INTERNET-BASED PERMITTING OF OIL AND GAS WELLS AT THE TEXAS RAILROAD COMMISSION

Susan L. Cisco, Ph.D., CRM
Railroad Commission of Texas

Paper may soon be eliminated from the well permitting process at the Railroad Commission of Texas ("Commission") by an electronic commerce system that captures, stores, and transmits oil or gas well permitting information. With a few computer keystrokes and mouse clicks, Burlington Resources filed and the Commission approved the first drilling permit electronically through the ECAP (Electronic Compliance and Approval Process) system in a demonstration on May 11, 2000. A collaboration among the U. **S.** Department of Energy, the oil and gas industry, and the Commission, ECAP is expected to save more than $17 million annually, improve communication, and streamline regulatory processes through the use of Internet-based technologies, relational databases, document imaging, and workflow software.

THE PROBLEM WITH WELL PERMITTING

Historically, permitting an oil or gas well has been a linear, paper-based process. A paper application form is filled out and signed by an applicant. It is submitted with attachments and the applicable fee to the Commission where it is reviewed in a step-by-step process. Because the necessary steps to approve a permit application are varied and handled by several organizational units, it takes three to five days to manually process a simple application. The approved permit must then be returned to the applicant by mail. A delay of one to two days in approving a permit application can cost an operator thousands of dollars, as a permit must be posted at the drill site before drilling can begin.

In addition to proving cumbersome and time consuming, the paper-based permit application process produces redundancies as operators are asked to provide the same information more than once – operator name and address, operator number, well name, etc. Commission staff must re-key the typed or hand-written data from the paper forms into mainframe databases. After keying, the Commission retains the paper forms for 100 years.

USING TECHNOLOGY TO SOLVE THE WELL PERMITTING PROBLEM

In October 1998, Railroad Commissioners and staff met with industry representatives to develop a permitting system to increase process efficiencies and to reduce industry and Commission costs. The group of industry and Commission personnel decided to first focus on electronic processing of the more than 150,000 oil and gas compliance permit applications filed annually.

A major challenge for such an ambitious project is the diversity of the industry, which the Commission serves. In Texas, the Commission regulates nearly 9,000 active operators of all sizes, including independent and major vertically integrated companies. Also, there is daily contact with business consultants and information brokers as well as the general public and other users of drilling permit information.

Ideally, approving a permit would become a completely electronic process, from initial application through review and permit issuance. The project team grappled with many technological ideas. EDI (Electronic Data Interchange) was considered but dismissed because it did not provide a widely accessible, flexible, and low cost solution. The team also considered e-mail as the primary means for sending data back and forth, but eliminated it as the core architecture component because of transmission reliability concerns, security issues, and attachment format problems. The handling of attachments had to be firmly integrated with the application process to avoid the paper chase that would be created if paper filings had to be matched to electronic filings. The team also eliminated downloadable forms as an option because they would still create paper filings. The Internet became the obvious solution. It simply requires a computer, a web browser such as Microsoft Explorer or Netscape Navigator, an Internet connection, a scanner if needed for attachments, and no other hardware or software. This is standard equipment now available in many homes, offices, commercial copy centers, and at the Commission's district offices and Austin office.

PLANNING AND FUNDING ECAP

The Internet-based technology solution to the well permitting problem was named ECAP. Representatives from the Commission and industry groups formulated ECAP's system infrastructure through several joint application design sessions. With the help of industry representatives, the Commission received a special appropriation of **$1.4** million from the Texas Legislature. The U. **S.** Department of Energy contributed $700,000 to the project.

ECAP's initial pilot step will convert the filing, review, and approval of a well's drilling permit application (Form W-1) to a completely electronic process. The drilling permit was selected for several reasons:

The drilling permit is the first step in the regulatory life cycle of a well.
Automating the drilling permit process will require solutions to complex infrastructure problems such as security, authentication and certification requirements, electronic processing of fees, and electronic attach ments which can then be applied to other electronic processes throughout the full regulatory and compliance life cycle of wells.
There are immediate economic benefits to be gained within a reasonably short period **of** time.

The drilling permit application pilot project will be implemented in three phases. The first phase will provide the infrastructure that will allow the electronic filing and approval of basic applications, associated fees, and attachments. The next two phases expand the technological infrastructure to enable a more comprehensive electronic permit application process and an electronic repository for record keeping purposes. The end result will be a completely automated and streamlined workflow solution to the drilling permits application process with modules in place to accommodate future project steps.

TECHNOLOGY TOOLS

Conversion of the manual process of permitting an oil or gas well to a completely electronic process requires solutions to a large number of complex issues such as capturing the information submitted with an application, including plats and form attachments; payment of fees; security and authentication of the electronic transactions; database interactions; routing for review and internal workflow; electronic approval of the permit; and convenient data access in an electronic format. The solutions are being developed in-house with contract assistance. The technology tools include an Oraclea relational database, Web Objectsä as the application development environment, Javaä as the web programming language, and Legacy Objectsa to link necessary mainframe data in a legacy IMSa database to the Oraclea database. In future phases, ECAP will include workflow software, bridging software to automate the links between the Oraclea and IMSa databases, and integration with the Commission's ESRI ARC/INFOä geographic information system (GIS).

The security mechanism includes authentication against a directory service. X.500 is the Internet standard that provides a global electronic directory of people and organizations that is available to anyone in the world with Internet access. For the ECAP project, directory services will be integrated into the application to allow individuals to have complete control over who submits information on their personal or company account through the assignment of user identification codes (user IDs) and passwords. This same framework will also handle the digital certificates and digital signatures necessary for automating other Commission forms in the future. For security reasons, the user ID, password, and credit card information will be encrypted as they travel through the ECAP system.

To file permit applications electronically, an operator needs a personal computer (PC), standard web browser, Internet connection, and an image scanner for plats. Each of the nine Commission Oil and Gas Division district offices and the Austin office will have the necessary equipment available for electronic filings.

HOW TO APPLY FOR WELL PERMITS ELECTRONICALLY

Before filing electronically, an operator must be authorized by completing a hard copy Master Electronic Filing Agreement (MEFA). Both Commission and operator representatives must sign the agreement. The signature of the operator's authorized representative on the agreement shall be deemed to appear on all electronically filed forms as if it actually appeared. The MEFA establishes the terms of agreement **for** electronic filing for up to ten years but can be canceled upon notice by either the operator or the Commission.

A security administrator form must be attached to the MEFA and is used to identify up to nine security administrators for the company. The security administrator will have complete control over who within the company receives authorization to file electronically. Once the Commission approves the MEFA, the Security administrator will be notified of his or her assigned user ID. The security administrator can then distribute the ability for other company personnel to

file electronically by assigning additional user IDs to employees within the company and designating which forms they are authorized to file electronically through ECAP. The security administrator does this through entries in the X.500 directory.

Logging on to ECAP via the Internet requires a user ID and a password. An initial user ID and password are issued to the operator's authorized representative upon approval of the MEFA. The authorized representative will then be able to further distribute security access to ECAP by assigning additional user IDs and passwords as needed.

ECAP uses a tab format to lead the filer through the drilling permit application process. The filer clicks on the "General Info" tab to enter data about the lease, including the county, well number and location information. Next, the filer enters information about the oil or gas field such as field number or name, well type, and completion depth. After all fields are entered, the tiler is asked to verify that what was entered is correct and provide remarks if necessary. Commission rules require that all drilling permit applications include a scaled plat of the lease with the well spotted. Therefore, the tiler must attach a scanned image of the plan. Fees are automatically calculated and must be paid using a Visa or MasterCard credit card. Once the ECAP filer verifies the completed submission, he/she submits it. Receipt of the submission by the Commission will be immediately acknowledged with an electronic message. At any time, the ECAP filer can check on the status of the submitted application by logging back on to ECAP. Approval of electronically filed permit information will result in a reduction of two to four days in processing time that is currently required to approve an application submitted on paper.

PROCESS IMPROVEMENTS AND BENEFITS

The pilot ECAP system encompasses the entire process of applying for and receiving an approved permit to drill an oil or gas well and provides an interactive exchange of information that will be far more efficient than the current paper process. Information will be captured in electronic format, eliminating the need to re-key data. This reduces opportunities for error in data re-entry and accelerates issuance of the permit.

Industry representatives forecast a savings of up to $200 per permit and valuable time from electronic filing of the drilling permit applications in the pilot project. With the implementation of ECAP, ongoing benefits to the Commission and realized efficiencies will allow internal resources to be refocused on more qualitative issues and concerns. In addition, ECAP will increase public access to valuable data because electronic transactions will be available on the Commission web site 24 hours a day, 7 days a week.

Resources expended on developing the pilot ECAP system will provide the necessary framework for expansion to other electronic application processes and pave the way to a more efficient regulatory environment for Texas. The full economic benefit of electronic permitting and report processing via the Internet could reach more than $17 million annually based on 25% utilization by oil and gas operators. By sharing its experiences and successes, Texas can become a model for other state and federal regulatory agencies.

PLANS FOR THE FUTURE

ECAP Phase Two expands the core system to include more complex drilling permits, additional attachments, and reporting. Phase Three completes the development of the pilot project and includes integration with existing GIS and mainframe computer systems. ECAP is creating the foundation for process improvement in the entire regulatory life cycle of oil and gas wells in Texas.

DISCLAIMER

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