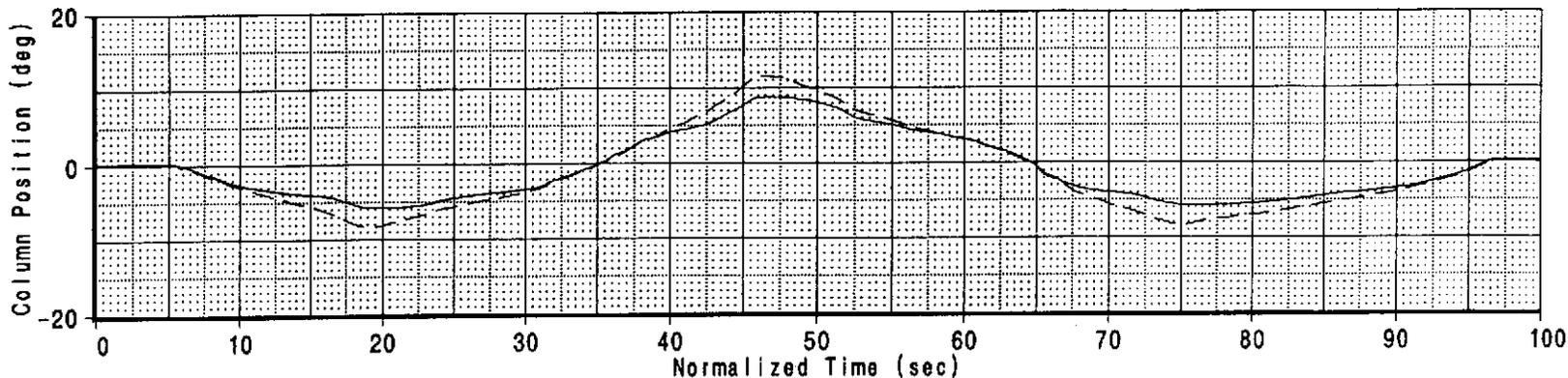
CALC	Aerodynamics	12Apr00	REVISED	DATE
CHECK				
APPD.				
APPD.				

Egypt Air Investigation  
 Pilot Sweeps  
 All PCU's Connected  
**BOEING**

PAGE	767-400ER VQ001
	BE326-000-029 Figure 47

03/29/00 12:57:55.0000-12:59:36.0000 VQ001 010-05 767-400 BUCKLEY, KIMBERL

\_\_\_\_\_ Pilot PD Weston 770 psi Elevator Feel Pressure  
 - - - - - First Officer Bill Tafs Ground Test

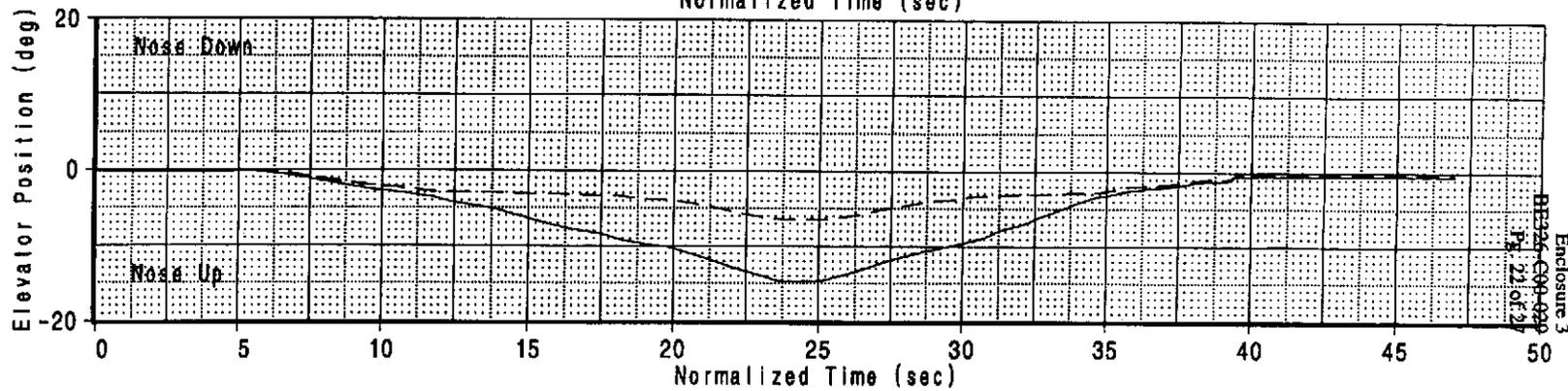
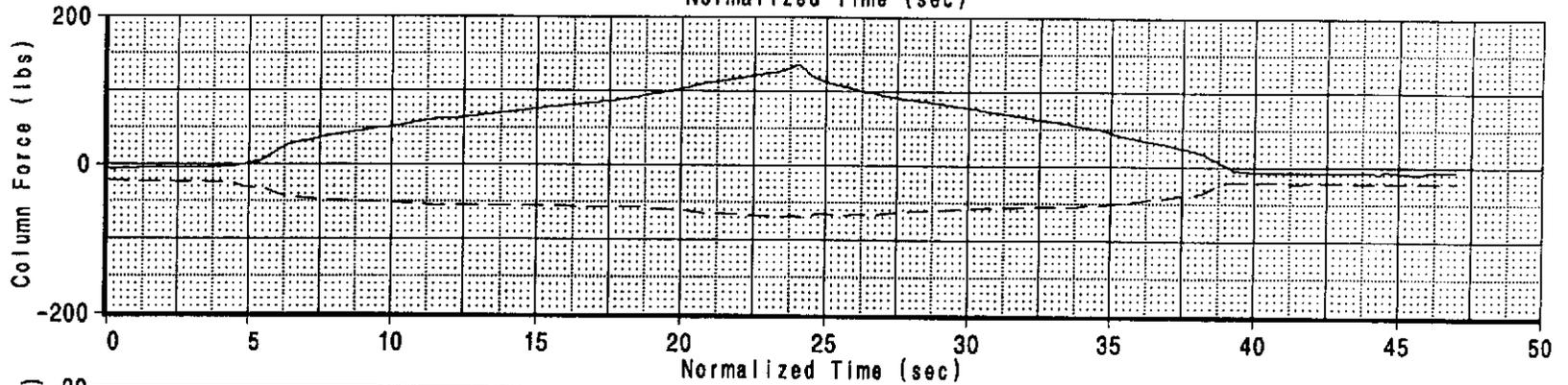
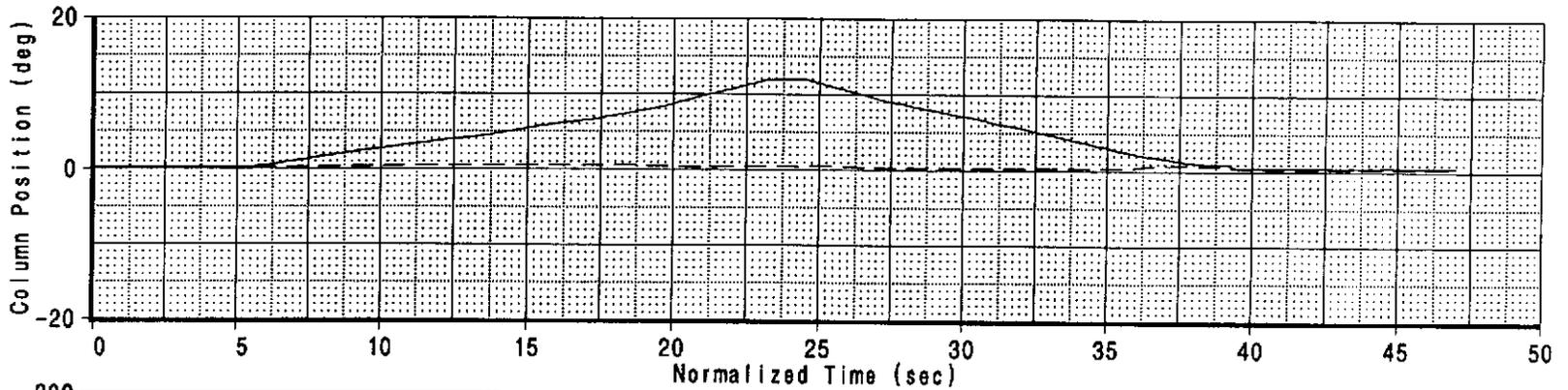


Enclosure 300  
BEE76-Q001-P9  
Pg. 21 of 27

CALC	Aerodynamics	12Apr00	REVISED	DATE
CHECK				
APPD.				
APPD.				
Egypt Air Investigation First Officer Sweeps All PCU's Connected 				
PAGE	767-400ER			
	VQ001			
	BEE76-Q00-029			
	Figure 42			

03/29/00 13:03:40.000-13:04:27.0000 VQ001 010-05 767-400 BUCKLEY, KIMBERL

— Pilot PD Weston 770 psi Elevator Feet Pressure  
 - - - First Officer Bill Tafs Ground Test



Enclosure 3  
 BE326-C00-029  
 Pg. 22 of 27

CALC	Aerodynamics	12APR00	REVISED	DATE
CHECK				
APPD.				
APPD.				

Egypt Air Investigation  
 Pilot Sweeps - All PCU's Connected  
 Split Column (Pilot moves column, FO holds)

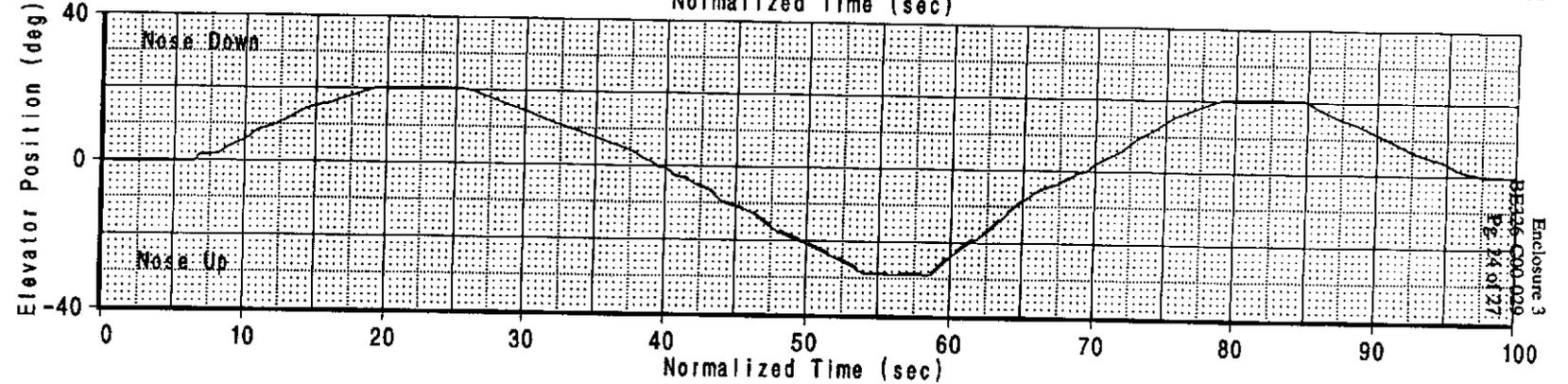
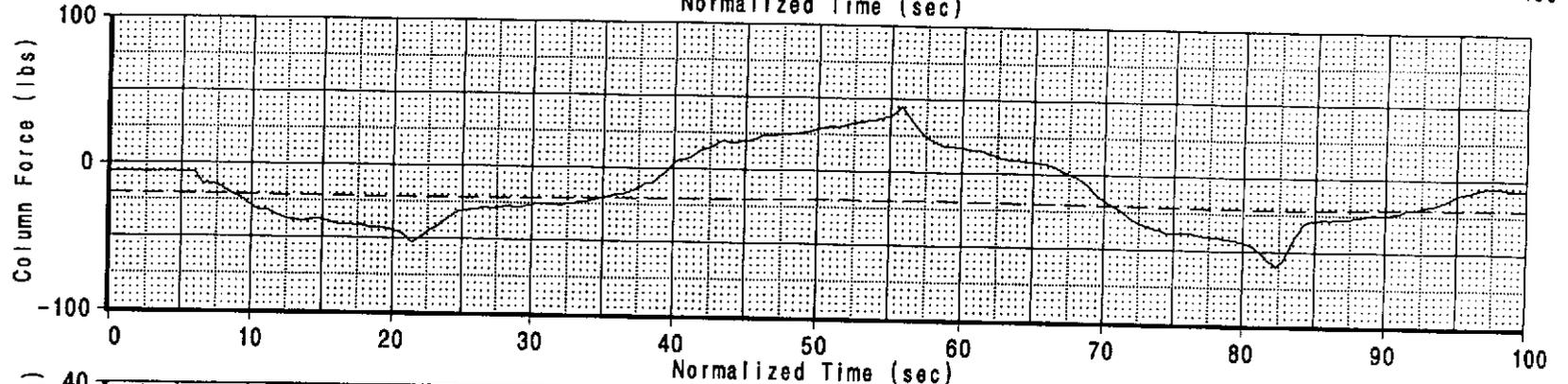
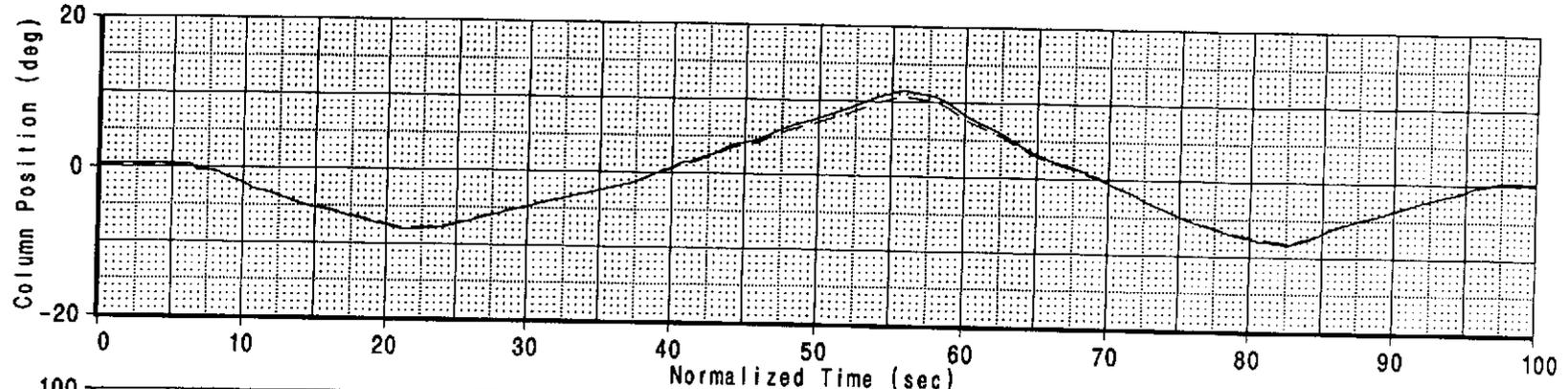


PAGE	767-400ER VQ001
	BE326-C00-029 Figure 43



03/29/00 13:07:10.0000-13:08:53.0000 VQ001 010-05 767-400 BUCKLEY, KIMBERL

\_\_\_\_\_ Pilot PD Weston Base Elevator Feel Pressure  
 - - - - - First Officer Bill Tafs Ground Test



Enclosure 3  
 BE326-C00-029  
 Pg. 24 of 27

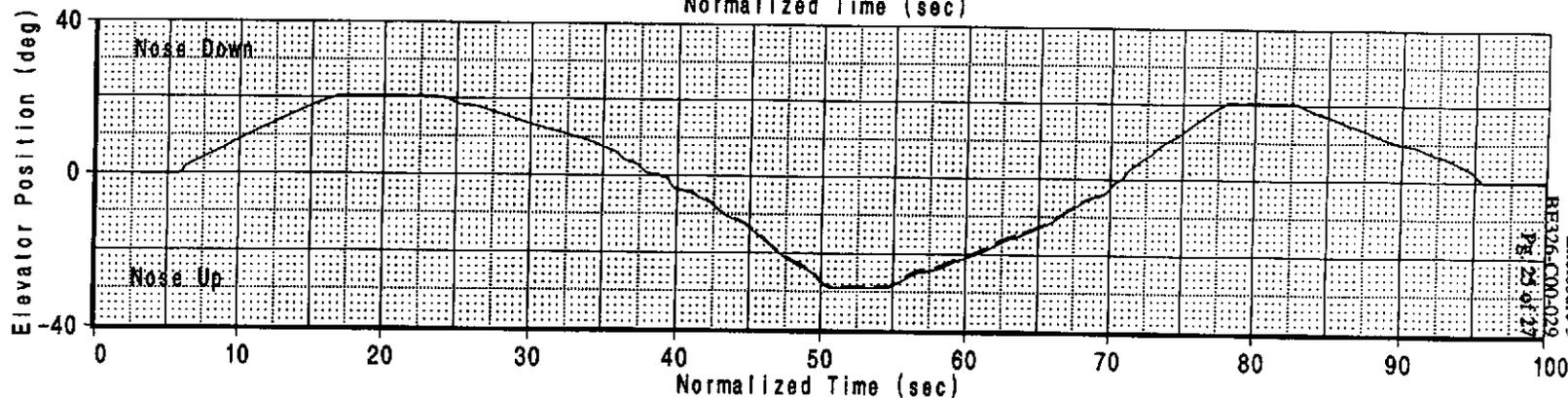
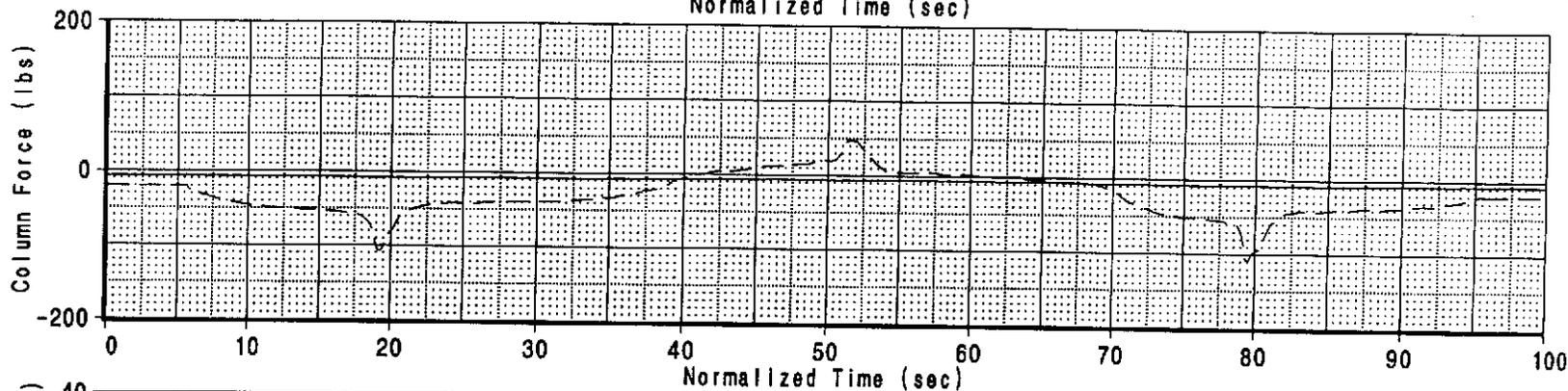
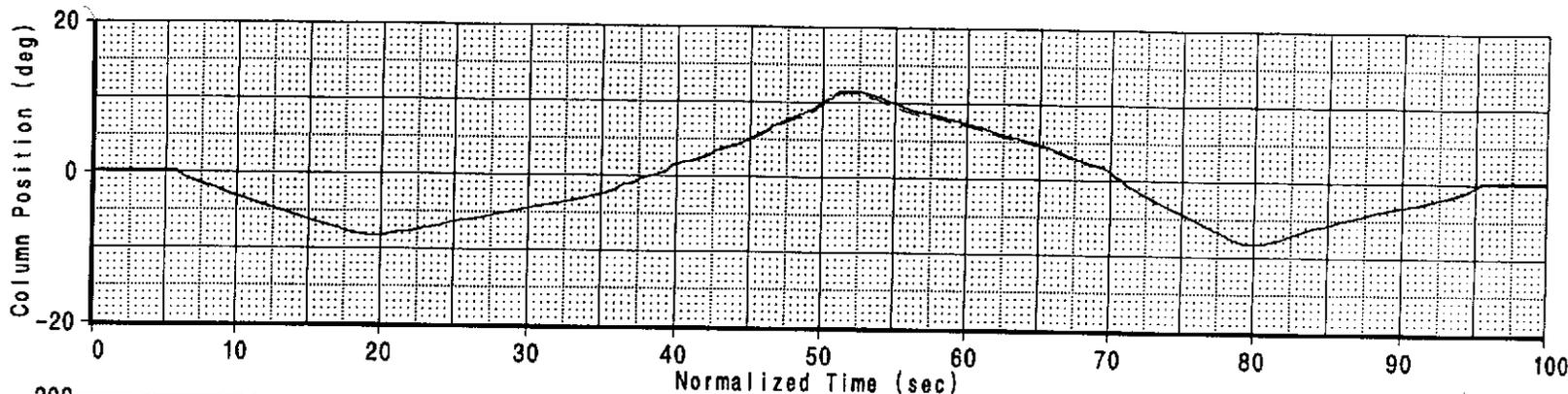
CALC	Aerodynamics	12Apr00	REVISED	DATE
CHECK				
APPD.				
APPD.				

Egypt Air Investigation  
 Pilot Sweeps  
 All PCU's Connected  
**BOEING**

PAGE	767-400ER VQ001
	BE326-C00-029 Figure 45

03/29/00 13:08:55.0000-13:10:35.0000 VQ001 010-05 767-400 BUCKLEY, KIMBERL

\_\_\_\_\_ Pilot PD Weston Base Elevator Feel Pressure  
 - - - - - First Officer Bill Tafs Ground Test

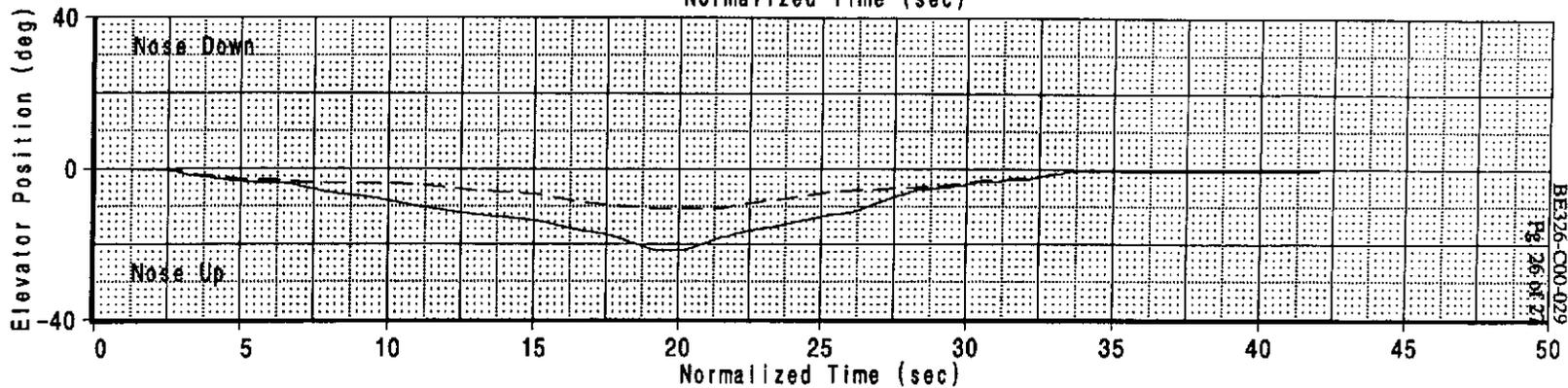
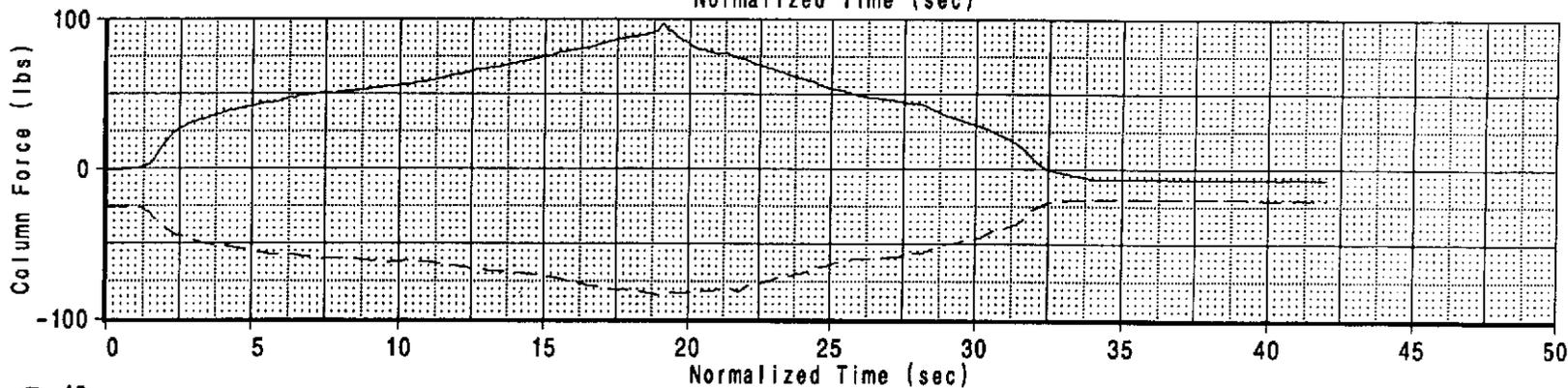
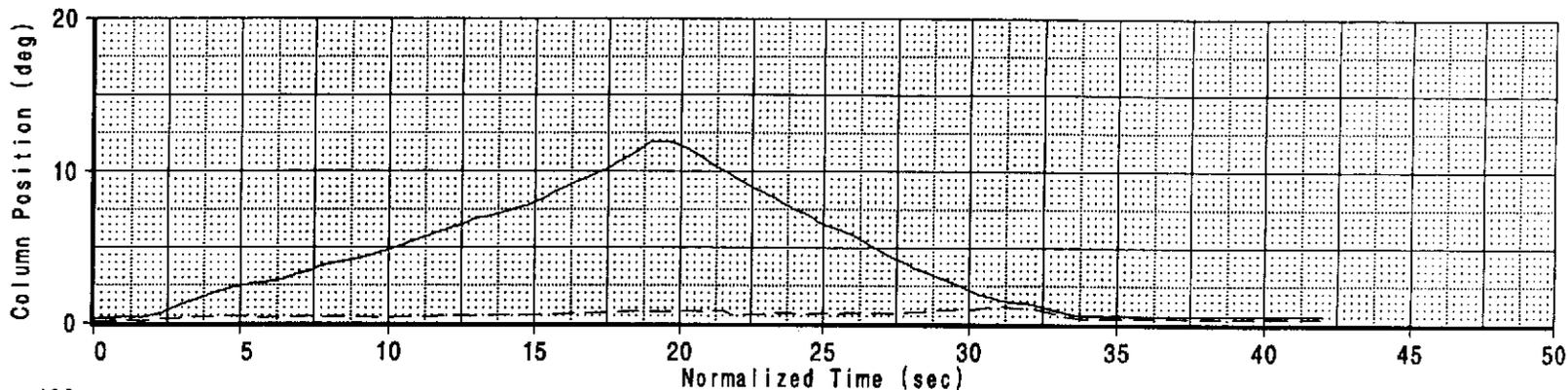


Enclosure 3  
RE326-001-029  
Pg 25 of 27

CALC	Aerodynamics	12Apr00	REVISED	DATE
CHECK				
APPD.				
APPD.				
Egypt Air Investigation First Officer Sweeps All PCU's Connected 				
PAGE	767-400ER VQ001	BE326-001-029	Figure 48	

03/29/00 13:10:45.0000-13:11:27.0000 VQ001 010-05 767-400 BUCKLEY, KIMBERL

\_\_\_\_\_ Pilot PD Weston Base Elevator Feel Pressure  
 - - - - - First Officer Bill Tafs Ground Test



Enclosure 3  
BE326-C00-029  
Pg 26 of 27

CALC	Aerodynamics	12Apr00	REVISED	DATE
CHECK				
APPD.				
APPD.				

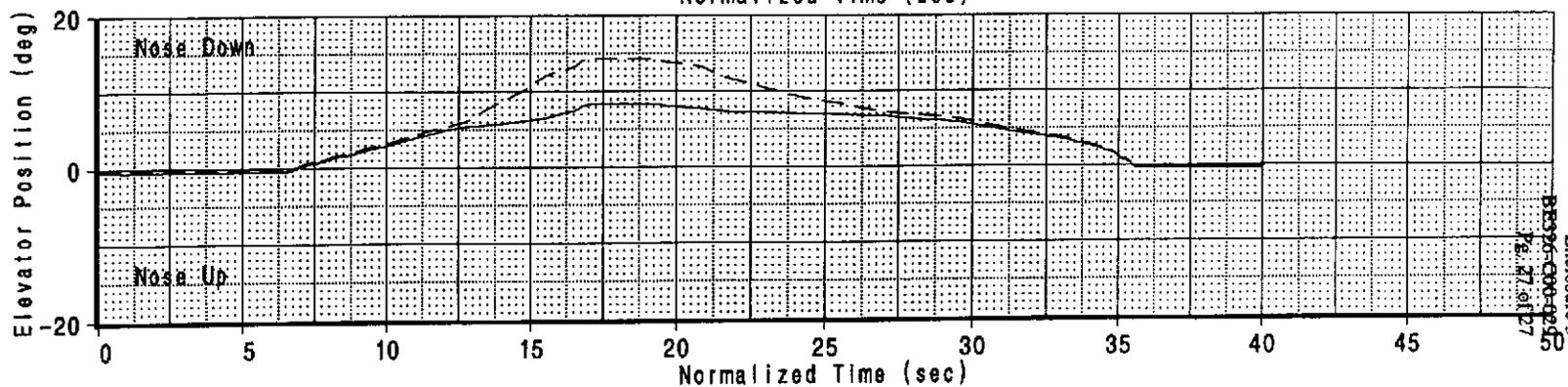
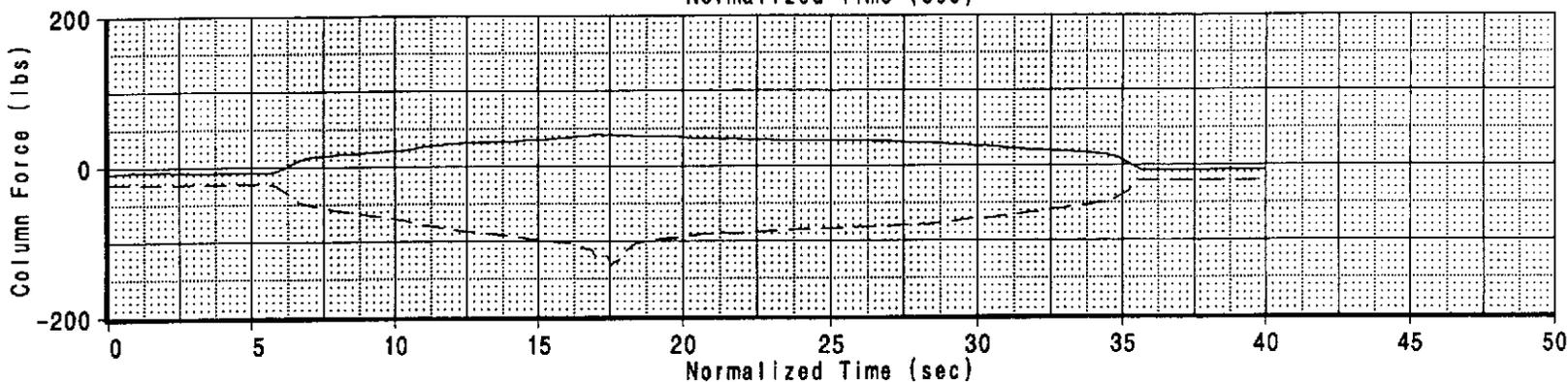
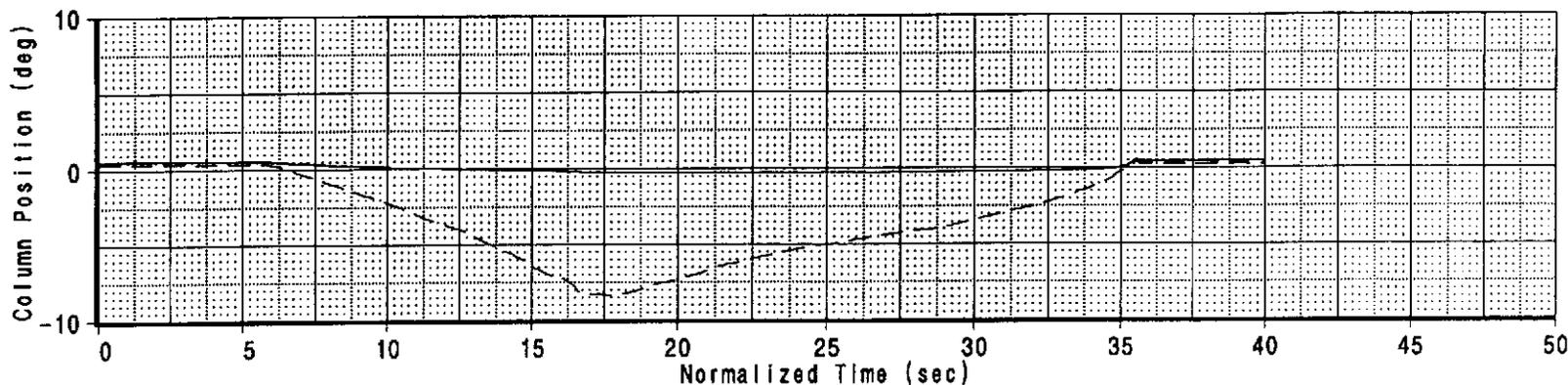
Egypt Air Investigation  
 Pilot Sweeps - All PCU's Connected  
 Split Column (Pilot moves column, FO holds)

PAGE	767-400ER VQ001
	BE326-C00-029 Figure 47



03/29/00 13:12:05.0000-13:12:45.0000 VQ001 010-05 767-400 BUCKLEY, KIMBERL

\_\_\_\_\_ Pilot PD Weston Base Elevator Feel Pressure  
 - - - - - First Officer Bill Tafs Ground Test



Enclosure 3  
 BE326-C00-029  
 Pg. 27 of 27

CALC	Aerodynamics	12Apr00	REVISED	DATE
CHECK				
APPD.				
APPD.				

Egypt Air Investigation  
 First Officer Sweeps - All PCU's Connected  
 Split Column(FO moves column, Pilot holds)

PAGE	767-400ER VQ001
	BE326-C00-029 Figure 48

