DOE QUARTERLY TECHNICAL PROGRESS REPORT

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TITLE: CONTINUED SUPPORT OF "THE NATURAL RESOURCES INFORMATION
SYSTEM (NRIS) FOR THE STATE OF OKLAHOMA"

Grant No. DE-FG22-92BC14853
Oklahoma Geological Survey (OGS), University of Oklahoma (OU)
Norman, Oklahoma 73019

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OBJECTIVE

The objective of this research program is to continue developing, editing, maintaining, utilizing and making publicly available the Oil and Gas Well History file portion of the Natural Resources Information System (NRIS) for the State of Oklahoma. This grant funds that ongoing development work as a continuation of earlier grant numbers DE-FG19-88BC14233 and DE-FG22-89BC14483. The Oklahoma Geological Survey, working with Geological Information Systems at the University of Oklahoma Sarkeys Energy Center, has undertaken to construct this information system in response to the need for a computerized, centrally located library containing accurate, detailed information on the state's natural resources. Particular emphasis during this phase of NRIS development is being placed on computerizing information related to the energy needs of the nation, specifically oil and gas.

SUMMARY OF TECHNICAL PROGRESS

The Well History file contains historical and recent completion records for oil and gas wells reported to the Oklahoma Corporation Commission on Form 1002-A. At the start of this quarter, the Well History file contained 250,432 records, providing geographical coverage for most of Oklahoma (all but the northeast part of the State). Data elements on this file include API well

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number, lease name and well number, location information, elevations, dates of significant activities for the well and formation items (e.g., formation names, completion and test data, depths and perforations). In addition to the standard Well History file processing, special projects are undertaken to add supplemental data to the file from well logs, scout tickets, and core and sample documentation.

A large portion of the Well History file work involves photocopying the completion reports for use in coding prior to data entry. The historical completion reports are checked out of the Oklahoma Geological Survey's Archive Library and copied at an average rate of about 1,500 forms per week. All new completion reports are copied as soon as they're received from the Oklahoma Corporation Commission. Completion reports for areas of the State that have already been (or are being) "worked" are entered into the processing stream immediately. All others are filed for processing at the appropriate times. Nearly 318,000 completion reports had been copied by the end of the quarter.

Processing of the Oklahoma Corporation Commission's oil and gas well completion reports (Form 1002-A) is proceeding smoothly. Presently, well records are being prescanned, keyed and edited for the following counties in north central and northeastern Oklahoma: Creek, Payne, Tulsa and Wagoner. (A four-township area in Pawnee County was also completed as part of a special project.) Nearly 26,000 well records were added to the file this quarter; thus, as of September 1992, there were 276,262 records on file. The Well History file progress is shown below by NRIS Regional Division. The current status of county coverage, and the total record counts by county, are displayed in the attached maps (Figures 1 and 2).

<u>AREA OF COVERAGE</u>	<u>START OF GRANT</u>	<u>START OF QUARTER</u>	<u>CURRENT</u>
Southeast Region:	65,712	65,820	65,945
Southwest Region:	69,453	69,785	69,916
Northeast Region:	23,467	37,228	58,558
Northwest Region:	32,507	32,543	32,697
North Central Region:	<u>40,883</u>	<u>45,056</u>	<u>49,146</u>
Total # Well Records	232,022	250,432	276,262

Both general and specialized edit procedures were continued on the well data. Search strategies are used to research well records with incorrect TRS or county location data, and well records that should be cross referenced. Oklahoma Tax Commission lease numbers are being assigned to well records through a combined machine and manual matching process between the lease and well files. This process was completed for seven more counties this quarter, bringing the total number completed to thirteen. A state-wide Lease file/Well file match was used to identify sections with significant discrepancies in the lease and well counts. The search was facilitated by cooperation from NRIS users and from Sooner Well Log Service, located in Oklahoma City, which has an extensive, well organized hardcopy collection of completion reports available for research at reasonable cost. Since the start of the grant, efforts

to locate missing 1002-A forms for areas identified through these methods has resulted in the addition of approximately 1,046 additional records to the file.

Further efforts were continued this quarter on a system for standardizing the formation names on the Well History file. This PC-based program uses a conversion table to standardize spellings, and allows the user to interactively build new entries for the conversion table as new spelling variations are encountered. As previously reported, there are over 28,500 entries in this table. In the southeast and southwest regions, over 98% of the 609,848 reported names have been standardized in this effort. Current efforts are focused on the northwest region. This formations-editing process is further enhanced by the addition of a table to determine the standard "Franklinized" abbreviation for each reported name, following the convention with which industry users are familiar.

One goal of the NRIS system involves efforts to "assign" leases and wells to fields, based on the official field outlines as designated by the Midcontinent Oil and Gas Association's Oklahoma Nomenclature Committee (ONC). Some areas exist in which significant field extension drilling has taken place, but the ONC has had insufficient resources to update the field boundaries accordingly. To assist the ONC in updating their field outlines, information packages are produced from the NRIS system for selected areas; these packages include well data listings and well spot maps. Based on this input, the Committee is first updating all gas field boundaries, and then emphasizing the oil field boundaries. Considerable progress has been made in this area, and the efforts are continuing. Overall, unassigned gas production is 13% of the annual average production, while unassigned oil production is 20%.

Special efforts were also undertaken this quarter to finalize the user and programming documentation for the NRIS system. The documentation should be completed early next quarter.

PUBLIC DATA RELEASE

Efforts have been made since early 1991 to disseminate NRIS information through meetings, workshops, OGS annual reports and mass mailings to numerous individuals, companies and organizations. As a result, a dramatic response to the release of NRIS data began last summer and has continued. Feedback from the public continues to reflect a great deal of excitement about this new resource for the oil and gas industry in Oklahoma. Data and analyses have been provided that would not have been feasible prior to construction of the NRIS system.

NRIS well data have been made available through the Oklahoma City Geological Society Library, with very positive results. The high level of interest by library members has led to the acquisition of several thousand records by several members, as well as constructive feedback on data anomalies they have detected.

Three companies now subscribe to the Well History file, and large data orders received from two other companies will likely result in additional subscriptions. Typically, small companies and independents are acquiring NRIS subsets to evaluate within their specific computer systems before committing to large data acquisitions.

The Oklahoma Geological Survey is in the process of establishing a user lab to facilitate user access to the NRIS data, initially by Survey staff and eventually by the public. A PC-level relational database management system called Advanced Revelations will be used to develop a menu-driven retrieval system customized to NRIS data. A large digitizer, large plotter and desk-top scanning equipment will enhance capabilities available through GeoGraphix software. Radian, a company that markets a contour mapping package, donated a copy of their CPS/PC software for use in the user lab; and Van Tech, Inc., the regional Radian distributor incorporated the NRIS Well History file formats within the menu system of their Master Well Manager software (much like GeoGraphix has done). Similarly, Energy Software Co., located in Midland, Texas, incorporated the NRIS file formats within their Paragon database management software.

Several mapping demonstrations were given using NRIS Well History data, including one to visitors from Russia who are interested in establishing a natural resources database for the city of Moscow, and another to visitors from India who are interested in setting up a water resources database. Additionally, an NRIS data presentation was given before the Oklahoma Mineral Owners Association whose board of directors is interested in the possibility of gaining access to NRIS lease production data.

For the Oklahoma Geological Survey (OGS), NRIS data continued to play a major role in the final development of the Oklahoma section of a Midcontinent Gas Atlas. Field and reservoir maps, well lists, and reservoir production summaries were generated for the project.

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STATUS OF WELL HISTORY DATABASE PROJECT

COUNTY 1002--A COVERAGE

COMPLETED WORK AREA
FUTURE WORK AREA
CURRENT WORK AREA

Figure 1

NORTHWEST
32697

SEPTEMBER 30, 1992

END

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