Here is what AI calculated for the loss amount. A little bit different than what I told you as one of my times was three minutes off. Total is 32.9 Barrel Lost assuming a ½" leak point. Pressures used are a visible average based on the trend while the unit was running.

Leak Result Calculation

Here are the results for the total leakage calculations:

1. **300 psi for 53 minutes**: Approximately **19.71 barrels**.
2. **200 psi for 26 minutes**: Approximately **7.89 barrels**.
3. **188 psi for 18 minutes**: Approximately **5.30 barrels**.

Detailed Breakdown:

Let's go through the calculations step by step for each scenario, including the equations and conversions used:

Formula Recap

The flow rate (Q) for the leak is calculated using the orifice flow equation:

$$Q = C_d \cdot A \cdot \sqrt{\frac{2 \cdot \Delta P}{\rho}}$$

Where:

- $C_d = 0.62$ (discharge coefficient, assumed)
- A = area of the 1/2" hole in square feet
- ΔP = pressure differential in lb/ft²
- ρ = density of the fluid (assumed 51 lb/ft³ for crude oil)

Step 1: Calculate Area of the Hole

The diameter of the hole is 0.5 inches (0.0417 feet). The area (A) is:

$$A = \pi \left(\frac{d}{2}\right)^2 = \pi \left(\frac{0.0417}{2}\right)^2 \approx 0.00136\,\text{ft}^2$$

Step 2: Convert Pressure to lb/ft²

Pressure is given in psi and needs to be converted to lb/ft² using:

$$\Delta P = \text{Pressure (psi)} \times 144\,(\text{lb/ft}^2/\text{psi})$$

Step 3: Calculate Flow Rate

Using the values above, we plug in to find Q in cubic feet per second.

Step 4: Calculate Total Volume Leaked

Total volume leaked (in cubic feet) over the given time (in seconds):

$$\text{Total Volume (ft}^3) = Q \times \text{Time (seconds)}$$

Convert this volume to barrels (1 barrel = 5.6146 cubic feet):

$$\text{Total Volume (barrels)} = \frac{\text{Total Volume (ft}^3)}{5.6146}$$

Detailed Calculations

1. **For 300 psi and 53 minutes:**
   - Pressure: $\Delta P = 300 \times 144 = 43,200\,\text{lb/ft}^2$
   - Time: $53 \times 60 = 3,180\,\text{seconds}$
   - Flow Rate: $Q = 0.62 \times 0.00136 \times \sqrt{\frac{2 \times 43,200}{51}} \approx 0.035\,\text{ft}^3/\text{s}$
   - Total Volume (ft³): $0.035 \times 3,180 = 111.1\,\text{ft}^3$
   - Total Volume (barrels): $\frac{111.1}{5.6146} \approx 19.71\,\text{barrels}$
2. **For 200 psi and 26 minutes:**
   - Pressure: $\Delta P = 200 \times 144 = 28,800\,\text{lb/ft}^2$
   - Time: $26 \times 60 = 1,560\,\text{seconds}$
   - Flow Rate: $Q = 0.62 \times 0.00136 \times \sqrt{\frac{2 \times 28,800}{51}} \approx 0.032\,\text{ft}^3/\text{s}$
   - Total Volume (ft³): $0.032 \times 1,560 = 44.3\,\text{ft}^3$
   - Total Volume (barrels): $\frac{44.3}{5.6146} \approx 7.89\,\text{barrels}$
3. **For 188 psi and 18 minutes:**
   - Pressure: $\Delta P = 188 \times 144 = 27,072\,\text{lb/ft}^2$
   - Time: $18 \times 60 = 1,080\,\text{seconds}$
   - Flow Rate: $Q = 0.62 \times 0.00136 \times \sqrt{\frac{2 \times 27,072}{51}} \approx 0.031\,\text{ft}^3/\text{s}$
   - Total Volume (ft³): $0.031 \times 1,080 = 29.76\,\text{ft}^3$
   - Total Volume (barrels): $\frac{29.76}{5.6146} \approx 5.30\,\text{barrels}$

Summary

Scenario	Total Loss (Barrels)
300 psi for 53 minutes	19.71 barrels
200 psi for 26 minutes	7.89 barrels
188 psi for 18 minutes	5.30 barrels

This breakdown shows the step-by-step work and conversions used for each case.

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State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

QUESTIONS

Operator: WESTERN REFINING PIPELINE LLC 200 E. Hardin Street Findlay, OH 45840	OGRID: 319135
	Action Number: 428732
	Action Type: [C-141] Initial C-141 (C-141-v-Initial)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAPP2431159375**
Incident Name	**NAPP2431159375 CTB-317 (SW CRUDE 6IN) @ 30-025-49210**
Incident Type	**Oil Release**
Incident Status	**Initial C-141 Received**
Incident Well	**[30-025-49210] SEAWOLF 12 1 FEDERAL #011H**

Location of Release Source	
Please answer all the questions in this group.	
Site Name	CTB-317 (SW Crude 6in)
Date Release Discovered	11/05/2024
Surface Owner	Private

Incident Details	
Please answer all the questions in this group.	
Incident Type	Oil Release
Did this release result in a fire or is the result of a fire	No
Did this release result in any injuries	No
Has this release reached or does it have a reasonable probability of reaching a watercourse	No
Has this release endangered or does it have a reasonable probability of endangering public health	No
Has this release substantially damaged or will it substantially damage property or the environment	No
Is this release of a volume that is or may with reasonable probability be detrimental to fresh water	No

Nature and Volume of Release	
Material(s) released, please answer all that apply below. Any calculations or specific justifications for the volumes provided should be attached to the follow-up C-141 submission.	
Crude Oil Released (bbls) Details	Cause: Equipment Failure | Pipeline (Any) | Crude Oil | Released: 33 BBL (Unknown Released Amount) | Recovered: 0 BBL | Lost: 33 BBL.
Produced Water Released (bbls) Details	*Not answered.*
Is the concentration of chloride in the produced water >10,000 mg/l	No
Condensate Released (bbls) Details	*Not answered.*
Natural Gas Vented (Mcf) Details	*Not answered.*
Natural Gas Flared (Mcf) Details	*Not answered.*
Other Released Details	*Not answered.*
Are there additional details for the questions above (i.e. any answer containing Other, Specify, Unknown, and/or Fire, or any negative lost amounts)	Release volume is estimated to be greater than 25 bbls due to pipeline control center alarms received at 23:03 CST on 11/5/2024. The actual amount of the release is under investigation.

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QUESTIONS (continued)

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QUESTIONS

Nature and Volume of Release (continued)	
Is this a gas only submission (i.e. only significant Mcf values reported)	**No, according to supplied volumes this does not appear to be a "gas only" report.**
Was this a major release as defined by Subsection A of 19.15.29.7 NMAC	**Yes**
Reasons why this would be considered a submission for a notification of a major release	**From paragraph A. "Major release" determine using:** **(1) an unauthorized release of a volume, excluding gases, of 25 barrels or more.**
With the implementation of the 19.15.27 NMAC (05/25/2021), venting and/or flaring of natural gas (i.e. gas only) are to be submitted on the C-129 form.	

Initial Response	
The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury.	
The source of the release has been stopped	True
The impacted area has been secured to protect human health and the environment	True
Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices	True
All free liquids and recoverable materials have been removed and managed appropriately	True
If all the actions described above have not been undertaken, explain why	*Not answered.*
Per Paragraph (4) of Subsection B of 19.15.29.8 NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please prepare and attach a narrative of actions to date in the follow-up C-141 submission. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see Subparagraph (a) of Paragraph (5) of Subsection A of 19.15.29.11 NMAC), please prepare and attach all information needed for closure evaluation in the follow-up C-141 submission.	

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

I hereby agree and sign off to the above statement	Name: Matt Krakow Title: Environmental Professional Email: mjkrakow@marathonpetroleum.com Date: 02/05/2025

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QUESTIONS (continued)

Operator: WESTERN REFINING PIPELINE LLC 200 E. Hardin Street Findlay, OH 45840	OGRID: 319135
	Action Number: 428732
	Action Type: [C-141] Initial C-141 (C-141-v-Initial)

QUESTIONS

Site Characterization	
Please answer all the questions in this group (only required when seeking remediation plan approval and beyond). This information must be provided to the appropriate district office no later than 90 days after the release discovery date.	
What is the shallowest depth to groundwater beneath the area affected by the release in feet below ground surface (ft bgs)	*Not answered.*
What method was used to determine the depth to ground water	*Not answered.*
Did this release impact groundwater or surface water	*Not answered.*
What is the minimum distance, between the closest lateral extents of the release and the following surface areas:	
A continuously flowing watercourse or any other significant watercourse	*Not answered.*
Any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)	*Not answered.*
An occupied permanent residence, school, hospital, institution, or church	*Not answered.*
A spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes	*Not answered.*
Any other fresh water well or spring	*Not answered.*
Incorporated municipal boundaries or a defined municipal fresh water well field	*Not answered.*
A wetland	*Not answered.*
A subsurface mine	*Not answered.*
An (non-karst) unstable area	*Not answered.*
Categorize the risk of this well / site being in a karst geology	*Not answered.*
A 100-year floodplain	*Not answered.*
Did the release impact areas not on an exploration, development, production, or storage site	*Not answered.*

Remediation Plan	
Please answer all the questions that apply or are indicated. This information must be provided to the appropriate district office no later than 90 days after the release discovery date.	
Requesting a remediation plan approval with this submission	No
The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.	

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CONDITIONS

Action 428732

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CONDITIONS

Created By	Condition	Condition Date
rhamlet	None	2/5/2025