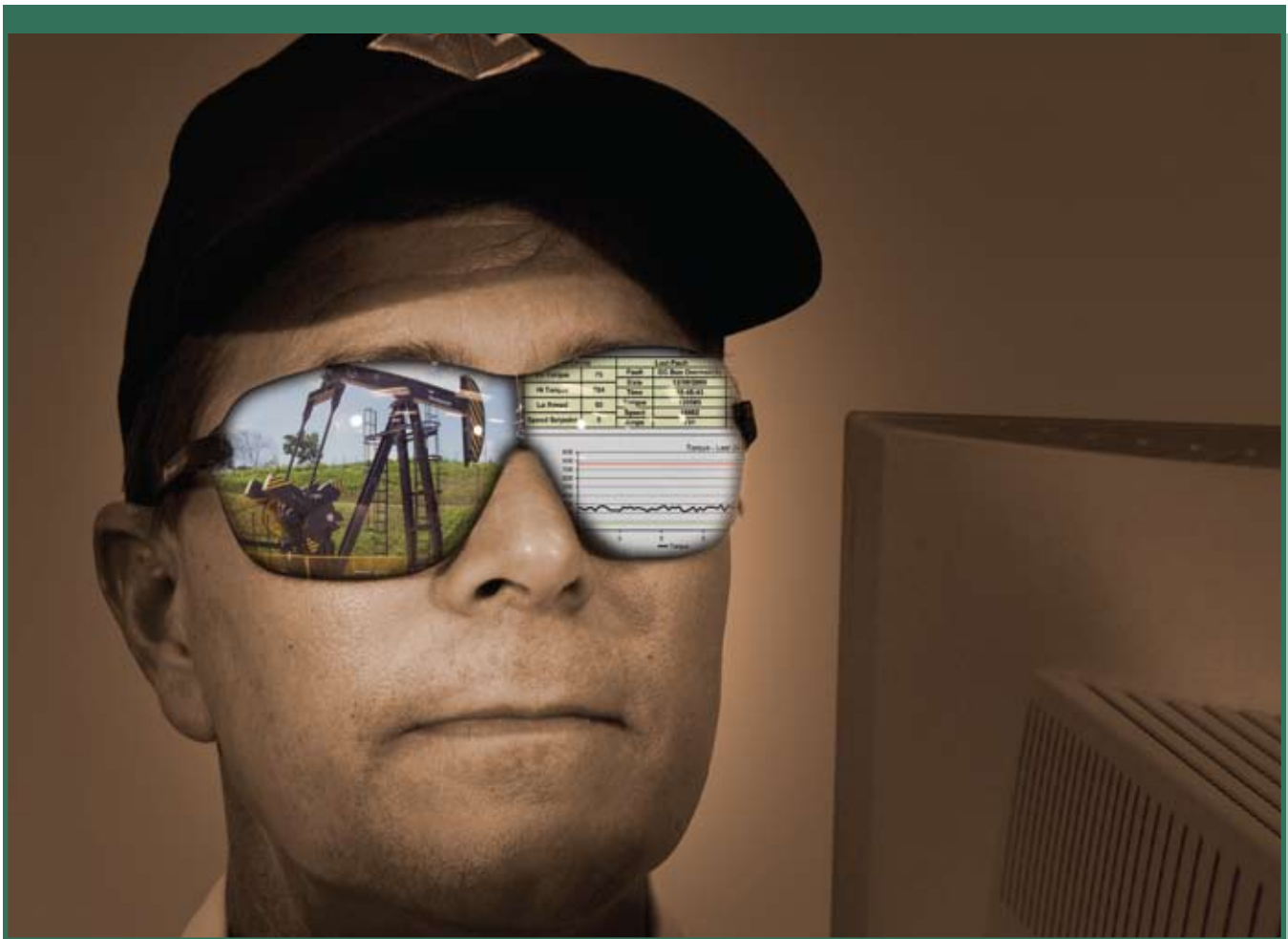




Weatherford[®]

LiftAdvisorSM

Simplified Well Surveillance and Analysis



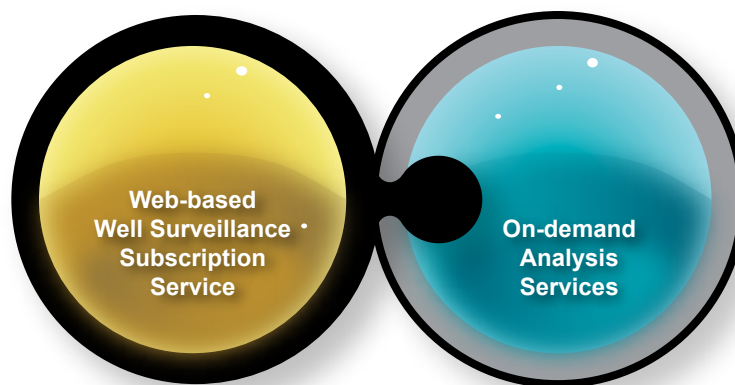
LiftAdvisor Service

For years, Weatherford's Production Optimization unit has been developing the award winning **LOWIS™** software for analyzing artificially lifted wells and has completed over 100,000 well installations. In addition to software, Weatherford has industry leading hardware controllers and personnel with decades of experience. *LiftAdvisor* service uses their experience and know-how to provide a state-of-the-art surveillance and analysis service.



LiftAdvisor service supplies operators with web-based well status, detailed reports, and an experienced analyst's evaluation with recommendations for well operation improvements for both rod-pumped and progressing cavity pump (PCP) wells. With *LiftAdvisor* service, operators of all sizes can benefit from concise daily and monthly well reporting in addition to field-proven analysis services. This cost-effective service is scalable so you choose how sophisticated your system becomes.

LiftAdvisor Service



Current Well Status
Well Snapshot Report
Monthly Report

Controller Tuning
Standard Analysis Report
Detailed Analysis Report
Dedicated Analyst

Web-Based Rod-Pumped Well Surveillance

Too much data can be as bad as not enough data if you do not have the software application and the available personnel to efficiently organize and properly analyze the data. Working with multiple customers using our software solutions, we have found that there are two main modes of operation; status and analysis. While a main advantage of the service is analysis—we recognize that a majority of the time users are interested in the status of their wells. Our web-based well surveillance is designed to fit that need. Your own web page provides the following information:

Current Well Status—Displays current alarms, along with yesterday and today's runtime, number of cycles, and inferred production results. This information is updated every hour and can be accessed anywhere there is an Internet connection. Our status screen is color coded allowing quick identification of wells in alarm.

Well Snapshot Report—This report includes surface and downhole dynamometer cards, current rod pump controller (RPC) set-points, cycle times, and the last seven days of runtime compared to normal operation. Every morning you can view and/or download this report from the website.

Monthly Report—On the first day of every month you can download a file containing the runtime, number of cycles, and inferred production for each individual day of the previous month. This allows you to trend, manipulate, and archive the monthly data.

LiftAdvisor Service Advantages

- Web-based well status
- Quick deployment
- Experienced well analysts available
- Advanced wellsite hardware
- Simplified communication
- No capital investment
- Scalable solution

Well Name	Scan Time	Alarm/Status Message	Host Mode	RPC Mode	Base Pump	Yesterday Bas	Yesterday Cycles	Today Bas	Today Cycles	Today Inferred Production	Yesterday Inferred Production	Comment	Out of Service Comment
Well 10-10	04/04	OK unknown, no problems	OK	Normal	24.00	0.00	0	0.00	0	0	0	Working	OK
Well 10-11	04/04	RPC control fail	RPC	Fail	1.20	0.00	0	0.00	0	0	0	Out of Service	RPC
Well 10-12	04/04	OK no well monitor	OK	Normal	24.00	0.00	0	0.00	0	0	0	Working	OK
Well 10-13	04/04	OK no well monitor	OK	Normal	24.00	0.00	0	0.00	0	0	0	Working	OK
Well 10-14	04/04	OK no well monitor	OK	Normal	24.00	0.00	0	0.00	0	0	0	Working	OK
Well 10-15	04/04	OK no well monitor	OK	Normal	24.00	0.00	0	0.00	0	0	0	Working	OK
Well 10-16	04/04	OK no well monitor	OK	Normal	24.00	0.00	0	0.00	0	0	0	Working	OK
Well 10-17	04/04	OK no well monitor	OK	Normal	24.00	0.00	0	0.00	0	0	0	Working	OK
Well 10-18	04/04	OK no well monitor	OK	Normal	24.00	0.00	0	0.00	0	0	0	Working	OK
Well 10-19	04/04	OK no well monitor	OK	Normal	24.00	0.00	0	0.00	0	0	0	Working	OK
Well 10-20	04/04	OK no well monitor	OK	Normal	24.00	0.00	0	0.00	0	0	0	Working	OK
Well 10-21	04/04	OK no well monitor	OK	Normal	24.00	0.00	0	0.00	0	0	0	Working	OK
Well 10-22	04/04	OK no well monitor	OK	Normal	24.00	0.00	0	0.00	0	0	0	Working	OK
Well 10-23	04/04	OK no well monitor	OK	Normal	24.00	0.00	0	0.00	0	0	0	Working	OK
Well 10-24	04/04	OK no well monitor	OK	Normal	24.00	0.00	0	0.00	0	0	0	Working	OK
Well 10-25	04/04	OK no well monitor	OK	Normal	24.00	0.00	0	0.00	0	0	0	Working	OK
Well 10-26	04/04	OK no well monitor	OK	Normal	24.00	0.00	0	0.00	0	0	0	Working	OK
Well 10-27	04/04	OK no well monitor	OK	Normal	24.00	0.00	0	0.00	0	0	0	Working	OK
Well 10-28	04/04	OK no well monitor	OK	Normal	24.00	0.00	0	0.00	0	0	0	Working	OK
Well 10-29	04/04	OK no well monitor	OK	Normal	24.00	0.00	0	0.00	0	0	0	Working	OK
Well 10-30	04/04	OK no well monitor	OK	Normal	24.00	0.00	0	0.00	0	0	0	Working	OK
Well 10-31	04/04	OK no well monitor	OK	Normal	24.00	0.00	0	0.00	0	0	0	Working	OK

Real-time well surveillance example.

Well Snapshot Report

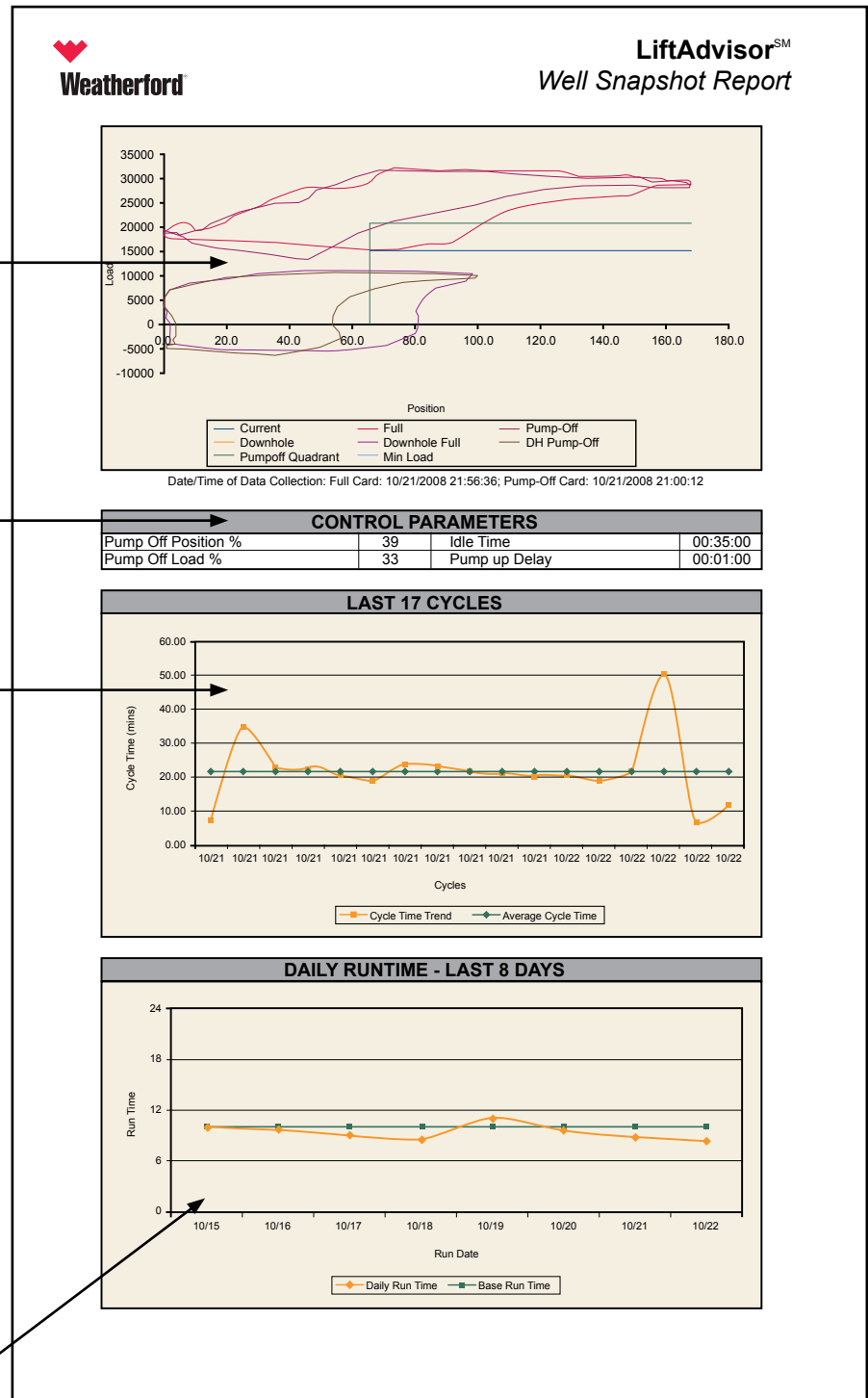
Overlapping surface and downhole dynamometer cards provide well performance information.

Detail of RPC parameters indicate the well's current settings.

Plot or trend of last 17 cycle run times to indicate well performance.



Trend of last seven day's run time can indicate potential problems.

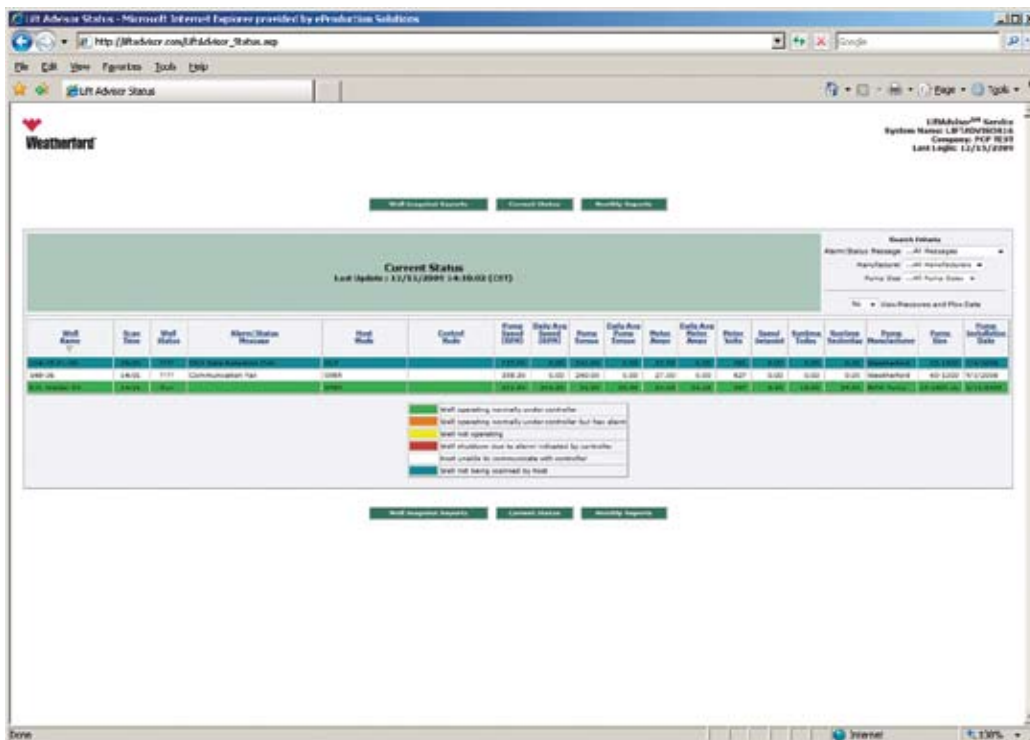


Web-Based PCP Well Surveillance

Current Well Status—Displays current alarms, along with yesterday and today’s runtime, current and daily values for pump speed, torque and amps, and pump manufacturer and size with an option to view pressures and flow. This information can be updated as needed and can be accessed anywhere there is an Internet connection. The status screen is color coded allowing quick identification of wells in alarm state.

Well Snapshot Report—This report includes a control parameters section that shows the alarm limits for torque and speed, last fault including the date and time along with the torque, speed, and amps during the fault, and fault history up to the last seven faults. It also provides trends for the last 24 hours on torque, speed, and amps and a 30-day trend showing runtime and daily averages for torque, speed, and amps. Every morning you can view and/or download this report from the website.

Monthly Report—On the first day of every month you can download a file containing the runtime and the daily averages for torque, speed, and amps for each individual day of the previous month. This allows you to trend, manipulate, and archive the monthly data.



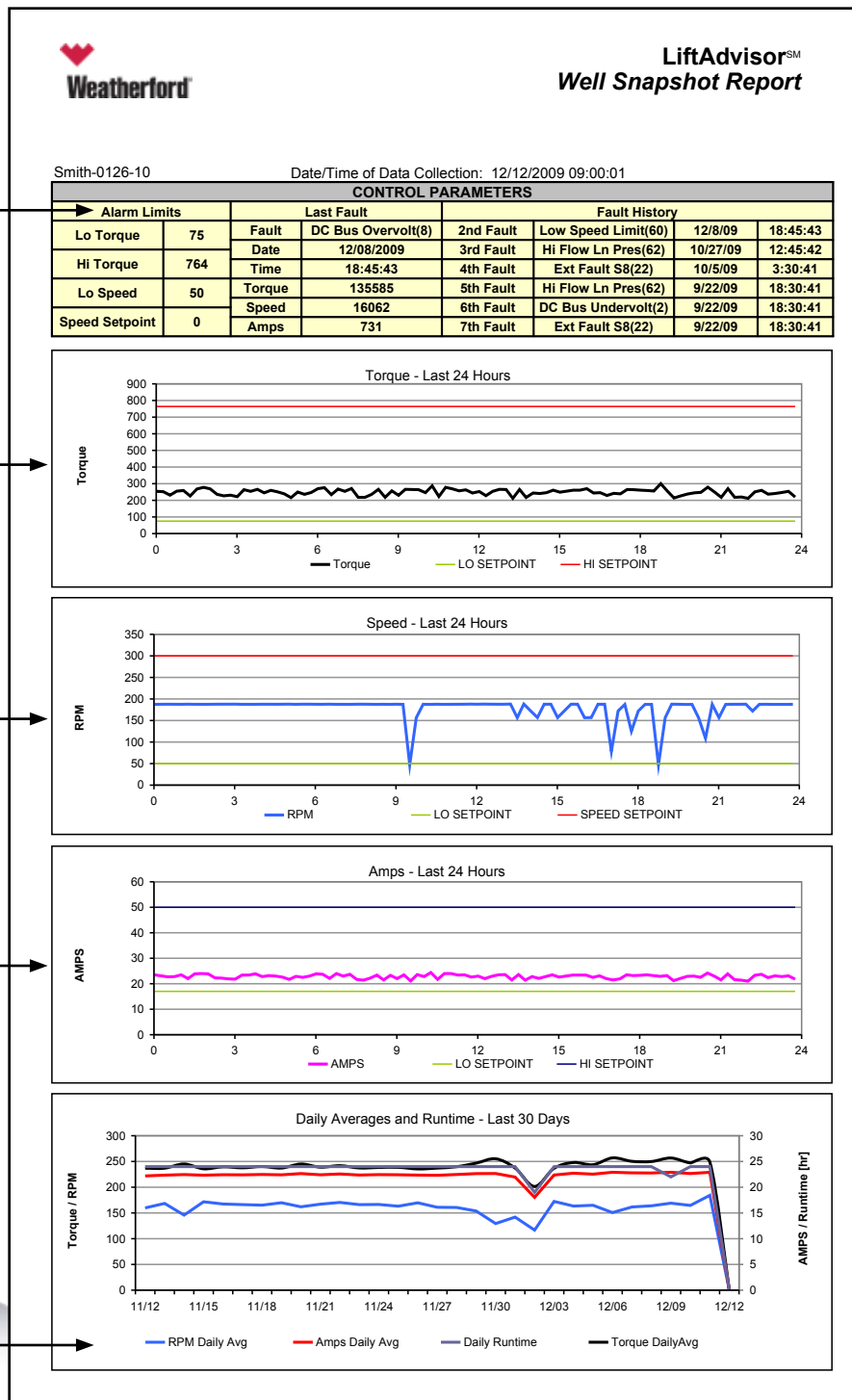
PCP real-time well surveillance example.

PCP Well Snapshot Report

Details of the controller parameters indicating well alarm limits, current faults, and fault history.

Trends of the last 24 hours for torque, speed, and amps along with limit markers which indicate well performance and potential problems.

Trends of the last 30 days on runtime and daily averages for torque, speed, and amps which helps to indicate long term well performance.



Analysis Services

Weatherford has a knowledgeable and experienced staff of well analysts ready to assist you with optimizing your wells. You can think of it as your own analysis team available when you need them. The goal of these services is to provide you with information so you can make profitable decisions. All these services are optional so you can choose those that will provide your company the most benefits. Analysis services include:

Controller Tuning—After the system is first deployed we will remotely tune your wells. Optimal pump-off set points and idle time for rod pump will be determined. Inferred production and base runtime will also be setup.

Standard Analysis Report—With the right information, we can provide a complete analysis report. For rod pumping, this includes downhole cards, current surface and downhole components, current operating parameters, and an economic analysis of energy usage.


Detailed Analysis Report—This report has all the information that is found in the Standard Analysis Report plus our analysts will further analyze the well, point out areas of concern, and make recommendations based on their years of experience.

Dedicated Analyst—With this service, one of our well analysts will be assigned to your wells. Each week they will check on your wells using a combination of our industry leading software and their field experience. Our analysts will then notify you of any issues that may be affecting the performance of your wells. If you have any problems with your well, you can also notify the analyst and they will look at your well remotely and provide feedback. The goal of this service is to be proactive rather than reactive and identify problems before they become costly.

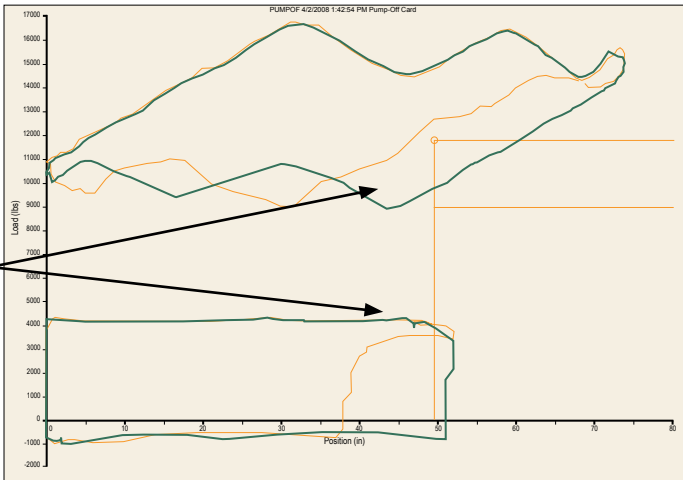
Benefits to Using Analysis Services

- Determination of pump condition, pump fillage, tubing anchor condition, gas compression, pump spacing, etc.
- More accurate top of stroke, RPC pump off, and malfunction set-point determination
- Correct pumping unit gearbox loading, including unit unbalance and counterbalance requirements to properly balance the unit
- Accurate pumping unit walking beam (pumping unit structure) loading
- Correct peak rod stress calculations
- Correct pump displacement, which can be used to verify well testing results, as well as to track downhole pump efficiency
- Calculated fluid levels—the user no longer has to depend solely on manual fluid level tests
- More accurate calculated fluid level trends
- Calculated pump intake pressure (PIP) accuracy
- Accurate electrical cost calculation

Standard Analysis Report



LiftAdvisorSM
Standard Analysis Report



Sakocius 3
02/27/08 22:53
ID: OPERATOR

Comment:

L -C - 228-213-100-CCW	Card Type	Curr.	Test 02/25/08	RPC	EPICRP
Pump Period 13.16	Top Perf	5840	Oil	1.0	Method POC
Unit SPM 4.56	Bottom Perf	6170	Water	8	Hrs On 5.7
Meas St Length 73.9	Anchor Depth	6194	Gas	160	API 48.0
Calc St Length 73.7	Total Rod Len	6125	Fluid	9	Water Sg 1.020
Pump Size 1.500	Meas Pump Dep	6143	Cut	88	Gas Sg .810
Tbg OD 2.875	Depth Diff	18	GOR	28928	Tbg Grad .427
Csg OD 5.500	Plug-Back TD	0	Csg %Oil	25	Csg Grad .412

Unit loading including gearbox torque, structure load and fluid level information.

Torque: Rating (1000)	228	% Rating	Exist CB Torq (1000)	419	FL Temp	80
API Torque (Up)	214	93	Optimum CB Torque	475	Tbg Press	10
API Torque (Down)	105	46	Beam Rating	213	Csg Press	10
API W/ Optimum CBT	161	70	Meas Beam Load	166	FAP	0/ 48
			% Of Rating	78	PIP	15/ 35

Rod string data including peak rod stress as a percent of allowable maximum.

RODS:	Grd Num	Len	S.F.	Min	Max	Allow	Actual	%Al	Dev	Drag	Damping	Gd
1	.750N97	194	4850	1.00	20499	37629	37188	17130	46	.0	.000	.023 .047
2	.750N97	40	1000	1.00	4001	16967	47500	12967	27	.0	.000	.023 .047
3	1.250 SK	11	275	1.00	229	4532	28650	4303	15	.0	.000	.042 .107

Surface and downhole load information.

Loads:	Peak DH	Avg DH	Calc PO	Normal	Peak Surf	%AN	Rod + Fld	14096
Upstroke	4158	3933	1391	16600	16624	100	Buoy Rods	9484
Downstroke	-905	-644	-3221	9050	9056	100	Dry Rods	10732
Diff	5063	4577	4612	7550	7568	100	Fluid Inrt	N

Pump displacement data based on surface, downhole, and net pump stroke—as well as pump efficiency calculations.

DH PUMP:	Stroke	% Fill	Displ (24.0)	Displ (5.7)	Vol Effic	Ratios
Surface	73.9		88.0	20.7	43.5	N/No .114
Downhole	53.6		63.8	15.0	59.9	Fo/Skr .100
Total Fluid	52.1	97.3	62.1	14.6	61.6	Sp/S .725

Prime mover vs. calculated horsepower data and electro/mechanical efficiency values.

Motor:	Type	NEMA D	% Motor	E/M Effic
Motor HP/Size	40.0			Surface 80.0
Slip/Trq Range	3			DH Card 68.5
Polish Rod HP	3.28	8.2		Prod 67.1
DH Card HP	2.81	7.0		
DH Hydraulic Hp	2.75	6.9		

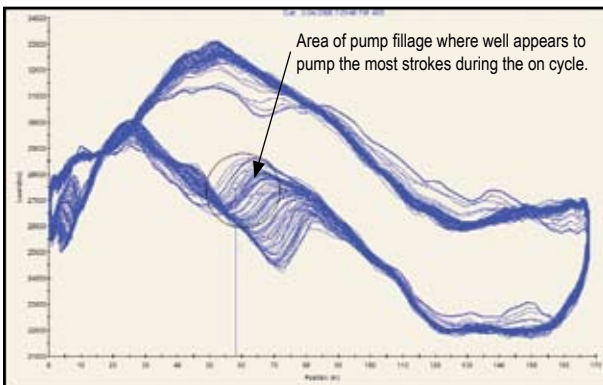
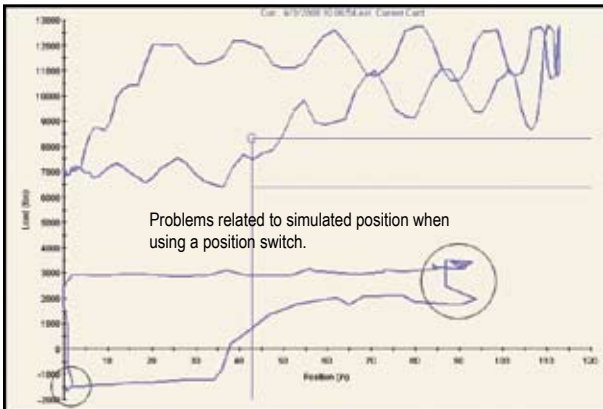
Calculated daily and yearly electrical costs.

Energy:	Avg HP	4.11	Est Cost	Annual	Daily	
Average KW	3.06		(24.0)	1474.87	4.04	Capacitor In Place .0
Cost \$/KW-Hr	.055		(5.7)	347.21	.95	Avg PF Required .0
Cost \$/Bbl Oil	.951					Recommended +/- KVAR (Peak PF) .00
Cost \$/Bbl Grs	.106					Recommended +/- KVAR (Avg PF) .00
KW-Hr/Bbl Grs	.340					

Detailed Analysis Report

At Weatherford, we understand that a canned report does not provide enough information to truly understand the condition of your well. That is why *LiftAdvisor* service incorporates knowledgeable and experienced well analysts using our industry leading tools to develop in-depth and detailed reports.

The contents of these reports are customized to your wells and focused on the type of information you are looking to extract. The reports include multiple surface and downhole cards, our Standard Analysis Report, cycle times, and other information that conveys the analyst's interpretation of the well's state. The recommendations included are based on the data collected from the wells, analysis software and the analyst's years of experience. With these reports, you have the information you need to make better informed decisions for more productive, profitable wells.



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Comment:

L -C - 228-213-100-CCW	Card Type	Curr.	Test	02/25/08	RPC	EPICRP
Pump Period	13.16	Top Perf	5840	Oil	1.0	Method
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API W/ Optimum CBT	161	70	Meas Beam Load	176	FAP	0/ 48
			% Of Rating	78	PIP	15/ 35

RODS:	Grd Num	Len	S.F.	Min	Max	Allow	Actual	% All	Dev	Drag	Damping	Gd
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Diff	5063	4577	4612	7550	7568	100	Fluid Inrt	N

DH PUMP:	Stroke	% Fill	Displ (24.0)	Displ (5.7)	Vol Effic	Ratios
Surface	73.9		88.0	20.7	43.5	N/No .114
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Total Fluid	52.1	97.3	62.1	14.6	61.6	Sp/S .725

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Slip/Trq Range	3		DH Card	68.5
Polish Rod HP	3.28	8.2	Prod	67.1
DH Card HP	2.81	7.0		
DH Hydraulic HP	2.75	6.9		

Energy:	Avg HP	4.11	Est Cost	Annual	Daily
Average KW	3.06	(24.0)	1474.87	4.04	Capacitor In Place
Cost \$/KW-Hr	.055	(5.7)	347.21	.95	Avg PF Required
Cost \$/Bbl Oil	.951				Recommended +/- KVAR (Peak PF)
Cost \$/Bbl Grs	.106				Recommended +/- KVAR (Avg PF)
KW-Hr/Bbl Grs	.340				

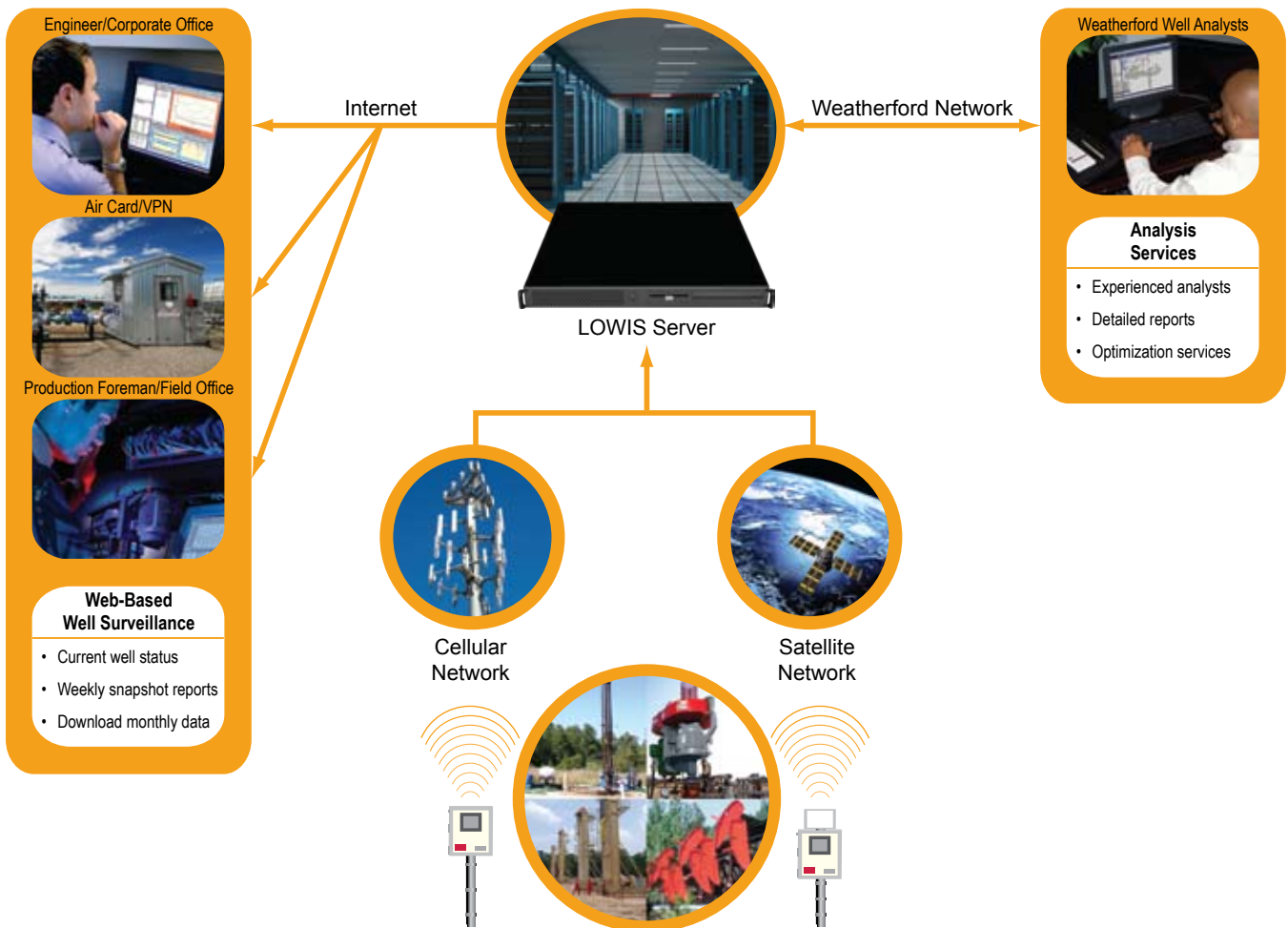
Recommendation

Analysis of the well shows that gearbox is 94% loaded—mainly due to unit unbalance. To reduce gearbox torque (and electrical usage) to a minimum, position all counterweights weights 17 in. from the end of the cranks. This action will also help the electric motor bearing, which are very loud at unit startup. **Note:** If the motor ever needs replacing, a 10 to 15 HP motor will do the job.

LiftAdvisor Service

Getting Started with LiftAdvisor Service

LiftAdvisor service can be as simple as website access to your well's current information or as complex as a package that includes a controller at the wellsite, communication system, website access, and a well analyst providing detailed reports of the wells on the system. The service uses an open system that can be used with existing artificial lift controllers and most communication systems, so past investments are not lost. Weatherford has years of experience in the design and implementation of remote optimization applications. Our technicians will perform a site survey and develop a system that minimizes your costs but also provides the reliability needed for your specific needs.



Minimal Investment

Because Weatherford hosts the software server, your costs are minimized. While each company has their own secure system, the costs of servicing and maintaining the systems are shared. The economies of scale multiply with efficient use of computing systems, standardized communication systems, and affordable wellhead electronics. This service includes software support provided by our team in Houston. Plus with Weatherford hosting your server, upgrades occur without interruption to your operations.



LiftAdvisorSM Service
Simplified Well Surveillance and Analysis

LiftAdvisor Service



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