# Documentation for
# dcextract (extract to DATACARD)
# 9/16/04

## 1.0  General Information

### 1.1  Application Description

The purpose of the dcextract program is to pull data from the database and write it to a file in DATACARD format.  It also creates a columnar text file for importing to spreadsheets.  This program is written in C.

### 1.2  Design Considerations

The program writes some general comment information to the top of the file about where it found the data in the database.  This includes the database table as well as the lid and shef code it was stored under.  The body of the file contains four values per line.

If the data stored in the database is not continuous (there are no rows stored for some dates), the program will put missing values into the datacard output for these time periods.  Also, the program will make sure the data written to the datacard starts on the first of the month.  If the first available data is before the 15$^{th}$ then missing values will be written to fill in the first part of the month, but if the first data is after the 15$^{th}$ then the datacard output will not start until the next month.

### 1.3  Application Assumptions

The archive database data tables store all data in Zulu (Z) time, while the DATACARD format is written in local time.  To convert from Z time to local time, dcextract assumes that local time is 4-8 hours different from Z time.  The same assumptions are made (in reverse) in the dcparse program, which shef encodes data from the datacard format.  Here is how the conversion is handled in the program:

- Daily Data
  - The peDPsep (daily data table) data slots have an end time of 12z for the given day.
  - First value in DATACARD is midnight to midnight local time on day 1, meaning that it ends between 4z and 8z on database day 2.
  - This program shifts the data back one day as it is written to the DATACARD format (i.e. day 2 from the database is written to day 1 of the DATACARD).
- Six Hourly Data
  - The peQPsep (six hourly data table) data slots have ending times of 0z, 6z, 12z, and 18z for the given day.

- First value in DATACARD is midnight to 6 am local time on day 1, meaning that it ends between 10z and 14z on database day 1.
    - This program writes the database 12z value as the DATACARD 6 am value.
- Hourly Data
    - The peHPsep (hourly data table) data slots are 0z, 1z, 2z, etc. for the given day.
    - First value in DATACARD is 1 am local time on day 1.
    - This program asks the user to input the number of hours local time is offset from Z time.  For example, if local time is 6 hours different from Z time, the DATACARD 1 am value is written from the database 7z value.

# 2.0  Configuration Information

The following apps_defaults tokens are used:

      adb_name        name of the archive database
      dcextract_outdir     output directory for datacard files (optional)

This DATACARD output files are created with a name of *lid.shefcode* and the columnar output file with a name of *lid.shefcode.col.*  If the dcextract_outdir token is defined the output files will be created in that directory, otherwise they will be in the users current working directory.

# 3.0  User How-To

This program can be run either through the *arcmenu -> Other Viewing/Extraction menu*, or on the command line by simply typing *dcextract.*  The program requires some user input, which can either be included on the command line or input as prompted by the program.  The required inputs are as follows:

1. location identifier (lid) for data to extract
2. SHEF parameter code for data to extract
3. first year of data to extract (default is first year of stored record)
4. last year of data to extract (default is last year of stored record)
5. number of hours local time is offset from Z time (needed only for hourly data)

There is an optional command line argument that control the 'debug' mode (this must be entered before any other arguments):

      -d = debug mode; writes more program information to the screen

Examples of running program using command line arguments:

      dcextract -d alec2 ppq5zzz      (debug mode on, uses default first and last years)

dcextract gjt pph5zzz 1950 2000 6        (hourly data needs offset)

If no command line arguments are given, the user will be prompted for the required information.


## 4.0   Troubleshooting Information

Use the 'debug' mode to see the database query being used as well as when missing data is being filled.


## 5.0   Installation Instructions


## 6.0   Maintenance Information

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## 7.0   References

Data dictionary for archive database.