

PROGRAMS

Selected programs used in the 1995 National assessment are presented here along with documentation.

National Oil and Gas Assessment Programs

The source codes for three assessment programs (nog2.f, nog3.f, and nog6.f) are presented on this CD-ROM for their possible utility to appraisers. These are in the directory "programs." The programs were written in Green Hills FORTRAN77 with a UNIX operating system. The source code is included. Explanatory notes are at the beginning of the source code for each program.

The programs were set up to accommodate files in a particular format. The input files must be formatted in the following manner:

(1) A file named "playfile" should contain the list of plays and have the play file names in columns 24-31.

(2) Data files for individual plays (referred to as the #.dat files) should include 92 lines and have data in columns 1-8. Only 14 of the lines are accessed by these programs:

line 13 -- the play probability

line 34 -- gas-oil ratio (in cubic feet of gas per barrel)

line 35 -- ratio of NGL to non-associated gas (in barrels per million cubic feet)

line 36 -- ratio of NGL to associated-dissolved gas (in barrels per million cubic feet)

line 56 -- the median size of the undiscovered oil accumulations (in millions of barrels)

line 57 -- the median size of the undiscovered gas accumulations (in billions of cubic feet)

line 73 -- the TSP shape factor for the undiscovered oil accumulations (See Houghton and others, 1993.)

line 74 -- the TSP shape factor for the undiscovered gas accumulations (See Houghton and others, 1993.)

line 79 -- the minimum number of undiscovered oil accumulations

line 80 -- the minimum number of undiscovered gas accumulations

line 81 -- the median number of undiscovered oil accumulations

line 82 -- the median number of undiscovered gas accumulations

line 83 -- the maximum number of undiscovered oil accumulations

line 84 -- the maximum number of undiscovered gas accumulations

The original #.dat files are not included on this disk, but the data is in the conv#in.ffa and conv#in.tab files.

nog2.f:

Program to assess undiscovered conventional accumulations

This program was used to generate the data in the conv#out.ffa and conv#.out.tab files. The output file has ten columns:

- (1) plays (identified by code number)
- (2) mean number of oil accumulations in each play
- (3) the mean size of the oil accumulations (in millions of barrels)
- (4) the mean amount of oil in the play (in millions of barrels)
- (5) the mean amount of associated gas (in billions of cubic feet)
- (6) the mean amount of natural gas liquids in the associated gas (in millions of barrels)
- (7) the mean number of non-associated gas accumulations
- (8) the mean size of the non-associated gas accumulations (in billions of cubic feet)
- (9) the mean amount of non-associated gas in the play (in billions of cubic feet)
- (10) the mean amount of natural gas liquids in the non-associated gas accumulations (in millions of barrels)

The resulting output file will be named nog2.prn. The file **nog2.ttl** is used by nog2.f and contains the column titles for nog2.prn.

nog3.f:

Program to generate fractiles from assessment of undiscovered conventional accumulations

This program was used to generate the data in the frac#.ffa and frac#.tab files. This is a Monte Carlo simulation program. Its output is a table of quantiles of the amount of oil in each play at various probabilities and the amount of non-associated gas at various probabilities. The number of iterations is determined by the value of the variable "itr" in the program, which is set to 9999 in the source code. Units: gas in billions of cubic feet, oil in millions of barrels. The resulting output file will be named nog3.prn. The file **nog3.ttl** is used by nog3.f and contains column titles for nog3.prn.

nog6.f:

Another program to generate fractiles from assessment of undiscovered conventional accumulations

This is a Monte Carlo simulation program. Its output is a table of 101 percentiles (from 0 percent through 100 percent) for the distribution of oil in oil accumulations and gas in non-associated gas accumulations. These distributions are based upon 9999 iterations wherein the number and sizes of accumulations are repeatedly sampled with the aid of a random number generator and the play assessment files (#.dat). The input files are (1) "playfile" and (2) the #.dat files. There is one output file for each play, named play#.dis, which contains an empirical distribution for the quantity of oil and gas in the play.

Description of a Discovery Process Modeling Procedure to Forecast Future Oil and Gas Using Field Growth, ARDS 4.01

This program (also in the directory "programs") was used to calculate inferred conventional reserves of oil and gas. The documentation is divided into five files, presented in Microsoft Word for Macintosh format, version 5.1a (.mwm), in rich text format (.rtf), or in Word Perfect for Windows format (.wpw).

ardstxt.mwm (Microsoft Word for Macintosh), **ardstxt.rtf** (rich text format), and **ardstxt.wpw** (Word Perfect for Windows):

Main body of the text

ardsfig.mwm (Microsoft Word for Macintosh), **ardsfig.rtf** (rich text format), and **ardsfig.wpw** (Word Perfect for Windows):

Figures 3, 4, and 6 (figures 1, 2, and 5 are stored as JPEG images in files fig1.jpg, fig2.jpg, fig5a.jpg, and fig5b.jpg.)

ardsexh.mwm (Microsoft Word for Macintosh), **ardsexh.rtf** (rich text format), and **ardsexh.wpw** (Word Perfect for Windows):

Exhibits 1 through 15

ardsapa.mwm (Microsoft Word for Macintosh), **ardsapa.rtf** (rich text format), and **ardsapa.wpw** (Word Perfect for Windows):

Appendix A -- Example of use (Output images are stored as files having .jpg extensions.)

ardsapb.mwm (Microsoft Word for Macintosh), **ardsapb.rtf** (rich text format), and **ardsapb.wpw** (Word Perfect for Windows):

Appendix B -- Program listings