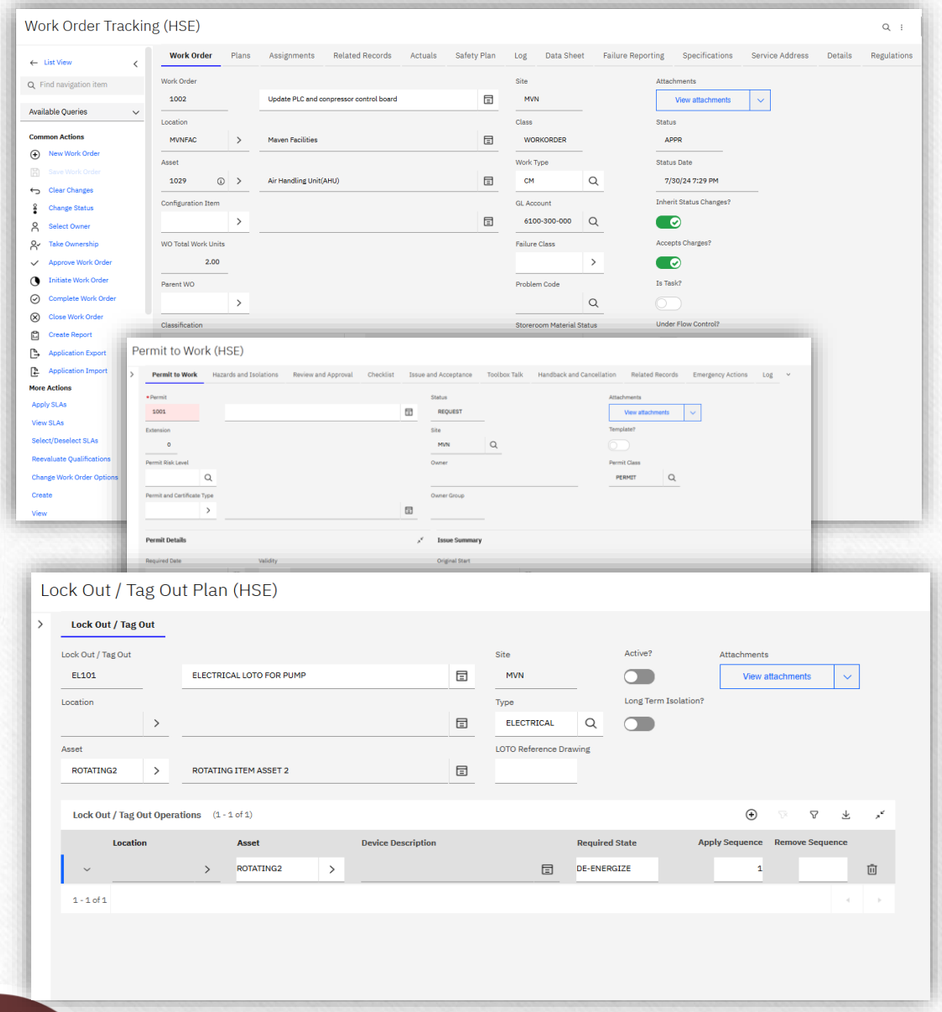


From Work Order to Safe Closeout: Making Compliance a Byproduct of Execution

Work Order → Permit → LOTO → Evidence → Closeout

A practical examination of IBM Maximo HSE integration for safe work execution in petrochemical operations.

Let's Start With Two Quick Questions

Question 1

Who here has seen a permit signed, but the actual controls weren't in place when the work started?

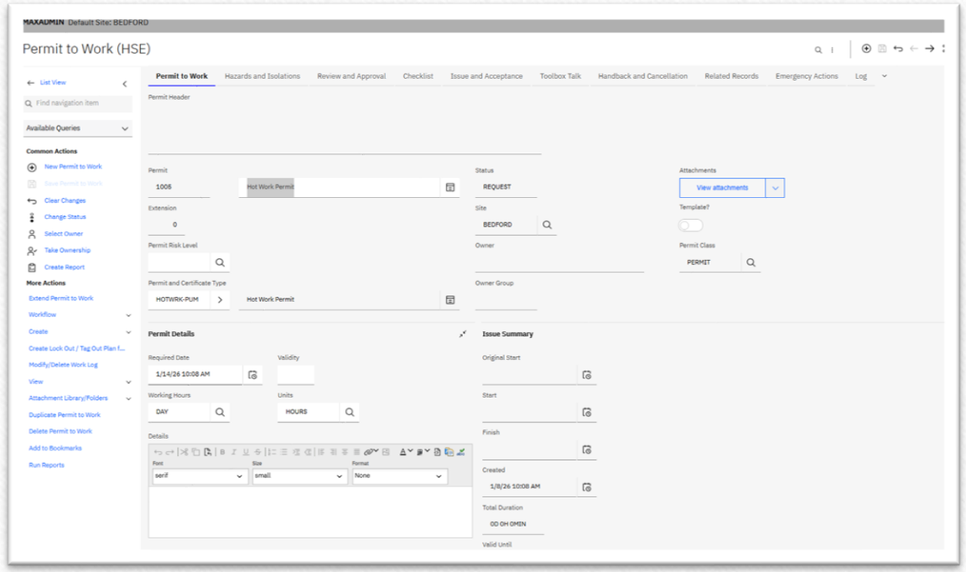
Show of hands

Question 2

Who has lost hours—or days—during an audit trying to chase down evidence for a job that happened months ago?

Show of hands

These aren't unique problems. They're systemic gaps that put our people at risk and create operational friction. Today, we'll walk through how Maximo HSE changes that dynamic.



The Petrochemical Problem: Safety as an Afterthought

Three Critical Gaps

These patterns emerge across shifts, sites, and contractors—creating unnecessary risk.

Safety Controls Bolted On Late

Hazard analysis happens after planning is complete. Permits become paperwork exercises rather than risk management tools.

Controls Vary By Shift

Day shift follows one protocol, night shift another. Contractor procedures don't match internal standards. Inconsistency breeds near-misses.

Evidence is Scattered

Gas test results in a notebook, photos on a phone, permit copy in a filing cabinet. Audits become archaeological expeditions.

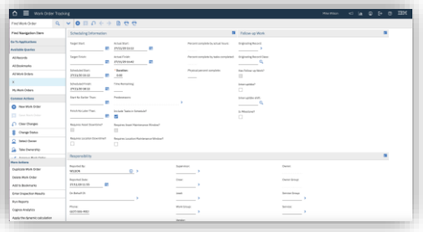
The End-to-End Thread: One Work Order, One Record

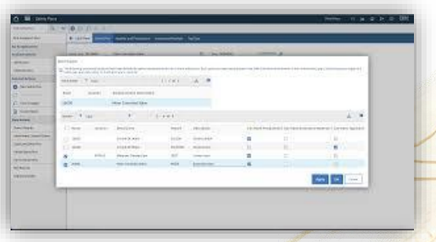
Every control, sign-off, and piece of evidence is anchored to a single work order thread. Compliance becomes a natural byproduct of execution—not a separate documentation burden.

IBM Maximo
Application Suite

The End to End Thread

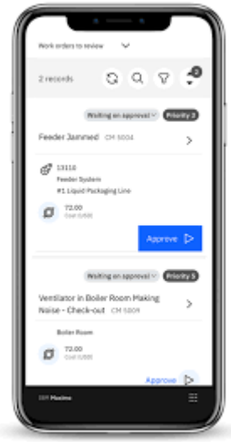
One Work Order, One Record



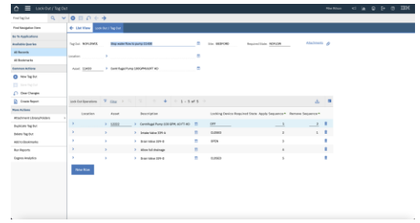


Work Order
Maximo Manage

Safety Plan
Maximo HSE

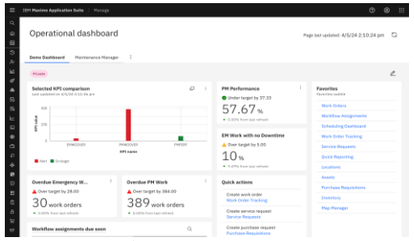


Permit to Work
Maximo HSE



LOTO/Isolation
Maximo HSE

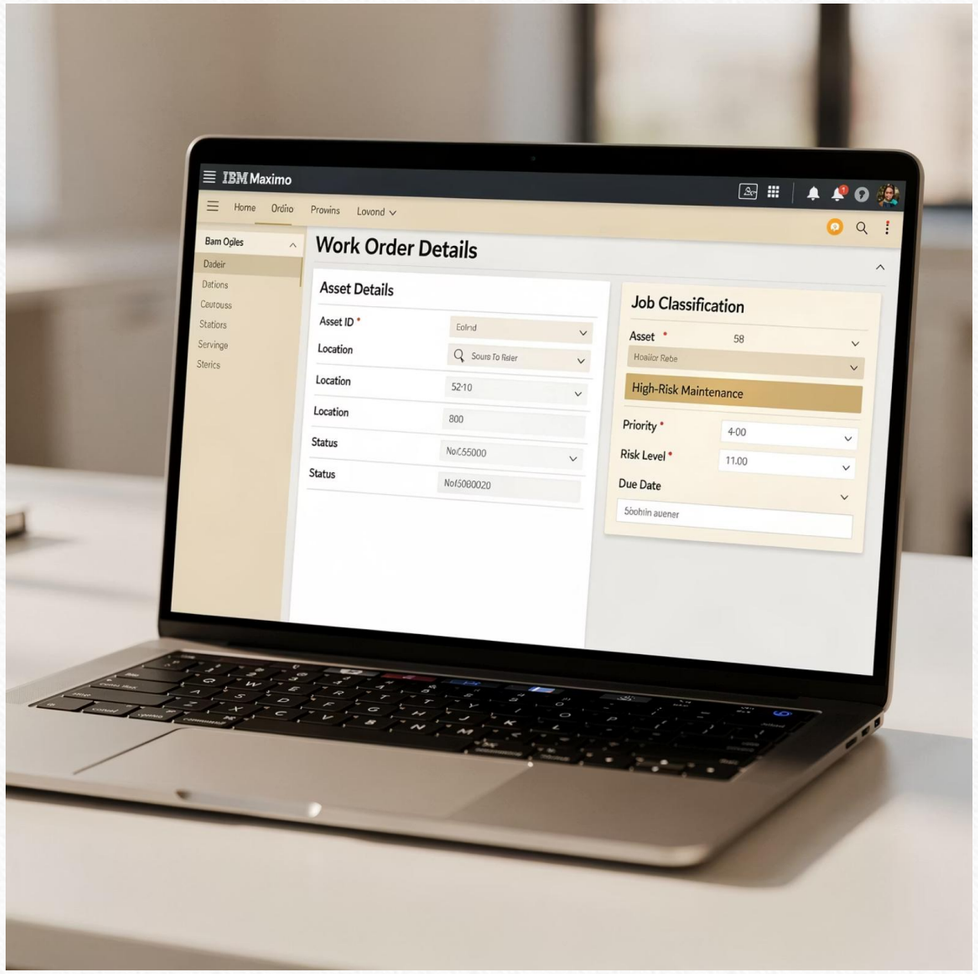
Execute & Evidence
Maximo Mobile



Closeout
Maximo HSE

SOUTHWEST MAXIMO USERS GROUP
SWMUG

Step 1: Work Order Created With Risk Context



Use Case: Leaking Pump Seal in Hydrocarbon Unit

A maintenance request identifies a leaking pump seal in a hydrocarbon processing unit. The work order is created in Maximo Manage with full asset and location context.

Risk Identified Early

Job type flagged as high-risk: hot work + hydrocarbon exposure

Standard Data Structure

Asset history, previous incidents, and procedures automatically linked

Audit Trail Starts Here

Every subsequent action timestamps and ties back to this single record

Step 2: Safety Plan and Risk Assessment Applied

Template-Driven Risk Management

Before work planning is finalized, Maximo HSE applies a safety plan template based on job type and asset class. This isn't a checkbox exercise—it's structured hazard identification with required precautions.

Identified Hazards

- Flammable hydrocarbon vapor release
- Hot work ignition source
- Confined space entry potential
- Pressure release during isolation

Required Precautions

- Continuous gas monitoring (LEL < 10%)
- Hot work permit with fire watch
- Full isolation with LOTO plan
- Procedure review and competency verification

Required Attachments

- Job Safety Analysis (JSA) for pump seal replacement
- Safety Data Sheet (SDS) for hydrocarbon exposure
- Standard operating procedure reference

Key benefit: Repeatability. The same pump seal job next quarter triggers the same safety plan. No shift-to-shift variation.

Step 3: Permit to Work Tied to the Work Order

No Floating Paper

The permit to work isn't a separate form in a filing cabinet. It's a Maximo HSE record directly linked to the work order, with every field populated from the safety plan.

01

Permit Initiated

Generated from safety plan data—hazards, precautions, and isolation requirements pre-populated

02

Gas Testing Required

LEL monitoring documented: initial test before isolation, verification before hot work, continuous monitoring during execution

03

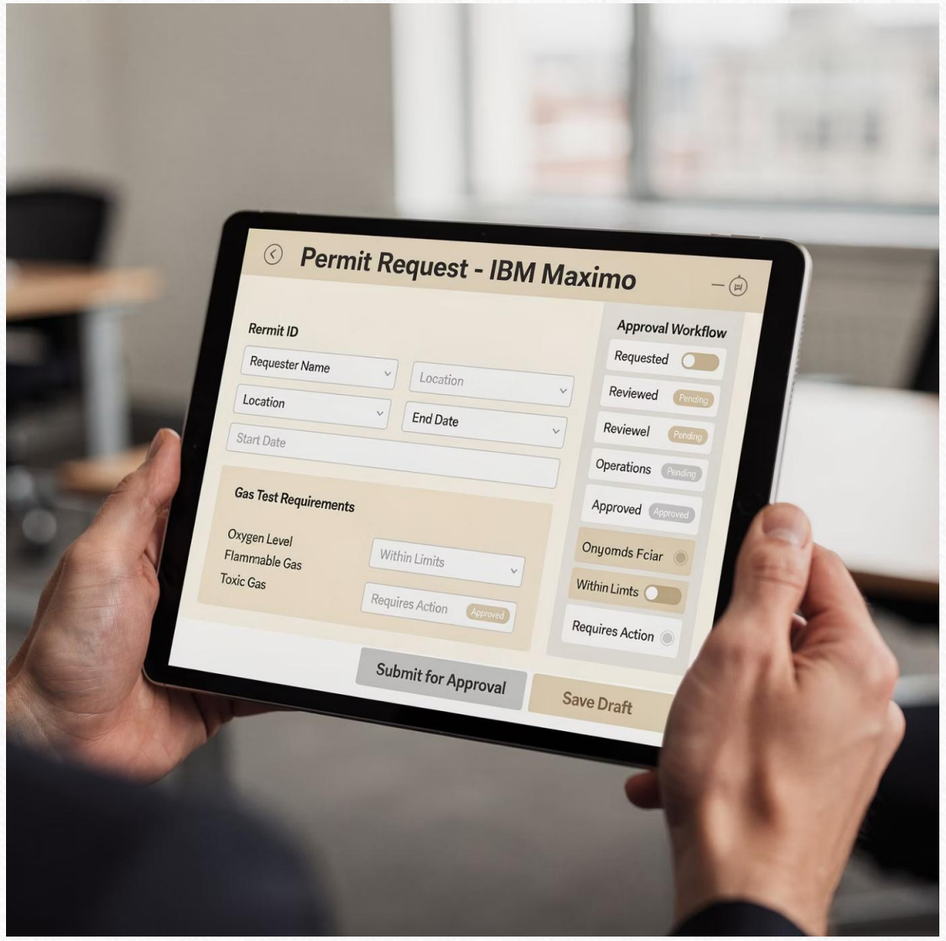
Multi-Level Sign-Offs

Issuing authority, accepting authority, area operator—all timestamped and captured in system

04

Permit Anchored to WO History

Ten years from now, an auditor can pull this work order and see the exact permit, who signed it, and when



Step 4: Isolation and LOTO Plan Created From Permit

Reusable, Auditable Isolation Plans

Maximo HSE generates a lock out/tag out plan directly from the permit requirements. For this pump seal replacement, the system references the asset's isolation template—verified energy sources, isolation points, and verification steps.

Isolation Steps

1. Close upstream block valve V-1234
2. Close downstream block valve V-1235
3. Drain line through drain valve V-1236
4. Verify zero pressure at gauge PI-789
5. Install blind flanges at isolation points

Tag Assignments

Each isolation point assigned a unique LOTO tag number. Tags tracked in system with who applied them, when, and photo evidence of placement.

Verification Requirements

Before hot work begins independent verification by operations that all isolations are in place and tested. Signature captured in Mobile.

Reusability matters: This LOTO plan becomes the template for future work on this pump. Tribal knowledge converted to institutional memory.

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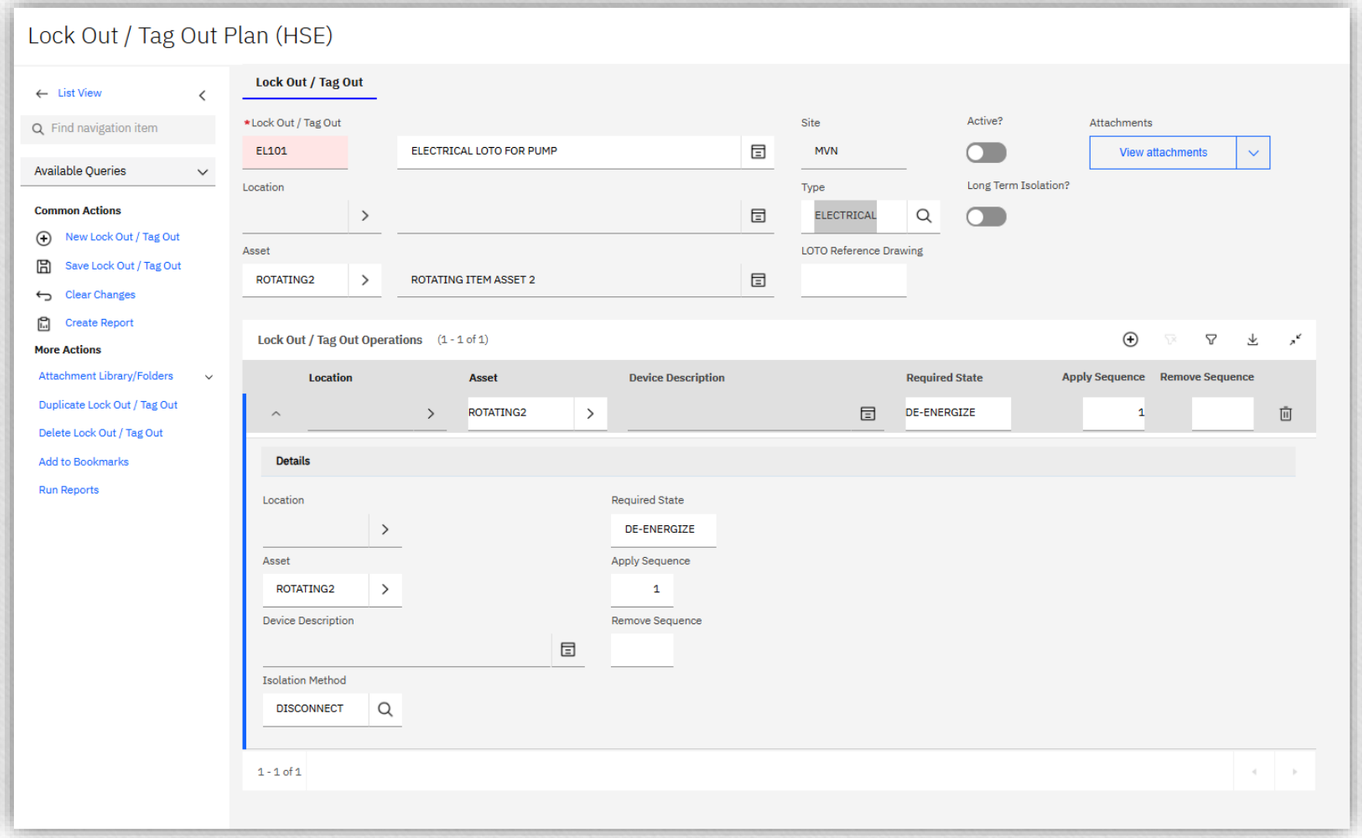
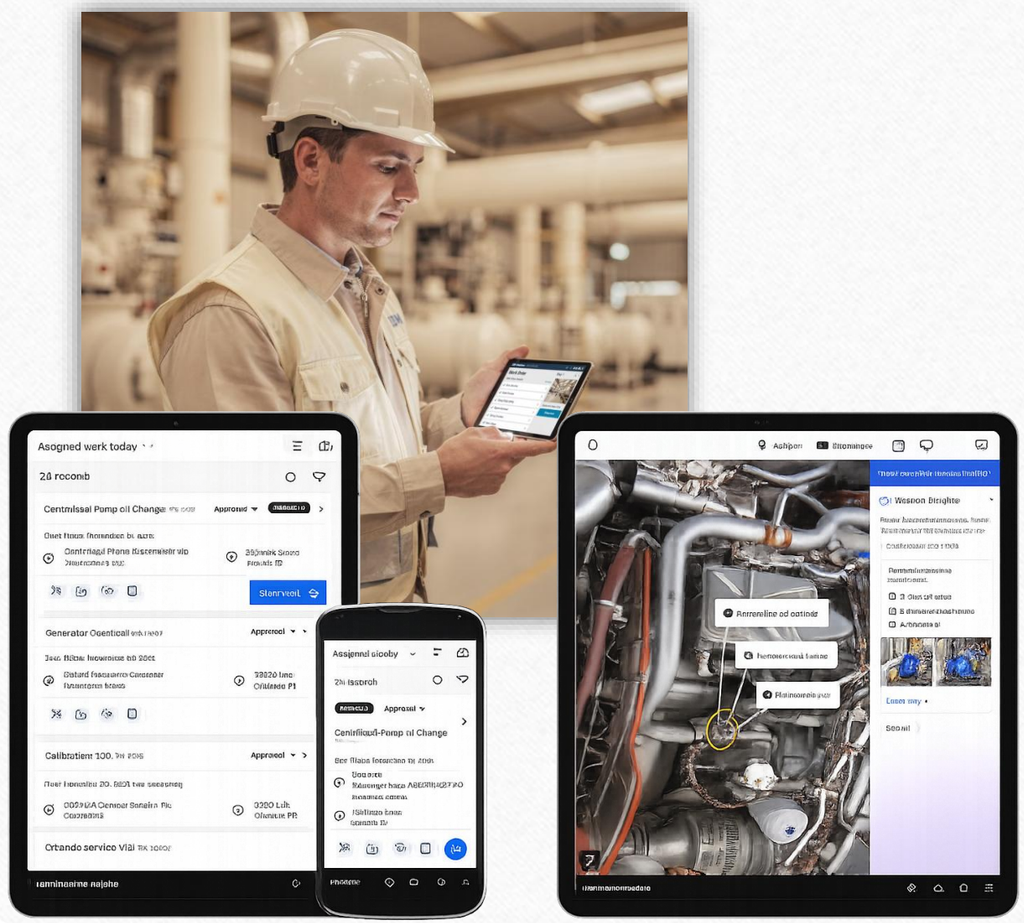


Step 5: Execute in the Field and Capture Evidence



Evidence Captured Where Work Happens

The maintenance technician and fire watch access the work order on Maximo Mobile. Every safety step, gas test reading, and verification is captured in real time—no more transferring notes from paper later.

- **Step-by-Step Guidance**

  Mobile displays JSA steps, isolation verification checklist, and hot work precautions in sequence

- **Time-Stamped Evidence**

  Photo of LOTO tags in place, gas test meter reading (LEL 3%), area barricade setup—all captured with GPS and timestamp

- **Real-Time Updates**

  Operations sees work status live. If gas readings spike, technician can immediately escalate and pause work through Mobile

- **No Data Re-Entry**

  Everything flows directly into the work order record. The evidence is already audit-ready.

Step 6: Closeout and Incident Linkage

Closing the Loop: Compliance and Learning

The work order cannot be closed until the permit is formally closed, all sign-offs are complete, and required evidence is attached. But closeout isn't just about compliance—it's where learning happens.

Permit Closure Verification

System enforces permit signed off, LOTO tags removed and accounted for, area returned to normal operations

Required Evidence Check

Gas test documentation, photo evidence, competency verification—all present before WO can close

Near-Miss Capture

During execution, fire watch noticed a valve leaking slightly during isolation. Near-miss captured in HSE module and linked to this work order and asset.

Learning Loop

Next time this pump is maintained, the near-miss is surfaced during safety planning. The isolation procedure is updated to include that valve inspection step.

This is operating discipline + system design—not heroics. The system enforces what good looks like, every single time.

The AI Layer: Turning Data Into Insight

Maximo's AI capabilities transform historical work order data into predictive safety intelligence

The real power of this integrated approach emerges when AI analyzes the complete thread of work orders, permits, incidents, and near-misses. IBM Maximo uses AI to identify patterns humans miss and surface risks before they materialize.

Three key AI capabilities in a smart layout with icons:

Predictive Risk Scoring

Before work begins, AI analyzes similar historical jobs, asset failure patterns, and incident data to calculate a risk score. High-risk jobs trigger enhanced safety protocols automatically.

Anomaly Detection During Execution

AI monitors real-time data from sensors and mobile inputs. If gas readings trend upward or isolation verification takes longer than historical norms, the system alerts supervisors immediately.

Learning From Near-Misses

Every near-miss, observation, and incident feeds the AI model. The system recommends safety plan updates and surfaces relevant lessons during future job planning.

This isn't AI for AI's sake—it's using machine learning to make the next job safer than the last one, systematically.

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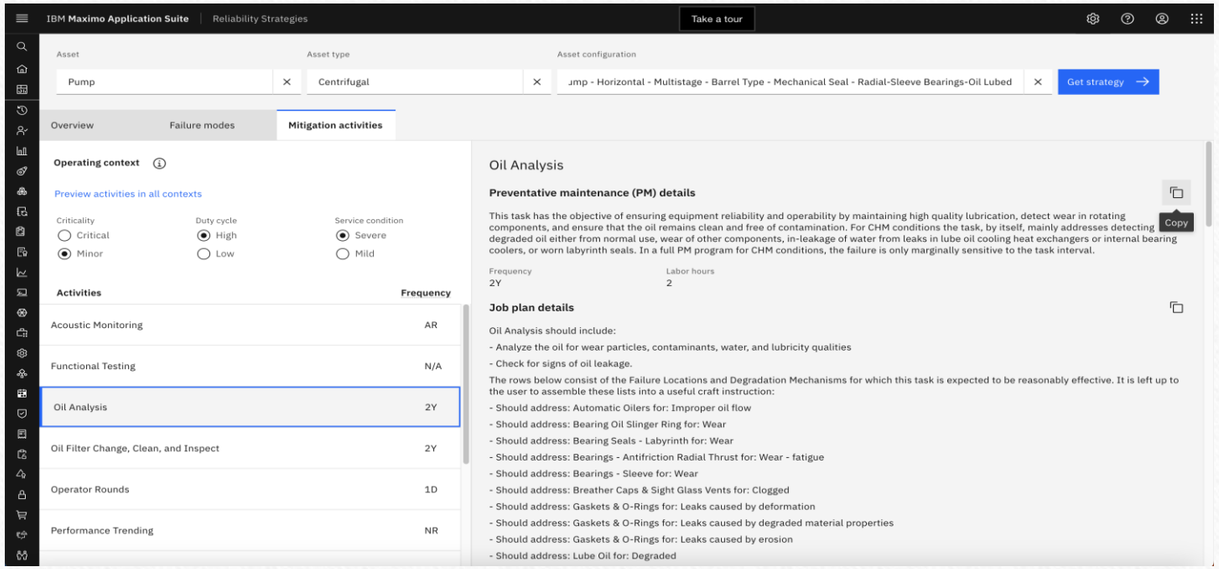

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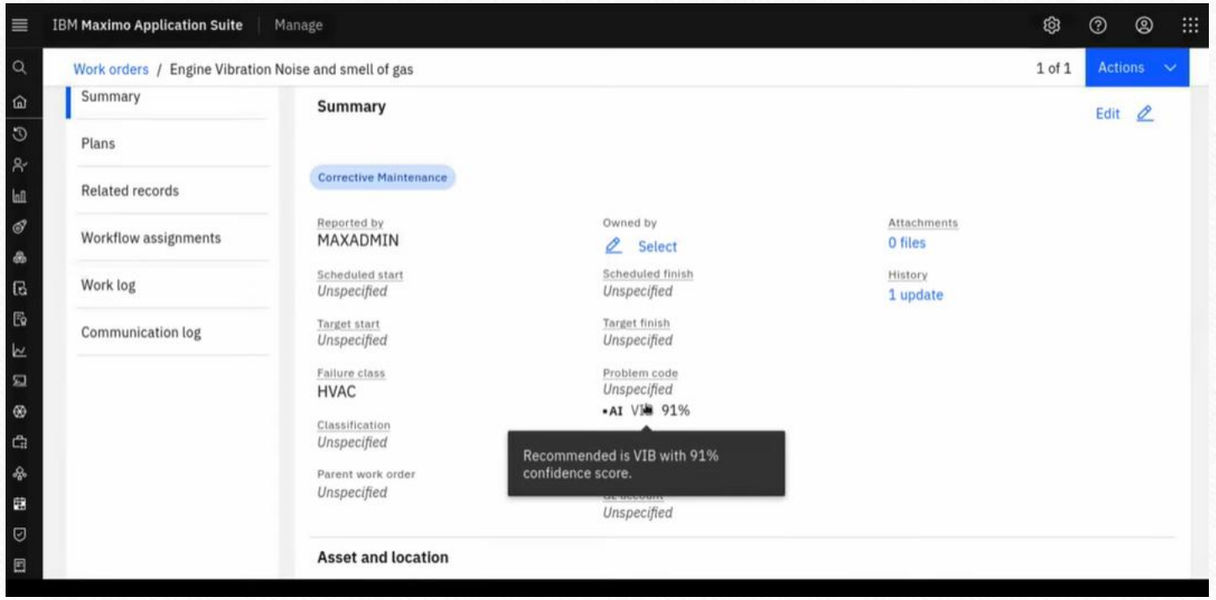

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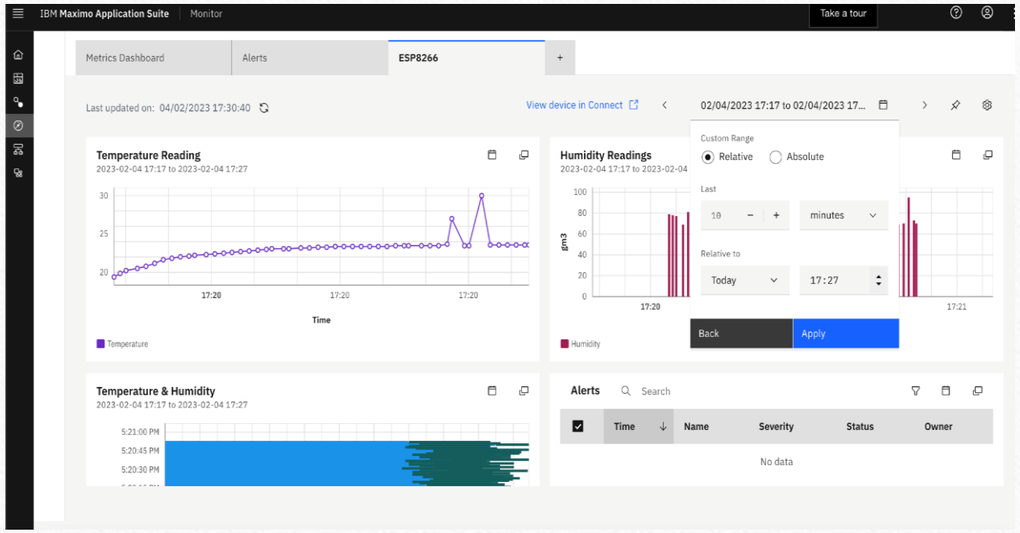

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THANK YOU

Michael Guns, Jr.
Director, Asset Strategy & Innovation

michael.guns@mavenasset.com
www.mavenasset.com

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