

STATE OF NEW MEXICO  
DEPARTMENT OF ENERGY, MINERALS AND NATURAL RESOURCES  
OIL CONSERVATION DIVISION

APPLICATION OF ADVANCE ENERGY  
PARTNERS, LLC FOR APPROVAL OF  
APPLICATIONS FOR PERMITS TO DRILL,  
LEA COUNTY, NEW MEXICO

Case No. 20795

PRE-HEARING STATEMENT AND  
PROTEST OF INTREPID POTASH, INC.  
AND INTREPID POTASH – NEW MEXICO, LLC

COMES NOW Intrepid Potash, Inc. and Intrepid Potash – New Mexico, LLC (together  
“Intrepid”) and submits this pre-hearing statement in the above-captioned case.

APPEARANCES

APPLICANT

Advance Energy Partners, LLC

APPLICANT’S ATTORNEYS

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PROTESTANT

Intrepid Potash, Inc. and  
Intrepid Potash – New Mexico, LLC

PROTESTANT’S ATTORNEYS

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STATEMENT OF THE CASE

Applicant applied for permits to drill six horizontal wells in the Bone Spring and Wolfcamp formations in the SW ¼ of Section 17 and the W ½ of Section 20, Township 21 South, Range 33 East in Lea County, New Mexico. The proposed wells (“Proposed Wells”) would be in the Potash Area established by Oil Conservation Commission Order No. R-111-P (“Order No. R-111-P”) and the quarter mile buffer zone of Intrepid’s Life of Mine Reserves (“LMR”). Recognizing that such drilling required Intrepid’s consent, Order No. R-111-P, Paragraph G(e)(3), pp. 11-12, Applicant asked Intrepid to consent. Intrepid Potash declined to consent.

Intrepid declined to consent because the Proposed Wells, within the Potash Area and within the quarter mile buffer zone of Intrepid’s LMR, would result in waste of potash because they “would have the effect unduly to reduce the total quantity of . . . commercial deposits of potash which may reasonably be recovered in commercial quantities [and] interfere unduly with the orderly commercial development of such potash deposits.” NMSA 1978, §§ 70-2-12(B)(17) and 70-2-3(F). The OCD has authority to prohibit drilling when it would have such results. NMSA 1978, § 70-2-12(B)(17).

In addition, there is new evidence that drilling in the Potash Area could “result in a hazard to or interfere unduly with mining of potash deposits.” Order No. R-111-P prohibits drilling under such circumstances. Order No. R-111-P, Paragraph C (2). The recent failure of the XTO Remuda 101H well resulted in drilling fluid and hydrocarbons entering the salt strata in which potash deposits are located and moving more than a mile to and up a potash core hole to deposit on the surface. This occurrence suggests that the drilling within the Potash Area that Applicant proposes could have adverse, hazardous impacts on potash miners and potash mining generally.

In light of the XTO and similar incidents, Intrepid submits that its withholding of consent to Applicant’s proposed drilling is reasonable and that the OCD should not approve Applicant’s proposal.

PROPOSED EVIDENCE

Intrepid may present the following evidence at hearing in this matter:

PROTESTANT

WITNESSES	EST. TIME	EXHIBITS
Robert Baldridge, Intrepid’s General Manager-New Mexico Operations	30 min.	Exhibit 1: Release Notification to OCD, Incident No. Nab1901038306
		Exhibit 2: Map of Remuda 101H well drilled by XTO and incident

		site
		Exhibit 3: Geologic Formations of and Above Potash Zones
		Exhibit 4: Geologic Factors Controlling Natural Gas Distribution Related to the January 2001 Gas Explosions in Hutchinson, Kansas, by Susan E. Nissen, W. Lynn Watney, Saibal Bhattacharya, Alan P. Byrnes, and David Young, Kansas Geological Survey Open File Report 2004-21 (excerpt)

Mr. Baldridge will testify to Intrepid’s concerns regarding the impact of potential well failures similar to XTO Remuda 101H on potash reserves, mining and safety.

**PROCEDURAL MATTERS**

No procedural matters are pending.

Respectfully submitted,

RODEY, DICKASON, SLOAN, AKIN & ROBB, P.A.

By   
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[cloehr@rodey.com](mailto:cloehr@rodey.com)  
*Attorneys for Intrepid Potash, Inc. and Intrepid Potash –  
New Mexico, LLC*

**CERTIFICATE OF SERVICE**

I hereby certify that I caused a true and correct copy of the foregoing Pre-Hearing Statement and Protest of Intrepid Potash, Inc. and Intrepid Potash – New Mexico, LLC along with this Certificate of Service to be served on September 26, 2019 by electronic mail to:

Gary W. Larson  
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[dhardy@hinklelawfirm.com](mailto:dhardy@hinklelawfirm.com)  
*Attorneys for Advance Energy Partners, LLC*

  
Cynthia Loehr

District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
811 S. First St., Artesia, NM 88210  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

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

Form C-141  
Revised August 24, 2018  
Submit to appropriate OCD District office

Incident ID	NAB1901038306
District RP	2RP-5169
Facility ID	fAB1901038066
Application ID	pAB1901037748

Release Notification

Responsible Party

Responsible Party	XTO Energy, Inc.	OGRID	5380
Contact Name	Kyle Littrell	Contact Telephone	432-221-7331
Contact email	kyle_littrell@xtoenergy.com	Incident # (assigned by OCD)	NAB1901038306
Contact mailing address	522 W. Mermod, Suite 704, Carlsbad, NM		

Location of Release Source

Latitude 32.287 Longitude -103.959  
(NAD 83 in decimal degrees to 5 decimal places)

Site Name	PCA 53	Site Type	
Date Release Discovered	11/27/18	API# (if applicable)	

Unit Letter	Section	Township	Range	County
K	23	23S	29E	Eddy

Surface Owner: ☐ State ☒ Federal ☐ Tribal ☐ Private (Name: )

Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

<input checked="" type="checkbox"/> Crude Oil	Volume Released (bbls) 2,022	Volume Recovered (bbls) 0
<input checked="" type="checkbox"/> Produced Water	Volume Released (bbls) 6,066	Volume Recovered (bbls) 0
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Condensate	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
<input type="checkbox"/> Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

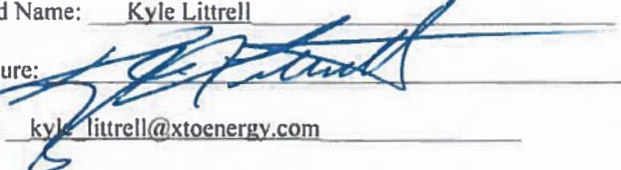

Cause of Release  
On November 27<sup>th</sup>, the BLM notified XTO that fluids had been discovered on surface through an existing corehole associated with a nearby potash mine. In October, XTO experienced a pressure loss while drilling the Remuda South 25 State 101H and an unknown volume of flowback fluids were released into the subsurface. BLM has associated the loss of flowback fluids into the subsurface to the November 27<sup>th</sup> event. Inspection of the site was performed by an environmental contractor and review of the data is in progress.

Incident ID	NAB1901038306
District RP	2RP-5169
Facility ID	fAB1901038066
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Was this a major release as defined by 19.15.29.7(A) NMAC?  <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If YES, for what reason(s) does the responsible party consider this a major release? The release exceeded 25 bbls of produced water and oil.
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)? Release was reported by a member of the public to the BLM on 11/27/18. BLM notified XTO and XTO provided notice to Mike Bratcher, Maria Pruett, Jim Griswold at NMOCD and Jim Amos and Shelly Tucker at BLM on 11/29/18. Notification was provided by email by Bryan Foust.	

Initial Response

The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury

<input checked="" type="checkbox"/> The source of the release has been stopped.	
<input checked="" type="checkbox"/> The impacted area has been secured to protect human health and the environment.	
<input checked="" type="checkbox"/> Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.	
<input checked="" type="checkbox"/> All free liquids and recoverable materials have been removed and managed appropriately.	
If all the actions described above have <u>not</u> been undertaken, explain why:	
Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.	
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.	
Printed Name: <u>Kyle Littrell</u>	Title: <u>SH&amp;E Coordinator</u>
Signature: 	Date: <u>12/11/18</u>
email: <u>kyle.littrell@xtoenergy.com</u>	Telephone: <u>432-221-7331</u>
<u>OCD Only</u>	
Received by: 	Date: <u>1/10/2019</u>



Incident ID	NAB1901038306
District RP	2RP-5169
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Site Assessment/Characterization

*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?	< 50 (ft bgs)
Did this release impact groundwater or surface water?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a wetland?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying a subsurface mine?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying an unstable area such as karst geology?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within a 100-year floodplain?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Did the release impact areas not on an exploration, development, production, or storage site?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.

**Characterization Report Checklist:** *Each of the following items must be included in the report.*

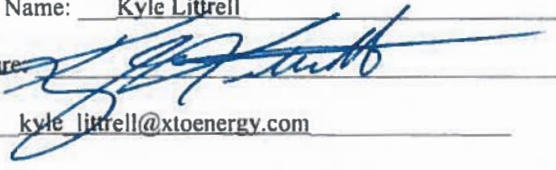
☐ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.☐ Field data☐ Data table of soil contaminant concentration data☐ Depth to water determination☐ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release☐ Boring or excavation logs☐ Photographs including date and GIS information☐ Topographic/ Aerial maps☐ Laboratory data including chain of custody

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

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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.

Printed Name: Kyle Littrell

Signature: 


email: kyle\_littrell@xtoenergy.com

Title: SH&E Coordinator

Date: 12/11/18

Telephone: 432-221-7331

OCD Only

Received by: 

Date: 1/10/2019



# Remuda 101H drilled by XTO

PCA-053H is the legacy core hole where fluid reached the surface

Legend

★

PCA-053H

☆

Remuda 101H



Google Earth

© 2018 Google

3 mi

Intrepid Ex. 2





**Intrepid – New Mexico, LLC**

**MEMORANDUM**

**DATE:** September 20, 2019  
**TO:** Robert Baldrige  
**FROM:** Greg Bruce  
**SUBJECT:** Geologic formations above the Potash Zones

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The following is a brief synopsis of the geologic formations present from the bottom of the Potash bearing zones to the surface in the general vicinity of the New Mexico operations.

Based on the strat columns that are used within our department, there are seven (7) major formations listed from the surface to the bottom of the potash zones. Starting at the surface and descending in order, they are:

Surface Deposits  
Mescalero Caliche  
Gatuna Formation  
Santa Rosa Formation  
Dewey Lake Formation  
Rustler Formation  
Salado Formation

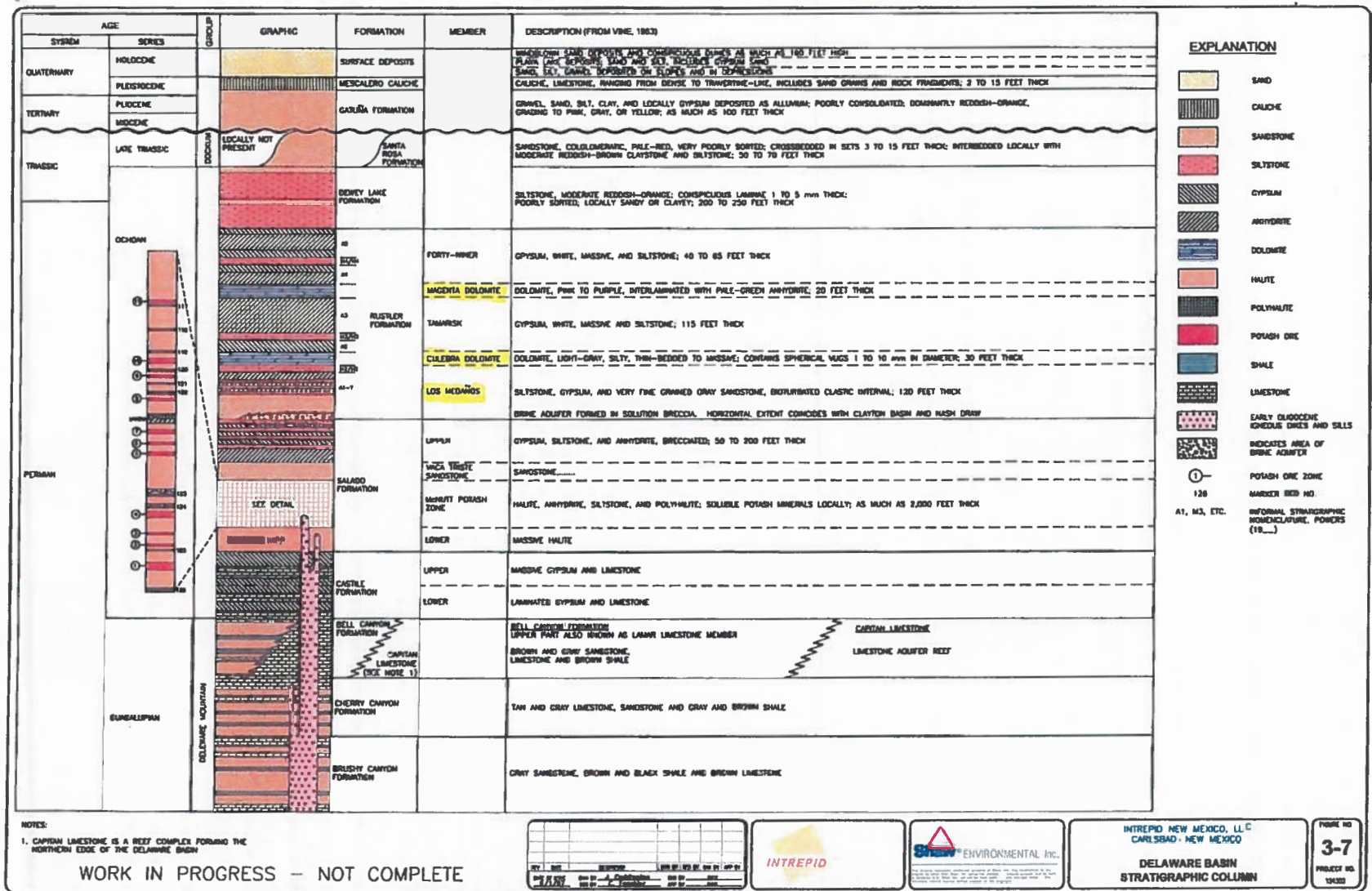
The Gatuna and Santa Rosa formations are not always present in the areas near the NM operations. There aren't any distinct members listed with the upper 5 formations. The 2 lower formations (Rustler and Salado) have members listed for each formation.

The Rustler formation has 5 separate members listed each having distinct bedding zones. The Forty-Niner member has 6 bedding zones, the Magenta Dolomite contains 1 bedding zone, the Tamarisk has 3 bedding zones, the Culebra Dolomite has 1 bedding zone and the Los Mendanos has 10 bedding zones.

The Salado Formation has 4 separate members each having distinct bedding zones. The Upper member has 8 bedding zones, the Vaca Triste contains 1 bedding zone which is not always present, and the third formation is the McNutt formation which contains the Potash zones. Within the McNutt there are 11 potash zones, 11 USGS maker Beds and 22 other identified bedding zones. Below the McNutt is the Lower member which is a massive halite zone.

I have included a table with all of the information and also have attached the strat column that I reference.

Formation	Member	Distinct Bedding Structures
Surface Deposits		1
Mescalero Caliche		1
Gatuna Formation		1
Santa Rosa Formation		1
Dewey Lake Formation		4
Rustler Formation	Forty-Niner	6
	Magenta Dolomite	1
	Tamarisk	3
	Culebra Dolomite	1
	Los Medanos	9
Salado Formation	Upper	8
	Vaca Triste Sandstone	1
	McNutt Potash Zone (To and Including 1st Ore Zone)	44
	<b>Total Distinct Bedding Structures</b>	<b>81</b>





# Geologic Factors Controlling Natural Gas Distribution Related to the January 2001 Gas Explosions in Hutchinson, Kansas

Susan E. Nissen, W. Lynn Watney, Saibal Bhattacharya, Alan P. Byrnes, and David Young

Kansas Geological Survey, 1930 Constant Ave., Lawrence, KS 66047

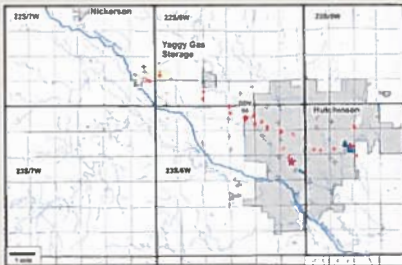


## ABSTRACT

In January 2001, explosions and eruptions of gas geysers occurred in the city of Hutchinson, Kansas. Three days earlier, an estimated 143 million cu ft of natural gas at high pressure escaped from a casing leak at the Yaggy underground gas storage facility, 7 miles to the northwest. At Yaggy, natural gas was stored in solution caverns in the Lower Permian Hutchinson Salt Member. The casing leak was located just below the top of the salt and 184 ft above the top of the storage cavern. Vent and observation wells drilled in the area after the explosions encountered gas over a distance of 9 miles, primarily along a narrow, northwest-southeast-trending corridor between Yaggy and eastern Hutchinson. The widespread distribution of gas warranted further characterization of the surrounding geology to resolve features that provided pathways for the gas. Studies of 116 borehole logs in a 150 mi<sup>2</sup> area, along with seismic lines, core, well logs, and shut-in pressure data, suggest that gas moved through the area within a thin dolomite interval 170 ft above the top of the Hutchinson Salt Member, apparently along a fracture cluster that follows the crest of a low-relief, westerly plunging anticline. High-resolution seismic and stratigraphic analyses revealed deep-seated structural features that appear to have controlled fracture and fault concentrations in the thin, brittle dolomite beds that served as the conduits for the gas. Episodes of focused undersaturated ground-water circulation along associated fractures apparently resulted in evaporite dissolution that enhanced structural relief and tensional forces along the anticline.

## BACKGROUND

On January 17 and 18, 2001, explosions and eruptions of gas geysers occurred in the city of Hutchinson, Kansas. Three days earlier, natural gas at high pressure (600+ psi) began escaping from a casing leak in a natural gas storage well, S-1, at the Yaggy underground gas storage facility, 7 miles to the northwest of Hutchinson, with an estimated loss of 143 million cu ft of gas. At Yaggy, natural gas is stored at depths in excess of 600 ft in solution-mined caverns in the Hutchinson Salt Member of the Lower Permian Wellington Formation of the Sumner Group. The casing leak was located just below the top of the salt and 184 ft above the top of the storage cavern.



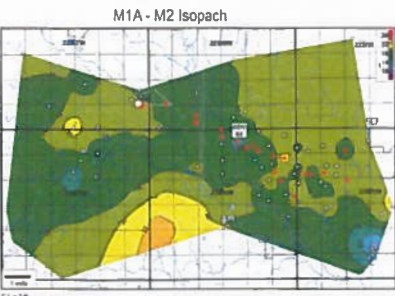
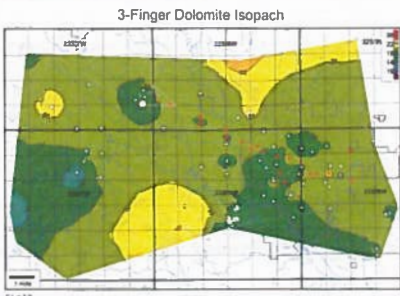
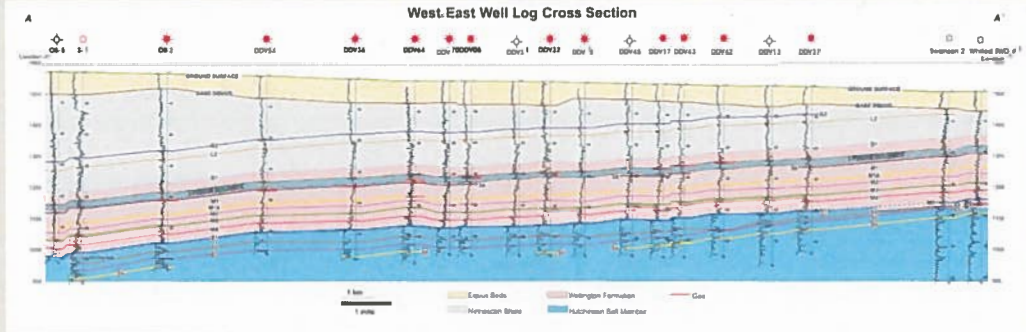
In response to the explosions, 57 vent wells and five observation wells were drilled in the city of Hutchinson and westward towards the Yaggy storage facility. These wells detected gas over a distance of 9 miles, primarily along a narrow, northwest-southeast-trending corridor between Yaggy and eastern Hutchinson. For all but two of the productive vent wells, the gas was contained within a 30-ft thick interval approximately 170 ft above the top of the Hutchinson Salt Member, which core data show to contain several thin dolomite layers. The natural gas that caused the explosions and gas geysers reached the surface from this interval through abandoned brine wells. On July 7, 2001, DDV #64, in T23S R6W Sec. 3, suddenly vented large amounts of gas at high pressure over several days. This gas originated from a zone 70 ft below the main gas-bearing interval.

The widespread lateral distribution of gas, along with its apparent narrow vertical distribution, warranted further characterization of the surrounding geology to resolve features that provided pathways for gas movement.

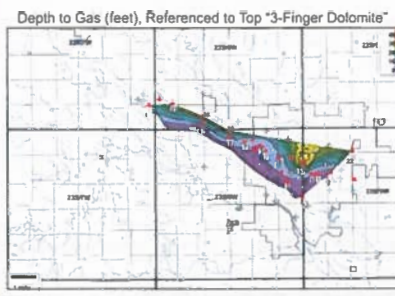
## STRATIGRAPHIC ELEMENTS

Natural gamma-ray logs from 59 of the vent and observation wells and 57 nearby oil wells and gas-storage wells were used to conduct high-resolution stratigraphic correlation and mapping of 15 closely spaced marker beds within the Lower Permian strata for a 150-mi<sup>2</sup> area encompassing Hutchinson and Yaggy (Nissen and Watney, 2003, Watney et al., 2003). The logs were normalized so that units range from 0 (salt) to 100 (shale).

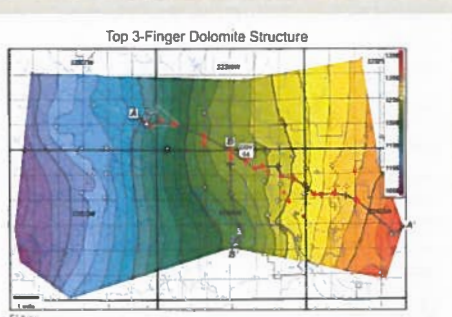
The main gas-bearing interval generally corresponds to a characteristic pattern of three low natural gamma-ray lobes, informally referred to as the "3-finger dolomite," which can be correlated throughout the Hutchinson area. In several wells, gas is found in an interval approximately 5 to 10 feet below the base of the 3-finger dolomite, corresponding to a fourth low gamma-ray lobe, designated 3A. This lobe appears to be discontinuous and cannot be mapped throughout the Hutchinson area. Deeper gas zones have been reported in two vent wells. The high-pressure gas vented from DDV #64 in July 2001 originated from a zone 70 ft below the top of the 3-finger dolomite, corresponding to marker bed M1A. Gas in DDV #09 (approximately 1,000 ft to the north of dry hole DDV #45) was reported from an interval 37 ft below the top of the 3-finger dolomite, corresponding to marker bed M1.



Isopach maps of the 3-finger dolomite and M1A-M2 intervals show that both intervals vary in thickness by less than 4 ft throughout most of the Hutchinson study area. Subtle localized thinning (by 3-5 ft) of the M1A-M2 isopach occurs at DDV #64, which may be linked in some way to the July 2001 venting of gas from the M1A interval in this well.



A map of reported depth to gas referenced to the top of the 3-finger dolomite shows that the gas in the northernmost vent wells resides in a slightly deeper stratigraphic interval (3A) compared to gas in more southerly wells. The anomalous depth to gas at the eastern edge of T23S R6W Sec. 12 corresponds to the M1 gas zone in DDV #09.



A structure map of the top 3-finger dolomite shows a regional westerly structural dip of approximately 20 ft/mi. To the west of Hutchinson, a broad west-northwest-trending anticline (the Yaggy-Hutchinson anticline) is superimposed on this regional dip. Gas-producing vent wells lie along the northern edge of this anticline. DDV #64 is located on a closed high along the crest of the anticline. This may have made DDV #64 a focus for gas migration.

## EXHIBIT

tabbles  
Interpid Ex. 4