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South Dakota Areas of Oil and Gas Production

by

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The Open-File Report on "South Dakota Areas of Oil and Gas Production" is a plotter-ready file that was produced for plotters that use an HPGL2 format. The file was generated using ARC/INFO, a commercial software program that is a product of Environmental Systems Research Institute (ESRI). The map consists of two layers: 1) a layer showing county and state boundaries, and 2) a layer showing oil and gas exploration and production.

The layer showing county and state boundaries came from a data set extracted from U. S. Census TIGER/line files by Doug Nebert and Mark Negri of the USGS Water Resources Division. This data set has a resolution of up to 1:100,000. The 1:100,000 data set can be accessed through 'anonymous ftp' at [waisqvarsa.er.usgs.gov](ftp://waisqvarsa.er.usgs.gov) (130.11.51.187).

The layer showing oil and gas exploration and production was generated from data calculated by a program developed by Richard Mast and David Root of the Geologic Division of the USGS. Their FORTRAN program generalized data from the June, 1993,

version of the Well History Control System (WHCS), a commercial database of oil and gas well information compiled by Petroleum Information Corporation, Houston, TX. The WHCS has been compiled from historical drilling information, and as a consequence data may be incomplete in some portions of the country. The WHCS shows locations of wells, information about when the wells were drilled, whether they produced oil or gas, stratigraphic intervals they produce from and total depths of the wells, as well as other information. In order to plot point information from such a database it is necessary to either plot it at a scale where each point is distinguishable, or to generalize the data so they can be seen at a chosen scale. Since it is not uncommon to have several wells within a few hundred feet of each other, it is not possible to plot actual well locations on a map that shows the entire state. However, a point that is one-sixteenth square mile in size can be seen on a state scale map of 1:1,000,000.

The conterminous United States was divided into 12 sections, and each section was subdivided into a grid consisting of cells approximately one-quarter-mile by one-quarter-mile. The resulting cells are approximately one-sixteenth of a square mile, or forty acres. The program then determined which wells in the file had been drilled in a particular cell. If a well had been drilled in a cell, the program then determined the final class of the well. If the well was not a producing well, the cell was classified as a non-productive cell. If the well produced oil, the cell was classified as an oil-producing cell. If the well produced gas, the cell was classified as a gas-producing cell. When more than one well was drilled within a cell, production was given priority over non-production in classifying the status of the cell. For example, if a cell contained four wells and three of them were non-producers, the producing well still determined the status of the cell. If the cell contained multiple wells and at least one of them produced oil and at least one of them produced gas, the cell was classified as an oil-and-gas-producing cell.

The resultant data set was then converted into an ARC/INFO coverage using a program written by William Beeman of the Geologic Division of the USGS. A program written in Arc Macro Language (AML) was then utilized to display the data that was contained within the state's boundaries.

The data set was retrieved and displayed as part of the 1995 National Oil and Gas Assessment. Further details of the assessment and its methodology can be found in the USGS digital publication DDS-30, "1995 National Assessment of United States Oil and Gas Resources on CD-ROM" edited by Gautier and others, a compact disk that can be read by a CD-ROM reader attached to either a Mac or Windows environment. The CD-ROM may be ordered by calling (303)236-5711, or by sending e-mail to acd@bpgsvr.cr.usgs.gov.