

FieldDIRECT Value Study
With O&G Company

Fall 2002

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INTRODUCTION

In the fall of 2002, IHS Energy personnel worked closely with one of our clients to conduct an in-depth analysis around its implementation of the FieldDIRECT® services. The objective was to quantify the impact the FieldDIRECT service had on the company's operations. The result is the following detailed Value Study. While our client continues to be very satisfied with the service and this value study findings, due to internal considerations, they declined to allow us to publish their name in association with this study.

The results of this study are quite impressive so extra attention was given to list all details and calculations.

IHS Energy is confident in the results of this study and believes it accurately represents the value of the FieldDIRECT service to this company.

We are currently seeking other clients that would be interested in having this type of evaluation conducted based on their experiences with FieldDIRECT and other IHS Energy products and services. If you feel your company would benefit from this type of analysis, and the approval to publish the findings is given, please contact your IHS Energy sales representative.

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EXECUTIVE SUMMARY

The results of the IHS Energy study with an O&G Company (O&GC) quantifying the benefits of digital data collection and FieldDIRECT produced impressive results for O&GC, its shareholders and the service. A combination of decreased staff, prevented equipment costs, increased time and resources efficiencies and increased oil and gas production yielded a net benefit to O&GC of \$103,663 monthly distributed as follows:

Direct Savings (reduced headcount)	\$ 11,967
Indirect Savings (time, resources)	10,961
Production Increase (5% per O&GC)	84,170
Cost of FieldDIRECT	(3,435)
Total Monthly Net Benefit to O&GC	\$ 103,663

This number is quite large and it should be noted that extra time and care was taken to ensure this number is as correct as possible and based on available data (not assumptions) and the input provided. Additionally, this number does not include the known, but as of yet unquantified, savings from correctly estimating production and reducing penalties in the gas nomination process.

Overall, FieldDIRECT has produced outstanding benefits to O&GC in cost savings and in increased revenues from increased production. The supporting data and details of the calculations are shown throughout this study.

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DATA

Salary Data

Based on data from salary.com as well as local knowledge the average salaries used for this study are listed in Table 1.

Table 1 Salary Data

Position	Annual Base Salary	Annual Salary including Benefits (25% addition)	Estimated Hourly Salary
Engineer	\$ 100,000	\$ 125,000	\$ 60.10
Production Analyst/Regulatory Analyst/Production Accountant	\$ 45,000	\$ 56,250	\$ 27.04
Field Superintendent	\$ 65,000	\$ 81,250	\$ 39.06
Pumper	\$ 45,000	\$ 56,250	\$ 27.04
DBA or Programmer	\$ 100,000	\$ 125,000	\$ 60.10

PRICING AND PRODUCTION DATA

Commodity Pricing

NYMEX contract pricing data provided by O&GC on 9/26/02 was \$30.24/bbl for oil and \$3.56/MMBtu for natural gas. These values represent a premium considering world oil market uncertainty so more conservative values of \$25.00/bbl and \$3.00/MMBtu were used for oil and gas pricing data respectively in this analysis. These contract prices however, do not include the cost of gathering and transporting the oil or gas. From sources that are familiar with these costs, the average oil gathering and transporting costs across the nation were stated to be between \$7.00 – 8.00 per barrel. For this study, the average of \$7.50 per barrel was used. Gas transportation costs are known to average \$0.40 per mcf (or per MMBtu) so that figure was used for gas transportation costs. An O&GC engineer stated that O&GC's water-hauling costs could be estimated at \$1.00/bbl so this value was used in water production calculations.

Average Production Calculations

O&GC production data from FieldDIRECT was averaged over six months, from April to September 2002. April was chosen because of a divestiture in March 2002

so April 2002 provided the first full month of production without interference in the data from this divestiture.

Revenue Interest Calculations

As in nearly all oil and gas companies, the revenue interest in O&GC properties is not 100%. O&GC's Annual Report (Form 10-K) shows the gross and net ratios for oil and gas for O&GC's properties. As shown in Table 2, the revenue calculations for this study used the net production value divided by the gross production value. An assumption was made that royalty interests were 20% and that taxes were 5%. The net/gross ratio was then multiplied by 80% then 95% to account for these royalties and taxes. This yielded 71% revenue interest for oil and 46% revenue interest for gas. O&GC's working interest for water costs were calculated as the net oil production/gross oil production yielding 93%.

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Table 2 Pricing and Production Data

		Gathering and Transportation Costs	Gross Sales Less Transportation Costs
Average Sales Price of Oil (per bbl.)	\$ 25.00	\$ 7.50	\$ 17.50
Average Sales Price of Gas (per MMBtu with 1MMbtu per mcf)	\$ 3.00	\$ 0.40	\$ 2.60
Average Water Hauling Costs (per bbl)	\$ 1.00		
Average Monthly Oil Production (bbls) April – Sept 2002	79,004		
Average Monthly Gas Production (mcf) April – Sept 2002	987,492		
Average Monthly Water Production (bbls) April – Sept 2002	500,897		
Estimated Revenue Interest in Oil Production [(Net/Gross Oil Production from 2001 Form 10-K) * 80% revenue - 5% for taxes]	71%		
Estimated Revenue Interest in Gas Production [(Net/Gross Gas Production from 2001 Form 10-K) * 80% revenue - 5% for taxes]	46%		
Estimated Working Interest for Water Production [used Net/Gross Oil Production from 2001 Form 10-K]	93%		

Production Changes

In the course of the interviews with two O&GC employees, increased production was identified as a result of implementing FieldDIRECT. The Engineer noted that he believed production increased at least 5% with FieldDIRECT because of the availability of timely information and immediately identifying when a well needs attention or fixing. This number had the potential for large impact on this study so it was deemed prudent to gain verification. In interviewing the Field Production Superintendent, he also mentioned he felt that production had increased through the availability of timely information because they could start to see trends and identify problems BEFORE they occurred. In trying to quantify this increase, the superintendent was asked if he felt 5% was correct. His response was that 5% was easily the production increase. He also speculated that

production increases could potentially be even higher for companies that adopted digital data collection that previously did not enjoy good communications between pumpers and field superintendents. A 5% increase in production is remarkable yet understandable given the increased attention to the properties and improved communication between the staff members who can increase the production. Using the 5% increase in production yielded much of the benefit to O&GC so an alternate method of verifying this data was used to make every attempt to ensure this data was correct. Using monthly production data for O&GC from 1997 to 2000 (before any digital data collection) the oil, gas and water decline rates were calculated in IHS Energy's PowerTools® using the computer-generated best-fit decline rate for the given time period. To determine the decline rate after digital data collection, daily production

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Table 3
 Estimated Change in Production

Estimated Monthly Production Change	Data Collected in Interviews and Used in Calculations	Before Digital Data Collection Decline (1997-2000) Used for Verification, Not in Calculations	Decline After Digital Data Collection Using FieldDIRECT. Used for Verification, Not in Calculations.
Oil Production Increase	5.00%	15.18%	9.40%
Gas Production Increase	5.00%	10.28%	1.96%
Water Production Increase [- Decrease]	5.00%	- 5.32%	-12.89%

values from FieldDIRECT were imported into PowerTools for April – September 2002. (Again, April was picked as the starting point because of a divestiture in March 2002.) Then PowerTools generated the best-fit decline and the decline rate was calculated (shown in Table 3).

The difference in the pre-digital data collection (1997–2000) and post-digital data collection (April–September 2002) rates was then calculated to be a 9.40% production increase in oil, a 1.96% production increase in gas and a decrease in water production of 12.89%.

Taking the average monthly production data shown in Table 2, and converting the oil to an equivalent volume of gas (mcf) with a factor of 6 mcfe/bbl as

used in O&GC's annual report and as shown in Table 4, oil represents 32% of production and gas represents 68% of production for O&GC. These percentages, when applied to the oil and gas production changes from decline curves in Table 3, yield a weighted contribution production increase of 4.37%. This is exceptionally close to the estimated 5% increase in production given by the Engineer and Field Superintendent.

It is expected and understandable that this section on determining production increases will gain the most scrutiny so extra care has been taken to show in detail how the calculations were made and provide alternate methods to verify the results.

Table 4
 Weighted Average of Production Increase Using Decline Curves

	Average Production	Mcf (6 mcfe/bbl)	Percent of O&GC's Production	Percent Increase in Production from Decline Curve Data	Weighted Contribution of Production Increase
Average Monthly Oil Production (bbls) April – Sept 2002	79,004	474,023	32%	9.40%	3.05%
Average Monthly Gas Production (mcf) April – Sept 2002	987,492	987,492	68%	1.96%	1.32%
Totals		1,461,515	100%		4.37%

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CALCULATIONS

COST SAVINGS

Direct Savings

The largest part of reduced direct savings came from the reduction in head count of two production assistants. This reduction was possible because of increased efficiencies and the time previously spent re-entering production data was minimized. Additional savings is seen in having FieldDIRECT hosted at IHS Energy and having the database maintained and managed by an outside service. This prevents the spending for a database analyst (DBA) or programmer and security expert along with hardware savings of a server (\$15,000 – \$20,000) and server software upgrades. Direct cost savings total \$11,967 per month as shown in Table 5.

Indirect Savings

Indirect savings are classified here as time-savings for employees to accomplish similar or improved tasks in a shorter time frame. The data collected is shown in Table 6 and includes eliminating two tasks previously done by the Production Accountant. First, she now saves a half day a month in not needing to research production and one and a half days a month by not adding or adjusting tank strapping measurements. Additionally, the Production Accountant saves a total of a day a month by not contacting the Field Superintendent about not receiving production data. This saves time for the Production Accountant and the Field Superintendent. The Engineer and Field Superintendent also save time using FieldDIRECT. The Engineer estimates he saves a half a day a week since he no longer needs to look for production data. This does not only impact the engineer interviewed.

Table 5
 Direct Cost Savings

Category	Positions Affected	Number of Similar Positions in Company	Number of Hours Saved per Month, if Applicable	Estimated Monthly Cost Savings
Reduced staff by 2 production assistants.	Production Assistant	2	172	\$ 9,303
Because the application and data are hosted on IHS servers:				
No need for a DBA/Programmer for database maintenance [2-3 hours a week].	IT	1	9	\$ 541
No need to purchase server with cost of \$15,000 – 20,000. [Estimated a 4-year replacement cycle. \$17,500/48 months]	IT			\$ 365
No need for server upgrades.	IT	1	5	\$ 300
No need for security expert for web-based interface [\$15,000 – \$20,000/year]. [\$17,500/12 months]	IT	1		\$ 1,458
Direct Savings Monthly Subtotal				\$ 11,967

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As was presented, there are two Engineers and one Superintendent who works as a field engineer who all look at production daily. All three of these individuals save time in this manner and thus better utilize O&GC's employee resources.

Using FieldDIRECT as a communication tool for production data has also reduced the "phone tag" between office Engineers and the Field Superintendents around 20 minutes a day each.

The pumpers also see benefits in time-savings. Their paperwork processing time has been reduced from one hour a day to half that time. The month-end close process has been reduced from 6-7 hours to half an hour. This time-savings is great for contract pumpers but only really financially impacts the company for pumpers who are employees. Of the 27 pumpers working for O&GC, 10 of these are employees. Therefore, the cost savings here were only applied to the employee pumpers.

Table 6
 Indirect Cost Savings

Category	Positions Affected	Number of Similar Positions in Company	Number of Hours Saved per Month, if Applicable	Estimated Monthly Cost Savings
Reduced time checking production by 1/2 day per month.	Production Accounting	1	4	\$ 108
Reduced time for new tank strappings by 1-1/2 days per month.	Production Accounting	1	12	\$ 325
Decreased time making phone calls to check or receive production data by a day per month.	Production Accounting	1	8	\$ 216
	Field Superintendent	1	8	\$ 313
Reduced time looking for current data by a half day a week.	Engineering	2	18	\$ 2,163
	Field Superintendent	1	18	\$ 703
Reduced time tracking down superintendent to ask about production [20 minutes per day].	Engineering	2	7.3	\$ 881
	Field Superintendent	2	7.3	\$ 573
Pumpers' paperwork cut by half from 1 hour to 1/2 hour a day. 10 pumpers were company employees vs. contract.	Pumper	10	15	\$ 4,056
Pumpers' paperwork for month-end close reduced from 6-7 hours to 30 minutes. 10 pumpers were company employees vs. contract.	Pumper	10	6	\$ 1,623
Indirect Savings Monthly Subtotal				\$ 10,961

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**Production/Sales/Revenue
 Increases**

The production, sales and revenue changes attributable to FieldDIRECT are straightforward given the production data available, the estimated production increases, the more conservative sales pricing data, and the data available in O&GC's annual report with standard estimates to convert working interest to net revenue interest. While it is clear in the calculations, it is worth noting that the assumption was made that if production

of oil and gas increased by 5% that water production would also increase. While there is the potential for water production to not increase by the same percentage, the more conservative approach was used and a 5% increase in water production and thus higher water hauling costs were factored in. Revenue calculations are detailed in Table 7 and yield a \$125,446 monthly benefit to O&GC.

Table 7
 Revenue Calculations

	Oil (bbl)	Gas (mcf)	Water (bbl)	Average Monthly Increase in Sales
Average April – September 2002 Monthly Production	79,004	987,492	500,897	
Increase (decrease) in monthly production from:	3,950	49,375	25,045	
Downtime cut by half. Saves 3–4 days by communicating volumes in production graphs where it is easier to spot trends.				
Can see problems BEFORE they occur.				
Increased Sales [increased production * sales prices or water hauling costs].	\$ 98,755	\$ 172,811	\$ 25,045	
Net Increased Revenue to O&GC [including Working Interest, NRI and Taxes]	\$ 70,093	\$ 78,743	\$ 23,390	\$ 125,446
Monthly Revenue Increases Subtotal				\$ 125,446

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Non-Quantifiable Benefits

In the search for quantifiable benefits to digital data collection and FieldDIRECT there were a few benefits identified where quantification was not easily accomplished. These include:

- Data entry reduced from five times to one. This can only reduce the number of data entry errors made.
- The quality of the phone calls between the engineer and production superintendent has improved greatly. There has been little change in the quantity and potentially even a slight increase in phone calls, however conversations now revolve around solving problems with the wells not just answering production questions.
- People have begun seeing what other possibilities are available and begun thinking “outside the box” in other areas of the business.
- Production data is now seen the day after it is collected instead of up to 40 days afterwards with 31-day gauge sheets. This also allows for a more timely month-end close. The books are now being closed within the first 4 or 5 working days of the month and not nearly a month later.
- Checks and balances are in place because individuals can see production data from the sales invoice, the pumpers and the check meter.

- Increased communication of field and well activities by utilizing the Notes section of FieldDIRECT.
- A good client/vendor working relationship. Great support and training in the field was especially noted, as was IHS Energy's ability to incorporate enhancements into the application. It is worth mentioning that these comments were volunteered by the field personnel interviewed and not asked for or even discussed in the normal line of questioning during the interviews.

Savings Not Directly Attributable to FieldDIRECT

In addition to the cost savings and production increases attributable to digital data collection and FieldDIRECT, additional changes have been made to the process of transferring data from the production system into O&GC's accounting system, Excalibur™. This change entailed developing a bridge for production data from FieldDIRECT into Excalibur using an EDI Shield. This reduced the data transfer process from three days to five hours a month and eliminated another data entry opportunity for error. The data is shown in Table 8 and is NOT included in the total benefit calculations because this is an ancillary benefit that O&GC has done separately from FieldDIRECT.

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Table 8 Excalibur Import Benefits

Category	Positions Affected	Number of Similar Positions in Company	Number of Hours Saved per Month	Estimated Monthly Cost Savings
Using EDI Shield to transfer data into Excalibur reduces data entry from 3 days to 5 hours a month	Production Accounting	1	19	\$ 514

Cost of FieldDIRECT
Hardware and Software

FieldDIRECT is priced as a service on a “per well, per month” basis. In the fall of 2002, O&GC had 306 wells on subscription to this service. The service utilizes handheld technology that is an additional cost to the clients. Assuming a 3-year

replacement cycle for the handheld equipment for the 27 pumpers and the cost per well per month of \$10, the total prorated monthly cost for FieldDIRECT is \$3,435 as shown in Table 9.

Table 9 FieldDIRECT Cost

Category	Number of O&GC wells in FieldDIRECT	Cost of FieldDIRECT \$/well/month	Total Cost per month
FieldDIRECT Service	306	\$ 10.00	\$ 3,060
FieldDIRECT Hardware [Hand-held costs]. 27 Pumpers with average hand-held costing \$500. Assumed a 3-year replacement cycle. [27 pumpers * \$500 per handheld / 36 months]			375
Monthly Cost Subtotal			\$ 3,435

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CONCLUSIONS

Benefits to O&GC in Using FieldDIRECT

The benefits of using FieldDIRECT's digital data collection for O&GC are impressive with a net benefit of \$103,663 a month. Table 10 summarizes this data. As has been detailed, most of the benefit is from increased production and therefore revenue. This increased production data, it is expected, will gain additional attention and review. Therefore, an alternate method using the changing production decline rates was used to confirm the data that was provided by the O&GC staff.

In addition to the production increase, there was significant process change and time-savings noted by the O&GC staff. The most notable is that the engineer and field superintendent are communicating about solving and preventing problems on wells and no longer simply calling to confirm or retrieve production data. And, since data entry of production data has been reduced from five times to once, headcount changes were possible and two production assistant positions were eliminated. This increased productivity will only assist O&GC and its shareholders.

For more information about how **FieldDIRECT** services from IHS Energy can help your organization get daily production data from the field to the office quickly and cost-efficiently, call **1.800.527.7756 ext. 577**, e-mail sales@fielddirect.com or visit www.ihsenergy.com/products/fielddirect.

Table 10 Totals

	Total Decreased Costs and Increased Production/Revenue	
Total Decreased Direct and Indirect Costs	\$	22,928
Total Increased Revenue	\$	84,170
Total Costs	\$	(3,435)
Net Benefit per Month to O&GC	\$	103,663

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