

U.S. Department of Transportation Federal Aviation Administration _{Washington, D.C.}

Master Minimum Equipment List

Revision: 35 Date: 04/25/2014

BOEING 747

B-747-100/200/300/SP SERIES

J. Steven Foss, Chairman Flight Operations Evaluation Board (FOEB)

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FEDERAL AVIATION ADMINISTRATION

MASTER MINIMUM EQUIPMENT LIST

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(BOEING B-747-100/200/300/SP SERIES)

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HIGHLIGHTS OF CHANGE					

EFFECTIVE ABOVE DATE, the Boeing 747 Master Minimum Equipment List has been revised. Please replace pages of previous lists with Revision 35 for a complete up-to-date MMEL. Retain this sheet with your MMEL until the next revision is issued. All changes are reflected in the highlights of change listed below.

ATA 21 AIR CONDITIONING

- Item 2 Sub item 3) Added STC ST02646CH for the National Aircraft Service, Inc. NASI PACK FCS-ECO.
- Item 3 Sub item 2) Added STC ST02646CH for the National Aircraft Service, Inc. NASI PACK FCS.
- Item 5 Sub item 2) Added STC ST02646CH for the National Aircraft Service, Inc. NASI PACK FCS.
- Item 13 Sub item 1) Added STC ST02646CH for the National Aircraft Service, Inc. NASI PACK FCS.

ATA 23 COMMUNICATIONS

- Item 3 Sub item 2) Revised to align with FAA Policy Letter 106 Revision 4, dated January 18, 2012.
- Item 7 Sub item 1) Revised to align with FAA Policy Letter 9 Revision 11, dated December 17, 2012.
- Item 11 Revised to align with FAA Policy Letter 9 Revision 11, dated December 17, 2012.
- Item 16 Revised to align with FAA Policy Letter 58 Revision 4, dated March 24, 2012.

ATA 25 EQUIPMENT / FURNISHINGS

- Item 3 Revised to align with FAA Policy Letter 47 Revision 2, dated October 17, 2011.
- Item 10 Revised repair interval and added requirement to cover associated floor proximity lights per FAA Policy Letter 1 Revision 4, dated February 27, 2010.
- Item 11 Revised repair interval. Added "or slide missing" per FAA Policy Letter 99 Revision 2, dated February 26, 2010.
- Item 14 Revised to align with FAA Policy Letter 89 Revision 2, dated January 31, 2009.

Item 19 Revised to align with FAA Policy Letter 100 Revision 2, dated January 20, 2009.

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ATA 25 EQUIPMENT / FURNISHING	S (cont'd)						
Item 21 Sub item 1) Revised to align with FAA Policy Letter 116 Revision 3, dated December 17, 2012.							
Item 22 Sub items 1), 3), 4) Revised March 12, 2012.	to align with FAA Policy Lette	er 79 Revision 8, dated					
Item 23 Sub items 1), 3) Revised to a January 1, 2012.	align with FAA Policy Letter 5	6 Revision 5, dated					
Item 25 Revised to align with FAA Poli	icy Letter 73 Revision 5, date	d June 15, 2011.					
Item 26 Sub item 1) Revised to align January 29, 2010.	with FAA Policy Letter 96 Re	vision 2, dated					
Item 28 Revised to align with FAA Poli 2012.	icy Letter 104 Revision 6, dat	ed December 17,					
ATA 31 INDICATING/RECORDING S	SYSTEMS						
Item 2 Revised to align with FAA Polic	y Letter 87 Revision 10, date	d August 10, 2010.					
ATA 33 LIGHTS							
Item 1 Revised to align with FAA Polic	Item 1 Revised to align with FAA Policy Letter 77 Revision 4, dated December 17, 2012.						
Item 2 Revised to align with FAA Polic	y Letter 123 Revision 1, date	d April 30, 2010.					
ATA 34 NAVIGATION							
Item 26 Sub item 2) Revised to align with FAA Policy Letter 76 Revision 6, dated July 30, 2013.							
Item 28 Revised to align with FAA Policy Letter 39 Revision 5, dated January 29, 2010.							
ATA 35 OXYGEN	ATA 35 OXYGEN						
Item 6 Revised to align with FAA Polic	y Letter 43 Revision 2, dated	December 18, 2011.					
ATA 38 WATER / WASTE							
Item 2 Revised to align with FAA Polic	y Letter 83 Revision 7, dated	January 24, 2013.					
<u></u>							

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DEFINITIONS						

DEFINITIONS

For the Master Minimum Equipment List, Definitions addendum, refer to the current FAA MMEL Policy Letter PL-25, Policy Concerning MMEL Definitions as found on the Flight as well as, the current Standards Information Management System (FSIMS) website.

FSIMS - Publications - MMEL Policy Letters

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PREAMBLE							

PREAMBLE

For the Master Minimum Equipment List, Preamble addendum as used for operations under 14 CFR Parts 121, 125, 129, and 135, refer to the current FAA Policy Letter PL-34, *MMEL and MEL Preamble*, as found on the Flight Standards Information Management System (FSIMS) website.

FSIMS – Publications - MMEL and MEL Preamble

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SFOLIENCE ITEM	2. NU		MBER REQUIRED FOR DISPATCH				
NUMBERS		5. NO	4. REMARKS AND EXCEPTIONS				
21 AIR CONDITIONING		Ì					
1. Packs							
1) Passenger C	-	2	(M) May be inoperative provided two				
Configuration			packs operate normally in full flow				
			position.				
a) Full Flow Mode C	3	1	May be inoperative provided:				
			a) One pack operates normally in full				
			flow position, and				
			b) Two packs operate normally in the				
			$\frac{1}{2}$ flow position.				
2) Cargo Configuration							
(Pressurized)							
a) 8-10 Main Entry C	-	1	(M) (O) Operations may be conducted				
Doors Installed			with one pack operating provided:				
			a) Ramaii veni operates normaliy,				
			b) If equipment cooling is operated in				
			SMOKE mode, the airplane				
			remains at or below FL 180.				
_							
C	-	1	(IVI) (U) Operations may be conducted				
			a) Ram air vent remains open and				
			b) If equipment cooling is operated in				
			NORM mode, the airplane				
			remains at or below FL 200.				
			(Continued)				
			 a) Ram air vent remains open, and b) If equipment cooling is operated in NORM mode, the airplane remains at or below FL 200. 				
			(Continued)				

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NUMBERS			4. REMARKS AND EXCEPTIONS			
21 AIR CONDITIONING		 				
1. Packs (Cont'd)						
2) Cargo Configuration						
(Pressurized)						
(Cont'd)						
a) 8-10 Main Entry		1	(\mathbf{M}) (O) Operations may be conducted			
Doors Installed	-	1	with one pack operating provided:			
(Cont'd)			a) Ram air vent remains open, and			
			b) If equipment cooling is operated in			
			SMOKE mode, the airplane			
b) 2 Main Entry C	-	1	(M) (O) Operations may be conducted			
Doors Installed			with one pack operating provided:			
			a) Ram air vent operates normally,			
			b) If equipment cooling is operated in			
			SMOKE mode, the airplane			
			remains at or below FL 250.			
C C	_	1	(M) (O) Operations may be conducted			
C			with one pack operating provided:			
			a) Ram air vent remains open, and			
			b) If equipment cooling is operated in			
			remains at or below FL 310			
			(Continued)			

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SYSTEM & 1		. 04/23/ MBER I		21-5			
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21 AIR CONDITIONING		1					
1. Packs (Cont'd)							
2) Cargo Configuration							
(Pressurized)							
(Cont'd)							
b) 2 Main Entry C	-	1	(M) (O) Operations ma	ay be conducted			
Doors Installed			with one pack operatin	ng provided:			
(Cont'd)			a) Ram air vent re	emains open, and			
			SMOKE mode	the airplane			
			remains at or b				
*** c) Three Pack D	3	2					
Configuration	Ŭ	-					
			(Continued)				

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]	1				
1. Packs (Cont'd)						
3) Cargo Configuration C	-	0	(M) (O) May be inoperative in an			
(Unpressurized)			unpressurized configuration provided:			
			 All equipment cooling blowers 			
			operate normally,			
			b) Equipment cooling must be in the			
			DITCH mode,			
			c) Rain all vent valve operates			
			d) Procedures are established and			
			used to ensure the lower cargo			
			compartments and Combi main			
			deck cargo compartment remain			
			empty or are verified to contain			
			only empty cargo handling			
			equipment, ballast (ballast may be			
			loaded in ULDs), or Fly Away Kits,			
			and			
			e) Extended overwater flight is			
			prohibited.			
			NOTE: Operator MEL a must define			
			which items are approved for			
			inclusion in the Fly Away Kits			
			and which materials can be used			
			as ballast.			

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eve	DUEING 747	1		. 04/23/	2014 21-5		
SE		1.	2. NUI				
	MBERS			5. NU	A REMARKS AND EXCEPTIONS		
110					4. REMARKS AND EXCELLIONS		
21	AIR CONDITIONING						
2.	Pack Flow Control and Shutoff Valve						
	1) Three Pack Airplanes	С	3	-	(M) (O) May be inoperative for associated inoperative pack(s).		
	*** a) Half Flow Valve Position	С	-	0			
	b) Cargo Configuration	D	3	2	(M) (O) May be inoperative for associated inoperative pack.		
	*** c) Cargo Configuration Half Flow Position	D	3	2			
	2) Two Pack Airplanes (Cargo Configuration)	С	2	1	(M) (O) May be inoperative for associated inoperative pack.		
	*** a) Half Flow Valve Position	С	-	-			
	3) NASI PACK FCS- ECO (STC ST02646CH)	D	1	0	(M) May be inoperative deactivated off.		

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]					
21 AIR CONDITIONING							
3. Air Cycle Machine (ACM)	С	-	1	(M) (O) May be inoperative provided, if auto control is used, associated bypass valve(s) is secured in the full heat (open) position.			
	С	-	1	(M) (O) May be inoperative provided, if manual control is used, associated bypass valve(s) remains in the full heat (open) position.			
	С	-	-	(M) (O) May be inoperative provided, associated pack(s) is inoperative.			
1) Cargo Configuration Three Pack Airplanes	D	3	2	(M) (O) One may be inoperative provided, if auto control is used, associated bypass valve is secured in the full heat (open) position.			
	D	3	2	(M) (O) One may be inoperative provided, if manual control is used, associated bypass valve remains in the full heat (open) position.			
	D	3	2	(M) (O) One may be inoperative provided associated pack is inoperative.			
2) With NASI PACK FCS (STC ST02646CH)	С	2	1	(M) (O) One may be inoperative provided, if manual control is used, associated bypass valve remains in the full heat (open) position.			
	С	2	1	 (M) One may be inoperative provided: a) Associated pack is selected OFF. 			

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]				
21	AIR CONDITIONING						
4.	Pack Coolant (Inlet/Exit Door) Systems	С	3	2	 (M) (O) On three pack airplanes, one inlet door may be inoperative in the full open to 40% from full open position (with associated exit door inoperative) provided: a) Associated pack is operated in auto mode only, b) Remaining two packs operate normally, and c) Associated exit door is deactivated at least 50% open 		
		С	-	0	 (M) (O) Inlet doors may be inoperative in the full open to 40% from full open position provided: a) Associated exit door(s) operates normally, b) Associated pack(s) is operated in the manual mode, and c) All associated pack indications operate normally. 		
		С	-	0	 (M) (O) Inlet doors may be inoperative in the full open to 40% from full open position provided: a) Associated exit door(s) is deactivated and secured full open, b) Associated pack(s) is operated in the manual mode, and c) All associated pack indications operate normally. 		
		С	-	0	(M) (O) Inlet and exit doors may be inoperative in any position for an inoperative pack provided associated exit door is open more than the inlet door on airplanes with line number 242 and subsequent, and on airplanes with S/B 21-2194 or production equivalent incorporated.		

MASTER MINIMUM EQUIPMENT LIST FEDERAL AVIATION ADMINISTRATION AIRCRAFT: REVISION NO: 35 PAGE NO: DATE: 04/25/2014 BOEING 747 DATE: 04/25/2014 21-8 SYSTEM & 1. 2. NUMBER INSTALLED SEQUENCE ITEM 3. NUMBER REQUIRED FOR DISPATCH NUMBERS 4. REMARKS AND EXCEPTIONS 21 AIR CONDITIONING 4. REMARKS AND EXCEPTIONS 4. Pack Coolant (Inlet/Exit Door) Systems (Cont'd) C - 0 (M) (O) Inlet and exit doors may be inoperative in any position for an inoperative pack provided associated exit door is deactivated and secured at least 50% open on airplanes before line number 242, or without S/B 21-2194 incorporated. C - 0 (M) (O) Exit doors may be inoperative provided they remain in the full open to ½ open position. 1) Cargo Configuration D 3 2 (M) (O) One inlet door may be inoperative in the full open to	U.S. DEPARTMENT OF TRANSPORTATION							
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SEQUENCE ITEM NUMBERS ITEM 21 AIR CONDITIONING 4. REMARKS AND EXCEPTIONS 4. Pack Coolant C (Inlet/Exit Door) C Systems (Cont'd) C - 0 (M) (O) Inlet and exit doors may be inoperative in any position for an inoperative pack provided associated exit door is deactivated and secured at least 50% open on airplanes before line number 242, or without S/B 21-2194 incorporated. C - 0 (M) (O) Exit doors may be inoperative provided they remain in the full open to ½ open position. 1) Cargo D 3 2 (M) (O) One inlet door may be inoperative to the full open to the full ope	SYS	STEM &	1.	2. NU	MBER I	NSTALLED	L	
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21 AIR CONDITIONING C - 0 (M) (O) Inlet and exit doors may be inoperative in any position for an inoperative pack provided associated exit door is deactivated and secured at least 50% open on airplanes before line number 242, or without S/B 21-2194 incorporated. C - 0 (M) (O) Exit doors may be inoperative provided associated exit door is deactivated and secured at least 50% open on airplanes before line number 242, or without S/B 21-2194 incorporated. C - 0 (M) (O) Exit doors may be inoperative provided they remain in the full open to ½ open position. 1) Cargo D 3 2 (M) (O) One inlet door may be inoperative in the full open position to the full open position.	NUI	MBERS				4. REMARKS AND E	XCEPTIONS	
 21 AIR CONDITIONING 4. Pack Coolant (Inlet/Exit Door) Systems (Cont'd) C - 0 (M) (O) Inlet and exit doors may be inoperative in any position for an inoperative pack provided associated exit door is deactivated and secured at least 50% open on airplanes before line number 242, or without S/B 21-2194 incorporated. C - 0 (M) (O) Exit doors may be inoperative provided they remain in the full open to ½ open position. 1) Cargo D 3 2 (M) (O) One inlet door may be inoperative in the full open position to the full open po				ļ				
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 4. Pack Coolant (Inlet/Exit Door) Systems (Cont'd) C - 0 (M) (O) Inlet and exit doors may be inoperative in any position for an inoperative pack provided associated exit door is deactivated and secured at least 50% open on airplanes before line number 242, or without S/B 21-2194 incorporated. C - 0 (M) (O) Exit doors may be inoperative provided they remain in the full open to ½ open position. 								
 4. Pack Coolant C - 0 (M) (O) milet and exit doors may be inoperative in any position for an inoperative pack provided associated exit door is deactivated and secured at least 50% open on airplanes before line number 242, or without S/B 21-2194 incorporated. C - 0 (M) (O) Exit doors may be inoperative provided they remain in the full open to ½ open position. 1) Cargo D 3 2 (M) (O) One inlet door may be inoperative provided they remain in the full open to 1/2 open position. 	4	Dools Coolont	0		0	(\mathbf{M}) (O) inlat and axit	dooro moviho	
Systems (Cont'd)C-0(M) (O) Exit doors may be inoperative provided they remain in the full open to ½ open position.1) Cargo ConfigurationD32(M) (O) One inlet door may be inoperative in the full open position to	4.	(Inlet/Exit Door)	C	-	0	inoperative in any po	sition for an	
 (Cont'd) exit door is deactivated and secured at least 50% open on airplanes before line number 242, or without S/B 21-2194 incorporated. C - 0 (M) (O) Exit doors may be inoperative provided they remain in the full open to ½ open position. 1) Cargo D 3 2 (M) (O) One inlet door may be inoperative in the full open position to the		Systems				inoperative pack prov	vided associated	
Image: Configuration D 3 2 (M) (O) Exit doors may be inoperative provided they remain in the full open to ½ open position. 1) Cargo D 3 2 (M) (O) One inlet door may be inoperative provided they remain the full open to ½ open position.		(Cont'd)				exit door is deactivate	ed and secured at	
C - 0 Inumber 242, or without S/B 21-2194 incorporated. C - 0 (M) (O) Exit doors may be inoperative provided they remain in the full open to 1/2 open position. 1) Cargo D 3 2 (M) (O) One inlet door may be inoperative provided they remain in the full open to 1/2 open position.						least 50% open on ai	rplanes before line	
C - 0 (M) (O) Exit doors may be inoperative provided they remain in the full open to 1) Cargo D 3 2 (M) (O) One inlet door may be inoperative in the full open position to						number 242, or witho	ut S/B 21-2194	
C - 0 (M) (O) Exit doors may be inoperative provided they remain in the full open to ¹ / ₂ open position. 1) Cargo D 3 2 (M) (O) One inlet door may be inoperative in the full open position to						incorporated.		
 1) Cargo D B Configuration 			С	_	0	(M) (O) Exit doors ma	av he inoperative	
1) Cargo D 3 2 (M) (O) One inlet door may be Configuration			U		Ũ	provided they remain	in the full open to	
1) Cargo D 3 2 (M) (O) One inlet door may be Configuration						¹ / ₂ open position.	•	
1) Cargo D 3 2 (M) (O) One inlet door may be								
Configuration		1) Cargo	D	3	2	(M) (O) One inlet doo	r may be	
		Configuration	D	Ŭ	-	inoperative in the full	open position to	
Three Pack 40% from full open (with associated exit		Three Pack				40% from full open (v	vith associated exit	
Airplanes door inoperative) provided:		Airplanes				door inoperative) pro-	vided:	
a) Associated pack is operated in						a) Associated pa	ck is operated in	
auto mode only, and						auto mode oni	y, and	
b) Associated exit door is deactivated at least 50% open						deactivated at	least 50% open	
							10401 0070 opon.	
D 3 2 (M) One inlet door may be inoperative			D	3	2	(M) One inlet door ma	ay be inoperative	
in the full open position to 40% from						in the full open position	on to 40% from	
full open (with associated exit door						full open (with associ	ated exit door	
inoperative) provided associated pack						inoperative) provided	associated pack	

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SYSTEM &	1	2 NU	: 04/25/ MRFR	NSTALLED	21-9			
SEQUENCE ITEM		2.1101	3. NU	MBER REQUIRED FC	R DISPATCH			
NUMBERS				4. REMARKS AND E	XCEPTIONS			
		ļ						
21 AIR CONDITIONING								
5. ACM Bypass Valves	С	-	1	(M) (O) May be inope valves are deactivate	erative provided d open before			
				departure.				
	С	_	_	(O) May be inoperativ	ve provided			
	-			associated pack is no	ot used.			
1) Cargo Configuration	D	3	2	(M) (O) One may be i	inoperative			
Three Pack Airplanes				provided valve is dea	ctivated open			
				before departure.				
	D	3	2	One may be inoperat	ive provided			
				associated pack is no	ot used.			
2) With NAS PACK FCS	С	2	1	(M) (O) One may be i	inoperative provided			
(STC ST02646CH)				valve is deactivated of departure.	pen before			
	С	2	1	(M) One may be inop	erative provided:			
6. Pack Control	С	-	-	Either Automatic or M	lanual feature may			
(Auto or Manual)				be inoperative for eac	ch operating pack.			
1) Cargo Configuration	D	3	2	Either Automatic or M	lanual feature may			
Three Pack Airplanes				be inoperative.				
7. Pack Cooling Door/ACM	С	-	0	(O) Indications may b	e inoperative			
Bypass Position				provided associated	oack ACM			
Indicators				indicators operate no	rmally.			
	6				- -			
	С	-	-	(IVI) (O) Indications m	ay be inoperative back is not used.			
				(Continued)				

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FEDERAL AVIATION ADMINISTRATION							
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NUMBERS			5. NO				
21 AIR CONDITIONING							
7. Pack Cooling							
Door/ACM Bypass							
Position Indicators							
(Cont'd)							
1) Cargo Configuration	П	3	2	(M) (O) One may be i	nonerative		
Three Pack Airplanes	D	5	~	provided Pack Coolar	nt Inlet/Exit Door		
				is considered inopera	tive.		
	D	3	2	(M) (O) One may be i	noperative		
				provided ACM Bypas	s valve is		
				considered inoperativ	e.		
	П	2	2	One may be increased	ive provided		
	D	3	2	associated pack is po	ive provided		
8. Pack Overheat Trip	С	-	-	(O) One may be inop	erative provided		
System	-			ACM OUTLET/COMF	PDISCH		
,				temperature indicatio	ns of the		
				associated pack oper	ates normally.		
	С	-	-	(M) (O) May be inope	rative provided		
				associated pack is no	t used.		
1) Corgo Configuration	П	2	2	(0) One may be incr	arativa providad		
Three Pack Airplanes	D	3	2	$\Delta CM OLITI FT/COME$			
				temperature indicatio	ns of the		
				associated pack oper	ates normally.		
	D	3	2	One may be inoperat	ive provided		
				associated pack is no	ot used.		

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BOEING 747	4	DATE	: 04/25/		21-11				
STOLENCE ITEM	1.	2. NU		INSTALLED MBER REOLIIRED FOI					
NUMBERS			0.110	4. REMARKS AND EX	XCEPTIONS				
21 AIR CONDITIONING									
9. Pack Trip Lights	С	-	-	(O) One may be inoperated pack airflo operates normally.	erative provided w indicator				
	С	-	-	(O) One may be inoperated duct press operates normally.	erative provided ure indicator				
	С	-	-	(M) (O) May be inoper associated pack is not	rative provided t used.				
1) Cargo Configuration Three Pack Airplanes	D	3	2	(O) One may be inoperated pack airflo operates normally.	erative provided w indicator				
	D	3	2	(O) One may be inoperated duct press operates normally.	erative provided ure indicator				
	D	3	2	One may be inoperation associated pack is not	ve provided t used.				
10. Pack Temperature Indication Systems	С	-	0						
11. Pack Airflow *** Indication Systems	D	-	0						
12. Duct Low Pressure *** Indication Systems	D	-	0						
13. Water Separator Coalescer Bags	С	-	0	May be operated with removed.	coalescer bags				
1) Cargo Configuration Three Pack Airplanes	D	3	2	One pack may be ope coalescer bag remove	erated with ed.				
a) With NASI PACK FCS STC (ST02646CH)	С	2	0	May be operated with removed.	coalescer bags 				

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STOLENCE ITEM	١.	2. NU				
NUMBERS			5. NU			
21 AIR CONDITIONING						
14. Zone Temperature	С	-	-	(O) Either Automatic	or Manual controls	
Control System,				may be inoperative.		
Automatic/Manual (Flight						
Deck, Cabin Zones,						
Systems)						
Oystemsy						
	С	-	-	(O) Automatic and Ma	anual controls may	
				be inoperative provid	ed Master Trim Air	
				Shutoff Valve remain	s closed.	
1) Trim Air Source						
Downstream of Pack						
Shutoff Valve						
a) Zone 1 Trim Air	С	1	0	(M) (O) Automatic an	d Manual controls	
. Modulating				may be inoperative p	rovided Zone 1 Trim	
Valves				Air Modulating Valve	remains in the full	
				cool (closed) position		
h) All Other Zere	<u> </u>			(\mathbf{M}) (\mathbf{O}) Automotio on	d Manual controla	
D) All Other Zone	C	-	-	(IVI) (O) Automatic an	a Manual controls	
Modulating				Zone Trim Air Modula	nting Valve(s) is	
Valves				deactivated in the full	cool (closed) to	
				1/3 open position.		
2) Trim Air Source	С	-	-	(M) (O) Automatic an	d Manual controls	
Upstream of Pack				may be inoperative p	rovided associated	
Flow Control and				Zone I rim Air Modula	iting Valve(s) is	
Air Check Valve				position	cool (closed)	
deletion)						

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FEDERAL AVIATION ADMINISTRATION						
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SFOLIENCE ITEM		Z. NUI				
NUMBERS			0.110	4. REMARKS AND E		
21 AIR CONDITIONING						
15. Master Trim Air Valve (Passenger and Crew Compartments)		1	0	(M) (O) May be inope	rative closed.	
1) Trim Air Source C Downstream of Pack Flow Control and Shutoff Valve		1	0	 (M) (O) May be inoper provided: a) Zone 1 Trim A remains in the position, and b) Zone Trim Air for other zones in Manual Moc deactivated in (closed) to 1/3 	rative open ir Modulating Valve full cool (closed) Modulating Valves s operate normally le, or are the full cool open position.	
2) Trim Air Source C Upstream of Pack Flow Control and Shutoff Valve (Trim Air Check Valve deletion)		1	0	 (M) (O) May be inoper provided: a) Zone 1 Trim A remains in the position, and b) Zone Trim Air for other zones in Manual Moor deactivated in (closed) position 	erative open ir Modulating Valve full cool (closed) Modulating Valves s operate normally le, or are the full cool on.	
3) Cargo Configuration E)	1	0	(M) (O) May be inope	rative closed.	
4) Pressure Regulating C Function		1	0	(M) May be operated regulating function ind deactivated.	with the pressure operative or	

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STOLENCE ITEM	2. NU						
NUMBERS		0.110	4 REMARKS AND E	XCEPTIONS			
21 AIR CONDITIONING							
16. Trim Air Modulating C	-	0					
(Passenger and Crew							
Systems)							
17. COMP Temperature C	-	0					
Indicators (Passenger							
and Crew Systems)							
18. DUCT Temperature							
Indicators (Passenger							
and Crew Systems)							
1) Compartments Using C	_	0	May be incorporative or	ovidad associated			
Trim Air		0	zone duct overheat p	rotective system			
			operates normally.				
C	-	0	May be inoperative pr	ovided associated			
			trim air modulation va	lve remains in the			
С	-	0	May be inoperative pr	ovided trim			
			air shutoff valve rema	ins closed.			
*** 2) Upper Deck With C	-	0	May be inoperative pr	ovided associated			
			operates normally	ion system			
С	-	0	May be inoperative pr	ovided associated			
			heater switches rema	in OFF.			
			(Continued)				
		1					

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SEQUENCE ITEM	1.	2. NUI	3 NU				
NUMBERS			0.110	4. REMARKS AND E	XCEPTIONS		
21 AIR CONDITIONING							
18 DUCT Tomporaturo							
Indicators (Passenger							
and Crew Systems)							
(Cont'd)							
	•						
3) Zone A With	С	-	0	(M) May be inoperative	/e provided		
	С	-	0	Mav be inoperative p	rovided associated		
				zone duct overheat p	rotection system		
				operates normally.			
10 Duct Overheat Protective							
Systems (Passenger and							
Crew Systems)							
1) Compartments	С	-	0	May be inoperative p	rovided associated		
Using Trim Air				zone supply duct tem	perature indicator		
				operates normally.			
	С	-	0	Mav be inoperative p	rovided associated		
			_	trim air modulation va	lve remains in the		
				cool (closed) position			
	0						
	C	-	0	May be inoperative pl	rovided trim air		
*** 2) Upper Deck With	С	-	0	May be inoperative p	rovided associated		
Electric Heaters				heater switches rema	in OFF.		
	0		_				
3) Zone A With Electric Heaters	C	-	0	(IVI) May be inoperative associated beater is a	ve provided		
			1	I			

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SYS		1.	2. NUI			
				3. NU		
	VIDER3				4. REMARKS AND E	XCEPTIONS
21]			
21	AIR CONDITIONING					
20.	Recirculating Fans	С	-	0		
***	(or Flight Deck Fan)					
21.	Gasper Fans	D	-	0		

22.	Cabin Pressure Control					
	System (Automatic)					
	1) Outflow Valves	C	1	0	(M) (O) Automatic Co	ntrol to both
	Manual Close Priority	U	•	U	outflow valves may be	e inoperative.
	Control (PRR 73278					••P • . • • .
	or Production					
	Equivalent					
	Incorporated)					
		6				
	2) PRR 73278 or	С	1	0	(M) (O) Automatic Co	ntrol to one outflow
	Production				valve may be inopera	tive provided:
	Equivalent Not				a) Associated out	TIOW VAIVE REMAINS
	incorporated				b) A maximum of	two packs are used
					for takeoff and	landing when one
					outflow valve is	s closed.
		С	1	0	(M) (O) Automatic Co	ntrol to both
					outflow valves may be	e inoperative at
					or below 15,000 ft. M	SL.
						ontrol" includes
					Bate Control	

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SYSTEM & 1.	2. NU	MBER I	INSTALLED
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH
NUMBERS			4. REMARKS AND EXCEPTIONS
21 AIR CONDITIONING			
23. Cabin Pressure Control Systems (Manual)			
1) Manual Positions C	3	1	(O) Two manual positions (MAN, MAN L, or MAN R) may be inoperative provided both outflow valves operate normally in both the manual and automatic control mode.
C	3	1	 (O) Two manual positions (MAN, MAN L, or MAN R) may be inoperative provided: a) Both outflow valves can be operated in manual control, and b) Limitations (if any) associated with automatic control inoperative are followed.
C	3	1	 (M) (O) Two manual positions (MAN, MAN L, or MAN R) may be inoperative provided: a) One outflow valve operates normally in manual and automatic control, b) Remaining outflow valve is deactivated closed, and c) A maximum of two packs are used for takeoff and landing when one outflow valve is closed.
			(Continued)

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SEQUENCE ITEM	1.	2. NO		
NUMBERS			0.110	4. REMARKS AND EXCEPTIONS
21 AIR CONDITIONING				
 Cabin Pressure Control Systems (Manual) (Cont'd) 				
1) Manual Positions (Cont'd)	С	3	0	 (M) (O) Manual control to both outflow valves may be inoperative for unpressurized flight provided: a) Procedures are established and used to ensure the lower cargo compartments and Combi main deck cargo compartment remain empty or are verified to contain only empty cargo handling equipment, ballast (ballast may be loaded in ULDs), or Fly Away Kits, b) All equipment cooling blowers operate normally, c) Equipment cooling is operated in the DITCH mode, d) One outflow valve is deactivated closed, e) One outflow valve remains full open, and f) Automatic control is available to the open outflow valve. NOTE: Operator MELs must define which items are approved for inclusion in the Fly Away Kits and which materials can be used as ballast.

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			MASTER MINIMUM EQUIPMENT LIST
			2014 PAGE NO.
BOEING 747		. 04/23/ MDED I	
	2. NU		
		3. NU	
NUMBERS			4. REMARKS AND EXCEPTIONS
21 AIR CONDITIONING	_		
23. Cabin Pressure Control Systems (Manual) (Cont'd)			
1) Manual Positions C (Cont'd)	3	0	 (M) (O) Manual control to both outflow valves may be inoperative for unpressurized flight provided: a) Procedures are established and used to ensure the lower cargo compartments and Combi main deck cargo compartment remain empty or are verified to contain only empty cargo handling equipment, ballast (ballast may be loaded in ULDs), or Fly Away Kits, b) All equipment cooling blowers operate normally, c) Equipment cooling is operated in the DITCH mode, d) One outflow valve is deactivated full open, and e) Extended overwater flight is prohibited. NOTE: Operator MELs must define which items are approved for inclusion in the Fly Away Kits and which materials can be used as ballast.

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SEQUENCE ITEM		2.1101	3. NU	MBER REQUIRED FC	R DISPATCH		
NUMBERS				4. REMARKS AND E	XCEPTIONS		
24. Outflow Valves	С	2	1	 (M) (O) One valve matched closed provided: a) Both manual a controls opera remaining valve b) A maximum of for takeoff and 	ay be inoperative and automatic te normally on the re, and two packs are used landing.		
	С	2	0	 (M) (O) May be inoper unpressurized flight p a) At least one variation open, b) Procedures ar used to ensure compartments deck cargo contempty or are visual equipment, bat loaded in ULD c) All equipment contemprate normation operate normation operate normation (Equipment contemprised) c) All equipment contemprised over prohibited. NOTE: Operator MEL which items a inclusion in than which mating used as ballated as bal	erative for provided: alve remains fully e established and e the lower cargo and Combi main mpartment remain erified to contain rgo handling llast (ballast may be s), or Fly Away Kits, cooling blowers ally, bling is operated in de, and water flight is -s must define re approved for e Fly Away Kits aterials can be st.		

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1.	2. NUI	MBER I	NSTALLED					
		3. NU	MBER REQUIRED FOR DIS	PATCH				
			4. REMARKS AND EXCEP	TIONS				
С	2	1	 (M) One may be inoperative a) Remaining value opernormally, and b) For airplanes on white taken from the pneur upstream of the pack and shutoff value (trinvalue deletion) install Auto shutdown of verified when remunative is tested. 	e provided: erates ch trim air is natic manifold flow control m air check led: #2 pack is naining relief				
С	2	1	 One may be inoperative provide a) Remaining valve oper normally, and b) For airplanes on which taken from the pneur upstream of the pack and shutoff valve (trin valve deletion) install Operation is limited maximum of two 	ovided: erates ch trim air is natic manifold flow control m air check led: ed to a packs.				
	NSPOR ISTRAT 1. C	NSPORTATION	ISTRATION ISTRATION REVISION NO DATE: 04/25/ 1. 2. NUMBER I 3. NUI C 2 1 C 2 1	MASTER MINIMUM EQUINSPORTATION MASTER MINIMUM EQUINSTRATION REVISION NO: 35 DATE: 04/25/2014 PAGI 1. 2. NUMBER INSTALLED PAGI 3. NUMBER REQUIRED FOR DIS 4. REMARKS AND EXCEP C 2 1 (M) One may be inoperative a) Remaining valve ope normally, and b) For airplanes on which taken from the pneur upstream of the pack and shutoff valve (trin valve deletion) install Auto shutdown of verified when rem valve is tested. C 2 1 One may be inoperative pro a) Remaining valve ope normally, and b) For airplanes on which taken from the pneur upstream of the pack and shutoff valve (trin valve is tested. C 2 1 One may be inoperative pro a) Remaining valve ope normally, and b) For airplanes on which taken from the pneur upstream of the pack and shutoff valve (trin valve deletion) install Operation is limite maximum of two				

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SEQUENCE ITEM	2	3. NU	MBER REQUIRED FOR DISPATCH				
NUMBERS			4. REMARKS AND EXCEPTIONS				
21 AIR CONDITIONING							
25. Positive Pressure C Relief Valves (Cont'd)	2	1	 One may be inoperative provided: a) Remaining valve operates normally, and b) For airplanes on which trim air is taken from the pneumatic manifold upstream of the pack flow control and shutoff valve (trim air check valve deletion) installed: Airplane is operated with master trim air valve closed. 				
С	2	0	 (M) (O) May be inoperative provided: a) Flight is conducted in an unpressurized configuration, and b) Procedures are established and used to ensure the lower cargo compartments and Combi main deck cargo compartment remain empty or are verified to contain only empty cargo handling equipment, ballast (ballast may be loaded in ULDs), or Fly Away Kits. NOTE: Operator MELs must define which items are approved for inclusion in the Fly Away Kits and which materials can be used as ballast. 				
26. PRESS RELIEF Valve C Open Lights	2	0					
27. AUTO FAIL/RATE C LIMIT Light	1	0					

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SYSTEM &	1.	2. NUI	MBER I	NSTALLED			
SEQUENCE ITEM			3. NUI				
Nomberto					AGEP HOINS		
21 AIR CONDITIONING							
28. Outflow Valve Position Indication Systems	С	2	0	(O) May be inoperativ remaining component the pressurization sys normally.	re provided all ts and functions of stem operate		
	С	2	0	 (M) (O) May be inope a) Flight is conduunpressurized b) Procedures are used to ensure compartments deck cargo corrempty or are very only empty carrequipment, balloaded in ULDs NOTE: Operator MEL which items a inclusion in the and which maused as ballas 	rative provided: cted in an configuration, and e established and the lower cargo and Combi main npartment remain erified to contain go handling llast (ballast may be s), or Fly Away Kits. .s must define re approved for e Fly Away Kits terials can be st.		

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	SIRAI						
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SYSTEM &	1.	2. NU	MBER I	NSTALLED			
SEQUENCE ITEM			3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS				4. REMARKS AND EXCEPTIONS			
21 AIR CONDITIONING							
29. CABIN V/S Vertical Speed Indication System	С	1	0	(O) May be inoperative provided all remaining components and functions of the pressurization system operate normally.			
	С	1	0	 (M) (O) May be inoperative provided: a) Flight is conducted in an unpressurized configuration, and b) Procedures are established and used to ensure the lower cargo compartments and Combi main deck cargo compartment remain empty or are verified to contain only empty cargo handling equipment, ballast (ballast may be loaded in ULDs), or Fly Away Kits. NOTE: Operator MELs must define which items are approved for inclusion in the Fly Away Kits and which materials can be used as ballast. 			

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SYSTEM &	1.	2. NU	MBER I	NSTALLED			
SEQUENCE ITEM			3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS				4. REMARKS AND EXCEPTIONS			
	-		_				
30. Cabin Altitude Indication System	С	1	0	 (O) May be inoperative provided: a) Cabin differential pressure indicator operates normally, and b) A chart is provided the flight crew to convert differential pressure to cabin altitude. 			
	С	1	0	 (M) (O) May be inoperative provided: a) Flight is conducted in an unpressurized configuration, and b) Procedures are established and used to ensure the lower cargo compartments and Combi main deck cargo compartment remain empty or are verified to contain only empty cargo handling equipment, ballast (ballast may be loaded in ULDs), or Fly Away Kits. NOTE: Operator MELs must define which items are approved for inclusion in the Fly Away Kits and which materials can be 			
				which items are approved for inclusion in the Fly Away Kits and which materials can be used as ballast.			

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SYSTEM &	1.	2. NUI						
			3. NU					
NOMBERS				4. REIVIARNS AND E	IXCEPTIONS			
21 AIR CONDITIONING								
31. Cabin DIFF PRESS Indication System	С	1	0	 (O) May be inoperative a) Cabin altitude normally, and b) A chart is proventory to convert cab differential presented 	ve provided: indicator operates ided the flight crew in altitude to ssure.			
	С	1	0	 (M) (O) May be inoperative (M) (O) May be inoperative (M) and the second of t	erative provided: acted in an configuration, and e established and e the lower cargo and Combi main mpartment remain erified to contain rgo handling llast (ballast may be s), or Fly Away Kits. -s must define are approved for he Fly Away Kits aterials can be ast.			
32. Cabin Altitude Warning System	С	1	0	(M) May be inoperative remains at or below 1	ve provided flight 0,000 ft. MSL.			

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SEQUENCE ITEM	1.	2.1101	3. NU	MBER REQUIRED FOR DISPATCH				
NUMBERS				4. REMARKS AND EXCEPTIONS				
21 AIR CONDITIONING								
33. Equipment Cooling Blowers								
1) Main Equipment Center Cooling Blowers	С	2	1	 (M) (O) One may be inoperative provided: a) Both flow control valve and Upper Deck overboard dump valve operate normally in the SMOKE mode, and b) Flight is conducted in a pressurized configuration. 				
2) Upper Deck Equipment Cooling Blower	С	1	0	 (M) (O) May be inoperative provided: a) Upper Deck overboard dump valve operates normally, and b) Flight is conducted in a pressurized configuration. 				
34. INS (IRS) Blowers	С	-	0	May be inoperative provided both main equipment blowers operate normally.				
	С	-	-	May be inoperative provided, if one main equipment blower is inoperative, an INS (IRS) blower functions normally for each operating INS (IRS).				
35. Main Equipment Cooling Cargo Compartment Shutoff Valve	С	1	0	 (M) (O) May be inoperative closed provided: a) Equipment cooling system is operated in the SMOKE mode, b) Flow control valve and upper deck equipment cooling overboard dump valve are verified in the open (SMOKE mode) position, and c) Flight is conducted in a pressurized configuration. 				

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BOEING 747		DATE	: 04/25/	2014 21-28			
SYSTEM &	1.	2. NUI	MBER I	NSTALLED			
SEQUENCE ITEM			3. NU				
NUMBERS				4. REMARKS AND EXCEPTIONS			
21 AIR CONDITIONING							
36. Equipment Cooling NO AIRFLOW Indicating System	С	2	0	 (M) (O) May be inoperative provided: a) Equipment cooling system is operated in SMOKE mode, b) Flow control and upper deck equipment cooling overboard dump valves are verified in the open (SMOKE mode) position, and c) Flight is conducted in a pressurized configuration. 			
37. Main Equipment Center Cooling Flow Control Valve	С	1	0	 (M) (O) May be inoperative in the open (SMOKE mode) position provided: a) Flight is conducted in a pressurized configuration, and b) Extended overwater flight is prohibited. 			
38. Upper Deck Equipment Cooling Overboard Dump Valve	С	1	0	 (M) (O) May be inoperative open provided: a) Equipment cooling system is operated in the SMOKE mode, b) Flight is conducted in a pressurized configuration, and c) Extended overwater flight is prohibited. 			
 39. Main Equipment Center *** Cooling Bypass Valve System 	С	-	0	(M) May be inoperative in the non-bypass position.			

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MASTER MINIMUM EQUIPMENT LIS							
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SYSTEM &	1.	2. NUI					
			3. NU				
Nomberto				4. REMARKS AND EXCEPTIONS			
21 AIR CONDITIONING							
40. Equipment Cooling Smoke Detector	С	1	0	 (M) (O) May be inoperative provided: a) Equipment cooling system is operated in the SMOKE mode, b) Flow control and upper deck equipment cooling overboard dump valves are verified in the open (SMOKE mode) position, and c) Flight is conducted in a pressurized configuration. 			
41. Lower Cargo Heating System							
1) Aft System							
a) Two Valve Installation	D	1	0	(M) May be inoperative provided one valve remains closed.			
b) Three Valve Installation	D	1	0	(M) May be inoperative provided either the override valve, or both bulk control valve and container control valves remain closed.			
2) Forward System (Cargo Configuration) (Including Israel Aircraft Industry Special Freighter, STC ST00358LA)	D	1	0	(M) May be inoperative provided one valve remains closed.			
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BOEING 747		DATE	DATE: 04/25/2014 21-30				
SYSTEM &	1.	2. NU	MBER				
			3. NU				
Nomberto				4. REMARKS AND EACEPT	10113		
21 AIR CONDITIONING							
42. Lower Cargo Heating Indicating System							
1) Aft System	С	-	0	(M) May be inoperative (inclutest function) provided it is verall valves and the overheat p system operates normally.	iding the prified that rotective		
	D	-	0	(O) May be inoperative (inclu function) provided associated system is not used.	iding test d heating		
2) Forward System (Cargo Configuration) (Including Israel Aircraft Industry Special Freighter, STC ST00358LA)	С	1	0	(M) May be inoperative (inclutest function) provided it is ver all valves and the overheat p system operates normally.	uding the erified that rotective		
	D	1	0	(O) May be inoperative (inclu function) provided associated system is not used.	iding test d heating		
43. Wall Heat System	С	1	0	Moved to ATA 21-58, Rev. 2	8.		
44. Upper Deck Heater *** System	С	-	0	(M) May be inoperative provi heater(s) is deactivated.	ded		
1) OVERHEAT Light	С	1	0	(O) May be inoperative (and heat used) provided overhea and associated supply duct t indication operates normally.	upper deck t protection emperature		
2) Cargo Configuration	D	2	1	(M) One may be inoperative operations provided associat deactivated.	for all cargo ed heater is		

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BOEING 747	4	DATE	: 04/25/	2014 21-31		
STOLENCE ITEM	1.	2. NUI				
NUMBERS			3. NU			
				4. REMARKS AND EXCEPTIONS		
21 AIR CONDITIONING		ĺ				
45. Galley Overboard						
(Manual or Floatric)						
1) Main Deck and	С	1	0	May be inoperative in the low flow or		
Upper Deck Galleys	•		Ū.	closed position.		
Installed						
	С	1	0	May be inoperative in the high flow or		
				open position provided three packs		
				operate normally.		
	С	1	0	May be inoperative in the high flow or		
	U	•	Ũ	open position provided:		
				a) Two packs operate normally, and		
				b) Airplane remains at or below		
				FL 310.		
2) LowerLobe	C	1	0	(M) May be inoperative (and lower lobe		
Gallev(s)	U	•	0	allev used) provided:		
Installed				a) Valve is secured CLOSED, and		
				b) Galley/Lav Fan operates		
				continuously.		
	C	1	0	(M) May be increative OPEN provided:		
	C	1	0	a) Lower lobe dalley power is OFF		
				b) Lower lobe galleys are not		
				occupied, and		
				c) Three packs operate normally.		
	6		~			
	С	1	0	(M) May be inoperative OPEN provided:		
				b) Airplane remains at or below		
				FL 310.		

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MASTER MINIMUM EQUIPMENT LIST FEDERAL AVIATION ADMINISTRATION						
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BOEING 747	DATE	: 04/25/	2014 21-32			
SYSTEM & 1.	2. NU					
		3. NU				
			4. REMARKS AND EXCEPTIONS			
21 AIR CONDITIONING						
46. Galley/Lavatory Fan						
1) Lower Lobe C Galley(s) Installed	-	0	(M) (O) May be inoperative provided, if galleys are serviced with dry ice, AFM limitations (for galley/lavatory fan not operating) are observed.			
С	-	0	(M) (O) May be inoperative provided galleys are not serviced with dry ice.			
a) ATC TD9614LA-T C Not Installed	-	0	(M) (O) May be inoperative provided altitude limitations are observed.			
b) ATC TD9614LA-T C Installed	-	0	 (M) (O) May be inoperative provided: a) Altitude limitations are observed, b) Operations do not require the use of SATCOM, and c) SATCOM System(s) is deactivated. 			
47. Galley Supply C Shutoff Valve (Lower Lobe Galley)	1	0	 (M) (O) May be inoperative provided integral fire extinguisher system is not relied upon. NOTE: See requirements for Lower Lobe Galley fire extinguisher system 			

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SYSTEM &	1.	2. NUI	MBER I	NSTALLED		
SEQUENCE ITEM			3. NU	MBER REQUIRED FO	R DISPATCH	
NUMBERS				4. REMARKS AND E	XCEPTIONS	
21 AIR CONDITIONING						
48. Heater Systems *** (Lower Lobe Galley)	С	-	0			
1) OVERHEAT Light	С	_	0	 (M) May be inoperative used) provided: a) Overheat protection operates norm b) Associated suppression operature in normally. 	ve (and systems ection system ally, and oply duct dications operate	
49. NO AIRFLOW*** Indicating System (Lower Lobe Galley)	С	2	1	(O) One light (on eith galley deck) may be i the remaining light is	er main deck or noperative provided closely monitored.	
	С	2	0	(M) (O) Lights may be provided associated of serviced with dry ice.	e inoperative galley is not	
	С	2	0	(O) Lights may be inc associated galley is n	perative provided ot occupied.	
50. Disinsection System	D	1	0			

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SYSTEM &	1.	2. NU	MBER I	NSTALLED			
SEQUENCE ITEM			3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS				4. REMARKS AND EXCEPTIONS			
]	 				
51. Ram Air Vent Valve							
1) Passenger Configuration	D	1	0	May be inoperative in any position.			
2) Cargo Configuration (Including Israel Aircraft Industry Special Freighter, STC ST00358LA)	С	1	0	(M) May be inoperative open provided two packs operate normally.			
	С	1	0	 (M) May be inoperative open, with single pack operating, provided: a) Altitude remains at or below FL 200 (with 8 or more main deck entry doors installed), and b) Equipment cooling is operated in NORM 			
	С	1	0	 (M) May be inoperative open, with single pack operating, provided: a) Altitude remains at or below FL 180 (with 8 or more main deck entry doors installed), and b) Equipment cooling is operated in SMOKE mode. 			
	С	1	0	 (M) May be inoperative open, with single pack operating, provided: a) Altitude remains at or below FL 310 (with 1 or 2 main deck entry doors installed), and b) Equipment cooling is operated in NORM. 			

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FEDERAL AVIATION ADMINISTRATION						
AIRCRAFT:	REVIS		0:35	PAGE NO:		
BUEING 747		: 04/25/ MBED I		21-35		
SEQUENCE ITEM	2. NO	3. NU	MBER REQUIRED FC	R DISPATCH		
NUMBERS			4. REMARKS AND E	XCEPTIONS		
21 AIR CONDITIONING						
51. Ram Air Vent Valve *** (Cont'd)						
2) Cargo Configuration C (Including Israel Aircraft Industry Special Freighter, STC ST00358LA) (Cont'd)	1	0	 (M) May be inoperative pack operating, provious a) Altitude remain FL 250 (with 1 entry doors instants) Equipment coordinates SMOKE mode 	ve open, with single ded: ns at or below or 2 main deck stalled), and pling is operated in s.		
52. Ram Air Vent Heater C *** System (Including Israel Aircraft Industry Special Freighter, STC ST00358LA)	1	0	 (M) (O) May be inoperative of the inop	erative provided: edures are id used to assure ew comfort, and stivated.		
53. Aft Cargo Air*** Conditioning System Controls and Valves						
1) Auto or Manual D Controls	2	0	(M) (O) May be inoper conditioned air shutor cargo trim air shutoff normally.	erative provided both ff valve and aft valve operate		
2) Conditioned Air D Shutoff Valve and Aft Cargo Trim Air Shutoff Valve	2	0	(O) May be inoperativ	ve closed.		
			(Continued)			

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FEDERAL AVIATION ADMINI	STRAT	ION			
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SFOLIENCE ITEM	1.	2. NUI			
NUMBERS			5. NO	4 REMARKS AND E	
21 AIR CONDITIONING					
53. Aft Cargo Air					
Controls and Valves					
(Cont'd)					
3) Aft Cargo Trim	D	1	0	(O) May be inoperativ	e open, the system
Air Valve				used, and the compa	rtment loaded
				provided the trim air r	nodulating valve
				is deactivated closed.	
4) Conditioned Air	D	1	0	(O) May be inoperativ	e open provided
Shutoff Valve	D	•	Ũ	procedures are estab	lished and used to
				ensure the aft cargo o	compartment
				remains empty or is v	rerified to contain
				only empty cargo har	idling equipment,
				or Fly Away Kits	e loaded in ULDS),
				NOTE: Operator MEL	s must define
				which items a	re approved for
				inclusion in th	e Fly Away Kits
				and which ma	terials can be
				used as ballas	st.
5) Trim Air	П	1	0	(0) May be inonerativ	ve closed
Modulating Valve	D		0		
	D	1	0	(O) May be inoperativ	/e open, the
				system used, and the	compartment
				loaded provided the A	Att Cargo Trim Air
					livated closed.

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FEDERAL AVIATION ADMINISTRATION						
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SYSTEM &	1	2. NU	: 04/25/ MBFR I	2014 <u>21-37</u> INSTALLED		
SEQUENCE ITEM	••	2.110	3. NU	MBER REQUIRED FOR DISPATCH		
NUMBERS				4. REMARKS AND EXCEPTIONS		
21 AIR CONDITIONING						
54. Aft Cargo Compartment *** Air Conditioning Trim Air Modulating Valve	D	1	0			
Position Indication System						
 55. Aft Cargo Compartment *** Air Conditioning System Compartment/Duct Temperature Indication System 	D	1	0	(O) May be inoperative provided duct overheat protective system operates normally.		
	D	1	0	(O) May be inoperative provided trim air modulation valve remains in the cool (closed) position.		
 56. Aft Cargo Compartment *** Air Conditioning Overheat Protection System 	D	-	0	 (O) May be inoperative provided: a) Supply duct temperature indicator operates normally, and b) Trim air modulating valve remains in the cool (closed) position. 		
57. Pack Flow Control and *** Shutoff Valve PACK VALVE CLOSED Lights	D	3	0			
58. Side Cargo Door Heat	D	1	0	(M) May be inoperative provided system is deactivated.		
59. Air Conditioning Exhaust *** Valve (Lower 41)	D	1	0	(M) May be inoperative closed.		
60. Supplemental Vent Fans	С	-	0	May be inoperative provided packs are not operated in ½ flow position.		

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MASTER MINIMUM EQUIPMENT LIST							
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SYSTEM & 1.	2. NU	MBER I	NSTALLED				
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH				
NUMBERS			4. REMARKS AND EXCEPTIONS				
21 AIR CONDITIONING							
61. Pack Air Flow Indicator			Deleted prior to Rev. 21.				
62. Ozone Converter D	3	0	(O) As required by 14 CFR.				
63. Crew Rest Area Air C *** Distribution System	1	0	(M) (O) May be inoperative provided heater is deactivated.				
			NOTE: Ventilation and temperature control will be inoperative.				
1) Temperature Control C	1	0	(M) (O) May be inoperative provided heater is deactivated.				
2) Ventilation C	1	0	 (M) (O) May be inoperative provided: a) Heater is deactivated, and b) CRA (Crew Rest Area) air supply fan is deactivated. 				
3) Temperature D Indicator	1	0					
64. Humidifier Systems D	-	0					
65. Zone 2A C *** Heater System	1	0	(M) (O) May be inoperative provided heater is deactivated.				

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SYSTEM & 1		. 04/23/ MBER I		21-39		
SEQUENCE ITEM	2. 110	3. NU		R DISPATCH		
NUMBERS			4. REMARKS AND E	XCEPTIONS		
21 AIR CONDITIONING						
100 Lower Cargo						
(Super Tanker)						
(STC ST01219LA)						
()						
1) Aft System						
a) Two Valve						
Installation						
1) Super Tanker D	1	0	(M) May be inoperativ	ve provided Super		
(STC			Tanker operations ar	e conducted in		
ST01912LA)			an ambient temperati	ure above		
b) Three Valve			0 degrees C.			
Installation						
motanation						
1) Super Tanker D	1	0	(M) May be inoperativ	ve provided Super		
(STC			Tanker operations are	e conducted in		
ST01912LA)			an ambient temperat	ure above		
			U degrees C.			

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FEDERAL AVIATION ADMINISTRATION							
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BUEING 747	1		: 03/24/	2008 22-1 NSTALLED			
SEQUENCE ITEM	1.	2.1101	3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS				4. REMARKS AND EXCEPTIONS			
22 AUTO FLIGHT							
1. Autopilot Systems	С	-	1	(O) May be inoperative provided			
				approach minimums do not require			
				their use.			
				NOTE: Any mode which functions			
				normally may be used.			
	В	-	0	(O) May be inoperative provided:			
			-	a) Approach minimums do not			
				require their use, and			
				 b) Enroute operations do not require their use 			
				NOTE: Any mode which functions			
				normally may be used.			
1) Control Wheel	С	2	1	(O) One may be inoperative provided:			
Disengage Switches				a) Autopilot(s) is not used below			
				1,500 feet AGL, and b) Approach minimums do not			
				require their use.			
2) Pitch Selector Modes							
a) ALT SEL	С	-	0	Except where enroute operations require			
				its use, may be inoperative provided			
				altitude alert or altitude hold operate			
				nonnaily.			
b) ALTITUDE	С	-	0	Except when enroute operations require			
HOLD				its use, may be inoperative provided			
c) IAS	С	-	0				
*** d) V/S	D	-	0				
-, -, -	-		-				
				(Continued)			

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FEDERAL AVIATION ADMINISTRATION							
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SYSTEM &	1.	2. NU	. 03/24/ MBER I	NSTALLED			
SEQUENCE ITEM			3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS				4. REMARKS AND EXCEPTIONS			
]					
22 AUTOFLIGHT							
 Autopilot Systems (Cont'd) 							
 Pitch Selector Modes (Cont'd) 							
e) TURB	С	-	0				
*** f) PMS	D	-	0	May be inoperative provided procedures do not require its use.			
*** g) VNAV	D	-	0	May be inoperative provided procedures do not require its use.			
3) Nav Selector Modes							
a) HDG	С	-	0				
b) VOR/LOC	С	-	0	May be inoperative provided approach minimums do not require its use.			
c) ILS	С	-	0	May be inoperative provided approach minimums do not require its use.			
*** d) INS	С	-	0				
*** e) LNAV	С	-	0				
f) LAND	С	-	0	May be inoperative provided approach minimums do not require its use.			
*** g) GPS	С	-	0				
				(Continued)			

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			$\cdot 03/24$	U: 33 a /2008	PAGE NO:
SYSTEM &	1		. 03/24/ MBFR I	NSTALLED	22-3
SEQUENCE ITEM		2.110	3. NU	MBER REQUIRED FO	R DISPATCH
NUMBERS		4. REMARKS AND EXCEPTIONS			XCEPTIONS
22 AUTO FLIGHT					
 Autopilot Systems (Cont'd) 					
*** 4) Back Beam Selector	D	-	0		
*** 5) Course Transfer Switch	D	-	0	May be inoperative pl course information is pilot.	rovided separate available to each
*** 6) Altitude Rate Unit (Computer)	С	1	0	May be inoperative pr minimums do not req	rovided approach uire its use.
2. Autopilot Disengaged Lights	В	-	0	May be inoperative plare not used.	rovided autopilots
1) Triple Channel Installation	С	6	-	One light per channel and the associated an except during autolar	l may be inoperative utopilot used, nd operations
2) Dual Channel Installation	С	2	1	One may be inoperat used, except for auto	ive and autopilot(s) land operations.
3. Yaw Damper	С	2	1	One may be inoperat associated yaw damp remains OFF.	ive provided ber switch
4. Autothrottle System	С	1	0	May be inoperative p minimums do not req	rovided approach uire its use.
				NOTE: Any mode whi normally may	ch functions be used.

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FE	DERAL AVIATION ADMINIS	STRAT	ION			
AIR	CRAFT:			REVISION NO: 33 a PAGE NO:		
SYS	STEM &	1.	2. NU	. 03/24/ MBER I	INSTALLED	
SEC	QUENCE ITEM			3. NU	MBER REQUIRED FOR DISPATCH	
NU	VIBERS		4. REMARKS AND EXCEPTIONS			
22	AUTO FLIGHT					
5. ***	Airspeed Command Bugs	С	2	1	Copilot's bug may be inoperative.	
		С	2	1	Pilot's may be inoperative provided autothrottle function requiring the bug is not used.	
		С	2	0	May be inoperative provided procedures do not require their use.	
6. ***	Gust Response Suppression (Beta and/or MSAS)	D	1	0		
7. ***	Autoland Bias Actuator	С	1	0	May be inoperative with autoland used below 50 ft. AGL provided, for B-747SP, dual channel autoland operations are not conducted.	
		С	1	0	May be inoperative with autoland used below 50 ft. AGL provided, for B-747- 100/200/300 airplanes configured with autoland couplers (LCLUs or LRCUs), dual channel autoland operations at gross weights above 630,000 lb. (285,766 kg) are not conducted.	
		С	1	0	May be inoperative with autoland used below 50 ft. AGL provided, for all other configurations, observe autoland placards in the cockpit, if any, per AD 82-26-01, (S/B 747-22-2127 and S/B 747-22-2130 or production equivalent).	

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FEDERAL AVIATION ADMINI	STRAT	ION			
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SECHENCE ITEM	1.	2. NUI			
NUMBERS			5. NO	A REMARKS AND E	
22 AUTO FLIGHT		Ī	İ		
	_				
8. Auto Stabilizer Trim	С	2	1	One system may be i	noperative provided
Systems				approach minimums	or procedures do
				use.	
	В	2	0	May be inoperative p	rovided autopilots
				are not used.	
0 Automotic Dellout		2	0	May be increative a	rovidodu
9. Automatic Rollout	D	3	0	a) Approach minir	nume or procedures
Control Cysterns				do not require	its use, and
				b) Associated aut	opilot channel is not
				engaged in the	land mode.
	-		•		
10. Rudder PEDAL	D	1	0	(O) May be inoperative	e provided
	D	1	0	(O) May be inoperativ	e and automatic
				rollout control used p	rovided:
				a) Rudder pedal	steering Roll Out
				Control Light is	s operating
				normally, and	nitorod during
				rollout	nitorea auring
				Tonout.	
11. Rudder Pedal Steering	D	1	0	(O) May be inoperativ	ve provided
*** ROLL OUT CONTROL				automatic rollout cont	rol is not used.
Light					
	П	1	0	(\mathbf{O}) May be increased	and automatic
	U		U	rollout control used n	rovided the Rudder
				Pedal Steering Light	operates normally.

0.5. DEPARTIVIEN	IT OF TRANSPO	RTATIO	N		
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SYSTEM &	1.	2. NU	MBER I	NSTALLED	
	IIEM		3. NU	MBER REQUIRED FO	RDISPATCH
NUMBERS				4. REMARKS AND E	XCEPTIONS
23 COMMUNICA	TIONS				
1. Flight Deck Sp	beakers D	2	0	May be inoperative p a) Procedures do use, and b) Headsets are i operating norm	rovided: not require their nstalled and nally.
2. Passenger Ad System	dress				
1) Passenger Configurati	B	1	0	 (O) May be inoperative a) Alternate, norming procedures, and restrictions are used, and b) Flight attendar (audio and vise normally. 	ve provided: nal, and emergency nd/or operating e established and nt alerting system ual) operates
				NOTE: Any station fu operates norm	nction(s) that nally may be used.
a) Flight L Microp	beck PA B hone	-	0	 (O) May be inoperative a) Alternate, norm procedures, are restrictions are used, and b) Flight Deck/Care Function (two-normally. (Continued) 	ve provided: nal, and emergency nd/or operating e established and abin Interphone way) operates

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BOEING 747	DATE	: 04/25/	2014 23-2
SYSTEM & 1.	2. NUI	MBER I	NSTALLED
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH
NUMBERS			4. REMARKS AND EXCEPTIONS
23 COMMUNICATIONS			
 Passenger Address System (Cont'd) 			
1) Passenger Configuration (Cont'd)			
b) Cabin Attendant Stations			
1) Handsets, B PA Function	-	-	 May be inoperative provided: a) Flight Deck to Cabin PA function operates normally, and b) PA override function at Doors 1L and 4L operates normally.
*** 2) Door 1L or 4L B Panel PA Function	-	-	 May be inoperative provided: a) Flight Deck to Cabin PA function operates normally, and b) PA override function on handsets at Doors 1L and 4L operates normally.
*** c) Cabin Attendant B Station PA Microphone	-	-	 May be inoperative provided: a) Flight Deck to Cabin PA function operates normally, and b) PA override function on handsets at Doors 1L and 4L operates normally.

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SYSTEM & 1.	2. NU	MBER I	NSTALLED		
SEQUENCE ITEM		3. NU	MBER REQUIRED FC	OR DISPATCH	
NUMBERS			4. REMARKS AND E	XCEPTIONS	
23 COMMUNICATIONS					
2. Passenger Address					
(Cont'd)					
1) Passenger					
Configuration					
(Cont'd)					
d) Lavatory C	-	-	(O) May be inoperativ	ve provided	
Speakers			alternate, normal, and	d emergency	
			procedures, and/or of		
				1360.	
2) Cargo Configuration C	1	0	(O) May be inoperativ	ve provided	
(Courier/			alternate, normal, and	d emergency	
Supernumerary			procedures, and/or o	perating restrictions	
Address System)			are established and u	used.	
_					
D	1	0	May be inoperative p	rovided procedures	
			do not require its use	•	
a) Lavatory	1	0	(\mathbf{O}) May be incorrective	ve provided	
Speakers	I	0	alternate procedures	are established	
			and used.		
D	1	0	May be inoperative p	rovided procedures	
			do not require its use		

U.S. DEPARTMENT OF TRANSPORTATION					
FEDERAL AVIATION ADMINISTRA	TION		MASTER MINIMU	M EQUIPMENT LIST	
AIRCRAFT:	REVIS	SION N	O: 35	PAGE NO:	
BOEING 747	DATE	: 04/25/	2014	23-4	
SYSTEM & 1.	2. NU	MBER I	NSTALLED		
		3. NU			
NOWBERS			4. REMARKS AND E	XCEPTIONS	
23 COMMUNICATIONS					
3. Communication Systems D	-	-	Any in excess of thos	e required by	
			not powered by a Sta	ndby Rus and is not	
			required for emergen	cy or abnormal	
			procedures.		
Control Panels					
*** a) Frequency C	-	0			
Transfer Indication					
		0			
Transfer Switch	-	0			
c) Frequency C	-	2			
Selectors					
d) Frequency		0			
Indicators	-				
indicatoro					
			(Continued)		

U.S. DEP	U.S. DEPARTMENT OF TRANSPORTATION					
FEDERAL	AVIATION ADMINIS	TRAT	ION		MASTER MINIMU	M EQUIPMENT LIST
AIRCRAF	T:		REVIS	SION N	O: 35	PAGE NO:
	BOEING 747	4	DATE: 04/25/2014 23-5			23-5
SECUEN	& CE ITEM	1.	2. NUI			
NUMBER	S			J. NO	4. REMARKS AND E	
23 COM	MUNICATIONS					
3. Com (VHF (Con	munication Systems , HF, UHF) l'd)					
2) Hi Co Sy	igh Frequency (HF) ommunications /stem	D	-	-	Any in excess of thos 14 CFR may be inope	se required by erative.
		C	-	1	 (O) May be inoperative operations that require provided: a) SATCOM Void operates normed by Alternate process and the established and c) SATCOM Void available over of flight, and d) If SATCOM Void over the internate SATCOM Void (INMARSAT) of commercial number to avail a prior coordinate ATS (FIR) facility of the established and the established and communication only as a back communication of the established and the established and communication of the established and the est	ve while conducting re two LRCS ce or Data Link hally, edures are ad used, ce coverage is the intended route bice is to be used ded route of flight, ce short codes or direct dial umbers (IRIDIUM) bible. If not available, tion with appropriate lity is required. bice is to be used ckup to normal HF ons.
4. Flight Syste	t Deck Interphone em					
1) Fl	ight Deck Intercom				Deleted by Rev. 26. I into ATA 25-23.	Relief incorporated
2) FI	ight Deck to Ground				Deleted by Rev. 31. F into ATA 23-7.	Relief incorporated

U.S. DEPARTMENT OF TRANSPORTATION MASTER MINIMUM EQUIPMENT LI					M EQUIPMENT LIST	
FEDERAL AVIAT	FEDERAL AVIATION ADMINISTRATION					
AIRCRAFT:	10 7 47	REVIS	SION N	O: 35	PAGE NO:	
BOEIN	NG 747		: 04/25/		23-6	
SECHENCE		2. NU				
NUMBERS			5. NO	4 REMARKS AND E		
23 COMMUNIC	TIONS					
5. Audio Selecto	or Panels			Deleted by Rev. 26. F into ATA 25-23.	Relief incorporated	
6. Service Inter System	ohone D	1	0	(O) May be inoperative communication with gestablished by use of interphone system.	ve provided normal ground can be the flight deck	
 Crewmember System 	Interphone					
1) Passenge Configurat	r ion					
a) Flight Cabin, Flight I Functio	Deck to B Cabin to Deck ons	-	-	 (O) May be inoperative a) Flight Deck to flight deck interest operate normal percent of the b) Flight deck interest operates norm each pair of exect pair of exect procedures be flight attendant established an NOTE: Any station for exect periode /li>	ve provided: cabin and cabin to rphone functions illy on at least fifty cabin handsets, cabin and cabin to rphone function ally at one door for ait doors, and munications tween the affected t's station(s) are d used.	
				(Continued)		

U.S. DEPARTMENT OF TRANSPOR	TATION	
	M.	ASTER MINIMUM EQUIPMENT LIST
AIRCRAFT.	REVISION NO: 35	PAGE NO [.]
BOEING 747	DATE: 04/25/2014	23-7
SYSTEM & 1.	2. NUMBER INSTA	LLED
SEQUENCE ITEM	3. NUMBER	REQUIRED FOR DISPATCH
NUMBERS	4. RI	EMARKS AND EXCEPTIONS
23 COMMUNICATIONS		
7. Crewmember Interphone System (Cont'd)		
1) Passenger Configuration (Cont'd)		
b) Cabin to Cabin B Function	(O) M a) b) c)	Aay be inoperative provided: Cabin to Cabin interphone functions operate normally on at least fifty percent of the cabin handsets, Cabin to cabin interphone function operates normally at one door for each pair of exit doors, and Alternate communications procedures between the affected flight attendant's station(s) are established and used.
	NOT (C	 E: Any station function(s) that operates normally may be used. ontinued)

U.S. DEPARTMENT OF TRANSPORTATION				
FEDERAL AVIATION ADMINISTRAT				
			0:35 PAGE NU: 2014 23-8	
BOEING 747		. 04/23/ MDED I		
SECHENCE ITEM	2. NU			
NUMBERS		3. NU		
Nomberto			4. REMARKS AND EXCEPTIONS	
	1	1		
23 COMMUNICATIONS				
7 Crewmember				
Internhone System				
(Cont'd)				
(cont d)				
1) Passenger				
Configuration				
(Cont'd)				
c) Flight Deck to C	1	0	(O) Flight interphone flight deck to	
Ground Function			ground/ground to flight deck function	
			may be inoperative provided:	
			a) Alternate procedures are	
			established and used, and	
			b) Nose gear/forward fuselage	
			service interphone jack	
			operates normally.	
	1	0	(\mathbf{O}) Sorving interphase flight deals to	
C		0	(C) Service interpriorie flight deck to around/around to flight dock function	
			may be inonerative provided:	
			a) Alternate procedures are	
			established and used and	
			b) Nose gear/forward fuselage flight	
			interphone jack operates normally.	
В	-	0	(O) May be inoperative provided	
			alternate procedures are established	
			and used.	
			(Continued)	

U.S. DEPARTMENT OF TRANS	POR	TATION	١			
AIRCRAFT:	I NA I	REVIS		D: 35 PAGE NO:		
BOEING 747		DATE	: 04/25/	2014 23-9		
SYSTEM &	1.	2. NUI	MBER I	NSTALLED		
SEQUENCE ITEM			3. NU	MBER REQUIRED FOR DISPATCH		
NUMBERS				4. REMARKS AND EXCEPTIONS		
23 COMMUNICATIONS						
 Crewmember Interphone System (Cont'd) 						
 Passenger Configuration (Cont'd) 						
d) Flight Deck Handsets	С	_	0	 (O) May be inoperative provided: a) Flight Deck to cabin communication operates normally, and b) Alternate procedures are established and used. 		
	D	-	0	May be inoperative provided procedures do not require its use.		
e) Cabin Handsets	В		_	 (O) May be inoperative provided: a) Fifty percent of cabin handsets operate normally, b) One handset must operate normally at each pair of exit doors, and c) Alternate communications procedures between the affected flight attendant's station(s) are established and used. NOTE 1: An operative handset at an inoperative flight attendant seat shall not be counted to satisfy the fifty percent requirement. NOTE 2: Any handsets(s) function(s) that operates normally may be used. 		
				(Continued)		

U.S. DEPARTMENT OF TRANSPORTATION MASTER MINIMUM EQUIPMENT LIST							
FEDERAL AVIATION ADMINIS	TRAT	ION					
AIRCRAFT:		REVIS	REVISION NO: 35 PAGE NO				
BUEING /4/	1	DATE 2 NU	NUMBER INSTALLED				
SEQUENCE ITEM	1.	2.1101	3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS				4. REMARKS AND EXCEPTIONS			
23 COMMUNICATIONS							
 Crewmember Interphone System (Cont'd) 							
2) Cargo Configuration							
a) Flight Deck to Cabin, Cabin to Flight Deck Functions	С	1	0	(O) May be inoperative provided alternate, normal, and emergency procedures, and/or operating restrictions are established and used.			
	D	1	0	May be inoperative provided procedures do not require its use.			
b) Cabin to Cabin Function	D	1	0				
c) Flight Deck to Ground Function	С	1	0	 (O) Flight interphone flight deck to ground/ground to flight deck function may be inoperative provided: a) Alternate procedures are established and used, and b) Nose gear/forward fuselage service interphone jack operates normally. 			
	С	1	0	 (O) Service interphone flight deck to ground/ground to flight deck function may be inoperative provided: a) Alternate procedures are established and used, and b) Nose gear/forward fuselage flight interphone jack operates normally. (Continued) 			

MASTER MINIMUM EQUIPMENT FEDERAL AVIATION ADMINISTRATION AIRCRAFT: REVISION NO: 35 PAGE NO: BOEING 747 DATE: 04/25/2014 23-11	LIST
AIRCRAFT:REVISION NO: 35PAGE NO:BOEING 747DATE: 04/25/201423-11	
BOEING 747 DATE: 04/25/2014 23-11	
SYSTEM & 1. 2. NUMBER INSTALLED	
SEQUENCE ITEM 3. NUMBER REQUIRED FOR DISPATCH	
NUMBERS 4. REMARKS AND EXCEPTIONS	
23 COMMUNICATIONS	
7 Crewmember Interphone	
Svstem	
(Cont'd)	
2) Cargo Configuration	
(Cont'd)	
c) Flight Deck to $B_{1} = 0$ (0) May be incorrective provided	
Ground Function	
(Cont'd) and used.	
d) Flight Deck C - 0 May be inoperative provided flight dec	ck
Handsets to courier/supernumerary communica	tion
operates normally.	
procedures do not require its use.	
e) Courier/ D - 1	
Supernumerary	
Handsets	
D - 0 May be inoperative provided	
remains unoccupied.	
8. Selective Call Systems C - 0 (O) May be inoperative provided	
(SELCAL) alternate procedures are established	
and used.	
D - U May be inoperative provided procedu	res
1) Channels C - 0 (O) May be inoperative provided	
alternate procedures are established	
and used.	
D - 0 May be inoperative provided procedu	res

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			MASTER MINIMUM EQUIPMEN	T LIST		
FEDERAL AVIATION ADMINISTRAT						
		0.01/25	0:35 PAGE NU: /2014 23-12			
SVSTEM & 1		. 04/23/ MRED I				
SEQUENCE ITEM	2.110		MBER REOLIIRED FOR DISPATCH			
NUMBERS		0.110	4 REMARKS AND EXCEPTIONS			
23 COMMUNICATIONS	1					
9. Pre-recorded Passenger C	1	0	(O) May be inoperative provided			
*** Announcement System			alternate procedures are established	d		
			and used.			
	1	0	(O) May be increative provided			
D	I	0	procedures do not require its use			
10. Emergency Evacuation			Moved to ATA 25-18, Rev. 20.			
*** Signal System						
11. Alerting System						
(Audio / Visual)						
1) Passenger						
Configuration						
a) Elight Deck Visual B		0	May be inonerative provided the flig	ht		
Alerting System	_	0	deck audio alerting system operates	3		
(Call Light)			normally.			
()						
			NOTE: The flight deck audio alerting	g		
			system must always be			
			operative.			
			(Continued)			
			(Continuea)			

U.S. DEPARTMENT OF TRANSPORTATION MASTER MINIMUM EQUIPMENT LIST					
			<u>∩. 25</u>		
BOEING 747	DATE	DATE: 04/25/2014 23-1			
SYSTEM & 1.	2. NU	MBER I	NSTALLED		
SEQUENCE ITEM		3. NU	MBER REQUIRED FO	R DISPATCH	
NUMBERS			4. REMARKS AND E	XCEPTIONS	
23 COMMUNICATIONS					
11 Alerting System					
(Audio / Visual)					
(Cont'd)					
1) Passenger					
Configuration					
(Cont d)					
b) Flight Attendant B	-	0	(O) May be inoperativ	ve provided:	
Visual Alerting		· ·	a) PA system ope	erates normally,	
System			 b) If affected visu 	al alerting system is	
(Call Light)			used for lavato	ory smoke detector	
			alerting, an alt	ernate lavatory	
			smoke detecto	or alert (audio or	
			normally and	lieu anu operates	
			c) Alternate proce	edures for	
			contacting fligh	nt attendants are	
			established an	d used.	
			NOTE 1: Passenger 1	to Attendant Call	
			System is co	nsidered Non-	
			Essential Eq		
				NLI <i>)</i> .	
			NOTE 2: Anv visual a	alerting system	
			function(s) t	hat operates	
			normally ma	ay be used.	
			(Continued)		

U.S. DEPARTMENT OF TRANSPORTATION MASTER MINIMUM EQUIPMENT LIST					
FEDERAL AVIATION ADMINISTRAT					
			D: 35 PAGE NO: 2014 23-14		
SVSTEM & 1		. 04/23/ MRER I	NSTALLED		
SEQUENCE ITEM	2.1101				
NUMBERS		0.1101	4 REMARKS AND EXCEPTIONS		
23 COMMUNICATIONS		İ			
11. Alerting System					
(Audio / Visual)					
(Cont'd)					
1) Passenger					
(Cont'd)					
(Cont d)					
c) Elight Attendant B	_	0	(O) May be inoperative provided.		
Audio Alerting		Ũ	a) PA system operates normally.		
System			b) If affected audio alerting system is		
(Čhime)			used for lavatory smoke detector		
			alerting, an alternate lavatory		
			smoke detector alert (visual or		
			audio) is installed and operates		
			normally, and		
			c) Alternate procedures for		
			contacting flight attendants are		
			established and used.		
			NOTE 1: Passanger to Attendent Call		
			System is considered Non-		
			Essential Equipment and		
			Furnishing (NEF).		
			NOTE 2: Any audio alerting system		
			function(s) that operates		
			normally may be used.		
			(Continued)		

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FEDERAL AVIATION ADMINISTR	RATION					
AIRCRAFT:	REVI	SION NO	D: 35 PAGE NO:			
BOEING 747		DATE: 04/25/2014 23				
SYSTEM & 1	I. 2. NU					
NUMBERS		3. NUI	4 REMARKS AND EXCEPTIONS			
23 COMMUNICATIONS		Ì				
11. Alerting System						
(Cont'd)						
2) Cargo Configuration						
a) Elight Dook Visual E		0	May be increative provided the			
Alerting System		0	flight deck audio alerting system			
(Call Light)			operates normally.			
b) Flight Deck	D 1	0	May be inoperative provided			
Audio/Visual			courier/supernumerary compartment			
Alerting System			remains unoccupied.			
(Call Light Chine)						
c) Courier/ E	3 1	0	(O) May be inoperative provided:			
Supernumerary			a) Courier/Supernumerary address			
Visual Alerting			system operates normally, and			
System			b) Alternate procedures are			
(Call Light)			established and used.			
ſ) 1	0	May be inoperative provided			
			courier/supernumerary compartment			
			remains unoccupied.			
			NOTE: Any viewal alerting system			
			function(s) that operates			
			normally may be used.			
			(Continued)			

U.S. DEI	U.S. DEPARTMENT OF TRANSPORTATION							
FEDERA	L AVIATION ADMINIS	TRAT	ION					
AIRCRA	FT:		REVIS	SION NO	D: 35	PAGE NO:		
0.0751	BOEING 747		DATE	: 04/25/	2014	23-16		
SYSIEN		1.	2. NUI	2. NUMBER INSTALLED				
				3. NUI				
NONDEI					4. KEIVIARKS AND E			
23 CO	MMUNICATIONS							
11. Aler (Aud (Cor	ting System dio / Visual) nt'd)							
2) (Cargo Configuration Cont'd)							
	c) Courier/ Supernumerary Audio Alerting System (Chime)	В	1	0	 (O) May be inoperative a) Courier/Superior system operative b) Alternate procession established and 	ve provided: numerary address es normally, and edures are d used.		
		D	-	0	May be inoperative p courier/supernumera remains unoccupied.	rovided ry compartment		
					NOTE: Any audio ale function(s) th normally may	erting system at operates / be used.		
12. Coc (CV	kpit Voice Recorder R) System	A	1	0	May be inoperative p a) Flight Data Re operates norm b) Repairs are m flight days.	rovided: corder (FDR) ally, and ade within three		
13. HF Syst	Communications tem				Moved to ATA 23-3,	Rev. 20.		

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FEDERAL AVIATION ADMINI	FEDERAL AVIATION ADMINISTRATION							
AIRCRAFT:		REVIS		PAGE NO:				
BUEING 747	1		: 04/25/		23-17			
SEQUENCE ITEM	1.	2. NU						
NUMBERS			0.110	4. REMARKS AND E				
23 COMMUNICATIONS								
 14. ARINC Communication *** Addressing and Reporting System (ACARS) 	D	-	0	May be inoperative p do not require its use	rovided procedures			
	С	-	0	May be inoperative p procedures are estab	rovided alternate lished and used.			
				NOTE: Any mode wh normally may	ich functions be used.			
1) Printer System	D	-	0					
2) DATA Mode	D	-	0	May be inoperative p do not require its use	rovided procedures			
3) VOICE Mode	D	-	0	May be inoperative p do not require its use	rovided procedures			
4) SELCAL Mode	D	-	0	May be inoperative p do not require its use	rovided procedures			
15. Satellite Communication *** (SATCOM) Systems	С	-	0	(O) May be inoperatival alternate procedures and used.	ve provided are established			
	D	-	0	May be inoperative p do not require their us	rovided procedures se.			
1) SATCOM Voice Systems	С	-	0	(O) May be inoperatival alternate procedures and used.	ve provided are established			
	D	-	0	May be inoperative p do not require their us	rovided procedures se.			
				(Continued)				

U.S	U.S. DEPARTMENT OF TRANSPORTATION								
	MASTER MINIMUM EQUIPMENT LIST								
	CRAFT.	IKAI			O' 35 PAGE NO				
/	BOEING 747		DATE	: 04/25/	2014 23-18				
SYS	STEM &	1.	2. NU	MBER I	NSTALLED				
SEC	QUENCE ITEM			3. NU	MBER REQUIRED FOR DISPATCH				
NU	MBERS				4. REMARKS AND EXCEPTIONS				
23	COMMUNICATIONS								
15. ***	Satellite Communication (SATCOM) Systems (Cont'd)								
	2) HF/SAT XFER Switches	D	2	0	(M) (O) May be inoperative provided procedures do not require their use.				
	3) SATCOM Lights	D	2	0	(O) May be inoperative provided associated chime function operates normally.				
	4) SATCOM Select Switches	D	2	0	(O) May be inoperative provided procedures do not require their use.				
16.	Flight Deck Headsets Earphones/Headphones and Boom Microphones								
	 Headset Earphones/ Headphones 				l				
	a) Captain / First Officer Position	С	2	1	One may be inoperative provided associated flight deck speaker operates normally.				
	b) F/E Position	С	1	0	May be inoperative provided both flight deck speakers operate normally.				
	2) Headset Boom Microphones								
		A	-	0	 May be inoperative provided: a) Associated hand microphone is installed and operates normally, and b) Repairs are made within three flight days. (Continued) 				

U.S	U.S. DEPARTMENT OF TRANSPORTATION MASTER MINIMUM EQUIPMENT LIST							
FED	DERAL AVIATION ADMIN	ISTRAT	ION					
AIR	CRAFT:		REVIS	REVISION NO: 35 PAGE NO:				
0.10	BOEING 747	4		DATE: 04/25/2014 23-19				
		1.	2. NU					
	MBERS			3. NO	A REMARKS AND EXCEPTIONS			
16.	Flight Deck Headsets Earphones/ Headphones and Boom Microphones (Cont'd)	3						
	2) Headset Boom Microphones (Cont'd)						
		D	-	-	Any in excess of those required by regulation may be inoperative.			
	 Active Noise Canceling/ Reduction Function 	D	-	0	May be inoperative provided normal audio function of headset is operative.			
17.	Flight Deck Hand Microphones (or Equivalent)	С	-	0	May be inoperative or missing provided associated headset/boom microphone operates normally.			
		D	-	0	May be inoperative or missing provided procedures do not require their use.			
18.	Ground Crew Call System	С	1	0	 (M) May be inoperative provided: a) Equipment Cooling and Electrical Power Systems are continuously monitored during ground operations, and b) Alternate procedures are established and used. 			

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BOEING 747	DATE	DATE: 04/25/2014				
SYSTEM & 1.	2. NU	MBER I	INSTALLED			
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS			4. REMARKS AND EXCEPTIONS			
19. Push-To-Talk (PTT)						
Switches						
1) Control Wheel PTT C Switches	2	1	 (M) One may be inoperative provided: a) Auxiliary Panel PTT Switches operate pormally, and 			
			 b) Affected switch is deactivated open. 			
2) Flight Crew Auxiliary C Panel PTT Switches	2	1	 (M) One may be inoperative provided: a) Control Wheel PTT Switches operate pormally, and 			
			 b) Affected switch is verified failed open or is deactivated open. 			
20. Flight Deck Entry C *** Door/Cabin Video Surveillance Systems	-	0	(O) May be inoperative and components may be missing provided alternate			
Surveillance Systems			procedures are established and used.			
			NOTE: Any portion of the system which operates normally may be used.			
D	-	0	May be inoperative provided procedures do not require its use.			
21. Flight Tracker System D	1	0	May be inoperative provided procedures do not require its use.			
100 FM Radios D (STC ST01912LA)	2	0	May be inoperative provided procedures do not require its use.			

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FEDERAL AVIATION ADMINIST	RAT	ION		MASTER MINIMUM E	EQUIPMENT LIST			
AIRCRAFT:		REVIS	AGE NO:					
BOEING 747		DATE	: 04/12/	2005	24-1			
SYSTEM &	1.	2. NUI						
NUMBERS			CEPTIONS					
24 ELECTRICAL POWER								
1. Generator Systems								
1) Engine Driven	В	4	3	(M) (O) One may be inop	perative			
Generator				provided:				
(Generator, Load				a) All AC buses are p	powered, ker operates			
GCU, GCB)				normally, and	aker operates			
,				c) KW indicators for	all remaining			
				channels operate	normally.			
				NOTE: See AFM for ger	nerator			
				requirements wh	nen using			
				water injection for	or takeoff.			
a) Cargo	С	4	3	(M) (O) One may be inop	perative			
Configuration				provided:				
				 a) All AC buses are p b) Split System Brea 	powered, aker operates			
				normally, and	aker operates			
				c) KW indicators for	all remaining			
				channels operate	normally.			
				NOTE: See AFM for ger	nerator			
				requirements wh	nen using			
				water injection fo	or takeoff.			
2) APU Driven	С	2	0	(M) May be inoperative p	orovided			
Generator (Generator,				associated APU generate	or remains OFF.			
Generator Control								
Control Unit)								
	C	2	4	(M) One ADL concreter	mayba			
	C	2	I	inoperative and removed	nay De J.			
	С	2	0	(M) APU generators may	y be inoperative			
				deactivated.	NF U 13			
U.S. DEPARTMENT OF TRANSPORTATION								
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FEDERAL AVIATION ADMINISTRATION								
AIRCRAFT:		REVIS		O: 32 PAGE NO:				
BOEING 747	1		:04/12/	2005 24-2				
SEQUENCE ITEM	1.	2. 110	3. NU	MBER REQUIRED FOR DISPATCH				
NUMBERS				4. REMARKS AND EXCEPTIONS				
24 ELECTRICAL POWER								
2. CSD Oil Low PRESS	С	4	0	May be inoperative provided CSD oil				
(or CSD OIL Light)				indications operate normally on the associated generator(s)				
3. CSD Oil Temperature/	С	4	0	(O) CSD Oil Temperature may be				
I emperature Rise				Inoperative provided CSD Temperature				
indicators				indications operate normally on the				
				associated generator(s).				
	C	1	0	CSD Oil Tomporaturo Piso may be				
	U	-	Ū	inoperative provided CSD Oil				
				Temperature, CSD oil low PRESS light				
				and KW indications operate normally on				
				the associated generator(s).				
	С	4	0	May be inoperative provided CSD OIL				
				light and KW indications operate				
				normally on the associated generator (s).				
	В	4	3	(M) (O) One may be inoperative				
				provided:				
				deactivated,				
				b) All AC buses are powered,				
				c) Split System Breaker operates				
				d) KW indications for all remaining				
				generator(s) operate normally.				
	C	1	0					
*** Lights	U	-						
	-	_	_					
5. APU (Generator) BRG	С	2	0					

U.S. DEPARTMENT OF TRANSPORTATION MASTER MINIMUM EQUIPMENT LIST							
FEDERAL AVIATION ADMINISTRATION							
AIRCRAFT:				O: 32 PAGE NO:			
SYSTEM &	1	2. NU	. 04/12/ MBFR	2005 <u>24-5</u> INSTALLED			
SEQUENCE ITEM		2.110	3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS			4. REMARKS AND EXCEPTIONS				
24 ELECTRICAL POWER							
6. APU GEN OPEN Lights	С	-	0	May be inoperative (and APU generator used) provided associated AC AMPS indication(s) operate normally.			
7. APU FIELD OFF Lights	С	-	0	May be inoperative (and APU generator used) provided associated APU generator AC VOLTS or frequency indication operates normally.			
8. Transformer Rectifiers (TR) (Main)	В	4	3	(M) (O) No. 1 TR only (with PRR 71659 installed) or either No. 1 or No. 3 TR (if PRR 71659 is not installed) may be inoperative provided flight deck cooling NO AIRFLOW detector and overboard dump valve operate normally.			
	В	4	3	 (M) (O) No. 1 TR only (with PRR 71659 installed) or either No. 1 or No. 3 TR (if PRR 71659 is not installed) may be inoperative provided: a) Equipment cooling system is operated in the SMOKE mode with flow control valve and overboard dump valve verified in the open (SMOKE mode) position, and b) Flight is conducted in a pressurized configuration. 			
1) Cargo Configuration	С	4	3	(M) (O) No. 1 TR only (with PRR 71659 installed) or either No. 1 or No. 3 TR (if PRR 71659 is not installed) may be inoperative provided flight deck cooling NO AIRFLOW detector and overboard dump valve operate normally. (Continued)			

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BOEING 747	4		: 04/12/	2005 24-4				
STOLENCE ITEM	1.	3 NUMBER REQUIRED FOR DISPATCH						
NUMBERS		4. REMARKS AND EXCEPTIONS						
24 ELECTRICAL POWER								
8. Transformer Rectifiers (TR) (Main) (Cont'd)								
1) Cargo Configuration (Cont'd)	В	4	3	 (M) (O) No. 1 TR only (with PRR 71659 installed) or either No. 1 or No. 3 TR (if PRR 71659 is not installed) may be inoperative provided: a) Equipment cooling system is operated in the SMOKE mode with flow control valve and overboard dump valve verified in the open (SMOKE mode) position, and b) Flight is conducted in a pressurized configuration. 				
9. Automatic Generator Paralleling System	С	1	0	(O) May be inoperative provided random paralleling procedures are use.				
10. Split System Breaker *** (SSB)	С	1	0	 (O) May be inoperative OPEN provided: a) All engine driven generators operate normally, and b) Water injection is not used for takeoff. 				
11. SSB Open Light	С	1	0	(M) (O) May be inoperative provided procedures are established to verify position of SSB.				
12. DC Bus Isolation Relays	С	4	3	No. 1 may be inoperative closed.				
	С	4	2	No. 1 may be inoperative closed and No. 3 may be inoperative open.				
	С	-	-	No. 3 may be inoperative open.				

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FEDERAL AVIATION ADMINI	STRAT	ION					
AIRCRAFT:		REVIS	REVISION NO: 32 PAGE NO:				
BOEING 747	1		: 04/12/	2005 24-5			
SFOLIENCE ITEM	1.	2. NUI					
NUMBERS			0.110	4. REMARKS AND EXCEPTIONS			
24 ELECTRICAL POWER							
13. DC Bus Isolation Relay OPEN Lights	С	-	0	(M) May be inoperative provided TR amperage indications operate normally.			
14. KW/KVAR Meters	С	4	3				
	С	4	2	 (O) Two may be inoperative provided: a) They are not on the same side of the SSB, b) SSB operates normally, and c) Electrical loads on each side of the SSB are limited to not more than 27 KW. 			
1) KVAR Functions	С	4	0	May be inoperative on all meters.			
15. AC Meters Indications System							
1) Volts	С	-	-	AC volts indication may be inoperative for an inoperative generator.			
2) Frequency/CSD RPM	С	-	-	Frequency and CSD RPM indication may be inoperative for an inoperative main generator, or frequency or CSD RPM indication may be inoperative for an operating main generator.			
3) APU Frequency	С	-	0	May be inoperative provided all remaining functions of the APU operate normally.			
	С	-	0	May be inoperative provided APU generator(s) is not used.			
4) External Power Indications	С	-	0				
				(Continued)			

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FEDERAL AVIATION ADMINIS	TRAT	ION				
AIRCRAFT:			SION NO	O: 32 PAGE NO:		
SYSTEM &	1.	2. NU	MBER I	NSTALLED		
SEQUENCE ITEM			3. NUMBER REQUIRED FOR DISPATCH			
NUMBERS		4. REMARKS AND EXCEPTIONS				
24 ELECTRICAL POWER						
15. AC Meters Indications System (Cont'd)						
5) PMG Indications	С	-	0	(O) May be inoperative provided FIELD OFF lights operate normally.		
16. DC Meters Indications						
1) TR Indications						
a) Volts	С	4	0	May be inoperative for any TR provided associated AMPS indication operates normally.		
b) AMPS	С	4	3	 May be inoperative for one TR provided: a) Associated VOLTS indication operates normally, and b) With one TR inoperative, remaining TR AMPS indications operate normally. 		
2) APU BATT Indications	С	2	-	May be inoperative provided SB 21-2004 or production equivalent is incorporated or if SB 21-2004 or production equivalent is not incorporated either VOLTS or AMPS indication may be inoperative.		
17. APU/External Power Ammeters	С	2	0			
 Generator System Maintenance Annunciator Panel 	D	1	0			

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FEDERAL AVIATION ADMINIST	FEDERAL AVIATION ADMINISTRATION						
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BUEING 747	4		: 04/12/		24-7		
SECHENCE ITEM	1.	2. NUI					
NUMBERS			5. NO	4 REMARKS AND E	XCEPTIONS		
24 ELECTRICAL POWER							
	_						
19. Electrical Load	С	4	0	May be inoperative p	rovided:		
Gallov Powor/Engine				a) Associated gal	ney or water		
Water Pump Protection)				and	nis are not used,		
				 b) Associated gal 	ley power		
				switch(es) rem	ain OFF.		
20. Galley Power 3-	С	1	0	(O) May be inoperativ	e provided		
Generator Mode System				generator loads are n	nonitored.		
21 Galley Power Trip Off	С	4	0	(O) May be inoperativ	e provided		
*** Lights	0		Ũ	associated galley pov	ver is not used.		
	С	4	0	(M) May be inoperativ	e provided fault		
				is verified in the light	circuit.		
22 External Power System	С	_	0				
	0		Ū				
1) AC CONN Light	С	-	0	May be inoperative p	rovided all		
				remaining external po	ower indications		
				operate normally.			
23 API Batteny(s)	C	_	_	May be inconcrative of	rovided that if		
23. AFO Dattery(S)	C	-	-	PRR 73054 is not inc	orporated at least		
				one APU battery oper	rates normally.		
					,		
1) Battery Heater	С	-	-	May be inoperative p	rovided that if		
				PRR 73054 is not inc	orporated, at least		
				one APU battery ope	rates normally.		
24. APU Battery Charger	С	1	0	(M) May be inoperativ	ve provided		
	-	•		PRR 73054 has been	incorporated.		
					•		

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FEDERAL AVIATION ADMINISTRATION							
AIRCRAFT:		REVISION NO: 32 PAGE NO:					
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SFOLIENCE ITEM	1.						
NUMBERS			5. NO	4 REMARKS AND EXCEPTIONS			
24 ELECTRICAL POWER							
25. Lightning Protectors	С	6	3	One of each phase may be inoperative			
				provided all AC buses are paralleled.			
26 Econtial AC Rup	C	4	2	(M) The NORMAL or one CEN position			
Selector Switch Positions	C	4	3	of the Essential AC Bus Selector may be			
(Gen 1, Gen 2, Gen 3,				inoperative provided:			
Normal)				a) Essential AC power is checked			
				and verified normal in the			
				remaining positions, and			
				b) "ESS AC BUS" c/b for the			
				and collared			
27. APU Generator Cooling	С	-	0	May be inoperative provided associated			
Air System				APU generator is not used.			
28. APU Generator Cooling	С	-	0				
*** Air Loss Generator Trip							
System							
29 APLI Generator NO GEN	C	_	0				
*** COOLING Light	0		Ū				
30. ESS BUS OFF Lights	С	2	0	May be inoperative provided:			
(Airplanes with Automatic				a) Essential AC and Standby AC			
STANDBY POWER				buses are powered normally,			
I ranster Only)				b) Standby Power automatic transfer			
				normally and			
				c) Standby Power ON light operates			
				normally.			

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MASTER MINIMUM EQUIPMENT LIST							
FEDERAL AVIATION ADMINISTRATION							
AIRCRAFT:		REVIS	SION N	0: 32	PAGE NO:		
BOEING 747		DATE	: 04/12/	2005	24-9		
SYSTEM &	1.	2. NU	MBER I	NSTALLED			
SEQUENCE ITEM			3. NU	MBER REQUIRED FO	R DISPATCH		
NUMBERS				4. REMARKS AND E	XCEPTIONS		
24 ELECTRICAL POWER							
31 Standby Power ON Light	С	1	0	May be inoperative p	rovided [.]		
	Ũ		Ŭ	a) Standby Powe	r system operates		
				normally in bot	h normal and		
				manual modes	and		
				h) ESS BUS OFF	lights operate		
				normally	lights operate		
				normally.			
22 CENODEN Light	C			May be increative fo	r on accoriated		
32. GEN OPEN LIGHT	C	-	-	inaparetivo generative ic			
				inoperative generator			
	0			Marcha in an anathra fa	n en esse sisted		
33. GEN FIELD OFF Light	C	-	-	May be inoperative fo	or an associated		
				inoperative generator			

U.S. DEPARTMENT OF TRANSPOR	TATION	l						
FEDERAL AVIATION ADMINISTRAT	MASTER MINIMUM EQUIPMENT LIST							
AIRCRAFT:	REVIS	ION: 3	5 PAGE NO:					
BOEING 747	DATE:	04/25/	2014 25-1					
SYSTEM & 1.	2. NU	IBER I	NSTALLED					
SEQUENCE ITEM		3. NUI	MBER REQUIRED FOR DISPATCH					
NUMBERS			4. REMARKS AND EXCEPTIONS					
25 EQUIPMENT/ FURNISHINGS								
1. Main Deck Cart C *** Tiedowns	-	0	May be inoperative provided they are not required for storage of lower lobe galley carts on the main deck.					
2. Flight Deck Door Lock Solenoid			Moved to 52-19, Rev. 20.					
3. Megaphones D	-	-	 Any in excess of those required by 14 CFR may be inoperative or missing provided: a) Inoperative megaphone is removed from the passenger cabin, b) Associated placard is removed or obscured, and c) Required distribution is maintained. 					
			NOTE: Not required for flights conducted in a cargo configuration.					
 Crewmember Shoulder Harness (Flight Deck) 			Deleted by Revision 26, See ATA 25-23 for applicable relief.					

U.S. DEPARTMENT OF TRANSPOR	TATIO	١					
MASTER MINIMUM EQUIPMENT LIS							
FEDERAL AVIATION ADMINISTRATION							
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BOEING 747	DATE	: 04/25/	2014 25-2				
SYSTEM & 1.	2. NU	MBER I	NSTALLED				
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH				
NUMBERS			4. REMARKS AND EXCEPTIONS				
25 EQUIPMENT/							
FURNISHINGS							
5. Flight Attendant Seat							
Assemblies (Single or							
Dual Position)							
1) Required Flight B	-	-	(M) (O) One seat position or assembly				
Attendant Seats			(dual position) may be inoperative				
			provided:				
			 Affected seat position or seat 				
			assembly is not occupied,				
			 b) Flight attendant(s) displaced by 				
			inoperative seat(s) occupies either				
			an adjacent flight attendant seat or				
			the passenger seat which is most				
			accessible to the inoperative				
			seat(s), so as to most effectively				
			perform assigned duties,				
			 c) Alternate procedures are 				
			established and used as published				
			in crewmember manuals,				
			 d) Folding type seat stows 				
			automatically or is secured in the				
			retracted position, and				
			 e) Passenger seat assigned to flight 				
			attendant is placarded: FOR				
			FLIGHT ATTENDANT USE				
			ONLY.				
			(Continued)				

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FEDERAL AVIATION ADMINISTRAT	ION				
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BOEING 747		: 04/25/		25-3	
STSTEM & 1.	2. NU				
NUMBERS	4 REMARKS AND EXCEPTIONS				
25 EQUIPMENT/					
FURNISHINGS					
5. Flight Attendant Seat					
Assemblies (Single or					
(Cont'd)					
1) Required Flight			NOTE 1: An automat	ic folding seat that	
Attendant Seats			will not stov	will not stow automatically is	
			Considered		
			NOTE 2: A seat posi	tion with an	
			inoperative	or missing	
			restraint sy	stem is	
			Considered		
			NOTE 3: Individual o	perators, when	
			operating w	ith inoperative	
			Seats, Will C	onsider the	
			of seats to e	ensure that	
			proximity to	exits and	
			distribution	requirements of	
			the applicat	ble 14 CFR are met.	
			NOTE 4: If one side o	of a dual seat	
			assembly is	inoperative and a	
			flight attend	ant is displaced to	
			the adjacen	t seat, the adjacent	
			seat must o	perate normally.	
			(Continued)		

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MASTER MINIMUM EQUIPMENT LIST								
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BOEING 747	DATE	: 04/25/	2014	25-4				
SYSTEM & 1.	2. NU	MBER I	NSTALLED					
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR D	DISPATCH				
NUMBERS			4. REMARKS AND EXC	EPTIONS				
	1							
25 EQUIPMENT/								
FURNISHINGS								
5. Flight Attendant								
Seat Assemblies								
(Single or Dual Position)								
(Cont'd)								
2) Evenes Elight			(NA) May be increasive r					
2) EXCESS Flight C	-	-	(M) May be inoperative p	ition or cost				
Allendani Seals			a) Allected seat posi	accupied and				
			b) Folding type seat	stows				
			automatically or is	slows secured in				
			the retracted positi	ition				
			NOTE 1: An automatic for	olding seat that				
			will not stow au	utomatically is				
			considered inor	perative.				
			NOTE 2: A seat position	with an				
			inoperative or r	missing				
			restraint system	n is				
			considered inor	perative.				
3) Cargo Configuration			May be increative previ	ided affected				
3) Cargo Conliguration D	-	-	soat position or soat acc	anected				
			occupied	CITIDIY IS HUL				

U.S. DEPARTMENT OF TRANSPORTATION MASTER MINIMUM FOUIPMENT LIS					
FEDERAL AVIATION ADMINISTRATION					
AIRCRAFT:	REVIS	SION: 3	5 PAGE NO:		
BUEING 747		: 04/25/	2014 25-5		
SFOUENCE ITEM	2. NU	3 NU			
NUMBERS		0.110	4. REMARKS AND EXCEPTIONS		
25 EQUIPMENT/ FURNISHINGS					
6. Personnel Lift System C *** (LLG Airplanes Only)	-	0	May be inoperative provided associated galley is not used.		
1) Electrical Interlock Override per AAL-ECO-Y0438 Installed					
a) Door Mechanical C Interlock System	-	0	 (O) May be inoperative (and lift used) provided: a) Electrical interlock system operates normally, and b) Alternate procedures found in B-747 Flight Attendant's Manual are followed. 		
b) Electrical Interlock C System	-	0	 (O) May be inoperative (and lift used) provided: a) Mechanical interlock system operates normally, b) Electrical override system, including lift master power cutoff switch is installed and operating normally, c) Alternate procedures found in B-747 Flight Attendant's Manual are followed, and d) If personnel lift should become inoperative enroute, associated LLG is secured, and not used further. 		
			(Continued)		

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MASTER MINIMUM EQUIPMENT L					
AIRCRAFT:	REVI	SION: 3	5 PAGE NO:		
BOEING 747	DATE	: 04/25/	/2014 25-6		
SYSTEM & 1.	2. NU	MBER I	INSTALLED		
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH		
NUMBERS			4. REMARKS AND EXCEPTIONS		
25 EQUIPMENT/ FURNISHINGS					
 6. Personnel Lift System *** (LLG Airplanes Only) (Cont'd) 					
2) Electrical Interlock C Override per AAL-ECO-Y0438 Not Installed	-	0	May be inoperative provided associated galley is not used.		
a) Door Mechanical C Interlock System	-	0	 May be inoperative (and associated LLG used) provided: a) Electrical interlock system operates normally, and b) Alternate procedures found in B-747 Flight Attendant's Manual are followed. 		
b) Upper Door C Electrical Interlock System	-	0	 May be inoperative in the closed (powered) position (and lift used) provided: a) Mechanical interlock and lower door electrical interlock operate normally, and b) Alternate procedures found in B-747 Flight Attendant's manual are followed. (Continued) 		

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BOEING 747	DATE	: 04/25/	2014 25-7			
SYSTEM & 1.	2. NU	MBER I	NSTALLED			
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS			4. REMARKS AND EXCEPTIONS			
		1				
25 EQUIPMENT/						
FURNISHINGS						
6. Personnel Lift System						
(Cont'd)						
(Cont d)						
2) Electrical Interlock						
Override per						
AAL-ECO-Y0438						
Not Installed						
(Cont'd)						
c) Lower Door C	-	0	(O) May be inoperative in the closed			
Electrical			(powered) position (and lift used)			
Interlock System			provided:			
			a) Mechanical interlock and upper			
			door electrical interlock operate			
			normally,			
			b) PRR 74644-4 or equivalent is			
			nicorporateu,			
			inoperative (per Maintenance			
			Manual) and			
			d) Alternate procedures found in			
			B-747 Flight Attendant's Manual			
			are followed.			

U.S. DEPARTMENT OF TRANSPOR	TATIO	N	MASTER MINIMUM FOUNDMENT LIST			
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BOEING 747	DATE 2 NU	: 04/25/ MBER I	2014 25-8 NSTALLED			
SEQUENCE ITEM	2.110	3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS			4. REMARKS AND EXCEPTIONS			
]					
FURNISHINGS						
7. Cart Lift *** (LLG Airplanes Only)						
1) Electrical Interlock C	-	0	(O) May be inoperative in full down			
AAI -FCO-Y0438			position (and associated galley(s) used)			
Installed			a) Personnel lift operates normally in			
			normal mode, and			
			 b) Number of serving carts removed from associated calley is limited to 			
			number of main deck tiedowns			
			permitted to be used for takeoff			
			and landing, plus the number of available stowage spaces in other			
			operating galleys.			
С	-	0	(O) May be inoperative in any position			
			a) Personnel lift in associated LLG			
			operates normally in normal			
			mode,			
			including lift master power cutoff			
			switch is installed and operates			
			normally,			
			from associated gallev is limited			
			as described above, and			
			d) If personnel lift should become			
			LLG is secured and not used			
			further.			
			(Continued)			

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AIRCRAFT:	REVIS	SION: 3	5 PAGE NO:		
BOEING 747	DATE	: 04/25/	2014 25-9		
SYSTEM & 1.	2. NU				
		3. NU			
Nomberto			4. REMARKS AND EXCEPTIONS		
25 EQUIPMENT/	1				
FURNISHINGS					
7. Cart Litt					
(Cont'd)					
(000000)					
1) Electrical Interlock					
Override per					
AAL-ECO-Y0438					
(Cont'd)					
a) Mechanical C	_	0	(O) May be inoperative (and associated		
Interlock System		Ŭ	LLG used) provided:		
			a) Electrical interlock system		
			operates normally, and		
			b) Alternate procedures found in		
			B-747 Flight Attendant's Manual		
			are tollowed.		
b) Electrical Interlock	_	0	May be inonerative (and associated LLG		
System		0	used) provided:		
-,			a) Mechanical interlock system		
			operates normally,		
			 b) Electrical override system, 		
			including lift master power cutoff		
			switch is installed and operates		
			normally, and		
			B-747 Flight Attendant's Manual		
			are followed.		
			(Continued)		

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FEDERAL AVIATION ADMINISTRATION						
AIRCRAFT:	REVIS	REVISION: 35 PAGE NO:				
SYSTEM & 1.	2. NU	. 04/25/ MBER I	2014 25-10 NSTALLED			
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS			4. REMARKS AND EXCEPTIONS			
25 EQUIPMENT/ FURNISHINGS						
 Cart Lift (LLG Airplanes Only) (Cont'd) 						
2) Electrical Interlock C Override per AAL-ECO Y0438 Not Installed	-	0	 (O) May be inoperative in full down position (and respective galley(s) used) provided: a) Personnel lift operates normally in normal mode, and b) Number of serving carts removed from respective galley is limited to the number of main deck tiedowns permitted to be used for takeoff and landing, plus number of available stowage spaces in other operating galleys. 			
a) Mechanical C Interlock System	-	0	 (O) May be inoperative (and associated LLG used) provided: a) Electrical interlock system operates normally, and b) Alternate procedures found in B-747 Flight Attendant's Manual are followed. 			
b) Electrical Interlock C System (On Upper Deck)	-	0	 (O) May be inoperative (and lift used) provided: a) Mechanical interlock system operates normally, and b) Alternate procedures found in B-747 Flight Attendant's Manual are followed. 			
8. Manual Egress C *** Provisions (LLG Airplanes Only)	-	0	May be inoperative if associated lower lobe galley is not occupied.			

0.0. DEFAILTMENT OF TRA	U.S. DEPARTMENT OF TRANSPORTATION					
FEDERAL AVIATION ADMINISTRATION						
AIRCRAFT: BOEING 747		REVIS DATE	SION: 3 : 04/25/	5 /2014	PAGE NO: 25-11	
SYSTEM &	1.	2. NU	MBER I			
NUMBERS			3. NU	MBER REQUIRED FC		
25 EQUIPMENT/ FURNISHINGS						
 Flexible Smoke Barrier (Passenger and Combi Airplanes) 	С	1	0	May be inoperative p than eight passenger deck during takeoff o	rovided not more s occupy the upper r landing.	
10. Main Cabin Door/Slide (Or Door)						
1) Passenger Configuration	A			 (M) (O) One may be in missing) provided: a) All remaining rare fully operated b) Associated do passenger loa c) A conspicuous rope, and a plate the door is ino across the inoperative covered to obsolights, e) Passengers are use the associated do procedures massociated door is associated doo	inoperative (or slide main cabin doors tional, or is not used for ding, a barrier strap or acard stating that perative are placed perative door, it sign and floor a associated with e exit must be scure the sign and re advised not to ated door, ed that evacuation ust not include or, although may be used,	

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FEDERAL AVIATION ADMINISTRATION					
AIRCRAFT:	REVIS	SION: 3	5 PAGE NO:		
BOEING 747	DATE 2 NU	: 04/25/. MBER I	2014 25-12 NSTALLED		
SEQUENCE ITEM	2.1101	3. NUI	MBER REQUIRED FOR DISPATCH		
NUMBERS			4. REMARKS AND EXCEPTIONS		
FURNISHINGS					
10. Main Cabin Door/Slide					
(Or Door) (Cont'd)					
(conta)					
1) Passenger			g) Persons (other than assigned		
Configuration			cabin attendants) are not		
(Cont d)			areas when the associated door is		
			as indicated below:		
			Door L-1 or R-1:		
			From forward cabin end to a line		
			L-2/R-2.		
			NOTE: (All except B-747-300)		
			Upper Deck may not be		
			takeoff, or landing.		
			, 3		
			Door L-2 or R-2:		
			Halfway to next exits in both		
			directions from the associated door.		
			Door L-3 or R-3:		
			Halfway to next exits in both		
			directions from the associated door.		
			(Continued)		

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AIRCRAFT:	REVIS	SION: 3	5	PAGE NO:		
BOEING 747	DATE	: 04/25/	2014	25-13		
SYSTEM & 1.	2. NU	MBER I	NSTALLED			
SEQUENCE ITEM		3. NU	MBER REQUIRED FC	OR DISPATCH		
NUMBERS			4. REMARKS AND E	XCEPTIONS		
25 EQUIPMENT/						
FURNISHINGS						
10. Main Cabin Door/Slide						
(Or Door)						
(Cont'd)						
			/			
1) Passenger			Door L-4 or R-4: (A	All except B-747SP)		
Configuration						
(Cont'd)			Halfway to next ex	its in both		
			directions from the	associated door.		
			Door L-4 or P-4: (B-717 SD)		
			D001 L-4 01 1(-4. ()	D-141 OF)		
			From a line midwa	v between L-3/R-3		
			and L-4/R-4 to aft	cabin end.		
			Door L-5 or R-5:			
			Energy - Kara anishing			
			From a line midwa	y between L-4/R-4		
			and L-5/R-5 to all 0	cabin end.		
			NOTE 1. Restriction	extends across		
			Antire cabir	and those seats		
			located on	designated		
			boundaries	will be blocked		
			(Continued)			

U.S. DEPARTMENT OF TRANSPOR	TATION	
		MASTER MINIMUM EQUIPMENT LIST
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BOEING 747	DATE: 04	/25/2014 25-14
SYSTEM & 1.	2. NUMBE	ER INSTALLED
SEQUENCE ITEM	3.	NUMBER REQUIRED FOR DISPATCH
NUMBERS		4. REMARKS AND EXCEPTIONS
25 EQUIPMENT/ FURNISHINGS		
10. Main Cabin Door/Slide (Or Door) (Cont'd)		
1) Passenger Configuration (Cont'd)		 h) Tapes or ropes of conspicuous, contrasting colors shall be installed to block access to unusable seats before boarding of passengers, i) Conspicuous signs and placards shall be placed in appropriate locations to identify seats not to be occupied by passengers, j) Main passenger aisles, cross aisles and exit access areas must not be blocked, k) Seating capacity must not exceed rated capacity of remaining pairs of exits, l) For extended overwater operations, occupancy shall not exceed the normal rated capacity of the rated overload capacity of the slide/rafts remaining after loss of one additional slide/raft of greatest capacity, whichever is less, (Continued)

U.S. DEPARTMENT OF TRANSPOR	TATIO	N	
	MASTER MINIMUM EQUIPMENT LIST		
FEDERAL AVIATION ADMINISTRAT	ION		
AIRCRAFT:	REVIS	SION: 3	5 PAGE NO:
BOEING 747	DATE	: 04/25/	2014 25-15
SYSTEM & 1.	2. NU	MBER I	NSTALLED
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH
NUMBERS			4. REMARKS AND EXCEPTIONS
25 EQUIPMENT/ FURNISHINGS			
10. Main Cabin Door/Slide (Or Door) (Cont'd)			
1) Passenger Configuration (Cont'd)			 m) Blocked seating layouts and evacuation procedures must be developed and accepted by the FAA certificate holding office for inclusion in the operator's manual, n) Weight and Balance Manifest is revised as necessary to verify that proper loading limits are observed, and o) Repairs are made within one flight day. NOTE 2: Cabin attendant(s) may be stationed in the vicinity of
2) Cargo and Combi C Configuration	-	-	each door within blocked areas. Main entry doors/slides (or slide missing) located in the cargo area may be inoperative with no restrictions.

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FEDERAL AVIATION ADMINISTRATION					
AIRCRAFT:	REVIS	SION: 3	5 PAGE NO:		
BOEING 747		: 04/25/	2014 25-16		
STSTEM & T.	2. NU		MBER REQUIRED FOR DISPATCH		
NUMBERS		0.110	4. REMARKS AND EXCEPTIONS		
25 EQUIPMENT/ FURNISHINGS					
 Upper Deck Escape Slide Inflation System (Or Door) 					
1) Passenger, Combi or C Cargo Configuration (One Door)	1	0	 (M) (O) May be inoperative (or slide missing) provided: a) Upper deck occupancy is limited to those flight crewmembers essential to the flight (including official observer in forward observer seat) during takeoff or landing, and b) Inertial escape reels are installed and operate normally for upper deck occupants. 		
 Passenger or Combi Configuration (Two Door) 					
a) Circular Stair C	2	1	(M) (O) One may be inoperative (or slide missing) provided upper deck occupancy is limited to sixteen passengers.		
b) Straight Stair C	2	1	 (M) (O) One may be inoperative (or slide missing) provided: a) Upper deck occupancy is limited to 24 passengers, and b) Aircraft capacity is limited to 550 passengers. (Continued) 		

U.S. DEPARTMENT OF TRANSPORTATION						
MASTER MINIMUM EQUIPMENT LIST						
FEDERAL AVIATION ADMINISTRATION						
			010 N 3	D 2017	25-16	
SVSTEM &	1		MRER I		25-10	
SEQUENCE ITEM	1.	2. 1101				
NUMBERS			0.1101	4. REMARKS AND E	XCEPTIONS	
		İ				
11. Upper Deck Escape						
Slide Inflation System						
(Or Door)						
(Cont'd)						
	~		0		a thus (so all de	
c) Straight or C	C	2	0	(IVI) (O)IVIAY be inoper	rative (or slide	
				a) Upper deck oc	cupancy is limited	
				to those flight	cupancy is infliced	
				essential to the	e flight	
				(including offic	ial observer in	
				forward observ	ver seat) during	
				takeoff or land	ing, and	
				 b) Inertial escape 	reels are installed	
				and operate no	ormally for upper	
				deck occupant	S.	

U.S. DEPARTMENT OF TRANSPORTATION					
FEDERAL AVIATION ADMINISTRAT	ION		MASTER MINIMUM EQUIPMENT LIST		
AIRCRAFT:	REVIS	SION: 3	5 PAGE NO:		
BOEING 747	DATE	: 04/25/	2014 25-17		
SYSTEM & 1.	2. NU	MBER I	NSTALLED		
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH		
NUMBERS			4. REMARKS AND EXCEPTIONS		
25 EQUIPMENT/ FURNISHINGS					
 Upper Deck Escape Slide Inflation System (Or Door) (Cont'd) 					
3) Cargo Configuration, C or Cargo With Upper Deck Occupants (Two Door)	2	1	 (M) (O) May be inoperative (or slide missing) provided: a) Upper deck occupancy is limited to those flight crewmembers and supernumeraries identified by the AFM and essential to the flight (including official observer in forward observer seat) during takeoff or landing, and b) Inertial escape reels and escape harnesses are installed (as required) and operate normally for upper deck occupants. 		
C	2	0	 (M) (O)May be inoperative (or slide missing) provided: a) Upper deck occupancy is limited to those flight crewmembers essential to the flight (including official observer in forward observer seat) during takeoff or landing, and b) Inertial escape reels are installed and operate normally for upper deck occupants. 		

U.S. DEPARTMENT OF TRANSPORTATION MASTER MINIMUM FOUIPMENT LIST					
FEDERAL AVIATION ADMINISTRAT	ION				
AIRCRAFT:	REVIS		5 PAGE NO:		
SYSTEM & 1	2 NU	. 04/25/ MBFR I	2014 25-18 INSTALLED		
SEQUENCE ITEM	2.110	3. NU	MBER REQUIRED FOR DISPATCH		
NUMBERS			4. REMARKS AND EXCEPTIONS		
25 EQUIPMENT/ FURNISHINGS					
12. Flight Crew Seats					
*** 1) Power Adjustment D	-	0	May be inoperative provided manual		
System(s)			adjustment operates normally.		
2) Manual					
Adjustment					
System(s)					
a) Recline A	_	0	(M) May be inonerative provided:		
System(s)		Ū	a) Seat(s) is secured in an upright		
			position acceptable to the affected		
			crewmember(s), and b) Repairs are made within two flight		
			days.		
b) Armrest(s) B	-	0	(M) May be inoperative provided:		
			the retracted position or removed.		
			and		
			b) Seat(s) is acceptable to affected		
			crewmember(s).		
c) Headrest(s) C	-	0	May be inoperative or removed provided		
			seat(s) is acceptable to the affected		
			crewmember(s).		
d) Lumbar C	_	0	May be inoperative provided seat(s) is		
Support(s)			acceptable to the affected		
			crewmembers(s).		
e) Thiah C	-	0	May be inoperative provided seat(s) is		
Support(s)		-	acceptable to the affected		
			crewmember(s).		

U.S. DEPARTMENT OF TRANSPORTATION						
FEDERAL AVIATION ADMINIST	RAT	ION			101	
AIRCRAFT:		REVIS	SION: 3	5 PAGE NO:		
BOEING 747	1		: 04/25/	2014 <u>25-19</u>		
SEQUENCE ITEM	١.	2. NUI	3 NU	MBER REQUIRED FOR DISPATCH		
NUMBERS			0.110	4. REMARKS AND EXCEPTIONS		
25 EQUIPMENT/						
FURNISHINGS						
13. Flight Attendant	С	-	-	May be inoperative or missing provide	b	
*** Flashlight/Holder				crewmember assigned to the associate	ed	
Assembly				seat has a flashlight of equivalent		
14. "FASTEN SEAT BELT	С	-	-	One or more signs or placards may be	I	
WHILE SEATED" Sign or				illegible or missing provided a legible	ļ	
Placard				sign or placard is visible from each	I	
				becupied passenger seat.		
15. UPR DK DR FLT LOCK				Moved to ATA 52-28, Rev. 26.		
*** Light (F/E Panel)						
(Extended Upper Deck)						
16. DOOR GND MODE Light				Moved to ATA 52-29, Rev. 26		
*** (Above Door)						
(Extended Upper Deck)						
17 Elight Look Actuator				Moved to ATA 52.20 Day 26		
*** (Extended Upper Deck)				1000ed 10 ATA 52-30, Rev. 26.		
18. Emergency Evacuation	С	1	0	(O) May be inoperative provided		
*** Signal System				alternate procedures are established		
				to initiate an emergency evacuation.		
19. Cargo Restraint Systems	А	-	-	(M) May be inoperative or missing	1	
				provided:	İ	
				a) Acceptable cargo loading limits		
				from an approved source, i.e., a	in al l	
				or Weight and Balance Docume	ent I	
				are observed, and	i	
				b) Repairs are made prior to the	l	
				completion of the next heavy		
					I	
	С	-	-	(M) May be inoperative, or missing	1	
				provided cargo compartment	ļ	
				remains empty.	I	

U.S. DEPARTMENT OF TRANSPO	U.S. DEPARTMENT OF TRANSPORTATION					
			MASTER MINIMUM EQUIPMENT LIST			
AIRCRAFT:	REVIS	SION: 3	5 PAGE NO:			
BOEING 747	DATE	: 04/25/	2014 25-20			
SYSTEM & 1.	2. NU	<u>MBER I</u>	NSTALLED			
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS			4. REMARKS AND EXCEPTIONS			
	_					
25 EQUIPMENT/						
FURNISHINGS						
20 Lower Cargo						
Compartment Lining and						
Decompression Venting						
Belt Panels						
1) Passenger C	-	0	(O) May be missing in the cargo			
Configuration or			compartment provided procedures are			
Class B Cargo			established and used to ensure the			
			empty or is verified to contain only empty			
			cargo handling equipment, ballast			
			(ballast may be loaded in ULDs), or			
			Fly Away Kits.			
			NOTE: Operator MELs must define			
			which items are approved for			
			inclusion in the Fly Away Kits			
			and which materials can be			
			useu as Dallast.			
2) Cargo Configuration D	-	0	May be missing.			
Class "E" Cargo						
5						

U.S. DEPARTMENT OF TRANSPORTATION					
MASTER MINIMUM EQUIPMENT LIST					
		REVIS		D 12014	PAGE NO:
	4				20-21
STOLENCE ITEM	1.	2. NUI			
			3. NUI		R DISPATCH
NUMBERS				4. REMARKS AND E	XCEPTIONS
25 EQUIPMENT/ FURNISHINGS 21. Non-Essential Equipment & Furnishings (NEF)		-	0	May be inoperative, da provided that the item accordance with the o	amaged or missing n (s) is deferred in operator's NEF
				deferral program. In procedures and proce the operator's (insert and (O) procedures, i available to the flight in the operator's appr	e NEF program, esses are outlined in name) Manual. (M) f required, must be crew and included opriate document.
				NOTE: Exterior lavat are not consi NEF items.	tory door ashtrays dered passenger

U.S. DEPARTMENT OF TRANSPORTATION						
MASTER MINIMUM EQUIPMENT LIS						
AIRCRAFT:	REVIS	SION: 3	5 PAGE NO:			
BOEING 747	DATE	: 04/25/	2014 25-22			
SYSTEM & 1.	2. NU	MBER I	NSTALLED			
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS			4. REMARKS AND EXCEPTIONS			
25 EQUIPMENT/ EURNISHINGS						
22. Passenger Seats D	-	-	(M) May be inoperative provided:			
			a) Seat does not block an			
			Emergency Exit,			
			b) Seat does not restrict any			
			passenger from access to the			
			main aircraft aisle,			
			c) The affected seal(s) is blocked			
			NOTE 1: A seat with an inoperative seat			
			belt is considered inoperative.			
			NOTE 2: Inonorativo soats do not affect			
			the required number of Flight			
			Attendants			
			NOTE 3: Affected seat(s) may include			
			the seat(s) behind and/or			
			adjacent outboard seats.			
1) Recline Mechanism D	-	-	(M) May be inoperative and seat			
,			occupied provided seat back is secured			
			in the full up-right position.			
D	-	-	(IVI) IVIAY be inoperative and seat			
			occupied provided seat back is			
			ininovable in the full up-right position.			
2) Underseat C	-	-	(O) May be inoperative provided:			
Baggage			a) Baggage is not stowed under seat			
Restraining Bars			with inoperative restraining bar,			
			b) Associated seat is placarded: DO			
			NOT STOW BAGGAGE UNDER			
			THIS SEAT, and			
			c) Procedures are established to			
			alert Cabin Crew of inoperative			
			restraining bar.			
			(Continued)			

U.S. DEPARTMENT OF TRANSPOR		١	MASTER MINIMUM EQUIPMENT LIST
FEDERAL AVIATION ADMINISTRAT	ION		
AIRCRAFT:	REVIS	SION: 3	5 PAGE NO:
BOEING 747	DATE	: 04/25/	2014 25-23
SYSTEM & 1.	2. NUI		
		3. NU	
Nomberto			4. REMARKS AND EXCEPTIONS
25 EQUIPMENT/	1		
FURNISHINGS			
22. Passenger Seats			
(Contrd)			
3) Armrest			
a) Armrest with D	-	-	(M) May be inoperative or missing and
Recline			seat occupied provided:
Mechanism			a) Armrest does not block an
			Emergency Exit,
			b) Armrest does not restrict any
			passenger from access to the
			c) If armrost is missing, soat is
			secured in the full upright position.
b) Armrest without D	-	-	May be inoperative or missing and
Recline			seat occupied provided:
Mechanism			a) Armrest does not block an
			Emergency Exit, and
			b) Armrest does not restrict any
			main aircraft aisle
4) Seat Belt Air Bag			
Restraint Systems			
a) Seat Belt Air D	-	-	May be inoperative provided affected
b) Seat Belt Air D	_	-	May be inoperative or disconnected
Bags Not			provided seat belt operates normally.
Required by			
14 CFR			

U.S. DEPARTMENT OF TRANSPORTATION						
FEDERAL AVIATION ADMINISTRATION						
AIRCRAFT:	REVISION: 35 PAGE NO:					
BOEING 747	DATE	: 04/25/	/2014 25-24			
SYSTEM & 1.	2. NU	MBER I	INSTALLED			
SEQUENCE ITEM		3. NU	IMBER REQUIRED FOR DISPATCH			
NUMBERS			4. REMARKS AND EXCEPTIONS			
25 EQUIPMENT/ FURNISHINGS						
23. Observer Seat(s)						
1) Primary Observer A Seat (Including Associated Equipment)	-	-	 May be inoperative provided: a) A passenger seat in the passenger cabin is made available to an FAA inspector for the performance of official duties, and b) Repairs are made within two (2) flight days. 			
A	-	-	 May be inoperative provided: a) Second observer's seat is available to the FAA inspector for the performance of official duties, and b) Repairs are made within two (2) flight days. (Continued) 			
A	-	-	 May be inoperative provided: a) Second observer's seat is available to the FAA inspecto the performance of official durand b) Repairs are made within two flight days. (Continued) 			

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	MASTER MINIMUM EQUIPMENT LIST		
FEDERAL AVIATION ADMINISTRAT			
		510N: 3	5 PAGE NU:
		. 04/23/	2014 20-20 NOTALLED
	2. NU		
		3. NU	
NOMBERS			4. REMARKS AND EXCEPTIONS
25 EQUIPMENT/ FURNISHINGS			
23. Observer Seat(s) (Cont'd)			
1) Primary Observer A Seat (Including Associated Equipment) (Cont'd)	-	-	 May be inoperative provided: a) Required minimum safety equipment (safety belt and oxygen) is available, b) Seat is acceptable to the FAA inspector for the performance of official duties, and c) Repairs are made within two (2) flight days.
			NOTE 1: These provisos are intended to provide for occupancy of the above seats by an FAA inspector when the minimum safety equipment (oxygen and safety belt) is functional and the inspector determines the conditions to be acceptable.
			NOTE 2: The pilot-in-command will determine if the minimum safety equipment is functional for other persons authorized to occupy any observer seat(s).
		<u> </u>	

U.S. DEPARTMENT OF TRANSPORTATION						
FEDI	FRAL AVIATION ADMINIS	τράτ			MASTER MINIMUM EQUIPMENT LIST	
AIRC	CRAFT:		REVIS	SION: 3	5 PAGE NO:	
	BOEING 747		DATE	DATE: 04/25/2014 25-26		
SYS	TEM &	1.	2. NUI	MBER I	NSTALLED	
				3. NU		
	IDERJ				4. REMARKS AND EXCEPTIONS	
25	EQUIPMENT/ FURNISHINGS					
23.	Observer Seat(s) (Cont'd)					
***	2) Additional Observer Seat(s) (Including Associated Equipment)	D	-	0		
					NOTE: The pilot-in-command will determine if the minimum safety equipment is functional for other persons authorized to occupy any observer seat(s).	
***	 Observer Seat Not Required by 14 CFR (Including Associated Equipment) 	D	-	0	NOTE: The pilot-in-command will determine if the minimum safety equipment is functional for other persons authorized to occupy any observer seat(s).	
24. (***	Cart Lift System (Between Main and Upper Deck Galleys)	С	1	0	(M) May be inoperative deactivated.	
	1) Normal Mode	С	1	0	 (O) May be inoperative provided: a) Override Mode operates normally, and b) Alternate procedures are established and used. 	
	2) Override Mode	С	1	0	 (O) May be inoperative provided: a) Normal Mode operates normally, and b) Alternate procedures are established and used. (Continued) 	

U.S. DEPARTMENT OF TRANSPORTATION					
			MASTER MINIMUM EQUIPMENT LIST		
FEDERAL AVIATION ADMINISTRATION					
AIRCRAFT:	REVIS	SION: 3	5 PAGE NO:		
BOEING 747	DATE	: 04/25/	2014 25-27		
SYSTEM & 1.	2. NU	MBER I	NSTALLED		
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH		
NUMBERS			4. REMARKS AND EXCEPTIONS		
25 EQUIPMENT/					
FURNISHINGS					
24. Cart Lift System					
*** (Between Main and					
Upper Deck Galleys)					
(Cont'd)					
3) Actuator Motors C	2	1	(M) (O) One may be inoperative		
,			provided:		
			a) Associated motor is deactivated,		
			b) Cart lift operates in Normal Mode,		
			and		
			c) Alternate procedures are		
			established and used.		
U.S. DEPARTMENT OF TRANSPO	RTATIO	N	MASTER MINIMU		
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FEDERAL AVIATION ADMINISTRA	TION				
AIRCRAFT:	REVIS	SION: 3	5	PAGE NO:	
BOEING 747		: 04/25/ MRFR I	NSTALLED	25-28	
SEQUENCE ITEM	2.110	3. NU	MBER REQUIRED FC	R DISPATCH	
NUMBERS			4. REMARKS AND E	XCEPTIONS	
FURNISHINGS					
25. Emergency Medical Equipment					
1) First Aid Kit and/or A Associated Equipment	-	-	 (O) If more than one CFR, only one of the result of the period of the provided: a) FAK is resealed will identify it a be mistaken for unit, and b) Repairs or rep made within or the period of the peri	is required by 14 required FAKs may g, or inoperative ed in a manner that is a unit that cannot or a fully serviceable lacements are he (1) flight.	
D	-	-	Any in excess of those CFR may be incomple inoperative.	e required by 14 ete, missing, or 	
2) Emergency Medical A Kit and/or Associated Equipment	-	0	 (O) May be incompleted inoperative provided: a) EMK is sealed will identify it a be mistaken for unit, and. b) Repairs or rep made within or 	te, missing, or in a manner that is a unit that cannot or a fully serviceable lacements are ne (1) flight.	
D	-	-	Any in excess of those CFR may be incomple inoperative. (Continued)	e required by 14 ete, missing, or 	

U.S. DEPARTMENT OF TRANSPORTATION					
	STRAT	ION		MASTER MINIMU	M EQUIPMENT LIST
AIRCRAFT:		REVIS	SION: 3	5	PAGE NO:
BOEING 747		DATE	: 04/25/	2014	25-29
SYSTEM &	1.	2. NU	MBER I	NSTALLED	
			3. NU		
NUMBERS				4. REMARKS AND E	XCEPTIONS
25 EQUIPMENT/ FURNISHINGS					
25. Emergency Medical Equipment (Cont'd)					
 Automated External Defibrillator (AED) and/or Associated Equipment 	A	-	0	 (O) May be incompleted inoperative provided: a) AED is resealed will identify it a be mistaken for unit, and b) Repairs or rep made with-in or 	te, missing, or ed in a manner that as a unit that cannot or a fully serviceable lacements are one (1) flight.
	D	-	-	Any in excess of those CFR may be incomple inoperative.	e required by 14 ete, missing, or

U.S. DEPARTMENT OF TRANSPOR	TATION	١	MASTER MINIMU	M EQUIPMENT LIST
FEDERAL AVIATION ADMINISTRAT	ION			
AIRCRAFT:	REVIS	SION: 3	5	PAGE NO:
BOEING 747		: 04/25/		25-30
SYSTEM & 1.	2. NUI			
NUMBERS		5. NO	4 REMARKS AND E	XCEPTIONS
25 EQUIPMENT/ FURNISHINGS				
26. Galley/Cabin/Lavatory Waste Receptacle Access Doors/Covers				I
1) Galley/Cabin Waste C Receptacle Access Doors/Covers	-	-	 (M) (O) May be inoperative of the container access is securized waste introduct compartment, b) Procedures ar ensure that su waste receptar accommodate be generated of the comparted of the commodate accommodate be generated of the commodate accommodate be generated of the commodate accommodate be generated of the commodate accommodate /li>	erative provided: is empty and the ired to prevent and e established to fficient galley/cabin cles are available to all waste that may on a flight.
2) Lavatory Waste C Receptacle Access Doors/Covers		-	 (M) May be inoperatival Associated ware empty, b) Receptacle ac prevent waster receptacle, c) Lavatory is used crewmembers d) Associated lavatis locked closed INOPERATIVE NOTE: These provision intended to provision or inspection 	ve provided: aste container is cess is secured to introduction into the ed only by , and vatory entrance door ed and placarded: E-DO NOT ENTER. ions are not prohibit lavatory use a by crewmembers.

U.S. DEPARTMENT OF TRANSPOR	ΙΟΙΤΑΤ	N	MASTER MINIMUM EQUIPMENT LIST
FEDERAL AVIATION ADMINISTRA	TION		
AIRCRAFT:	REVIS		5 PAGE NO:
BOEING 747	2 NU	<u>. 04/25/</u> MBER I	2014 25-31 INSTALLED
SEQUENCE ITEM	2.110	3. NU	MBER REQUIRED FOR DISPATCH
NUMBERS			4. REMARKS AND EXCEPTIONS
	4		
25 EQUIPMENT/			
FURNISHINGS			
27. Exterior Lavatory Door			
Ashtrays			
1) Airplanes with more A	-	-	One may be missing provided it is
lavatory door ashtray			replaced within ten calendar days.
installed			
2) Airplanes with only A	1	0	May be missing provided it is replaced
one exterior lavatory			within three calendar days.
door ashtray installed			
28. Storage Bins/Cabin, C	-	-	(M) May be inoperative provided:
Galley and Lavatory			a) Procedures are established to
Storage Compartments/			secure the affected bin,
Closets			compartment or closet in the
			b) Affected bin compartment or
			closet is prominently placarded
			DO NOT USE,
			c) Any emergency equipment
			located in affected compartment is
			d) Affected bin compartment or
			closet is not used for storage of
			any items except for those
			permanently affixed.
			NOTE: For overboad hims, if no
			partitions are installed the entire
			overhead bin is considered
			inoperative.
			(Continued)

U.S. DEPARTMENT OF TRANS	SPOR	TATION	١	
	трат			MASTER MINIMUM EQUIPMENT LIST
AIRCRAFT.	IKAI			5 PAGE NO
BOEING 747		DATE	: 04/25/	2014 25-32
SYSTEM &	1.	2. NUI	MBER I	NSTALLED
SEQUENCE ITEM			3. NU	MBER REQUIRED FOR DISPATCH
NUMBERS				4. REMARKS AND EXCEPTIONS
 25 EQUIPMENT/ FURNISHINGS 28. Storage Bins/Cabin, Galley and Lavatory Storage Compartments/ Closets (Cont'd) 				
	C			 (M) (O) May be inoperative provided: a) For non-retractable doors, affected door is removed, b) For retractable doors, affected door is removed or secured in the retracted (fully open) position. c) Affected bin, compartment or closet is not used for storage of any items, except those permanently affixed, d) Affected bin, compartment or closet is prominently placarded DO NOT USE, e) Procedures are established and used to alert crew members and passengers of inoperative bins, compartments or closets and f) Passengers are briefed that affected bin, compartment or closet is not used. NOTE 1: For overhead bins, if no partitions are installed, the entire overhead bin is considered inoperative. NOTE 2: Any emergency equipment located in the affected bin, compartment or closet is not used.

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			MASTER MINIMU	M EQUIPMENT LIST
FEDERAL AVIATION ADMINISTRAT	ION			1
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BOEING 747	DATE	: 04/25/	2014	25-33
SYSTEM & 1.	2. NU	<u>MBER I</u>	NSTALLED	
SEQUENCE ITEM		3. NU	MBER REQUIRED FO	R DISPATCH
NUMBERS			4. REMARKS AND E	XCEPTIONS
		ļ		
25 EQUIPMENT/				
FURNISHINGS				
28. Storage Bins/Cabin,				
Galley and Lavatory				
Storage Compartments/				
Closets				
(Cont'd)				
*** 1) Storage D	-	0	(M) May be inoperativ	e in the unlocked
Compartment Key			position provided doo	or(s) can be
Locks			secured by other mea	ans.

U.S. DEPARTMENT OF TRANS	U.S. DEPARTMENT OF TRANSPORTATION						
	MASTER MINIMUM EQUIPMENT LIST						
FEDERAL AVIATION ADMINIST	RAT	ION		o o-			
AIRCRAFT:		REVIS		J: 35	PAGE NO:		
BUEING 747	-		04/25/		25-34		
SYSIEM &	1.	2. NUMBER INSTALLED					
SEQUENCE ITEM			3. NU	MBER REQUIRED FOR	DISPATCH		
NUMBERS				4. REMARKS AND EX	CEPTIONS		
25 EQUIPMENT/							
FURNISHINGS							
29. Emergency Locator							
*** Transmitter (ELT)							
	_						
1) Survival Type ELTs	D	-	-	Any in excess of those	required by		
				14 CFR may be inoperated	ative or missing.		
2) Fixed ELIS	A	-	0	(M) May be inoperative	provided:		
				a) System is dead	tivated, and		
				b) Repairs are ma	de within 90 days.		
	•		0				
	A	-	0	May be missing provide	d repairs are		
				made within 90 days.			
	-						
	D	-	-	(M) Any in excess of the	ose required by		
				14 CFR may be inopera	ative provided		
				system is deactivated.			
	-						
	D	-	-	(M) Any in excess of the	ose required by		
				14 CFR may be inopera	ative or missing.		
20 Electricity Equipment	P			Any in exercise of the first			
30. Floatation Equipment	D	-	-	Any in excess of that re	equired by 14 CFR		
(Crew and Passenger)				may be moperative of f	แรงแห.		

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	REVIS	SION: 3	5 PAGE NO:			
BUEING 747		: 04/25/	2014 25-35			
SYSTEM & 1.	2. NU		NSTALLED			
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS			4. REMARKS AND EXCEPTIONS			
25 EQUIPMENT/						
FURNISHINGS						
31. Flight						
Crew/Supernumerary						
Escape Devices						
1) Inartial Facana			(M) May be increasive or missing			
T) mental Escape C	-	-	(W) Way be inoperative of missing			
Reels			provided.			
			supernumeraries is limited to the			
			number of operative escape reels			
			and			
			b) Inoperative escape reels are			
			removed			
*** 2) Escape Harnesses C	-	0	(M) May be inoperative or missing			
			provided:			
			a) The number of supernumeraries is			
			limited to the number of operative			
			escape reels / harnesses, and			
			b) Inoperative escape harnesses are			
			removed.			
32. Cargo Loading D	-	0				
System(s)						
			NOTE: Any portion of system(s) that			
			operates normally may be used.			

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FEDERAL AVIATION ADMINIS	TRAT	ION				
AIRCRAFT:		REVIS	SION: 3	5 PAGE NO:		
BUEING 747	1	2 NU	: 04/25/ MBER I	2014 25-36 NSTALLED		
SEQUENCE ITEM	1.	2.1101	3. NU	MBER REQUIRED FOR DISPATCH		
NUMBERS				4. REMARKS AND EXCEPTIONS		
25 EQUIPMENT/						
FURNISHINGS						
33. Upper Deck Crew Rest						
*** Installation						
STC ST011745E						
1) Smoke Detectors						
	-					
a) Common Area	С	2	1			
and/of opper Burk						
	С	2	0	(M) May be inoperative provided crew		
				rest area is locked closed and placarded:		
				DO NOT USE		
				NOTE: This proviso is not intended to		
				prohibit crew rest area		
				inspections by crewmembers.		
b) Lower Bunk	С	1	0	(M) May be inoperative provided crew		
	-	_	-	rest area is locked closed and placarded:		
				DO NOT USE.		
				NOTE: This provise is not intended to		
				prohibit crew rest area		
				inspections by crewmembers.		
	0					
2) Smoke Evacuation	C	1	0	(M) May be inoperative open provided:		
Valve				b) Crew rest area is locked closed		
				and placarded: DO NOT USE.		
				INUIE: I hese provisos are not intended		
				inspections by crewmembers.		
				(Continued)		

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FEDERAL AVIATION ADMINIS	STRAT	ION				
AIRCRAFT:		REVIS	SION: 3	5 PAGE NO:		
BUEING 747	1	DATE 2 NU	: 04/25/ MBER I	2014 25-37 NSTALLED		
SEQUENCE ITEM		2.1101	3. NU	MBER REQUIRED FOR DISPATCH		
NUMBERS				4. REMARKS AND EXCEPTIONS		
25 EQUIPMENT/						
FURNISHINGS						
 33. Upper Deck Crew Rest *** Installation STC ST01174SE (Cont'd) 						
2) Smoke Evacuation Valve (Cont'd)	С	1	0	(M) May be inoperative closed provid crew rest area is locked closed and placarded: DO NOT USE.	ed	
				NOTE: This proviso is not intended to prohibit crew rest area inspections by crewmembers) 	
3) No Smoking/Fasten Seat Belt Sign	С	1	0	(O) May be inoperative provided alternate procedures are established and used.		
	С	1	0	(M) May be inoperative provided crew rest area is locked closed and placare DO NOT USE.	v ded:	
				NOTE: This proviso is not intended t prohibit crew rest area inspections by crewmembers	0 S.	
4) Lighted Exit Sign	С	1	0	(M) May be inoperative provided crew rest area is locked closed and placare DO NOT USE.	v ded:	
				NOTE: This proviso is not intended to prohibit crew rest area inspections by crewmembers) ;.	
5) PSUs (Oxygen Boxes)	С	-	0	(M) May be inoperative provided associated bunk(s) are placarded: DO NOT OCCUPY.		

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FEDERAL AVIATION ADMINIS	TRAT	ION			
AIRCRAFT:		REVIS	SION: 3	5 PAGE NO:	
BOEING 747	1	2 NU	: 04/25/ MBER I	2014 25-38 NSTALLED	
SEQUENCE ITEM	1.	2. 1101	3. NU	MBER REQUIRED FOR DISPATCH	
NUMBERS				4. REMARKS AND EXCEPTIONS	
25 EQUIPMENT/ FURNISHINGS					
100 Supertanker System	D	2	1	(M) (O) One may be inoperative	
(Left and Right) (STC ST01912LA)				a) Associated system is	
				deactivated, and	
				b) Associated agent tanks are	
				verified empty.	
	D	2	0	May be inoperative for non-tanker	
				operation.	
101 Tonker System	P	2	0	(Λ)	
Power Switches	D	2	0	a) Associated system is	
(Left and Right)				deactivated, and	
(STC ST01912LA)				b) Associated agent tanks are	
				verified empty.	
102 Drop Valve	В	2	1	(M) (O) One switch may be inoperative	
Power Switches				provided procedures do not require	
(Left and Right)				its use.	
	D	2	0	(M) (O) May be inoperative for non-	
				tanker operation.	
103 Drop Valve Arming	П	4	2	(M) (O) One switch per system may be	
Select Switches	D		-	inoperative provided procedures do not	
(Left and Right)				require its use.	
(STC ST01912LA)					
	D	4	0	(M) (O) May be inoperative for non-	
				tanker operation.	
104 Drop Enchla Quitat	P		_		
(STC ST01912LA)	D	1	U	(IVI) (O) May be inoperative for non-	

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BOEING 747	DATE	: 04/25/	/2014 25-39			
SYSTEM & 1.	2. NU	MBER I	INSTALLED			
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS			4. REMARKS AND EXCEPTIONS			
25 EQUIPMENT/						
FURNISHINGS						
105 Drop Time	1	0	May be incorrective provided			
Preset Display	'	0	procedures do not require its use			
(STC ST01912LA)						
106 Pressure Regulating D	2	1	(M) (O) One may be inoperative			
Valves (PRV)			provided:			
(Left and Right)			a) PRV valve is verified closed, and			
(STC STUT9TZLA)			b) One drop valve must operate			
П	2	0	(M) (O) May be inoperative provided			
	2	0	procedures do not require its use.			
107 Drop Valves B	4	2	(M) (O) One per side may be			
(Left and Right)			inoperative provided procedures			
(STC ST01912LA)			do not require its use.			
			NOTE: One valve per side must operate			
			normally for tarker operation.			
108 Tanker Pressure D	2	0	(M) (O) May be inoperative provided			
System			procedures do not require its use.			
(Left and Right)						
(STC ST01912LA)						
(Loft and Pight)	Ø	U	(ivi) (U) iviay be inoperative provided			
(STC ST01912LA)						

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MASTER MINIMUM EQUIPMENT LIST							
AIRCRAFT:	REVI	SION: 3	5	PAGE NO:			
BOEING 747	DATE	E: 04/25/	2014	25-40			
SYSTEM & 1	2. NU	JMBER I	NSTALLED				
SEQUENCE HEM		3. NU					
Nomberto			4. REIVIARNO AND E	ACEPTIONS			
25 EQUIPMENT/ FURNISHINGS							
110 Tanker System Pressure Indication (Left and Right) (STC ST01912LA)							
1) Regulator Set D Pressure Indication (Left and Right) (STC ST01912LA)	2	1	(M) (O) May be inope procedures do not rec	rative provided quire its use.			
			NOTE: Operate the a normally if ei bar segment normally.	associated system ther the digital or indicators operate			
2) Agent System D Pressure Indication (Left and Right) (STC ST01912LA)	2	1	(M) (O) May be inope procedures do not rec	rative provided quire its use.			
			NOTE: Operate the a normally if ei bar segment normally.	associated system ther the digital or indicators operate			
3) Air System D Pressure Indication (Left and Right) (STC ST01912LA)	2	1	(O) May be inoperativ system pressure can alternate means.	e provided be verified by			
			NOTE: Operate the a normally if ei bar segment normally.	associated system ther the digital or indicators operate			
4) Regulator Pressure D Preset (Left and Right) (STC ST01912LA)	2	1	(M) (O) May be inope procedures do not rec	rative provided quire its use.			

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MASTER MINIMUM EQUIPMENT LIST							
AIRCRAFT:		REVIS	SION: 3	5 PAGE NO:			
BOEING 747		DATE	: 04/25/	/2014 25-41			
SYSTEM &	1.	2. NU	MBER	INSTALLED			
SEQUENCE ITEM			3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS				4. REMARKS AND EXCEPTIONS			
25 EQUIPMENT/ FURNISHINGS							
111 Precharge Valves And Controls (Left and Right) (STC ST01912LA)	D	2	1	(M) (O) May be inoperative provided procedures do not require its use.			
112 High Pressure Relief Valves (Left and Right) (STC ST01912LA)	D	2	1	(M) (O) One may be inoperative provided associated high pressure air system is deactivated.			
				NOTE: If system has a high pressure air charge associated valve must operate normally.			
	D	2	0	(M) (O) May be inoperative for non- tanker operation.			
113 High Pressure Rupture Disks (Left and Right) (STC ST01912LA)	D	2	1	(M) (O) One may be inoperative provided associated high pressure air system is deactivated.			
				NOTE: If system has a high pressure air charge associated valve must operate normally.			
	D	2	0	(M) (O) May be inoperative for non- tanker operation.			
114 Low Pressure Rupture Disks (Left and Right) (STC ST01912LA)	D	4	2	 (M) (O) May be inoperative provided: a) Associated system is deactivated, and b) Associated agent tanks are verified empty. 			
	D	4	0	(M) (O) May be inoperative for non- tanker operation.			

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BOEING 747	4		DATE: 04/25/2014 25-4			
STOLENCE ITEM	1.	2. NUI		INSTALLED MBER REQUIRED FOR DISPATCH		
NUMBERS		4. REMARKS AND EXCEPTIONS				
25 EQUIPMENT/ FURNISHINGS						
115 Negative Pressure Relief Valves (Left and Right) (STC ST01912LA)	D	4	0	 (M) (O) May be inoperative provided: a) Associated system is deactivated, and b) Associated agent tanks are verified empty. 		
116 Agent Storage Tanks (Left and Right) (STC ST01912LA)	D	10	5	 (M) (O) Either system (Left or Right) may be inoperative provided: a) Associated system is deactivated, and b) Associated agent tanks are verified empty. 		
	D	10	0	(M) (O) May be inoperative for non- tanker operation.		
117 Agent Tank Level Indication System (Left and Right) (STC ST01912LA)	D	10	0	 (O) May be inoperative provided: a) Quantity is verified by an alternate means, and b) For Takeoff, landing and segmented drops, agent Quantity Must be considered full for performance calculations. 		
1) Agent Tank Level Indicators (Left and Right) (STC ST01912LA)	D	20	0	 (O) Both indicators for any one tank may be inoperative provided: a) Quantity is verified by an alternate means, and b) For Takeoff, landing and segmented drops, agent quantity must be considered full for performance calculations. NOTE: Operate the associated system normally if either the digital or bar segment indicators operate normally. 		

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SYSTEM &	1.	2. NU	. 04/25/ MBER	INSTALLED		
SEQUENCE ITEM			3. NU	MBER REQUIRED FOR DISPATCH		
NUMBERS				4. REMARKS AND EXCEPTIONS		
FURNISHINGS						
440 Link Dranswa Elsis	-	•	0	(\mathbf{M}) (O) May be increased in provide the		
118 High Pressure Fluid Relief Valves	D	2	0	(IVI) (O) May be inoperative provided:		
(Left and Right)				b) All agent tanks are verified empty.		
(STC ST01912LA)						
119 Tanker Leak	П	1	2	(M) (O) One system PER SIDE (A or B)		
Detection System	D	-	2	may be inoperative.		
(Left A and B)						
(Right A and B)						
(STC ST01912LA)						
	D	4	0	(M) (O) May be inoperative provided:		
				a) All systems are deactivated, and		
				b) All agent tanks are verified empty.		
1) Tanker Leak	D	8	4	(M) (O) One loop per system (A or B)		
Detectors				on inboard or outboard side may be		
				inoperative.		
	D	8	0	(M) (O) May be inoperative provided all		
				agent tanks are verified empty.		
120 Tankar Emorganov	П	2	0	(M) (O) May be incorrective provided:		
Dump System	D	2	0	a) Associated system(s) is		
(Left and Right)				deactivated and		
(STC ST01912LA)				b) Associated agent tanks are		
				vermed empty.		
121 ECADS Barrier System	D	1	0	(M) (O) May be inoperative provided:		
(STC ST01912LA)				a) System is deactivated and		
				b) ALL agent tanks are verified		
				NOTE: Must operate normally for		
				tanker operation.		

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SYSTEM & 1.	2. NU	MBER I	NSTALLED			
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS			4. REMARKS AND EXCEPTIONS			
25 EQUIPMENT/						
FURNISHINGS						
122 ECADS Dump Valves D	4	3	(O) One may be inoperative provided			
(STC ST01912LA)		_	remaining valves are verified to operate			
			normally before each departure.			
_						
D	4	0	(M) (O) May be inoperative for			
			non-tanker operations.			
123 Timer Bypass Switch D	1	0	(O) NORM function may be			
(NORM / BYPASS)		Ŭ	inoperative provided BYPASS			
(STC ST01912LA)			function operates normally.			
D	1	0	(O) BYPASS function may be			
			Inoperative provided NORM			
			runction operates normally.			
124 SAFEMON A	1	0	(M) (O) May be inoperative provided.			
(STC ST01912LA)		Ŭ	a) Flight Data Recorder (FDR)			
			operates normally, and			
			b) Must be repaired within 5			
			Sequential Tanker flights.			
125 C Matar	4		(O) May be increased in a received at			
	, I		(O) Iviay be inoperative provided SAFEMON operates normally			
			CATEMON Operates normally.			

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FEDERAL AVIATION ADMINISTRATION						
AIRCRAFT:		REVI	SION N	0: 32	PAGE NO:	
BOEII	NG 747	DATE	: 04/12/	2005	26-1	
SYSIEM &	1.	2. NU	MBERI			
			3. NU		OR DISPATCH	
INUIVIDERS				4. REMARKS AND E	XCEPTIONS	
26 FIRE PROTE	ECTION					
1. Engine Fire Detection Sy	C	8	4	(O) One loop per eng inoperative.	ine may be	
2. Nacelle Tem Indication Sy	perature stems					
1) JT9D Eng	jines C	8	0			
2) CF6-50E	Engines C	8	0	(M) May be inoperative no fuel nozzle pad but on the associated en	ve provided there is ırn-through repair gine.	
3) RB211 Er	ngines C	8	0			
 Fire Bottle Di Lights Engine Lower Cargo 	scharge C e, APU and	-	0	May be inoperative p is used to verify squib	rovided squib test o integrity.	
	С	-	-	May be inoperative for APU, or lower cargo	or an inoperative extinguisher system.	
4. Engine & AP Extinguisher Discharge Di	U Fire C Thermal scs	-	0	(M) May be missing p discharge diaphragm by an accepted proce	provided thermal integrity is verified edure.	
	C	-	-	May be inoperative for APU fire extinguisher	or an inoperative system.	

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eve	BOEING 747	1		: 04/12/	2005 26-2 NSTALLED
SEC	DUENCE ITEM	Ι.	2. NUI	3 NU	
NU	VBERS			0.110	4. REMARKS AND EXCEPTIONS
26	FIRE PROTECTION				
5	Portablo Firo	П	_	_	(M) Any in excess of these required by
5.	Extinguisher	D	-	-	14 CFR may be inoperative or missing
					provided:
					a) The inoperative fire extinguisher is
					tagged inoperative, removed from
					out of sight so it cannot be
					mistaken for a functional unit, and
					b) Required distribution is maintained.
		0		•	
6.	VVNEEI VVEII FIRE	C	1	0	(O) May be inoperative provided brakes
	Deteotion Cystom				temperature indicators before engine
					start.
		C	1	0	(M) (O) May be inoperative provided
		U	•	0	brakes are verified cool to the touch
					before engine start.
-	ADU Fine Datastian	0			
1.	System	C	2	1	(IVI) (O) One may be inoperative.
	Cystem				
		С	2	0	(M) (O) May be inoperative provided:
					a) APU is not used, and
					 b) APU fuel valve is deactivated
					ciosed.
	1) Flight Deck Test	С	2	1	(M) (O) One may be inoperative.
	Feature				· · · · ·
		C	2	0	(M) (O) Mov be increative provided:
		U	2	U	a) APU is not used and
					b) APU fuel valve is deactivated
					closed.

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	BOEING 747			: 04/12/		20-3
513		1.	2. NU			
				3. NUI		
	VIDEINO				4. KEIMARKS AND E	INCEPTIONS
26	FIRE PROTECTION					
8.	APU Fire Extinguisher	С	1	0	(M) May be inoperativ a) APU is not use b) APU fuel valve closed.	ve provided: ed, and e is deactivated
9.	Forward Lower Cargo Compartment Smoke Detector(s) (Single or Dual Loop System, All Models)	С	-	1	(M) (O) All except on inoperative if the asso compartment is to be	e may be ociated cargo loaded.
		С	-	0	 (O) May be inoperative procedures are estable to ensure the associate compartment remains verified to contain on handling equipment, be loaded in ULDs), or NOTE: Operator ME which items a inclusion in the and which mand li>	ve provided lished and used ated cargo s empty or is ly empty cargo ballast (ballast may or Fly Away Kits. Ls must define are approved for he Fly Away Kits aterials can be list.
	1) Flight Deck Test Feature	С	1	0	(M) May be inoperatival alternate procedure v integrity.	ve provided an erifies system

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SYSTEM & SECHENCE ITEM	1.	2. NUI			
NUMBERS			5. NU	4 REMARKS AND E	
26 FIRE PROTECTION					
10. Aft Lower Cargo					
Smoke Detectors					
1) Single Loop System,					
SB 26-2070					
Not Incorporated					
(All Except 7475P)					
a) Container	С	3	2	(M) (O) Any one dete	ctor may be
Compartment	-	-	_	inoperative for pressu	rized flight.
Detectors					-
	~	2	0	(\mathbf{M}) (O) One of the feature	numeral truck allots stars
	C	3	2	(IVI) (O) One of the for	
				flight.	
	С	3	2	(M) (O) Aft detector m	nay be inoperative
				for unpressurized flig	ht provided
				procedures are estab	lished and used to
				or is verified to contai	n only empty cargo
				handling equipment.	ballast (ballast mav
				be loaded in ULDs), o	or Fly Away Kits.
				NOTE: Operator ME	Ls must define
				inclusion in th	are approved for he Fly Away Kits
				and which ma	aterials can be
				used as balla	st.
				(Continued)	
				1	

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MASTER MINIMUM EQUIPM						
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SYSTEM & 1.	2. NU	2. NUMBER INSTALLED				
SEQUENCE ITEM		3. NUMBER REQUIRED FOR DISPATCH				
NUMBERS			4. REMARKS AND E	EXCEPTIONS		
26 FIRE PROTECTION						
10. Aft Lower Cargo						
Compartment						
Smoke Detectors						
(Contra)						
1) Cingle Lean System						
1) Single Loop System,						
Not Incorporated						
(All Except 7/7SP)						
(Cont'd)						
(cont d)						
a) Container C	3	1	(M) (O) The two forwa	ard detectors may		
Compartment		-	be inoperative provid	ed procedures		
Detectors			are established and u	used to ensure the		
(Cont'd)			associated cargo con	npartment remains		
			empty or is verified to	contain only empty		
			cargo handling equip	ment, ballast		
			(ballast may be loade	ed in ULDs), or Fly		
			Away Kits.			
			NOTE: Operator ME	Ls must define		
			which items a	are approved for		
			inclusion in th	ne Fly Away Kits		
			and which ma	aterials can be		
			used as balla	IST.		
			(Continued)			
	1	1	1			

U.S. DEPARTMENT OF TRANSPOR	IOITAT	N	
FEDERAL AVIATION ADMINISTRAT	ION		MASTER MINIMON EQUIPMENT LIS
AIRCRAFT:	REVIS	SION N	O: 32 PAGE NO:
BOEING 747	DATE	: 04/12/	/2005 26-7
SYSTEM & 1.	2. NU	MBER I	
		3. NU	
NOWBERS			4. REMARKS AND EXCEPTIONS
26 FIRE PROTECTION		İ	
 Aft Lower Cargo Compartment Smoke Detectors (Cont'd) 			
 Single Loop System, SB 26-2070 Not Incorporated (All Except 747SP) (Cont'd) 			
b) Bulk C Compartment Detector	1	0	(M) (O) May be inoperative provided procedures are established and used to ensure the associated cargo compartment remains empty or is verified to contain only empty cargo handling equipment, ballast (ballast may be loaded in ULDs), or Fly Away Kits.
			NOTE: Operator MELs must define which items are approved for inclusion in the Fly Away Kits and which materials can be used as ballast.
c) Flight Deck Test C Feature	1	0	(M) May be inoperative provided an alternate procedure verifies system integrity.
			(Continued)

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FEDERAL AVIATION ADMINISTRATION					
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BOEING 747		: 04/12/	2005	26-8	
SYSTEM & 1.	2. NU				
NUMBERS		3. NU	A REMARKS AND E		
26 FIRE PROTECTION		İ			
10. Aft Lower Cargo					
Smoke Detectors					
(Cont'd)					
2) Single Loop System,					
SB 26-2070					
Incorporated					
a) Container C	2	1			
Compartment					
Detectors					
6	2	0	May be inconcretive of	rovided one bulk	
	2	0	compartment detecto	r operates normally	
				r oporatoo normany.	
С	2	0	(O) May be inoperativ	e provided	
			procedures are estab	lished and used	
			to ensure the associa	ited cargo	
			compartment remains	s empty or is	
			handling equipment	hallast (hallast mav	
			be loaded in ULDs), o	or Fly Away Kits.	
			,,,		
			NOTE: Operator ME	Ls must define	
			which items a	are approved for	
			and which m	aterials can be	
			used as balla	ist.	
			(Continued)		

U.S. DEPARTMENT OF TRAN	ISPOR	TATION	١		
FEDERAL AVIATION ADMINIS	STRAT	ION		MASTER MINIMU	M EQUIPMENT LIST
AIRCRAFT:		REVIS		D: 32	PAGE NO:
BOEING 747		DATE	: 04/12/	2005	26-9
SYSTEM &	1.	2. NU	MBER I	NSTALLED	
SEQUENCE ITEM			3. NU	MBER REQUIRED FC	R DISPATCH
NUMBERS				4. REMARKS AND E	XCEPTIONS
		1	 		
 Aft Lower Cargo Compartment Smoke Detectors (Cont'd) 					
2) Single Loop System, SB 26-2070 Incorporated (Cont'd)					
b) Bulk Compartment Detectors	С	2	1		
	С	2	0	May be inoperative p container compartme operates normally.	rovided one nt detector
	С	2	0	(O) May be inoperative procedures are estable to ensure the associal compartment remainse verified to contain on handling equipment, be loaded in ULDs), o	ve provided lished and used ated cargo s empty or is ly empty cargo ballast (ballast may or Fly Away Kits.
				NOTE: Operator ME which items a inclusion in th and which ma used as balla	Ls must define are approved for ne Fly Away Kits aterials can be ist.
c) Flight Deck Test Feature	С	1	0	(M) May be inoperatival alternate procedure v integrity. (Continued)	ve provided an verifies system

U.S. DEPARTMENT OF TRANSPOR	RTATION	N			
MASTER MINIMUM EQUIPMENT LIST					
FEDERAL AVIATION ADMINISTRAT				•	
AIRCRAFT:	REVIS	SION N	0: 32	PAGE NO:	
BOEING 747	DATE	: 04/12/	2005	26-10	
SYSTEM & 1.	2. NU	MBER I	NSTALLED		
SEQUENCE ITEM		3. NU	MBER REQUIRED FC	DR DISPATCH	
NUMBERS			4. REMARKS AND E	EXCEPTIONS	
		1			
26 FIRE PROTECTION					
10 Aft Lower Corgo					
Compartment					
Smoke Detectors					
(Cont'd)					
(2011.2)					
3) Dual Loop System					
, , , , , , , , , , , , , , , , , , , ,					
a) Container C	2	1			
Compartment					
Detectors					
C	2	0	(O) May be inoperativ	ve provided	
			procedures are estab	olished and used	
			to ensure the associa	ated cargo	
			compartment remains	s empty or is	
			venned to contain on	ly empty cargo	
			handling equipment,	or Fly Away Kits	
			NOTE: Operator MF	Ls must define	
			which items a	are approved for	
			inclusion in tl	ne Fly Away Kits	
			and which m	aterials can be	
			used as balla	ast.	
			(Continued)		
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FEDERAL AVIATION ADMINISTRAT	ION			
AIRCRAFT:	REVIS	SION NO	O: 32	PAGE NO:
BOEING 747	DATE	: 04/12/	2005	26-11
SYSIEM & 1.	2. NU			
		3. NU		
NUMBERS			4. REMARKS AND E	XCEPTIONS
	_	1		
20 THE TROTECTION				
10. After Lower Cargo				
Compartment				
Smoke Detectors				
(Cont'd)				
2) Duald and Custom				
3) Dual Loop System				
(Cont d)				
b) Bulk C	2	1		
Compartment	-	•		
Detectors				
C	2	0	(O) May be inoperativ	/e provided
			procedures are estab	lished and used
			to ensure the associa	ited cargo
			compartment remains	s empty or is
			handling equipment	hallast (hallast may
			be loaded in UI Ds)	or Fly Away Kits
			NOTE: Operator ME	Ls must define
			which items a	are approved for
			inclusion in th	ne Fly Away Kits
			and which ma	aterials can be
			used as balla	ist.
a) Elizabt Datak	4		(M) Mov ha increase	in provided an
C) Flight Deck C	I	0	(IVI) IVIAY DE INOPERAIN	verifies system
			integrity	ennes system
			(Continued)	
			. ,	

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MASTER MINIMUM EQUIPMENT LIST						
FEDERAL AVIATION ADMINISTRA						
		510N N0	0: 32 PAGE NO:			
BUEING 747						
	2. NU					
NIMBERS		3. NU				
Nomberto			4. REMARKS AND EACEPTIONS			
26 FIRE PROTECTION						
10. Aft Lower Cargo						
Compartment						
Smoke Detectors						
(Cont'd)						
() = (====						
4) 747SP C	2	1				
6	2	0	(O) May be increative provided			
C	2	0	(O) May be inoperative provided			
			to ensure the associated cargo			
			compartment remains empty or is			
			verified to contain only empty cargo			
			handling equipment, ballast (ballast may			
			be loaded in ULDs), or Fly Away Kits.			
			NOTE: Operator MELs must define			
			which items are approved for			
			inclusion in the Fly Away Kits			
			and which materials can be			
			used as dallast.			
a) Flight Deck	1	0	(M) May be inonerative provided an			
Test Feature			alternate procedure verifies system			
			integrity.			

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FEDERAL AVIATION ADMINIS	TRAT	ION		
AIRCRAFT:		REVIS		D: 32 PAGE NO:
BOEING 747	1	DATE 2 NU	: 04/12/ MBER I	2005 26-13 NSTALLED
SEQUENCE ITEM	1.	2.110	3. NU	MBER REQUIRED FOR DISPATCH
NUMBERS				4. REMARKS AND EXCEPTIONS
]		
26 FIRE PROTECTION				
 Main Deck Cargo *** Smoke Detector System (Including Israel Aircraft Industry Special 	С	-	-	One detector per zone may be inoperative.
Freighter,				
STC ST00358LA)				
	С	-	0	(O) May be inoperative provided procedures are established and used to ensure the associated cargo zones remain empty or are verified to contain only empty cargo handling equipment, ballast (ballast may be loaded in ULDs), or Fly Away Kits.
				NOTE: Operator MELs must define which items are approved for inclusion in the Fly Away Kits and which materials can be used as ballast.
 Passenger Compartment Smoke Detection Annunciator Panels (Combi) 	С	2	1	
 12. Main Deck Cargo *** Smoke Detector Flight Deck Test System (Including Israel Aircraft Industry Special Freighter, STC ST00358LA) 	С	1	0	 (M) May be inoperative provided: a) Smoke Detector system integrity is verified before each departure, and b) NO AIRFLOW indicating system operates normally

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FEDERAL AVIATION ADMINIS	STRAT	ION				
AIRCRAFT:				O: 32 PAGE NO:		
SYSTEM &	1.	2. NU	. 04/12/ MBFR I	2005 <u> 20-14</u> NSTALLED		
SEQUENCE ITEM		2.110	3. NU	MBER REQUIRED FOR DISPATCH		
NUMBERS				4. REMARKS AND EXCEPTIONS		
26 FIRE PROTECTION						
 13. Main Deck Cargo Smoke *** Detector NO AIRFLOW Indicating System (Including Israel Aircraft Industry Special Freighter, STC ST00358LA) 	D	1	0	 (M) May be inoperative provided: a) Smoke Detector system integrity is verified before each departure, and b) Main Deck Cargo Smoke Detector Flight Deck Test System operates normally. 		
14. Lower Cargo *** Compartment Fire Extinguisher System	С	1	0	 (O) May be inoperative provided procedures are established and used to ensure the lower cargo compartments remain empty or are verified to contain only empty cargo handling equipment, ballast (ballast may be loaded in ULDs), or Fly Away Kits. NOTE: Operator MELs must define which items are approved for inclusion in the Fly Away Kits and which materials can be used as ballast. 		
 Extinguisher Bottle No. 2, All Operations except Combi configurations with Main Deck Fire Extinguishing System installed 	С	1	0	 (M) (O) Extinguisher bottle No. 2 and associated indications may be inoperative (and lower cargo compartments used) provided: a) Airplane is pressurized, and b) Flight remains within 60 minutes of a suitable landing field. 		
2) Cargo Configuration (Class "E" Cargo)	D	1	0	(O) May be inoperative and Class E operations conducted provided appropriate emergency procedures listed in the AFM are used.		

U.S. DEPARTMENT OF TRANSPORTATION MASTER MINIMUM EQUIPMENT LIST							
FEDERAL AVIATION ADMINISTRA	FEDERAL AVIATION ADMINISTRATION						
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BUEING 747							
SEQUENCE ITEM	2.110	3 NUMBER REQUIRED FOR DISPATCH					
NUMBERS		0.110	4. REMARKS AND EXCEPTIONS				
26 FIRE PROTECTION							
15. Engine Fire Detector C Fault Indication	2	1	Either the Flight Engineer's FAULT light or the Pilot's FIRE DETECTION light				
16. Surge Tank Flame D *** Suppression (STP) System	2	0					
17. Fire Extinguisher Squib C *** Test Function (Engine, APU and Lower Cargo)	-	0	 (M) Test function(s) may be inoperative provided it is verified that: a) Failure is in the light circuit only, and b) In the event of a fire, the bottle would discharge. 				
C	-	0	Test function(s) may be inoperative for an inoperative APU and/or lower cargo fire extinguisher system.				
18. Lower Lobe C *** Galley Fire Extinguisher System	1	0	 (M) (O) May be inoperative provided: a) Electrical power to the galley remains OFF, and b) Galley is not used. 				
C	1	0	 (M) (O) May be inoperative, and galley used, provided: a) Power to the associated galley remains OFF when galley is not in use, b) A minimum of two portable fire extinguishers are available in each galley, and c) A full face smoke mask supplied by a portable oxygen bottle is available for one attendant in each galley. 				

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BUEING 747	4			2005 26-16		
	١.	2. NUI				
NUMBERS			5. NU	A REMARKS AND EXCEPTIONS		
26 FIRE PROTECTION		ĺ				
19. Lower Lobe Galley Fire	С	1	0	(M) Test function may be inoperative		
*** Extinguisher Squib Test				provided it is verified that:		
Function				a) Failure is in the light circuit only,		
				b) In the event of a fire the bottle		
				would discharge.		
	С	1	0	Test function may be inoperative		
				provided fire extinguisher system is		
				not required to operate.		
20. Lower Lobe Galley	С	-	-	Ceiling detector may be inoperative		
*** Smoke Detectors				provided exhaust duct detector for		
(Two Per Galley)				associated galley operates normally.		
	С	_	0	(O) May be inoperative (both ceiling and		
	U		Ũ	exhaust duct) provided associated		
				galley(s) is monitored in flight by an		
				accepted procedure.		
21 Lower Lobe Galley	П	_	_	Any in excess of those required by		
*** Portable Fire	D			14 CFR may be inoperative.		
Extinguisher						
				NUTE: At least two per galley are		
				Fire Extinguisher System is not		
				installed, or is not operating		
				normally.		

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FEDERAL AVIATION ADMINISTRA	ΓΙΟΝ					
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SYSTEM & 1	2. NU	. 04/12/ MBFR I	2005 <u> 20-17</u> INSTALLED			
SEQUENCE ITEM	2.110	3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS			4. REMARKS AND EXCEPTIONS			
26 FIRE PROTECTION						
22. Wing Leading Edge Overheat Warning System						
1) Single Loop System						
a) Pylons C	8	0	The two detectors in each pylon, if installed by SB 26-2006 (or production equivalent), may be inoperative.			
b) Wing Detectors C	38	18	The ten detectors in each wing which can be removed by SB 26-2049 or production equivalent may be inoperative provided the remaining system operates normally.			
2) Flight Deck Test C Feature	1	0	(M) May be inoperative provided an alternate procedure verifies system integrity each flight day.			
3) Dual Loop System						
a) Loops C	4	2	One loop in each wing may be inoperative provided the remaining loop(s) operates normally.			
23. Master Fire B Warning Light (Forward Glare Shield)	2	1	(M) One may be inoperative provided all remaining visual and aural fire warning devices operate normally.			
24. Lower Cargo C *** Compartment Smoke Detector NO AIRFLOW Light	1	0	(M) May be inoperative provided Smoke Detector system operation is verified before each departure.			

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AIRCRAFT.			O: 32 PAGE NO [.]			
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SYSTEM & 1.	2. NU	MBER	INSTALLED			
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS			4. REMARKS AND EXCEPTIONS			
	-	1				
26 FIRE PROTECTION						
25. Lavatory Fire C	-	-	For each lavatory, the lavatory fire			
Extinguisher			extinguisher system may be inoperative			
Systems			provided associated lavatory smoke			
			detector system operates normally.			
C	_	_	(M) (O) For each layatory, the layatory			
			fire extinguisher system may be			
			inoperative provided:			
			a) Lavatory waste receptacle is			
			empty,			
			b) Associated lavatory door is locked			
			ENTER, and			
			c) Lavatory is used only by			
			crewmembers.			
			NOTE: These provisos are not intended			
			inspections by crewmembers.			
D	-	0	May be inoperative for flights conducted			
			in a cargo configuration.			
26 Fire Bell Reset Switch B	2	2	(Ω) One may be inonerative provided			
		2	remaining switches operate normally.			
			<u> </u>			

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BOEING 747	4	DATE: 04/12/2005 26-19					
STOLENCE ITEM	1.						
NUMBERS			5. NU	4 REMARKS AND E			
26 FIRE PROTECTION							
27. Lavatory Smoke Detection Systems	С	-	-	 (M) (O) For each lava smoke detection syst inoperative provided: a) Lavatory waste empty, b) Associated lava closed and pla INOPERATIVE ENTER, and c) Lavatory is use crewmembers NOTE: These provis to prohibit lava inspections be 	atory, the lavatory em may be e receptacle is ratory door is locked carded: E – DO NOT ed only by os are not intended vatory use or by crewmembers.		
	D	-	0	May be inoperative for in a cargo configuration	or flights conducted on.		
28. Crew Rest Area Smoke *** Detection System	С	1	0	 (M) (O) May be inoper one or both smoke de a) Crew rest area b) Crew rest area placarded: INC NOT ENTER, c) Crew rest area purpose. NOTE: These provis to prohibit created inspections be an area of the provise of the prohibit created by the provise of the prohibit created by the provise of the	erative (including etectors) provided: a remains empty, a door is locked and OPERATIVE – DO and a is not used for any os are not intended ew rest area by crewmembers.		
U.S. DEPARTMENT OF TRANS	SPOR	TATION	١				
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FEDERAL AVIATION ADMINIS	FEDERAL AVIATION ADMINISTRATION						
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BOEING 747		DATE	: 04/12/	2005 26-20			
SYSTEM &	1.	2. NUI	MBER I	NSTALLED			
SEQUENCE IIEM			3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS				4. REMARKS AND EXCEPTIONS			
26 FIRE PROTECTION							
29. Strut Overheat Warning Systems RB211 Engines							
1) Dual Loops	С	8	4	(O) One loop per engine may be inoperative.			
2) Flight Deck Test Feature	С	1	0	(M) May be inoperative provided an alternate procedure verifies system integrity each flight day.			
3) Overheat Detectors	С	-	8	Two overheat detectors added by SB 747-54-2121 or production equivalent may be inoperative.			
30. Main Deck Cargo *** Compartment Fire Extinguisher System (Combi Airplanes)	С	1	0	 (O) May be inoperative provided procedures are established and used to ensure the main deck cargo compartment remains empty or is verified to contain only empty cargo handling equipment, ballast (ballast may be loaded in ULDs), or Fly Away Kits. NOTE: Operator MELs must define which items are approved for inclusion in the Fly Away Kits and which materials can be used as ballast. 			
				(Continued)			

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MASTER MINIMUM EQUIPMENT LIST						
FEDERAL AVIATION ADMINISTRAT	ION					
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SYSTEM & 1.	2. NU		NSTALLED			
		3. NU				
NUMBERS			4. REMARKS AND E	XCEPTIONS		
]					
20 FIRE FROTECTION						
30. Main Deck Cargo						
*** Compartment Fire						
Extinguisher System						
(Combi Airplanes)						
(Cont'd)						
1) Main Deck Metered C	8	7	(M) (O) One may be	inoperative with		
Halon Bottles			material carried in the	e main deck cargo		
			a) Airplane is pre	u. Issurizad		
			b) Main Deck Ha	Ion Dump System		
			and associate	d bottles #1 through		
			#4 operate no	rmally,		
			c) Inoperative bo	ttles and associated		
			flex tubing and	squib wiring are		
			disconnected,	capped, and		
			 d) Alternate proc 	edures are		
			established for	r the crew member		
			assigned fire f	ighting responsibility		
			to enter the ca	irgo compartment, at		
			the captain's c	irection, within 75		
			ovtinguich on	vioper equipment to		
				remaining life.		
			(Continued)			
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			O: 32 PAGE NO:			
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SYSTEM & 1.	2. NUI	MBER I	NSTALLED			
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS			4. REMARKS AND EXCEPTIONS			
26 FIRE PROTECTION						
30 Main Deck Cargo						
*** Compartment Fire						
Extinguisher System						
(Combi Airplanes)						
(Cont'd)						
1) Main Dook Matarad	0	Б	(M) (O) Three may be increasive with			
1) Main Deck Metered A	0	5	(W) (O) Three may be moperative with			
			material carried in the main deck cargo			
(Cont d)			compartment provided:			
			a) Airpiane is pressurized,			
			b) Main Deck Halon Dump System			
			and associated bottles #1 through			
			#4 operate normally,			
			c) Inoperative bottles and associated			
			flex tubing and squib wiring are			
			disconnected, capped,			
			 d) Alternate procedures are 			
			established for the crew member			
			assigned fire fighting responsibility			
			to enter the cargo compartment. at			
			the captain's direction. within 60			
			minutes, with proper equipment to			
			extinguish any remaining fire and			
			a) Renairs are made within three			
			flight dave			
			(Continued)			

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	MASTER MINIMUM EQUIPMENT LIST						
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BOEING 747	DATE	: 04/12/	2005 26-23				
SYSTEM & 1.	2. NU	MBER I	NSTALLED				
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH				
NUMBERS			4. REMARKS AND EXCEPTIONS				
]						
26 FIRE EXTINGUISHER							
30. Main Deck Cargo							
*** Compartment Fire							
Extinguisher System							
(Combi Airplanes)							
(Cont'd)							
0) Main Dask Osma		0					
2) Main Deck Cargo C	1	0	(O) May be inoperative provided				
Squib Test Module			procedures are established and used to				
			compartment remains empty or is				
			verified to contain only empty of is				
			handling equipment hallast (hallast may				
			be loaded in UI Ds), or Fly Away Kits				
			NOTE: Operator MELs must define				
			which items are approved for				
			inclusion in the Fly Away Kits				
			and which materials can be used				
			as ballast.				
	4		(M) (O) May be increased in a provide t				
Ľ	1	U	(IVI) (U) Iviay be inoperative provided:				
			a) It is verified that the failure is in				
			b) In the event of a fire, the bottle				
			would discharge				
			(Continued)				

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AIRCRAFT						
BOEING 747	DATE	: 04/12/	2005 26-24			
SYSTEM & 1.	2. NU	MBER I	NSTALLED			
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS			4. REMARKS AND EXCEPTIONS			
26 FIRE PROTECTION						
30 Main Dock Cargo						
*** Compartment Fire						
Extinguisher System						
(Combi Airplanes)						
(Cont'd)						
	10					
3) Main Deck Cargo C	10	0	(O) May be inoperative provided			
Module Lights			to ensure the main deck cargo			
(Located in the Aft			compartment remains empty or is			
Lower Cargo			verified to contain only empty cargo			
Compartment)			handling equipment, ballast (ballast may			
			be loaded in ULDs), or Fly Away Kits.			
			NOTE: Operator MELs must define			
			which items are approved for			
			inclusion in the Fly Away Kits			
			and which materials can be			
С	10	0	(M) (O) May be inoperative provided:			
	_	-	a) Squib Test is used to verify squib			
			integrity, and			
			b) Procedure is used to verify that			
			associated dottle is tuil.			

U.S.	U.S. DEPARTMENT OF TRANSPORTATION MASTER MINIMUM EQUIPMENT LIST						
FED	ERAL AVIATION ADMINIS	TRAT	ION				
AIR	BOEING 747			SION: 3	4a PAGE NO:		
SYS	STEM &	1.	2. NU	MBER I	NSTALLED		
SEC	UENCE ITEM			3. NU	MBER REQUIRED FOR DISPATCH		
NUN	/IBERS				4. REMARKS AND EXCEPTIONS		
27	FLIGHT CONTROLS						
1.	Control Surface Position Indicating System	С	1	0	(O) May be inoperative provided visual inspection of associated surface verifies proper movement before each departure.		
2.	Leading Edge Flap Position Light Systems						
	1) LE FLAPS	С	2	1	 (M) (O) Green light may be inoperative provided: a) Flap position module at the Flight Engineer panel operates normally, and b) Leading edge flaps module operation to position "0", "1", or "5" is monitored by observing operative lights. 		
	2) Leading Edge Flap Lights (F/E Panel)	С	16	8	 (O) One amber or green light for each indicating segment on the flap position module may be inoperative provided: a) Both LE FLAPS position lights on the pilots' center panel operate normally, and b) Leading edge flaps module operation to position "0", "1", or "5" is monitored by observing operative lights. 		
3.	Takeoff Warning Horn System				Deleted, Rev. 20.		
4.	Hydraulic Power VALVE CLOSED Lights	С	8	6	(M) One per axis may be inoperative provided the associated valve position is verified open before each departure.		

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FE	DERAL AVIATION ADMINIS	STRAT	ION				
AIR	CRAFT:			SION: 3	4a PAC	GE NO:	
970	BUEING 747	1	DATE 2 NU	: 08/17/ MRED I		21-2	
SF	OUENCE ITEM	1.	2. NU	3 NU	MBER REQUIRED FOR DI	ISPATCH	
NU	MBERS			0.110	4. REMARKS AND EXCE	PTIONS	
27	FLIGHT CONTROLS						
5.	Hydraulic Power Valves	С	8	0	(M) May be inoperative op	ben.	
6.	Stabilizer BRAKE REL Lights	С	2	0			
7.	Lateral Trim System	С	1	0	 (M) May be inoperative provide a constraint of the second s	ovided: ates normally, is centered.	
8.	Stall Warning System(s)						
	1) Airplanes with Engines Other Than JT9D-7R4G2	С	2	1	(M) May be inoperative pro is deactivated.	ovided system	
		В	-	0	(M) (O) May be inoperative training in stall recognition has been conducted with t warning system deactivate	e provided and recovery the stall ed.	
	 Airplanes with JT9D- 7R4G2 Engines 	С	2	1	(M) May be inoperative pro	ovided system	
		В	-	0	 (M) (O) May be inoperative a) Training in stall recorrecovery has been with the stall warnin deactivated, and b) Thrust setting of 1.6 exceeded. 	e provided: ognition and conducted ng system 62 EPR is not	

U.S	U.S. DEPARTMENT OF TRANSPORTATION MASTER MINIMUM EQUIPMENT LIST						
FED	DER	AL AVIATION ADMINIS	TRAT	ION			
AIR	CR/				SION: 3	4a /2000	PAGE NO:
eve	TE		1		. 08/17/		21-3
SEC	בו וכ בו ור		١.	2. NU			
	MRF	RS		3. NUMBER REQUIRED FOR DIS			
1101							
27	FI	IGHT CONTROLS					
	• -						
9.	Au	to Spoilers System	С	1	0	(M) (O) May be inope	rative provided it
***						is deactivated.	
						NOTE: If landing per	formance requires
						use of auto s	pollers, see AFM
						for performan	ice adjustments.
10	Fla	n Load Relief	C	1	0	(M) May be incongrativ	e or deactivated in
10.	(A)	Itomatic Flap	0	•	U	the fully extended pos	sition provided the
	Re	traction) System				following weight restri	ictions are applied:
	-	, , , ,				<u> </u>	
	1)	All except 747SP,	С	1	0	Flaps 30 retractor ma	y be inoperative
		Single or Two-Stage				provided flaps 30 not	used above in-flight
		Retractor, or				gross weight 480,000) lb. (218,000 kg).
		Modulated Retractor					
	2)	Two-Stage Potractor	C	1	0	Flans 25 retractor ma	w ha inonarativa
	Z)	or Modulated	U		0	provided flaps 25 not	used above in-flight
		Retractor				aross weight of 585.0	00 lb. (265.350 kg).
						g,.	
	3)	747SP Only	С	1	0	Flaps retractor may b	e inoperative
						provided flaps 30 not	used above in-flight
						gross weight of 450,0	00 lb. (204,000 kg).
			•				
11.	ΗL	AP LD RELIEF Light	С	1	0	(M) May be inoperative	e provided it is
						light circuit and that t	inclion is in the
						flap retraction system	otherwise
						operates normally.	
			С	1	0	May be inoperative for	or an inoperative
						automatic flap retract	ion system.

U.S	U.S. DEPARTMENT OF TRANSPORTATION							
FEI	DERAL AVIATION ADMINI	STRAT	ION					
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SYS	STEM &	1.	2. NU	. 06/17/ MBER I	NSTALLED			
SE	QUENCE ITEM			3. NU	MBER REQUIRED FOR DISPATCH			
NU	MBERS				4. REMARKS AND EXCEPTIONS			
27								
21								
12. ***	Over-rotation Warning System							
	1) 747-100/200/300 except those powered by JT9D-7/7A/7F/7J Engines	D	1	0				
	2) 747-100/200/300 powered by JT9D-7/7A/7F/7J Engines	D	1	0	(O) May be inoperative except for operations that require use of the AFM Alternate Forward C.G. Takeoff Performance Appendix.			
	3) 747SP	С	1	0	 (O) May be inoperative provided the following performance adjustments are made: a) Reduce AFM takeoff field length limited gross weight and obstacle clearance limited gross weight by 28,000 lb. (12,700 kg), b) Reduce AFM tire speed limited gross weight by 46,000 lb. (20,865 kg), c) Increase AFM normal takeoff speeds (for actual takeoff weight) by: V17 KIAS VR10 KIAS V29 KIAS d) If V1 exceeds VMBE, reduce takeoff weight 1,500 lb. (680 kg) per knot of excess, and e) Use normal flap retraction speeds (without 9 KIAS V2 increase). 			

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FEDERAL AVIATION ADMINISTRAT	ION		MASTER MINIMUM EQUIPMENT LIST
AIRCRAFT:	REVIS	SION: 3	4a PAGE NO:
BOEING 747	DATE	: 08/17/	27-5
SYSTEM & 1.	2. NU		
		3. NU	
NOMBERS			4. REMARKS AND EXCEPTIONS
27 FLIGHT CONTROLS			
13. Rudder Ratio System			Deleted, Rev. 27.
14. Speed Brake Solenoid C	1	0	(M) (O) May be inoperative in the "ground" position provided speed brake lever is not moved beyond the FLIGHT position in flight.
15. Reverser Actuated*** Leading Edge Flaps Retraction System			
1) With Turbine C Reversers Installed	1	0	 (M) (O) May be inoperative provided: a) Normal operation of leading edge flaps is not affected, and b) Leading edge flaps and adjacent wing skin panels are visually inspected for heat damage after each use of reverse thrust.
2) With Turbine C Reversers de- activated by SB JT9D-747-78-2053, or SB CF6-747-78- 2067, or system is not installed	1	0	May be inoperative provided normal operation of leading edge flaps is not affected.
16. Stabilizer Motion C Mechanical Sound System	1	0	Sound level may be degraded provided stabilizer brake release lights operate normally.

U.S. DEPARTMENT OF TRANSPOR	U.S. DEPARTMENT OF TRANSPORTATION						
FEDERAL AVIATION ADMINISTRATION							
AIRCRAFT:	REVIS	SION: 3	4a PAGE NO:				
SVSTEM & 1		. 00/17/ MRED I					
SFOLIENCE ITEM	2. NO						
NUMBERS		5. NO	A REMARKS AND EXCEPTIONS				
27 FLIGHT CONTROLS							
17. Leading Edge Flap C Drives (Electric)	8	7	(M) One may be inoperative provided all pneumatic drives operate normally.				
18. Leading Edge Flap Drives (Pneumatic)	8	7	 (M) (O) One may be inoperative provided: a) Drive is deactivated in accordance with an accepted procedure, b) All electric drives operate normally, c) Takeoff obstacle clearance is not dependent upon retraction of flaps from takeoff position, and d) For airplanes with any turbine reversers active, leading edge flaps and adjacent wing skin panels are visually inspected for heat damage after each use of reverse thrust. NOTE: A maximum of one drive unit on each side may fail to reach fully extended position provided normal indications can be achieved within five seconds when using alternate system. 				
19. Rudder Pedal Actuated C *** Body Gear Steering Cutout System	1	0					

U.S. DEPARTMENT OF TRANSF	U.S. DEPARTMENT OF TRANSPORTATION MASTER MINIMUM FOUIPMENT LIST						
FEDERAL AVIATION ADMINIST	RAT	ION					
AIRCRAFT:				PAGE NO:			
SYSTEM &	1	2. NUI	. 00/17/ MBFR I	NSTALLED	21-1		
SEQUENCE ITEM	••		3. NU	MBER REQUIRED FOR	R DISPATCH		
NUMBERS				4. REMARKS AND EX	CEPTIONS		
27 FLIGHT CONTROLS							
20. Elevator Feel Light	С	1	0	(M) May be inoperative	e provided an		
				accepted procedure is	used to verify		
				normally before each d	systems operate		
21. Control Wheel Trim	В	2	1	Copilots may be inoper	rative provided		
Switch System				stabilizer trim system (i	including pilot's		
				control wheel trim switt	cn) operates		
				normany.			
22. Multiple Position							
*** Greenband System							
1) Amber Lights	С	2	1	One of the two amber I	lights may be		
	•		-	inoperative.	ignie mely ie e		
	~	0	0	A set an link (s. secondo s. in			
	C	2	0	Amber lights may be in	operative		
				stabilizer trim setting a	re verified to be		
				properly set for the exis	sting gross weight		
				and center of gravity lo	ocation.		
2) Greenband Indicator	C	2	0				
Lights (Stabilizer Trim	C	2	0				
Scale Greenband							
Indicators)							
3) Greenband Aural	C	1	0	May be inonerative for	two areenhands		
Warning Feature	0	I	0	not in use provided that	it under these		
				conditions the aural wa	arning feature, and		
				at least one amber ligh	t operate normally		
				existing greenband appr	ind center of		
				gravity location.			

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FEDERAL AVIATION ADMINISTRATION						
AIRCRAFT:				4a PAGE NO:		
BUEING 747	1	DATE 2 NU	: 08/17/ MRED I	2009 27-8 NSTALLED		
SEQUENCE ITEM	1.	2.110	3 NU			
NUMBERS			0.110	4. REMARKS AND EXCEPTIONS		
27 FLIGHT CONTROLS						
23. Elevator Trim Indicator	D	1	0			
24. Trailing Edge Flap Position Indicators (747SP ONLY)	С	2	1	Position "Up", "1", and "5" may be inoperative provided the Leading Edge Flap position lights operate normally at both pilots' and flight engineer's panels.		
				NOTE: Stall Warning System may be inoperative.		
25. Stabilizer Trim Standby *** Power System	С	1	0			
26. Horizontal Stabilizer Trim Systems (Electronic Trim Function)	С	2	1	 (M) One may be inoperative provided: a) Horizontal Stabilizer Trim is verified to operate normally through use of manual trim levers, and b) No arm or control solenoid valves are failed in the energized position. 		
27. M-14 Flaps Asymmetry *** Detector System (All Except 747SP)	С	1	0	 (M) May be inoperative provided: a) Inboard flap position indicator operates normally, and b) M-14 asymmetry detector is disconnected. 		
28. Outboard Aileron Lockout Systems	С	2	0	(M) May be inoperative unlocked provided airspeed is limited to 270 KIAS/.73 Mach, whichever is lower.		

U.S. DEPARTMENT OF TRANSPORTATION MASTER MINIMUM EQUIPMENT LI						M EQUIPMENT LIST
FEDERAL AV	IATION ADMINIS	TRAT			Γ	
AIRCRAFT:			REVIS		D: 34 a	PAGE NO:
SACTEN 8	DEING 747	1		: 08/17/		27-9
SEQUENCE	ITEM	1.	2. NO	3 NU		R DISPATCH
NUMBERS				0.1101	4. REMARKS AND E	XCEPTIONS
					_	
27 FLIGHT C	ONTROLS					
29. Trailing E System	dge Flap Drive					
1) No-Co Drag	oast Brake	A	1	0	 (M) (O) May be inoperative of the second s	erative provided: que Tube and g Brake support rified to be efore each railing Edge Arm s OFF during ions in the terminal ade within three
30. Flap Leve *** Gate (Wit	er Frangible ness Wire)	A	1	0	 (M) (O) May be inoper not lock wired in stow provided: a) The proper repis not availab installed at th b) Use of Flaps 3 prohibited excernergency situte c) Repairs are manday. 	erative (gate ved position) placement lock wire ple and cannot be ne current airport. 30 for landing is ept on an uation, and ade within one flight

U.S. DEPARTMENT OF TRANSPORTATION MASTER MINIMUM EQUIPMENT LIST								
FEDERAL AVIATION ADMINISTRATION								
AIRCRAFT:				O: 33 PAGE NO:				
BOEING 747	1		: 05/04/	/2006 28-1				
SFOLIENCE ITEM	Ι.	2. NU						
NUMBERS			5. NO	4 REMARKS AND EXCEPTIONS				
28 FUEL		Ī	İ					
1. Main Tank Boost Pumps	С	8	7	(M) (O) One may be inoperative provided operations are conducted in compliance with AFM.				
2. Center Tank Override Jettison Pumps	С	2	1	(M) (O) One may be inoperative provided operations are conducted in compliance with AFM.				
	С	2	0	May be inoperative provided Center Tank fuel is carried in lieu of payload.				
	С	2	0	May be inoperative provided tank is not fueled.				
3. Fuel Pressure Warning Lights	С	-	-	(O) May be inoperative provided associated pump is not operated.				
	С	-	-	(M) (O) May be inoperative provided associated pump is deactivated.				
	С	-	-	May be inoperative provided associated tank is not fueled.				
	В	-	-	(M) One light per tank may be inoperative provided it is verified that the associated pump operates normally.				
	В	-	0	May be inoperative provided associated fuel pressure indicator operates normally.				
 Fuel Mismanagement Alert (Flashing Function) 	С	1	0					
4. Fuel Pressure Indicators	D	-	0					

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FEDERAL AVIATION ADMINISTRATION						
AIR	CRAFT:		REVIS		O: 33 PAGE NO:	
eve	BUEING /4/	1		: 05/04/	2006 28-2 NSTALLED	
SE		1.	2. NU		MBER REQUIRED FOR DISPATCH	
NU	VBERS			0. NO	4. REMARKS AND EXCEPTIONS	
28	FUEL					
5.	Fuel Crossfeed Valves	С	4	3	 (M) (O) One may be inoperative deactivated open provided: a) All main tank quantity indicators operate normally, b) For takeoff with outboard engines feeding from the center tank, inboard crossfeed valves operate normally, and c) Operations are conducted in accordance with AFM limitations. 	
6.	Fuel CROSSFEED VALVE Lights	С	4	3	One may be inoperative provided associated crossfeed valve operates normally.	
		С	4	3	One may be inoperative provided associated crossfeed valve is inoperative.	
7.	Engine Fuel Shutoff Valve Transit/Position Lights	С	4	3	(M) One may be inoperative provided proper valve operation is verified before each departure.	
8.	Reserve Fuel Transfer Valves	С	-	0	 (M) (O) May be inoperative provided: a) AFM procedures for fuel loading and management are complied with, and b) Fuel in reserve tanks is considered unusable and unjettisonable. 	

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FED	ERAL AVIATION ADMINIS	TRAT	ION			
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eve	BOEING 747	1		: 05/04/	2006 28-3	
SFC		Ι.	2. NUI			
NUN	MBERS			0.110	4. REMARKS AND EXCEPTIONS	
28	FUEL					
9.	Fuel RES VALVE Lights	С	-	0	 (M) (O) May be inoperative provided: a) Valve(s) are verified to operate normally, and b) Either the associated main tank or reserve tank quantity indicator operates normally. 	
		С	-	0	(M) (O) May be inoperative provided associated reserve fuel transfer valve(s) is considered inoperative.	
		С	-	0	(M) (O) May be inoperative provided reserve tank fuel is not used.	
10.	Total Fuel Quantity/Gross Weight Indicators	С	-	0		
11.	Main Tank Fuel Quantity Indicating Systems (F/E Panel)	С	4	3	 (M) (O) One may be inoperative provided: a) Fuel Flow Meter or Fuel Used Indicator for each engine operates normally, b) All boost pumps for the associated tank operate normally, c) Tank is emptied and serviced with a known quantity of fuel or measuring stick readings are taken to verify fuel quantity in associated tank after each refueling, and d) For associated indicator in tank 2 or 3, the following must apply: SB 28-2042 or production equivalent must be incorporated. (Continued) 	

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BOEING 747	DATE	: 05/04/	/2006 28-4			
SYSTEM & 1	2. NU					
NUMBERS		5. NU	4 REMARKS AND EXCEPTIONS			
28 FUEL						
11. Main Tank Fuel Quantity C Indicating Systems (F/E Panel) (Cont'd)	4	3	 (M) (O) One may be inoperative provided: a) Fuel Flow Meter or Fuel Used Indicator for each engine operates normally, b) All boost pumps for the associated tank operate normally, c) Tank is emptied and serviced with a known quantity of fuel or measuring stick readings are taken to verify fuel quantity in associated tank after each refueling, and d) For associated indicator in tank 2 or 3, the following must apply: Fuel is loaded so that quantity in each outboard main plus reserve tank equals the fuel in each inboard main tank. (Continued) 			

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BOEING 747	4			2006 28-5		
SFOUENCE ITEM	1.	2. NUI		MBER REQUIRED FOR DISPATCH		
NUMBERS			0.110	4. REMARKS AND EXCEPTIONS		
		ļ				
28 FUEL						
11. Main Tank Fuel Quantity Indicating Systems (F/E Panel) (Cont'd)	С	4	3	 (M) (O) One may be inoperative provided: a) Fuel Flow Meter or Fuel Used Indicator for each engine operates normally, b) All boost pumps for the associated tank operate normally, c) Tank is emptied and serviced with a known quantity of fuel or measuring stick readings are taken to verify fuel quantity in associated tank after each refueling, and d) For associated indicator in tank 2 or 3, the following must apply: Each Fuel Used Indicator must be operating normally with a continuous fuel record maintained, so that at any given time the fuel remaining in the associated tank can be accurately verified. 		
 Smiths Digital Fuel Indicator Fuel Configuration Light 				Moved to ATA 28-38, Rev. 24.		
12. Center Tank Fuel Quantity Indicating System (F/E Panel)	С	1	0	May be inoperative provided tank remains empty.		
	С	1	0	 (M) (O)May be inoperative provided: a) All fuel used indicators operate normally, b) All main tank fuel quantity indicators operate normally, and c) Center wing tank fuel quantity is verified by an acceptable procedure. 		

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FEDERAL AVIATION ADMINISTRATION							
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BOEING 747	4		: 05/04/	2006 28-6			
STOLENCE ITEM	1.	2. NUI					
NUMBERS			5. NO	4 REMARKS AND EXCEPTIONS			
28 FUEL							
13. Reserve Tank Fuel Quantity Indicating System (F/E Panel)	С	-	0	(M) (O) May be inoperative provided reserve tank fuel is not required.			
	С	-	0	 (M) (O) May be inoperative provided: a) Associated reserve tank quantity is verified by an acceptable procedure, and b) Either the associated main tank quantity indicator operates normally or the associated reserve tank transfer valve light operates normally. 			
14. Fueling Bay Quantity Indicating System	С	1	0	(M) May be inoperative provided fuel is loaded using an alternate procedure.			
15. Measuring Sticks	С	15	0	(M) May be inoperative provided fuel quantity is verified by an alternate procedure.			
16. APU Fuel Valve	С	1	0	(M) May be inoperative closed.			
17. APU FUEL VALVE Light	С	1	0	(M) (O) May be inoperative (and APU used) provided the APU fuel valve is verified closed before departure.			
18. APU Fuel (DC) Pump	С	1	0	(M)May be inoperative provided the pump is deactivated.			
				NOTE: Boost pump may be used to supply fuel to APU.			

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FEDERAL AVIATION ADMINIS	TRAT	ION				
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BOEING 747	1		: 05/04/	2006 28-7		
SEQUENCE ITEM	1.	2. NUI	3. NU	MBER REQUIRED FOR DISPATCH		
NUMBERS				4. REMARKS AND EXCEPTIONS		
28 FUEL						
19. APU DC PUMP ON Light	С	1	0			
20 Pressure Fueling System	C	1	0	(M) May be inoperative provided:		
	Ũ		Ŭ	a) Alternate refueling procedures are		
				established and used, and		
				b) All refueling valves are closed.		
				NOTE: Any function of the Pressure		
				Fueling System that operates		
				normally may be used.		
1) Volumetric Shutoff	C	1	0	(M) (O) May be inonerative provided:		
	U	•	Ŭ	a) Fuel quantity indicators on		
				refueling panel operate normally,		
				and b) Indiastors are monitored during		
				refueling.		
				5		
	С	1	0	(M) (O) May be inoperative provided:		
				 a) Fuel quantity indicators on Flight Engineer's papel operate 		
				normally,		
				b) Communications procedures are		
				established between the flight		
				and and the person refueling,		
				c) Fuel quantity is monitored from		
				the flight deck during refueling.		
	Δ	1	0	(M) (O) May be incorrective provided:		
	Л			a) An alternate means to determine		
				fuel quantity during the refueling		
				process is used, and		
				than three flight days before		
				repairs are made.		
				(Continued)		

U.S. DEPARTMENT OF TRANSPORTATION						
FEDEI	RAL AVIATION ADMINIS	TRAT	ION		MASTER MINIMOM EQUIPMENT LIST	
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OVET	BOEING 747	1		: 05/04/	2006 28-8	
SFOU		1.	2. NUI		MBER REQUIRED FOR DISPATCH	
NUMB	ERS			0.110	4. REMARKS AND EXCEPTIONS	
28 FI	JEL					
20. Pi (C	ressure Fueling System Cont'd)					
2)	Main Tank 1 and 4 Refueling Valves	С	2	0	 (M) May be inoperative open provided: a) Takeoff weight is limited to the maximum zero fuel weight (See AFM), and b) Fuel Jettison system is considered inoperative. 	
3)	Main Tank 2 and 3 Refueling Valves	С	4	0	 (M) May be inoperative open provided: a) Fuel Jettison system is considered inoperative, and b) For 747SP, takeoff weight is limited to 657,000 lb. (298,000 kg). 	
4)	Center Tank Refueling Valves	С	2	0	(M) May be inoperative open provided Fuel Jettison system is considered inoperative.	
5)	Reserve Tank 1 and 4 Refueling Valves	С	2	0	 (M) May be inoperative open provided: a) Takeoff weight is limited to the maximum fuel transfer weight (See AFM), and b) Fuel Jettison system is considered inoperative 	
6)	Reserve Tank 2 and 3 Refueling Valves	С	2	0	 (M) May be inoperative open provided: a) Fuel Jettison system is considered inoperative, and b) For 747SP, takeoff weight is limited to 657,000 lb. (298,000kg). 	
*** 7)	Preselect Feature (Simmonds Precision Products, Inc. STC No. ST20BO)	С	-	0		

U.S. DEPARTMENT OF TRAN	ISPOR	TATIO	١	MASTER MINIMUM EQUIPMENT LIST
FEDERAL AVIATION ADMINIS	STRAT	ION		
AIRCRAFT:		REVIS		O: 33 PAGE NO:
BUEING 747	1	2 NU	. 05/04/ MBER I	2006 28-9 NSTALLED
SEQUENCE ITEM	1.	2.110	3. NU	MBER REQUIRED FOR DISPATCH
NUMBERS				4. REMARKS AND EXCEPTIONS
28 FUEL				
21. Jettison System	С	1	0	 (M) (O) May be inoperative provided: a) Airplane performance requirements (including Approach Climb and Landing Climb capability) are met, b) Jettison nozzle valves remain closed, and c) No. 1 and No. 4 main tank jettison transfer valves remain closed.
1) Center Wing Jettison Valves	С	2	0	 May be inoperative open provided: a) Both jettison nozzle valves operate normally and are closed, and b) All refueling valves operate normally.
	С	2	0	 May be inoperative closed provided: a) Center tank fuel is considered as payload, and b) All boost pumps in main tanks 2 and 3 operate normally.
2) No. 1 and/or No. 4 Main Tank Jettison Transfer Valves	С	2	0	May be inoperative closed provided fuel required to be jettisoned does not deplete inboard main tank below the quantity in the outboard main tanks plus the quantity in the outboard main tanks plus the quantity in No. 1 and No. 4 reserve tanks
22. Fuel Scavenge Pump	С	1	0	(M) (O) May be inoperative provided the first 3000 lb. (1360 kg) of center tank fuel is considered as payload and unusable.

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FEDERAL AVIATION ADMINISTRATION						
AIRCRAFT:		REVIS		O: 33 PAGE NO:		
BUEING 747	1	2 NU	: 05/04/ MBER	2006 28-10 NSTALLED		
SEQUENCE ITEM	1.	2.1101	3. NU	MBER REQUIRED FOR DISPATCH		
NUMBERS				4. REMARKS AND EXCEPTIONS		
28 FUEL						
23. Fuel Scavenge Pump Low Pressure Light	С	1	0	(O) May be inoperative provided alternate procedures are established to verify fuel depletion.		
24. Fuel Temperature Indicating System (Main Tank No. 1)	С	1	0	May be inoperative provided Total Air Temperature (TAT) or Static Air Temperature (SAT) to (TAT) conversion is substituted as an indication of fuel temperature.		
25. Manually Operated Defuel Valve Systems	С	2	0	(M) May be inoperative secured closed.		
26. Jettison Pumps Low Pressure Warning Lights	С	4	2	(M) One may be inoperative in each tank provided associated jettison pumps operate normally.		
	С	4	0	May be inoperative provided Jettison System is inoperative.		
27. Reserve Tank 2 and 3 *** Float Switches	С	2	1	 (O) One float switch may be inoperative in either reserve tank 2 or 3, and that tank used provided: a) Fuel quantity indicators for both reserve tanks 2 and 3, and main tanks 2 and 3 operate normally, b) Reserve Fuel VMO Selector System operates normally, and its lower speed limit is observed until reserve tanks 2 and 3 are emptied, and c) After reserve fuel is drained in flight, reserve tank transfer valves remain open until landing. (Continued) 		

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MASTER MINIMUM EQUIPMENT LI							
AIRCRAFT:		SION N	O: 33 PAGE NO:				
BOEING 747	DATE	: 05/04/	2006 28-11				
SYSTEM & 1.	2. NU	MBER I	INSTALLED				
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH				
NUMBERS			4. REMARKS AND EXCEPTIONS				
28 FUEL							
27. Reserve Tank 2 and 3 C	2	0	(M) (O) Float Switches may be				
*** Float Switches			inoperative provided:				
(Cont'd)			a) Reserve tanks 2 and 3 are verified				
			empty (sump drained) after				
			airplane refueling, and				
			b) Reserve tanks 2 and 3 transfer				
			valves remain open for the				
			duration of the flight				
			NOTE: Refer to Chapter 34				
			"Mach/Airspeed Warning				
			System "				
			Gystem.				
С	2	0	(M) (O) Float switches may be				
	-	Ű	inoperative (and reserve tanks 2 and 3				
			used) provided.				
			a) Fuel quantity indicators for both				
			reserve tanks 2 and 3 and main				
			tanks 2 and 3 operate normally				
			b) After reserve fuel is drained in				
			flight reserve tank transfer values				
			romain open until landing				
			a) Time delay medule M2020 or				
			M2021 is modified by an accented				
			procedure, and				
			d) Elight dools ALIX ELEL MACULA (C				
			U) FIIGHL DECK AUX FUEL MACH A/S				
			warn lest switch activates the				
			mach/airspeed aurai warning.				
		1					

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MASTER MINIMUM EQUIPMENT LIST						
			0:33 PAGE NU: 2006 28-12			
SVSTEM & 1		. 03/04/ MRED I				
SFOLIENCE ITEM	2. 110					
NUMBERS		5. NO	A REMARKS AND EXCEPTIONS			
28 FUEL						
28. Fuel Sump Drain Valves						
1) Without Water A Scavenge (Ejector) Pump Systems Installed	-	-	 (M) One may be inoperative provided: a) There is no evidence of leakage, b) Refueling service equipment is checked for moisture accumulation before and after each fuel service, and c) Valve is repaired or replaced within 25 flight hours. 			
2) With Water C Scavenge (Ejector) Pump Systems Installed	-	0	 (M) May be inoperative provided: a) There is no evidence of leakage, and b) Alternate procedures are established and used to prevent water accumulation in associated tank. 			
29. Center Auxiliary Tank D *** Fuel Quantity Indicating System	1	0	May be inoperative provided center auxiliary tank remains empty.			
C	1	0	(M) (O) May be inoperative provided the tank is serviced with a known quantity of fuel by an accepted procedure.			

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FEDERAL AVIATION ADMINISTRATION							
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SYSTEM & 1.	2. NU						
		3. NU					
NUMBERS			4. REMARKS AND E	XCEPTIONS			
28 FUE							
30. Center Auxiliary Tank D	2	0	May be inoperative p	rovided center			
*** Transfer Pumps			auxiliary tank remains	s empty.			
C	2	1	One may be incorrat	ive provided:			
C	2	1	a) Fuel quantity in	n remaining tanks is			
			adequate to re	ach an alternate			
			destination if th	ne remaining pump			
			fails at any tim	e, and			
			b) Fuel in tank is	included as part of			
			the maximum :	zero fuel weight.			
21 Contor Auviliant Took	1	0	May be inconcretive of	and provided			
*** Isolation Valve	1	0	center auxiliary tank r	emains empty			
				empty.			
32. Center Auxiliary Tank D	1	0	May be inoperative p	rovided center			
*** Isolation Valve Light			auxiliary tank remains	s empty.			
C	1	0	(M) (O) May be inope	rative provided			
			solation valve operat	ion is verified			
			manually.				
33. Center Auxiliary Tank D	1	0	May be inoperative p	rovided center			
*** Transfer Shutoff Valve			auxiliary tank remains	s empty.			
34. Center Auxiliary Tank D	1	0	May be inoperative p	rovided center			
*** Transfer Shutoff Valve			auxiliary tank remains	s empty.			
Closed Light							
35 Center Auxiliary Tank D	1	0	May be inconcrative or	rovided center			
*** Transfer Shutoff Valve			auxiliary tank remains	sempty.			
Test System							

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FEDERAL AVIATION ADMINISTRATION								
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SYSTEM & 1.	2. NU							
NUMBERS		3. NU	A REMARKS AND E					
28 FUEL								
36. Center Tank Left Fueling C Valve	1	0	May be inoperative cl center auxiliary tank	losed provided remains empty.				
37. Center Tank Left Fueling C Valve Light (F/E Panel)	1	0	May be inoperative p auxiliary tank remains	rovided center s empty.				
38. Fuel Configuration Light C	1	0						
39. Fuel Receptacle Cap C	4	0	May be inoperative o no leakage can be de refueling is complete.	r missing provided etected after				
40. Simmonds Digital Fuel D *** Quantity Indicating System ACC.5 ERROR CODE STC No. ST20BO	-	0						
			NOTE: Fuel quantity operative wit code display indicator(s). indicates tha the tank qua but still withi	is still considered h an Acc.5 error ed on fuel quantity ACC.5 displayed t the accuracy of intity is reduced n system limits.				

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MASTER MINIMUM EQUIPMENT LIST							
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BOEING 747		DATE	: 05/04/	2006	28-15		
SYSTEM &	1.	2. NU	MBER I	NSTALLED			
SEQUENCE ITEM			3. NU	MBER REQUIRED FO	R DISPATCH		
NUMBERS				4. REMARKS AND E	XCEPTIONS		
28 FUEL]					
44 Eval Overtity Test							
Switches							
Currentee							
*** 1) Digital System	С	-	0				
*** 2) Analog System							
a) Flight Deck	С	1	0	(M) May be inoperative associated fuel quant	ve provided ity indicators are		
				verified to operate no	rmally once each		
b) Fueling Panel	С	-	0	(M) May be inoperativ	ve provided fuel		
				quantity is verified by procedure.	an acceptable		
				P.00000101			

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FEDERAL AVIATION ADMINISTRATION							
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BUEING 747		: 04/12/	/2005 <u>29-1</u>				
SFOUENCE ITEM	2. NU		INSTALLED IMBER REQUIRED FOR DISPATCH				
NUMBERS		0.110	4. REMARKS AND EXCEPTIONS				
29 HYDRAULIC POWER							
1. Engine Driven B Hydraulic Pump Systems	4	3	 (M) (O) One may be inoperative (including the pump and/or associated plumbing) provided: a) All ADP's operate normally, b) ADP for associated hydraulic system operates in CONTINUOUS for takeoff and landing, c) At least one air conditioning pack is OFF for takeoff, with airplane performance based upon the assumption that the pack is operating normally, d) DC bus remains paralleled at all times, and e) Failed pump is removed and an appropriate cover plate installed. 				
В	4	3	 (M) (O) One may be inoperative (including the pump and/or associated plumbing) provided: a) All ADP's operate normally, b) ADP for associated hydraulic system operates in CONTINUOUS for takeoff and landing, c) At least one air conditioning pack is OFF for takeoff, with airplane performance based upon the assumption that the pack is operating normally, (Continued) 				

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FEDERAL AVIATION ADMINISTRAT	ION		
AIRCRAFT:	REVIS		D: 32 PAGE NO:
BUEING 747	DATE 2 NU	: 04/12/	2005 <u>29-2</u>
SEQUENCE ITEM	2.1101	3. NU	MBER REQUIRED FOR DISPATCH
NUMBERS		0	4. REMARKS AND EXCEPTIONS
29 HYDRAULIC POWER			
1. Engine Driven Hydraulic Pump			 AC and DC busses may be isolated (and triple-channel approaches conducted) provided;
(Cont'd)			1) Generators 3 and 4, and TRs No. 3 and Essential operate normally, and 2) SB 29-2031 has been
			e) Failed pump is removed and an appropriate cover plate installed.
В	4	3	 (M) (O) One may be inoperative (including the pump and/or associated plumbing) provided: a) All ADP's operate normally, b) ADP for associated hydraulic system operates in CONTINUOUS for takeoff and landing, c) At least one air conditioning pack is OFF for takeoff, with airplane performance based upon the assumption that the pack is operating normally, d) DC bus remains paralleled at all times, and e) When the pump case does not leak, the pump is removed, the drive shaft is removed from the pump, lines capped, and the pump reinstalled, using an appropriate gasket.
			(Continuea)

U.S. DEPARTMENT OF TRANSPOR	U.S. DEPARTMENT OF TRANSPORTATION						
MASTER MINIMUM EQUIPMENT LIS							
AIRCRAFT:	IO: 32 PAGE NO:						
BOEING 747	DATE	: 04/12/	2/2005 29-3				
SYSTEM & 1.	2. NU	MBER I	INSTALLED				
SEQUENCE ITEM		3. NU	JMBER REQUIRED FOR DISPATCH				
NUMBER5			4. REMARKS AND EXCEPTIONS				
29 HYDRAULIC POWER							
1. Engine Driven Hydraulic Pump Systems (Cont'd)	4	3	 (M) (O) One may be inoperative (including the pump and/or associated plumbing) provided: a) All ADP's operate normally, b) ADP for associated hydraulic system operates in CONTINUOUS for takeoff and landing, c) At least one air conditioning pack is OFF for takeoff, with airplane performance based upon the assumption that the pack is operating normally, d) AC and DC busses may be isolated (and triple-channel approaches conducted) provided: Generators 3 and 4, and TRs No. 3 and Essential operate normally, and SB 29-2031 has been incorporated, and e) When the pump case does not leak, the pump is removed, the drive shaft is removed from the pump, lines capped, and the pump reinstalled, using an appropriate gasket. 				

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			MASTER MINIMUM EQUIPMENT LIST				
FEDERAL AVIATION ADMINISTRATION							
AIRCRAFT:	REVIS	SION NO	O: 32 PAGE NO:				
BUEING 747			/2005 29-4				
	2. NU						
NUMBERS		3. NUI					
29 HYDRAULIC POWER							
1. Engine Driven Hydraulic Pump Systems (Cont'd)	4	3	 (M) (O) One may be inoperative (including the pump and/or associated plumping) provided: a) All ADP's operate normally, b) ADP for associated hydraulic system operates in CONTINUOUS for takeoff and landing, c) At least one air conditioning pack is OFF for takeoff, with airplane performance based upon the assumption that the pack is operating normally, d) DC bus remains paralleled at all times, and e) If the pump has not failed but an engine driven hydraulic pump shutoff valve is inoperative closed, the associated pump is removed, and an acceptable cover plate is installed. 				

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MASTER MINIMUM EQUIPMENT LIS						
AIRCRAFT:	IO: 32 PAGE NO:					
BOEING 747	DATE	: 04/12/	2/2005 29-5			
SYSTEM & 1.	2. NU	MBER I	INSTALLED			
SEQUENCE ITEM		3. NU	JMBER REQUIRED FOR DISPATCH			
NUMBERS			4. REMARKS AND EXCEPTIONS			
29 HYDRAULIC POWER						
1. Engine Driven Hydraulic Pump Systems (Cont'd)	4	3	 (M) (O) One may be inoperative (including the pump and/or associated plumbing) provided: a) All ADP's operate normally, b) ADP for associated hydraulic system operates in CONTINUOUS for takeoff and landing, c) At least one air conditioning pack is OFF for takeoff, with airplane performance based upon the assumption that the pack is operating normally, d) AC and DC busses may be isolated (and triple-channel approaches conducted) provided: Generators 3 and 4, and TRs No. 3 and Essential operate normally, and SB 29-2031 has been incorporated, and e) If the pump has not failed but an engine driven hydraulic pump shutoff valve is inoperative closed, the associated pump is removed, and an acceptable cover plate is installed. (Continued) 			

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MASTER MINIMUM EQUIPMENT LIST						
AIRCRAFT:	REVIS		IO: 32 PAGE NO:			
BOEING 747	DATE	: 04/12/	/2005 29-6			
SYSTEM & 1.	2. NUI	MBER I	INSTALLED			
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS			4. REMARKS AND EXCEPTIONS			
29 HYDRAULIC POWER						
1. Engine Driven B Hydraulic Pump Systems (Cont'd)	4	3	 (O) One may be inoperative (including the pump and/or associated plumping) provided: a) All ADP's operate normally, b) ADP for associated hydraulic system operates in CONTINUOUS for takeoff and landing, c) At least one air conditioning pack is OFF for takeoff, with airplane performance based upon the assumption that the pack is operating normally, d) DC bus remains paralleled at all times, and e) An installed pump is inoperative in the depressurized mode with the fluid supply, pump case return and associated plumbing functioning normally. (Continued) 			

U.S. DEPARTMENT OF TRANSPORTATION							
MASTER MINIMUM EQUIPMENT LIS							
AIRCRAFT:		REVIS	SION N	O: 32 PAGE NO:			
BOEING 747		DATE	: 04/12/	/2005 29-7			
SYSTEM &	1.	2. NUI	MBER I	INSTALLED			
SEQUENCE ITEM			3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS				4. REMARKS AND EXCEPTIONS			
29 HYDRAULIC POWER							
1. Engine Driven Hydraulic Pump Systems (Cont'd)	В	4	3	 (O) One may be inoperative (including pump and/or associated plumbing) provided: a) All ADP's operate normally, b) ADP for associated hydraulic system operates in CONTINUOUS for takeoff and landing, c) At least one air conditioning pack is OFF for takeoff, with airplane performance based upon the assumption that the pack is operating normally, d) AC and DC busses may be isolated (and triple-channel approaches conducted) provided: Generators 3 and 4, and TRs No. 3 and Essential operate normally, and SB 29-2031 has been incorporated, and e) An installed pump is inoperative in the depressurized mode with the fluid supply, pump case return and associated plumbing functioning normally. 			
1) Depressurization Function	С	4	0				
U.S. DEPARTMENT OF TRANSPORTATION							
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FEDERAL AVIATION ADMINISTRATION							
AIRCRAFT:			REVISION NO: 32 PAGE NO:				
SYSTEM &	1.	2. NU	. 04/12/ MBER	INSTALLED			
SEQUENCE ITEM			3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS				4. REMARKS AND EXCEPTIONS			
29 HYDRAULIC POWER							
2. Air Driven Pumps (ADP)	С	4	3	(M) Either No. 2 or No. 3 pump (including the pump and/or associated plumbing) may be inoperative provided the pump is deactivated.			
	С	4	3	 (M) (O) Either No. 1 or No. 4 pump (including the pump and/or associated plumbing) may be inoperative provided: a) Pump is deactivated, b) Takeoff performance is in accordance with the AFM appendix for landing gear extended, c) Takeoff obstacle clearance is dependent upon flaps remaining in the takeoff position, d) For operation at JT9D-7F Wet, JT9D-7J or CF6-45/45A thrust ratings, takeoff performance is based upon Vmcg increase of 5 KIAS, and e) For CF6-50/-50E/-50E-1/-50E-2/ -80C2 and JT9D-70A/-7Q/-7R4G2 and RB211-524B2/C2/D4 or D4X thrust ratings, takeoff performance is based upon Vmcg increase of 9 KIAS. 			
 AC Hydraulic Pump Systems 	С	-	0	(M) (O) May be inoperative (including the pump and/or associated plumping) provided pump and/or associated plumbing is deactivated.			
	С	-	0	(M) (O) Pump(s) may be inoperative provided pump switch(es) remains OFF.			

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AIRCRAFT:		REVIS	REVISION NO: 32 PAGE NO:				
BUEING 747	1		: 04/12/	2005 29-9			
SFOLIENCE ITEM	١.	2. NU		MBER REQUIRED FOR DISPATCH			
NUMBERS			5. NO	4. REMARKS AND EXCEPTIONS			
29 HYDRAULIC POWER							
4. ADP Auto Controls	С	2	0	(O) No. 2 and/or No. 3 may be inoperative provided OFF position operates normally.			
	С	2	0	 (O) No. 1 and/or No. 4 may be inoperative provided: a) Associated pump operates continuously during takeoff and landing, b) One air conditioning pack remains OFF for takeoff and landing, with performance based on the assumption that the pack is operating, and c) OFF position operates normally. 			
	С	4	3	One may be inoperative provided associated ADP is inoperative.			
5. ADP Continuous Run Controls	С	4	2	 Two may be inoperative provided: a) AUTO and OFF functions of associated ADP operate normally, and b) Associated EDP operates normally. 			
	С	4	3	One may be inoperative provided associated ADP is inoperative.			
*** 1) Flaps Actuated Control for ADPs 2, 3, and 4	С	3	0				

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FEDERAL AVIA	TION ADMINISTR	ATION			
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SYSTEM &	<u>ING 747</u> 1	2 NI	:: 04/12/ IMBER	NSTALLED	29-10
SEQUENCE	ITEM	2.110	3. NU	MBER REQUIRED FC	R DISPATCH
NUMBERS				4. REMARKS AND E	XCEPTIONS
29 HYDRAULI	C POWER				
6. ADP Run Li	ghts C	4	3	One may be inoperat associated system pr operates normally.	ive provided essure indicator
	C	4	0	May be inoperative p a) Associated sys indicator opera b) Associated AD pressure lights	rovided: stem pressure ates normally, and DP and EDP low s operate normally.
	С	4	3	One may be inoperat associated ADP is inc	ive provided operative.
7. Pump Low I Lights	⊃ressure C	8	4	 (M)(O) Four may be in provided: a) Associated systindicators ope b) Associated AE normally, c) No two lights a hydraulic system d) Normal operate pump is verified and e) For all airplane auto spoilers, hydraulic system associated hydraulic system associate	noperative stem pressure rate normally, DP run light operates are in the same em, ion of associated ed before departure, es equipped with if light(s) are in em 1 or 4, and the draulic system fails in flight, verify dbrake c/b is

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	BOEING 747		DATE	: 04/12/	2005 29-11		
SYS	STEM &	1.	2. NUI	MBER I	NSTALLED		
SEC	QUENCE ITEM			3. NU	MBER REQUIRED FOR DISPATCH		
NUI	MBERS				4. REMARKS AND EXCEPTIONS		
29	HYDRAULIC POWER						
8.	Hydraulic System Low Pressure Lights (Pilots' Panel)	С	4	2	(O) Two may be inoperative provided, for all airplanes equipped with auto spoilers, if light(s) are in hydraulic system 1 or 4, and the associated hydraulic system subsequently fails, verify that auto speedbrake c/b is opened.		
		С	4	0	 (O) May be inoperative provided; a) Associated ADP and EDP pressure lights on the flight engineer's panel operate normally, and b) For all airplanes equipped with auto spoilers, if lights are in hydraulic system 1 or 4, and the associated hydraulic system subsequently fails, verify that auto speedbrake c/b is opened. 		
9.	System Pressure Indicators	С	4	3	One indicator may be inoperative provided associated low pressure warning lights operate normally.		
10.	Systems Overheat Lights and / or Temperature Indicator	С	4	0			
***	1) Temperature Indicator	D	4	0			

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SEQUENCE ITEM	1.	2.110	3. NU	MBER REQUIRED FOR DISPATCH		
NUMBERS				4. REMARKS AND EXCEPTIONS		
		ļ				
29 HYDRAULIC POWER						
11. Flight Deck Hydraulic Brake Pressure Indicator	С	1	0	 (M) (O) May be inoperative provided: a) Hydraulic system 1 and 4 pressure indicators operate normally, b) Pilot's Brake Source Low Pressure Light is checked before each departure, and c) Brake accumulator air charge is normal (checked on wheel well indicator). 		
12. Brake Source Low Pressure Hydraulic Light (F/E Panel)	С	1	0	 (M) (O) May be inoperative provided: a) Systems 1 and 4 pressure indicators operate normally, and b) Pilot's Brake Source Low Pressure Light is checked before each departure. 		
13. Brake Accumulator(s)	A	-	0	 (M) (O) May be inoperative provided: a) Before each departure, brake pressure can be maintained at a minimum of 2,500 PSI for at least five minutes after pressure source is removed, b) Required AFM takeoff distance and landing field length is increased by 230 feet, and c) Repairs are made within 25 flight hours. 		
14. Brake Accumulator Pressure Indicator (In Wheel Well)	D	1	0	May be inoperative provided associated flight deck indicator operates normally.		

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AIRCRAFT:	10.11	REVIS		D: 32 PAGE NO:				
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SYSTEM &	1.	2. NU	MBER I	NSTALLED				
SEQUENCE ITEM			3. NUI	MBER REQUIRED FOR DISPATCH				
NUMBERS				4. REMARKS AND EXCEPTIONS				
29 HYDRAULIC POWER								
15. Hydraulic Quantity Indicators (F/E Panel)	С	4	2	 (M) Two may be inoperative provided: a) Associated system pressure indicator and pump low pressure lights operate normally, and b) Reservoir level is checked before each departure. 				
16. Hydraulic Low Quantity Lights (F/E Panel)	С	4	2					
17. Reservoir Servicing Indicator	D	1	0					
 Reservoir Low *** Pressure Lights 	D	4	0					

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BOEING 747		DATE	: 04/12/	2005 30-1	
SYSTEM &	1.	2. NUI	MBER I		
NUMBERS			3. NU	MBER REQUIRED FOR DISPATCH	
30 ICE AND RAIN PROTECTION					
1. Nacelle Anti-Ice Valves					
1) JT9D Engines	С	4	3	(M) (O) One may be inoperative closed provided the airplane is not operated in known or forecast icing conditions.	
	С	4	3	 (M) (O) One may be inoperative in the intermediate open position provided: a) Associated NAC TAI VALVE light is deactivated, b) Maximum ambient temperature at takeoff and landing fields is 90 degrees F (32 degrees C), c) On the four engines, no more than two different EPR settings may be used for takeoff, d) Associated high stage bleed valve and light operate normally, and e) On the remaining three engines, all nacelle anti-ice valves operate normally. NOTE: When operating in icing conditions between 16,000 ft. MSL and FL 230, maintain a minimum of 60% N1 on the associated engine. (Continued) 	

U.S. DEPARTMENT OF TRANSPOR	ΤΑΤΙΟΝ	١	MASTE	-R MINIMI		MENTLIST
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BOEING 747	DATE	: 04/12/	2005	_	3	30-2
SYSTEM & 1.	2. NUI	MBER I	NSTALLEL			FOLL
		3. NUI				
NOMBERS			4. REMAI	RKS AND I		NS
30 ICE AND RAIN						
PROTECTION						
 Nacelle Anti-Ice Valves (Cont'd) 						
(001112)						
1) JT9D Engines			f) EP	R limits an	d performa	ince
(Cont'd)			lim	ited gross v	weights are	e reduced
			as	follows:		
			Above	50 degree	s⊢(10 de(grees C):
			(valu	ies in brack	tets are in	Kg)
			T/O W/t	T/O &	Appr	Enrt
			Field	Final	Landing	Climb
			Length	Climb	Climb	All
			Limit			Temp
			EPR	EPR	EPR	EPR
$2^{2}/7$ $7^{2}/7$			6.000	17,000	12 000	24.000
-71 Engines			0,000 lb	17,000 lb	15,000 lb	34,000 lb
			(2.722)	(7711)	(5 897)	(15422)
			.02	.02	.02	.02
b) -70A Engines			10,000	34,000	21,000	52,000
			lb	lb	lb	lb
			(4,536)	(15,422)	(9,526)	(23,587)
			.03	.03	.03	.03
c) -70 Engines			10.000	34,000	21,000	52 000
			10,000 lh]h	21,000 lh	1b
			(4,536)	(15,422)	(9,526)	(23,587)
			.02	.02	.02	.03
				•		
				N		
			(Contin	ued)		

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			MASTE	ER MINIMU	JM EQUIPI	MENT LIST
FEDERAL AVIATION ADMINISTRAT			γ			0.
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SYSTEM & 1		MRFR I	<u>NSTALLER</u>)		0-0
SEQUENCE ITEM	2.1101	3. NU	MBER REC	UIRED F	OR DISPA	ТСН
NUMBERS		0.110	4. REMA		EXCEPTIC	NS
30 ICE AND RAIN	ĺ	ĺ				
PROTECTION						
1. Nacelle Anti-Ice Valves						
(Cont'd)						
1) ITOD Engines						
(Cont'd)			Above 5	0 dearees	F (10 deau	rees C.).
(contra)			(Value	s in brack	ets are in k	a)
			(Value			9)
			T/O Wt	T/O &	Appr.	Enrt
			Field	Final	Landing	Climb
			Length	Climb	Climb	All
			Limit			Temp
			EPR	EPR	EPR	EPR
c) -74/-7E/-71			4 000	11,000	8 000	22.000
Engines			4,000 lb	11,000 lb	0,000 lh	22,000 lb
(747SP)			(1.814)	(4,990)	(3.629)	(9.979)
			.02	.02	.02	.02
e) -7R4G2 Engines			4,000	22,000	8,000	32,000
			lb	lb	lb	lb
			(1,814)	(9,979)	(3,629)	(14,515)
			.03	.03	.03	.03
			At or belov	v 50 degre	es F (10 de	egrees C):
			No popole	for Takes	off \N/aiabe	Field
			Longth T	y for Taket	Final Clim	riela h
			Annroach	and Landi	ng Climh li	o, mits
			/ pprodoin			
2) CF6 Engines C	4	3	(M) (O) O	ne may be	inoperative	e closed
, 0			provided t	he airplane	e is not ope	erated in
			known or	forecast ici	ing conditio	ons.
			(_	
3) RB211 Engines C	4	3	(M) (O) O	ne may be	inoperative	e closed
			provided t	he airplane	e is not ope	erated in
			KNOWN OF	IUTECAST IC	ing conditio	JIIS.
			(Con	tinued)		

U.S. DEPARTMENT OF TRANSPOR		N	MASTER MINIMUM EQUIPMEI	NT LIST	
FEDERAL AVIATION ADMINISTRATION					
AIRCRAFT:			D: 32 PAGE NO:		
SYSTEM & 1	2 NU	: 04/12/ MBFR I	2005 <u>30-4</u> NSTALLED	•	
SEQUENCE ITEM	2.110	3. NU	MBER REQUIRED FOR DISPATCH	1	
NUMBERS			4. REMARKS AND EXCEPTIONS		
]				
30 ICE AND RAIN					
1. Nacelle Anti-Ice Valves					
(Cont'd)					
3) RB211 Engines C	4	3	(M) (O) One may be inoperative in	the	
(Cont'd)			open position provided:		
			a) Associated NAC TAI VALVE	= light	
			b) Maximum ambient temperat	ture at	
			takeoff and landing fields is	90	
			degrees F (32 degrees C),	al a in	
			shutoff valve is secured close	a air sed.	
			d) Cowl pressure relief valve	,	
			operates normally,		
			e) EPR limits and performance limited gross weights are re-) duced	
			as follows:	aaooa	
			Above FO degreese F (10 degreese		
			Above 50 degrees F (10 degrees	s C).	
			Takeoff and 12,000 I	b	
			Landing limit (5,444 kg	g)	
			EPR .02		
			All Temperatures 10.000	b	
			Enroute limit (4,536 kg	g)	
			EPR .01		
			At or below 50 degrees F (10 degre	es C):	
			No penalty.		
			(Continued)		

U.S. DEPARTMENT OF TRANSPORTATION						
			MASTER MINIMU	M EQUIPMENT LIST		
FEDERAL AVIATION ADMINISTRAT	FEDERAL AVIATION ADMINISTRATION					
AIRCRAFT:	REVISION NO: 32 PAGE NO:			PAGE NO:		
BOEING 747	DATE	: 04/12/	2005	30-5		
SYSTEM & 1.	2. NUI	MBER I	NSTALLED			
SEQUENCE ITEM		3. NU	MBER REQUIRED FO	R DISPATCH		
NUMBERS			4. REMARKS AND E	XCEPTIONS		
30 ICE AND RAIN						
PROTECTION						
1. Nacelle Anti-Ice Valves						
(Cont'd)						
			f) On the former			
3) RB211 Engines			t) On the four en	gines no more than		
(Cont d)			two EPR settin	igs are to be used		
			IOF takeon, and) a in ioina conditiona		
			g) when operatin			
			maintain minin	tod opging		
				leu engine.		
				I on the associated		
				norativo a		
			minimum of 8	SO% N3 will		
			provide equiv	alent protection		
			provido oquit			
2 NAC TALVALVE Lights						
(F/F Panel)						
1) JT9D Engines C	4	3	(M) (O) One may be i	noperative with		
	•	Ũ	associated valve clos	ed provided		
			airplane is not operat	ed in known or		
			forecast icing condition	ons.		
			L Č			
			(Continued)			

U.S. DEPARTMENT OF TRANSPORTATION MASTER MINIMUM EQUIPMENT LIST					
FEDERAL AVIATION ADMINISTRATION					
AIRCRAFT:	REVIS	SION N	O: 32 PAGE NO:		
BUEING 747		:04/12/	2005 30-6 NSTALLED		
STOLENCE ITEM	2. NU				
NUMBERS		0.110	4. REMARKS AND EXCEPTIONS		
30 ICE AND RAIN					
PROTECTION					
2. NAC TAI VALVE Lights					
(F/E Panel)					
(Cont'd)					
	1	2	(\mathbf{M}) (O) One may be increasive with		
(Cont'd)	4	5	associated anti-ice valve remaining in the		
(00110)			intermediate open position provided:		
			a) Maximum ambient temperature at		
			takeoff and landing fields is 90		
			b) On the four engines, no more than		
			two different EPR settings may be		
			used for takeoff,		
			c) Associated high stage bleed valve		
			and light must operate normally,		
			d) On remaining three engines all		
			nacelle anti-ice valves operate		
			normally.		
			NOTE: When operating in icing		
			and FL 230 maintain a		
			minimum of 60% N1 EPR on		
			the associated engine.		
			e) EPR limits and performance		
			by:		
			(Continued)		

U.S. DEPARTMENT OF TRANSPOR	TATION	MASTE	R MINIMU	IM FQUIP	MENTLIST			
FEDERAL AVIATION ADMINISTRAT	FEDERAL AVIATION ADMINISTRATION							
AIRCRAFT:	REVISION	N NO: 32		PAGE N	Ю:			
BOEING 747	DATE: 04	/12/2005	_	3	30-7			
SYSTEM & 1.	2. NUMBE	ER INSTALLE)					
SEQUENCE ITEM	3.	NUMBER REC	QUIRED FO	DR DISPA	ТСН			
NUMBERS		4. REMA	RKS AND E	EXCEPTIC	DNS			
		l						
TROTEOHOR								
2. NAC TAI VALVE Lights								
(F/E Panel)								
(Cont'd)								
1) JT9D Engines		Above 5	60 degrees	F (10 deg	rees C):			
(Contrd)		(Value	es in bracke	ets are in k	(g)			
				Appr	Enrt			
		Field	T/U & Final	Appr.	Climb			
		Length	Climb	Climb				
		Limit	Cinno	Olimb	Temp			
		EPR	EPR	EPR	EPR			
a) -3A/-7, -7A/-7F,		6,000	17,000	13,000	34,000			
-7J Engines			lb (7.744)	lb (5.007)	lb (15,422)			
		(2,722)	(7,711)	(5,897)	(15,422)			
		.02	.02	.02	.02			
b) -704 Engines		10,000	34 000	21 000	52 000			
b) rort Engines		lb	lb	21,000 lb	lb			
		(4,536)	(15,422)	(9,526)	(23,587)			
		.03	.03	.03	.03			
c) -7Q Engines		10,000	34,000	21,000	52,000			
		lb	lb	<u>lb</u>	lb			
		(4,536)	(15,422)	(9,526)	(23,587)			
		.02	.02	.02	.03			
		4 000	11.000	0.000				
a) -/A/-/F/-/J		4,000 Ih	11,000 Ih	8,000 Ih	22,000 Ih			
		(1 814)	(4,990)	(3.629)	(9,979)			
(1410F)		.02	.02	.02	.02			
		L	·		·I			
			· · ·					
		(Cont	inued)					

U.S. DEPARTMENT OF TRANSPORTATION							
FEDERAL AVIATION ADMINISTRATION							
AIRCRAFT:	REVIS		D: 32 PAGE NO:			IO:	
BOEING 747		: 04/12/	2005 NGTALLER	<u> </u>		30-8	
STOLENCE ITEM	2. NU					тен	
NUMBERS		0.1101	4 REMAR) NS	
30 ICE AND RAIN PROTECTION							
2. NAC TAI VALVE Lights (F/E Panel) (Cont'd)							
1) JT9D Engines (Cont'd)							
e) -7R4G2 Engines			T/O Wt Field Length Limit EPR 4,000 lb (1,814) .03	T/O & Final Climb EPR 22,000 Ib (9,979) .03	Appr. Lndg Climb EPR 8,000 lb (3,629) .03	Enrt Climb All Temp EPR 32,000 Ib (14,515) .03	
2) CF6 Engines C	4	3	At or below No penalty Length, Ta Approach (M)(O) On associated airplane is forecast ic	v 50 degree y for Takec akeoff and and Landii he may be i d valve clos s not opera cing conditi	es F (10 de off Weight Final Clim ng Climb li noperative sed provid ted in know ons.	egrees C): Field b, mits. e with ed wn or	

U.S. DEPARTMENT OF TRANSP	POR	TATION	1	
	- • -			MASTER MINIMUM EQUIPMENT LIST
	KAI			
BOEING 747			0.010 100 100 100 100 100 100 100 100 100	2005 FAGE NO.
SYSTEM &	1	2 NUI	MBFR I	NSTALLED
SEQUENCE ITEM		2.1101	3. NU	MBER REQUIRED FOR DISPATCH
NUMBERS				4. REMARKS AND EXCEPTIONS
30 ICE AND RAIN				
PROTECTION				
2. Otatan Anti Ian Makuna	D	4	0	
3. Statof Anti-ice valves	U	4	0	
1) JT9D Engines	C	4	3	$(M)(\Omega)$ One may be inoperative open
	0	•	0	provided:
				a) On four engines, no more than
				two EPR settings may be used for
				takeoff,
				b) Nacelle anti-ice valve on
				associated engine operates
				c) On remaining engines all nacelle
				anti-ice valves operate normally,
				and
				 d) EPR limits and performance
				limited gross weights are reduced
				as follows:
				Above 50 degrees $F(10 \text{ degrees } C)$:
				Above 50 degrees 1 (10 degrees 0).
				(Values in brackets are in kg)
				T/O Wt T/O & Appr. Enrt
				Field Final Lndg Climb
				Length Climb Climb All
a) -3A/-7, -7A/-7F,				12,000 34,000 25,000 52,000
-7J Engines				lb lb lb lb
				(5,443) (15,422) (11,340) (23,587)
				See See See See Note Note
b) -70A Engines				16,000 59,000 35,000 92,000
				lb lb lb lb
				(7,258) $(26,762)$ $(15,876)$ $(41,731)$
				<u> </u>
				(Continued)

U.S. DEPARTMENT OF TRANSPOR	TATION	١	MAGTE				
FEDERAL AVIATION ADMINISTRATION							
AIRCRAFT:	REVIS	SION NO	D: 32		PAGE N	0:	
BOEING 747	DATE	: 04/12/	2005	-	3	0-10	
SYSTEM & 1.	2. NUI	MBER I	NSTALLE)			
SEQUENCE ITEM		3. NUI	MBER REC		OR DISPA	ТСН	
NUMBERS			4. REMA	RKS AND	EXCEPTIC	DNS	
]						
FROTECTION							
3. Stator Anti-Ice Valves							
*** (Cont'd)			Above 5	50 degrees	F (10 deg	rees C):	
				-			
1) JT9D Engines (Cont'd)			(Valu	es in brack	ets are in	kg)	
(Cont d)			T/O W/t	T/O &	Appr	Enrt	
			Field	Final	Inda	Climb	
			Length	Climb	Climb	All	
			Climb	•	•	Temp	
			EPR	EPR	EPR	EPR	
			40.000	50.000	05 000	00.000	
c) -7Q Engines			16,000 lb	59,000 lb	35,000 lh	92,000 lb	
			(7,258)	(26,762)	(15,876)	(41,731)	
			.06	.06	.06	.06	
e) -7A/-7F/-7J			9,000	29,000	19,000	43,000	
Engines			lb	lb	lb	lb	
(747SP)			(4,082)	(13,154)	(8,618)	(19,505)	
			.04	.04	.04	.04	
f) -7R4G2 Engines			15,000	36,000	30.000	50.000	
(With Stator			lb	lb	lb	lb	
Valves)			(6,804)	(16,330)	(13,608)	(22,680)	
			.06	.05	.06	.05	
			NOTE: -3	A03 / 7 / 7 / 7	=PR.	- חח	
			-7/	/-/A/-/F/-/	J04 l	=PK	
			At or belov	v 50 degre	es F (10 de	egrees C):	
			No penalt	v for Takor	off Weight	Field	
			Length T	akeoff and	Final Clim	b.	
			Approach	and Landi	ng Climb li	mits.	
					0		

U.S. DEPARTMENT OF TRANSPORTATION							
FEDERAL AVIATION ADMINISTRATION							
AIRCRAFT:		REVISION NO: 32 PAGE NO:					
SYSTEM &	1	2 NU	: 04/12/ MBER I	2005 NSTALLED	30-11		
SEQUENCE ITEM	••	2.1101	3. NU	MBER REQUIRED FO	R DISPATCH		
NUMBERS				4. REMARKS AND E	XCEPTIONS		
30 ICE AND RAIN							
PROTECTION							
4. Anti-Ice NACELLE							
VALVE OPEN Lights							
1) ITOD Engines	C	_	0	(M) May be inconcrativ	e provided pormal		
(Including STATOR	C	-	0	valve operation is ver	ified before		
VALVE OPEN Lights)				operating in known or	r forecast icing		
				conditions.			
	C			May be incorporative by	rovided acception		
	C	-	-	anti-ice valve is inope	erative.		
2) CF6 Engines	С	4	0	(M) May be inoperativ	ve provided normal		
				valve operation is ver	ified before		
				conditions.	Torecast icing		
	С	4	3	May be inoperative p	rovided associated		
				anti-ice valve is inope	erative.		
3) BB211 Engines	C	4	0	(M) May be inoperativ	e provided pormal		
	Ũ		Ŭ	valve operation is ver	ified before		
				operating in known or	r forecast icing		
				conditions.			
	C	4	3	May be inonerative by	rovided associated		
	U	-	0	anti-ice valve is inope	erative.		
5. Pitot-Static Probe	В	4	3	(M) (O) Heater eleme	nts in one probe		
Heater System				may be inoperative pi	rovided the airplane		
				known or forecast icir	ng conditions.		
					-		
				NOTE: For probe he	at to be considered		
				in that probe	in neater elements		
				normally.			
				,			

U.S. DEPARTMENT OF TRANSPORTATION							
FEDERAL AVIATION ADMINISTRATION							
AIRCRAFT:	O: 32 PAGE NO:						
BOEING 747	DATE	: 04/12/	2005 30-12				
SYSTEM & 1.	2. NU	MBER I	NSTALLED				
		3. NU					
NUMBERS			4. REMARKS AND EXCEPTIONS				
30 ICE AND RAIN PROTECTION							
6. Temperature Probe C Heaters	2	1					
 Probe Heater Ammeter C or Light Indication Systems (Pilots' Overhead Panel) 	2	1	(M) One may be inoperative provided associated heaters are verified to be operating normally before departure.				
С	2	1	One may be inoperative provided associated heater is inoperative.				
8. Wing Anti-Ice Valves C	2	0	(M) May be inoperative closed provided flight is not operated in known or forecast icing conditions.				
9. Wing Anti-Ice Valve C Intransit Lights	2	0	(M) May be inoperative provided normal valve operation is verified before departure if flight is to be operated in known or forecast icing conditions.				
10. Wing Anti-Ice Overheat C Protection System	1	0					
			NOTE: Placing Wing Anti-Ice Switch in GRD TEST position (when on the ground) for more than a brief time may cause wing overheat.				

U.S. DEPARTMENT OF TRANSPORTATION MASTER MINIMUM FOUIPMENT LIST							
FEDERAL AVIATION ADMINISTRATION							
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BUEING /4/		: 04/12/	2005 <u>30-13</u>				
SFOUENCE ITEM	2. NU		MBER REQUIRED FOR DISPATCH				
NUMBERS		0.110	4. REMARKS AND EXCEPTIONS				
30 ICE AND RAIN							
PROTECTION							
11. Flight Deck Window							
Heating Systems							
1) No. 1 Windows C	2	1	(O) One may be inoperative provided:				
(EXCEPT SIERRAUIN			a) AFM limitations are applied, and b) Both No 2 window bostors operate				
outer thin class			normally.				
pane)							
a) Window Heating C	2	0	May be inoperative open provided				
Time Delay Relay			a) Placed in OVRD during ground				
			operations, and				
			b) Placed in ON during flight				
			operations.				
	2	1	(\mathbf{M}) (O) One may be inonerative				
Windows (with 0.050"	2	'	provided:				
outer thin glass pane)			a) Both No.2 window heaters operate				
			normally,				
			b) Entire outer glass layer is				
			c) Visibility through associated				
			window is acceptable to the				
			captain, and				
			d) AFM limitations are applied.				
a) Window Heating	2	0	May be inconcrative onen provided				
Time Delay Relay	2	0	associated window heat switch is:				
			a) Placed in OVRD during ground				
			operations, and				
			b) Placed in ON during flight				
			operations.				
			(Continued)				

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FEDERAL AVIATION ADMINISTRATION								
AIRCRAFT:	REVIS	REVISION NO: 32 PAGE NO:						
BOEING 747		:04/12/ MRED I	2005 30-14					
SEQUENCE ITEM	2. NO	3. NU	MBER REQUIRED FOR DISPATCH					
NUMBERS			4. REMARKS AND EXCEPTIONS					
30 ICE AND RAIN								
PROTECTION								
11. Flight Deck Window								
Heating Systems								
(Cont d)								
3) No. 2 Windows C	2	1	(O) One may be inoperative provided:					
			a) AFM limitations are applied, and					
			b) Both No. 1 window heaters					
			operate normally.					
4) No. 3 Windows C	2	0	(M) May be inoperative provided No. 3					
			Window Heat circuit is deactivated.					
12 No. 1 Window Hoot	2	0						
*** OVERRIDE Function	2	0						
13. Window Heat POWER								
Lights								
1) No. 1 and/or No. 2 C	4	0	(M) May be inoperative provided window					
Windows			heat operates normally before each					
			departure.					
C	4	3	One may be inoperative provided					
- C	-		associated No. 1 or No. 2 window					
			heater is inoperative.					
	0							
2) No. 3 Windows C	2	0	(IVI) May be inoperative provided window beat operates normally before each					
			departure.					
С	2	0	May be inoperative provided associated					
			No. 5 window neater is inoperative.					
14. Window Heat OVHT C	1	0						
Test Feature								

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AIRCRAFT:	-	REVIS	SION NO	D: 32 PAGE NO:			
BOEING 747		DATE	: 04/12/	2005 30-15			
SYSTEM &	1.	2. NUI	MBER I	NSTALLED			
SEQUENCE ITEM			3. NUI	MBER REQUIRED FOR DISPATCH			
NUMBERS				4. REMARKS AND EXCEPTIONS			
30 ICE AND RAIN PROTECTION		1					
15. Rain Repellent Systems	D	2	0				
16. Windshield Wipers	С	2	0	May be inoperative provided airplane is not operated in precipitation within 5 statute miles of the airport of departure or intended landing.			
1) High Speed	С	2	1	 One may be inoperative provided: a) Associated low speed function operates normally, and b) Approach minimums do not require its use. 			
	С	2	0	 May be inoperative provided: a) Associated low speed function(s) operate(s) normally, b) Approach minimums do not require its use, and c) Airplane is not operated in known or forecast precipitation of moderate or greater intensity within 5 statute miles of the airport of departure or intended landing. 			
2) Low Speed	С	2	0	May be inoperative provided the associated high speed function(s) operate(s) normally.			

U.S. DEPARTMENT OF TRANSPORTATION							
MASTER MINIMUM EQUIPMENT LIST							
AIRCRAFT:	RAFT: REVISION NO: 32 PAGE NO:						
BOEING 747		DATE	: 04/12/	2005	30-16		
SYSTEM &	1.	2. NUI	MBER I	NSTALLED			
			3. NU		R DISPATCH		
NUMBERS				4. REMARKS AND E	XCEPTIONS		
30 ICE AND RAIN PROTECTION							
17. Windshield Washer Systems	С	1	0				
18. Windshield Air (Defog) System	С	2	0	(M) May be inoperative defogging valve(s) is position.	ve provided secured in defog		
 Pitot Heat Indicating "Probe Heat" System (Pilots' Center Panel) 	С	-	0	 (M) May be inoperative a) Probe heater list system (pilots' operates norm b) Pitot-static proverified to operate 	ve provided: ight indication overhead panel) ally, and be heater system is rate normally.		
	С	-	0	May be inoperative ponot operated in known conditions.	rovided airplane is n or forecast icing		
20. Low N1 Light				Moved to ATA 77-14,	Rev. 26.		

U.S. DEPARTMENT OF TRANSPORTATION							
FEDERAL AVIATION ADMINISTRATION							
AIRCRAFT:		REVIS	REVISION NO: 32 PAGE NO:				
BUEING 747	1	DATE 2 NU	:04/12/	2005 30-17 NSTALLED			
SEQUENCE ITEM	1.	2. 1101	3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS				4. REMARKS AND EXCEPTIONS			
		ļ					
30 ICE AND RAIN							
PROTECTION							
21. Waste Water Drain Heater System(s)	С	-	0	 (M) May be inoperative provided: a) Water supply to associated lavatory, galley and service center basin(s) is secured off, and b) Associated lavatory, galley and service center basin(s) is not used. 			
	С	-	0	 (M) May be inoperative provided: a) Water supply to associated galley and service center basin(s) is secured off, b) Associated lavatory, galley and service center basin(s) is not used, c) Associated lavatory door is locked closed and placarded: INOPERATIVE – DO NOT ENTER, and d) Lavatory is used only by crewmembers. NOTE: These provisos are not intended to prohibit lavatory use or inspections by crewmembers. 			
22. PT2 Probe Heater *** Systems	С	4	3	 (M) (O) One may be inoperative provided: a) Associated Engine Pressure Ratio System is considered inoperative, b) Remaining PT2 probes operate normally, and c) Autothrottles are not used in icing conditions. (Continued) 			

U.S. DEPARTMENT OF TRAN	ISPOR	TATIO	١				
MASTER MINIMUM EQUIPMENT LIST							
AIRCRAFT:	011011	REVIS	SION N	0: 32	PAGE NO:		
BOEING 747		DATE	: 04/12/	/2005	30-18		
SYSTEM &	1.	2. NU	MBER I	NSTALLED			
SEQUENCE ITEM			3. NU	MBER REQUIRED FO	R DISPATCH		
NUMBERS				4. REMARKS AND E	XCEPTIONS		
30 ICE AND RAIN PROTECTION							
22. PT2 Probe Heater *** Systems (Cont'd)	С	4	2	(O) Two may be inope airplane is not operate forecast icing condition	erative provided ed in known or ons.		
23. Nacelle Anti-Ice COWL OVHT Lights (RB211 Engines)	С	4	3	 (O) One may be inoperative and th	erative provided: e control valve is sed position, and operated in known g conditions.		
	С	4	3	 (M) (O) One may be in acelle anti-ice used, a) Associated hig valve is secured b) Associated national valve operates c) A minimum of maintained whicing conditions d) Associated Conditions d)	noperative and provided: h stage bleed air ed closed, celle anti-ice control normally, 60% N1 RPM is en operating in s, and wI Overheat I is removed from stem Accessory M on the ngine is a minimum of provided rotection.		

U.S. DEPARTMENT OF TRANSPORTATION						
FE	DERAL AVIATION ADMINIS	TRAT	ION			
AIR	CRAFT:		REVIS		O: 35 PAGE NO:	
SV	BOEING 747	1	DATE 2 NU	: 04/25/ MBER I	2014 31-1 NSTALLED	
SE	QUENCE ITEM	1.	2.110	3. NU	MBER REQUIRED FOR DISPATCH	
NU	MBERS				4. REMARKS AND EXCEPTIONS	
<u> </u>			ļ			
31	INDICATING/ RECORDING SYSTEMS					
1.	Clock	С	-	1	May be inoperative provided at least one operates normally at either the pilot's or copilot's station.	
2.	Flight Data Recorder (FDR) System (Includes FDR function of Combined Voice and Flight Data Recorder (CVFDR)	С	-	-	Any in excess of those required by 14 CFR may be inoperative.	
		A		0	 May be inoperative provided: a) Cockpit Voice Recorder (CVR) operates normally, b) Airplane is not dispatched from a designated airport as listed in the operator's MEL unless: The FDR failure occurs after pushback but prior to takeoff, or The FDR repair was attempted but was not successful. c) In those cases where repair is attempted but not successful, the aircraft may be dispatched on a flight or series of flights until the next designated airport where repair must be accomplished prior to dispatch, and d) Repairs are made within three flight days. 	

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FEDERAL AVIATION ADMINISTR		N		MASTER MINIMUM EQUIPMENT LIST			
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BOEING 747	D/	DATE: 04/25/2014 31-2					
SYSTEM & 1.	. 2.	NUN		INSTALLED MBER REQUIRED FOR DISPATCH			
NUMBERS			J. NO	4. REMARKS AND EXCEPTIONS			
31 INDICATING/ RECORDING SYSTEMS							
 Flight Data Recorder (FDR) System (Includes FDR function of Combined Voice and Flight Data Recorder (CVFDR) (Cont'd) 							
1) FDR Recording A Parameters required by 14 CFR		-	-	Up to three (3) recording parameters may be inoperative provided: a) Cockpit Voice Recorder (CVR) operates normally, and b) Repairs are made within 20 calendar days.			
2) FDR Recording A Parameters not required by 14 CFR		-	-	May be inoperative provided repairs are made prior to the completion of the next heavy maintenance visit.			
3. Weight and Balance D *** Indicator System	,	1	0				
4. AIDS/ACMS D *** Maintenance Recorder System	1	1	0	May be inoperative provided alternate procedures are established and used.			
D		1	0	May be inoperative provided Maintenance procedures do not require its use.			
1) Digital Flight Data D Management Unit		1	0	May be inoperative provided alternate procedures are established and used.			
Dividij		1	0	May be inoperative provided Maintenance procedures do not require its use.			
5. Quick Access Recorder D *** (QAR) System		1	0				

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BOEING 747	DATE	: 04/25/	/2014 31-3				
SYSTEM & 1.	2. NU	MBER I	INSTALLED				
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH				
NUMBERS			4. REMARKS AND EXCEPTIONS				
	_ 						
RECORDING SYSTEMS							
6. Multifunction Printer C	1	0	(O) May be inoperative provided				
System			and used.				
			NOTE: Any function that operates				
			normally may be used.				
D	1	0	May be inoperative provided procedures				
_	-		do not require its use.				
			NOTE: Any function that operates				
			normally may be used.				
7. Astronautics EFIS A	2	1	(O) One inboard Navigation Display may				
*** Navigation Displays			be inoperative provided:				
(STC ST01916NY)			a) All standby instruments operate				
			h) Operations are conducted in day				
			VMC only.				
			c) Operations are not conducted into				
			known or forecast over-the-top				
			conditions.				
			a) Alternate procedures are established and used and				
			e) Repairs are made within one flight				
			day.				

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BOEING 747	4		: 04/12/	2005 32-1 NSTALLED		
STOLENCE ITEM	١.	2. NUI				
NUMBERS			5. NO	A REMARKS AND EXCEPTIONS		
32 LANDING GEAR						
1. Anti-Skid System						
1) Normal Anti-Skid System	С	1	0	 (M) (O) May be inoperative provided: a) Thrust reversers operate normally, and b) Operations are conducted in compliance with AFM Anti-Skid Inoperative performance data. 		
a) Control Channels	С	16	14	 (M) (O) One or two control channels may be inoperative provided: a) Associated brakes are deactivated using the special brake disconnect tool, and b) Operations are conducted in compliance with AFM Two Brakes Deactivated performance data. 		
	С	16	14	 (M) (O) One or two control channels may be inoperative provided: a) Associated brakes are deactivated by capping off brake lines, b) Gear is left down for two minutes after takeoff to permit wheel(s) to stop turning, then retracted (due to lack of inflight braking), and c) Operations are conducted in compliance with AFM performance data for both Gear Down dispatch and Two Brakes Deactivated. (Continued) 		

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SYSTEM &	1 2	2 NUM	//12/ //BFR	2005 <u>32-2</u> NSTALLED			
SEQUENCE ITEM	. 2		3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS				4. REMARKS AND EXCEPTIONS			
32 LANDING GEAR							
 Anti-Skid System (Cont'd) 							
1) Normal Anti-Skid System (Cont'd)							
a) Control Channels ((Cont'd)	C	16	14	 (M) (O) One or two control channels may be inoperative provided: a) Associated brake(s) is not deactivated, b) Locked wheel protection is verified to be available, and c) Operations are conducted in compliance with AFM Anti-Skid Inoperative performance data. 			
2) Reserve Anti-Skid (System	C	1	0	(M) (O) May be inoperative provided manual braking capability on reserve brake system is verified on associated wheels.			
2. Anti-Skid System Lights (C	17	16	Light on forward panel may be inoperative provided each Normal Anti- Skid channel has a normally operating light on the flight engineer's panel.			
1) Normal Anti-Skid (Lights	С	17	0	May be inoperative provided Normal Anti-Skid system is inoperative.			
2) Reserve Valve Lights ((F/E Panel)	C	4	3	One may be inoperative, or ON continuously.			
	C	4	0	May be inoperative provided Reserve Anti-Skid system is inoperative.			

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eve	BOEING 747	1		: 04/12/	2005 32-3 NSTALLED		
SE		1.	2. NUI	3. NU			
NU	VBERS			0.110	4. REMARKS AND EXCEPTIONS		
32	LANDING GEAR						
3.	ANTI-SKID HYD Light	С	1	0	 (M) (O) May be inoperative provided: a) Parking brake valve is verified to operate normally before each departure, and b) Operations are conducted in compliance with AFM Anti-Skid Inoperative performance data and procedures (but with Anti-Skid switch ON). 		
4. ***	ANTI-SKID LANDING (GEAR) TILT INPUTS Light(s) or Test System	С	-	0	(O) May be inoperative provided Anti- Skid switch remains OFF for all operations below 30 knots.		
5.	Wheel Brakes	С	16	14	(M) (O) One or two brakes may be deactivated with the special brake disconnect tool provided operations are conducted in compliance with AFM Two Brakes Deactivated performance data.		
		С	16	14	 (M) (O) One or two brakes may be deactivated by capping off brake lines, or two brakes may be removed and the lines capped provided: a) Operations are in compliance with AFM performance data for both Gear Down dispatch and Two Brakes Deactivated, b) Gear is left down for two minutes after takeoff to permit wheel(s) to stop turning, then retracted (due to lack of inflight braking), and (Continued) 		

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BOEING 747	DATE	: 04/12/	2005 32-4					
SYSTEM & 1.	2. NU	MBER I	NSTALLED					
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH					
NUMBERS			4. REMARKS AND EXCEPTIONS					
32 LANDING GEAR								
5. Wheel Brakes (Cont'd)			 c) If brakes are removed to assure truck will tilt to the retract position, one forward and one aft brake on the same side must be removed to maintain a balanced truck (relocate brakes as situation requires), or, if the inoperative brake(s) is (are) on wheel(s) No. 2, 13, or 14, one brake only on the associated truck(s) may be removed, up to a total of two brakes. 					
6. Parking Brake			Deleted, Rev. 20.					
7. Parking Brake Valve B (Anti-Skid Return Line Valve)	1	0	 (M) (O) May be inoperative closed provided: a) Valve is verified fully closed before departure, b) Anti-Skid system is deactivated, and c) Operation is conducted in compliance with AFM procedures with Anti-Skid OFF. 					
8. Parking Brake Light C	1	0						
9. Reserve Brake Valve C OPEN Light	1	0	(M) May be inoperative provided normal valve operation is verified before departure.					

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AIRCRAFT:			REVISION NO: 32 PAGE NO:			
SYSTEM &	1.	2. NU	. 04/12/ MBER I	NSTALLED		
SEQUENCE ITEM			3. NU	MBER REQUIRED FOR DISPATCH		
NUMBERS				4. REMARKS AND EXCEPTIONS		
32 LANDING GEAR						
10. Wheel Brake *** Temperature Indication System	С	1	0	(O) May be inoperative provided AFM Maximum Quick Turnaround Weight limitations are observed.		
11. Gear DOWN Indication Systems (F/E Panel)	С	2	1	 (M) (O) One system (primary or alternate) may be inoperative provided: a) With a nose gear indication inoperative, access to the lower nose compartment is readily available, b) Each inoperative main gear indication has a normally operating primary and alternate DOOR OPEN indication, and c) GEAR DOWN and DOOR OPEN lights on pilots' panel operate normally. 		
	С	2	0	(M) (O) May be inoperative for Gear Down dispatch in accordance with the AFM.		
12. Gear DOOR OPEN Indication Systems (F/E Panel)	С	2	1	(M) (O) One system (primary or alternate) may be inoperative.		
 Gear TILT Indication Systems (F/E Panel) 	С	2	1	(M) (O) One system (primary or alternate) may be inoperative provided fuel jettison system operates normally.		
	С	2	1	(M) (O) One system (primary or alternate) may be inoperative provided fuel jettison system is considered inoperative.		

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FEDERAL AVIATION ADMINISTRATION							
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BOEING 747		: 04/12/		32-6			
SYSTEM & 1.	2. NU						
NUMBERS		3. NU	A REMARKS AND E	XCEPTIONS			
32 LANDING GEAR							
14. Body Gear Steering C Indication System With PRR 73919 or Service Bulletin 32-2052 Incorporated	1	0	 (M) May be inoperative a) Body gear steed verified locked b) Body gear steed c) Body gear steed connector (DX disconnected, d) Body gear steed integrity must leach takeoff. 	ve provided: ering actuators are ering is deactivated, ering display module 342) is and ering actuator be verified before			
1) Primary C UNLOCKED Indications	2	1	 (M) (O) One primary indication may be ino body gear steering sy provided: a) PRESS indicate normally, and b) All other UNLC operate normal 	UNLOCKED perative and the rstem used tion operates DCKED indications Ily.			
2) Alternate C UNLOCKED Indications	2	1	 (M) (O) One alternate indication may be ino body gear steering sy provided: a) PRESS indicat normally, and b) All other UNLC operate norma NOTE: On 747SP set 	e UNLOCKED perative and the rstem used tion operates OCKED indications Ily.			

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975		1	2 NU	DATE: 04/12/2005 32-7				
SEQ	UENCE ITEM	1.	2.110	3. NU	MBER REQUIRED FOR DISPATCH			
NUM	BERS			00	4. REMARKS AND EXCEPTIONS			
				ļ				
32 I	LANDING GEAR							
45		0						
15.1	System (GEAR, GEAR	C	1	0	alternate procedure is established and			
[DOWN, and DOOR				used.			
(OPEN Lights)							
16	anding Coor	۸	1	0	(M) (O) Mov be incorrective provided:			
	Landing Gear	A	I	0	a) Override mechanism operates			
-					normally, and			
					b) Repairs are made within seven			
					flight days.			
17. 1	Body Gear Steering	С	1	0	(M) (O) May be inoperative provided:			
	System				a) Body gear steering actuators are			
					verified locked, and			
					b) Body gear steering is deactivated.			
					NOTE: On 747SP see AFM limits.			
18. I	Rudder Pedal Nose	С	1	0	(M) (O) May be inoperative provided it			
\ \	Wheel Steering System				does not impair remaining systems on			
					airpiane.			
19. 3	Selector Valves	С	2	0	(M) May be inoperative in the normal			
*** (Alternate Hydraulic				position (position 1) provided:			
(Gear Selector System)				a) Associated motor-operated shutoff			
					valves(s) are verified in the closed			
					b) Circuit breaker is pulled and			
					collared.			
20 1	Motor-Operated Shutaff	C	2	0	(M) May be inconcrative in the closed			
×** \	Valves (Alternate	U			position (position 1) provided circuit			
1	Hydraulic Gear Selector				breaker is pulled and collared.			
	System)							

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FEDERAL AVIATION ADMINI	STRAT	ION					
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STATEM &	1.	2. NU					
NUMBERS			5. NO	4 REMARKS AND EX			
32 LANDING GEAR							
21. Main Gear Emergency *** Extension Air Bottles	С	2	0	Bottles may be dischar remaining functions of systems operate norm	rged provided gear extension ally.		
22. Body Gear Steering Switch (Overhead Panel)	С	1	0	May be inoperative pro GEAR STEERING AR breaker is pulled and o deactivate the Body G system.	ovided BODY M & IND circuit collared to ear Steering		
	С	1	0	May be inoperative for body gear steering sys	an inoperative stem.		
23. AUTOBRAKE System	С	1	0	(M) May be inoperative AUTOBRAKE light doe with the AUTOBRAKE the OFF position.	e provided the es not illuminate system switch in		
	С	1	0	(M) May be inoperative AUTOBRAKE light illu AUTOBRAKE system position provided the A system solenoid is ver	e and the minated with the switch in the OFF AUTOBRAKE ified CLOSED.		
	С	1	0	(M) May be inoperative AUTOBRAKE light illur AUTOBRAKE system position provided the s line to the Autobrake F Module is capped.	e and the minated with the switch in the OFF system pressure Pressure Control		
	С	1	0	(M) May be inoperative AUTOBRAKE light illu AUTOBRAKE system position provided the A Pressure Control mode (Continued)	e and the minated with the switch in the OFF Autobrake ule is removed.		

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AIRCRAFT:		REVIS	REVISION NO: 32 PAGE NO					
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SEQUENCE ITEM	1.	2. 1101	3. NU	MBER REQUIRED FOR DISPATCH				
NUMBERS				4. REMARKS AND EXCEPTIONS				
]						
32 LANDING GEAR								
23. AUTOBRAKE System (Cont'd)								
1) AUTOBRAKE Valve Module	С	1	0	 (M) May be inoperative provided: a) Pressure line to the valve module is capped, and b) Control pressure line to shuttle valves is connected to valve module system return line. 				
2) Rejected Takeoff Mode	С	1	0	May be inoperative provided autobrake system is not used.				
24. Landing Gear Strut *** Pressure Gauge	D	4	0					
25. Inflight Wheel Braking System	С	1	0	 (O) May be inoperative in the NOT APPLIED mode provided: a) Performance is in compliance with Gear Down dispatch, and b) After takeoff, gear remains extended for two minutes (to permit wheel(s) to stop tuning before retracting gear). 				
26. Landing Gear Retracting System	С	1	0	 (M) (O) May be partially or completely inoperative provided: a) Inoperative components are properly secured by an accepted procedure, and b) Airplane is operated in accordance with the appropriate AFM Gear Down Appendix. 				
27. Rudder Pedal *** Steering Light				Moved to ATA 22-10, Rev. 20.				
U.S. DEPARTMENT OF TRANSPORTATION								
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FEDERAL AVIATION ADMINISTRATION								
AIRCRAFT:		REVIS		O: 32 PAGE NO:				
BUEING 747	1	DATE 2 NU	: 04/12/ MBER	/2005 32-10				
SEQUENCE ITEM	1.	2.110	3. NU	MBER REQUIRED FOR DISPATCH				
NUMBERS				4. REMARKS AND EXCEPTIONS				
		ļ						
32 LANDING GEAR								
28. Wheel Tiebolts (Wing Gear or Body Gear)	A	#1	#2	#1- Number Installed: 288#2- No. Required for Dispatch: 272				
				 (M) One per wheel may be broken or missing provided: a) Associated wheel is removed and inspected for broken parts or damage of wheel or brake assembly, and the wheel or assembly is replaced if damage is found, b) After each landing the associated wheel(s) are inspected for additional broken or missing tiebolts, and c) Operations are limited to a maximum of five departures. 				
29. Wing/Body Gear Uplock Bungee Springs	В	8	7	(M) (O) One may be broken or missing provided the gear handle remains UP following gear retraction.				
30. Main Gear AIR/GRD *** Mode Lights (PRI and ALT)	С	2	0					
31. Nose Wheel Snubber Pads	С	2	0					
32. Tire Pressure *** Indication System	С	1	0	May be inoperative provided alternate procedures are established and used.				
	D	1	0	May be inoperative provided procedures do not require its use.				

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SYSTEM &	1.	2. NU	MBER I	NSTALLED		
SEQUENCE ITEM			3. NU	MBER REQUIRED FO	R DISPATCH	
NUMBERS				4. REMARKS AND E	XCEPTIONS	
32 LANDING GEAR						
33. Remote Brake Indicator*** Light System	С	1	0	(M) (O) May be inope alternate procedures and used.	rative provided are established	
	D	1	0	(M) (O) May be inope procedures do not rec	rative provided quire its use.	
 34. Nose Gear N/SQUAT *** GND MODE Light Systems (PRI and ALT) 	С	2	0	(M) (O) May be inope procedures do not rec	rative provided quire its use.	
35. Brake Cooling Fan *** Systems	С	16	14	 (M) May be inoperative a) Associated where deactivated, and by Performance is the AFM for Br 	ve provided: eel brake(s) is nd s in compliance with rake(s) Deactivated.	
	D	16	0	(M) May be inoperative fan wheel mounted sl deactivated (removed associated wheel.	ve provided cooling nroud assembly is I) from the	

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BOEING 747	DATE: 04/25/2014	FAGE NO. 33-1			
SYSTEM & 1.	2. NUMBER INSTALLED	001			
SEQUENCE ITEM	3. NUMBER REQUIRE	D FOR DISPATCH			
NUMBERS	4. REMARKS A	AND EXCEPTIONS			
33 LIGHTS					
 Cockpit/Flight Deck/Flight C Compartment and Instrument Lighting System 	 Individual lights provided: Remainin are suffic all requir and othe are provi Remainin are posit are shiel crewmer Lighting intensity crew. 	may be inoperative			
	NOTE 1: Individ and/or annuncia excluded from th	ual button/switch lights tions/indications are his relief.			
	NOTE 2: Unaide NVGs) may be p NVG supplemer missing filters	ed operation (without permitted with inoperative ntal lights; cracked or 			

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SYSTEM &	1.	2. NU	. 04/25/ MBER I	NSTALLED	
SEQUENCE ITEM			3. NU	MBER REQUIRED FOR DISPATCH	
NUMBERS				4. REMARKS AND EXCEPTIONS	
		 1			
33 LIGHTS					
2. Passenger Lighted Information Signs	С	-	-	 (M) May be inoperative provided: a) Associated passenger seat or lavatory is not occupied from which a passenger lighted information sign is not readily legible, and b) Associated seat or lavatory is blocked and placarded – DO NOT OCCUPY. NOTE: These conditions are not intended to prohibit lavatory use or inspections by crewmembers. 	
	С	-	-	 (O) May be inoperative and associated passenger seat or lavatory may be occupied provided: a) Passenger Address System operates normally, and b) PA system is used to notify passengers and cabin crew when associated sign(s) are placed on or off. 	
1) All Cargo, Supernumerary/ Courier Area Lighted Information Signs	С	-	-	(O) May be inoperative provided alternate procedures are established and used to notify couriers/supernumeraries when associated sign(s) are placed on or off.	
 Normal (28-Volt) *** Exit Lights 	D	-	0		

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SEQUENCE ITEM		3. NU				
NUMBERS			4. REMARKS AND EXCEPTIONS			
33 LIGHTS						
 Cabin Interior Illumination System 						
1) Passenger and C Combi Configurations With Incandescent Floor Proximity Emergency Escape Path Marking System	1	-	Individual lights may be inoperative provided remaining lighting is sufficient for cabin attendants/cargo couriers to perform their duties.			
a) Cargo C Configuration (Class "B" Compartments)	1	-	Individual lights may be inoperative provided remaining lighting is sufficient for crewmembers/cargo couriers to perform their duties.			
b) Cargo C Configuration (Class "E" Compartments) (Including Israel Aircraft Industry Special Freighter, STC ST00358LA)	1	0				
			(Continued)			

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SFOLIENCE ITEM	2. NU				
NUMBERS		5. NO	4 REMARKS AND E		
33 LIGHTS	Ī				
 Cabin Interior Illumination System (Cont'd) 					
2) Passenger and C Combi Configurations With Photoluminescent Floor Proximity Emergency Escape Path Marking System	1	-	Individual lights may provided: a) Remaining ligh cabin attendar perform their of b) Remaining ligh charge the Pho Floor Proximity Escape Path N complying with acceptable ligh specified in on documents: 1. FAA er letter, 2. FAA ap Type D 3. Limitati section Supple Certific 4. An FAA	be inoperative thing is sufficient for this/cargo couriers to luties, and thing is sufficient to otoluminescent y Emergency Marking System by approved minimum thing levels as e of the following agineering approval oproved report of the besign holder, tons and Conditions of the applicable mental Type ate (STC), or A approved report orated in the Master g List for the ble STC.	
			(Continued)		

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MASTER MINIMUM EQUIPMENT LIS							
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SYSTEM & 1.	2. NU	MBER I	NSTALLED				
SEQUENCE ITEM		3. NU	MBER REQUIRED FC	R DISPATCH			
NUMBERS			4. REMARKS AND E	XCEPTIONS			
33 LIGHTS							
4. Cabin Interior Illumination							
System							
(Cont'd)							
2) Passenger and							
With							
Photoluminescent							
Floor Proximity							
Emergency Escape							
Path Marking System							
(Cont'd)							
a) Cargo C	1	_	Individual lights may	be inoperative			
Configuration			provided remaining li	ahting is sufficient			
(Class "B"			for crewmembers/car	go couriers to			
Compartments)			perform their duties.				
b) Cargo C	1	0					
(Class "F"							
Compartments)							
(Including Israel							
Aircraft Industry							
Special Freighter,							
STC ST00358LA)							
			(Continued)				
			(00000)				

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SE	QUENCE ITEM			3. NU	MBER REQUIRED FO	RDISPATCH
	MBER3				4. REMARKS AND E	XCEPTIONS
33	LIGHTS					
4.	Cabin Interior Illumination					
	(Cont'd)					
	3) Cargo Configuration					
	a) Class "B" Compartments	С	1	-	Individual lights may provided remaining lig for crewmembers/car	be inoperative ghting is sufficient go couriers to
	 b) Class "E" Compartments (Including Israel Aircraft Industry Special Freighter, STC ST00358LA) 	С	1	0		
5.	Wheel Well, Lower Cargo Compartment and Servicing Lights System	D	1	0		
6.	Lower Forward Electronic Compartment Lighting (For Manual Nose Gear Extension)	С	1	0	May be inoperative portion means of illumination	rovided an alternate is available.

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<u>ev</u>	BOEING 747	1		. 04/23/ MRED I		
SF	OUENCE ITEM	1.	2. 110			
NU	VBERS			0.110	4. REMARKS AND E	XCEPTIONS
33	LIGHTS					
7.	Runway Turn Off Lights	С	2	0	May be inoperative p lights operate normal airplane with the inop Turn Off Light(s).	rovided both landing ly on the side of the erative Runway
		С	2	0	May be inoperative fo	or day operations.
8.	Landing Lights	С	4	2	Two may be inoperat operations.	ive for night
		С	4	0	May be inoperative for	or day operations.
9.	Anti-Collision Light Systems	С	-	0	May be inoperative fo	or day operations.
	 Red Upper and Lower Fuselage Beacon Lights 	С	2	0	May be inoperative for provided the white Ta Strobe Lights or the v Lower Fuselage Strok normally.	or night operations ail and Wing Tip vhite Upper and be Lights operate
***	2) White Tail and Wing Tip Strobe Lights	С	3	0	May be inoperative for provided the red Upp Fuselage Beacon Lig Upper and Lower Fus Lights operate norma	or night operations er and Lower hts or the white selage Strobe Illy.
***	3) White Upper and Lower Fuselage Strobe Lights	D	2	0		

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SYSTEM &	1.	2. NUI	MBER I	NSTALLED		
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NUMBERS				4. REMARKS AND EXCEPTIONS		
33 LIGHTS						
10. Wing Illumination Lights	С	2	0	(O) May be inoperative provided ground deicing procedures do not require their use.		
11. Position Lights (Wing Tips & Tail)	С	4	3	 For night operations, all except the following minimum may be inoperative: a) One stationary red wing tip bulb, b) One stationary green wing tip bulb, and c) One stationary white tail light assembly. 		
(С	4	0	May be inoperative for day operations.		
12. Exterior Emergency I Lighting System	В	1	0	May be inoperative for an inoperative or deactivated upper or lower cabin door, or for main entry door(s) located in the main deck cargo area of cargo and combi airplane configurations.		
(С	1	0	May be inoperative for day operations.		

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			MASTER MINIMUM EQUIPMENT LIST				
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		SION: 3	5 PAGE NU:				
BUEING 747		. 04/23/					
SFOLIENCE ITEM	2. NU						
NUMBERS		5. NO	A REMARKS AND EXCEPTIONS				
33 LIGHTS	1						
13. Interior Emergency C	1	-	(M) A random 25% of lights may be				
Lighting System			inoperative provided:				
(Including Israel			a) Inoperative lights are not adjacent,				
Aircraft Industry			b) At least two of the three lights at				
			each entry door operate normally,				
310 3100358LA)			deck door light for an operative				
			door/slide operate normally, and				
			d) Inoperative lights are replaced in				
			accordance with the existing				
			operator's Maintenance Program.				
C	1		May be increative for an increative or				
	1	-	deactivated door(s)				
14. LOGO Light System D	1	0					

15. Door Emergency EXII C	-	-	(M) (O) Emergency EXII sign associated				
Sign			with one door may be inoperative				
			considered inoperative				

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FEDERAL AVIATION ADMINISTRAT			
	DATE.	04/25/	D PAGE NU:
SYSTEM & 1	2 NUM	/BER I	
SEQUENCE ITEM	2.100		MBER REQUIRED FOR DISPATCH
NUMBERS		011101	4. REMARKS AND EXCEPTIONS
33 LIGHTS			
16. Floor Proximity			
Emergency Escape Path			
Marking System			
1) Passenger and			
Combi Configurations			
a) Incandescent C	1	-	Individual lights may be inoperative
Marking System			provided FAA approved minimum
			acceptable lighting levels specified in
			one of the following documents are
			complied with:
			 a) FAA engineering approval letter, b) FAA approved report of the Type
			Design holder.
			c) Limitations and Conditions section
			of the applicable Supplemental
			Type Certificate (STC), or
			d) An FAA approved report
			incorporated in the Master
			Drawing List for the applicable
			510.
			(Continued)
			()

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FEDERAL AVIATION ADMINISTRATION						
AIRCRAFT:	REVIS	SION: 3	5	PAGE NO:		
BOEING 747		: 04/25/		33-11		
	2. NU					
NUMBERS		5. NO	4 REMARKS AND EX	XCEPTIONS		
33 LIGHTS	Ī	Ì				
16. Floor Proximity						
Emergency Escape Path						
(Cont'd)						
1) Passenger and						
Combi Configurations						
(Cont'd)						
h) Dhata	4		Componente movile à			
D) Photo- C	I	-	provided FAA approve	noperative d minimum		
Marking System			acceptable lighting lev	els specified in		
<u> </u>			one of the following do	ocuments are		
			complied with:			
			a) FAA engineerin	ng approval letter,		
			b) FAA approved	report of the Type		
			Design holder,	Conditions costion		
			c) Limitations and			
			Type Certificate	= (STC) or		
			d) An FAA approv	ved report		
			incorporated in	the Master		
			Drawing List for	r the applicable		
			STC.			
	4	_				
2) Cargo Configuration D	1	U				
17. Sterile Cockpit Light D	1	0	(O) May be inoperative	e provided		
*** System			alternate procedures a	are established		
			and used.			

U.S. DEPARTMENT OF TRANSPORTATION							
MASTER MINIMUM EQUIPMENT LIST							
FEDERAL AVIATION ADMIN	STRAT	ION					
AIRCRAFT:		REVIS	SION: 3	5	PAGE NO:		
BOEING 747		DATE	: 04/25/	2014	33-12		
SYSTEM &	1.	2. NUI	MBER I	NSTALLED			
SEQUENCE ITEM			3. NU	MBER REQUIRED FO	OR DISPATCH		
NUMBERS				4. REMARKS AND E	XCEPTIONS		
33 LIGHTS							
	-		_				
18. Master Dim and Test	В	1	0	Dim function may be	inoperative		
System				provided:	t functions an anata		
				a) Test and Brigh	it functions operate		
				h) Light intensity	is acceptable to the		
				flight crow	is acceptable to the		
				night crew.			

U.S	U.S. DEPARTMENT OF TRANSPORTATION								
FE	DERAL AVIATION ADMINIS	TRAT	ION						
AIR	CRAFT:		REVIS	SION: 3	5	PAGE NO:			
SYS	BUEING 747 STEM &	1	DATE 2 NU	: 04/25/ MBER I	2014 NSTALLED	34-1			
SEG	QUENCE ITEM		2.1101	3. NU	MBER REQUIRED FO	R DISPATCH			
NU	MBERS				4. REMARKS AND E	XCEPTIONS			
24]						
34	NAVIGATION								
1. ***	Standby Airspeed Indicator	С	1	0	May be inoperative un airspeed indicators an	nless all-electric re installed.			
2.	Mach/Airspeed Indicators								
	1) Mach Indicators	С	2	1	(O) One may be inop airplane remains at o failure of the second during flight.	erative provided r below FL 290 if indicator occurs			
		С	2	0	 (O) May be inoperative a) Airplane remain 290, and b) A placard which limitation is aff instrument participation 	ve provided: ns at or below FL th sets forth this ixed to the nel.			
	 External Airspeed Markers (Bugs) 	С	-	0	(O) May be inoperative provided alternate provided alternate provided alternate provided and used	ve or missing ocedures are			
3.	Mach/Airspeed Warning System								
	1) Aural (Clacker) Warning	С	1	0	 May be inoperative play A fifth pod, Ge Fuel airspeed installed and or and b) Speed at which warning sound limit airspeed. 	rovided: ar Down or Aux warning system is perates normally, h the substitute ls is observed as			
	2) Barber Pole Indicators	С	2	1	One MACH/AS indica may be inoperative p warning system (clac normally.	ator (Barber Pole) rovided aural ker) operates			

U.S	U.S. DEPARTMENT OF TRANSPORTATION								
AIR	CRAFT:		REVIS	SION: 3	5 PAGE	NO:			
0.10	BOEING 747		DATE	: 04/25/	2014	34-2			
SYS	SIEM & ITEM	1.	2. NUI						
	MBERS			5. NU	4 REMARKS AND EXCEPT	TIONS			
34	NAVIGATION								
4. ***	Altimeters (Servo-Pneumatic)								
	1) Servo Mode	С	-	0	 (M) Except where enroute op require its use, may be inope provided: a) Altimeter remains in the pneumatic mode, and b) AFM altimeter correct are used. 	perations erative he l ion charts			
5.	Altimeters (Electric)				Deleted, Rev. 20.				
6. ***	Standby Pneumatic Altimeters	С	-	0	May be inoperative except for airplanes equipped with all-e altimeters.	or those electric			
7.	Altimeter Vibrators								
	1) Servo-Pneumatic Altimeters	С	2	1	One may be inoperative prov associated air data compute normally.	vided r operates			
	2) Pneumatic Altimeters	С	2	1	One may be inoperative prov conditions exist at departure airports.	vided VMC and arrival			
	 Standby Altimeter (with Electric Altimeters installed) 	С	1	0	May be inoperative provided conditions exist at departure arrival airports.	VMC and			
		С	1	0	May be inoperative provided equipped with normally funct dual radio altimeters.	aircraft is tioning			
	 Standby Altimeter (with Servo- Pneumatic Altimeters installed) 	С	-	0	May be inoperative except for airplanes equipped with all-e altimeters.	or those electric			

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FEDERAL AVIATION ADMINISTRATION							
AIRCRAFT:		REVIS	SION: 3	5	PAGE NO:		
BOEING 747	4		: 04/25/		34-3		
STOLENCE ITEM	1.	2. NUI					
NUMBERS			5. NO	4 REMARKS AND E	XCEPTIONS		
34 NAVIGATION							
8. Static Air Temperature	D	1	0	May be inoperative p	rovided Total Air		
Indication				TAT/N1 Limit TAT inc	lication operates		
				normally.			
9. Total Air Temperature	С	1	0	(O) May be inoperativ	ve provided Static		
*** Indicator				Air Temperature (SA	T) indication		
				operates normally.			
	С	1	0	(O) May be inoperativ	ve provided		
				TAT/EPRL or TAT/N	1 Limit TAT		
				indication operates no	ormally.		
10. Bank-and-Pitch				Deleted, Rev. 20.			
Indicators (Horizon							
Indicators)							
11. Standby Attitude	С	-	0	May be inoperative p	rovided not		
Indicator				required by 14 CFR.			
 	R	-	0	May be inonerative b	rovided [.]		
			Ŭ	a) A third switcha	ble source of		
				attitude referer	nce is available,		
				b) Operations are	e conducted in Day		
				VMC only, and	l not conducted into		
				known or fored	ast over-the-top		
				conditions.			
12. Flight Director Systems	С	-	0	May be inoperative p	rovided approach		
				minimums do not req	uire their use.		

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FEDERAL AVIATION ADMINI	r						
			100×3 04/25/	5 /2014	PAGE NO: 34-4		
SYSTEM &	1.	2. NU	MBFR I	NSTALLED			
SEQUENCE ITEM			3. NU	MBER REQUIRED FC	R DISPATCH		
NUMBERS				4. REMARKS AND E	XCEPTIONS		
34 NAVIGATION							
13. Turn and Bank Indicators							
1) Rate of Turn Indicators	С	2	1	Turn function of one i be inoperative for VN	nstrument may IC flight.		
	С	2	0	May be inoperative p Horizon indicator ope	rovided Standby rates normally.		
14. ADI Test ***	С	2	0				
15. Slow-Fast Indicators	С	2	0				
16. Stabilized Heading Indication Systems				Deleted, Rev. 20.			
17. Standby Magnetic Compass (Non-Stabilized)	С	1	0	(O) May be inoperative combination of three (IRU/IRS) stabilized of systems operate norm	ve provided any gyro or INS compass nally.		
	С	1	0	 (O) May be inoperative a) Any combination INS (IRS) states systems operated b) Airplane is operative independent not capability, and radar control be enroute portion (Continued) 	ve provided: on of two gyro or ilized compass ate normally, and erated with dual avigational under positive by ATC on the n of the flight.		

U.S. DEPAR	TMENT OF TRAN	SPOR		١				
FEDERAL A	FEDERAL AVIATION ADMINISTRATION							
AIRCRAFT:			REVIS	SION: 3	5	PAGE NO:		
E	BOEING 747		DATE	: 04/25/	2014	34-5		
SYSTEM &		1.	2. NU	MBER I	NSTALLED			
SEQUENCE	ITEM			3. NU	MBER REQUIRED FO	R DISPATCH		
NUMBERS					4. REMARKS AND E	XCEPTIONS		
34 NAVIGA	TION							
17. Standby Compas (Non-Sta (Cont'd)	r Magnetic ss abilized)	С	1	0	(O) May be inoperativate entirely within are unreliability provided stabilized directional ginstalled, operate nor used in conjunction with navigation techniques	ve for flights that eas of magnetic at least two gyro systems are mally, and are vith free gyro		
18. Central Warning	Instrument System	С	1	0	May be inoperative partimeter minimums do not req	rovided approach uire its use.		
1) TES	T Switch(es)	С	-	1				
		С	-	0	May be inoperative pl considered inoperative	rovided CIWS is e.		
*** 2) CIW	'S Horns	С	2	1				
		С	2	0	May be inoperative p considered inoperativ	rovided CIWS is /e.		
19. Flight M System	ode Annunciator	С	1	0	May be inoperative p minimums do not req	rovided approach uire its use.		
20. Central Comput Systems	Air Data er (CADC) S	С	2	0	May be inoperative po deviations for associa observed, and listed i the operator's MEL.	rovided dispatch ated equipment are n this column of		

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MASTER MINIMUM EQUIPMENT							
AIRCRAFT REVISION: 35 PAGE NC						PAGE NO:	
	BOEING 747		DATE	: 04/25/	/2014	34-6	
SYSTI	EM &	1.	2. NU	MBER I	NSTALLED		
SEQU	ENCE ITEM			3. NU	MBER REQUIRED FO	R DISPATCH	
NUMB	BERS				4. REMARKS AND E	XCEPTIONS	
]				
34 N	AVIGATION						
21. V S	HF Navigation ystems (VOR/ILS)	D	-	-	Any in excess of thos 14 CFR may be inope a) System or com powered by a b) System or com required to acc emergency pro	e required by erative provided: nponent is not Standby Bus, and nponent is not complish an pocedure.	
1)	Self-Test Feature	С	2	0			
2)	Expanded Localizer Indicator (In ADI)	С	-	-	May be inoperative p minimums do not req	rovided approach uire its use.	
3)	Glide Slope Pointer (In ADI)	С	-	-	May be inoperative p minimums do not req	rovided approach uire its use.	
4)	Glide Slope Pointer (In HSI)	С	-	-	May be inoperative p minimums do not req	rovided approach uire its use.	
5)	Course Pointer and Course Bar Pair (In HSI)	В	2	1	One pair may be inop a) Indication of V normally in the RDDMI, RDMI b) Approach mini require its use (Continued)	perative provided: OR radial operates associated , or RMI, and mums do not	

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SYSTEM & 1.	2. NU	MBER I	NSTALLED				
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH				
NUMBERS			4. REMARKS AND EXCEPTIONS				
34 NAVIGATION							
21. VHF Navigation Systems							
(VOR/ILS)							
(Cont'd)							
6) II S Antenna							
Switching							
5							
a) Glide Slope C	-	0	May be inoperative provided approach				
			minimums do not require use of				
			associated ILS glide slope receiver.				
			NOTE: If ILS 1 and 2 Glide Slope				
			switching is inoperative,				
			GPWS Mode 5 is considered				
			inoperative.				
b) Localizer C	-	0	May be inoperative provided approach				
			minimums do not require use of				
			associated ILS receiver.				
22. Distance Measuring D	-	-	Any in excess of those required by				
Equipment			14 CFK may be inoperative.				

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FEDERAL AVIATION ADMINISTRATION								
AIRCRAFT:		REVIS	SION: 3	5	PAGE NO:			
BOEING 747		DATE	: 04/25/		34-8			
SYSTEM &	1.	2. NUI						
			3. NU					
NOWBERS				4. REMARKS AND E	XCEPTIONS			
		1						
34 NAVIGATION								
23. Weather Radar System	С	-	0	May be inoperative p	rovided weather			
				radar is not required l	oy 14 CFR.			
	D	-	1	May be inoperative p	rovided one			
				weather radar system	operates normally.			
	-		_					
1) Display	С	-	1	Any in excess of thos	e required by			
				14 CFR may be inope	erative.			
2) Contour	C		0	May be increasive p	wided menual			
	C	-	0	agin control operative p				
				gain control operates	normany.			
3) Map	С	_	0					
o)p	•		Ū.					
4) Test	С	-	0	(M) May be inoperativ	ve provided			
				alternate procedures	are established			
				and used before each	n departure to			
				verify normal weather	mode operation.			
	-		_					
5) Automatic Gain	С	-	0	May be inoperative p	rovided radar gain			
Control				can be manually tune	d to receive			
					ims.			
6) Stabilization	C	_	0	(M) May be incoerativ	e provided:			
of Stabilization	0		U	a) Tilt Control ope	erates normally, and			
				b) Antenna is ver	ified to scan in a			
				horizontal plan	e with the tilt at			
				zero degrees.				
*** 7) Turbulence Detection	С	1	0					
Mode								
				(Continued)				

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		DIKAI						
	BOFING 747		DATE	04/25/	2014 7401 34-9			
SYS	STEM &	1	2 NUI	MBFR I				
SEC	QUENCE ITEM		2.1101	3 NU	MBER REQUIRED FOR DISPATCH			
NUI	MBERS			00	4. REMARKS AND EXCEPTIONS			
34	NAVIGATION		İ					
23.	Weather Radar System (Cont'd)							
***	8) Predictive Windshear	В	-	0	(O) May be inoperative provided			
					alternate procedures are			
					established and used.			
					NOTE: Operator's alternate procedures			
					should include reviewing			
					windshear avoidance and			
					windshear recovery procedures.			
		C		0	(O) May be increative provided:			
		U	-	0	a) Alternate procedures are			
					established and used, and			
					b) Ground Proximity Warning System			
					Windshear Warning (Mode 7) or			
					Windshear Detection and			
					Guidance System operates			
					normally.			
24	Radio Compass System	П	_	_	Any in excess of those required by			
27.	(ADF)	U	_	-	14 CFR may be inoperative.			
25.	Marker Beacon System	С	-	0	May be inoperative provided approach			
					minimums do not require their use.			
24. 25.	Radio Compass System (ADF) Marker Beacon System	C D C	-	0 - 0	 NOTE: Operator's alternate procedures should include reviewing windshear avoidance and windshear recovery procedures. (O) May be inoperative provided: a) Alternate procedures are established and used, and b) Ground Proximity Warning System Windshear Warning (Mode 7) or Windshear Detection and Guidance System operates normally. Any in excess of those required by 14 CFR may be inoperative. May be inoperative provided approach minimums do not require their use. 			

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BOEING 747		DATE	: 04/25/	2014 34-10			
SYSTEM & 1	۱.	2. NU	MBER I	NSTALLED			
SEQUENCE ITEM			3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS				4. REMARKS AND EXCEPTIONS			
34 NAVIGATION							
20 ATC Transportant and			0	May be increative provided:			
26. ATC transponders and E	5	-	0	May be inoperative provided:			
Automatic Altitude				a) Operations do not require its use,			
Reporting Systems				and h) Drian to flight approval is			
				b) Prior to flight, approval is			
				obtained from AIC facilities			
				naving jurisdiction over planned			
				route of flight.			
r			1	Any in excess of these required by			
L		-	I	14 CER may be inoperative			
				14 CI IX may be moperative.			
*** 1) Elementary and A	4	-	0	May be inoperative provided:			
Enhanced Downlink			-	a) Operations do not require			
Aircraft Reportable				its use, and			
Parameters Not				b) Repairs are made prior to			
Required By 14 CER				completion of the next heavy			
				maintenance visit			
*** 2) ADS-B Sauitter)	-	0	May be inoperative provided operations			
Transmissions			-	do not require its use.			
		-	0	(O) May be inoperative provided alternate			
			-	procedures are established and used.			
				NOTE: Any ADS-B Out function that			
				operates normally may be used.			

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SYSTEM & 1	2. NU	. 04/25/ MBFR I	NSTALLED 34-11			
SEQUENCE ITEM	2.110	3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS			4. REMARKS AND EXCEPTIONS			
34 NAVIGATION						
27. Inertial Navigation Systems (INS)						
*** 1) All INS Systems Except Litton LTN92						
a) Navigational D Information	-	-	Any in excess of those required by 14 CFR may be inoperative.			
b) Attitude/ C Heading Information	-	2	A third switchable source of attitude information may be inoperative provided a self-contained bank and pitch indicator is available.			
C	-	1	May be inoperative provided an installed Attitude Heading Sensing Unit, AHSU, operates normally and is used.			
*** c) Navigation C Databases	-	-	 (O) May be out of currency provided: a) Current Aeronautical Charts are used to verify Navigation Fixes before dispatch, b) Procedures are established and used to verify status and suitability of Navigation Facilities used to define route of flight, and c) Approach Navigation Radios are manually tuned and identified. 			
d) Wind Indication C	-	0	(Continued)			

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STOTENCE ITEM	2. NU					
NUMBERS		3. NU				
NOMBERG			4. REMARKS AND EXCEPTIONS			
34 NAVIGATION	1					
27. Inertial Navigation						
Systems (INS)						
(Cont'd)						
*** 2) Litton L1N92						
a) INS Novigation D			Any in excess of these required by			
a) INS Navigation D System	-	-	14 CER may be inonerative			
Oystem			14 Of IX may be inoperative.			
b) Attitude/Heading C	-	2	A third switchable source of attitude			
Information			information may be inoperative provided			
			a self-contained bank and pitch indicator			
			is available.			
c) Navigational C	-	-	(O) May be inoperative and system			
Information			used for attitude and/or heading			
(excessive drift			source provided:			
rates or residual			a) System is aligned and operated in			
ground speed)			the NAV mode (not ATT REF),			
vvnen INS is			b) No INS warning annunciations or			
primary Attitude			instrument flags are displayed,			
and/or Heading			c) Both pilots pitch, roll and heading			
Source			limits and			
			d) System is not used for navigation			
			(Continued)			

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FEDERAL AVIATION ADMINISTRATION							
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SYSTEM &	1.	2. NUI					
NUMBERS			5. NO	4. REMARKS AND E	XCEPTIONS		
34 NAVIGATION							
27. Inertial Navigation Systems (INS) (Cont'd)							
*** 2) Litton LTN92 (Cont'd)							
d) Functions Reference By "Delayed Maintenance Action/ Malfunction" Messages	С	-	-	May be inoperative pr which receive INS da with the message(s) a inoperative.	rovided systems ta associated are considered		
*** e) INS Update/ No Update Annunciators	D	-	0	May be inoperative p a) RNAV approad not used, and b) Update status	rovided: ch procedures are is verified on CDU.		
f) CDU WARN Light	С	-	-	May be inoperative prise monitored periodica intervals) for failure m	rovided Status page ally (ten minute nessages.		
g) CDU Offset Light	С	-	-	May be inoperative po INS is not used in cro unless a remote offse and operates normall	rovided associated osstrack offset of light is installed y.		
h) CDU Alert Light	С	_	_	May be inoperative pu CDU is monitored for to next way point (Flig a remote Alert light is operative.	rovided associated distance and time ght Plan page) or installed and		
i) CDU Edge Light	С	-	-	May be inoperative pulighting of the CDU is to the flight crew.	rovided area acceptable		
				(Continued)			

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SYSTEM & 1	2. NI	JMBER	INSTALLED			
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS			4. REMARKS AND EXCEPTIONS			
27. Inertial Navigation						
(Cont'd)						
(cont d)						
*** 2) Litton LTN92						
(Cont'd)						
i) CDU Dimming			May be ineperative provided display is			
j) ebe birning e	-	-	legible and acceptable to flight crew.			
k) CDU Display C	-	-	May be inoperative provided			
Segments			corresponding segment on other			
			CDU operates normally.			
I) MSU Alian Light C	_	_	Verify align countdown on CDU			
			Status page ALIGN changes to NAV.			
m) MSU Detent to C	-	-	(M) May be inoperative provided			
			SWITCH IS SECURE IN INAV position.			
n) MSU Edge Light C	-	-	May be inoperative provided area lighting			
,			of MSU is acceptable to flight crew.			
o) INS Crossfill C	-	-	May be inoperative provided flight			
p) Wind Display C	-	-				
q) Navigation C	-	-	(O) May be out of currency provided:			
(Catalogs)			a) Current Aeronautical Charts are used to verify Navigation Fixes			
(Catalogs)			before dispatch.			
			b) Procedures are established and			
			used to verify status and suitability			
			of Navigation Facilities used to			
			aetine route of flight, and			
			manually tuned and identified.			
			(Continued)			

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MASTER MINIMUM EQUIPMENT LIST								
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BOEING 747		DATE	: 04/25/	2014 34-15				
SYSTEM &	1.	2. NUI	MBER I	NSTALLED				
			3. NU					
				4. REMARKS AND EXCEPTIONS				
34 NAVIGATION								
27. Inertial Navigation Systems (INS) (Cont'd)								
*** 2) Litton LTN92 (Cont'd)								
*** r) RNAV	D	-	-	May be inoperative provided enroute operations do not require its use.				
*** s) GPS Updating	D	-	-	May be inoperative provided enroute operations do not require its use.				
*** t) Triple Mix	D	-	-	May be inoperative provided enroute operations do not require its use.				
u) CDU Message CHECK ADC (from ADC to IN	C S)	-	-	NOTE: Wind and RNAV may be inoperative without ADC data.				
v) Approach Mode	С	-	-	May be inoperative provided approach minimums do not require its use.				
w) Autopilot Coupling	С	-	-	May be inoperative provided approach minimums do not require its use.				
28. Altitude Alerting Syster	n A	-	0	 (O) May be inoperative provided: a) Autopilot with altitude hold, and altitude capture operates normally, b) Enroute operations, ie RVSM, do not require its use, c) Airplane does not depart from a designated airport (as listed in the operator's MEL) where repair or replacement can be made, and d) Repairs are made within three flight days. 				
	С	-	1	(Continued)				

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FED	FEDERAL AVIATION ADMINISTRATION							
AIR	CRA	FT:		REVIS	SION: 3	5 PAGE NO:		
CV(BOEING 747	4			2014 34-16		
SF		I & JCE ITEM	1.	2. NUI		MBER REQUIRED FOR DISPATCH		
NUI	MBEF	RS			0.110	4. REMARKS AND EXCEPTIONS		
34	NAV	IGATION						
28.	Altitu (Cor	ude Alerting System nt'd)						
	1) <i>A</i>	Aural Alert	С	-	0	May be inoperative provided: a) Visual alert operates normally, and b) Auto-pilot with altitude hold and altitude capture operates normally.		
	2) \	/isual Alert	С	-	0	May be inoperative provided: a) Aural alert operates normally, and b) Auto-pilot with altitude hold and altitude capture operates normally		
29.	Low Altim	Range Radio neter System						
	1) I	ndicators	С	-	0	May be inoperative provided approach minimums or operating procedures do not require their use.		
	2) F (Receiver/Transmitter R/T) Unit(s)	A	-	0	 May be inoperative provided: a) Dispatch deviation for GPWS inoperative is observed, b) Approach minimums or operating procedures do not require their use, and c) Operations are limited to not more than two flight days before repairs are made. 		
			С	-	1	 May be inoperative provided: a) Failed R/T Unit, by design, does not provide inputs to the GPWS, and b) Approach minimums or operating procedures do not require its use. 		

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BOEING 747		DATE	: 04/25/	2014	34-17	
SYSIEM &	1.	2. NUI				
			3. NU		RDISPATCH	
NOMBERS				4. REMARKS AND E	XCEPTIONS	
		<u> </u>	 			
34 NAVIGATION						
30. ADI Supplementary						
*** Indications (In ADI)						
1) Radio Altimeter	D	-	0	May be inoperative p	rovided approach	
Altitude Display				minimums do not req	uire its use.	
			-			
2) DH Light	С	-	0	May be inoperative p	rovided approach	
				minimums do not req	uire its use.	
	~		0	Marcha in an anativa n	navidad an na a sh	
3) RISING RUNWAY	C	-	0	niay be inoperative p	rovided approach	
4) Rate of Turn	С	2	0	May be inonerative b	rovided Standby	
Indicator	Ŭ	-	Ŭ	Attitude Indicator ope	rates normally.	
5) Decrab Pointer	С	-	0	May be inoperative p	rovided approach	
				minimums do not req	uire its use.	
6) Flight Director	С	-	0	May be inoperative p	rovided approach	
Lights				minimums do not req	uire its use.	
31. Glide Slope Antenna	С	-	0	(O) May be inoperativ	/e provided	
Annunciators				associated glide slop	e receiver is not	
				required for approach	n minimums.	
32 Ground Provinity	Δ	1	0	(\mathbf{O}) May be inconcretiv	e provided:	
Warning System	~	1	0	a) Alternate proc	edures are	
				established an	d used, and	
				b) Repairs are m	ade within two	
				flight days.	·····	
				(Continued)		

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MASTER MINIMUM EQUIPMENT LIS						
AIRCRAFT:	SINAI	5 PAGE NO:				
BOEING 747		DATE	: 04/25/	/2014 34-18		
SYSTEM &	1.	2. NU	MBER I	NSTALLED		
SEQUENCE ITEM			3. NU			
NUMBERS				4. REMARKS AND EXCEPTIONS		
34 NAVIGATION						
32. Ground Proximity Warning System (Cont'd)						
1) Terrain Avoidance Warning (Modes 1 thru 4)	A	4	0	 (O) May be inoperative provided: a) Alternate procedures are established and used, and b) Repairs are made within two flight days. 		
2) Test Mode Function	A	1	0	 May be inoperative provided: a) GPWS is considered inoperative, and b) Repairs are made within two flight days 		
3) Glide Slope Deviation	С	-	1	ingrit dayo.		
(Mode 5)	В	-	0			
 Advisory Callouts (Mode 6) 	В	-	0	(O) May be inoperative provided alternate procedures are established and used.		
	С	-	0	 (O) May be inoperative provided: a) Advisory callout not required by 14 CFR, and b) Alternate procedures are established and used. 		
		1				

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FEDERAL AVIATION ADMINISTRATION							
AIRCRAFT:			REVISION: 35			PAGE NO:	
BOE	ING 747		DATE	: 04/25/	2014	34-19	
SYSTEM &		1.	2. NUI	MBER I	NSTALLED		
	TTEM			3. NU			
NONDERS					4. REIMARKS AND E	CEPTIONS	
34 NAVIGATIO	DN						
32. Ground Pro Warning Sy (Cont'd)	ximity stem						
*** 5) Windsh (Reactiv	ear Warning /e) (Mode 7)	В	-	0	(O) May be inoperatival alternate procedures a used.	ve provided are established and	
					NOTE: Operator's al procedures s reviewing wir and windshe procedures.	ternate hould include ndshear avoidance ar recovery	
		С	-	0	 (O) May be inoperative a) Alternate procession established ar b) Weather Rada Windshear Dege Guidance System normally. 	ve provided: edures are nd used, and ar System Predictive etection and tem operates	
6) Terrain and Wa (TAWS)	Awareness rning System						
a) Forv Terr Avo and Des (PD	vard Looking ain dance (FLTA) Premature cent Alert A) Functions	В	1	0	(O) May be inoperativ alternate procedures and used.	e provided are established	
b) Terr Fun	ain Display ctions	С	-	1			
		В	-	0			
*** 7) Runway & Advis (RAAS)	Awareness ory System	С	1	0			

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BOEING 747	-	DATE	: 04/25/		34-20	
	1.	2. NU				
NUMBERS			5. NU	A REMARKS AND E		
34 NAVIGATION			Ì			
33. Auxiliary or Reserve *** Fuel Vmo Selector	С	2	1	One may be inoperat airspeed indicator wit may be substituted) p a) A suitable over identify the app b) When these fu the airplane re FL 350 when li 310 KIAS, or F to Vmo of 342	ive (or one B-747 hout a selector provided: rlay is installed to plicable Vmo, and lel tanks are loaded, mains at or below imited to Vmo of FL 300 when limited KIAS.	
	С	2	0	May be inoperative p fuel tanks 2 and 3, or tanks 1 and 4 remain	rovided reserve auxiliary fuel empty.	
34. VLF Navigation System	D	-	-	Any in excess of thos 14 CFR may be inope	e required by erative.	
35. Instrument Panel *** Navigation Switching						
1) VHF/NAV Systems	С	-	-	May be inoperative pl associated systems a normally, with indepe for each pilot's instrur	rovided the are operating ndent indications ments.	
*** 2) INS Systems	С	-	-	May be inoperative pl associated systems a normally, with indepe for each pilot's instrur (Continued)	rovided the are operating ndent indications ments.	

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FEDERAL AVIATION ADMINISTRATION							
AIRCRAFT:		REVIS	SION: 3	5 PAGE NO:			
BOEING 747	1	DATE 2 NU	: 04/25/ MBED I	2014 34-21 NSTALLED			
SEQUENCE ITEM	1.	2. 1101	3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS			0.110	4. REMARKS AND EXCEPTIONS			
34 NAVIGATION							
35. Instrument Panel*** Navigation Switching (Cont'd)							
*** 3) FMS Systems	С	-	-	May be inoperative provided the associated systems are operating normally, with independent indications for each pilot's instruments.			
*** 4) FD Systems (STC ST01020SE)	С	2	0	May be inoperative provided approach minimums do not require its use.			
36. ATT/COMP *** Stabilization Switching	С	1	0	 May be inoperative provided: a) It is verified that two platforms (INS, ASHU, or IRS) are each independently providing heading and attitude information to the respective Captain's and F/O's instruments, and b) Standby Horizon operates normally. 			
37. RDDMI, RDMI or RMI	С	2	1	One may be inoperative provided associated HSI and the remaining RDDMI, RDMI or RMI operates normally.			
38. Performance*** Management System(PMS)	D	1	0				
				NOTE: Any function which operates normally may be used.			
39. Instrument Panel*** Navigation Switching Annunciator Lights	С	-	0				

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FEDERAL AVIATION ADMIN	<u>ISTRA</u> T	ION					
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BOEING 747		DATE	: 04/25/	2014 34-22			
STATEM &	1.	2. NUI					
NUMBERS			3. NU				
				4. REMARKS AND EXCEPTIONS			
34 NAVIGATION							
40. Traffic Collision and Avoidance System (TCAS)	В	-	0	 (M) May be inoperative provided: a) System is deactivated and secured, and b) Enroute or approach procedures do not require its use. 			
	С	-	0	 (M) May be inoperative provided: a) Not required by 14 CFR, b) System is deactivated and secured, and c) Enroute or approach procedures do not require its use. 			
*** 1) Combined Traffic Alert (TA) and Resolution Advisory (RA) Dual Display	С	2	1	 One may be inoperative on the non-flying pilot side provided: a) TA and RA visual display operates normally on the flying pilot side, and b) TA and RA audio function operates normally on the flying side. 			
2) Resolution Advisory (RA) Display Systems(s)	С	2	1	One may be inoperative on non-flying pilot side.			
	С	-	0	 (O) May be inoperative provided: a) Traffic Alert (TA) visual display and audio functions operate normally, b) TA only mode is selected by the crew, and c) Enroute or approach procedures do not require its use. 			
3) Traffic Alert (TA) Display System(s)	С	-	0	 (O) May be inoperative provided: a) RA visual display and audio functions operate normally, and b) Enroute or approach procedures do not require its use. (Continued) 			
U.S. DEPARTMENT OF TRANSPORTATION							
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FEDERAL AVIATION ADMINI	STRAT	ION		MASTER MINIMUM EQUIPMENT LIST			
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BOEING 747		DATE	: 04/25/	2014 34-23			
SYSTEM &	1.	2. NUI					
NUMBERS			3. NU	A REMARKS AND EXCEPTIONS			
				A. REMARKO AND EXCEL HONO			
34 NAVIGATION							
40. Traffic Collision and Avoidance System (TCAS) (Cont'd)							
4) Audio Functions	В	1	0	May be inoperative provided enroute or approach procedures do not require use of TCAS.			
*** 5) Airspace Selection Function	С	-	0				
41. Metric Altimeter	D	-	0				
42. True or Calibrated Airspeed Indicator	С	1	0				
43. Airspeed Vibrator	С	2	0				
44. Microwave Landing *** Systems	D	-	0				
45. Windshear Detection *** and Guidance System	В	-	0	 (O) May be inoperative provided alternate procedures are established and used. 			
				NOTE: Operator's alternate procedures should include reviewing windshear avoidance and windshear recovery procedures.			
	С	-	0	 (O) May be inoperative provided: a) Alternate procedures are established and used, and b) Weather Radar System Predictive Windshear or Ground Proximity Warning System Windshear Warning (Mode 7) operates normally. 			

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MASTER MINIMUM EQUIPMENT LI						
AIRCRAFT:	REVIS	SION: 3	5 PAGE NO:			
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SYSTEM & 1.	2. NU	MBER I	NSTALLED			
SEQUENCE ITEM		3. NU				
NUMBERS			4. REMARKS AND EXCEPTIONS			
34 NAVIGATION	_					
46. Radio/INS C (Radio/FMS) Switches (Glareshield)	2	0	 (M) May be inoperative provided: a) VOR/ILS function is verified to operate normally and is available on the HSI, b) Navigation is not predicated on the use of the INS (FMS), and c) Switch is not moved in flight. 			
A	2	1	 (M) (O) May be inoperative provided: a) VOR/ILS function is verified to operate normally and is available on the HSI, b) INS (FMS) navigation information display on associated Control Display Unit (CDU) (Multifunction Control Display Unit (MCDU)) operates normally, c) Autopilot(s) operates normally, d) Switch is not moved in flight, and e) Repairs are made within three flight days. 			
D	2	1	 (M) May be inoperative provided: a) Associated radio function operates normally, and b) Navigation is not predicated on the use of the INS (FMS). 			
47. Pilots' Performance C *** System (PPS)	1	0				

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BOEING 747	1		: 04/25/	2014 34-25		
STOTENCE ITEM	1.	2. NUI				
NUMBERS			5. NO	4 REMARKS AND EXCEPTIONS		
34 NAVIGATION						
 48. Global Positioning *** System/Global Navigation Satellite Systems (GPS/GNSS) 	D	-	0	May be inoperative provided procedures or navigation is not dependent upon its use.		
1) TAS	С	-	0	(O) May be inoperative provided procedures are developed to enter TAS manually.		
2) Heading	С	-	0	(O) May be inoperative provided procedures are developed to enter heading manually.		
3) Course Deviation (HSI)	В	_	1	 (O) May be inoperative provided: a) Course deviation is monitored on GPS CDU, b) Associated A/P GPS Nav Select Mode, and panel message light are operable, and c) CDU is located forward of the pilots' control stand (P9) panel. 		
4) Flight Plan Cross Load	С	-	0	(O) May be inoperative provided procedures are developed to enter flight plans manually.		
5) Navigation Data Base	С	-	0	 (O May be out of currency provided: a) Current Aeronautical Charts are used to verify Navigation Fixes before dispatch, b) Procedures are established and used to verify status and suitability of Navigation Facilities used to define route of flight, and c) Approach navigation radios are manually tuned and identified. (Continued) 		

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AIRCRAFT:		SION: 3	5	PAGE NO:				
BOEING 747	DATE	: 04/25/	2014	34-26				
SYSTEM & 1.	2. NU	MBER I	NSTALLED					
SEQUENCE ITEM		3. NU	MBER REQUIRED FC	R DISPATCH				
NUMBERS			4. REMARKS AND E	XCEPTIONS				
34 NAVIGATION								
48. Global Positioning								
System/Global								
Systems (GPS/GNSS)								
(Cont'd)								
6) Wind Direction and C	-	0	(O) May be inoperativ	ve provided				
Speed			procedures are devel	oped to enter				
				ccu manually.				
7) Panel Message C	-	0	(O) May be inoperativ	ve provided:				
			a) Procedures ar	e developed to				
			monitor the as	sociated operable				
			b) CDU message	ted forward of the				
			pilots' control s	stand (P9) panel.				
				· / ·				
49. Digital Distance C	2	0						
and Ground Speed								
indicators								

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FEDERAL AVIATION ADMINI							
AIRCRAFT:				5 PAGE NO:			
SYSTEM &	1.	2. NU	MBER I	NSTALLED			
SEQUENCE ITEM			3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS				4. REMARKS AND EXCEPTIONS			
]					
34 NAVIGATION							
50. TAT/EPRL or TAT/N1 *** Limit Indication System	С	1	0	 (O) May be inoperative provided: a) SAT or TAT indicator operates 			
				 b) Neither EPR/N1 computer nor full flight regime autothrottle system are used, except in the speed reversion mode for holding, approach and landing. 			
1) TAT Indication (Counter)	С	1	0	 (M) (O) May be inoperative provided: a) SAT or TAT indicator operates normally, and b) EPRL or N1 Limit indication is verified to operate normally. 			
	С	1	0	 (M) (O) May be inoperative provided: a) SAT or TAT indicator operates normally, and b) Neither EPR/N1 computer nor full flight regime autothrottle system are used, except in the speed reversion mode for holding, approach and landing. 			
2) EPRL or N1 Limit Indication	С	1	0	(O) May be inoperative provided neither EPR/N1 computer nor full flight regime autothrottle system are used, except in the speed reversion mode for holding, approach and landing.			
3) EPRL or N1 Limit Computer	С	1	0	(O) May be inoperative provided neither EPR/N1 limit indication nor full flight regime autothrottle system are used, except in the speed reversion mode for holding, approach and landing.			

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SEQUENCE ITEM	2.110	3. NU	MBER REQUIRED FOR DISPATCH				
NUMBERS			4. REMARKS AND EXCEPTIONS				
34 NAVIGATION							
51. Attitude Heading C *** Sensing Unit (AHSU)	-	2	May be inoperative provided two independent attitude sources				
			NOTE: This could be satisfied by any combination of INS and AHSU systems.				
52. Flight Management C *** Computer Systems (FMC) (Includes STC ST01893CH)	-	2	One may be inoperative provided enroute operations do not require its use.				
1) Navigation Databases C	-	-	 (O) May be out of currency provided: a) Current Aeronautical Charts are used to verify Navigation Fixes before dispatch, b) Procedures are established and used to verify status and suitability of Navigation Facilities used to define route of flight, and c) Approach navigation radios are manually tuned and identified. 				
2) GPS Updating D	-	-	May be inoperative provided enroute operations do not require its use.				
			NOTE: Any mode which functions normally may be used.				
53. Control Display Units C *** (MCDU)	-	2	MCDU 3 (Center) may be inoperative.				
			NOTE: Any mode which functions normally may be used.				

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FEDERAL AVIATION ADMINIST	RAT	ION					
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SEQUENCE ITEM	••	2.1101	3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS				4. REMARKS AND EXCEPTIONS			
34 NAVIGATION							
54. EFIS Control Panel							
Map Switches							
1) POS	С	2	1				
2) NAV AID	С	2	1				
3) ARPT	С	2	1				
΄ Δ) ΡΤΕ ΠΔΤΔ	C	2	1				
	C	2					
55. Servo Altimeter *** Alerter System (Kollsman STC ST00111BO)							
1) 100 Series Display Codes	С	-	-	(O) May be displayed provided alternate procedures are established and used.			
2) 200 Series Display Codes	С	-	-	 (O) May be displayed provided: a) Alternate procedures are established and used, and b) Enroute operations do not require its use. 			
56. Horizontal Situation Indicators (HSI)							
*** 1) Miles/Distance Readout	С	-	0	(O) May be inoperative provided alternate procedures are established and used.			
*** 2) Ground Speed Readout	С	-	0	(O) May be inoperative provided alternate procedures are established and used.			

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BUEING 747	1	2 NU	. 04/23/ MBER I		34-30		
SEQUENCE ITEM	1.	2. NO					
NUMBERS			0.110	4. REMARKS AND E	XCEPTIONS		
34 NAVIGATION							
	_						
57. Automatic Dependent	D	-	0	May be inoperative pl	rovided it is not		
(ADS-B) System				required by 14 CFR.			
				NOTE: If ADS-B is in	stalled in lieu of or		
				as a replacer	nent for 14 CFR		
				required equi	pment, the repair		
				category in th	e operator's MEL		
					me as mai or me		
					omont.		
1) Cockpit Display and	D	-	0	NOTE: Cockpit Displa	ay and Traffic		
Traffic Information				Information (CDTI) display of		
(CDTI)				data from oth	er aircraft systems		
				may be used			
2) CDTI Control Panel	D	-	0	May be inoperative p	rovided:		
				a) Flight ID can b	e set, and		
				 b) Screen display the flight group 	is acceptable to		
				the flight crew.			
3) Data Link	D	_	0	NOTE: In some aircr	aft the Data Link		
Transmitter(s)			-	Transmission	is an integral part		
				of the transp	onder and relief is		
				provided in the	nat section.		
4) Data Link Receiver(s)	D	-	0				
5) ADS-B Applications	U	-	U				
		l	I				

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SEQUENCE ITEM	1.	2. 1101	3. NU	MBER REQUIRED FOR DISPATCH		
NUMBERS				4. REMARKS AND EXCEPTIONS		
34 NAVIGATION						
58. Liquid Crystal Display						
*** (LCD), EHSI and EADI						
FHSLEPL-020						
(STC ST00989LA-D)						
a) DME Distance	С	2	0	May be inoperative provided procedures		
Readout				do not require its use.		
	С	2	0	(O) May be inoperative provided		
				alternate procedures are established		
				and used.		
b) INS Distance	С	2	0			
Readout						
	0		0			
c) GSPD Readout	C	2	0			
d) TKE Readout	С	2	0			
,						
e) TTG Readout	С	2	0			
f) Wind Readout	C	2	Ο			
i) Wind Readout	U	2	0			
g) XTRK (Cross	С	2	0			
Track) Distance						
Keadout						
h) Bearing Pointers	С	4	0			
, , ,						
				(Continued)		
				(Continuea)		

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			REVISION: 35 DATE: 04/25/2014			
SYSTEM &	1		. 04/23/ MBFR I	NSTALLED		
SEQUENCE ITEM	••	2.1101	3. NU	MBER REQUIRED FOR DISPATCH		
NUMBERS				4. REMARKS AND EXCEPTIONS		
34 NAVIGATION						
E9 Liquid Crystal Diaplay						
*** (ICD) EHSL and EAD						
(Cont'd)						
(222)						
*** 1) Rockwell-Collins						
EHSI FPI-920						
(SIC SI00989LA-D)						
(Cont d)						
i) Terrain	С	2	0			
(TERR)	•	_	C C			
Displays						
(TAWS)						
1) Auto Dop up	C	2	0			
Terrain Alert	C	2	0			
Display						
Functions						
j) Range Markings	С	2	0	NOTE: No terrain displayed if set to 2.5		
				or 640 NM.		
k) APC Mode	C	2	1	One may be increative provided:		
K) AND MODE	U	2		a) Procedures do not require its use.		
				and		
				b) EHSIs are operative in HSI mode.		
				NOTE: No terrain displayed if set to HSI mode.		
				(Continued)		
				(Continuea)		
			I			

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MASTER MINIMUM EQUIPMENT LIS							
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SYSTEM & 1.	2. NU	MBER	INSTALLED				
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH				
NUMBERS			4. REMARKS AND EXCEPTIONS				
58. Liquid Crystal Display							
(Contid)							
(Cont a)							
*** 1) Rockwell-Collins							
EHSI FPI-920							
(STC ST00989LA-D)							
(Cont'd)							
I) MAP Mode	2	0	May be inonerative provided:				
	2	0	a) Procedures do not require its use.				
			and				
			b) EHSIs are operative in HSI mode.				
			NOTE: No terrain displayed if set to HSI				
			mode.				
m) PLAN Mode C	2	0	May be inoperative provided:				
	-	Ŭ	a) Procedures do not require its use,				
			and				
			b) EHSIs are operative in HSI mode.				
			mode				
			mode.				
n) Cross-side Data C	2	0	May be inoperative provided the				
Bus			associated systems are operative with				
			independent indications for each pilot's				
			instruments.				
			(Continued)				
			(Continuea)				

U.S. DEPARTMENT OF TRANSPORTATION									
FEDERAL AVIAT	FEDERAL AVIATION ADMINISTRATION								
AIRCRAFT:	NO 747		REVIS	REVISION: 35 PAGE NO:					
SYSTEM &	NG 747	1	2 NU	04/25/	2014 NSTALLED	34-34			
SEQUENCE	ITEM		3. NUMBER REQUIRED FOR DISPATCH			R DISPATCH			
NUMBERS					4. REMARKS AND E	EXCEPTIONS			
34 NAVIGATIO	N								
58. Liquid Crysta	l Display								
(Cont'd)	and EADI								
(Cont d)									
*** 2) Rockwell	-Collins								
EHSI FPI	-930 103211 A-T)								
	103212A-1)								
a) DME	Distance	С	2	0	May be inoperative p	rovided procedures			
Read	out				do not require its use				
		С	2	0	(O) May be inoperativ	ve provided			
		U	-	Ŭ	alternate procedures	are established			
					and used.				
b) FMS	Distance	C	2	0					
Read	out	U	2	U					
		-	_	_					
c) ETA I	Readout	С	2	0					
d) TTG	Readout	С	2	0					
,		_							
e) TAS I	Readout	С	2	0					
f) TKE I	Readout	С	2	0					
,									
g) GSPI	D Readout	С	2	0					
h) Wind	Readout	С	2	0					
		Ŭ	_	J					
i) XTRM	(Cross	С	2	0					
l rack Read) Distance								
l iteau									
j) Beari	ng Pointers	С	4	0					
					Continued				
					Continuea)				

U.S. DEPARTMENT OF TRANSPOR	U.S. DEPARTMENT OF TRANSPORTATION						
FEDERAL AVIATION ADMINISTRAT	ION		MASTER MINIMU	M EQUIPMENT LIST			
AIRCRAFT: REVISION: 35 PAGE N							
BOEING 747	DATE	: 04/25/	2014	34-35			
SYSTEM & 1.	2. NU	MBER I	NSTALLED				
SEQUENCE ITEM		3. NU	MBER REQUIRED FC	OR DISPATCH			
NUMBERS			4. REMARKS AND E	XCEPTIONS			
34 NAVIGATION							
58. Liquid Crystal Display							
*** (LCD), EHSI and EADI							
(Cont'd)							
*** 2) Rockwell-Collins							
EHSI FPI-930							
(ATC TD10321LA-T)							
(Cont'd)							
		0					
K) Track Indicators C	2	0					
I) Terrain (TERR) C	2	0					
Displays (TAWS)	_	Ŭ					
1) Auto Pop-up C	2	0					
Terrain Alert							
Display							
Functions							
m) Range Markings C	2	0	NOTE: No terrain dis	splayed if set to			
			640 NM.				
n) APC Mode	2	1	One may be incorrat	ive provided:			
	2	I	2) Procedures de	not roquiro ite uso			
			a) Theedules us	not require its use,			
			h) FHSIs are one	arative in HSI mode			
			NOTE: No terrain dis	splaved if set to			
			HSI mode.	1			
			(Continued)				

U.S. DEPARTMENT OF TRANSPOR		N	
FEDERAL AVIATION ADMINISTRAT	ION		MASTER MINIMUM EQUIPMENT LIST
AIRCRAFT:	REVIS	SION: 3	5 PAGE NO:
BOEING 747	DATE	: 04/25/	2014 34-36
SYSTEM & 1.	2. NU	MBER I	NSTALLED
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH
NUMBERS			4. REMARKS AND EXCEPTIONS
34 NAVIGATION			
58. Liquid Crystal Display			
*** (LCD), EHSI and EADI			
(Cont'd)			
*** 2) Rockwell-Collins			
EHSI FPI-930			
(ATC TD10321LA-T)			
(Cont'd)			
o) MAP Mode C	2	0	May be inoperative provided:
			a) Procedures do not require it use,
			and b) EUSIs are operative in USI mode
			b) Ensis are operative in hist mode.
			NOTE: No terrain displayed if set to
			HSI mode.
p) PLAN Mode C	2	0	May be inoperative provided:
			a) Procedures do not require its use,
			and
			b) EHSI are operative in HSI mode.
			NOTE: No terrain displayed if set to
			HSI mode.
g) Cross-side Data C	2	0	May be inoperative provided the
Bus	_		associated systems are operative with
			independent indications for each pilot's
			instruments.
			(Continuea)

U.S. DEPARTMENT OF TRANSPO	ORTATIC	N	MASTER MINIMUM EQUIPMENT LIST			
FEDERAL AVIATION ADMINISTRATION						
AIRCRAFT:	REVI	SION: 3	5 PAGE NO:			
BOEING 747	2 NI	<u>=. 04/25/</u> JMBER I	2014 <u>34-37</u> INSTALLED			
SEQUENCE ITEM	2.110	3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS			4. REMARKS AND EXCEPTIONS			
34 NAVIGATION						
58. Liquid Crystal Display*** (LCD), EHSI and EADI (Cont'd)						
*** 3) Astronautics A EHSI and EADI (STC ST00425CH)	4	3	 (O) First Officer's lower LCD may be inoperative provided: a) First Officer's RMI operates normally, b) Combined ADI (CADI) Mode is selected on First Officer's upper LCD, c) Approach minimums do not require its use, and d) Repairs are made within two flight days. 			
a) ARC Mode C	2	1	One may be inoperative provided: a) Procedures do not require its use, and b) EHSIs are operated in HSI mode.			
b) MAP Mode C	2	0	 May be inoperative provided: a) Procedures do not require its use, and b) EHSIs are operated in HSI mode. 			
c) PLN Mode C	2	0	May be inoperative provided procedures do not require its use.			
d) Groundspeed C Displays	2	0				
e) True Airspeed C Displays	2	0				
			(Continued)			

U.S. DE	U.S. DEPARTMENT OF TRANSPORTATION MASTER MINIMUM EQUIPMENT LIST					
FEDERA		TRAT			-	DAGENO
AIRCRA				510N: 3	5 /2017	PAGE NO: 34-38
SYSTEM	1 &	1				
SEQUE			2.1101	3. NU		R DISPATCH
NUMBE	RS			00	4. REMARKS AND E	XCEPTIONS
					_	
34 NA\	/IGATION					
50 Linu	id Ornatal Diamlay					
58. LIQU						
(LC)	of'd)					
(00)						
*** 3)	Astronautics					
	EHSI and EADI					
	(STC ST00425CH)					
	(Cont'd)					
	i) Wind Displays	C	2	0		
		C	2	0		
	g) Distance to	С	2	0		
	Active					
	Waypoint					
	Displays					
	h) Waynoint Data	C	2	0		
	i) Waypoint Data	0	2	0		
) Airport Data	С	2	0		
	/ 1					
) Radio Altitude	С	2	0	May be inoperative p	rovided approach
	Displays				minimums or operatir	ng procedures do
					not require its use.	
	() Rising Rupway	C	2	0	May be incorrative of	rovided approach
	Symbols	C	2	0	minimums do not red	uire its use
	Symbolo -					
) Decision Height	С	2	0	May be inoperative p	rovided approach
	Alert				minimums do not req	uire its use.
					(Continued)	

U.S. DEPARTMENT OF TRANS	U.S. DEPARTMENT OF TRANSPORTATION						
AIRCRAFT:		REVIS	SION: 3	5 PAGE NO:			
BOEING 747		DATE	: 04/25/	/2014 34-39			
SYSTEM &	1.	2. NU	MBER I	NSTALLED			
SEQUENCE ITEM			3. NUI				
NUMBERS				4. REMARKS AND EXCEPTIONS			
34 NAVIGATION							
 58 Liquid Crystal *** Display (LCD), EHSI and EADI (Cont'd) 							
*** 4) Smith Industries EHSI and EADI (STC ST01020SE)	A	4	3	 (O) First Officer's lower LCD may be inoperative provided: a) First Officer's RMI operates normally, b) Combined ADI (CADI) Mode is selected on First Officer's upper LCD, c) Approach minimums do not require its use, and d) Repairs are made within two flight days. 			
a) ARC (or Expanded) Mode	С	2	1	 One may be inoperative provided: a) Procedures do not require its use, and b) EHSIs are operated in HSI (or CTR) mode. 			
b) MAP Mode	С	2	0	 May be inoperative provided: a) Procedures do not require its use, and b) EHSIs are operated in HSI (or CTR) mode. 			
c) HSI (or Centered) Mode	С	2	1	 One may be inoperative provided: a) Procedures do not require its use, and b) EHSIs are operated in ARC (or Expanded) mode. 			
d) PLAN Mode	С	2	0	May be inoperative provided procedures do not require its use.			
				(Continuea)			

U.S. DEPARTMENT OF TRANSPO	RTATIO	N				
MASTER MINIMUM EQUIPMENT LIST						
AIRCRAFT.		REVISION: 35 PAGE NO.				
BOEING 747	DATE	DATE: 04/25/2014 34-40				
SYSTEM & 1.	2. NU	MBER I	NSTALLED			
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS			4. REMARKS AND EXCEPTIONS			
		l				
34 NAVIGATION						
58 Liquid Crystal						
*** Display (LCD),						
EHSI and EADI						
(Cont'd)						
*** 4) Smith Industries						
EHSI and EADI						
(STC ST01020SE)						
(Cont'd)						
a) Croundeneed		0				
e) Groundspeed C Displays	2	0				
Displays						
f) True C	2	0				
Airspeed						
Displays						
a) Wind	2	0				
Displays	2	0				
Displays						
h) Active C	2	0	May be inoperative provided			
Waypoint			procedures do not require its use.			
Identifiers						
i) ETA to C	2	0	May be ineperative provided			
Active	2	0	procedures do not require its use			
Wavpoint						
Displays						
j) Distance to C	2	0	May be inoperative provided			
Active Way-			procedures do not require its use.			
k) Lateral C	2	0	May be inoperative provided			
Track	-		procedures do not require its use.			
Pointers and						
Deviation Bars						
			(Continued)			

U.S. DEPARTMENT OF TRANSPORTATION						
FEDERAL AVIATION ADMINISTRATION						
AIRCRAFT:		REVIS	REVISION: 35 PAGE NO:			
BOEING	747	DATE	: 04/25/	2014	34-41	
SYSTEM &	1.	2. NUI	MBER I	NSTALLED		
	EIM		3. NU			
NOMBERG				4. KEIVIARKS AND E	INCEPTIONS	
34 NAVIGATION						
58. Liquid Crystal *** Display (LCD), EHSI and EADI (Cont'd)						
*** 4) Smith Indust EHSI and EA (STC ST010) (Cont'd)	ries \DI 20SE)					
I) VNAV Pointers	С	2	0	May be inoperative p procedures do not re	rovided quire its use.	
m) Glideslop Pointers (In EHSI)	e C	2	0	May be inoperative p approach minimums its use.	rovided do not require	
n) Course Pointer a Deviation Bar Pair (VOR/LO (In EHSI)	B nd C)	2	1	One pair may be inop a) Indication of VOI operates normal associated RDD or RMI, and b) Approach minim require its use.	perative provided: R radial ly in the MI, RDMI, ums do not	
o) Navigatic Advisory Message	n C s	2	0	May be inoperative p procedures do not re	rovided quire its use.	
p) ADF Bearing Pointers	D	4	0	Any in excess of thos 14 CFR may be inop	se required by erative.	
q) DME Distance Displays (In EADI)	D	4	0	Any in excess of thos 14 CFR may be inop	se required by erative.	
				(Continued)		

U.S. DEPARTMENT OF TRANSPORTATION						
FEDERAL AVIATION ADMINISTRATION						
AIRCRAFT:	REVIS	SION: 3	5	PAGE NO:		
BOEING 747		: 04/25/		34-42		
STOLEM & I.	2. NU		MBER REQUIRED FO			
NUMBERS		0.110	4. REMARKS AND E	XCEPTIONS		
34 NAVIGATION						
58. Liquid Crystal						
*** Display (LCD),						
EHSI and EADI						
(Cont'd)						
*** 4) Smith Industries						
EHSI and EADI						
(STC ST01020SE)						
(Cont d)						
r) Glideslope C	3	0	May be inoperative p	rovided		
Pointers			approach minimums	do not		
(In EADI)			require its use.			
s) Expanded	3	0	May be inconcrative or	rovided		
Localizer	0	Ŭ	approach minimums	do not		
Indicators			require its use.			
(In EADI)						
t) PMS Speed C	2	0	May be inonerative by	rovided		
Deviation	2	Ŭ	procedures do not rec	quire its use.		
Pointers						
		_	Movies			
u) Flight C Director	2	0	approach minimums	rovided or operating		
Command Bars			procedures do not rec	quire its use.		
v) Radio D	3	0	May be inoperative p	rovided		
Attitude			procedures do not rec	or operating		
Displays						
w) Rising C	2	0	May be inoperative p	rovided		
Symbols			require its use	uo not		
Cymbolo						
			(Continued)			

U.S. DEPARTMENT OF TRANSPORTATION						
FEDERAL AVIATION ADMINISTRATION						
AIRCRAFT:		REVIS	SION: 3	5 PAGE NO:		
BOEING 747		DATE	: 04/25/	2014 34-43		
SYSTEM &	1.	2. NUI	MBER I			
			3. NU			
NOMBERG				4. REMARKS AND EXCEPTIONS		
34 NAVIGATION						
58. Liquid Crystal *** Display (LCD), EHSI and EADI (Cont'd						
*** 4) Smith Industries EHSI and EADI (STC ST01020SE) (Cont'd)						
x) Decision Height Displays	С	2	0	May be inoperative provided approach minimums do not require its use.		
y) Decision Height Alert	С	2	0	May be inoperative provided approach minimums do not require its use.		
z) Dimming Functions (BRT/DIM)	С	5	0	(O)May be inoperative provided display brightness is acceptable to the flight crew.		
aa) Rate of Turn Indicators	С	2	0	May be inoperative provided Standby Attitude Indicator (EADI #3) operates normally.		
ab) Slip Indicators	С	3	0			
ac) Standby Attitude Indicator (EADI #3)	С	1	0	May be inoperative provided not required by 14 CFR.		
	В	1	0	 May be inoperative provided: a) A third switchable source of attitude reference is available, b) Operations are conducted in Day VMC only, and c) Operations are not conducted into known or forecast overthe-top conditions. 		

U.S. DEPARTMENT OF TRANSPORTATION MASTER MINIMUM EQUIPMENT LIST						
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AIRCRAFT:		REVIS	SION: 3	5	PAGE NO:	
BOEING 747	4	DATE	: 04/25/	2014	34-44	
SYSIEM &	1.	2. NUI	MBER I	NSTALLED		
			3. NU		RDISPATCH	
NUMBERS				4. REMARKS AND E	XCEPTIONS	
34 NAVIGATION						
59 EHSI/EADI Display						
*** Control Panel (DCP)						
*** 1) Rockwell-Collins						
ÉHSI FPI-920						
(STC ST00989LA-D)						
a) Dimming	С	2	0	May be inoperative p	rovided display	
Selectors				brightness is accepta	ble to the flight	
(BRT)				crew.		
b) Degring Calestan	~	4	0		a na avvina al lavv	
D) Bearing Selectors	C	4	0	Any in excess of thos	e required by	
(DRG I, DRG 2)				14 CFR may be mope	erauve.	
C) DATA SEI	C	2	0	May be incoerative o	rovided procedures	
Buttons	0	2	0	do not require its use		
Battono					•	
d) TERR Buttons	С	2	0	NOTE: If failed in TE	RR mode, the	
	•	_	Ū.	pop-up mode	will be inhibited on	
				opposite EHS	SI.	
e) MODE Selector	С	4	3	May be inoperative p	rovided:	
(HSI, ARC				a) EHSIs are ope	rative in HSI mode,	
positions)				and		
				b) One EHSI is o	perative in ARC	
				mode.		
f) MODE Salastar	C	Л	0			
	C	4	U			
positions)						
				(Continued)		

U.S. DEPARTMENT OF TRANSPOR	TATIO	١	MASTER MINIMU	M EQUIPMENT LIST	
FEDERAL AVIATION ADMINISTRAT	ION				
AIRCRAFT:	REVIS	SION: 3	5	PAGE NO:	
BOEING 747	DATE	: 04/25/	2014	34-45	
SYSTEM & 1.	2. NU				
		3. NU			
NOMBERS			4. REIVIARKS AND E	ACEPTIONS	
34 NAVIGATION]				
59. EHSI/EADI Display					
*** Control Panel (DCP)					
(Contrd)					
*** 2) Rockwell-Collins					
EHSI FPI-930					
(ATC TD10321LA-T)					
a) Dimming C	2	0	May be inoperative p	rovided display	
Selectors			brightness is accepta	ble to the flight	
(BRT)			crew.		
b) Bearing Selectors C	4	0	Any in excess of thos	e required by	
(BRG 1, BRG 2)		Ŭ	14 CFR may be inope	erative.	
c) NAV DATA SEL C	2	0	May be inoperative p	rovided procedures	
Buttons			do not require its use		
d) TERR Buttons C	2	0	NOTE: If failed in TE	RR mode, the pop-	
			opposite EHS		
				51.	
e) MODE Selector C	4	3	May be inoperative p	rovided:	
(HSI, ARC			a) EHSIs are ope	erative in HSI mode,	
positions)			and		
			b) One EHSI is o	perative in ARC	
			mode.		
f) MODE Selector	4	0			
(MAP. PLAN	- T				
positions)					
. ,			(Continued)		

U.S. DEPARTMENT OF TRANSPORTATION						
MASTER MINIMUM EQUIPMENT LIS						
FEDERAL AVIATION ADMINISTRATION						
AIRCRAFT: REVISION: 35 PAGE NO:						
BOEING 747 DATE: 04/25/2014 34-46						
SYSTEM & 1. 2. NUMBER INSTALLED						
3. NUMBER REQUIRED FOR DISPATCH						
4. REMARKS AND EXCEPTIONS						
34 NAVIGATION						
*** Control Panel (DCP)						
(Cont'd)						
*** 2) Rockwell-Collins						
EHSI FPI-930						
(ATC TD10321LA-T)						
(Cont'd)						
g) STA Map Data C 2 0						
Buttons						
h) WPT Map Data C 2 0						
Buttons						
i) ARPT Map Data C 2 0						
Buttons						
J) RIE DATA Map C 2 U						
k) BA Test Buttons C 2 0 May be inspective provided enpres	h					
minimums or operating procedures of	л Л					
not require its use	0					
(Continued)						

U.S. DEPARTMENT OF TRANSPOR	NOITAT	N	
FEDERAL AVIATION ADMINISTRA	ΓΙΟΝ		
AIRCRAFT:	REVIS	SION: 3	5 PAGE NO:
BOEING 747	2 NU	: 04/25/ MBER I	/2014 34-47
SEQUENCE ITEM	2. 110	3. NU	MBER REQUIRED FOR DISPATCH
NUMBERS			4. REMARKS AND EXCEPTIONS
34 NAVIGATION			
59. EHSI/EADI Display			
*** Control Panel (DCP)			
(Cont'd)			
*** 3) Astronautics			
EHSI and EADI			
(STC ST00425CH)			
a) MODE Selectors			
1) CADI C	2	1	(M) (O) One may be inoperative
			provided:
			a) Procedures are established and
			of the associated FADI to
			Combined mode, and
			b) Automatic switching is verified
			prior to each flight.
2) CHSI C	2	1	(M) (O) One may be inoperative
			provided:
			a) Procedures are established and
			used to verify automatic switching
			Combined mode, and
			b) Automatic switching is verified
			prior to each flight.
3) VOR/ILS C	2	1	(Ω) One may be inoperative provided
	2		associated EHSI is operated in FMS
			mode.
	0	1	(O) One may be increasive provided
	2		associated EHSI is operated in MAP
			mode.
			(Continued)

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MASTER MINIMUM EQUIPMENT LIST					
AIRCRAFT:		REVIS	REVISION: 35 PAGE NO:		
BOEING 747		DATE	DATE: 04/25/2014 34-48		
SYSTEM &	1.	2. NUI			
NUMBERS			3. NU	A REMARKS AND EXCEPTIONS	
34 NAVIGATION					
59. EHSI/EADI Display *** Control Panel (DCP) (Cont'd)					
*** 3) Astronautics EHSI and EADI (STC ST00425CH) (Cont'd)					
a) MODE Selectors (Cont'd)					
5) MAP	С	2	1	(O) One may be inoperative provided associated EHSI is operated in FMS mode.	
6) PLN	С	2	0		
7) CTR Buttons	С	2	0	NOTE: Operation in ARC mode is not required.	
b) RANGE Selectors	С	2	1	(O) One may be inoperative provided associated EHSI is operated in VOR/ILS or FMS mode.	
1) TFC Buttons	С	2	0	May be inoperative provided a secondary TCAS display on the affected side operates normally.	
	С	2	0	 (M) (O) May be inoperative provided: a) Procedures are established and used to verify TCAS "Pop-Up" function, and b) TCAS "Pop-Up" function is verified prior to each flight. 	
				(Continued)	

U.S. DEPARTMENT OF TRANSPORTATION				
FEDERAL AVIATION ADMINISTRATION				
AIRCRAFT:	REVIS	REVISION: 35 PAGE NO:		
BOEING 747		:: 04/25/ MBER I	/2014 34-49	
SEQUENCE ITEM	2.110	3. NU	MBER REQUIRED FOR DISPATCH	
NUMBERS			4. REMARKS AND EXCEPTIONS	
59. EHSI/EADI Display				
(Cont'd)				
*** 3) Astronautics EHSI and EADI (STC ST00425CH) (Cont'd)				
c) MAP Overlay Buttons				
1) WXR C	2	1		
2) NAV AID C	2	1		
3) WYPT C	2	1		
4) ARPT C	2	1		
5) RTE DATA C	2	1		
6) TERR C	2	0		
d) DH Selectors C	2	0	May be inoperative provided approach minimums or operating procedures do not require its use.	
e) VOR/ADF C Bearing Pointer Display Switches	2	1	One may be inoperative provided procedures do not require its use.	
			(Continued)	

MASTER MINIMUM EQUIPMENT LIST MASTER MINIMUM EQUIPMENT LIST AIRCRAFT: BOEING 747 PAGE NO: DATE: 04/25/2014 94 GE NO: 34-50 SYSTEM & SEQUENCE ITEM Image: 1000 minimum for the second SUBJECT STATUS 34 NAVIGATION 2 NUMBER REQUIRED FOR DISPATCH 34 NAVIGATION 4 REMARKS AND EXCEPTIONS 34 MODE Selectors 1 (O) One may be inoperative provided: a) Associated EADI and EHSI operate normally, and b) Repairs are made within two flight days. 2) CHSI A 2 1 (O) One may be inoperative provided: a) Associated EADI and EHSI operate normally, and b) Repairs are made within two flight days. 3) VOR/ILS C 2 1 One may be inoperative provided approach minimums and operating procedures do not require its use. 5) PLN C	U.S. DEPARTMENT OF TRANSPORTATION						
TEDENAL AVITATION ADJUMINST RATION REVISION: 35 PAGE NO: 34-50 AIRCRAFT: BOEING 747 REVISION: 35 PAGE NO: 34-50 SYSTEM & 1. 2. NUMBER INSTALLED 34-50 SEQUENCE ITEM 1. 3. NUMBER REQUIRED FOR DISPATCH NUMBERS 1. 3. NUMBER REQUIRED FOR DISPATCH 34 NAVIGATION 4. REMARKS AND EXCEPTIONS 59 EHSI/EADI Display 4. REMARKS AND EXCEPTIONS **** 4) Smith Industries EHSI and EADI (STC ST01020SE) 4. a) MODE Selectors 1 (O) One may be inoperative provided: a) Associated EADI and EHSI operate normally, and b) Repairs are made within two flight days. 2) CHSI A 2 1 (O) One may be inoperative provided: a) Associated EADI and EHSI operate normally, and b) Repairs are made within two flight days. 3) VOR/ILS C 2 1 One may be inoperative provided approach minimums and operating procedures do not require its use. 4) MAP C 2 1 One may be inoperative provided procedures do not require its use. 5) PLN C 2 0 0 6) CTR Buttons C 2 1 One may be inoperative provided procedures do not require its use.	MASTER MINIMUM EQUIPMENT LIS						
BOEING 747 DATE: 04/25/2014 34-50 SYSTEM & 1. 2. NUMBER INSTALLED 34-50 SEQUENCE ITEM 1. 2. NUMBER REQUIRED FOR DISPATCH NUMBERS 34 NAVIGATION 34. 34. 34 NAVIGATION 34. 34. NUMBER REQUIRED FOR DISPATCH 34. NAVIGATION 34. 34. 35. EHSI/EADI Display 34. 34. *** 4) Smith Industries 4. REMARKS AND EXCEPTIONS a) MODE Selectors 1 (O) One may be inoperative provided: a) Associated EADI and EHSI operative provided: a) MODE Selectors 1 (O) One may be inoperative provided: a) Associated EADI and EHSI operative provided: a) MODE Selectors 1 (O) One may be inoperative provided: a) Associated EADI and EHSI operative provided: a) VOR/ILS C 2 1 (O) One may be inoperative provided: a) VOR/ILS C 2 1 One may be inoperative provided approach minimums and operating procedures do not require its use. 4) MAP C	AIRCRAFT		BEVISION: 35 PAGE NO				
SYSTEM & SEQUENCE ITEM 1. 2. NUMBER INSTALLED 34 NAVIGATION 3. NUMBER REQUIRED FOR DISPATCH 34 NAVIGATION 4. REMARKS AND EXCEPTIONS 34 NAVIGATION 4. REMARKS AND EXCEPTIONS 39 EHSI/EADI Display 4. REMARKS AND EXCEPTIONS **** 4) Smith Industries EHSI and EADI (STC ST01020SE) 1 a) MODE Selectors 1 1) CADI A 2) CHSI A 2) CHSI A 3) VOR/ILS C 3) VOR/ILS C 4) MAP C 4) MAP C 5) PLN C 6) PLN C 6) CTR C 6) CTR C 6) RANGE C 7) RANGE C 1) One may be inoperative provided procedures do not require its use.	BOEING 747	DATE	: 04/25/	/2014 34-50			
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 3) VOR/ILS C 2 1 One may be inoperative provided approach minimums and operating procedures do not require its use. 4) MAP C 2 1 One may be inoperative provided procedures do not require its use. 5) PLN C 2 0 6) CTR Buttons C 2 0 Cone may be inoperative provided procedures do not require its use. 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0							
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b) RANGE C 2 1 One may be inoperative provided Functions procedures do not require its use.		2	0				
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Functions	b) RANGE C	2	1	One may be inoperative provided			
(10,640)	Functions			procedures do not require its use.			
(10-640)	(10-040)						
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(Continued)							

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FEDERAL AVIATION ADMINISTRATION						
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BOEING 747	DATE	: 04/25/	2014 34-51			
SYSTEM & 1	. 2. NU					
NUMBERS		5. NU	4 REMARKS AND EXCEPTIONS			
34 NAVIGATION						
59. EHSI/EADI Display						
*** Control Panel (DCP)						
(Cont'd)						
*** 1) Smith Industrias						
EHSI and EADI						
(STC ST01020SE)						
(Cont'd)						
c) MAP Overlay						
Buttons						
1) NAV AID C	; 2	1				
2) ARPT C	2	1				
3) RTE DATA C	2	1				
	, 2					
d) DH Selectors C	2	0	May be inoperative provided			
			approach minimums or operating			
			procedures do not require its use.			
60. Inertial Reference						
*** Systems (IRS)						
1) Inertial Reference						
Systems						
(HG2050AC50)						
a) Navigational C		_	Any in excess of those required by			
Information			14 CFR may be inoperative.			
b) Attitude/ C	-	2	A INITE SWITCHADLE SOURCE OF			
Information			inoperative provided a			
			self-contained bank and pitch			
			indicator is available.			
L		<u> </u>				

U.S. DEPARTMENT OF TRANSPORTATION					
MASTER MINIMUM EQUIPMENT LIS					
FEDERAL AVIATION ADMINISTRATION					
AIRCRAFT:	REVIS	SION: 3	5	PAGE NO:	
BOEING 747	DATE	: 04/25/	/2014	34-52	
SYSTEM & 1.	2. NU	MBER	INSTALLED		
SEQUENCE ITEM		3. NU	MBER REQUIRED FO	R DISPATCH	
NUMBERS			4. REMARKS AND E	XCEPTIONS	
34 NAVIGATION					
61. CMA-900 Flight C	3	2	One may be inoperat	ive provided	
			enroute operations do	o not require its use.	
ATC TD102211 A T					
STC ST00425CH and					
STC ST00423CH, and STC ST00698SE)					
1) CMA-900 Elight					
Management Units					
(FMU)					
(******)					
a) Two Autopilot C	3	2	(M) FMU 3 may be in	operative.	
Channels				I Contraction of the second se	
Installed					
С	2	1	(M) (O) One FMU Ma	y be inoperative	
			provided:		
			a) Enroute operation	tions do not require	
			its use, and		
			b) FMS steering of	of the associated	
			autopilot is not	used.	
			(Continue I)		
			(Continued)		

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MASTER MINIMUM EQUIPMENT L					
AIRCRAFT:		REVISION: 35 PAGE NO:			
BOEING 747		DATE	04/25/	2014	34-53
SYSTEM &	1.	2. NU	MBER I	NSTALLED	
SEQUENCE ITEM			3. NUI	MBER REQUIRED FOR	R DISPATCH
NUMBERS				4. REMARKS AND EX	KCEPTIONS
61. CMA-900 Flight *** Management Systems (FMS) (ATC TD9614LA-T, ATC TD10321LA-T, STC ST00425CH, and					
STC ST00698SE) (Cont'd)					
1) CMA-900 Flight Management Units (FMU) (Cont'd)					
b) Three Autopilot (Channels Installed	С	3	2	(M) One FMU may be provided enroute oper require its use.	inoperative ations do not
	C	2	1	 (M) (O) One FMU may provided: a) Enroute operation require its use, and b) FMS steering of the autopilot is not use. 	/ be inoperative ns do not nd the associated sed.
c) Navigation (Databases	C	-	-	 (O) May be out of curral a) Current Aerona used to verify N before dispatch b) Procedures are used to verify s of Navigation F define route of the count of the	ency provided: utical Charts are lavigation Fixes , established and tatus and suitability acilities used to flight, and gation Radios are and identified.
d) GPS Updating (C	3	0	May be inoperative pro operations do not requ (Continued)	ovided enroute lire its use.

U.S. DEP/	U.S. DEPARTMENT OF TRANSPORTATION					
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NUMBER				3. NU		
NOMBER	5					
34 NAVI	GATION					
-						
61. CMA-	900 Flight					
*** Mana	gement Systems					
ATC	TD10321LA-T					
STC	ST00425CH, and					
STC	ST00698SE)					
(Cont	'd)					
	uctors Interfece					
	nite (CIII)					
*** a)	Interface with	D	3	0	(M) (O) May be inope	rative provided
,	PMS				enroute operations do	o not require its use.
		-	_	_		
*** b)	Interface with	С	3	2	(M) (O) One may be i	noperative provided
	Inertial Navigation				remaining two CIU ar	nd associated
	System				normally	nis operate
					normally.	
*** 3) D	igital Discrete	С	3	2	(M) (O) One may be i	noperative
A	dapters (DDA)				provided:	
					a) Associated FM	1U is not selected as
					an instrument	source, and
					D) FIVIS Synchron	ized mode operates
					normany.	
4) Ai	r Data Converter	С	1	0	(M) (O) May be inope	rative provided
Ú	nit 2 (ADCU 2)				FMS synchronized m	ode operates
					normally.	
					(Continued)	
					(Continued)	

U.S. DEPARTMENT OF TRANSPORTATION						
MASTER MINIMUM EQUIPMENT LIST						
AIRCRAFT:		SION: 3	5 PAGE NO:			
BOEING 747	DATE	DATE: 04/25/2014 34-55				
SYSTEM & 1.	2. NU	2. NUMBER INSTALLED				
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS			4. REMARKS AND EXCEPTIONS			
34 NAVIGATION						
61. CMA-900 Flight *** Management Systems						
(FMS)						
(ATC TD9614LA-T,						
STC ST00425CH, and						
STC ST00698SE)						
(Cont'd)						
*** 5) Pilots' Panel						
Lights						
a) FMS APPR C Lights	2	1	(O) One may be inoperative provided FMS synchronized mode operates normally.			
Lights	2		FMS synchronized mode operates			
			normally.			
c) OFST C	2	1	(O) One may be inoperative provided			
Lights			FMS synchronized mode operates			
			normally.			
d) ATC C	2	1	One may be inoperative provided ATC			
Lights			HI-LO chime operates normally.			
	2	0				
Control Stand -	2	0				
VNAV AVAIL						
Lights						
62 Airborno		0	(\mathbf{O}) May be increasive provided the			
*** Dataloader	-		dataloader selector switch remains			
			in the OFF position.			
1) Detelocidar		_	(\mathbf{O}) Move by increase the provided the			
Selector Panel	-	U	dataloader selector switch remains			
			In the OFF position.			

MASTER MININ FEDERAL AVIATION ADMINISTRATION AIRCRAFT: REVISION: 35 BOEING 747 DATE: 04/25/2014 SYSTEM & 1. SEQUENCE ITEM NUMBERS 3. NUMBER REQUIRED 34 NAVIGATION 63 SatelliteBased *** Augumentation (SBAS) with WAAS	PAGE NO: 34-56 FOR DISPATCH D EXCEPTIONS
AIRCRAFT: REVISION: 35 BOEING 747 DATE: 04/25/2014 SYSTEM & 1. SEQUENCE ITEM NUMBERS 3. NUMBER REQUIRED 34 NAVIGATION 63 SatelliteBased **** Augumentation (SBAS) with WAAS Image: Note of the sector of the sec	PAGE NO: 34-56 FOR DISPATCH D EXCEPTIONS
BOEING 747 DATE: 04/25/2014 SYSTEM & 1. SEQUENCE ITEM NUMBERS 3. NUMBER REQUIRED 34 NAVIGATION 63 SatelliteBased **** Augumentation (SBAS) with WAAS	34-56 FOR DISPATCH D EXCEPTIONS
SYSTEM & 1. 2. NUMBER INSTALLED SEQUENCE ITEM 3. NUMBER REQUIRED NUMBERS 4. REMARKS AND 34 NAVIGATION 63 SatelliteBased **** Augumentation (SBAS) with WAAS	FOR DISPATCH DEXCEPTIONS
SEQUENCE ITEM 3. NUMBER REQUIRED NUMBERS 4. REMARKS AND 34 NAVIGATION 63 SatelliteBased **** Augumentation (SBAS) with WAAS	FOR DISPATCH DEXCEPTIONS
NUMBERS 4. REMARKS AND 34 NAVIGATION 63 SatelliteBased *** Augumentation (SBAS) with WAAS 63 SatelliteBased	D EXCEPTIONS
34 NAVIGATION 63 SatelliteBased *** Augumentation (SBAS) with WAAS	
34 NAVIGATION 63 SatelliteBased *** Augumentation (SBAS) with WAAS	
63 SatelliteBased *** Augumentation (SBAS) with WAAS	
1) Universal Avionics C 3 2 One may be inoper UNS-1Fw (STC ST02653NY-D) 3 2 One may be inoper is in the center (No approach procedur its use.	rative provided it . 3) position or es do not require
a) TAS C - 0 (O) May be inoper- procedures are est to enter TAS manu	ative provided ablished and used ally.
b) Heading C - 0 (O) May be inoperative of the procedures are estimated to enter heading matrix	ative provided ablished and used anually.
c) Course Deviation B - 1 (O) May be inoperative (HSI) (HSI) b) Associated Mode, and pare operable	ative provided: ation is monitored on and A/P GPS Nav Select banel message light e.
d) Flight Plan Cross C - 0 (O) May be inoperative constrained by the constraint of t	ative provided ablished and used manually.
e) Navigation Data C - 0 (O May be out of c Base (O May be out of c a) Current Aer used to ver before disp b) Procedures used to ver suitability c used to der c) Approach n manually tr	urrency provided: onautical Charts are ify Navigation Fixes atch, are established and ify status and f Navigation Facilities ine route of flight, and avigation radios are uned and identified.

U.S. DEPARTMENT OF TRANSPORTATION MASTER MINIMUM EQUIPMENT LIST					
FEDERAL AVIATION ADMINISTRATION					
AIRCRAFT:	REVIS	SION: 3	5 PAGE NO:		
BOEING 747		: 04/25/	2014 34-57 NSTALLED		
STSTEM & I.	2. NU		MBER REQUIRED FOR DISPATCH		
NUMBERS		5. NO	A REMARKS AND EXCEPTIONS		
34 NAVIGATION					
*** Augumentation					
(SBAS) with WAAS					
(Cont'd)					
1) Universal Avionics					
(Cont'd)					
f) Wind Speed and C	-	0	(O) May be inoperative provided		
Direction			procedures are established and used		
			to enter wind direction and speed		
			manually.		
g) LOS,LPV,LNAV C	2	0	(O) May be inoperative provided		
and VNAV			approach is not predicated on use of		
Annunciators			the SBAS system.		
n) Panel Message C	2	0	(O) May be inoperative provided		
(MSG FMS HDG			to monitor the associated operable		
FMS, APPR,			CDU message annunciator.		
SATX, GPS and			5		
INTEG)					
i) EMS Decording D	2	0	May be increative		
I) FINS Recording D	3	0	iviay be inoperative.		
j) Control Display C	3	2	One may be inoperative provided it		
" (CDU)			is in the center (No. 3) position or		
			approach procedures do not require		
			its use.		

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FEDERAL AVIATION ADMINISTRATION							
AIRCRAFT:	REVIS		D: 35 PAGE NO:				
BOEING 747		: 04/25/	2014 35-1 NSTALLED				
STOLEM & T.	2. NU	3. NU	MBER REQUIRED FOR DISPATCH				
NUMBERS			4. REMARKS AND EXCEPTIONS				
35 OXYGEN							
 Passenger Oxygen B Systems 	1	0	 (O) May be inoperative provided: a) Flight is not conducted where the minimum altitude enroute is above 14,000 feet MSL, b) All air conditioning packs operate normally, c) All other components of the pressurization system operate normally, d) Flight remains at or below FL 250, e) Portable Oxygen units are provided for 10% of the passengers, and f) Passengers are appropriately briefed. 				
С	1	0	May be inoperative provided flight is conducted at or below 10,000 feet MSL.				
1) Automatic C Deployment	1	0	 (M) (O) May be inoperative provided: a) Manual deployment system operates normally, and b) Flight remains at or below FL 250. 				
2) Passenger Service C Unit (PSU)	-	-	 (M) (O) May be inoperative without flight altitude restriction provided: a) Associated seats are blocked and placarded to prevent occupancy, and b) Units operate normally for all usable lavatories and flight attendant locations. (Continued) 				
U.S. DEPARTMENT OF TRANSPORTATION							
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FEDERAL AVIATION ADMINISTRATION							
AIRCRAFT:	REVIS		O: 35	PAGE NO:			
BOEING 747		:04/25/	2014 NSTALLED	35-2			
SEQUENCE ITEM	2. NU		MBER REQUIRED FO				
NUMBERS			4. REMARKS AND E	XCEPTIONS			
35 OXYGEN							
 Passenger Oxygen Systems (Cont'd) 							
3) Cargo Configuration C	1	0	May be inoperative p seats are considered not occupied.	rovided passenger inoperative and			
a) Passenger C Service Unit (PSU)	-	-	 (M) (O) May be inoper flight altitude restrictions a) Associated seand placarded occupancy, and b) Units operate usable lavator attendant locard 	erative without ons provided: eats are blocked d to prevent nd normally for all ries and flight ations.			
2. Portable Oxygen D Dispensing Units (Bottle and Mask)	-	-	 (M) Any in excess of 14 CFR may be unservised. a) Required distributions serviceable be maintained th and b) Bottles not pro- are replaced, removed at th maintenance 	those required by erviceable or ribution of ottles is roughout aircraft, operly serviced serviced, or e next available facility.			
3. Dual Pressure Indicator D on Fill Panel and/or F/E Station	-	-	(M) May be inoperative cylinder indications a verify that pressure is required amount.	ve provided all re checked to s above the			
4. Remote Fill Station D	-	-	(M) May be inoperative tight integrity of supplication affected.	ve provided leak- ly system is not			

U.S. DEPARTMENT OF TRANSPOR	TATIO	N				
MASTER MINIMUM EQUIPMENT LIST						
			0.05			
	REVR		U: 35	PAGE NO:		
BOEING 747	DATE	: 04/25/	2014	35-3		
SYSTEM & 1.	2. NU	MBER I	INSTALLED			
SEQUENCE ITEM		3. NU	MBER REQUIRED FC	OR DISPATCH		
NUMBERS			4. REMARKS AND E	XCEPTIONS		
35 OXYGEN	Ī					
5 Passanger Oxygon			(M) (O) Automatic on	oning footuro		
5. Passenger Oxygen C	-	-	(IVI) (U) Automatic op	(aa) may ba		
Mask Access Door			and/or the door latch	(es) may be		
Latch			inoperative in the uni	atched position		
			and taped closed pro	vided:		
			a) PSU oxygen s	system operates		
			normally,			
			b) Airplane rema	ains at or below FL		
			250, and			
			c) Passenger(s)	occupying the		
			seat(s) with th	ne inoperative door		
			latch are brief	ed on oxygen		
			mask access.			
C	-	-	(M) (O) Automatic op	ening feature		
			and/or the door latch	(es) may be		
			inoperative in the unl	atched position		
			and taped closed for	operations without		
			flight altitude restriction	ons provided		
			associated seat(s) ar	e blocked and		
			placarded to prevent	occupancy.		
			•			
6. Protective Breathing D	-	-	Any in excess of those	se required by		
Equipment (PBE)			14 CFR may be inop	erative or removed		
			provided location place	carding is		
			removed or obscured	I. Ť		
7. Oxygen Overboard C	1	0	(O) May be damaged	l or missing.		
Discharge Indicator				-		

U.S. DEPARTMENT OF TRANSPOR	IOITAT	N				
MASTER MINIMUM EQUIPMENT LIS						
FEDERAL AVIATION ADMINISTRATION						
AIRCRAFT:	REVIS	SION N	0: 32	PAGE NO:		
BOEING 747	DATE	: 04/12/	2005	36-1		
SYSTEM & 1.	2. NUMBER INSTALLED					
SEQUENCE ITEM		3. NU	MBER REQUIRED FC	OR DISPATCH		
NUMBERS			4. REMARKS AND E	XCEPTIONS		
36 PNEUMATIC			NOTE: Item 2 (Except Engine), Item Only), and Ite may not simu more than or the remaining valves must	ot CF6-80C2 3 (CF-6 Engine ems 5, 6, 7, and15 ultaneously affect ne engine, and on g engines, starter operate normally.		
 High Stage Bleed Valve Systems 						
1) JT9D Engines C (Except JT9D-70A)	4	3	(M) (O) One may be secured closed provi 70% N1 RPM is mair icing conditions.	inoperative ded a minimum of ntained while in		
2) JT9D-70A Engines C	4	3	(M) One may be inop closed.	perative secured		
3) CF6-45/50 Engines						
a) Without Pt 5.4 C Pressure Switch Installed	4	3	(M) (O) One may be secured closed provi 70% N1 RPM is main icing conditions.	inoperative ded a minimum of ntained while in		
			(Continued)			

U.S. DEPARTMENT OF TRANSPORTATION						
FEDERAL AVIATION ADMINISTRATION						
AIRCRAFT:	REVIS		O: 32 PAGE NO:			
BOEING 747		: 04/12/	2005 36-2 NSTALLED			
SEQUENCE ITEM	2. NU	3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS			4. REMARKS AND EXCEPTIONS			
36 PNEUMATIC						
 High Stage Bleed Valve Systems (Cont'd) 						
 CF6-45/50 Engines (Cont'd) 						
b) With Pt 5.4 C Pressure Switch Installed	4	3	(M) (O) If Pt 5.4 switch is determined to operate normally, one may be inoperative secured closed provided a minimum of 70% N1 RPM is maintained while in icing conditions.			
C	4	0	 (M)(O) May be operated normally if: a) Pt 5.4 switch(es) is determined to be inoperative, b) Pt 5.4 switch(es) is deactivated, and c) No other bleed air system abnormality exists. 			
4) High Pressure C Shutoff Valve Systems (CF6-80C2 Engines)	4	3	 (M) (O) One may be inoperative secured closed provided: a) A minimum of 70% N1 (55% N1 below 10,000 feet MSL) is maintained on the associated engine while in icing conditions, and b) Duct isolation valve switches remain open for takeoff and all flap operations. NOTE: The thrust reverser on the associated engine will be inoperative. 			
			(Continued)			

U.S. DEPARTMENT OF TRANSPORTATION							
FEDERAL AVIATION ADMINISTRATION							
AIRCRAFT:	REVIS		O: 32 PAGE NO:				
BOEING 747	DATE 2 NU	: 04/12/ MBER I	2005 36-3				
SEQUENCE ITEM	2.110	3. NU	MBER REQUIRED FOR DISPATCH				
NUMBERS			4. REMARKS AND EXCEPTIONS				
]						
36 PNEUMATIC							
 High Stage Bleed Valve Systems (Cont'd) 							
5) RB211 Engines C	4	3	 (M) (O) One may be inoperative provided: a) Valve is secured closed, and b) A minimum of 60% N1 is maintained while in icing conditions. NOTE: If the N1 RPM on the associated engine is inoperative, a minimum of 75% N3 will provide equivalent protection. 				
2. Precooler Control Systems							
1) JT9D Engines C (Except -70A)	4	3	 (M) (O) One may be inoperative provided: a) Associated bleed air valve switch remains closed except for engine start, b) Associated nacelle anti-ice switch remains OFF, c) Duct isolation valve switches remain open for takeoff and all flap operations with any engine installation, and d) Airplane is not operated in known or forecast icing conditions. 				
			(Continued)				

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		MASTER MINIMUM EQUIPMENT LIST				
FEDERAL AVIATION ADMINISTRATION						
AIRCRAFT:	REVIS		O: 32 PAGE NO:			
BUEING 747		: 04/12/	2005 <u>36-4</u>			
	2. NU					
NUMBERS		5. NU	A REMARKS AND EXCEPTIONS			
			TREMARING AND EXCEL HONG			
36 PNEUMATIC	1					
2. Precooler Control						
Systems						
(Cont a)						
2) JT9D-70A Engines C	4	3	(M) (O) One may be inoperative			
_,		-	provided:			
			a) Associated bleed air valve			
			switch remains closed except			
			for engine start, and			
			b) Duct isolation valve switches			
			flap operations with any engine			
			installation.			
3) CF6-45/50 Engines C	4	3	(M) (O) One may be inoperative			
			provided:			
			a) A minimum of 70% N1 is			
			maintained while in icing			
			b) Associated bleed air valve			
			switch remains closed except			
			for engine start, and			
			c) Duct isolation valve switches			
			remain open for takeoff and all			
			flap operations with any engine			
			installation.			
			(Continued)			

U.S. DEPARTMENT OF TRANSPOR	U.S. DEPARTMENT OF TRANSPORTATION				
MASTER MINIMUM EQUIPMENT LIST					
AIRCRAFT:			0: 32	PAC	GE NO:
BOEING 747	DATE	: 04/12/	2005		36-5
SYSTEM & 1.	2. NU	MBER I	NSTALLED		
SEQUENCE ITEM		3. NU	MBER REQUI	RED FOR DI	SPATCH
NUMBERS			4. REMARKS	S AND EXCE	PHONS
36 PNEUMATIC					
2. Precooler Control Systems (Cont'd)					
4) CF6-80C2 Engines C	4	3	(M) (O) One provided the modulating v intermediate	may be inope associated fa alve(s) remai open positior	erative In air Ins in the I.
C	4	2	(M) (O) One the right side inoperative p a) Assoc valve b) Airpla know condi c) For e perfor reduc	on the left sid of the airplar rovided: ciated fan air (s) remains o ane is not ope n or forecast tions, and ach inoperativ rmance limite ced by:	e and one on ne may be modulating pen, rated in icing ve system, d weights are
			Takeoff/ Approach/ Lndg Climb Enroute	2,100 lb. 3,800 lb.	(953 kg) (1,724 kg)
			(Continued))	

U.S. DEPARTMENT OF TRANSF	U.S. DEPARTMENT OF TRANSPORTATION				
MASTER MINIMUM EQUIPMENT LIST FEDERAL AVIATION ADMINISTRATION					
AIRCRAFT:		REVIS		D: 32	PAGE NO:
BOEING 747		DATE	: 04/12/	2005	36-6
SYSTEM &	1.	2. NUI	MBER I	NSTALLED	
NUMBERS			3. NUI		
NOMBERG				4. KEIVIARKS AND E	ACEPTIONS
36 PNEUMATIC					
 Precooler Control Systems (Cont'd) 					
5) RB211 Engines (С	4	3	 (M) (O) One may be in provided: a) Associated BI switch remain engine start, b) Duct isolation remain OPEN flap operation c) A minimum of maintained will conditions. NOTE: If the N1 RPM associated er inoperative, a 75% N3 will p equivalent pro- 	inoperative eed Air Valve s OFF except for valve switches for takeoff and all s, and 60% N1 is hile in icing M on the ngine is minimum of provide btection.

U.S. DEPARTMENT OF TRAN	ISPOR	ΤΑΤΙΟΝ	١	MASTER MINIMUM FOUIPMENT LIST		
FEDERAL AVIATION ADMINISTRATION						
AIRCRAFT:			O: 32 PAGE NO:			
BUEING 747	1	DATE 2 NU	: 04/12/ MBER I	2005 36-7 NSTALLED		
SEQUENCE ITEM	1.	2. 1101	3. NU	MBER REQUIRED FOR DISPATCH		
NUMBERS				4. REMARKS AND EXCEPTIONS		
36 PNEUMATIC						
 Engine Bleed Pressure Relief Valves 						
1) JT9D Engines	С	4	3	(M) (O) One may be inoperative closed provided associated High Stage Bleed Valve is secured closed.		
2) CF6-45/50 Engines	С	4	3	 (M) (O) One may be inoperative closed provided: a) Associated bleed air pressure regulating valve is secured closed, b) Duct isolation valve switches remain open for takeoff and all flap operations, and c) Airplane is not operated in known or forecast icing conditions. 		
3) CF6-50E2 Engines	A	4	3	 (M) (O) One may be inoperative open and removed provided: a) Associated bleed air pressure regulating valve is secured closed, b) Duct isolation valve switches remain open for takeoff and all flap operations, c) Airplane is not operated in known or forecast icing conditions, d) Blanking plate, P/N 312U7830-2, is installed, and e) Repairs are made within 5 flight days. 		

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AIRCRAFT' REVISION NO: 32 PAGE NO:						
BOEING 747		DATE: 04/12/2005 36-8				
SYSTEM &	1.	2. NU	MBER	NSTALLED		
SEQUENCE ITEM			3. NU	MBER REQUIRED FC	R DISPATCH	
NUMBERS				4. REMARKS AND E	XCEPTIONS	
36 PNEUMATIC						
3. Engine Bleed Pressure Relief Valves (Cont'd)						
4) RB211 Engines	С	4	3	(M) (O) One may be closed position provid high stage bleed valv	inoperative in the ded the related e is secured shut.	
	С	4	3	 (M) (O) One may be and removed provide a) Precooler Inle P/N 65B8993 b) Related high s is secured shift c) Blanking plate P/N 312U783 	inoperative open d: at Duct, 1-16, is installed, stage bleed valve ut, and e, 0-2, is installed.	
 Engine Bleed PRESS *** RELIEF Lights 	D	4	0			

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FEDERAL AVIATION	FEDERAL AVIATION ADMINISTRATION						
AIRCRAFT:		REVIS	D: 32	PAC	GE NO:		
BOEING	1		: 04/12/ MBED I			36-9	
SEQUENCE II	EM	2.1101	3. NU	MBER REQUI	RED FOR DI	SPATCH	
NUMBERS				4. REMARKS	S AND EXCE	PTIONS	
36 PNEUMATIC							
5. Engine Pylon Ble Air Valves	eed						
1) JT9D and CF6-45/50 E	C ngines	4	3	(M) (O) Exce may be inope provided duc remain open operations.	pt for engine erative secure t isolation val for takeoff an	start, one ed closed ve switches d all flap	
2) CF6-80C2 E	ngines C	4	3	(M) (O) Exce may be inope provided: a) For e perfo reduc	ept for engine erative secure ach inoperativ rmance limite ced by:	start, one ed closed /e system, d weights are	
				Takeoff/ Approach/ Lndg Climb	2,100 lb.	(953 kg)	
				Enroute	3,800 lb.	(1,724 kg)	
				b) Pneu switcl takeo	matic duct isc hes remain op ff and all flap	lation valve pen for operations.	
				NOTE: The th assoc inope Bullet been	nrust reverser iated engine rative unless in 747-36-208 installed.	on the will be Service 86 has	
3) RB211 Engir	nes C	4	3	(M) (O) Exce may be inope provided duc remain open operations.	pt for engine erative secure t isolation val for takeoff an	start, one ed closed ve switches d all flap	

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FEDERAL AVIATION ADMINISTRATION						
AIRCRAFT:	REVIS		O: 32 PAGE NO:			
BUEING 747		:04/12/	2005 36-10 NSTALLED			
SEQUENCE ITEM	2. NO	3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS			4. REMARKS AND EXCEPTIONS			
36 PNEUMATIC						
6. Low Pressure Bleed Check Valves						
1) JT9D Engines C	4	3	 (M) (O) One may be inoperative provided: a) Associated High Stage Bleed Valve is secured closed, b) Associated engine pylon bleed air valve is secured closed, except for engine start, c) Except for -70A engines, the airplane is not operated in known or forecast icing conditions, d) Low pressure bleed duct is blocked by an acceptable tool, and e) Duct isolation valve switches remain open for takeoff and all flap operations. 			
2) CF6-45/50 Engines C	4	3	 (M) (O) One may be inoperative provided: a) Associated High Stage Bleed Valve is secured closed, b) Associated bleed air pressure regulating valve is secured closed, c) Airplane is not operated in known or forecast icing conditions, and d) Duct isolation valve switches remain open for takeoff and all flap operations. 			

SPOR	IATION	١			
IKAI			O: 32 PAGE NO:		
	DATE	: 04/12/	2005 36-11		
1.	2. NU	MBER I	NSTALLED		
		3. NUI	MBER REQUIRED FOR DISPATCH		
			4. REMARKS AND EXCEPTIONS		
С	4	3	 (M)(O) One may be inoperative open provided: a) Associated high pressure shutoff valve is secured closed, b) A minimum of 70% N1 (55% N1 below 10,000 feet MSL) is maintained on the associated engine while in icing conditions, and c) Duct isolation valve switches remain open for takeoff and all flap operations. NOTE: The thrust reverser on the associated engine will be inoperative. 		
	TRAT 1.	C 4	C 4 3		

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MASTER MINIMUM EQUIPMENT LIST FEDERAL AVIATION ADMINISTRATION						
AIRCRAFT:	RI	EVIS		D: 32	PAGE NO:	
BOEING 747	D	DATE: 04/12/2005 36-12			36-12	
SYSIEM & 1	. 2.					
			3. NUI			
NUMBERS				4. REMARKS AND E	ACEPTIONS	
36 PNEUMATIC						
 Low Pressure Bleed Check Valves (Cont'd) 						
4) RB211 Engines C	>	4	3	 (M) (O) One may be provided: a) Associated Hi Valve is secure b) Associated er air valve is se except for enge c) Low pressure be blocked by tool, d) Airplane is no known or fore conditions, ar e) Duct isolation remain open for flap operation 	inoperative igh Stage Bleed red closed, ngine pylon bleed cured closed, gine start, bleed duct must an acceptable t operated in cast icing nd valve switches for takeoff and all s.	

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AIRCRAFT		DN REVISION NO: 32 PAGE N			
BOEING 747	DATE	: 04/12/	2005 36-13		
SYSTEM & 1.	2. NU	MBER I	NSTALLED		
SEQUENCE ITEM		3. NU			
NUMBERS			4. REMARKS AND EXCEPTIONS		
36 PNEUMATIC					
7. Bleed Air Systems					
1) JT9D Engines C	4	3	 (M) (O) One precooler core and the pneumatic ducting connecting the low pressure bleed check valve to the engine bleed air valve may be inoperative damaged provided: a) Associated High Stage Bleed Valve is secured closed, b) Associated engine pylon bleed air valve is secured closed, except for engine start, c) Low pressure bleed duct is blocked by an acceptable tool, d) Except for -70A engines, the airplane is not operated in known or forecast icing conditions, and e) Duct isolation valve switches remain open for takeoff and all flap operations. 		
			(Continued)		

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AIRCRAFT:	REVIS		O: 32 PAGE NO:		
BOEING 747	DATE	: 04/12/	/2005 36-14		
SYSTEM & 1.	2. NU	MBER I			
SEQUENCE ITEM NUMBERS		3. NU	MBER REQUIRED FOR DISPATCH		
NOMBERG			4. REMARKS AND EXCEPTIONS		
36 PNEUMATIC	1				
 Bleed Air Systems (Cont'd) 					
2) CF6-45/50 Engines C	4	3	 (M) (O) One precooler core and the pneumatic ducting connecting the bleed air pressure regulating valve to the pylon bleed air valve may be inoperative damaged provided: a) Associated bleed air pressure regulating valve is secured closed, b) Associated engine pylon bleed air valve is secured closed, b) Associated engine start, c) Airplane is not operated in known or forecast icing conditions, and d) Duct isolation valve switches remain open for takeoff and all flap operations. 		
			(Continued)		

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SEQUENCE ITEM		2. 1101	3. NU	MBER REQUI	RED FOR DIS	SPATCH
NUMBERS		4. REMARKS AND EXCEPTIONS			PTIONS	
36 PINEUMATIC						
 Bleed Air Systems (Cont'd) 						
3) CF6-80C2 Engines	С	4	3	(M) (O) One pneumatic di bleed air pre the pylon ble inoperative of a) Asso regul close b) Asso regul secur engir c) Airpla know condi d) Duct rema flap of e) For e perfo reduc Takeoff/ Approach/ Lndg Climb Enroute	precooler core sucting connect ssure regulating ed air valve m lamaged provi- ciated bleed a ating valve is a d, ciated engine ating and shuft red closed, ex- ne start, ane is not open in or forecast i isolation valve in open for tak operations, and ach inoperative mance limited by: 2,100 lb. 3,800 lb.	e and the ting the ng valve to hay be ided: ir pressure secured pressure coff valve is cept for rated in cing e switches keoff and all d re system, d weights are (953 kg) (1,724 kg) on the will be

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	2. NU				
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NUMBERS			4. REMARKS AND EXCEPTIONS		
36 PNEUMATIC					
 Bleed Air Systems (Cont'd) 					
4) RB211 Engines C	4	3	 (M) (O) One precooler core and the pneumatic ducting connecting the low pressure bleed check valve to the engine bleed air valve may be inoperative damaged provided: a) Associated High Stage Bleed Valve is secured closed, b) Associated engine pylon bleed air valve is secured closed, except for engine start, c) Low pressure bleed duct must be blocked by an accepted tool, d) Airplane is not operated in known or forecast icing conditions, and e) Duct isolation valve switches remain open for takeoff and all flap operations. 		
8. Engine Bleed Air C OVERHEAT Lights	4	3	One may be inoperative for an associated inoperative bleed air valve.		
9. Engine Bleed Air VALVE C CLOSED Lights	4	0			

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SYSTEM & 1.	2. NU					
		3. NU				
NUMBERS			4. REMARKS AND E	XCEPTIONS		
	1					
30 T NEOMATIO						
10. Engine Bleed HIGH						
STAGE Lights						
1) JT9D Engines C	4	3	One may be inoperat	tive provided		
(All Except –70A			70% N1 is maintaine	d on the		
and CF6-45/50			associated engine w	hile in icing		
Engines)			conditions.			
3) ITOD 704 Enginee	1	0				
2) J19D-70A Engines C	4	0				
3) CF6-80C2 Engines C	4	3	One may be inoperat	tive provided a		
			minimum of 70% N1	(55% N1 below		
			10,000 feet MSL) is r	maintained on the		
			associated engine wi	hile in icing		
			conditions.			
4) RB211 Engines C	4	0	May be inoperative p	rovided 60% N1 is		
,g	-		maintained on the as	sociated engine		
			while in icing condition	ons.		
			NOTE: If the N1 RPN	A on the		
			associated er	ngine is		
			inoperative, a	a minimum of		
			75% N3 will p	provide		
			equivalent pro	otection.		
11 Proumatic Procesure	2	1	(M) (O) One may be	inoporativo		
Indicating Systems	2		(IVI) (O) One may be			
indicating bystems			operate normally			
12. APU Bleed Air Valve C	1	0	(M) (O) May be inope	erative provided		
		_	valve is closed before	e departure.		
				-		

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SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH		
NUMBERS			4. REMARKS AND EXCEPTIONS		
36 PNEUMATIC					
13. Engine Start Solenoid C (In Engine Bleed Air Valves)	4	3	 (M) (O) One may be inoperative provided: a) Bleed air valve operates normally, and b) Engine start valves on remaining engines operate normally. 		
14. Wing Isolation Valves C	2	1	(M) (O) One may be inoperative ope	en.	
15. Bleed Air Pressure Regulating Valve Systems					
1) CF6-45/50 C Engines	4	3	 (M) (O) One may be inoperative provided: a) Associated bleed air pressu regulating valve is secured closed, b) Duct isolation valve switches remain open for takeoff and flap operations, and c) Airplane is not operated in known or forecast icing conditions. 	re s all	
			(Continued)		

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SEQUENCE ITEM		2.1101	3. NU	MBER REQUIR		БРАТСН
NUMBERS				4. REMARKS	AND EXCEP	PTIONS
36 PNEUMATIC						
 Bleed Air Pressure Regulating Valve Systems (Cont'd) 						
2) CF6-80C2 Engines	C	4	3	(M) (O) One m provided: a) Associ regulat closed b) Duct is remain flap op c) Airplan known conditi d) For ea perforr reduce Takeoff/ Approach/ Lndg Climb Enroute	nay be inope iated bleed a ting valve is s solation valve open for tak berations, ne is not oper or forecast in ons, and ch inoperativ mance limited ad by: 2,100 lb. 3,800 lb.	rative ir pressure secured e switches coff and all rated in cing re system, d weights are (953 kg) (1,724 kg)
16. APU Pneumatic Duct	С	1	0	NOTE: The thr associa inopera (M) (O) May b provided: a) APU cl normal b) If APU power, is dead	rust reverser ated engine v ative. be inoperative heck valve of lly, and is used for e , the APU Ble ctivated close	l on the vill be (leaking) perates electrical eed Air valve ed.

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BOEING 747		DATE	: 04/12/	2005	36-20
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SEQUENCE ITEM			3. NUI	MBER REQUIRED FC	OR DISPATCH
NUMBERS				4. REMARKS AND E	XCEPTIONS
36 PNEUMATIC					
17. APU Check Valve	С	1	0	(O) May be inoperativ	ve provided the
				APU bleed air valve i	remains closed
				after the first engine	is started.
18. High Stage	С	4	0		
Check Valves					
(RB211 Engines)					

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SYSIEM & 1.	2. NU	MBER I	NSTALLED				
SEQUENCE ITEM		3. NU	MBER REQUIRED FO	RDISPATCH			
NUMBERS			4. REMARKS AND E	XCEPTIONS			
38 WATER/WASTE							
				a su ta un su la s			
1. Potable Water Systems C	-	-	(IVI) Individual compo	nents may be			
			inoperative provided:				
			a) Associated co	ricoloted and			
			b) Accorded on	r isolaleu, anu			
		D) Associated system component are verified pat to have looke					
			NOTE: Any portion of	system which			
			onerates norm	ally may be used			
				ially may be used.			
C	_	_	(M) May be inonerativ	e provided:			
6			a) System is dra	ined and			
			b) Procedures a	re established and			
			used to ensur	e that system is			
			not serviced.	o that by otom to			
1) Potable Water D	-	-					
Indication System							

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AIRCRAFT:	REVIS	SION N	O: 35 PAGE NO:		
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SYSTEM & 1.	2. NU	MBER	INSTALLED		
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH		
NUMBERS			4. REMARKS AND EXCEPTIONS		
]	1			
30 WATER / WASTE					
2. Lavatory Waste C	-	-	(M) Individual components may be		
Systems			inoperative provided:		
(Including			a) Associated components are		
			b) Associated system components		
Lavatories)			are verified not to have leaks		
Lavatoriooy					
			NOTE: Any portion of system which		
			operates normally may be		
			used.		
C	_	_	(M) Associated lavatory system(s) may		
			be inoperative provided:		
			a) Associated components are		
			deactivated or isolated to		
			prevent leaks, and		
			b) Associated lavatory door is		
			secured closed and placarded:		
			INOPERATIVE - DO NOT		
			NOTE: These provisions are not		
			intended to prohibit inspections		
			by crewmembers.		
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BUEING /4/	1		: 04/12/	/2005 49-1		
SEQUENCE ITEM	1.	2. NU				
NUMBERS			5. NO	4. REMARKS AND EXCEPTIONS		
49 AIRBORNE AUXILIARY POWER						
 Auxiliary Power Unit (APU) 	С	1	0	 May be inoperative provided: a) APU Master switch remains OFF, and b) Procedures do not require its use. 		
1) Pneumatic Function	С	1	0	(M) May be inoperative and APU used for electrical power provided APU Bleed Air valve is deactivated closed.		
2. APU FAULT Light	С	1	0	(O) May be inoperative provided a qualified operator remains in the vicinity of the APU controls.		
	С	1	0	May be inoperative provided APU is not used.		
3. APU Oil Quantity Indication System	С	1	0	 (M) May be inoperative (and APU used) provided: a) APU oil quantity is verified filled to capacity once each flight day, b) There is no evidence of above normal oil consumption or leakage, and c) The APU auto-shutdown system operates normally. 		
	С	1	0	(M) May be inoperative provided APU is not used.		

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SEQUENCE ITEM			3. NUI	MBER REQUIRED FO	R DISPATCH
NUMBERS				4. REMARKS AND E	XCEPTIONS
49 AIRBORNE AUXILIARY POWER					
4. APU RPM Indication System	С	1	0	May be inoperative pr a) At least one A frequency ind normally, and b) EGT is monito acceleration.	ovided: APU generator ication operates ored during APU
	С	1	0	May be inoperative p not used.	rovided APU is

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NUMBERS				4. REMARKS AND EXCEPTIONS
49 AIRBORNE AUXILIARY				
POWER				
5. APU Inlet Door	С	1	0	(M) May be inoperative secured closed provided APU is not used.
	С	1	0	 (M) May be inoperative open or partially open provided: a) If APU is used in flight or on the ground, door is in the proper position, b) Time limitations are adhered to, and c) The following gross weight penalties are applied: <u>Takeoff and Landing</u>: Old inlet door - 2,910 lb. (1,320 kg) (Maximum of 50 flight hours)
				Scoop inlet door – 800 lb. (363 kg) (No time limitation)
				Enroute Climb (1 or 2 engines out):
				Old inlet door – 7,760 lb. (3,520 kg) (Maximum of 50 flight hours)
				Scoop inlet door – 2,140 lb. (971 kg) (No time limitation)
				NOTE: With scoop removed in accordance with Service Bulletin 747-49-2046, use penalties and limitations for "Old inlet Door".

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SVSTEM &	1		. 04/12/ MRED I		49-4		
SEQUENCE ITE	и. М	2. 110					
NUMBERS			5. NO	4 REMARKS AND E			
49 AIRBORNE AUXIL POWER	IARY						
 APU External Control System 	С	1	0	(O) May be inoperation qualified operator rer of the APU controls.	ve provided a nains in the vicinity		
	С	1	0	May be inoperative p not used.	rovided APU is		
7. APU Auto-Shutdov System	vn C	1	0	 (O) May be inoperative a) APU is used of start, and b) Control panel monitored. 	ve provided: only for engine is closely		
	С	1	0	May be inoperative p not used.	rovided APU is		
8. APU Battery *** Cooling Fan	D	1	0				
9. APU Cockpit *** Hourmeter	D	1	0				
10. APU Starter *** Counter Meter	D	1	0				
11. APU Anti-Ice Valve	e C	1	0				

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SEQUENCE ITEM	2.1101	3. NU	MBER REQUIRED FOR DISPATCH	
NUMBERS			4. REMARKS AND EXCEPTIONS	
52 00013				
1. Door and Fillet Warning and Indicating Lights				
1) Main Entry, Upper C Deck, Main and Center Electronics Bay Access, Bulk Cargo, and Fillet Door Warning Lights	-	0	(M) May be inoperative provided the door(s) is (are) closed, locked and visually verified secured in accordance with the manufacturer's recommended procedure. In addition to the above visual verification for the Bulk Cargo Door and the Main and Center Electronics Bay Access Doors, they must also be pushed.	
2) Forward and Aft C Lower Lobe and Main Deck Side Cargo Door Warning Lights (Including Israel Aircraft Industry Special Freighter, STC ST00358LA)	-	-	(M) One light on the F/E panel may be inoperative provided the CARGO DOORS Light on the pilots' panel is verified to operate normally.	
a) CARGO DOORS A Light (Pilots' Panel)	1	0	 (M) May be inoperative provided: a) Associated cargo door lights on the F/E panel operate normally, b) Associated cargo door(s) is (are) closed, locked, and visually verified secured in accordance with the manufacturer's recommended procedure, and c) Repairs are made within three flight days. 	
			(Continued)	

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NUMBERS		4 REMARKS AND EXCEPTIONS				
52 DOORS		ĺ				
 Door and Fillet Warning and Indicating Lights (Cont'd) 						
 Door Indicator Lights C (Door Operator's Control Panel) 	-	0	(M) May be inoperative provided the door(s) is (are) closed, locked, pushed, and visually verified secured in accordance with the manufacturer's recommended procedure.			
 Nose Cargo Door *** Warning Light (F/E and Pilots' Panels) 						
1) Cargo Configuration A	-	0	 (M) (O) May be inoperative provided: a) It is visually verified that latches are fully extended before each departure, b) Accepted procedures are followed, c) An inoperative light which will not extinguish is deactivated, and d) Repairs are made within 30 flight hours. 			
a) Flight Deck Test C Feature	1	0	 (M) May be inoperative provided: a) Latches are visually verified fully extended before each departure, and b) Latches are deactivated by an accepted procedure. (Continued) 			

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	_				
52 DOORS					
 2. Nose Cargo Door *** Warning Light (F/E and Pilots' Panels) (Cont'd) 					
2) Passenger A Configuration	-	0	 (M) (O) Lights and/or test feature may be inoperative provided: a) Door is deactivated in accordance with maintenance manual procedures, and b) Repairs are made within 30 flight hours. 		
3. Main Lower Lobe Cargo C *** Doors and/or Main Deck Side Cargo Door (Including Israel Aircraft Industry Special Freighter, STC ST00358LA)	-	_	 (M) (O) One latch or hinge section per door may be missing or inoperative provided: a) It is visually verified before departure that there is no damage to other hinge sections or latches on the associated door, b) Flight is conducted in an unpressurized configuration, and c) For passenger or mixed passenger/cargo operations only, procedures are established and used to ensure the lower cargo compartments and the Combi main deck cargo compartment remain empty or are verified to contain only empty cargo handling equipment, ballast (ballast may be loaded in ULDs), or Fly Away Kits. 		
			(Continued)		

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NUMBERS				4. REMARKS AND E	XCEPTIONS	
52 DOORS						
 Main Lower Lobe Cargo *** Doors and/ or Main Deck Side Cargo Door (Including Israel Aircraft Industry Special Freighter, STC ST00358LA) (Cont'd) 				NOTE: Operator MEL which items a inclusion in th and which ma used as ballas	s must define re approved for e Fly Away Kits terials can be st.	
4. Nose Cargo Door C *** Power Drive (Lift) System	C	1	0	(M) May be inoperativ accepted maintenanc procedures are estab	ve provided e manual lished and used.	
5. Nose Cargo Door C *** Cam System	C	1	0	(M) May be inoperativ accepted maintenanc procedures are estab	ve provided e manual lished and used.	
6. Nose Cargo Door C *** Power Latch System	C	1	0	 (M) May be inoperative a) Associated laterative extended marerative accepted main procedures, at b) Latches are version fully extended 	ve provided: tches are nually by ntenance manual nd isually confirmed	
1) Power Latches C	C	16	15	One may be inoperat unlatched position or remaining latches are confirmed to be fully	ive in the missing provided visually extended.	

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NUMBERS	
52 DOORS	
7. Nose Cargo DoorC10(M) May be inoperative with bot LATCHES CLOSED indications inoperative provided latches are visually verified closed.7. Nose Cargo DoorC10(M) May be inoperative with bot LATCHES CLOSED indications inoperative provided latches are visually verified closed.	h S Ə
C 1 0 (M) May be inoperative with bot LATCHES UNLOCKED installar inoperative provided all latches visually verified locked.	h tions are
C 1 0 May be inoperative with both LATCHES UNLOCKED installat inoperative provided two lights a P10 panel are used to confirm t latches are locked.	tions at pilots' hat the
1) Nose Cargo Door C 1 0 (M) May be inoperative provided latches are verified closed by vi Loadmaster Station with Annunciator Module	d sual
C 1 0 May be inoperative provided lat are confirmed closed by visual inspection of latch annunciator	ches lights.
C 1 0 May be inoperative provided lat are confirmed closed by visual inspection of Flight Engineer pa indicator lights.	ches Inel
 8. Main Entry Door Mode Selector OR Upper Deck Type "A" Door Mode Selector 	

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		3. NU	MBER REQUIRED FOR DISPATCH		
NUMBERS			4. REMARKS AND EXCEPTIONS		
52 DOORS					
9. Pressure Stop Fitting C Assemblies, Main Entry Doors	-	-	 (M) (O) One forward fitting assembly and/or one aft fitting assembly per door (with a total of 10 fittings per airplane) may be missing or inoperative provided: a) There are no visible defects on other fitting assemblies for associated door(s), b) Auto controller operates normally, and c) Maximum cabin differential pressure is limited to 5.2 psi. 		
10. Pressure Stop C Fitting Assemblies, Upper Deck Door(s)	-	_	 (M) (O) One forward fitting assembly and/or one aft fitting assembly per door may be missing or inoperative provided: a) There are no visible defects on other fitting assemblies for associated door(s), b) Auto controller operates normally, and c) Maximum cabin differential pressure is limited to: All Except Extended Upper Deck: 6.1 psi. Extended Upper Deck: 3.0 psi. 		

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SEQUENCE ITEM		3. NU	MBER REQUIRED FC	OR DISPATCH	
NUMBERS			4. REMARKS AND E	XCEPTIONS	
52 DOORS					
 11. Cargo Door Stop Pins or D *** Stop Pin Fitting Assemblies (Main Lower Lobe or Main Deck Side Cargo Doors) (Including Israel Aircraft Industry Special Freighter, STC ST00358LA) 	-	0	May be inoperative o there is no evidence structural damage.	r missing provided of adjacent	
12. Nose Cargo Door A *** Latch Lock System	1	0	 (M) (O) May be inope a) Accepted main procedures and used, and b) Repairs are not flight hours. 	rative provided: intenance manual re established and nade within 30	
			NOTE: Nose Cargo I Lights will als	Door Warning o be inoperative.	
13. Main Entry Door C Hold-Open Latch	-	-	May be inoperative p considered inoperativ	rovided the door is /e.	
D	-	-	May be inoperative in configuration.	n a cargo	
1) Latch Release Lever C	-	0			
2) Latch Release Lever D (Cargo Configuration)	-	0			

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SEQUENCE ITEM		2.110	3. NU	MBER REQUIRED FOR DISPATCH				
NUMBERS				4. REMARKS AND EXCEPTIONS				
52 DOOR3								
14. Nose Cargo Door *** Latch Annunciator	A	1	0	 May be inoperative in a cargo configuration provided: a) Nose Cargo Door Warning Lights (flight deck) operate normally, and b) Repairs are made with 30 flight hours. 				
	A	1	0	 (M) May be inoperative in a cargo configuration provided: a) Proper latch engagement is visually verified, and b) Repairs are made within 30 flight hours. 				
15. Crew Compartment Overhead Hatch Latch Pin	С	4	3	(M) One may be removed provided hatch operates normally.				
 16. Main Deck Side Cargo *** Door Latch System (Electrical Function) (Including Israel Aircraft Industry Special Freighter, STC ST00358LA) 	С	1	0	 (M) May be inoperative provided: a) Manual function operates normally, b) There is no damage to latch mechanism, c) There is no damage to master latch lock mechanism, d) Door is closed and locked using an accepted maintenance procedure, and e) All cam latches and lock sectors are verified in the closed/locked position. 				
17. Door MANUAL Light	С	1	0	(O) May be inoperative provided alternate procedures are established and used.				
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NUMBERS			4. REMARKS AND EXCEPTIONS					
52 DOORS								
18. Upper Deck Type "A" C*** Emergency Exit Door Actuator(s)	2	0	Electrical operation feature of doors may be inoperative.					
19. Flight Deck Door C *** Lock System (Not 14 CFR 25.795 Compliant)	1	0	 (M) May be inoperative provided: a) Passengers do not occupy upper deck during taxi, takeoff or landing on airplanes with upper deck door escape provisions forward of the flight deck door, b) Door can be locked and unlocked manually, and c) Solenoid is deactivated in the retracted position. 					
C	1	0	May be inoperative provided supplemental flight deck door security device is installed and operates normally.					
С	1	0	May be inoperative provided flight is conducted in a cargo configuration.					
20. Cargo Door Hook C Systems (Main Lower Lobe Cargo Doors and Main Deck Side Cargo Door) (Electrical Function) (Including Israel Aircraft Industry Special Freighter, STC ST00358LA)	-	0	 (M) May be inoperative provided: a) Manual function operates normally, b) There is no damage to hook mechanism, and c) Doors are closed and locked using an accepted maintenance manual procedure. 					

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SYSIEM & 1.	2. NU						
		3. NU		OR DISPATCH			
NOMBERS			4. REMARKS AND E	XCEPTIONS			
52 DOORS							
21. Extended Upper Deck C *** Door BATTERY OK Lights	2	1	 (M) One press-to-tes inoperative provided: a) Associated baa adequately chade b) Charge adequately the beginning 	t system may be attery is narged, and uacy is verified at of each flight day.			
22. Main Lower Lobe Cargo C Door Latch Systems (Electrical Function)	2	0	 (M) May be inoperative a) Manual function normally, b) There is no date mechanism, c) There is no date latch lock methods d) Doors are closed using an acceleration and procesed and procesed and procesed by All latch cameleration. 	ve provided: on operates amage to latch amage to master chanism , sed and locked epted maintenance edure, and s on lower sill are in the closed			
23. Cargo Door Lift Systems C (Main Lower Lobe Cargo Doors and Main Deck Side Cargo Door) (Including Israel Aircraft Industry Special Freighter, STC ST00358LA)	-	0	 (M) May be inoperative a) There is no day mechanism, b) There is no day master latch leand c) Associated descripted and logaccepted main procedure. 	ve provided: amage to the latch amage to the ock mechanism, oor is opened, cked using an ntenance manual			

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SYSTEM & 1.	2. NU	MBER					
SEQUENCE ITEM		3. NU	MBER REQUIRED FC	OR DISPATCH			
NUMBERS			4. REMARKS AND E	XCEPTIONS			
52 DOORS							
24. Bulk Cargo Door C Balance Mechanism	1	0	(M) May be inoperati safety hold open dev	ve provided a ice is used when			
25. Cargo Door Electrical C *** Hydraulic Pump (Hayes STC)	1	0	 (M) May be inoperative a) Manual hand normally, b) Hydraulic pretto operate the and c) An acceptable use of the main is established 	ve provided: pump operates ssure is sufficient e door normally, e procedure for nual hand pump I and used.			
26. Main Deck Side Cargo C *** Door Indicating System (Hayes STC)	1	0	 (M) May be inoperative a) All latches op are verified lo departure, an b) Cargo door la using an acce 	ve provided: erate normally and cked before each d tches are pinned eptable procedure.			
27. Pressure Stop Fitting C Assemblies, Bulk Cargo Door	-	-	 (M) (O) One forward one aft fitting assemble or inoperative provide a) There are no remaining fitti associated do b) Auto controlle normally, and c) Maximum cab pressure is lin 	fitting assembly or oly may be missing ed: visible defects on ng assemblies for oor, er operates bin differential nited to 5.2 psi.			

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BOEING 747	4		: 04/12/	2005 52-12				
STOLENCE ITEM	1.							
NUMBERS		3. NUMBER REQUIRED FOR DISPATCH						
			4. REMARKS AND EXCEPTIONS					
52 DOORS								
28. UPR DK DR FLT *** LOCK Light (F/E Panel) (Extended Upper Deck)	С	1	0	 (M) May be inoperative provided: a) Each upper deck Type "A" door is verified to be capable of being unlatched before each departure, and b) DOOR GRD MODE Light above each upper deck Type "A" door operates normally. 				
	С	1	0	 (M) (O) May be inoperative provided: a) Each upper deck Type "A" door is verified to be capable of being unlatched before each departure, and b) A cabin attendant monitors door handle(s), when cabin pressure differential is less than 3.0 psi, to prevent inadvertent door operation. 				
29. DOOR GND MODE *** Light (Above Door) (Extended Upper Deck)	С	2	0	 (M) May be inoperative provided: a) Each upper deck Type "A" door is verified to be capable of being unlatched before each departure, and b) UPR DK DR FLT LOCK Light on F/E panel operates normally. 				
	С	2	0	 (M) (O) May be inoperative provided: a) Each upper deck Type "A" door is verified to be capable of being unlatched before each departure, and b) A cabin attendant monitors door handle(s), when cabin pressure differential is less than 3.0 psi, to prevent inadvertent door operation. 				

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SEQUENCE ITEM	1.	2. NUI		MBER REQUIRED FOR DISPATCH				
NUMBERS			0.110	4. REMARKS AND EXCEPTIONS				
52 DOORS								
30. Flight Lock Actuator *** (Extended Upper Deck)	С	2	0	 (M) (O) May be inoperative or missing provided: a) Each upper deck Type "A" door is verified to be capable of being unlatched before each departure, and b) A cabin attendant monitors door handle(s), when cabin pressure differential is less than 3.0 psi, to prevent inadvertent door operation. 				
31. Main (Forward) Electronic Bay External Access Door Latch Pins	С	4	3	(M) May be damaged or missing provided the door operates normally.				
	С	4	3	 (M) May be inoperative provided: a) Integrity of remaining pins is verified, b) Remaining pins are verified to be fully engaged before departure, and c) Door remains closed. 				
 32. Main Deck Side Cargo *** Door Latch Lock System (Interior Master Latch Lock Handle Shear Pin) (Including Israel Aircraft Industry Special Freighter, STC ST00358LA) 	С	1	0	 (M) Shear pin may be inoperative or missing provided: a) Exterior master latch lock handle operates normally, b) There is no damage to the master latch mechanism, and c) Door is locked using the exterior master latch lock handle. 				

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BOEING 747		DATE	: 04/12/	2005	52-14		
SYSTEM &	1.	2. NU	MBER I	NSTALLED			
SEQUENCE ITEM			3. NU	MBER REQUIRED FO	R DISPATCH		
NUMBERS				4. REMARKS AND E	XCEPTIONS		
52 DOORS							
 33. Boeing Enhanced Flight *** Deck Security Door Automatic Locking System (14 CFR 25.795 Compliant) 	A	1	0	 (M) (O) May be inope a) Automatic lock deactivated, b) Door dead box normally and it the door, c) Alternate processablished ar locking and ur using the deaded d) Repairs are manual flight days. 	rative provided: king system is It operates is used to lock redures are nd used for nlocking the door d bolt, and hade within two		
 Flight Deck Access Panel System (Keypad, Door Chime) 	В	1	0	 (M) (O) May be inope a) Keypad is dea b) Alternate proceetablished ar 	rative provided: activated, and edures are nd used.		
a) LEDs	С	-	0	(O) May be inoperatival alternate procedures and used.	ve provided are established		
*** b) Door Bell Mode	С	1	0	(O) May be inoperatival alternate procedures and used.	ve provided are established		
2) Flight Deck Door LOCK FAIL Light	В	1	0	(M) May be inoperative automatic lock control operate normally.	ve provided Is are verified to		
				(Continued)			

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FEDERAL AVIATION ADMINISTRAT	FEDERAL AVIATION ADMINISTRATION							
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BOEING 747			2005	52-15				
	2. NU							
NUMBERS		3. NO	A REMARKS AND E					
52 DOORS]							
33. Boeing Enhanced Flight								
Automatic Locking								
System								
(14 CFR 25.795								
Compliant)								
(Cont'd)								
3) Flight Deck Door B	1	0	(IVI) May be inoperativ	e provided:				
AUTO UNER EIght			verified to one	rate normally				
			and	frate normally,				
			b) Door chime o	perates normally.				
4) Flight Deck Door B	1	0	(M) (O) May be inope	rative provided:				
Lock Control			a) Keypad is dea	activated,				
Selector			D) Automatic loc	ally and				
			c) Alternate proc	edures are				
			established ar	nd used.				
5) Pressure Rate-Of- A	1	0	(M) May be inoperativ	ve provided:				
Change Sensing			a) Pressure sens	sing module is				
Module			deactivated, a	ind				
			D) Repairs are in	ade within two				
			ingin uays.					
34. Boeing Enhanced Flight C	1	0	May be inoperative p	rovided automatic				
*** Deck Security Door			lock controls operate	normally.				
Dead Bolt								
(14 CFR 25.795								
Compliant)								

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BOEING 747		DATE	: 07/27/	2000	53-1			
SYSTEM &	1.	2. NUI	MBER I	NSTALLED				
			3. NUI					
NUMBERS				4. REMARKS AND E	XCEPTIONS			
53 FUSELAGE								
1 Caroo Liner Belt Panels				Moved to ATA 25-20	Rev 20			
1. Gargo Einer Deit Fanels					, 1.07 20.			
2. Sidewall Vents								
1) Passenger	D	-	-	(M) Two sidewall ven	ts on each side of			
Configuration				each zone may be or	pen or missing			
				provided the adjacen	t passenger seat			
				occupied.				
	_		0					
2) Cargo Configuration	D	-	0	May be missing.				
3. Floor Vents								
1) Bassanger	c			Two in each zone me	who open or			
Configuration	C	-	-	missing.				
2) Cargo Configuration	D	-	0	May be missing.				

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FEDERAL AVIATION ADMINISTRATION									
AIRCRAFT:		REVIS	SION N	O: 34a	PAGE NO:				
BOEING 747		DATE	: 08/17/	2009	56-1				
SYSTEM &	1.	2. NU	MBER I	NSTALLED					
SEQUENCE ITEM			3. NU	MBER REQUIRED FO	OR DISPATCH				
NUMBERS		4. REMARKS AND EXCEPTIONS							
56 WINDOWS									
1. Windshields, Windows	-	-	-	Relief Deleted with R	evision 34a				
				Note: Refer to aircra	ft maintenance				
				Manual (AMM)	or structural				
				repair manual ((SRM)				

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BOEING 747	2 NU	. 07/28/ MBER I	2004 73-1 NSTALLED					
SEQUENCE ITEM	2.110	3. NU	MBER REQUIRED FOR DISPATCH					
NUMBERS			4. REMARKS AND EXCEPTIONS					
73 ENGINE FUEL &								
CONTROL								
1. Fuel Filter C	4	0	(M) (O) May be inoperative provided:					
(ITAD Engines)			a) Associated fuel temperature					
(319D Engines)			b) Airplane is not operated with the					
			associated engine fuel					
			temperature at or below +5					
			degrees C, and c) Inoperative beater valve					
			remains closed.					
1) Automatic Function D	1	0						
2. Fuel Heater D	4	0						
Valve Lights								
3. Engine Fuel								
Temperature Indicating								
Systems								
1) JT9D Engines C	4	0	(O) May be inoperative provided fuel					
			heater operation is verified by a drop in					
			EPR and a rise in engine oil					
			temperature.					
*** 2) CF6 Engines D	4	0						
3) RB211 Engines C	4	3	(O) One may be inoperative provided:					
-,			a) Associated engine's fuel					
			pressure warning system					
			operates normally, and					
			indication system operates					
			normally.					

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BOEING 747		DATE	: 07/28/	2004	73-2			
SYSTEM &	1.	2. NUI	MBER I	NSTALLED				
SEQUENCE ITEM			3. NU	MBER REQUIRED FOR				
NUMBERS				4. REMARKS AND EX	CEPTIONS			
73 ENGINE FUEL & CONTROL								
 Fuel Filter ICING Lights (Differential Pressure Warning System) (JT9D Engines) 	С	4	2	 (O) Two may be inoper a) Associated eng temperature ino normally, and b) If airplane is op engine fuel tem below +5 degre fuel heater is op minute every 30 	rative provided: gine fuel dicator operates perated with operature at or ees C, associated perated for one 0 minutes.			
 Fuel Filter Bypass Lights (CF6 Engines) 	С	4	3					
 Fuel Condition *** Actuator Lights 	D	4	0					
7. Fuel Used Indicators	С	4	0	May be inoperative pro associated main tank of or an associated Fuel operates normally.	ovided the quantity indicator Flow indicator			

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SYS	TEM &	1.	2. NUI	MBER I	NSTALLED				
SEQ	UENCE ITEM			3. NU	MBER REQUIRED FO	OR DISPATCH			
NUM	BERS				4. REMARKS AND E	XCEPTIONS			
72 1									
	CONTROL								
8. 1	Fuel Flow Indicators								
	1) Pratt Whitney /	C	_	з	(0) One may be inco	erative provided			
	General Electric	U		5	an addition Fuel Flow	or Fuel Used			
	Engines				indicator is used as a	substitute.			
	Liigiilee								
		С	4	3	One may be inoperati	ive provided:			
					a) Associated N	1, N2 (and EPR			
					for PW) indica	ators operate			
					normally, and				
					b) Associated m	ain tank quantity			
					indicating sys	tem operates			
					normally.				
	2) RB211 Engines	С	_	3	(O) One may be inop	erative provided			
-	-)gee	•		C C	an additional Fuel Flo	ow or Fuel Used			
					indicator is used as a	a substitute.			
		С	4	3	(O) May be inoperativ	e provided:			
					a) Associated N	1, N2, N3, and			
					EPR Indicator	rs and the engine			
						ystem operate			
					h) Associated m	ain tank quantity			
					indicating eve	tem operates			
					normally.				
***	Digital Fuel	D	4	0					
	Flow Readout,								
	All Engines								

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SYSTEM & 1.	2. NUMBER INSTALLED						
SEQUENCE IIEM	3. NUMBER REQUIRED FOR DISPATCH						
NOMBERS			4. REMARKS AND E	XCEPTIONS			
73 ENGINE FUEL & CONTROL							
9. Electronic Engine C Control (EEC) Systems (CF6-80C2 Engines)	4	0	(O) May be inoperative EEC controls remain	/e provided all OFF.			
10. Electronic Engine C Control (EEC) Lights (CF6-80C2 Engines)	4	0	(O) May be inoperative EEC controls remain	ve provided all OFF.			
11. Propulsion Interface and C Monitor Units (CF6-80C2 Engines)	2	0	 (O) May be inoperative provided: a) All EEC controls remain OFF, and b) Autothrottle system is not used. 				
12. Propulsion Interface and C Monitor Unit Lights (CF6-80C2 Engines)	2	0	 (O) May be inoperative a) All EEC contrand b) Autothrottle s 	ve provided: ols remain OFF, ystem is not used.			
13. Start Enrichment C Control Systems RB211 Engines	4	0	(O) May be inoperation alternate procedures and used.	ve provided are established			
14. Start Control C Units RB211 Engines	4	3	(O) One may be inop the associated engin control system opera	erative provided e start enrichment tes normally.			

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NUMBERS			4. REMARKS AND EXCEPTIONS				
73 ENGINE FUEL &							
CONTROL							
15 Fuel Pressure A	4	2	Two may be inonerative provided:				
Warning Systems		~	a) Associated engine fuel				
RB211 Engines			temperature indication system				
			operates normally, and				
			b) Airplane is limited to 10 flights				
			before repairs are made.				
10 Engine Limit	4	2					
Control Systems	4	3	a) N1 N2 N3 and the fuel flow				
RB211 Engines			indicators on the associated				
			engine operate normally.				
			b) Associated engine limit control				
			switch is in OVERRIDE, and				
			c) Airplane is limited to 10 flights				
			before repairs are made.				
17 Air Control Valves							
RB211 Engines							
1) RB211-524B2/C2 C	4	0	(M) (O) May be inoperative provided				
Engines			the air control valve is deactivated per				
			RR SB 73-5364.				
2) BB211 524D4 C	4	0	(M) (O) May be incorporative provided				
L RD211-524D4 C Engines	4	U	the air control valve is deactivated per				
Liginos			RR SB 73-8108.				

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SEQUENCE ITEM			3. NUI	MBER REQUIRED FO	OR DISPATCH	
NUMBERS				4. REMARKS AND E	XCEPTIONS	
74 IGNITION						
1. Ignition Systems	С	8	4	One per engine may	be inoperative	
5 7				provided the nacelle	anti-ice svstems	
				operate normally on a	associated	
				engine(s).		
				- 3 - (-7		
2. IGN ON	D	1	0			
*** Light (F/E Panel)			-			
J						

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MASTER MINIMUM EQUIPMENT LIST							
BOEING 747	DATE	: 03/09/	2000 75-	-1			
SYSTEM & 1.	2. NU	MBER I	NSTALLED				
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATC	Ή			
NUMBERS			4. REMARKS AND EXCEPTION	S			
75 BLEED AIR							
1. 15 th Stage Surge C *** Prevention/ Recovery Bleed Valves (JT9D Engines)	8	7	 (M) (O) One may be inoperative of provided: a) EPR indicator for the associated rengine operates normally b) If the inoperative valve is valve, associated reverse rendered inoperative by a accepted procedure. 	closed ociated , and a "B" r is n			
C	8	7	 (M) (O) One may be inoperative of provided: a) EPR indicator for the associated engine operates normally b) If the inoperative valve is valve, Non-RABs reversing procedure is used on all engines. 	closed ociated , and a "B" ng			
2. Turbine Case Cooling C *** Air Flow Systems	4	0	(M) May be inoperative provided inoperative system is deactivated to a leak in the turbine cooling air or manifold.	l if due ducts			
3. Turbine Case Cooling C *** Indicating Systems	4	0					

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SEQUENCE ITEM	2.110	3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS	4. REMARKS AND EXCEPTIONS					
]					
75 BLEED AIR						
4. Three Way Solenoid						
Directional Control						
(JT9D Engines)						
(0.02						
1) Engines Prior to C	4	2	Two may be inoperative in the ground			
J19D-7Q			mode.			
С	4	3	One may be inoperative in the flight			
			mode provided:			
			a) Associated engine reverser is			
			b) All remaining reversers operate			
			normally.			
	4	2	(N) One may be increased to provide de			
2) JI9D-7Q Engines C	4	3	a) Associated engine reverser is			
			deactivated, and			
			b) All remaining reversers operate			
			normally.			
5. 3.5 Bleed Air Valves C	-	-	(M) (O) One (per airplane) may be			
(JT9D Engines)			inoperative secured closed.			
6 Surge Provention	Л	0	(\mathbf{O}) May be incorrective provided a			
System (JT9D-7R4G2	4	0	thrust setting of 1.62 EPR is not exceed			
Engines Only)			on the associated engines(s).			
7. IDG AII/OII Heat C	4	0	(IVI) May be inoperative open.			
(CF6-80C2 Engines)						
8. Core Compartment C	4	0	(M) May be inoperative open.			
(CF6-80C2 Engines)						

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SYSTEM &	1.	2. NU	MBER					
NUMBERS			3. NU	MBER REQUIRED FOR DISPATCH				
NUMBERG				4. REMARKS AND EXCEPTIONS				
75 BLEED AIR		_ 						
9. Turbine Clearance *** Control Systems (CF6-80C2 Engines)	С	4	0	(M) May be inoperative provided associated turbine clearance control valves remain closed.				
10. Surge Recovery Bleed System (JR9D-7R4G2 Engines Only)	С	4	0	(O) May be inoperative provided a thrust setting of 1.62 EPR is not exceeded on the associated engine(s).				
11. Five Way Solenoid Valve (JT9D-7R4G2 Engines Only)								
1) 3.5 Bleed Valve Function	С	4	3	 (M) One may be inoperative provided: a) Associated engine reverser is deactivated, b) All remaining reversers operate normally, and c) Thrust setting of 1.62 EPR is not exceeded on the associated engine. 				
	A	4	2	 (M) Two may be inoperative provided: a) Associated engine reversers are deactivated, b) No damage exists which would impair structural integrity of associated reversers, c) Inoperative reversers are on symmetrical engines only, d) All remaining reversers operate normally, e) Anti-skid and auto spoilers systems operate normally, f) Thrust setting of 1.62 EPR is not exceeded on the associated engines, and g) Repairs are made within three flight days. 				

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975	BUEING 747	1	2 NU	: 03/09/ MRED I	2000 / 76-1 NSTALLED
SEC		1.	2. NU		MBER REQUIRED FOR DISPATCH
	/BERS			0.1101	4 REMARKS AND EXCEPTIONS
	-				
76	ENGINE CONTROLS				
1.	Throttle Bar Light (JT9D Engines)	С	1	0	(O) May be inoperative for operation above FL 350 (or FL 290 with any engine bleed air valve turned off) provided a procedure is established to
					ensure throttle bar is placed in the high altitude thrust lever idle stop position.
2. ***	Ground Idle Light				
	1) JT9D Engines	С	1	0	 May be inoperative provided: a) Flight idle function operates normally, and b) A minimum of 55% N1 is maintained on approach.
		С	1	0	May be inoperative provided Flight idle system is inoperative.
	2) CF6-45/50 Engines	С	1	0	 May be inoperative provided: a) Flight idle function operates normally, and b) A minimum of 45% N1 is maintained on approach.
		С	1	0	May be inoperative provided Flight idle system is inoperative.
	3) CF6-80C2 Engines	С	1	0	 May be inoperative provided: a) Flight idle function operates normally, and b) A minimum of 45% N1 is maintained on approach, and in icing conditions.

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SYS		1.	2. NUI				
				3. NUI			
	IDENS				4. KEIVIARKS AND	EXCEPTIONS	
76	ENGINE CONTROLS						
10							
2. ***	Ground Idle Light (Cont'd)						
	1) DR211 Enginee	C	1	0	May be increasive	providadu	
	4) RB211 Engines	C	I	0	a) Flight idle fu	provided.	
					normally, and	d	
					b) A minimum o	of 40% N1 is	
					, maintained c	on approach.	
3.	Flight Idle System						
~~~							
	1) IT9D -7 -7A -7F	C	1	0	(O) May be inonerat	ive in around mode	
	-7J Engines	U	•	Ŭ	provided the following	na field	
	<u>.</u>				elevation/landing gro	oss weight	
					reductions are appli	ed for each	
					associated engine:		
					(Values in parenthe	ses are in kg).	
						Law dia a Olive h	
					Flovation	Moject Poduction	
					Sea Level-1.800ft	None	
					1,801ft-4,000ft	10,000 lb (4,536)	
					4,001ft-6,000ft	15,000 lb (6,804)	
					6,001ft-8,000ft	18,750 lb (8,505)	
					8,001ft-10,000ft	21,250 lb (9,639)	
					NOTE		
					NUIE: System not	required for J19D-	
					SA Engines		
					(Continued)		

U.S. DEPARTMENT OF TRANSPORTATION MASTER MINIMUM FOUIPMENT LIST							
FEDERAL AVIATION ADMINIST	FRAT	ION					
AIRCRAFT:		REVIS		O: 29 b	PAGE NO:		
BOEING 747	1		: 03/09/		76-3		
SEQUENCE ITEM	1.	2. 1101	3. NU	MBER REQUIRED F	OR DISPATCH		
NUMBERS		4. REMARKS AND EXCEPTIONS					
76 ENGINE CONTROLS							
<ol> <li>Flight Idle System</li> <li>(Cont'd)</li> </ol>							
2) JT9D-7Q, -7R4G2 Engines	С	1	0	(O) May be inopera provided the following elevation/landing gr reductions are applit associated engine:	tive in ground mode ng field oss weight ied for each		
		(Values in parentheses are in kg.)					
				Elevation	Landing Climb Limited Gross Weight Reduction		
				Sea Level-1,800ft 1,801ft-4,000ft 4,001ft-6,000ft 6,001ft-8,000ft 8,001ft-10,000ft	None 11,250 lb (5,103) 20,000 lb (9,057) 26,250 lb (11,907) 31,250 lb (14,175)		
				NOTE: System not 3A Engines	required for JT9D-		
3) JT9D Engines	С	1	0	(O) May be inopera provided the following ross weight limit re applied for each ass	tive in flight mode ng takeoff/landing eductions are sociated engine:		
				Takeoff Field 25,000 lb.	Length Limit: (11,340 kg)		
				Landing Field 15,000 lb.	l Length Limit: (6,804 kg)		
				(Continued)			

U.S. DEPARTMENT OF TRANSPORTATION						
FEDERAL AVIATION ADMINISTRAT	ION		MASTER MINIMUM EQUIPMENT LIST			
AIRCRAFT:	REVIS		O: 29 b PAGE NO:			
BOEING 747	DATE	: 03/09/	/2000 76-4			
SYSTEM & 1.	2. NU	MBER I	INSTALLED			
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS			4. REMARKS AND EXCEPTIONS			
76 ENGINE CONTROLS						
3. Flight Idle System						
*** (Cont'd)						
4) CF6-45/50 C	1	0	(O) May be inoperative in flight mode			
Engines			provided the following takeoff/landing			
			applied for each associated engine:			
			applied for each associated engine.			
			Takeoff Field Length Limit:			
			15,700 lb. (7,121 kg)			
			Landing Field Length Limit:			
			9,300 lb. (4,218 kg)			
5) RB211-524 C	1	0	(O) May be inoperative in flight mode			
Engines		_	provided the following takeoff/landing			
			gross weight limit reductions are			
			applied for each associated engine:			
			I akeoff Field Length Limit:			
			3,000 lb. (1,301 kg)			
			Landing Field Length Limit:			
			15,000 lb. (6,804 kg)			

U.S. DEPARTMENT OF TRANSPORTATION							
FEDERAL AVIATION ADMINIS	TRAT	ION					
AIRCRAFT:		REVIS	REVISION NO: 32 PAGE NO:				
BOEING 747	1		: 04/12/	2005 77-1			
SFOUENCE ITEM	١.	2. NU		MBER REQUIRED FOR DISPATCH			
NUMBERS			0.110	4. REMARKS AND EXCEPTIONS			
77 ENGINE INDICATING							
1. N1 Tachometer System							
1) JT9D Engines	В	4	3	(O) One may be inoperative provided:			
				a) EPR, N2 and Fuel Flow indicators on the associated			
				engine operate normally, and			
				b) Low N1 warning system			
				operates normally.			
	в	4	3	(O) One may be inoperative provided.			
	_		•	a) EPR, N2 and Fuel Flow			
				indicators on the associated			
				engine operate normally, and			
				known or forecast icing			
				conditions.			
2) CE6-45/50	Δ	4	З	(M) (O) One may be inoperative			
Engines	Λ	-	0	provided:			
				a) Before loss of the N1 indicator,			
				all associated engine			
				h) Low N1 warning system			
				operates normally,			
				c) Before each departure, a visual			
				check of the engine with the			
				made			
				d) N2 and Fuel Flow indicators on			
				the associated engine operate			
				normally,			
				e) Appropriate N2 power setting curves are available to the			
				crew,			
				(Continued)			
		1					

U.S. DEPARTMENT OF TRANSPORTATION						
			MASTER MINIM	UM EQUIPMENT LIST		
			<b>∩</b> · 32	PAGE NO.		
BOEING 747	DATE	: 04/12	/2005	77-2		
SYSTEM & 1.	2. NU	MBER	INSTALLED	I		
SEQUENCE ITEM		3. NU	MBER REQUIRED F	OR DISPATCH		
NUMBERS			4. REMARKS AND	EXCEPTIONS		
77 ENGINE INDICATING						
1. N1 Tachometer						
System (Cont'd)						
2) CF6-45/50			f) Performance	e limited gross		
Engines			weights from	n the AFM are		
(Cont'd)			reduced as	TOIIOWS:		
			Takeoff Field	21.000 lb.		
			Length	(9,526 kg)		
			Takeoff Climb	50,000 lb.		
				(22,680 kg)		
			Enroute Climb	7 000 lb		
				(3.175 kg)		
				(0,000,000)		
			Approach,	34,000 lb.		
			Landing Climb	(15,422 kg)		
			a) Not more th	 an ana takaoff NI1		
			setting may	he used on		
			remaining th	ree engines, and		
			h) Repairs are	made within 40		
			flight hours.			
	4	2		o in on oriotivic		
A	4	3	(IVI) (U) Une may be	emoperative		
			a) Aircraft is no	ot operated in		
			known or fo	recast icing		
			conditions,	-		
			b) Before loss	of the N1 indicator,		
			all associate	ed engine		
			naications \	were normal, departure a viewal		
			check of the	engine with the		
			inoperative	N1 indicator is		
			made,			
			d) N2 and Fue	I Flow indicators on		
			the associat	ted engine operate		
			normally.			
			(Continued)			

U.S. DEPARTMENT OF TRANSPORTATION								
MASTER MINIMUM EQUIPMENT LIST								
		REVISION NO: 32 PAGE NO:						
BOEING 747	DATE	DATE: 04/12/2005 77-3						
SYSTEM & 1.	2. NU	MBER I	INSTALLED					
SEQUENCE ITEM		3. NU	MBER REQUIRED F	OR DISPATCH				
NUMBERS			4. REMARKS AND	EXCEPTIONS				
	]							
77 ENGINE INDICATING								
1. N1 Tachometer								
System								
(Cont'd)								
2) CE6-45/50			e) Appropriate	N2 nower setting				
Engines			curves are a	vailable to the				
(Cont'd)			crew,					
			f) Performance	e limited gross				
			weights from	the AFM are				
			reduced as f	Ollows:				
			Takeoff Field	21.000 lb.				
			Length	(9,526 kg)				
			Takeoff Climb	50,000 lb.				
				(22,680 kg)				
			Enroute Climb	7.000 lb.				
				(3,175 kg)				
			Approach,	34,000 lb.				
			Landing Climb	(15,422 kg)				
			a) Not more the	an one takeoff N1				
			setting may	be used on				
			remaining th	ree engines, and				
			h) Repairs are	made within 40				
			flight hours.					
*** a) Fan Sneed D	Δ	0	May be incoerative	provided				
Modifier Unit	-		associated N1 indic	ator operates				
(FSMU)			normally.					
CF6-50E2			-					
Engines, SB								
747-77-2093	1	2	$(M)$ $(\bigcirc)$ May be incr	vorativo providad:				
A	4	3	(IVI) (U) IVIAY DE INOP	V1 indicator is				
			considered i	noperative. and				
			b) Repairs are	made within 40				
			flight hours.					
			(Continued)					

U.S. DEPARTMENT OF TRANSPORTATION MASTER MINIMUM EQUIPMENT LIST							
FEDERAL AVIATION ADMINISTRATION							
AIRCRAFT:			O: 32 PAGE NO:				
BOEING 747	2 NU	: 04/12/ MRFR I					
SEQUENCE ITEM	2.110	3. NU	MBER REQUIRED FOR DISPATCH				
NUMBERS			4. REMARKS AND EXCEPTIONS				
77 ENGINE INDICATING							
1. N1 Tachometer							
System							
(Cont'd)							
3) CE6-80C2 C	4	3	(M) (O) One may be inoperative				
Engines		Ũ	provided:				
			a) Before loss of the N1 indicator,				
			all associated engine				
			h) Before each departure a visual				
			check of the engine with the				
			inoperative N1 indicator is				
			made,				
			c) N2 and Fuel Flow indicators on				
			normally				
			d) All EECs must operate normally				
			and be ON,				
			e) All packs must be OFF for				
			takeoff or go-around (or APU				
			f) Derated takeoffs or go-arounds				
			or reduced thrust takeoffs are				
			not permitted,				
			g) Thrust setting procedures are				
			established and used for				
			takeoff, go-around, and				
			and				
			h) The same thrust setting is used				
			on all engines.				
			(Continuea)				

U.S.	U.S. DEPARTMENT OF TRANSPORTATION									
FED										
AIRCRAFT: REVISION NO: 32 PAGE NO:										
	-	BOEING 747		DATE	: 04/12/	2005	77-5			
SYS	TEM	&	1.	2. NUI	MBER I	NSTALLED				
SEC		CE ITEM			3. NUI	MBER REQUIRED FO	R DISPATCH			
NUN	/IBERS	5				4. REMARKS AND E	XCEPTIONS			
77	ENG	INE INDICATING								
1.	NI I Svste	acnometer								
	(Con	ťd)								
			_	_						
	4) F	RB211 Engines	A	4	3	(O) One may be inop	erative provided:			
						indicators and	the engine limit			
						control system	n on the			
						associated er	igine operate			
						normally, and				
						b) Airplane is lim	nited to 10 flights			
***	5) [	Digital N1	D	4	0					
	F	Readout,								
	/	All Engines								

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MASTER MINIMUM EQUIPMENT LIST								
AIRCRAFT.			O: 32 F	PAGE NO [.]				
BOEING 747	DATE	: 04/12/	2005	77-6				
SYSTEM & 1.	2. NU	MBER I	NSTALLED					
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR	DISPATCH				
NUMBERS			4. REMARKS AND EX	CEPTIONS				
		1						
2. N2 Tachometer								
System								
1) IT9D Engines B	4	3	$(\Omega)$ One may be inoner	rative provided				
	-		the EPR, N1, and Fuel	Flow indicators				
			on the associated engin	ne operate				
			normally.					
2) CE6 Engines B	4	3	$(\Omega)$ One may be inoper	rative provided				
	-		the N1 and Fuel Flow in	ndicators on the				
			associated engine oper	rate normally.				
	4	2	$(\mathbf{O})$ One may be increased	rativa providadu				
3) RB211 Engines A	4	3	(U) One may be inoper	ative provided:				
			indicators and e	engine limit				
			control system of	on the				
			associated engi	ine operate				
			normally, and					
			b) Airplane is limite	ed to 10 flights				
			before repairs a	are made.				
*** 4) Digital N2 D	4	0						
Readout,								
All Engines								
3 Fuel Flow Meter			Moved to $\Delta T\Delta 73_{-8}$ Pc	av 18a Rotitlad				
			to: "Indicator". Rev. 26					

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MASTER MINIMUM EQUIPMENT LIST								
FEDERAL AVIATION ADMINISTRATION								
AIRCRAFT:	REVIS	SION N	O: 32 PAGE NO:					
BOEING 747	DATE	: 04/12/	/2005 77-7					
SYSTEM & 1.	2. NU	MBER I	INSTALLED					
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH					
NUMBERS			4. REMARKS AND EXCEPTIONS					
	]							
77 ENGINE INDICATING								
4. Engine Pressure Ratio								
System								
	4	2	(M) (O) One may be ineperative					
I) JI9D Engines A	4	3	(M) (O) One may be inoperative					
			a) Before loss of EPP indicator all					
			a) Defore loss of LFIX indicator, all					
			were normal					
			b) N1 N2 and Fuel Flow					
			indicators on the associated					
			engine operate normally					
			c) Appropriate N1 curves are					
			available to the crew.					
			d) Not more than one takeoff EPR					
			setting is used for the remaining					
			three engines.					
			e) Reduced thrust operation is					
			prohibited,					
			f) Repairs are made within 40					
			flight hours, and					
			g) Performance limited gross					
			weights from AFM are reduced					
			as follows:					
			(Continued)					

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AIRCRAFT:		REVISION NO: 32 PAGE NO:						
BOEING 747	DATE	: 04/12/	2005		77-8			
SYSTEM & 1.	2. NU	MBER I	NSTALLED		1.			
SEQUENCE ITEM		3. NU	MBER REQUI	RED FOR	DISPATCH			
NUMBERS			4. REMARKS	S AND EXC	EPTIONS			
77 ENGINE INDICATING								
<ol> <li>Engine Pressure Ratio System (Cont'd)</li> </ol>								
1) JT9D Engines (Cont'd)			747-100/200/	/300:				
			Engine	Takeoff, Approach & Landin Climb	n g Enroute			
			JT9D-3A	12,000 lb (5,443 kg	b. 12,000 lb. (5,443 kg)			
			JT9D-7/7A	7,000 lb. (3,175 kg	7,000 lb. (3,175 kg)			
			JT9D-7F/7J	6,000 lb. (2,721 kg	6,000 lb. (2,721 kg)			
			JT9D-7Q	8,000 lb. (3,629 kg	10,000 lb. (4,536 kg)			
			JT9D-70A	4,000 lb. (1,814 kg	5,000 lb. g) (2,268 kg)			
			JT9D- 7R4G2	27,000 lb (12,247 kg	b. 20,000 lb. g) (9,072 kg)			
			747SP:	I	1			
				Takeoff, Approach & Landing	g			
			Engine	Climb	Enroute			
			JT9D-7/7A /7F/7J	5,500 lb. (2,495 kg)	7,350 lb. (3,334 kg)			
				Continued	ł)			

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MASTER MINIMUM EQUIPMENT LIST								
FEDERAL AVIATION ADMINISTRATION								
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BUEING 747		: 04/12/	/2005 /7-9					
SYSTEM & 1.	2. NU							
NUMBERS		3. NU						
Nomberto			4. REMARKS AND EXCEPTIONS					
77 ENGINE INDICATING								
<ol> <li>Engine Pressure Ratio System (Cont'd)</li> </ol>								
2) RB211 Engines A	4	3	<ul> <li>(M) (O) One may be inoperative provided: <ul> <li>a) Before loss of EPR indicator, all associated engine indications were normal,</li> <li>b) N1, N2, N3, and Fuel Flow indicators and engine limit control system on the associated engine operate normally,</li> <li>c) Appropriate N1 curves are available to the crew,</li> <li>d) Not more than one takeoff EPR setting is used for the remaining three engines,</li> <li>e) Reduced thrust operation is prohibited,</li> <li>f) Airplane is limited to 10 flights before repairs are made, and</li> <li>g) Performance limited gross weights from AFM are reduced as follows:</li> </ul> </li> </ul>					

U.S. DEPARTMENT OF TRANSPOR	TATIO	١	MASTER	R MINIMUM EQL	JIPMENT LIST	
FEDERAL AVIATION ADMINISTRATION						
AIRCRAFT:		REVISION NO: 32 PAGI			E NO:	
SYSTEM & 1.	2. NU	. 04/12/ MBER I	2005 NSTALLED		77-10	
SEQUENCE ITEM		3. NU	MBER REQ	UIRED FOR DIS	РАТСН	
NUMBERS			4. REMAR	KS AND EXCEP	TIONS	
	]	 				
<ol> <li>Engine Pressure Ratio System (Cont'd)</li> </ol>						
2) RB211 Engines			747-100/20	00:		
(Cont'd)				Takeoff,		
			Engine	Approach & Landing Climb	Enroute	
			RB211-524	B2/C2	14,000 lb. (6,350 kg)	
			1) Airport 80 deg	Temperature up rees F (27 degre 24,000 lb. (10,886 kg)	to es C)	
			2) Airport 80 deg	Temperature abo rees F (27 degre 30,000 lb. (13,608 kg)	ove es C)	
			747-100/2	:00/300:		
			Engine	Takeoff, Approach & Landing Climb	Enroute	
			RB211-52	4D4/D4X 12,000 lb. (5,443 kg)	14,000 lb. (6,350 kg)	
			(Contin	nued)		

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FEDERAL AVIATION ADMINISTRATION						
		510N N(	J: 32	PAGE NO:		
BUEING 747		. 04/12/ MRED I		11-11		
SEQUENCE ITEM	2.110					
NUMBERS		0.1101	4. REMARKS AND E	XCEPTIONS		
77 ENGINE INDICATING						
<ol> <li>Engine Pressure Ratio System Cont'd)</li> </ol>						
2) RB211 Engines (Cont'd)			747SP: Takeoff, Approach			
			Engine Landing C	Simb Enroute		
			RB211-524B2/C2	13,500 lb. (6,124 kg)		
			1) Airport Temperat 80 degrees F (27 20,000 lb (9,072 kg	ure up to ' degrees C) )		
			2) Airport Temperat 80 degrees F (27 25,000 lb (11,340 k	ure above ′ degrees C) g)		
			RB211-524D4/D4X 10,000 lb (4,536 kg	. 13,500 lb. ) (6,124 kg)		
*** 3) Digital Engine D Pressure Ratio Readout, JT9D and RB211 Engines	4	0				

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FEDERAL AVIATION ADMINISTRATION								
AIRC	CRA	FT:		REVIS		O: 32 PAGE NO:		
<u> </u>		BUEING /4/	1		: 04/12/	/2005 ///-12		
SEQ	UEN		1.	2. NO	3. NU	MBER REQUIRED FOR DISPATCH		
NUM	1BEF	RS				4. REMARKS AND EXCEPTIONS		
77				]				
11		GINE INDICATING						
5.	Vib Sys	ration Indication						
***	1)	Pratt Whitney/ General Electric Engines	D	4	0	May be inoperative unless required by maintenance procedures.		
	2)	Vibration Signal Channels - All RB211 Engines	С	8	4	One channel per engine may be inoperative, as required by Airworthiness Directive T81-22-51, unless required by maintenance procedures.		
			С	8	4	<ul> <li>(M) Channel "A" or "B" NORM selection may be inoperative provided: <ul> <li>a) Operative channel is the same on all engines</li> </ul> </li> <li>b) Oil filter differential pressure indicating system operates normally on the associated engine(s),</li> <li>c) Low oil pressure indicating system operates normally on the associated engine(s), and</li> <li>d) Operative channel remains selected.</li> </ul>		
		a) Rotor Vibration Selector Switch Positions	С	4	1	N1, N2, and N3 selection positions may be inoperative provided NORM selection position operates normally.		

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AIRCRAFT:		REVIS		D: 32	PAGE NO:			
BOEING 747		DATE	: 04/12/	2005	77-13			
SYSTEM &	1.	2. NUI	MBER I	NSTALLED				
SEQUENCE ITEM			3. NUI	MBER REQUIRED FO	R DISPATCH			
NUMBERS				4. REMARKS AND E	XCEPTIONS			
77 ENGINE INDICATING								
6. Fuel Used Indicators				Moved to ATA 73-7,	Rev 18a.			
<ol> <li>Maximum Indication Lights, Pointers or Systems (N1, N2, EGT)</li> </ol>	С	12	0					
8. EGT *** Overtemperature Lights	С	4	0					
9. EGT or N1 Limit *** Computer				Moved to ATA 34-50	, Rev 28.			
10. EGT Indicators (Digital Indications)	С	4	0	May be inoperative p associated pointer in operates normally.	rovided dication			
11. Pt 5.4 Indicators *** (CF6 Engines)	D	4	0					
12. TAT Counter *** (EPR/N1 Computer)				Moved to ATA 34-50	, Rev 28.			

U.S. DEPARTMENT OF TRANSPORTATION MASTER MINIMUM EQUIPMENT LIS								
FEDERAL AVIATION ADMINISTRATION								
AIRCRA	\FT:		REVIS	SION NO	D: 32	PAGE NO:		
	BOEING 747		DATE	: 04/12/	2005	77-14		
SYSTE	M &	1.	2. NUI	MBER I	NSTALLED			
SEQUE	NCE ITEM			3. NUI	MBER REQUIRED FO	R DISPATCH		
NUMBE	RS				4. REMARKS AND E	XCEPTIONS		
			1					
	IGINE INDICATING							
13. Cc *** Tr; (J⁻	ontrolled Differential ansformer (CDX) F9D Engines)	A	4	3	<ul> <li>(M) (O) Positive or ne be inoperative provid</li> <li>a) Associated El considered in</li> <li>b) Repairs are m flight hours.</li> </ul>	egative class may ed: PR system is operative, and nade within 40		
1)	JT9D Engines Except for JT9D- 7Q and JT9D- 7R4G2	С	4	0	(M) Positive class on bypassed and associ used.	ly may be ated EPR system		
2)	JTD-7Q only							
	a) Positive class 5 thru 10	С	4	0	(M) May be bypassed EPR system used pro- pressure altitude is lea and OAT is less than F, or runway pressure than 2.000 feet and C ISA +51 degrees F.	d and associated ovided runway ess than 6,000 feet ISA +22 degrees e altitude is less DAT is less than		
3)	JT9D-7R4G2 only							
	a) Positive class 5 thru 9	С	4	0	(M) May be bypassed EPR system used pro pressure altitude is le feet. NOTE: Negative Cla	d and associated ovided runway ess than 7,000 ss may not be		
					-)puoodi.			
U.S. DEPARTMENT OF TRANSPORTATION								
--------------------------------------------------------------------------------------------------------------------------	---	--------------------------	--------------------	-------------------------------------------------------------------------------------------------------------------------------------------------	--	--		
FEDERAL AVIATION ADMINISTRATION								
AIRCRAFT:		REVISION NO: 32 PAGE NO:						
SYSTEM &	1	2 NU	: 04/12/ MBER I	/2005 / /7-15				
SEQUENCE ITEM		2.110	3. NU	MBER REQUIRED FOR DISPATCH				
NUMBERS				4. REMARKS AND EXCEPTIONS				
77 ENGINE INDICATING								
14. Low N1 Light	В	1	0	May be inoperative provided airplane is not operated in known or forecast icing conditions.				
15. N3 Tachometer System (RB211 Engines)	С	4	3	(O) One may be inoperative provided N1, N2, and Fuel Flow indicators and engine limit control system on the associated engine operate normally.				
*** 1) Digital N3 Readout	D	4	0					
<ol> <li>Turbine Cooling Overheat Warning Systems (RB211 Engines)</li> </ol>								
1) Dual loop	С	8	4	(O) One loop per engine may be inoperative.				
<ul> <li>17. Engine Instrument</li> <li>*** Display System Model</li> <li>94002 (EIDS) STC</li> <li>ST00483WI</li> </ul>								
1) ACARS & 615 Transmit Chip	С	2	0					
2) Exceedance & EXD Snapshot Memory	С	2	0					
3) Aircraft Power Bus	С	2	1					
4) ACMS Transmit Chip	С	2	0					
				(Continued)				

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MASTER MINIMUM EQUIPMENT L						
	REVIS	SION N	0:32	PAGE NO:		
BOEING 747		:04/12/	2005	//-16		
SYSTEM & 1.	2. NU					
SEQUENCE ITEM		3. NU	MBER REQUIRED FC	DR DISPATCH		
NUMBERS			4. REMARKS AND E	XCEPTIONS		
	4					
77 ENGINE INDICATING						
17. Engine Instrument						
Display System Model						
94002 (EIDS) STC ST00492W/I						
(Cont'd)						
(Cont d)						
5) Backlight Module C	4	2	May be inonerative n	rovided one fan		
Fans	-	~	operates normally in	each display unit		
T and				caon alopiay and.		
6) Avionics Adapter B	2	1				
Rack (AAR) Fan	_					
7) Generator Output C	4	0	(O) May be inoperati	ve provided		
Discrete			affected engine start	switch(es) can be		
			operated manually.			
8) RPM C	-	-	(M) (O) May be inope	erative provided		
Microcontroller			associated N1 or N2	indication(s) is not		
			used.			
9) Command EPR/N1 C	1	0	May be inoperative p	rovided:		
Switch			a) Failure is indi	cated in the MAN		
			Mode,			
			b) Mode annund	iation at bottom of		
			N1 or EPR in	dication is blank,		
			c) CMD SWITC	H remains in MAN		
			position , and			
			d) Engine interm	nix does not exist.		

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MASTER MINIMUM EQUIPMENT LI						
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BUEING 747		. 04/12/ MRED I				
SEQUENCE ITEM	2. 110		MBER REQUIRED FOR DISPATCH			
NUMBERS		0.1101	4. REMARKS AND EXCEPTIONS			
78 ENGINE EXHAUST						
4 Threat Deversors						
1. Thrust Reversers						
1) JT9D Engines C (With Fan and Turbine Reversers)	8	4	<ul> <li>(M) (O) May be inoperative provided:</li> <li>a) No damage exists which would impair structural integrity of associated reverser,</li> <li>b) An accepted procedure is established to verify that inoperative thrust reversers are locked in the forward thrust position, and</li> <li>c) Four fan reversers operate normally.</li> </ul>			
С	8	4	<ul> <li>(M) (O) May be inoperative provided:</li> <li>a) No damage exists which would impair structural integrity of associated reverser,</li> <li>b) An accepted procedure is established to verify that inoperative thrust reversers are locked in the forward thrust position, and</li> <li>c) Both fan and turbine reversers operate normally on engines 2 and 3.</li> </ul>			
			(Continued)			

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FEDERAL AVIATION ADMINISTRATION							
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BOEING 747		DATE	: 04/12/	2005 78-2			
SYSTEM &	1.	2. NUMBER INSTALLED					
SEQUENCE ITEM			3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS				4. REMARKS AND EXCEPTIONS			
78 ENGINE EXHAUST							
<ol> <li>Thrust Reversers (Cont'd)</li> </ol>							
1) JT9D Engines (With Fan and Turbine Reversers) (Cont'd)	С	8	4	<ul> <li>(M) (O) May be inoperative provided:</li> <li>a) No damage exists which would impair structural integrity of associated reverser,</li> <li>b) An accepted procedure is established to verify that inoperative thrust reversers are locked in the forward thrust position, and</li> <li>c) Both fan and turbine reversers operate normally on engines 1 and 4, and with both the fan and turbine reversers inoperative on engines 2 and 3, if SB 747-32-2141 or production equivalent has not been incorporated, failure of ground safety relay in the flight position requires landing field length increases of:</li> </ul>			
				Dry Runway - 150 ft. Wet Runway - 500 ft.			
2) JT9D Engines (Without Turbine Reversers)	С	4	3	<ul> <li>(M) One may be inoperative provided:</li> <li>a) Anti-skid and auto spoilers systems operate normally,</li> <li>b) No damage exists which would impair structural integrity of associated reverser, and</li> <li>c) An accepted procedure is established to verify that inoperative thrust reverser is locked in the forward thrust position.</li> </ul>			
				(Continued)			

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FEDERAL AVIATION ADMINISTRATION						
AIRCRAFT:	REVIS	REVISION NO: 32 PAGE NC				
BOEING 747	2. NU	: 04/12/ MBFR I	2005 / 78-3 NSTALLED			
SEQUENCE ITEM	2.110	3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS			4. REMARKS AND EXCEPTIONS			
78 ENGINE EXHAUST	]					
<ol> <li>Thrust Reversers (Cont'd)</li> </ol>						
2) JT9D Engines A (Without Turbine Reversers) (Cont'd)	4	2	<ul> <li>(M) Two may be inoperative provided: <ul> <li>a) Inoperative reversers are on symmetrical engines only,</li> <li>b) Anti-skid and auto spoilers systems operate normally,</li> <li>c) No damage exists which would impair structural integrity of associated reversers,</li> <li>d) An accepted procedure is established to verify that the inoperative thrust reversers are locked in the forward thrust position, and</li> <li>e) Repairs are made within three flight days.</li> </ul></li></ul>			
3) JT9D Engines Reverser Blocker Doors			Moved to ATA 78-9, Rev. 24.			
4) CF6 Engines C (With Fan and Turbine Reversers)	8	4	<ul> <li>(M) (O) May be inoperative provided:</li> <li>a) No damage exists which would impair structural integrity of associated reverser,</li> <li>b) An accepted procedure is established to verify that the inoperative thrust reverser is locked in the forward thrust position, and</li> <li>c) Four fan reversers operate normally.</li> </ul>			
			(Continued)			

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SYSTEM & 1.	2. NU	MBER I	NSTALLED			
		3. NU				
NOMBERS			4. REMARKS AND EXCEPTIONS			
78 ENGINE EXHAUST						
1. Thrust Reversers (Cont'd)						
4) CF6 Engines C (With Fan and Turbine Reversers) (Cont'd)	8	4	<ul> <li>(M) (O) May be inoperative provided:</li> <li>a) No damage exists which would impair structural integrity of associated reverser,</li> <li>b) An accepted procedure is established to verify that the inoperative thrust reverser is locked in the forward thrust position, and</li> <li>c) Both fan and turbine reversers operate normally on engines 1 and 4.</li> </ul>			
С	8	4	<ul> <li>(M) (O) May be inoperative provided:</li> <li>a) No damage exists which would impair structural integrity of associated reverser,</li> <li>b) An accepted procedure is established to verify that the inoperative thrust reverser is locked in the forward thrust position, and</li> <li>c) Both fan and turbine reversers operate normally on engines 2 and 3.</li> </ul>			
			(Continued)			

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BOEING 747		: 04/12/		78-5		
STSTEM & T.	2. NU					
NUMBERS		0.1101	4. REMARKS AND E			
78 ENGINE EXHAUST						
1. Thrust Reversers (Cont'd)						
5) CF6 Engines C (Without Turbine Reversers)	4	3	<ul> <li>(M) One may be inop <ul> <li>a) Anti-skid and a</li> <li>operate normal</li> </ul> </li> <li>b) No damage eximpair structura associated reveasion in the formation of the formation of the formation.</li> </ul>	erative provided: uto spoilers systems lly, ists which would al integrity of erser, and rocedure is verify that the ust reverser is orward thrust		
A	4	2	<ul> <li>(M) Two may be inop <ul> <li>a) Inoperative rev</li> <li>symmetrical en</li> <li>b) Anti-skid and a</li> <li>operate normal</li> </ul> </li> <li>c) No damage eximpair structuration associated reveal</li> <li>d) An accepted prestablished to vision and established to vision, and</li> <li>e) Repairs are mating flight days.</li> </ul>	erative provided: ersers are on agines only, uto spoilers systems ly, asts which would al integrity of ersers, rocedure is verify that the ust reversers are orward thrust ade within three		
			(Continued)			

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BUEING 747		: 04/12/		/8-0		
SFOUENCE ITEM	2. NO					
NUMBERS		5. NO	4 REMARKS AND E	XCEPTIONS		
78 ENGINE EXHAUST		ĺ				
1. Thrust Reversers						
(Cont'd)						
6) RB211 Engines C	4	3	(M) One maybe inope	erative provided:		
			a) Anti-skid and au	uto spoilers systems		
			operate normal	ly,		
			b) No damage exis	sis which would		
			associated reve	erser and		
			c) An accepted pre	ocedure is		
			established to v	erify that the		
			inoperative thru	st reverser is		
			locked in the for	rward thrust		
			position.			
Δ	Δ	2	(M) Two may be inon	erative provided:		
	-	2	a) Inoperative reve	ersers are on		
			symmetrical en	gines only,		
			b) Anti-skid and au	uto spoilers systems		
			operate normal	ly,		
			c) No damage exis	sts which would		
			impair structura	i integrity of		
			d) An accented pr	nsens, ocedure is		
			established to v	verify that the		
			inoperative thru	st reversers are		
			locked in the for	rward thrust		
			position, and			
			e) Repairs are ma	de within three		
			night days.			

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BOEING 747	DATE	: 04/12/	78-7			
SYSTEM & 1.	2. NU	MBER I	INSTALLED	•		
SEQUENCE ITEM		3. NU	MBER REQUIRED FC	OR DISPATCH		
NUMBERS			4. REMARKS AND E	XCEPTIONS		
78 ENGINE EXHAUST						
2. Reverse Thrust Position C Indicating System (JT9D Engines Except –70A)	4	3	<ul> <li>(M) One reverser unsibe inoperative (and reprovided: <ul> <li>a) No damage existing air structural associated reverses bit impair structural associated reverses bit mechanism is verticated before (following each activation), and c) For engines with valve installed 747-78-2052 of equivalent), value before each de</li> </ul></li></ul>	stow indication may everse used) ists which would al integrity of erser, rake indicating verified fully e departure reverser th pneumatic shutoff in lieu of TRSM (SB r production ve is verified closed parture.		
С	4	-	(M) Reverser Unstow be inoperative for ass reverser(s) provided reverser(s) is locked position.	r Indications may sociated inoperative associated in forward thrust		
C	4	-	Reverse thrust position except reverser unsto be inoperative.	on indications, ow indications, may		

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SYSTEM & 1.	2. NUMBER	RINSTALLED				
SEQUENCE ITEM	3. N					
NOWBERS		4. REMARKS AND EXCEPTIONS				
78 ENGINE EXHAUST		i i				
<ol> <li>Reverse Thrust Position Indicating System (JT9D Engines Except –70A) (Cont'd)</li> </ol>						
1) Without Turbine A Reversers	4 2	<ul> <li>(M) Two may be inoperative provided: <ul> <li>a) Associated reversers are considered inoperative,</li> <li>b) Inoperative reversers are on symmetrical engines only,</li> <li>c) Anti-skid and auto spoilers systems operate normally,</li> <li>d) No damage exists which would impair structural integrity of associated reversers,</li> <li>e) An accepted procedure is established to verify that the inoperative thrust reversers are locked in the forward thrust position, and</li> <li>f) Repairs are made within three flight days.</li> </ul></li></ul>				

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AIRCRAFT:		REVISION NO: 32 PAGE NO:			
SYSTEM & 1.	2. NU	. 04/12/ MBER I	NSTALLED		
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH		
NUMBERS			4. REMARKS AND EXCEPTIONS		
	]				
78 ENGINE EXHAUST					
3. Thrust Reverser Unstow Indicating System					
1) CF6 and C JT9D-70A Engines	4	3	<ul> <li>(M) (O) One may be inoperative (and the reverser used) provided that, before each departure, it is verified that:</li> <li>a) No damage exists which would impair structural or operational integrity of the systems or components,</li> <li>b) Reverser sleeves are fully and properly stowed,</li> <li>c) Reverse thrust (full reverse) position indicating system operates normally, and</li> <li>d) Thrust reverser valve indicating system (CF6 engines) operates normally.</li> </ul>		
C	4	3	<ul> <li>(M) (O) One may be inoperative (and the reverser used) provided that, before each departure, it is verified that:</li> <li>a) No damage exists which would impair structural or operational integrity of the systems or components,</li> <li>b) Reverser sleeves are fully and properly stowed,</li> <li>c) Reverse thrust (full reverse) position indicating system operates normally, and</li> <li>d) Thrust reverser armed indicating system (JT9D-70A engines) operates normally.</li> <li>(Continued)</li> </ul>		

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SYSTEM &	1.	2. NUI				
			3. NUI			
NUMBERS				4. REMARKS AND EXCEPTIONS		
78 ENGINE EXHAUST		]				
<ol> <li>Thrust Reverser Unstow Indicating System (Cont'd)</li> </ol>						
1) CF6 and JT9D-70A Engines (Cont'd)	С	4	-	(M) May be inoperative for inoperative reversers provided associated reversers are locked in the forward thrust position.		
a) Without Turbine Reversers	A	4	2	<ul> <li>(M) Two may be inoperative provided:</li> <li>a) Associated reversers are considered inoperative,</li> <li>b) Inoperative reversers are on symmetrical engines only,</li> <li>c) Anti-skid and auto spoilers systems operate normally,</li> <li>d) No damage exists which would impair structural integrity of associated reversers,</li> <li>e) An accepted procedure is established to verify that the inoperative thrust reversers are locked in the forward thrust position, and</li> <li>f) Repairs are made within three flight days.</li> <li>(Continued)</li> </ul>		

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	BOEING 747		DATE	: 04/12/	/2005 78-11		
SY	STEM &	1.	2. NUI	MBER I	INSTALLED		
SE	QUENCE IIEM			3. NU	IMBER REQUIRED FOR DISPATCH		
NU	MBER2				4. REMARKS AND EXCEPTIONS		
70			]				
78	ENGINE EXHAUST						
3.	Thrust Reverser Unstow Indicating System (Cont'd)						
	2) RB211 Engines	С	4	3	(M) (O) One reverser unstow indication may be inoperative provided associated reverser is locked in forward thrust position.		
		A	4	2	<ul> <li>(M) Two may be inoperative provided:</li> <li>a) Associated reversers are considered inoperative,</li> <li>b) Inoperative reversers are on symmetrical engines only,</li> <li>c) Anti-skid and auto spoilers systems operate normally,</li> <li>d) No damage exists which would impair structural integrity of associated reversers,</li> <li>e) An accepted procedure is established to verify that the inoperative thrust reversers are locked in the forward thrust position, and</li> <li>f) Repairs are made within three flight days.</li> </ul>		

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SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS			4. REMARKS AND EXCEPTIONS			
	]					
78 ENGINE EXHAUST						
4. Reverse Thrust						
(Full Reverse)						
Position Indicating						
System						
		0				
1) J19D-70A Engines C	4	0	(IVI) May be inoperative (and reverser(s)			
			Indicating System and Thrust Poyorsor			
			Armed Indicating System for associated			
			engine(s) operates normally			
2) CE6 Engines C	4	0	(M) May be inoperative (and reverser(s)			
		Ŭ	used) provided the Unstow Position			
			Indicating System and Thrust Reverser			
			Valve Indicating System for associated			
			engine(s) operates normally.			
			3 3 4 4 7 4 7 8 7 8 7			
3) RB211 Engines C	4	0	(M) May be inoperative (and the reverser			
			used) provided:			
			a) Associated unstow position			
			indicating system operates			
			normally, and			
			b) Associated thrust reverser unlock			
			indicating system operates			
			normally.			

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	2. NU					
NUMBERS		3. NU				
Nomberto			4. REMARKS AND EXCEPTIONS			
78 ENGINE EXHAUST	1	1				
5. Thrust Reverser Valve						
Indicating System						
(CF-6 Engines)						
1) CF-6 Engines With C	4	2	May be inoperative for associated			
Pan and Turbine			inoperative reverser(s).			
Reversers						
2) CE-6 Engines C	4	3	One may be inoperative for associated			
Without Turbine		Ū	inoperative reverser.			
Reversers						
A	4	2	(M) Two may be inoperative provided:			
			a) Associated reversers are			
			considered inoperative,			
			b) Inoperative reversers are on			
			symmetrical engines only,			
			c) Anti-skid and auto spoilers			
			systems operate normally,			
			a) No damage exists which would impair structural integrity of			
			associated reversers			
			e) An accepted procedure is			
			established to verify that the			
			inoperative thrust reversers are			
			locked in the forward thrust			
			position, and			
			f) Repairs are made within three			
			flight days.			
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SEQUENCE	ITEM		3. NUMBER REQUIRED FOR DISPATCH			
NUMBERS					4. REMARKS AND EXCEPTIONS	
78 ENGINE	EEXHAUST					
6. Thrust F Indicatir (JT9D-7	Reverser Armed ng System OA Engines)	С	4	3	<ul> <li>(M) One may be inoperative provided that on the associated engine: <ul> <li>a) Thrust reverser unstow indicating system operates normally, and</li> <li>b) Stow latch on each reverser cowl half, and latch operating arm on the reverser air motor are verified in the latched position before each departure.</li> </ul></li></ul>	
		С	4	3	<ul> <li>(M) One may be inoperative provided that on the associated engine: <ul> <li>a) Thrust reverser is considered inoperative, and</li> <li>b) An accepted procedure is established to verify that inoperative thrust reverser is locked in the forward thrust position.</li> </ul> </li> </ul>	
		A	4	2	<ul> <li>(M) Two may be inoperative provided: <ul> <li>a) Associated reversers are considered inoperative,</li> <li>b) Inoperative reversers are on symmetrical engines only,</li> <li>c) Anti-skid and auto spoilers systems operate normally,</li> <li>d) No damage exists which would impair structural integrity of associated reversers,</li> <li>e) An accepted procedure is established to verify that the inoperative thrust reversers are locked in the forward thrust position, and</li> <li>f) Repairs are made within three flight days.</li> </ul></li></ul>	

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SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS			4. REMARKS AND EXCEPTIONS			
78 ENGINE EXHAUST						
7. Reverse Actuated C	4	-	(M) Electric control system may be			
*** Bleed System			inoperative provided associated engine			
(RABS)			reversing system is deactivated.			
1) Mithewit Turking	4	2	(NA) Two may be increative provided.			
Reversers	4	2	<ul> <li>a) Associated reversers are</li> </ul>			
			considered inoperative,			
			b) Inoperative reversers are on			
			symmetrical engines only,			
			c) Anti-skid and auto spoilers			
			systems operate normally,			
			a) No damage exists which would impair structural integrity of			
			associated reversers.			
			e) An accepted procedure is			
			established to verify that the			
			inoperative thrust reversers are			
			locked in the forward thrust			
			position, and			
			i) Repairs are made within three flight days			
			night days.			

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SYSTEM & 1	2. NI	J <u>MBER I</u>	INSTALLED			
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH			
NUMBERS			4. REMARKS AND EXCEPTIONS			
78 ENGINE EXHAUST						
8. Reverse Thrust C *** Limiter Valve (CF6-45/50 Engines)	4	3	<ul> <li>(M) One may be inoperative provided:</li> <li>a) Vent in the valve is blocked, and</li> <li>b) Fan reverser on the associated engine is deactivated.</li> </ul>			
1) Without Turbine A Reversers	4	2	<ul> <li>(M) Two may be inoperative provided: <ul> <li>a) Vent in the valve(s) is blocked,</li> <li>b) Associated reversers are considered inoperative,</li> <li>c) Inoperative reversers are on symmetrical engines only,</li> <li>d) Anti-skid and auto spoilers systems operate normally,</li> <li>e) No damage exists which would impair structural integrity of associated reversers,</li> <li>f) An accepted procedure is established to verify that the inoperative thrust reversers are locked in the forward thrust position, and</li> <li>g) Repairs are made within three flight days.</li> </ul></li></ul>			

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SYSTEM & 1.	2. NU	MBER I	NSTALLED			
SEQUENCE ITEM		3. NU	MBER REQUIRED FO	RDISPATCH		
NUMBERS			4. REMARKS AND E	XCEPTIONS		
78 ENGINE EXHAUST						
9. Reverser Blocker Doors (JT9D Engines)						
1) All Except JT9D-70A C Engines	-	-	Two fan reverser bloc (excluding the upper the engine for 747-10 excluding upper door engine for 747-200/30 two turbine reverser to engine, may be inoper reverser(s) considered normally).	cker doors two on right side of 0 airplanes and on right side of the 00 airplanes), and blocker doors per erative (with d to operate		
2) JT9D-70A Engines C	-	-	One fan reverser bloo may be inoperative (v considered to operate	cker door per engine vith reverser(s) e normally).		

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SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH		
NUMBERS			4. REMARKS AND EXCEPTIONS		
10. Thrust Reverser Unlock C	4	3	(M) One may be inoperative provided		
Indicating System			associated reverser is locked in forward		
(RB211 Engines)			inrust position.		
А	4	2	(M) Two may be inoperative provided:		
			a) Associated reversers are		
			considered inoperative,		
			<ul> <li>D) Inoperative reversers are on symmetrical engines only</li> </ul>		
			c) Anti-skid and auto spoilers		
			systems operate normally,		
			d) No damage exists which would		
			impair structural integrity of		
			e) An accepted procedure is		
			established to verify that the		
			inoperative thrust reversers are		
			locked in the forward thrust		
			f) Repairs are made within three		
			flight days.		

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SYSTEM &	1.	2. NU	MBER I	NSTALLED	
SEQUENCE ITEM			3. NU	MBER REQUIRED FOR DISPATCH	
NUMBERS				4. REMARKS AND EXCEPTIONS	
79 ENGINE OIL					
1. Oil Quality Indicating	С	4	3	(M) (O) One may be inoperative	
Systems				provided:	
				that the oil tank is filled to the	
				maximum recommended capacity,	
				b) There is no evidence of above	
				normal oil consumption or	
				leakage, and	
				oil pressure warning, and	
				temperature indicating systems	
				operate normally and are	
				monitored.	
2. Oil Pressure Warning					
Light Systems					
1) CF6 and JT9D	С	4	3	(O) One may be inoperative provided	
Engines				associated oil pressure, temperature,	
				and quantity indicators operate normally,	
				(Continued)	

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SYSTEM & 1		. 04/12/ MRFR I	NSTALLED		
SEQUENCE ITEM	2.1101	3. NU	MBER REQUIRED FOR DISPATCH		
NUMBERS			4. REMARKS AND EXCEPTIONS		
	ļ				
79 ENGINE OIL					
2. Oli Pressule Warning					
(Cont'd)					
(222)					
2) RB211 Engines C	4	3	(M) (O) Except as required by		
			Airworthiness Directive T81-22-51, one		
			may be inoperative provided:		
			a) Associated oil pressure indicator		
			b) Associated differential oil pressure		
			indicator operates normally,		
			c) Associated oil temperature		
			indicator operates normally,		
			d) Associated oil quantity indicator		
			operates normally,		
			e) All operating oil system indications		
			f) HP oil filters without a differential		
			pressure indication are checked		
			once each flight day, and		
			g) RR SB 72-78-36 or production		
			equivalent is installed.		
	1				

U.S. DEPARTMENT OF TRANSPORTATION MASTER MINIMUM EQUIPMENT LIST						M EQUIPMENT LIST	
FED	FEDERAL AVIATION ADMINISTRATION						
AIRCRAFT:			REVIS	REVISION NO: 32 PAGE NO:			
0.70	BOEING 747	4				79-3	
515		1.	2. NUI				
	ABERS			3. NUI			
	MDEIKO				4. KEIVIARKS AND E	ACEPTIONS	
79	ENGINE OII		1				
3.	Oil Filter Bypass Warning	С	4	0	(M) May be inoperativ	/e provided:	
	Light Systems				<ul> <li>a) It is verified that</li> </ul>	at the malfunction is	
					in the warning	system, and	
					b) At intervals no	t to exceed 30	
					nours time in s	ervice, the main on	
					presence of co	intaminants.	
		С	4	0	(O) May be inoperativ	e provided	
					associated oil filter pr	essure indicators	
					operate normally, and	d are monitored.	
		•		•			
4.	Oil Filter Pressure	C	4	0	May be inoperative p	rovided associated	
	mulcators				FILTER DIFASS ligi	its operate normally.	
		С	4	0	(M) May be inoperativ	ve provided:	
		•		Ū.	a) It is verified that	at the malfunction is	
					in the indicatio	n system, and	
					<li>b) At intervals no</li>	t to exceed 30	
					hours time in s	ervice, the main oil	
					screen is inspe	ected for the	
					presence of co	ontaminants.	
F	Engine Breather	C	л	0			
Э. ***	Indicators (Pressure or	C	4	0			
	Temperature)						
	(JT9D Engines)						
6.	Oil Temperature				Deleted, Rev. 20.		
	Indications						
_	<b>OND</b>						
7.	Oil Pressure Indications				Deleted, Rev. 20.		

U.S	. DEPARTMENT OF TRAN	SPOR		١	
FFI	DERAL AVIATION ADMINIS	TRAT	ION		MASTER MINIMUM EQUIPMENT LIST
AIRCRAFT:			REVIS		O: 32 PAGE NO:
	BOEING 747		DATE	: 04/12/	/2005 79-4
SYS	STEM &	1.	2. NUI		
NU	MBERS			5. NU	4. REMARKS AND EXCEPTIONS
79	ENGINE OIL				
8.	Combined Filter and Differential Pressure Indicating Systems RB211 Engines	С	4	0	(M) Except as required by Airworthiness Directive T81-22-51 may be inoperative provided RR SB 72-78-36 or production equivalent is installed.
9.	Fine Scavenge Oil Differential Pressure ("FILT DELTA P" Gage) Indicating System RB211 Engines	С	4	3	<ul> <li>(M) (O) Except as required by Airworthiness Directive T81-22-51 one may be inoperative provided: <ul> <li>a) Associated oil pressure indicator operates normally,</li> <li>b) Associated oil pressure warning light operates normally,</li> <li>c) Associated oil temperature indicator operates normally,</li> <li>d) Associated oil quantity indicator operates normally,</li> <li>e) All operating oil system indications are monitored,</li> <li>f) Scavenge oil filter is checked once each flight day, and</li> <li>g) RR SB 72-78-36 or production equivalent is installed.</li> </ul> </li> </ul>

U.S. DEPARTMENT OF TRANSPORTATION				
MASTER MINIMUM EQUIPMENT LIST				
AIRCRAFT:	RE	VISION		D: 32 PAGE NO:
BOEING 747	DA	TE: 04/	/12/	2005 79-5
SYSTEM & 1.	2.1	2. NUMBER INSTALLED		
		3. NUMBER REQUIRED FOR DISPATC		
NOWBERS				4. REMARKS AND EXCEPTIONS
79 ENGINE OIL				
10. High Pressure Oil C Differential Pressure ("FILT DELTA P" Gage) Indicating System RB211 Engines	4	3	3	<ul> <li>(M) (O) Except as required by Airworthiness Directive T81-22-51 one may be inoperative provided: <ul> <li>a) Associated oil pressure indicator operates normally,</li> <li>b) Associated oil pressure warning light operates normally,</li> <li>c) Associated oil temperature indicator operates normally,</li> <li>d) Associated oil quantity indicator operates normally,</li> <li>e) All operating oil system indications are monitored,</li> <li>f) HP oil filter is checked once each flight day, and</li> <li>g) RR SB 72-78-36 or production equivalent is installed.</li> </ul> </li> </ul>
11. Oil Tank Flapper Valves C	4	0	0	(M) May be inoperative provided associated oil tank filler cap is secured closed after each servicing.

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MASTER MINIMUM EQUIPMENT LIST					
AIRCRAFT:		REVIS	REVISION NO: 31d		E NO:
BOEING 7	47	DATE: 11/02/2		2004	80-1
SYSTEM &	1.	2. NU	MBER I	NSTALLED	
SEQUENCE ITE	EM	3. NUMBER REQUIRED FOR DISPATCH			PATCH
NUMBERS		4. REMARKS AND EXCEPTIONS		TIONS	
80 STARTING					
1. STARTER VALVE Lights	OPEN				
U U					
1) Single Light S	ystem C	4	3	(M) (O) One may be inopera it is verified after engine sta associated valve is closed.	ative provided rt that the
2) Dual Light Sys	stem C	8	6	(M) (O) Two lights on one e be inoperative provided it is after engine start that the as valve is closed.	ngine may verified ssociated
	С	8	4	(O) One light on each engin inoperative.	ie may be
2. Engine Start Valve	e C	4	3	<ul> <li>(M) (O) One may be inoperative provided:</li> <li>a) Pylon bleed air shutor remaining engines of normally, and</li> <li>b) Accepted alternate s procedures are established.</li> </ul>	ative closed off valves on perate tarting blished and

U.S. DEPARTMENT OF TRANSPORTATION					
FEDERAL AVIATION ADMINISTR	ATION		MASTER MINIMU	M EQUIPMENT LIST	
AIRCRAFT:	REV	ISION N	O: 31d	PAGE NO:	
BOEING 747	DAT	E: 11/02	/2004	82-1	
SYSTEM & 1.	2. N	2. NUMBER INSTALLED			
SEQUENCE ITEM		3. NU	MBER REQUIRED FC	OR DISPATCH	
NUMBERS		4. REMARKS AND EXCEPTIONS			
82 WATER INJECTION					
1. Water Drain System C *** (JT9D Engines)	1	0	(M) May be inoperative remains closed (-200	ve provided valve only).	
2. Water Flow Lights C (JT9D Engines)	4	3	One may be inoperat N2 and Fuel Flow ind associated PRESS lig normally.	ive provided the N1, licators, and ght operate	
С	4	3	May be inoperative o inoperative water inje	n engines with ection systems.	
<ol> <li>Water Pressure Lights C (JT9D Engines)</li> </ol>	4	0	May be inoperative p Fuel Flow indicators, systems on associate operate normally.	rovided N1, N2 and and water flow ed engine(s)	
С	4	0	May be inoperative o inoperative water inje	n engines with ection systems.	
4. Water LOW C PRESS Light (Pilot's and/or F/E Panel) (JT9D Engines)	-	0			

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MASTER MINIMUM EQUIPMENT LIST				
AIRCRAFT			O: 31d PAGE NO	
BOEING 747	DATE: 11/02/2		/2004 82-2	
SYSTEM & 1.	2. NU	MBER I	INSTALLED	
SEQUENCE ITEM		3. NU	MBER REQUIRED FOR DISPATCH	
NUMBERS			4. REMARKS AND EXCEPTIONS	
62 WATER INJECTION				
5. Water Injection C	4	0	(M) (O) May be inoperative closed.	
Shutoff Valve				
(JT9D Engines)				
C	4	0	(M) May be inoperative open provided an	
Ŭ		Ŭ	acceptable blocker plate is installed in	
			water line (to prevent bleed air	
			back-pressuring).	
C	1	0	$(\mathbf{O})$ May be increasive open provided:	
	4	0	a) Water regulator check valve	
			function operates normally,	
			b) Water pumps are not turned on	
			until an EPR of 1.2 is attained,	
			and a) Associated N1 and N2 indicators	
			WATER FLOW and water PRESS	
			lights operate normally.	
6. Water Injection System C	4	0	(M) May be inoperative with associated	
(JI9D Engines)			engine(s) operated at dry thrust rating	
			a) Associated water pump(s) is	
			deactivated, and	
			b) Operation (including performance)	
			complies with AFM.	

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MASTER MINIMUM EQUIPMENT LIST				
AIRCRAFT:				O: 31d PAGE NO:
BUEING 747	1	DATE: 11/02/2004 82-3		
SEQUENCE ITEM		3. NUMBER REQUIRED FOR DISPATCH		
NUMBERS		4. REMARKS AND EXCEPTIONS		4. REMARKS AND EXCEPTIONS
82 WATER INJECTION		]		
7. Water Quantity Indicators (JT9D Engines)	С	2	0	<ul> <li>(M) (O) May be inoperative provided:</li> <li>a) Tank is filled to standpipe level,</li> <li>b) A visual check is made to verify that there are no water tank leaks, and</li> <li>c) Antisiphon valves (PRR 73562-1) are installed and operating normally.</li> </ul>
	С	2	0	<ul> <li>(M) May be inoperative provided:</li> <li>a) Tank is filled to standpipe level,</li> <li>b) A visual check is made to verify that there are no water tank leaks, and</li> <li>c) A procedure is established to verify water pumps are not turned on until immediately before takeoff.</li> </ul>
	С	2	0	May be inoperative provided water injection is not used.
8. Antisiphon valve (JT9D Engines)	С	1	0	<ul> <li>(M) May be inoperative provided:</li> <li>a) Vent line for antisiphon valve, if failed open, is capped, and</li> <li>b) Water injection pumps are not turned off (after starting) until all required water has been used.</li> </ul>
	С	1	0	May be inoperative provided water injection is not used.