

A Statistical Approach to Measure and Monitor State Estimator

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Salt River Project



sigma
station
events
RTU
RTS
static
data
NTP
modeling
SCADA
Megawatts
area
outages
renewables
RFL
node
direction
weighting
loading
topology
availability
dynamic
flow
vars
ICCP
vars





Case: SRP 2015 Model | DBLoad: Tue Aug 15 11:19:03 2017 |

Note1: Case notes 1

Note2: Case notes 2

Active Server: emsprda2

Scada Source:

SE CONTROLS
Converged
 09/15/17 10:15:47
 Iterations 10
 Chi Square Index 129.01
 Ext. Soln **TWO-PF** Bad Data
 Flat Start **OFF** Tol% 5.00
 Sch Start **OFF** Res 5.00
 SCADA Inpt **ON** Obs Only **OFF**
 SCADA Updt **ON** PF Ctrl **OFF**
 Brkr Est **OFF** Brkr Upd **OFF**

BuildTm: 09/12/17 10:13:09
 Snap Tm: 09/15/17 10:16:18 **EXCEPTIONS**

Obs/Unobs 1713 390
 Boundary 82
 Islands: Meas/Elec 1 / 2
 Meas: #/Bad/Rmv 5807 / 308 / 10

SE Tuning 388
 SE Bad Data Cust BD
 SE Rem. Meas BD Rpt
 PMU Menu Use: NO
 SE Viol.
 RTS Calcs

OSI SE Ctrl
 CASE **SE FIX**
 OSI SE **SRP SE**

PF CONTROLS
Converged
 09/15/17 08:21:28
 Iterations 10

Soln Type **FD/NR**
 Flat Start **OFF**
 Sched. Start **OFF**
 Debug **MED**
 Data Valid. **OFF**
 Auto Run **OFF**

Gen Mvar **ON**
 Rem.Volt **ON**
 Xfmr Volt **OFF**
 Xfmr Flow **OFF**
 Shunt Volt **ON**
 Interchange **OFF**

SRP Load: **3942** Gen: **3937**

Otg Sched
 Limit Sets
 PF Viol.
 Path Def.

OSI PF Ctrl
 Execute PF **SRP PF**

CA CONTROLS
Converged
 09/15/17 10:13:37

Soln Type **FD/NR**
 Flat Start **OFF**
 # Cont 945
 # Cases w/Vio 5
 # Violations 11
 # Div. Cont. 0
 # NonConv Cont 0

Limit **Limit 2**
 CA Alm **ON** Case **OFF** Viol **ON**

Gen Mvar **ON**
 Rem.Volt **ON**
 Xfmr Volt **OFF**
 Xfmr Flow **OFF**
 Shunt Volt **ON**
 Interchange **OFF**

Cont Sets
 Ranked Viol.
 Diverged Cont.

OSI CA Ctrl
 SRP CA
 Execute CA **SRP CA**

RTS CONTROLS Last: Load SCADA values
Working
 09/15/17 10:16:18

Status **ACTIVE**

OSII Custom
 Evt Trig **OFF**
 RTS **ON** 6 Sec
 NTP **OFF** 1200
 SE **OFF** 5 **ON**
 CA **OFF** 50 **ON**
 Aux **ON** 1
 Sys Snap **ON** 600 **OFF**
 Max Sys Snaps 550
 SE Mon **ON** 450 CA Alm **ON**

Aux Scripts **CkPrms**
 1 **OFF** osi_rt_logzip
 2 **OFF** osi_rt_ca_alarm
 3 **OFF** onet_calc.pl
 4 **OFF** onet_svcase_trgr.pl
 5 **OFF** onet_wls_calc.pl
 6 **ON** onet_rts.pl

Custom Ctrl **Prod>>PDS**
 SvCs Archive **SvCs Trgrs**
 RTS Calc
 SRP RTS Ctrl
 OSI RTS Ctrl **OSI Reports**
 SRP NA Menu
 Execute RTS **Execute NTP**

RTPF Qual 940.72 WLS Obj/SE 385.91 / 377.31

CA Viol 11 / 0 / 0 / 1.1

Solv by: Load SCADA

Sol Time: 09/15/17 10:16:18

Main Menu

Calc Summary

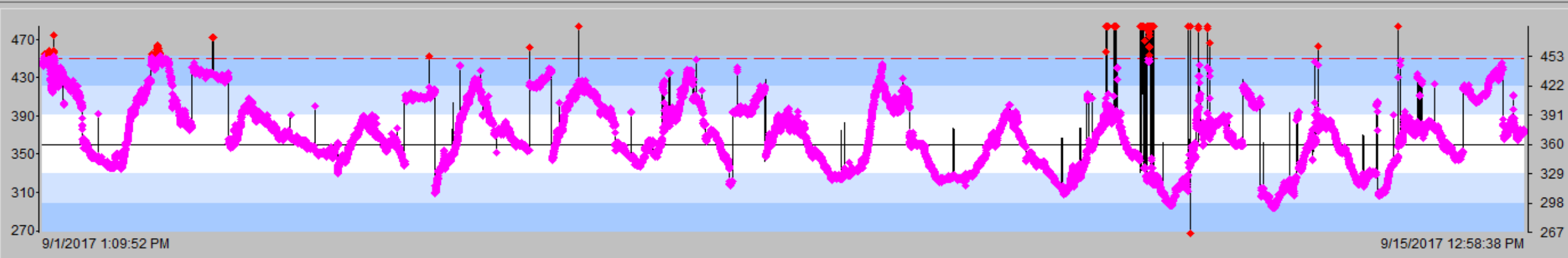
SRP Reports

Statistical - With the help of numbers or data,

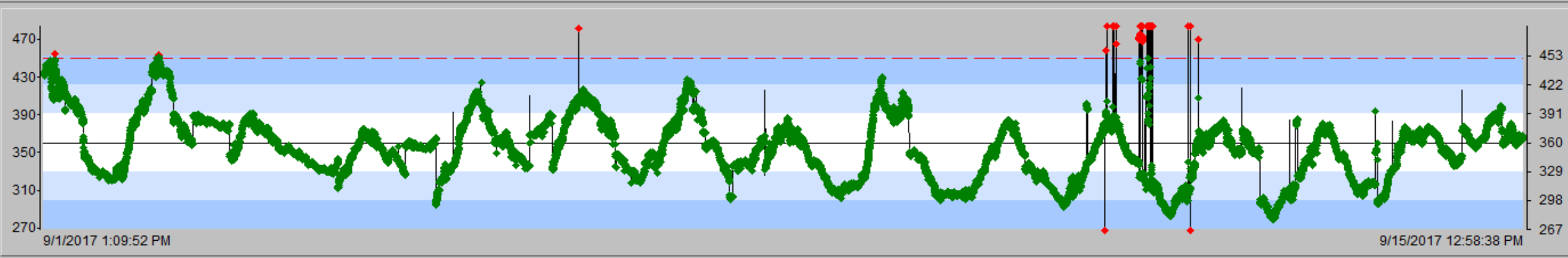
Quality - The characteristics of a product are studied,

Control - To make them behave the way they are intended to behave.

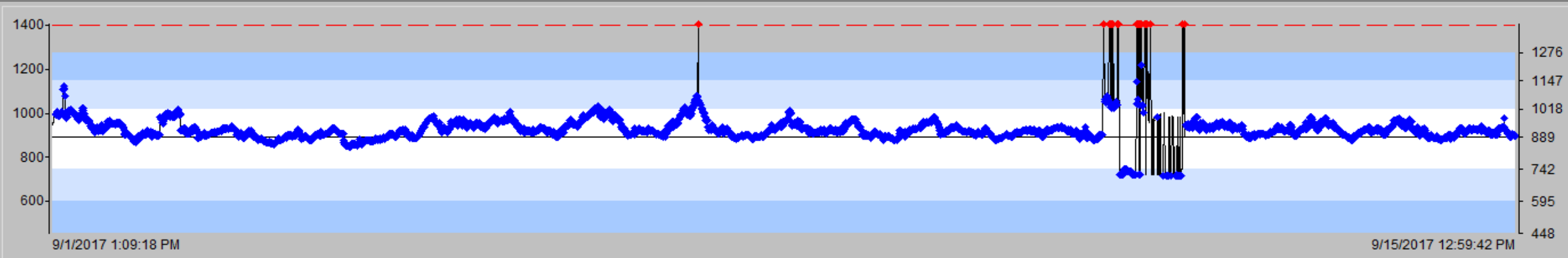
WLS OBJ - Summer Plot (June-August) : [Individuals]



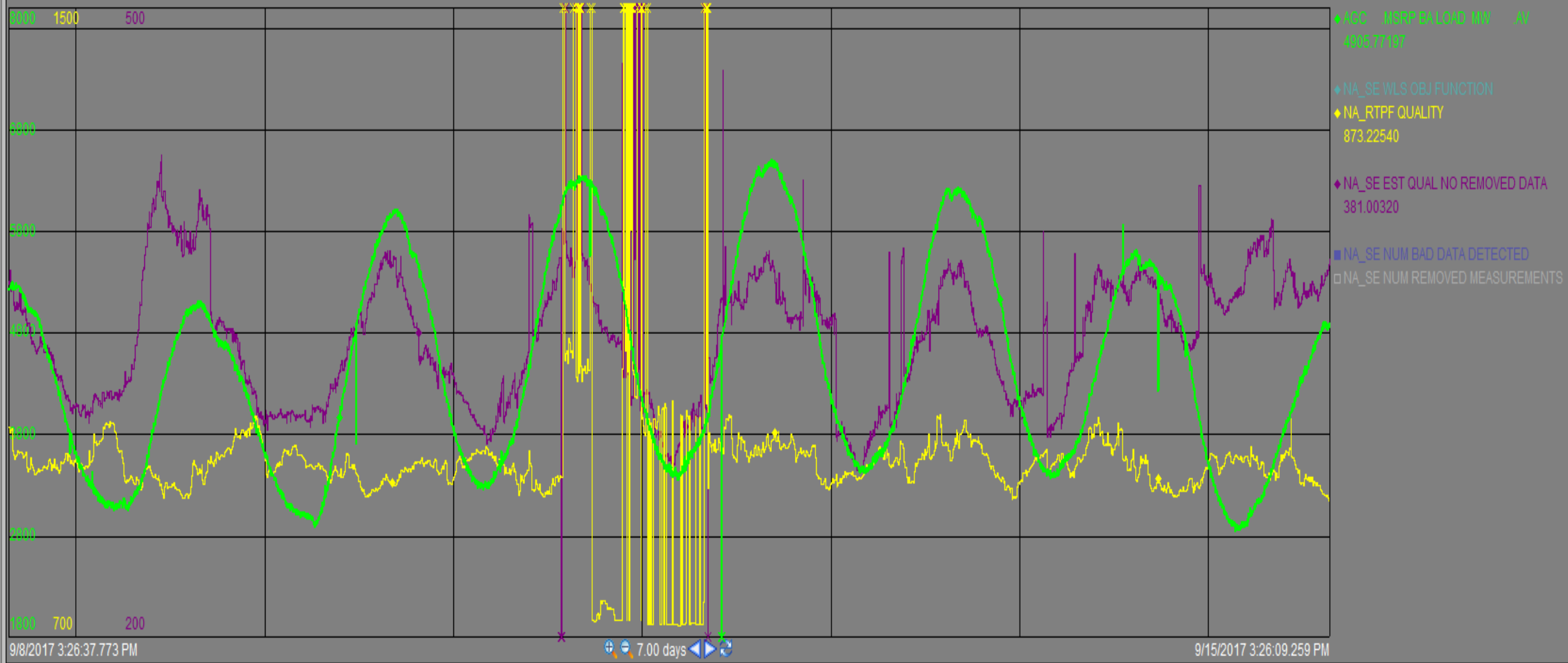
SE - Summer Plot (June-August) : [Individuals]



RTPF - Summer Plot (June-August) : [Individuals]



Plot-0



ICCP

- A) Inter-control Center Communications Protocol
- B) Ill-Timed, Chaotic, Challenging, Phantasmal
- C) Integrating ^{other} Control Center Problems
- D) All of the above



80/20

Elements

- Elements
 - ICCP Links
 - 1-SRP - APS_RX ICCP
 - 2-SRP - CAISO ICCP
 - IMPERIAL
 - MESQUITE
 - MIGUEL
 - OCSDGE
 - SUNCREST
 - CAISO Analog 70
 - CAISO Analog 74
 - CAISO Analog 76
 - 3-SRP - EHV ICCP
 - 4-SRP - WECC ICCP
 - 5-SRP - LDWP ICCP
 - 6-SRP - SCE_RX ICCP
 - Element Searches

1-SRP - APS_RX ICCP

- General Child Elements Attributes Ports Analyses Version

Filter

	Name	Value
<input checked="" type="checkbox"/>	AnalogStale	100
<input type="checkbox"/>	Connection	Online
<input type="checkbox"/>	CountAnalogStale	0
<input checked="" type="checkbox"/>	LinkName	APS_RX
<input type="checkbox"/>	LinkStatus	4
<input type="checkbox"/>	Stale	Good
<input type="checkbox"/>	SumAnalogStale	Calc Failed
<input checked="" type="checkbox"/>	TrigerMin	5
<input type="checkbox"/>	UpTimePercentage	100 %