Idaho Power Pi System

OSI 2002 T&D West Meeting
Las Vegas
September 26-27,2002

Presented by:
Ronald Schellberg
Idaho Power Company, Boise, Idaho

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Idaho Power System
Basic Characteristics

- 410,000+ customers in two states Idaho and Oregon
- Over 20,000 square mile service territory
- 3,000 MW generation capacity at 20 plant sites
- 16 Interconnections with 5 neighboring utilities
- Transmission & Distribution:
  - Over 4,600 miles of transmission lines
  - Over 18,000 miles of distribution lines
- 2002 Summer Control Area Peak was 3235 MW

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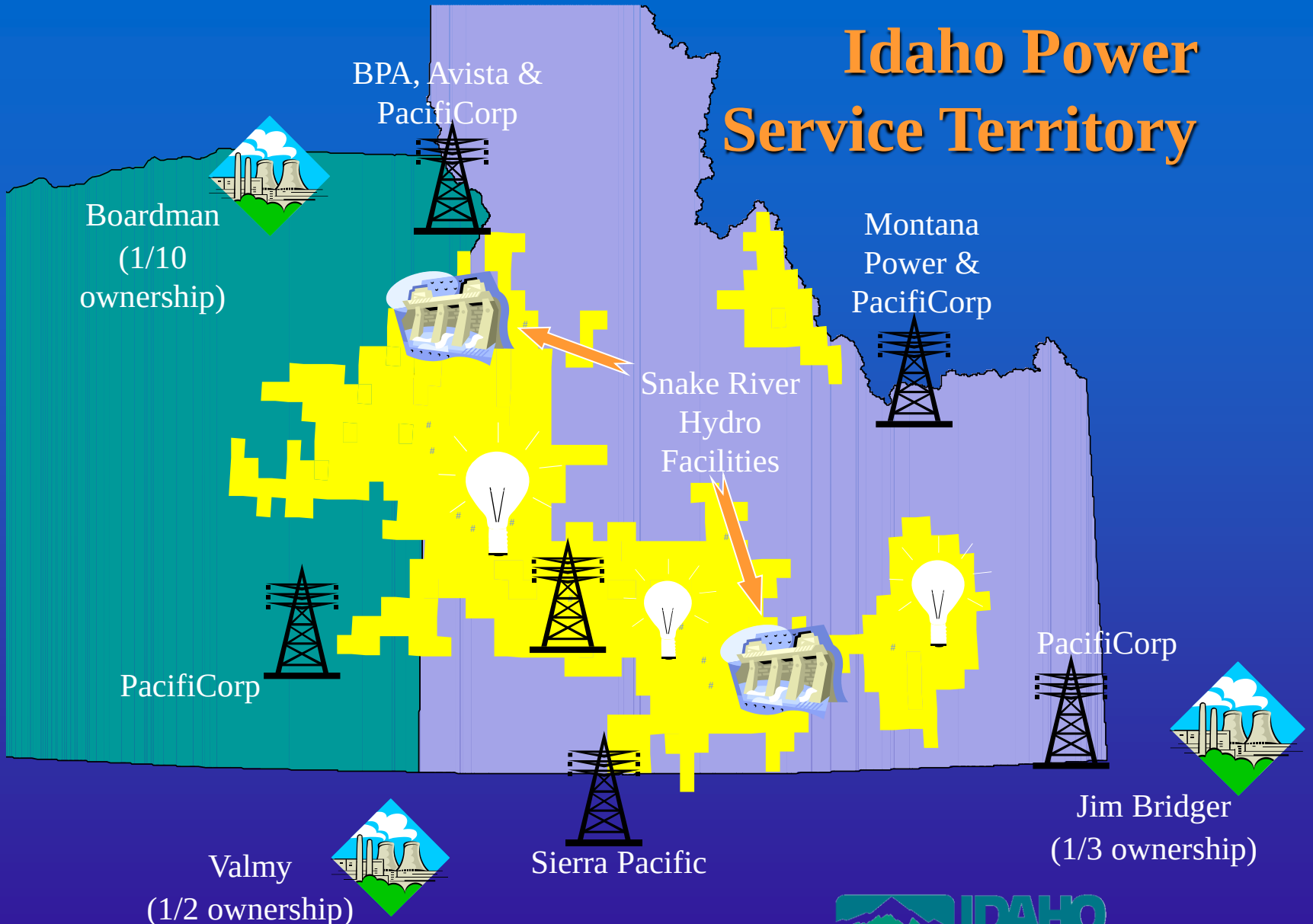
Idaho Power Service Territory



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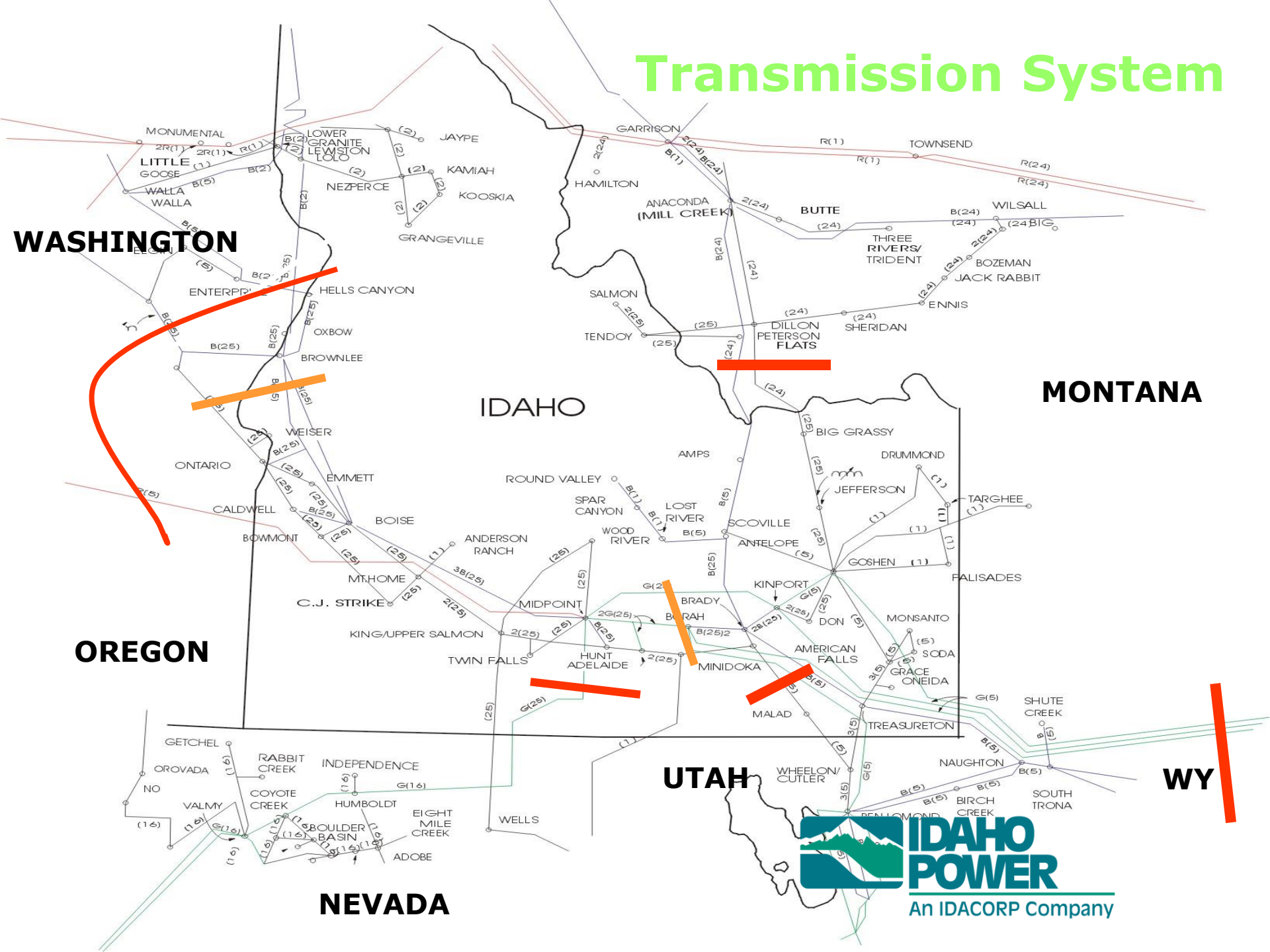
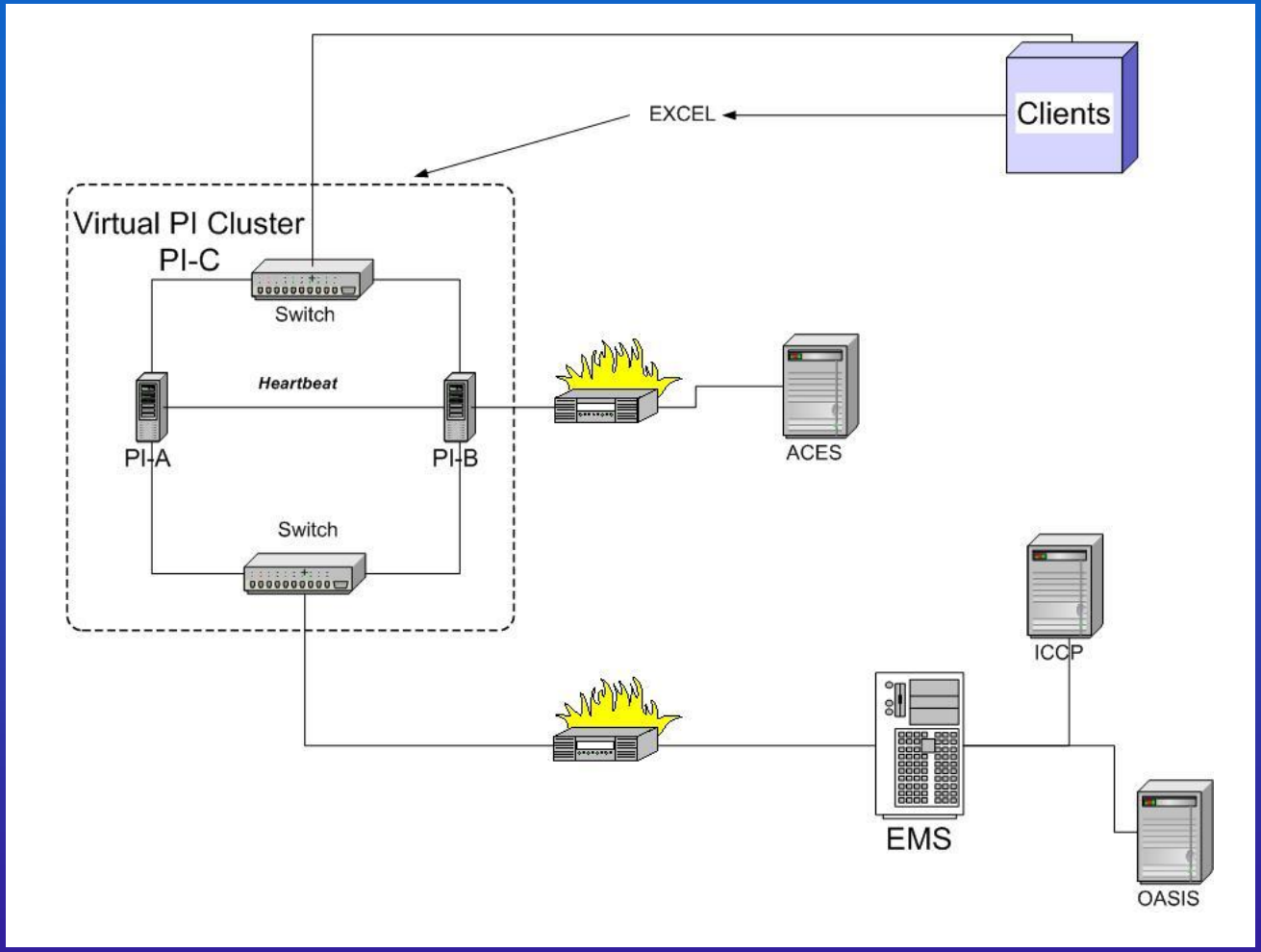
Transmission System



Server Configuration



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Pi System

- 170 “Users”
- Over 10,800 “Points”
- Transmission, Distribution and Generation
- MW, Mvar, Volts, Amps, Temp, Status, Water Flows

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OSI Pi Uses

- Transmission Diagram
- Load Forecasting
- Power Plant Operation
- Dispatcher Support
- Miscellaneous Analysis

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Transmission Diagram

- Procbook based
- Uses multi-state colors based upon Breaker Status
- Trend Charts
- Hot Links to other pages
- Computed Values in Visual Basic

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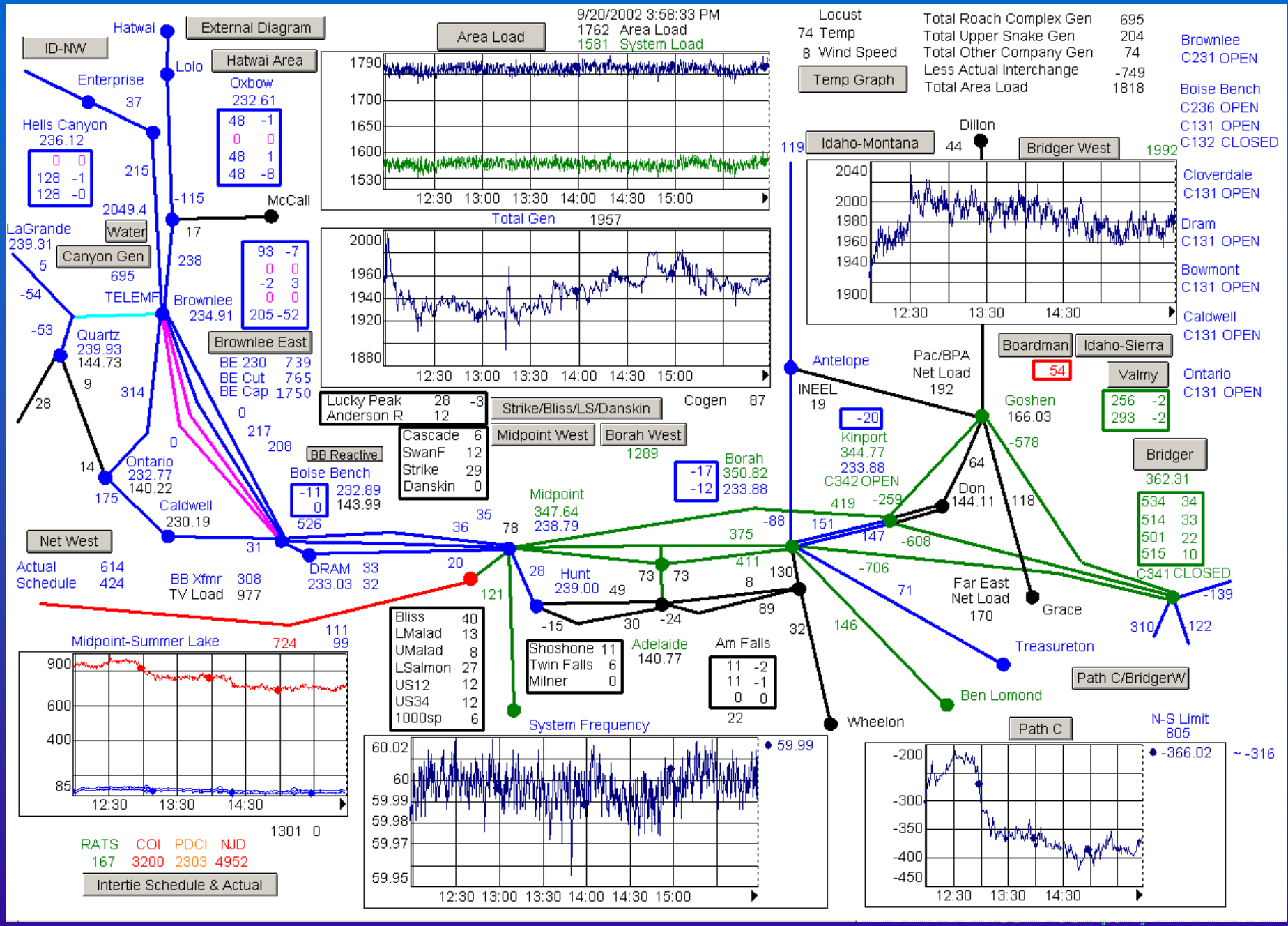
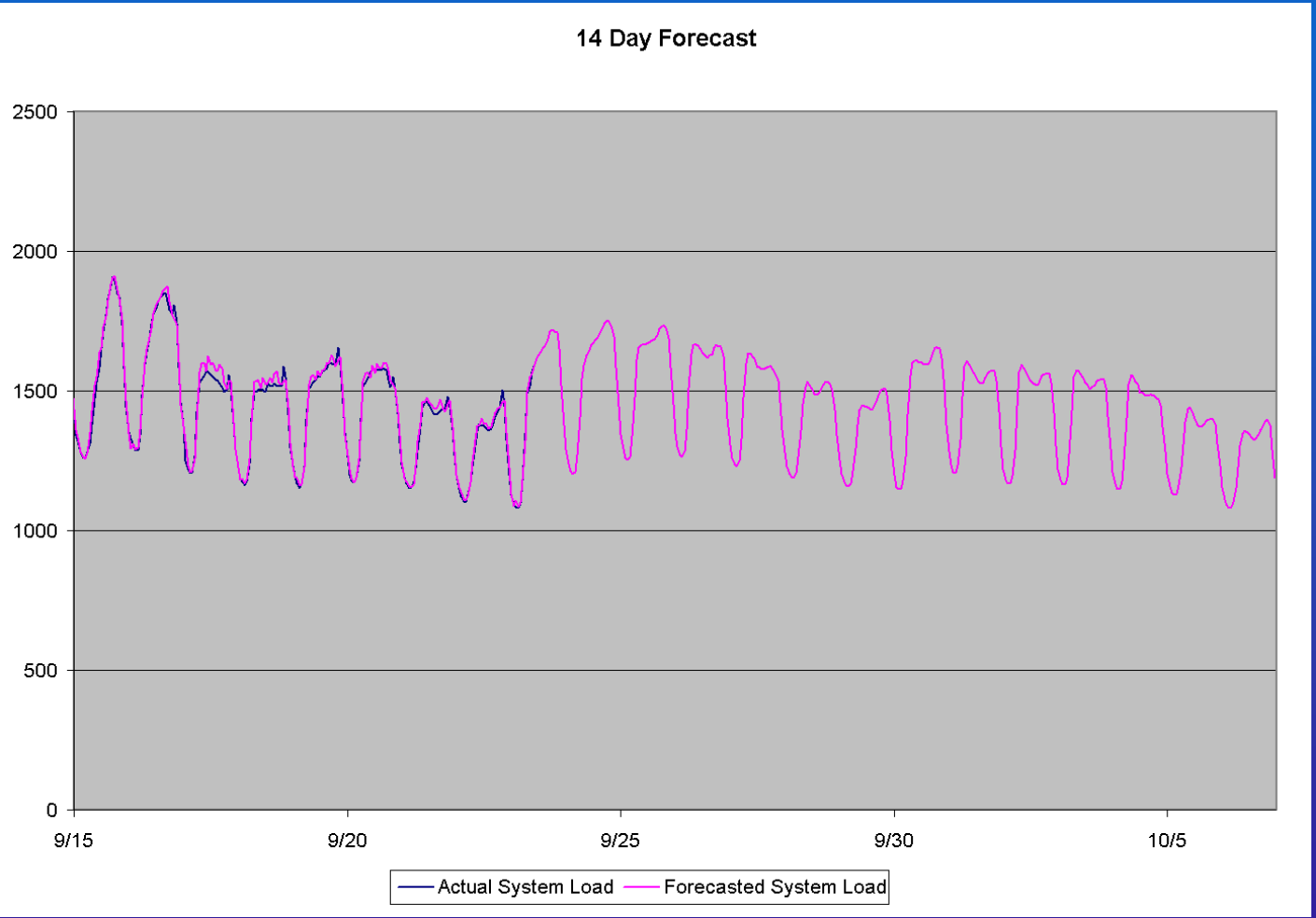

9/20/2002 3:58:33 PM
1762 Area Load
1581 System Load
Area Load
Locust
74 Temp
8 Wind Speed
Temp Graph
Total Roach Complex Gen 695
Total Upper Snake Gen 204
Total Other Company Gen 74
Less Actual Interchange -749
Total Area Load 1818
Brownlee C231 OPEN
Boise Bench C236 OPEN C131 OPEN C132 CLOSED
Cloverdale C131 OPEN
Dram C131 OPEN
Bowmont C131 OPEN
Caldwell C131 OPEN
Ontario C131 OPEN
Hatwai
External Diagram
ID-NW
Lolo
Hatwai Area
Enterprise
37
Oxbow
232.61
48 -1
0 0
48 1
48 -8
Hells Canyon
236.12
0 0
128 -1
128 -0
215
-115
McCall
2049.4
Water
17
LaGrande
239.31
5
Canyon Gen
695
238
-54
TELEMF
Brownlee
234.91
93 -7
0 0
-2 3
0 205 -52
-53
Quartz
239.93
144.73
Brownlee East
BE 230 739
BE Cut 765
BE Cap 1750
9
314
28
0
217
208
14
Ontario
232.77
140.22
175
Caldwell
230.19
BB Reactive
Boise Bench
-11 232.89
0 143.99
526
Net West
Actual 614
Schedule 424
BB Xfmr 308
TV Load 977
31
DRAM 33
233.03 32
Lucky Peak 28 -3
Anderson R 12
Cascade 6
SwanF 12
Strike 29
Danskin 0
Strike/Bliss/LS/Danskin
Midpoint West
Borah West
1289
Cogen 87
Total Gen 1957
Midpoint
347.64
238.79
36
35
78
20
121
Borah
350.82
233.88
-17
-12
Hunt
239.00
28
49
73
73
-15
30
-24
Adelaide
140.77
Shoshone 11
Twin Falls 6
Milner 0
Bliss 40
LMalad 13
UMalad 8
LSalmon 27
US12 12
US34 12
1000sp 6
Am Falls
11 -2
11 -1
0 0
22
System Frequency
Midpoint-Summer Lake
724
111
99
1301 0
RATS COI PDCI NJD
167 3200 2303 4952
Intertie Schedule & Actual
Dillon
119
Idaho-Montana
44
Bridger West
1992
Antelope
INEEL
19
Pac/BPA
Net Load
192
-20
Kinport
344.77
233.88
C342 OPEN
Boardman
Idaho-Sierra
54
Valmy
256 -2
293 -2
Goshen
166.03
-578
64
Don
144.11
118
419
-259
151
147
-608
-88
375
411
8
130
89
32
-706
71
146
Bridger
362.31
534 34
514 33
501 22
515 10
C341 CLOSED
-139
310
122
Far East
Net Load
170
Grace
Treasureton
Path C/BridgerW
Ben Lomond
Wheelon
Path C
N-S Limit
805
-366.02
~ -316

14 Day Load Forecast



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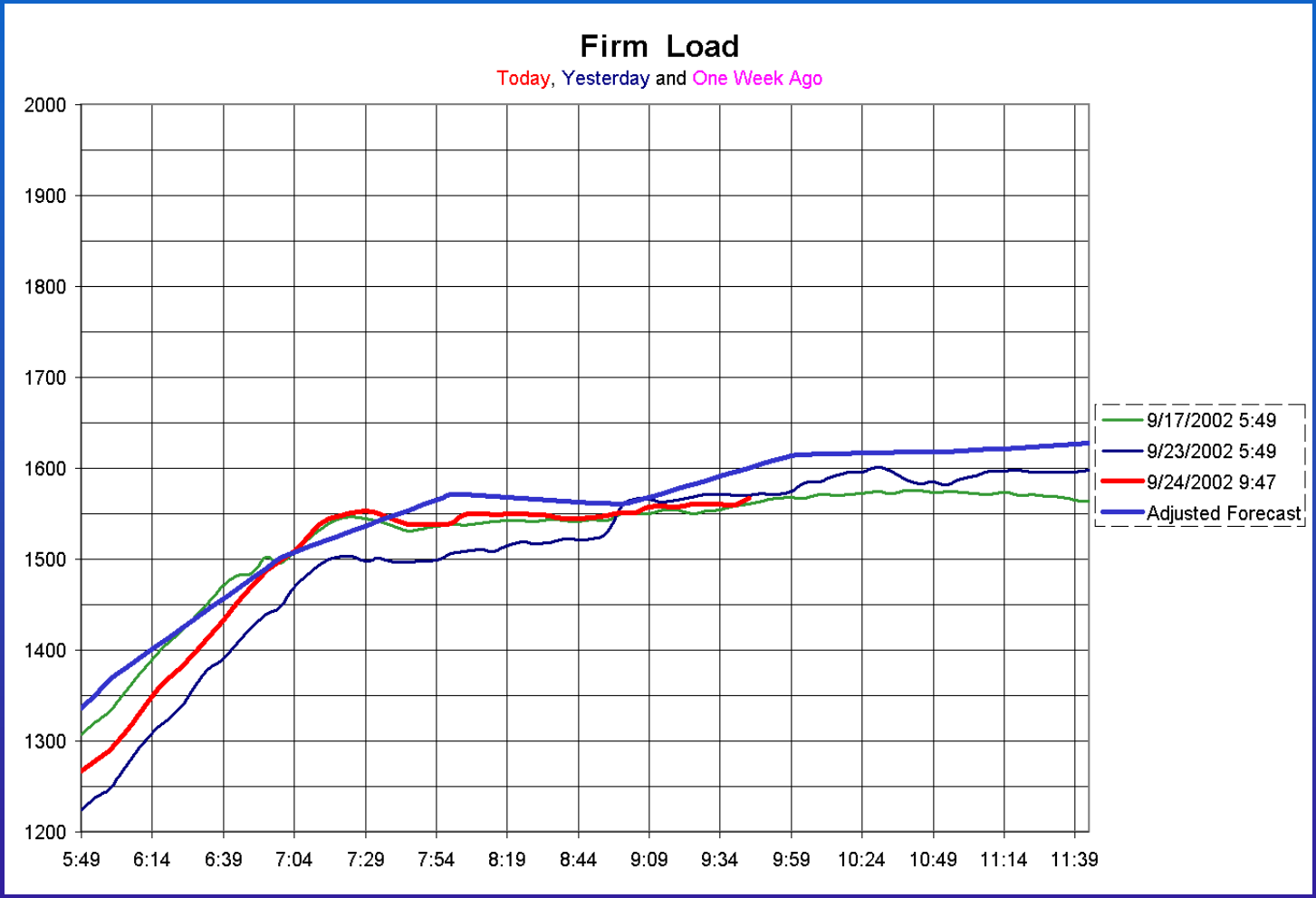
Hourly Forecast



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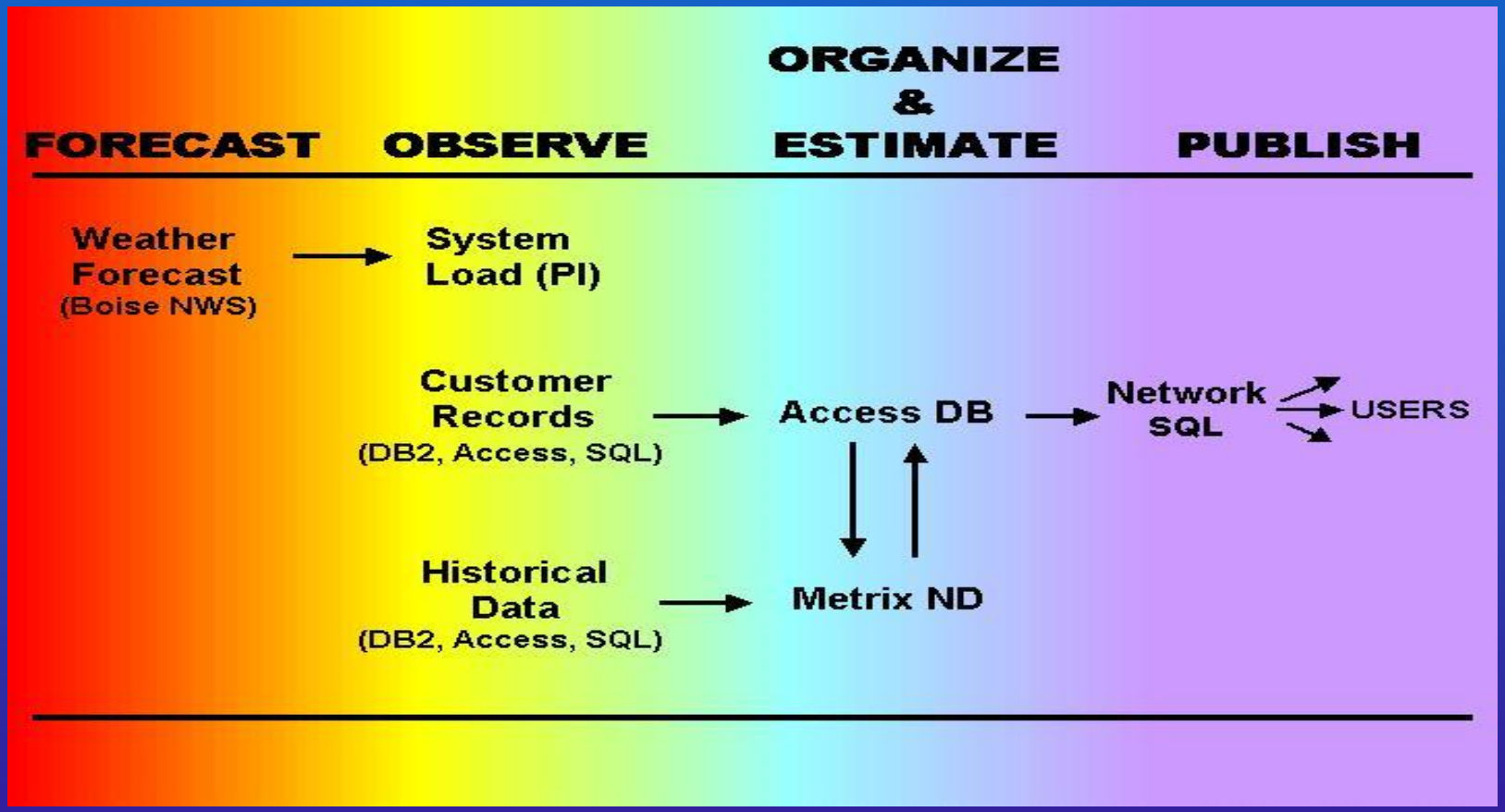
Hourly Load Forecast Process



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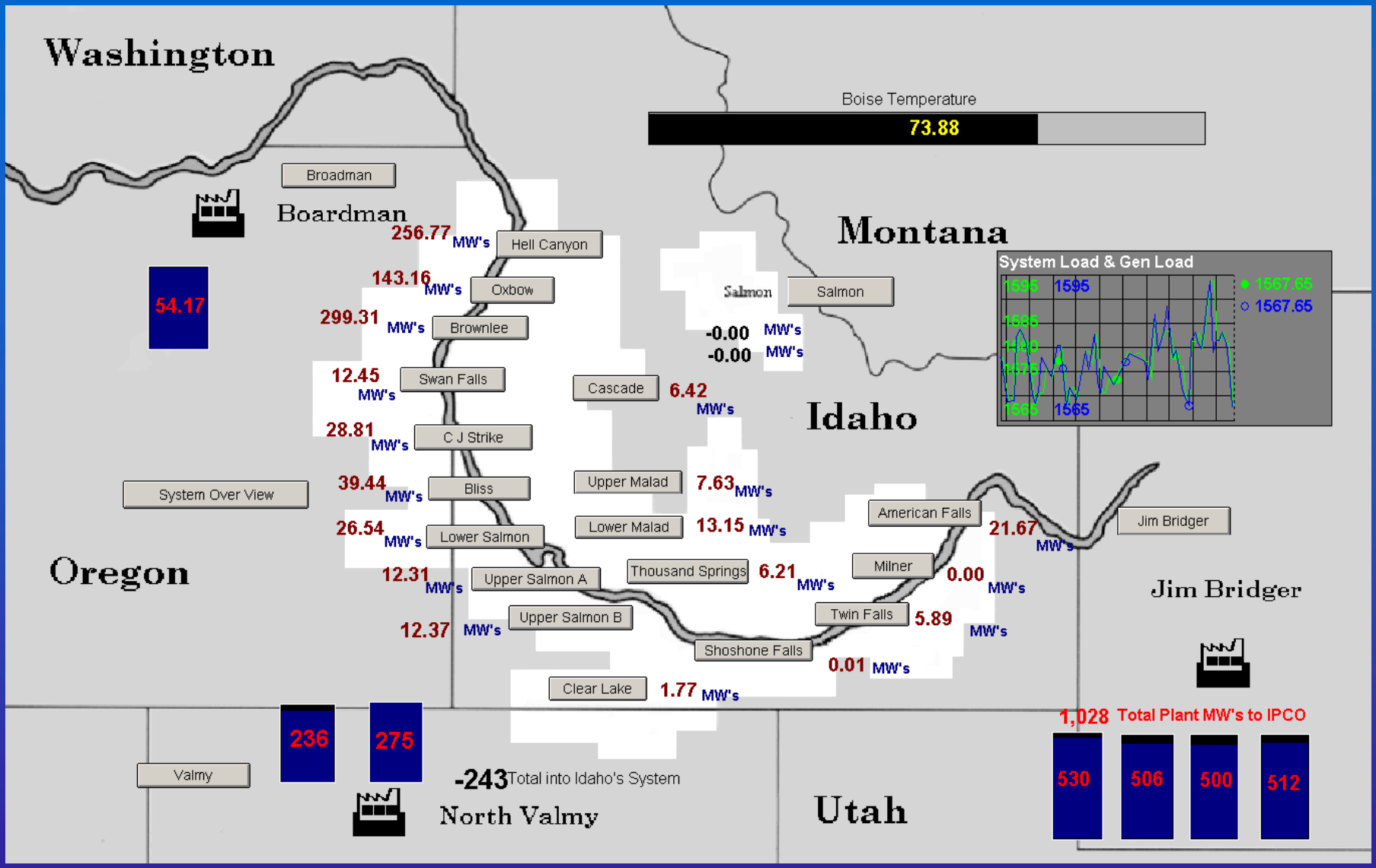

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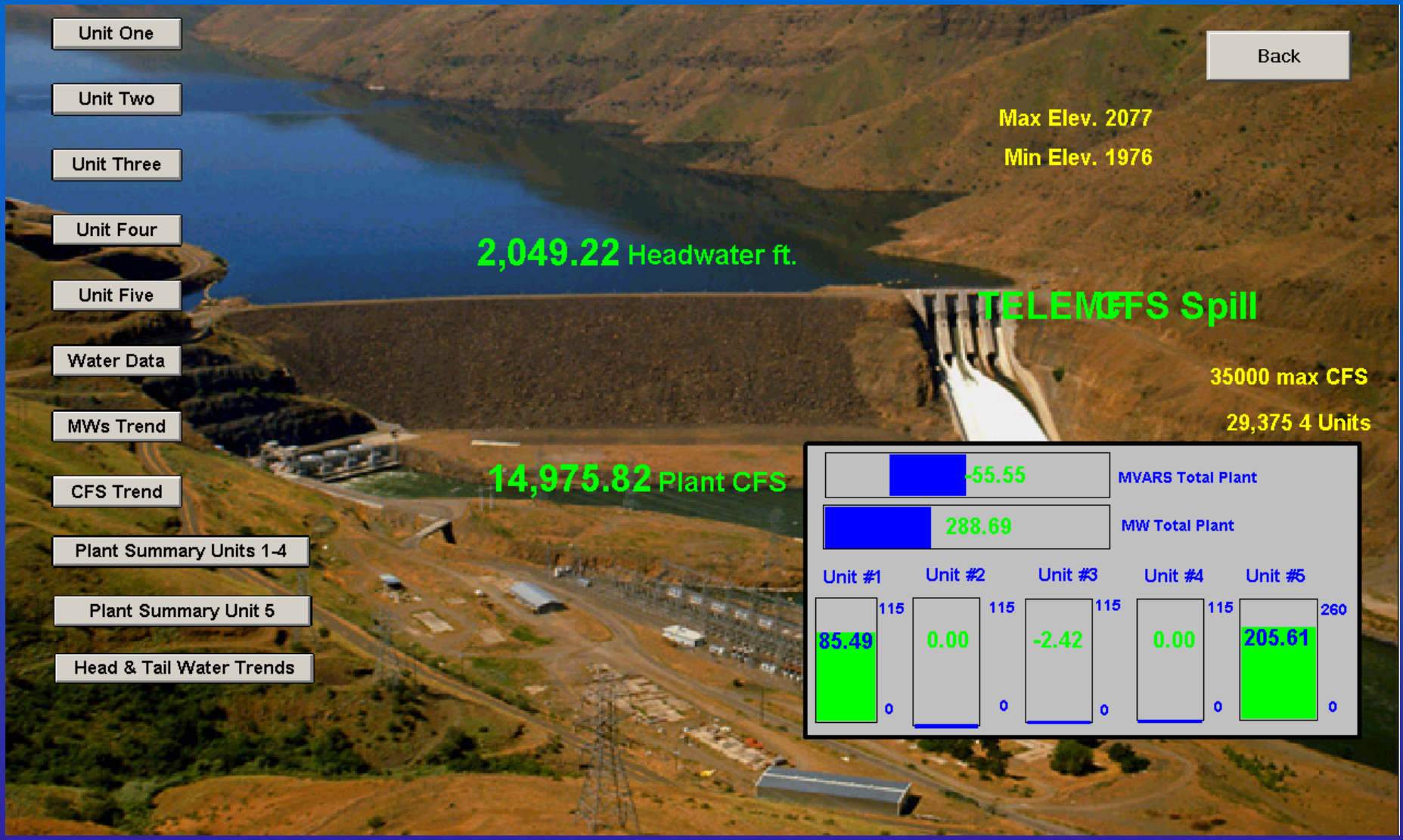

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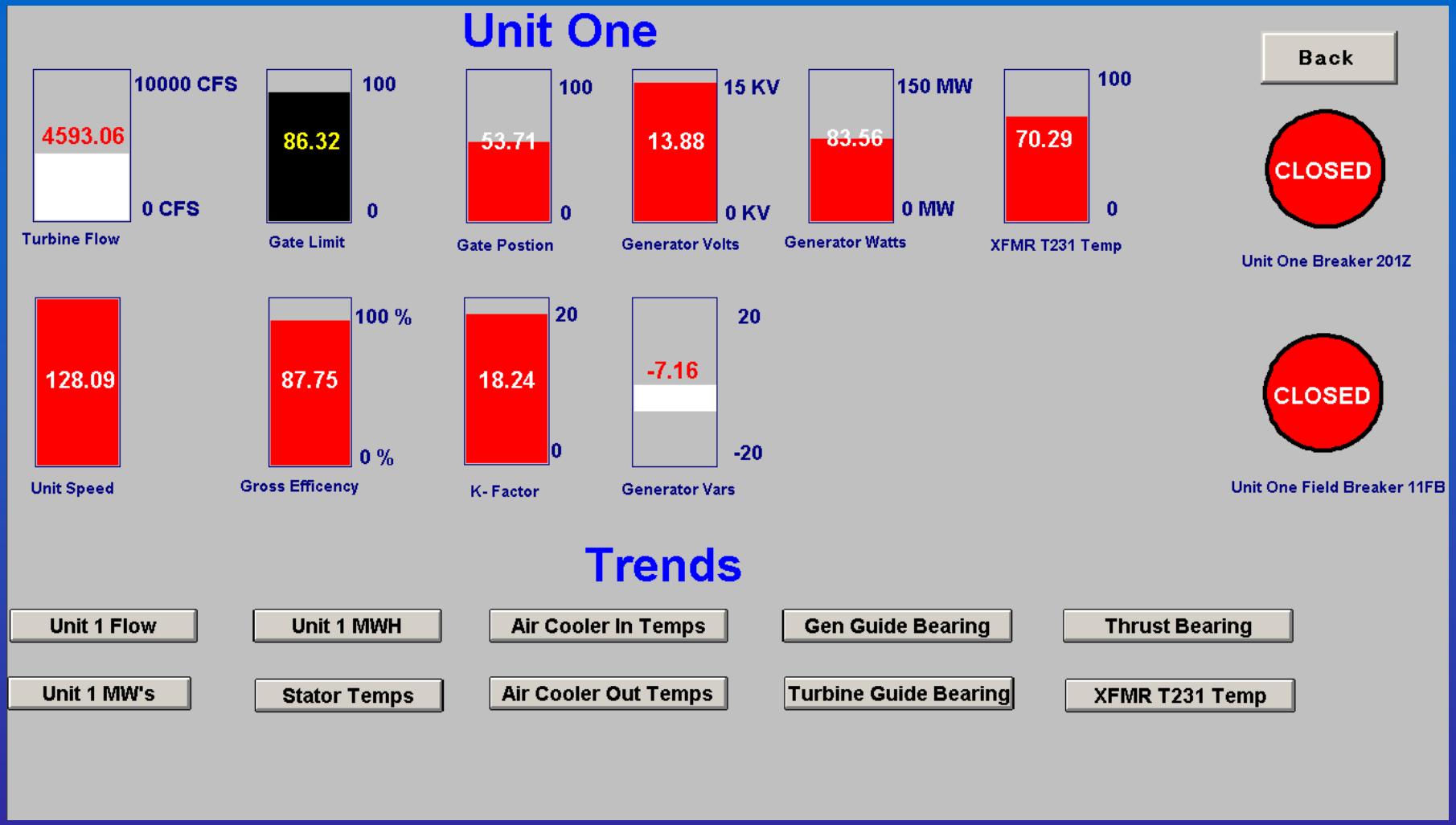

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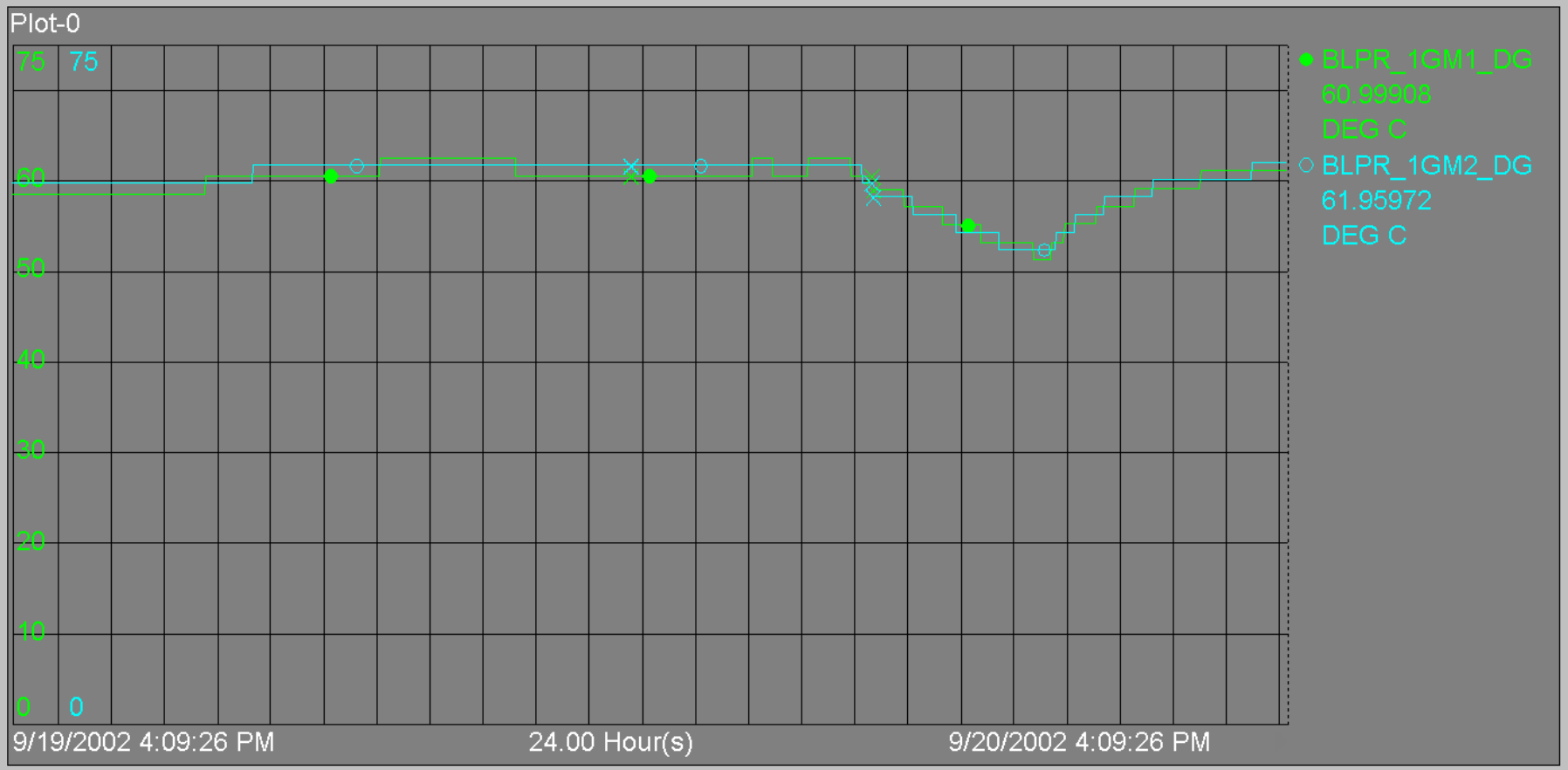
Click here to set Date

Unit One Gen Guide Bearing Temperatures

Back



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Dispatcher Support

- Line, Voltage, Reactive Limits
- Nomograms
- NWPP Weekly Operating Report
- Spinning Reserve Monitoring
- Energy Accounting
- DCS Reporting

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Operating Limits

SPRING 2002 OPERATING PROCEDURE (version 1.0)

OPERATING PROCEDURE EFFECTIVE April 1, 2002

START AUTO-UPDATE | STOP AUTO-UPDATE | MANUAL UPDATE

DATE OF INFORMATION	**Bold Numbers = Calculated cell**	Last Update	20/Nov/2001 12:22:58
Normal Conditions	**Limit**	**Actual**	**Schedule**
NW to ID plus Canyon Gen.	**1925**	**-389**	**-335**
Brownlee East 230/138	**1420**	**472**	**134**
Brownlee-Quartz-LaGrande(@LaGrande)	+300 / -300	**0**	
BPA schedule	+350 / -350		**26**
Enterprise-Hells Canyon	+400 / -400	**69**	
Lolo-Oxbow	+340 / -340	**-27**	**-209**
PAC Dynamic Overlay	-48 (Current Value)		**98 (Avg. Last Hour)**
Brownlee-Boise Bench and BLPR-ONTO 230 lines total	**1540**	**486**	
Individual BLPR-BOBN and BLPR-ONTO 230 lines (Actual = Highest line)	**375**	**251**	
Hells Canyon-Brownlee (Limit based on Nomogram D)	**460**	**76**	
Oxbow-Brownlee (Limit based on Nomogram D)	**460**	**93**	
Midpoint-Summerlake E-W	1500	**893**	Total West
W-E (SEE BELOW)	**-400**	**0**	Flow
Northwest to/from Idaho Actual E-W (from NW-ID wksht	**2400**	**52**	**945**
W-E (from NW-ID wksht	**1200**	**0**	

NW-Sierra	**COI Actual**	**PDCI Actual**	**NOJD Actual**	**Path C**	**Path C limit**
199	**2319**	**1341**	**TELEMF**	**-8**	**830**
	BORA West Limit		**BORA West Actual**		Based on PathC/Rock Springs
	2307		**1434**		Nomogram

NOTE: Northwest to Idaho limit based on Nomogram A-1. (See below) **Nom. A-1 Input**

Number of series capacitor segments in on the MPSN-SMLK line (0-4). **2**

i.e. if the entire burns bank is out, the total segments in are 4 - 2 = 2

Reactive Margin

When total Brownlee-Boise Bench line flow is greater than 1000Mw

we must maintain at least **246** MVAR of reactive margin.

Reactive Margin	Capacity	Available Capacity	Actual MVAR	Multiplier	Available Margin
BOBN C-236 Capacitor	60	**60**		1	**60**
BOBN Condensers	132	**66**	**-8**	1	**74**
BLPR 1-4	180	**45**	**-13**	0.6	**35**
BLPR 5	130	**130**	**-72**	0.6	**121**
OBPR 1-4	100	**50**	**-18**	0.5	**34**
HCPR 1-3	210	**70**	**2**	0.3	**20**
BLPR C231	132	**132**		**0.6**	**79**
West Flow Adjustment					**60**
Total Reactive Margin					**484**

Total Actual Roach Generation **555**

System Voltages	Operating Range	Actual voltage
Brownlee 230kV	227.7-241.5	**234.9**
Boise Bench 138kV	138.0-144.2	**144.1**
American Falls	138.0-144.2	**141.9**

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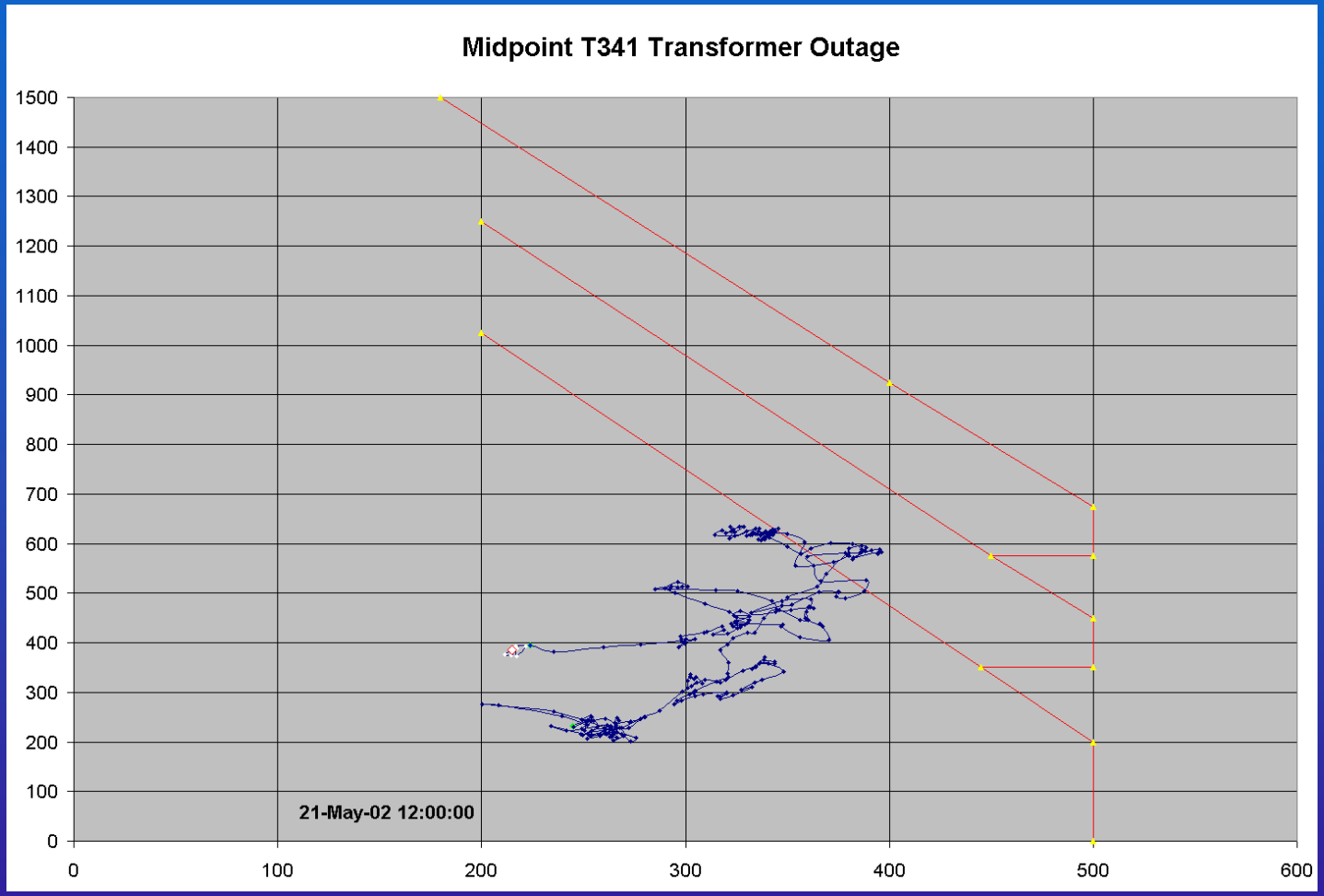
Nomograms



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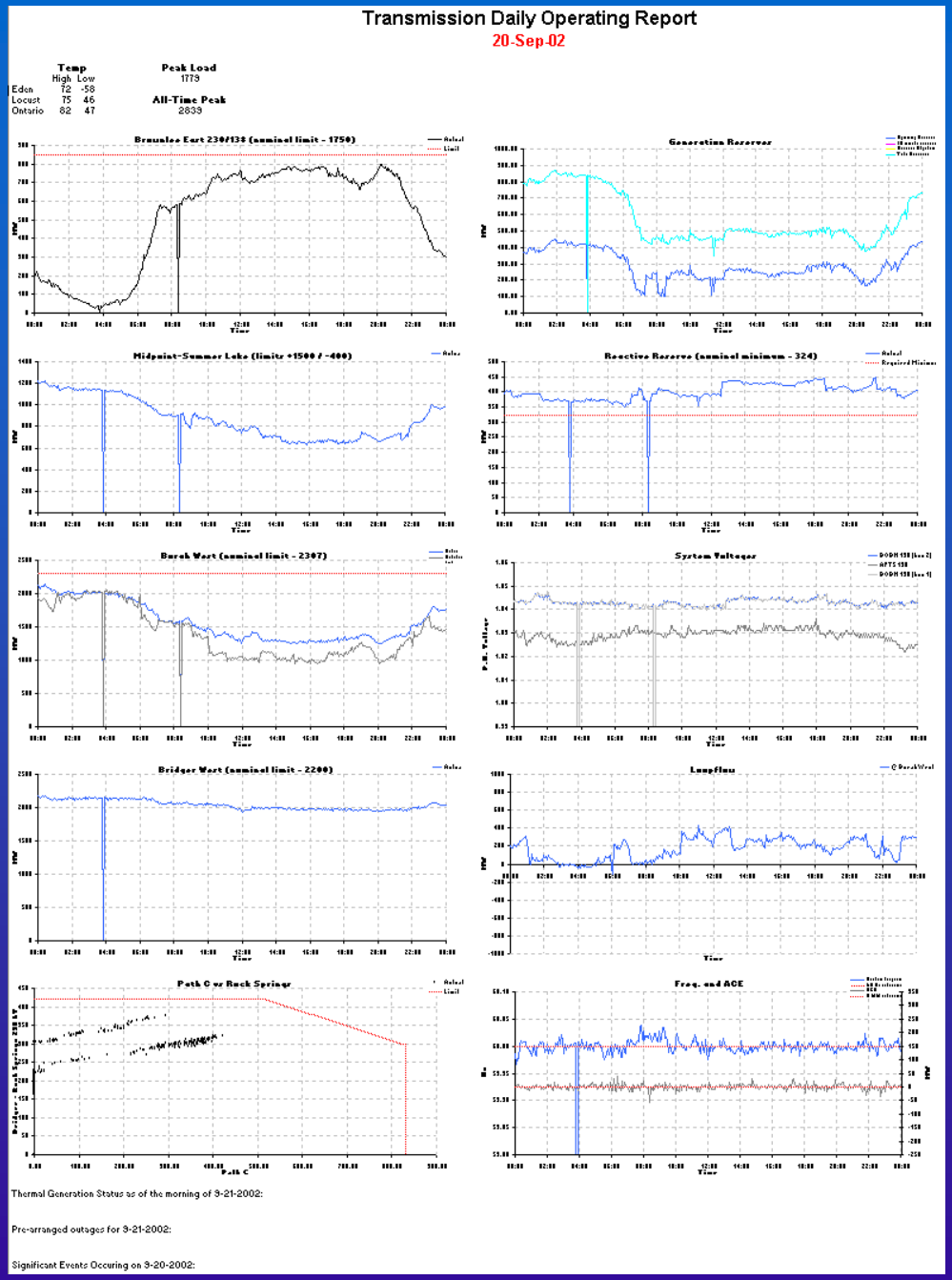
Transmission Daily Report



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NWPP Report

IDAHO POWER	NWPP WEEKLY COORDINATED OPERATION REPORT					
	DAILY AVE		WEEKLY AVE	HOUR ENDING NET		
	SUNDAY	TUESDAY	WEEK THRU	POOL	POOL	SYSTEM
TIME IN PPST	AVERAGE	AVERAGE	WEDNESDAY	MIN.	MAX.	PEAK
FIGURES ARE MEGAWATTS	2002-08-04	2002-08-06	2002-08-07	2002-08-06	2002-08-05	2002-08-01
				0400	1100	01800
GENERATION						
UPPER SNAKE NATURAL	218.38	217.71	220.46	207	216	243
LOWER SNAKE NATURAL			303.98			
LOWER SNAKE DRAFT			22.91			
LOWER SNAKE TOTAL	313.08	326.58	326.89	140	425	504
TOTAL HYDRO:	531.46	544.29	547.35	347	641	747
BOARDMAN	55.58	2.00	42.04	0	56	55
BRIDGER	411.63	482.75	530.39	480	488	653
VALMY	109.46	94.42	136.88	113	121	241
SALMON	0.00	0.00	0.00	0	0	0
DANSKIN	-0.08	-0.08	-0.08	0	0	0
DIESELS	0.00	0.00	0.00	0	0	0
TOTAL THERMAL:	576.58	579.08	709.23	593	665	949
COGEN & NON IPCO GEN ADJ	99.75	108.50	106.40	110	99	113
TOTAL GENERATION:	1207.79	1231.88	1362.98	1050	1405	1809
ACTUAL INTERCHANGE						
PCE - WYO	-418.63	-439.71	-465.37	-553	-369	-496
PACW	-92.75	-8.29	11.76	491	-519	-257
PAC NET	-511.38	-448.00	-453.61	-62	-888	-753
PCE - UTAH	-252.29	-184.88	-171.13	-533	92	78
SPP	206.67	185.75	173.87	171	210	150
AVA	-46.67	-222.33	-184.46	-131	0	-300
BPA	-86.75	-111.08	-78.52	-55	-130	-100
TOTAL METERED:	-690.42	-780.54	-713.85	-610	-716	-925
INTERCHANGE GEN TRANS	-18.38	-22.46	13.85	-3	-7	119
TOTAL ACTUAL INTERCHANGE:	-708.79	-803.00	-700.01	-613	-723	-806
AREA LOAD:	1916.58	2034.88	2062.98	1663	2128	2615
SCHEDULED INTERCHANGE						
PCE - WYO	-632.04	-822.00	-883.70	-1282	-628	-1070
PACW	85.92	259.46	327.73	816	87	311
PAC NET	-546.13	-562.54	-555.98	-466	-541	-759
PCE - UTAH	42.04	-11.54	139.09	-27	130	-58
SPP	106.38	47.83	50.74	59	17	21
AVA	-51.13	6.46	-90.22	0	-294	-178
BPA	-246.25	-263.21	-257.11	-174	-192	-293
NET SCHEDULE:	-695.08	-783.00	-713.48	-608	-880	-1267
INADVERTENT:				-2	164	342
HYDRAULIC DATA	**AM FALLS**	**BROWNLEE**				
RESERVOIR ELEV 24:00 WED.	4321	2071				
WEATHER DATA	**BOISE**	**BURLEY**	**POCATELLO**			
PRECIPITATION (INCHES)	0.0	0.0	0.0			
AVG. TEMPERATURE (DEG. F)	73.1	67.0	72.1			

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Miscellaneous Analysis

- Conductor Amps
- Loopflow
- Reactive Reserve

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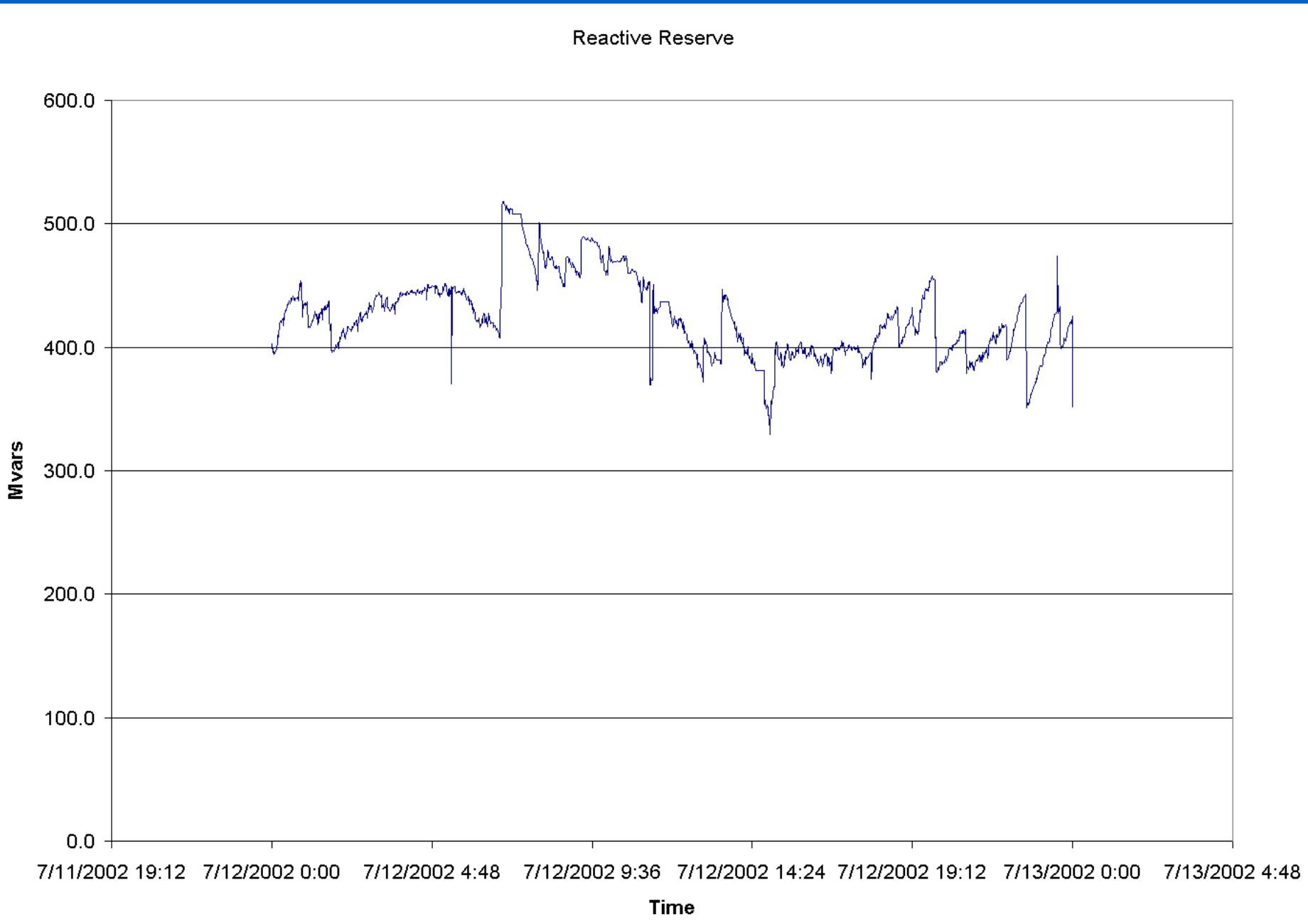
Reactive Reserve
600.0
500.0
400.0
300.0
200.0
100.0
0.0
Mvars
7/11/2002 19:12
7/12/2002 0:00
7/12/2002 4:48
7/12/2002 9:36
7/12/2002 14:24
7/12/2002 19:12
7/13/2002 0:00
7/13/2002 4:48
Time

Questions????

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