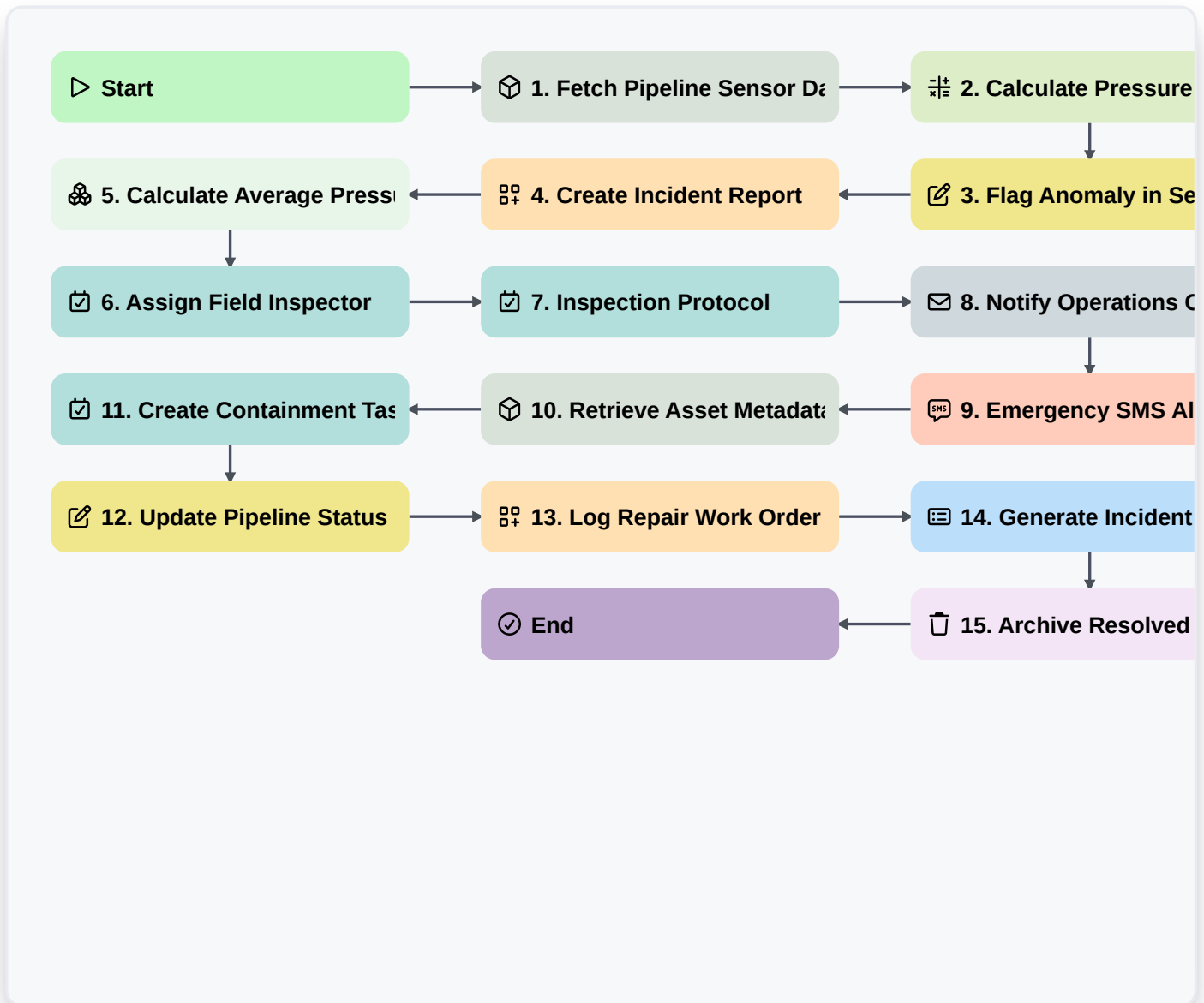


# Oil Pipeline Leak Detection Workflow



## Start

Start of the Workflow/Process.

## 1. Fetch Pipeline Sensor Data

Retrieve the latest pressure and flow rate readings from the Pipeline Monitoring data model.

## 2. Calculate Pressure Deviation

Compare current pressure readings against baseline operating pressure to identify anomalies.

## 3. Flag Anomaly in Sensor Log

Update the specific sensor entry status to 'Anomaly Detected' when thresholds are breached.

## 4. Create Incident Report

Generate a new entry in the Incident Data Model containing the detected leak parameters.

## 5. Calculate Average Pressure Drop

Aggregate pressure readings over the last 30 minutes to confirm if the drop is sustained.

## 6. Assign Field Inspector

Create a task for the Maintenance Team to perform a physical inspection of the flagged pipeline segment.



### **7. Inspection Protocol**

Sub-steps for the task: 1. Visual inspection, 2. Pressure test, 3. Ultrasonic thickness measurement.

### **8. Notify Operations Center**

Send an urgent email alert to the Operations Manager with the incident details.

### **9. Emergency SMS Alert**

Send an automated SMS to the On-Call Engineer for immediate response.

### **10. Retrieve Asset Metadata**

Get details of the specific pipeline segment (material, age, diameter) from the Asset Data Model.

### **11. Create Containment Task**

Create a high-priority task for the Emergency Response Team to initiate valve shut-off.

### **12. Update Pipeline Status**

Change the status of the Pipeline Segment entry to 'Maintenance/Leaking'.

### **13. Log Repair Work Order**

Create a new Work Order entry in the Maintenance Data Model to track the repair process.

### **14. Generate Incident Summary Report**

Generate a final report summarizing the leak duration, volume lost, and response time for regulatory compliance.

### **15. Archive Resolved Anomaly**

Remove the temporary anomaly alert entry from the active monitoring view once the incident is closed.

### **End**

End of the Workflow/Process.