NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

November 1, 2013

Attachment 20– Simulator Notes

OPERATIONAL FACTORS

ERA13MA139

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A. OPERATIONS GROUP SIMULATOR TEST PLAN NOTES

Thomson, GA Premier Accident
(NTSB # ERA13FA139)

Aircraft:	Premier 390 Simulator (1 hour 25 minutes)	
Airport:	Wilmington, DE (FlightSafety – FSI -Training Facility)	
Participants (6):	Simulator Operator:	Wayne Hundley - FSI Lead Technician
	Captain Seat:	Mark Mohler - Beechcraft
	Co-pilot Seat:	David Lawrence - NTSB
	Observers:	Maryam Allahyar, Tim Burtch – NTSB
		Charlie Smith – FSI Attorney
	Test Director:	David Lawrence - NTSB
Dates:	July 17, 2013 (1200 EDT)	

Notes: - KHVQ airport was used with the following lengths:

5503ft x 100 ft. (1677 x 30 m) dry asphalt

- For the landing scenarios, 10,500 pounds was used (weight freeze).
- Fuel: 900 pounds was used (Fuel freeze simulator).
    - Simulator was utilized with the motion OFF due to the number of participants and observers in the simulator cab.
    - Acknowledged: go-arounds after landing are not defined in the Premier AFM or procedures; Simulator may not be able to replicate some task configurations/profiles.

Objectives:

1. To document normal Premier landing profile and procedures to a full stop.
2. To document normal Premier go-around profile and procedures.
3. To document Premiere landing procedures for an anti-skid inop landing to a full stop.

4. To document go-around process following touchdown: (1) in the go-around configuration (Full thrust, flaps retracting to 10, lift dump retracted), and (2) in the go-around configuration with the lift dump extended.

Task 1 - Setup

Time: (In Simulator) 00:00
Initial Setup

- FMS Flight plan - Set to arrival visual approach path glide path to runway 10 at KHVQ, 3 degree

VNAV snowflake.

- Simulator Position - On approach (5 mile final at 2000, just prior to glideslope intercept)
- Alternate - N/A
- Fuel Weight - 900 pounds (fuel freeze)
- Aircraft weights - 10,500 pounds landing weight (weight freeze)
- Autopilot - On initially, then off on the approach for landing.
- Config - Flaps DN, Gear Down, Lift Dump armed, stabilizer trim as required
- Thrust - as required (thrust idle at 50 feet)
- Field elevation - 501 feet, 1% downslope
- Vref (C/FO) - 114/113
- Vac (C/FO) - 127/126
- PF/PM - Captain was PF[1] and F/O will be PM[2]
- Environmental - KHQU - 210055Z AUTO 00000KT 10SM CLR 09/M04 A3012
  - Night VMC
  - Temp 9C, Altimeter: 30.12
- Sim Position - Instructor took a "snapshot" of Task 1 start position

Procedure

1) Provided simulator safety briefing
2) Observer/pilot occupant cockpit familiarization

[1] Pilot Flying
[2] Pilot Monitoring

Proc.	Notes
1	Briefing completed.
2	Familiarization completed. KHVQ airport was in the database for the simulator and used for each approach and landing.

Task 2 - Normal Landing

Time: 08:33

Initial Setup

- Weight/Weather - Per initial setup
- Autopilot - Off
- Config - Flaps DN, Gear Down, Lift Dumper armed

Procedure

1) Placed simulator motion to "OFF" (CAP was PF)
2) Released position freeze and initiate a normal landing.
3) Documented alerts (aural and visual)
4) Documented Premier procedures

- configuration
- approach profile
- callouts
- thrust reduction altitude
- touchdown point
- brake/lift dump applications
- Stopping distance (estimate)

5) Other information

Proc.	Notes
1	Sim motion off.

2	Position Freeze released. Configuration was flaps DN, gear down, on glideslope, Vref a 50 feet above the threshold then thrust levers reduced to idle. N1 was about 58.0% to maintain glideslope.
3	Document alerts: see below
4	Document Premier procedures: - configuration: gear down, flaps down - approach profile: on glideslope intercept, Vac to begin with, then slowed to Vref+10, then Vref at 50' - auto pilot off prior to 500' - callouts: 1000' auto callout, 500' minimums auto callout - yaw damper off prior to 200'. - thrust reduction altitude at 50 feet. "Vref 50 feet thrust to idle" pilot callout. - touchdown point: about 1000 feet from runway end - brake/lift dump applications: mains on, nose gear on, braking, lift dump - stopping distance (estimate): about 2500 feet remaining
5	Other Information:

Task 3 - Normal Balked Landing at 50'

Time: 18:46

Initial Setup

- Weight/Weather - Per initial setup
- Autopilot - Off
- Config - Flaps DN, Gear Down, Lift Dumper armed

Procedure

1) Placed simulator motion to "off" (CAP was PF)
2) Released position freeze and initiate a normal landing.
3) Initiated airborne go-around at 50 feet
4) Documented alerts (aural and visual)
5) Documented Premier procedures

- configuration

- approach/departure profile
- callouts
- climb performance (estimate)

6) Other information

Proc.	Notes
1	Sim motion off.
2	Position Freeze released. Configuration was flaps DN, gear down, on glideslope, Vref a 50 feet above the threshold. N1 was about 58.0% to maintain glideslope.
3	Go-around at 50 ft. initiated.
4	Document alerts: see below
5	Document Premier procedures: - configuration: gear down, flaps down - approach profile: on glideslope intercept, Vac to begin with, then slowed to Vref+10, then Vref at 50' - auto pilot off prior to 500' - callouts: 1000' auto callout, 500' minimums auto callout - yaw damper off prior to 200' (last item in the checklist). - Go-around procedure used: Max power, pitch up, flaps to ten. Go around button was pushed and FD's went to ten degrees pitch up (track). Positive rate of climb, gear up. At gear up, flaps up. Auto pilot came on about 2000 during climb out. - climb performance (estimate): normal
6	Other Information: Pilot had the balked landing checklist out for reference. According to him, typically the pilot would not have that out for reference. Note: wind speed showed a headwind of 153 knots, even though the IOS panel had winds calm loaded. Wind speed reduced to zero after the simulator was taken off of position freeze.

Task 4 - Normal Landing – Anti-skid Inop

Time: 26:40

Initial Setup

- Weight/Weather - Per initial setup
- Autopilot - Off
- Config - Flaps down, Gear Down, Lift Dumper armed
- Vref - 114/113

Procedure

1) Placed simulator motion to "off" (CAP was PF)
2) Released position freeze and initiated a normal landing.
3) Documented alerts (aural and visual)
4) Documented Premier procedures

- configuration
- approach profile
- callouts
- thrust reduction altitude
- touchdown point
- brake/lift dump applications
- stopping distance

5) Other information

Proc.	Notes
1	Sim motion off.
2	Position Freeze released. Configuration was flaps down, gear down, on glideslope, Vref at 50 feet above the threshold then thrust levers reduced to idle. N1 was about 58.0-61.0% to maintain glideslope.
3	Document alerts: see below
4	Documented Premier procedures: - configuration: gear down, flaps down - approach profile: on glideslope intercept, Vac to begin with, then slowed to Vref+10, then Vref at 50' - auto pilot off prior to 500' - callouts: 1000' auto callout, 500' minimums auto callout - yaw damper off prior to 200'. - thrust reduction altitude at 50 feet. "Vref 50 feet thrust to idle" pilot callout. - touchdown point: about 1000 feet from runway end

	- brake/lift dump applications: mains on, nose gear on, braking, lift dump. Maximum braking was used. - stopping distance (estimate): unable to estimate since the airplane appeared to blow the main tires on landing and exited the runway to the right side.
5	Other Information: IOS panel was set to fail the anti-skid (Landing Gear/Brakes page). Master caution for anti-skid fail did not illuminate until after the gear was extended. There was no aural alert with the malfunction. EICAS showed an amber anti-skid fail light. After touchdown, there appeared to be a blown tire that affected the directional control and aircraft exited the runway to the right side (sim issue?). Pilot said he did not use full braking on landing. The procedure to use for landing performance calculations is for the pilot to first go to the checklist, then go to the brown tab and look up the normal unfactored dry landing distance, then apply the 130/89% penalties (depending on flaps zero or ten).

Task 5 - Go-Around After Landing – Anti-skid Inop/Lift dump

Time: 37:00

Initial Setup

- Weight/Weather - Per initial setup
- Autopilot - Off
- Config - Flaps DN initially, then Flaps retracting to 10 for go-around, Gear Down, Lift Dumper armed, extended at touchdown, then retracted for go-around
- Procedure - Land, then after 4 seconds, initiated a go-around
  - Applied full thrust, retracted flaps to 10, retracted lift dump, rotated at 105 knots

Procedure

1) Placed simulator motion to “off” (CAP was PF)
2) Released position freeze and initiated a normal landing.
3) 4 seconds after touchdown, initiated a go-around:

- Full thrust
- Flaps 10
- Lift dump retract
- Rotated at 105 knots

4) Documented alerts (aural and visual)

5) Documented procedures used:

- configuration
- approach profile
- callouts
- thrust reduction altitude
- touchdown point/go-around point on runway
- brake/lift dump applications
- engine acceleration
- climb performance after go-around (estimate)
- altitude at runway end

6) Other information

Proc.	Notes
1	Sim motion off.
2	Position Freeze released. Configuration was flaps DN, gear down, on glideslope, Vref a 50 feet above the threshold then thrust levers reduced to idle. N1 was about 58.0% to maintain glideslope.
3.	Initiated a go-around: - Full thrust - Flaps 10 - Lift dump retract - Rotate at 105 knots - engine acceleration - climb performance after go-around
4	Documented alerts: see below
5	Document Premier procedures: - configuration: gear down, flaps down - approach profile: on glideslope intercept, Vac to begin with, then slowed to Vref+10, then Vref at 50' - auto pilot off prior to 500' - callouts: 1000' auto callout, 500' minimums auto callout - yaw damper off just after 500' auto callout. - thrust reduction altitude at 50 feet. "Vref 50 feet thrust to idle" pilot callout. - touchdown point: about 1000 feet from runway end - brake/lift dump applications: mains on, nose gear on, braking, lift

	dump. Maximum braking was to be used. - procedure used: lift dump retract (first), full thrust, flaps to 10.[3] - Airplane lifted off about 11 seconds after the takeoff warning horn began to sound. At lift off, the takeoff warning horn stopped. - engine acceleration was normal (about 8-9 seconds) - climb performance after go-around (estimate): "sufficient" - altitude at runway end: about 80 feet.
6	Other Information: The procedure the pilot used for the go-around was lift dumper/thrust/then flaps 10. Pilot said they used to have a program in the airplane to conduct touch and go's, and this was briefed (not trained) to reconfigure the airplane for the touch and go. It was not a trained maneuver. The takeoff configuration warning horn was a ground function only. A gear unsafe after going airborne would get an alternating horn that indicated the gear was coming up with the flaps greater than 20.

Task 6a - Go-Around After Landing – Anti-skid Inop/Lift dump

Time: 45:50

Initial Setup

- Weight/Weather - Per initial setup
- Autopilot - Off
- Config - Flaps down initially, then Flaps retracted to 10 for go-around, Gear Down, Lift Dumper armed then extended a touchdown (remained extended after touchdown)
- Procedure - Land, then after 4 seconds, initiated a go-around
  - Applied full thrust, retracted flaps to 10, rotated at 105 knots
  - Position freeze simulator at departure end of runway and noted altitude

Procedure

1) Placed simulator motion to "off" (CAP was PF)
2) Released position freeze and initiate a normal landing.
3) 4 seconds after touchdown, initiated a go-around:

- Full thrust

[3] According to Beechcraft Captain Mark Mohler (via email received 8/17/2013): "Referencing the go around procedure we utilized in the familiarization program we used to have - the procedure was actually retract the lift dump, trim the pitch, set flaps then add power. We used to do this on. 12,000' runway so time / length wasn't as critical. For the purposes of what we were doing I intentionally applied power sooner due to short length of runway."

- Flaps retracted to zero
- Lift dump remains extended
- Rotate at 105 knots

4) Documented alerts (aural and visual)
5) Documented procedures used:

- configuration
- approach profile
- callouts
- thrust reduction altitude
- touchdown point/go-around point on runway
- brake/lift dump applications
- engine acceleration
- climb performance after go-around (estimate)
- altitude at runway end

6) Other information

Proc.	Notes
1	Sim motion off.
2	Position Freeze released.
3.	Initiated a go-around: - Full thrust - Flaps retracted to 10 - Lift dump remained extended - Rotated at 105 knots
4	Document alerts: see below
5	Document Premier procedures: - configuration: gear down, flaps down - approach profile: on glideslope intercept, Vac to begin with, then slowed to Vref+10, then Vref at 50' - auto pilot off prior to 500' - callouts: 1000' auto callout, 500' minimums auto callout - yaw damper off just after 500' auto callout. - thrust reduction altitude at 50 feet. "Vref 50 feet thrust to idle" pilot callout. - touchdown point: about 1000 feet from runway end

	- brake/lift dump applications: mains on, nose gear on, braking, lift dump extended. Maximum braking was to be used. - procedure used for go-around: full thrust, flaps to 10 (lift dump stayed extended).[4] - Airplane lifted off about 17seconds after the takeoff warning horn began to sound. At lift off, the takeoff warning horn stopped. There were no other aural alerts heard. - the stick shaker fired once immediately after liftoff. - climb performance after go-around (estimate): marginal. - altitude a runway end: 35 feet (position froze the sim at departure end)
6	Other Information: Airspeed continued to increase to 167 knots. According to NSTB performance engineer, his was an unrealistic representation based on the amount of drag exhibited.

Task 6b - Go-Around After Landing – Anti-skid Inop/Lift dump

Time: 51:48

Initial Setup

- Weight/Weather - Per initial setup
- Autopilot - Off
- Config - Flaps DN initially, then Flaps retracted to zero for go-around, Gear Down, Lift Dumper armed then extended a touchdown (remained extended after touchdown)
- Procedure - Land, then after 4 seconds, initiated a go-around
  - Applied full thrust, retract flaps to 10, rotated at 105 knots
  - Did not position freeze the simulator at departure end and allowed to climb out

Procedure

1) Placed simulator motion to "off" (CAP was PF)
2) Released position freeze and initiate a normal landing.
3) 4 seconds after touchdown, initiated a go-around:

- Full thrust
- Flaps retracted to 10.

[4]

- Lift dump remained extended
- Rotated at 105 knots

4) Documented alerts (aural and visual)

5) Documented procedures used:

- configuration
- approach profile
- callouts
- thrust reduction altitude
- touchdown point/go-around point on runway
- brake/lift dump applications
- engine acceleration
- climb performance after go-around (estimate)
- altitude at runway end

6) Other information

Proc.	Notes
1	Sim motion off.
2	Position Freeze released.
3.	Initiated a go-around: - Full thrust - Flaps retracted to 10 - Lift dump remains extended - Rotate at 105 knots
4	Documented alerts: see below
5	Documented Premier procedures: - configuration: gear down, flaps down - approach profile: on glideslope intercept, Vac to begin with, then slowed to Vref+10, then Vref at 50' - auto pilot off prior to 500' - callouts: 1000' auto callout, 500' minimums auto callout - yaw damper off just after 500' auto callout. - thrust reduction altitude at 50 feet. "Vref 50 feet thrust to idle" pilot callout. - touchdown point: about 1000 feet from runway end - brake/lift dump applications: mains on, nose gear on, braking, lift

	dump extended. Maximum braking was to be used. - procedure used for go-around: full thrust, flaps to 10 (lift dump stayed extended). - Airplane lifted off about 15 seconds after the takeoff warning horn began to sound(thrust applied). At lift off, the takeoff warning horn stopped. There were no other aural alerts heard. - The stick shaker fired twice after liftoff. - climb performance after go-around (estimate): - altitude a runway end: 25 feet
6	

Task 6c - Go-Around After Landing – Anti-skid Inop/Lift dump

Time: 57:10

Initial Setup

- Weight/Weather - Per initial setup
- Autopilot - Off
- Config - Flaps DN initially, then Flaps retracted to 10 for go-around, Gear Down, Lift Dumper armed then extended a touchdown (remained extended after touchdown)
- Procedure - Land, then after 4 seconds, initiated a go-around
  - Applied full thrust, retracted flaps to 20 for 8 secs, and then brought them to 10 (Tim Burtch request), rotated at 105 knots
  - Continue climb out and note speed, gear retracted during climb out

Procedure

Note:

1) Placed simulator motion to “off” (CAP was PF)
2) Released position freeze and initiate a normal landing.
3) 4 seconds after touchdown, initiated a go-around:

- Full thrust
- Flaps retracted to 10.

- Lift dump remained extended
- Rotated at 105 knots

4) Documented alerts (aural and visual)
5) Documented procedures used:

- configuration
- approach profile
- callouts
- thrust reduction altitude
- touchdown point/go-around point on runway
- brake/lift dump applications
- engine acceleration
- climb performance after go-around (estimate)
- altitude at runway end

6) Other information

Proc.	Notes
1	Sim motion off.
2	Position Freeze released.
3.	Initiated a go-around: - Full thrust - Flaps retracted to 10 - Lift dump remains extended - Rotated at 105 knots
4	Documented alerts: see below
5	Documented Premier procedures: - configuration: gear down, flaps down - approach profile: on glideslope intercept, Vac to begin with, then slowed to Vref+10, then Vref at 50' - auto pilot off prior to 500' - callouts: 1000' auto callout, 500' minimums auto callout - yaw damper off just after 500' auto callout. - thrust reduction altitude at 50 feet. "Vref 50 feet thrust to idle" pilot callout. - touchdown point: about 1000 feet from runway end - brake/lift dump applications: mains on, nose gear on, braking, lift

	dump extended. Maximum braking was to be used. - procedure used for go-around: full thrust, flaps to 20 (lift dump stayed extended), then after 8 seconds retracted to 10. - Airplane lifted off about 16 seconds after the takeoff warning horn began to sound (thrust applied). At lift off, the takeoff warning horn stopped. There were no other aural alerts heard. - The stick shaker fired twice after liftoff. - climb performance after go-around (estimate): - altitude a runway end: 25 feet
6	Other Information: Airspeed during climb out was noted at 162 knots and accelerating. When flaps were brought to 10, the speed continued to increase.

Task 6d - Go-Around After Landing – Anti-skid Inop/Lift dump

Time: 1:03:07

Initial Setup

- Weight/Weather - Per initial setup
- Autopilot - Off
- Config - Flaps DN initially, then Flaps retracted to 10 for go-around, Gear Down, Lift Dumper armed then extended a touchdown (remained extended after touchdown)
- Procedure - Land, then after 4 seconds, initiated a go-around

- Applied full thrust, retracted flaps to 20 for 8 secs, and then brought them to 10, rotated at 105 knots (Tim Burtch request)

- Continue climb out and note speed, gear remained extended

Procedure

1) Placed simulator motion to "off" (CAP was PF)
2) Released position freeze and initiate a normal landing.
3) 4 seconds after touchdown, initiated a go-around:

- Full thrust
- Flaps retracted to 10.
- Lift dump remained extended
- Rotated at 105 knots

4) Documented alerts (aural and visual)
5) Documented procedures used:

- configuration
- approach profile
- callouts
- thrust reduction altitude
- touchdown point/go-around point on runway
- brake/lift dump applications
- engine acceleration
- climb performance after go-around (estimate)
- altitude at runway end

6) Other information

Proc.	Notes
1	Sim motion off.
2	Position Freeze released.
3.	Initiated a go-around: - Full thrust - Flaps retracted to 10 - Lift dump remains extended - Rotate at 105 knots
4	Documented alerts: see below
5	Documented Premier procedures: - configuration: gear down, flaps down - approach profile: on glideslope intercept, Vac to begin with, then slowed to Vref+10, then Vref at 50' - auto pilot off prior to 500' - callouts: 1000' auto callout, 500' minimums auto callout - yaw damper off just after 500' auto callout. - thrust reduction altitude at 50 feet. "Vref 50 feet thrust to idle" pilot callout. - touchdown point: about 1000 feet from runway end - brake/lift dump applications: mains on, nose gear on, braking, lift dump extended. Maximum braking was to be used. - procedure used for go-around: full thrust, flaps to 20 (lift dump stayed extended), then after 8 seconds retracted to 10. - Airplane lifted off about 16 seconds after the takeoff warning horn began to sound (thrust applied). At lift off, the takeoff warning horn

	stopped. There were no other aural alerts heard. - The stick shaker fired once after liftoff. - climb performance after go-around (estimate): - altitude a runway end: 25 feet
6	Other Information: According to Beechcraft, the only way to know the lift dumper was still extended after departure (or anytime in flight) was the white Speed Brake Extend light. Pilot stated that he was trimming nose down during the climb out with lift dumpers extended.

Task 5 - Go-Around After Landing – Anti-skid Inop/Lift dump retracted

Time: 1:09:00

Initial Setup

- Weight/Weather - Per initial setup
- Autopilot - Off
- Config - Flaps DN initially, then Flaps retracting to 10 for go-around, Gear Down, Lift Dumper armed, extended at touchdown, then retracted for go-around
- Procedure - Land, then after 4 seconds, initiated a go-around
  - Applied full thrust, retracted flaps to 10, retracted lift dump, rotated at 105 knots

Procedure

1) Placed simulator motion to "off" (CAP was PF)
2) Released position freeze and initiated a normal landing.
3) 4 seconds after touchdown, initiated a go-around:

- Full thrust
- Flaps 10
- Lift dump retract
- Rotated at 105 knots

4) Documented alerts (aural and visual)
5) Documented procedures used:

- configuration
- approach profile
- callouts
- thrust reduction altitude

- touchdown point/go-around point on runway
- brake/lift dump applications
- engine acceleration
- climb performance after go-around (estimate)
- altitude at runway end

6) Other information

Proc.	Notes
1	Sim motion off.
2	Position Freeze released. Configuration was flaps DN, gear down, on glideslope, Vref a 50 feet above the threshold then thrust levers reduced to idle. N1 was about 58.0% to maintain glideslope.
3.	Initiated a go-around: - Full thrust - Flaps 10 - Lift dump retract - Rotate at 105 knots - engine acceleration - climb performance after go-around
4	Documented alerts: see below.
5	Document Premier procedures: - configuration: gear down, flaps down - approach profile: on glideslope intercept, Vac to begin with, then slowed to Vref+10, then Vref at 50' - auto pilot off prior to 500' - callouts: 1000' auto callout, 500' minimums auto callout - yaw damper off just after 500' auto callout. - thrust reduction altitude at 50 feet. "Vref 50 feet thrust to idle" pilot callout. - touchdown point: about 1000 feet from runway end - brake/lift dump applications: mains on, nose gear on, braking, lift dump. Maximum braking was to be used. - procedure used: lift dump retract (first), full thrust, , flaps to 10. - Airplane lifted off about 12 seconds after the takeoff warning horn began to sound. At lift off, the takeoff warning horn stopped. - engine acceleration was normal (about 8-9 seconds) - climb performance after go-around (estimate): "sufficient"

6	

Task 6e - Go-Around After Landing – Anti-skid Inop/Lift dump

Time: 1:16:00

Initial Setup

- Weight/Weather - Per initial setup
- Autopilot - Off
- Pilot Flying - Co-pilot (David Lawrence – NTSB)
- Config - Flaps DN initially, then Flaps retracted to 10 for go-around, Gear Down, Lift Dumper armed then extended a touchdown (remained extended after touchdown)
- Procedure - Land, then after 4 seconds, initiated a go-around
  - Applied full thrust, retracted flaps to 10, rotated at 105 knots
  - Continued climb out, gear remained extended

Procedure

1) Placed simulator motion to "off" (CAP was PF)
2) Released position freeze and initiate a normal landing.
3) 4 seconds after touchdown, initiated a go-around:

- Full thrust
- Flaps retracted to 10.
- Lift dump remained extended
- Rotated at 105 knots

4) Documented alerts (aural and visual)
5) Documented procedures used:

- configuration
- approach profile
- callouts
- thrust reduction altitude
- touchdown point/go-around point on runway
- brake/lift dump applications
- engine acceleration

- climb performance after go-around (estimate)
- altitude at runway end

6) Other information

Proc.	Notes
1	Sim motion off.
2	Position Freeze released.
3.	Initiated a go-around: - Full thrust - Flaps retracted to 10 - Lift dump remains extended - Rotate at 105 knots
4	Documented alerts: see below
5	Documented Premier procedures: - configuration: gear down, flaps down - approach profile: on glideslope intercept, Vac to begin with, then slowed to Vref+10, then Vref at 50' - auto pilot off prior to 500' - callouts: 1000' auto callout, 500' minimums auto callout - yaw damper off just after 500' auto callout. - thrust reduction altitude at 50 feet. "Vref 50 feet thrust to idle" pilot callout. - touchdown point: about 1000 feet from runway end - brake/lift dump applications: mains on, nose gear on, braking, lift dump extended. Maximum braking was to be used. - procedure used for go-around: full thrust, flaps to 10 (lift dump stayed extended), gear remained extended. - Airplane lifted off about 14 seconds after the takeoff warning horn began to sound (thrust applied). At lift off, the takeoff warning horn stopped. There were no other aural alerts heard. - The stick shaker fired once after liftoff.
6	Other Information: Attempted to remain in the green band on the pitch trim during landing, and it required significant force to rotate the airplane with the lift dumpers extended during the go-around. During the approach, we extended the lift dumpers in flight. When the lift dump was extended, there was a slight pitch up, the airspeed

	decreased to about 112 knots, and the stick shaker fired once. There was no aural alternating tone associated with a failure in the lift dump. The only visual message was a Speed Brake Extend annunciator light.