

**Docket No. SA-520**

**Exhibit No. 9-H**

**NATIONAL TRANSPORTATION SAFETY BOARD**

Washington, D.C.

**Flap/Slat Sequence Ground Test Plan & Results**

( 9 Pages)

## ALASKA 261 SYSTEMS GROUP GROUND TEST PLAN

For Tuesday, March 7, 2000

This is a test plan drafted by the Systems Group assigned with to the NTSB investigation of Alaska Airlines 261 accident investigation. The test plan provides detailed, step-by-step procedures to conduct 2 different tests. The purpose of these tests is to determine why there are anomalies on the DFDR data traces from the accident flight. These tests are very brief.

The test set-up should consist of an Alaska MD-82 airplane on the ground that is capable of electrical power. The engines do not need to be started. A DFDR is needed for recording, as well as a unit to download the DFDR data onto. A minimum of two persons is needed: one in the cockpit to operate the specified switches and controls, and one outside to observe flap slat movement.

This test should be supervised by an NTSB field investigator from the Seattle office. Systems Group members Andy Leiper (Alaska) and John Pollom (AMFA) should also be present. The FAA, Boeing, and ALPA have also been invited. The NTSB field investigator shall be the supervising authority for the test, and Andy Leiper is the technical lead.

Please read these notes prior to starting:

### VHF- 1 KEYING

When using VHF1 keying as a marker, make sure keying is depressed for greater than one second or it will not show up on recorded data. (i.e. key VHF1 mike simultaneously with handle movement and hold until action is complete.) All that matters is the beginning of the movement - an error band will exist between the different sampling rate of each parameter though.

### FDR DATA

Download test data from FDR unit as normal. I think Alaska uses ADRAS. Save as unpacked binary if possible; if not save as normal ADRAS .sdf or .fdf file. Data may be emailed, burned on CD, put on floppy, sent though snail mail, anything except paper copy would be appreciated.

### Points of Contact:

Send data to: Erin Gormley (NTSB DFDR Group Chair) Alpha pager is 1-877-497-2288 or email [8777208398.4972288@pagenetmessage.net](mailto:8777208398.4972288@pagenetmessage.net). Her 'landline' until Wednesday morning is 518-482-6454. She will return to the office Wednesday afternoon. Call me anytime with questions, comments or mere information overload concerns ☺

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FDR SN 4749

The systems group ground test plan was done on aircraft 935 in the Alaska Airline hanger in Seattle on March 7 2000. The flight data recorder serial number was 4749.

**Participants**

**Michael Stockhill NTSB**

**Henry Yaap ALPA**

**John Pollom AMFA**

**David Inderbitzen Boeing**

**Andy Leiper Alaska Airlines**

**Step #7 of the flap/slat sequencing test was done three times. The first time the flap handle was moved from up retract to 15 degrees instead of 11 degrees and the VHF-1 mike was keyed beyond the handle movement. The second time the handle was moved to 11 degrees but the mike was keyed beyond the handle movement. The third time was done per instructions.**

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## FLAP/SLAT SEQUENCING GROUND TEST

1. Turn Auxiliary Hydraulic Pump On
2. Turn transfer pump on
3. Ensure flap/slat are in the **UP RETRACT** position
4. Note the reading on the flap/slat gage UP BOTH L/H + R/H
5. Depress the VHF-1 key for 5 seconds and release
6. Communicate with outside ground observer so he/she can prepare to observe flap/slat movement and whether flaps or slats come out first.
7. Move the flap/slat handle to the **11-degree position** in one motion, without stopping, while simultaneously depressing the VHF-1 mike key. Keep the mike key depressed during the entire time of the handle movement.
8. Note the flap gage reading 12° R/H - 11.5° L/H.
9. Have ground observer record his/her observations of the flap/slat movement:  
slats extend approx 1 sec before flaps started moving
10. Ensure flap/slat are in the **UP RETRACT** position
11. Note the reading on the flap/slat gage UP L/H + R/H
12. Depress the VHF-1 key for 5 seconds and release
13. Communicate with outside ground observer so he/she can prepare to observe flap/slat movement and whether flaps or slats come out first.
14. Move the flap/slat handle to the **11-degree position** in one motion, without stopping, while simultaneously depressing the VHF-1 mike key. ~~Keep~~ the mike key depressed during the entire time of the handle movement.
15. Note the flap gage reading L/H 11.5° R/H 12°

16. Have ground observer record his/her observations of the flap/slat movement.

Slats started moving approx 1 sec before flaps movement

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17. Ensure flap/slat are in the UP RETRACT position

18. Note the reading on the flap/slat gage UP 4/H + P/H

19. Depress the VHF-1 key for 5 seconds and release

20. Communicate with outside ground observer so he/she can prepare to observe flap/slat movement and whether flaps or slats come out first.

21. Move the flap/slat handle to the "0 / EXTEND" position in one motion, without stopping, while simultaneously depressing the VHF-1 mike key. Keep the mike key depressed during the entire time of the handle movement.

22. Note the flap gage reading UP.

23. Have ground observer record his/her observations of the flap/slat movement:

Slats extended, no flap movement

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24. Ensure flap/slat are in the UP RETRACT position

25. Note the reading on the flap/slat gage UP

26. Depress the VHF-1 key for 5 seconds and release

27. Communicate with outside ground observer so he/she can prepare to observe flap/slat movement and whether flaps or slats come out first.

28. Move the flap/slat handle to the "0 / EXTEND" position in one motion, without stopping, while simultaneously depressing the VHF-1 mike key. Keep the mike key depressed during the entire time of the handle movement.

29. Note the flap gage reading UP

30. Have ground observer record his/her observations of the flap/slat:

Slats extended no flap movement

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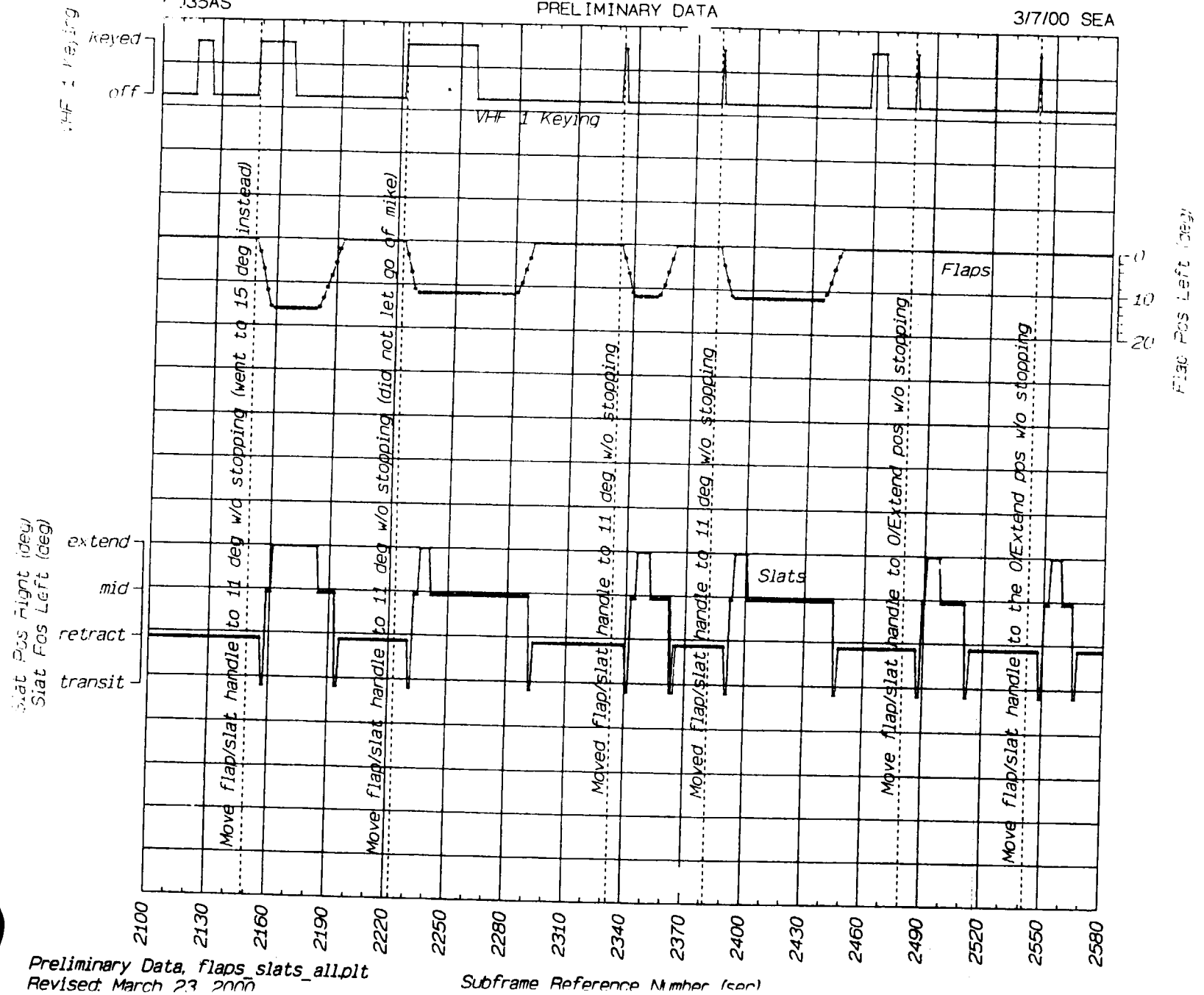
END OF TEST

# MD83 Alaska Airlines Seattle Ground Test

MD35AS

PRELIMINARY DATA

3/7/00 SEA



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Preliminary Data, flaps slats\_all.plt  
Revised: March 23 2000

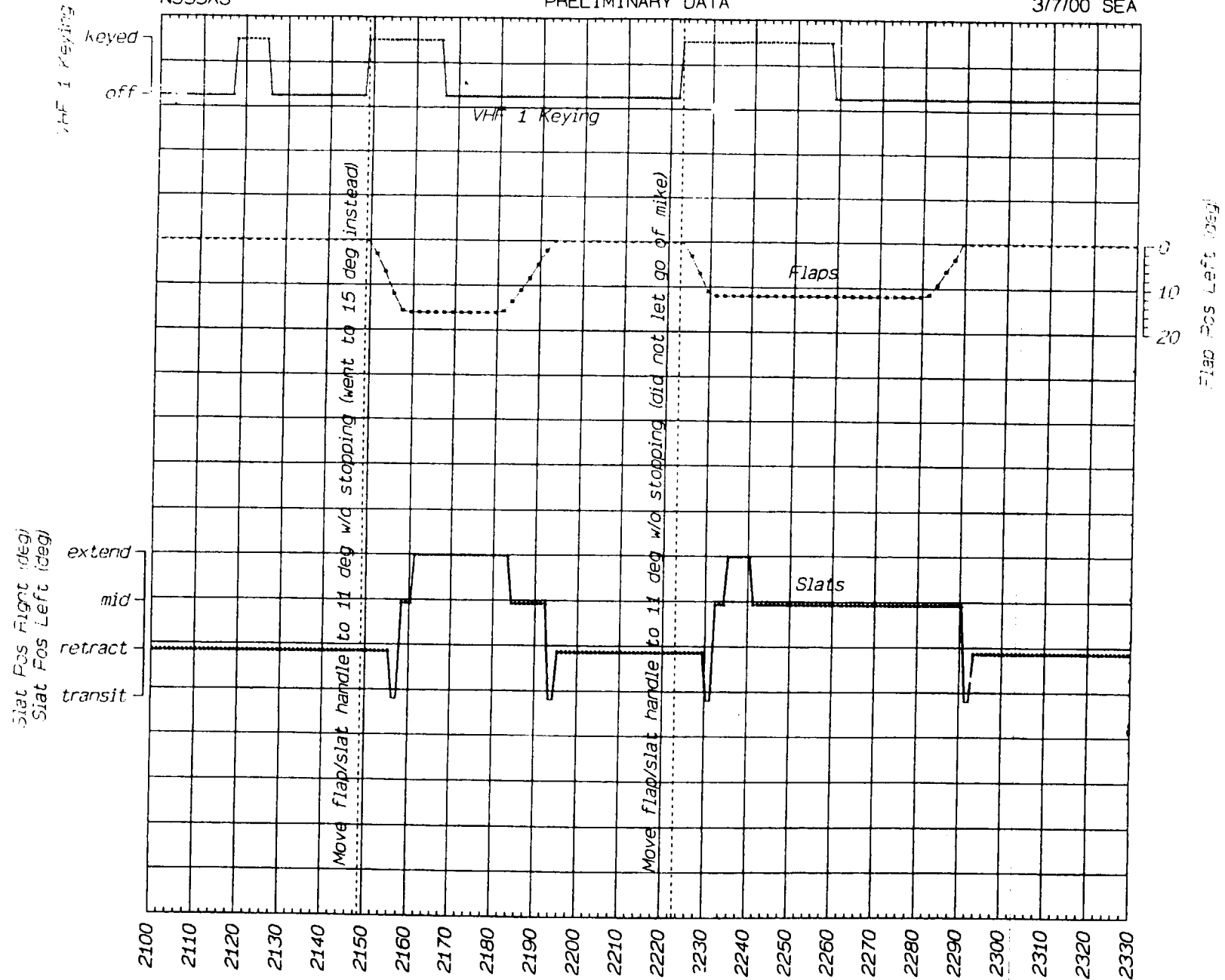
Subframe Reference Number (sec)

# MD83 Alaska Airlines Seattle Ground Test

N935AS

PRELIMINARY DATA

3/7/00 SEA



Preliminary Data, flaps slats\_1st try.plt

Subframe Reference Number (sec)

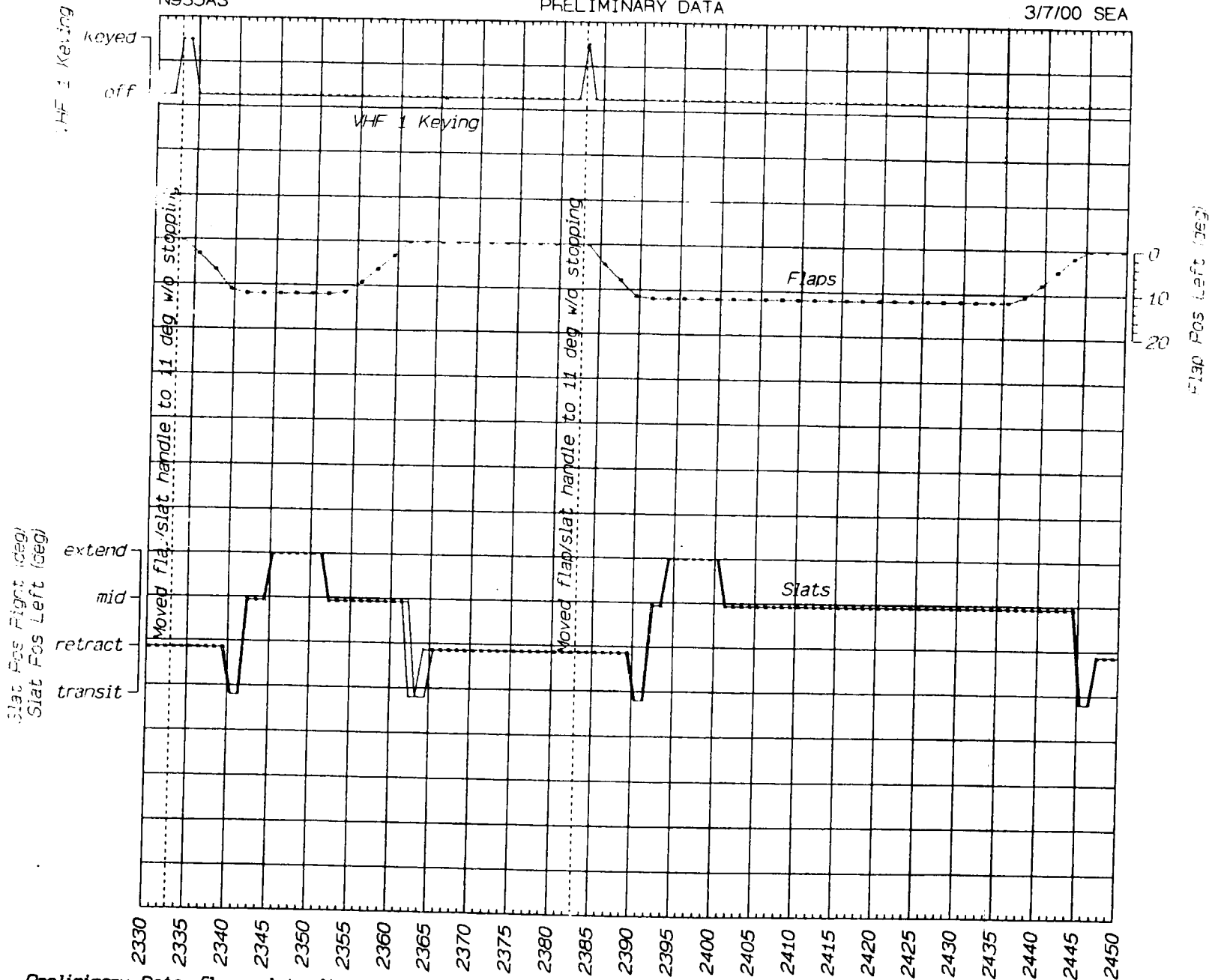


# MD83 Alaska Airlines Seattle Ground Test

N935AS

PRELIMINARY DATA

317100 SEA



Preliminary Data, flaps\_slats.plt  
Created: March 23, 2000

Subframe Reference Number (sec)



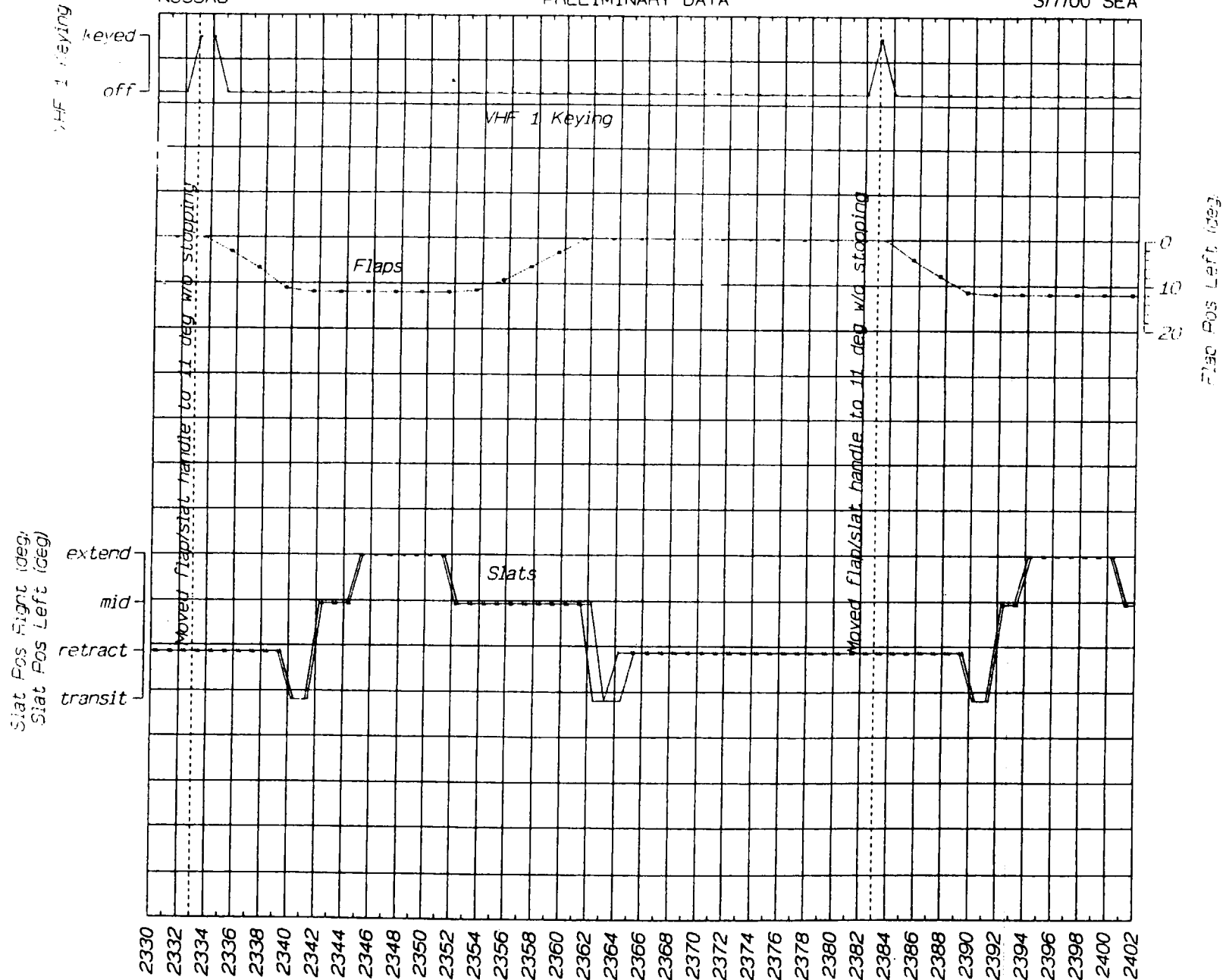


# MD83 Alaska Airlines Seattle Ground Test

N935AS

PRELIMINARY DATA

3/7/00 SEA



# MD83 Alaska Airlines Seattle Ground Test

N935AS

PRELIMINARY DATA

3/7/00 SEA

