



## Wireless and Mobile Computing Initiatives and PI

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Kesler Engineering is co-owned by OSIsoft

# Presentation Topics

- Wireless and Mobile Computing
  - PI Data Collection
  - PI Data Display
  - Invite audience to share their wireless and mobile computing initiatives



# Presentation Topics

- PI Data Collection
  - PDAs – with a cradle or fully wireless
    - PocketPCs, Win32 tablets, wearable computers (Win32 platforms)
      - » PI ManualLogger
- PI Data Display
  - PDAs, Cell Phones, Pagers - fully wireless
    - Auto-refreshing Trends/Graphics, tables
      - » PocketPI (PI-ICE and SVG based) for WinCE devices – currently at prototype stage
    - A few numbers or a small table, also trends as jpegs or gifs
      - » DevNet Download for Email notification or Pager alerts
      - » Samples are also available for HTML based displays or WML based WAP phones or mini-browsers

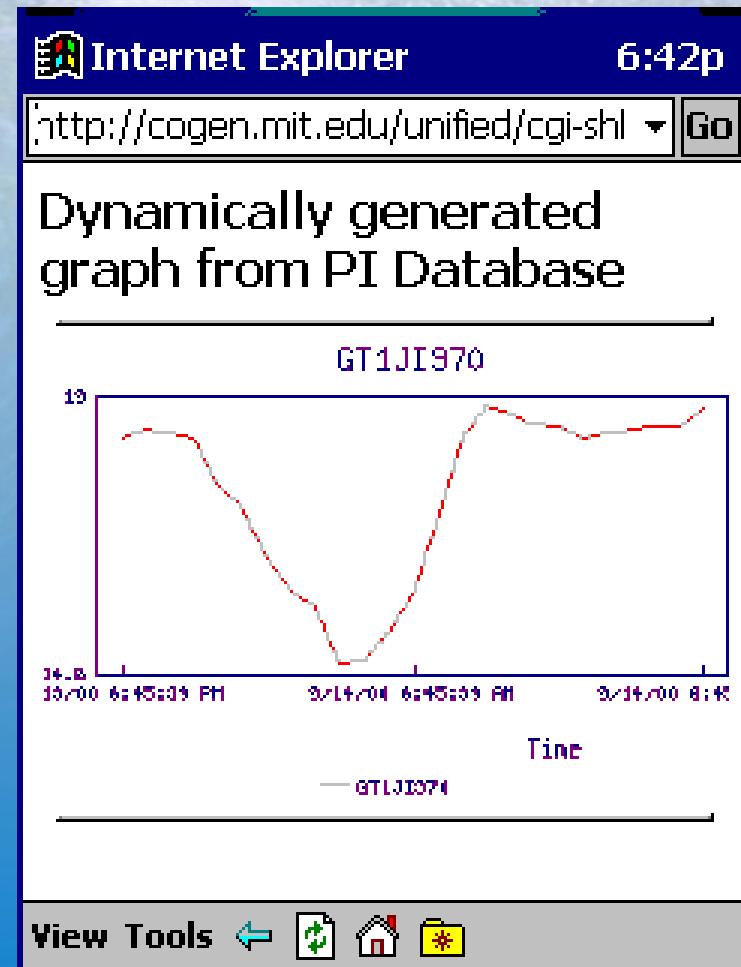
# PI Display

Internet Explorer 6:37p  
http://cogen.mit.edu/unified/cgi-bi Go

## Historical Data Values

Tagname	Time	Descriptor	Value	Units
GT1JI370	2000-09-14 14:40:11	ACTIVE LOAD CALC	18.400	MW
GT1JI370	2000-09-14 14:50:11	ACTIVE LOAD CALC	18.468	MW
GT1JI370	2000-09-14 15:00:11	ACTIVE LOAD CALC	18.540	MW
GT1JI370	2000-09-14 15:10:11	ACTIVE LOAD CALC	18.600	MW

View Tools



# PI Display

Internet Explorer 6:37p  
http://cogen.mit.edu/unified/cgi-bi Go

## Historical Data Values

Tagname	Time	Descriptor	Value	Units
GT1JI370	2000-09-14 14:40:11	ACTIVE LOAD CALC	18.400	MW
GT1JI370	2000-09-14 14:50:11	ACTIVE LOAD CALC	18.468	MW
GT1JI370	2000-09-14 15:00:11	ACTIVE LOAD CALC	18.540	MW
GT1JI370	2000-09-14 15:10:11	ACTIVE LOAD CALC	18.612	MW

View Tools

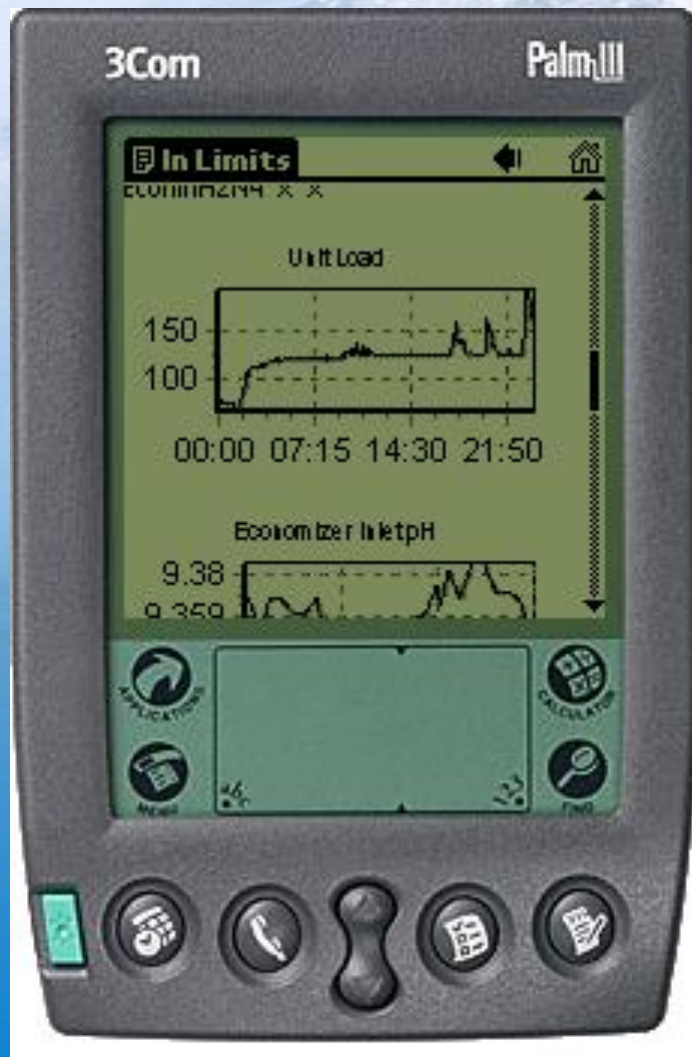
PI V1.0

Tagname	Time	Descriptor	Value	Units	Status
GT1AL382	2001-06-05 23:31:56	ALT NDE BEARING TEMP	172.000	DEGF	0
GT1AL383	2001-06-05 23:31:56	ALT DE BEARING TEMP			

46.0 13.0



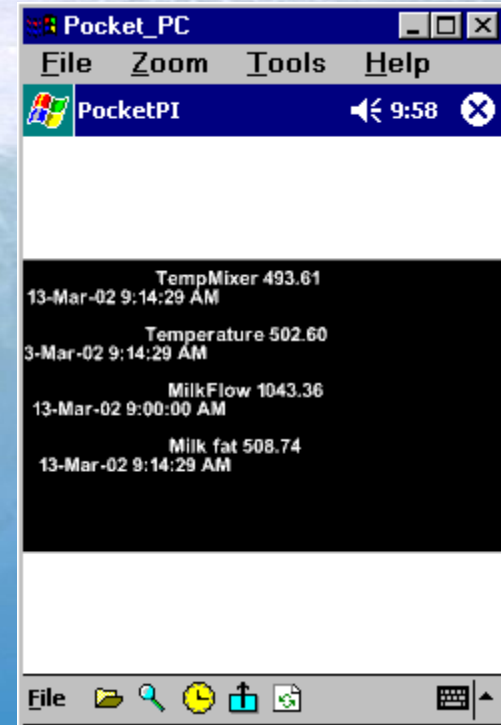
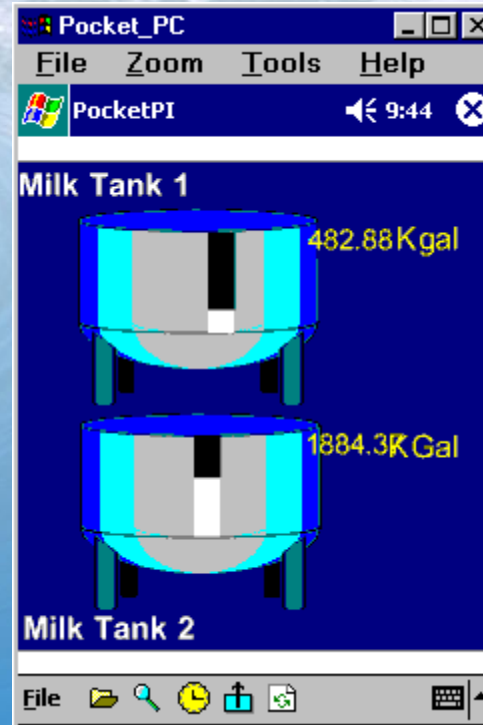
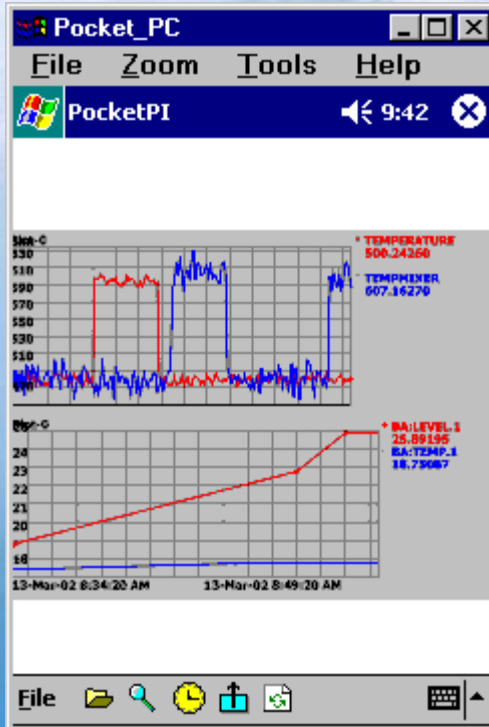
# PI Display



ASP script generated jpeg\*

\* Extract from Jacksonville Electric Authority UC2001 presentation

# PI Display – ICE and PocketPI\*



\* PocketPI is currently in prototype stage

# PI Data Collection : PI-Manual Logger

- Manual input data collection module for PI
  - **PI-ML-PC** : PC based module
  - **PI-ML-HHT** : Optional hand-held interface module

The hand-held module supports data collection using portable hand-held terminals, including barcode scanners.

You can also use a Windows based PC (tablet form-factor that are referred to as Mobile Data Terminals) as a handheld device to collect PI data

- PI-Manual Logger is a PI client application, similar to PI- ProcessBook and PI-DataLink



# PI-ML Topology

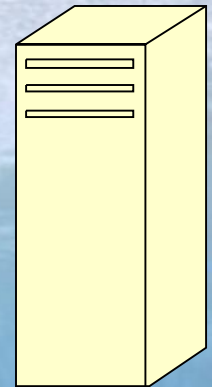
Handheld  
device  
running  
PIML-HHT



Desktop  
PC running  
PIML-PC



PI Server



Wired LAN or  
Wireless LAN

- Docking station with serial port
- Wired LAN or Wireless LAN
- InfraRed

# PI-ML Topology (contd.)

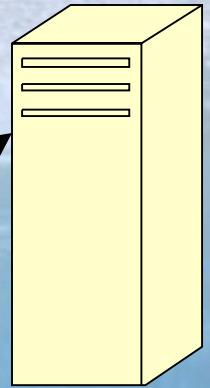
Handheld  
device  
running  
PIML-HHT



Desktop  
PC running  
PIML-PC



PI Server



- Tour configuration
- Data Entry/Data Review
- Send to PI

- Download Tour configuration
- Data Entry
- Upload collected data
- Wireless devices allow a real-time link to a server

# Data Entry methods

- Use a PC as a data entry station
  - Keyboard data entry
  - Import data from text files
  - Import data directly from lab instruments which support RS232 serial interface to a PC
- Use a hand-held device for data entry

**You should consider PI-Manual Logger whenever manual intervention is required (data review/data validation) BEFORE data are sent to PI**



# Features

- Route based (also referred to as Tours)
  - A Tour is simply a group of Tags, and within a Tour, Tags can also be grouped by Equipment
- Data from operator logs, lab data, scanners, inspection data
- Data validation (during data-entry)
  - Validation limits can be PI tags AND can also be read from an external specs (targets) database using automation
- Display instructions to the user during data collection (can also be a URL)
- Display history (previous values from PI)

## Features (continued)

- Automatic time-stamping of data
- Multi-user - data is visible to authorized users **even before it goes to PI** so that it can be reviewed and edited, if necessary
- Data review/edit by another person
- Multiple levels of security, especially writing data to PI

# Additional Features – version 1.3

- Capture operator comments
- Built-in Tour management - every point carries with it information regarding when it has to be collected – for example, hourly rounds 9:00 am round, once a day PM shift, once a week Tuesday AM shift etc.
- Ability to group points in a Tour, say, by Equipment
- Ability to additionally use a barcode label for every point
- Use PIML's automation to customize the desktop PC screens for data entry



# Additional Features – version 1.3 (continued)

- Extended PIML automation interface (Windows PC only)
  - Read validation limits from an external source
  - Customize Data Entry/Review screens
  - Custom data validation logic
  - Calculations using one or more data entries, optionally including data from the PI archive
  - Do as much as you want OR as little as a simple calculation to check that entries add up to 100% for a lab sample

# Tour configuration – Adding Points

Tour Definition

Tour Name: PP07

Permission: DEF

Tag Name: PPB

Descriptor:

Comment Tag: CD:F

Equipment:

Collection:

Specs:

Data validation

LowLow Limit: 76

Low Limit: 79.3

High Limit: 80.7

HighHigh Limit: 84

Delta Limit:

Location Run

Text:

Add...

Delete

Record: 11

Datas

Co

PI Tag Search

Search Criteria

PI Server: ALL CONNECTED

Tag Mask: PP\*

Descriptor:

Pt Source: \*

Value: \*

Search Results

\\localhost\PPAsh301

\\localhost\PPBasis Weight

\\localhost\PPBrightness

\\localhost\PPCaliper

\\localhost\PPColor - a

\\localhost\PPColor - b

\\localhost\PPColor - L

\\localhost\PPColor Error

\\localhost\PPCurl303

\\localhost\PPDirt count

\\localhost\PPFluorescence

\\localhost\PPFormation (Kai.)

List Count:

Percent

Connections

Search

Abort

Reset

Select All

Pt. Attr.

OK

Cancel

Help

Save

Close

# Tour configuration – Paper mill

## Tour Definition

Tour Name: PP01

Description: Paper Machine#1

Permission: DEFAULT-TOUR

Digital States for Tour...

Tour Options...

Report...

Tag Name: PPBasis Weight

Descriptor:

Comment Tag: CD:F161 .CM

Barcode:

Equipment:

Eng. Unit:

Collection:

Point Type: R

Digital States...

Specs:

Data validation

LowLow Limit: 76

Zero:

0

Low Limit: 79.3

High Limit: 80.7

HighHigh Limit: 84

Span:

100

Delta Limit:

Location: Run to target

Text:

Add...

Datasheet View

Pt. Attrib...

ReSequence...

Concrd...

Save as...

Save

Delete

Comment tags...

Data Validation tags...

Eqpt/Tag Grouping...

Close

Record: 1 of 21



# Tour configuration – Electrical T&D

## Tour Definition

Tour Name: Ber1

Description: Bergen Switch

Permission: Palisades

Digital States for Tour...

Tour Options...

Report...

Tag Name: PA-SBE-GCB.40P.005

Descriptor: Temperature High

Comment

Tag:

Equipment: 40P Gas Circuit Breaker

Collection:

Specs:

Barcode:

Eng. Unit: Deg F

Point Type: R

Digital States...

Data validation

LowLow Limit:

Low Limit: 41

High Limit: 90

HighHigh Limit:

Delta Limit:

Zero:

-40

Span:

161



Send To PI

Location

Text:

Add...

Datasheet View

Pt. Attrib...

ReSequence...

Concrd...

Save as...

Save

Delete

Comment tags...

Data Validation tags...

Eqpt/Tag Grouping...

Close

Record: 23 of 153

# Tour configuration – Collection time specification

**Data Collection Time Specifications**

Tag: CD:F161 .

Descriptor: Crude Offgas Flow

Data Collection Time Specifications:

☐ Prompt for data entry at ALL times

☒ Prompt for data entry ONLY at SPECIFIED times

Type

☒ Daily Period: 4 Hours Offset: 0 Hours [Show Tour Times...](#)

☐ Weekly Day (Sunday=1), shift(A/P): Offset: Hours [Show Tour Times...](#)

If Type is Daily, and Period = 4 and Offset = 2, you will be prompted for Data Entry for this Tag every 4 hours, for Tours with TourTimestamp hour as below (Offset=2 is counted from midnight):  
2 Hrs, 6 Hrs, 10 Hrs, 14 Hrs, 18 Hrs and 22 Hrs

If Type is Weekly, the entry:  
Offset=6 is counted from midnight such that 6Hrs to 18Hrs (clock time) is treated as AM, and the rest as PM  
1,A;1,P;3,P means the Tag will be prompted for DataEntry for the hours:  
Sunday AM, Sunday PM and Tuesday PM

Record: 1 of 8

**PI-Manual Logger**

Tag will be prompted for data entry at the following hours:  
0,4,8,12,16,20

[OK](#)

[OK](#)

[Cancel](#)

## Data Entry

Z:0 LL:76 L:79.3 H:80.7 HH:84 S:100



Tour Name: Ber1

Description: Bergen Switch

HHT ID:

Operator Name: mike

Records: Show by Equipment

Violations

Checked:

Tour TimeStamp: 8/8/01 7:27:38 PM

Status:

Equipment: 30P Gas Circuit Breaker

Click to select Equipment:

- X Common Mechanical #1Battery
- X Common Mechanical #1Battery Charger
- X Common Mechanical #2Battery
- X Common Mechanical #2Battery Charger
- X Common Mechanical #3Battery
- X Common Mechanical #3Battery Charger
- Common Mechanical #4Battery
- Common Mechanical #4Battery Charger
- X 132-1 Transfmr Ckt Switch Pri Load Break
- X M-1339 Circuit Switcher Reactor Shunt
- X 132-3 Transfmr Ckt Switch Pri Load Break
- F-1306 Circuit Switcher Line Load Break
- R-1344 Ckt Switch Reactor Load Break
- 20H Gas Circuit Breaker
- 30P Gas Circuit Breaker**
- 40P Gas Circuit Breaker
- 50P Gas Circuit Breaker
- 55P Gas Circuit Breaker
- 65P Gas Circuit Breaker
- 70P Gas Circuit Breaker
- 80P Gas Circuit Breaker
- 90P Gas Circuit Breaker
- MagCon test unit
- 14FA Oil Circuit Breaker
- 16FA Oil Circuit Breaker
- 1FA Oil Circuit Breaker
- 1FB Oil Circuit Breaker
- 1TR Oil Circuit Breaker
- 20FB Oil Circuit Breaker
- 22FB Oil Circuit Breaker
- 24FB Oil Circuit Breaker
- 26FB Oil Circuit Breaker

Tag

Tag Value

Eng Unit/Archived

PA-SBE-GCB.30P.001  
Counter

465

Step

N

PA-SBE-GCB.30P.003  
Gas Pressure High

PSI

N

PA-SBE-GCB.30P.005  
Temperature High

Deg F

N

PA-SBE-GCB.30P.006  
Air/hydraulic pressure

PSI

N

Record: 1 of 5 (Filtered)

Data Entry on a PC,  
Electrical T&D example  
with Equipment display ON

## Data Entry on a PC - Spreadsheet view

Data Entry Ber1:Bergen Switch 8/8/01 7:27:38 PM

Description:	Tag Value:	Eng Unit:	Comment
Counter	46	Step	
Gas Pressure High		PSI	
Temperature High		Deg F	
Air/hydraulic pressure		PSI	
SF-6 gas compressor run time		Hr	

Bergen Switch

Click to select Equipment

- X Common Mechanical #1Battery
- X Common Mechanical #1Battery Charger
- X Common Mechanical #2Battery
- X Common Mechanical #2Battery Charger
- X Common Mechanical #3Battery
- X Common Mechanical #3Battery Charger
- Common Mechanical #4Battery
- Common Mechanical #4Battery Charger
- X 132-1 Transfmr Ckt Switch Pri Load Break
- X M-1339 Circuit Switcher Reactor Shunt
- X 132-3 Transfmr Ckt Switch Pri Load Break
- F-1306 Circuit Switcher Line Load Break
- R-1344 Ckt Switch Reactor Load Break
- 20H Gas Circuit Breaker
- 30P Gas Circuit Breaker**
- 40P Gas Circuit Breaker
- 50P Gas Circuit Breaker
- 55P Gas Circuit Breaker
- 65P Gas Circuit Breaker
- 70P Gas Circuit Breaker
- 80P Gas Circuit Breaker
- 90P Gas Circuit Breaker
- MagCon test unit
- 14FA Oil Circuit Breaker
- 16FA Oil Circuit Breaker
- 1FA Oil Circuit Breaker
- 1FB Oil Circuit Breaker
- 1TR Oil Circuit Breaker
- 20FB Oil Circuit Breaker
- 22FB Oil Circuit Breaker
- 24FB Oil Circuit Breaker
- 26FB Oil Circuit Breaker

Record: 1 of 5 (Filtered)

# Data Associate a BatchID and Batch start/end time with manual inputs

**PI-Manual Logger**

File Edit View Insert Format Records Tools Window Help

LogOn/ piml PIML Tour Send Data Entry/Review Receive

**batch demo**

Click to select Equipment

- Unit5
- Mixer
- X Blender

**Data Entry bat1:batch demo 9/18/01 4:52:29 PM**

Tour Name: bat1 Description: batch demo

HHT ID:

Operator Name: rgk Records: Show by Equipmer Violations Checked: ☒

Tour TimeStamp: 9/18/01 4:52:29 PM Status:

Equipment: Unit5 BatchID: XYZ777

Tag Tag Pick a Batch Eng Unit/Archived Comment:

BA:ACTIVE.1	Active	STATE	N
Batch Active Reactor 1			
BA:CONC.1	70	DEG. C	N
Concentration Reactor 1			
BA:LEVEL.1	45		N
Level Reactor 1			

Record: 2 of 5 (Filtered)

Min:0 LL:75 L:100 H:150 HH:175 Max:200

FLTR



PIMLObj

Search Results

Library Class

Classes

<globals>  
PIML  
PIMLPremissionLevel  
PIMLRunStatus  
PIMLViolationCode

Members of 'PIML'

AdminPermissionLevel  
CheckAllForViolation  
CheckForViolation  
CommandButtonSendToPIEnabled  
CurrentDataEntryADOREcordset  
CurrentDataEntryRecordset  
CurrentTourPermissionLevel  
GetStates  
GetTourStates  
LocalIMDBPath  
LocalSystemDBPath  
LoginID  
OperatorName  
SaveDataEntry  
SendToPI  
Submit  
TourDescriptor  
TourName  
TourTimeStamp

## PIML Automation Interface – Properties and Methods

Function **CheckForViolation**(ByVal lngTourRunTagID As Long) As Integer

Member of [PIMLObj.PIML](#)

POWER OF PI  
FORNIA

# Data Entry on a PC - User designed form using PIML's automation interface

**Tour Data Entry**

Tour Name: **Samp** Description: **PIML Demo** **Report...**

Operator Name: **Records:** **Show All** **Delete Tour-run**

Tour TimeStamp: **ons...**

**Tag Name / Desc**

Kero10 Kero 10% ASTM					F	No
Kero50 Kero 50% ASTM					F	No
Kero90 Kero 90% ASTM					F	No
HGO10 HGO 10% ASTM					F	No
HGO50 HGO 10% ASTM					F	No
HGO90 HGO 10% ASTM					F	No

**Lab Results**

Sample time  
☒ 4:00 a.m. ☐ 11:00 a.m. ☐ 8:00 p.m.

	10%	50%	90%
Kerosene ASTMs	464		
Hvy Gas Oil ASTMs			

**Submit** **Cancel**

**Append Another Value** **View Datasheet** **Next Empty Tag** **Send To PI** **My Form** **Save**

**Delete** **Prev. Values...** **Requery Limits** **Redo Limit** **Pt. Attrib...** **Done**

Record: **1** of 10

## Roundsheet Collection Schedule

- 17:00
- 18:00
- 16F Evap Shutdown Shift Rounds
  - Days
- 16F Evap CRO Asst 3 Hr Round
  - 8:00
  - 11:00
  - 14:00
  - 17:00
- 16F Evap CRO Asst Shift Rounds
  - Days
- 18F Surv Op Tks 25-28 & 44-47 Shift Rounds
  - Days
- 18F Surv Op Suppt Facility Shift Rounds
  - Days
- 18F Surv Op FPP-2/3 & FDB-4 3 Hr Vent Sys Round
  - 8:00
  - 11:00
  - 14:00
  - 17:00
- 242-F Surv Op Tks 1-8, 33 & 34 Shift Rounds
  - Days
- 242-F Surv Op 0800-1000 Vent Round
  - 10:00
- 242-F Surv Op 1400-1600 Vent Round
  - 16:00
- 242-F Surv Op Tks 18-19 & Suppt Fac Shift Rounds
  - Days
- 62F Surv Op 4 Hr MCC Round
  - 8:00
  - 12:00
  - 16:00
- 1F CRO Shift Rounds
  - Days
- 74F CRO Shift Rounds
  - Days

User (Savannah River Site/Westinghouse)  
authored Rounds Status screen

- 16F Evap Operating Hourly Rounds
  - 3/29/01 10:00:00 AM \*\*Ready for Operator Review\*\*(HULL, SHAW)
- 18F CRO Shift Rounds
  - 3/29/01 10:00:00 AM \*\*Ready for SS Review\*\*(HULL, SHAWN W)

## As-Needed Roundsheet Collection Status (This Shift)

16F Evap Overheads Data

Review Roundsheet

Turnover

Parameter Data

Put roundsheet on  
hold

Admin

Update Status: Idle

Date/Time: 4/3/01 1:47:20 PM





## PI-0ps(1.0) Shift

- Limit Violations
- Limit Violations/Comments
- Comments, NRT, OOS, STBY, N/A

Comment,N/A,NRT,OOS,STBY

### Parameter Details

				SAT
--	--	--	--	-----

Operator Name:

HULL, SHAWN W

Cancel

Parameter History

## SRS authored Shift Turnover screen

Select Roundsheet and Viewing Period

Roundsheet: 18F CRO Shift Rounds

Days to Review: 23

Viewing Options

☐ Show Limit Violations/Comments Only☒ Show All Data

Legend

\*A/C\* Condition

Limit Violation

Limit Violation w/o Comment

Comment,N/A,NRT,OOS,STBY

Item	Parameter	Time Stamp	Value/Condition	Units	Comment	Operator
1	ALL 241-18F CR Panel Alarm Lights Operable	3/27/01 6:00:00 AM	UNSAT			
2	Tk 25 H2 Monitor %CLFL	3/27/01 6:00:00 AM	5	%		
3	FPP-2 Sump Level	3/27/01 6:00:00 AM	9.6	In.		
4	PT2 Level Differential	3/27/01 6:00:00 AM	8.00	in		
5	Tk 25 Bottom Temp (DCS TI7110C)	3/27/01 6:00:00 AM	55	deg C		

Print Turnover Report

Return to Status

Parameter History

# Hardware – Handheld devices and Portable terminals

- Symbol 3000 terminals - text based 8x20 screens, optional barcode scanner, models PDT3100, PDT6100, Intrinsically Safe models are available
- PocketPCs - consumer units (Casio, Compaq etc.), rugged units (Symbol PDT8100 , Casio IT700)
- Mobile Data Terminals – typically Win2000 tablet form factor with/without keyboards – Panasonic Toughbook, Walkabout Hammerhead



# PDT-6100



**EXPANDING THE POWER OF PI**  
OSISOFT 2002 USERS CONFERENCE MONTEREY CALIFORNIA

# PDT-3100 (less rugged)



# PDT-6800 ( Intrinsically Safe version)



# Data Entry on a hand-held (Symbol Series 3000 models)

```
PI-ML Demo Tour
CD:F163
Crude Nap Flow
DEG F      R      1/8
VAL*: 6900
11-DEC-98  10:12:54
LAV: 6600
F1: Help
```

```
*Validation Error *
Value must be betwn
6500.00
and
6800.00
```



## Hardware – Ruggedized Industrial PocketPCs

Symbol PPT-2800 with integrated scanner



Casio IT-700 PocketPC (optional Scanner and Wireless card)



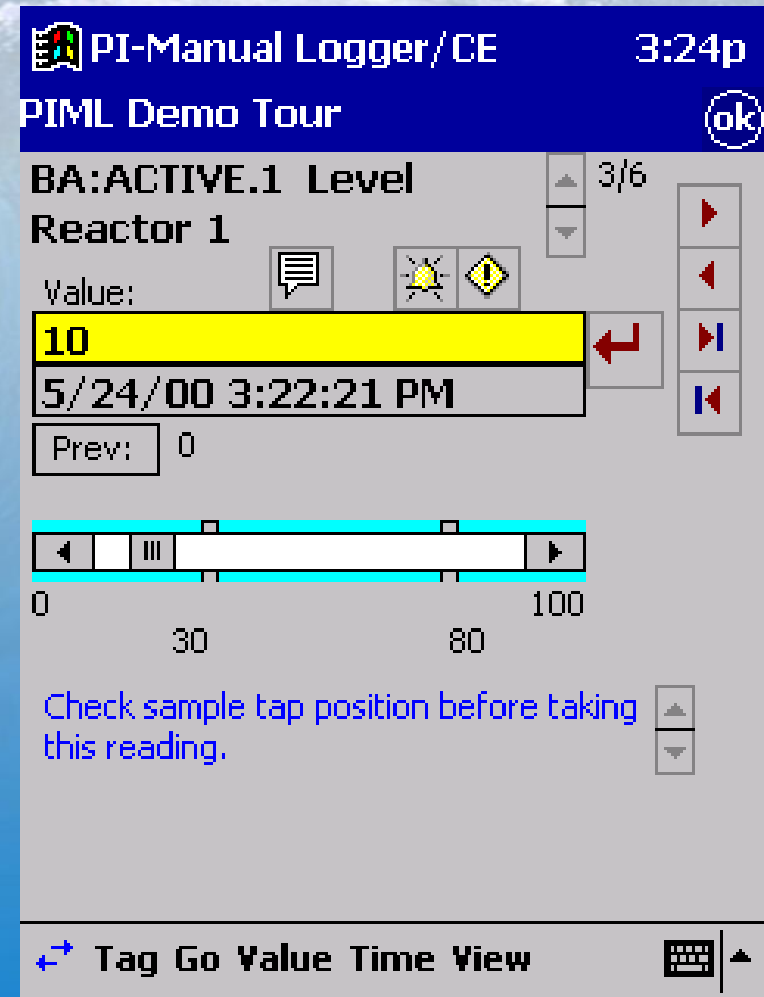
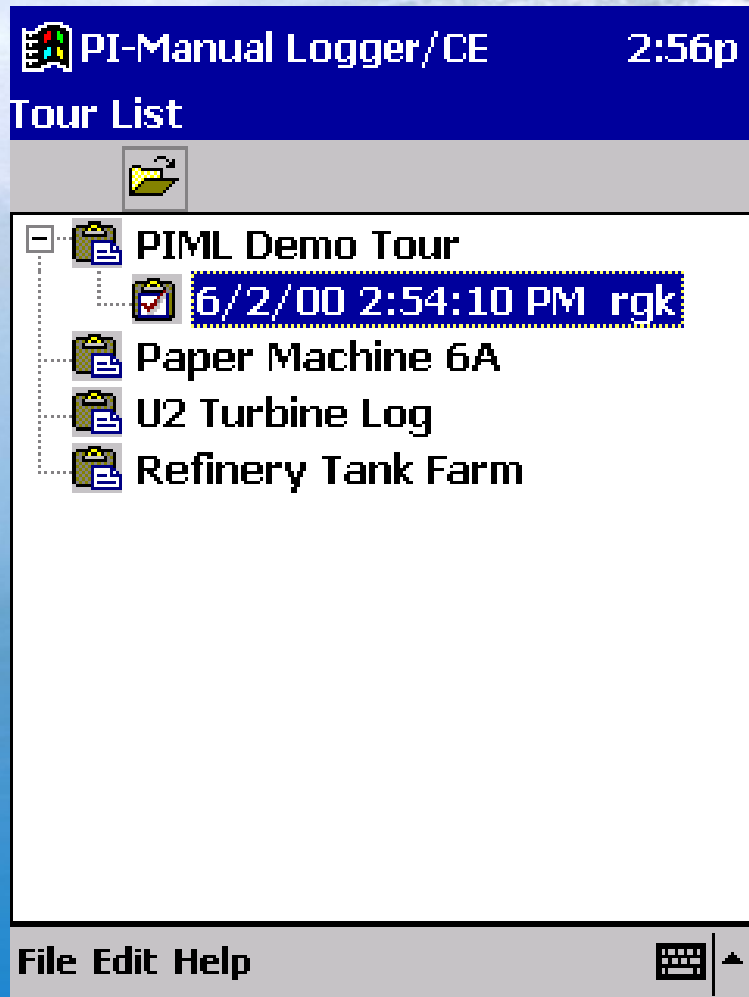
## Hardware – Ruggedized Industrial PocketPCs

Symbol PPT-8100 with  
integrated scanner

Non-incendive Class I  
Div 2 certified units  
shipping since 4Q 2001





# PocketPC Data Entry



# PocketPC Data Entry

PI-Manual Logger/CE 4:29p  
PIML Demo Tour (ok)


BA.CM Batch Comment 5/6

Value:  

pum



pumping

123	1	2	3	4	5	6	7	8	9	0	-	=	←
Tab	q	w	e	r	t	y	u	i	o	p	[	]	
CAP	a	s	d	f	g	h	j	k	l	;	'		
Shift	z	x	c	v	b	n	m	,	.	/		↵	
Ctl	á	ü	`	\							↓	↑	←

Tag Go Value Time View 


PI-Manual Logger/CE 4:27p  
PIML Demo Tour (ok)

BA.CM Batch Comment 5/6

Value:  

RGK

ABC	abc	123	←
-----			← →
			← spc
			ⓘ @ \$

Tag Go Value Time View 



## Hardware – Mobile Data Terminals Windows 98/2000 based portable PCs

Panasonic Toughbook, wireless CDPD

Walkabout, Hammerhead



Select a Tour-Run

Tour list option

☒ Show my Tours ☐ Show all Tours

Description

PIML demo

Demo abcp

big200 tags

demo for srs

demo for Calpine

demo for iau

T.	Tour Timestamp	Operator		
	26-Mar-01 1:21:29 ...	rgk123	Archived	0
	26-Mar-01 1:19:40 ...	asdf	Submitted	-1
	25-Mar-01 11:45:48...	2356		4
	26-Feb-01 8:22:05 ...	Gopal	Archived	-1
	08-Feb-01 9:00:41 ...			-1
	08-Feb-01 9:00:41 ...		Archived	-1
	08-Feb-01 9:00:41 ...			-1
	15-Jan-01 7:14:25 ...	555	Archived	-1
	29-Dec-00 1:25:37 ...	6		-1
	29-Dec-00 2:06:51 ...			-1
	28-Dec-00 10:34:3...			-1
	12-Dec-00 10:31:3...	5	Submitted	-1

Open...

OpenAll...

Delete

Close

Data review and status:

➤ Rounds on queue

➤ Rounds completed

➤ Rounds submitted for approval

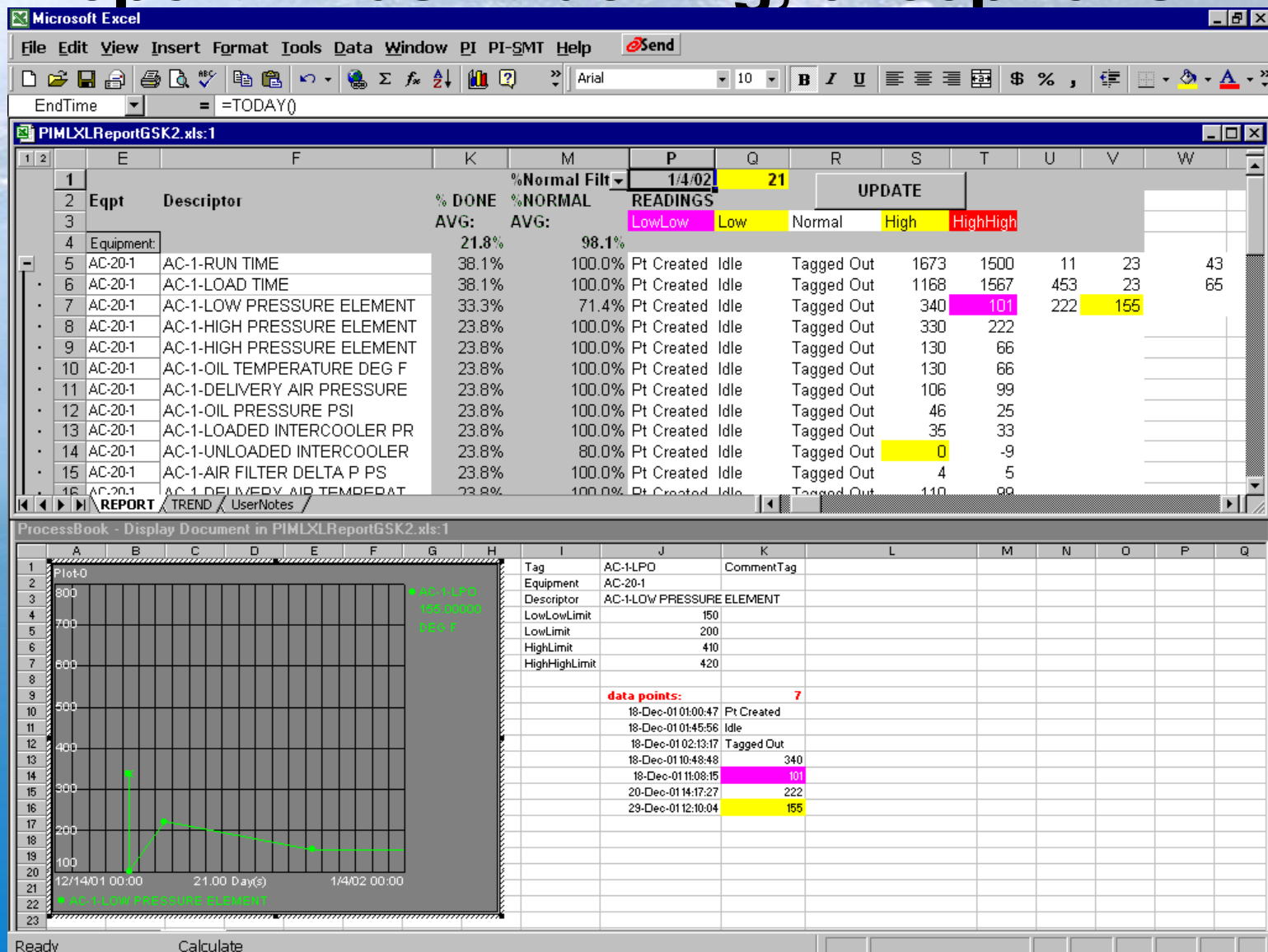
➤ Rounds sent to PI

# PI Tag set up – Excel sheet

Tag WorkbookPITags.xls											
	C	D	E	F	G	H	I	K	L	M	N
1	Equipment Group	TagDescriptor	Zero	Span	Point	Units	DigitalSet	LowLow	Low	High	HighHigh
2	A Well Pump	A Well Disch Press	0	150	Real	PSIG		10	15	90	100
3	A Well Pump	A Well Lubricator Level	0	6"	Digital	Level		1"	2"	6"	8"
4	B Well Pump	B Well Disch Press	0	150	Real	PSIG		10	15	90	100
5	B Well Pump	B Well Lubricator Level	0	6"	Digital	Level		1"	2"	6"	8"
6	RIVER INTAKE	River Intake PP A Disch Press	0	50	Real	PSIG		15	20	40	50
7	RIVER INTAKE	River Intake PP B Disch Press	0	50	Real	PSIG		15	20	40	50
8	RIVER INTAKE	River Intake PP A Lube Press	0	50	Real	PSIG		5	8	10	12
9	RIVER INTAKE	River Intake PP B Lube Press	0	50	Real	PSIG		5	8	10	12
10	RIVER INTAKE	River Intake Screen B Diff	0	10	Real	INWC		0	0	4	4
11	RIVER INTAKE	River Intake Screen A Diff	0	10	Real	INWC		0	0	4	4
12	LPSW PPs	LP Serv Water PP A Disch Press	0	100	Real	PSIG		10	20	70	80
13	LPSW PPs	LP Serv. Water PPB Disch Press	0	100	Real	PSIG		10	20	70	80
14	LPSW PPs	LP Serv Water PP A Screen Diff	0	10	Real	INWC		0	0	4	5
15	LPSW PPs	LP Serv. Water PP B Screen Diff	0	10	Real	INWC		0	0	4	5
16	LPAW PPs	PB 1A LPAW PP Disch Press	0	250	Real	PSIG		70	80	190	200
17	LPAW PPs	PB 1B LPAW PP Disch Press	0	250	Real	PSIG		70	80	190	200
18	LPAW PPs	PB 1C LPAW PP Disch Press	0	250	Real	PSIG		70	80	190	200
19	LPAW PPs	PB 2A LPAW PP Disch Press	0	250	Real	PSIG		70	80	190	200
20	LPAW PPs	PB 2B LPAW PP Disch Press	0	250	Real	PSIG		70	80	190	200
21	LPAW PPs	PB 2C LPAW PP Disch Press	0	250	Real	PSIG		70	80	190	200
22	LPAW PPs	LPAW PP Seal Water Strainer Diff	0	25	Real	PSIG		0	0	15	20
23	SURGE POND PPs	Surge Pond PP A Disch Press	0	50	Real	PSIG		0	0	20	30
24	SURGE POND PPs	Surge Pond PP A Oil Level	0	6"	Digital	Level	OK_NOTOK	1"	2"	5"	6"
25	SURGE POND PPs	Surge Pond PP B Disch Press	0	50	Real	PSIG		0	0	20	30
26	SURGE POND PPs	Surge Pond PP B Oil Level	0	6"	Digital	Level		1"	2"	5"	6"
27	SURGE POND PPs	Surge Pond PP #3 Disch Press	0	50	Real	PSIG		8	10	25	30
28	SURGE POND PPs	Surge Pond PP #3 Oil Level	0	6"	Digital	Level		1"	2"	5"	6"
29	CIRC WATER PPs	Circ Water PP 1A Disch Press	0	50	Real	PSIG		10	12	45	50
30	CIRC WATER PPs	Circ Water 1A Lube Press	0	100	Real	PSIG		40	50	90	100

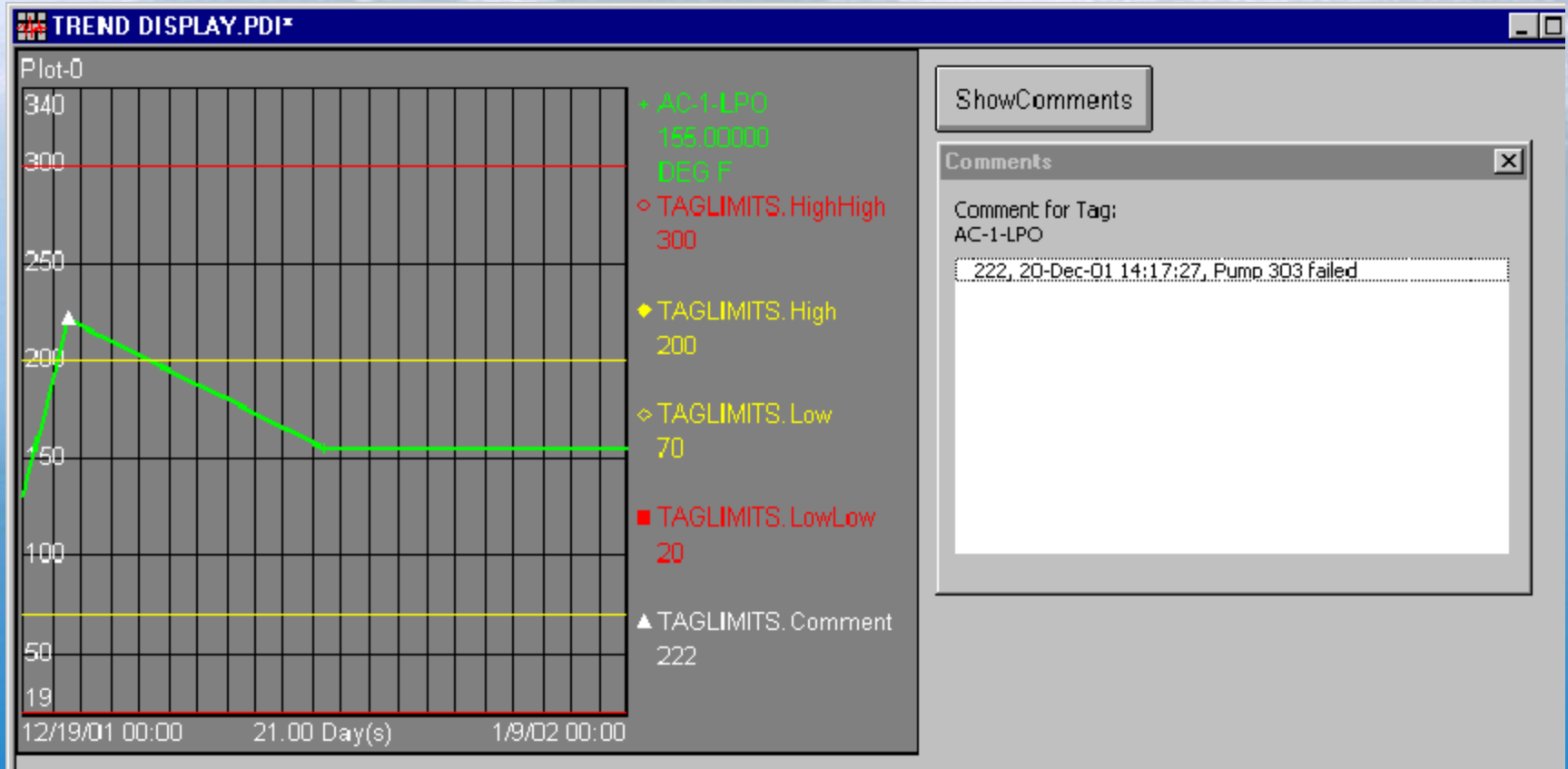
Outside Tags / Inside Tags / Coal Yard /

# Report – Task tracking, exceptions





# Task reports - Comments



# Key Benefits

- Off-the-shelf solution
- Scalable - Expand and grow as you need
- Kesler/OSI can supply all the hardware and software, and provide assistance in turn-key implementation and project execution

# Partial listing of PI sites using “Intrinsically Safe” models

- BP Oil, Alliance and Toledo
- Mobil Oil, Beaumont, TX
- UOP, Des Plaines, IL
- Eastman Chemicals (about 150 devices, 300 users at the Longview, TX site)

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- Over 100 PI sites use the hand-held interface in various Paper & Pulp, Power, Chemicals, Minerals and Mining etc.

# Selected sites in Power Generation (Symbol hand-helds)

- Midwest Generation (previously ComEd), IL (3 sites)
- Virginia Power, VA (3 sites)
- Potomac Electric , MD (6 sites)
- Florida Power, FL(15 sites)
- Northern Power (Sherco Station), MN
- Kiwaunee (Nuclear)
- Alliant Gas & Electric (Nuclear)
- Several other sites in Pulp & Paper, Mining, Oil & Gas, Chemicals etc.



# PocketPC PI sites

- Nuclear
  - Savannah River/Westinghouse (deployment in Feb 2002, serial link to a PC with a docking station)
- Power Generation
  - Entergy, White Bluff, AR
  - Jeffery Energy Center (deployment 2Q 2002, evaluation RF based wireless link to PI)

## Oil & Gas

- Tesoro Petroleum, Salt Lake City Refinery
- Shell Canada, Caroline Gas Complex, Calgary – Pilot and Evaluation

## Win32 PC sites

- Numerous PI sites – Lab entry

## Mobile Win32 PC sites

- Panasonic Toughbook – PSE&G Electrical T&D, full deployment 1Q 2002
  - 70 devices, 300 substations, 100 inspection points per station, once a week
  - Wireless remote entry using CDPD modem link to PI

# Hands-on demo

- Need 2 volunteers
  - PC - put together a Tour
  - Hand-held, Symbol 8100 or Casio IT-700 rugged PocketPC – collect some data and then upload to PI