Byron PPC RMS

The Scientech Version

Of the RM-11

Radiation Monitoring System

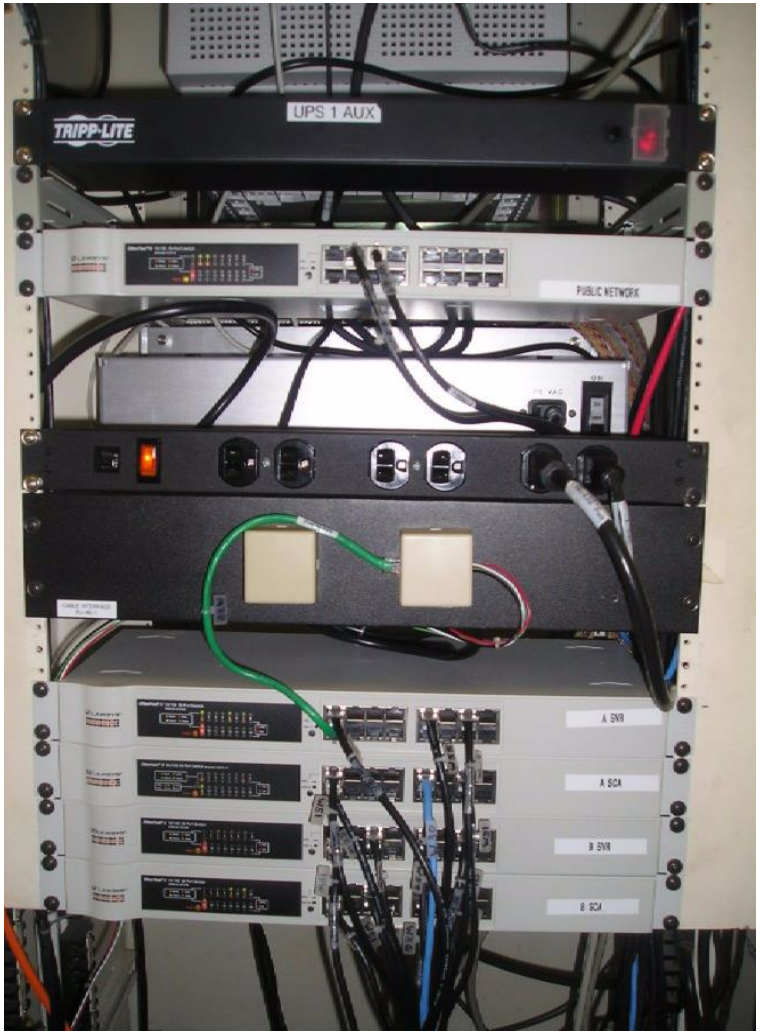
Byron Nuclear Power Station

RM-11

General Atomics Computer System
(Pictures Courtesy of Braidwood)

RM-11

General Atomics Computer System
(Pictures Courtesy of Braidwood)



RM-11

General Atomics Computer System
(Pictures Courtesy of Braidwood)

RM-11

General Atomics Computer System
(Pictures Courtesy of Braidwood)

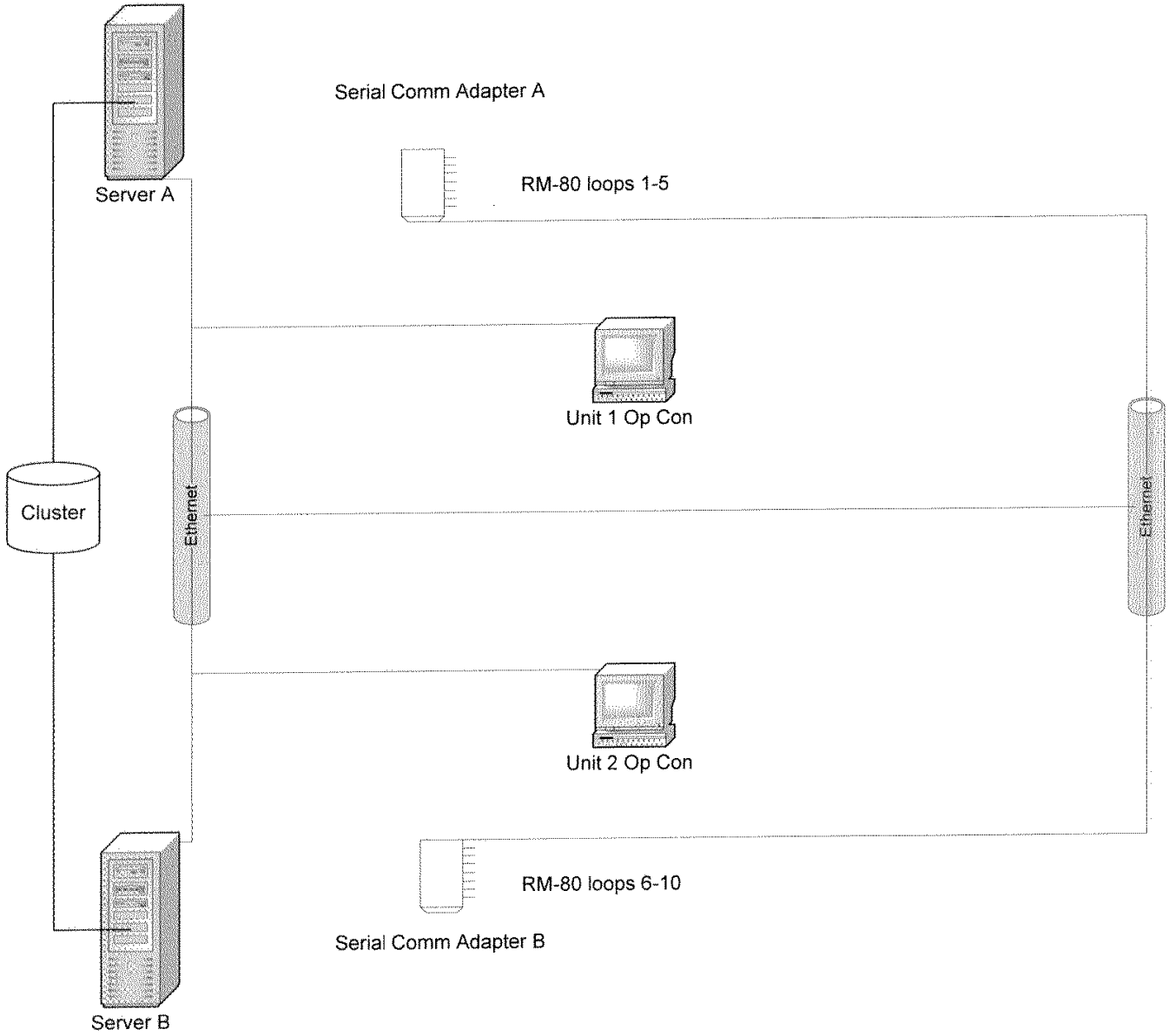
RM-11

Unit Workstation &
Special Keyboard

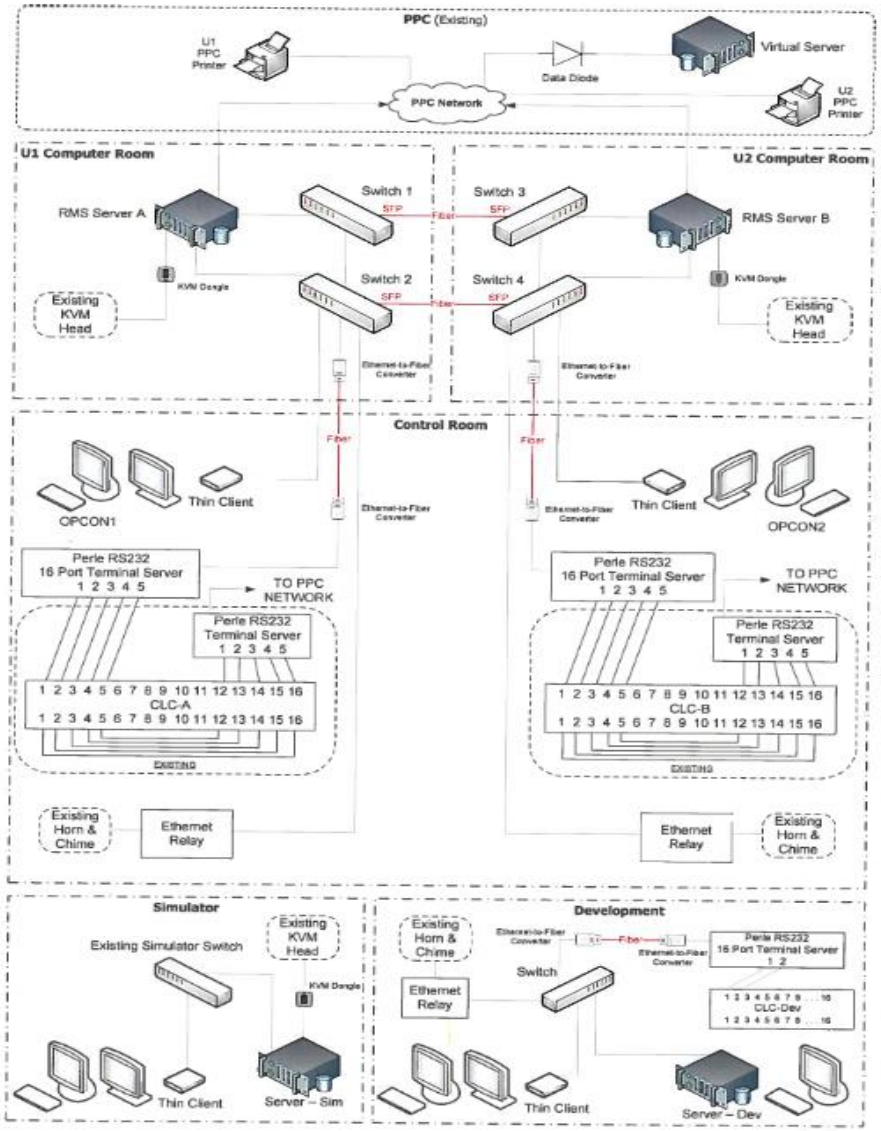
RM-11

Unit 24-Pin Printer!

RM-11R Block Diagram



Byron's RMS


PPC (Existing)
U1 PPC Printer
Data Diode
Virtual Server
PPC Network
U2 PPC Printer
U1 Computer Room
U2 Computer Room
RMS Server A
Switch 1
SFP
Fiber
Switch 3
RMS Server B
KVM Dongle
Switch 2
Switch 4
Existing KVM Head
Ethernet-to-Fiber Converter
Control Room
Thin Client
OPCON1
OPCON2
Perle RS232 16 Port Terminal Server 1 2 3 4 5
TO PPC NETWORK
Perle RS232 Terminal Server 1 2 3 4 5
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
CLC-A
CLC-B
EXISTING
Existing Horn & Chime
Ethernet Relay
Simulator
Existing Simulator Switch
Server – Sim
Development
Switch
CLC-Dev
Server – Dev

Byron's RMS

Scientech used the existing CLC Board Communication Technology for the field Interface, leaving all of

the RM-80 Skids as is,

Byron’s RMS

while the old CRT and Server Technology was removed

Byron's RMS

as well as the old Unit Assist

Printers, Work Stations

and Specialized Keyboard.

Byron's RMS

It was replaced with a streamlined set of

2 new rack mounted Windows Based Servers;

1 in Unit 1 PPC CR(Normally the Active)

1 in Unit 2PPC CR (normally the Standby)

Byron's RMS

And Dual Screen RMS Wide Screen Monitors that are run by HP Mini PCs

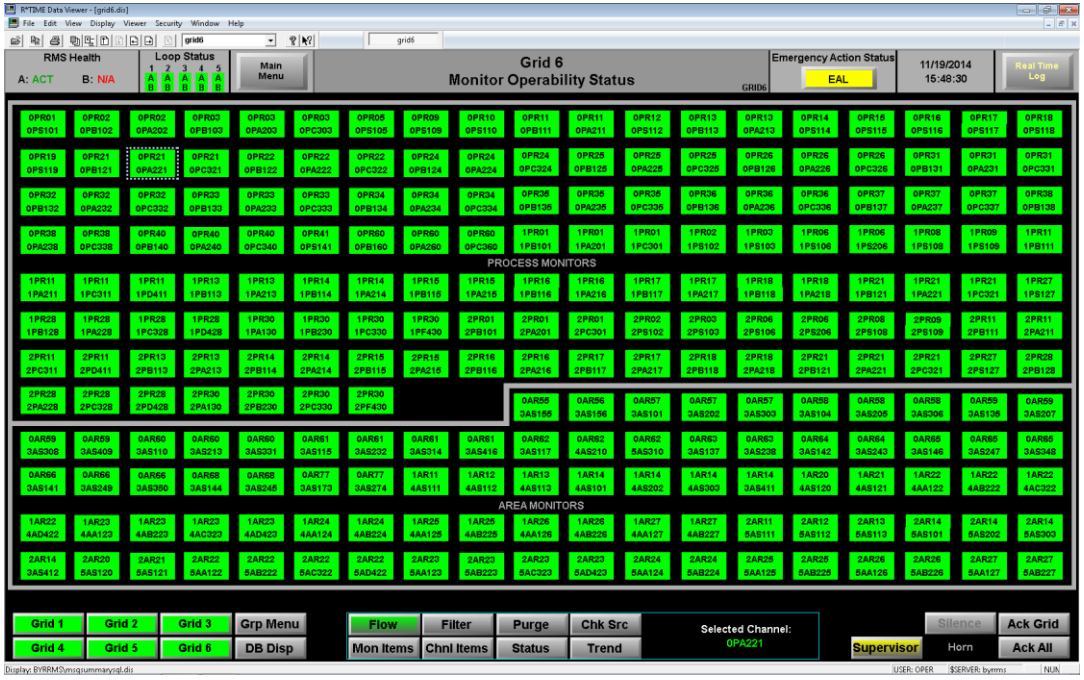
Byron's RMS

Benefits;

- Updated Technology
- Windows Based OS with mouse click interface
- Rtime look and feel
- Hot Standby Server (like the PPC Rtime)
- Many built in Reports and Trends

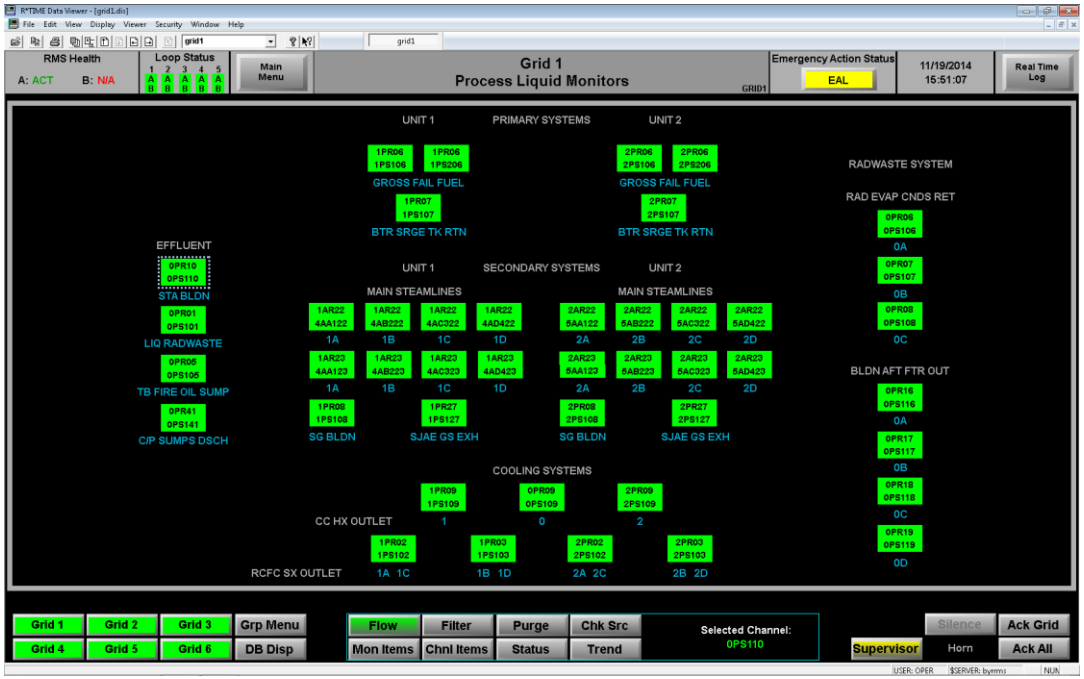
Byron's RMS

Scientech's design kept the RM-11 familiarity on the Main Screens

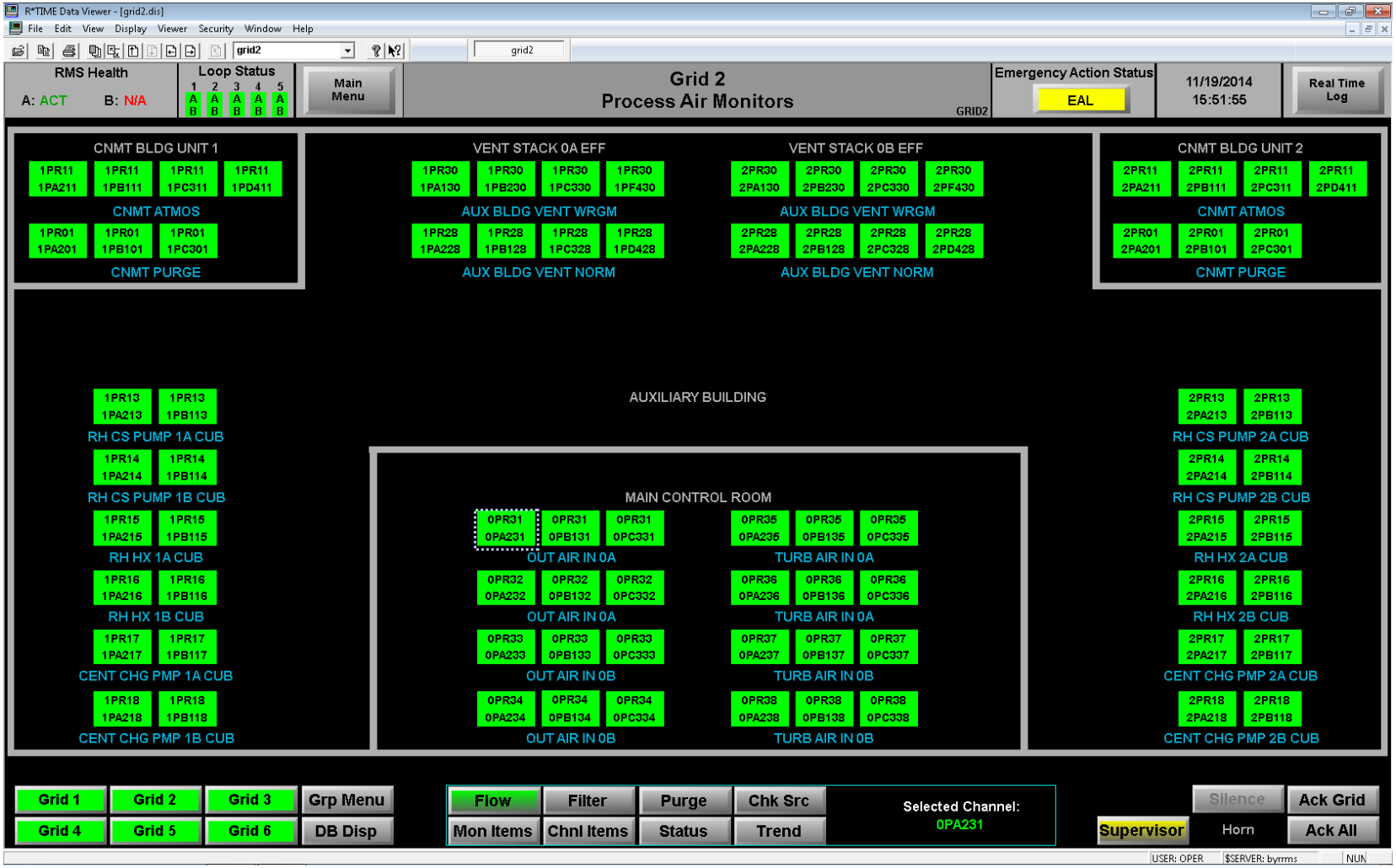


Byron's RMS

to help preserve the look and feel that the Operators and IM Personnel are used to.



Byron’s RMS


R*TIME Data Viewer - [grid2.dis]
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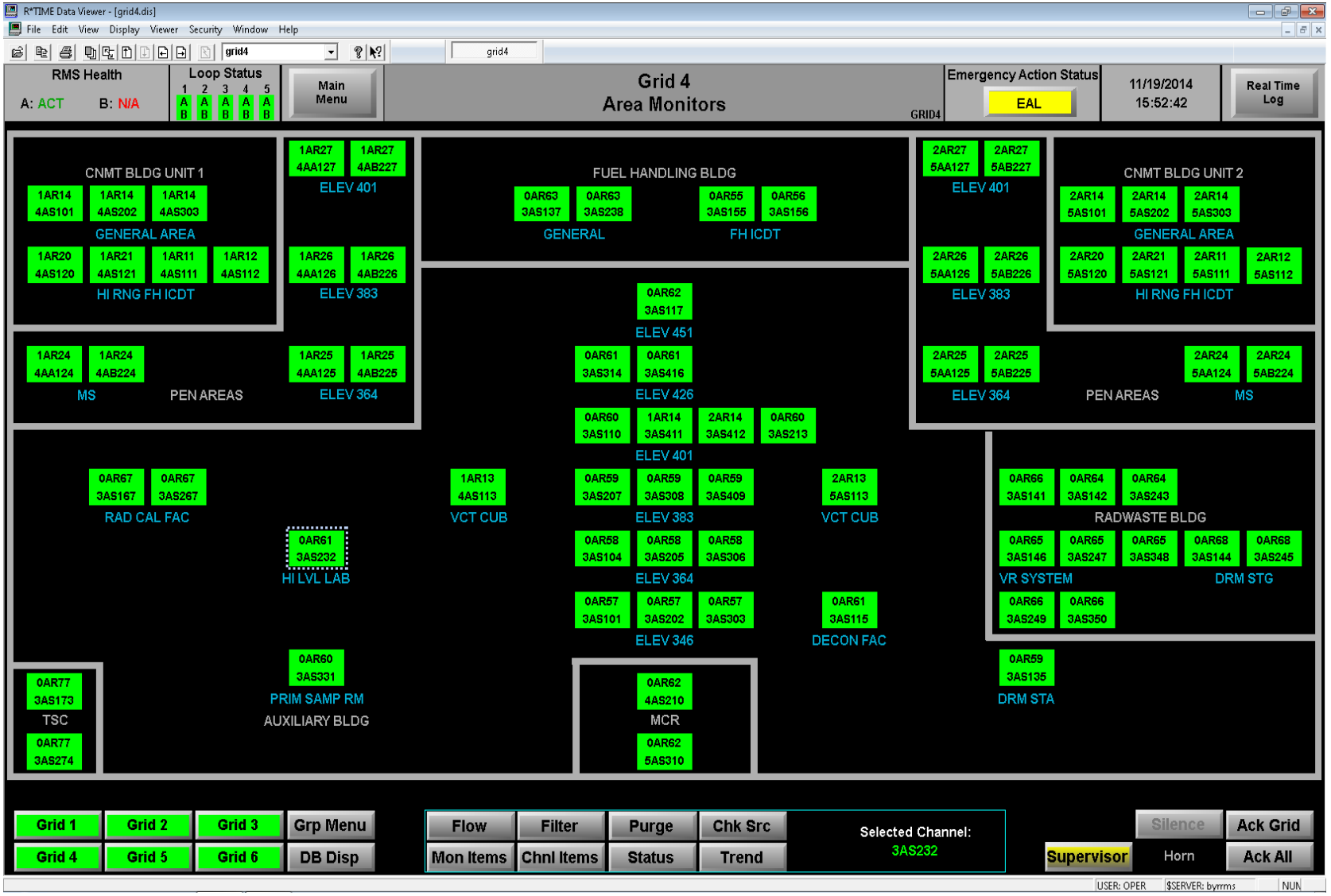
grid2
RMS Health
A: ACT B: N/A
Loop Status
1 2 3 4 5
A B A B A B A B A B
Main Menu
Grid 2
Process Air Monitors
GRID2
Emergency Action Status
EAL
11/19/2014
15:51:55
Real Time Log
CNMT BLDG UNIT 1
1PR11 1PA211
1PR11 1PB111
1PR11 1PC311
1PR11 1PD411
CNMT ATMOS
1PR01 1PA201
1PR01 1PB101
1PR01 1PC301
CNMT PURGE
VENT STACK 0A EFF
1PR30 1PA130
1PR30 1PB230
1PR30 1PC330
1PR30 1PF430
AUX BLDG VENT WRGM
1PR28 1PA228
1PR28 1PB128
1PR28 1PC328
1PR28 1PD428
AUX BLDG VENT NORM
VENT STACK 0B EFF
2PR30 2PA130
2PR30 2PB230
2PR30 2PC330
2PR30 2PF430
AUX BLDG VENT WRGM
2PR28 2PA228
2PR28 2PB128
2PR28 2PC328
2PR28 2PD428
AUX BLDG VENT NORM
CNMT BLDG UNIT 2
2PR11 2PA211
2PR11 2PB111
2PR11 2PC311
2PR11 2PD411
CNMT ATMOS
2PR01 2PA201
2PR01 2PB101
2PR01 2PC301
CNMT PURGE
AUXILIARY BUILDING
1PR13 1PA213
1PR13 1PB113
RH CS PUMP 1A CUB
1PR14 1PA214
1PR14 1PB114
RH CS PUMP 1B CUB
1PR15 1PA215
1PR15 1PB115
RH HX 1A CUB
1PR16 1PA216
1PR16 1PB116
RH HX 1B CUB
1PR17 1PA217
1PR17 1PB117
CENT CHG PMP 1A CUB
1PR18 1PA218
1PR18 1PB118
CENT CHG PMP 1B CUB
MAIN CONTROL ROOM
0PR31 0PA231
0PR31 0PB131
0PR31 0PC331
OUT AIR IN 0A
0PR35 0PA235
0PR35 0PB135
0PR35 0PC335
TURB AIR IN 0A
0PR32 0PA232
0PR32 0PB132
0PR32 0PC332
OUT AIR IN 0A
0PR36 0PA236
0PR36 0PB136
0PR36 0PC336
TURB AIR IN 0A
0PR33 0PA233
0PR33 0PB133
0PR33 0PC333
OUT AIR IN 0B
0PR37 0PA237
0PR37 0PB137
0PR37 0PC337
TURB AIR IN 0B
0PR34 0PA234
0PR34 0PB134
0PR34 0PC334
OUT AIR IN 0B
0PR38 0PA238
0PR38 0PB138
0PR38 0PC338
TURB AIR IN 0B
2PR13 2PA213
2PR13 2PB113
RH CS PUMP 2A CUB
2PR14 2PA214
2PR14 2PB114
RH CS PUMP 2B CUB
2PR15 2PA215
2PR15 2PB115
RH HX 2A CUB
2PR16 2PA216
2PR16 2PB116
RH HX 2B CUB
2PR17 2PA217
2PR17 2PB117
CENT CHG PMP 2A CUB
2PR18 2PA218
2PR18 2PB118
CENT CHG PMP 2B CUB
Grid 1
Grid 2
Grid 3
Grp Menu
Grid 4
Grid 5
Grid 6
DB Disp
Flow
Filter
Purge
Chk Src
Mon Items
Chnl Items
Status
Trend
Selected Channel:
0PA231
Silence
Ack Grid
Supervisor
Horn
Ack All
USER: OPER
$SERVER: byrrms
NUM

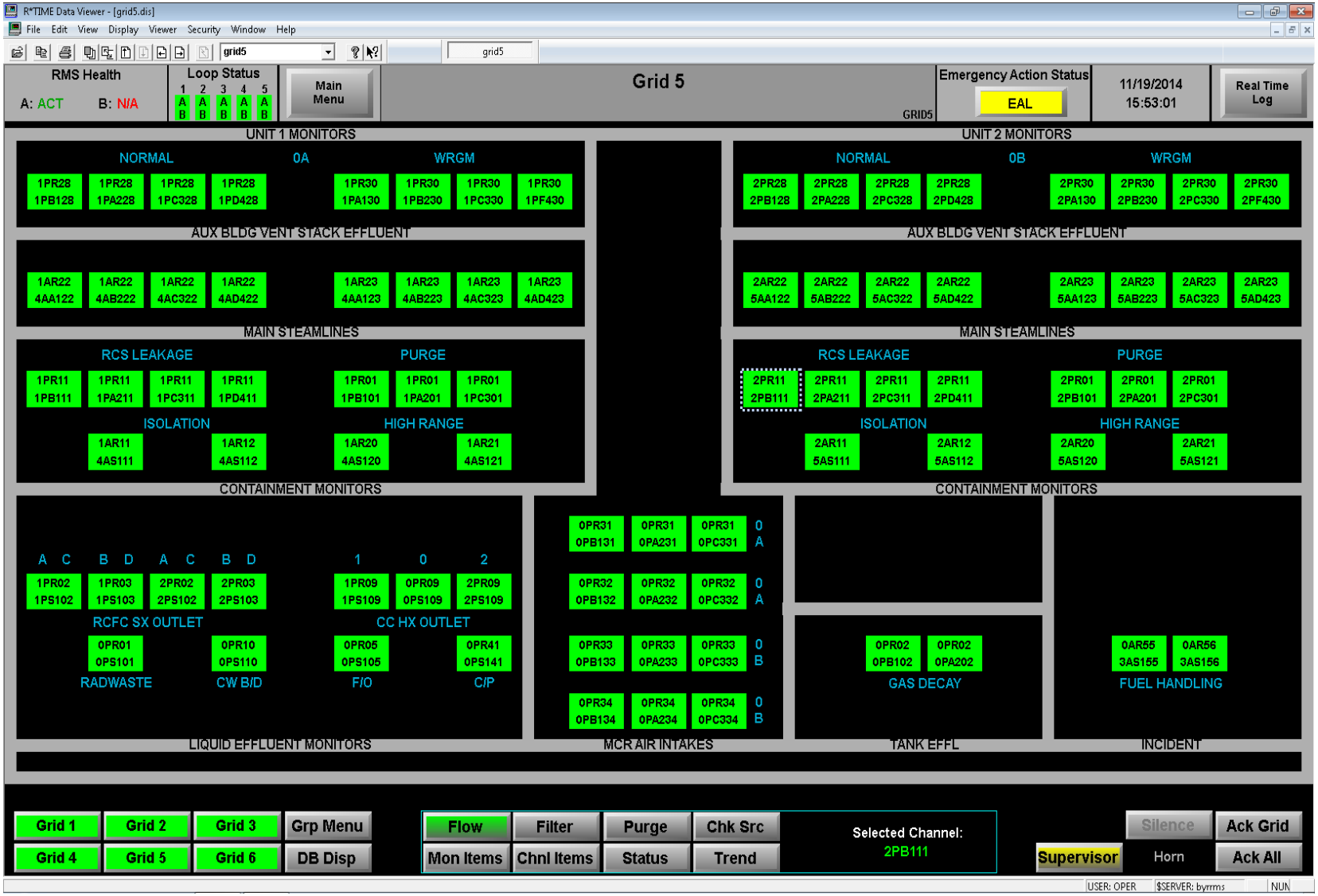
Byron's RMS

R*TIME Data Viewer - [grid3.dis]
File Edit View Display Viewer Security Window Help
grid3
RMS Health
A: ACT B: N/A
Loop Status
1 2 3 4 5
A B A B A B A B A B
Main Menu
Grid 3
Process Air Monitors
GRID3
Emergency Action Status
EAL
11/19/2014
15:52:14
Real Time Log
AUXILIARY BUILDING
1PR21 1PA221
1PR21 1PB121
1PR21 1PC321
PIPE TUNNEL
0PR21 0PA221
0PR21 0PB121
0PR21 0PC321
AUX BLDG EXH 0A
0PR22 0PA222
0PR22 0PB122
0PR22 0PC322
AUX BLDG EXH 0B
2PR21 2PA221
2PR21 2PB121
2PR21 2PC321
PIPE TUNNEL
0PR12 0PS112
RECYCLE EVAP CUB
0PR24 0PA224
0PR24 0PB124
0PR24 0PC324
FHB EXH
0PR11 0PA211
0PR11 0PB111
RADWASTE EVAP CUB
0PR15 0PS115
LAUNDRY ROOM
0PR26 0PA226
0PR26 0PB126
0PR26 0PC326
RADWASTE VENT
0PR14 0PS114
DRM STA
0PR03 0PA203
0PR03 0PB103
0PR03 0PC303
LAB FUME HOOD
0PR25 0PA225
0PR25 0PB125
0PR25 0PC325
FTR VENT
0PR13 0PA213
0PR13 0PB113
GAS DECAY TK CUB
TSC
0PR60 0PA260
0PR60 0PB160
0PR60 0PC360
TSC VENT SYS
0PR02 0PA202
0PR02 0PB102
GAS DECAY TK EFF
RADWASTE BLDG
0PR40 0PA240
0PR40 0PB140
0PR40 0PC340
VR AREA CUB VENT
Grid 1
Grid 2
Grid 3
Grp Menu
Grid 4
Grid 5
Grid 6
DB Disp
Flow
Filter
Purge
Chk Src
Mon Items
Chnl Items
Status
Trend
Selected Channel:
0PA221
Silence
Ack Grid
Supervisor
Horn
Ack All
USER: OPER
$SERVER: byrrms
NUM

Byron's RMS


R*TIME Data Viewer - [grid4.dis]
File Edit View Display Viewer Security Window Help
grid4
RMS Health
A: ACT B: N/A
Loop Status
1 2 3 4 5
A B A B A B A B A B
Main Menu
Grid 4
Area Monitors
GRID4
Emergency Action Status
EAL
11/19/2014
15:52:42
Real Time Log
CNMT BLDG UNIT 1
1AR14 4AS101
1AR14 4AS202
1AR14 4AS303
GENERAL AREA
1AR20 4AS120
1AR21 4AS121
1AR11 4AS111
1AR12 4AS112
HI RNG FH ICDT
1AR27 4AA127
1AR27 4AB227
ELEV 401
1AR26 4AA126
1AR26 4AB226
ELEV 383
1AR24 4AA124
1AR24 4AB224
MS
PEN AREAS
1AR25 4AA125
1AR25 4AB225
ELEV 364
FUEL HANDLING BLDG
0AR63 3AS137
0AR63 3AS238
GENERAL
0AR55 3AS155
0AR56 3AS156
FH ICDT
0AR62 3AS117
ELEV 451
0AR61 3AS314
0AR61 3AS416
ELEV 426
0AR60 3AS110
1AR14 3AS411
2AR14 3AS412
0AR60 3AS213
ELEV 401
0AR59 3AS207
0AR59 3AS308
0AR59 3AS409
ELEV 383
0AR58 3AS104
0AR58 3AS205
0AR58 3AS306
ELEV 364
0AR57 3AS101
0AR57 3AS202
0AR57 3AS303
ELEV 346
2AR27 5AA127
2AR27 5AB227
ELEV 401
2AR26 5AA126
2AR26 5AB226
ELEV 383
2AR25 5AA125
2AR25 5AB225
ELEV 364
PEN AREAS
2AR24 5AA124
2AR24 5AB224
MS
CNMT BLDG UNIT 2
2AR14 5AS101
2AR14 5AS202
2AR14 5AS303
GENERAL AREA
2AR20 5AS120
2AR21 5AS121
2AR11 5AS111
2AR12 5AS112
HI RNG FH ICDT
0AR67 3AS167
0AR67 3AS267
RAD CAL FAC
0AR61 3AS232
HI LVL LAB
1AR13 4AS113
VCT CUB
2AR13 5AS113
VCT CUB
0AR61 3AS115
DECON FAC
0AR66 3AS141
0AR64 3AS142
0AR64 3AS243
RADWASTE BLDG
0AR65 3AS146
0AR65 3AS247
0AR65 3AS348
0AR68 3AS144
0AR68 3AS245
VR SYSTEM
DRM STG
0AR66 3AS249
0AR66 3AS350
0AR59 3AS135
DRM STA
0AR77 3AS173
TSC
0AR77 3AS274
0AR60 3AS331
PRIM SAMP RM
AUXILIARY BLDG
0AR62 4AS210
MCR
0AR62 5AS310
Grid 1
Grid 2
Grid 3
Grp Menu
Grid 4
Grid 5
Grid 6
DB Disp
Flow
Filter
Purge
Chk Src
Mon Items
Chnl Items
Status
Trend
Selected Channel:
3AS232
Silence
Ack Grid
Supervisor
Horn
Ack All
USER: OPER
$SERVER: byrrms
NUM

Byron's RMS


R*TIME Data Viewer - [grid5.dis]
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RMS Health
A: ACT B: N/A
Loop Status
Main Menu
Grid 5
GRID5
Emergency Action Status
EAL
11/19/2014
15:53:01
Real Time Log
UNIT 1 MONITORS
NORMAL 0A WRGM
1PR28 1PB128
1PR28 1PA228
1PR28 1PC328
1PR28 1PD428
1PR30 1PA130
1PR30 1PB230
1PR30 1PC330
1PR30 1PF430
AUX BLDG VENT STACK EFFLUENT
1AR22 4AA122
1AR22 4AB222
1AR22 4AC322
1AR22 4AD422
1AR23 4AA123
1AR23 4AB223
1AR23 4AC323
1AR23 4AD423
MAIN STEAMLINES
RCS LEAKAGE
PURGE
1PR11 1PB111
1PR11 1PA211
1PR11 1PC311
1PR11 1PD411
1PR01 1PB101
1PR01 1PA201
1PR01 1PC301
ISOLATION
HIGH RANGE
1AR11 4AS111
1AR12 4AS112
1AR20 4AS120
1AR21 4AS121
CONTAINMENT MONITORS
A C B D A C B D
1PR02 1PS102
1PR03 1PS103
2PR02 2PS102
2PR03 2PS103
RCFC SX OUTLET
0PR01 0PS101
0PR10 0PS110
RADWASTE
CW B/D
1 0 2
1PR09 1PS109
0PR09 0PS109
2PR09 2PS109
CC HX OUTLET
0PR05 0PS105
0PR41 0PS141
F/O
C/P
LIQUID EFFLUENT MONITORS
0PR31 0PB131
0PR31 0PA231
0PR31 0PC331
0 A
0PR32 0PB132
0PR32 0PA232
0PR32 0PC332
0 A
0PR33 0PB133
0PR33 0PA233
0PR33 0PC333
0 B
0PR34 0PB134
0PR34 0PA234
0PR34 0PC334
0 B
MCR AIR INTAKES
UNIT 2 MONITORS
NORMAL 0B WRGM
2PR28 2PB128
2PR28 2PA228
2PR28 2PC328
2PR28 2PD428
2PR30 2PA130
2PR30 2PB230
2PR30 2PC330
2PR30 2PF430
AUX BLDG VENT STACK EFFLUENT
2AR22 5AA122
2AR22 5AB222
2AR22 5AC322
2AR22 5AD422
2AR23 5AA123
2AR23 5AB223
2AR23 5AC323
2AR23 5AD423
MAIN STEAMLINES
RCS LEAKAGE
PURGE
2PR11 2PB111
2PR11 2PA211
2PR11 2PC311
2PR11 2PD411
2PR01 2PB101
2PR01 2PA201
2PR01 2PC301
ISOLATION
HIGH RANGE
2AR11 5AS111
2AR12 5AS112
2AR20 5AS120
2AR21 5AS121
CONTAINMENT MONITORS
0PR02 0PB102
0PR02 0PA202
GAS DECAY
TANK EFFL
0AR55 3AS155
0AR56 3AS156
FUEL HANDLING
INCIDENT
Grid 1 Grid 2 Grid 3 Grp Menu
Grid 4 Grid 5 Grid 6 DB Disp
Flow Filter Purge Chk Src
Mon Items Chnl Items Status Trend
Selected Channel:
2PB111
Silence Ack Grid
Supervisor Horn Ack All
USER: OPER
$SERVER: byrrms
NUM

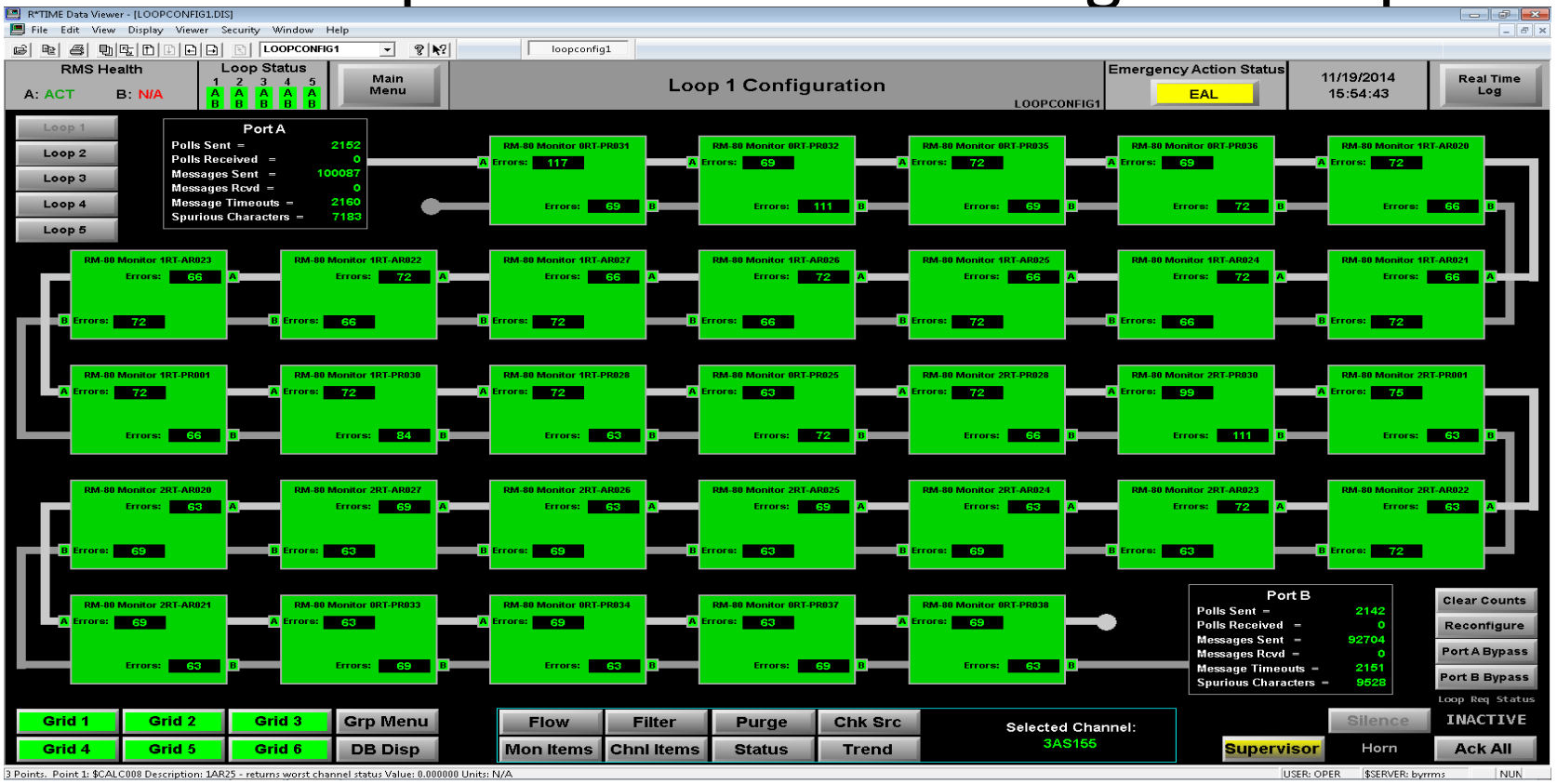
Byron's RMS

And have added
many new screens that
that mimic the PPC Rtime
and bring much more
useful information
that's easier to access.

Byron's RMS

For example: Communication Loop Diagrams…

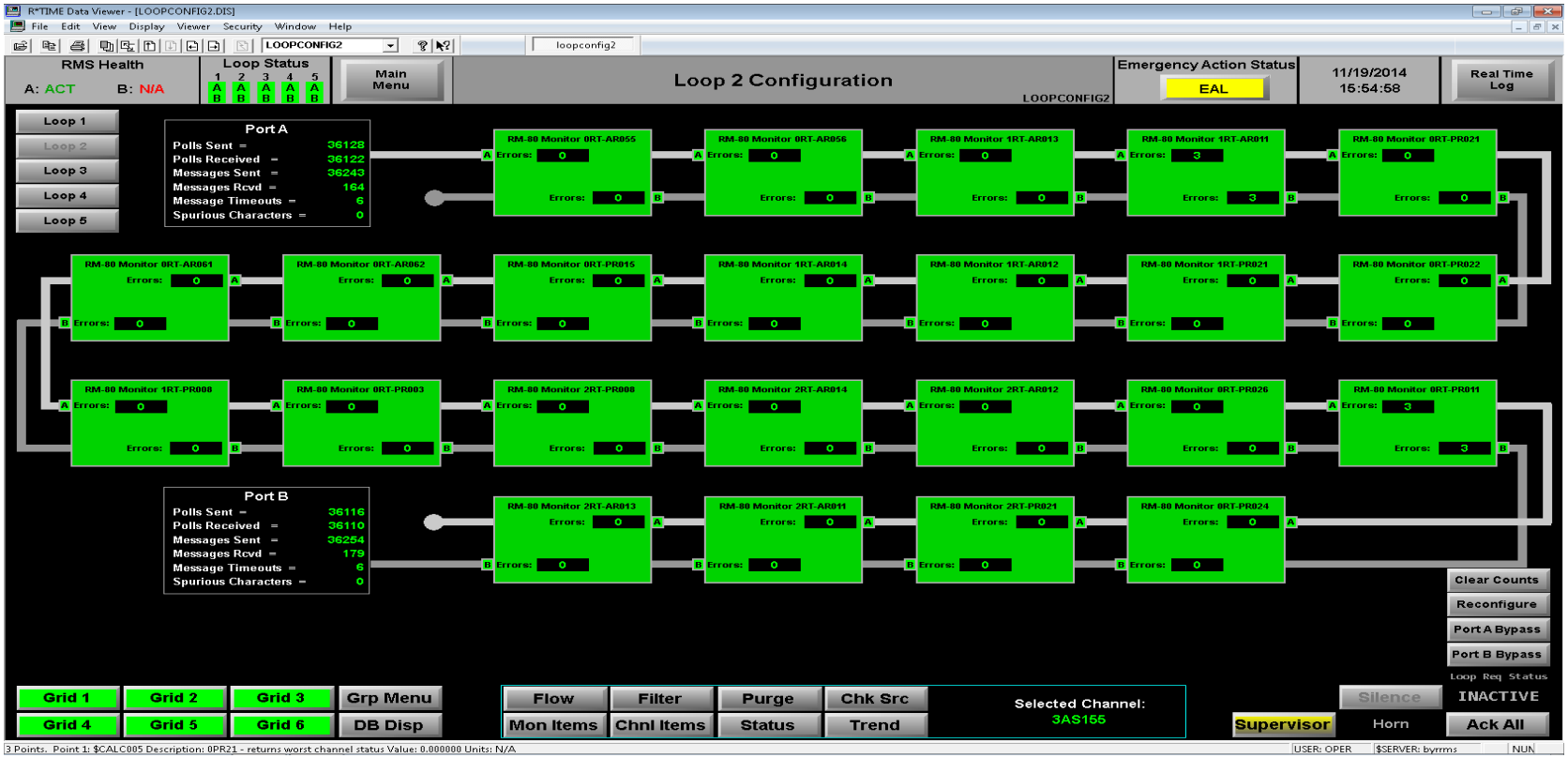
With Loop Status and health right on top



Byron's RMS

and have Communications Stats

for both Ports plainly visible…

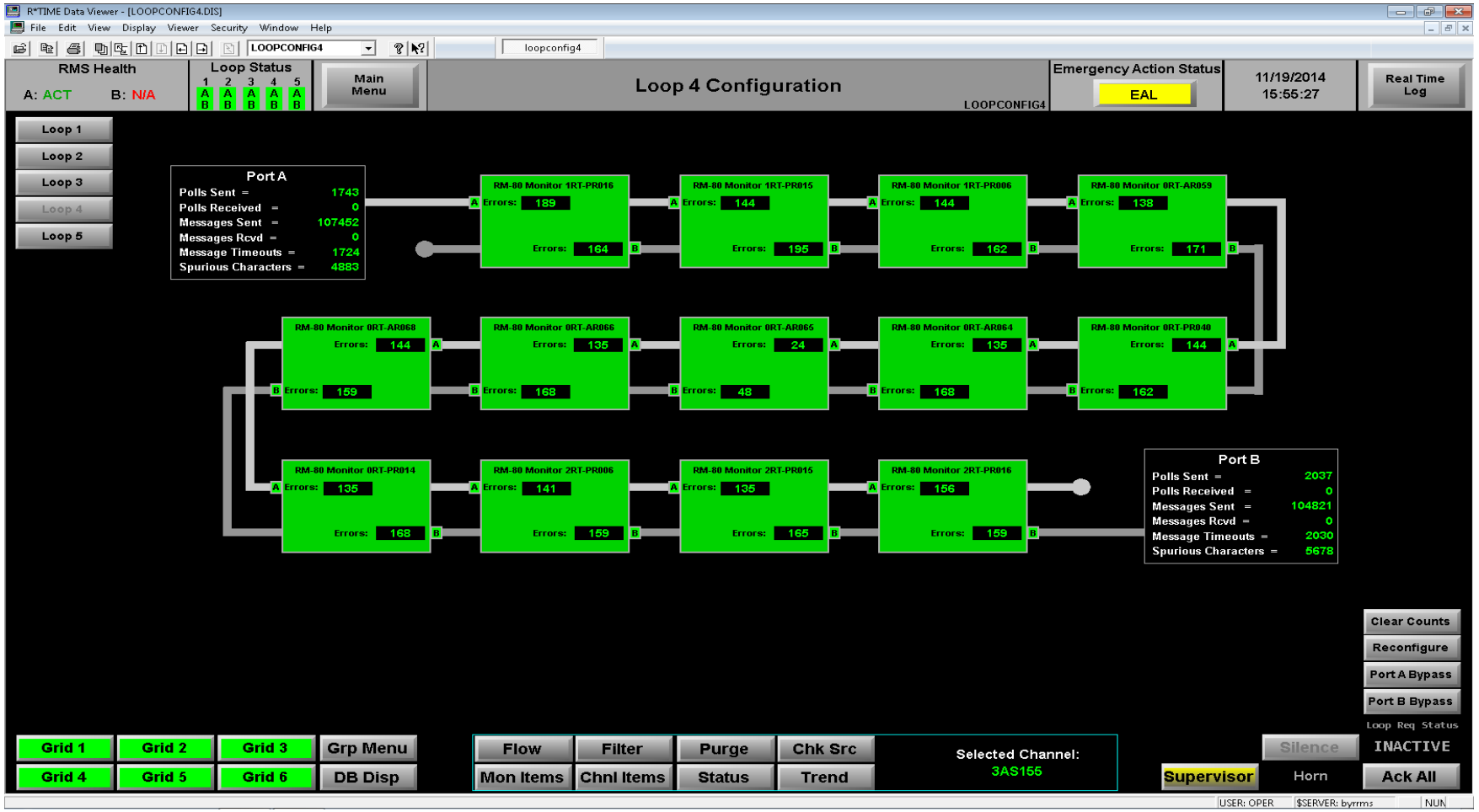


Byron's RMS

as well as contain other important information.

Byron's RMS

Rtime Style Tool Bars along the Top

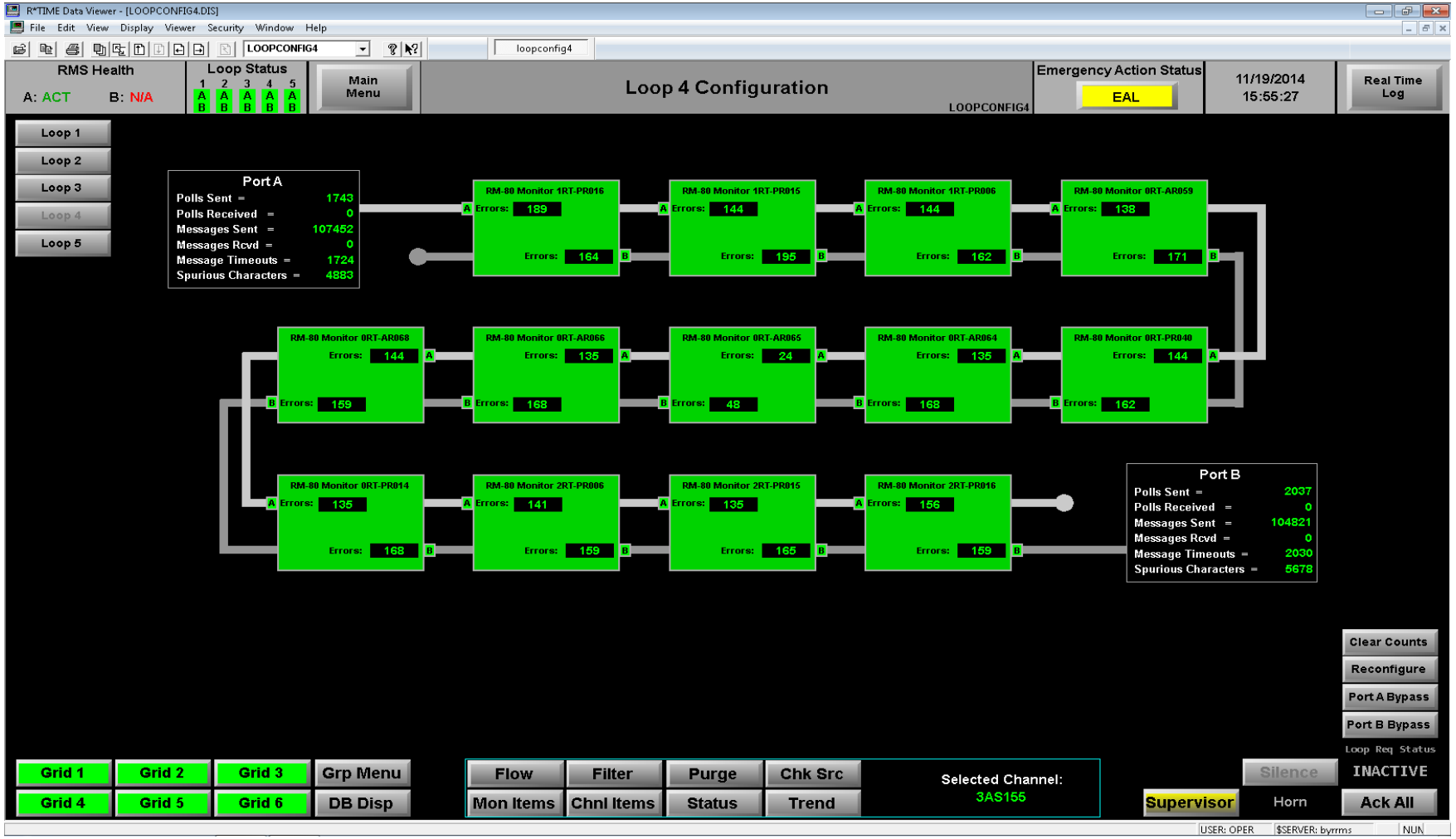


Byron's RMS

Just like we are used to viewing in the PPC.

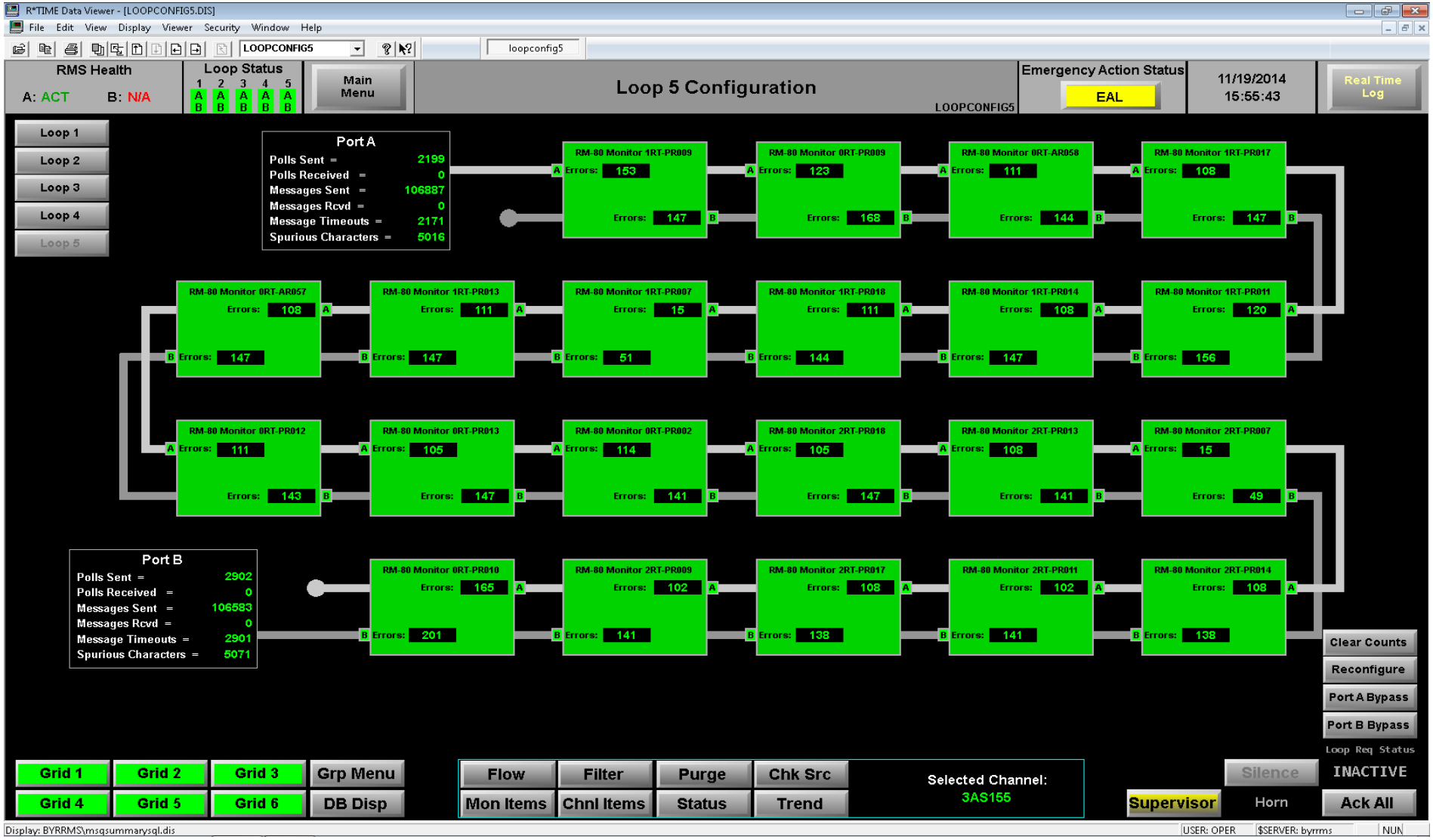
Byron's RMS

And easy to get to controls along the bottom!



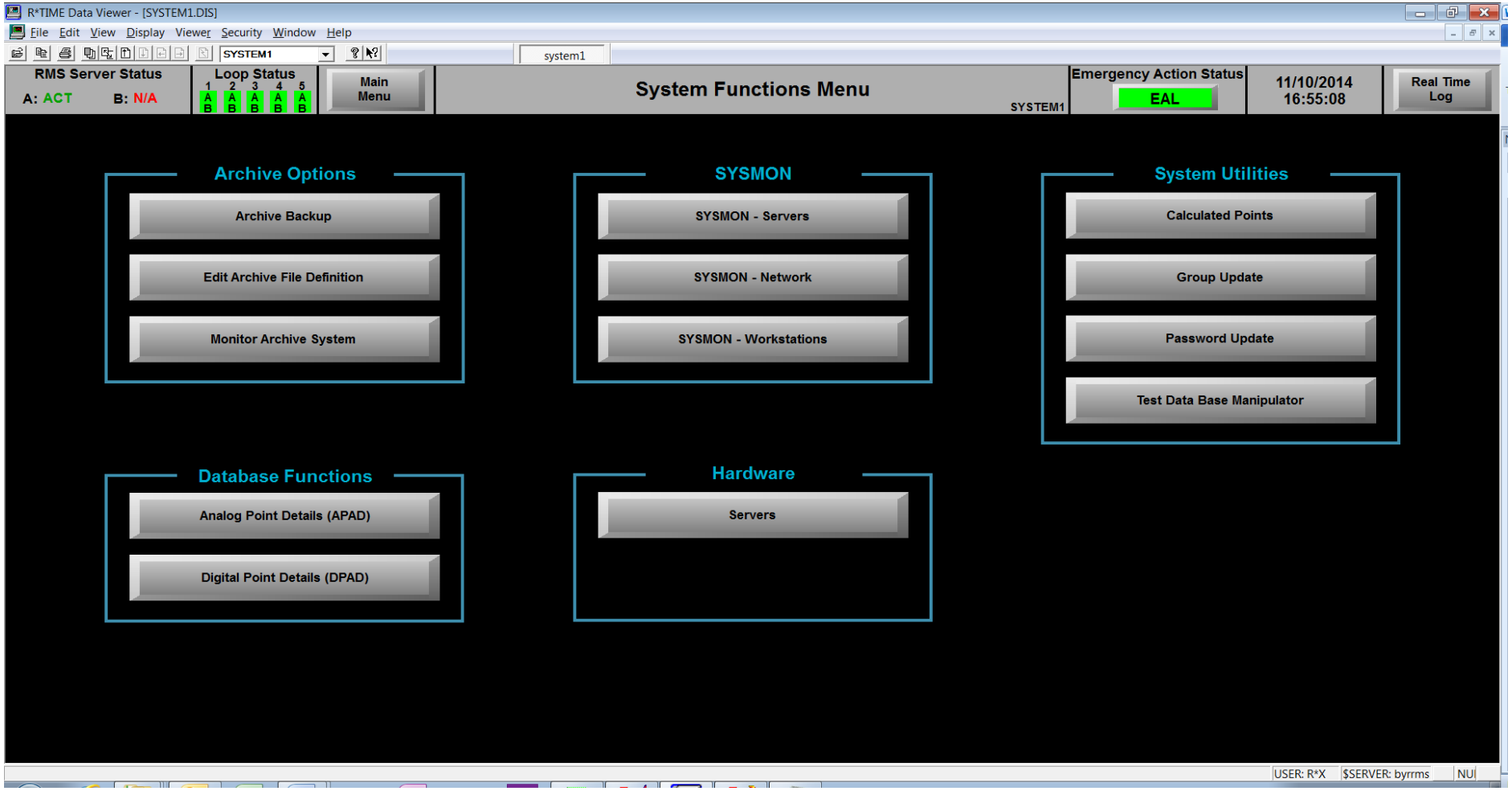
Byron's RMS

Very much like we are used to viewing in the PPC.



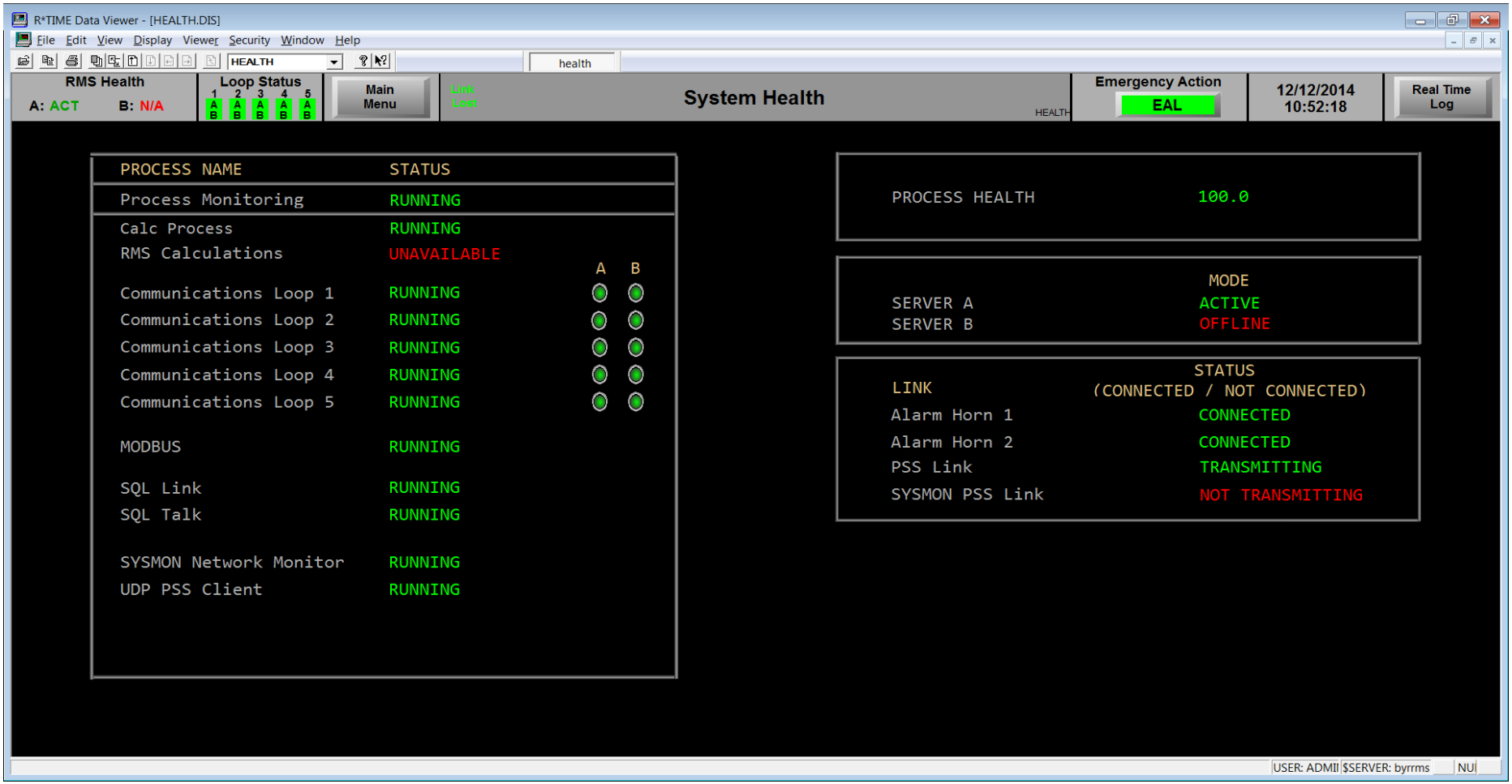
Byron's RMS

With more "Menu Options" than the RM-11.



Byron's RMS

We have easy access to additional System Health

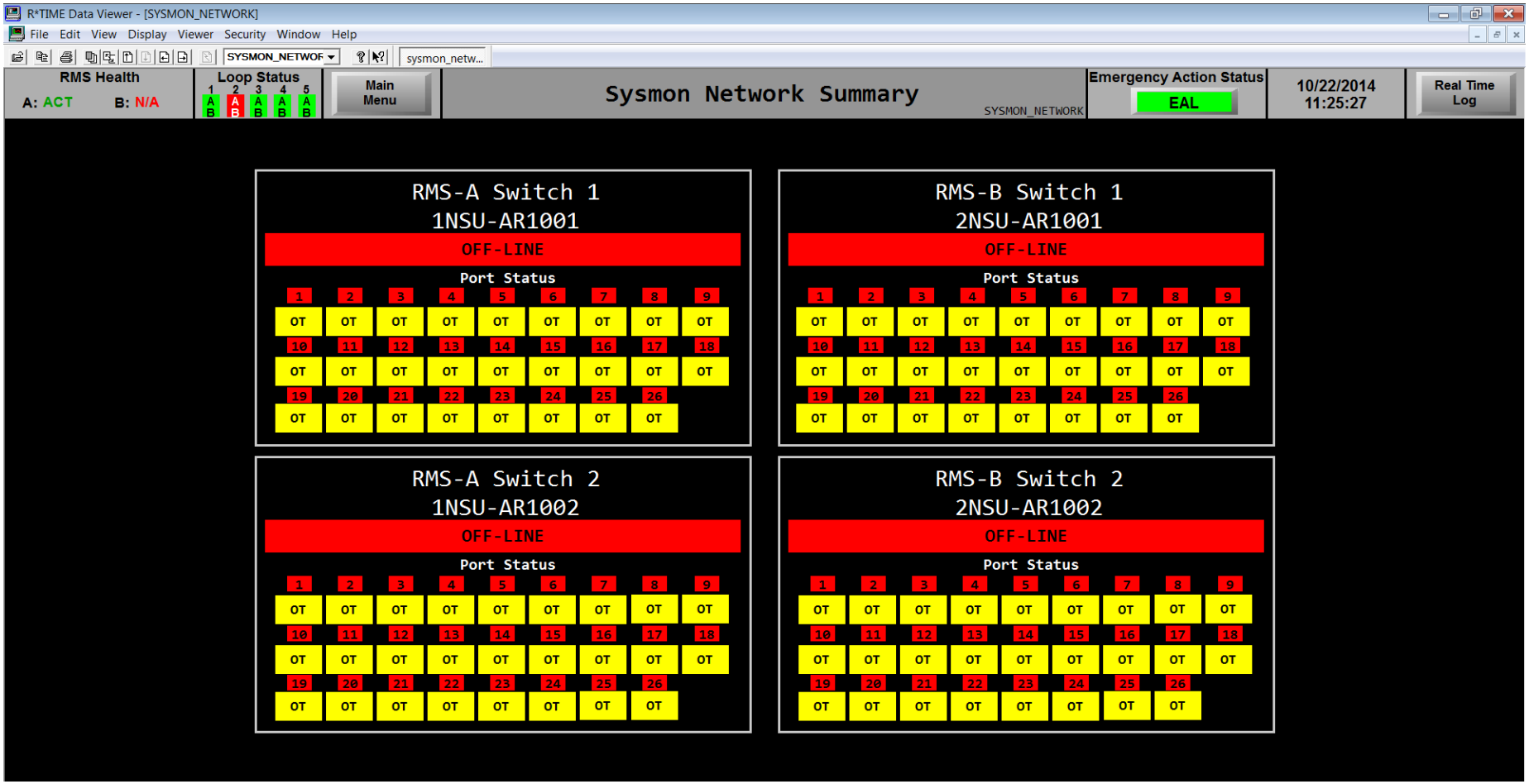


Byron’s RMS

Server Health

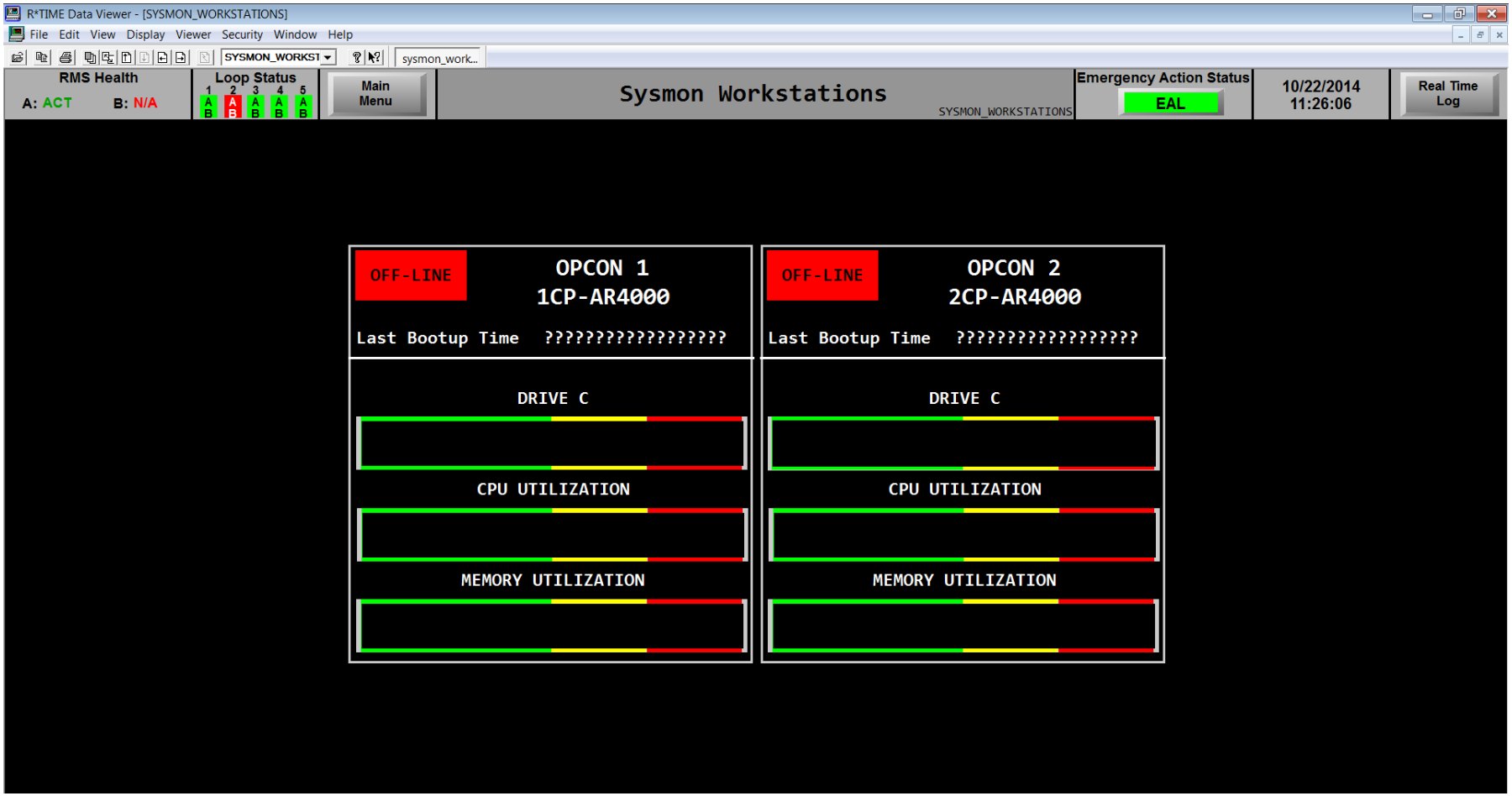
Byron's RMS

Network Status



Byron’s RMS

OPCON Health

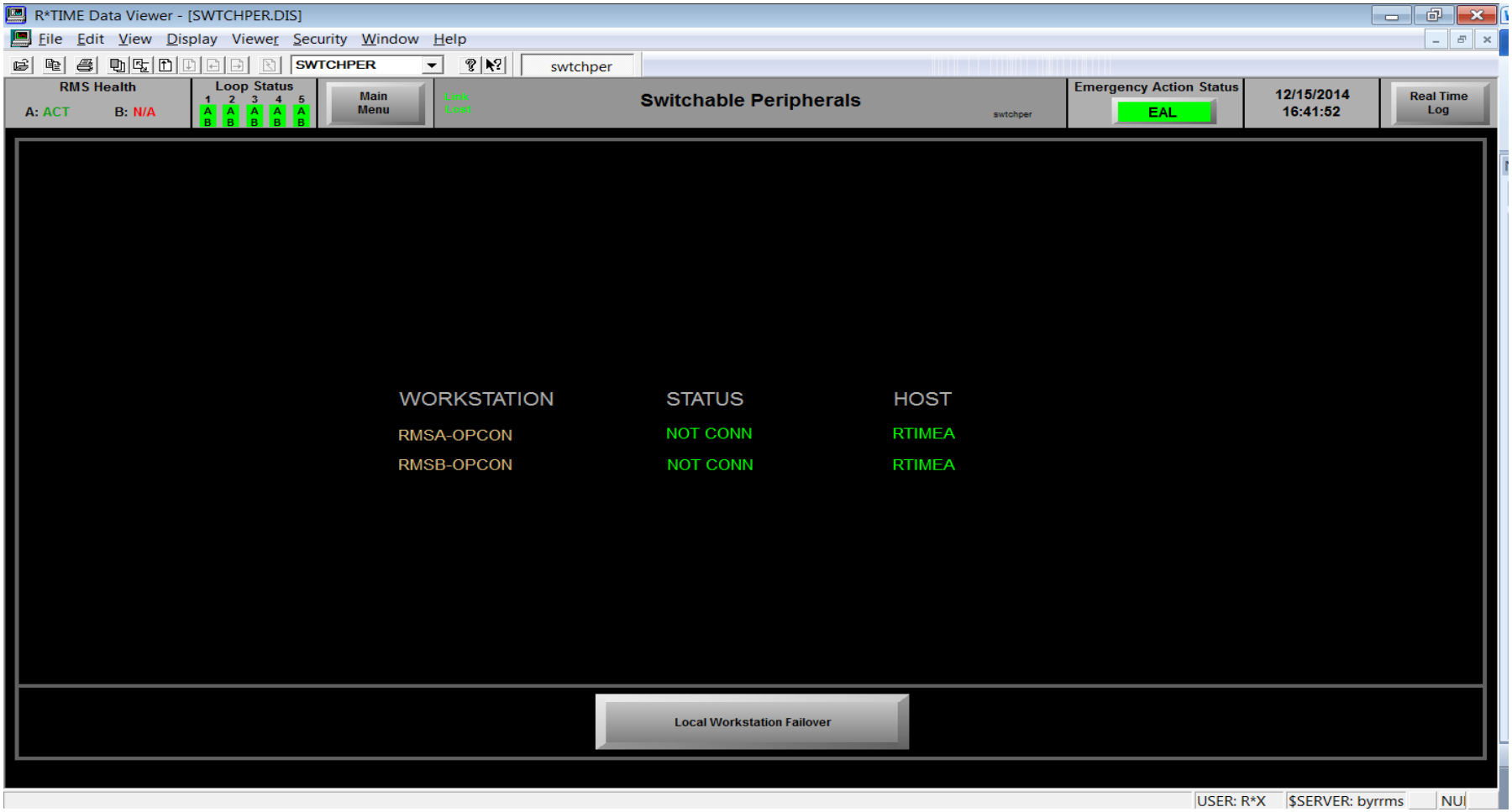


Byron's RMS

Fail Over

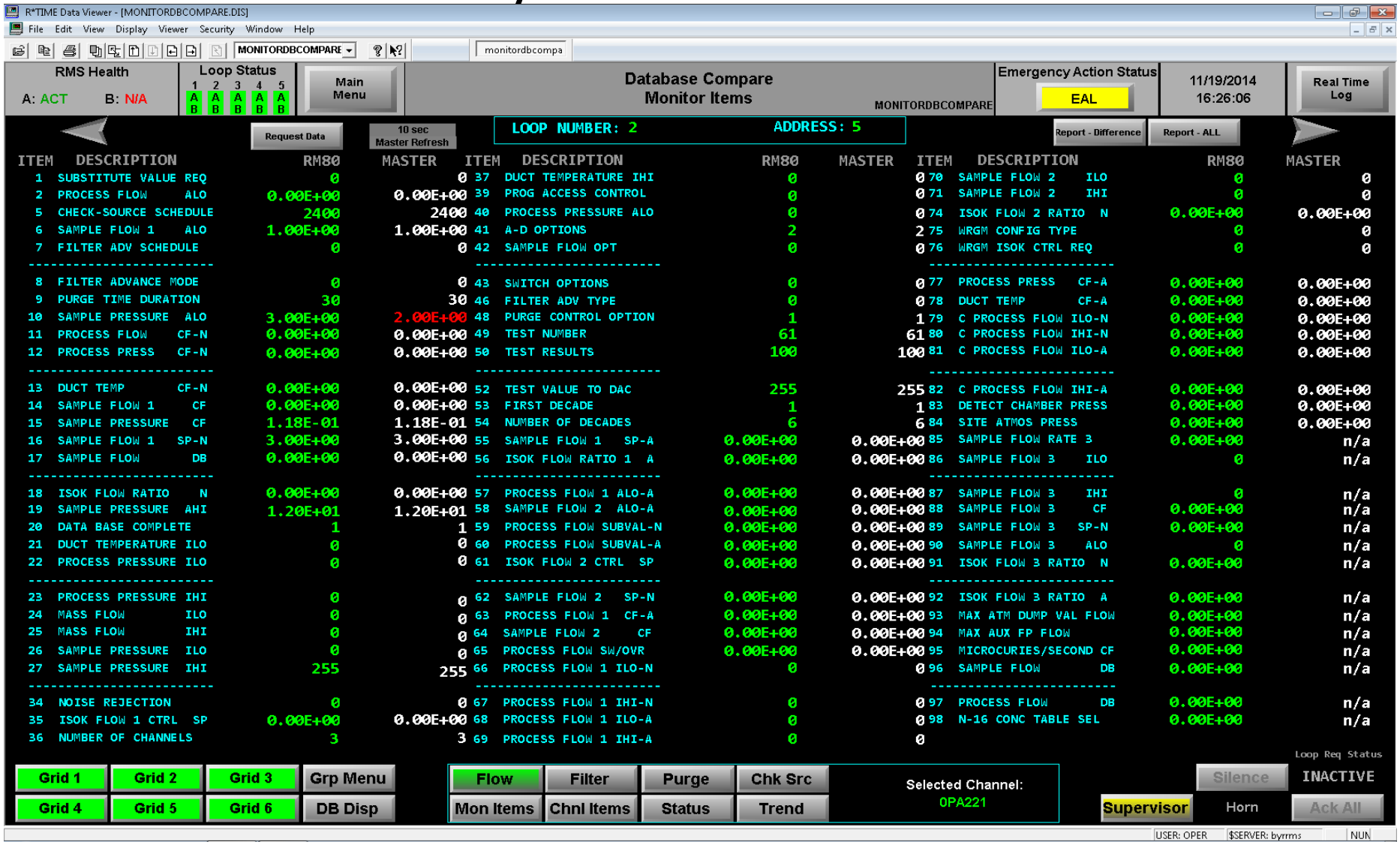
Byron's RMS

And Switchable Peripherals similar to PPC RTime



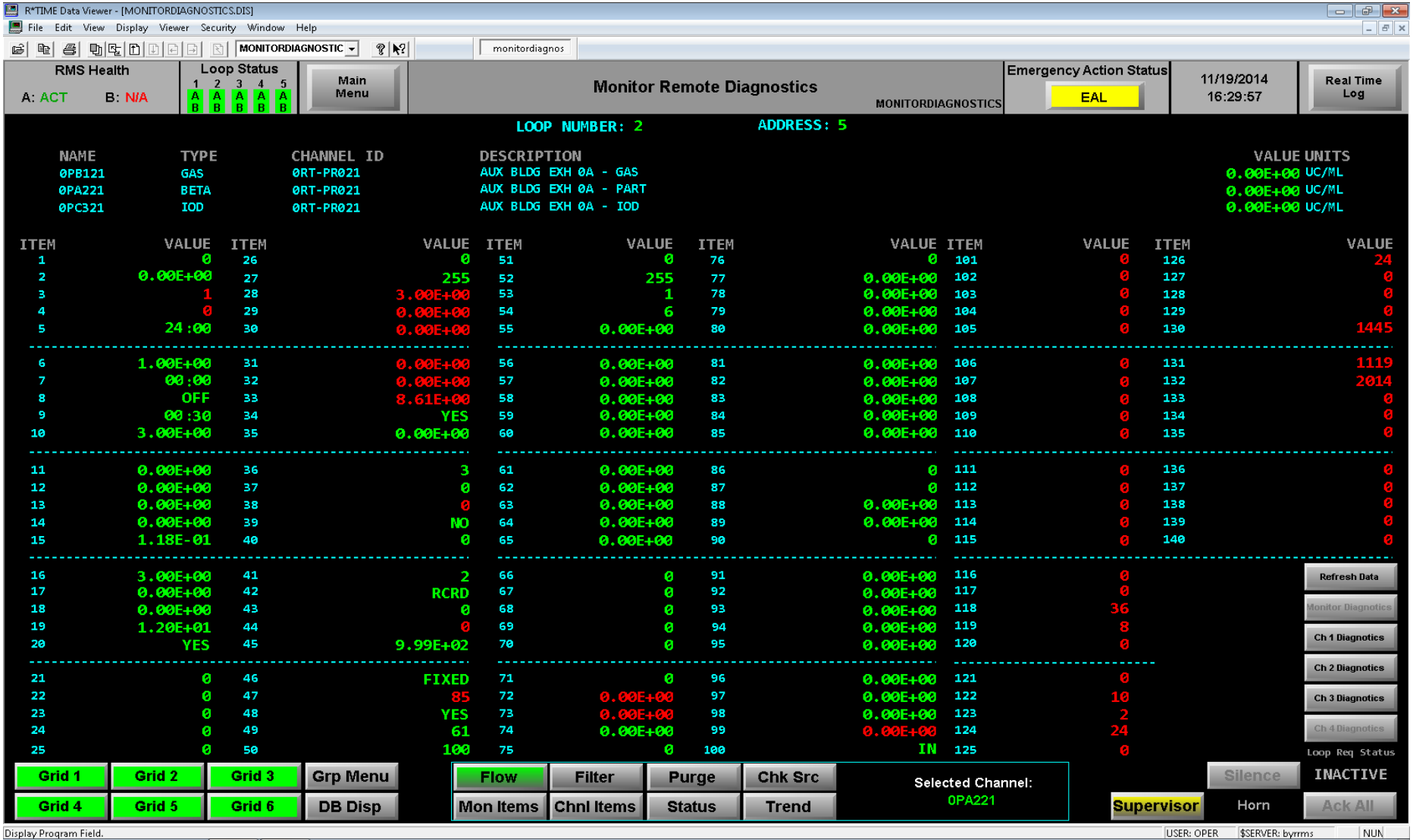
Byron's RMS

There are many more Informational Screens



Byron's RMS

There are many more Informational Screens

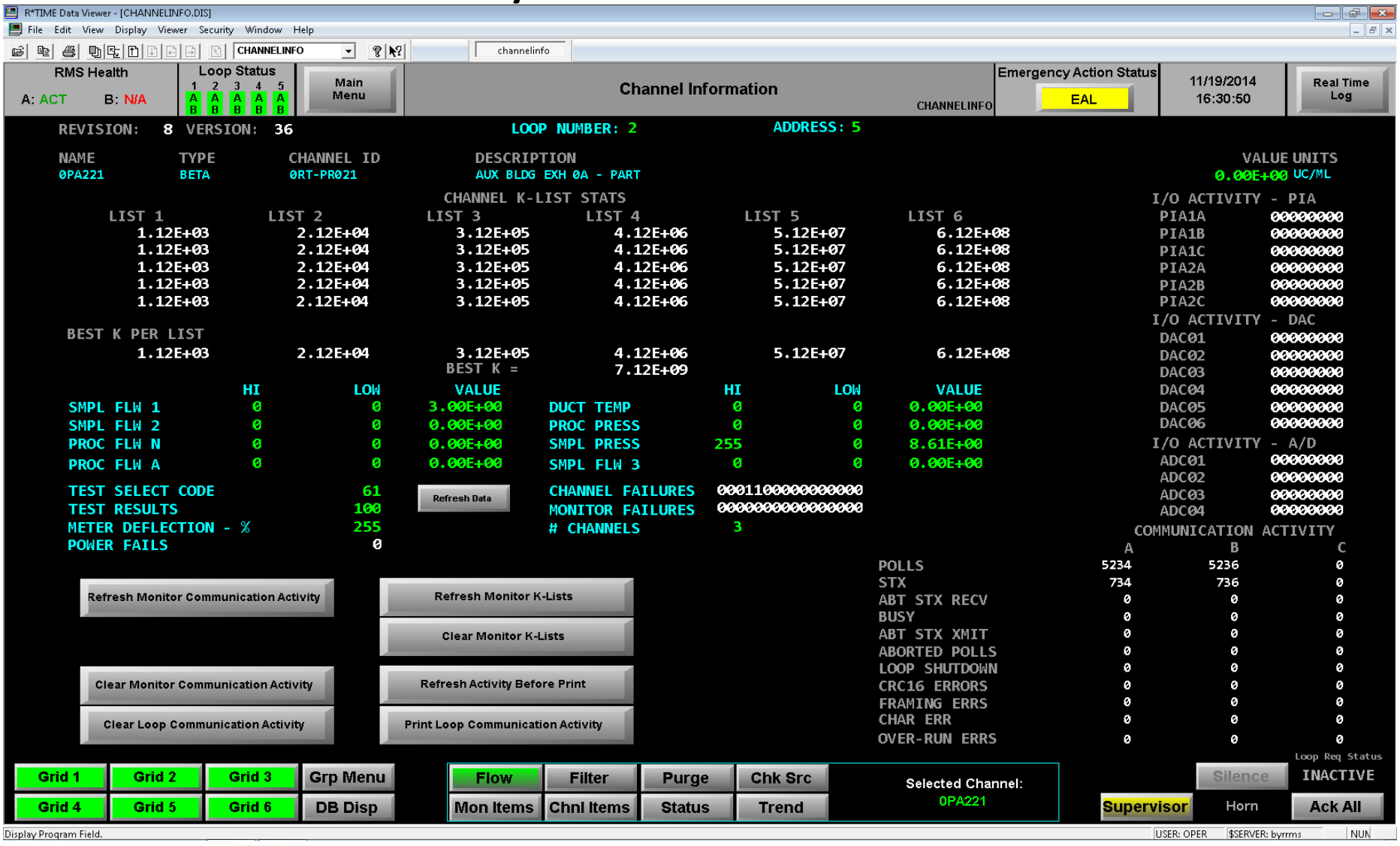


Byron's RMS

There are many more Informational Screens

Byron's RMS

There are many more Informational Screens



Byron's RMS
Report and Log Screens

06/23/2014 16:57:48 Byron RMS

SHIFTLY Report

Channel Name	Channel Type	Color U	Color A	Current Value	Units	Monitor Status	Channel Status	Poll Address L	Poll Address MN	Sample Flow	Process Flow
3AS155	AREA		G	2.96e-001		010000	004000	2	1	0.00e+000	0.00e+000
3AS156	AREA		G	2.24e-001		000000	004000	2	2	0.00e+000	0.00e+000
4AS111	AREA		G	4.10e+001		000000	004000	2	4	0.00e+000	0.00e+000
4AS112	AREA		G	3.95e+001		000000	004000	2	8	0.00e+000	0.00e+000
5AS111	AREA		M	3.05e+001		000000	004000	2	22	0.00e+000	0.00e+000
5AS112	AREA		M	3.03e+001		000000	004000	2	17	0.00e+000	0.00e+000
0PB132	GAS		G	2.53e-006		000000	004000	1	2	3.00e+000	0.00e+000
0PB133	GAS		G	2.62e-006		000000	004000	1	28	3.00e+000	0.00e+000
0PB134	GAS		G	2.16e-006		000000	004000	1	29	3.00e+000	0.00e+000
0PB131	GAS		G	2.62e-006		010000	004000	1	1	3.00e+000	0.00e+000
1PA211	BETA		M	3.23e-015		010000	014000	5	5	3.00e+000	0.00e+000
2PA211	BETA		M	4.91e-014		000000	014000	5	18	3.00e+000	0.00e+000

Signature _____ Date _____

Byron's RMS
Report and Log Screens

06/23/2014 Byron RMS

DAILY Report

Channel Name	Channel Type	Color U	Color A	Current Value	Units	Monitor Status	Channel Status	Poll Address L	Poll Address MN	Sample Flow	Process Flow
0PS101	LIQ		G	7.46e-006		000010	005000	3	15	0.00e+000	0.00e+000
0PS105	LIQ		G	3.34e-007		000000	004000	3	14	0.00e+000	0.00e+000
0PS110	LIQ		M	3.15e-007		004000	004000	5	21	3.00e+000	0.00e+000
0PS141	LIQ		G	6.36e-008		000000	004000	3	12	3.00e+000	0.00e+000
1PS102	LIQ		M	3.56e-007		010000	004000	3	2	3.00e+000	0.00e+000
1PS103	LIQ		M	1.55e-007		010000	004000	3	3	3.00e+000	0.00e+000
2PS102	LIQ		G	4.15e-007		000000	004000	3	20	3.00e+000	0.00e+000
2PS103	LIQ		G	1.01e-007		004000	004000	3	21	3.00e+000	0.00e+000
0PS109	LIQ		M	1.66e-007		000000	004000	5	2	3.00e+000	0.00e+000
1PS109	LIQ		M	1.72e-007		010000	004000	5	1	3.00e+000	0.00e+000
2PS109	LIQ		M	6.75e-007		004000	004000	5	20	3.00e+000	0.00e+000
1PA228	BETA		G	9.55e-015		000000	014000	1	15	1.95e+000	1.24e+005
1PB128	GAS		G	2.87e-006		000000	004000	1	15	1.95e+000	1.24e+005
1PC328	IOD		G	2.96e-014		000000	014000	1	15	1.95e+000	1.24e+005
1PD428	GAS		G	1.44e-003		000000	004000	1	15	1.95e+000	1.24e+005
1PB101	GAS		Y	4.53e-006		000000	004000	1	13	3.00e+000	0.00e+000
2PB101	GAS		G	2.05e-006		000000	004000	1	19	3.00e+000	0.00e+000
2PA228	BETA		G	3.23e-015		000000	014000	1	17	2.45e+000	1.46e+005
2PB128	GAS		G	2.34e-006		000000	004000	1	17	2.45e+000	1.46e+005
2PC328	IOD		G	3.67e-014		000000	014000	1	17	2.45e+000	1.46e+005
2PD428	GAS		G	1.21e-003		000000	004000	1	17	2.45e+000	1.46e+005
1PS108	LIQ		G	5.76e-007		000000	004000	2	13	3.00e+000	0.00e+000
1PS127	TGAS		G	4.05e-006		000000	004000	3	13	3.00e+000	0.00e+000
2PS108	LIQ		M	9.27e-007		000000	004000	2	15	3.00e+000	0.00e+000
2PS127	TGAS		G	1.23e-006		000000	004000	3	16	3.00e+000	0.00e+000

Signature

Date

Byron's RMS

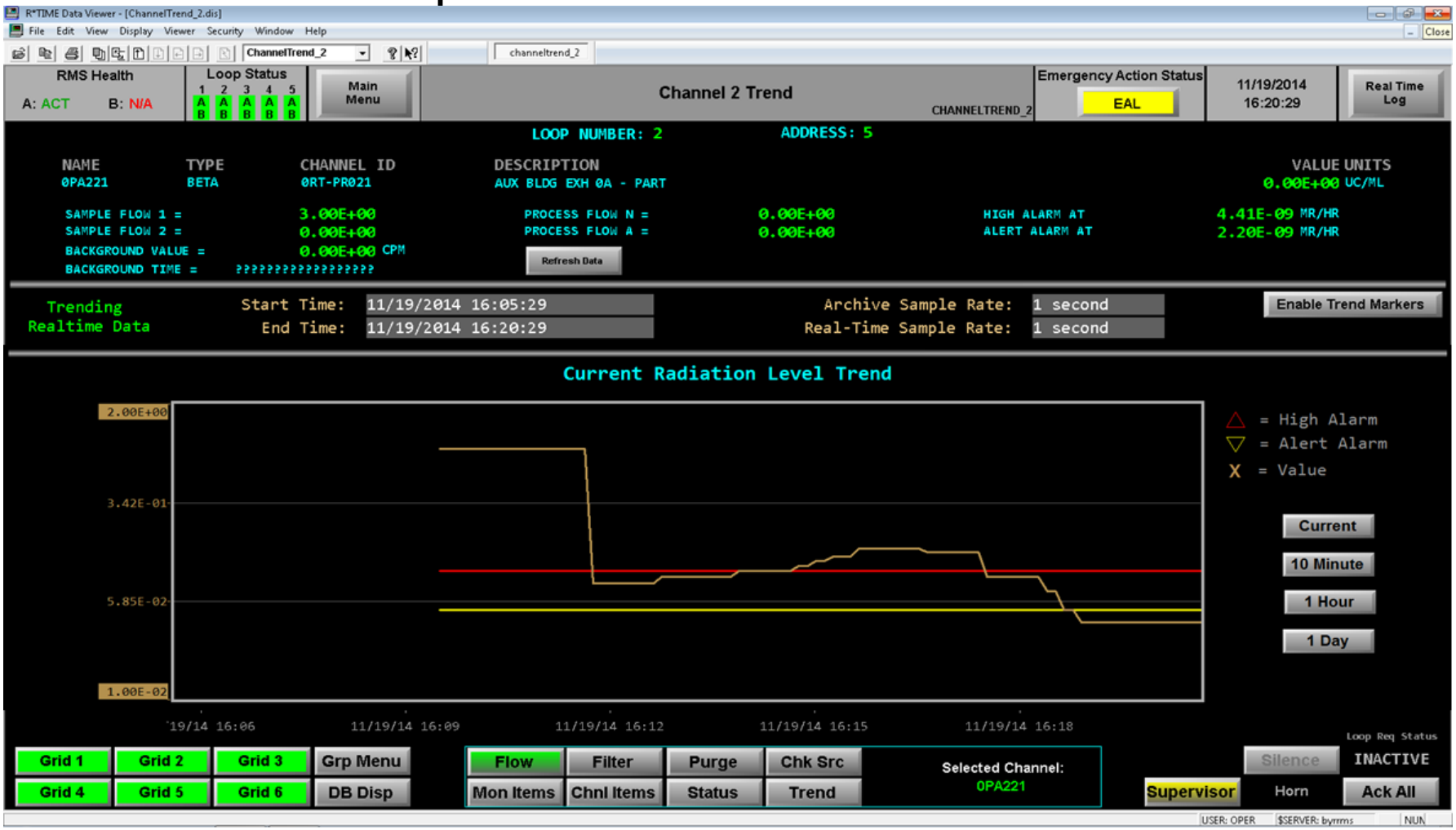
Check Source Report

Requested Start Time: 12/09/2014 14:02:06
Requested End Time: 12/11/2014 14:02:06
Number of Records : 1166

Date/Time	Channel Index	Channel Name	Current CPM	Background	Raw Counts	Check Source
12/09/2014 14:30:29	143	1PA211	3.00	6.00	13.00	4.00
12/09/2014 14:30:29	145	1PC311	3.01	6.02	13.04	4.01
12/09/2014 14:30:29	146	1PD411	3.02	6.04	13.08	4.02
12/09/2014 14:30:29	150	1PB114	3.03	6.06	13.12	4.03
12/09/2014 14:30:29	149	1PA214	3.04	6.08	13.16	4.04
12/09/2014 14:30:29	158	1PB118	3.05	6.10	13.20	4.05
12/09/2014 14:30:29	157	1PA218	3.06	6.12	13.24	4.06
12/09/2014 14:30:29	140	1PS107	3.07	6.14	13.28	4.07
12/09/2014 14:30:29	148	1PB113	3.08	6.16	13.32	4.08
12/09/2014 14:30:29	147	1PA213	3.09	6.18	13.36	4.09
12/09/2014 14:30:29	3	3AS101	3.10	6.20	13.40	4.10
12/09/2014 14:30:29	4	3AS202	3.11	6.22	13.44	4.11
12/09/2014 14:30:29	5	3AS303	3.12	6.24	13.48	4.12
12/09/2014 14:30:29	53	0PS112	3.13	6.26	13.52	4.13
12/09/2014 14:30:29	55	0PB113	3.14	6.28	13.56	4.14
12/09/2014 14:30:29	54	0PA213	3.15	6.30	13.60	4.15
12/09/2014 14:30:29	41	0PB102	3.16	6.32	13.64	4.16
12/09/2014 14:30:29	40	0PA202	3.17	6.34	13.68	4.17
12/09/2014 14:30:29	221	2PB118	3.18	6.36	13.72	4.18
12/09/2014 14:30:29	220	2PA218	3.19	6.38	13.76	4.19
12/09/2014 14:30:29	211	2PB113	3.20	6.40	13.80	4.20
12/09/2014 14:30:29	210	2PA213	3.21	6.42	13.84	4.21
12/09/2014 14:30:29	203	2PS107	3.22	6.44	13.88	4.22
12/09/2014 14:30:29	213	2PB114	3.23	6.46	13.92	4.23

Byron's RMS

And the ability to select and trend points as with the PPC RTime



Byron's RMS

With the Replacement of the PPC, new Data Diode, and the addition of the PSS Computer, we were able to follow suit with the RMS in that we have a Level 2 System that can pass live data from the RMS in Real Time. We are able to share that data with those who are not in the MCR and have need of the viewing the data!

Real Time Demo!

Byron's RMS

Overall, I feel that the Scientech RMS System has performed very well and that the station is much better off for having upgraded.

I also have been satisfied with the level of support that we have received from Scientech when we have had issues.

Byron's RMS

Questions?