

**EUROPEAN ORGANISATION  
FOR THE SAFETY OF AIR NAVIGATION  
EUROCONTROL**

**REVISION SUMMARY DOCUMENT  
FOR THE  
BASE OF AIRCRAFT DATA (BADA) 2.3**

**EEC Note 24/95  
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**Revision Summary Document  
for the  
Base of Aircraft Data (BADA) 2.3**

EUROCONTROL Experimental Centre

Summary

This Revision Summary Document (RSD) describes all changes made to BADA files in Revision 2.3 from the previous release, Revision 2.2. Configuration management procedures for BADA trace all changes through Configuration Change Orders (CCOs). The RSD thus presents a list of all 19 CCOs implemented for BADA 2.3 along with a description for each CCO.

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# 1. INTRODUCTION

## 1.1 Identification and Scope

This document summarises the changes made to the Base of Aircraft Data (BADA), Revision 2.3 from the previous Revision 2.2.

A general description of BADA Revision 2.3 is provided in the BADA 2.3 User Manual [RD1]. As noted in Section 6 of the User Manual, all BADA 2.3 files can be accessed over the Internet via anonymous ftp at the following address:

**bada.eurocontrol.fr**                      {subdirectory bada/2.3}

## 1.2 Organisation

This document is presented in two sections including Section 1, the Introduction. This first section includes a list of referenced documents and a glossary of acronyms.

Section 2, Configuration Change Orders, presents a list of all changes to the BADA files between Revision 2.2 and 2.3. Each change is classified as a Configuration Change Order (CCO). A description for each CCO is also included in this section.

A copy of the Revision Summary File for BADA 2.3 is included as Appendix A.

## 1.3 Referenced Documents

- RD1**                      User Manual for the Base of Aircraft Data (BADA) Revision 2.3; EEC Note 23/95, 18 October 1995.
- RD2**                      Configuration Management Manual for the Base of Aircraft Data (BADA), Issue 1.0; Internal EEC Note 4/B2.3/1995, 18 October 1995.
- RD3**                      Coverage of 1994 European Air Traffic by the Base of Aircraft Data Revision 2.2; EEC Note 15/95, 24 July 1995.
- RD4**                      Aircraft Type Designators; ICAO Document No. 8643, 24th Edition, January 1994.
- RD5**                      BADA Modelling Report for B727 Aircraft (Boeing 727) Issue 1.0; EEC/CAPO Document Number BADA/AC/B727/01; 7 April 1995.
- RD6**                      BADA Modelling Report for B73V Aircraft (Boeing 737-500) Issue 1.0; EEC/CAPO Document Number BADA/AC/B73V/01; 14 April 1995.
- RD7**                      BADA Modelling Report for BATP Aircraft (BAe Advanced Turbo prop) Issue 1.0; EEC/CAPO Document Number BADA/AC/BATP/01; 16 November 1994.

- RD8** BADA Modelling Report for D228 Aircraft (Dornier 228) Issue 1.0; EEC/CAPO Document Number BADA/AC/D228/01; 26 January 1995.
- RD9** BADA Modelling Report for D328 Aircraft (Dornier 328) Issue 1.0; EEC/CAPO Document Number BADA/AC/D328/01; 17 February 1995.
- RD10** BADA Modelling Report for HS25 Aircraft (BAe 125 Dominie) Issue 1.0; EEC/CAPO Document Number BADA/AC/HS25/01; 15 July 1994.
- RD11** BADA Modelling Report a Generic Military Fighter Aircraft (FGTR) Issue 1.0; EEC/CAPO Document Number BADA/AC/FGTR/01; 12 May 1995.
- RD12** BADA Modelling Report for MD11 Aircraft (McDonnell-Douglas MD-11) Issue 1.0; EEC/CAPO Document Number BADA/AC/MD11/01; 14 April 1995.

#### **1.4 Glossary of Acronyms**

<b>APF</b>	Airline Procedures File
<b>BADA</b>	Base of Aircraft Data
<b>CAS</b>	Calibrated Airspeed
<b>CCO</b>	Configuration Change Order
<b>CM</b>	Configuration Management
<b>CRCO</b>	Central Route Charges Office
<b>EEC</b>	Eurocontrol Experimental Centre
<b>ICAO</b>	International Civil Aviation Organisation
<b>IPAS</b>	Integrated Preparation and Analysis System
<b>OPF</b>	Operations Performance File
<b>PTF</b>	Performance Table File
<b>RCS</b>	Revision Control System
<b>RSD</b>	Revision Summary Document

## 2. CONFIGURATION CHANGE ORDERS

Table 2-1 below provides a summary of the 19 BADA Configuration Change Orders (CCOs) that were implemented between BADA Revisions 2.2 and 2.3. The use of CCOs as part of the configuration management (CM) procedures for BADA is described in the BADA CM Manual [RD2].

**Table 2-1: CCO Summary for BADA 2.3**

<b>CCO Identifier</b>	<b>Title</b>
BADA-CCO-95-01	Correct HS25 Descent Speeds
BADA-CCO-95-02	Update First Line in Files for CC Character
BADA-CCO-95-03	Modify D228 Model for New Climb/Descent Speeds
BADA-CCO-95-04	Update BATP Descent Speed
BADA-CCO-95-05	Update A/C Descriptions per ICAO/95
BADA-CCO-95-06	Add New A/C Model for D328
BADA-CCO-95-07	Update B727 Model for JT8D-15 Engines
BADA-CCO-95-09	Add New A/C Model for B73V
BADA-CCO-95-10	Add New A/C Model for MD11
BADA-CCO-95-11	User Lower Case Characters in Max Climb Thrust Comment
BADA-CCO-95-12	Remove TAB Characters from SYNONYM.LST
BADA-CCO-95-13	Correct Last Line in SYNONYM.NEW
BADA-CCO-95-14	Add New A/C Model for Generic Military Fighter A/C (FGTR)
BADA-CCO-95-15	Add Maximum Payload Mass to all OPF Files
BADA-CCO-95-16	Update OPF Files to Standard Format
BADA-CCO-95-17	Update APF Files to Standard Format
BADA-CCO-95-18	Change Turbo to Turboprop for OPF Engine Type
BADA-CCO-95-19	Remove TAB Characters from SYNONYM.LST
BADA-CCO-95-20	Add PTF File to BADA

Descriptions for each CCO are presented in subsequent pages. For each CCO a description of the change, motivation for the change and a specification of the affected files is provided. Note that any symbols referring to BADA coefficients use the same symbols as described in the BADA 2.3 User Manual [RD1].

**BADA-CCO-95-01****Correct HS25 Descent Speeds**Description of Modification:

The value of the BADA reference descent CAS,  $V_{des,ref}$ , was changed from 0.275 knots to 275 knots.

Reason for Modification:

The previous value of  $V_{des,ref}$ , was clearly in error due to the exponent field being set to 0 instead of 3. The BADA Modelling Report for the HS25 aircraft [RD10] indicates that the correct value is 275 knots.

Files Affected:

HS25\_\_.OPF            modified exponent value from 0 to 3



**BADA-CCO-95-02****Update First Line in Files for CC Characters**Description of Modification:

The first line in the OPF, APF and SYNONYM files was modified to replace equal sign characters with the “C” character.

As an example, the appearance of the header block of the MD80\_\_.OPF file for BADA 2.2 was as follows:

```

CC===== MD80__.OPF =====/
CC                                          /
CC          AIRCRAFT PERFORMANCE          /
CC          operational files              /
CC                                          /
CC  BADA RCS File Id                      /
CC  File Name      Current Revision      Last Modification /
CC                revision  date        revision  date      /
CC  MD80__.OPF    2.2    94/09/02        2.1.1.2    94/08/17 /

```

The modified appearance for BADA 2.3 is shown in the version below.

```

-->  CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC MD80__.OPF CCCCCCCCCCCCCC/
CC                                          /
CC          AIRCRAFT PERFORMANCE          /
CC          operational files              /
CC                                          /
CC  BADA RCS File Id                      /
CC  File Name      Current Revision      Last Modification /
CC                revision  date        revision  date      /
CC  MD80__.OPF    2.3    95/03/02        2.3    95/03/02    /

```

Reason for Modification:

The Ground Segment of the EEC SIM5+ real-time simulator required all files to have the “C” characters in the first line in order for the software to read the file.

Files Affected:

all APF files	modified
all OPF files	modified
SYNONYM.LST	modified
SYNONYM.NEW	modified

**BADA-CCO-95-03****Modify D228 Model for New Climb/Descent Speeds**Description of Modification:

The OPF and APF files for the D228 aircraft were modified to correspond to an updated model with increased speeds for climb and descent. The preparation of the updated model is described in a BADA Modelling Report [RD8]

Reason for Modification:

The D228 model in BADA 2.2 was based on the following nominal speeds:

climb:	107 knots (CAS)
descent:	109 knots (CAS)

These speeds were observed by users on the EEC SIM5+ simulator to be too low. Values on the order of 160 knots were suggested as being more appropriate. An investigation into the source data for the D228 showed that these low values were probably erroneously taken from one-engine out conditions. More appropriate nominal speeds were indeed in the range of 160 to 170 knots.

A change in the nominal climb/descent speeds of this magnitude required that the thrust, drag and fuel coefficients be re-calculated. An complete update to the model was thus prepared.

Files Affected:

D228__.APF	modified
D228__.OPF	modified

**BADA-CCO-95-04****Update BATP Descent Speed**Description of Modification:

The nominal descent speeds for the BATP aircraft was reduced from 215 CAS to 180 CAS.

Reason for Modification:

The original model for the BATP aircraft, as described in the BADA Modelling Report [RD7] specified a nominal descent speed of 215 CAS corresponding to a minimum cost descent. Users of the model at the EEC SIM5+ real-time simulator expressed the view that the descent speed was too fast. The modelling report identified that an alternative nominal descent speed was 180 knots corresponding to a minimum fuel descent. This reduced value was thus selected which required a modification to the APF file.

Files Affected:

BATP\_\_.APF          modified

**BADA-CCO-95-05****Update A/C Descriptions per ICAO/95**Description of Modification:

The description of aircraft models were modified in the two synonym files in order to maintain consistency with the 1994 version of the ICAO aircraft type designators [RD4].

The differences between the 1993 and 1994 version are summarised below.

(a)	B73S	1993	Boeing 737-300/500 Series
		1994	Boeing 737-300
(b)	BA46	1993	BAe 146-100/200/300
		1994	BAe 146-100/200/300, RJ Series
(c)	C550	1993	Cessna Citation II
		1994	Cessna Citation II-S2
(d)	HS25	1993	HS 125 Dominie, All Series
		1994	HS 125 Series 400/500/500, BAe 125
(e)	PA42	1993	Piper Cheyenne III/IV
	PA42	1994	Piper Cheyenne III/IV, 400SL
(f)	PAYE	1993	Piper Cheyenne I/II
	PAYE	1994	Piper Cheyenne II

Reason for Modification:

The January 1994 edition of the ICAO Aircraft Type Designators [RD4] showed several updates from the previous 1993 version.

Files Affected:

SYNONYM.LST	modified
SYNONYM.NEW	modified

**BADA-CCO-95-06****Add New A/C Model for D328**Description of Modification:

New OPF and APF files were added to represent the BADA model for the D328 (Dornier 328) aircraft. The SYNONYM.NEW and SYNONYM.LST files were updated to include the D328 aircraft.

The modelisation of the D328 aircraft is described in a BADA Modelling Report [RD9].

Reason for Modification:

The D328 aircraft accounted for 0.09% of CRCO traffic [RD3] in 1994. In order to maintain 90% coverage BADA normally provides models for those aircraft with a traffic share greater than 0.2%. Since the D328 is a new aircraft, its share is expected to increase such that it will reach the 0.2% threshold in 1995.

Files Affected:

D328__.APF	new file
D328__.OPF	new file
SYNONYM.LST	added entry for D328 aircraft
SYNONYM.NEW	added entry for D328 aircraft

**BADA-CCO-95-07****Update B727 Model for JT8D-15 Engines**Description of Modification:

The OPF and APF files for the B727 aircraft were modified to correspond to an updated model representing a more advanced version of the aircraft. The preparation of the updated model is described in a BADA Modelling Report [RD5]

Reason for Modification:

The B727 model in BADA 2.2 was based on a version of the aircraft fitted with Pratt & Whitney JT8D-7 engines. Several problem reports at the EEC SIM5+ real-time simulator had been raised on this aircraft which complained of poor climb performance.

An investigation of the problem showed that the climb performance of the model was consistent with the reference data for the JT8D-7 fitted aircraft. This climb performance was however poorer than the more advanced versions of the aircraft fitted with JT8D-15 engines. As the current operational fleet of B727 aircraft consists more of the later versions, the model was re-done to match these later versions with the JT8D-15 engines.

Files Affected:

B727__.APF	modified
B727__.OPF	modified

**BADA-CCO-95-09****Add New A/C Model for B73V**Description of Modification:

New OPF and APF files were added to represent the BADA model for the B73V (Boeing 737-500) aircraft. The SYNONYM.NEW and SYNONYM.LST files were updated to include the B73V aircraft.

The modelisation of the B73V aircraft is described in a BADA Modelling Report [RD6].

Reason for Modification:

For BADA 2.2 the B73S model represented both the B737-300 and B737-500 aircraft. This was consistent with the ICAO aircraft type designators for 1993 in which the B73S designator covered both aircraft types. The 24th Edition of the ICAO Aircraft Type Designators document [RD4] introduced a new designator, B73V, for the B737-500 while restricting the old designator, B73S, to represent only the B737-300. The BADA B73V model was based on a B737-300 aircraft and thus remained valid under the new designation. A new model for the B737-500, however, was needed.

Files Affected:

B73V__.APF	new file
B73V__.OPF	new file
SYNONYM.LST	added entry for B73V
SYNONYM.NEW	added entry for B73V

**BADA-CCO-95-10****Add New A/C Model for MD11**Description of Modification:

New OPF and APF files were added to represent the BADA model for the MD11 (McDonnell-Douglas MD-11) aircraft. The SYNONYM.NEW and SYNONYM.LST files were updated to include the MD11 aircraft.

The modelisation of the MD11 aircraft is described in a BADA Modelling Report [RD12].

Reason for Modification:

In BADA 2.2 the MD11 was equivalenced to the DC10 aircraft. However, according to RD3, the MD11 accounts for 0.52% of European air traffic thus making it a candidate for a model of its own if BADA is to maintain 90% coverage.

Files Affected:

MD11__.OPF	new file
MD11__.APF	new file
SYNONYM.LST	removed equivalence to DC10, added entry for MD11 aircraft,
SYNONYM.NEW	modified MD11 entry from DC10 equivalence to direct model



**BADA-CCO-95-11****User Lower Case Characters in Max. Climb Thrust Comment**Description of Modification:

The DA10\_\_.OPF file was modified to use lower case characters for the maximum climb thrust comment.

The BADA 2.2 version of the Engine Thrust block from this file is shown below.

```

CC===== Engine Thrust =====/
CC      Max Climb Thrust Coefficients (SIM) /
CD      .27300E+05      .48900E+05      .12200E-09      .00000E+00      -.56582E-02 /
CC      Cruise          Desc(low)      Desc(high)      Desc level      unused /
CD      .95000E+00      .40000E+00      .60000E+00      .22000E+05      .00000E+00 /
CC      Desc CAS        Desc Mach      unused          unused          unused /
CD      .32000E+03      .80000E+00      .00000E+00      .00000E+00      .00000E+00 /

```

The BADA 2.3 version of the Engine Thrust block is shown below with lower case letters for the maximum climb thrust comment.

```

--> CC===== Engine Thrust =====/
--> CC      Max climb thrust coefficients (SIM) /
CD      .27300E+05      .48900E+05      .12200E-09      .00000E+00      -.56582E-02 /
CC      Cruise          Desc(low)      Desc(high)      Desc level      unused /
CD      .95000E+00      .40000E+00      .60000E+00      .22000E+05      .00000E+00 /
CC      Desc CAS        Desc Mach      unused          unused          unused /
CD      .32000E+03      .80000E+00      .00000E+00      .00000E+00      .00000E+00 /

```

Reason for Modification:

The simulation preparation component of the EEC SIM5+ real-time simulator required this comment to have the lower case letters shown in order to be read correctly. This comment had at some point been modified for the DA10\_\_.OPF file.

Files Affected:

DA10\_\_.OPF            modified

**BADA-CCO-95-12****Remove TAB Characters from SYNONYM.LST**Description of Modification:

A TAB character in the SYNONYM.LST file was removed and placed with blanks.

Reason for Modification:

TAB characters were inadvertently introduced in the SYNONYM.LST file when adding the D328 aircraft. This character caused a failure in the simulation preparation software of the EEC SIM5+ real-time simulator which expected only blank characters.

Files Affected:

SYNONYM.LST      modified

**BADA-CCO-95-13****Correct Last Line in SYNONYM.NEW**Description of Modification:

The leading two characters of the last line of the SYNONYM.NEW file were corrected from “CD” to “CC”.

The previous version of the end of the file is shown below.

```

CD - TU54   TUPOLEV           TU-154,154A/B/B2/C/M   TU54__   /
CD * U11   PIPER             AZTEC                 PAZT__   /
CD * VC10  BAE               VC10-1100            B707__   /
CD =====/
FI                                                    /

```

The modified version is as follows:

```

CD - TU54   TUPOLEV           TU-154,154A/B/B2/C/M   TU54__   /
CD * U11   PIPER             AZTEC                 PAZT__   /
CD * VC10  BAE               VC10-1100            B707__   /
--> CC =====/
FI                                                    /

```

Reason for Modification:

The leading two characters of the last line of SYNONYM.NEW should have been “CC” to indicate a comment. This error was detected when this file was first used by the new simulation preparation and analysis software (IPAS) of the EEC.

Files Affected:

SYNONYM.NEW    modified

**BADA-CCO-95-14****Add New A/C Model for Generic Military Fighter A/C (FGTR)**Description of Modification:

A new aircraft model for a generic military fighter aircraft was added (FGTR). This resulted in the addition of a new APF and OPF file. This model replaced existing specific fighter models for the Mirage F1, Mirage 2000 and Panavia Tornado. The APF and OPF files for these specific fighter aircraft were removed from BADA. The synonym files were modified to equivalence specific fighter aircraft to the generic model.

The derivation of the generic military fighter aircraft model is described in a BADA Modelling Report [RD11].

Reason for Modification:

Existing fighter aircraft models were observed to have problems attaining required speeds. In addition, any one specific aircraft fighter had such a small share of European air traffic that a specific model was not warranted. A generic model was prepared to represent the general performance of such an aircraft as it differs from typical civilian transports (e.g. high climb and descent rates, supersonic flight).

Files Affected:

FGTR__.APF	new file
FGTR__.OPF	new file
SYNONYM.LST	added entry for FGTR, modified synonyms
SYNONYM.NEW	added entry for FGTR and synonyms
F1____.APF	removed file from RCS
F1____.OPF	removed file from RCS
MIR2__.APF	removed file from RCS
MIR2__.OPF	removed file from RCS
MRC__.APF	removed file from RCS
MRC__.OPF	removed file from RCS

**BADA-CCO-95-15****Add Maximum Payload Mass to all OPF Files**Description of Modification:

The maximum payload mass in tonnes was added as a parameter to all OPF files.

This parameter was placed in a previously unused field of the mass block of the OPF file as shown below.

```

CC===== Mass (t) =====/
CC  reference      minimum      maximum      max payload  unused      /
--> CD      .54430E+02   .36400E+02   .72480E+02   .19193E+00  .00000E+00  /

```

Reason for Modification:

The maximum payload mass was required as a new parameter for all aircraft in order to allow for a better estimation of initial aircraft weight based on distance to destination and assumed load factor.

Files Affected:

all OPF files            modified

**BADA-CCO-95-16****Update OPF Files to Standard Format**Description of Modification:

Comments in OPF files were modified to ensure that exactly the same format appeared in all files. This included:

- wording of comments,
- use of upper and lower case characters in comments, and,
- spacing in comments.

Reason for Modification:

In order to facilitate the automatic checking of file formats it was necessary to standardise on all file comments. Automatic checking was desired due to the rigidity of programs reading the files, particularly the EEC SIM5+ real-time simulator.

Files Affected:

all OPF files            modified

**BADA-CCO-95-17****Update APF Files to Standard Format**Description of Modification:

Comments in APF files were modified to ensure that exactly the same format appeared in all files. This included:

- wording of comments,
- use of upper and lower case characters in comments, and,
- spacing in comments.

Reason for Modification:

In order to facilitate the automatic checking of file formats it was necessary to standardise on all file comments. Automatic checking was desired due to the rigidity of programs reading the files, particularly the EEC SIM5+ real-time simulator.

Files Affected:

all APF files            modified

**BADA-CCO-95-18****Change Turbo to Turboprop for OPF Engine Type**Description of Modification:

Four OPF files were modified to change the engine type from “Turbo” to “Turboprop”.

As an example, the Aircraft Type block for the Fokker 50 (FK50) aircraft was previously as shown below:

```
CC=====Actype =====/
CD  FK50__      2 engines   Turbo                M          /
CC      FOKKER 50                                wake       /
CC (source: DLT Deutsche Luftverkehrsgesellschaft) /
```

The modified block is shown below:

```
CC=====Actype =====/
CD  FK50__      2 engines   Turboprop           M          /
CC      FOKKER 50                                wake       /
CC (source: DLT Deutsche Luftverkehrsgesellschaft) /
```

Reason for Modification:

In order to facilitate the automatic checking of file formats, it was necessary to standardise on the engine type label used for turboprop aircraft.

Files Affected:

FK50__.OPF	modified
MU2__.OPF	modified
PAYE__.OPF	modified
BE90__.OPF	modified



**BADA-CCO-95-19****Remove TAB Characters from SYNONYM.LST**Description of Modification:

Several TAB characters in the SYNONYM.LST file were removed and placed with blanks.

Reason for Modification:

TAB characters were inadvertently introduced in the SYNONYM.LST file when modifying equivalences due to the introduction of the generic military fighter (FGTR) aircraft. This character caused a failure in the simulation preparation software of the EEC SIM5+ real-time simulator which expected only blank characters.

Files Affected:

SYNONYM.LST      modified

**BADA-CCO-95-20****Add PTF Files to BADA**Description of Modification:

An addition file, Performance Table File (\*.PTF), was added for each aircraft type. This file contains a table of true air speed, climb/descent rate and fuel flow at various flight levels for cruise, climb and descent conditions.

Reason for Modification:

Several applications in the domain of Air Traffic Management (ATM) prefer the use of table-based performance data for aircraft. One of the reasons for this is computational efficiency in avoiding standard atmosphere and total-energy model equations. The release of Performance Table Files with BADA allows for ATM application to make use of the BADA models.

Files Affected:

all PTF files

new files

## **APPENDIX A**

### **Revision Summary File for BADA 2.3**

## BADA Revision Summary File

Revision Id: 2.3  
 Release Date: 95/06/08  
 Number of Files: 197

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```

=====
File Name      Revision      Last Modification      Size      Checksum
                ( revision      date )                (bytes)
=====
SYNONYM.LST    2.3           2.2.1.8   95/06/02      8756     1339161677
SYNONYM.NEW    2.3           2.2.1.7   95/05/12      9653       711580096
AT42__.APF     2.3           2.2.1.2   95/05/18      2424     2355521772
AT42__.OPF     2.3           2.2.1.3   95/05/19      4392     2040516795
AT42__.PTF     2.3           2.2.1.2   95/05/18      5376     1265171651
AT72__.APF     2.3           2.2.1.2   95/05/18      2424     1273536177
AT72__.OPF     2.3           2.2.1.3   95/05/19      4392     2185389233
AT72__.PTF     2.3           2.2.1.2   95/05/18      5356     1098005045
B707__.APF     2.3           2.2.1.2   95/05/18      2424     3768982372
B707__.OPF     2.3           2.2.1.3   95/05/19      4392     1626905990
B707__.PTF     2.3           2.2.1.2   95/05/18      5456       289487126
B727__.APF     2.3           2.2.1.3   95/05/18      2424     1578908069
B727__.OPF     2.3           2.2.1.3   95/05/19      4392     2311342319
B727__.PTF     2.3           2.2.1.2   95/05/18      5456     2282002533
B737__.APF     2.3           2.2.1.2   95/05/18      2424     1588307576
B737__.OPF     2.3           2.2.1.3   95/05/18      4392     4194766491
B737__.PTF     2.3           2.2.1.2   95/05/18      5456     2048356206
B73F__.APF     2.3           2.2.1.2   95/05/18      2424     1005268072
B73F__.OPF     2.3           2.2.1.3   95/05/19      4392     2112569161
B73F__.PTF     2.3           2.2.1.2   95/05/18      5436     1420892233
B73S__.APF     2.3           2.2.1.2   95/05/18      2424     2297884061
B73S__.OPF     2.3           2.2.1.3   95/05/19      4392     1989871405
B73S__.PTF     2.3           2.2.1.2   95/05/18      5456       194381425
B73V__.APF     2.3           2.2.1.1   95/04/24      2424     1617925390
B73V__.OPF     2.3           2.2.1.3   95/05/19      4392     2278606984
B73V__.PTF     2.3           2.2.1.2   95/05/18      5456       729044227
B747__.APF     2.3           2.2.1.2   95/05/18      2424     4082849258
B747__.OPF     2.3           2.2.1.3   95/05/19      4392       968264424
B747__.PTF     2.3           2.2.1.2   95/05/18      5456     2204282465
B74F__.APF     2.3           2.2.1.1   95/03/03      2424     3771018548
B74F__.OPF     2.3           2.2.1.3   95/05/19      4392     1455778149
B74F__.PTF     2.3           2.2.1.2   95/05/18      5456     2395710168
B757__.APF     2.3           2.2.1.2   95/05/18      2424       853194237
B757__.OPF     2.3           2.2.1.3   95/05/19      4392     3136259228
B757__.PTF     2.3           2.2.1.2   95/05/18      5456       548121238
B767__.APF     2.3           2.2.1.1   95/03/03      2424     2287082848
B767__.OPF     2.3           2.2.1.4   95/05/19      4392     1890501138
B767__.PTF     2.3           2.2.1.2   95/05/18      5456     2522763164
BA11__.APF     2.3           2.2.1.2   95/05/18      2424     2858986511
BA11__.OPF     2.3           2.2.1.3   95/05/19      4392     3893549479
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File Name      Revision      Last Modification      Size      Checksum
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BA11___.PTF    2.3
BA31___.APF    2.3          2.2.1.2    95/05/18    2424    3280918196
BA31___.OPF    2.3          2.2.1.3    95/05/18    4392    117454027
BA31___.PTF    2.3
BA41___.APF    2.3          2.2.1.2    95/05/18    2424    1836900935
BA41___.OPF    2.3          2.2.1.3    95/05/18    4392    1476797516
BA41___.PTF    2.3
BA46___.APF    2.3          2.2.1.1    95/03/03    2424    2333811104
BA46___.OPF    2.3          2.2.1.3    95/05/19    4392    2385682972
BA46___.PTF    2.3
BATP___.APF    2.3          2.2.1.3    95/05/18    2424    3012847756
BATP___.OPF    2.3          2.2.1.3    95/05/18    4392    2568088886
BATP___.PTF    2.3
BE20___.APF    2.3          2.2.1.1    95/03/03    2424    1099995624
BE20___.OPF    2.3          2.2.1.3    95/05/19    4392    4164295383
BE20___.PTF    2.3
BE90___.APF    2.3          2.2.1.1    95/03/03    2424    1262605187
BE90___.OPF    2.3          2.2.1.4    95/05/30    4392    1757882415
BE90___.PTF    2.3
BE99___.APF    2.3          2.2.1.2    95/05/18    2424    4204018908
BE99___.OPF    2.3          2.2.1.3    95/05/19    4392    13987529
BE99___.PTF    2.3
C130___.APF    2.3          2.2.1.1    95/03/03    2424    1144512401
C130___.OPF    2.3          2.2.1.3    95/05/19    4392    4133271817
C130___.PTF    2.3
C550___.APF    2.3          2.2.1.1    95/03/03    2424    1361068827
C550___.OPF    2.3          2.2.1.3    95/05/19    4392    3367998727
C550___.PTF    2.3
C560___.APF    2.3          2.2.1.1    95/03/03    2424    1283515361
C560___.OPF    2.3          2.2.1.3    95/05/19    4392    2047690680
C560___.PTF    2.3
CL60___.APF    2.3          2.2.1.2    95/05/18    2424    2507403896
CL60___.OPF    2.3          2.2.1.3    95/05/19    4392    90697986
CL60___.PTF    2.3
D228___.APF    2.3          2.2.1.2    95/03/03    2424    1563270133
D228___.OPF    2.3          2.2.1.4    95/05/19    4392    3219453227
D228___.PTF    2.3
D328___.APF    2.3          2.2.1.2    95/05/18    2424    668401055
D328___.OPF    2.3          2.2.1.3    95/05/19    4392    1908206034
D328___.PTF    2.3
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File Name      Revision      Last Modification      Size      Checksum
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DA01__.APF    2.3           2.2.1.2  95/05/18      2424      3157047330
DA01__.OPF    2.3           2.2.1.3  95/05/19      4392      3641337533
DA01__.PTF    2.3                                     5456      1465886314
DA10__.APF    2.3           2.2.1.2  95/05/18      2424      2776712414
DA10__.OPF    2.3           2.2.1.5  95/05/19      4392      510697153
DA10__.PTF    2.3                                     5456      2641380957
DA20__.APF    2.3           2.2.1.2  95/05/18      2424      487705187
DA20__.OPF    2.3           2.2.1.3  95/05/18      4392      3968939774
DA20__.PTF    2.3                                     5456      1856867115
DA50__.APF    2.3           2.2.1.2  95/05/18      2424      3598776231
DA50__.OPF    2.3           2.2.1.3  95/05/19      4392      2760182688
DA50__.PTF    2.3                                     5456      2650033947
DA90__.APF    2.3           2.2.1.2  95/05/18      2424      1532509285
DA90__.OPF    2.3           2.2.1.3  95/05/19      4392      4042950603
DA90__.PTF    2.3                                     5456      1209978823
DC10__.APF    2.3           2.2.1.1  95/03/03      2424      2867734745
DC10__.OPF    2.3           2.2.1.3  95/05/19      4392      511643299
DC10__.PTF    2.3                                     5456      3817262646
DC8S__.APF    2.3           2.2.1.2  95/05/18      2424      3583056427
DC8S__.OPF    2.3           2.2.1.3  95/05/19      4392      3928914043
DC8S__.PTF    2.3                                     5456      4231450696
DC9__.APF     2.3           2.2.1.1  95/03/03      2424      2003607430
DC9__.OPF     2.3           2.2.1.3  95/05/19      4392      2255250
DC9__.PTF     2.3                                     5456      1210314739
DH8__.APF     2.3           2.2.1.2  95/05/18      2424      1726385188
DH8__.OPF     2.3           2.2.1.3  95/05/19      4392      2068063367
DH8__.PTF     2.3                                     5376      3763430795
E120__.APF    2.3           2.2.1.1  95/03/03      2424      2873170287
E120__.OPF    2.3           2.2.1.3  95/05/19      4392      3802951201
E120__.PTF    2.3                                     5416      1203970517
EA30__.APF    2.3           2.2.1.1  95/03/03      2424      3902757610
EA30__.OPF    2.3           2.2.1.3  95/05/19      4392      252995429
EA30__.PTF    2.3                                     5456      3511963074
EA31__.APF    2.3           2.2.1.2  95/05/18      2424      3737531852
EA31__.OPF    2.3           2.2.1.3  95/05/19      4392      2788592664
EA31__.PTF    2.3                                     5456      2910332388
EA32__.APF    2.3           2.2.1.1  95/03/03      2424      4056844430
EA32__.OPF    2.3           2.2.1.3  95/05/19      4392      3261687964
EA32__.PTF    2.3                                     5456      1909067344
EA33__.APF    2.3           2.2.1.2  95/05/18      2424      3330358620
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EA33__.OPF    2.3           2.2.1.3   95/05/19      4392      3004446899
EA33__.PTF    2.3
EA34__.APF    2.3           2.2.1.1   95/03/03      2424      4293444618
EA34__.OPF    2.3           2.2.1.3   95/05/19      4392        603268195
EA34__.PTF    2.3           2.2.1.3   95/05/19      5456      2083236415
FGTR__.APF    2.3           2.2.1.2   95/05/18      2424      1077526194
FGTR__.OPF    2.3           2.2.1.2   95/05/19      4392      1172151247
FGTR__.PTF    2.3           2.2.1.2   95/05/19      5456      1065456992
FK10__.APF    2.3           2.2.1.1   95/03/03      2424      2923773271
FK10__.OPF    2.3           2.2.1.3   95/05/19      4392      2424324063
FK10__.PTF    2.3           2.2.1.3   95/05/19      5456      2895917113
FK27__.APF    2.3           2.2.1.1   95/03/03      2424        733358500
FK27__.OPF    2.3           2.2.1.3   95/05/19      4392        474928412
FK27__.PTF    2.3           2.2.1.3   95/05/19      5356      4285502271
FK28__.APF    2.3           2.2.1.1   95/03/03      2424      3573101006
FK28__.OPF    2.3           2.2.1.3   95/05/19      4392      1000585297
FK28__.PTF    2.3           2.2.1.3   95/05/19      5456      1716391871
FK50__.APF    2.3           2.2.1.1   95/03/03      2424      2836718668
FK50__.OPF    2.3           2.2.1.4   95/05/30      4392      2227886523
FK50__.PTF    2.3           2.2.1.4   95/05/30      5396      2819714914
HS25__.APF    2.3           2.2.1.2   95/05/18      2424      3965195092
HS25__.OPF    2.3           2.2.1.4   95/05/19      4392        291576694
HS25__.PTF    2.3           2.2.1.4   95/05/19      5456      2345910471
L101__.APF    2.3           2.2.1.1   95/03/03      2424        991234470
L101__.OPF    2.3           2.2.1.3   95/05/19      4392      3839789409
L101__.PTF    2.3           2.2.1.3   95/05/19      5456        609326426
LR35__.APF    2.3           2.2.1.1   95/03/03      2424      2506729738
LR35__.OPF    2.3           2.2.1.3   95/05/19      4392      1572309416
LR35__.PTF    2.3           2.2.1.3   95/05/19      5456      1107880429
MD11__.APF    2.3           2.2.1.1   95/05/03      2424      2518358997
MD11__.OPF    2.3           2.2.1.3   95/05/29      4392        108937053
MD11__.PTF    2.3           2.2.1.3   95/05/29      5456        428555850
MD80__.APF    2.3           2.2.1.2   95/05/18      2424        510662616
MD80__.OPF    2.3           2.2.1.3   95/05/19      4392      3898471590
MD80__.PTF    2.3           2.2.1.3   95/05/19      5456      3583507361
MU2__.APF    2.3           2.2.1.1   95/03/03      2424      4191939974
MU2__.OPF    2.3           2.2.1.4   95/05/30      4392      4131761932
MU2__.PTF    2.3           2.2.1.4   95/05/30      5456      3340368240
ND16__.APF    2.3           2.2.1.1   95/03/03      2424        114598091
ND16__.OPF    2.3           2.2.1.3   95/05/19      4392      2781025830
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ND16___.PTF    2.3
PA28___.APF    2.3          2.2.1.2    95/05/18      2424      4220023551
PA28___.OPF    2.3          2.2.1.3    95/05/19      4392      40675435
PA28___.PTF    2.3
PA31___.APF    2.3          2.2.1.1    95/03/03      2424      4185016052
PA31___.OPF    2.3          2.2.1.3    95/05/19      4392      591634749
PA31___.PTF    2.3
PA34___.APF    2.3          2.2.1.2    95/05/18      2424      3541454548
PA34___.OPF    2.3          2.2.1.3    95/05/19      4392      1526963463
PA34___.PTF    2.3
PA42___.APF    2.3          2.2.1.1    95/03/03      2424      1172231694
PA42___.OPF    2.3          2.2.1.3    95/05/19      4392      1786695571
PA42___.PTF    2.3
PAYE___.APF    2.3          2.2.1.1    95/03/03      2424      999682866
PAYE___.OPF    2.3          2.2.1.4    95/05/30      4392      369467854
PAYE___.PTF    2.3
PAZT___.APF    2.3          2.2.1.1    95/03/03      2424      3659597952
PAZT___.OPF    2.3          2.2.1.3    95/05/19      4392      1358240786
PAZT___.PTF    2.3
SF34___.APF    2.3          2.2.1.2    95/05/18      2424      3061144573
SF34___.OPF    2.3          2.2.1.3    95/05/19      4392      3820086359
SF34___.PTF    2.3
SH36___.APF    2.3          2.2.1.2    95/05/18      2424      4258395085
SH36___.OPF    2.3          2.2.1.3    95/05/19      4392      3110653682
SH36___.PTF    2.3
SW3___.APF     2.3          2.2.1.1    95/03/03      2424      585636398
SW3___.OPF     2.3          2.2.1.3    95/05/19      4392      1408124191
SW3___.PTF     2.3
TB20___.APF    2.3          2.2.1.2    95/05/18      2424      3069309738
TB20___.OPF    2.3          2.2.1.3    95/05/19      4392      286156484
TB20___.PTF    2.3
TU34___.APF    2.3          2.2.1.1    95/03/03      2424      3792413146
TU34___.OPF    2.3          2.2.1.3    95/05/19      4392      2098453439
TU34___.PTF    2.3
TU54___.APF    2.3          2.2.1.1    95/03/03      2424      1446061863
TU54___.OPF    2.3          2.2.1.3    95/05/19      4392      2033485985
TU54___.PTF    2.3
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