

National Grid Electric Generation

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SmartSignal Summit '08

National Grid plc

- ◆ One of the largest investor-owned utilities in the world.
- ◆ Headquartered in London, UK
- ◆ \$8.1 billion in revenues, fiscal year 2007

Where we came from ...

National Grid's US predecessor companies have roots in the energy field that date back to the mid-1800s; more recently:

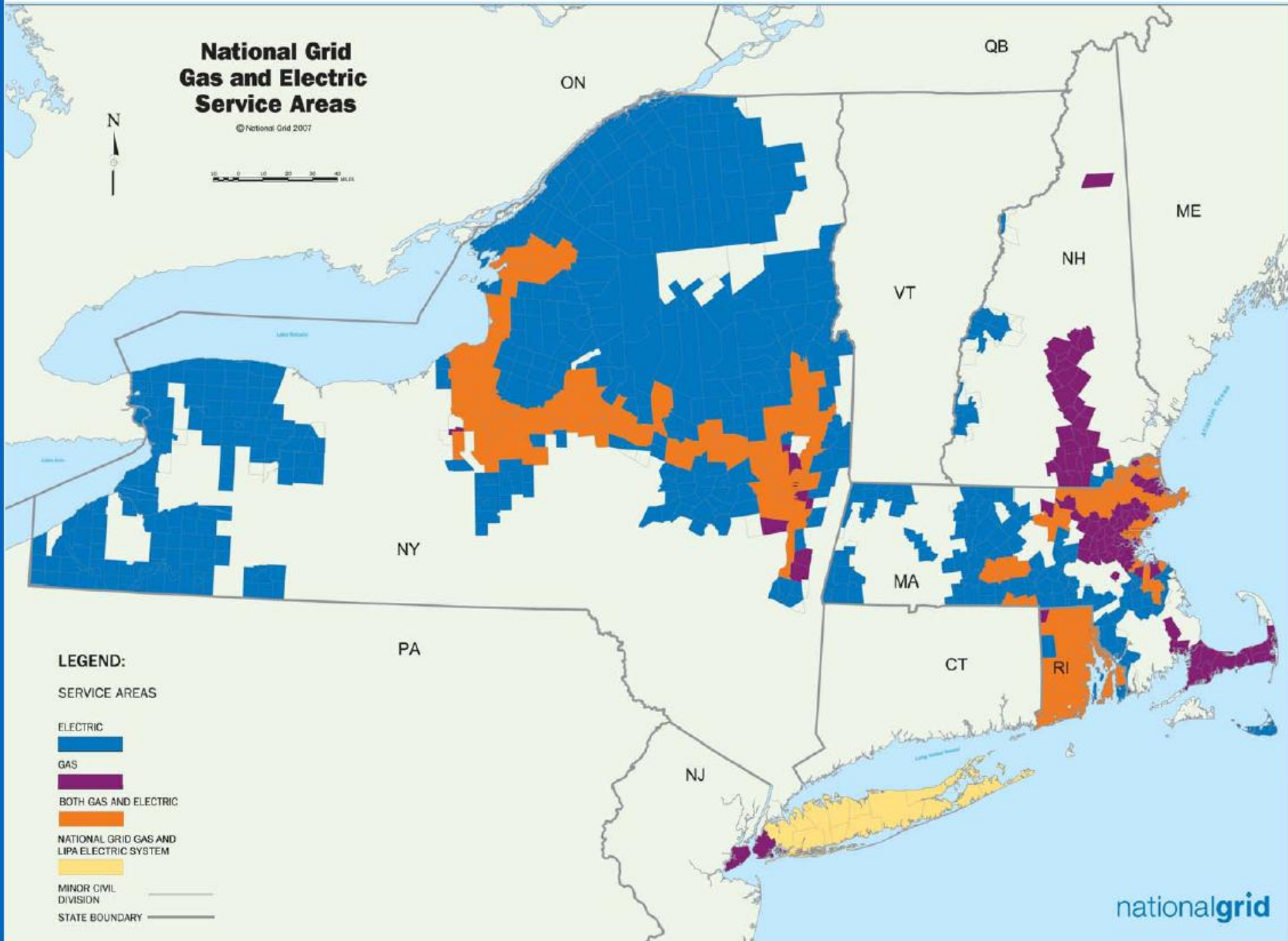
- ◆ NEES became part of National Grid, March 2000
- ◆ EUA joined National Grid, April 2000
- ◆ Niagara Mohawk combined with National Grid, January 2002
- ◆ Parent company, National Grid Transco, formed October 2002 from National Grid and Lattice merger
- ◆ All companies renamed National Grid in October 2005
- ◆ New England Gas became part of National Grid, August 2006
- ◆ KeySpan became part of National Grid, August 2007

National Grid - US

- ◆ 4.4 million electricity customers in NE and NY (includes 1.1 million LIPA customers)
- ◆ More than 3.4 million gas customers in the US
- ◆ 6,650 megawatts of generating capacity
- ◆ Approximately 18,000 employees

National Grid Gas and Electric Service Areas

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LEGEND:

SERVICE AREAS

ELECTRIC



GAS



BOTH GAS AND ELECTRIC



NATIONAL GRID GAS AND
LIPA ELECTRIC SYSTEM



MINOR CIVIL
DIVISION



STATE BOUNDARY



It all depends on your perspective.....

Operations Manager
Shift Supervisor
Mechanic
Power Engineering
Control Technician
Maintenance Manager
Operator
Regulatory Manager
Performance Engineer
Environmental Engineer
Energy Traders
PPO Engineer
Operations Manager
Vice President
Director
NDE Engineer

OSI PI and SmartSignal are our 2 Pillars of Information Infrastructure for our.....

- ◆ Performance Monitoring System
- ◆ Predictive Maintenance Monitoring tools
- ◆ Distributed Control System historian and analysis tools.
- ◆ Enotification System
- ◆ Control Room Unit Dispatch System
- ◆ Energy Trader analysis tools
- ◆ Fuel Management tools
- ◆ Cellular access to realtime data

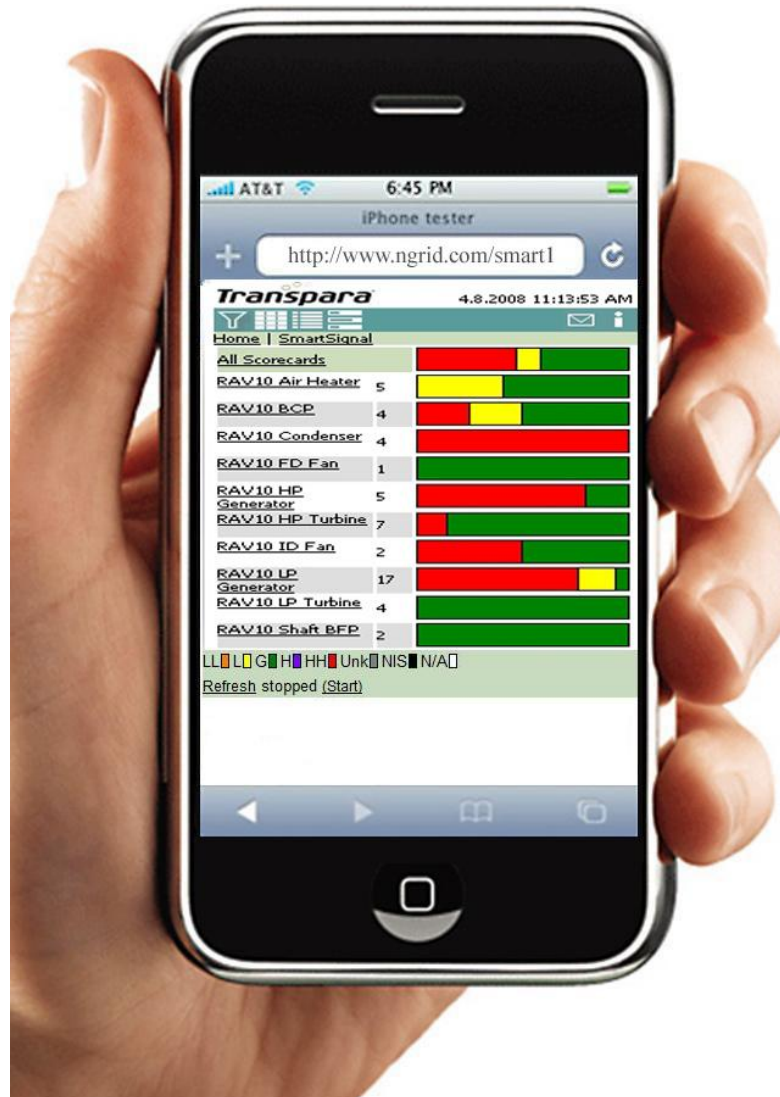
Our focus is on the people

- ◆ give them what they need
- ◆ in the format they ask for
- ◆ make the information “**role based**”
- ◆ provide “**actionable**” information
- ◆ build it all on a solid, user friendly foundation
- ◆ use a dynamic response strategy
- ◆ leverage everything you have and “leave hooks” for stuff you haven’t thought of yet.

Give them what they ask for....



Cellular access to realtime data



Role: Performance Engineer

Detail = SmartSignal Watchlist



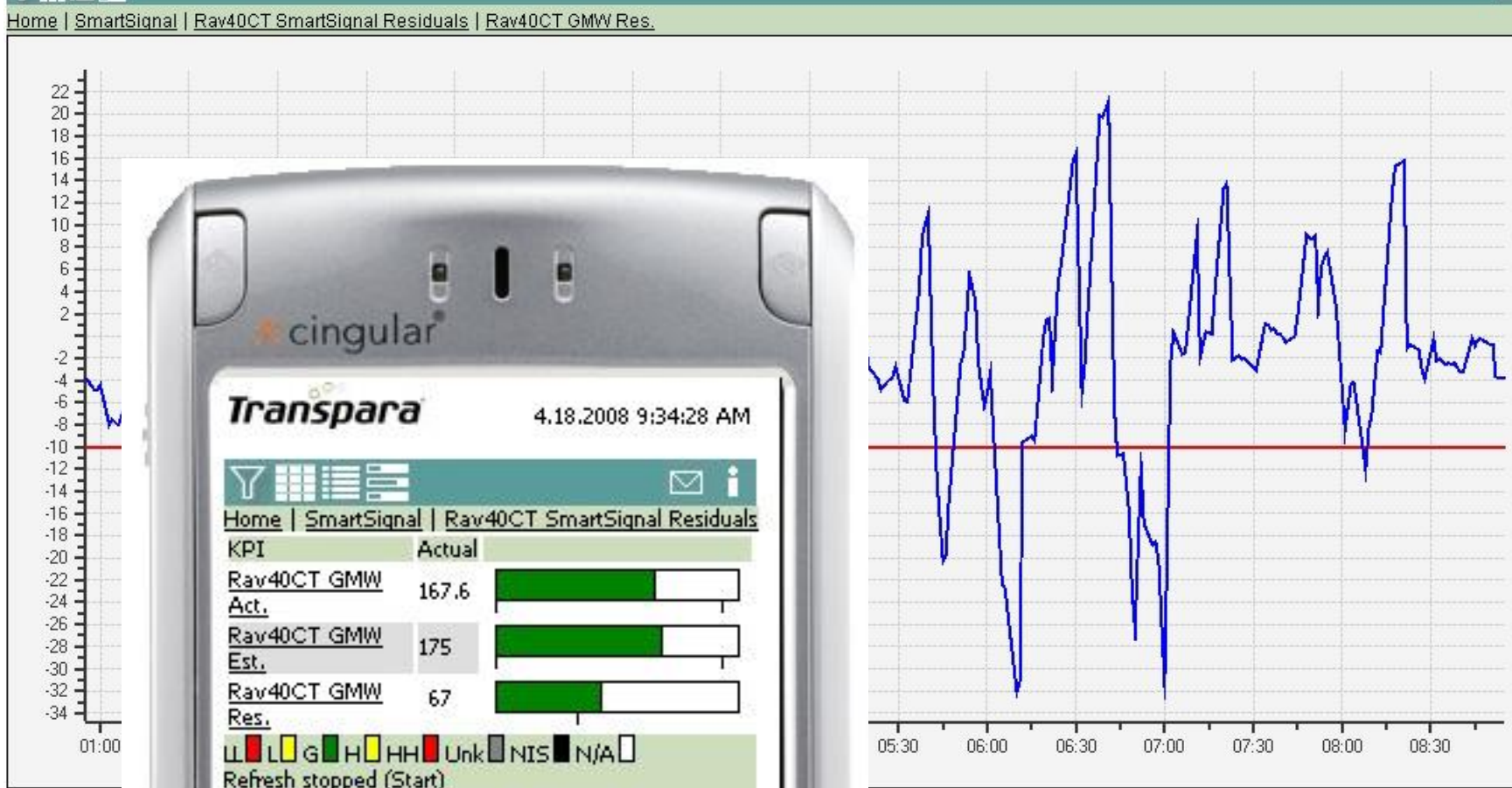
Role: Performance Engineer

Residual Screens

Transpara

4.18.2008 8:55:07

Home | SmartSignal | Rav40CT SmartSignal Residuals | Rav40CT GMW Res.



Role: Performance Engineer

The image shows a performance engineer's workflow. On the left is a web browser displaying the SmartSignal 'WatchList' for 'Keyspan'. The user is Jason White. The watchlist includes items like 'R40 BFP A', 'R40 BFP B', 'R40 CT GENERATOR', 'R40 FGS COMPRESSOR 1B', 'R40 GAS TURBINE', 'R40 HRSG', and 'R40 STEAM TURBINE'. On the right is a handheld PDA displaying the 'Transpara' interface for 'Rav40 LPS 1141 Res.' on 4.18.2008 at 9:05:42 AM. The PDA screen shows a table of KPIs with green status indicators and a legend at the bottom.

KPI	Actual
Rav40 LPS 1141 Act.	1.794
Rav40 LPS 1141 Est.	1.808
Rav40 LPS 1141 Res.	-.006

Legend: LL (Red), L (Yellow), G (Green), H (Yellow), HH (Red), Unk (Grey), NIS (Black), N/A (White)

Refresh stopped (Start)

Performance Analysis Tools

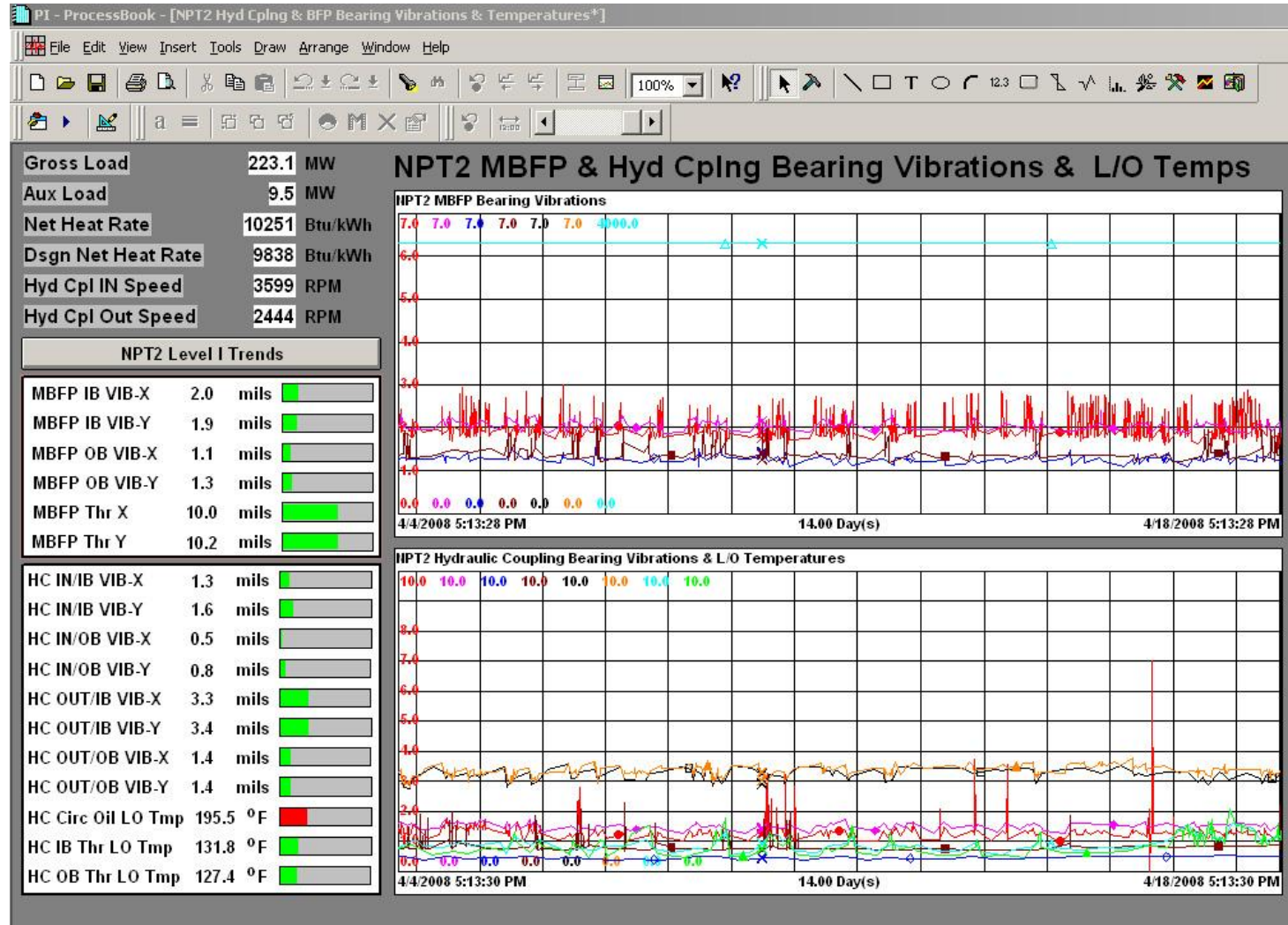
NPT1 Level I Trends

- NPT1 Turbine Bearing Vibrations & Temperatures
- NPT1 Hyd Cplng & BFP Bearing Vibrations & Temperatures
- NPT1 BCP Bearing Temperatures
- NPT1 BCP Bearing Seal Parameters
- NPT1 HDP Bearing Temperatures
- NPT1 ID Fan Bearing Parameters
- NPT1 FD Fan Bearing Parameters
- NPT1 GR Fan Bearing Parameters
- NPT1 Condenser Data (Month)
- NPT1 Air Preheater Parameters
- NPT1 HP Feedwater Heater Trends
- NPT1 LP Feedwater Heater Trends
- NPT1 Boiler Drum Parameters
- NPT1 FOBP Bearing Temperatures

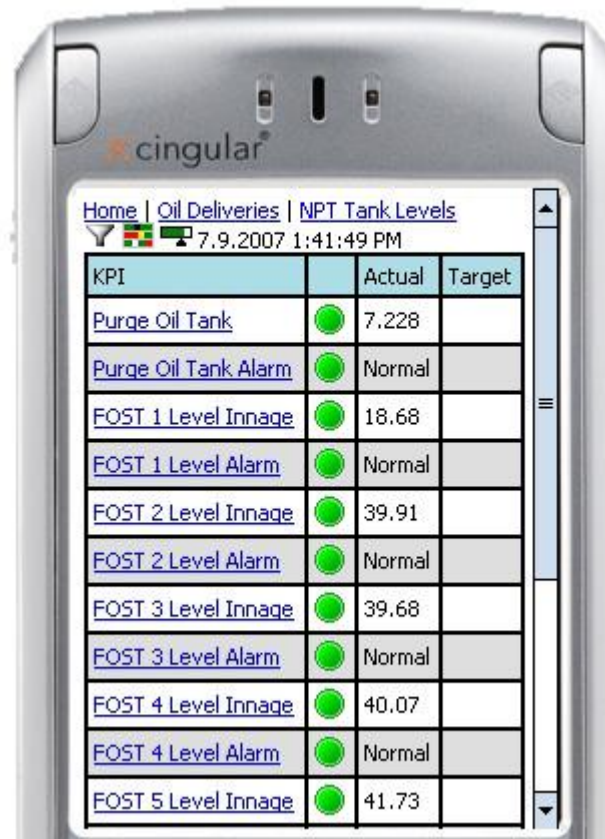
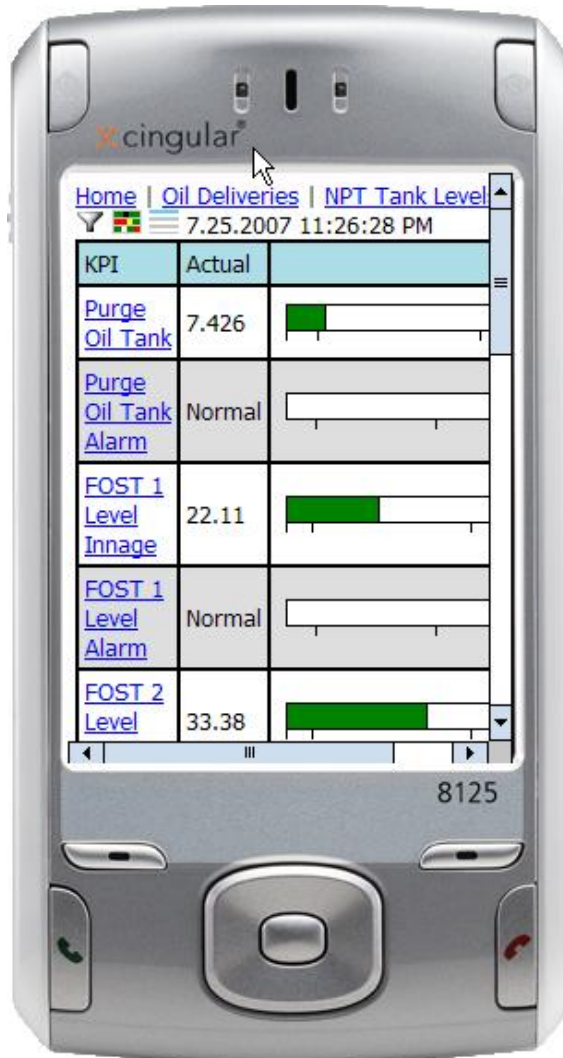
New **Open**

NPT1 Level I T
2 Level I T
3 Level I T
4 Level I T

Role: Performance Engineer



Role: Mechanic



Role: Energy Trader

Detail = Northport gas burn trend



Home | KETS | Northport Gas Usage
7.11.2007 11:55:49 AM

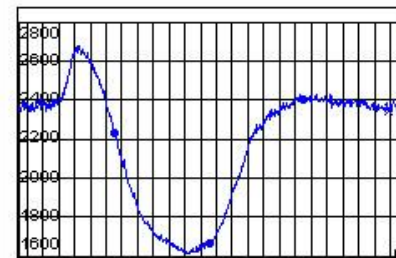
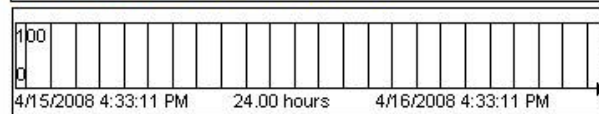
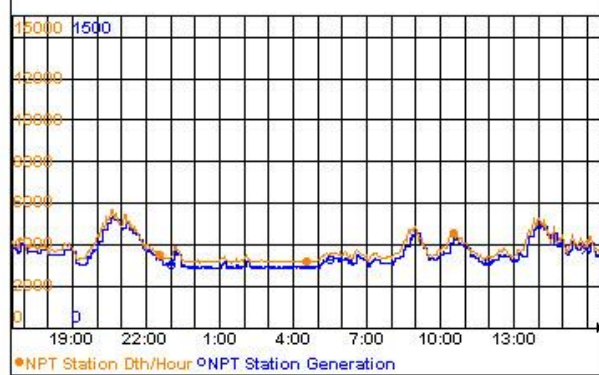
KPI		Actual	Target
LI Area Load	●	4,023	
NPT Total Gen	●	1,199	
NPT Total Gas Burn	●	14,561	
NPT Gas Burn Rate	●	8,108	
NPT Pct Gas Burn	●	66.26	
NPT 1 Gen	●	325.5	
NPT 1 Pct Gas	↑	100	
NPT 1 Gas Rate	▲	3,374	
NPT 2 Gen	●	275	



Role: Energy Trader

Northport Power Station Gas Burn

Burn Rate & Net Output 4/16/2008 4:33:11 PM



System Load
2,360 MW

Net MW

347 MW

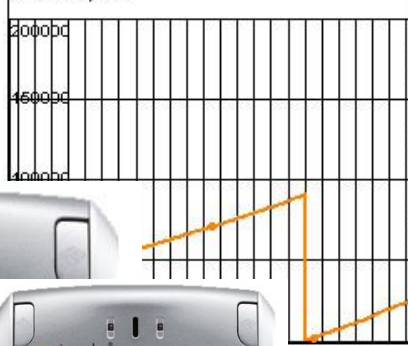
Gas Burn Rate

3,687 Dth/Hr

Total Burn

26,196 Dth/Day

Total Daily Burn



Home | KETS | Northport Gas Usage
7.11.2007 11:55:49 AM

KPI	Actual
LI Area Load	4,023
NPT Total Gen	1,199
NPT Total Gas Burn	14,561
NPT Gas Burn Rate	8,108
NPT Pct Gas Burn	66.26
NPT 1 Gen	325.5
NPT 1 Pct Gas	100
NPT 1 Gas Rate	3,374
NPT 2 Gen	275



347 MW

0 Dth/Hr

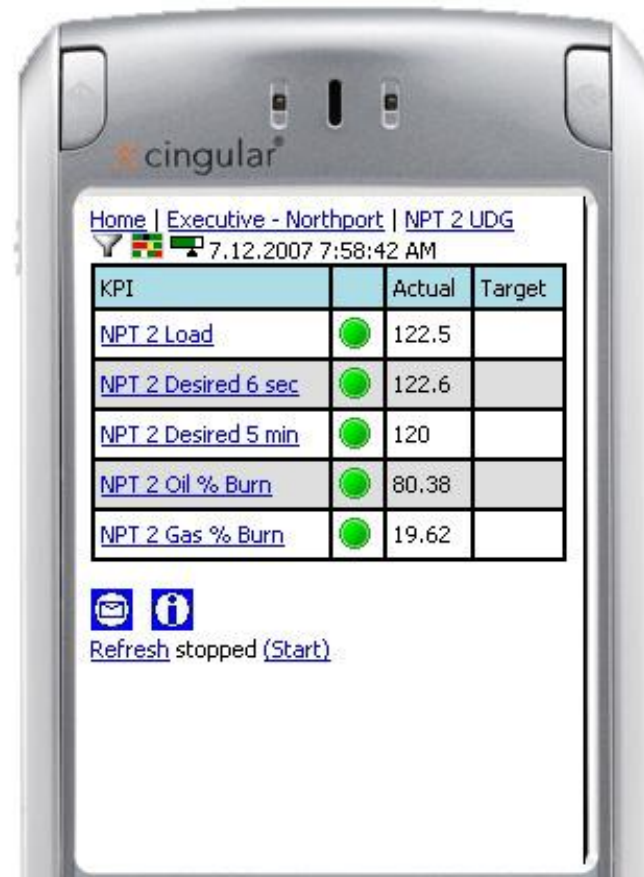
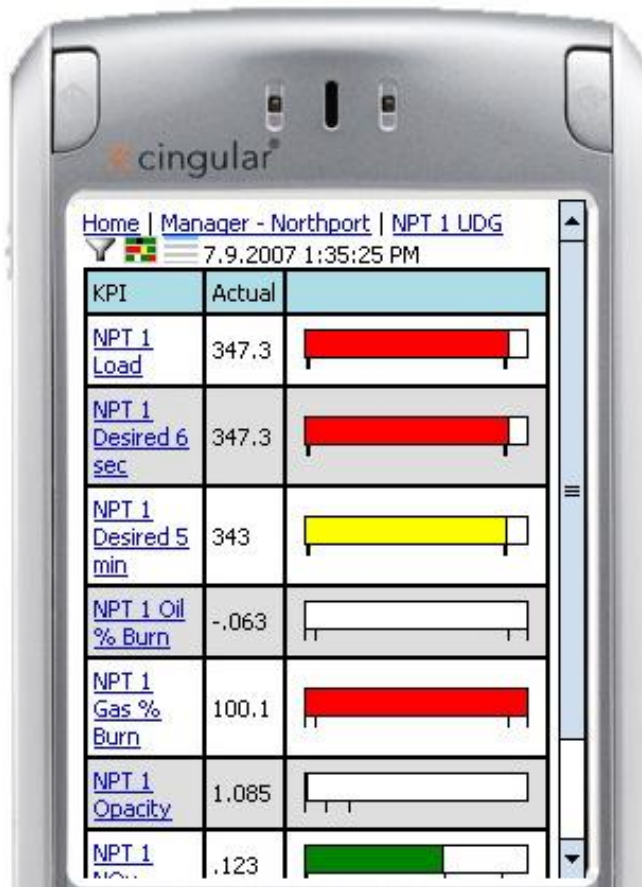
,986 Dth/Hr

14 Dth/Hr

,687 Dth/Hr

Role: Shift Supervisor

Detail = Unit base points



Benefits to National Grid

- ◆ Rapid deployment
- ◆ Technology acceptance
- ◆ Team collaboration
- ◆ Off-site connectivity
- ◆ KPIs directly aligned with “role” needs
- ◆ Corporate visibility and transparency
- ◆ Minimize overtime
- ◆ Efficient utilization of human resources
- ◆ Minimize environmental sanctions
- ◆ Leverage our PI investment

Do the math!

Heatrate savings	\$6,700,000
ISO penalty disputes	\$2,500,000
ISO DMNC testing	\$250,000
RAV20 identified critical points on fluid drive	\$750,000
DCS Historical Database	<u>\$1,250,000</u>
TOTAL	\$11,450,000

End