

## **RW CARTER HYDROCARBON SURVEY POINTS OF INTEREST**

### **Two pay zone HS survey scenarios**

Introduction: Subject well – RW Carter 4BH, 42-055-34885, Texas RRC lease #14965, IP test May 14, 2008. It was drilled horizontally in the Edwards zone, which is some 350 ft below the existing Austin Chalk producing zone to tap the strong water drive Edwards. The initial production (IP) of the well was **flowing up the 7” casing, 284 bopd & 6,188 bwpd which is a 4.6% oil cut.**

A medium resolution Hydrocarbon Surveys survey was run on the entire lease which revealed a high area around the 1B location. It showed a much higher area to near the southwest side of the lease. The HS data value code is shown on the left side of the Carter illustration. A vertical value presentation of the HS survey is also included.

To determine the best member of the Upper Edwards to drill the lateral in, 4 vertical wells were drilled straddling the path of the proposed 1,000 ft lateral. These wells were logged with high resolution, 20-inch logs through the Edwards. The log on the #1B well showed higher potential than the other 3 wells. Given the correlation between the HS readings around the #1B and the well logs, the operator reversed the direction of the lateral, to the southwest and made a VERY SUCCESSFUL WELL. It produced some **75,116 bo in the first 19 months, still making 91 bopd**, before another well was added to the lease.

#### Hydrocarbon Surveys Points of Interest

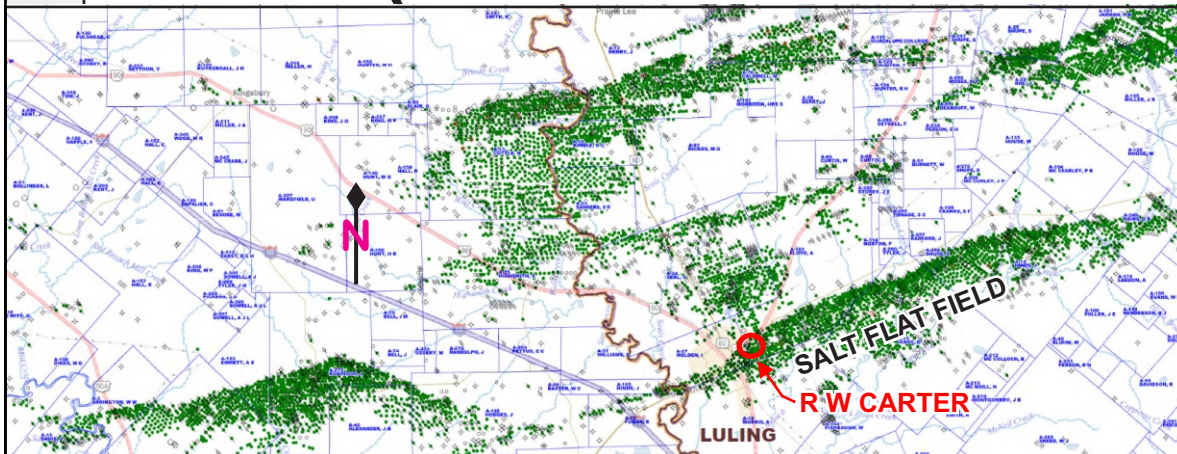
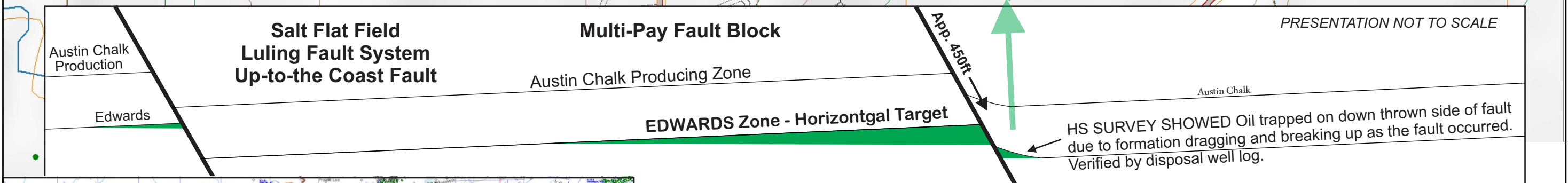
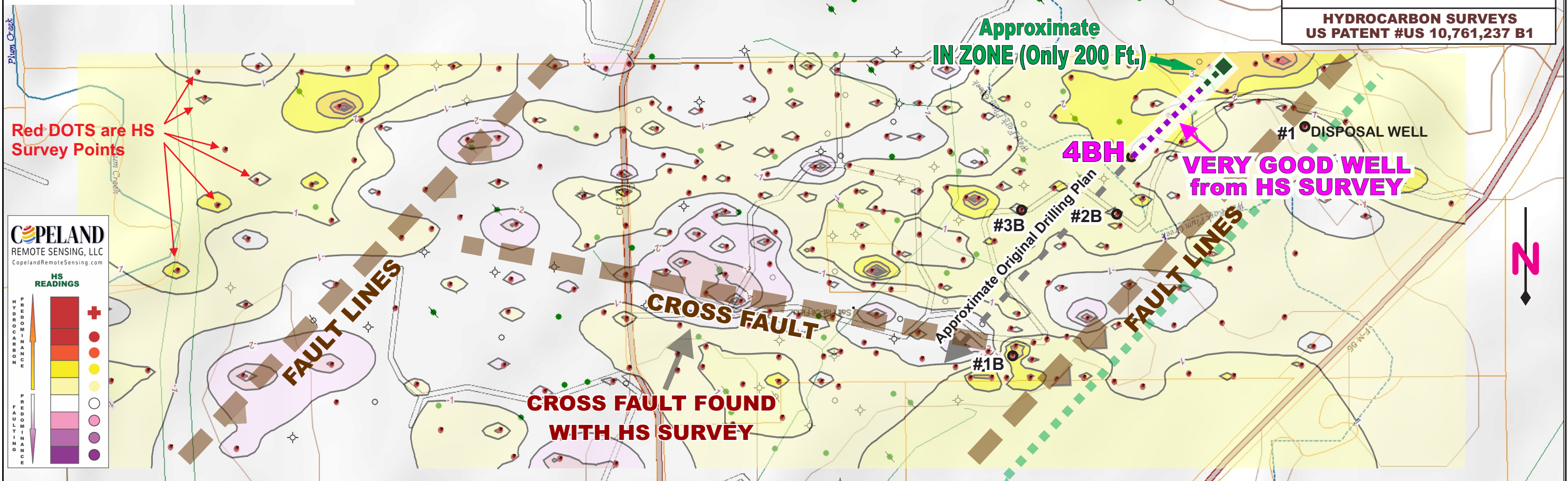
1. This is a **two-pay zone scenario** with the horizontal, Edwards, being below the existing Austin Chalk formation. The total vertical depth (TVD) of the Edwards is only 2,800 feet.
2. The play is based on a large, 450 ft, fault which traps the Edwards up against shales. This fault was shown by the HS system, as well as another known fault, down-dip to the east. HS survey data indicated an UNKNOWN CROSS FAULT.
3. Additionally, HS data indicates a small oil reservoir on the down-thrown side of the main fault which was caused by a dragging effect (see diagram). This is not the case on the lesser fault to the east.
4. A few years later HS road surveys along a road on the north side of lease showed lower HS readings, which confirms drainage by the horizontal wells.

# Hydrocarbon Surveys - GREAT SUCCESS

## Direction of lateral REVERSED AFTER HS SURVEY

NORTH SOUTH OIL, LLC  
RW Carter Lease - Texas RRC #14965  
RW Carter 4BH - API 42-055-34885  
Caldwell County, Texas  
**Hydrocarbon Survey Map**  
HydrocarbonSurveys.com  
Mapping based on Medium Density Survey  
February 23, 2008.

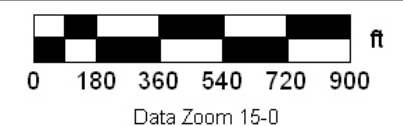
**HYDROCARBON SURVEYS**  
**US PATENT #US 10,761,237 B1**



**Hydrocarbon Surveys Field Example: The direction of the horizontal lateral was change to encounter a HS HIGH READING AREA. The well only has 200 feet in zone. Lease production was 75,116 BARRELS OIL IN THE FIRST 19 MONTHS and was still producing approximately 91 barrels per day (App. 2800 ft TVD).**

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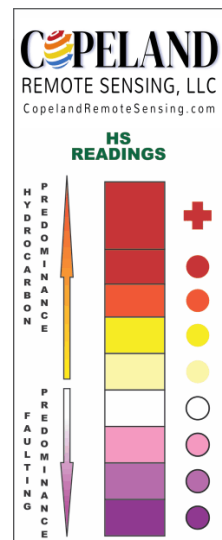
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# Hydrocarbon Surveys SUCCESS

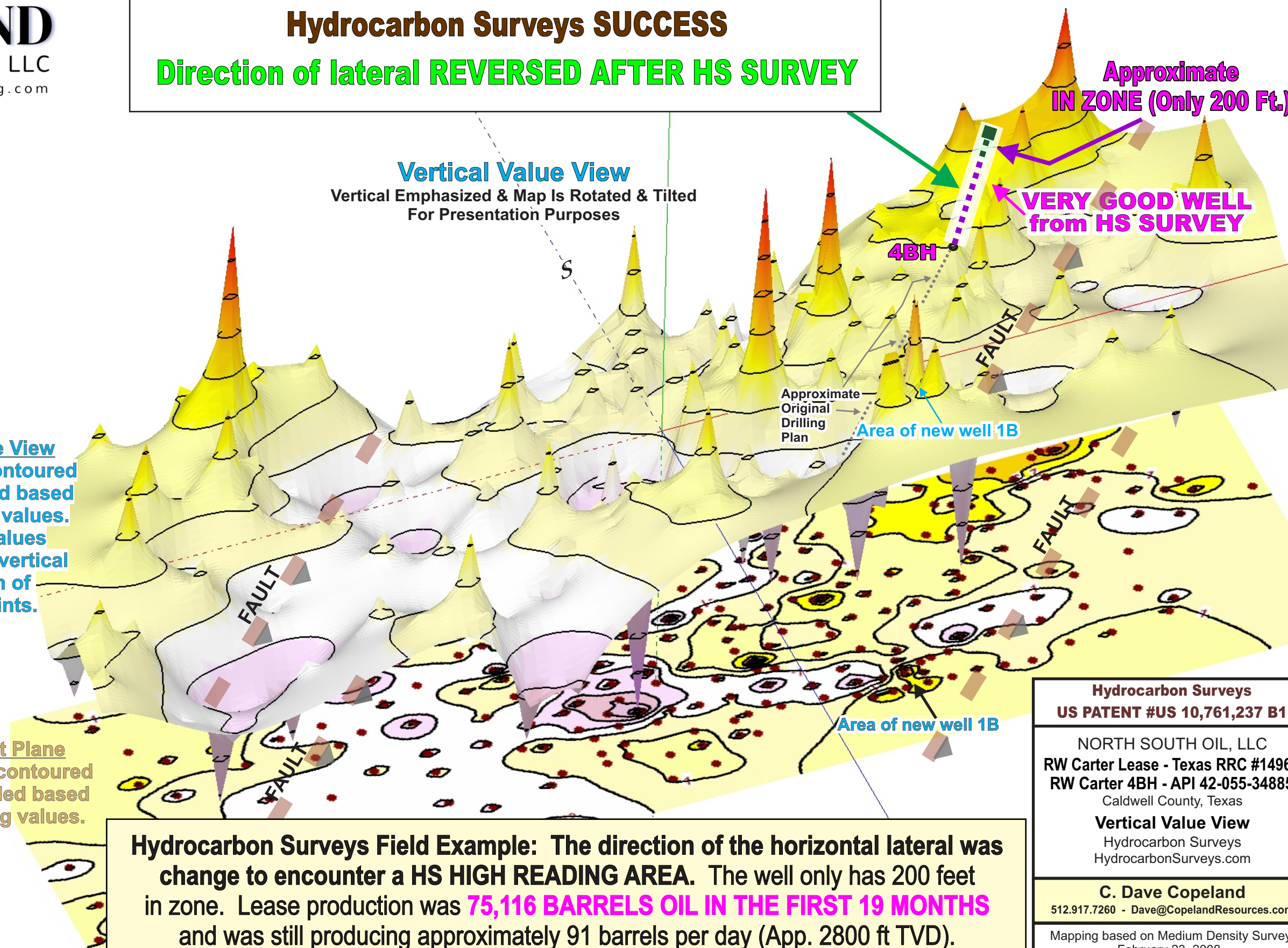
## Direction of lateral REVERSED AFTER HS SURVEY



**Vertical Value View**  
This plane is contoured and color coded based on HS reading values. ALSO, HS Values determine the vertical disposition of HS data points.

**Normal Flat Plane**  
This plane is contoured and color coded based on HS reading values.

**Vertical Value View**  
Vertical Emphasized & Map Is Rotated & Tilted For Presentation Purposes



**Hydrocarbon Surveys Field Example:** The direction of the horizontal lateral was change to encounter a HS HIGH READING AREA. The well only has 200 feet in zone. Lease production was **75,116 BARRELS OIL IN THE FIRST 19 MONTHS** and was still producing approximately 91 barrels per day (App. 2800 ft TVD).

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**Vertical Value View**  
Hydrocarbon Surveys  
HydrocarbonSurveys.com

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Mapping based on Medium Density Survey  
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**HYDROCARBON SURVEYS**  
a Unique Patented Technology for  
**FINDING OIL & GAS Reserves**  
**US PATENT # US 10,761,237 B1**  
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**Production Hub Pages**



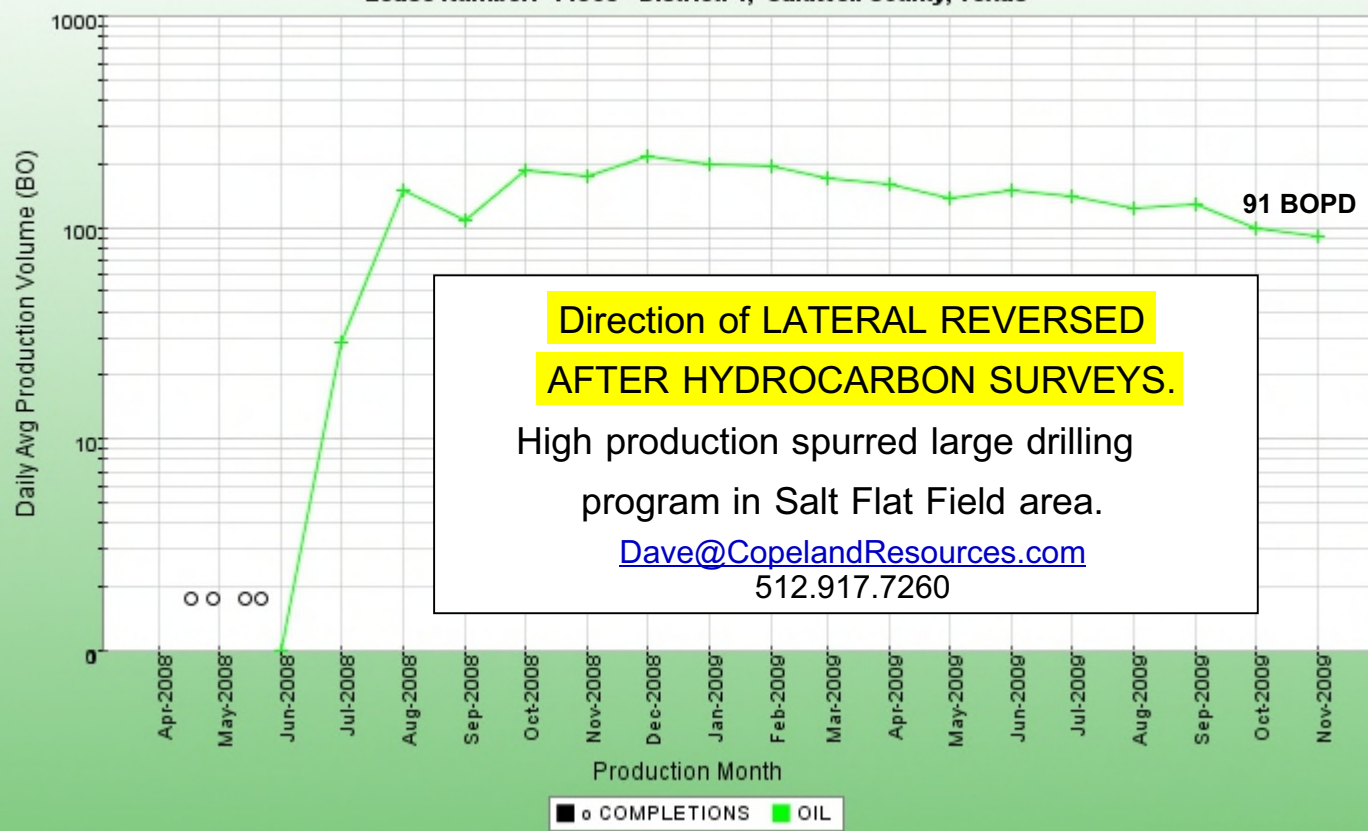
**RW Carter #4BH – Only 200 foot lateral in Edwards –  
Location selected from Copeland Remote Sensing, LLC high reading show.**

<b>Field</b> SALT FLAT (EDWARDS)	<b>Operator</b> NORTH SOUTH OIL, LLC	<b>Location</b> District: 1; Caldwell County, Texas
<b>Lease Name</b> CARTER, R. W.	<b>Oil Lease Number</b> 14965	<b>Cumulative (since 2008)</b> <b>75,116 BO</b>
<b>Wells</b>		
42-055-34882(1BH) 42-055-34883(2B) 42-055-34884(3B)		<b>42-055-34885(4BH)</b>
42-055-34909(5BH) 42-055-34910(6BH)		(1BH, 5BH, & 6BH not on line yet.)

**Oil Production**

Daily Avg Production Volume (Logarithmic) vs. Time

Lease Number: 14965 - District: 1; Caldwell County, Texas



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