

FLIGHT STANDARDIZATION BOARD (FSB) REPORT

McDONNELL DOUGLAS DC-10 and MD-11

REVISION NO. 1

OCTOBER 18, 1996

CHAIRMAN: \_\_\_\_\_

W.C. MALONE  
LGB-AEG

COORDINATED: \_\_\_\_\_12/09/96

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## REVISION RECORD

REVISION NO. ORIGINAL	SECTION	PAGE #s ALL	DATE
REVISION #1			10/18/96
1.4	- Previous reports superseded.		
1.6	- Acronyms added.		
3.1.2 & pg. 66	- Removes "PROF" Mode altitude limitation.		
3.4	- Remove reference to FAR 91.85(c).		
5.1	- Removes reference to DC-10-10 in ODR tables.		
5.3.3 and 7.2.3	- Changes ANM-270L to LGB-AEG.		
6.1.11	- Adds high altitude training.		
6.6.3	- Requirements for Designated Firefighter.		
7.2.1	- Adds reference to GPS.		
9.4.1 and 2	- Emergency Evacuation updated.		
Compliance Checklist:			
91.221	- Type design complies.		
91.611	- Authorization for one engine ferry.		
121.358	- Windshear system certified.		
121.485 reference to	- Changes ANM-270L to LGB-AEG and removes "Skybunk".		
Advisory Circular:			
AC 00-50A	- Windshear system certified.		
FAA Directives	- May use /G on Flight Plans.		

## 1. PURPOSE AND APPLICABILITY:

1.1 This FSB report specifies FAA master training, checking, and currency requirements applicable to crews operating DC-10 and MD-11 aircraft under FAR 121. This report also addresses Training, etc.). Provisions of this report include: certain issues regarding the operation of DC-10s or MD-11s Training, etc.). Provisions of this report include: other than under FAR 121 (e.g. Type Rating Determination, Training, etc.). Provisions of this report include:

- 1.1.1 Assigning different "Type Ratings" to DC-10 and MD-11 aircraft.
- 1.1.2 Describing "Master Common Requirements" (MCRs) applicable to DC-10s and MD-11s.
- 1.1.3 Describing "Master Difference Requirements" (MDRs) for crews requiring differences qualification for mixed-fleet flying or transition of DC-10 variants, MD-11 variants, or both DC-10 and MD-11 variants.
- 1.1.4 Providing examples of acceptable "Operator Difference Requirement (ODR)" Tables.
- 1.1.5 Describing an acceptable training program and training device characteristics when necessary to establish compliance with pertinent MDRs.
- 1.1.6 Setting checking and currency standards including specification of particular check items that must be administered by FAA or operators.
- 1.1.7 Providing information to FAA Field Offices about DC-10 and MD-11 compliance with FARs, Advisory Circular, or other operational criteria.

1.2 This report provides:

- 1.2.1 Minimum requirements which must be applied by FAA field offices, (e.g. MCRs, MDRs, Type Rating designations, etc.).
- 1.2.2 Information may be mandatory for particular operators  
] if the designated configurations apply and if approved for that operator (e.g. MDR footnotes, acceptable ODR tables).
- 1.2.3 Information which is used to facilitate FAA review of an aircraft type or variant proposed for use by an

operator (e.g. compliance checklist for FAA Field Office use etc.).

Note: Various sections within this report are noted as to

whether compliance (considering the FARs and provisions of AC 120-53) is required, is recommended, or is advisory in nature.

1.3 This report addresses DC-10 variants including DC-10-10, -10F, -15, -30, -30F, -40, and -40F, and MD-11 variants including the MD-11 and MD-11F. Refer to FAA Type Certificate Data Sheet A22WE.

1.4 The provisions of this report are effective until amended, superseded, or withdrawn by subsequent revisions to this FSB report. Previous DC-10 and MD-11 FSB reports are superseded.

#### 1.5 Terminology:

The term "must" is used in this report and certain MDR footnotes even though it is recognized that this FSB report, and Advisory Circular AC 120-53 on which it is based, provides one acceptable means, but not necessarily the only means of compliance with FAR 121 Subpart N and O requirements. This terminology acknowledges the need for operators to fully comply with this FSB report MDR and ODR provisions if AC 120-53 is to be used by the operator as the means of complying with FAR 121. Operators who choose this method must comply with each applicable MDR provision including the footnotes.

The term "extended range" is used in this report for extended range operation in remote and oceanic areas.

#### 1.6 Acronyms:

The following is a list of some of the acronyms used in this report:

AGL - Above Ground Level

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APD - Aircrew Program Designee

APM - Aircrew Program Manager

AQP - Advanced Qualification Program

ASI - Aviation Safety Inspector

ATP - Airline Transport Pilot

CAWS - Central Aural Warning System

CWS - Control Wheel Steering

DU - Display Unit

EAD - Engine and Alert Display

FCP - Flight Control Panel  
FF - Fuel Flow  
FMC - Flight Management Computer  
FMA - Flight Mode Annunciator  
FMS - Flight Management System  
FQ - Fuel Quantity  
FTD - Flight Training Device  
IRS - Inertial Reference System  
LSAS - Longitudinal Stability Augmentation System  
LOFT - Line Oriented Flight Training  
MDA - Minimum Decent Altitude  
ND - Navigation Display  
NSET - National Simulator Evaluation Team  
PDCS - Performance Data Computer System  
PFD - Primary Flight Display

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PMS - Performance Management System  
PNF - Pilot Not Flying  
POI - Principal Operation Inspector  
PROF - Profile Mode  
RCWS - Roll Control Wheel Steering  
RTO - Rejected Takeoff  
SD - System Display

## 2. PILOT "TYPE RATING" REQUIREMENTS:

In accordance with the provisions of FAR 1 and 61, different pilot "type ratings" are assigned to the DC-10 and MD-11 as listed in paragraph 1.3. Any DC-10 variant is designated as a "DC-10", and any MD-11 variant is designated as an "MD-11".

## 3. "MASTER COMMON REQUIREMENTS" (MCRs):

### 3.1 MINIMUM HEIGHT FOR USE OF AUTOPILOT (FAR 121.579):

#### 3.1.1 All DC-10s:

For the DC-10, unless a higher altitude is otherwise specified by the FAA or McDonnell Douglas (e.g. by AFM, AD, service bulletin, etc.) the minimum height for engagement of the autopilot for takeoff, in FAR 121 operations, is 500 feet AGL when in the "takeoff", "vertical speed", "IAS hold", or "altitude hold" modes. For DC-10s approved for takeoff or landing using CWS, the autopilot may be engaged in CWS mode prior to takeoff, and may remain engaged in CWS mode through landing. For autopilot precision approach, dual land, single land, or go-around, autopilot minimum use height

is as specified by the AFM. For non-precision approach, the autopilot minimum use height is the published MDA when in "vertical speed", "IAS hold", or "altitude hold" modes, otherwise minimum use height is 500 feet AGL.

3.1.2 All MD-11s:

For the MD-11, unless a higher value is otherwise specified by FAA (e.g. by AFM, AD, service bulletin, etc.) the minimum height for engagement of the autopilot for MD-11 aircraft, under FAR 121 operations, is 200 feet AGL in "takeoff", "level change", "vertical speed", and "altitude hold" mode. "PROF" Mode may be

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used in accordance with AFM constraints for minimum engagement altitude.

the RCWS

For MD-11s with RCWS and LSAS, the autopilot may be in /LSAS configuration for both takeoff and landing. For autopilot precision approach, dual land, single land, or go-around, autopilot minimum use height is as specified by the AFM for the respective mode (i.e. autopilot may usually remain engaged through completion of landing rollout). For non-precision approach, the autopilot minimum use height is 50 feet below published MDA when using "level change", "vertical speed", "flight path angle (FPA)" or "altitude hold"

modes.

3.2 Approach Categories (FAR 97.3):

Both the DC-10 and MD-11 are generally considered Category D aircraft for "Straight-In Approach" weather minima. Certain DC-10-10s may be considered Category C if, at their maximum certificated landing weight, 1.3 Vso is less than 141 knots (see the pertinent AFM and FAR 97.3(b)). Both the DC-10 and MD-11 are considered approach Category D aircraft for "Circling Approach" weather minima unless otherwise permitted or required by applicable operations specifications.

## 3.3 NO FLAP APPROACH:

Training and checking requirements include:

3.3.1 Training for and demonstration of approaches with no slats and normal flaps, no flaps and normal slats, and no slats or flaps is appropriate for both DC-10 and MD-11 aircraft.

3.3.2 Credit for demonstration of a "No Flap/No Slat" approach in either a DC-10 or MD-11 aircraft is permitted for the other respective type if specified by approved ODRs.

## 3.4 NORMAL "FINAL LANDING FLAP SETTING":

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The normal "final landing flap setting" is considered to be either "Flaps 35" or "Flaps 50" for both DC-10 and MD-11.

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## 3.5 USE OF MD-11 "MAP" MODE DURING INSTRUMENT APPROACHES:

It is appropriate that crews monitor pertinent raw data navigation information during instrument approaches using the ND "MAP" mode. Raw data localizer and glideslope information on the PFD, and VOR, or NDB information, as applicable, should be monitored to ensure consistency with ND map information. Some operators consider it a good operating practice to have one pilot monitor the pertinent ND "APPR" or "VOR" display mode to validate information shown by the map display. Exclusive use of the "MAP" mode by both pilots during an instrument approach without some means of crosscheck (i.e. monitoring PFD LOC and GS data,) is not appropriate. This is due to the potential for error associated with unreliable navigation signals, delays in updating following "IRS only" operations, facility outages, or other such factors.

## 4. "MASTER DIFFERENCE REQUIREMENTS" (MDRs):

## 4.1 MDR TABLES:

Requirements for particular DC-10 and MD-11 variants are shown in Appendix 1. These provisions apply when differences between variants exist which affect crew knowledge, skills, or abilities (e.g. Level A or greater differences). Limited

credit for certain maneuvers is permitted between MD-11 and DC-10 aircraft, as specified, even though the DC-10 and MD-11 are assigned level E for differences and have different pilot type ratings. This is appropriate since common handling qualities and other common characteristics such as cockpit visibility may permit certain credit for training, checking, and currency related to takeoff and landing.

4.2 MDR FOOTNOTES:

Footnotes to MDR requirements define acceptable "required means" of compliance. A footnote can indicate requirements that are less restrictive than the basic designation, or more restrictive than the basic designation, depending on the significance of the differences between particular variants.

4.3 DIFFERENCE LEVEL DEFINITIONS:

Difference level definitions are as specified in AC 120-53. For convenience, a table summarizing these definitions is included with the MDR table in Appendix 1.

5. FAA APPROVED "OPERATOR DIFFERENCE REQUIREMENTS" (ODR) TABLES:

5.1 ODR TABLES:

ODR Tables are to be developed by each individual operator when differences exist which affect crew qualification. An example ODR table related to DC-10 and MD-11 mixed fleet

] operations is shown in Appendix 2. This ODR table is provided  
] only as an example and may not include items that are  
] applicable to particular operators.  
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5.2 LANDING CURRENCY CREDIT PERMITTED BY ODR TABLES:

Limited credit for certain takeoff and landing maneuvers may be permitted between MD-11 and DC-10 aircraft as specified in ODR tables. When approved by FAA, an operator may have its pilots satisfy the requirement for three takeoffs and landings in the previous 90 days (FAR 121.439) by accomplishing those takeoffs and landings in either the DC-10, the MD-11, or by any combination of three takeoffs and landings in a DC-10 or MD-11. However, to obtain this credit, a pilot must remain current with both the DC-10 and MD-11 cockpits, systems, and

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procedures by having completed at least 3 segments in the DC-10, and an additional 3 segments in the MD-11, each within 90 days. However, during these six segments the pilot may have been the "pilot flying" for only three of the respective takeoffs and landings (See section 8 regarding currency). An example to see how this landing currency credit is permitted is provided by the ODR tables shown in Appendix 2. The levels and methods that may be used to re-establish currency if currency is lost are shown under the compliance methods columns (e.g. a difference Level D method such as an appropriate FTD may be used in this instance). The applicable currency period and necessary currency events that must be satisfied are shown in the currency column.

### 5.3 DISTRIBUTION OF FAA APPROVED ODR TABLES:

Distribution of the FAA Approved ODR Tables should be as follows:

- 5.3.1 Original FAA approved ODR tables are to be retained by the operator;
- 5.3.2 Copies of FAA approved ODR tables are to be retained by the Certificate Holding District Office (CHDO).
- 5.3.3 A copy of approved ODR tables should be provided to the DC-10/MD-11 Flight Standards Board (FSB) Chairman, Long Beach AEG, LGB-AEG.

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## 6. FSB SPECIFICATIONS FOR TRAINING:

### 6.1 GENERAL:

#### 6.1.1 AIRMEN EXPERIENCE:

The provisions of this section of the report apply to programs for experienced airmen (i.e. airmen who have previous experience in FAR 121 air carrier operations, former military, commuter or corporate pilots with turbine powered aircraft experience, etc.). For airmen not having such experience additional requirements may be necessary as determined by the POI, FSB, and AFS-200.

6.1.2 DC-10 TRAINING PROGRAM NEW TO AN OPERATOR:  
(without differences between DC-10 variants)

Numerous training programs for any one DC-10 variant are already FAA approved. FAA Principal Inspectors of operators initially introducing a DC-10 type for an operator not currently using DC-10s, and where differences between DC-10 aircraft are not a factor, may approve such programs consistent with other programs previously approved by FAA for DC-10s (i.e. for an operator introducing a fleet of DC-10-10s with no differences between individual aircraft).

- a) When such programs are approved, operators should be aware that if variants are to be added (DC-10-30 to be introduced within a fleet (Navigation Systems added to a fleet of DC-10-10s) or differences are to be introduced within a fleet (Navigation Systems updated for part of the fleet), ODR table development and FAA approval is necessary prior to operations of those aircraft with differences.
- b) For information regarding previously approved programs, FAA Principal Inspectors of other existing DC-10 operators may be consulted. In the event of uncertainty regarding evaluation of a proposed program, the DC-10 FSB Chairman should be consulted.

6.1.3 MD-11 TRAINING PROGRAM NEW TO AN OPERATOR:  
(without differences between MD-11 variants)

MD-11 training programs (with no differences between aircraft, where no mixed-fleet operations with DC-10 aircraft occur, and where no transition or currency credit is sought) should meet or exceed each provision of this report related to the MD-11. A sample of acceptable FAR 121 Appendix E and H programs are provided in Appendix 3. MDRs and ODR tables in

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Appendix 1 and 2 do not apply.

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6.1.4 DC-10 OR MD-11 TRAINING PROGRAMS WITH DIFFERENCES  
BETWEEN AIRCRAFT:

When more than one variant of DC-10, MD-11, or combinations of DC-10s and MD-11s are flown in a mixed fleet, differences training programs meeting criteria specified by MDR tables must be described in ODR tables and approved by FAA, or the operator

] must have an alternate means of compliance as prescribed  
] by Section 12 of this report.

Any existing DC-10 program that is less comprehensive than the program shown in Appendix 2 should be reviewed and revised as necessary to meet MDRs. Any changes proposed to such existing programs making those programs less restrictive should not be approved without prior coordination with the DC-10 FSB chairman.

#### 6.1.5 TAKEOFF SAFETY:

Because of frequent DC-10 and MD-11 operations at critical weight with runway limited takeoffs, particular emphasis on certain takeoff safety related topics is appropriate during training. This includes emphasis on the following:

- a) The meaning and proper use of V1.
- b) The importance of prompt and correct execution of a rejected takeoff (RTO), including selection of autobrakes and use of full braking capability.
- c) The need to minimize exposure to high speed RTOs for minor difficulties unrelated to the ability of the aircraft to continue a safe takeoff.
- d) Proper selection of flap settings and thrust levels for existing conditions.
- e) Proper lineup and use of available runway.
- f) Correct accountability for clutter and/or reduced braking friction.
- g) Consideration of use of Reduced V1 or Minimum V1 when runway in excess of critical field length is available.

#### 6.1.6 ALTITUDE CALLOUTS DURING LANDING:

- a) DC-10:

Radar altimeter callouts have been found to be beneficial during flare. Accordingly, for those DC-10 aircraft not equipped with automatic voice radar altitude callouts or tones, a crew procedure

providing for a "non-flying" flight crewmember (PNF, flight engineer to make callouts during flare is recommended (e.g. callouts for 50', 30', 10' Radar Altitude).

b) MD-11:

For the MD-11, due to the minimum number of landings typically accomplished by each crewmember as a result of long stage lengths, and the need for the "pilot-not-flying" (PNF) to monitor other parameters during flare, use of automatic voice callouts (if installed) during flare is certified

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appropriate. The procedures of MD-11 operators not electing to use automatic callouts should only be approved if use of an equivalent or better procedure or method is demonstrated.

6.1.7 AUTOMATIC LANDINGS:

If an operator conducts automatic landings in either the DC-10 or MD-11 then appropriate training must occur. This training must be conducted in the respective DC-10 or MD-11 training device, simulator, or airplane due to the differences in AFCS, instrument indications, and annunciations. However, due to the similarity between various autoland systems in DC-10s, autoland training for the DC-10 may occur in any DC-10 variant. Similarly, MD-11 autoland training may occur in any MD-11 variant.

6.1.8 HAZARDOUS WEATHER AND WINTER OPERATIONS:

Proper precautions and procedures regarding hazardous weather/winter operations which may be unique to DC-10 and MD-11 aircraft should be addressed. For example, skid braking characteristics when stopping on slippery topics such as proper use of wing/tail anti-ice, anti-skid braking characteristics when stopping on slippery runways, appropriate autobrake settings, hazards associated with rejecting critical weight takeoffs near V1 on slippery runways, and other such topics are appropriate for emphasis in training programs due to the significant percentage of critical field length takeoffs.

## 6.1.9 CREWMEMBER EMERGENCY TRAINING (FAR 121.417):

Appropriate emergency training must be given to each crewmember on the location, type, function, and operation of each item of emergency equipment that is different in each DC-10/MD-11 variant. Training may be accomplished by pictures or videotape if, prior to line operation, adequate knowledge of equipment use is demonstrated to an authorized representative of the operator for that variant in a static aircraft or approved training device.

- a) Where equipment is common, instruction may be adjusted for those crewmembers qualified and current on other DC-10 or MD-11 variants, provided records are available which demonstrate that crewmembers meet FAR 121.417 and 121.683(a) requirements. For example, where elements of interior configurations are common, training may be simultaneously credited for variants.
- b) For different emergency equipment, doors, slides, slide/rafts, rafts, communications, or other interior configuration elements, even when within the same series (e.g. DC-10-10 and -10F), training on emergency equipment for each variant is required in accordance with MDRs.

## 6.1.10 DC-10/MD-11 SPECIAL CHARACTERISTICS:

- a) Critical Hydraulic Failure:

For DC-10s with the #3 hydraulic system modification, which permits limited control in the event of catastrophic tail section hydraulic failure, and for any MD-11, crews should demonstrate familiarity with pertinent hydraulic system annunciations and knowledge of backup aircraft control and thrust management for such a hydraulic failure. An approach and landing should be accomplished with this critical hydraulic failure during initial, transition, and upgrade training. For crews currently qualified on one or both of these aircraft, if not already addressed, this issue should be addressed during a suitable recurrent training period on at least a one time basis. While demonstration of use of proper procedures and control in this configuration is

appropriate, it is not an objective to train to proficiency in landing with this configuration.

b) Takeoff Rotation With Failure of #2 Engine:

Due to the location of the #2 engine, in the event of failure of the #2 engine a pilot will experience very light control forces at rotation. Pilots should be familiar with this characteristic and take precautions to not "prematurely rotate", "over rotate", or let speed subsequently decay below V2 during initial climb.

6.1.11 MD-11 SPECIAL CHARACTERISTICS:

a) Speeds beyond Vmo/Mmo:

If inadvertently encountering speeds beyond Vmo/Mmo, the LSAS speed protection feature may in some instances provide pitch control feedback that can lead to slight pilot induced oscillation (PIO) during recovery. Crews should be aware of this characteristic and be advised that use of normal overspeed recovery techniques, including thrust reduction and a smooth increase of pitch attitude, are appropriate. Training in high altitude PIO

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recovery should be accomplished in the simulator.

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b) Rotation, Flare, and Geometry Limits:

Due to MD-11 fuselage geometry, crews should be clearly aware of the attitude at which tail contact can occur, proper rotation and flare technique, and flare and touchdown pitch characteristics of the aircraft with use of various flap, spoiler, reverse thrust, and CG conditions. This should be addressed for normal takeoffs and landings, with a wing or center engine inoperative, and for landing considering use of either auto spoilers or manual spoilers.

6.1.12 TRAINING FOR DC-10/MD-11 "SEAT DEPENDENT" TASKS:

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a) Proper accomplishment of certain DC-10/MD-11 tasks,

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procedures, or maneuvers require training of a crewmember for a particular crew position (i.e. captain, first officer, international relief officer, check airman, etc.). Thus training programs, including those programs leading to

airman certification for an ATP Certificate or type rating, should recognize and address the necessary seat/position related tasks for the applicable example, an applicant for addition of an MD-11 type crewmember or certification that is intended. For example, an applicant for addition of an MD-11 type rating to an ATP Certificate would be expected to receive training in ground taxi by use of the steering tiller, including turns on narrow taxiways, accurately maneuvering to a jetway, and transitioning to or from the tiller during crosswind takeoffs or landings. Demonstrating taxi exclusively through use of rudder pedal steering would not be appropriate for a new PIC, even though such a demonstration may be entirely acceptable for training of a first officer. Accordingly, each training program should address seat dependent tasks or maneuvers to the extent necessary to satisfy crew qualification objectives.

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- b) The DC-10/MD-11 tasks, procedures, or maneuvers are considered to have seat dependent elements are follows:

- (1) Use of steering tiller during taxi.
- (2) Rejected Takeoff.

- c) Other items which could in certain circumstances have seat dependent elements, and may need to be considered and addressed as determined by each operator and POI on a case by case basis, include the following:

- (1) Crosswind takeoffs and landings.
- (2) Engine inoperative takeoffs and landings.
- (3) Emergency communications.
- (4) Loss of all generators.
- (5) Loss of all engines.
- (6) Emergency Descent.
- (7) Operation on emergency power (DU Display configuration differences).

## 6.2 INITIAL, UPGRADE, OR TRANSITION TRAINING:

### 6.2.1 Pilot Initial, Upgrade, and Transition Ground Training (FAR 121.419):

Pilot Initial, Upgrade, and Transition Ground Training is accomplished in accordance with FAR 121.419 or SFAR

58 Advanced Qualification Program (AQP). When more than one variant is to be flown or transition from one variant to another is to be accomplished, appropriate ground instruction in differences is required for each variant consistent with MDR provisions.

6.2.2 Pilot Initial, Upgrade and Transition Flight Training (FAR 121.424):

Pilot Initial, Upgrade and Transition Flight Training is accomplished in accordance with FAR 121.424 or SFAR 58 (AQP). When flight training is accomplished, and several variants are to be flown, flight training is to suitably address each variant consistent with MDR provisions.

6.2.3 Training Program Hour Reductions (FAR 121.405):

Training program hours may be reduced as specified in FAR 121.405, but may not be reduced to a level which is less than that set forth in the MDR Tables.

6.3 DIFFERENCES TRAINING (FAR 121.418):

6.3.1 General:

Unless an initial or transition program is completed for each variant, differences training is necessary for each variant as shown in the MDR Tables. Samples of acceptable ODR Tables for differences are shown in Appendix 2.

- a) The differences programs of Appendix 2 for a mixed-fleet assumes a trainee has completed Initial, Upgrade or Transition Training and will receive differences training for the other variant group(s).
- b) Coverage of differences may be completed coincident either with each phase of Initial, Upgrade, or Transition Training, or following completion of that training.

6.3.2 Differences Ground Training:

Differences Ground Training in the topics applicable to the pertinent variant group or groups and shown by sample ODR tables or the equivalent is required. When

Level C or greater training is required by MDRs, comprehensive treatment of the topics specified in the ODR Tables requires at least 20 programmed hours of ground instruction. The POI may reduce this minimum time when specific cases warrant.

#### 6.3.3 Differences Flight Training:

Differences Flight Training is required in the topics and maneuvers applicable to the pertinent variant group or groups that are shown by sample ODR tables. For an Advanced Qualification (SFAR 58) Program, "Flight Qualification Events" must be consistent with items specified by the applicable ODR tables.

#### 6.3.4 Engine Intermix:

Engine intermix operations (i.e. For the DC-10, different Pratt & Whitney JT9Ds or different GE CF6s with different levels of rated thrust, or for the MD-11 different PW4460s, etc.) are acceptable as specified by the AFM. If engine intermix limits and performance are clearly addressed (Vmcg, airport analysis, FAR 121.189 obstacle clearance, etc.), and this information is readily available to the flight crew and easily interpreted, then Level A/A/A differences are considered acceptable.

#### 6.3.5 Passenger and Freighter Variants:

Mixed flying of Passenger, Combi, and Freighter Variants within the same variant group (i.e. DC-10-10 passenger and freighter configurations, or MD-11 passenger and combi) may require compliance with additional MDR footnote limitations (e.g. A/A/B). This is appropriate due to differences in doors, fire protection provisions, emergency evacuation, and other areas.

#### 6.3.6 DC-10 FMS Differences:

When Level D or greater requirements are shown for differences training due to Flight Management System (FMS), training must include "hands-on" training with the FMS and its components. Comprehensive treatment of FMS typically requires a MINIMUM of 8 programmed hours of "hands on" instruction unless otherwise approved for an AQP program.

#### 6.3.7 DC-10 PDCS/PMS Differences:

Performance Data Computer System (PDCS) and Performance Management System (PMS) Differences must be addressed between variants. Level B/A/B is acceptable for differences between PDCS and PMS aircraft or vice versa. POIs may permit credit for prior PMS and PDCS experience by reducing the amount of Level B or greater training needed.

#### 6.4 RECURRENT TRAINING:

6.4.1 Recurrent training must include appropriate training in accordance with FAR 121.427 for each variant group consistent with the items and levels specified by MDR and ODR tables for differences training.

6.4.2 Recurrent Flight Training requires appropriate maneuvers and procedures identified in FAR 121 Appendix E or as otherwise approved for an AQP in accordance with SFAR 58. For either case, maneuvers and procedures addressed must account for each variant group operated. ODR table provisions identify differences in maneuvers or procedures between variants which must be addressed in the operators recurrent program.

#### 6.5 LOFT PROGRAMS (FAR 121.409(b)(3)):

When operators have LOFT programs and several variants, POIs should review LOFT credits to assure suitability for each variant. If simulators used for LOFT have differences from the variants actually flown, LOFT credits may be reduced or eliminated if such differences are determined to have a significant adverse effect on the effectiveness of LOFT. Separate LOFT programs for DC-10 and MD-11 are necessary. LOFT credit between DC-10 and MD-11 programs is not appropriate.

#### 6.6 OTHER TRAINING:

##### 6.6.1 Flight Engineer:

Flight Engineer training for the DC-10 is in accordance with FAR 63, FAR 121 Appendix E, or SFAR 58. Flight Engineer training is not applicable to the MD-11.

## 6.6.2 Flight Navigator:

Flight Navigator training is not applicable to either the DC-10 or MD-11.

## 6.6.3 Designated Firefighter (Combi Only):

] Prior to FAR 121 use of DC-10 and MD-11 "Combi" variants  
use ] in service, POI's must coordinate with the FSB on the  
] of the "Designated Fire Fighter" training requirements,  
the] i.e., the "Combi Standards for Training", mandated by  
] "Combi AD-93-07-15", and agreed to by the FAA, Transport  
] Canada, and the Joint Airworthiness Authority (JAA).  
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## 6.6.4 Flight Attendants:

Due to similarities in cabin configuration, Flight Attendants may be jointly qualified in all DC-10 and MD-11 variants. Such qualification, however, must address any differences in doors, slides, communications, and emergency equipment when common qualification applies.

## 6.6.5 Flight Dispatchers:

POIs assure that operators have complied with FAR 121.422, (Dispatcher Training) for all variants. Dispatchers may be simultaneously qualified for all DC-10 and MD-11 variants. However, for variants which have different performance, procedures, or limitations (i.e. use "Flex" thrust ratings, MMEL, CAT III, Engine Intermix, or other such differences), dispatchers must be trained to suitably address those differences. Records should indicate the variants for which dispatchers are qualified.

## 7. FSB SPECIFICATIONS FOR CHECKING:

## 7.1 GENERAL:

## 7.1.1 Separate DC-10 and MD-11 Checks/Evaluations:

Checks or evaluations specified by FAR 61 Appendix A, FAA Order 8400.10, FAR 121 Appendix F, or SFAR 58 evaluations apply separately to DC-10 and MD-11 variants except as permitted by MDRs and ODRs. FAR 121 differences checking items within each of the DC-10 and MD-11 types are accomplished as specified by MDRs and ODRs.

7.1.2 The following areas of emphasis should be addressed during checks as necessary :

a) Manual and Automatic flight:

Proficiency with both manual and automatic flight in normal, and non-normal situations including the use of appropriate Flight Guidance System modes.

b) Unique features:

Proper use or understanding of features not commonly found on other transport aircraft such as "Dial-a-Flap", auto slat extend, or center landing gear, etc.

c) Unique Flight Characteristics:

Proper response to flight characteristics which may be different from other transport aircraft (i.e. proper pitch and lateral control following an engine failure during takeoff, particularly the number #2 engine); proper use of reverse thrust (particularly with an inoperative engine or reverser); suitable planning for and performance of a two engine inoperative landing; and proper taxi technique such as during turns between narrow taxiways.

d) Other characteristics:

Timely and correct response to situations that could be experienced with extended range/heavy weight aircraft such as demonstrating prompt and correct performance of RTOs on critical length runways; maintaining awareness of brake energy and brake temperatures following landings with short turnaround times (following RTOs, or during extended taxi); timely identification of the need for and initiation of fuel dumping; proper enroute fuel monitoring and management on extended range flights; and proper performance of extended range/over water navigation procedures (if applicable).

7.2. MANEUVERS/PROCEDURES OR SPECIAL CHARACTERISTICS:

7.2.1 FMS/GPS Demonstration of Competency:

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a) FMS/GPS Checking for the MD-11, or for a DC-10 if an

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of ]

FMS/GPS is installed, should include a demonstration

both normal and non-normal procedures as necessary.

Specific items and flight phases to be checked

include any applicable initialization, takeoff,

departure, cruise, arrival, precision and non-

precision approach, missed approach, holding,

diversion to an alternate or route change, and

pertinent non-normals.

b) For extended range over remote areas or oceanic operations, FMS/GPS use may include emphasis on items

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such as proper step climb considering enroute

winds, engine-out diversion planning, and fuel

management.

c) For the MD-11, since navigation must be accomplished through use of the FMS/GPS, a high degree

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of proficiency with BASIC FMS/GPS FEATURES should be

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exhibited to initialize or find necessary information

to safely accomplish a flight, to properly

configure the aircraft (confirm V speeds, adjust

Thrust

Limits, set CG, etc.), and satisfy commonly accepted

ATC clearances without undue delay. However, it is

recognized that demonstration of mastery of each and

every feature of FMS/GPS, use of the full range of

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alternative techniques, use of the optimum technique

for a particular task, or use of extra/optional

features and other such "mastery level" skills common

to experienced FMS/GPS users may not necessarily be

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mature at the time of initial certification of an

applicant. The key factor to be evaluated is

whether the applicant can safely, confidently, and

expeditiously use the FMS/GPS to achieve the desired

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outcome and assure safe flight without undue

errors, delays, distractions, or unsafe results.

d) For the MD-11 proper use of "standby navigation" mode should be demonstrated because use of standby navigation is not normally used in line operations.

e) Proper FMS/GPS use in conjunction with outside visual

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traffic scan, particularly in terminal areas,

should be demonstrated. Prolonged fixation on FMS significantly detracting from outside scan should be avoided.

7.2.2 "No Flap/No Slat" Approaches:

Checking regarding "No Flap/Slat" Approaches for the DC-10 or MD-11 is conducted in accordance with the provisions of paragraph 3.4. "No Flap/No Slat" and "hydraulic system abnormal" approaches may be combined or addressed during training related to demonstration of the #3 hydraulic system enhancements.

7.2.3 DC-10 Specific Items:

Since the DC-10 has been in FAR 121 service for an extended period, and acceptable checking procedures have been previously established by FAA, no specific items beyond those listed in 7.2.1 through 7.2.3 are identified by this report. Questions regarding specific items for the DC-10 may be addressed to the chairman of the DC-10 FSB (LGB-AEG) or to other FAA

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inspectors currently accomplishing DC-10 airmen certification (FAA DC-10 APM's, etc.).

7.2.4 MD-11 Specific Items:

a) Checklists:

MD-11 non-normal checklists supplied by the manufacturer are organized using a different method than commonly used for other transport aircraft and FAR 121 operators. Thus, applicants should clearly demonstrate the ability to find pertinent items and accurately use MD-11 non-normal checklists in a timely manner, including use and understanding of related synoptic displays and any associated "consequences" messages. It should be noted that the "consequences" display has not yet been demonstrated as an approved means to substitute for the abnormal or emergency checklist requirements of FAR 121.315.

b) Automatic Flight System:

Crews should have a clear understanding of Flight Control Panel (FCP) use including confirmation of mode arming and engagement and use of Flight Mode

Annunciations (FMA) on the PFD. Crews should be sufficiently familiar with the FCP and FMA to easily and reliably satisfy routine flight path control requirements, comply with typical ATC clearances, and respond to non-normal situations such as engine failure or emergency descent. Crews should not show confusion about which modes are armed or active, or how to select the mode desired. Crews should exhibit confidence in actions to take to accomplish a particular maneuver, not be surprised by the aircraft accomplishing a different maneuver than expected or failing to respond as intended. If the "speed protection" mode, "windshear" mode, or other such situations are encountered, an appropriate crew response should be evident.

c) Engine and Alert (EAD) and Systems Displays (SD):

Proper use of EAD and SDs should be demonstrated in conjunction with both normal and non-normal procedures. It should be evident that critical information (total fuel, stabilizer position, bleed air pressure for start, etc.) can be easily found when necessary, even for situations in which a Display Unit (DU) may be inoperative.

d) Central Aural Warning System (CAWS):

Pilots should be sufficiently familiar with aural alert messages to be able to readily distinguish between those messages requiring awareness, attention, or action from messages that do not. For example, some messages are the result of a configuration that the crew is otherwise already aware of, some may result from a known inoperative component (MEL item), and some may be considered nuisance messages that may be disregarded. This is particularly important for messages that may not be intuitive or which are not in the abnormal checklist and may require reference to other documents to determine significance.

e) Communication Radio Management:

Clear understanding of use of the Communication Radio Panels and Audio Control Panels should be demonstrated. This is particularly important when

Flight Training Device (FTD) and simulator training sessions may not fully incorporate simulated ATC or company radio communications by using the simulator/FTD speakers or headsets. A clear understanding of the use of PA, Oxygen mask mic, VHF #1 radio, and cabin interphone for emergency communications should be evident.

f) Fuel System:

Because of the criticality of fuel computations during extended range/overwater flights, crews should be particularly familiar with the way fuel computations are made by the FMC, in addition to basic fuel quantity indications on the overhead panel and use of the fuel synoptic. The importance of issues such as entering enroute wind data into the FMC to get a proper destination fuel estimate, the effect of using fuel flow (FF) alone as the basis for FMC calculation of extra fuel rather than the normal "fuel flow plus fuel quantity" (FF+FQ), and proper use of ballast fuel should be clearly understood.

g) RCWS/LSAS:

Takeoffs and landings should be demonstrated using appropriate RCWS/LSAS configurations (on or off) to be used by that operator or for the variants otherwise to be flown by the applicant.

h) Steep Turns:

For aircraft with full time "roll control wheel steering" (RCWS), steep turns may be conducted with RCWS selected "off" (e.g. by disengaging the "Emergency AP/AT Off Selector") if a previous demonstration has been made of the normal RCWS response to reduce bank angles greater than 30 degrees.

i) Seat Dependent Checking/Evaluation Items:

Checks or evaluations such as for an initial ATP Certificate, addition of an MD-11 type rating, or conduct of an FAR 121 PIC proficiency check usually require demonstration of certain procedures, skills, or maneuvers unique to a particular crew

position (e.g. demonstration of taxi from the left pilot seat by using the steering tiller). Thus, unless otherwise authorized by FAA, POIs, APMs, and other ASIs should assure that checks/evaluations address any pertinent seat dependent tasks which are applicable, considering the operator and crew position of the airman being tested. Items which are considered "seat dependent" if necessary for various MD-11 checks and evaluations are listed in section 6.1.12.

### 7.3 TYPE RATINGS:

#### 7.3.1 Oral Exam:

Unless otherwise specified by ODR tables, the oral portion of a type rating practical test need only address the variant(s) to be flown. For qualification in accordance ODR tables specifying a Level E check, a complete oral exam for the pertinent variant(s) should be administered by an FAA inspector or APD.

#### 7.3.2 Pilot seat to be used:

The practical test for DC-10 and MD-11 ATP or Type Rating

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should be demonstrated from the left pilot seat unless otherwise specified or permitted by FAA for a particular operator (eg. as specified by the POI in accordance with an applicable FAA Action Notice, AFS-200 directive, etc...).

#### 7.3.3 Variant to be used:

Airmen may complete the necessary practical test in any DC-10 variant for issuance of a "DC-10" pilot type rating, and in any MD-11 for issuance of an "MD-11" type rating.

#### 7.3.4 Differences:

Before airmen serve as Pilot-in-Command (PIC) under FAR 121 in a variant other than that in which a type rating practical test was completed, differences qualification in accordance with MDR provisions must be completed.

### 7.3.5 Preflight Inspection Exemptions:

Operators qualifying aircrews in one or more variants, and who conduct the "interior and exterior visual preflight inspection" portion of practical tests under provisions of an exemption (eg. ATA Exemption 4416, as amended), should separately apply provisions of that exemption to DC-10 and MD-11 variants. Where crewmembers fly several variants and differences in emergency equipment exist, such as in the type and operation of doors (cargo), lower galleys, slides and slide/rafts, and other emergency equipment, operators should account for those differences in a manner acceptable to the FAA when applying provisions of an exemption.

### 7.3.6 Airmen Not Employed Under FAR 121:

When possible, a practical test for an applicant intending to operate under FAR 91 or 125 should be conducted in a variant of the same group as that intended to be flown (e.g. Test conducted using a DC-10-10 series aircraft for an applicant intending to fly a DC-10-10). In the event this is not possible or practical, or where a DC-10 or MD-11 Type Rating is sought and no specific DC-10 or MD-11 operation is planned or intended, the test may be conducted using any respective DC-10 or MD-11 variant. In this instance, and following a successful test, the applicant should be advised of the desirability of completing subsequent differences training if other variants are to be flown. The inspector should recommend that at least one of the following provisions be met prior to serving as PIC of a different variant than the one in which the original test was accomplished:

- a) Completion of differences qualification in accordance with or equivalent to that specified for FAR 121 (e.g. compliance with MDRs and ODRs).
- b) Completion of a proficiency check in accordance with FAR 61.58 completed in the variant(s) to be flown.
- c) Completion of a proficiency check in accordance with or equivalent to that specified by FAR 121, a check conducted by a US military service or other

equivalent check in an aircraft of the variant group to be flown.

Completion of a briefing of an applicant regarding the desirability of additional differences training prior to flying other DC-10 or MD-11 variants may be noted by the inspector in the "Remarks" block of FAA Form 8410-2 (Airman Certificate and/or Rating Application) or adjacent to the "Inspector's Report" block of the FAA Form 8710-1.

#### 7.4 PROFICIENCY CHECKS/EVALUATIONS:

##### 7.4.1 Separate DC-10 and MD-11 Proficiency Checks:

Except as specified in approved ODR tables, proficiency checks/evaluations are administered separately for DC-10 and MD-11 variant groups.

##### 7.4.2 Proficiency Checks addressing each variant flown:

When a proficiency check/evaluation addresses qualification in more than one variant, the check may primarily address one variant. However, portions of the check should be accomplished in relevant combinations of training devices, simulators, or aircraft, to ensure assessment of competency related to other variant(s) flown.

##### 7.4.3 Substitution of recurrent flight training:

Satisfactory completion of a proficiency check may be substituted for recurrent flight training as permitted in FAR 121.433(c) for either the respective DC-10 or MD-11 types.

##### 7.4.4 Alternating Proficiency Checks:

If crews fly DC-10 and MD-11 variants in a mixed-fleet, proficiency checks should alternate each six months for PICs, and annually for First Officers, unless otherwise authorized by the FAA (i.e. through an exemption which permits annual training/checking in lieu of each 6 mos.). When alternating checks are accomplished, the differences assessment for other respective DC-10 or MD-11 variants being evaluated may be satisfied by ground training, written questionnaire, oral review, or other method approved by the POI.

## 7.4.5 FAR 61.58 Checks:

Proficiency checks which may be required in accordance with FAR 61.58, but do not pertain to Part 121 operations, should be administered using the same variant or a variant within the same group as the aircraft intended to be flown unless otherwise authorized by the FAA.

## 7.4.6 MD-11 "Initial Level E Proficiency Checks" for Crews Qualified in the DC-10:

This section is reserved for future use to apply to those airmen qualifying in the MD-11 through a "Differences" program based on the DC-10, in accordance with approved ODR tables. It would not apply to airmen qualifying for the MD-11 through an initial or transition course. Since a differences qualification program from a DC-10 to MD-11 was not evaluated, specific provisions are not identified here, beyond general identification of the applicable differences level E/E/D.

## 7.4.7 DC-10 "Initial Level E Proficiency Checks" for Crews Qualified in the MD-11:

This section is reserved for future use to apply to those airmen qualifying in the DC-10 through a "Differences" program based on the MD-11, in accordance with approved ODR tables. It does not apply to airmen qualifying for the DC-10 through an initial or transition course. Since a differences or transition evaluated, requirements are not specified. program between these variant groups has not yet been evaluated, requirements are not specified.

## 7.5 USE OF FTDs FOR CERTAIN CHECK/EVALUATION ITEMS:

MD-11 Flight Training Devices may be used for certain additional check items for the ATP, Type Rating, Proficiency

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Check, or Proficiency Evaluation when approved by the FSB, NSET and POI (see Para 10.2.3).

## 7.6 ONLINE EVALUATIONS (SFAR 58):

Separate "Online Evaluations" are to be completed for DC-10 or MD-11 aircraft.

## 7.7 OPERATING EXPERIENCE (FAR 121.434, AC 120-53):

Separate operating experience applies to the DC-10 and MD-11. Operating experience for the DC-10 may be accomplished in any DC-10 variant, and operating experience for the MD-11 may be accomplished in any MD-11 variant.

## 7.8 QUALIFICATIONS OF FAA INSPECTORS OR CHECK AIRMEN:

For the purpose of airman certification, FAA Inspectors, Aircrew Program Designees (APDs), or check airmen should have completed appropriate qualification for the respective DC-10 or MD-11 variant(s) to be flown. Unless otherwise specified by FAA, airman certification for the DC-10 and MD-11 should only be by individuals qualified in the respective DC-10 or MD-11 variant group.

## 8 FSB SPECIFICATIONS FOR CURRENCY:

## 8.1 CURRENCY (Recent Experience) FAR 121.439:

8.1.1 Currency required by FAR 121.439 is addressed separately for the DC-10 and MD-11 unless otherwise approved through ODR tables. For programs approved through ODR tables, currency is specified in accordance with MDRs.

## 8.1.2 Currency Credit:

- a) Currency Level D is specified between DC-10 and MD-11 variant groups, thus currency credit may be permitted between DC-10 and MD-11 operations as shown by approved ODR tables. This is appropriate because handling characteristics of all DC-10s and MD-11s are common. Takeoffs and landings performed in one variant are equivalent to those performed in other variants if knowledge and procedural issues are suitably addressed through appropriate ODR table provisions.
- b) In order to address knowledge and procedural issues flight crewmembers must complete at least 3 flight segments, including use of the FMS if installed, in the preceding 90 days in each of the DC-10 and MD-11 variant groups (or in a difference level D or higher qualifying FTD or simulator).

### 8.1.3 Use of the Term "Segment" as Applied to Currency:

For the purposes of this FSB report, a segment consists of the following flight phases or maneuvers: Preflight, Start, Takeoff, Climb, Cruise, Descent, Approach, Landing, and Shutdown. Credit for a segment requires that a crewmember serve in an appropriate cockpit crew position during the necessary flight phases or maneuvers, but does not require the crewmember to physically control the aircraft or autopilot during those maneuvers. For example, both pilots may take credit for a segment even though only one actually controls the aircraft during the takeoff and landing. Credit for the cruise phase is achieved by serving in a crew position during any part of cruise. It is not necessary to serve in a crew position for the entire cruise time, since extended range flights may require crew relief. Pilots may not take credit for a segment by observation from a jumpseat, or by serving in a relief capacity during the cruise phase of flight only, regardless of flight time accrued in cruise. Cumulative completion of a segment is permitted. A segment may be completed in one flight, or by cumulatively completing the necessary phases and maneuvers in more than one flight. For example, a takeoff, departure, and initial cruise may be performed on one extended range flight, and descent, approach, and landing on the next, allowing credit for a single segment.

## 8.2 METHODS FOR RE-ESTABLISHING CURRENCY:

### 8.2.1 Re-Establishing currency at Level A, B, or C:

If necessary, currency is re-established at difference levels A, B, or C as provided in AC 120-53.

### 8.2.2 Re-Establishing currency at level D or Level E:

Flight crewmembers re-establishing currency at Level D or E is as specified in FAR 121.439(b), or as specified by ODR tables. During line operation, currency may be re-established under the supervision of an appropriately qualified check airman serving as PIC.

9 OPERATIONAL COMPLIANCE CHECKLIST:

9.1 General:

Compliance checklists are provided as an aid to FAA Certificate Holding District Offices (CHDOs) in identifying those specific rules or policies for which compliance has already been demonstrated to FAA for a particular aircraft type, variant, or variant group. The checklist also notes rules or policies which remain to be demonstrated to CHDOs by operators.

9.2 DC-10 Compliance Checklist:

Due to prior FAR 121 operating experience of the DC-10 fleet, a Compliance Checklist for the DC-10 has not been included in this report. Inspectors who may need to establish compliance with operating rules for a new operator or DC-10 variant new to that operator are encouraged to coordinate with the POI of another FAR 121 carrier currently operating DC-10s.

9.3 MD-11 Compliance Checklist:

An MD-11 compliance checklist is provided in Appendix 4. Compliance was determined by inspection of and for only the first production completed airplane.

9.4 Discussion of Specific Compliance Items:

9.4.1 Emergency Evacuation - DC-10:

An emergency evacuation demonstration in accordance with FAR 121.291 was successfully completed for the DC-10 including configurations, Flight Attendants and passenger capacities listed on the Type Certificate Data Sheet as specified in FAA Order 8400.10 Vol. 3, Chapter 10, Section 7. Maximum passenger capacity is 380. A mini-evacuation, however, is required for each new DC-10 operator.

9.4.2 Emergency Evacuation - MD-11:

An emergency evacuation demonstration in accordance with FAR 121.291 was successfully completed for the MD-11 including configurations, Flight Attendants and passenger capacities listed on the Type Certificate Data Sheet as specified in FAA Order 8400.10 Vol. 3, Chapter 10, Section 7. Maximum passenger capacity is 410. A mini-evacuation, however, is required for each new MD-11 operator.

## 9.4.3 FAR 121.291 Ditching Demonstration - MD-11:

Due to the similarity of doors, slides/rafts, and procedures, credit for a DC-10 full scale ditching demonstration is permitted for the MD-11. Accordingly, use of a "Partial Ditching Demonstration" is permitted for the MD-11 in accordance with FAA Order 8400.10, Vol. 3, Section 4.

## 9.4.4 Proving Runs, FAR 121.163:

## a) DC-10:

Initial FAR 121 proving runs in accordance with provisions of FAR 121.163(a) have been completed. Further demonstration under FAR 121.163(a) is not necessary. Proving runs in accordance with FAR 121.163 (b) are appropriate in accordance with FAA Order 8400.10, Vol. 3, Chapter 9.

## b) MD-11:

Initial FAR 121 proving runs in accordance with provisions of FAR 121.163(a) have been completed by the initial FAR 121 operator of the MD-11. Subsequent proving runs in accordance with FAR 121.163(b) are appropriate in accordance with FAA Order 8400.10, Vol. 3, Chapter 9. Credit in the form of proving run time reductions may be given for previous DC-10 experience for that operator, when such previous experience is directly applicable.

## 9.4.5 DC-10 Forward Observer Seat:

The left forward observer seat is considered acceptable for use under FAR 121.581. The second observer seat may be used by FAA inspectors at their discretion, such as when conducting an observation of a flight engineer check airman.

## 9.4.6 MD-11 Forward Observer Seat:

The center/right forward observer seat is designated to meet requirements of FAR 121.581. Other cockpit observer seats (left) may be used by FAA inspectors at

their discretion, such as when observing check airmen in the performance of their duties.

## 10 FSB SPECIFICATIONS FOR DEVICES AND SIMULATORS:

### 10.1 DEVICE AND SIMULATOR CHARACTERISTICS:

Device and simulator characteristics pertinent to DC-10 or MD-11 variants are as specified by FAR 121.407, FAR 121 Appendix H, the FAA NSET, AQP Advisory Circular, or AC 120-53, except as described below.

### 10.2 SPECIAL REQUIREMENTS:

Special device or simulator characteristics are described for training, checking, and re-establishing currency as follows:

10.2.1 When different engine display formats are used, due to operation with different engine types (DC10-10/GE-CF6 and DC-10-40/PW-JT9 or MD-11 GE-CF6 and PW-4460 etc.), crews should be exposed to the alternate engine instrument presentations by some means (i.e. CBT, simulator, photos, drawings, etc.) adequate to assure proper display interpretation and use, in addition to simulator or FTD training for an appropriate variant.

10.2.2 The combination of devices and simulators should adequately address training requirements resulting from differences in optional equipment (e.g. CAWS altitude callouts, hydraulic/pneumatic thrust reverser differences due to different engine types, split cue/integrated cue flight directors, RCWS use, etc.).

#### 10.2.3 Use of FTDs for Certain Check/Evaluation Items:

During static operations certain FAA approved MD-11 flight training devices (FTDs) have identical characteristics to C or D Level Simulators (formerly Phase II or III Simulators), therefore certain ATPC, type rating, or proficiency check/evaluation items may be completed in those FTDs. This is appropriate for items such as preflight FMS initialization (e.g. FAR 61 Appendix A - I.(b),(2)), or engine start non-normals (e.g. FAR 61 Appendix A - I.(d)). Specific checking credit in such instances must be approved by the POI following coordination with the NSET. When such credit is approved by the POI, use of this credit for a

particular check is at the discretion of the FAA inspector/APD conducting the check.

10.2.4 Where ODR tables identify use of a flight training device (FTD) as a minimum acceptable means to re-establish certain currency provisions (e.g. Appendix 2, ODR Table, compliance method shown as differences Level D, Footnote 2), the FSB has determined that certain FTDs may be used even if they do not fully satisfy FAA Level 6 Flight Training Device requirements. POI approval of such exceptions requires both National Simulator Evaluation Team (NSET) and FSB concurrence on a case by case basis.

10.3 AIRCRAFT, SIMULATOR AND DEVICE COMPATIBILITY (Ref. FAR 121.407):

When variants are flown in mixed fleets, the combination of simulators and devices used to satisfy MDR and ODR provisions must match specific variants flown by that operator. The acceptability of differences between devices, simulators, and aircraft operated must be addressed by the POI.

10.4 DEVICE APPROVAL:

Requests for device approval should be made to the POI. If device characteristics clearly meet established FAA criteria and have been approved by the National Simulator Evaluation Team (NSET), the POI may approve those devices for that carrier. Where devices do not clearly satisfy a given level, POIs should request advice from the FSB Chairman, NSET, or Flight Standards, Air Transportation Division, Washington D.C., (AFS-200).

11 APPLICATION OF FSB REPORT:

11.1 OPERATORS WITH ONLY ONE VARIANT (no differences):

Apply relevant parts of this report (i.e., Type Rating designation, checking maneuvers related to FAR 121, etc.) following the effective date of this report.

11.2 OPERATORS WITH A MIXED FLEET:

11.2.1 In addition to the provisions of paragraph 11.1 as described above, compliance with MDRs, ODRs, and other relevant FSB report provisions is necessary.

11.2.2 For the DC-10 (i.e. operators mixed-fleet-flying DC-10-10s and DC-10-30s etc. must have ODR tables approved by FAA), compliance should be within a period of 12 months from the date of approval of this report or alternate compliance must be obtained. Since FAA review and approval of programs, devices, training methods, and other items requires a reasonable period of time for FAA review, and since many operators may need to apply for approval, operators should plan to submit proposed ODR tables to POIs within 10 months of the date of this report in order to assure timely review and approval of their respective program.

11.2.3 For the MD-11, compliance with this report should be established prior to any FAR 121 operations.

## 12 ALTERNATE MEANS OF COMPLIANCE:

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### 12.1 APPROVAL LEVEL AND APPROVAL CRITERIA:

Alternate means of compliance to differences requirements of FAR 121 Subpart N and O for mixed fleet operations, other than as specified in provisions of this report, must be approved by Flight Standards, Air Transportation Division (AFS-200). If Alternate compliance is sought, operators will be required to establish that the proposed alternate means provides an equivalent level of safety to the provisions of AC 120-53 and this FSB report. Analysis, demonstrations, proof of concept testing, differences documentation, or other evidence may be required.

### 12.2 EQUIVALENT SAFETY:

In the event alternate compliance is sought, training program hour reductions, simulator approvals, and device approvals, may be significantly limited and reporting requirements may be increased to assure equivalent safety. FAA will generally not consider relief by alternate compliance unless sufficient lead time has been planned by an operator to allow for any necessary testing and evaluation.

### 12.3 INTERIM PROGRAMS:

In the event of clearly unforeseen circumstances in which it is not possible for an operator to comply with MDR provisions, the operator may seek an interim program rather than a permanent alternate compliance method. Financial

arrangements, scheduling adjustment, and other such reasons are not considered "unforeseen circumstances" for the purposes of this provision.

13 MISCELLANEOUS - RESERVED

APPENDICES

APPENDIX 1

MASTER DIFFERENCE REQUIREMENTS

MASTER DIFFERENCE REQUIREMENTS  
DC-10 and MD-11

Type Rating DC-10* or MD-11		FROM AIRCRAFT (BASE AIRCRAFT)				
		DC-10-10	DC-10-20	DC-10-30	DC-10-40	MD-11
T O  A I R C R A F T	DC-10-10	A/A/A (1)(2) (3)(5)	A/A/A (1)(2) (3)	B/B/B (1)(2)(3) (5)	B/B/B (1)(2)(3)	E/E/D
	DC-10-20	A/A/A (1)(2) (3)	A/A/A (1)(2) (3)	B/B/B (1)(2)(3)	B/B/B (1)(2)(3)	E/E/D
	DC-10-30	B/B/B (1)(2) (3)(5)	B/B/B (1)(2) (3)	A/A/A (1)(2)(3) (5)	B/B/B (1)(2)(3)	E/E/D
	DC-10-40	B/B/B (1)(2) (3)	B/B/B (1)(2) (3)	B/B/B (1)(2)(3)	A/A/A (1)(2)(3)	E/E/D
	MD-11	E/E/D	E/E/D	E/E/D	E/E/D	A/A/A (4)(5)

FOOTNOTES

\* TYPE RATING FOR DC-10-10/20/30/40 = DC-10

(1) NAVIGATION SYSTEM - B/B/C

(2) FREIGHTER/COMBI - B/B/B

(3) PDCS/PMS - C/B/C

(4) ENGINE TYPE -B/B/B

(5) FMS (INCLUDING ANS-70) - C/C/C

APPENDIX 2

ACCEPTABLE ODR TABLES

KEY

FLT CHAR - FLIGHT CHARACTERISTICS  
PROCDS - PROCEDURES CHANGES  
CK - CHECKING LEVEL  
CUR - CURRENCY REQUIREMENTS  
FLT CHK - FLIGHT CHECK

METHODS KEY

SEG - SEGMENT(S)  
CBT - COMPUTER BASED TRAINING  
FTD - FLIGHT TRAINING DEVICE  
PT - PROCEDURE TRAINER  
SS - SELF STUDY  
PC - PROFICIENCY CHECK  
RT - RECURRENT TRAINING

DESIGN OPERATOR DIFFERENCES REQUIREMENTS TABLE

DIFFERENCE AIRCRAFT: MD-11 BASE AIRCRAFT: DC-10-30 Approved by (POI):				COMPLIANCE METHOD						
				TRAINING					CHKG/CURR	
SYSTEM	REMARKS	FTL CHAR	PROC CHNG	LVL A	LVL B	LVL C	LVL D	LVL E	FLT CHK	CUR
AIRCRAFT GENERAL ATA 31/33/ 52/53	-FLIGHT DECK -INTERNAL LIGHTING -CABIN DOORS -TAIL CONE -CARGO DOOR ADDED -MAXIMUM GROSS WEIGHTS INCREASE -AIRCRAFT DIMENSION CHANGE (3)	NO	YES	SS	CBT	PT (1)	FTD (2)			EACH PC/ RT
AIR/PNEU MATICS ATA 21/36	-AUTOMATED CONTROLS -EIS DISPLAY/ MESSAGES -AUTO PACK OPERATION -FMS PRESSURIZ- ATION CONTROL -CABIN AIR DIST. SYSTEM -DIGITAL CABIN PRESSURE CONTROL	No	YES		CBT		FTD			3 SEG  90 DAYS
AUTO- MATIC FLIGHT ATA 22	-FLIGHT GUID- ANCE PANEL -FLIGHT MODE ANNUNCIATION -FLIGHT MANAGEMENT SYSTEM -AUTOTHROTTLE OPERATION -EIS DISPLAY/ MESSAGE	NO	YES		CBT		FTD (2)			3 SEG  90 DAYS

## DESIGN OPERATOR DIFFERENCES REQUIREMENTS TABLE

DIFFERENCE AIRCRAFT: MD-11 BASE AIRCRAFT: DC-10-30 Approved by (POI):				COMPLIANCE METHOD						
				TRAINING					CHKG/CURR	
SYSTEM	REMARKS	FTL CHAR	PROC CHNG	LVL A	LVL B	LVL C	LVL D	LVL E	FLT CHK	CUR
APU ATA 49	-CONTROL SWITCHES/ PANEL -EIS DISPLAY/ MESSAGE	NO	YES	SS			FTD (2)			3 SEG  90 DAYS
HYDRAULIC ATA 29	-AUTOMATED CONTROLS -EIS DISPLAY/ MESSAGES -HYD. SYSTEM TESTS	NO	YES		CBT		FTD (2)			3 SEG  90 DAYS
COMMUNI- CATIONS ATA 23	-AIRINC 700 -TCAS (1) ACARS IMPROVMENTS -RADIO MANAGE- MENT PANEL	NO	YES		CBT		FTD (2)			3 SEG  90 DAYS
ELEC- TRICAL ATA 24	-AUTOMATED CONTROLS -EIS DISPLAY/ MESSAGE	NO	YES		CBT		FTD (2)			3 SEG 90 DAYS

DESIGN OPERATOR DIFFERENCES REQUIREMENTS TABLE

DIFFERENCE AIRCRAFT: MD-11 BASE AIRCRAFT: DC-10-30 Approved by (POI):				COMPLIANCE METHOD						
				TRAINING					CHKG/CURR	
SYSTEM	REMARKS	FTL CHAR	PROC CHNG	LVL A	LVL B	LVL C	LVL D	LVL E	FLT CHK	CUR
SYSTEM ATA 24	-REVISED EMER. POWER SYSTEM -BATTERY CHARG- ING ON ADG -AUTO LOAD SHEDDING -NO BREAK AUTO POWER TRANS. -APU INDEPEND. AC BUS SUPPLY -100/120 kva IDGs	NO	YES		CBT		FTD (2)			3 SEG  90 DAYS
EMER. EQUIP- MENT ATA 25/33/ 35/52	-EIS DISPLAY MESSAGE -PAX O2 MASKS RELOCATED -COCKPIT O2 CONTORLS/ INDICATOR	No	YES		CBT		FTD (2)			
ENGINES (2) ATA 70/80	-FADEC -FADEC/ECU/FCC/ INTERFACE -EIS DISPLAY/ MESSAGE -INCREASED THRUST -ENGINE START PANEL LOCATION -FMS ENGINE THRUST SELECT -OPERATING LIMITATIONS -AUTO IGNITION -HIGH IDLE WITH ENGINE ANTI-ICE -OVERBOOST STOP	NO	YES		CBT		FTD (2)			3 SEG  90 DAYS

DESIGN OPERATOR DIFFERENCES REQUIREMENTS TABLE

DIFFERENCE AIRCRAFT: MD-11 BASE AIRCRAFT: DC-10-30 Approved by (POI):				COMPLIANCE METHOD						
				TRAINING					CHKG/CURR	
SYSTEM	REMARKS	FTL CHAR	PROC CHNG	LVL A	LVL B	LVL C	LVL D	LVL E	FLT CHK	CUR
WATER & WASTE ATA 38	-VACUUM WASTE SYSTEM	NO	NO	SS						
FIRE PROTEC- TION  ATA 26	-EIS DISPLAY MESSAGE -SMOKE DETECTION ISOLATION -CARGO SMOKE/ OVERHEAT DETECTION -LAV SMOKE/FIRE DETECT -AUTO CARGO AND FDCU TESTS -AUTO FAULTY LOOP ISOLATION	NO	YES	SS						
FLIGHT CONTROLS ATA 27	-EIS DISPLAY/ MESSAGE -LSAS -AUTO PITCH TRM -CONTROL WHEEL STEERING  -ONE POSITION SLAT SYSTEM -AUTO SPOILER DEPLOY -VOICE T.O. WARNING	NO	YES		CBT		FTD (2)			3 SEG  90 DAYS

DESIGN OPERATOR DIFFERENCES REQUIREMENTS TABLE

DIFFERENCE AIRCRAFT: MD-11 BASE AIRCRAFT: DC-10-30 Approved by (POI):				COMPLIANCE METHOD						
				TRAINING					CHKG/CURR	
SYSTEM	REMARKS	FTL CHAR	PROC CHNG	LVL A	LVL B	LVL C	LVL D	LVL E	FTL CHK	CUR
FUEL ATA 28	-EIS DISPLAY/ MESSAGE -AUTOMATIC FUEL MANAGEMENT -HORIZ. STAB. ADDED FUEL TANK -AUTO CG CONTROL -AUTO FUEL DUMP TERMINATION	NO	YES		CBT		FTD (2)			3 SEG  90 DAYS
ICE AND RAIN ATA 30	-EIS DISPLAY/ MESSAGE -HORIZ. STAB. ANTI-ICE -ICE DETECTION SYSTEM -HEAT AUTOMA- TICALLY APPLIED TO AIR DATA, PILOT, AOA, AND TAT	NO	YES	SS						

DESIGN OPERATOR DIFFERENCES REQUIREMENTS TABLE

DIFFERENCE AIRCRAFT: MD-11 BASE AIRCRAFT: DC-10-30 Approved by (POI):				COMPLIANCE METHOD						
				TRAINING					CHKG/CURR	
SYSTEM	REMARKS	FTL CHAR	PROC CHNG	LVL A	LVL B	LVL C	LVL D	LVL E	FTL CHK	CUR
INSTRUMENTATION AND NAV. ATA 31/34	-EFIS PFD & ND -LASER GYROS  -IRUs CONTROLS AND DISPLAY -FMC, FMS -AUTO NAV RADIO TUNING -MANUAL NAV TUNING VIA MCDU -PROFILE AUTO FLIGHT MODE -EFIS CONTROL PANEL -FLIGHT/NAV SWITCHING (AUX PANEL) -WX RADAR CONTROL AND DISPLAY  -TRANSPONDER -STANDBY FLT INSTRUMENT  -EIS DISPLAY/ MESSAGE	NO	YES		CBT		FTD (2)			3 SEG  90 DAYS

## DESIGN OPERATOR DIFFERENCES REQUIREMENTS TABLE

DIFFERENCE AIRCRAFT: MD-11 BASE AIRCRAFT: DC-10-30 Approved by (POI):				COMPLIANCE METHOD						
				TRAINING					CHKG/CURR	
SYSTEM	REMARKS	FTL CHAR	PROC CHNG	LVL A	LVL B	LVL C	LVL D	LVL E	FLT CHK	CURR
LANDING GEAR AND BRAKES  ATA 32	-EIS DISPLAY/ MESSAGE -ALT CTR GEAR EXTENSION  -BRK TEM/TIRE PRESSURE DISPLAY -ABS SYSTEM  -LANDING GEAR HANDLE  -SECONDARY GEAR POS IND ON EIS	NO	YES	SS			FTD (2)			3 SEG  90 DAYS
WARNING & ALERTS  ATA 31	-CAWS -EIS ALERT ADDED FOR CRT DISPLAY -AURAL WARNINGS INHIBITED ON T.O. -SYSTEM CUE ALERTS	No	YES		CBT		FTD (2)			3 SEG  90 DAYS
NORMAL TAKEOFF, CLIMB, CRUISE, DESCENT, INSTRU- MENT APPROACH LANDINGS	Optional use of DFGS, A/T, A/P and F/D.	NO	YES	SS			FTD (2)			3 SEG  90 DAYS

## DESIGN OPERATOR DIFFERENCES REQUIREMENTS TABLE

DIFFERENCE AIRCRAFT: MD-11 BASE AIRCRAFT: DC-10-30 Approved by (POI):				COMPLIANCE METHOD						
				TRAINING					CHKG/CURR	
SYSTEM	REMARKS	FTL CHAR	PROC CHNG	LVL A	LVL B	LVL C	LVL D	LVL E	FTL CHK	CUR
NON - NORMAL MANEU- VERS, INCLUDE NO FLAP STALLS		NO	YES	SS			SIM			PC/ RT

## FOOTNOTES

- (1) - DOOR TRAINER
- (2) - SEE PARAGRAPH 10.2.4 REGARDING CERTAIN FTD CREDITS
- (3) - SEE FLT CREW OPERATING MANUAL FOR DETAILS OF DIFFERENCES

APPENDIX 3

EXAMPLE OF AN ACCEPTABLE MD-11 TRAINING PROGRAM

(FAR 121 Appendix E Program)

(FAR 121 Appendix H Program)

### General

This document is intended to outline a typical, but not the only acceptable, approach to MD-11 Initial and Transition Pilot training. This program consists of Ground and Flight Training Segments. The Ground Training Segment consists of 15 days, encompassing 120 hours of integrated training. The Flight Segment consists of 10 days, encompassing 40 hours of simulator training.

#### Training Program Philosophy:

Both Ground and Flight Training Segments of the MD-11 training program are operational in nature. The Ground Training Segment follows the principle of presentation of information through programmed instruction followed by reinforcement of that instruction in the Flight Training Device. Following successful completion of the Ground Training Segment, the trainee enters the Flight Training Segment, which is designed to build upon the student's prior learning with progressively more complex maneuvers and procedures.

This program is derived from a task analysis expressed as Crew Performance Objectives (CPOs). CPOs were defined by the ATA Training Committee as guidelines for training and include need-to-know information required to perform normal, abnormal and emergency procedures. It is presumed that a trainee entering this program will be a Commercial Pilot with Multi-Engine turbojet experience but with no experience in Electronic Information Systems (EIS), Inertial Navigation and Reference Systems (INS and IRS), Autothrottle (A/T) or Flight Management Systems (FMS).

#### Training Methods and Devices:

Training program materials are presented utilizing stand-up instruction, video tape, interactive computer based training, cockpit procedures trainers, flight training devices (FTDs) and flight simulators.

Trainees are normally paired as crews for all portions of the training program involving hands-on cockpit operations. Trainee performance is evaluated on a daily basis by their instructor(s). Evaluation is also accomplished with CBT module tests and scheduled progress checks within the training program.

During the ground training segment, trainees will normally spend one-half of their training day in CBT and classroom instruction and one-half their training day with an instructor in preparation and execution of the associated FTD modules.

Flight training using FTDs, a flight simulator and an airplane follows the ground training segment. The program outlined in this document provides for either Advanced Simulator Training under FAR 121, Appendix H, with associated Line-Oriented Flight Training (LOFT) or under FAR 121, Appendix E and FAR 61, Appendix A, with associated aircraft training and evaluation.

## INITIAL AND TRANSITION TRAINING

## Ground Training

## OBJECTIVES:

The Ground Training Segment of the MD-11 Initial and Transition Training Program develops crew performance objectives through a precise specification of learning objectives, programmed instruction, and post training performance evaluation to insure that the student will:

- a) Understand and be able to operate all aircraft systems.
- b) Be proficient in all normal, abnormal, and emergency procedures.
- c) have acquired the knowledge and skill required to proceed to flight training.

## Flight Training

## OBJECTIVES:

Flight Training Segment uses Level 5 FTDs and Level C flight simulators. The crew concept approach is used throughout flight training. At completion of training the student will:

- a) Be able to safely and efficiently operated the MD-11 aircraft.
- b) Demonstrate a satisfactory level of proficiency in all required maneuvers and procedures.

A typical MD-11 initial and transition program is presented below. This curriculum is designed for a combination of level B (CBT), level C (CPT/Task Trainer), and level E (FFS) training. System integration is introduced in the FTD during the ground training segment. Day 25 is divided into either flight training and check in the aircraft or LOFT training under FAR 121 Appendix H.

DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
Classroom Intro	CBT Autoflight	CBT EIS	CBT EIS	CBT Fuel
CBT A/C gen EIS FMS	Fire Det/ Protect COM/NAV/ IRS	FMS/ Autoflight	Pwr Plant FMS	FMS/ Autoflgt
	FTD Cockpit Orienta- tion FMS	FTD Fire Det/ Protect AU FMS/ Autoflight	FMS/ Autoflight FTD Pwr Plant FMS/ Autoflight APU Abnorm	FTD Fuel FMS/ Autoflgt
DAY 6	DAY 7	DAY 8	DAY 9	DAY 10
CBT Electrical FMS	CBT Air Ice & Rain	CBT Hydraulic Landing Gear	CBT Flt Con- trols	FTD Progress Check
FTD Electrical FMS/ Autoflight	FMS/ Autoflight	A/C Gen	DEMO Emergency Equipment Slide/Raft Equipment	CBT Pwr Plant Fire Detect/ Protec- tion Electrical
	FTD Air Press Anti-Ice/ Defog FMS/ Autoflight	CPT  Intergrated Cecklist	FTD Hydraulic FMS/ Autoflight	
DAY 11	DAY 12	DAY 13	DAY 14	DAY 15
FTD Pwr Plant Electrical APU Fire/Det Protection FMS Autoflight	FTD Fuel Air Ice/Rain FMS/ Autoflight	CLASSROOM Performance Windshear	FTD Hydraulic Land Gear Flt Ctrl FMS/ Autoflight	FTD Crew Progress Check
	CBT Fuel, Air Ice/Rain		Cabin Door Trainer	
	CBT Hydraulic Land Gear Flight Controls			

DAY 16	DAY 17	DAY 18	DAY 19	DAY 20
FTD Brief Normal Procedure FMS/ Non-Prec ILS Autoflight	FTD Brief Normal/ Abnormal Procedure FMS/ ILS Non-Prec Autoflight Debrief	FTD Brief Normal/ Abnormal Procedure FMS/ Autoflight Stalls Progress Check Debrief	SIM 1 Brief RTO Airwork Holding Eng Fail ILS (2 Eng Inop) (1 Eng Inop) Debrief	SIM 2 Brief Hyd Malf Eng Fail V1 Flap Malf ILS Non-Prec Windshear Debrief
DAY 21	DAY 22	DAY 23	DAY 24	DAY 25
SIM 3 Brief Emergency Descent Airwork Hyd Malf ILS Eng Fail V1 Debrief	SIM 4 Brief ILS (1 Eng Inop) LSAS Malf Non-Prec Holding ILS (2 Eng Inop) Debrief	FLT SIM 5 Brief RTO Emergency Descent Airwork Holding ILS (1 Eng Inop) Non-Prec Flap Malf Debrief	FLT SIM 6 Brief Flight Check Debrief	FLT SIM 7 Aircraft Training/ Flight Check * Line Oriented Flight Training (LOFT)

NOTES:

1. DAYS 16 through 25 are Flight Training Modules.
2. FTD = Flight Training Device (Level 5 or higher).
3. CPT = Cockpit Procedures Trainer.
4. CBT = Computer Based Training.
5. SIM = Flight simulator (Level C or Higher).
6. \* For programs conducted under FAR 121, Appendix H.

APPENDIX 4

AIRCRAFT COMPLIANCE CHECKLIST

June 11, 1991

DC-10 COMPLIANCE CHECKLIST: See Paragraph 9.2

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MD-11 COMPLIANCE CHECKLIST: 6/11/91

This checklist applies to MD-11s equipped with either the GE-CF6 or PW-4460 engines, in either the passenger or freighter configuration. Compliance with the following Federal Aviation Regulations and FAA policies has been established based on MD-11 Ship #455 (S/N 48449), Finnair configuration, or equivalent. Items that are identified as "CHDO" need to be evaluated by principal inspectors at the Certificate Holding District Office prior to an MD-11 being used in FAR 121 revenue service. Items marked "complies" have either been found to directly comply with the applicable rule, or the necessary data or procedures are available to permit assessment of compliance of an MD-11 for a particular operation (i.e. takeoff obstacle clearance assessment pertinent to FAR 121.189). Items marked NA are not applicable to MD-11 aircraft.

Not all rules or policies or MD-11 variants are necessarily addressed by this checklist (e.g. Combi, and Rolls Royce powered variants have not been evaluated). When differences exist between the variant(s) evaluated with the compliance checklist and variant(s) used by an operator, the CHDO evaluates those differences and approves use of the variant if that variant provides equivalent compliance with FARs or FAA policies. It remains the responsibility of a Certificate Holding District Office to review compliance with pertinent rules or policies not already satisfactorily addressed in this compliance checklist prior to FAR 121 approval of an operator for use of a particular MD-11 variant.

FAR 91

REF.	SUBJECT	FINDING
91.9	Civil aircraft flight manual, marking, and placard requirements.	Type design complies.
91.21	Portable electronic devices	CHDO.
91.117	Aircraft speed.	Type design complies. Increased speed notification to ATC (speeds above 250 KIAS below 10000'MSL) may be appropriate if clean maneuvering speed is higher. CHDO.

91.191	Category II Manual.	CHDO if operated under FAR Part 91.
91.203	Civil aircraft: Certifications Required.	CHDO.
91.205	Powered civil aircraft with standard category U.S. airworthiness certificates; instruments and equipment requirements.	Type design complies, except (b) (11). CHDO.
91.207	Emergency locator transmitters.	NA
91.209	Aircraft lights.	Type design complies.
91.211	Supplemental Oxygen.	Type design complies.
91.213	Inoperative instruments and equipment.	Type design complies, MMEL available.
91.215	ATC Transponder and altitude reporting equipment and use.	Type design complies.
91.217	Data correspondence between automatically reported pressure altitude data and the pilot's altitude reference.	Type design complies.
91.219	Altitude alerting system or device; turbojet powered civil airplanes.	Type design complies. 91.219(c) CHDO.
91.221	TCAS ]	Type design complies.
91.317	Provisionally certified civil aircraft; operating limitations.	NA
91.409	Inspections.	CHDO.
91.413	ATC transponder tests and inspections.	CHDO.
91.415	Changes to aircraft inspection programs.	CHDO.

91.503	Flying equipment and operating information.	Type design check lists and procedures comply. CHDO.
91.511	Radio equipment for overwater operations.	Type design complies. CHDO.
91.513	Emergency equipment.	CHDO.
91.517	Smoking and safety belt signs.	Type design complies.
91.519	Passenger Briefing	Seat back cards not evaluated, CHDO.
91.521	Shoulder harness.	Type design complies.
91.525	Carriage of cargo.	Type design complies.
91.527	Operating in icing conditions.	Type design met requirements of (b) and (c)
91.603	Aural speed warning device.	Type design complies.
91.605	Transport category civil airplane weight limitations.	Weight, balance, and performance information is available for compliance. CHDO.
91.609	Flight recorders and cockpit voice recorders.	Type design complies.
91.611	Authorization for ferry flights ] with one engine inoperative.	Type design complies. CHDO
91.805	Final compliance, Subsonic airplanes.	Type design complies. (Stage 3)
FAR 121		
121.141	Airplane or rotorcraft flight manual.	Type design AFM complies. CHDO.
121.157	Aircraft certification and equipment requirements.	Type design complies with (b).
121.173	General.	Type design complies with

		(b) and (d).
121.189	Transport category airplanes: Turbine engine powered; takeoff limitations.	Type design complies. CHDO.
121.191	Transport category airplanes: turbine engine powered: En route limitations: One engine inoperative.	Type design complies. CHDO.
121.193	Transport category airplanes: Turbine engine powered: En route limitations: Two engines inoperative.	Type design complies. CHDO.
121.195	Transport category airplanes: Turbine engine powered: Landing limitations: Destination airports.	Type design complies. CHDO.
121.197	Transport category airplanes: Turbine engine powered: Landing limitations: Alternate airports.	Type design complies. CHDO.
121.285	Carriage of cargo in passenger compartments.	CHDO.
121.287	Carriage of cargo in cargo compartments.	CHDO.
121.289	Landing gear: Aural warning device.	Type design complies.
121.291	Demonstration of emergency evacuation procedures.	Complies, except (b) through (e) CHDO. (see para 9.4.2)
121.303	Airplane instruments and equipment.	Type design complies.
121.305	Flight and navigational equipment.	Type design complies.
121.307	Engine instruments.	Type design complies.

121.308	Lavatory fire protection.	Type design complies.
121.309	Emergency equipment.	Type design complies, except (b) (1) CHDO.
121.310	Additional emergency equipment.	Type design complies. CHDO responsible for (b), (c), (d), (f), (g), (h), and (l). NA for (j) and (k).
121.311	Seats, safety belts, and shoulder harnesses.	Type design complies. CHDO.
121.312	Materials for compartment interiors.	Type design complies. CHDO.
121.313	Miscellaneous equipment.	Type design complies with (a) through (f). CHDO responsible for (g) through (i).
121.314	Cargo and baggage compartments.	Type design complies.
121.315	Cockpit check procedure.	Type design complies. CHDO.
121.316	Fuel Tanks.	Type design complies.
121.317	Passenger information.	Type design complies. (f), (g), and (h) CHDO.
121.319	Crewmember Interphone system.	Type design complies.
121.323	Instruments and equipment for operations at night.	Type design complies.
121.325	Instruments and equipment for operations under IFR or over-the-top.	Type design complies.
121.329	Supplemental oxygen for sustenance: Turbine engine powered airplanes.	Type design complies, except (b) (3) CHDO.

121.333	Supplemental oxygen for emergency descent and for first airplanes with pressurized aid: turbine engine powered airplanes with pressurized cabins.	Type design complies, except (c) (2), (3), (4), (d), and (f). CHDO.
121.335	Equipment standards.	Type design complies.
121.337	Protective Breathing equipment.	Equipment is in compliance; procedures for use in (b) and (c) to be reviewed by CHDO.
121.339	Emergency equipment for extended overwater operations.	Equipment complies; (a) (3) (4) (c) and procedures. CHDO.
121.340	Emergency flotation means.	Type design complies; except (b). CHDO.
121.341	Equipment for operations in icing conditions.	Type design complies.
121.342	Pitot heat indication systems.	Type design complies.
121.343	Flight recorders.	Type design complies.
121.345	Radio equipment.	Type design complies.
121.347	Radio equipment for operations under VFR over routes navigated by pilotage.	Type design complies.
121.349	Radio equipment for operations under VFR over routes not navigated by pilotage or for operations under IFR or over-the-top.	Type design complies, except procedures for (d) are responsibility of CHDO.
121.351	Radio equipment for extend overwater operations and for certain other operations.	Type design complies, except (b). CHDO.
121.353	Emergency equipment for operations over uninhabited terrain areas: flag and supplemental air carriers and commercial operators.	CHDO.

121.355	Equipment for operations on which specialized means of navigation are used. (FAR 121 Appendix G)	Type design complies for inertial navigation. FAR 121 Appendix G, type design complies, except 1., 4., 5., and 7. CHDO.
121.357	Airborne weather radar equipment requirements.	Type design complies; (c) responsibility of CHDO.
121.358	Low-altitude windshear system ] equipment requirements. ]	Type design complies.
121.359	Cockpit voice recorders.	Type design complies, except (b) NA.
121.360	Ground proximity warning-glide slope deviation alerting system.	Type design complies, except (d) and (e). CHDO.
121.369	Manual requirements.	Type design related data and manuals comply, otherwise CHDO.
121.397	Emergency and emergency evacuation duties.	Type design complies. Operator specific functions, CHDO.

121.485 Flight time Limitations. (Crew rest facility)	The suitability of a crew rest facility to comply with 121.485 (a) must be demonstrated. Proposals for crew rest facilities submitted to a FSDO should be coordinated with LGB-AEG prior to approval.
]	
121.576 Retention of items of mass in passenger and crew compartments.	Type design complies, otherwise CHDO.
121.578 Cabin ozone concentration.	Aircraft meets requirement by type design.
121.579 Minimum altitudes for use of autopilot.	Compliance based on AFM procedures and limitations (see para 3.1.2). CHDO.
121.581 Forward observer's seat: En route inspections.	Type design complies (see para 9.4.6).
121.587 Closing and locking of flight crew compartment door.	Type design complies; operator procedures CHDO.
121.589 Carry-on baggage.	Type design complies; operator procedures CHDO.
121.629 Operation in icing conditions.	Type design complies. The MD-11 suggested criteria for underwing frost assessment was not evaluated; otherwise CHDO.
121.652 Landing weather minimums: IFR: All certificate holders.	"High limit" landing minima qualification for PIC's applies separately to DC-10 and MD-11 aircraft.

## MISCELLANEOUS

## a. ADVISORY CIRCULAR

- 1) AC 00-50A - LOW LEVEL WIND SHEAR - Windshear alerting and flight guidance systems have been evaluated and  
] complies. If system is inoperative, procedures consistent  
] with AC 00-50A and the FAA Windshear Training Aid should  
] be used.
- 2) AC's 20-129, 20-130, 25-15 and 90-45A - AREA NAVIGATION, VNAV, MULTI SENSOR NAVIGATION SYSTEMS IN US NAS - the MD-11 FMS meets requirements for enroute or approach area navigation systems when radio updating is taking place. Aircraft may file "/R" flight plan suffix for routes having suitable VOR/DME coverage.
- 3) AC 90-79 - USE OF ELECTRONIC NAVIGATION IN REMOTE AREAS - Aircraft systems and procedures are consistent with this AC.
- 4) AC 91-6A - WATER, SLUSH, AND SNOW ON RUNWAY - Aircraft systems and procedures are consistent with this AC.
- 5) AC 91-53 - NOISE ABATEMENT DEPARTURE PROFILE - Aircraft systems and procedures are consistent with this AC when using a 1000' AAE acceleration altitude, cutback to climb thrust at 1500' AAE or upon reaching 0/EXT, climb at 0/RET maneuvering speed to 3000' AAE, and then accelerate to 250 KTS. If 0/RET maneuvering speed is greater than 250 KIAS, climb may be made at that speed to 10,000 MSL, after advising ATC of the need for a climb speed above 250 KTS. Since "PROF" mode of the FMS has a default altitude for initial thrust cutback of 1500' AAE and an initiation of acceleration altitude set at 3000' AAE.  
]
- 6) AC 120-28D - CATEGORY III - AFM provisions address Category III requirements for fail-operational systems using "Dual Land". Approval is limited to Category III based on use of a fail-operational system. Credit for use of fail-passive Cat IIIa (Single Land) is not yet authorized. (see 8400.10 and as necessary, consult AFS-410).
- 7) AC 120-29 - CATEGORY I AND II - Aircraft systems and procedures are consistent with AC 120-29 and Order

8400.10 for Category I and II. The AFM and MMEL include reference to acceptable aircraft configurations which were demonstrated. Procedures and requirements are as addressed by US standard operations specifications and Order 8400.10. Demonstration of Category II for the MD-11 was based on use of the automatic radio altitude callout feature during flare. Operators not using this automatic callout feature should specify procedures providing equivalent safety which are acceptable to FAA.

- 8) AC 120-33 - NAVIGATION SYSTEMS FOR APPROVAL IN MINIMUM NAVIGATION PERFORMANCE STANDARD (MNPS) AIRSPACE - Aircraft systems and procedures are consistent with AC 120-33.
- 9) AC 120-35B - LOFT/LOS - Aircraft systems and procedures, and training, checking, and currency identified by the FSB are consistent with this AC. Specific provisions related to LOFT are addressed by paragraph 6.5.1 of this report.
- 10) AC 120-38 - CABIN OZONE CONCENTRATIONS - MD-11 systems prevent harmful levels of ozone concentration. Systems and procedures are consistent with this AC.
- 11) AC 120-51 COCKPIT RESOURCE MANAGEMENT - MD-11 systems, checklists, and procedures are consistent with use of this AC.
- 12) AC 121-13 - SELF CONTAINED NAVIGATION SYSTEMS - Aircraft systems and procedures are consistent with AC 121-13.

b. FAA DIRECTIVES, POLICIES, AND US AIRMAN'S INFORMATION MANUAL:

- 1) The FAA Flight Plan designator is MD-11 for all MD-11 variants. All MD-11 aircraft may file with a /G flight ]  
 plan suffix based on DME updating of the FMS. No unique air traffic requirements are applicable to the MD-11 aircraft.
- 2) The DC-10 and MD-11 is considered a "Heavy" aircraft ]  
 and flight plans should be so designated. Wake turbulence characteristics are similar for all DC-10 and MD-11 variants. ]
- 3) For some DC-10 and MD-11 aircraft, airspeeds in excess ]  
 of US standard limits (greater than 250 KIAS below 10,000 MSL...) may be necessary during departure. In such instances, crews should advise ATC of speeds to be used, when speeds in excess of standard limits are necessary.