

- A national data repository can facilitate the administration and implementation of regulation in the oil and gas industry.
- In the UK the DTI's regulatory systems are enabled via the UK Oil Portal.
- The DTI has made appropriate development software freely available to others.

## Super store

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The effective regulation and efficient operational management of an oilfield is a complex, multi-faceted task that can be accomplished more easily by establishing a national data repository, writes **Stewart Robinson** of the UK's DTI.

REGULATORS OF OIL PROVINCES ALL SHARE THE SAME OVERALL GOALS OF EXPLOITING their oil province fully and maximising oil revenue. A common set of requirements support these goals:

- The development of administrative IT systems to regulate the oil industry
- The establishment of a national data repository (NDR)
- The simplification of all the processes that link the NDR to administrative processes.
- The release of high-quality data

The minimum set of administrative functions required includes:

- The maintenance of licensing concessions data
- A basic permitting system for seismic operations, and well and drilling operations
- Notification of well numbers
- Production reporting
- Well completions data
- Support for environmental regulation

The regulator will need to decide how much data is to be collected, and that will depend on the nature of the regulatory regime to be applied. In the UK experience has shown that a light regulatory regime and close collaboration within the oil industry works very well. In other countries a different approach is used. Whichever route is chosen, it is likely that regulatory functions will be similar in different countries and the metadata describing entities will be the same. What will change will be the detailed data requirements and possibly the internal administrative processes.

**Oil companies use the UK Oil Portal for requesting consents for oil and gas operations in the North Sea.**

### Establishing an NDR

In many oil provinces the storage of bulk data, such as well logs and seismic information, is now delegated to an NDR. In establishing an NDR, the first decision that needs to be made is what type of NDR will be created. The options include a system where everything is in

### REGISTRY CASE STUDY – PRODUCED WATER TRADING REGULATION

The Offshore Petroleum Activities (oil pollution, prevention and control) Regulations 2005 authorised a scheme that commits operators to controlling produced water discharges. The scheme allowed operators to trade discharges of dispersed oil in produced water to achieve compliance. The DTI will establish and maintain a registry that will record the allowances allocated to qualifying installations on the UK continental shelf as well as record completed transfers and trades. The registry will also support the adjustment and surrender of allowances, and be used at the end of each year to reconcile installation accounts.

A secure, online system from the UK Oil Portal is required to support produced water trading (PWT). This system will support three discrete sets of users: administrators of the system at the DTI, coordinators nominated by the operators and third-party users (including traders) nominated by the coordinators. It will support business processes for:

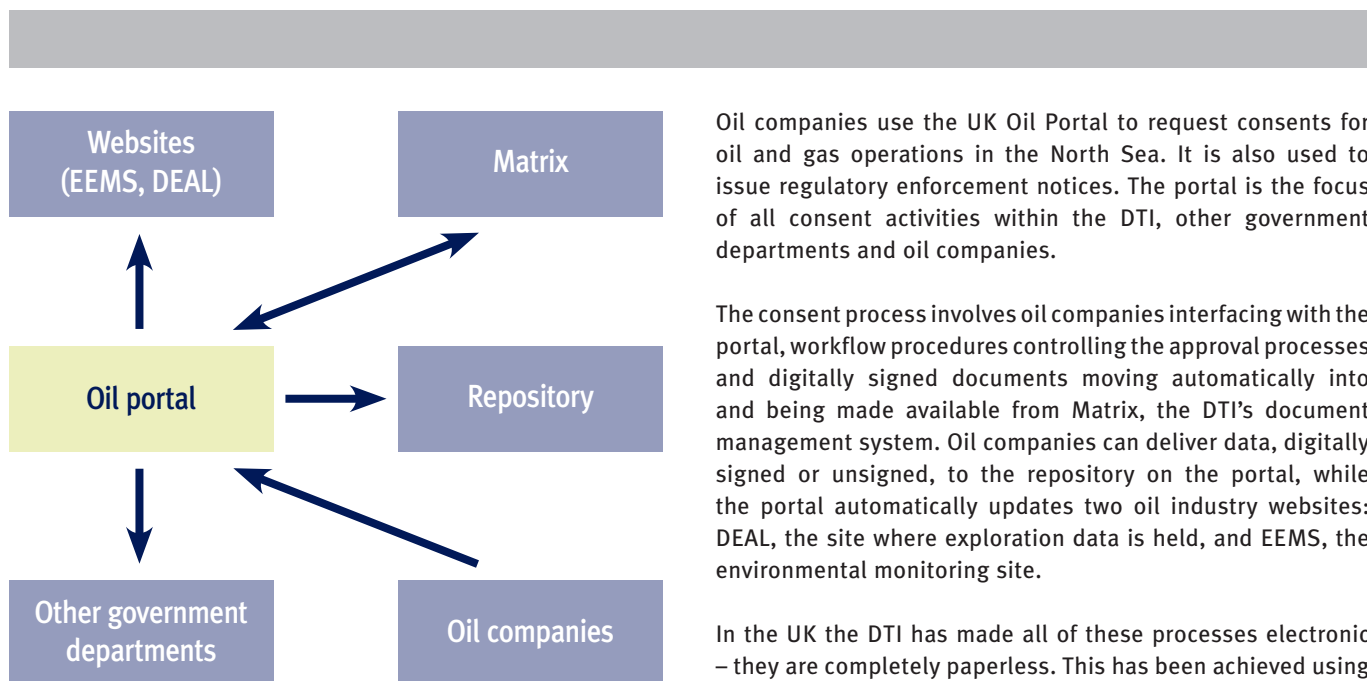
- Allowance allocation (including supplementary allocations)
- Account management
- Allowance transfer, trading and reconciliation
- Allowance reallocation and withdrawal
- Annual returns and the surrender of allowances
- DTI-imposed penalties

The monthly and annual dispersed oil in produced water discharge returns will be submitted via EEMS in the normal manner. A separate verified annual return must be submitted by the end of April in the succeeding year, to facilitate the surrender of allowances equivalent to discharges. The verified annual return for each qualifying installation must be submitted to the appropriate installation account by the PWT coordinator as a digitally signed pdf file.

The DTI will be responsible for recording the discharge quantity in the registry and for checking that the allowances in the installation account (the surrendered allowances) are equivalent to the discharge.

one place or a 'virtual' system with a catalogue and links to data. A tender can then be sent out to suppliers. The next step is to decide which data sets to store in the NDR. Popular data sets are well logs and seismic data, but it is also worthwhile considering cultural data, maps and geology, as well as structural data on pipelines and platforms, and possibly environmental data. For each data set, definitions must be established covering who owns it, who is entitled to view it and who is responsible for making sure it is correct.

Selecting a supplier and setting up the NDR is not a major problem; the difficulty comes when the data is released. For the



The UK Oil Portal is central to the consent process for the North Sea.

data to be useful, users must have confidence in its accuracy. Ensuring this quality requires sound business processes and data quality standards. These can be put in place by implementing an active regulatory regime and using professional data release agents. The web will play an important role in the distribution of accurate data, as will digital exchange standards for moving data around the web.

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**Active UK regulation**

All of the UK DTI’s regulatory systems will be web enabled, via the UK Oil Portal, by March 2008 – most of them already are. These include systems for:

- The issuing of exploration and development licences
- The issuing of seismic consents
- The issuing of drilling consents
- The issuing of production consents, for production and flaring, for example
- The issuing of pipeline consents
- The monitoring of well operations – workovers, abandonments and such
- The monitoring of oil and gas production
- The monitoring of field operations, annual field reports and such
- The issuing of environmental permits
- The monitoring of environmental incidents, such as oil spills
- The managing of the decommissioning process for platforms and pipelines

Oil companies use the UK Oil Portal to request consents for oil and gas operations in the North Sea. It is also used to issue regulatory enforcement notices. The portal is the focus of all consent activities within the DTI, other government departments and oil companies.

The consent process involves oil companies interfacing with the portal, workflow procedures controlling the approval processes and digitally signed documents moving automatically into and being made available from Matrix, the DTI’s document management system. Oil companies can deliver data, digitally signed or unsigned, to the repository on the portal, while the portal automatically updates two oil industry websites: DEAL, the site where exploration data is held, and EEMS, the environmental monitoring site.

In the UK the DTI has made all of these processes electronic – they are completely paperless. This has been achieved using digital certificates and a set of standards for digital signatures in the oil industry. The systems can handle transactions in more than one channel, so although the preferred route is electronic, a parallel paper route could also be used easily.

**Linking the NDR**

The portal is linked to the NDR (DEAL) via a web-enabled service, but if a government or national oil company hosted both the NDR and the regulatory systems at the same site, this link would be much easier to implement. Key business processes that make government procedures efficient and could be easily linked to the NDR include:

- Well numbering
- Notification when wells are spudded, abandoned or completed
- Notification when well or concession ownership changes
- The whole well completion process – catalogues of well logs
- Annual field returns and production against consents

**Software resource**

The DTI has a set of components that builds these systems very quickly. These components are generically called FOX. In line with UK government IT policy, FOX is freely available as open source software (at [www.foxopen.com](http://www.foxopen.com)).

The DTI uses a rapid development methodology for creating applications, based around building prototypes and iterating towards solutions. This makes it difficult to predict how long it will take to build a given application, but the DTI believes its technology and rapid development methodology delivers systems significantly quicker and more cost-effectively than traditional methods. ●

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