

ALARM MANAGEMENT DISTILLED

How a simple tool can change everything.











*BRANDON
HARRINGTON*

Associated Electric Cooperative
Springfield, MO



JONIVAN STANLEY

247





Unacknowledged

Date/Time	Origin	Description	Event	Value
03/22/18 21:41:33	FRANKS	XFMR T1 345/161/13.8 161-SIDE MVA	RETURN TO NORMAL	-144.9
03/22/18 21:41:32	CALLAWAY	BUS 345KV_BUS_B KV	LOW LIMIT 2 EXCEEDED	328.3
03/22/18 21:41:32	CALLAWAY	BUS 345KV_BUS_A KV	LOW LIMIT 2 EXCEEDED	328.3
03/22/18 21:41:32	LSE_CRK	LN LSE_CRK-CALLAWAY 345 KV	LOW LIMIT 2 EXCEEDED	328.3
03/22/18 21:41:32	LSE_CRK	LN LSE_CRK-FRANKS 345 KV	LOW LIMIT 2 EXCEEDED	328.3
03/22/18 21:41:32	BLAND	LN BLAND-FRANKS 345 KV	LOW LIMIT 2 EXCEEDED	328.3
03/22/18 21:41:32	BLAND	LN BLAND-CALAWAY 345 KV	LOW LIMIT 2 EXCEEDED	328.3
03/22/18 21:41:32	BLAND	LN BLAND-LABADI 345 KV	LOW LIMIT 2 EXCEEDED	328.3
03/22/18 21:41:32	FT_WOOD	LN FTWOOD-EDGRSP 161 KV-A	LOW LIMIT 2 EXCEEDED	127.8
03/22/18 21:41:32	FT_WOOD	LN FRANKS-FTWOOD 161 KV-A	LOW LIMIT 2 EXCEEDED	130.8
03/22/18 21:41:32	FT_WOOD	LN FTWOOD-WAYNESV 161 KV-A	LOW LIMIT 2 EXCEEDED	127.8
03/22/18 21:41:32	FT_WOOD	BUS 69KV_SOUTH KV-A	LOW LIMIT 2 EXCEEDED	57.9
03/22/18 21:41:32	FT_WOOD	BUS 69KV_NORTH KV-A	LOW LIMIT 2 EXCEEDED	54.9
03/22/18 21:41:32	LEBANON	BUS 69KV_SOUTH KV-A	LOW LIMIT 2 EXCEEDED	58.9
03/22/18 21:41:32	LEBANON	BUS 161KV_SOUTH KV-A	LOW LIMIT 2 EXCEEDED	129.8
03/22/18 21:41:32	LEBANON	BUS 161KV_NORTH KV-A	LOW LIMIT 2 EXCEEDED	126.8
03/22/18 21:41:32	MARIES	BUS 69KV_MAIN_2 KV-A	RETURN TO NORMAL	68.1
03/22/18 21:41:32	MARIES	BUS 69KV_MAIN KV-A	LOW LIMIT 2 EXCEEDED	56.9
03/22/18 21:41:32	MARIES	BUS 161KV_MAIN_2 KV-A	LOW LIMIT 2 EXCEEDED	126.8
03/22/18 21:41:32	MARIES	BUS 161KV_MAIN_1 KV-A	LOW LIMIT 2 EXCEEDED	122.8
03/22/18 21:41:32	HUBEN	LN FRANKS-HUBEN 345KV MVA	HIGH LIMIT 2 EXCEEDED	1255.7
03/22/18 21:41:32	FRANKS	LN HUBEN-FRANKS 345 MVA	HIGH LIMIT 2 EXCEEDED	974.2
03/22/18 21:41:32	FRANKS	XFMR T1 345/161/13.8 161-SIDE MVA	HIGH LIMIT 2 EXCEEDED	470.2
03/22/18 21:41:32	FRANKS	LN FRANKS-SALEM 345 KV-C	LOW LIMIT 2 EXCEEDED	304.5
03/22/18 21:41:32	FRANKS	LN FRANKS-SALEM 345 KV-B	LOW LIMIT 2 EXCEEDED	304.5
03/22/18 21:41:32	FRANKS	LN FRANKS-SALEM 345 KV-A	LOW LIMIT 2 EXCEEDED	300.5
03/22/18 21:41:32	FRANKS	LN BLAND-FRANKS 345 KV-C	LOW LIMIT 2 EXCEEDED	300.5
03/22/18 21:41:32	FRANKS	LN BLAND-FRANKS 345 KV-B	LOW LIMIT 2 EXCEEDED	302.5
03/22/18 21:41:32	FRANKS	LN BLAND-FRANKS 345 KV-A	LOW LIMIT 2 EXCEEDED	298.5
03/22/18 21:41:32	SALEM	BUS 161KV_BUS1 KV-C	RETURN TO NORMAL	155.0
03/22/18 21:41:32	SALEM	BUS 161KV_BUS1 KV-B	RETURN TO NORMAL	159.0
03/22/18 21:41:32	SALEM	BUS 161KV_BUS1 KV-A	RETURN TO NORMAL	158.0
03/22/18 21:41:32	SALEM	BUS 345KV_MAIN KV-C	RETURN TO NORMAL	350.0
03/22/18 21:41:32	SALEM	BUS 345KV_MAIN KV-B	RETURN TO NORMAL	354.0
03/22/18 21:41:32	SALEM	BUS 345KV_MAIN KV-A	RETURN TO NORMAL	351.0
03/22/18 21:41:31	FRANKS	XFMR T1 345/161/13.8 161-SIDE MVA	RETURN TO NORMAL	-144.9
03/22/18 21:41:30	CALLAWAY	BUS 345KV_BUS_B KV	RETURN TO NORMAL	354.0

System Operators



Plant Operators



Network Operators



Smooth Operators



Unacknowledged

Drag a column header here to group by that column

	Date/Time	Origin	Description	Event	Value
	03/22/18 21:43:09	FT_WOOD	LN FTWOOD-EDGRSP 161 KV-A	EXCEEDED LOW LIMIT	126.8
	03/22/18 21:43:09	FT_WOOD	LN FRANKS-FTWOOD 161 KV-A	EXCEEDED LOW LIMIT	125.8
	03/22/18 21:43:09	FT_WOOD	LN FTWOOD-WAYNESV 161 KV-A	EXCEEDED LOW LIMIT	129.8
	03/22/18 21:43:09	FT_WOOD	BUS 69KV_SOUTH KV-A	EXCEEDED LOW LIMIT	54.9
	03/22/18 21:43:09	FT_WOOD	BUS 69KV_NORTH KV-A	EXCEEDED LOW LIMIT	54.9
	03/22/18 21:43:09	LEBANON	BUS 69KV_SOUTH KV-A	EXCEEDED LOW LIMIT	54.9
	03/22/18 21:43:09	LEBANON	BUS 161KV_SOUTH KV-A	EXCEEDED LOW LIMIT	125.8
	03/22/18 21:43:09	LEBANON	BUS 161KV_NORTH KV-A	EXCEEDED LOW LIMIT	130.8
	03/22/18 21:43:09	MARIES	BUS 69KV_MAIN_2 KV-A	EXCEEDED LOW LIMIT	54.9
	03/22/18 21:43:09	MARIES	BUS 69KV_MAIN KV-A	EXCEEDED LOW LIMIT	56.9
	03/22/18 21:43:09	MARIES	BUS 161KV_MAIN_2 KV-A	EXCEEDED LOW LIMIT	125.8
	03/22/18 21:43:09	MARIES	BUS 161KV_MAIN_1 KV-A	EXCEEDED LOW LIMIT	123.8
	03/22/18 21:43:09	HUBEN	LN FRANKS-HUBEN 345KV MVA	EXCEEDED HIGH LIMIT	1254.7
	03/22/18 21:43:09	HUBEN	LN MRSHFLD-HUBEN 161KV KV-A	EXCEEDED LOW LIMIT	125.8
	03/22/18 21:43:09	HUBEN	LN COFFMAN-HUBEN 161KV KV-A	EXCEEDED LOW LIMIT	126.8
	03/22/18 21:43:09	HUBEN	BUS 345KV MORGAN KV-A	EXCEEDED LOW LIMIT	300.5
	03/22/18 21:43:09	HUBEN	BUS 345KV FRANKS KV-A	EXCEEDED LOW LIMIT	300.5
	03/22/18 21:43:09	FRANKS	LN HUBEN-FRANKS 345 MVA	EXCEEDED HIGH LIMIT	1064.9
	03/22/18 21:43:09	FRANKS	FRANKS TIE BMW	SHIFTED -43.0	-627.0
	03/22/18 21:43:09	FRANKS	XFMR T1 345/161/13.8 161-SIDE MVA	EXCEEDED HIGH LIMIT	372.3
	03/22/18 21:43:09	FRANKS	LN FRANKS-SALEM 345 KV-C	EXCEEDED LOW LIMIT	300.5
	03/22/18 21:43:09	FRANKS	LN FRANKS-SALEM 345 KV-B	EXCEEDED LOW LIMIT	302.5
	03/22/18 21:43:09	FRANKS	LN FRANKS-SALEM 345 KV-A	EXCEEDED LOW LIMIT	304.5
	03/22/18 21:43:09	FRANKS	LN BLAND-FRANKS 345 KV-C	EXCEEDED LOW LIMIT	300.5
	03/22/18 21:43:09	FRANKS	LN BLAND-FRANKS 345 KV-B	EXCEEDED LOW LIMIT	300.5
	03/22/18 21:43:09	FRANKS	LN BLAND-FRANKS 345 KV-A	EXCEEDED LOW LIMIT	297.5
	03/22/18 21:43:09	SALEM	BUS 161KV_BUS1 KV-C	EXCEEDED LOW LIMIT	126.8
	03/22/18 21:43:09	SALEM	BUS 161KV_BUS1 KV-B	EXCEEDED LOW LIMIT	126.8
	03/22/18 21:43:09	SALEM	BUS 161KV_BUS1 KV-A	EXCEEDED LOW LIMIT	122.8
	03/22/18 21:43:09	SALEM	BUS 345KV_MAIN KV-C	EXCEEDED LOW LIMIT	296.5
	03/22/18 21:43:09	SALEM	BUS 345KV_MAIN KV-B	EXCEEDED LOW LIMIT	296.5
	03/22/18 21:43:09	SALEM	BUS 345KV_MAIN KV-A	EXCEEDED LOW LIMIT	300.5



A Tool



Tips

First, educate yourself

EPRI | ELECTRIC POWER
RESEARCH INSTITUTE

**EPRI Alarm Management and
Annunciator Application Guidelines**

EPRI | ELECTRIC POWER
RESEARCH INSTITUTE

Alarm Management Implementation

*Using EPRI's Alarm Management Guidelines to Improve Alarm
Management Systems*

1023146

The

**Alarm
Management
Handbook**

A Comprehensive Guide

AMERICAN NATIONAL STANDARD

ANSI/ISA-18.2-2016

**Management of Alarm Systems
for the Process Industries**

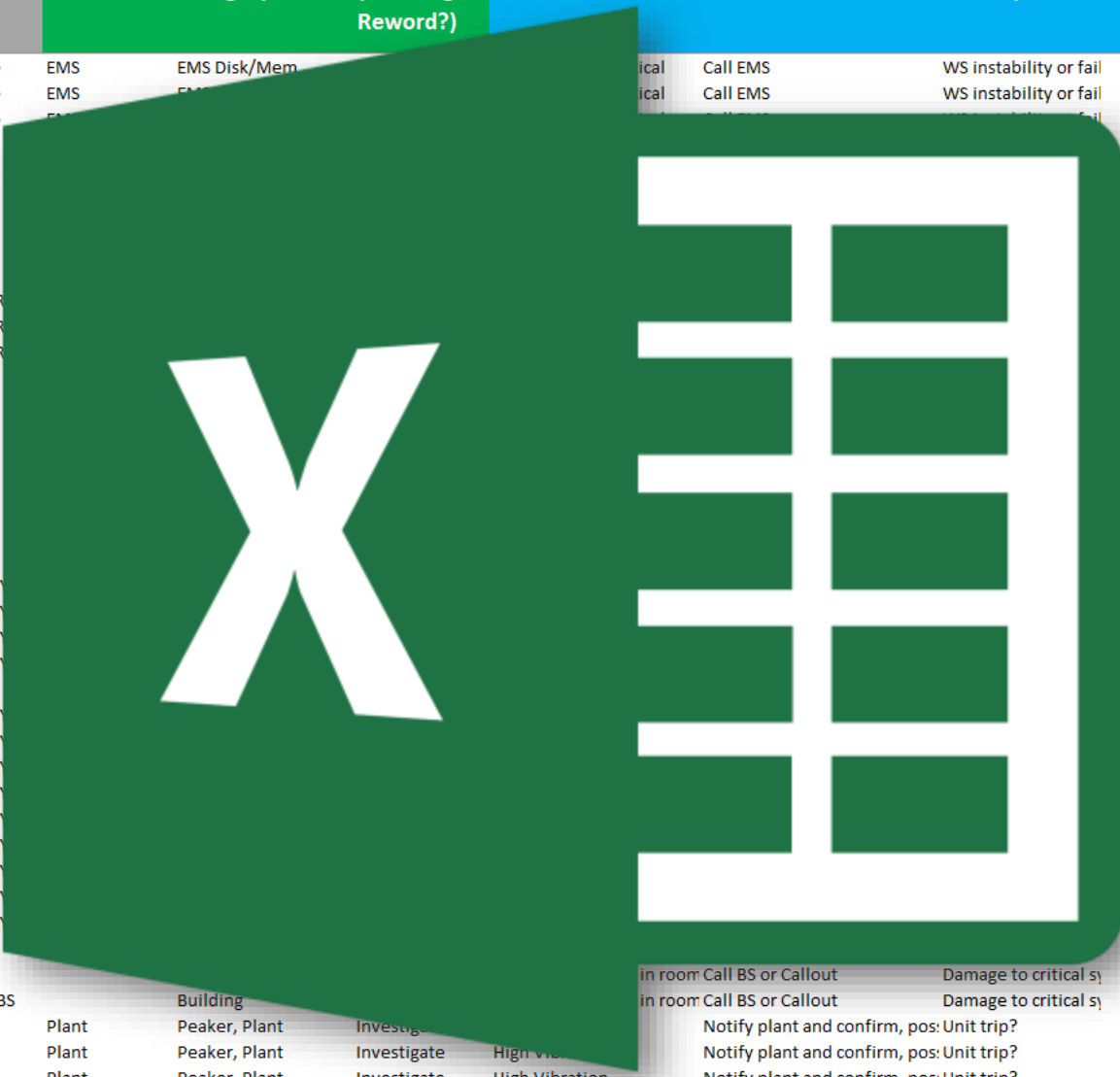
Approved 17 March 2016

The seven steps



1. Define Philosophy
2. Benchmark System
3. Resolve Bad Actors
- 4. Document and Rationalize**
5. Audit and Enforce
6. Real-Time Management
7. Control and Maintain

Units	Station	Key	Name	Alarm Group	Contact	Category	Notes (Reconfig? Reword?)	Cause	Action	Consequence	Severity	Time	Priority	Alarm Group	Deadbands	Sound	Email	Op Guide or Prot
MISC	CALC_SUB	04999453	BCC WS1 C: FREE MB	Disk Capacity/Mem Usage	EMS	EMS Disk/Mem			Call EMS	WS instability or fail	Minor	10	M	81	20			
MISC	CALC_SUB	04999454	BCC WS1 D: FREE MB	Disk Capacity/Mem Usage	EMS	EMS Disk/Mem			Call EMS	WS instability or fail	Minor	10	M	81	20			
MISC	CALC_SUB	04999455	BCC WS1 E: FREE MB	Disk Capacity/Mem Usage	EMS	EMS Disk/Mem			Call EMS	WS instability or fail	Minor	10	M	81	20			
FIRE	ESSEX	01113019	GEN ESSEX UNIT 1	Critical Essex wDB							Severe	1	H	126	0		Yes	
FIRE	HOLDEN	01103022	GEN HOLDEN UNIT 11	Critical Holden Alarm							Severe	1	H	91	0		Yes	
FIRE	HOLDEN	01103054	GEN HOLDEN UNIT 12	Critical Holden Alarm							Severe	1	H	91	0		Yes	
FIRE	HOLDEN	01103086	GEN HOLDEN UNIT 13	Critical Holden Alarm							Severe	1	H	91	0		Yes	
FIRE	NODAWAY	01101063	GEN NODAWAY UNIT 1	Critical Nodaway Alarm							Severe	1	H	92	0		Yes	
FIRE	NODAWAY	01101083	GEN NODAWAY UNIT 2	Critical Nodaway Alarm							Severe	1	H	92	0		Yes	
N-A	HEADQTRS	01042018	RTU Fire Alarm 1	HQ EQUIP MONITOR-OPER							Severe	0	H	96	0		Yes	
N-A	HEADQTRS	01042019	RTU Fire Alarm 2	HQ EQUIP MONITOR-OPER							Severe	0	H	96	0		Yes	
N-A	HEADQTRS	01042021	RTU Fire Control System Trc	HQ EQUIP MONITOR-OPER							Major	30+	M	96	0		Yes	
N-A	HOLDEN	02103028	GEN HD11 GAS DIFFUSION	Status Audible							Minor	10	M	32				
N-A	HOLDEN	02103034	GEN HD12 GAS DIFFUSION	Status Audible							Minor	10	M	32				
N-A	HOLDEN	02103040	GEN HD13 GAS DIFFUSION	Status Audible							Minor	10	M	32				
GASD	ESSEX	01113018	GEN ESSEX UNIT 1	Status Silent							Severe	0	H	9	0		Yes	
GASD	HOLDEN	01103085	GEN HOLDEN UNIT 13	Status Silent							Severe	0	H	9	0		Yes	
GASD	NODAWAY	01101062	GEN NODAWAY UNIT 1	Status Silent							Severe	0	H	9	0		Yes	
GASD	NODAWAY	01101082	GEN NODAWAY UNIT 2	Status Silent							Severe	0	H	9	0		Yes	
MW	AECI	04779406	WIND Combined Net Gener	Wind Net Generation							Minor	0	M	130			abc@aeci.org	
BMW	ATCHISON	04115004	GEN COW BRANCH	UNIT BMW REASONABILITY							Minor	0	M	112			Yes	
BMW	CHOUTEAU	04011032	GROSS GEN CHOUTEAU	UNIT BMW REASONABILITY							Minor	0	M	112			Yes	
BMW	CHOUTEAU	04172040	GEN CHOUTEAU 2 NET	UNIT BMW REASONABILITY							Minor	0	M	112			Yes	
BMW	CLYDE	04116005	GEN CONCEPTION	UNIT BMW REASONABILITY							Minor	0	M	112			Yes	
MW	DELLPLNT	04004021	DELL GROSS GENERATION	Analog Silent -RoC wDB							Minor	0	M	66			Yes	
BMW	DELLPLNT	04004138	GROSS GEN DELL	UNIT BMW REASONABILITY							Minor	0	M	112			Yes	
BMW	ESSEX	04093028	GEN ESSEX UNIT 1	UNIT BMW REASONABILITY							Minor	0	M	112			Yes	
BMW	GENTRY	04102033	GEN BLRG	UNIT BMW REASONABILITY							Minor	0	M	112			Yes	
BMW	GRDA_1	04135039	GEN GRDA UNIT 2	UNIT BMW REASONABILITY							Minor	0	M	112			Yes	
BMW	HOLDEN	04103051	GEN HOLDEN 13	UNIT BMW REASONABILITY							Minor	0	M	112			Yes	
BMW	NEW_MAD	04010004	GEN NEW MADRID UNIT 1	UNIT BMW REASONABILITY							Minor	0	M	112			Yes	
BMW	NEW_MAD	04010010	NMD2 NET MW	UNIT BMW REASONABILITY							Minor	0	M	112			Yes	
BMW	NODAWAY	04101023	GEN NODAWAY UNIT 1	UNIT BMW REASONABILITY							Minor	0	M	112			Yes	
BMW	NODAWAY	04101024	GEN NODAWAY UNIT 2	UNIT BMW REASONABILITY							Minor	0	M	112			Yes	
BMW	WINSLOW	04170025	WINSLOW GEN	Winslow Setpoint Limit							Minor	0	M	87			Yes	
N-A	HEADQTRS	01042012	RTU COMPUTER ROOM HI TI	HQ EQUIP-EMISISBS					in room Call BS or Callout	Damage to critical s	Severe	30	M	103	30			
N-A	HEADQTRS	01042015	RTU FIBER ROOM HI TEMP	HQ EQUIP MONITOR-EMSB		Building			in room Call BS or Callout	Damage to critical s	Severe	30	M	18	30			
HVIB	ESSEX	01113016	GEN ESSEX UNIT 1	Status Silent	Plant	Peaker, Plant	Investigate		Notify plant and confirm, pos:	Unit trip?	Severe	1	H	9				
HVIB	HOLDEN	01103008	GEN HOLDEN UNIT 11	Status Silent	Plant	Peaker, Plant	Investigate	High vibration	Notify plant and confirm, pos:	Unit trip?	Severe	1	H	9				
HVIB	NODAWAY	01101076	GEN NODAWAY UNIT 2	Status Silent	Plant	Peaker, Plant	Investigate	High Vibration	Notify plant and confirm, pos:	Unit trip?	Severe	1	H	9				
(blank)	ICCP	02999141	AMEREN ICCP LINK STATUS	ICCP LINK STATUS	Ops, EMS	Monitor		ICCP Link down	Call EMS	Loss of ICCP teleme	Minor	30+	L	119	600			
(blank)	ICCP	02999142	CENTRAL ICCP LINK STATUS	ICCP LINK STATUS	Ops, EMS	Monitor		ICCP Link down	Call EMS	Loss of ICCP teleme	Minor	30+	L	119	600			
(blank)	ICCP	02999143	KAMO ICCP LINK STATUS	ICCP LINK STATUS	Ops, EMS	Monitor		ICCP Link down	Call EMS	Loss of ICCP teleme	Minor	30+	L	119	600			



*Best
Feature
of All*

It's FREE!

Units	Station	Key	Name	Alarm Group	Contact	Category	Notes (Reconfig? Reword?)	Cause	Action	Consequence	Severity	Time	Priority	Alarm Group	Deadbands	Sound	Email	Op Guide or Prot
MISC	CALC_SUB	04999453	BCC WS1 C: FREE MB	Disk Capacity/Mem Usage	EMS	EMS Disk/Mem	What are good li	EMS resources critical	Call EMS	WS instability or fail	Minor	10	M	81	20			
MISC	CALC_SUB	04999454	BCC WS1 D: FREE MB	Disk Capacity/Mem Usage	EMS	EMS Disk/Mem	What are good li	EMS resources critical	Call EMS	WS instability or fail	Minor	10	M	81	20			
MISC	CALC_SUB	04999455	BCC WS1 E: FREE MB	Disk Capacity/Mem Usage	EMS	EMS Disk/Mem	What are good li	EMS resources critical	Call EMS	WS instability or fail	Minor	10	M	81	20			
FIRE	ESSEX	01103021	GEN ESSEX UNIT 1	Critical Essex w/D	Peaker, Plant	Peaker, Plant	Add Phone num	Fire alarm	Call plant personel	Fire damage	Severe	1	H	126	0		Yes	
FIRE	HOLDEN	01103022	GEN HOLDEN UNIT 11	Critical Holden Alarm	Peaker, Plant	Peaker, Plant	Add Phone num	Fire alarm	Call plant personel	Fire damage	Severe	1	H	91	0		Yes	
FIRE	HOLDEN	01103054	GEN HOLDEN UNIT 12	Critical Holden Alarm	Peaker, Plant	Peaker, Plant	Add Phone num	Fire alarm	Call plant personel	Fire damage	Severe	1	H	91	0		Yes	
FIRE	HOLDEN	01103086	GEN HOLDEN UNIT 13	Critical Holden Alarm	Peaker, Plant	Peaker, Plant	Add Phone num	Fire alarm	Call plant personel	Fire damage	Severe	1	H	91	0		Yes	
FIRE	NODAWAY	01101063	GEN NODAWAY UNIT 1	Critical Nodaway Alarm	Peaker, Plant	Peaker, Plant	Add Phone num	Fire alarm	Call plant personel	Fire damage	Severe	1	H	92	0		Yes	
FIRE	NODAWAY	01101063	GEN NODAWAY UNIT 2	Critical Nodaway Alarm	Peaker, Plant	Peaker, Plant	Add Phone num	Fire alarm	Call plant personel	Fire damage	Severe	1	H	92	0		Yes	
N-A	HEADQTRS	01042018	RTU Fire Alarm 1	HQ EQUIP MONITOR-OPERBS	Build. Services	Building		Fire Control System abnor	Call BS?	?	Severe	0	H	96	0		Yes	
N-A	HEADQTRS	01042019	RTU Fire Alarm 2	HQ EQUIP MONITOR-OPERBS	Build. Services	Building		Fire Control System abnor	Call BS?	?	Severe	0	H	96	0		Yes	
N-A	HEADQTRS	01042021	RTU Fire Control System Trc	HQ EQUIP MONITOR-OPERBS	Build. Services	Building		Fire Control System abnor	Call BS?	Fire suppression inc	Major	30+	M	96	0		Yes	
N-A	HOLDEN	02103028	GEN HD11 GAS DIFFUSION	Status Audible	Ops	Peaker, Plant	Investigate	Gas didn't switch on start	Contact plant		Minor	10	M	32				
N-A	HOLDEN	02103034	GEN HD12 GAS DIFFUSION	Status Audible	Ops	Peaker, Plant	Investigate	Gas didn't switch on start	Contact plant		Minor	10	M	32				
N-A	HOLDEN	02103044	GEN HD13 GAS DIFFUSION	Status Audible	Ops	Peaker, Plant	Investigate	Gas didn't switch on start	Contact plant		Minor	10	M	32				
GASD	ESSEX	01101018	GEN ESSEX UNIT 1	Status Silent	Peaker, Plant	Peaker, Plant	Increase priority	Gas leak detected	Call plant personel, investigat	Explosion	Severe	0	H	9	0		Yes	
GASD	HOLDEN	01103085	GEN HOLDEN UNIT 13	Status Silent	Peaker, Plant	Peaker, Plant	Increase priority	Gas leak detected	Call plant personel, investigat	Explosion	Severe	0	H	9	0		Yes	
GASD	NODAWAY	01101062	GEN NODAWAY UNIT 1	Status Silent	Peaker, Plant	Peaker, Plant	Increase priority	Gas leak detected	Call plant personel, investigat	Explosion	Severe	0	H	9	0		Yes	
GASD	NODAWAY	01101082	GEN NODAWAY UNIT 2	Status Silent	Peaker, Plant	Peaker, Plant	Increase priority	Gas leak detected	Call plant personel, investigat	Explosion	Severe	0	H	9	0		Yes	
MW	AECI	04779406	WIND Combined Net Gener	Wind Net Generation		Wind, GEN	RoC 75 MW < 60	GEN > Reasonable, RoC	Call plant personel, develop	De-rate a unit	Minor	0	M	130			abc@aeci.org	
BMW	ATCHISON	04115004	GEN COW BRANCH	UNIT BMW REASONABILITY	Todd	Wind, GEN	RoC 10 MW < 60	GEN > Reasonable, RoC	Call plant personel, develop	De-rate a unit	Minor	0	M	112			Yes	
BMW	CHOUTEAU	04011032	GROSS GEN CHOUTEAU	UNIT BMW REASONABILITY	Todd	Plant, GEN	RoC 40 MW < 60	GEN > Reasonable, RoC	Call plant personel, develop	De-rate a unit	Minor	0	M	112			Yes	
BMW	CHOUTEAU	04172040	GEN CHOUTEAU 2 NET	UNIT BMW REASONABILITY	Todd	Plant, GEN	RoC 15 MW < 60	GEN > Reasonable, RoC	Call plant personel, develop	De-rate a unit	Minor	0	M	112			Yes	
BMW	CLYDE	04116005	GEN CONCEPTION	UNIT BMW REASONABILITY	Todd	GEN	RoC 10 MW < 60	GEN > Reasonable, RoC	Call plant personel, develop	De-rate a unit	Minor	0	M	112			Yes	
MW	DELLPLNT	04004021	DELL GROSS GENERATION	Analog Silent -RoC wDB		Plant	RoC 30 MW < 60	GEN > Reasonable, RoC	Call plant personel, develop	De-rate a unit	Minor	0	M	66			Yes	
BMW	DELLPLNT	04004138	GROSS GEN DELL	UNIT BMW REASONABILITY	Todd	Plant, GEN	RoC 40 MW < 60	GEN > Reasonable, RoC	Call plant personel, develop	De-rate a unit	Minor	0	M	112			Yes	
BMW	ESSEX	04093028	GEN ESSEX UNIT 1	UNIT BMW REASONABILITY	Todd	Peaker, Plant, GEN	RoC 15 MW < 60	GEN > Reasonable, RoC	Call plant personel, develop	De-rate a unit	Minor	0	M	112			Yes	
BMW	GENTRY	04102033	GEN BLRG	UNIT BMW REASONABILITY	Todd	Wind, GEN	RoC 15 MW < 60	GEN > Reasonable, RoC	Call plant personel, develop	De-rate a unit	Minor	0	M	112			Yes	
BMW	GRDA_1	04135039	GEN GRDA UNIT 2	UNIT BMW REASONABILITY	Todd	GEN	RoC 15 MW < 60	GEN > Reasonable, RoC	Call plant personel, develop	De-rate a unit	Minor	0	M	112			Yes	
BMW	HOLDEN	04103051	GEN HOLDEN 13	UNIT BMW REASONABILITY	Todd	Peaker, Plant, GEN	RoC 30 MW < 60	GEN > Reasonable, RoC	Call plant personel, develop	De-rate a unit	Minor	0	M	112			Yes	
BMW	NEW_MAD	04010004	GEN NEW MADRID UNIT 1	UNIT BMW REASONABILITY	Todd	Plant, GEN	RoC 15 MW < 60	GEN > Reasonable, RoC	Call plant personel, develop	De-rate a unit	Minor	0	M	112			Yes	
BMW	NEW_MAD	04010010	NMD2 NET MW	UNIT BMW REASONABILITY	Todd	Plant, GEN	RoC 15 MW < 60	GEN > Reasonable, RoC	Call plant personel, develop	De-rate a unit	Minor	0	M	112			Yes	
BMW	NODAWAY	04101023	GEN NODAWAY UNIT 1	UNIT BMW REASONABILITY	Todd	Peaker, Plant, GEN	RoC 15 MW < 60	GEN > Reasonable, RoC	Call plant personel, develop	De-rate a unit	Minor	0	M	112			Yes	
BMW	NODAWAY	04101024	GEN NODAWAY UNIT 2	UNIT BMW REASONABILITY	Todd	Peaker, Plant, GEN	RoC 15 MW < 60	GEN > Reasonable, RoC	Call plant personel, develop	De-rate a unit	Minor	0	M	112			Yes	
BMW	WINSLOW	04170025	WINSLOW GEN	Winslow Setpoint Limit		Wind	RoC 50 MW < 300	GEN > Reasonable, RoC	Call plant personel, develop	De-rate a unit	Minor	0	M	87			Yes	
N-A	HEADQTRS	01042012	RTU COMPUTER ROOM HI TEM	HQ EQUIP-EMISISBS		Building		High temperature in room	Call BS or Callout	Damage to critical sy	Severe	30	M	103	30			
N-A	HEADQTRS	01042015	RTU FIBER ROOM HI TEMP	HQ EQUIP MONITOR-EMSB		Building		High temperature in room	Call BS or Callout	Damage to critical sy	Severe	30	M	18	30			
HVIB	ESSEX	01113016	GEN ESSEX UNIT 1	Status Silent	Plant	Peaker, Plant	Investigate	High Vibration	Notify plant and confirm, pos:	Unit trip?	Severe	1	H	9				
HVIB	HOLDEN	01103008	GEN HOLDEN UNIT 11	Status Silent	Plant	Peaker, Plant	Investigate	High Vibration	Notify plant and confirm, pos:	Unit trip?	Severe	1	H	9				
HVIB	NODAWAY	01101076	GEN NODAWAY UNIT 2	Status Silent	Plant	Peaker, Plant	Investigate	High Vibration	Notify plant and confirm, pos:	Unit trip?	Severe	1	H	9				
(blank)	ICCP	02999141	AMEREN ICCP LINK STATUS	ICCP LINK STATUS	Ops, EMS	Monitor		ICCP Link down	Call EMS	Loss of ICCP teleme	Minor	30+	L	119	600			
(blank)	ICCP	02999142	CENTRAL ICCP LINK STATUS	ICCP LINK STATUS	Ops, EMS	Monitor		ICCP Link down	Call EMS	Loss of ICCP teleme	Minor	30+	L	119	600			
(blank)	ICCP	02999143	KAMO ICCP LINK STATUS	ICCP LINK STATUS	Ops, EMS	Monitor		ICCP Link down	Call EMS	Loss of ICCP teleme	Minor	30+	L	119	600			

And it has 4, count em' FOUR color-coded sections!

4 sections

Gray

Collect

Green

Catorganize

Blue

Rationalize

Orange

Configure

Collect

Categorize

Rationalize

Configure

COLLECT

AutoSave Off | MasterAlarmDatabase.xlsx - Excel | Harrington, Brandon

File Home Insert Page Layout Formulas Data Review View Add-ins Help Team Tell me what you want to do

Units	Station	Key	Name	Alarm Group	Contact	Category	Notes	Cause
MISC	CALC_SUB	04999453	BCC WS1 C: FREE MB	Disk Capacity/Mem Usage	EMS	EMS Disk/Mem	What are good limits?	EMS resources critical
MISC	CALC_SUB	04999454	BCC WS1 D: FREE MB	Disk Capacity/Mem Usage	EMS	EMS Disk/Mem	What are good limits?	EMS resources critical
MISC	CALC_SUB	04999455	BCC WS1 E: FREE MB	Disk Capacity/Mem Usage	EMS	EMS Disk/Mem	What are good limits?	EMS resources critical
FIRE	ESSEX	01113019	GEN ESSEX UNIT 1	Critical Essex wDB	Todd	Peaker, Plant	Set to Critical Essex? Consolidate.	Fire alarm
FIRE	HOLDEN	01103022	GEN HOLDEN UNIT 11	Critical Holden Alarm		Peaker, Plant	Add Phone numbers to action, fire dept.	Fire alarm
FIRE	HOLDEN	01103054	GEN HOLDEN UNIT 12	Critical Holden Alarm		Peaker, Plant	Add Phone numbers to action, fire dept.	Fire alarm
FIRE	HOLDEN	01103086	GEN HOLDEN UNIT 13	Critical Holden Alarm		Peaker, Plant	Add Phone numbers to action, fire dept.	Fire alarm

First Step:
Export Points!!!

Dump SCADA points database
into your spreadsheet

SCADA key

Point Description

Alarm Text

Station

Configuration Data

Trigger, etc...

*Second Step:
Create a
Benchmarking
Workbench*

Create a second sheet and dump your alarm history. We'll need this next.

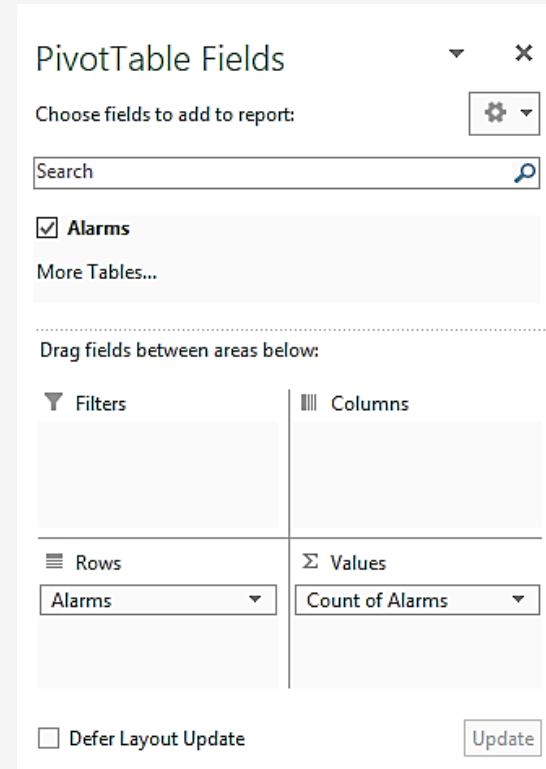
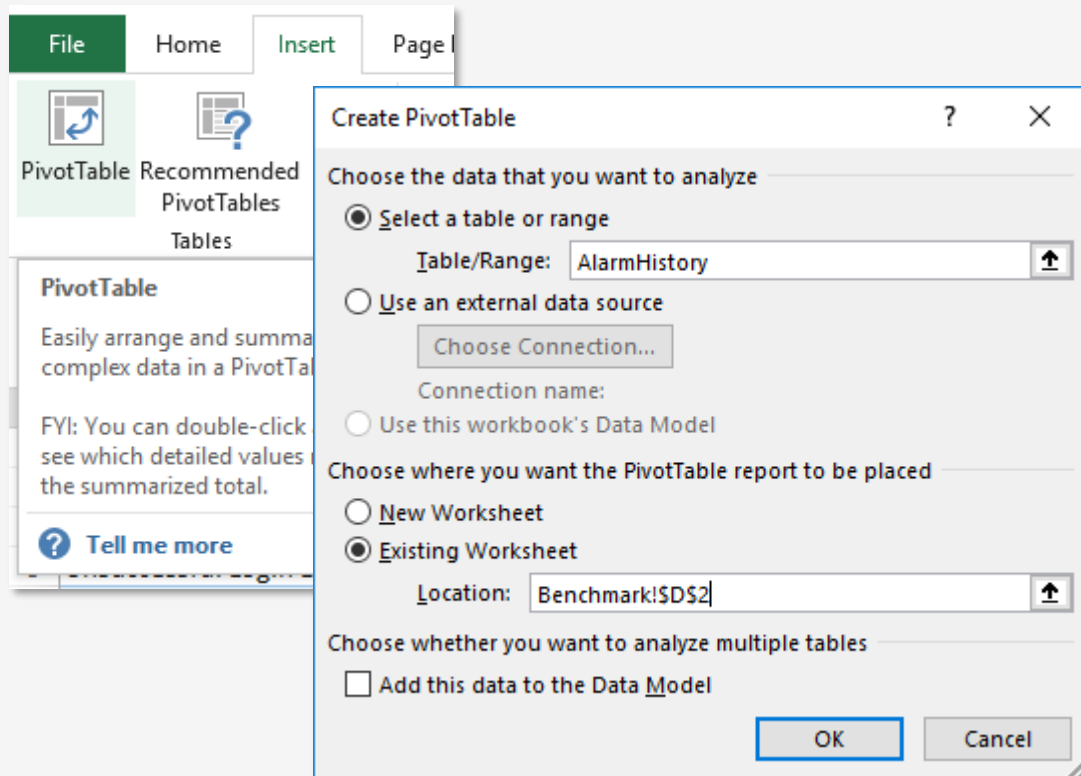
42							
43							

◀ ▶ | MasterDatabase **Benchmark** ⊕

Ready Calculate

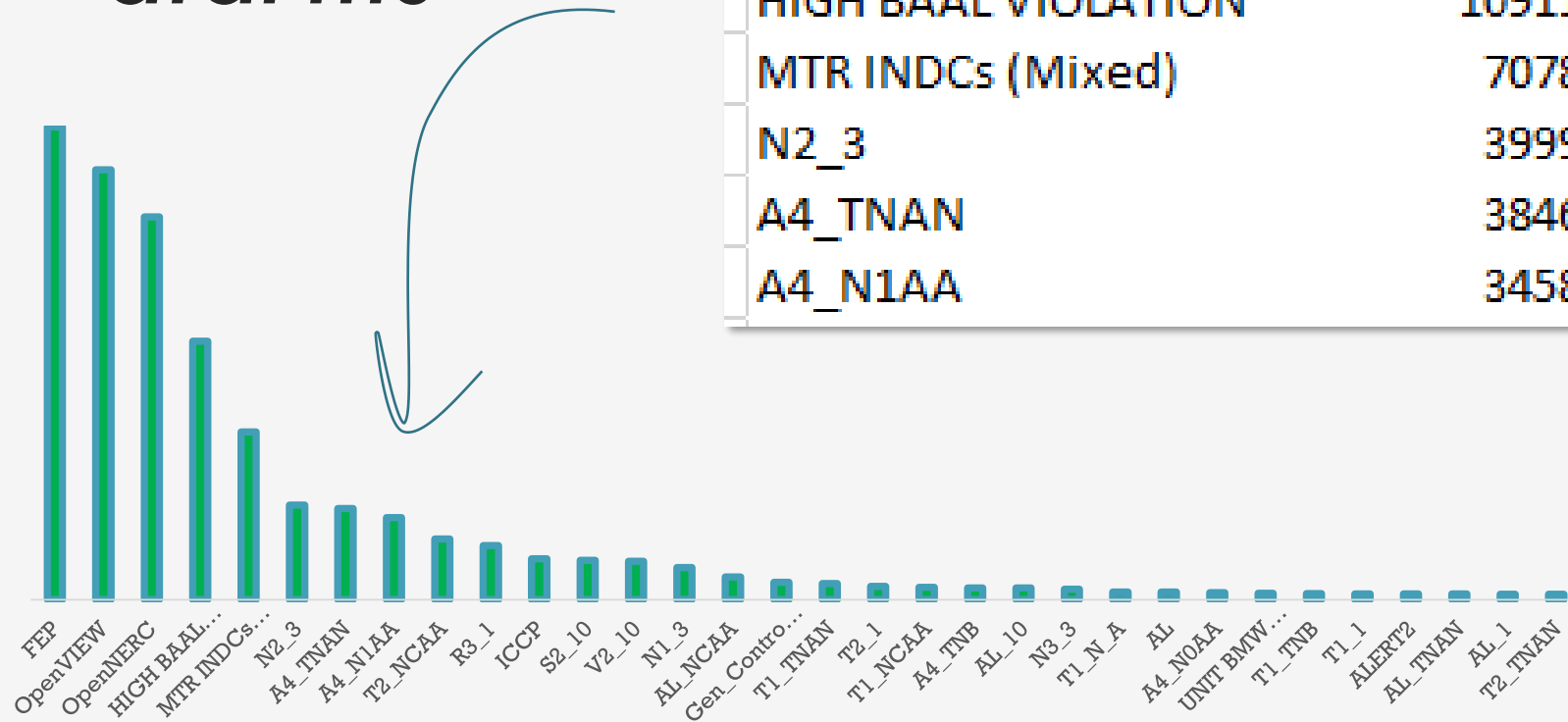
Look for Patterns

Pick a time frame to benchmark such as **three months**



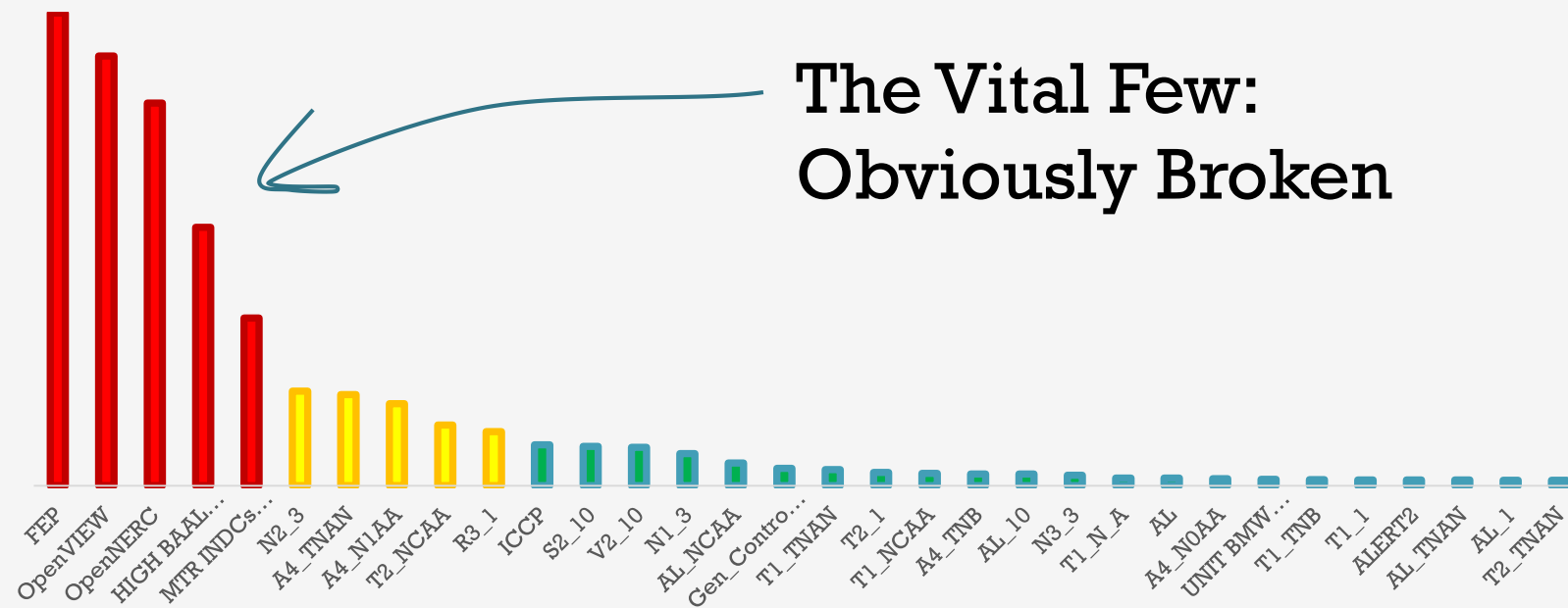
Alarms	Count
FEP	199680
OpenVIEW	181465
OpenNERC	161570
HIGH BAAL VIOLATION	109111
MTR INDCs (Mixed)	70782
N2_3	39995
A4_TNAN	38460
A4_N1AA	34583

Pattern:
*Frequent
alarms*



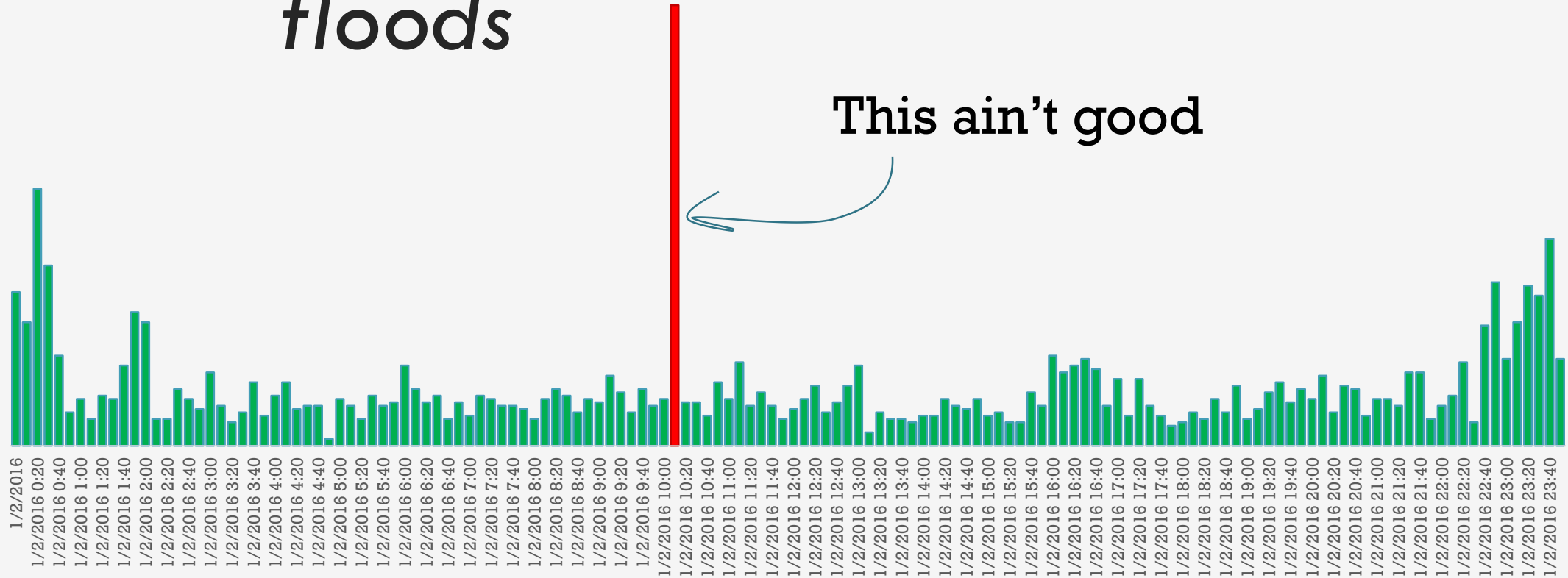
Alarms	Count
FEP	199680
OpenVIEW	181465
OpenNERC	161570
HIGH BAAL VIOLATION	109111
MTR INDCs (Mixed)	70782
N2_3	39995
A4_TNAN	38460
A4_N1AA	34583

Pattern:
*Frequent
alarms*



*Pattern:
Alarm
floods*

This ain't good



Operator alarm response

1. Read it
2. Acknowledge it
3. Navigate to the right screen
4. Decide if its even real
5. Determine what to do
6. Make it happen
7. Watch and wait



**At least a
few minutes**

*How many is
too many?*

2 alarms every 10 minutes
is manageable

No more than
300 alarms per day

Recapitulation

Logged in spreadsheet:

Created master alarm database with

- Data points that are generating alarms
- Any useful metadata

History and benchmark

Created benchmark workbench with

- Used Excel to find patterns
- Found the Vital Few
- Learned how deep the rabbit hole goes

Collect

Catorganize

Rationalize

Configure

CATORGANIZE

catorganize *-verb* cat·or·ga·nize \ kat 'ör-gə-, nīz \
: to place into categories and organize

CATORGANIZE

AutoSave Off MasterAlarmDatabase.xlsx - Excel Harrington, Brandon

File Home Insert Page Layout Formulas Data Review View Add-ins Help Team Tell me what you want to do Share

Alarm Group	Contact	Category	Notes	Cause	Action
Disk Capacity/Mem Usage	EMS	EMS Disk/Mem	What are good limits?	EMS resources critical	Call EMS
Disk Capacity/Mem Usage	EMS	EMS Disk/Mem	What are good limits?	EMS resources critical	Call EMS
Disk Capacity/Mem Usage	EMS	EMS Disk/Mem	What are good limits?	EMS resources critical	Call EMS
Critical Essex wDB	Todd	Peaker, Plant	Set to Critical Essex? Consolidate.	Fire alarm	Call plant personnel
Critical Holden Alarm		Peaker, Plant	Add Phone numbers to action, fire dept.	Fire alarm	Call plant personnel
Critical Holden Alarm		Peaker, Plant	Add Phone numbers to action, fire dept.	Fire alarm	Call plant personnel
Critical Holden Alarm		Peaker, Plant	Add Phone numbers to action, fire dept.	Fire alarm	Call plant personnel

Contact

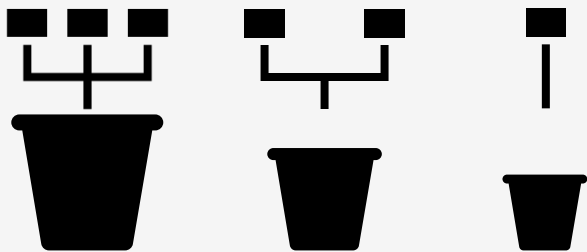
Category

Notes

Categorize and Organize

Categorize all points into buckets of similar points

The Vital Few – Put **80%** of your points in **20%** of your buckets



Contact

Category

Notes

Category Examples

- MVA line loading
- Voltage limits
- Tie line MW shift
- Circuit Breakers and Switches
- Load tap changers
- EMS system
- Comm. and health
- XFMR and CB Alarms
- Relaying and protection
- Plant cycle
- Duplicates and points to disable

Collect

Categorize

Rationalize

Configure

Contact

Category

Notes

*No time to
go solo*

Find your experts

Seek out other stakeholders

Contact	Category	Notes
---------	----------	-------

Recapitulation

Logged to spreadsheet:

- **Contact** – Person or team
- **Categories** – All of em.
- **Notes**



Collect

Categorize

Rationalize

Configure

RATIONALIZE

AutoSave Off  MasterAlarmDatabase.xlsx - Excel Harrington, Brandon 

Notes	Cause	Action	Consequence	Severity	Time	Priority	Alarm Group	Deadbands
What are good limits?	EMS resources critical	Call EMS	WS instability or failure	Minor	10	M	81	20
What are good limits?	EMS resources critical	Call EMS	WS instability or failure	Minor	10	M	81	20
What are good limits?	EMS resources critical	Call EMS	WS instability or failure	Minor	10	M	81	20
Set to Critical Essex? Consolidate.	Fire alarm	Call plant personnel	Fire damage	Severe	1	H	126	0
Add Phone numbers to action, fire dept.	Fire alarm	Call plant personnel	Fire damage	Severe	1	H	91	0
Add Phone numbers to action, fire dept.	Fire alarm	Call plant personnel	Fire damage	Severe	1	H	91	0
Add Phone numbers to action, fire dept.	Fire alarm	Call plant personnel	Fire damage	Severe	1	H	91	0

Cause

Action

Consequence

Severity

Time

Priority

*Determine
Two Things:*

Should an
alarm exist?

How important
is an alarm?

Cause

Action

Consequence

Severity

Time

Priority

“Alarm”
Textbook
Definition

An audible and/or visible means of indicating to the operator an ... abnormal condition requiring a response. (ISA 18.2)

Cause

Action

Consequence

Severity

Time

Priority

*Should an
alarm exist?*

*An audible and/or visible means of
indicating*

to the operator an ...

abnormal condition

requiring a response. (ISA 18.2)

Collect

Categorize

Rationalize

Configure

Cause

Action

Consequence

Severity

Time

Priority

*To the
spreadsheet!*

Cause of the abnormal condition

Action the Operator should take

Cause

Action

Consequence

Severity

Time

Priority

*How
important
is it?*

Why

Focus on what needs to be done next

Priority

How

The operator's ability to quickly tell things apart

Collect

Categorize

Rationalize

Configure

Cause

Action

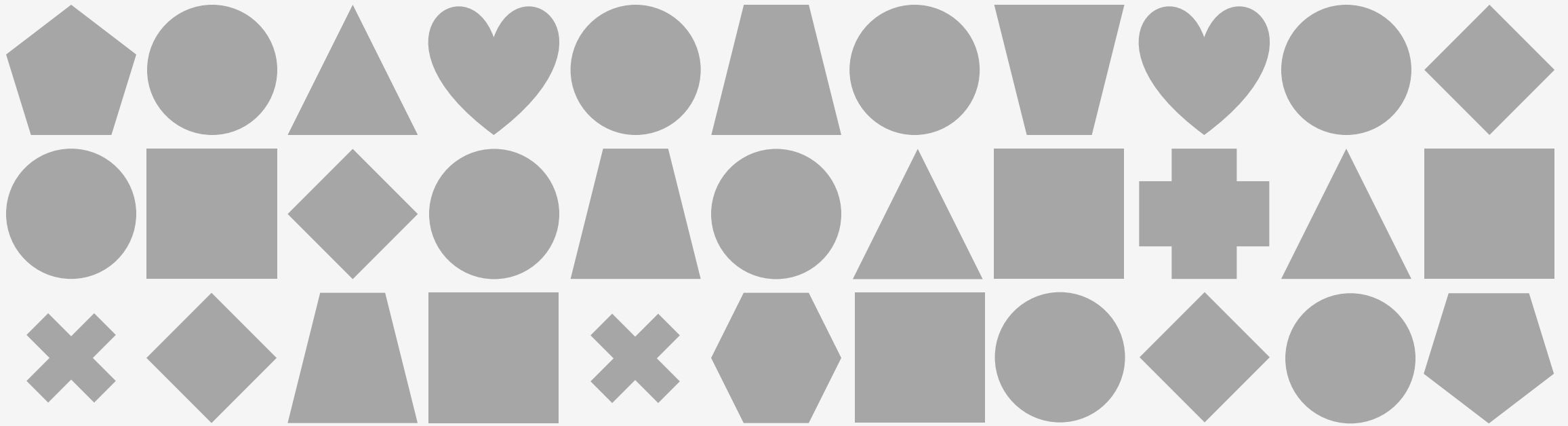
Consequence

Severity

Time

Priority

*We're bad
at this.*



Collect

Categorize

Rationalize

Configure

Cause

Action

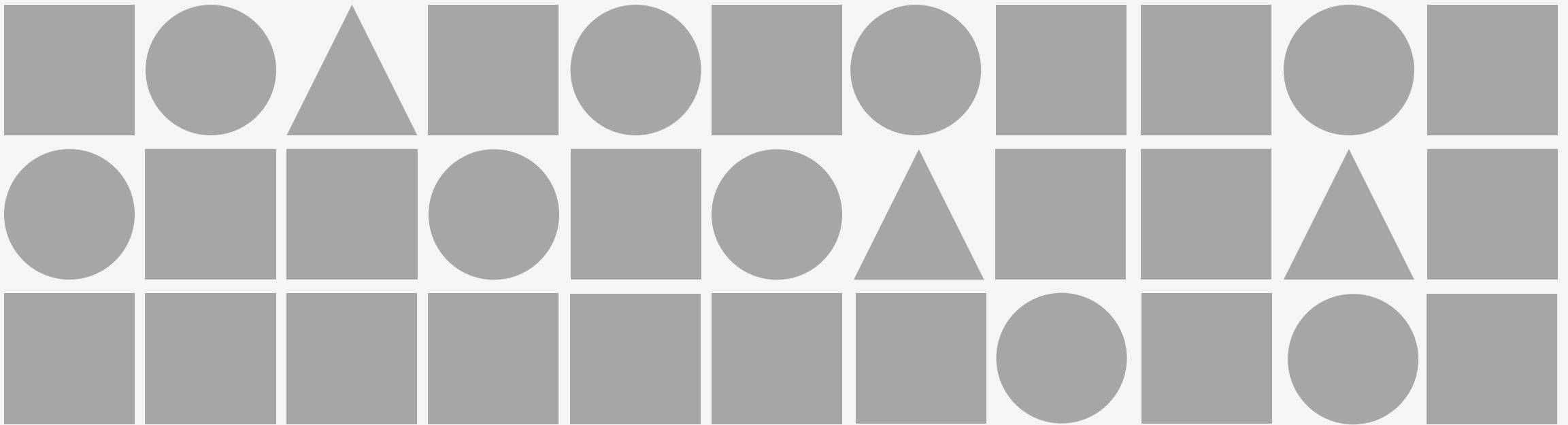
Consequence

Severity

Time

Priority

*3 things
is simple.*



Collect

Categorize

Rationalize

Configure

Cause

Action

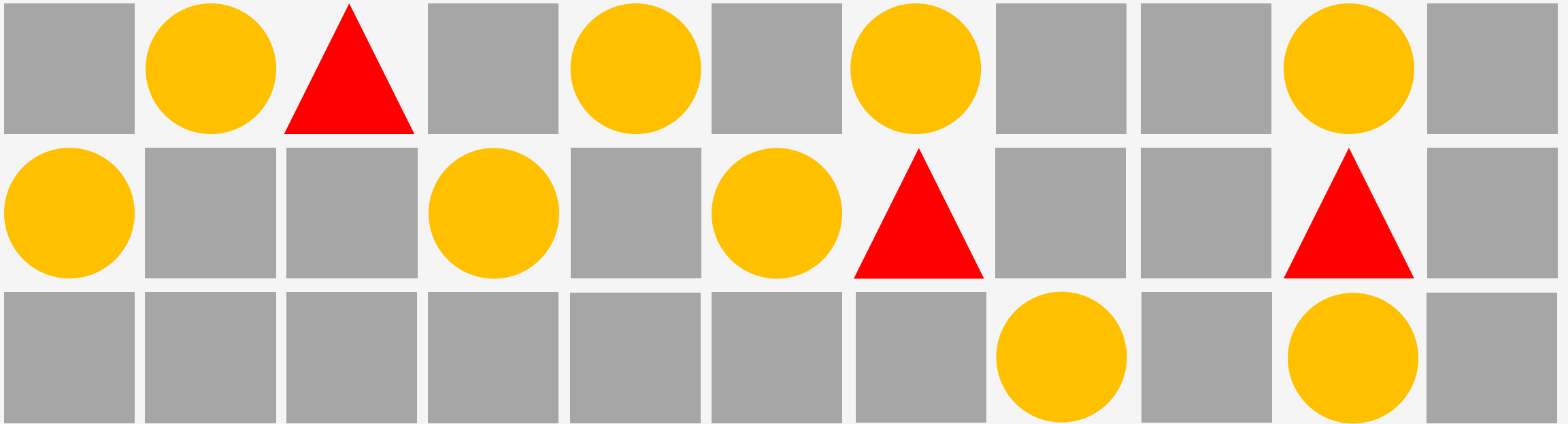
Consequence

Severity

Time

Priority

Color!
Woah!



Collect

Categorize

Rationalize

Configure

Cause

Action

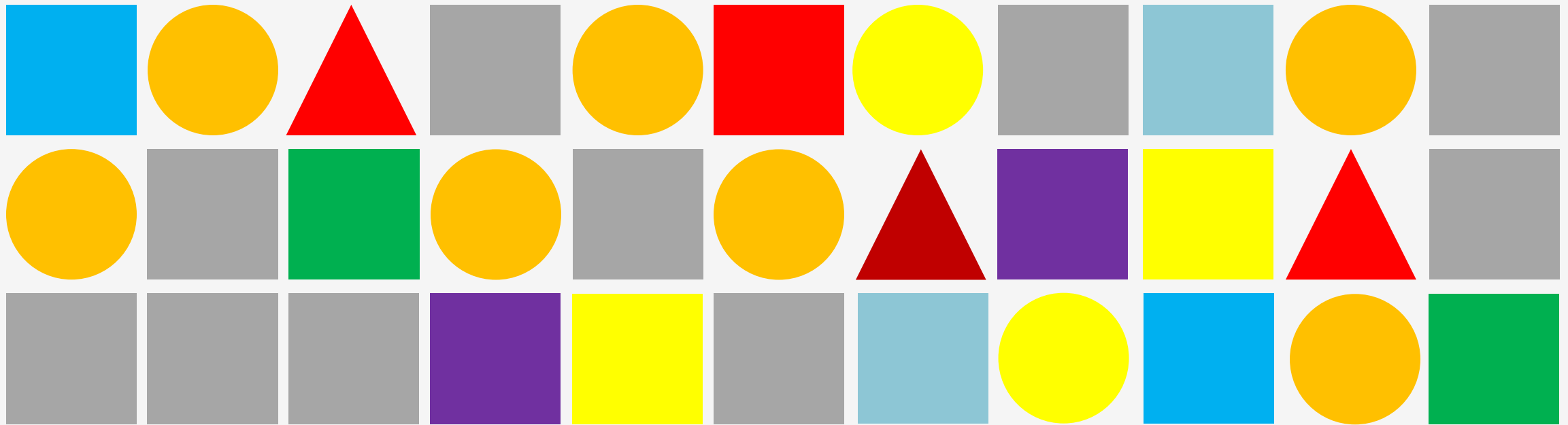
Consequence

Severity

Time

Priority

*For some reason
we do this.*



Collect

Categorize

Rationalize

Configure

Cause

Action

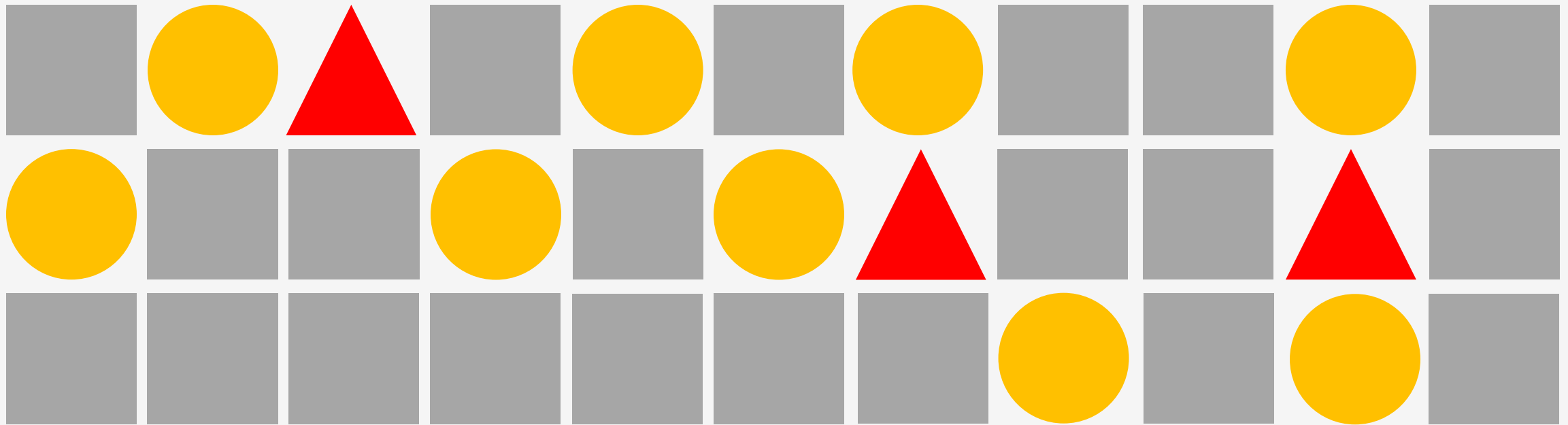
Consequence

Severity

Time

Priority

Priority – 3 levels



Cause

Action

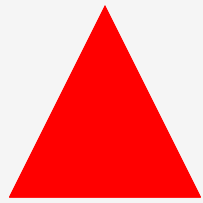
Consequence

Severity

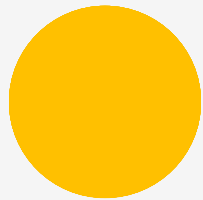
Time

Priority

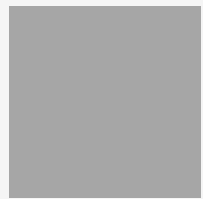
Priority – 3 levels



High



Medium



Low

80%



Low

15%



Medium

5%



High

Alarms

- All
 - Summary
 - Unacknowledged (33)
 - Acknowledged
 - Active
 - Suppressed
 - Deleted
 - Shared Views
 - My Views

Unacknowledged

Drag a column header here to group by that column

Date/Time	Origin	Description	Event	Value
03/22/18 21:43:17	FRANKS	FRANKS TIE BMW	SHIFTED -42.0	-669.0
03/22/18 21:43:09	FT_WOOD	LN FTWOOD-EDGRSP 161 KV-A	EXCEEDED LOW LIMIT	126.8
03/22/18 21:43:09	FT_WOOD	LN FRANKS-FTWOOD 161 KV-A	EXCEEDED LOW LIMIT	125.8
03/22/18 21:43:09	FT_WOOD	LN FTWOOD-WAYNESV 161 KV-A	EXCEEDED LOW LIMIT	129.8
03/22/18 21:43:09	FT_WOOD	BUS 69KV_SOUTH KV-A	EXCEEDED LOW LIMIT	54.9
03/22/18 21:43:09	FT_WOOD	BUS 69KV_NORTH KV-A	EXCEEDED LOW LIMIT	54.9
03/22/18 21:43:09	LEBANON	BUS 69KV_SOUTH KV-A	EXCEEDED LOW LIMIT	54.9
03/22/18 21:43:09	LEBANON	BUS 161KV_SOUTH KV-A	EXCEEDED LOW LIMIT	125.8
03/22/18 21:43:09	LEBANON	BUS 161KV_NORTH KV-A	EXCEEDED LOW LIMIT	130.8
03/22/18 21:43:09	MARIES	BUS 69KV_MAIN_2 KV-A	EXCEEDED LOW LIMIT	54.9
03/22/18 21:43:09	MARIES	BUS 69KV_MAIN KV-A	EXCEEDED LOW LIMIT	56.9
03/22/18 21:43:09	MARIES	BUS 161KV_MAIN_2 KV-A	EXCEEDED LOW LIMIT	125.8
03/22/18 21:43:09	MARIES	BUS 161KV_MAIN_1 KV-A	EXCEEDED LOW LIMIT	123.8
03/22/18 21:43:09	HUBEN	LN FRANKS-HUBEN 345 KV-A	EXCEEDED HIGH LIMIT	1254.7
03/22/18 21:43:09	HUBEN	LN FRANKS-HUBEN 161 KV-A	EXCEEDED LOW LIMIT	125.8
03/22/18 21:43:09	HUBEN	LN COFFMAN-HUBEN 161KV KV-A	EXCEEDED LOW LIMIT	126.8
03/22/18 21:43:09	HUBEN	BUS 345KV MORGAN KV-A	EXCEEDED LOW LIMIT	300.5
03/22/18 21:43:09	HUBEN	BUS 345KV FRANKS KV-A	EXCEEDED LOW LIMIT	300.5
03/22/18 21:43:09	FRANKS	LN HUBEN-FRANKS 345 MVA	EXCEEDED HIGH LIMIT	1064.9
03/22/18 21:43:09	FRANKS	FRANKS TIE BMW	SHIFTED -43.0	-627.0
03/22/18 21:43:09	FRANKS	LN FRANKS-SALEM 345 KV-A	EXCEEDED HIGH LIMIT	372.3
03/22/18 21:43:09	FRANKS	LN FRANKS-SALEM 161 KV-A	EXCEEDED LOW LIMIT	300.5
03/22/18 21:43:09	FRANKS	LN FRANKS-SALEM 161 KV-B	EXCEEDED LOW LIMIT	302.5
03/22/18 21:43:09	FRANKS	LN FRANKS-SALEM 345 KV-A	EXCEEDED LOW LIMIT	304.5
03/22/18 21:43:09	FRANKS	LN BLAND-FRANKS 345 KV-C	EXCEEDED LOW LIMIT	300.5
03/22/18 21:43:09	FRANKS	LN BLAND-FRANKS 345 KV-B	EXCEEDED LOW LIMIT	300.5
03/22/18 21:43:09	FRANKS	LN BLAND-FRANKS 345 KV-A	EXCEEDED LOW LIMIT	297.5
03/22/18 21:43:09	SALEM	BUS 161KV_BUS1 KV-C	EXCEEDED LOW LIMIT	126.8
03/22/18 21:43:09	SALEM	BUS 161KV_BUS1 KV-B	EXCEEDED LOW LIMIT	126.8
03/22/18 21:43:09	SALEM	BUS 161KV_BUS1 KV-A	EXCEEDED LOW LIMIT	122.8
03/22/18 21:43:09	SALEM	BUS 345KV_MAIN KV-C	EXCEEDED LOW LIMIT	296.5
03/22/18 21:43:09	SALEM	BUS 345KV_MAIN KV-B	EXCEEDED LOW LIMIT	296.5
03/22/18 21:43:09	SALEM	BUS 345KV_MAIN KV-A	EXCEEDED LOW LIMIT	300.5

Where to focus?



Alarms

- All
- Summary
- Unacknowledged (33)
- Acknowledged
- Active
- Suppressed
- Deleted
- Shared Views
- My Views

Unacknowledged

Drag a column header here to group by that column

Date/Time	Origin	Description	Event	Value
03/22/18 21:43:17	FRANKS	FRANKS TIE BMW	SHIFTED -42.0	-669.0
03/22/18 21:43:09	FT_WOOD	LN FTWOOD-EDGRSP 161 KV-A	EXCEEDED LOW LIMIT	126.8
03/22/18 21:43:09	FT_WOOD	LN FRANKS-FTWOOD 161 KV-A	EXCEEDED LOW LIMIT	125.8
03/22/18 21:43:09	FT_WOOD	LN FTWOOD-WAYNESV 161 KV-A	EXCEEDED LOW LIMIT	129.8
03/22/18 21:43:09	FT_WOOD	BUS 69KV_SOUTH KV-A	EXCEEDED LOW LIMIT	54.9
03/22/18 21:43:09	FT_WOOD	BUS 69KV_NORTH KV-A	EXCEEDED LOW LIMIT	54.9
03/22/18 21:43:09	LEBANON	BUS 69KV_SOUTH KV-A	EXCEEDED LOW LIMIT	54.9
03/22/18 21:43:09	LEBANON	BUS 161KV_SOUTH KV-A	EXCEEDED LOW LIMIT	125.8
03/22/18 21:43:09	LEBANON	BUS 161KV_NORTH KV-A	EXCEEDED LOW LIMIT	130.8
03/22/18 21:43:09	MARIES	BUS 69KV_MAIN_2 KV-A	EXCEEDED LOW LIMIT	54.9
03/22/18 21:43:09	MARIES	BUS 69KV_MAIN KV-A	EXCEEDED LOW LIMIT	56.9
03/22/18 21:43:09	MARIES	BUS 161KV_MAIN_2 KV-A	EXCEEDED LOW LIMIT	125.8
03/22/18 21:43:09	MARIES	BUS 161KV_MAIN_1 KV-A	EXCEEDED LOW LIMIT	123.8
03/22/18 21:43:09	HUBEN	LN FRANKS-HUBEN 345KV MVA	EXCEEDED HIGH LIMIT	1254.7
03/22/18 21:43:09	HUBEN	LN MRSHFLD-HUBEN 161KV KV-A	EXCEEDED LOW LIMIT	125.8
03/22/18 21:43:09	HUBEN	LN COFFMAN-HUBEN 161KV KV-A	EXCEEDED LOW LIMIT	126.8
03/22/18 21:43:09	HUBEN	BUS 345KV MORGAN KV-A	EXCEEDED LOW LIMIT	300.5
03/22/18 21:43:09	HUBEN	BUS 345KV FRANKS KV-A	EXCEEDED LOW LIMIT	300.5
03/22/18 21:43:09	FRANKS	LN HUBEN-FRANKS 345 MVA	EXCEEDED HIGH LIMIT	1064.9
03/22/18 21:43:09	FRANKS	FRANKS TIE BMW	SHIFTED -43.0	-627.0
03/22/18 21:43:09	FRANKS	XFMR T1 345/161/13.8 161-SIDE MVA	EXCEEDED HIGH LIMIT	372.3
03/22/18 21:43:09	FRANKS	LN FRANKS-SALEM 345 KV-C	EXCEEDED LOW LIMIT	300.5
03/22/18 21:43:09	FRANKS	LN FRANKS-SALEM 345 KV-B	EXCEEDED LOW LIMIT	302.5
03/22/18 21:43:09	FRANKS	LN FRANKS-SALEM 345 KV-A	EXCEEDED LOW LIMIT	304.5
03/22/18 21:43:09	FRANKS	LN BLAND-FRANKS 345 KV-C	EXCEEDED LOW LIMIT	300.5
03/22/18 21:43:09	FRANKS	LN BLAND-FRANKS 345 KV-B	EXCEEDED LOW LIMIT	300.5
03/22/18 21:43:09	FRANKS	LN BLAND-FRANKS 345 KV-A	EXCEEDED LOW LIMIT	297.5
03/22/18 21:43:09	SALEM	BUS 161KV_BUS1 KV-B	EXCEEDED LOW LIMIT	126.8
03/22/18 21:43:09	SALEM	BUS 161KV_BUS1 KV-A	EXCEEDED LOW LIMIT	126.8
03/22/18 21:43:09	SALEM	BUS 161KV_BUS1 KV-B	EXCEEDED LOW LIMIT	122.8
03/22/18 21:43:09	SALEM	BUS 161KV_BUS1 KV-A	EXCEEDED LOW LIMIT	122.8
03/22/18 21:43:09	SALEM	BUS 345KV_MAIN KV-C	EXCEEDED LOW LIMIT	296.5
03/22/18 21:43:09	SALEM	BUS 345KV_MAIN KV-B	EXCEEDED LOW LIMIT	296.5
03/22/18 21:43:09	SALEM	BUS 345KV_MAIN KV-A	EXCEEDED LOW LIMIT	300.5

Sweet relief!

Cause

Action

Consequence

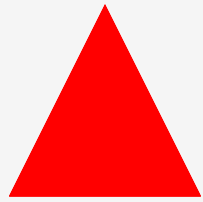
Severity

Time

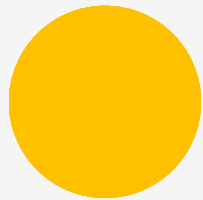
Priority

Priority – 3 levels

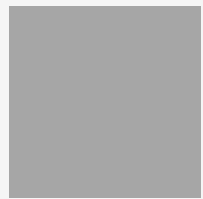
Make Color Count



High



Medium



Low

80%



Low

15%



Medium

5%



High

Collect

Categorize

Rationalize

Configure

Cause

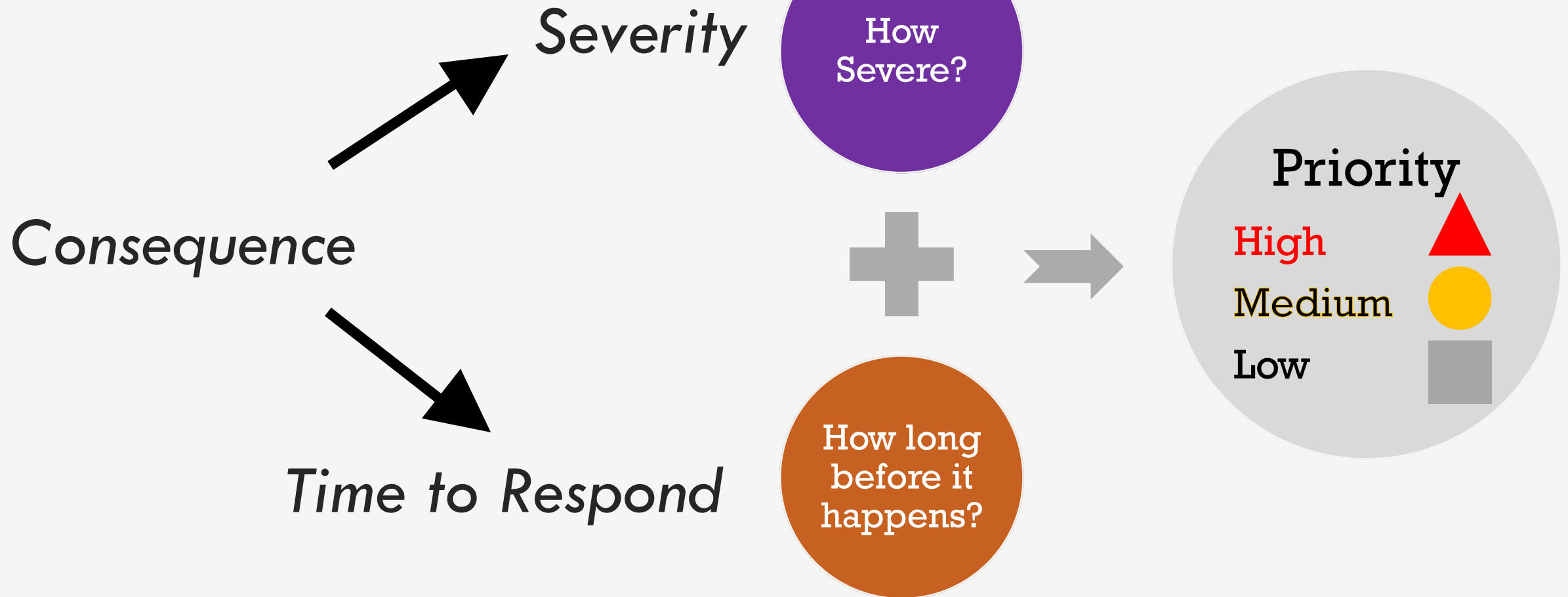
Action

Consequence

Severity

Time

Priority



Collect

Categorize

Rationalize

Configure

Cause

Action

Consequence

Severity

Time

Priority

Severity

Minor
Severity

Major
Severity

Severe
Severity

Collect

Categorize

Rationalize

Configure

Cause

Action

Consequence

Severity

Time

Priority

Severity

Area of Impact	Minor Severity	Major Severity	Severe Severity
Compliance			
Operation			
Generation Loss			
Gen Impact to Grid			
Cost			

Cause

Action

Consequence

Severity

Time

Priority

Severity

Area of Impact	Minor Severity	Major Severity	Severe Severity
Compliance	File report	Report and Fines	Continued Violation
Operation	Warning	Over/under voltage	Line overloading
Generation Loss	<2% Capacity	In between	Loss of Unit
Gen Impact to Grid	Fixed by Auto Gen Control	Re-dispatching or purchase	Potential of brown/blackout
Cost	<\$10k	<=\$100k	>\$100k

Collect

Categorize

Rationalize

Configure

Cause

Action

Consequence

Severity

Time

Priority

Severity

Minor
Severity

Major
Severity

Severe
Severity

Collect

Categorize

Rationalize

Configure

Cause

Action

Consequence

Severity

Time

Priority

Severity
+
Time

	Minor	Major	Severe
≈ 30 minutes	Low	Low	Medium
≈ 10 minutes	Low	Medium	Medium
< 3 minutes	Medium	High	High

Cause Action Consequence Severity Time Priority

Severity
+
Time
=
Priority

	Minor	Major	Severe
≈ 30 minutes	Low	Low	Medium
≈ 10 minutes	Low	Medium	Medium
< 3 minutes	Medium	High	High

Cause

Action

Consequence

Severity

Time

Priority

Recapitulation

Logged to spreadsheet:

- **Cause**
- **Action**
- **Consequence**
- **Severity** (Minor, Major, Severe)
- **Time** (3, 10, 30)
- **Priority** (L, M, H)

Collect

Categorize

Rationalize

Configure

CONFIGURIZE

Collect

Categorize

Rationalize

Configure

CONFIGURE

AutoSave Off MasterAlarmDatabase.xlsx - Excel Harrington, Brandon Share

File Home Insert Page Layout Formulas Data Review View Add-ins Help Team Tell me what you want to do

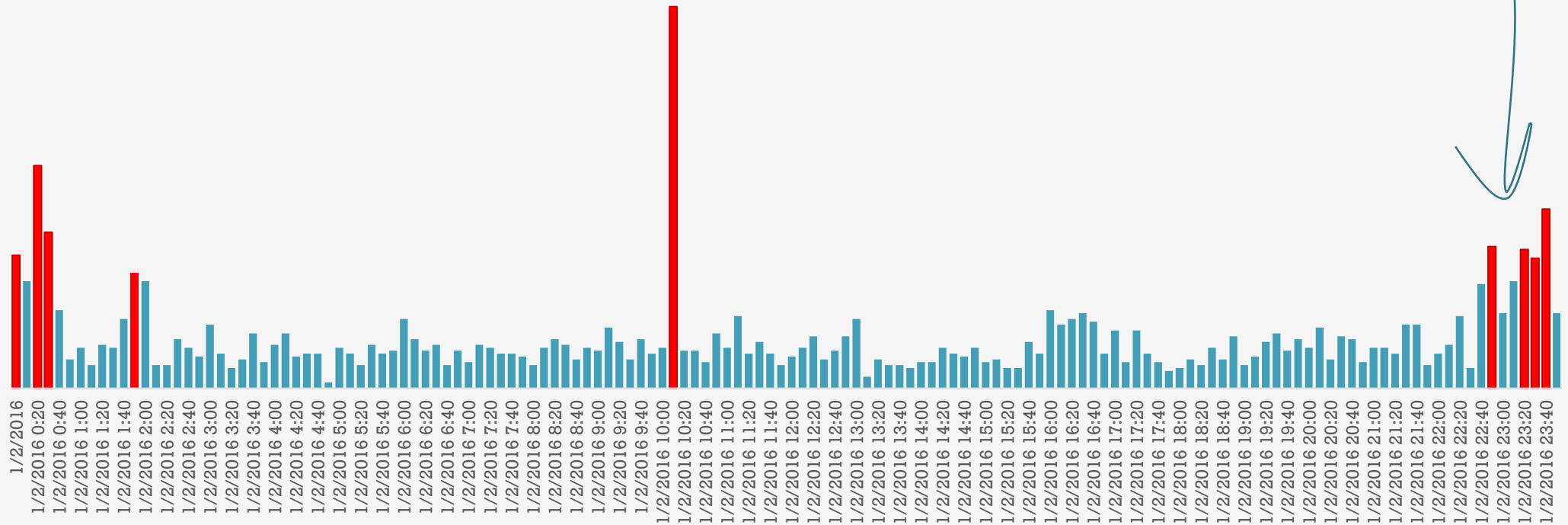
Consequence	Severity	Time	Priority	Alarm Group	Deadbands	Sound	Email	Op Guide or Proc
WS instability or failure	Minor	10	M		81	20		
WS instability or failure	Minor	10	M		81	20		
WS instability or failure	Minor	10	M		81	20		
Fire damage	Severe	1	H		126	0	Yes	
Fire damage	Severe	1	H		91	0	Yes	
Fire damage	Severe	1	H		91	0	Yes	
Fire damage	Severe	1	H		91	0	Yes	

Translate

Convert rationalize data into your specific system settings:

- Alarm Group and Classes
- Priority and Color
- Sound
- Email
- Operating Guide or Procedure
- Deadbanding

Deadbanding



Deadbanding

A little goes a long way.

- 1-2% on the value
- 20 second delay or less

Wait to say Return to Normal

- Low risk of preventing an alarm

Recapitulation

Logged to spreadsheet:

- **Configuration**
 - Alarm Group: Color, Priority, Sound, Email, Group
- **Deadbands**

All done right?!

Gray

Collect

Green

Catorganize

Blue

Rationalize

Orange

Configure

One Last Thing



ViewPoint

File Edit View Actions Sound

Pause Acknowledge Delete Flag Email Details Help Disable Sound Silence Snooze

Search

Alarms

- All
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 - Acknowledged
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 - Acknowledged (Detailed)
 - All (Detailed)
 - Summary (Detailed)
 - Unack Severity 1
 - Unack Severity 8
 - Unacknowledged (Detailed)
 - My Views

Unacknowledged

Date/Time	Origin	Description	Event	Value
03/22/18 21:41:44	FRANKS	FRANKS TIE BMW	RATE OF CHANGE +50.0	-195.0
03/22/18 21:41:43	FRANKS	XFMR T1 345/161/13.8 161-SIDE MVA	RETURN TO NORMAL	-144.9
03/22/18 21:41:42	CALLAWAY	BUS 345KV_BUS_B KV	LOW LIMIT 2 EXCEEDED	328.3
03/22/18 21:41:42	CALLAWAY	BUS 345KV_BUS_A KV	LOW LIMIT 2 EXCEEDED	328.3
03/22/18 21:41:42	LSE_CRK	LN LSE_CRK-CALLAWAY 345 KV	LOW LIMIT 2 EXCEEDED	328.3
03/22/18 21:41:42	LSE_CRK	LN LSE_CRK-FRANKS 345 KV	LOW LIMIT 2 EXCEEDED	328.3
03/22/18 21:41:42	BLAND	LN BLAND-FRANKS 345 KV	LOW LIMIT 2 EXCEEDED	328.3
03/22/18 21:41:42	BLAND	LN BLAND-CALAWAY 345 KV	LOW LIMIT 2 EXCEEDED	328.3
03/22/18 21:41:42	BLAND	LN BLAND-LABADI 345 KV	LOW LIMIT 2 EXCEEDED	328.3
03/22/18 21:41:42	FT_WOOD	LN FTWOOD-EDGRSP 161 KV-A	LOW LIMIT 2 EXCEEDED	122.8
03/22/18 21:41:42	FT_WOOD	LN FRANKS-FTWOOD 161 KV-A	LOW LIMIT 2 EXCEEDED	124.8
03/22/18 21:41:42	FT_WOOD	LN FTWOOD-WAYNESV 161 KV-A	LOW LIMIT 2 EXCEEDED	126.8
03/22/18 21:41:42	FT_WOOD	BUS 69KV_SOUTH KV-A	LOW LIMIT 2 EXCEEDED	53.9
03/22/18 21:41:42	FT_WOOD	BUS 69KV_NORTH KV-A	LOW LIMIT 2 EXCEEDED	55.9
03/22/18 21:41:42	LEBANON	BUS 69KV_SOUTH KV-A	LOW LIMIT 2 EXCEEDED	51.9
03/22/18 21:41:42	LEBANON	BUS 161KV_SOUTH KV-A	LOW LIMIT 2 EXCEEDED	125.8
03/22/18 21:41:42	LEBANON	BUS 161KV_NORTH KV-A	LOW LIMIT 2 EXCEEDED	127.8
03/22/18 21:41:42	MARIES	BUS 69KV_MAIN_2 KV-A	RETURN TO NORMAL	68.1
03/22/18 21:41:42	MARIES	BUS 69KV_MAIN KV-A	LOW LIMIT 2 EXCEEDED	54.9
03/22/18 21:41:42	MARIES	BUS 161KV_MAIN_2 KV-A	LOW LIMIT 2 EXCEEDED	129.8
03/22/18 21:41:42	MARIES	BUS 161KV_MAIN_1 KV-A	LOW LIMIT 2 EXCEEDED	128.8
03/22/18 21:41:42	HUBEN	LN FRANKS-HUBEN 345KV MVA	HIGH LIMIT 2 EXCEEDED	1254.7
03/22/18 21:41:42	FRANKS	LN HUBEN-FRANKS 345 MVA	HIGH LIMIT 2 EXCEEDED	975.2
03/22/18 21:41:42	FRANKS	XFMR T1 345/161/13.8 161-SIDE MVA	HIGH LIMIT 2 EXCEEDED	469.2
03/22/18 21:41:42	FRANKS	LN FRANKS-SALEM 345 KV-C	LOW LIMIT 2 EXCEEDED	300.5
03/22/18 21:41:42	FRANKS	LN FRANKS-SALEM 345 KV-B	LOW LIMIT 2 EXCEEDED	300.5
03/22/18 21:41:42	FRANKS	LN FRANKS-SALEM 345 KV-A	LOW LIMIT 2 EXCEEDED	300.5
03/22/18 21:41:42	FRANKS	LN FRANKS-FRANKS 345 KV-C	LOW LIMIT 2 EXCEEDED	303.5
03/22/18 21:41:42	FRANKS	LN FRANKS-FRANKS 345 KV-B	LOW LIMIT 2 EXCEEDED	302.5
03/22/18 21:41:42	FRANKS	LN FRANKS-FRANKS 345 KV-A	LOW LIMIT 2 EXCEEDED	303.5
03/22/18 21:41:42	SALEM	BUS 161KV_BUS1 KV-C	RETURN TO NORMAL	158.0
03/22/18 21:41:42	SALEM	BUS 161KV_BUS1 KV-B	RETURN TO NORMAL	159.0
03/22/18 21:41:42	SALEM	BUS 161KV_BUS1 KV-A	RETURN TO NORMAL	154.0
03/22/18 21:41:42	SALEM	BUS 345KV_MAIN KV-C	RETURN TO NORMAL	353.0
03/22/18 21:41:42	SALEM	BUS 345KV_MAIN KV-B	RETURN TO NORMAL	354.0
03/22/18 21:41:42	SALEM	BUS 345KV_MAIN KV-A	RETURN TO NORMAL	358.0
03/22/18 21:41:41	FRANKS	XFMR T1 345/161/13.8 161-SIDE MVA	RETURN TO NORMAL	-144.9
03/22/18 21:41:39	CALLAWAY	BUS 345KV_BUS_B KV	RETURN TO NORMAL	351.0

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Alarm Adaptor: Connected

Turn this...

Alarms

- All
 - Summary
 - Unacknowledged (33)
 - Acknowledged
 - Active
 - Suppressed
 - Deleted
 - Shared Views
 - My Views
- System Overview
- Alarms
- Events
- SOEs

Unacknowledged

Drag a column header here to group by that column

Date/Time	Origin	Description	Event	Value
03/22/18 21:43:17	FRANKS	FRANKS TIE BMW	SHIFTED -42.0	-669.0
03/22/18 21:43:09	FT_WOOD	LN FTWOOD-EDGRSP 161 KV-A	EXCEEDED LOW LIMIT	126.8
03/22/18 21:43:09	FT_WOOD	LN FRANKS-FTWOOD 161 KV-A	EXCEEDED LOW LIMIT	125.8
03/22/18 21:43:09	FT_WOOD	LN FTWOOD-WAYNESV 161 KV-A	EXCEEDED LOW LIMIT	129.8
03/22/18 21:43:09	FT_WOOD	BUS 69KV_SOUTH KV-A	EXCEEDED LOW LIMIT	54.9
03/22/18 21:43:09	FT_WOOD	BUS 69KV_NORTH KV-A	EXCEEDED LOW LIMIT	54.9
03/22/18 21:43:09	LEBANON	BUS 69KV_SOUTH KV-A	EXCEEDED LOW LIMIT	54.9
03/22/18 21:43:09	LEBANON	BUS 161KV_SOUTH KV-A	EXCEEDED LOW LIMIT	125.8
03/22/18 21:43:09	LEBANON	BUS 161KV_NORTH KV-A	EXCEEDED LOW LIMIT	130.8
03/22/18 21:43:09	MARIES	BUS 69KV_MAIN_2 KV-A	EXCEEDED LOW LIMIT	54.9
03/22/18 21:43:09	MARIES	BUS 69KV_MAIN KV-A	EXCEEDED LOW LIMIT	56.9
03/22/18 21:43:09	MARIES	BUS 161KV_MAIN_2 KV-A	EXCEEDED LOW LIMIT	125.8
03/22/18 21:43:09	MARIES	BUS 161KV_MAIN_1 KV-A	EXCEEDED LOW LIMIT	123.8
03/22/18 21:43:09	HUBEN	LN FRANKS-HUBEN 345KV MVA	EXCEEDED HIGH LIMIT	1254.7
03/22/18 21:43:09	HUBEN	LN MRSHFLD-HUBEN 161KV KV-A	EXCEEDED LOW LIMIT	125.8
03/22/18 21:43:09	HUBEN	LN COFFMAN-HUBEN 161KV KV-A	EXCEEDED LOW LIMIT	126.8
03/22/18 21:43:09	HUBEN	BUS 345KV MORGAN KV-A	EXCEEDED LOW LIMIT	300.5
03/22/18 21:43:09	HUBEN	BUS 345KV FRANKS KV-A	EXCEEDED LOW LIMIT	300.5
03/22/18 21:43:09	FRANKS	LN HUBEN-FRANKS 345 MVA	EXCEEDED HIGH LIMIT	1064.9
03/22/18 21:43:09	FRANKS	FRANKS TIE BMW	SHIFTED -43.0	-627.0
03/22/18 21:43:09	FRANKS	XFMR T1 345/161/13.8 161-SIDE MVA	EXCEEDED HIGH LIMIT	372.3
03/22/18 21:43:09	FRANKS	LN FRANKS-SALEM 345 KV-C	EXCEEDED LOW LIMIT	300.5
03/22/18 21:43:09	FRANKS	LN FRANKS-SALEM 345 KV-B	EXCEEDED LOW LIMIT	302.5
03/22/18 21:43:09	FRANKS	LN FRANKS-SALEM 345 KV-A	EXCEEDED LOW LIMIT	304.5
03/22/18 21:43:09	FRANKS	LN BLAND-FRANKS 345 KV-C	EXCEEDED LOW LIMIT	300.5
03/22/18 21:43:09	FRANKS	LN BLAND-FRANKS 345 KV-B	EXCEEDED LOW LIMIT	300.5
03/22/18 21:43:09	FRANKS	LN BLAND-FRANKS 345 KV-A	EXCEEDED LOW LIMIT	297.5
03/22/18 21:43:09	SALEM	BUS 161KV_BUS1 KV-A	EXCEEDED LOW LIMIT	126.8
03/22/18 21:43:09	SALEM	BUS 161KV_BUS1 KV-B	EXCEEDED LOW LIMIT	126.8
03/22/18 21:43:09	SALEM	BUS 161KV_BUS1 KV-A	EXCEEDED LOW LIMIT	122.8
03/22/18 21:43:09	SALEM	BUS 345KV_MAIN KV-C	EXCEEDED LOW LIMIT	296.5
03/22/18 21:43:09	SALEM	BUS 345KV_MAIN KV-B	EXCEEDED LOW LIMIT	296.5
03/22/18 21:43:09	SALEM	BUS 345KV_MAIN KV-A	EXCEEDED LOW LIMIT	300.5

Into this!

Goodbye

1. It's not so hard.

2. You can have my stuff.

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QUESTIONS?