

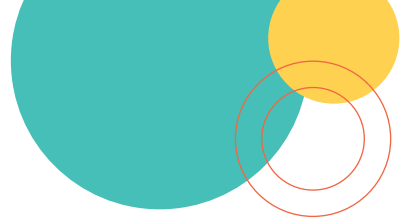


User Manual for APBE Functions

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NDayAvg(V,N)



Description:

The Average value of the Variable (V) is calculated using all the available Readings in the “Last N Days.”

Input: V (Decimal), N (Positive Integer ≥ 1), Output: Decimal

Example:

Alert Requirement: Show an Alert when the Average Casing pressure over the past 3 “Days” is 10% more than that in the past 10 “Days.”

Exception Condition: The below Exception Condition shows the syntax and logic used

The screenshot shows the 'Edit Alert Config' window with the following configuration:

- Configuration Steps:** Configure Alert Scope > Configure Exception > Configure Alert > Test Run > Configure Alert Trigger
- Variables Table:**

Variable	Object Type	Data Type	Attribute	Validation Values	Response Attribute	Driving Attribute	Display Label	Action
CP	Well	CommonWellReading	CasingPressure	300	Yes	Yes	Casing Pressure	
- Exception Condition:**
 - Logic: $\text{NDayAvg}(\text{CP}, 3) > 1.1 * \text{NDayAvg}(\text{CP}, 10)$
 - Buttons: + Add Condition, + Add Condition Group, Validate

Mathematical logic:

On the Well SMITH, SOL #3A

Given the last 3 Days only have 2 readings available, the 30th and 28th March Readings, only these two readings are used to calculate the Average over the past 3 days, i.e., $(500+400)/2 = 450$

Given the last 10 Days only have 6 readings available, only these 6 readings are used to calculate the Average over the past 10 days, i.e., $(500+400+378+315+385+338)/6 = 386$

Given $450 > 1.1 * 386 = 424.6$, the condition is satisfied, and an alert for SMITH, SOL #3A Well is created as shown below

Manage Readings | SMITH, SOL #3A | 03-02-2022 to 03-30-2022

Explore Objects

Team: Default | Reading View: Daily Well Reading

Route: Search...

MID Route 1

- J&W ZAV
 - J&W 1HB
 - J&W FLARE METER
 - J&W ZAV 2HB
 - J&W ZAV Gas Sales
 - J&W ZAV 1H
- ROSS 2503
- SMITH, SOL #12
- SMITH, SOL #3
 - SMITH, SOL #30051
 - SMITH, SOL #3A
 - SMITH, SOL #3B
 - SMITH, SOL #3C
 - SMITH, SOL-Wtr Mtr
- Template Route
- Unassigned

Date Range Filter

From Date: 03-02-2022 | To Date: 03-30-2022

	ReadingDate	ReadingTime	ReadingNumber	TubingPressure	Casing Pressure	Surface Casing Pressure	Actions
<input type="checkbox"/>	2022-03-30	10:55 AM	1	126	500	36	
<input type="checkbox"/>	2022-03-28	10:55 AM	1	114	400	46	
<input type="checkbox"/>	2022-03-26	10:55 AM	1	129	378	41	
<input type="checkbox"/>	2022-03-24	10:55 AM	1	134	315	49	
<input type="checkbox"/>	2022-03-22	10:55 AM	1	113	385	35	
<input type="checkbox"/>	2022-03-21	10:55 AM	1	135	338	45	
<input type="checkbox"/>	2022-03-20	10:55 AM	1	119	339	35	
<input type="checkbox"/>	2022-03-19	10:55 AM	1	140	385	47	
<input type="checkbox"/>	2022-03-18	10:55 AM	1	119	312	37	
<input type="checkbox"/>	2022-03-17	10:55 AM	1	138	340	44	
<input type="checkbox"/>	2022-03-16	10:55 AM	1	140	352	43	
<input type="checkbox"/>	2022-03-15	10:55 AM	1	122	312	43	
<input type="checkbox"/>	2022-03-14	10:55 AM	1	112	320	40	
<input type="checkbox"/>	2022-03-13	10:55 AM	1	116	324	39	
<input type="checkbox"/>	2022-03-12	10:55 AM	1	112	339	39	
<input type="checkbox"/>	2022-03-11	10:55 AM	1	113	313	44	

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Pump By Exception

Manage Alert History

Alert Configurations | Schedule Overview | Alert History

Search... | Filters | Alert: 1 selected | Route: MID Route 1

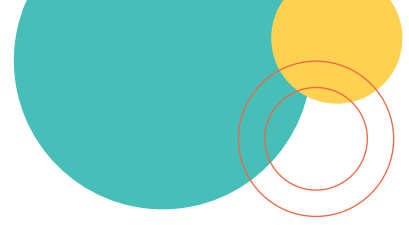
Bulk Update

	Object	Stop	Alert	Label	Status	Score	Start Score	Type	C. Priority	Actions
<input type="checkbox"/>	SMITH, SOL #3A	SMITH, SOL #3	NDayAvg	NDA	New	1000	1000	Manual	1000	...

Note:

- If there are no readings on the object, then the expression evaluation on that particular object fails, and the object is skipped, but for the other objects, the expression is evaluated, and an alert is generated if the condition is true
- If there are less number of readings available on an object than what the function demands, but there are no NULL values in between, then the expression evaluation proceeds with the available data and evaluates the expression. E.g., If we are using NDayAvg(CP,10) and we have only 6 days of data, we compute the Average of 6 Days and not 10 Days.
- If multiple NULL values exist for an object attribute in an expression, the expression evaluation fails, and no alert is created for that object.

NReadingAvg(V,N)



Description:

Returns the Average value of the Variable (**V**) fetched from the last N available “Readings” on the object, irrespective of the days

Input: V (Decimal), N (Positive Integer ≥ 1), Output: Decimal

Example:

Alert Requirement: Show an Alert when the Average Casing pressure over the past 3 “Readings” is 10% more than in the past 8 “Readings.”

Exception Condition: The below Exception Condition shows the syntax and logic used

Edit Alert Config

Configure the Exception Condition which would trigger the alert

Variables

Variable	Object Type	Data Type	Attribute	Validation Values	Response Attribute	Driving Attribute	Display Label	Action
CP	Well	CommonWellReading	CasingPressure	300	Yes	Yes	Casing Pressure	

Exception Condition

AND

NReadingAvg(CP,3) > (Greater than) 1.1*NReadingAvg(CP,8)

+ Add Condition + Add Condition Group

Mathematical logic:

On the Well SMITH, SOL #3A:

Last 3 Readings Average is: $(450+331+500)/3 = 427$

Last 8 Readings Average is: $(450+331+500+326+378+345+315+355)/8 = 375$

Manage Readings | SMITH, SOL #3A | 10-05-2021 to 03-30-2022

Explore Objects | Team: Default | Reading View: Daily Well Reading

Object	ReadingDate	Casing Pressure	Surface Casing Pressure	Flow Line Pressure	Choke	Injection Pressure	Actions
MID Route 1	2021-12-13	450	36		64		
J&W ZAV	2021-12-12	331	44		64		
ROSS 2503	2021-12-11	500	46		64		
SMITH, SOL #12	2021-12-10	326	39		64		
SMITH, SOL #3	2021-12-09	378	41		64		
MasterTank-1	2021-12-08	345	47		64		
SMITH, SOL #30051	2021-12-07	315	49		64		
SMITH, SOL #3A	2021-12-06	355	41		64		
SMITH, SOL #3B	2021-12-05	385	35		64		
SMITH, SOL #3C	2021-12-04	338	45		64		
Rt 32	2021-12-03	339	35		64		
Rt 35	2021-12-02	385	47		64		
Template Route	2021-12-01	312	37		64		
Unassigned	2021-11-30	340	44		64		
	2021-11-29	352	43		64		
	2021-11-28	312	43		64		
	2021-11-27	320	40		64		

Date Range Filter: From Date: 10-05-2021, To Date: 03-30-2022

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Given that the Last 3 Reading Average of Casing Pressure is greater than 1.1 times the 8 Reading Average of Casing Pressure, the condition is satisfied, and an alert for SMITH, SOL #3A Well, is created, as shown below.

Pump By Exception | + New

Manage Alert History | Alert Configurations | Schedule Overview | Alert History

Search: ... | Filters: Alert: 1 selected | Route: MID Route 1

Object	Stop	Alert	Label	Status	Score	Start Score	Type	C. Priority	Actions
SMITH, SOL #3A	SMITH, SOL #3	NReadingAvg	NRA	New	1000	1000	Manual	1000	...

Note:

- If there are no readings on the object, then the expression evaluation on that particular object fails, and the object is skipped. However, the expression is evaluated for other objects, and an alert is generated if the condition is true.
- If there are less number of readings available on an object than what the function demands, but there are no NULL values in between, then the expression evaluation proceeds with the available data and evaluates the expression. E.g., If we are using NReadingAvg(CP,7) and we have only 5 readings overall, we compute the average of 5 and not 7.
- If multiple NULL values exist for an object attribute in an expression, the expression evaluation fails, and no alert is created for that object.

PercentDeviationFromAvg(V,N)



Description:

Returns the Percentage Deviation of the Current Reading (or Last Available Reading) of the Variable (**V**) with the average of the last N available “**Readings**” on the object

Input: V (Decimal) , N (Positive Integer >=1), Output: Decimal

Example:

Alert Requirement: Show an alert when the Percentage Deviation of the “Current Reading” is more than 30% of the average of the last 7 readings

Exception Condition: The below Exception Condition shows the syntax and logic used

Variable	Object Type	Data Type	Attribute	Validation Values	Response Attribute	Driving Attribute	Display Label	Action
Volume	Meter	GasMeterwPresBTU	MeasuredVolume	300	Yes	Yes	Measured Volume	

Exception Condition

AND

PercentDeviationFromAvg(Volume,7) >= (Greater than or Equal to) # 0.3

Mathematical logic:

On JWH ZAV Gas Sales Meter

Current Reading: 460

Last 7 readings average: $(122+369+164+286+85+457+284)/7 = 252.42$

Allocation

Operations

Components

Access

Account

Analytics

Talk to us

A G

Manage Readings

JWH ZAV Gas Sales

03-01-2022 to 03-30-2022

Explore Objects

Team: Default

Reading View: GasOdometerBTU

Object: JWH ZAV Gas Sales

MID Route 1

J&W ZAV

JWH ZAV Gas Sales

	ReadingDate	ReadingTime	Measured Volume	ReadingNumber	Close Odometer	Open Odometer	PSIG?	Actions
<input type="checkbox"/>	2022-03-30	10:55 AM	460	1	49479	49019	<input checked="" type="radio"/>	
<input type="checkbox"/>	2022-03-29	10:55 AM	122	1	49019	48897	<input checked="" type="radio"/>	
<input type="checkbox"/>	2022-03-28	10:55 AM	369	1	48897	48528	<input checked="" type="radio"/>	
<input type="checkbox"/>	2022-03-27	10:55 AM	164	1	48528	48364	<input checked="" type="radio"/>	
<input type="checkbox"/>	2022-03-26	10:55 AM	286	1	48364	48078	<input checked="" type="radio"/>	
<input type="checkbox"/>	2022-03-25	10:55 AM	85	1	48078	47993	<input checked="" type="radio"/>	
<input type="checkbox"/>	2022-03-24	10:55 AM	457	1	47993	47536	<input checked="" type="radio"/>	
<input type="checkbox"/>	2022-03-23	10:55 AM	284	1	47536	47252	<input checked="" type="radio"/>	
<input type="checkbox"/>	2022-03-22	10:55 AM	208	1	47252	47044	<input checked="" type="radio"/>	
<input type="checkbox"/>	2022-03-21	10:55 AM	267	1	47044	46777	<input checked="" type="radio"/>	
<input type="checkbox"/>	2022-03-20	10:55 AM	241	1	46777	46536	<input checked="" type="radio"/>	
<input type="checkbox"/>	2022-03-19	10:55 AM	271	1	46536	46265	<input checked="" type="radio"/>	
<input type="checkbox"/>	2022-03-18	10:55 AM	216	1	46265	46049	<input checked="" type="radio"/>	
<input type="checkbox"/>	2022-03-17	10:55 AM	262	1	46049	45787	<input checked="" type="radio"/>	
<input type="checkbox"/>	2022-03-16	10:55 AM	207	1	45787	45580	<input checked="" type="radio"/>	
<input type="checkbox"/>	2022-03-15	10:55 AM	206	1	45580	45374	<input checked="" type="radio"/>	
<input type="checkbox"/>	2022-03-14	10:55 AM	299	1	45374	45075	<input checked="" type="radio"/>	

Date Range Filter

From Date: 03-01-2022

To Date: 03-30-2022

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Given $(\text{Current Reading} - \text{Average of 7 Readings}) / \text{Average of 7 Readings} = (460 - 252.42) / 252.42 = 0.82$, which is more than 0.3, i.e., 30%, the condition is satisfied, and an alert is created on the meter as shown below

Pump By Exception

Manage Alert History

Alert: 1 selected | Route: MID Route 1

Object	Stop	Alert	Label	Status	Score	Start Score	Type	C. Priority	Actions
JWH ZAV Gas Sales	J&W ZAV	PercentDeviationFromAvg	PDA	New	1000	1000	Manual	1000	...

Note:

- If there are no readings on the object, then the expression evaluation on that particular object fails, and the object is skipped. However, the expression is evaluated for other objects, and an alert is generated if the condition is true.
- If there are less number of readings available on an object than what the function demands, but there are no NULL values in between, then the expression evaluation proceeds with the available data and evaluates the expression. E.g., If we are using `PercentDeviationFromAvg(Volume,10)` and we have only the current Reading and 5 other readings overall, we compute the average of 5 and not 10 readings.
 - The percent Deviation function requires a minimum of 1 reading apart from the Current Reading. If that is also unavailable, the expression evaluation fails, and the object is skipped.
 - If the average of the last N readings is zero, then the expression evaluation fails, and the object is skipped.
- If multiple NULL values exist for an object attribute in an expression, the expression evaluation fails, and no alert is created for that object.

IsNull(V)



Description:

Checks whether the last available Reading on the object for Variable (V) is NULL or not and returns True/- False Value

Input: V (Decimal, Date, Picklist) , Output: True/False

Example:

Alert Requirement: Show an alert when the Last Available “Measured Volume” Reading is NULL on a meter in the selected routes

Exception Condition: The below Exception Condition shows the syntax and logic used

Add Alert Config

Configure the Exception Condition which would trigger the alert

Variables

Variable	Object Type	Data Type	Attribute	Validation Values	Response Attribute	Driving Attribute	Display Label	Action
Volume	Meter	GasMeterwPresBTU	MeasuredVolume	Specify	Yes	Yes	Measured Volume	+ Add

Exception Condition

AND

IsNull(Volume) = (Equal to) True

+ Add Condition + Add Condition Group

Given that the Last Available Reading for the JWH Flare Meter is March 30th, and the measured volume is NULL, the condition is satisfied, and an alert is created for all meters on which this condition is true.

Manage Readings | JWH FLARE METER | 09-01-2021 to 03-30-2022

Explore Objects

Team: Default | Reading View: GasMeterBTU

Route: Search...

MID Route 1

- J&W ZAV
 - JWH 1HB
 - JWH FLARE METER
 - JWH ZAV 2HB
 - JWH ZAV Gas Sales
 - J&W ZAV 1H
- ROSS 2503
- SMITH, SOL #12
 - SMITH, SOL #11
 - SMITH, SOL #12
 - SMITH, SOL #30052
- SMITH, SOL #3

Template Route

Unassigned

Date Range Filter

From Date: 09-01-2021

To Date: 03-30-2022

	ReadingDate	ReadingTime	ReadingNumber	Measured Volume	PSIG?	Measured Pressure	Production Date	Actions
<input type="checkbox"/>	2022-03-30	10:55 AM	1		●	14.5	03-29-2022	
<input type="checkbox"/>	2022-03-29	10:55 AM	1	23	●	14.5	03-28-2022	
<input type="checkbox"/>	2022-03-28	10:55 AM	1		●	14.5	03-27-2022	
<input type="checkbox"/>	2022-03-27	10:55 AM	1	7	●	14.5	03-27-2022	
<input type="checkbox"/>	2022-03-26	10:55 AM	1		●	14.5	03-25-2022	
<input type="checkbox"/>	2022-03-25	10:55 AM	1	22	●	14.5	03-25-2022	
<input type="checkbox"/>	2022-03-24	10:55 AM	1	22	●	14.5	03-24-2022	
<input type="checkbox"/>	2022-03-23	10:55 AM	1		●	14.5	03-22-2022	
<input type="checkbox"/>	2022-03-22	10:55 AM	1	14	●	14.5	03-22-2022	
<input type="checkbox"/>	2022-03-21	10:55 AM	1	15	●	14.5	03-21-2022	
<input type="checkbox"/>	2022-03-20	10:55 AM	1	18	●	14.5	03-20-2022	
<input type="checkbox"/>	2022-03-19	10:55 AM	1	15	●	14.5	03-19-2022	
<input type="checkbox"/>	2022-03-18	10:55 AM	1	15	●	14.5	03-18-2022	
<input type="checkbox"/>	2022-03-17	10:55 AM	1	21	●	14.5	03-17-2022	
<input type="checkbox"/>	2022-03-16	10:55 AM	1	7	●	14.5	03-16-2022	
<input type="checkbox"/>	2022-03-15	10:55 AM	1	16	●	14.5	03-15-2022	
<input type="checkbox"/>	2022-03-14	10:55 AM	1	7	●	14.5	03-14-2022	

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All meters with NULL Values are shown below:

Pump By Exception

Manage Alert History

Alert Configurations | Schedule Overview | Alert History

Search...

Filters

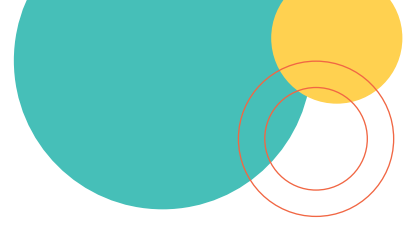
Alert: 1 selected

Route: MID Route 1

Bulk Update

	Object	Stop	Alert	Label	Status	Score	Start Score	Type	C. Priority	Actions
<input type="checkbox"/>	JWH FLARE METER	J&W ZAV	IsNull	ISN	New	1000	1000	Manual	1000	...
<input type="checkbox"/>	Ross 2503 Oil Check	ROSS 2503	IsNull	ISN	New	1000	1000	Manual	1000	...
<input type="checkbox"/>	ROSS 2503 LACT	ROSS 2503	IsNull	ISN	New	1000	1000	Manual	1000	...
<input type="checkbox"/>	SMITH, SOL-Wtr Mtr	SMITH, SOL #3	IsNull	ISN	New	1000	1000	Manual	1000	...

NDayVariance(V,N)



Description:

The Variance of values of the Variable (**V**) fetched from all the available Readings in the “**Last N Days**” using ‘population variance’ for this function.

Input: V (Decimal), N (Positive Integer >=1), Output: Decimal

Example:

Alert Requirement: Show an Alert when Variance of Casing pressure over the past 5 “**Days**” is greater than the past 10 “**Days**.”

Exception Condition: The below Exception Condition shows the syntax and logic used

Edit Alert Config

Configure the Exception Condition which would trigger the alert

Variables

Variable	Object Type	Data Type	Attribute	Validation Values	Response Attribute	Driving Attribute	Display Label	Action
V1	Well	CommonWellReading	CasingPressure	300	Yes	Yes	Casing Pressure	

Exception Condition

AND

NDayVariance(V1,5) > (Greater than) NDayVariance(V1,10)

Mathematical logic:

On the Well SMITH, SOL #3A

Assuming Current Date as March 30th. Given the last 5 Days only have 3 readings available, 30th, 28th, 26th March Readings, then only those 3 readings are used to calculate the Variance over the past 5 days, i.e., 500, 400, 350

Variance is calculated as Summation of $((X_i - \text{Mean})^2)/N$

where X_i are the readings, Mean is the Average of those readings, and N is “Number of Days”

For the given data, Mean = $(500+400+350)/3 = 416.67$,

Variance = $((500-416.67)^2 + (400-416.67)^2 + (300-416.67)^2)/3 = 3888.88$

Given the last 10 Days only have 6 readings available, then only those 6 readings are used to calculate the Variance over the past 10 days, i.e., (500,400,350,315,385,338) Variance = 3617.22

Given $3888.88 > 3617.22$, the condition is satisfied, and an alert is created for the SMITH, SOL #3A Well, as shown below

Manage Readings | SMITH, SOL #3A | 03-04-2022 to 04-04-2022

Explore Objects

Team: Default | Reading View: Daily Well Reading

Object: Search...

- ROSS 2503
- ROSS 2503 Compressor
- ROSS 2503 Gas Flare
- ROSS 2503 Gas Sales
- ROSS 2503 LACT
- Ross 2503 Oil Check
- ROSS 2503 Oil Tank 1
- ROSS 2503 Water Tank 1
- SMITH, SOL #12
- SMITH, SOL #3
- SMITH, SOL #30051
- SMITH, SOL #3A
- SMITH, SOL #3B
- SMITH, SOL #3C
- SMITH, SOL-Wtr Mtr

Template Route

Unassigned

Date Range Filter

From Date: 03-04-2022

To Date: 04-04-2022

	ReadingDate	ReadingTime	ReadingNumber	TubingPressure	Casing Pressure	Surface Casing Pressure	Actions
<input type="checkbox"/>	2022-03-30	10:55 AM	1	114	500	36	
<input type="checkbox"/>	2022-03-28	10:55 AM	1	114	400	46	
<input type="checkbox"/>	2022-03-26	10:55 AM	1	114	350	41	
<input type="checkbox"/>	2022-03-24	10:55 AM	1	114	315	49	
<input type="checkbox"/>	2022-03-22	10:55 AM	1	114	385	35	
<input type="checkbox"/>	2022-03-21	10:55 AM	1	135	338	45	
<input type="checkbox"/>	2022-03-20	10:55 AM	1	119	339	35	
<input type="checkbox"/>	2022-03-19	10:55 AM	1	140	385	47	
<input type="checkbox"/>	2022-03-18	10:55 AM	1	119	312	37	
<input type="checkbox"/>	2022-03-17	10:55 AM	1	138	340	44	
<input type="checkbox"/>	2022-03-16	10:55 AM	1	140	352	43	
<input type="checkbox"/>	2022-03-15	10:55 AM	1	122	312	43	
<input type="checkbox"/>	2022-03-14	10:55 AM	1	112	320	40	
<input type="checkbox"/>	2022-03-13	10:55 AM	1	116	324	39	
<input type="checkbox"/>	2022-03-12	10:55 AM	1	112	339	39	
<input type="checkbox"/>	2022-03-11	10:55 AM	1	113	313	44	
<input type="checkbox"/>	2022-03-10	10:55 AM	1	119	363	42	

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AG Grid

Pump By Exception

Manage Alert History

Alert: 1 selected | Route: MID Route 1

	Object	Stop	Alert	Label	Status	Score	Start Score	Type	C. Priority	C. Increment %	Created On	Actions
<input type="checkbox"/>	SMITH, SOL #3B	SMITH, SOL #3	NDayVariance 2	ND2	New	5000	5000	Manual	5000	10	03-30-2022 11:24	...
<input type="checkbox"/>	SMITH, SOL #3A	SMITH, SOL #3	NDayVariance 2	ND2	New	5000	5000	Manual	5000	10	03-30-2022 11:24	...
<input type="checkbox"/>	SMITH, SOL #3C	SMITH, SOL #3	NDayVariance 2	ND2	New	5000	5000	Manual	5000	10	03-30-2022 11:24	...

Note:

- If there are no readings on the object, then the expression evaluation on that particular object fails, and the object is skipped, but for the other objects, the expression is evaluated, and an alert is generated if the condition is true
- If there are less number of readings available on an object than what the function demands, but there are no NULL values in between, then the expression evaluation proceeds with the available data and evaluates the expression. E.g., If we are using NDayVariance(CP,10) and we have only 6 days of data, we compute the Variance of 6 Days and not 10 Days.
- If multiple NULL values exist for an object attribute in an expression, the expression evaluation fails, and no alert is created for that object.



NReadingVariance(V,N)

Description:

The Variance of values of the Variable (**V**) fetched from the “Last N Available Readings” using ‘population variance’ for this function.

Input: V (Decimal), N (Positive Integer >=1), Output: Decimal

Example:

Alert Requirement: Show an Alert when Standard Deviation over the past 3 “Readings” is Greater than 1629

Exception Condition: The below Exception Condition shows the syntax and logic used

Add Alert Config

Configure the Exception Condition which would trigger the alert

Variable	Object Type	Data Type	Attribute	Validation Values	Response Attribute	Driving Attribute	Display Label	Action
V1	Tank	TankRunTicket	NetOilVol	1600	Yes	Yes	NetOilVol	

Exception Condition

AND

NReadingVariance(V1,3) > (Greater than) # 1629

Mathematical logic:

On the tank SMITH, SOL#30051

Given 3 readings available are captured, only these 3 readings are used to calculate of Variance irrespective of the date, i.e., 153.816, 219.829, 123.053

Variance is calculated as Summation of $((X_i - \text{Mean})^2)/N$

where X_i are the readings, Mean is the Average of those readings, and N is “Number of Readings”

For the given data, Mean = $(153.816+219.829+123.053)/3 = 165.566$

Variance = $((153.816-165.566)^2 + (219.829-165.566)^2 + (123.053-165.566)^2)/3 = 1629.9636$

Given $1629.9636 > 1629$, the condition is satisfied, and an alert is created for the SMITH, SOL#30051 Well, as shown below

Manage Readings | SMITH, SOL #30051 | 03-02-2022 to 03-30-2022

Team: Default | Reading View: Oil Ticket

Route	TicketDate	TicketTime	Run Ticket Type	Net Oil Volume	Source Tank	Destination Tank	Purchaser	Actions
MID Route 1	2022-03-22	12:00 AM	Disposition	153.816			PLAINS MARKE	[Checkmark]
JEW ZAV	2022-03-22	10:55 AM	Disposition	219.829			PLAINS MARKE	[Checkmark]
ROSS 2503	2022-03-22	12:00 AM	Disposition	123.053			PLAINS MARKE	[Checkmark]
SMITH, SOL #12	2022-03-14	10:55 AM	Disposition	219.829			PLAINS MARKE	[Checkmark]
SMITH, SOL #3	2022-03-06	10:55 AM	Disposition	219.16			PLAINS MARKE	[Checkmark]

Pump By Exception + New

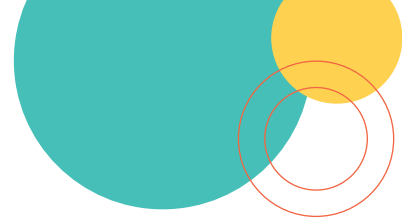
Manage Alert History | Alert Configurations | Schedule Overview | Alert History

Search: ... | Filters: ... | Alert: 1 selected | Route: MID Route 1

Object	Stop	Alert	Label	Status	Score	Start Score	Type	C. Priority	C. Increment %	Created On	Actions
SMITH, SOL #30051	SMITH, SOL #3	NReadingVariance	NRV	New	\$500	\$500	Manual	\$500	10	03-30-2022 10:10	...

Note:

- If there are no readings on the object, then the expression evaluation on that particular object fails, and the object is skipped, but for the other objects, the expression is evaluated, and an alert is generated if the condition is true
- If there are less number of readings available on an object than what the function demands, but there are no NULL values in between, then the expression evaluation proceeds with the available data and evaluates the expression. E.g., If we are using NReadingVariance(CP,10) and we have 6 readings, then we compute the Variance of 6 readings and not 10 Readings.
- If multiple NULL values exist for an object attribute in an expression, the expression evaluation fails, and no alert is created for that object.



NDayStdev(V,N)

Description:

Standard Deviation of values of the Variable (**V**) fetched from all the available Readings in the “Last N Days” using ‘population variance’ for this function.

Input: V (Decimal), N (Positive Integer ≥ 1), Output: Decimal

Example:

Alert Requirement: Show an Alert when Standard Deviation of Casing pressure over the past 3 “Days” is less than that in the past 10 “Days.”

Exception Condition: The below Exception Condition shows the syntax and logic used

Mathematical logic:

On the Well SMITH, SOL #3A

Assuming Current Date as March 30th. Given the last 5 Days only have 3 readings available, 30th, 28th, 26th March Readings, then only those 3 readings are used to calculate the standard deviation over the past 5 days, i.e., 500, 400, 350

Standard Deviation is calculated as “Square Root” of [Summation of $((X_i - \text{Mean})^2)/N$] i.e Square Root of Variance

where X_i are the readings, Mean is the Average of those readings, and N is “Number of Days”

For the given data, Mean = $(500+400+350)/3 = 416.67$,

Standard Deviation = Square Root of $[((500-416.67)^2 + (400-416.67)^2 + (300-416.67)^2)/3] = 62.36$

Given the last 10 Days only have 6 readings available, then only those 6 readings are used to calculate the standard deviation over the past 10 days, i.e., (500,400,350,315,385,338). Standard Deviation = 60.14

Given $62.36 > 60.14$, the condition is satisfied, and an alert is created for the SMITH, SOL #3A Well, as shown below

Manage Readings | SMITH, SOL #3A | 03-04-2022 to 04-04-2022

Explore Objects

Team: Default | Reading View: Daily Well Reading

Object Search...

- ROSS 2503
- ROSS 2503 Compressor
- ROSS 2503 Gas Flare
- ROSS 2503 Gas Sales
- ROSS 2503 LACT
- ROSS 2503 Oil Check
- ROSS 2503 Oil Tank 1
- ROSS 2503 Water Tank 1
- SMITH, SOL #12
- SMITH, SOL #3
- SMITH, SOL #30051
- SMITH, SOL #3A
- SMITH, SOL #3B
- SMITH, SOL #3C
- SMITH, SOL-Wtr Mtr
- Template Route
- Unassigned

Date Range Filter

From Date: 03-04-2022 | To Date: 04-04-2022

	ReadingDate	ReadingTime	ReadingNumber	TubingPressure	Casing Pressure	Surface Casing Pressure	Actions
<input type="checkbox"/>	2022-03-30	10:55 AM	1	114	500	36	
<input type="checkbox"/>	2022-03-28	10:55 AM	1	114	400	46	
<input type="checkbox"/>	2022-03-26	10:55 AM	1	114	350	41	
<input type="checkbox"/>	2022-03-24	10:55 AM	1	114	315	49	
<input type="checkbox"/>	2022-03-22	10:55 AM	1	114	385	35	
<input type="checkbox"/>	2022-03-21	10:55 AM	1	135	338	45	
<input type="checkbox"/>	2022-03-20	10:55 AM	1	119	339	35	
<input type="checkbox"/>	2022-03-19	10:55 AM	1	140	385	47	
<input type="checkbox"/>	2022-03-18	10:55 AM	1	119	312	37	
<input type="checkbox"/>	2022-03-17	10:55 AM	1	138	340	44	
<input type="checkbox"/>	2022-03-16	10:55 AM	1	140	352	43	
<input type="checkbox"/>	2022-03-15	10:55 AM	1	122	312	43	
<input type="checkbox"/>	2022-03-14	10:55 AM	1	112	320	40	
<input type="checkbox"/>	2022-03-13	10:55 AM	1	116	324	39	
<input type="checkbox"/>	2022-03-12	10:55 AM	1	112	339	39	
<input type="checkbox"/>	2022-03-11	10:55 AM	1	113	313	44	
<input type="checkbox"/>	2022-03-10	10:55 AM	1	119	363	42	

1 to 20 of 23

AG Grid

Pump By Exception

Manage Alert History

Alert Configurations | Schedule Overview | Alert History

Search... | Filters | Alert: 1 selected | Route: MID Route 1

Bulk Update

	Object	Stop	Alert	Label	Status	Score	Start Score	Type	C. Priority	C. Increment %	Created On	Actions
<input type="checkbox"/>	SMITH, SOL #3B	SMITH, SOL #3	NDayStddev2	NS2	New	6000	6000	Manual	6000	10	03-31-2022 12:03	...
<input type="checkbox"/>	SMITH, SOL #3A	SMITH, SOL #3	NDayStddev2	NS2	New	6000	6000	Manual	6000	10	03-31-2022 12:03	...
<input type="checkbox"/>	SMITH, SOL #3C	SMITH, SOL #3	NDayStddev2	NS2	New	6000	6000	Manual	6000	10	03-31-2022 12:04	...

Note:

- If there are no readings on the object, then the expression evaluation on that particular object fails, and the object is skipped, but for the other objects, the expression is evaluated, and an alert is generated if the condition is true
- If there are less number of readings available on an object than what the function demands, but there are no NULL values in between, then the expression evaluation proceeds with the available data and evaluates the expression.
- If multiple NULL values exist for an object attribute in an expression, the expression evaluation fails, and no alert is created for that object.



NReadingStdev(V,N)

Description:

The Standard Deviation of values of the Variable (**V**) fetched from the “Last N Available Readings” using ‘population variance’ for this function.

Input: V (Decimal), N (Positive Integer >=1), Output: Decimal

Example:

Alert Requirement: Show an Alert when Standard Deviation over the past 3 “Readings” is Greater than 40

Exception Condition: The below Exception Condition shows the syntax and logic used

The screenshot shows the 'Add Alert Config' window with the 'Configure Exception' tab selected. The 'Variables' table is as follows:

Variable	Object Type	Data Type	Attribute	Validation Values	Response Attribute	Driving Attribute	Display Label	Action
V1	Tank	TankRunTicket	NetOilVol	20	Yes	Yes	NetOilVol	

The 'Exception Condition' section shows a condition: `NReadingStdev(V1,3)` > (Greater than) 40.

Mathematical logic:

On the tank SMITH, SOL#30051

Given only 3 readings are available for the last day of readings are reported, then only those 3 readings will be used to calculate the Standard Deviation, i.e., 153.816, 219.829, 123.053

Standard Deviation is calculated as “Square Root” of [Summation of $((X_i - \text{Mean})^2)/N$] i.e Square Root of Variance

where X_i are the readings, Mean is the Average of those readings, and N is “Number of Readings”

For the given data, Mean = $(153.816+219.829+123.053)/3 = 165.566$

Standard Deviation = Square Root of $[((153.816-165.566)^2 + (219.829-165.566)^2 + (123.053-165.566)^2)/3] = 40.372808$

Given **40.372808 > 40**, the condition is satisfied, and an alert is created for SMITH, SOL#30051 Well, as shown below

Manage Readings | SMITH, SOL #30051 | 03-02-2022 to 03-30-2022

Explore Objects

Team: Default | Reading View: Oil Ticket

	TicketDate	TicketTime	Run Ticket Type	Net Oil Volume	Source Tank	Destination Tank	Purchaser	Actions
<input type="checkbox"/>	2022-03-22	12:00 AM	Disposition	153.816			PLAINS MARK	
<input type="checkbox"/>	2022-03-22	10:55 AM	Disposition	219.829			PLAINS MARK	
<input type="checkbox"/>	2022-03-22	12:00 AM	Disposition	123.053			PLAINS MARK	
<input type="checkbox"/>	2022-03-14	10:55 AM	Disposition	219.829			PLAINS MARK	
<input type="checkbox"/>	2022-03-06	10:55 AM	Disposition	219.16			PLAINS MARK	

Route: Search...

MID Route 1

- J&W ZAV
- ROSS 2503
- SMITH, SOL #12
- SMITH, SOL #3
- SMITH, SOL #30051
- SMITH, SOL #3A
- SMITH, SOL #3B
- SMITH, SOL #3C

Pump By Exception

Manage Alert History

Alert Configurations | Schedule Overview | Alert History

Search: ... | Filters: Alert: 1 selected | Route: MID Route 1

Bulk Update

	Object	Stop	Alert	Label	Status	Score	Start Score	Type	C. Priority	C. Increment %	Created On	Actions
<input type="checkbox"/>	SMITH, SOL #30051	SMITH, SOL #3	NReadingStdv	NRS	New	7000	7000	Manual	7000	10	03-30-2022 10:34	...

Note:

- If there are no readings on the object, then the expression evaluation on that particular object fails, and the object is skipped, but for the other objects, the expression is evaluated, and an alert is generated if the condition is true
- If there are less number of readings available on an object than what the function demands, but there are no NULL values in between, then the expression evaluation proceeds with the available data and evaluates the expression.
- If multiple NULL values exist for an object attribute in an expression, the expression evaluation fails, and no alert is created for that object.



MtdAvg(V)

Description:

Average of values of the Variable **(V)** fetched from the Month Readings

Input: V (Decimal), Output: Decimal

Example:

Alert Requirement: Show an Alert when the Average Oil Production for the **“Month”** is greater than 38

Exception Condition: The below Exception Condition shows the syntax and logic used

Add Alert Config

Configure the Exception Condition which would trigger the alert

Variables

Variable	Object Type	Data Type	Attribute	Validation Values	Response Attribute	Driving Attribute	Display Label	Action
V	Tank	DualPhaseOilWaterTank...	OilProduction	25	Yes	Yes	OilProduction	

Exception Condition

AND

MtdAvg(V) > (greater than) 38

Mathematical logic:

On the tank SMITH, SOL#30051

If there are 30 readings available for a given month, then these 30 readings will be used to calculate Month-to-Date Value i.e **Avg MTD = 38.09**

Given $38.09 > 38$, the condition is satisfied, and an alert is created for SMITH, SOL#30051 Well, as shown below

Manage Readings | SMITH SOL #30051 | 03-01-2022 to 03-31-2022

Explore Objects

Team: Default | Reading view: On-Term Reading

	ReadingDate	ReadingTime	Oil Production	ReadingNumber	Top Gauge	Water Gauge	Ending Oil	Beginning Oil	Tickets	Ending Water	Beginning Water	Actions
<input type="checkbox"/>	2022-09-30	10:55 AM	37.05	1	112.14"	010.04"	37.05	0	0	0	0	
<input type="checkbox"/>	2022-09-29	10:55 AM	31.2	1	22.14"	010.04"	60.25	37.05	0	0	0	
<input type="checkbox"/>	2022-09-28	10:55 AM	31.2	1	32.14"	010.04"	99.45	60.25	0	0	0	
<input type="checkbox"/>	2022-09-27	10:55 AM	31.2	1	42.14"	010.04"	130.65	99.45	0	0	0	
<input type="checkbox"/>	2022-09-26	10:55 AM	31.2	1	52.14"	010.04"	161.85	130.65	0	0	0	
<input type="checkbox"/>	2022-09-25	10:55 AM	31.2	1	62.14"	010.04"	193.05	161.85	0	0	0	
<input type="checkbox"/>	2022-09-24	10:55 AM	31.2	1	72.14"	010.04"	224.25	193.05	0	0	0	
<input type="checkbox"/>	2022-09-23	10:55 AM	31.2	1	82.14"	010.04"	255.45	224.25	0	0	0	
<input type="checkbox"/>	2022-09-22	10:55 AM	266.35	1	12.14"	010.04"	37.05	255.45	503.75	0	0	
<input type="checkbox"/>	2022-09-21	10:55 AM	31.2	1	22.14"	010.04"	68.25	37.05	0	0	0	
<input type="checkbox"/>	2022-09-20	10:55 AM	31.2	1	32.14"	010.04"	99.45	68.25	0	0	0	
<input type="checkbox"/>	2022-09-19	10:55 AM	31.2	1	42.14"	010.04"	130.65	99.45	0	0	0	
<input type="checkbox"/>	2022-09-18	10:55 AM	31.2	1	52.14"	010.04"	161.85	130.65	0	0	0	
<input type="checkbox"/>	2022-09-17	10:55 AM	31.2	1	62.14"	010.04"	193.05	161.85	0	0	0	
<input type="checkbox"/>	2022-09-16	10:55 AM	31.2	1	72.14"	010.04"	224.25	193.05	0	0	0	
<input type="checkbox"/>	2022-09-15	10:55 AM	31.2	1	82.14"	010.04"	255.45	224.25	0	0	0	
<input type="checkbox"/>	2022-09-14	10:55 AM	433	1	12.14"	010.04"	37.05	255.45	222.95	0	0	
<input type="checkbox"/>	2022-09-13	10:55 AM	31.2	1	22.14"	010.04"	68.25	37.05	0	0	0	
<input type="checkbox"/>	2022-09-12	10:55 AM	31.2	1	32.14"	010.04"	99.45	68.25	0	0	0	
<input type="checkbox"/>	2022-09-11	10:55 AM	31.2	1	42.14"	010.04"	130.65	99.45	0	0	0	

Date Range Filter

Pump By Exception

Manage Alert History

Alert Configurations | Schedule Overview | Alert History

Search... | Filters | Alert: 1 selected | Route: MID Route 1

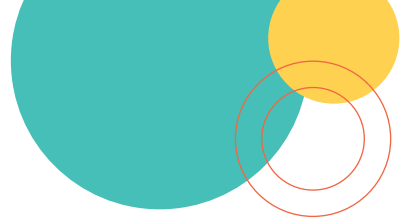
Bulk Update

	Object	Stop	Alert	Label	Status	Score	Start Score	Type	C. Priority	C. Increment %	Created On	Actions
<input type="checkbox"/>	SMITH SOL #30051	SMITH SOL #3	Month TO Date	MTD	New	2000	2000	Manual	2000	10	03-31-2022 04:30	...

Note:

- If there are no readings on the object, then the expression evaluation on that particular object fails, and the object is skipped, but for the other objects, the expression is evaluated, and an alert is generated if the condition is true
- If there are less number of readings available on an object than what the function demands, but there are no NULL values in between, then the expression evaluation proceeds with the available data and evaluates the expression.
- If multiple NULL values exist for an object attribute in an expression, the expression evaluation fails, and no alert is created for that object.

MtdSum(V)



Description:

Sum of values of the Variable (**V**) fetched from the Month Readings

Input: V (Decimal), Output: Decimal

Example:

Alert Requirement: Show an Alert when the Sum of the Oil Production for the “Month” is greater than 1140

Exception Condition: The below Exception Condition shows the syntax and logic used

Edit Alert Config

Configure the Exception Condition which would trigger the alert

Variables

Variable	Object Type	Data Type	Attribute	Validation Values	Response Attribute	Driving Attribute	Display Label	Action
V	Tank	DualPhaseOil/WaterTank...	OilProduction	37	Yes	Yes	OilProduction	

Exception Condition

AND

MtdSum(V) > (Greater than) 1140

Buttons: + Add Condition, + Add Condition Group, Validate

Mathematical logic:

On the tank SMITH, SOL#30051

Given only 30 readings are available for a month, then only those 30 readings will be taken for calculation of Month To Date Sum

Given Sum>1140 the condition is satisfied, and an alert is created for SMITH, SOL#30051 Well, as shown below

Manage Readings | SMITH SOL #30051 | 03-01-2022 to 03-31-2022

Explore Objects

Team: Default Reading view: On-Term Reading

	ReadingDate	ReadingTime	Oil Production	ReadingNumber	Top Gauge	Water Gauge	Ending Oil	Beginning Oil	Tickets	Ending Water	Beginning Water	Actions
<input type="checkbox"/>	2022-09-30	10:55 AM	37.05	1	112.14"	0.0.04"	37.05	0	0	0	0	
<input type="checkbox"/>	2022-09-29	10:55 AM	31.2	1	212.14"	0.0.04"	60.25	37.05	0	0	0	
<input type="checkbox"/>	2022-09-28	10:55 AM	31.2	1	312.14"	0.0.04"	90.45	60.25	0	0	0	
<input type="checkbox"/>	2022-09-27	10:55 AM	31.2	1	412.14"	0.0.04"	120.65	90.45	0	0	0	
<input type="checkbox"/>	2022-09-26	10:55 AM	31.2	1	512.14"	0.0.04"	161.85	120.65	0	0	0	
<input type="checkbox"/>	2022-09-25	10:55 AM	31.2	1	612.14"	0.0.04"	193.05	161.85	0	0	0	
<input type="checkbox"/>	2022-09-24	10:55 AM	31.2	1	712.14"	0.0.04"	224.25	193.05	0	0	0	
<input type="checkbox"/>	2022-09-23	10:55 AM	31.2	1	812.14"	0.0.04"	255.45	224.25	0	0	0	
<input type="checkbox"/>	2022-09-22	10:55 AM	266.35	1	112.14"	0.0.04"	37.05	255.45	503.75	0	0	
<input type="checkbox"/>	2022-09-21	10:55 AM	31.2	1	212.14"	0.0.04"	60.25	37.05	0	0	0	
<input type="checkbox"/>	2022-09-20	10:55 AM	31.2	1	312.14"	0.0.04"	90.45	60.25	0	0	0	
<input type="checkbox"/>	2022-09-19	10:55 AM	31.2	1	412.14"	0.0.04"	120.65	90.45	0	0	0	
<input type="checkbox"/>	2022-09-18	10:55 AM	31.2	1	512.14"	0.0.04"	161.85	120.65	0	0	0	
<input type="checkbox"/>	2022-09-17	10:55 AM	31.2	1	612.14"	0.0.04"	193.05	161.85	0	0	0	
<input type="checkbox"/>	2022-09-16	10:55 AM	31.2	1	712.14"	0.0.04"	224.25	193.05	0	0	0	
<input type="checkbox"/>	2022-09-15	10:55 AM	31.2	1	812.14"	0.0.04"	255.45	224.25	0	0	0	
<input type="checkbox"/>	2022-09-14	10:55 AM	433	1	112.14"	0.0.04"	37.05	255.45	222.95	0	0	
<input type="checkbox"/>	2022-09-13	10:55 AM	31.2	1	212.14"	0.0.04"	60.25	37.05	0	0	0	
<input type="checkbox"/>	2022-09-12	10:55 AM	31.2	1	312.14"	0.0.04"	90.45	60.25	0	0	0	
<input type="checkbox"/>	2022-09-11	10:55 AM	31.2	1	412.14"	0.0.04"	120.65	90.45	0	0	0	

Date Range Filter

Pump By Exception

Manage Alert History

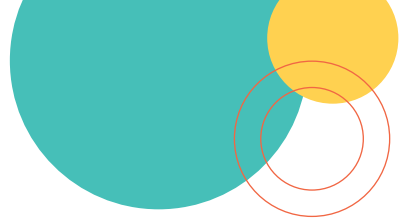
Alert: 1 selected Route: MID Route 1

	Object	Stop	Alert	Label	Status	Score	Start Score	Type	C. Priority	C. Increment %	Created On	Actions
<input type="checkbox"/>	SMITH SOL #30051	SMITH SOL #3	MTDSum	MTS	New	5500	5500	Manual	5500	10	03-31-2022 04:52	...

Note:

- If there are no readings on the object, then the expression evaluation on that particular object fails, and the object is skipped, but for the other objects, the expression is evaluated, and an alert is generated if the condition is true
- If there are less number of readings available on an object than what the function demands, but there are no NULL values in between, then the expression evaluation proceeds with the available data and evaluates the expression.
- If multiple NULL values exist for an object attribute in an expression, the expression evaluation fails, and no alert is created for that object.

WtdAvg(V)



Description:

Average of values of the Variable **(V)** fetched from the Week Readings

Input: V (Decimal), Output: Decimal

Example:

Alert Requirement: Show an Alert when the Average Oil Production for the **“Week”** is greater than 32.5

Exception Condition: The below Exception Condition shows the syntax and logic used

The screenshot shows the 'Add Alert Config' window with the following configuration:

- Configuration Steps:** Configure Alert Scope > **Configure Exception** > Configure Alert > Test Run > Configure Alert Trigger
- Variables Table:**

Variable	Object Type	Data Type	Attribute	Validation Values	Response Attribute	Driving Attribute	Display Label	Action
V	Tank	DualPhaseOilWaterTank...	OilProduction	33	Yes	Yes	OilProduction	
- Exception Condition:**
 - Logic: **WtdAvg(V)** > (Greater than) 32.5
 - Buttons: + Add Condition, + Add Condition Group, Validate

Mathematical logic:

On the tank SMITH, SOL#30051

If there are only 4 readings available for the current week (starting Monday), then only these 4 readings will be used to calculate the Week-to-Date value, i.e., **Average WTD = 33.15**

Given $33.15 > 32.5$, the condition is satisfied, and an alert is created for SMITH, SOL#30051 Well, as shown below

Manage Readings | SMITH, SOL #30051 | 03-28-2022 to 03-31-2022

Explore Objects

Team: Default | Reading View: Oil Tank Reading

	ReadingDate	ReadingTime	= Oil Production	ReadingNumber	Top Gauge	Water Gauge	Ending Oil	- 1	Actions
<input type="checkbox"/>	2022-03-30	10:55 AM	37.05	1	1'2 1/4"	0'0 0/4"	37.05	0	
<input type="checkbox"/>	2022-03-29	10:55 AM	31.2	1	2'2 1/4"	0'0 0/4"	68.25	37.05	
<input type="checkbox"/>	2022-03-28	10:55 AM	31.2	1	3'2 1/4"	0'0 0/4"	99.45	68.25	

Route: Search...

- MID Route 1
 - J&W ZAV
 - RO55 2503
 - SMITH, SOL #12
 - SMITH, SOL #3
 - SMITH, SOL #30051
 - SMITH, SOL #3A
 - SMITH, SOL #3B
 - SMITH, SOL #3C
 - SMITH, SOL-Wtr Mtr
- Template Route
- Unassigned

Pump By Exception

Manage Alert History

Alert Configurations | Schedule Overview | Alert History

Search... Filters: Alert: 1 selected | Route: MID Route 1

Bulk Update

	Object	Stop	Alert	Label	Status	Score	Start Score	Type	C. Priority	C. Increment %	Created On	Actions
<input type="checkbox"/>	SMITH, SOL #30051	SMITH, SOL #3	WTDAvg	WTA	New	3300	3300	Manual	3300	10	03-31-2022 05:16	...

Note:

- If there are no readings on the object, then the expression evaluation on that particular object fails, and the object is skipped, but for the other objects, the expression is evaluated, and an alert is generated if the condition is true
- If there are less number of readings available on an object than what the function demands, but there are no NULL values in between, then the expression evaluation proceeds with the available data and evaluates the expression.
- If multiple NULL values exist for an object attribute in an expression, the expression evaluation fails, and no alert is created for that object.

WtdSum(V)

Description:

Sum of values of the Variable (**V**) fetched from the Week Readings

Input: V (Decimal), Output: Decimal

Example:

Alert Requirement: Show an Alert when Sum of Oil Production for the “Week” is greater than 99

Exception Condition: The below Exception Condition shows the syntax and logic used

The screenshot shows the 'Edit Alert Config' window with the following configuration:

- Variables:** Variable: V, Object Type: Tank, Data Type: DualPhaseOilWaterTank..., Attribute: OilProduction, Validation Values: 98, Response Attribute: Yes, Driving Attribute: Yes, Display Label: OilProduction, Action: + Add.
- Exception Condition:** AND, WtdSum(V) > (Greater than) 99.

Mathematical logic:

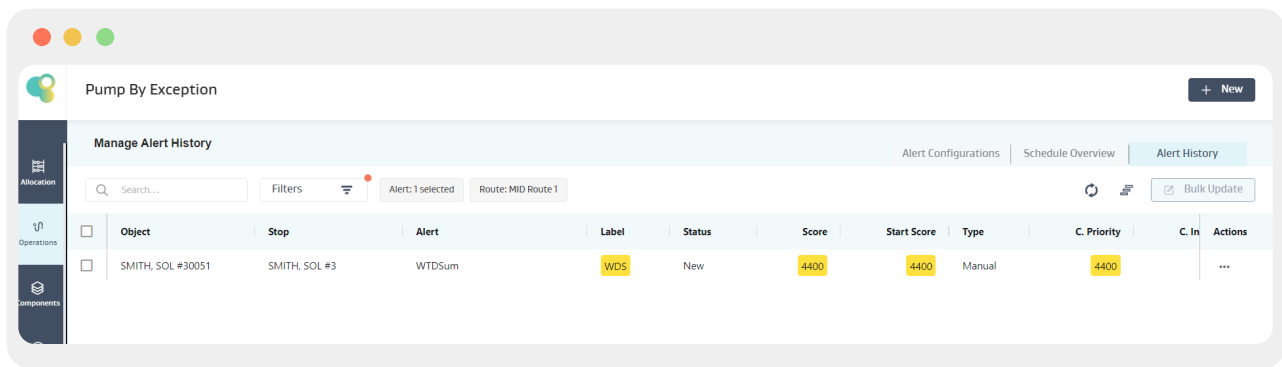
On the tank SMITH, SOL#30051

If there are only 4 readings for the current week (starting Monday), then only these 4 readings will be used to calculate the Week-to-Date value, i.e., **Sum WTD = 99.45**

Given $99.45 > 99$, the condition is satisfied, and an alert is created for SMITH, SOL#30051 Well, as shown below

The screenshot shows the 'Manage Readings' window for SMITH, SOL #30051. The table displays readings for the week of 03-28-2022 to 03-31-2022. The 'Oil Production' column is highlighted with a red circle.

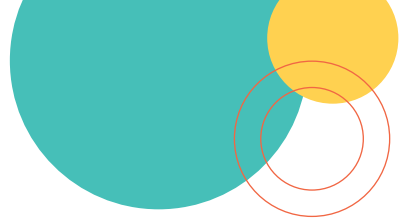
ReadingDate	ReadingTime	Oil Production	ReadingNumber	Top Gauge	Water Gauge	Ending Oil	Actions
2022-03-30	10:55 AM	37.05	1	1'2 1/4"	0'0 0/4"	37.05	0
2022-03-29	10:55 AM	31.2	1	2'2 1/4"	0'0 0/4"	68.25	37.05
2022-03-28	10:55 AM	31.2	1	2'2 1/4"	0'0 0/4"	99.45	68.25



Note:

- If there are no readings on the object, then the expression evaluation on that particular object fails, and the object is skipped, but for the other objects, the expression is evaluated, and an alert is generated if the condition is true
- If there are less number of readings available on an object than what the function demands, but there are no NULL values in between, then the expression evaluation proceeds with the available data and evaluates the expression.
- If multiple NULL values exist for an object attribute in an expression, the expression evaluation fails, and no alert is created for that object.

YtdAvg(V)



Description:

Average of values of the Variable **(V)** fetched from the Year Readings

Input: V (Decimal), Output: Decimal

Example:

Alert Requirement: Show an Alert when the Average of Oil for the “Year” is greater than 16

Exception Condition: The below Exception Condition shows the syntax and logic used

Add Alert Config

Configure the Exception Condition which would trigger the alert

Variables

Variable	Object Type	Data Type	Attribute	Validation Values	Response Attribute	Driving Attribute	Display Label	Action
V	Well	WellTest	Oil	16	Yes	Yes	Oil	

Exception Condition

AND

YtdAvg(V) > (Greater than) 16

Mathematical logic:

On the Well SMITH, SOL#3C

If there are only 3 readings available for a Year, then only these 3 readings will be used to calculate the Year-to-Date value, i.e., **Average YTD = 16.33**

Given $16.33 > 16$, the condition is satisfied, and an alert is created for SMITH, SOL#30051 Well, as shown below

Manage Readings | SMITH, SOL #3C | 01-01-2022 to 03-31-2022

Explore Objects

Team: Default | Reading View: Well Test

Route: Search...

MID Route 1

- J&W ZAV
- ROSS 2503
- SMITH, SOL #12
- SMITH, SOL #3
- SMITH, SOL #30051
- SMITH, SOL #3A
- SMITH, SOL #3B
- SMITH, SOL #3C
- SMITH, SOL-Wtr Mtr

Template Route

Unassigned

Date Range Filter

From Date: 01-01-2022

To Date: 03-31-2022

	ReadingDate	ReadingTime	ReadingNumber	Test Hours	Oil	24 Hour Oil	Gas	24 Hour Gas	Water	Actions
<input type="checkbox"/>	2022-03-30	08:50 AM	1	24 : 00	16	16	24	24	31	
<input type="checkbox"/>	2022-02-28	08:50 AM	1	24 : 00	17	17	28	28	35	
<input type="checkbox"/>	2022-01-29	08:50 AM	1	24 : 00	16	16	26	26	36	

Pump By Exception

Manage Alert History

Alert Configurations | Schedule Overview | Alert History

Search: Filters: Alert: 1 selected | Route: MID Route 1

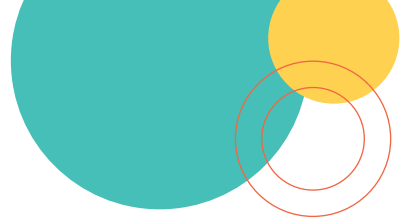
Bulk Update

	Object	Stop	Alert	Label	Status	Score	Start Score	Type	C. Priority	C. Increment %	Created On	Actions
<input type="checkbox"/>	SMITH, SOL #3C	SMITH, SOL #3	YTD Avg	YTA	New	6000	6000	Manual	6000	10	03-31-2022 06:26	...

Note:

- If there are no readings on the object, then the expression evaluation on that particular object fails, and the object is skipped, but for the other objects, the expression is evaluated, and an alert is generated if the condition is true
- If there are less number of readings available on an object than what the function demands, but there are no NULL values in between, then the expression evaluation proceeds with the available data and evaluates the expression.
- If multiple NULL values exist for an object attribute in an expression, the expression evaluation fails, and no alert is created for that object.

YtdSum(V)



Description:

Sum of values of the Variable **(V)** fetched from the Year Readings

Input: V (Decimal), Output: Decimal

Example:

Alert Requirement: Show an Alert when Sum of Oil for the **“Year”** is greater than 48.5

Exception Condition: The below Exception Condition shows the syntax and logic used

The screenshot shows the 'Add Alert Config' window with the following configuration:

- Configuration Steps:** 1. Configure Alert Scope, 2. Configure Exception, 3. Configure Alert, 4. Test Run, 5. Configure Alert Trigger.
- Variables Table:**

Variable	Object Type	Data Type	Attribute	Validation Values	Response Attribute	Driving Attribute	Display Label	Action
V	Well	WellTest	Oil	33	Yes	Yes	Oil	
- Exception Condition:** AND YtdSum(V) > (greater than) 48.5

Mathematical logic:

On the well SMITH, SOL#3C

For Year, 3 readings are available, so only those three readings will be taken for calculation of Year To Date Sum, i.e., **Sum YTD = 49**

Given $49 > 48.5$, the condition is satisfied, and an alert is created for SMITH, SOL#30051 Well, as shown below

Manage Readings | SMITH, SOL #3C | 01-01-2022 to 03-31-2022

Explore Objects

Team: Default | Reading View | Well Test

Route: Search...

Route: MID Route 1

- JOE W ZAV
- ROSS 2503
- SMITH, SOL #12
- SMITH, SOL #3
- SMITH, SOL #30051
- SMITH, SOL #3A
- SMITH, SOL #3B
- SMITH, SOL #3C
- SMITH, SOL-Wtr Mtr

Template Route

Unassigned

Date Range Filter

From Date: 01-01-2022

To Date: 03-31-2022

	ReadingDate	ReadingTime	ReadingNumber	Test Hours	Oil	24 Hour Oil	Gas	24 Hour Gas	Water	Actions
<input type="checkbox"/>	2022-03-30	08:50 AM	1	24 : 00	16	16	24	24	31	
<input type="checkbox"/>	2022-02-28	08:50 AM	1	24 : 00	17	17	28	28	35	
<input type="checkbox"/>	2022-01-29	08:50 AM	1	24 : 00	16	16	26	26	36	

Pump By Exception

Manage Alert History

Alert Configurations | Schedule Overview | Alert History

Search...

Filters

Alert: 1 selected | Route: MID Route 1

Bulk Update

	Object	Stop	Alert	Label	Status	Score	Start Score	Type	C. Priority	C. Increment %	Created On	Actions
<input type="checkbox"/>	SMITH, SOL #3C	SMITH, SOL #3	YTD Sum	YTS	New	6500	6500	Manual	6500	10	03-31-2022 06:32	...

Note:

- If there are no readings on the object, then the expression evaluation on that particular object fails, and the object is skipped, but for the other objects, the expression is evaluated, and an alert is generated if the condition is true
- If there are less number of readings available on an object than what the function demands, but there are no NULL values in between, then the expression evaluation proceeds with the available data and evaluates the expression.
- If multiple NULL values exist for an object attribute in an expression, the expression evaluation fails, and no alert is created for that object.



DayDiff(D1,D2)

Description:

Calculates the number of days between the dates D1 and D2

Input: D1 & D2 (mm-dd-yyyy), Output: Integer

Example:

Alert Requirement: Show an Alert when Date Difference between the Current Date and the Reading Date is greater than 0 i.e. Daily Compressor Reading requirement

Exception Condition: The below Exception Condition shows the syntax and logic used

Add Alert Config

Configure the Exception Condition which would trigger the alert

Variables

Variable	Object Type	Data Type	Attribute	Validation Values	Response Attribute	Driving Attribute	Display Label	Action
RD	Equipment	Compressor	ReadingDate	03-31-2022	Yes	Yes	ReadingDate	

Exception Condition

AND

DayDiff(RD,CurrentDate()) > 0

Mathematical logic:

On the Equipment, ROSS 2503 Compressor

The Last Available Reading is 3/30/2022

The Current Date is 3/31/2022

Given Current Date - Last Available Reading > 0, the condition is satisfied, and an alert is created for ROSS 2503 Compressor, as shown below.

Manage Readings | ROSS 2503 Compressor | 03-30-2022 to 03-31-2022

Explore Objects

Team: Default | Reading View | Compressor View

Route: Search...

ROSS 2503 Gas Sales
 ROSS 2503 LACT
 ROSS 2503 Oil Check
 ROSS 2503 Oil Tank 1
 ROSS 2503 Water Tank 1
 SMITH, SOL #12
 SMITH, SOL #3
 Template Route
 Buyback-Gas Lift Stop
 Combined Stop
 Deduct Meter Network
 Gas Stop 1
 Multi-tier Stop
 Oil Stop 1
 SWD - Skim Oil Stop
 Unassigned

Date Range Filter
 From Date: 03-30-2022
 To Date: 03-31-2022

	ReadingDate	ReadingTime	ReadingNumber	DownTime	Down Reason	Suction Pressure	Discharge Pressure	Suction Test	Actions
<input type="checkbox"/>	2022-03-30	10:55 AM	1	24 : 00	Engine Vibration	13	61	65	

Pump By Exception

Manage Alert History

Alert Configurations | Schedule Overview | Alert History

Search... Filters: Alert: 1 selected | Route: MID Route 1

Bulk Update

	Object	Stop	Alert	Label	Status	Score	Start Score	Type	C. Priority	C. Increment %	Created On	Actions
<input type="checkbox"/>	ROSS 2503 Compressor	ROSS 2503	DayOff	DDI	New	1000	1000	Manual	1000	10	03-31-2022 07:09	...

Note:

- If there are no readings on the object, then the expression evaluation on that particular object fails, and the object is skipped, but for the other objects, the expression is evaluated, and an alert is generated if the condition is true.

MonthDiff(D1,D2)



Description:

Calculates the number of months between the dates D1 and D2. Only Completed months are taken into account.

1 Month is Calculated on Date-to-Date basis. Eg: If Current Date is April 4th and Reading Date is March 5th, then $\text{MonthDiff}(\text{CurrentDate}() - \text{RD}) = 0$, but if the Current Date is April 5th, then $\text{MonthDiff}(\text{CurrentDate}() - \text{RD}) = 1$

Input: D1 & D2 (mm-dd-yyyy), Output: Integer

Example:

Alert Requirement: Show an Alert when Month Difference between the Current Month and the Last Available Reading Month is greater than zero for Well Test Due Requirement

The screenshot shows the 'Add Alert Config' window with the following configuration:

- Configuration Steps:** Configure Alert Scope > Configure Exception > Configure Alert > Test Run > Configure Alert Trigger (selected).
- Variables Table:**

Variable	Object Type	Data Type	Attribute	Validation Values	Response Attribute	Driving Attribute	Display Label	Action
RM	Well	WellTest	ReadingDate	03-30-2022	Yes	Yes	ReadingDate	

Exception Condition:

AND

MonthDiff(RM,CurrentDate()) > (Greater than) 0

Buttons: + Add Condition, + Add Condition Group, Validate

Mathematical logic:

On the Well for Well Test, ROSS 2503

The Last Available Reading is 2/28/2022

The Current Date is 3/31/2022

Given Current Month - Last Available Reading Month > 0, the condition is satisfied, and an alert is created for ROSS 2503, as shown below.

Manage Readings | ROSS 2503 | 02-27-2022 to 03-31-2022

Explore Objects

Team: Default | Reading View | Well Test

Route: Search...

ROSS 2503

- ROSS 2503
- ROSS 2503 Compressor
- ROSS 2503 Gas Flare
- ROSS 2503 Gas Sales
- ROSS 2503 LACT
- ROSS 2503 Oil Check
- ROSS 2503 Oil Tank 1
- ROSS 2503 Water Tank 1
- SMITH_SOL #12
- SMITH_SOL #3

Template Route

- Buyback-Gas Lift Stop
- Combined Stop
- Deduct Meter Network
- Gas Stop 1

Date Range Filter

From Date: 02-27-2022

To Date: 03-31-2022

ReadingDate	ReadingTime	ReadingNumber	Test Hours	Oil	24 Hour Oil	Gas	24 Hour Gas	Water	Actions
2022-02-28	12:00 AM	1	24:00		0		0		

1 to 1 of 1

Pump By Exception

Manage Alert History

Alert Configurations | Schedule Overview | Alert History

Search...

Filters

Alert: 1 selected | Route: MID Route 1

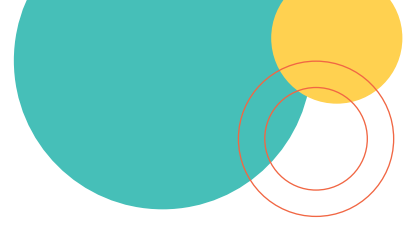
Bulk Update

Object	Stop	Alert	Label	Status	Score	Start Score	Type	C. Priority	C. In	Actions
ROSS 2503	ROSS 2503	Month Diff	MDI	New	2500	2500	Manual	2500		...

Note:

- If there are no readings on the object, then the expression evaluation on that particular object fails, and the object is skipped, but for the other objects, the expression is evaluated, and an alert is generated if the condition is true

NReadingSum(V,N)



Description:

Sum of values of the Variable (V) fetched from the “Last N Available Readings”

Input: V (Decimal), N (Positive Integer ≥ 1), Output: Decimal

Example:

Alert Requirement: Show an Alert when Sum of **NetOilVolume** for the “**Last 7 readings**” is greater than 1375

Exception Condition: The below Exception Condition shows the syntax and logic used

The screenshot shows the 'Add Alert Config' dialog box with the following configuration:

- Configuration Steps:** 1. Configure Alert Scope, 2. Configure Exception (selected), 3. Configure Alert, 4. Test Run, 5. Configure Alert Trigger.
- Variables Table:**

Variable	Object Type	Data Type	Attribute	Validation Values	Response Attribute	Driving Attribute	Display Label	Action
V1	Tank	TankRunTicket	NetOilVol	Specify	<input checked="" type="checkbox"/> Yes	<input checked="" type="checkbox"/> Yes	NetOilVol	

- Exception Condition:** AND
 NReadingSum(V1,7) > (Greater than) # 1375

Mathematical logic:

On the tank SMITH, SOL#30051

Given last 7 readings are available, so those 7 readings will be taken for calculation, i.e., (153.816, 219.829, 123.053, 219.829, 219.16, 219.829, 220.275) = 1375.791

Given $1375.791 > 1375$, the condition is satisfied, and an alert is created for SMITH, SOL#30051 Well, as shown below

Manage Readings | SMITH, SOL #30051 | 02-18-2022 to 03-31-2022

Explore Objects | Team: Default | Reading View: Oil Ticket

Route: Search...

- ROSS 2503
 - ROSS 2503
 - ROSS 2503 Compressor
 - ROSS 2503 Gas Flare
 - ROSS 2503 Gas Sales
 - ROSS 2503 LACT
 - Ross 2503 Oil Check
 - ROSS 2503 Oil Tank 1
 - ROSS 2503 Water Tank 1
- SMITH, SOL #12
- SMITH, SOL #3
- SMITH, SOL #30051
- SMITH, SOL #3A

Date Range Filter

From Date: 02-18-2022 | To Date: 03-31-2022

	TicketDate	TicketTime	Run Ticket Type	Net Oil Volume	Source Tank	Destination Tank	Actions
<input type="checkbox"/>	2022-03-22	12:00 AM	Disposition	153.816			
<input type="checkbox"/>	2022-03-22	10:55 AM	Disposition	219.829			
<input type="checkbox"/>	2022-03-22	12:00 AM	Disposition	123.053			
<input type="checkbox"/>	2022-03-14	10:55 AM	Disposition	219.829			
<input type="checkbox"/>	2022-03-06	10:55 AM	Disposition	219.16			
<input type="checkbox"/>	2022-02-26	10:55 AM	Disposition	219.829			
<input type="checkbox"/>	2022-02-18	10:55 AM	Disposition	220.275			

Pump By Exception | + New

Manage Alert History | Alert Configurations | Schedule Overview | Alert History

Search... | Filters | Alert: 1 selected | Route: MID Route 1 | Bulk Update

	Object	Stop	Alert	Label	Status	Score	Start Score	Type	C. Priority	C. In	Actions
<input type="checkbox"/>	SMITH, SOL #30051	SMITH, SOL #3	NReadingSum	NRS	New	3300	3300	Manual	3300		...

Note:

- If there are no readings on the object, then the expression evaluation on that particular object fails, and the object is skipped, but for the other objects, the expression is evaluated, and an alert is generated if the condition is true
- If there are less number of readings available on an object than what the function demands, but there are no NULL values in between, then the expression evaluation proceeds with the available data and evaluates the expression. E.g., If we are using NDayAvg(CP,10) and we have only 6 days of data, we compute the Average of 6 Days and not 10 Days.
- If multiple NULL values exist for an object attribute in an expression, the expression evaluation fails, and no alert is created for that object.



NDaySum(V,N)

Description:

The Sum of values of the Variable (V) fetched from all the available readings in the “Last N Days”

Input: V (Decimal), N (Positive Integer ≥ 1), Output: Decimal

Example:

Alert Requirement: Show an Alert when the Sum of **NetOilVolume** for the “**Last 10 Days**” is not equal to the Sum of **NetOilVolume** for the “**Last 10 readings**”

Exception Condition: The below Exception Condition shows the syntax and logic used

Mathematical logic:

On the tank SMITH, SOL#30051

Assuming Current Date as 30th March

Given the last 7 readings are available, only those 7 readings will be taken for calculation of NReadingSum, i.e., (153.816, 219.829, 123.053, 219.829, 219.16, 219.829, 220.275) = 1375.791

Also, there are 3 readings on the same day in the last 10 Days available readings which will be used for NDaySum, i.e., (153.816, 219.829, 123.053) = 496.698

Given 496.698 is Not Equal to 1375.791, the condition is satisfied, and an alert is created for SMITH, SOL#30051 Well, as shown below

Manage Readings | SMITH, SOL #30051 | 02-18-2022 to 03-31-2022

Explore Objects | Team: Default | Reading View: Oil Ticket

Route: Search...

- ROSS 2503
 - ROSS 2503
 - ROSS 2503 Compressor
 - ROSS 2503 Gas Flare
 - ROSS 2503 Gas Sales
 - ROSS 2503 LACT
 - Ross 2503 Oil Check
 - ROSS 2503 Oil Tank 1
 - ROSS 2503 Water Tank 1
- SMITH, SOL #12
- SMITH, SOL #3
- SMITH, SOL #30051
- SMITH, SOL #3A

Date Range Filter

From Date: 02-18-2022 | To Date: 03-31-2022

	TicketDate	TicketTime	Run Ticket Type	Net Oil Volume	Source Tank	Destination Tank	Actions
<input type="checkbox"/>	2022-03-22	12:00 AM	Disposition	153.816			
<input type="checkbox"/>	2022-03-22	10:55 AM	Disposition	219.829			
<input type="checkbox"/>	2022-03-22	12:00 AM	Disposition	123.053			
<input type="checkbox"/>	2022-03-14	10:55 AM	Disposition	219.829			
<input type="checkbox"/>	2022-03-06	10:55 AM	Disposition	219.16			
<input type="checkbox"/>	2022-02-26	10:55 AM	Disposition	219.829			
<input type="checkbox"/>	2022-02-18	10:55 AM	Disposition	220.275			

Pump By Exception | + New

Manage Alert History | Alert Configurations | Schedule Overview | Alert History

Search... | Filters | Alert: 1 selected | Route: MID Route 1 | Bulk Update

	Object	Stop	Alert	Label	Status	Score	Start Score	Type	C. Priority	C. In	Actions
<input type="checkbox"/>	SMITH, SOL #30051	SMITH, SOL #3	NDAYSUM	NDS	New	330	330	Manual	330		...

Note:

- If there are no readings on the object, then the expression evaluation on that particular object fails, and the object is skipped, but for the other objects, the expression is evaluated, and an alert is generated if the condition is true
- If there are less number of readings available on an object than what the function demands, but there are no NULL values in between, then the expression evaluation proceeds with the available data and evaluates the expression.
- If multiple NULL values exist for an object attribute in an expression, the expression evaluation fails, and no alert is created for that object.



IsStatic(V,N)

Description:

Helps to create an Alert when the values of the Variable (**V**) fetched from all the available Readings in the “Last N Days” are the Same or Carry Forwarded

Input: V (Decimal, Integer, Picklist, Boolean), N (Positive Integer >=1), Output: True/False

Example:

Alert Requirement: Show an Alert when Tubing pressure over the past 3 “Days” is same

Exception Condition: The below Exception Condition shows the syntax and logic used

Mathematical logic:

On the Well SMITH, SOL #3A

Given Tubing Pressure for the last 3 days is 114

Given 114 is static to True, the condition is satisfied, and an alert is created for SMITH, SOL #3A Well, as shown below

Manage Readings | **SMITH, SOL #3A** | 03-28-2022 to 03-31-2022

Explore Objects | Team: Default | Reading View: Daily Well Reading

	ReadingDate	ReadingTime	ReadingNumber	TubingPressure	Casing Pressure	Surface Casing Pressure	Flow Line	Actions
<input type="checkbox"/>	2022-03-30	10:55 AM	1	114	500	36		
<input type="checkbox"/>	2022-03-29	12:00 AM	1	114	400	46	0	
<input type="checkbox"/>	2022-03-28	10:55 AM	1	114	400	46		

Date Range Filter
From Date: 03-28-2022

Pump By Exception | **Manage Alert History** | Alert Configurations | Schedule Overview | Alert History

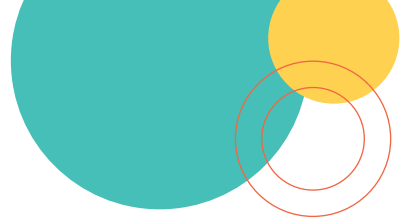
Search: ... | Filters: ... | Alert: 1 selected | Route: MID Route 1

	Object	Stop	Alert	Label	Status	Score	Start Score	Type	C. Priority	C. In	Actions
<input type="checkbox"/>	SMITH, SOL #3A	SMITH, SOL #3	IsStatic	ISC	New	-4000	4000	Manual	4000		...

Note:

- If there are no readings on the object, then the expression evaluation on that particular object fails, and the object is skipped, but for the other objects, the expression is evaluated, and an alert is generated if the condition is true
- If there are less number of readings available on an object than what the function demands, but there are no NULL values in between, then the expression evaluation proceeds with the available data and evaluates the expression.
- If multiple NULL values exist for an object attribute in an expression, the expression evaluation fails, and no alert is created for that object.

NReadingSumExCurr(V,X)



Description:

The Sum of the Variable (**V**) values fetched from the “Last N Readings” (**N**) excluding the Current Reading

Input: V (Decimal), N (Positive Integer ≥ 1), Output: Decimal

Example:

Alert Requirement: Show an Alert when the Sum of **Oil Production** for the “**Last 7 readings**” excluding **Current Reading** is greater than 410

Exception Condition: The below Exception Condition shows the syntax and logic used

Add Alert Config

Configure the Exception Condition which would trigger the alert

Variables

Variable	Object Type	Data Type	Attribute	Validation Values	Response Attribute	Driving Attribute	Display Label	Action
V	Tank	DualPhaseOil/WaterTank...	OilProduction	152	Yes	Yes	OilProduction	

Exception Condition

AND

NReadingSumExCurr(V,7) > (Greater than) # 151

+ Add Condition + Add Condition Group

Validate

Mathematical logic:

On the tank Oil Tank 101

The last 7 readings are available, so those 7 readings will be taken for calculation, i.e., (8.9 , 13.7, 14.11, 13.7, 14.11, 13.7, 73.22 = 151.44)

Given $151.44 > 151$, the condition is satisfied, and an alert is created for Oil Tank 101 Tank, as shown below

Manage Readings | Oil Tank 101 | 03-23-2022 to 04-04-2022

Explore Objects

Team: Default Reading View: Oil Tank Reading

Route: Search...

MID Route 1
Template Route

- Buyback-Gas Lift Stop
- Combined Stop
- Deduct Meter Network
- Gas Stop 1
- Multi-tier Stop
- Oil Stop 1
 - Oil Tank 101
 - Oil Tank 102
 - Well 101

Date Range Filter

From Date: 03-23-2022 To Date: 04-04-2022

	ReadingDate	ReadingTime	Oil Production	ReadingNumber	Top Gauge	Water Gauge	Actions
<input type="checkbox"/>	2022-04-04	12:00 AM	19.92	1	4'9 0/4"	0'0 0/4"	
<input type="checkbox"/>	2022-03-30	10:55 AM	8.9	1	3'9 0/4"	0'0 0/4"	
<input type="checkbox"/>	2022-03-29	10:55 AM	13.7	1	4'5 1/4"	0'0 0/4"	
<input type="checkbox"/>	2022-03-28	10:55 AM	14.11	1	5'1 3/4"	0'0 0/4"	
<input type="checkbox"/>	2022-03-26	10:55 AM	13.7	1	6'6 1/4"	0'0 0/4"	
<input type="checkbox"/>	2022-03-25	10:55 AM	14.11	1	7'2 3/4"	0'0 0/4"	
<input type="checkbox"/>	2022-03-24	10:55 AM	13.7	1	7'11 0/4"	0'0 0/4"	
<input type="checkbox"/>	2022-03-23	10:55 AM	73.22	1	2'6 3/4"	0'0 0/4"	

1 to 8 of 8

Page 1 of 1

Add Alert Config

Configure Alert Scope > Configure Exception > Configure Alert > Test Run > Configure Alert Trigger

Save & Exit Save & Run

Initiate Test Run

Search...

Object Name	Stop	Start Score
Oil Tank 101	Oil Stop 1	4500
Oil Tank 102	Oil Stop 1	4500

Pump By Exception

Manage Alert History

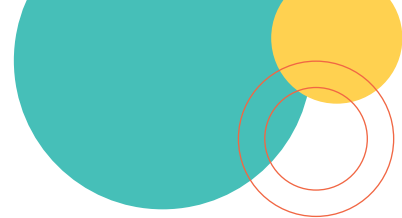
Alert Configurations Schedule Overview Alert History

Search... Filters Alert: 1 selected Route: Template Route Bulk Update

	Object	Stop	Alert	Label	Status	Score	Start Score	Type	C. Priority	C. In	Actions
<input type="checkbox"/>	Oil Tank 101	Oil Stop 1	NReadingSumExcurr2	NE2	New	4500	4500	Manual	4500		...
<input type="checkbox"/>	Oil Tank 102	Oil Stop 1	NReadingSumExcurr2	NE2	New	4500	4500	Manual	4500		...

Note:

- If there are no readings on the object, then the expression evaluation on that particular object fails, and the object is skipped, but for the other objects, the expression is evaluated, and an alert is generated if the condition is true
- If there are less number of readings available on an object than what the function demands, but there are no NULL values in between, then the expression evaluation proceeds with the available data and evaluates the expression.
- If multiple NULL values exist for an object attribute in an expression, the expression evaluation fails, and no alert is created for that object.



NDaySumExCurr(V,X)

Description:

The Sum of values of the Variable (**V**) fetched from all the available readings in the “Last N Days” (**N**) excludes the Current Day Reading.

Input: V (Decimal), N (Positive Integer ≥ 1), Output: Decimal

Example:

Alert Requirement: Show an Alert when the Sum of **NetOilVolume** for the “**Last 10 days**” excluding the current date is not equal to the Sum of **NetOilVolume** for the “**Last 10 readings**” excluding the current reading

Exception Condition: The below Exception Condition shows the syntax and logic used

The screenshot shows the 'Add Alert Config' window with the 'Configure Exception' step selected. The 'Variables' table lists the variable 'V1' of type 'Tank' with attribute 'NetOilVol' and a validation value of '330'. The 'Exception Condition' section shows a logic rule: 'NDaySum(V1,10) * (Not Equal to) NReadingSum(V1,10)'. The interface includes navigation tabs, a sidebar with icons for Allocation, Operations, Components, Access, and Analytics, and buttons for 'Save & Exit', 'Save & Run', 'Validate', and 'Add Condition'.

Variable	Object Type	Data Type	Attribute	Validation Values	Response Attribute	Driving Attribute	Display Label	Action
V1	Tank	TankRunTicket	NetOilVol	330	Yes	Yes	NetOilVol	

Exception Condition: $NDaySum(V1,10) \neq NReadingSum(V1,10)$

Mathematical logic:

On the tank SMITH, SOL#30051

Assuming Current Date as 1st April

The last 10 readings are available, so only those 10 readings will be taken for calculation of NReadingSumExCurr, i.e., (153.816, 219.829, 123.053, 219.829, 219.16, 219.829, 220.275, 219.606, 219.606, 220.275) = 2035.278

For NDaySumExCurr, there are 3 readings in the last 10 Days available readings, i.e., (153.816, 219.829, 123.053) = 496.698

Given 496.698 is Not Equal to 1375.791, the condition is satisfied, and an alert is created for SMITH, SOL#30051 Well, as shown below

Manage Readings | SMITH, SOL #30051 | 01-25-2022 to 04-01-2022

Explore Objects

Team: Default Reading View: Oil Ticket

Route: Search...

ROSS 2503

- ROSS 2503
- ROSS 2503 Compressor
- ROSS 2503 Gas Flare
- ROSS 2503 Gas Sales
- ROSS 2503 LACT
- Ross 2503 Oil Check
- ROSS 2503 Oil Tank 1
- ROSS 2503 Water Tank 1

SMITH, SOL #12

SMITH, SOL #3

Date Range Filter

From Date: 01-25-2022 To Date: 04-01-2022

	TicketDate	TicketTime	Run Ticket Type	Net Oil Volume	Source Tank	Destination Tank	Actions
<input type="checkbox"/>	2022-04-01	12:00 AM	Disposition	61.526			
<input type="checkbox"/>	2022-03-22	12:00 AM	Disposition	153.816			
<input type="checkbox"/>	2022-03-22	10:55 AM	Disposition	219.829			
<input type="checkbox"/>	2022-03-22	12:00 AM	Disposition	123.053			
<input type="checkbox"/>	2022-03-14	10:55 AM	Disposition	219.829			
<input type="checkbox"/>	2022-03-06	10:55 AM	Disposition	219.16			
<input type="checkbox"/>	2022-02-26	10:55 AM	Disposition	219.829			
<input type="checkbox"/>	2022-02-18	10:55 AM	Disposition	220.275			
<input type="checkbox"/>	2022-02-10	10:55 AM	Disposition	219.606			
<input type="checkbox"/>	2022-02-02	10:55 AM	Disposition	219.606			
<input type="checkbox"/>	2022-01-25	10:55 AM	Disposition	220.275			

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Pump By Exception

Manage Alert History

Alert Configurations | Schedule Overview | Alert History

Search... Filters Alert: 1 selected Route: MID Route 1

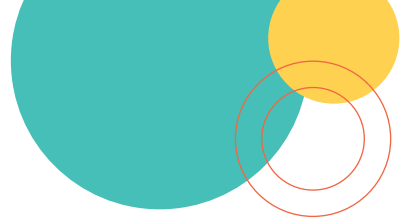
Bulk Update

	Object	Stop	Alert	Label	Status	Score	Start Score	Type	C. Priority	C. In	Actions
<input type="checkbox"/>	SMITH, SOL #30051	SMITH, SOL #3	NDaySumExCurr	NDE	New	3100	3100	Manual	3100		...

Note:

- If there are no readings on the object, then the expression evaluation on that particular object fails, and the object is skipped, but for the other objects, the expression is evaluated, and an alert is generated if the condition is true
- If there are less number of readings available on an object than what the function demands, but there are no NULL values in between, then the expression evaluation proceeds with the available data and evaluates the expression.
- If multiple NULL values exist for an object attribute in an expression, the expression evaluation fails, and no alert is created for that object.

NReadingAvgExCurr(V,X)



Description:

The Average of values of the Variable (**V**) fetched from the Last N Readings (**N**) excluding the Current Reading

Input: V (Decimal), N (Positive Integer ≥ 1), Output: Decimal

Example:

Alert Requirement: Show an Alert when the Average of **Oil Production** for the “**Last 7 readings**” excluding the **Current Reading** is greater than 21

Exception Condition: The below Exception Condition shows the syntax and logic used

Mathematical logic:

On the tank Oil Stop 1

The last 7 readings are available, so only those 7 readings will be taken for calculation, i.e., **(8.9 , 13.7, 14.11, 13.7, 14.11, 13.7, 73.22 = 21.634)**

Given $21.634 > 21$, the condition is satisfied, and an alert is created for Oil Stop 1 Tank, as shown below

Manage Readings | Oil Tank 101 | 03-23-2022 to 04-04-2022

Team: Default | Reading View: Oil Tank Reading

Route: Search...

MID Route 1
Template Route
Buyback-Gas Lift Stop
Combined Stop
Deduct Meter Network
Gas Stop 1
Multi-tier Stop
Oil Stop 1
Oil Tank 101
Oil Tank 102
Well 101

Date Range Filter
From Date: 03-23-2022
To Date: 04-04-2022

	ReadingDate	ReadingTime	Oil Production	ReadingNumber	Top Gauge	Water Gauge	Actions
<input type="checkbox"/>	2022-04-04	12:00 AM	19.92	1	4'9 0/4"	0'0 0/4"	
<input type="checkbox"/>	2022-03-30	10:55 AM	8.9	1	3'9 0/4"	0'0 0/4"	
<input type="checkbox"/>	2022-03-29	10:55 AM	13.7	1	4'5 1/4"	0'0 0/4"	
<input type="checkbox"/>	2022-03-28	10:55 AM	14.11	1	5'1 3/4"	0'0 0/4"	
<input type="checkbox"/>	2022-03-26	10:55 AM	13.7	1	6'6 1/4"	0'0 0/4"	
<input type="checkbox"/>	2022-03-25	10:55 AM	14.11	1	7'2 3/4"	0'0 0/4"	
<input type="checkbox"/>	2022-03-24	10:55 AM	13.7	1	7'11 0/4"	0'0 0/4"	
<input type="checkbox"/>	2022-03-23	10:55 AM	73.22	1	2'6 3/4"	0'0 0/4"	

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Pump By Exception | Manage Alert History

Alert Configurations | Schedule Overview | Alert History

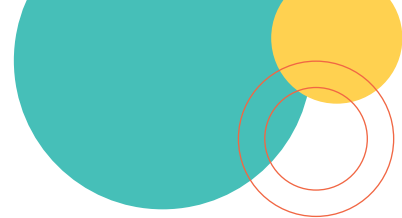
Search... | Filters | Alert: 1 selected | Route: Template Route

Bulk Update

	Object	Stop	Alert	Label	Status	Score	Start Score	Type	C. Priority	C. In	Actions
<input type="checkbox"/>	Oil Tank 101	Oil Stop 1	NreadingAvgExcurr2	NAE	New	2500	2500	Manual	2500		...
<input type="checkbox"/>	Oil Tank 102	Oil Stop 1	NreadingAvgExcurr2	NAE	New	2500	2500	Manual	2500		...

Note:

- If there are no readings on the object, then the expression evaluation on that particular object fails, and the object is skipped, but for the other objects, the expression is evaluated, and an alert is generated if the condition is true
- If there are less number of readings available on an object than what the function demands, but there are no NULL values in between, then the expression evaluation proceeds with the available data and evaluates the expression.
- If multiple NULL values exist for an object attribute in an expression, the expression evaluation fails, and no alert is created for that object.



NDayAvgExCurr(V,X)

Description:

The average of values of the Variable (V) fetched from all the available readings in the “Last N Days” (N) excluding the Current Day Reading.

Input: V (Decimal), N (Positive Integer ≥ 1), Output: Decimal

Example:

Alert Requirement: Show an Alert when the Average of **NetOilVolume** for the “**Last 10 days**” excluding the current date is not equal to the Average of **NetOilVolume** for the “**Last 10 readings**” excluding the current reading

Exception Condition: The below Exception Condition shows the syntax and logic used

The screenshot shows the 'Add Alert Config' window with the following configuration:

- Configuration Steps:** 1. Configure Alert Scope, 2. Configure Exception (selected), 3. Configure Alert, 4. Test Run, 5. Configure Alert Trigger.
- Variables Table:**

Variable	Object Type	Data Type	Attribute	Validation Values	Response Attribute	Driving Attribute	Display Label	Action
V	Tank	TankRunTicket	NetOilVol	10	Yes	Yes	NetOilVol	
- Exception Condition:** AND [NDayAvgExCurr(V,10)] ≠ (Not Equal to) [NReadingAvgExCurr(V,10)]

Mathematical logic:

On the tank SMITH, SOL#30051

Assuming Current Date as 1st April

The last 10 readings are available, so those 10 readings will be taken for calculation of NReadingAvgExCurr, i.e., (153.816, 219.829, 123.053, 219.829, 219.16, 219.829, 220.275, 219.606, 219.606, 220.275) = **203.5278**

For NDayAvgExCurr, there are 3 readings in the last 10 Days available readings, i.e., (153.816, 219.829, 123.053) = **165.566**

Given **203.5278** is Not Equal to **165.566**, the condition is satisfied, and an alert is created for SMITH, SOL#30051 Well, as shown below

Manage Readings | SMITH, SOL #30051 | 01-25-2022 to 04-01-2022

Explore Objects

Team: Default | Reading View: Oil Ticket

Route: Search...

ROSS 2503

- ROSS 2503
- ROSS 2503 Compressor
- ROSS 2503 Gas Flare
- ROSS 2503 Gas Sales
- ROSS 2503 LACT
- Ross 2503 Oil Check
- ROSS 2503 Oil Tank 1
- ROSS 2503 Water Tank 1

SMITH, SOL #12

SMITH, SOL #3

Date Range Filter

From Date: 01-25-2022

To Date: 04-01-2022

	TicketDate	TicketTime	Run Ticket Type	Net Oil Volume	Source Tank	Destination Tank	Actions
<input type="checkbox"/>	2022-04-01	12:00 AM	Disposition	61.526			
<input type="checkbox"/>	2022-03-22	12:00 AM	Disposition	153.816			
<input type="checkbox"/>	2022-03-22	10:55 AM	Disposition	219.829			
<input type="checkbox"/>	2022-03-22	12:00 AM	Disposition	123.053			
<input type="checkbox"/>	2022-03-14	10:55 AM	Disposition	219.829			
<input type="checkbox"/>	2022-03-06	10:55 AM	Disposition	219.16			
<input type="checkbox"/>	2022-02-26	10:55 AM	Disposition	219.829			
<input type="checkbox"/>	2022-02-18	10:55 AM	Disposition	220.275			
<input type="checkbox"/>	2022-02-10	10:55 AM	Disposition	219.606			
<input type="checkbox"/>	2022-02-02	10:55 AM	Disposition	219.606			
<input type="checkbox"/>	2022-01-25	10:55 AM	Disposition	220.275			

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Pump By Exception

Manage Alert History

Alert Configurations | Schedule Overview | Alert History

Search...

Filters

Alert: 1 selected | Route: MID Route 1

Bulk Update

	Object	Stop	Alert	Label	Status	Score	Start Score	Type	C. Priority	C. In	Actions
<input type="checkbox"/>	SMITH, SOL #30051	SMITH, SOL #3	NDayAvgExCurr	NEC	New	5000	5000	Manual	5000		...

Note:

- If there are no readings on the object, then the expression evaluation on that particular object fails, and the object is skipped, but for the other objects, the expression is evaluated, and an alert is generated if the condition is true
- If there are less number of readings available on an object than what the function demands, but there are no NULL values in between, then the expression evaluation proceeds with the available data and evaluates the expression.
- If multiple NULL values exist for an object attribute in an expression, the expression evaluation fails, and no alert is created for that object.

CurrentDate(), Day(D1), Month (D1)

Description:

Current Date function uses the Current Date in expression evaluation

Day(D1) returns the Date in integer format

Month(D1) returns the Month in integer format

Example:

Alert Requirement: Show an Alert for “LACT Meter Reading Rule” when the Open Reading is not NULL and the Day is Greater than 15 and also the last available “Reading Date” Month is same as Current Date month

Exception Condition: The below Exception Condition shows the syntax and logic used

The screenshot shows the 'Add Alert Config' window. It contains a table with the following data:

Variable	Object Type	Data Type	Attribute	Validation Values	Response Attribute	Driving Attribute	Display Label	Action
RD	Meter	LACTMeterReading	ReadingDate	04-04-2022	Yes	Yes	ReadingDate	
V	Meter	LACTMeterReading	OpenReading	10	No	No		

Below the table is the 'Exception Condition' section. It contains a logical expression:

AND OR
IsNull(V) = (Equal to) ✓ False
AND OR
Day(RD) > (Greater than) 15
AND
Month(CurrentDate()) = (Equal to) Month(RD)

Buttons: + Add Condition, + Add Condition Group, Validate

Mathematical logic:

On the Meter ROSS 2503 LACT

Assuming Current Date as March 30th

Given the Open Reading is not NULL

Given that the Reading Date is greater than 15

Given that the Current Date and Reading Date month is same

Given RD ie 03/16/2022 > 15 , the condition is satisfied, and an is created as shown below

Allocation

Operations

Components

Access

Account

Pump By Exception

+ New

Manage Alert History

Alert Configurations | Schedule Overview | Alert History

Search...

Filters

Alert: 1 selected

Route: MID Route 1

Bulk Update

	Object	Stop	Alert	Label	Status	Score	Start Score	Type	C. Priority	Actions
<input type="checkbox"/>	ROSS 2503 LACT	ROSS 2503	Current Date	CD	New	4000	4000	Manual	4000	...

JOYN Oil & Gas Production | User Manual for APBE Functions

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AddDays(D1,d)



Description:

Adds “d” No. of Days to the Date (D1)

Input: D1 (Date), d (Positive Integer ≥ 1), Output: Decimal

Note: Nested Functions can also be used which are of appropriate data-type

Example:

Alert Requirement: Show a Tank Visit Alert when 7 Days has passed since the Last Reading Date

Exception Condition: The below Exception Condition shows the syntax and logic used

Edit Alert Config

Configure the Exception Condition which would trigger the alert

Variables

Variable	Object Type	Data Type	Attribute	Validation Values	Response Attribute	Driving Attribute	Display Label	Action
D1	Tank	SinglePhaseWaterTankR...	ReadingDate	04-04-2022	Yes	Yes	ReadingDate	

Exception Condition

AND

AddDays(D1,7) >= CurrentDate()

Mathematical logic:

On the tank ROSS 2503 Water Tank 1

The last available reading is 03/28/2022 , **3/28/2022 + 7 Days** is 4/4/2022

Also the Current Date is 4/4/2022

Given **4/4/2022** is equal to 4/4/2022 , the condition is satisfied, and an alert for the ROSS 2503 Water Tank 1 Tank is created, as shown below.

Manage Readings | ROSS 2503 Water Tank | 03-04-2022 to 04-04-2022

Explore Objects

Team: Default | Reading View: Water Tank

Route: Search...

MID Route 1

- JEW ZAV
- ROSS 2503
 - ROSS 2503 Compressor
 - ROSS 2503 Gas Flare
 - ROSS 2503 Gas Sales
 - ROSS 2503 LACT
 - ROSS 2503 Oil Check
 - ROSS 2503 Oil Tank 1
- SMITH, SOL #12
- SMITH, SOL #3

Date Range Filter

From Date: 03-04-2022

To Date: 04-04-2022

	ReadingDate	ReadingTime	ReadingNumber	Water Gauge	Ending Water	-Beginning Water	Actions
<input type="checkbox"/>	2022-03-28	10:55 AM	1	4'11 0/4"	153.4	150.8	
<input type="checkbox"/>	2022-03-27	10:55 AM	1	4'10 0/4"	150.8	148.2	
<input type="checkbox"/>	2022-03-26	10:55 AM	1	4'9 0/4"	148.2	145.6	
<input type="checkbox"/>	2022-03-25	10:55 AM	1	4'8 0/4"	145.6	143	
<input type="checkbox"/>	2022-03-24	10:55 AM	1	4'7 0/4"	143	140.4	
<input type="checkbox"/>	2022-03-23	10:55 AM	1	4'6 0/4"	140.4	137.8	
<input type="checkbox"/>	2022-03-22	10:55 AM	1	4'5 0/4"	137.8	135.2	
<input type="checkbox"/>	2022-03-21	10:55 AM	1	4'4 0/4"	135.2	132.6	
<input type="checkbox"/>	2022-03-20	10:55 AM	1	4'3 0/4"	132.6	130	
<input type="checkbox"/>	2022-03-19	10:55 AM	1	4'2 0/4"	130	127.4	
<input type="checkbox"/>	2022-03-18	10:55 AM	1	4'1 0/4"	127.4	124.8	
<input type="checkbox"/>	2022-03-17	10:55 AM	1	4'0 0/4"	124.8	122.2	
<input type="checkbox"/>	2022-03-16	10:55 AM	1	3'11 0/4"	122.2	119.6	

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Pump By Exception

Manage Alert History

Alert Configurations | Schedule Overview | Alert History

Search... Filters Alert: 1 selected Route: MID Route 1

Bulk Update

	Object	Stop	Alert	Label	Status	Score	Start Score	Type	C. Priority	C. In	Actions
<input type="checkbox"/>	ROSS 2503 Water Tank 1	ROSS 2503	Well Visit	WV1	New	3000	3000	Manual	3000		...

AddMonths(D1,m)



Description:

Adds “m” No. of Months to the Date (D1)

Input: D1 (Date), m (Positive Integer ≥ 1), Output: Decimal

Note: Nested Functions can also be used which are of appropriate data-type

Example:

Alert Requirement: Show an Alert when the 1 month or more has passed since Last Available Reading Date

Exception Condition: The below Exception Condition shows the syntax and logic used

Edit Alert Config

Configure the Exception Condition which would trigger the alert

Variables

Variable	Object Type	Data Type	Attribute	Validation Values	Response Attribute	Driving Attribute	Display Label	Action
D1	Tank	DualPhaseOil/WaterTank...	ReadingDate	04-04-2022	Yes	Yes	ReadingDate	

Exception Condition

AND

AddMonths(D1,1) >= (Greater than or Equal to) CurrentDate()

Mathematical logic:

On the tank ROSS 2503 Oil Tank 1

The last available reading is **3/3/2022 + 1 Month** is 4/3/2022

Assuming the Current Date is 4/3/2022

Given the condition is satisfied, an alert for the ROSS 2503 Oil Tank 1 Tank is created, as shown below.

AddYears(D1,y)



Description:

Add “y” No. of years (y) to the Reading Date (D1)

Input: D1 (Date, y (Positive Integer >=1), Output: Decimal

Note: Nested Functions can also be used which are of appropriate data-type

Example:

Alert Requirement: Show an Alert when more than 1 year has passed since the Last Available Reading Date

Exception Condition: The below Exception Condition shows the syntax and logic used

Edit Alert Config

Configure the Exception Condition which would trigger the alert

Variables

Variable	Object Type	Data Type	Attribute	Validation Values	Response Attribute	Driving Attribute	Display Label	Action
D1	Well	CommonWellReading	ReadingDate	04-04-2022	Yes	Yes	ReadingDate	

Exception Condition

AND

AddYears(D1,1) >= (Greater than or Equal to) CurrentDate()

+ Add Condition + Add Condition Group

Validate

Mathematical logic:

On the tank ROSS 2503 Well

The last available reading is **4/1/2021 + 1 Year** is 4/1/2022

Assuming the Current Date is 4/1/2022

Given the condition is satisfied, an alert for the ROSS 2503 Well is created, as shown below.



Min(V1,V2,V3..)

Description:

Minimum value of the Variables (**V1,V2,V3**) is calculated from the Last Reading on the object

Input: V1,V2,V3 (Decimal), Output: Decimal

Example:

Alert Requirement: Show an Alert when the Minimum value for Casing pressure or Tubing Pressure is less than 50

Exception Condition: The below Exception Condition shows the syntax and logic used

Add Alert Config

Configure the Exception Condition which would trigger the alert

Variables

Variable	Object Type	Data Type	Attribute	Validation Values	Response Attribute	Driving Attribute	Display Label	Action
V1	Well	CommonWellReading	TubingPressure	51	<input checked="" type="radio"/> Yes	<input checked="" type="radio"/> Yes	TubingPressure	
V2	Well	CommonWellReading	CasingPressure	400	<input type="radio"/> No	<input type="radio"/> No	-	

Exception Condition

AND

Min(V1,V2,) < (Less than) 50

+ Add Condition + Add Condition Group

Validate

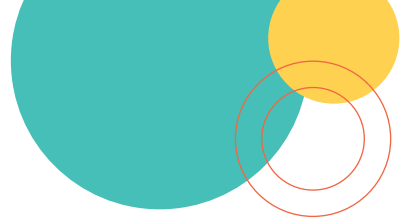
Mathematical logic:

On the Well SMITH, SOL #3A

Given the Tubing Pressure and Casing Pressure is respectively 49, 500

Given $49 < 50$, the condition is satisfied, and an alert for SMITH, SOL #3A Well is created as shown below

Max(V1,V2,V3..)



Description:

Maximum value of the Variable **(V1,V2,V3)** is calculated from the Last Reading on the Object

Input: V1,V2,V3 (Decimal), Output: Decimal

Example:

Alert Requirement: Show an Alert when the Maximum value for Casing pressure or Tubing Pressure is greater than 999

Exception Condition: The below Exception Condition shows the syntax and logic used

Add Alert Config

Configure the Exception Condition which would trigger the alert

Variables

Variable	Object Type	Data Type	Attribute	Validation Values	Response Attribute	Driving Attribute	Display Label	Action
V1	Well	CommonWellReading	TubingPressure	300	<input checked="" type="radio"/> Yes	<input checked="" type="radio"/> Yes	TubingPressure	
V2	Well	CommonWellReading	CasingPressure	100	<input type="radio"/> No	<input type="radio"/> No	-	

Exception Condition

AND

Max(V1,V2.) > (Greater than) 999

Buttons: + Add Condition, Add Condition Group, Validate

Mathematical logic:

On the Well SMITH, SOL #3B

Given the Tubing Pressure and Casing Pressure is respectively 500,1000

Given $1000 > 999$, the condition is satisfied, and an alert for SMITH, SOL #3B Well is created as shown below

Manage Readings | SMITH, SOL #3B | 04-04-2022 to 04-04-2022

Explore Objects | Team: Default | Reading View: Daily Well Reading

Route:

- ROSS 2503 LACT
- ROSS 2503 Oil Check
- ROSS 2503 Oil Tank 1
- ROSS 2503 Water Tank 1
- SMITH, SOL #12
- SMITH, SOL #3
 - SMITH, SOL #30051
 - SMITH, SOL #3A
 - SMITH, SOL #3B**
 - SMITH, SOL #3C
 - SMITH, SOL-Wtr Mtr
- Template Route
- Unassigned

Date Range Filter

From Date: 04-04-2022 | To Date: 04-04-2022

	ReadingDate	ReadingTime	ReadingNumber	TubingPressure	Casing Pressure	Surface Casing Pressure	Flow Line	Actions
<input type="checkbox"/>	2022-04-04	12:00 AM	1	500	1000	46	0	

AG Grid

Pump By Exception + New

Manage Alert History | Alert Configurations | Schedule Overview | **Alert History**

| Filters | Alert: 1 selected | Route: MID Route 1

	Object	Stop	Alert	Label	Status	Score	Start Score	Type	C. Priority	C. In	Actions
<input type="checkbox"/>	SMITH, SOL #3B	SMITH, SOL #3	Max	Max	New	1000	1000	Manual	1000		...



Power(V,P)

Description:

The value of the Variable (**V**) is calculated using number raised to a power.

Input: V= Base (Integer, Decimal), P = Power (Integer, Decimal), Where V is a positive decimal greater than zero, Output: Decimal

Example:

Alert Requirement: Show an Alert when the Tubing Pressure raise to 2 is less than 250

Exception Condition: The below Exception Condition shows the syntax and logic used

The screenshot shows the 'Add Alert Config' dialog box with the 'Configure Exception' tab selected. The dialog has a sidebar with icons for Allocation, Operations, Components, Access, Analytics, and Talk to us. The main area has a breadcrumb trail: 'Configure Alert Scope' > 'Configure Exception' > 'Configure Alert' > 'Test Run' > 'Configure Alert Trigger'. Below the breadcrumb is a 'Save & Exit' button and a 'Save & Run' button. The main content area is titled 'Configure the Exception Condition which would trigger the alert'. It contains a 'Variables' table and an 'Exception Condition' section.

Variable	Object Type	Data Type	Attribute	Validation Values	Response Attribute	Driving Attribute	Display Label	Action
V	Well	CommonWellReading	TubingPressure	2500	Yes	Yes	TubingPressure	

Exception Condition

AND

Power(V,2) < (Less than) # 2500

+ Add Condition + Add Condition Group

Validate

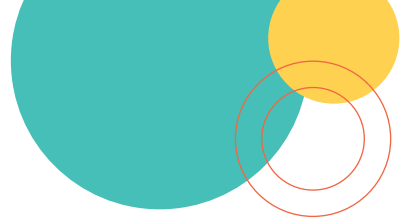
Mathematical logic:

On the Well SMITH, SOL #3A

Given the Tubing Pressure is 49

And 49 power 2 = 2401

Given 2401 < 2500, the condition is satisfied, and an alert for SMITH, SOL #3A Well is created as shown below



Description:

Returns the Absolute Value (positive value) of the variable **(V)**

Input: V (Decimal) , Output: Decimal

Example:

Alert Requirement: Generate an alert if the Absolute value of Percentage Deviation of Gas “Measured Volume” is greater than 9%

Exception Condition: The below Exception Condition shows the syntax and logic used

Variable	Object Type	Data Type	Attribute	Validation Values	Response Attribute	Driving Attribute	Display Label	Action
V	Meter	GasMeterwPresBTU	MeasuredVolume	300	Yes	Yes	Measured Volume	

Exception Condition

AND

Abs(PercentDeviationFromAvg (V,7)) > (Greater than) # 0.09

+ Add Condition + Add Condition Group

Mathematical logic:

On Test Gas Sales Meter

Current Reading: 90

Last 7 readings average: $(100+100+100+100+100+100+100)/7 = 100$

Given $(\text{Current Reading} - \text{Average of 7 Readings}) / \text{Average of 7 Readings} = (90-100)/100 = -0.1$, and Absolute Value of -0.1 is 0.1 which is greater than 0.09, the condition is satisfied, and an alert is created on the meter as shown below

Manage Readings | Test Gas Sales | 03-04-2022 to 04-04-2022

Team: Default | Reading View: GasOdometerBTU

Route: Search...

MID Route 1

- J&W ZAV
 - JWH 1HB
 - JWH ZAV 2HB
 - J&W ZAV Gas Sales
 - J&W ZAV 1H
 - Test Gas Sales
- ROSS 2503
- SMITH, SOL #12
- SMITH, SOL #3
- Template Route
- Unassigned

Date Range Filter

From Date: 03-04-2022

To Date: 04-04-2022

	ReadingDate	ReadingTime	Measured Volume	ReadingNumber	Close Odometer	Open Odometer	PSIG?	Actions
<input type="checkbox"/>	2022-04-04	12:00 AM	90	130	890	800	●	
<input type="checkbox"/>	2022-04-03	12:00 AM	100	129	800	700	●	
<input type="checkbox"/>	2022-04-02	12:00 AM	100	128	700	600	●	
<input type="checkbox"/>	2022-04-01	12:00 AM	100	127	600	500	●	
<input type="checkbox"/>	2022-03-31	12:00 AM	100	126	500	400	●	
<input type="checkbox"/>	2022-03-30	12:00 AM	100	125	400	300	●	
<input type="checkbox"/>	2022-03-29	12:00 AM	100	124	300	200	●	
<input type="checkbox"/>	2022-03-28	12:00 AM	100	123	200	100	●	

Pump By Exception + New

Manage Alert History

Alert Configurations | Schedule Overview | Alert History

Search... Filters Alert: 1 selected Route: MID Route 1 Bulk Update

	Object	Stop	Alert	Label	Status	Score	Start Score	Type	C. Priority	C. In	Actions
<input type="checkbox"/>	Test Gas Sales	J&W ZAV	Absolute	Abs	New	1000	1000	Manual	1000		...



For more information about Seven Lakes Technologies and their true SaaS solution visit joyn.ai

