

Boeing Laptop Tool (BLT)

Part of the Boeing Electronic Flight Bag

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The Boeing Electronic Flight Bag

Crew Information Services

Electronic Flight Bag

- Performance Tool - BLT
- Electronic Documents & Manuals
- Fault Reporting
- Electronic Logbook
- Navigation Charts

Other CIS components

- Weather
- FOQA
- Airline applications

Boeing Laptop Tool

- Background information
- Description
- Demonstration Table



Background

- Takeoff and landing performance without BLT:
 - Paper-based systems
 - Labor intensive to generate and publish
 - Require conservative corrections for non-standard operations
 - Prone to crew error
 - “Real-time” dispatch (e.g. via ACARS)
 - Good solution-but not for everyone



The Boeing Laptop Tool replaces...

- Expensive takeoff analysis processes
 - generation of data in engineering offices
 - publication & distribution of takeoff analysis books
 - or –
 - third party outsourcing
- Calls to dispatch and potential delays for “special cases” (MEL items, NOTAMs affecting performance)

...conservative paper publications

777-200
TRENT877

Brakes Deactivated

When operating with must be reduced to method which consists of one brake deactivated and the V1 two brakes deactivated 6300 kg and the V1 the resulting V1 is equal to V1(MCG) and slope exceeds 1560m for two brakes

Enroute

Long Range Cruise

These tables provide as the FMC. Maximize maneuver capability limits, providing the limited is denoted condition in level 1 above these altitudes may cause the aircraft

Note that optimum maneuver margins can be limited to

Long Range Cruise

These tables are provided for destination. Data is presented for low altitudes and longer trip distances:

To determine trip fuel enroute wind and Air Fuel and Time table air distance from 1 desired altitude and

Performance Dispatch -
Takeoff

777-200
TRENT877

Takeoff Field & Climb Limit Weights

Flaps 15 Sea Level Press

CORR'D FIELD LENGTH (M)		°C		°F		WIND		TORA		TODA		ASDA		ZRH
1450		206.8		218.5		232.9		244.0		255.8		267.7		
1600		218.5		232.9		244.0		255.8		267.7		279.6		ZURICH
1800		232.9		244.0		255.8		267.7		279.6		291.5		
2000		245.0		256.5		268.0		279.6		291.5		303.4		TORA 2900 M TODA 3260 M ASDA 2900 M
2200		256.5		268.0		279.6		291.5		303.4		315.3		
2400		267.7		279.6		291.5		303.4		315.3		327.2		TORA 2900 M TODA 3260 M ASDA 2900 M
2600		277.7		289.6		301.5		313.4		325.3		337.2		
2800		287.5		299.4		311.3		323.2		335.1		347.1		TORA 2900 M TODA 3260 M ASDA 2900 M
3000		296.8		308.7		320.2		332.1		344.0		355.0		
3200		305.8		317.7		329.1		341.0		352.0		363.0		TORA 2900 M TODA 3260 M ASDA 2900 M
3400		314.3		326.2		338.1		349.0		360.0		371.0		
3600		322.5		334.4		346.3		357.2		368.2		379.1		TORA 2900 M TODA 3260 M ASDA 2900 M
3800		330.2		342.1		354.0		365.0		376.0		387.0		
4000		337.3		349.2		361.1		372.1		383.1		394.1		TORA 2900 M TODA 3260 M ASDA 2900 M
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Our Solution

Boeing Laptop Tool

- Computes takeoff performance
- Computes landing performance
- Facilitates weight and balance calculations

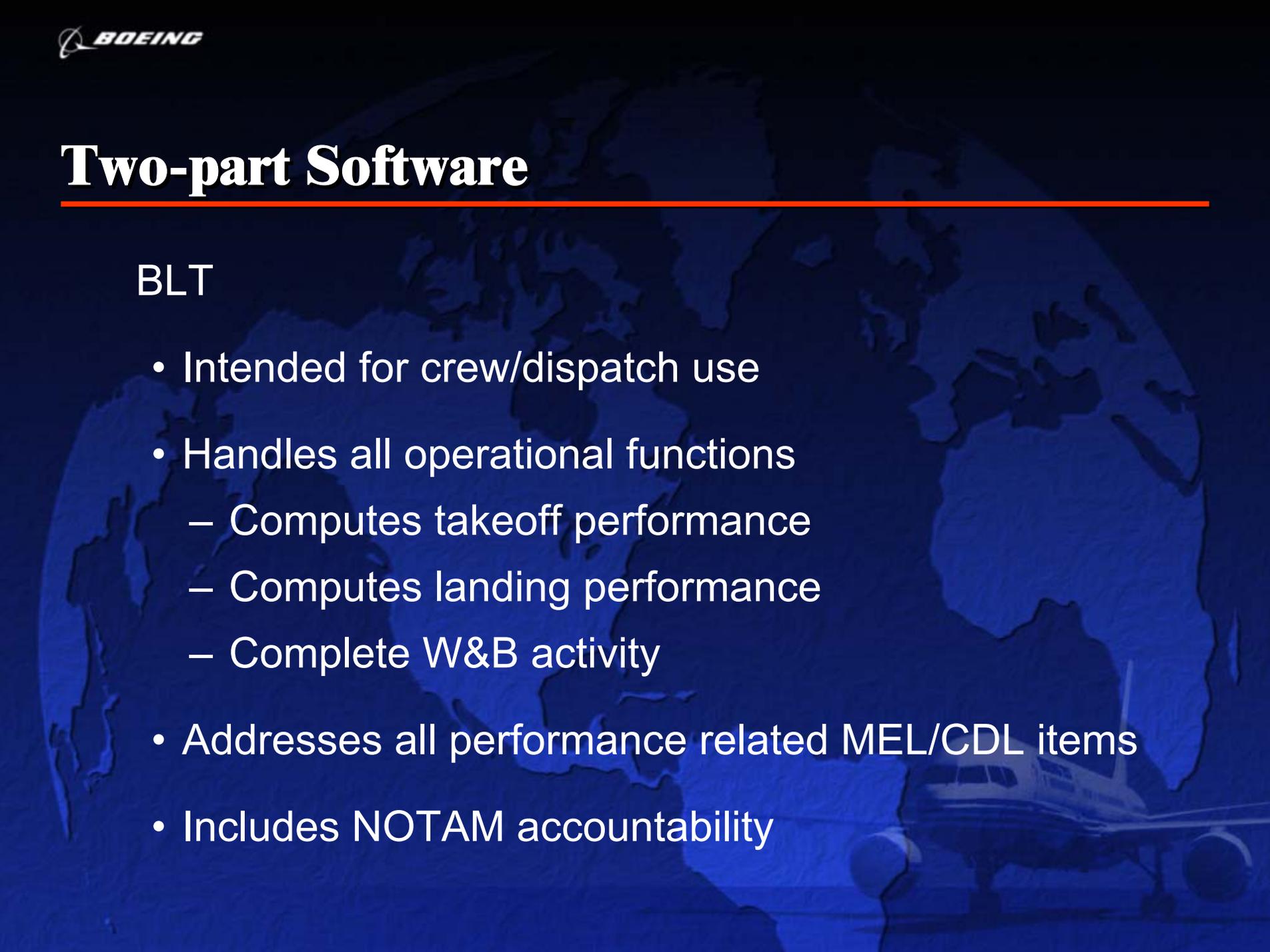
Two-part Software

Administrator

- Airport/runway database handler
- Airplane configuration definitions
- Database distribution to remote computers

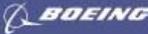
Two-part Software

BLT

- Intended for crew/dispatch use
 - Handles all operational functions
 - Computes takeoff performance
 - Computes landing performance
 - Complete W&B activity
 - Addresses all performance related MEL/CDL items
 - Includes NOTAM accountability
- 
- The background of the slide features a dark blue world map with a semi-transparent airplane silhouette overlaid on the right side, suggesting a global aviation context.

Administrator - Main Screen

Boeing Laptop Tool - Administrator Package



LAPTOP TOOL



The data produced by this software is provided on an "as is" basis only. Boeing assumes no liability for errors in the data or any damage to property or harm to persons resulting from use of this data. The user must assure agreement between the FAA Approved Airplane Flight Manual and this data.

- Unit Preferences
- Fleet Management
- Airport Management
- File Locations
- Package Data
- Launch BLT
- Exit

Administrator - Airport listing

Airport Listing
✕

Airport Info

Airport List	Runway List
EDDH -- HAMBURG	05
EDDT -- Berlin-Tegel	23
EDHL -- LUBECK	
EDLW -- WICKEDE	
EGPD -- DYCE	
EGPF -- GLASGOW	
EGPK -- PRESTWICK	
EGSS -- STN-STANSTED	
EIDW -- DUBLIN INTL	
EIKG -- KERRY	
EIKN -- CONNAUGHT	

New
Edit
Delete...

Elevation: 348 feet

Comments:
imported from STAS file

Runway Info

TOFL	C/W	S/W	LDA
10000 ft	0 ft	0 ft	0 ft

Slope: 0.24% (uphill)

Ignore lineup allowance

Obstacles

10 ft above LO; 952 ft from liftoff end

20 ft above LO; 988 ft from liftoff end

41 ft above LO; 2073 ft from liftoff end

72 ft above LO; 4649 ft from liftoff end

90 ft above LO; 5026 ft from liftoff end

Date Created: 20000301 Time Created: 104935
 Last Modified: 20000419 Time Modified: 094848

Engine-out Procedure:
engine out procedure for EGSS 05

Import Airport File

Print Summaries

Close

Administrator - Fleet Management

Fleet Management
_ _ X

Fleet Information

757-200
767-300

New Airplane

Copy Airplane

Edit Airplane

Print Summary

Delete Airplane

Model: 757-200

Airplane Information _ _ X

Airplane Name: Save

General

This airplane is based on....

Airplane Model:

Engine:

Certification:

Brakes:

Revision:

Default Flight#:

Comments:

Allow crew to ignore obstacles during visual operations

Allow crew to input runway data

Activate Weight and Balance Weight and Balance

Enable Viewing of Other Documents List Other Documents

BLT DDG Button Name: DDG .pdf File: ...

Version Identifier:

(20 characters maximum)

Manage .sif Files Import Existing t

Basic Airplane Data | Engine | Takeoff Policy | Landing Policy | Runway Condition

Weights (KG)

Max Taxi:	<input type="text" value="116120."/>
Max Takeoff:	<input type="text" value="115670."/>
Max Landing:	<input type="text" value="89811."/>
Max ZFW:	<input type="text" value="83460."/>

Tires

Lineup Allowances (Feet)

	90 Deg Turn	180 Deg Turn
ASDA	<input type="text" value="123.6"/>	<input type="text" value="145.8"/>
TORA	<input type="text" value="63.6"/>	<input type="text" value="85.8"/>

Defaults

Use lineup allowances for calculations

BLT-Performance

Boeing Takeoff & Landing Performance ✕

Airport Info for:

Airport:

Runway:

Condition:

OAT (Def=°C): (15 °C / 59 °F)

Wind (°/kt): (0 kt)

QNH: (1013.25 HPa)
(29.92 in HG)

Display For:

Takeoff

Landing

Flaps 1 / Dry Runway

Maximum Takeoff Power / 15 °C

Actual Weight: **151437 lb**

V1: **137 kt**

VR: **140 kt**

V2: **147 kt**

Minimum Flap Retract Ht: 440 ft AGL

Full Rate T/O %N1 Setting: 98.4

VREF: 141 kt

Stab Trim at 20.7 %mac: 6 ¼ units

Airplane Config for C-40 PAX

Rating:

Flaps:

A/C Bleed:

A/I Bleed:

Alerts

Maximum Assumed Temperature / 50 °C

Actual Weight: **151437 lb**

V1: **142 kt**

VR: **143 kt**

V2: **147 kt**

Minimum Flap Retract Ht: 450 ft AGL

SEL Temp T/O %N1 Setting: 92.0

Max Assumed Temp: **50 °C**

VREF: 141 kt

Stab Trim at 20.7 %mac: 6 ¼ units

Planned Weight (lb):

Assumed Temp (°C):

Mission:

BLT-Weight and Balance

Weight and Balance Summary

PAX (70)
Cargo (1400 lb)
Cor'n (3000 lb)
Fuel (40387 lb)

Description	Weight
SPARES KIT <input checked="" type="checkbox"/>	(500 lb)
FWD GALLEY 1 <input type="checkbox"/>	(1500 lb)
FWD GALLEY 2 <input checked="" type="checkbox"/>	(500 lb)
AFT GALLEY <input checked="" type="checkbox"/>	(1000 lb)

Last Minute Corrections		
Description	Weight (lb)	Bal. Arm (in)
aft wt	1000	1100.0

CG Envelope

Operating Empty Weight is 90400 lb.
 Estimated ZFW is 111350 lb (126000 lb max)
 Estimated landing weight is 116437 lb (134000 lb max)
 Estimated takeoff weight is 151437 lb (171000 lb max).

Print
Close

Payback

- Performance limited airports gain when:
 - Applying contaminated/slippery runway corrections
 - Applying MMEL/CDL corrections
 - Higher levels of reduced thrust are realized
 - Translates into \$\$ savings for engine maintenance
 - Less paper to publish and distribute
 - Decreases off-hours support for special needs
- 
- A faint, blue-tinted image of a commercial airplane on a runway, positioned in the bottom right corner of the slide.

Sample Benefit–Clutter

- 737-800/B26/Flaps 5
 - Sea level airport/30 degrees C
 - 8000-ft runway, obstacle limited, 3-mm standing water
 - Paper method
 - Weight = $72,300 - 8,200 = 64,100$ kg
 - Laptop Tool
 - Weight = 67,700 kg
- 
- A faint, blue-tinted image of a Boeing 737-800 aircraft on a runway, positioned in the bottom right corner of the slide.

Sample Benefit–Clutter

- 777-300/Trent892/Flaps 5
- Sea level airport/30 degrees C
- 12000-ft runway, no obstacles, 6-mm standing water
- Paper method
 - Weight = $280,900 - 34,400 = 246,500$ kg
- Laptop Tool
 - Weight = 249,700 kg



Sample Benefit–Anti-skid

- 737-800/B26/Flaps 5
- Sea level airport/30 degrees C
- 8,000-ft runway
- Paper method
 - Weight = $77,300 - 8,500 = 68,800$ kg
- Laptop Tool
 - Weight = 69,400 kg



Summary - BLT

- Simplifies document management
 - Reduces authoring and distribution costs
- Improves takeoff performance
 - weight improvements
 - improved maximum assumed temperature
- extremely flexible and capable