**FEDERAL AVIATION ADMINISTRATION (FAA)**
**MISSION SUPPORT SERVICES**
**AERONAUTICAL INFORMATION MANAGEMENT**

# ORS DIGITAL OBSTACLE FILE (DOF)
# DOF_README.PDF FILE

Revision 1 – January 14, 2008
DOF format changes due to ORS Implementation
Revision 1.1 – February 8, 2009
Obstacles are sorted by latitude within each state or country &
the addition of individual data files
Revision 1.2 – July 26, 2009
Increase the AGL HT field to 5 digits

FOR THE DOF, THE ZIP FILE RECEIVED WITH THIS DELIVERY INCLUDES:

1. **DOF_README.PDF** - This file provides an overview of the new Obstacle Repository System (ORS) formatted Digital Obstacle File (DOF) and the format for the data files.

2. **DOF.DAT** - One file containing digital obstacle data within all of the FAA Regions plus some areas of Canada, Mexico, the Caribbean, the Bahamas, and Pacific Areas.

3. **CHG.DAT** - A change list reflecting actions taken since the last currency date, in an uncompressed file format.

4. **57** - Separate files for each of the U.S. States plus the District of Columbia, Canada, Mexico, Puerto Rico, the Bahamas, the Caribbean and Pacific Areas.

5. **CHKALL_DOF.EXE** - A program for checking the data integrity on the main DOF file and DOF change file. The state files as a subset do not include the data integrity code.

6. **DAI_DATCHK.EXE** – A program for checking the data integrity of the individual data files.

## IMPORTANT NOTE

**FOR EVERY DOF DELIVERY,**
**BEFORE DOWNLOADING THE FILES AND FOLDERS TO YOUR COMPUTER,**
**CHECK THE EFFECTIVE DATES FOR THE DATA AND**
**DELETE ALL FILES AND FOLDERS FROM ANY PREVIOUS CYCLE.**

## DOF CONTACT INFORMATION

### FOR CONCERNS WITH EITHER THE PROGRAM OR THE DATA INCLUDED WITH THE DOF, PLEASE CONTACT:

Federal Aviation Administration (FAA)
Aeronautical Information Management
Terrain and Obstacles Data Team
1305 East-West Highway
Silver Spring, MD 20910-3281
TELEPHONE: 301-427-5115

### INSTRUCTIONS FOR VIEWING THE DATA FILES:

The DOF data files are ASCII text files and can be viewed in the editor or word processor of your choice. They are designed to be viewed with a non- proportional font, such as Courier New.

When viewing the files in Microsoft Notepad (or other editors), turn Word Wrap off. Word Wrap is turned on and off (in Notepad) by selecting it on the Edit Menu. Also (in Notepad), from the Edit menu, select Set Font, choose the font Courier New and the text size you want. You can adjust how much of the file is viewable both horizontally and vertically by changing the size of the font and the size of the window.

In word processors, set the font for the entire file to Courier New with the text size you want. If the lines of the file do not fit and wrap to the next line, make the left and right margins smaller and/or the font size smaller. For the data files with long lines, in addition to adjusting the margins and font size, change the orientation from portrait to landscape.

An unsupported program called Browse is included with the DOF package. Browse is a DOS based program without editing capabilities used for viewing ASCII text files. Please refer to Browse program instructions below.

### ERROR CHECKING:

Included in each DOF package are programs for checking the integrity of the data files. The programs are:

DOF - DAI_DATCHK.EXE
- CHKALL_DOF.EXE

### CHECKING THE INTEGRITY OF INDIVIDUAL FILES: DAI_DATCHK

To check the integrity of the data, double click on "DAI_DATCHK.EXE" in the folder that contains the data file you want to check. This will open up an MS-DOS window. Type the name of a data file, including the extension, (e.g. DOF.DAT, CHG.DAT) then press "Enter". A complete list of DOF data files is listed in DOF_README.PDF. Please refer to these lists. An example: Running DAI_DATCHK on DOF.DAT will scan the DOF data file and display a message stating the number of errors detected. If any data errors occur, they will be listed in a file called

“DATCHK_REPORT.TXT". This file will be put in your systems temporary directory, which is defined by the environment variable TEMP. You will be given an option to view this file. If errors do occur, print out this file and call the phone number for data errors listed in the section DOF CONTACT INFORMATION.

(NOTE: If the location of the DATCHK program and the data files are not the same, you will need to enter the path name.)

Repeat this process to scan each additional data file.

**CHECKING INTEGRITY OF ALL DOF FILES: CHKALL_DOF**

- After downloading the data and programs to your PC, double click on "CHKALL_DOF.EXE". CHKALL_DOF will run the DAI_DATCHK program on every DOF file. After all of the files have been checked, a message will display the results. If any data errors occur, they will be listed in a file called "DOF_DATCHK_REPORT.TXT". This file will be put in your systems temporary directory, which is defined by the environment variable TEMP. You will be given an option to view this file. If errors do occur, print out this file and call the phone number for data errors listed in the section DOF CONTACT INFORMATION.

(NOTE: The CHKALL_DOF and DAI_DATCHK programs must be in the same folder as the DOF data files that are to be checked.)

## CAUTION

The Digital Obstacle File contains only obstruction data for those man-made objects which affect domestic aeronautical charting products and does not purport to indicate the presence of all obstructions which may be encountered.

## NOTE

In the interest of air safety, the Digital Obstacle File depicts both "verified" and "unverified" obstruction data. A verified obstruction is indicated by an "O" in the verification status field of the data. This data has been reviewed by the FAA's Aeronautical Information Management (AIM), Terrain and Obstacles Data Team (TOD Team) and most have been assigned an accuracy code, indicating the reliability of its vertical height and horizontal position. An unverified obstruction is indicated by a "U" in the status field of the data. This data is considered unreliable because its position and height have not been verified by the TOD Team.

**Caution should be exercised by the user of unverified data.**

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List of DOF Data Files:

Entire DOF - Digital Obstacle File (DOF)
- DOF.DAT

State Files - Individual Files for each U.S. State and the District of Columbia
- 01-AL.DAT
- 02-AK.DAT
- 04-AZ.DAT
- 05-AR.DAT
- 06-CA.DAT
- 08-CO.DAT
- 09-CT.DAT
- 10-DE.DAT
- 11-DC.DAT
- 12-FL.DAT
- 13-GA.DAT
- 15-HI.DAT
- 16-ID.DAT
- 17-IL.DAT
- 18-IN.DAT
- 19-IA.DAT
- 20-KS.DAT
- 21-KY.DAT
- 22-LA.DAT
- 23-ME.DAT
- 24-MD.DAT
- 25-MA.DAT
- 26-MI.DAT
- 27-MN.DAT
- 28-MS.DAT

29-MO.DAT
30-MT.DAT
31-NE.DAT
32-NV.DAT
33-NH.DAT
34-NJ.DAT
35-NM.DAT
36-NY.DAT
37-NC.DAT
38-ND.DAT
39-OH.DAT
40-OK.DAT
41-OR.DAT
42-PA.DAT
44-RI.DAT
45-SC.DAT
46-SD.DAT
47-TN.DAT
48-TX.DAT
49-UT.DAT
50-VT.DAT
51-VA.DAT
53-WA.DAT
54-WV.DAT
55-WI.DAT
56-WY.DAT

Selected Countries or U.S. Territories - Bahamas, Canada, Puerto Rico and Mexico
Bahamas.DAT
Canada.DAT
PuertoRico.DAT
Mexico.DAT

Pacific Area – Countries included within the Pacific Area
Pacific.DAT

Caribbean Area – Countries included within the Caribbean Area
Caribbean.DAT

Change List - Change List - Actions taken since last currency date
CHG.DAT

# DIGITAL OBSTACLE FILE

## FOREWORD

The Digital Obstacle File (DOF) is a listing of verified and unverified obstacles in the U.S. with limited coverage of the Pacific, the Caribbean, Canada, Mexico, and the Bahamas of interest to aeronautical information users. The obstacles are assigned unique alphanumerical identifiers and are listed in order by ascending latitude within each state or country. The DOF digital product is updated every 56-days.

Included with the DOF delivery is a CHANGE LIST reflecting changes that occurred during the eight week period. This file is ordered by ascending file number. The file formats are included on the following pages.

Included within the DOF delivery are separate files that break the main file down into individual files for the 50 U.S. states, District of Columbia, Puerto Rico, Mexico, Canada, Pacific Area, and the Caribbean Area. These files adhere to the DOF format with the exception being that they do not contain a data integrity check code.

## SPECIAL NOTICE

### Important Information on Horizontal and Vertical Datums

The World Geodetic System 1984 (WGS 84) is used as the horizontal datum for all DOF data. All obstacle data has been converted to WGS 84 as of November 19, 2007.

All obstacle data identified with a Julian Date on or after the 71st day of 2001 will be placed in the North American Vertical Datum of 1988 (NAVD88). All other elevations in the Digital Obstacle File are in the National Geodetic Vertical Datum of 1929.

## JULIAN DATES

The Julian date field has been expanded to include a four-digit year.

## ORS NUMBER

All obstacles are assigned a unique number based on state or country. The ORS_NUMBER consists of a two-digit code, a dash, and a six-character number.

## FORMAT FOR DATA IN THE DIGITAL OBSTACLE FILES

NOTE: The following pages describe the format for headers and data in the Digital Obstacle File.

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### THE DOF FORMAT

The currency date header appears on line 1, in columns 3-26, followed by a 3-line header. Line 4 contains 121 "-" characters. Lines 2 and 3 are column headers for the obstacle detail lines.

There is a DATCHK code at the end of every line within the main DOF file.

The data for each obstacle is in the following format:

| Column | Data Element | Description |
|---|---|---|
| 1-2 | ORS Code | State<br>01 - Alabama<br>02 - Alaska<br>04 - Arizona<br>05 - Arkansas<br>06 - California<br>08 - Colorado<br>09 - Connecticut<br>10 - Delaware<br>11 - DC<br>12 - Florida<br>13 - Georgia<br>15 - Hawaii<br>16 - Idaho<br>17 - Illinois<br>18 - Indiana<br>19 - Iowa<br>20 - Kansas<br>21 - Kentucky<br>22 - Louisiana<br>23 - Maine<br>24 - Maryland<br>25 - Massachusetts<br>26 - Michigan<br>27 - Minnesota<br>28 - Mississippi<br>29 - Missouri<br>30 - Montana<br>31 - Nebraska<br>32 - Nevada<br>33 - New Hampshire |

34 - New Jersey
35 - New Mexico
36 - New York
37 - North Carolina
38 - North Dakota
39 - Ohio
40 - Oklahoma
41 - Oregon
42 - Pennsylvania
44 - Rhode Island
45 - South Carolina
46 - South Dakota
47 - Tennessee
48 - Texas
49 - Utah
50 - Vermont
51 - Virginia
53 - Washington
54 - West Virginia
55 - Wisconsin
56 - Wyoming

**North America**
CA - Canada
MX - Mexico
PR - Puerto Rico
BS - Bahamas

**Caribbean Area**
AG - Antigua and Barbuda
AI - Anguilla
AN - Netherlands Antilles
AW - Aruba
CU - Cuba
DO - Dominican Republic
GP - Guadeloupe
HN - Honduras
HT - Haiti
JM - Jamaica
KN - St. Kitts and Nevis
KY - Cayman Islands
MS - Montserrat
TC - Turks and Caicos Islands
VG - British Virgin Islands
VI - Virgin Islands

**Pacific Area**
AS - American Samoa
FM - Federated States of Micronesia
GU - Guam

KI - Kiribati
MH - Marshall Islands
MI - Midway Islands
MP - Northern Mariana Islands
PW - Palau
RU - Russia
TK - Tokelau
WQ - Wake Island
WS - Samoa

| Column | Data Element | Description |
|---|---|---|
| 3 | "-" | |
| 4-9 | Obstacle Number | Identifier of obstacle |
| 10 | Blank | |
| 11 | "O" or "U" | Verification Status<br>"O": verified<br>"U": unverified |
| 12 | Blank | |
| 13-14 | Country Identifier | |
| 15 | Blank | |
| 16-17 | State Identifier | State |
| 18 | Blank | |
| 19-34 | City Name | City |
| 35 | Blank | |
| 36-37 | Latitude Degrees | Geographical Coordinates |
| 38 | Blank | |
| 39-40 | Latitude Minutes | " |
| 41 | Blank | |
| 42-46 | Latitude Seconds | " |
| 47 | Latitude Hemisphere | " |

| | | |
|---|---|---|
| 48 | Blank | |
| 49-51 | Longitude Degrees | " |
| 52 | Blank | |
| 53-54 | Longitude Minutes | " |
| 55 | Blank | |
| 56-60 | Longitude Seconds | " |
| 61 | Longitude Hemisphere | " |
| 62 | Blank | |
| 63-74 | Obstacle Type | |
| 75 | Blank | |
| 76 | Quantity | |
| 77 | Blank | |
| 78-82 | AGL HT | Above Ground Level Height (Feet) |
| 83 | Blank | |
| 84-88 | AMSL HT | Above Mean Sea Level Height (Feet) |
| 89 | Blank | |
| 90 | Lighting | Type of Lighting<br><br>"R": Red<br>"D": Medium intensity White Strobe & Red<br>"H": High Intensity White Strobe & Red<br>"M": Medium Intensity White Strobe<br>"S" : High Intensity White Strobe<br>"F" : Flood<br>"C" : Dual Medium Catenary<br>"W": Synchronized Red Lighting<br>"L" : Lighted (Type Unknown)<br>"N": None<br>"U": Unknown |
| 91 | Blank | |
| 92 | Horizontal Accuracy | |

93 Blank

94 Vertical Accuracy

| HORIZONTAL | | VERTICAL | |
|---|---|---|---|
| Code | Tolerance | Code | Tolerance |
| 1 | +-20' | A | +-3' |
| 2 | +-50' | B | +-10' |
| 3 | +-100' | C | +-20' |
| 4 | +-250' | D | +-50' |
| 5 | +-500' | E | +-125' |
| 6 | +-1000' | F | +-250' |
| 7 | +-1/2 NM | G | +-500' |
| 8 | +-1 NM | H | +-1000' |
| 9 | Unknown | I | Unknown |

95 Blank

96 Mark Indicator Type of Marking

"P": Orange or Orange and White Paint
"W": White Paint Only
"M": Marked
"F": Flag Marker
"S": Spherical Marker
"N": None
"U": Unknown

97 Blank

98-111 FAA Study Number

112 Blank

113 Action: A, C, D, Add, Change, Dismantle

114 Blank

115-121 Julian Date Date of Action

122 Blank

123-128 DATCHK Code Data Integrity Code

**THE CHANGE LIST FORMAT**

Lines 1 and 2 are column headers for the detail lines. Line 3 Contains 130 "-" characters.

There is a DATCHK code at the end of every line in the file. The data for each change is in the following format:

| Column | Data Element | Description |
|---|---|---|
| 1-9 | Action | DISMANTLE, OLD, NEW, ADD, REMOVE |
| 10 | Blank | |
| 11-12 | ORS Code | (See DOF Format) |
| 13 | "-" | |
| 14-19 | Obstacle Number | " |
| 20 | Blank | |
| 21 | "O" or "U" | " |
| 22 | Blank | |
| 23-24 | Country Identifier | |
| 25 | Blank | |
| 26-27 | State Identifier | |
| 28 | Blank | |
| 29-44 | City Name | " |
| 45 | Blank | |
| 46-47 | Latitude Degrees | " |
| 48 | Blank | |
| 49-50 | Latitude Minutes | " |
| 51 | Blank | |
| 52-56 | Latitude Seconds | " |
| 57 | Latitude Hemisphere | " |

| | | |
|---|---|---|
| 58 | Blank | |
| 59-61 | Longitude Degrees | " |
| 62 | Blank | |
| 63-64 | Longitude Minutes | " |
| 65 | Blank | |
| 66-70 | Longitude Seconds | " |
| 71 | Longitude Hemisphere | " |
| 72 | Blank | |
| 73-84 | Obstacle Type | " |
| 85 | Blank | |
| 86 | Quantity | " |
| 87 | Blank | |
| 88-92 | AGL HT | " |
| 93 | Blank | |
| 94-98 | AMSL HT | " |
| 99 | Blank | |
| 100 | Lighting | " |
| 101 | Blank | |
| 102 | Horizontal Accuracy | " |
| 103 | Blank | |
| 104 | Vertical Accuracy | " |
| 105 | Blank | |
| 106 | Mark Indicator | " |
| 107 | Blank | |
| 108-121 | FAA Study Number | " |

| | | |
|---|---|---|
| 122 | Blank | |
| 123 | Action: A, C, D, R | Add, Change, Dismantle, Remove |
| 124-130 | Julian Date | Date of Action |
| 131 | Blank | |
| 132-137 | DATCHK Code | Data Integrity code |