

Portland General Electric

PI at PGE

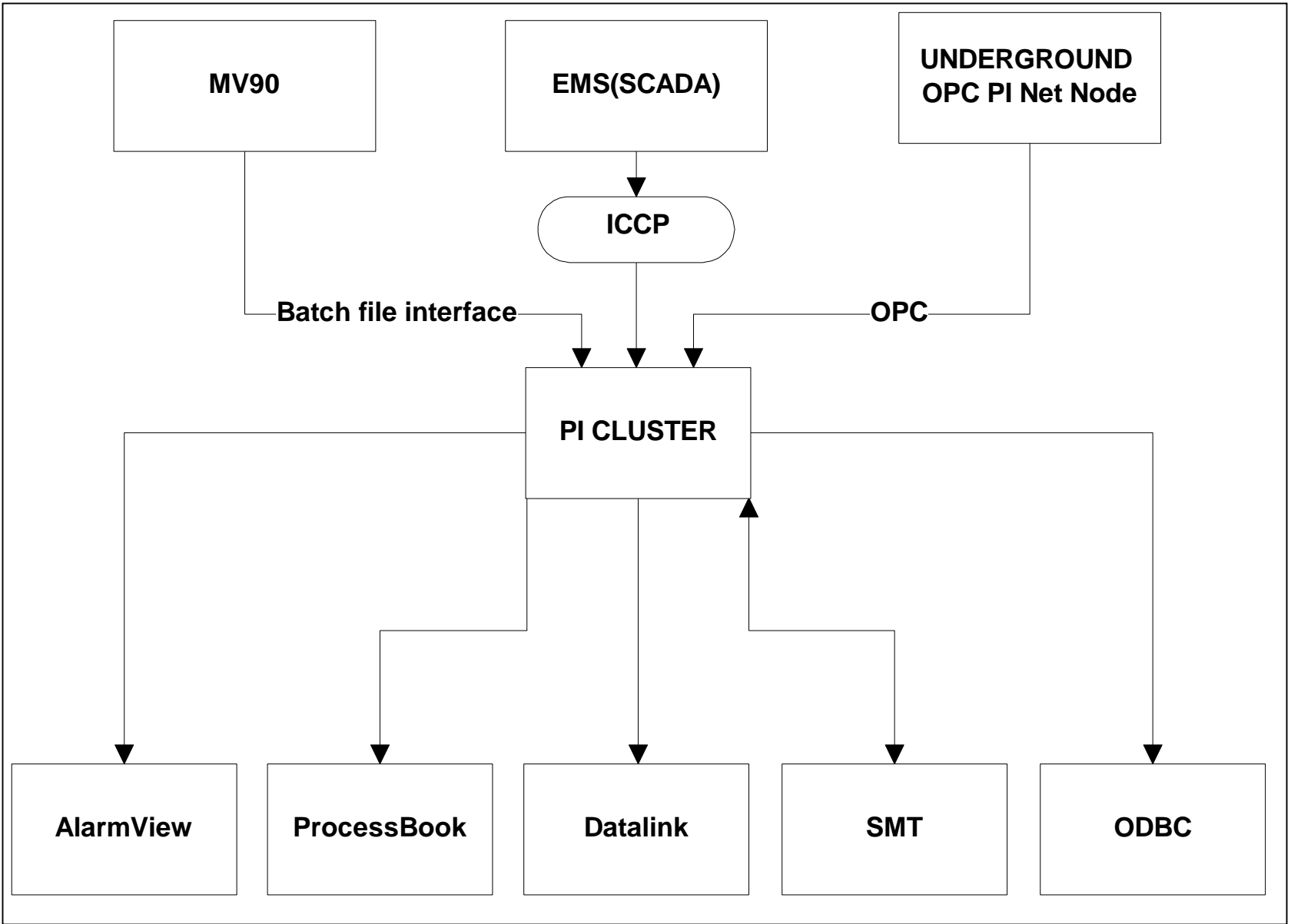
Scott Noble and Ray Payne

Outline

- **Overview**
- **Interfaces**
 - **SCADA**
 - **MV90**
 - **OPC**
- **Users**
- **Client Applications**

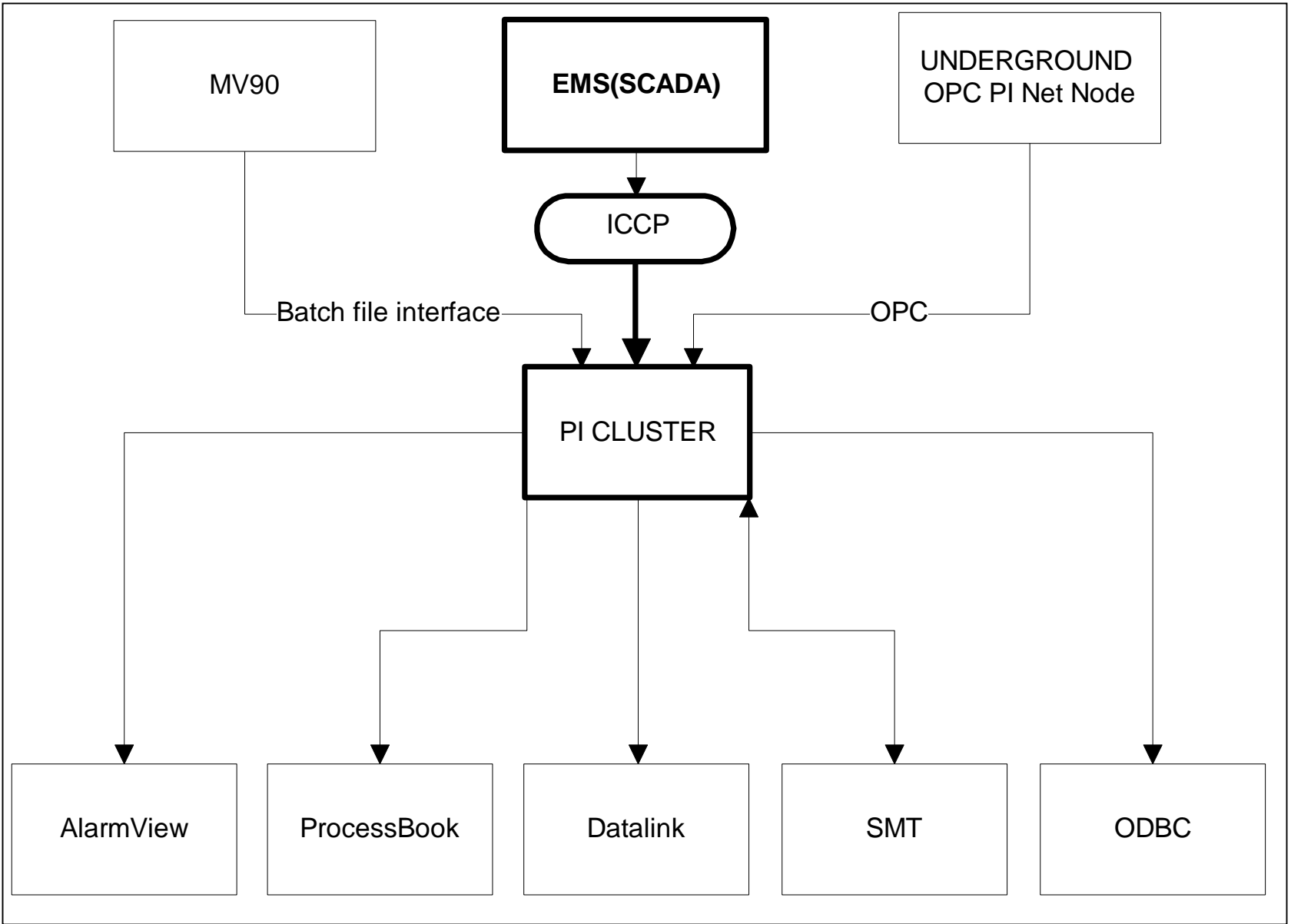
Overview

- Number of Tags (13,554)
 - Analog
 - Status
 - Calculated (MVA, PCNT, QA)
 - AlarmView
- Number of Users
 - ProcessBook (77)
 - Datalink (63)
 - Alarmview (21 Copies)



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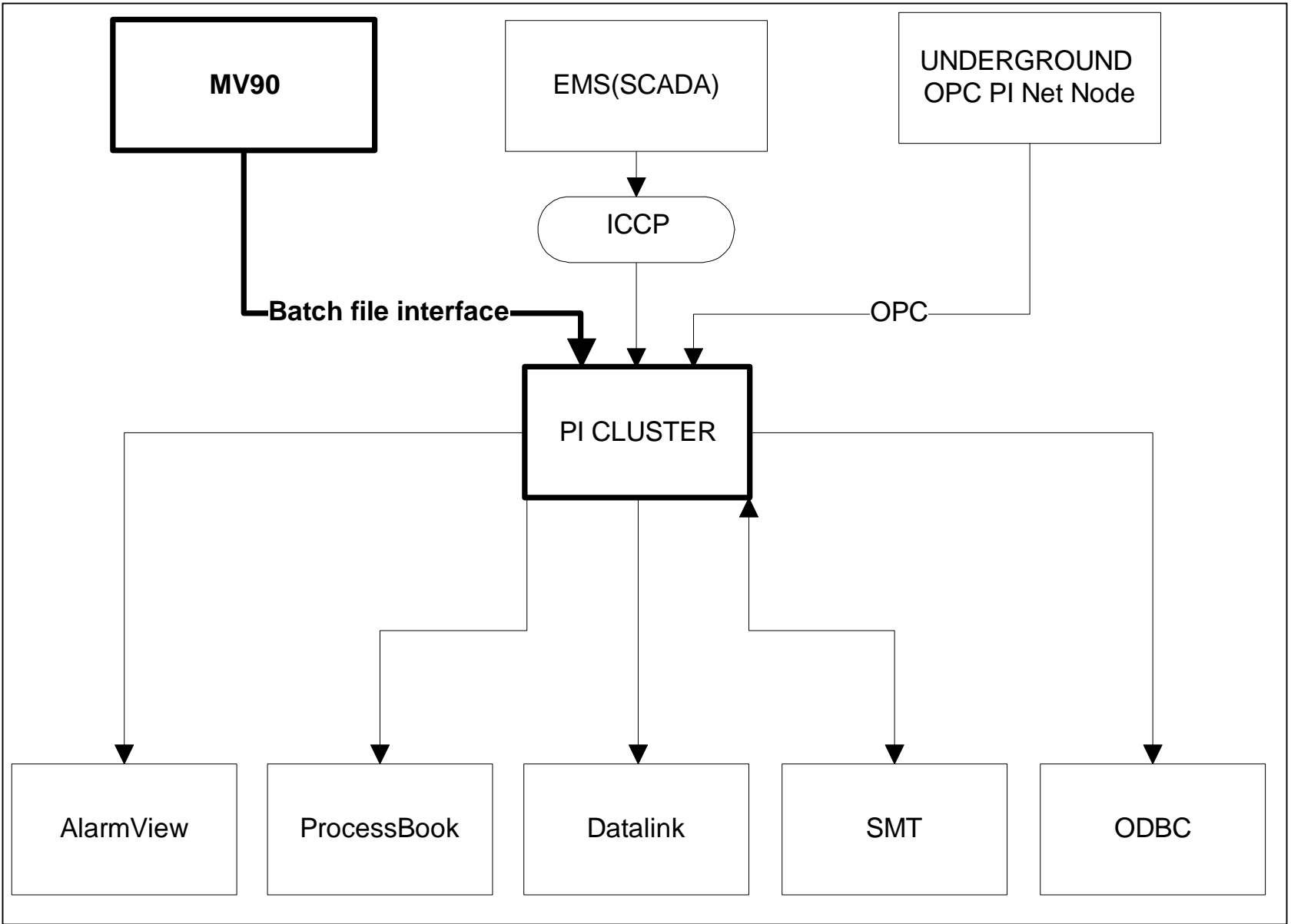


Interface

- SCADA Interface (EMS to PI Server)
 - ABB EMSYS
 - ICCP Protocol
(Inter-Control Center Protocol)
 - 30 Second Scan Rate
 - 86 Substations
 - 7911 Tags

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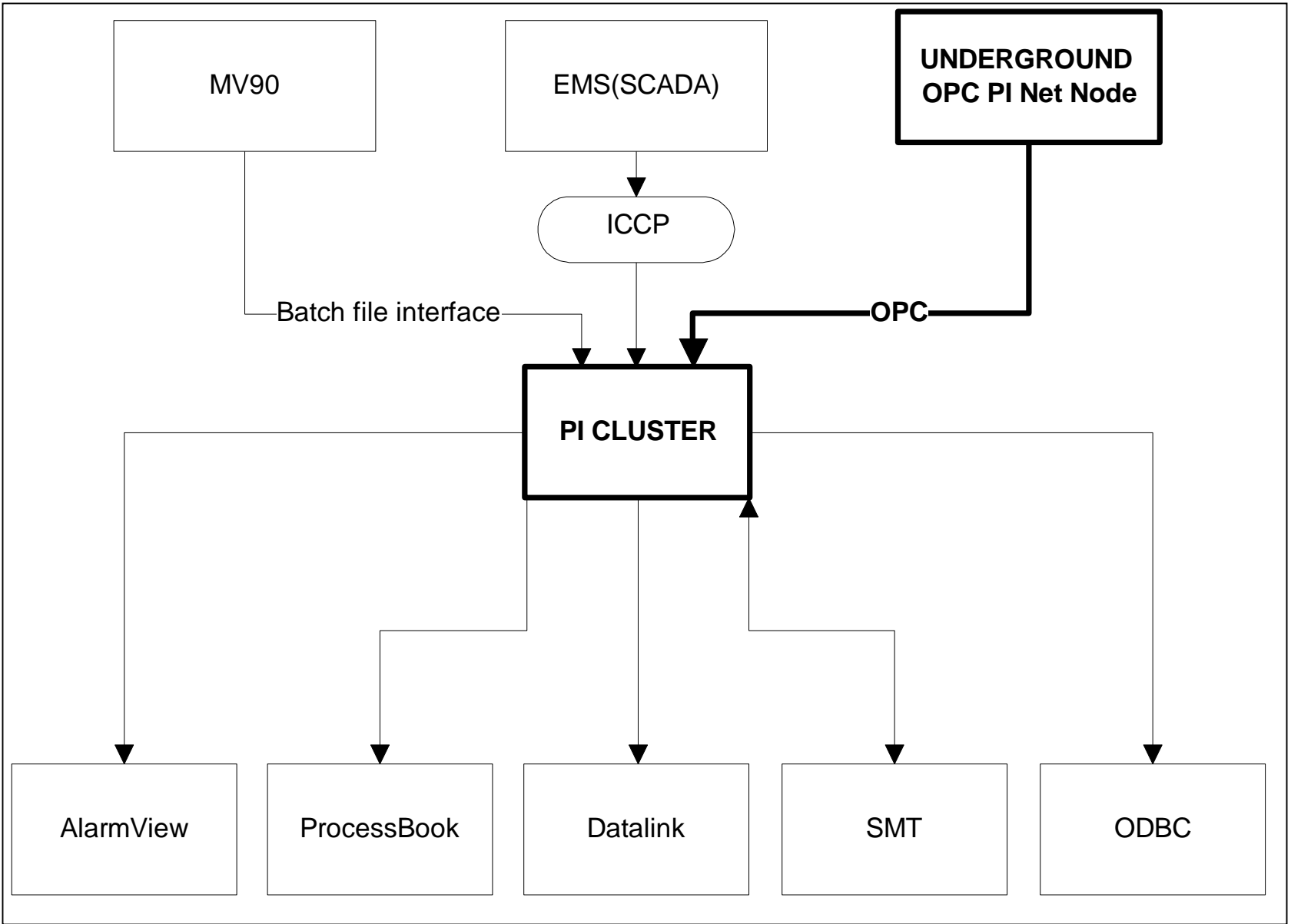


Interface

- MV90 Batch Process to PI Server
 - Batch Program Downloaded Once Per Week
 - 30 Minute Average Values
 - 66 Substations
 - 910 Analog
 - 350 Alarm

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Interface

- Underground Network to PI
 - Remote node on an OPC Server
 - The OPC server talks to Network Protectors in the down town Core area.
 - Still in the progress of getting this on-line

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Users

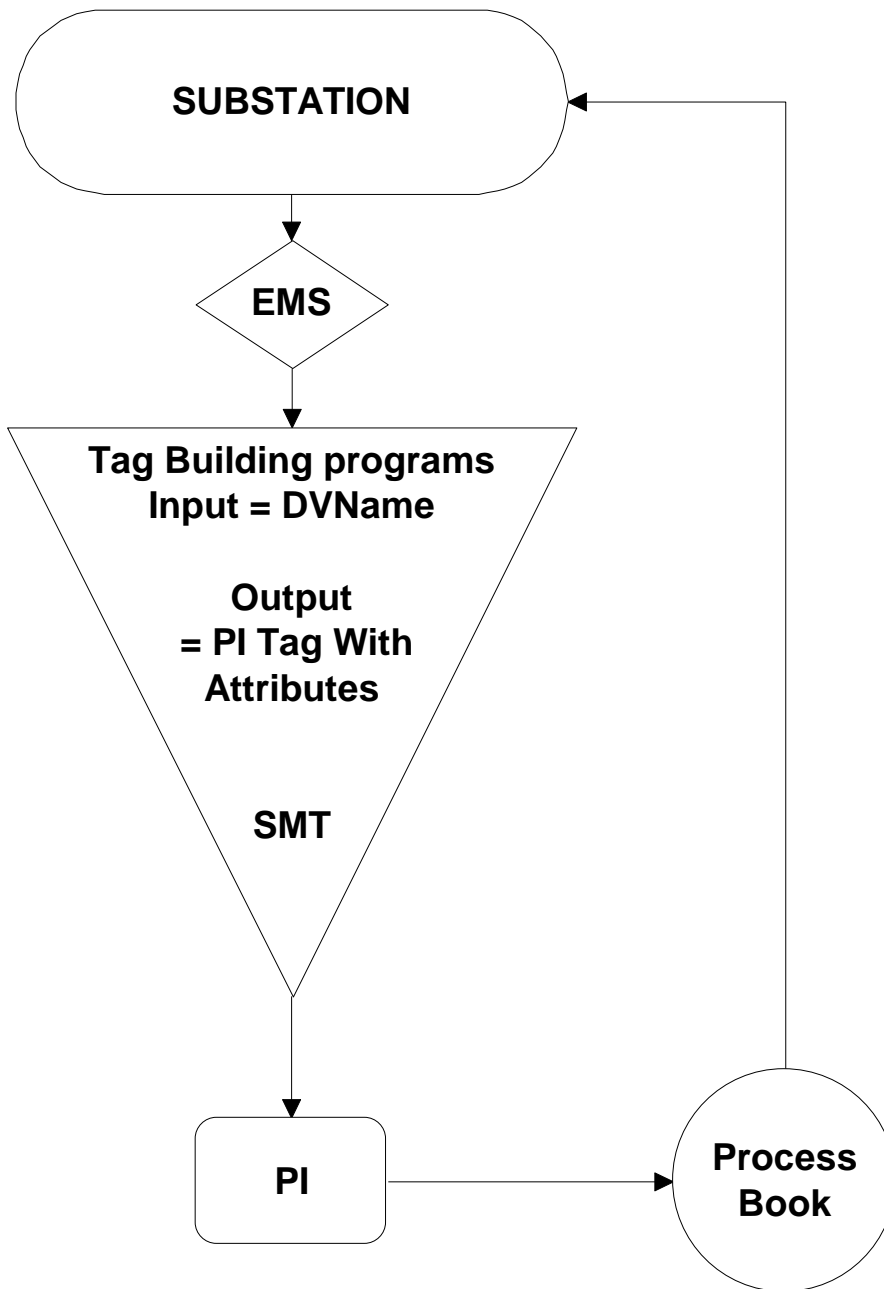
- **Planning Engineers**
- **Field Engineers**
- **SCADA Engineers and Techs**
- **Maintenance Engineers**
- **Protection Engineers**
- **Meter & Relay Technicians**
- **T&D Dispatchers**
- **Generation Schedulers**
- **Special Testers**
- **Load Research Department**

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Client Applications

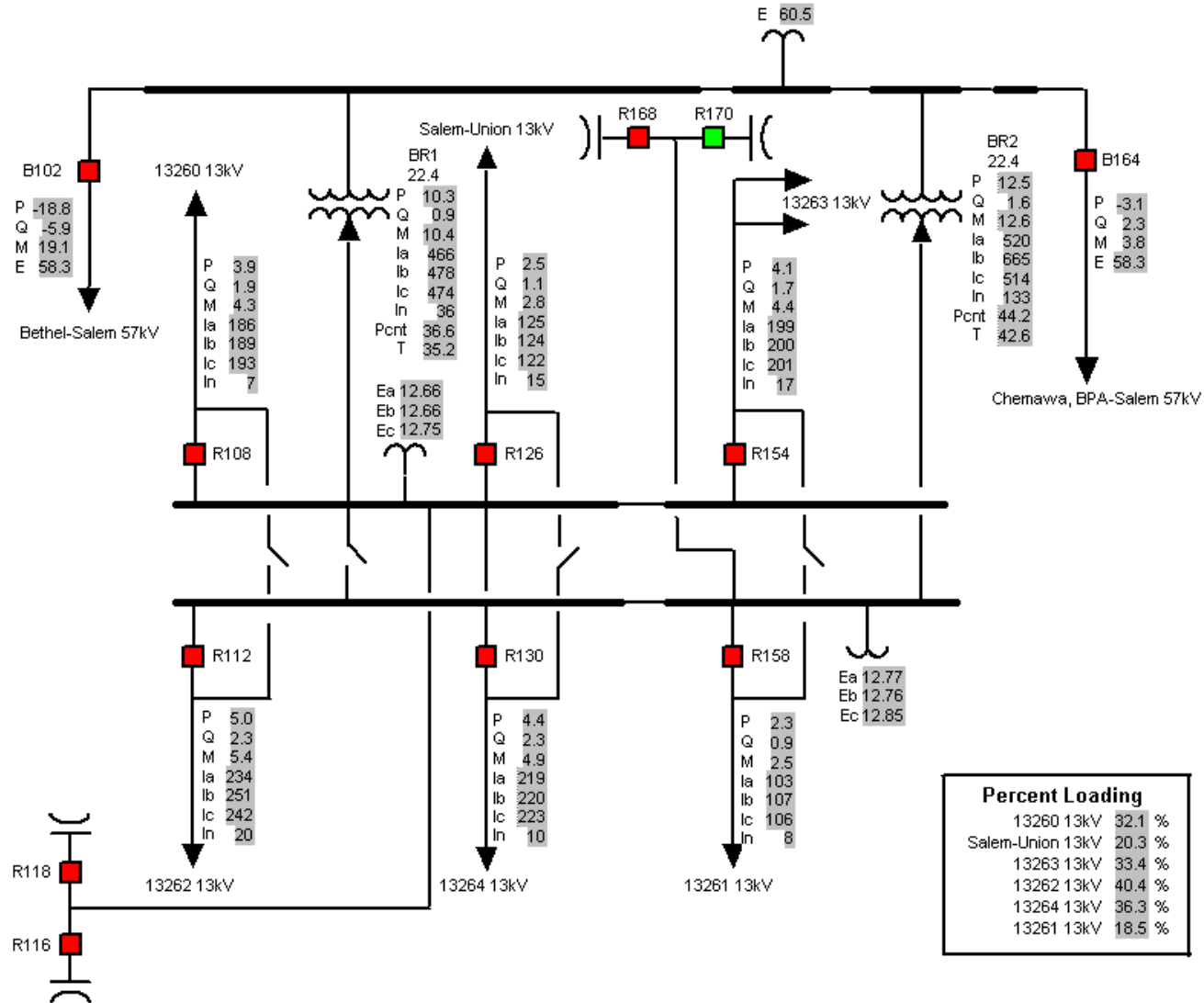
- **PI-ProcessBook**
- **PI-AlarmView**
- **PI-DataLink**
- **PI-SMT**
- **PI-Point Builder**
- **Tag Generator used to build Tags from existing tags**



PI-ProcessBook

Salem

Ambient Temp 77.8
 Station Battery 134.0
 Watchdog 2,061



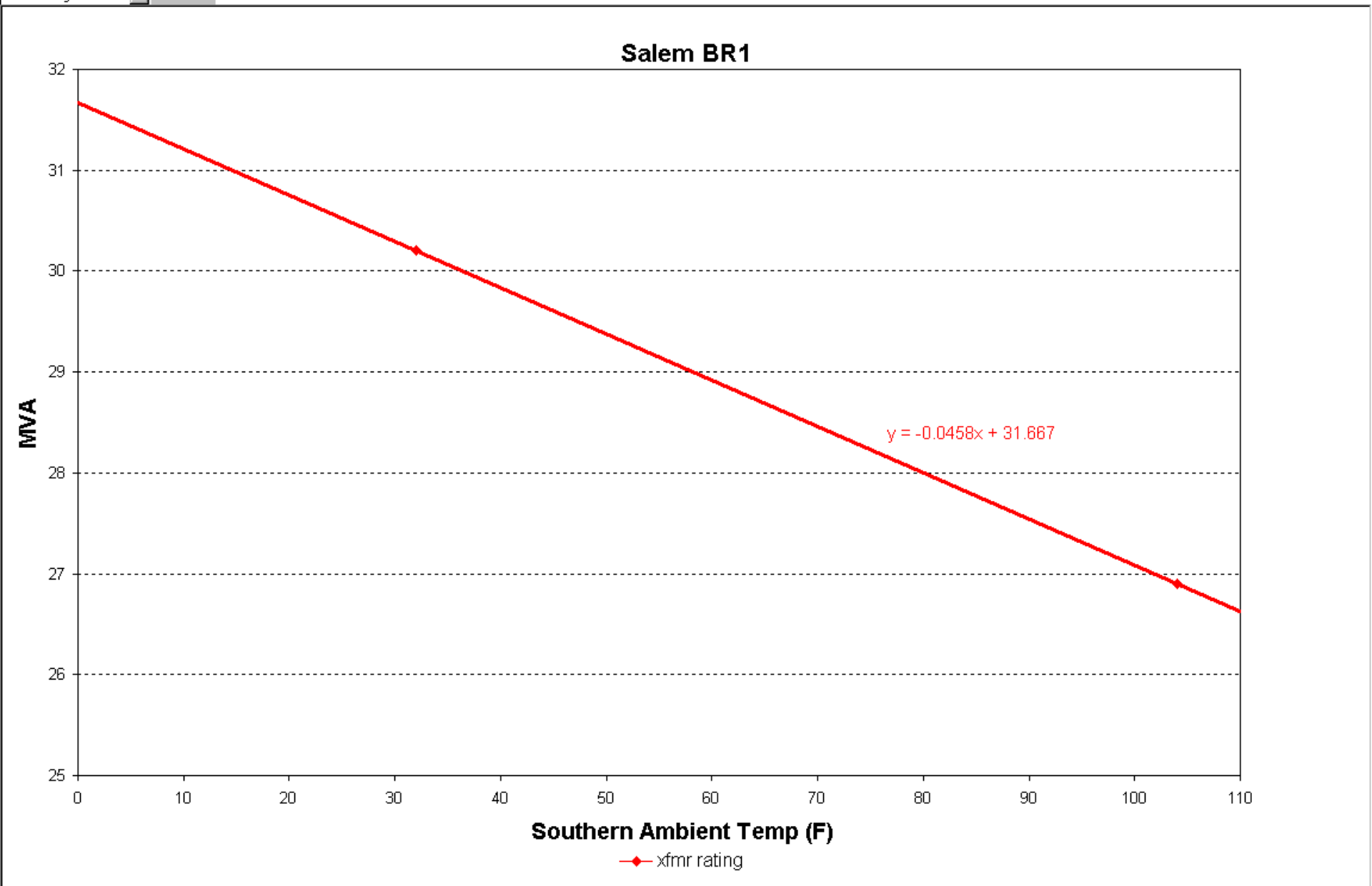
PI - ProcessBook - [TEMPERATURE.PDI]

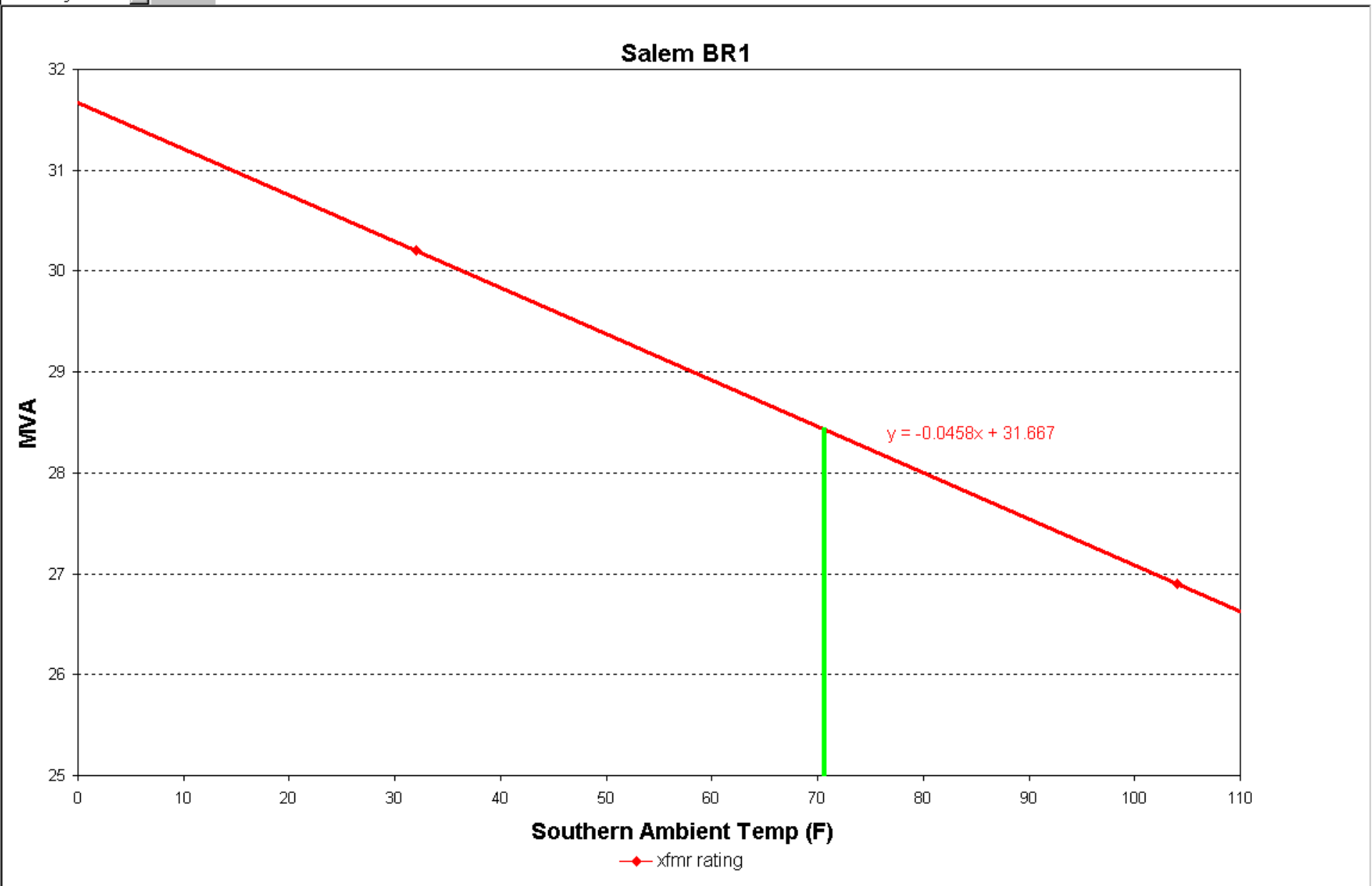
File Edit View Insert Tools Draw Arrange Window Help

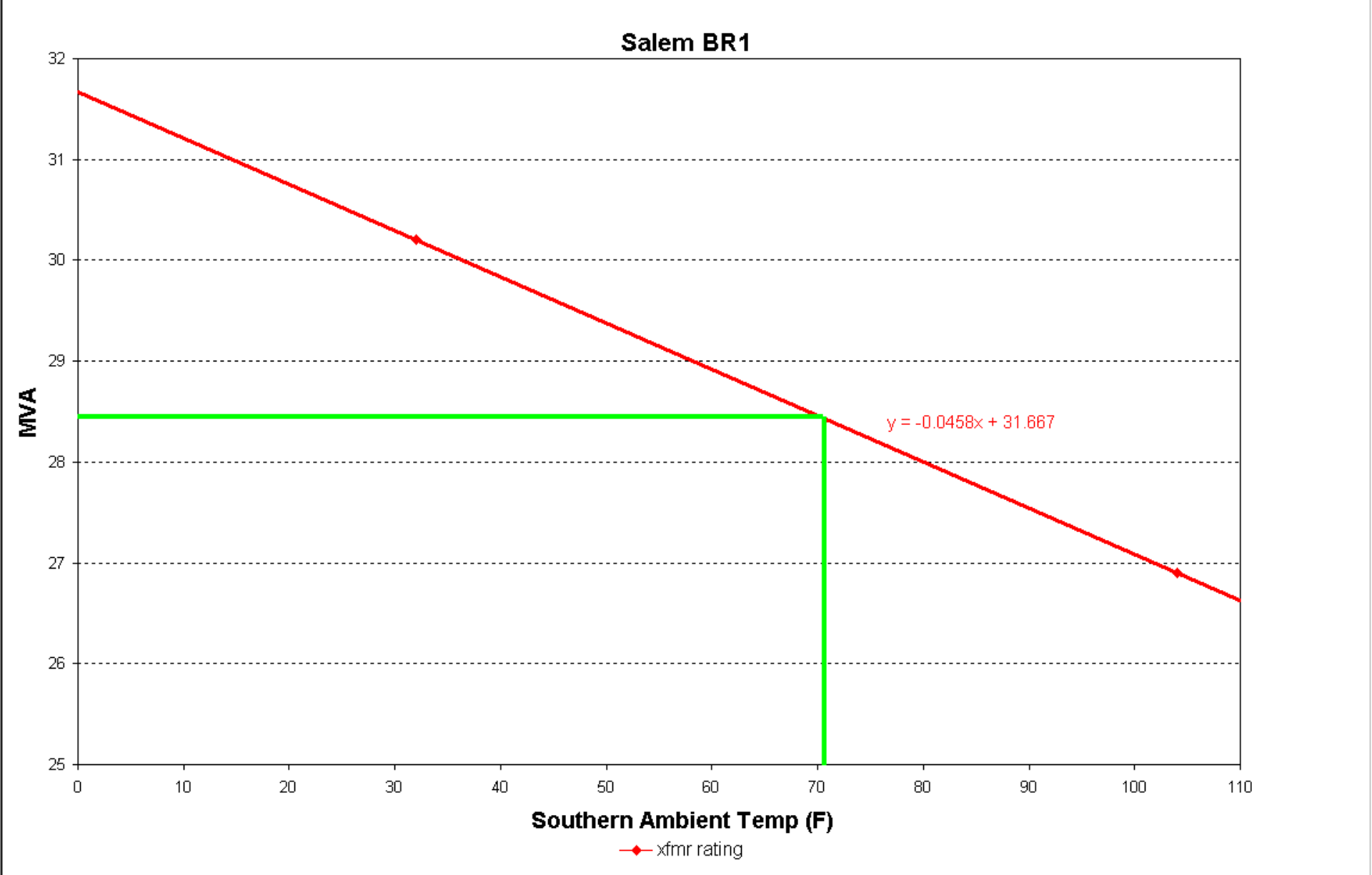
Ambient Temperatures

Central	Eastern	Western	Southern
Canemah 63.4	Carver 68.4	Boones Ferry 71.4	Bethel 70.4
Canyon 66.5	Glendoveer 68.4	Huber 71.9	Dayton 66.6
Clackamas 69.9	Gresham 68.5	Orencia 70.9	Grand Rhonde 64.9
E West 70.6	Hogan South 67.3	Oswego 67.5	McClain 71.5
Harborton 77.2	<hr/>	Sherwood 79.9	Middle Grove 69.2
Harmony 74.9	Average 68.1	St Helens 70.6	Monitor 72.2
Island 66.0		St Marys 75.1	Salem 77.8
Lents 68.3		Sunset 71.3	<hr/>
McLoughlin 66.7		Average 72.2	Average 70.4
Portsmouth 65.7			
Rivergate 73.5			
Sellwood 0.0 B/O			
Stephens 74.6			
Sullivan 72.1			
Urban 69.6			
<hr/>			
Average 70.0			

Ready NUM

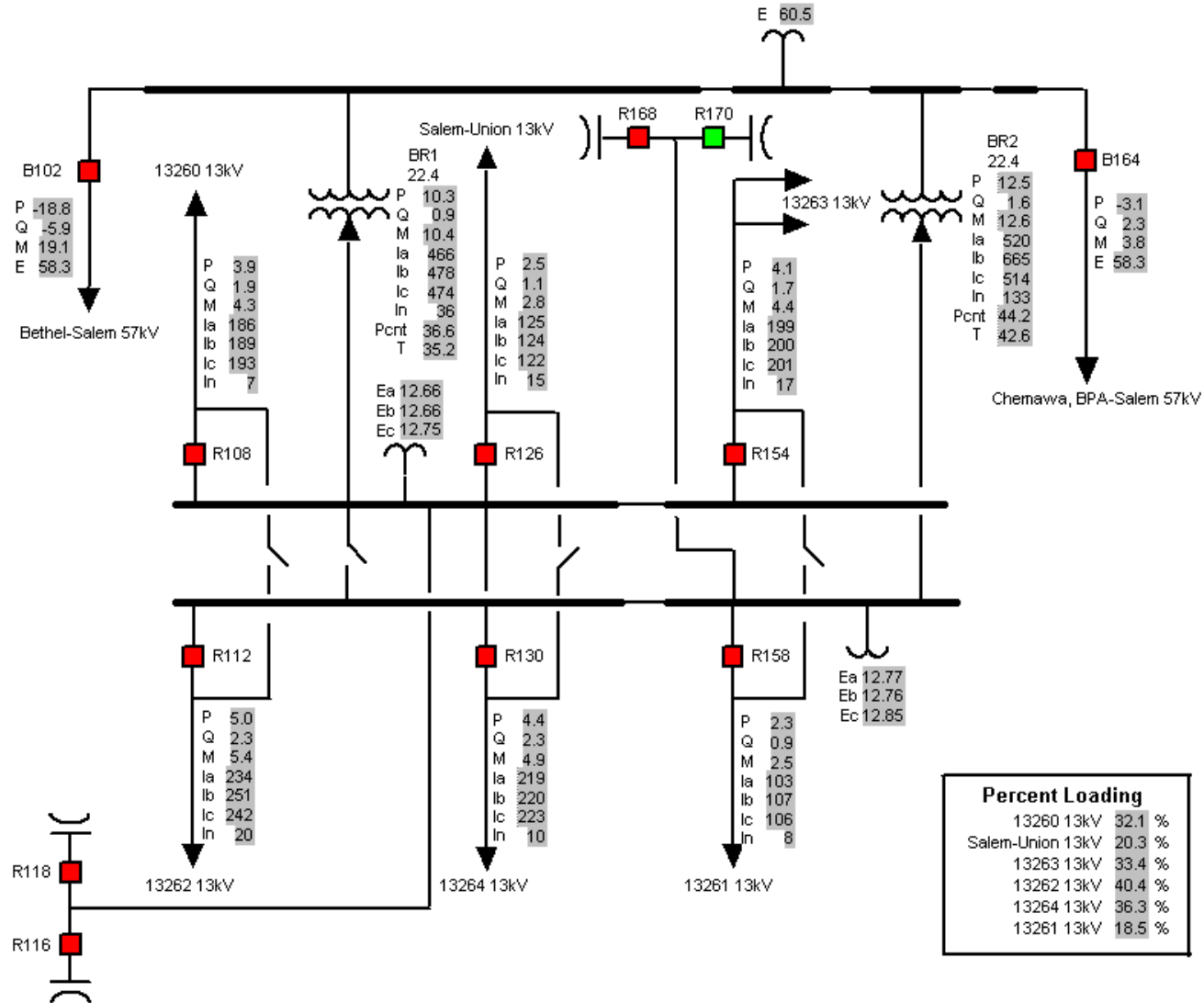






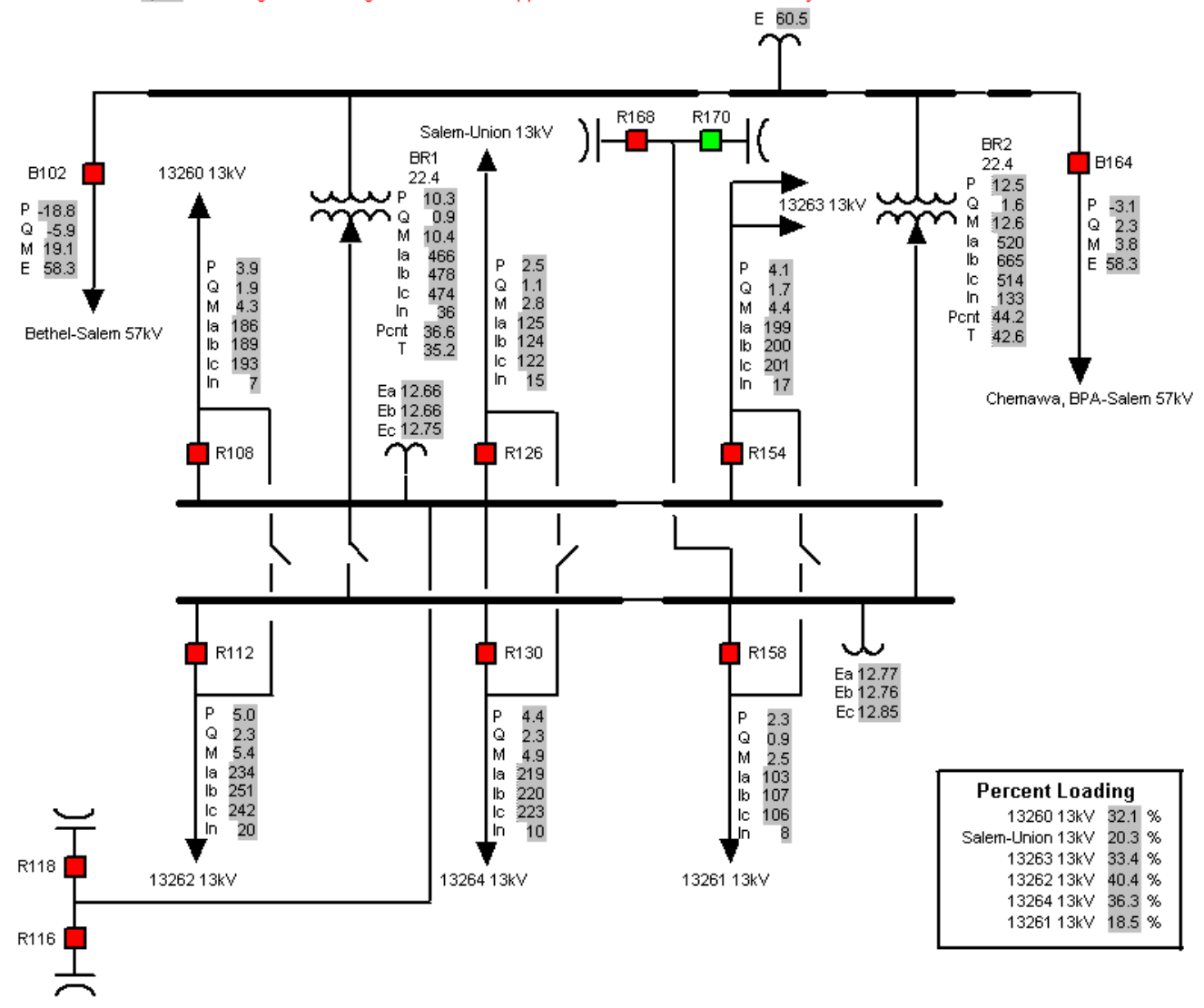
Salem

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 Station Battery 134.0
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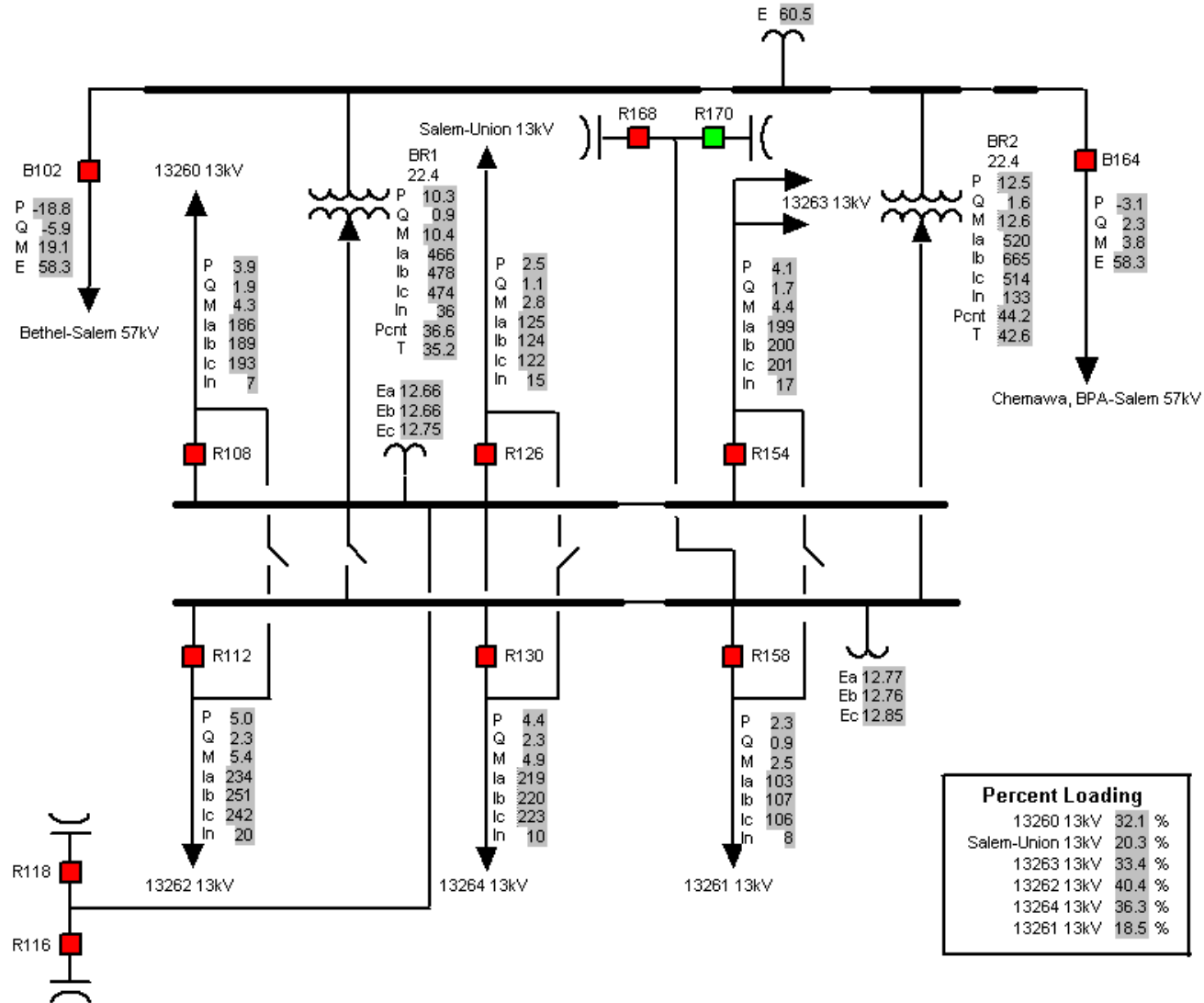
Salem
Ambient Temp 77.8
Station Battery 134.0
Watchdog 2,061

Warning: Watchdog counter has stopped. Substation information may have inaccuracies.



Salem

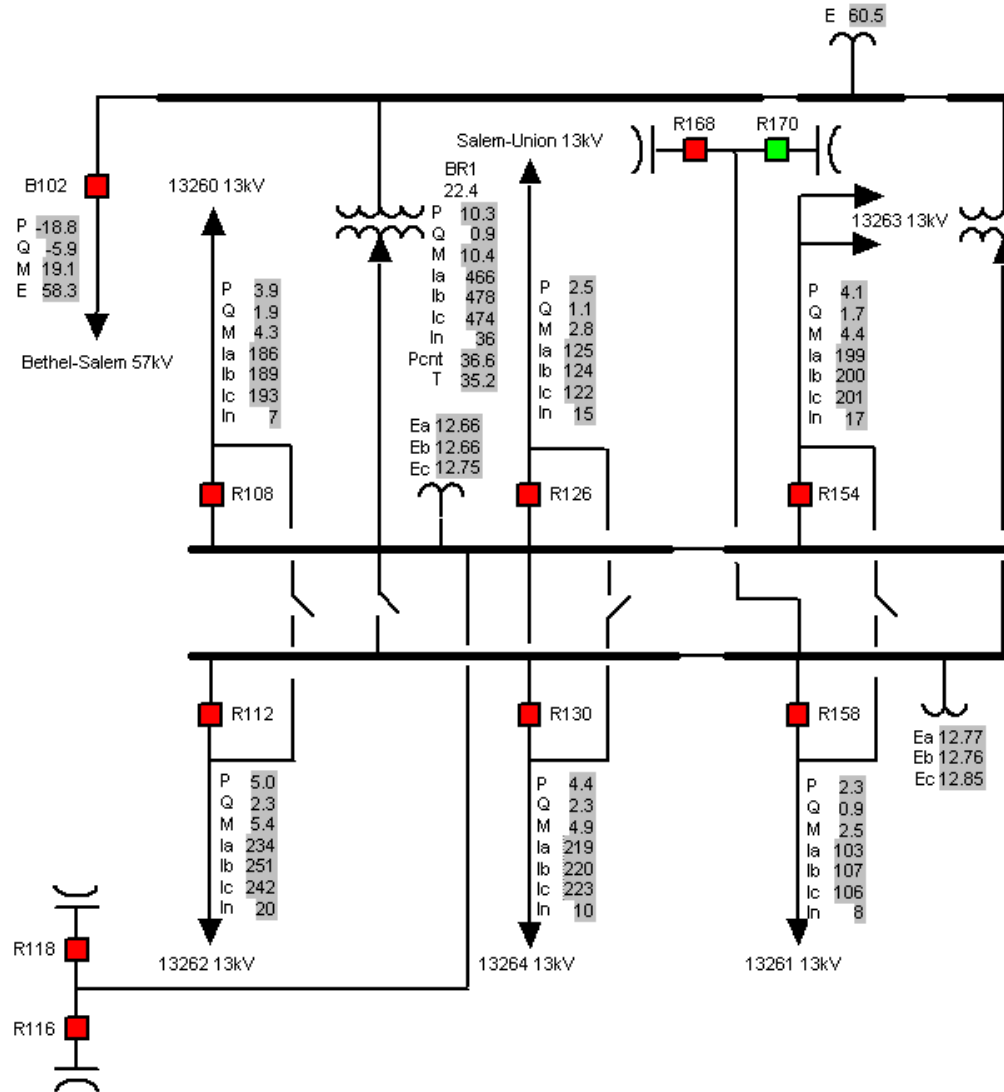
Ambient Temp 77.8
 Station Battery 134.0
 Watchdog 2,061



Percent Loading	
13260 13kV	32.1 %
Salem-Union 13kV	20.3 %
13263 13kV	33.4 %
13262 13kV	40.4 %
13264 13kV	36.3 %
13261 13kV	18.5 %

Salem

Ambient Temp 77.8
 Station Battery 134.0
 Watchdog 2,061



PI - ProcessBook - [Salem.pdi*]

Salem 57kV Transmission

	P	Q
Bethel-Salem 57kV	-18.85	-5.87
Chemawa, BPA-Salem 57kV	-3.11	2.27
BR1	10.34	0.86
BR2	12.50	1.61
Delta	0.82	-1.05

Salem BR1

	P	Q
BR1	10.34	0.86
13260 13kV	3.87	1.93
Salem-Union 13kV	2.46	1.07
13263 13kV	4.08	1.71
Delta	-0.02	3.81

Salem BR2

	P	Q
BR2	12.50	1.61
13262 13kV	4.95	2.25
13264 13kV	4.37	2.33
13261 13kV	2.26	0.91
Delta	-0.99	3.77

Ready

Under Voltage Load Shedding

System Load 2,691

Contact Protection or Transmission Planning if you have questions regarding this display.

Step 1					Step 2					Step 3				
SCADA Stations					SCADA Stations					SCADA Stations				
30 second values.					30 second values.					30 second values.				
	P	Q	E	BUS		P	Q	E	BUS		P	Q	E	BUS
Bethel-Geer 13kV	2.7	-0.5	120.2	W63	Hogan South-Lawrence 13kV	3.5	0.5	118.4	W52	Fairview-Troutdale-13kV	6.2	1.3	68.8	W54
Bethel-MacLeay 13kV	2.2	0.8	120.2	W63	Hogan South-Paropa 13kV	5.8	1.9	118.4	W52	Fairview-Wood Village 13kV	6.7	2.2	68.8	W54
Cornelius-13 13kV	8.4	2.1	60.6	B54	Newberg-Chehalem 13kV	4.7	0.5	117.8	W55	Fairview-Clear Creek 13kV	2.3	1.0	68.8	W54
Harborton-13 13kV	0.5	-0.2			Newberg-Dundee 13kV	4.2	2.2	117.8	W55	Fairview-13 13kV	3.7	0.9	68.8	W54
Harborton-Burlington 13kV	4.1	1.4			Newberg-Hoover 13kV	3.0	1.2	117.8	W55	Glendoveer WR2*	11.5	-1.1	117.9	W53
Harborton-Linnton 13kV	2.4	1.4			Rivergate South 11010 11kV	5.2	1.2	120.1	W53	Glendoveer WR4**	12.5	-3.3	117.9	W53
Middle Grove BR1*	15.2	0.9	61.7	B53	Rivergate South 11011 11kV	4.8	2.1	120.1	W53	Market-Fairgrounds 13kV	1.4	0.6	119.6	W52
Middle Grove BR2**	0.0	0.0	61.7	B53	Rivergate South-Pearcy 13kV	4.5	2.2	120.1	W53	Market-Hawthorne 13kV	6.1	1.7	119.6	W54
Orenco-Baseline 13kV	5.1	1.0	118.0	W56	Rivergate South-Swift 13kV	9.0	7.0	120.1	W53	Market-Park 13kV	3.1	0.8	119.6	W54
Orenco-13 13kV	-0.0	-0.0	118.0	W56	St Helens-13 13kV					Oswego-Iron Mountain 13kV	3.3	1.3	117.8	W53
Oxford-13 13kV	2.4	0.4	118.6	W57	St Helens-CRPUD #1 13kV					Oswego-Stafford Rd 13kV	6.4	1.8	117.8	W53
Oxford-Rural 13kV	3.5	1.4	118.6	W57	E East 11021 11kV	1.6	1.1	116.8	W62	Oswego-Palatine Hill 13kV	3.3	0.7	117.8	W53
Oxford-Shelton 13kV	2.1	1.1	118.6	W57	E East 11040 11kV	3.9	1.0	116.8	W62	Oswego-Marylhurst 13kV	3.9	1.2	117.8	W53
Scoggins-Cherry Grove 13kV	0.9	-0.3			E East 11041 11kV	4.6	1.5	116.8	W62	Salem 13262 13kV	5.2	2.4	60.8	B58
Scoggins-Laurelwood 13kV	2.1	-0.4			E East 11043 11kV	5.6	3.9	116.8	W62	Sellwood-13 13kV	0.0	0.0	0.0	W64
Sullivan-Sussex 13kV	3.9	1.6	59.7	B63	E East 11047 11kV	5.1	2.0	116.8	W62	Sellwood-Kellogg Park 13kV	0.0	0.0	0.0	W64
Sullivan-Willamette 13kV	7.8	1.1	59.7	B63	E East 11064 11kV	3.3	2.6	116.8	W62	Wilsonville-Boeckman 13kV	-0.0	-0.0	60.0	B53
Sullivan-Tanner 13kV	2.1	0.7	59.7	B63	E West 11039 11kV	3.8	1.9	116.9	W63	Wilsonville-Charbonneau 13kV	1.9	1.1	60.0	B53
					E West 11042 11kV	1.1	0.3	116.9	W63					
					E West 13139 13kV	4.2	0.5	116.9	W63					
					E West 13140 13kV	10.3	3.2	116.9	W63					
					E West 13148 13kV	2.7	1.2	116.9	W63					
					E West 13150 13kV	4.7	2.5	116.9	W63					
Sub Total	63.9	11.1			Sub Total	95.4	44.1			Sub Total	77.9	12.5		
Percent of System Load	2.3				Percent of System Load	3.5				Percent of System Load	2.9			
MV90 Stations	30 minute average values downloaded once per week.				MV90 Stations	30 minute average values downloaded once per week.				MV90 Stations	30 minute average values downloaded once per week.			
Boring-282nd 13kV	2.7	0.8												
Boring-City 13kV	2.9	0.6												
Boring-Telford 13kV	2.7	0.4												
Sub Total	8.3	1.8			Sub Total					Sub Total				
Total	72.2	12.9			Total	95.4	44.1			Total	77.9	12.5		

*Note: Includes Middle Grove-Brown Rd. 13kV and Middle Grove Swegle 13kV

**Note: Includes Middle Grove-Chemeketa 13 kV, Middle Grove-Cordon Rd. 13kV, and Middle Grove-West 13kV

*Note: Includes Glendoveer 13596, 13597 and 13599.

**Note: Includes Glendoveer 13598 13kV, Glendoveer-Clifgate 13kV, and Glendoveer-Northeast 13kV,

Momentary Trip Counters

SCADA Trip Counters are in BLACK

MV90 Trip Counters are in BLUE

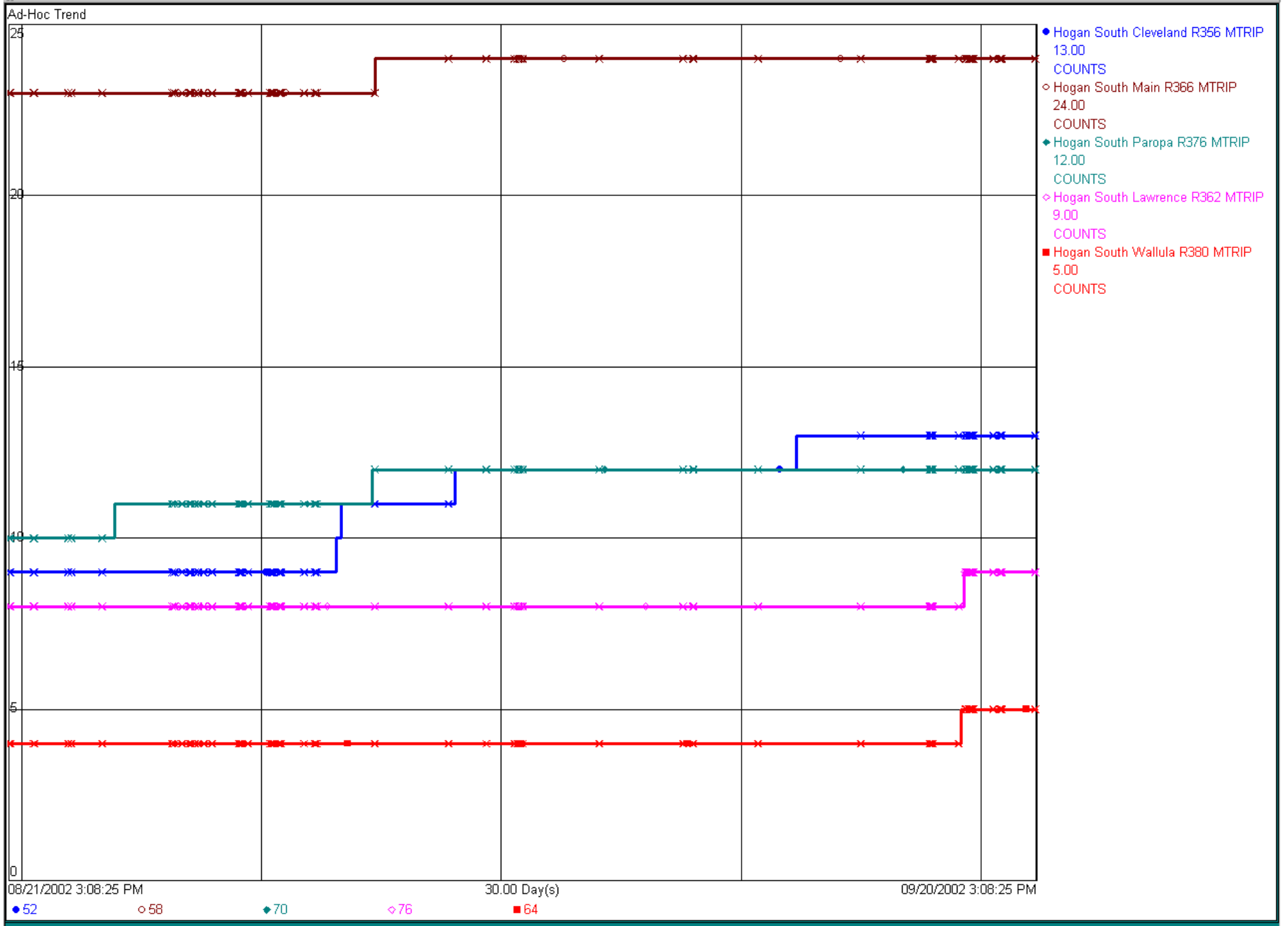
Abernethy Clackamas Heights R106 MTRIP	3	Canyon 13121 13 R498 MTRIP	0	Fairview Clear Creek R122 MTRIP	0
Abernethy Oregon City R104 MTRIP	3	Canyon 21St Ave R142 MTRIP	0	Fairview 13 R168 MTRIP	0
Alder Ankeny R102 MTRIP	1	Canyon 23rd Ave R174 MTRIP	4	Fairview Kennel Club R112 MTRIP	0
Alder Jantzen R114 MTRIP	1	Canyon Burnside R190 MTRIP	0	Fairview Troutdale R128 MTRIP	0
Amity 13 R110 MTRIP	2	Canyon 13 R158 MTRIP	1	Fairview Wood Village R108 MTRIP	0
Amity Bellevue R104 MTRIP	2	Carver 13 R106 MTRIP	3	Fargo 13 R106 MTRIP	0
Arleta Foster R122 MTRIP	3	Carver Almond R108 MTRIP	1	Garden Home Metzger R110 MTRIP	0
Arleta Powell R116 MTRIP	5	Carver Riverbend R104 MTRIP	0	Garden Home McKay R114 MTRIP	2
Arleta Steele R126 MTRIP	5	Cedar Hills 13 R164 MTRIP	2	Glencoe Glisan R102 MTRIP	3
Arleta Harold R136 MTRIP	1	Cedar Hills Leahy R218 MTRIP	8	Glencoe Providence R110 MTRIP	5
Arleta 52nd Ave R132 MTRIP	3	Cedar Hills Skyline R208 MTRIP	6	Glencoe Sunnyside R106 MTRIP	5
Banks 13 R108 MTRIP	6	Cedar Hills St Vincent R162 MTRIP	5	Glencullen Bridelmile R116 MTRIP	3
Banks Cedar Canyon R116 MTRIP	13	Cedar Hills Sylvan R216 MTRIP	7	Glencullen Sunset R112 MTRIP	5
Barnes 13 R118 MTRIP	2	Cedar Hills Shopping Center R166 MTRIP	11	Glendoveer 13596 R110 MTRIP	2
Barnes Battle Creek R124 MTRIP	3	Centennial 13 R114 MTRIP	3	Glendoveer 13597 R152 MTRIP	0
Barnes Pringle R144 MTRIP	0	Centennial Barker R126 MTRIP	4	Glendoveer 13598 R156 MTRIP	2
Barnes Sunnyside R132 MTRIP	5	Centennial Braecroft R118 MTRIP	3	Glendoveer 13599 R114 MTRIP	0
Beaverton Allen R130 MTRIP	0	Centennial Treeland R130 MTRIP	0	Glendoveer Clifgate R132 MTRIP	1
Beaverton Jamieson R122 MTRIP	0	Clackamas Evelyn R114 MTRIP	0	Glendoveer Northeast R124 MTRIP	1
Beaverton Northwest R118 MTRIP	5	Clackamas Gladstone R118 MTRIP	0	Harborton 13 R346 MTRIP	1
Beaverton West Slope R126 MTRIP	0	Clackamas Jennifer R130 MTRIP	0	Harborton Burlington R338 MTRIP	10
Bell Johnson Creek R132 MTRIP	13	Clackamas Tolbert R134 MTRIP	0	Harborton Linnton R334 MTRIP	6
Bell Kendall R128 MTRIP	1	Claxtar 13 R112 MTRIP	0	Harrison Davis R216 MTRIP	3
Bell Flavel R108 MTRIP	0	Claxtar Hayesville R122 MTRIP	0	Harrison Ivon R206 MTRIP	8
Bell Wichita R110 MTRIP	1	Claxtar Ridge R108 MTRIP	0	Hayden Island Mainland R132 MTRIP	3
Bell Southgate R112 MTRIP	0	Colton Grays Hill R108 MTRIP	0	Hayden Island North Shore R112 MTRIP	0
Bethany Springville R114 MTRIP	4	Colton Dhooghe R112 MTRIP	0	Hayden Island South Shore R108 MTRIP	0
Bethany Kaiser R116 MTRIP	0	Curtis 11077 R112 MTRIP	15	Hemlock 13 R128 MTRIP	2
Bethany Thompson R118 MTRIP	0	Curtis 13 R108 MTRIP	1	Hemlock Freemont R126 MTRIP	2
Bethel South Fruitland R412 MTRIP	44	Dayton East R118 MTRIP	2	Hemlock Mason R124 MTRIP	0
Bethel South Geer R416 MTRIP	63	Dayton Lafayette R140 MTRIP	4	Hillsboro Dairy Creek R124 MTRIP	10
Bethel South MacLeay R422 MTRIP	34	Dayton South & West R122 MTRIP	7	Hillsboro Jackson R136 MTRIP	0
Blue Lake 13 R174 MTRIP	0	Delaware Denver R140 MTRIP	0	Hillsboro Laurel R132 MTRIP	0
Blue Lake Sundial R178 MTRIP	0	Delaware Interstate R142 MTRIP	0	Hillsboro Scholls R148 MTRIP	0
Boones Ferry Wembley Park R122 MTRIP	17	Delaware Lombard R144 MTRIP	7	Hogan North 13 R106 MTRIP	8
Boones Ferry Goodall R126 MTRIP	7	Denny East R208 MTRIP	4	Hogan North Brigadoon R120 MTRIP	7
Boones Ferry Mt Park R136 MTRIP	2	Denny North R110 MTRIP	2	Hogan North Links R104 MTRIP	6
Boones Ferry Lake Grove R140 MTRIP	2	Denny South R206 MTRIP	6	Hogan North Salquist R124 MTRIP	1
Boones Ferry Kruse Way R150 MTRIP	2	Denny West R106 MTRIP	2	Hogan South Cleveland R356 MTRIP	13
Boring 282nd R132 MTRIP	5	Dilley 13 R106 MTRIP	0	Hogan South Lawrence R362 MTRIP	9
Boring City R112 MTRIP	2	Dilley Springhill Rd R110 MTRIP	0	Hogan South Main R366 MTRIP	24
Boring Telford R116 MTRIP	13	Dunns Corner 13 R152 MTRIP	2	Hogan South Paropa R376 MTRIP	12
Brightwood 13 R106 MTRIP	2	Dunns Corner Kelso R154 MTRIP	0	Hogan South Wallula R380 MTRIP	5
Brightwood North Bank R110 MTRIP	4	Durham Sattler R110 MTRIP	0	Holgate 13 R130 MTRIP	3
Brookwood 13 R106 MTRIP	0	Durham 13 R116 MTRIP	0	Holgate Bybee R150 MTRIP	6
Brookwood Bonwick R112 MTRIP	0	Durham South R484 MTRIP	0	Holgate Gideon R114 MTRIP	4
Brookwood Sunrise R116 MTRIP	6	Durham Bonita R486 MTRIP	0	Holgate Kenilworth R134 MTRIP	25
Canby 13644 R138 MTRIP	6	Eagle Creek Barton R104 MTRIP	4	Holgate Rhone R118 MTRIP	4
Canby 13643 R144 MTRIP	12	Eagle Creek Rivermill R106 MTRIP	7	Huber 13 R108 MTRIP	0
Canby Butteville R160 MTRIP	0	Eastport 76th R126 MTRIP	3	Huber Bany R124 MTRIP	0
Canby City of Canby #1 R110 MTRIP	13	Eastport Plaza R122 MTRIP	2	Huber Farmington R128 MTRIP	0

Momentary Trip Counters

SCADA Trip Counters are in BLACK

MV90 Trip Counters are in BLUE

Abernethy Clackamas Heights R106 MTRIP	3	Canyon 13121 13 R498 MTRIP	0	Fairview Clear Creek R122 MTRIP	0
Abernethy Oregon City R104 MTRIP	3	Canyon 21St Ave R142 MTRIP	0	Fairview 13 R168 MTRIP	0
Alder Ankeny R102 MTRIP	1	Canyon 23rd Ave R174 MTRIP	4	Fairview Kennel Club R112 MTRIP	0
Alder Jantzen R114 MTRIP	1	Canyon Burnside R190 MTRIP	0	Fairview Troutdale R128 MTRIP	0
Amity 13 R110 MTRIP	2	Canyon 13 R158 MTRIP	1	Fairview Wood Village R108 MTRIP	0
Amity Bellevue R104 MTRIP	2	Carver 13 R106 MTRIP	3	Fargo 13 R106 MTRIP	0
Arleta Foster R122 MTRIP	3	Carver Almond R108 MTRIP	1	Garden Home Metzger R110 MTRIP	0
Arleta Powell R116 MTRIP	5	Carver Riverbend R104 MTRIP	0	Garden Home McKay R114 MTRIP	2
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Barnes 13 R118 MTRIP	2	Cedar Hills Shopping Center R166 MTRIP	11	Glendoveer 13596 R110 MTRIP	2
Barnes Battle Creek R124 MTRIP	3	Centennial 13 R114 MTRIP	3	Glendoveer 13597 R152 MTRIP	0
Barnes Pringle R144 MTRIP	0	Centennial Barker R126 MTRIP	4	Glendoveer 13598 R156 MTRIP	2
Barnes Sunnyside R132 MTRIP	5	Centennial Braecroft R118 MTRIP	3	Glendoveer 13599 R114 MTRIP	0
Beaverton Allen R130 MTRIP	0	Centennial Treeland R130 MTRIP	0	Glendoveer Clifgate R132 MTRIP	1
Beaverton Jamieson R122 MTRIP	0	Clackamas Evelyn R114 MTRIP	0	Glendoveer Northeast R124 MTRIP	1
Beaverton Northwest R118 MTRIP	5	Clackamas Gladstone R118 MTRIP	0	Harborton 13 R346 MTRIP	1
Beaverton West Slope R126 MTRIP	0	Clackamas Jennifer R130 MTRIP	0	Harborton Burlington R338 MTRIP	10
Bell Johnson Creek R132 MTRIP	13	Clackamas Tolbert R134 MTRIP	0	Harborton Linnton R334 MTRIP	6
Bell Kendall R128 MTRIP	1	Claxtar 13 R112 MTRIP	0	Harrison Davis R216 MTRIP	3
Bell Flavel R108 MTRIP	0	Claxtar Hayesville R122 MTRIP	0	Harrison Ivon R206 MTRIP	8
Bell Wichita R110 MTRIP	1	Claxtar Ridge R108 MTRIP	0	Hayden Island Mainland R132 MTRIP	3
Bell Southgate R112 MTRIP	0	Colton Grays Hill R108 MTRIP	0	Hayden Island North Shore R112 MTRIP	0
Bethany Springville R114 MTRIP	4	Colton Dhooghe R112 MTRIP	0	Hayden Island South Shore R108 MTRIP	0
Bethany Kaiser R116 MTRIP	0	Curtis 11077 R112 MTRIP	15	Hemlock 13 R128 MTRIP	2
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Boones Ferry Goodall R126 MTRIP	7	Denny East R208 MTRIP	4	Hogan North Brigadoon R120 MTRIP	7
Boones Ferry Mt Park R136 MTRIP	2	Denny North R110 MTRIP	2	Hogan North Links R104 MTRIP	6
Boones Ferry Lake Grove R140 MTRIP	2	Denny South R206 MTRIP	6	Hogan North Salquist R124 MTRIP	1
Boones Ferry Kruse Way R150 MTRIP	2	Denny West R106 MTRIP	2	Hogan South Cleveland R356 MTRIP	13
Boring 282nd R132 MTRIP	5	Dilley 13 R106 MTRIP	0	Hogan South Lawrence R362 MTRIP	9
Boring City R112 MTRIP	2	Dilley Springhill Rd R110 MTRIP	0	Hogan South Main R366 MTRIP	24
Boring Telford R116 MTRIP	13	Dunns Corner 13 R152 MTRIP	2	Hogan South Paropa R376 MTRIP	12
Brightwood 13 R106 MTRIP	2	Dunns Corner Kelso R154 MTRIP	0	Hogan South Wallula R380 MTRIP	5
Brightwood North Bank R110 MTRIP	4	Durham Sattler R110 MTRIP	0	Holgate 13 R130 MTRIP	3
Brookwood 13 R106 MTRIP	0	Durham 13 R116 MTRIP	0	Holgate Bybee R150 MTRIP	6
Brookwood Bonwick R112 MTRIP	0	Durham South R484 MTRIP	0	Holgate Gideon R114 MTRIP	4
Brookwood Sunrise R116 MTRIP	6	Durham Bonita R486 MTRIP	0	Holgate Kenilworth R134 MTRIP	25
Canby 13644 R138 MTRIP	6	Eagle Creek Barton R104 MTRIP	4	Holgate Rhone R118 MTRIP	4
Canby 13643 R144 MTRIP	12	Eagle Creek Rivermill R106 MTRIP	7	Huber 13 R108 MTRIP	0
Canby Butteville R160 MTRIP	0	Eastport 76th R126 MTRIP	3	Huber Bany R124 MTRIP	0
Canby City of Canby #1 R110 MTRIP	13	Eastport Plaza R122 MTRIP	2	Huber Farmington R128 MTRIP	0



PI-Alarm View

PIAlarmView

File Edit Options Actions Help

Priority: 01 23

(pgepdx-apclpico)

- Transformer
 - Cooling Equipment Failure
 - High Combustible Gas
 - High/Low Oil Level
 - High Transformer Pressure
 - Loss of LTC Power
 - Low N2 Cylinder
 - Low Oil Flow
 - Low Transformer Pressure
 - LTC Filtration
 - LTC Off Position
 - LTC Trouble
 - MVA Loading
 - Top Oil Temp
 - Top Oil & Winding Temp
 - Winding Temp

Tagname	Al. State
Sherwood VWR1 XFMR Cooling Equip Failure ALARMVIEW	FAILURE
St Marys VWR9 XFMR Cooling Equip Failure ALARMVIEW	FAILURE
Carver WR2 MVA PCNT ALARMVIEW	Over70
Denny WR1 MVA PCNT ALARMVIEW	Over70
Harmony WR1 MVA PCNT ALARMVIEW	Over70
McClain BR3 MVA PCNT ALARMVIEW	Over70
Murrayhill WR1 MVA PCNT ALARMVIEW	Over70
Orencia WR4 MVA PCNT ALARMVIEW	Over70
Sunset WR2 MVA PCNT ALARMVIEW	Over80
Urban WR1 MVA PCNT ALARMVIEW	Over70
Urban WR3 MVA PCNT ALARMVIEW	Over70
Waconda BR2 MVA PCNT ALARMVIEW	Over70
West Portland WR1 MVA PCNT ALARMVIEW	Over70
Wilsonville BR1 MVA PCNT ALARMVIEW	Over70
Bethany WR1 MVA PCNT ALARMVIEW	Over70

Priority: 01 23

(pgepdx-apclpico)

- Feeder
 - MVA Loading
 - Neutral

Tagname	Al. State
Canyon 13134 Network #3 R162 MVA PCNT ALARMVIEW	Over90
Canyon 13135 Network #3 R178 MVA PCNT ALARMVIEW	Over80
Canyon 13136 Network #3 R194 MVA PCNT ALARMVIEW	Over80
Fairview Kennel Club R112 MVA PCNT ALARMVIEW	Over90
Orencia Amberqden R316 MVA PCNT ALARMVIEW	Over70
Sunset Pauling R216 MVA PCNT ALARMVIEW	Over90
West Portland 13 R106 MVA PCNT ALARMVIEW	Over70
Bethany Kaiser R116 N AMPS ALARMVIEW	Over100
Bethany Springville R114 N AMPS ALARMVIEW	Over100
Bethany Thompson R118 N AMPS ALARMVIEW	Over90
Island 13188 R110 N AMPS ALARMVIEW	Over90
Murrayhill Teal R116 N AMPS ALARMVIEW	Over100
West Union 13 R114 N AMPS ALARMVIEW	Over90
E West 13150 R412 MVA PCNT ALARMVIEW	Over70

Priority: 01 23

(pgepdx-apclpico)

- Battery
 - Charger Trouble
 - Ground
 - Loss of AC
 - Loss of DC
 - Low Voltage

Tagname	Al. State

System Load 3.075

Ambient Temperatures

Central	88.0	Western	89.9
Eastern	89.2	Southern	85.8

NUM

PIAlarmView

File Edit Options Actions Help

Priority: 01 23

(pgepdx-apclpico)

- Cap Bank
 - Auto/Manual
 - Trouble
 - Unbalanced

Tagname	Al. State
Bethany Cap Bank #1&2 Auto/Manual ALARMVIEW	Manual
Blue Lake Cap Bank #1&2 Auto/Manual ALARMVIEW	Auto
Murrayhill Cap Bank #1 Auto/Manual ALARMVIEW	Manual
Orencia Cap Bank #1&2 Auto/Manual ALARMVIEW	Manual
Orencia Cap Bank #3&4 Auto/Manual ALARMVIEW	Manual
Rivergate Cap Bank #1 Auto/Manual ALARMVIEW	Manual
Rivergate Cap Bank #2 Auto/Manual ALARMVIEW	Manual
Roseway Cap Bank #1&2 Auto/Manual ALARMVIEW	Manual
Sullivan Cap Bank #7&8 Auto/Manual ALARMVIEW	Manual
Twilight Cap Bank #3 Auto/Manual ALARMVIEW	Manual

Priority: 01 23

(pgepdx-apclpico)

- Relay
 - Trouble

Tagname	Al. State

Priority: 01 23

(pgepdx-apclpico)

- Breaker
 - Breaker Lockout
 - Low SF6

Tagname	Al. State
Hemlock Mason R124 BRKLO ALARMVIEW	LOCKOUT

Priority: 01 23

(pgepdx-apclpico)

- Watchdog

Tagname	Al. State
Glendoveer Watchdog ALARMVIEW	Stopped

PIAlarmView

File Edit Options Actions Help

Priority: 01 23

(pgepdx-apclpico)

- Transformer
 - Cooling Equipment
 - High Combustible
 - High/Low Oil Level
 - High Transformer F
 - Loss of LTC Power
 - Low N2 Cylinder
 - Low Oil Flow
 - Low Transformer Pt
 - LTC Filtration
 - LTC Off Position
 - LTC Trouble
 - MVA Loading

Tagname	AI State
Sherwood VWR1 XFMR Cooling Equip Failure ALARMVIEW	FAILURE
St Marys VWR9 XFMR Cooling Equip Failure ALARMVIEW	FAILURE
Carver WR2 MVA PCNT ALARMVIEW	Over70
Denny WR1 MVA PCNT ALARMVIEW	Over70
Harmony WR1 MVA PCNT ALARMVIEW	Over70
McClain BR3 MVA PCNT ALARMVIEW	Over70
Murrayhill WR1 MVA PCNT ALARMVIEW	Over70
Orencia WR4 MVA PCNT ALARMVIEW	Over70
Sunset WR2 MVA PCNT ALARMVIEW	Over80
Urban WR1 MVA PCNT ALARMVIEW	Over70
Urban WR3 MVA PCNT ALARMVIEW	Over70
Waconda BR2 MVA PCNT ALARMVIEW	Over80
West Portland WR1 MVA PCNT ALARMVIEW	Over70
Wilsonville BR1 MVA PCNT ALARMVIEW	Over70
Bethany WR1 MVA PCNT ALARMVIEW	Over70

Priority: 01 23

(pgepdx-apclpico)

- Feeder
 - MVA Loading
 - Neutral

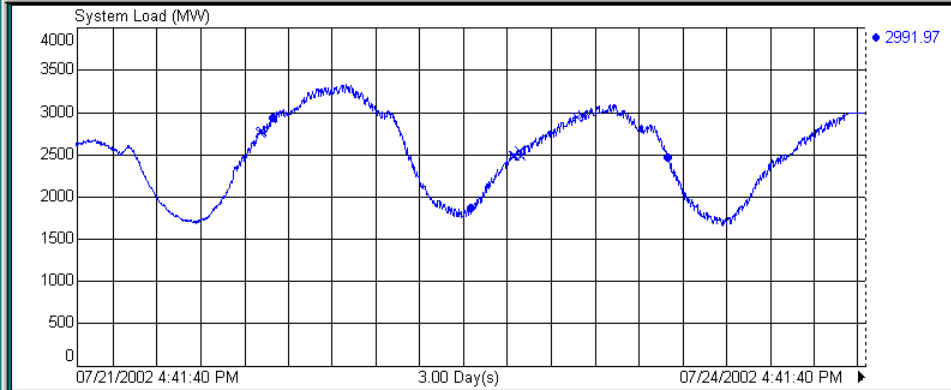
Tagname	AI State
Canyon 13134 Network #3 R162 MVA PCNT ALARMVIEW	Over90
Canyon 13135 Network #3 R178 MVA PCNT ALARMVIEW	Over80
Canyon 13136 Network #3 R194 MVA PCNT ALARMVIEW	Over80
Denny North R110 MVA PCNT ALARMVIEW	Over70
Fairview Kennel Club R112 MVA PCNT ALARMVIEW	Over90
Orencia Amberglen R316 MVA PCNT ALARMVIEW	Over70
Sunset Pauling R216 MVA PCNT ALARMVIEW	Over90
Urban Barbur R130 MVA PCNT ALARMVIEW	Over70
West Portland 13 R106 MVA PCNT ALARMVIEW	Over70
Bethany Kaiser R116 N AMPS ALARMVIEW	Over100
Bethany Springville R114 N AMPS ALARMVIEW	Over100
Bethany Thompson R118 N AMPS ALARMVIEW	Over100
Island 13188 R110 N AMPS ALARMVIEW	Over90
Murrayhill Teal R116 N AMPS ALARMVIEW	Over100
West Union 13 R114 N AMPS ALARMVIEW	Over90

Priority: 01 23

(pgepdx-apclpico)

- Battery
 - Charger Trouble
 - Ground
 - Loss of AC

Tagname	AI State
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PIAlarmView

File Edit Options Actions Help

Priority: 01 23

(pgepdx-apclpico)

- Cap Bank
 - Auto/Manual
 - Trouble
 - Unbalanced

Tagname	AI State
Bethany Cap Bank #1&2 Auto/Manual ALARMVIEW	Manual
Blue Lake Cap Bank #1&2 Auto/Manual ALARMVIEW	Auto
Murrayhill Cap Bank #1 Auto/Manual ALARMVIEW	Manual
Orencia Cap Bank #1&2 Auto/Manual ALARMVIEW	Manual
Orencia Cap Bank #3&4 Auto/Manual ALARMVIEW	Manual
Rivergate Cap Bank #1 Auto/Manual ALARMVIEW	Manual
Rivergate Cap Bank #2 Auto/Manual ALARMVIEW	Manual
Roseway Cap Bank #1&2 Auto/Manual ALARMVIEW	Manual
Sullivan Cap Bank #7&8 Auto/Manual ALARMVIEW	Manual
Twilight Cap Bank #3 Auto/Manual ALARMVIEW	Manual

Priority: 01 23

(pgepdx-apclpico)

- Relay
 - Trouble

Tagname	AI State
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Priority: 01 23

(pgepdx-apclpico)

- Breaker

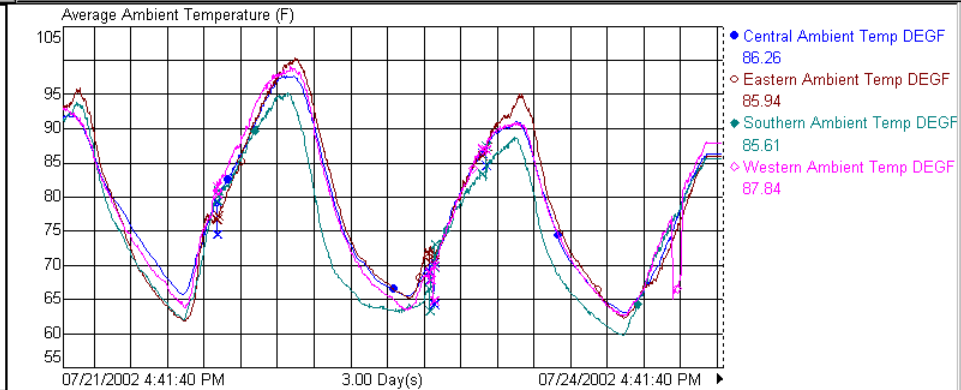
Tagname	AI State
Hemlock Mason R124 BRKLO ALARMVIEW	LOCKOUT

Priority: 01 23

(pgepdx-apclpico)

- Watchdog

Tagname	AI State
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PIAlarmView

File Edit Options Actions Help

Priority: 01
23

Tagname AI_State

(pgepdx-apclpico)
Breaker
Breaker Lockout
Central
Eastern
Southern
Western

Priority: 01
23

Tagname AI_State

(pgepdx-apclpico)
Transformer
MVA Loading

Carver WR2 MVA PCNT ALARMVIEW	Over70
Denny WR1 MVA PCNT ALARMVIEW	Over70
McClain BR3 MVA PCNT ALARMVIEW	Over70
Orenco WR4 MVA PCNT ALARMVIEW	Over70
Sunset WR2 MVA PCNT ALARMVIEW	Over80
Urban WR1 MVA PCNT ALARMVIEW	Over70
Urban WR3 MVA PCNT ALARMVIEW	Over70
Waconda BR2 MVA PCNT ALARMVIEW	Over70
West Portland WR1 MVA PCNT ALARMVIEW	Over70
Harmony WR1 MVA PCNT ALARMVIEW	Over70
Murrayhill WR1 MVA PCNT ALARMVIEW	Over70
Urban WR2 MVA PCNT ALARMVIEW	Over70

PIAlarmView

File Edit Options Actions Help

Priority: 01
23

Tagname AI_State

(pgepdx-apclpico)
Feeder
MVA Loading

Canyon 13134 Network #3 R162 MVA PCNT ALARMVIEW	Over90
Canyon 13135 Network #3 R178 MVA PCNT ALARMVIEW	Over80
Canyon 13136 Network #3 R194 MVA PCNT ALARMVIEW	Over80
Fairview Kennel Club R112 MVA PCNT ALARMVIEW	Over90
Orenco Amberqten R316 MVA PCNT ALARMVIEW	Over70
Sunset Pauling R216 MVA PCNT ALARMVIEW	Over90
West Portland 13 R106 MVA PCNT ALARMVIEW	Over70
Urban Barbur R130 MVA PCNT ALARMVIEW	Over70
E West 13150 R412 MVA PCNT ALARMVIEW	Over70

Priority: 01
23

Tagname AI_State

(pgepdx-apclpico)
Feeder
Neutral

Bethany Kaiser R116 N AMPS ALARMVIEW	Over100
Bethany Springville R114 N AMPS ALARMVIEW	Over100
Bethany Thompson R118 N AMPS ALARMVIEW	Over100
Island 13188 R110 N AMPS ALARMVIEW	Over80
Murrayhill Teal R116 N AMPS ALARMVIEW	Over90

System Load 2993
Western Average Ambient Temperature 89.8

Beaverton	Bethany	Boones Ferry	Brookwood	Cedar Hills	Cornelius	Denny	Durham	Huber	Main	Murrayhill	Orenco	Oswego	Reedville	Roseway	Scoggins	Six Corners	Sunset	Tualatin	WPortland	WUnion	Wilsonville	
WR1	WR1	WR1	BR1	WR1	WBR2	WR1	WR3	WR1	BR1	WVR3	WBR1	WR1	WR1	WR1	R106	WR1	WR1	R216	WR1	WR1	WR1	BR1
42.98	59.77	52.69	63.18	45.03	33.49	73.06	46.46	0.00	62.61	46.98	25.15	43.15	46.89	59.06	9.46	36.91	55.03	99.51	42.98	75.15	51.37	66.86
R118	R116	R136	R106	R164	BR1	R106	R110	WR2	R106	WR1	WBR2	WR3	R102	R114	R120	R110	R132	R250	R244	R106	R114	R114
10.43	21.58	38.64	52.74	13.59	48.45	26.32	24.88	0.00	43.45	63.65	26.40	53.01	18.53	29.93	29.96	16.99	20.19	0.08	73.87	74.94	36.45	34.70
R122	R114	R140	R112	R166	R212	R110	R116		43.45	63.65	26.40	R108	R106	R116			R112	R222	R252	R246	R116	R118
42.53	58.64	45.49	26.05	38.88	58.65	70.37	61.89		25.97	61.17	39.34	25.10	27.02	53.76		28.95	17.13	0.09	0.03	61.22	48.70	9.16
WR2	R118	WR2	R116	R162	R108	WR2	WR4		R152	R116	R306	R112	R114	R118		WR2	R224	R254	R248			R166
54.62	27.64	53.90	22.96	27.80	20.97	25.95	63.99		22.85	57.48	39.26	22.27	32.91	23.54		42.19	11.16	0.08	49.85			56.82
R126		R122		WR2		R206	R484		BR2	WR2	R410	R118	WR2			R222	R228	R256				BR2
48.42		12.16		48.19		20.37	56.59		55.86	27.61	17.24	23.27	32.03			27.46	27.24	0.08				58.76
R130		R126		R216		R208	R486		R102	R116	WR4	R122	R158				WR2	WR6				R136
17.32		17.52		25.35		22.37	57.32		36.80	26.20	73.62	40.49	37.54			16.07	80.51	28.98				31.05
		R150		R206					R144	R220	R316		R162			R226	R210	R136				R166
		54.63		39.52					59.19	0.08	74.07		24.01			30.11	0.25	0.08				56.82
				R216						R230	R414		WR3				R212	R236				BR3
				17.20									33.29				31.31	23.80				42.36
													R154				R214	R262				R352
													26.57				15.36	0.08				30.57
													R166				R216	R264				R356
													35.41				99.51	0.08				31.65
													R174				WR5	R266				
													0.08				33.21	0.09				
																	R134	R266				
																	0.08	0.08				

Portland General Electric

PI at PGE

Scott Noble and Ray Payne