narrative**wave**

Case Study:
Detecting Well/Production Anomalies Sooner

It is no secret that the oil industry is evolving.

Oil and gas operators feel this more than anyone. The future of operations will look different than operations of decades past.

Oil and gas engineers have **more wells to stay on top of than time**. There is simply **more to do than they can accomplish daily.**

Their daily routine often involves logging into **multiple systems** to analyze data and investigate well performance, and engineers **lack the time to manually analyze** an ever-accumulating pile of operational data.

The results are a **lack of insight** into what is occurring in their operation on a well by well basis.

After partnering with NarrativeWave, this operator now has an **automated list of top issues across their fields and wells**, and can streamline and strategize accordingly.

Meet the Oil and Gas Operator

This U.S. based Oil and Gas operator has wells in multiple basins including the Permian and Eagle Ford and has been drilling for over two decades. They are dedicated to becoming a more green operation by 2026. When evaluating their operational efficiency and green-strategy, they realized the first step was mitigating the problem of decreasing workforce and increasing operational demands. They needed a way to get eyes and ears on every well, every day.

The Plan

Proactively detect production anomalies

The client needed a way to detect well issues sooner. By working with NarrativeWave to integrate their existing simple asset data into the NarrativeWave platform, they were quickly able to identify big issues.

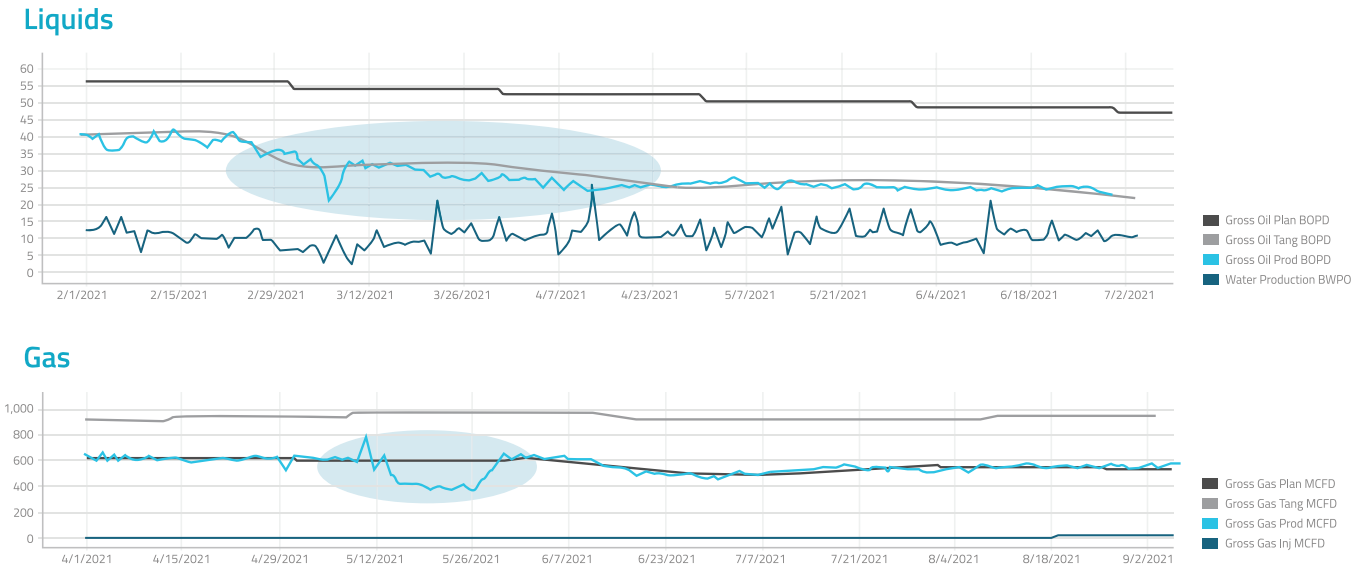
This client saw that their actual production was below planned production for TWO consecutive months -Yikes! This is an issue when you have too many wells, and too few engineers to watch them. It also illustrates an issue this operation would have never been aware of, had their data not been organized into an intuitive process.

The loss from this one well equated to over $50k in loss production over a **TWO month period.**

With the daily production data finally easy-to-see, interpret, and act upon, the operator saw a need to create workflows and automate this work – allowing their strategic thinkers to spend more time doing just that.

This was easily done in NarrativeWave's solution.

Well Performance Deviations and Pressure Anomalies



1. NarrativeWave could have detected low production as early as mid-March.
2. Value: -5 BPD loss since March, Total approx. $50k

Solution:

In order to detect production issues sooner, the following workflows were set up:

- Communicate production anomalies (planned vs. actual)
- Order well test when needed for confirmatiion
- Communicate with field techs
- Automate Well Maintenance - Specifically where/when needed

Goal: Value gains across Process, Operations, Productivity, & Production

Proposed Before:	Proposed After:
Well performance should be reviewed more often	Eyes and ears on all wells - every day - with curated feedback
Repeated, time consuming manual processes	Engineers are more efficient (Automation = more with less)
Manual workflow by each team member	Automated events and decisions using Trees
Limited analytics capabilities	Advanced analytics and ML to optimize wells and workflow
Challenging process to define most critical events	Attention log - What needs my attention first?

NarrativeWave implemented production and well analytic workflows for this O&G operator, seeing positive production results within three months. By beginning with the simple problem statement of detecting under production using data that is already being collected, the client was able to get up and running, increasing efficiency and production, within six weeks.

The result is a better run operation, on all accounts. They are now able to quickly detect anomalies in production that affect their bottom line, giving operations early warning and allowing them to take corrective action and investigate the root cause.

This has increased longevity of their assets, internal safety, and mitigated field visits. It has also meant more oil produced and in a more environmentally friendly way.

Manual Before Process:

1. Abnormalities detected for ex:

a. "Under production", "Not optimized"

2. Manual process, takes time

3. Rinse & repeat every time

4. Limited analysis and analytics

- Outside vendor is responsible for finding problems
- Internal time/adjustments are lengthy
- Reputational risk

Automated Aftermath:

1. Detect anomaly in prior day -

a. Was oil production off its normal level?

2. Detecting a well that's down from baseline

a. Note 30 barrels is more important 5 barrels

3. Check - was there downtime?

a. If no downtime - check well test

4. Well test - bad well test, fat fingered number

a. Look at well test - look for consistency

5. If inconsistent, Action -> request new well test

a. If well test look ok

b. Look at gas in, gas out

c. Deviation could be indication of why oil deviated

6. If there is low production

7. (If no anomalies found above) -> Get a new well test - to confirm

8. (If data gives reasonable explanation of losses) -> Reach out to confirm status or resolve status for that well

Results

Analytics now run every day to look for stated anomalies, providing concise list of issues for the engineers to investigate in the morning.

1. Catch well/production issues sooner
2. Better tracking of injection rate changes and results to optimize production
3. Engineers focus on what matters
4. Reduce number of trips to the field

NarrativeWave Active Applications:

- Well performance & surface measurement deviations
- Choke changes - tracking production increase/decrease, GOR, GLR changes
- Well test QC analytics - deviate from previous test or last allocation, test vs. meter
- Operating parameter deviations
- Flowline plugging
- Maintenance schedule for plungers using trip counter

Eyes on every well

- Find production deviations automatically
- Catch losses sooner to improve output

Save Time

- Save time so that engineers and tech can focus on what matters.
- Faster to find and take care of issues
- Assign Events to users
- Typical savings is 75% faster with our system

Optimize

- Well production / Gas injection
- Engineering Processes
- Data Usage
- Plunger arrivals