

Airborne Measurement of Transient Pulses Locates Hydrocarbon Reservoirs

By

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and

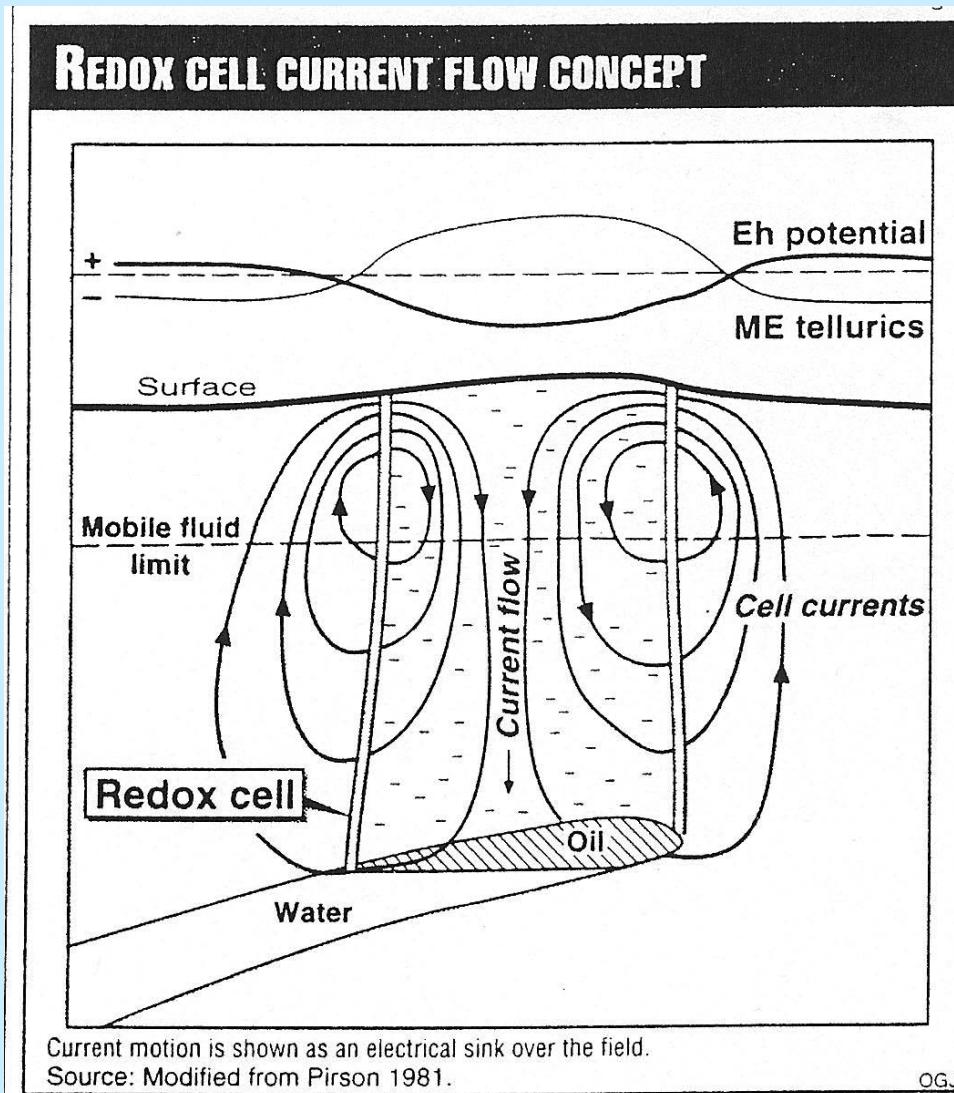
John R. Jackson, Pinemont

Technologies Inc, Littleton, Colorado

Perry A. Fischer, Editor of World Oil, on
Reviewing the AAPG-SEG “Surface Exploration
Case Histories” book in May 2003 Observed that:

- A theory on which a given geophysical method rests is both paramount and almost ignorable.
- While a sound theory is highly desirable for furthering an exploration method, billions of barrels of oil have been discovered by applying empirical, analogous responses from similar, hydrocarbon-productive geology.

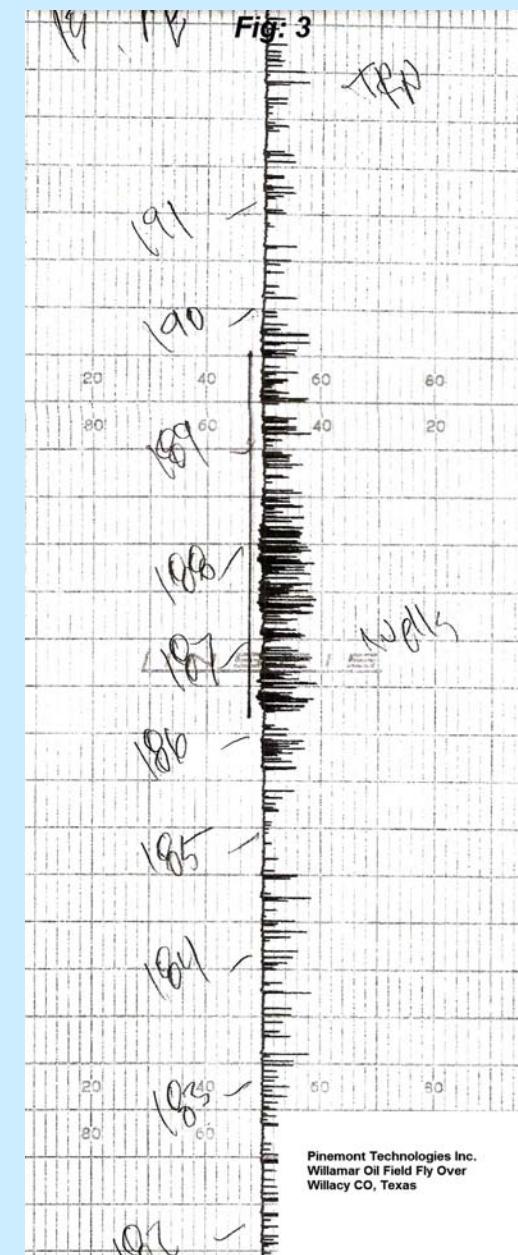
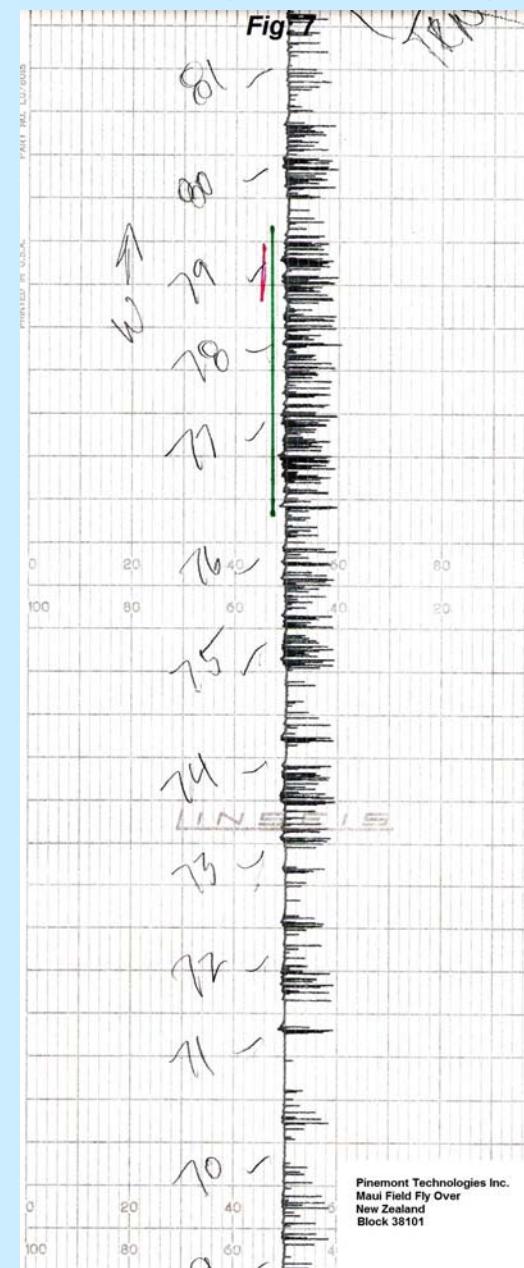
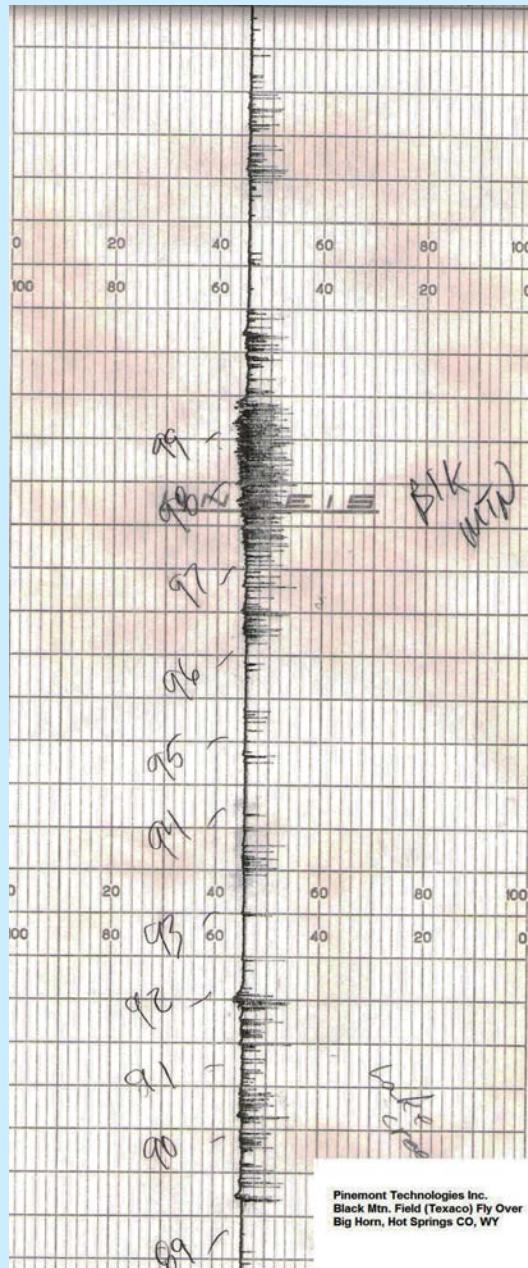
Transient Electromagnetic Pulses Generated by Lightning Strikes Around the World are Believed to Attach Themselves to, and Modulate, REDOX currents Generated by Reservoirs. The Pulses Can be measured Directly Over Hydrocarbon Reservoirs.



Transient Pulses Over Hydrocarbon Accumulations can be Recorded in Strip-Chart Form



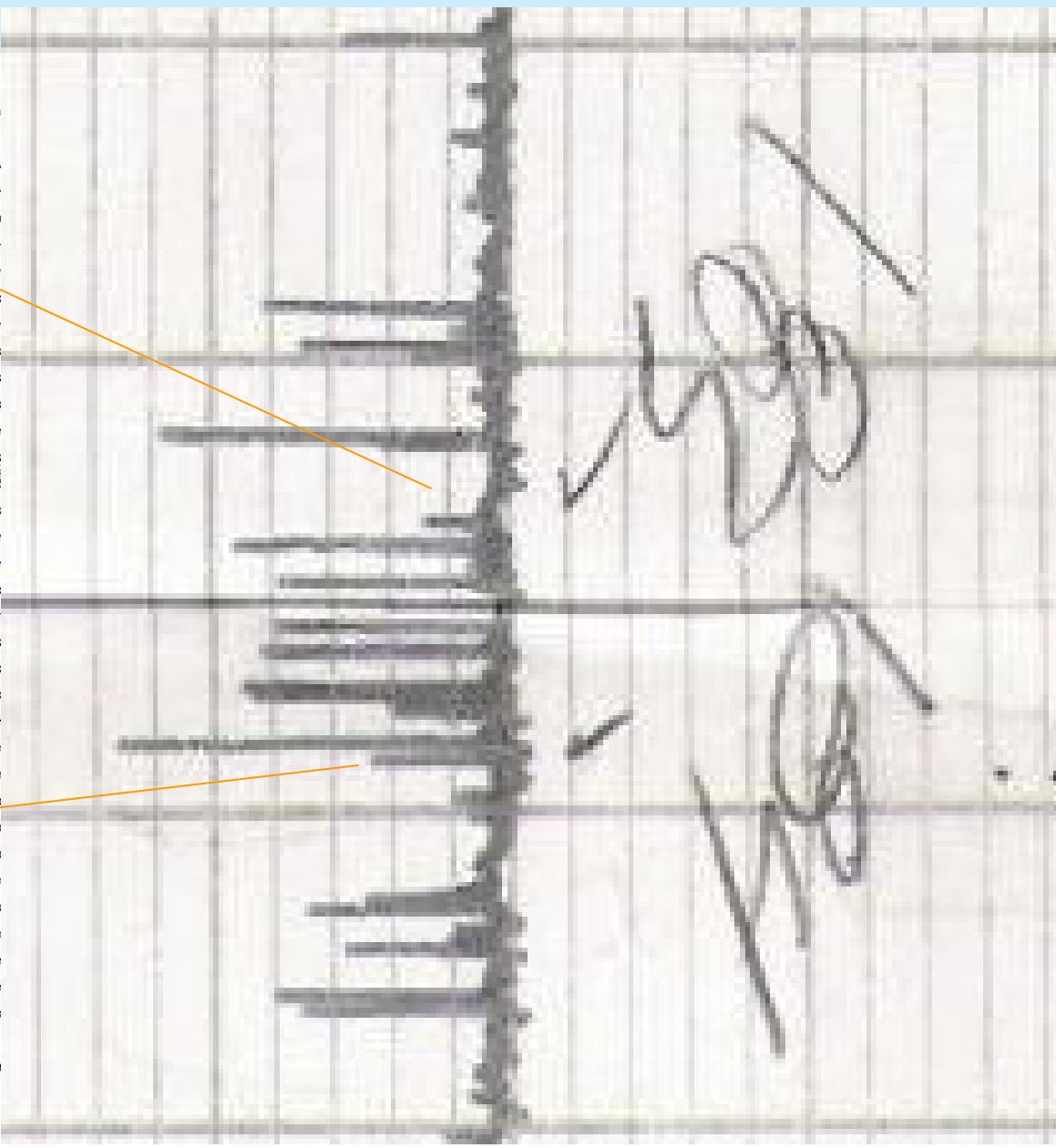
Strip Charts of Airborne Transient-Pulses Recorded Over Known Oil and Gas Fields



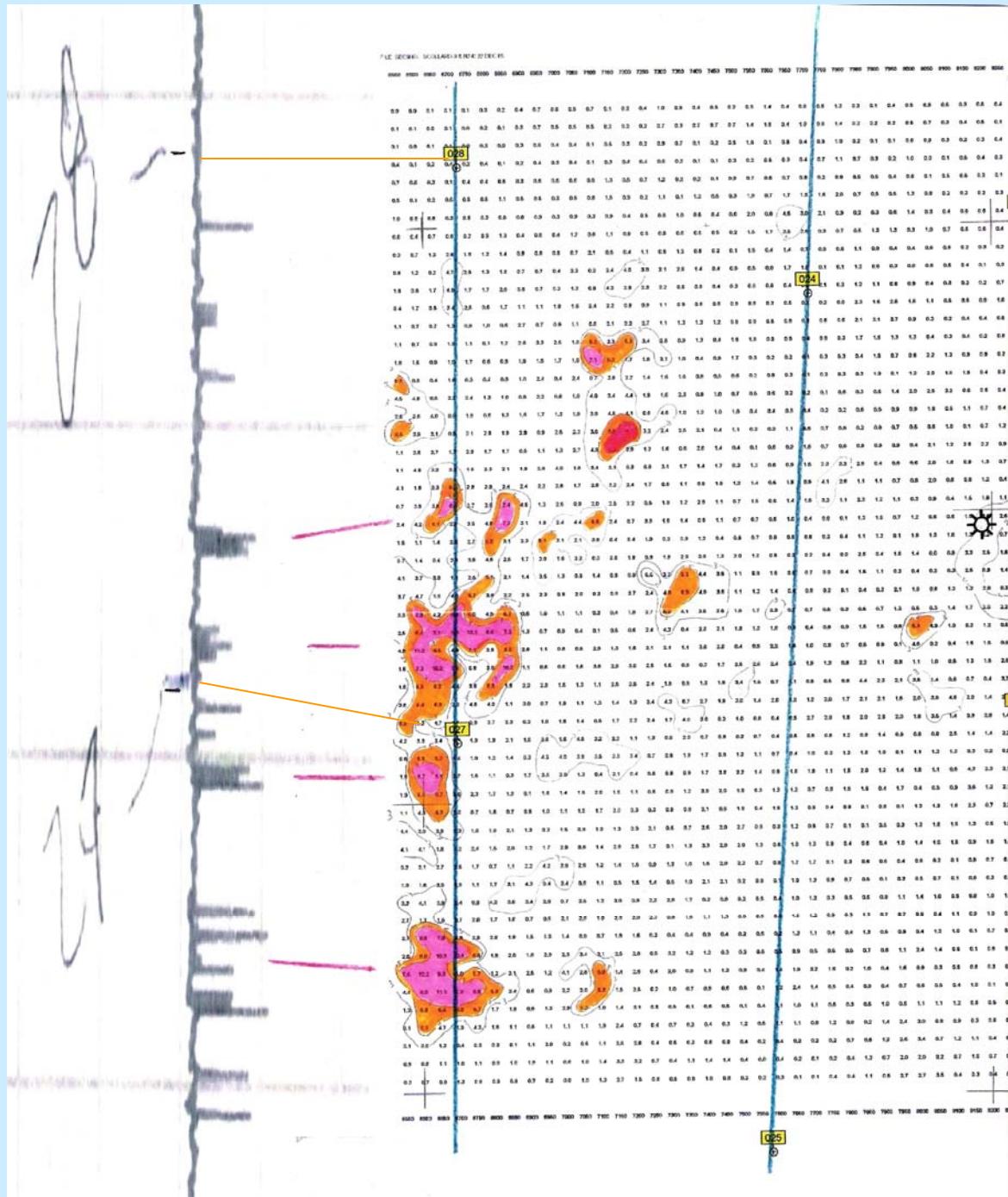
Airborne Transient Pulses Across Gulf-Leland's Leduc Reef field, Alberta

FILE: GMALLHGLWK4; HGI 22JUN03	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1	
	2.8	0.1	1.7	0.4	0.2	1.3	0.1	2.5	2.2	1.5	1.3	1.0	0.9	1.3	0.8	1.2	1.7	1.4	1.0	0.9	1.6	3.0	4.7		
	0.2	0.4	1.0	0.7	0.6	0.7	0.1	1.8	1.0	1.1	0.7	1.0	0.2	1.3	0.8	1.0	1.5	0.1	0.7	0.6	0.7	2.3	3.3		
	0.3	0.6	0.8	0.9	0.7	0.2	0.2	1.0	1.0	0.3	0.5	0.1	0.9	1.2	1.1	1.3	0.6	1.7	0.4	1.8	2.0	1.7			
	0.3	0.5	0.3	0.3	0.2	0.3	0.3	1.0	1.1	1.1	1.4	0.7	0.8	1.4	0.9	0.4	1.4	1.4	0.7	0.4	2.3	2.3	1.6		
	1.0	0.6	0.6	0.4	0.6	0.4	0.4	0.5	1.8	1.5	2.8	2.7	0.9	1.2	2.2	1.3	1.5	1.5	1.8	1.0	3.3	2.6	1.7		
	0.9	1.0	1.2	1.5	0.3	0.4	1.9	1.2	0.4	1.3	1.1	1.8	0.4	1.4	1.5	0.9	1.7	2.0	1.2	1.4	3.9	2.9	2.7		
	1.0	0.0	1.5	0.1	1.0	1.0	1.6	2.0	1.1	0.7	1.3	1.8	1.5	0.0	1.1	1.3	1.8	0.4	0.9	0.8	2.3	1.8	4.1		
	0.7	0.8	2.5	1.1	2.5	2.1	1.9	3.6	0.8	1.8	1.8	0.5	0.7	0.3	0.4	0.7	0.6	0.5	0.4	0.1	4.2	3.9	0.2		
	1.0	0.8	0.9	0.9	1.6	0.8	1.2	3.0	2.8	2.6	3.5	0.4	0.4	0.7	0.8	0.8	0.9	0.8	0.6	0.6	3.3	1.1	2.4		
	1.1	1.1	1.2	0.5	3.0	1.4	1.6	1.2	2.2	2.7	1.3	2.2	1.5	1.0	1.1	1.5	1.1	1.2	0.9	0.1	1.1	0.3	2.4		
	0.8	0.8	1.8	1.8	1.8	1.1	2.0	1.4	0.8	0.5	1.1	0.8	2.1	4.5	1.8	2.7	0.5	0.6	0.8	0.4	0.9	2.5	2.2		
	0.9	1.2	0.5	1.2	0.1	0.8	2.1	2.7	2.9	2.1	2.1	1.3	2.9	1.9	2.6	0.7	1.3	1.4	0.6	0.1	0.5	1.7	2.9		
	0.4	0.6	0.8	1.4	0.9	0.3	1.6	1.3	1.8	3.5	2.4	2.6	2.9	2.1	3.1	5.1	3.4	1.6	0.6	1.2	0.9	1.4	5.8		
	0.7	0.5	1.5	1.2	0.4	1.8	1.3	1.3	2.0	1.8	0.6	2.1	2.8	1.9	0.8	4.0	4.9	2.3	1.3	1.4	0.9	1.5	2.3		
	0.6	4.3	1.3	1.7	0.9	0.4	0.6	0.4	1.3	1.7	0.9	1.4	2.2	1.0	0.9	5.4	5.9	0.9	3.3	2.0	1.3	0.5	1.4		
	2.9	1.8	1.3	0.2	1.9	1.2	0.7	0.8	1.5	1.9	3.1	2.7	0.5	1.0	1.7	4.5	3.0	2.0	3.7	2.2	2.7	2.1	3.2		
	1.7	3.0	1.5	2.9	2.6	1.0	1.1	1.7	2.8	0.4	1.4	0.8	1.8	0.3	1.4	2.5	2.4	4.8	3.6	1.1	3.4	2.4	1.9		
	1.6	2.5	2.1	2.1	2.4	0.7	3.1	2.1	1.8	3.9	3.2	2.0	1.5	2.2	1.3	1.4	1.1	1.4	4.9	5.9	4.7	5.0	1.7	0.7	
	4.7	1.3	2.6	4.2	3.7	4.2	2.0	2.1	3.0	1.3	1.8	4.7	3.3	1.6	1.8	1.1	1.7	4.0	3.6	3.3	1.7	0.7	0.4		
	2.2	5.7	1.4	4.1	1.6	3.7	2.2	2.5	3.6	2.8	1.4	2.7	0.7	0.9	1.3	2.2	2.1	1.7	2.3	5.0	4.3	2.6	0.9		
	1.9	2.6	1.6	3.4	3.4	1.6	0.5	1.6	1.4	2.8	0.6	2.1	1.8	1.8	1.2	0.6	1.4	1.9	4.5	1.2	1.4	2.4			
	2.0	0.8	1.6	0.7	1.6	0.4	1.9	2.6	1.8	3.0	2.5	1.85	1.3	0.5	0.7	2.9	2.8	4.0	1.7	2.9	0.8	2.5	0.6		
	1.8	0.8	3.2	3.5	0.7	0.8	3.1	5.4	4.5	1.9	0.3	0.7	0.7	0.9	1.4	1.1	6.5	10.4	2.0	5.4	1.2	1.7	0.1		
	2.1	1.9	1.1	2.0	2.0	1.8	1.2	4.1	0.7	0.4	1.1	0.7	1.5	1.2	1.3	3.8	5.2	1.4	2.6	1.1	2.1	0.7	1.4	0.5	
	1.1	1.8	0.8	0.5	0.6	2.3	1.7	4.3	2.4	1.4	2.0	0.9	0.5	0.8	0.6	4.1	1.4	2.6	1.3	1.0	0.4	0.9	0		
	0.7	1.2	0.9	1.1	1.3	0.1	1.3	4.5	2.8	1.4	0.8	0.4	0.4	0.7	0.4	0.8	2.1	1.2	1.8	0.8	0.8	0.3	0		
	0.6	1.7	1.4	1.2	0.4	0.4	0.4	0.7	0.5	1.3	0.4	0.6	0.9	1.0	0.4	0.5	2.1	2.9	0.9	1.0	1.3	1.2	1.4		
	3.2	2.0	0.9	1.3	0.4	0.7	1.3	0.8	1.2	0.2	1.5	1.0	0.9	0.5	0.7	0.6	1.7	1.8	0.5	0.8	1.1	0.5	0.5		
	3.5	1.5	1.8	1.8	1.5	0.8	0.9	1.8	1.2	0.7	1.5	0.4	1.1	1.8	1.3	1.3	2.3	0.9	0.4	0.7	0.9	0.5	0.1		
	6.8	3.7	2.5	2.3	3.7	0.2	5.0	5.3	4.0	1.2	1.3	1.7	2.4	0.8	1.5	0.8	2.2	1.3	1.1	0.1	1.2	1.3	1.5		
	4.8	2.5	2.3	2.2	2.8	1.4	4.8	5.2	1.8	1.2	1.2	1.8	1.1	1.2	0.4	2.0	1.8	1.0	3.4	1.6	1.9	0.5	0.8		
	2.6	1.1	1.9	2.3	0.5	1.5	1.6	2.4	1.3	1.2	0.7	1.2	0.3	1.7	1.7	1.8	1.0	4.8	2.1	1.9	1.3	2.8	2.5		
	1.2	0.6	2.2	1.0	1.7	1.4	0.7	1.3	0.8	2.8	1.2	0.4	0.2	0.7	1.1	1.8	2.4	3.7	2.1	1.2	1.4	2.6	2.5		

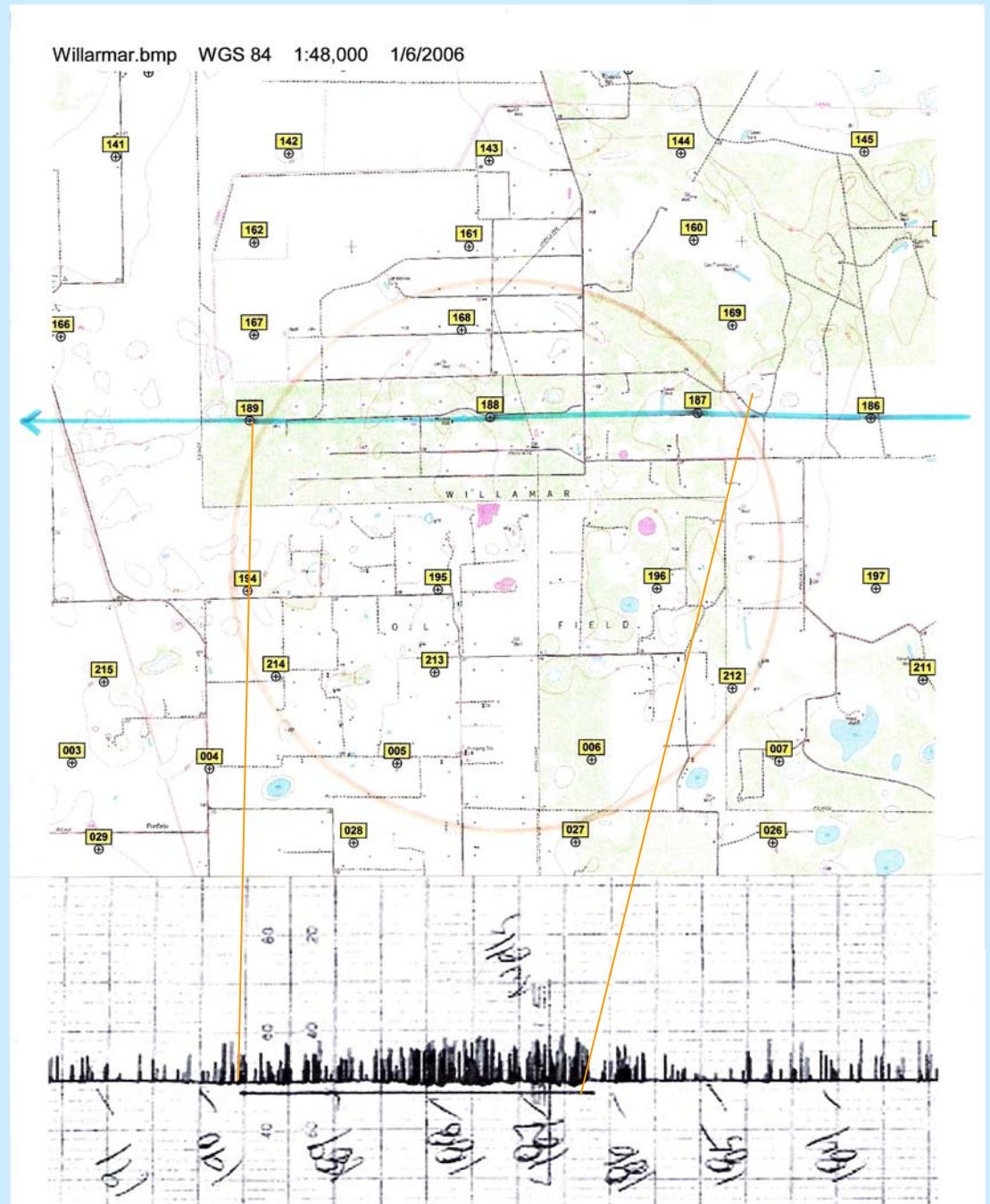
MAX= 10.4 MIN= 0.0 MEAN= 1.6 STD= 1.2



Airborne Transient- Pulse-Survey Line over Ground- Magnetic HG' Survey of Leduc Pinnacle Reef Prospects, Alberta



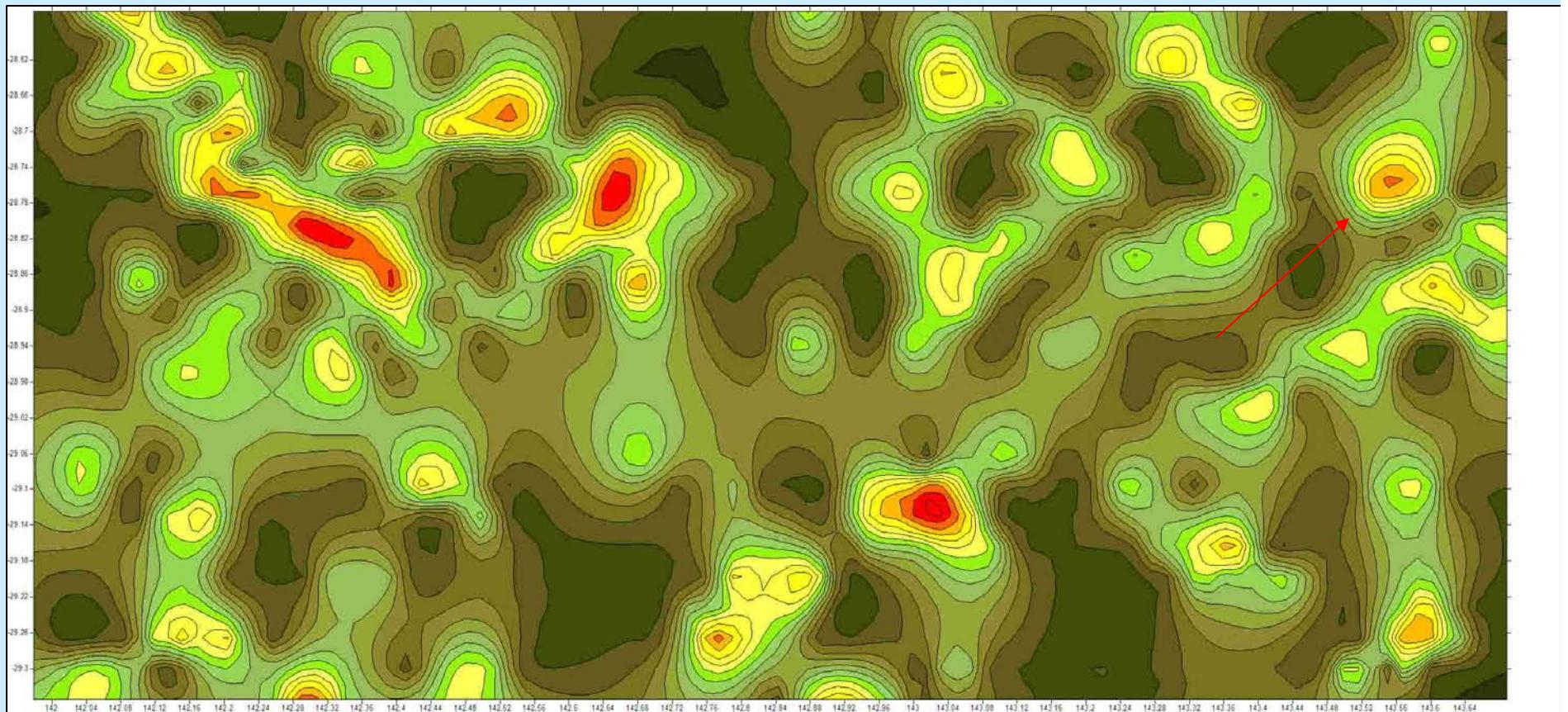
Airborne Transient-Pulse Trace Across the 3-Mile Diameter Willamar Field in South Texas. This Field has Cumulative Production of 136,050,000 mcf of Gas and 14.5 Million Barrels of Light Oil



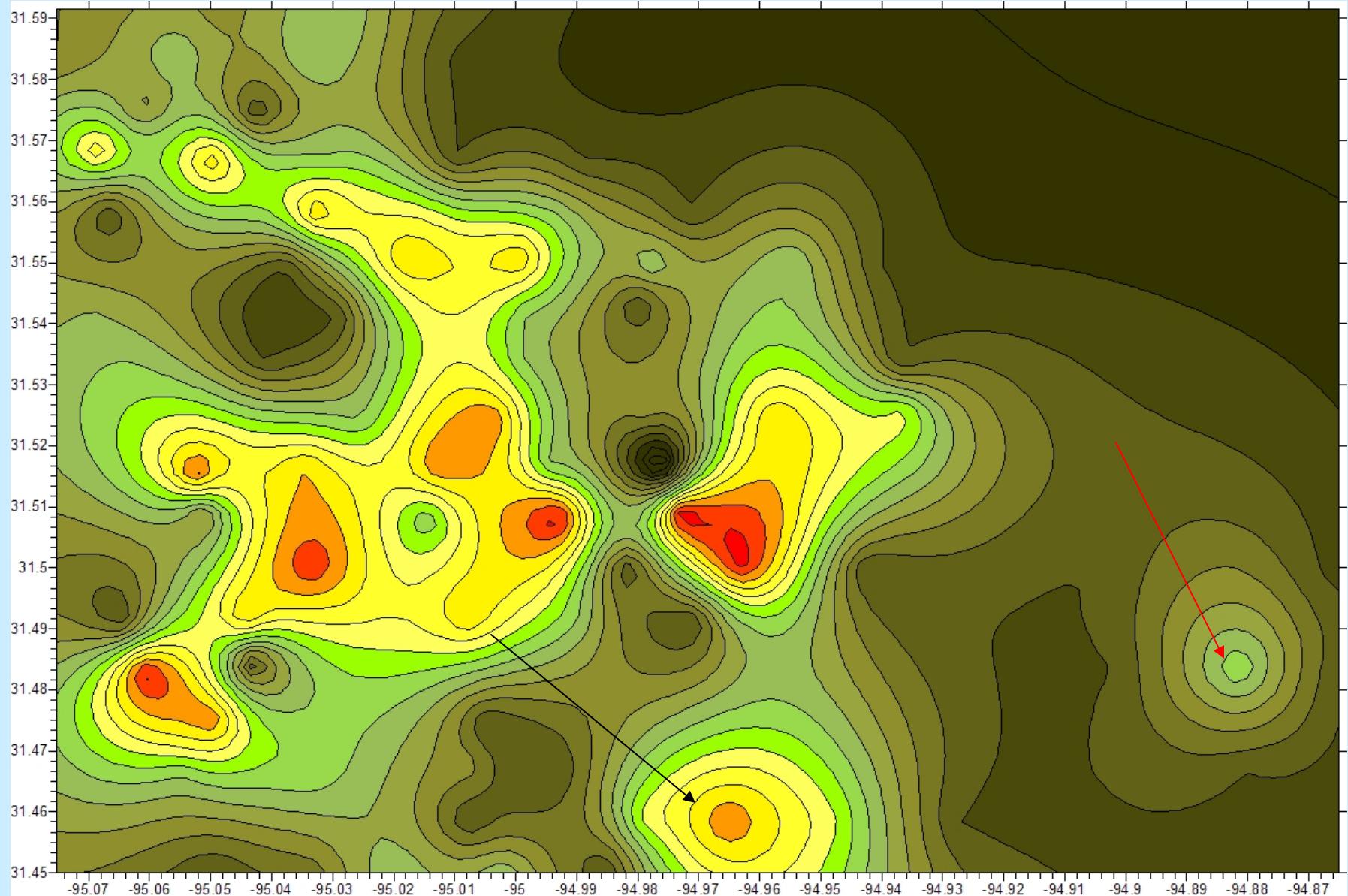
Cessna 206, Jackson, Pilot and Geologist Meet on Deserted Outback Road to Confer



A 60 by 120nm Pulse Density Map of the Cooper Basin, NSW, Australia



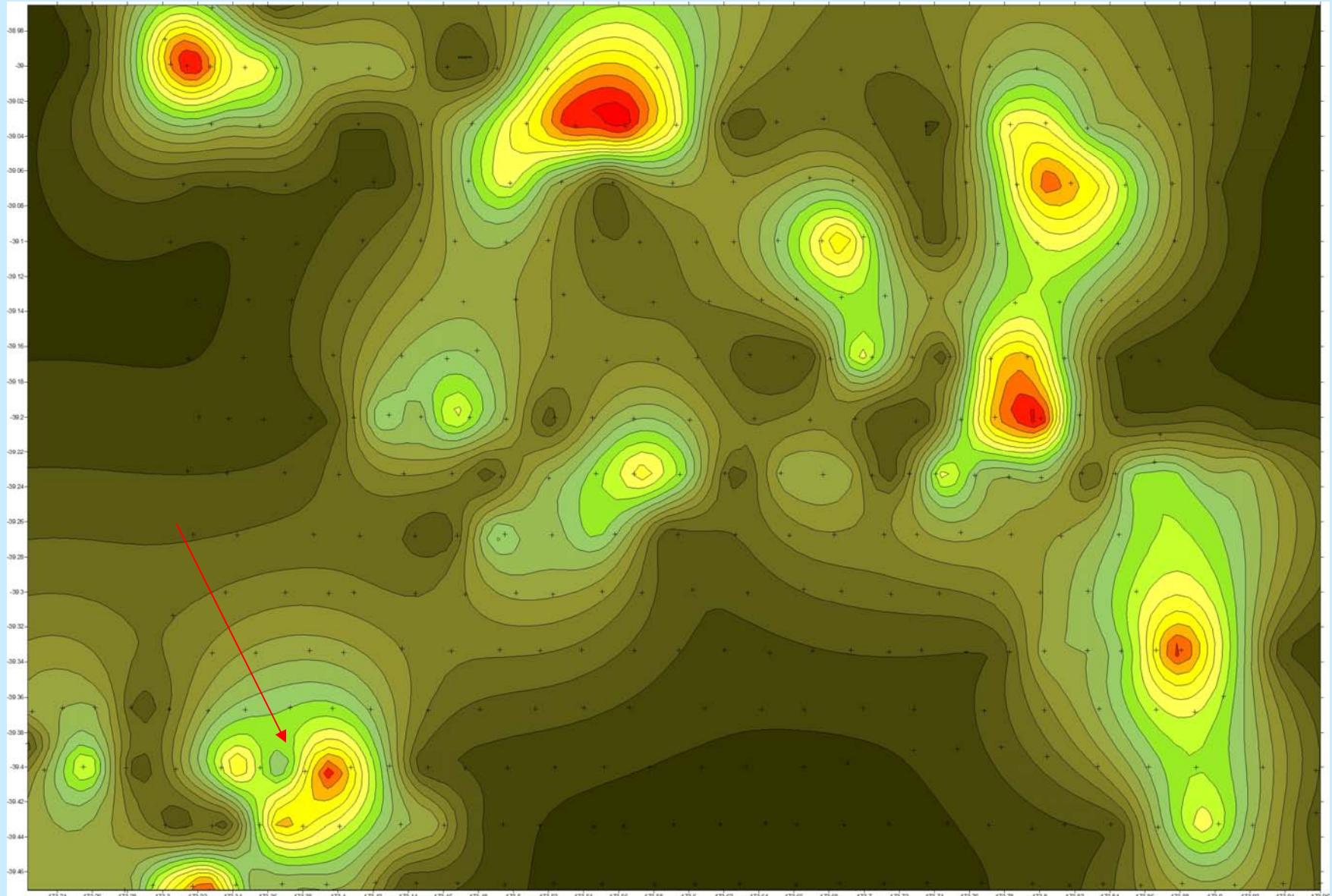
A 7 by 10nm Survey Over Cherokee County, East Texas.
Weakest, Eastern-Most Anomaly Has Produced 15 BCF from 4
Wells in the Mesozoic Glen Rose Limestone



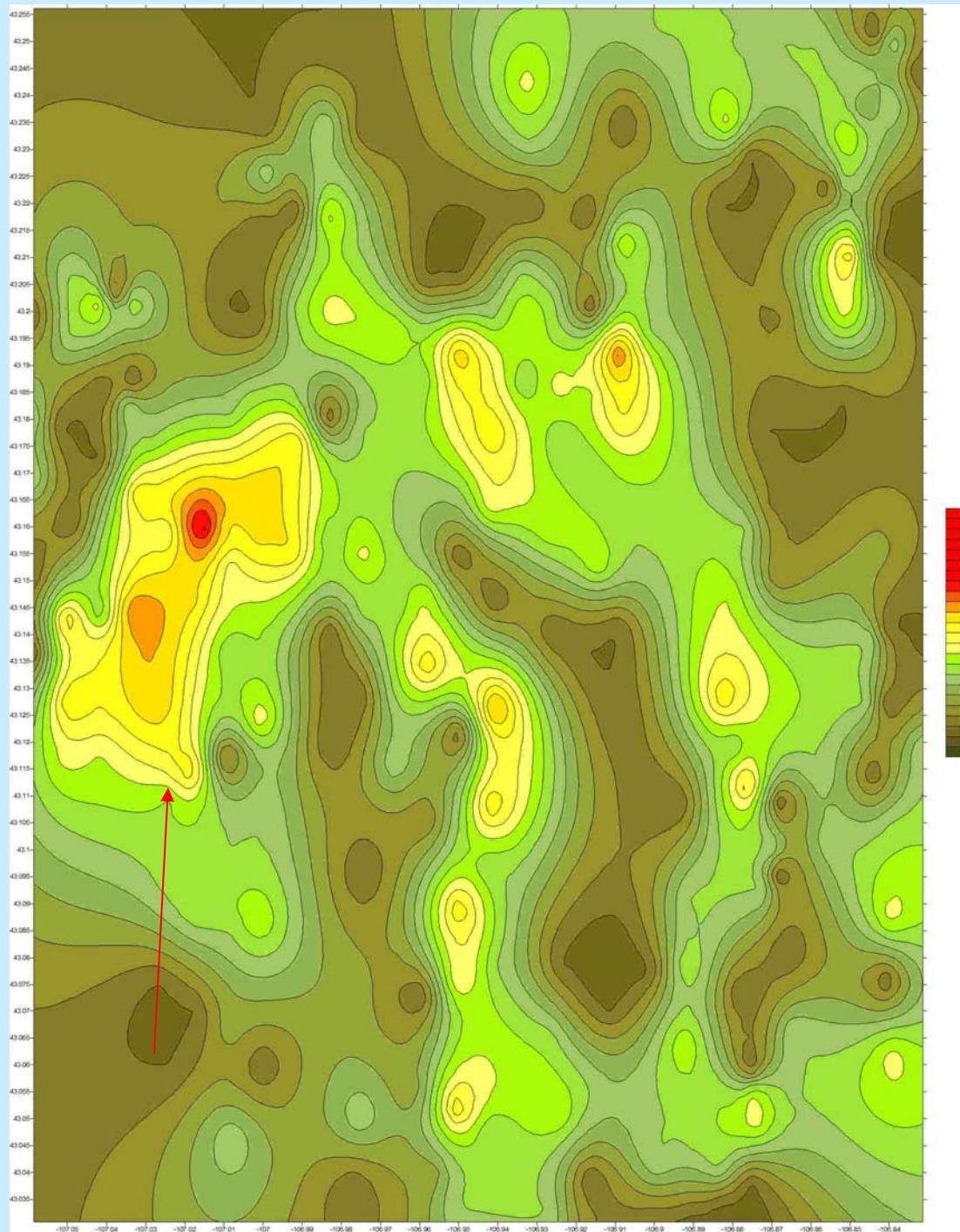
Off-Shore Survey Between North and South Islands,
New Zealand. The City of Nelson is Dead Ahead.



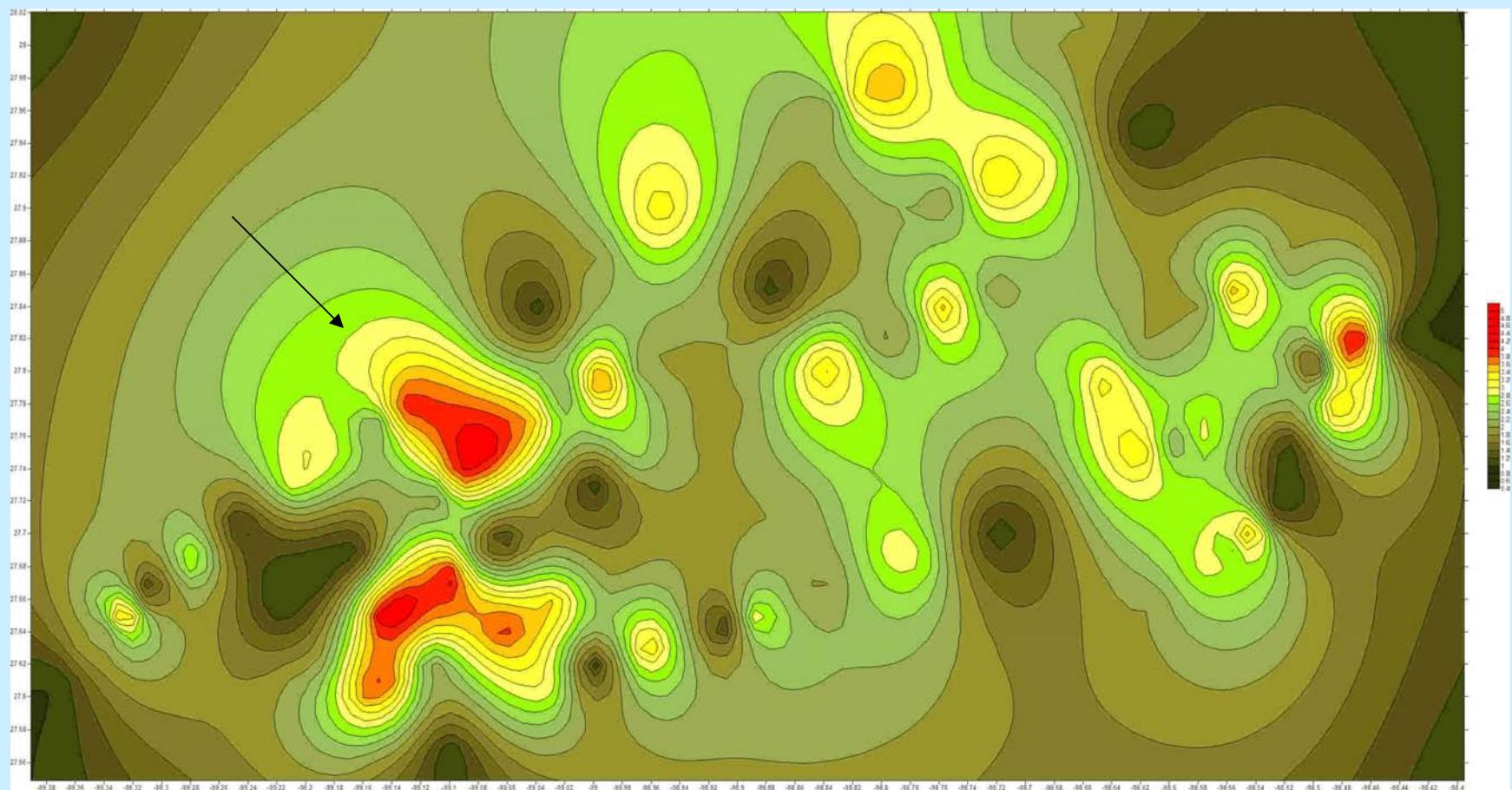
Off-Shore Survey Near New Plymouth, New Zealand. Survey is 30nm by 60nm.



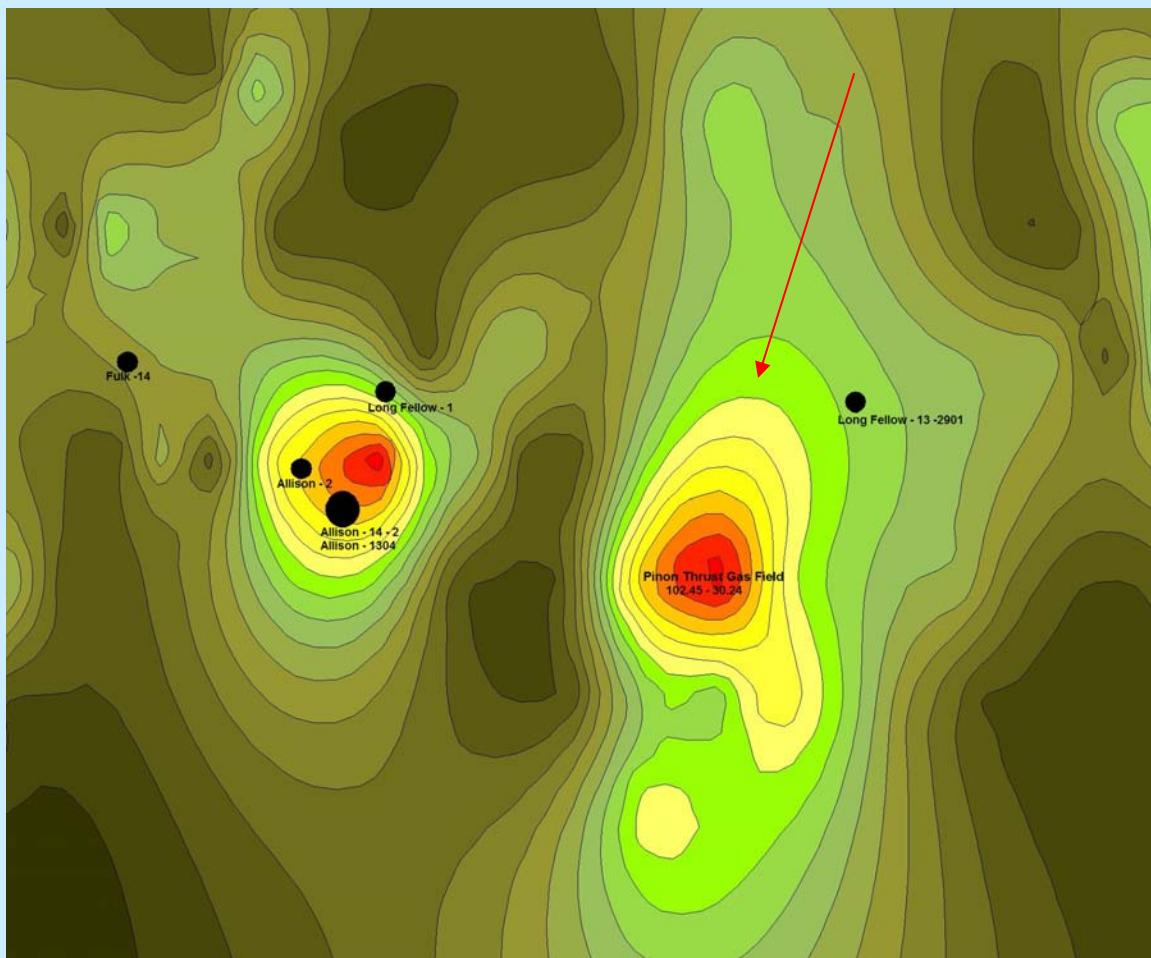
western-most Anomaly is Okie Oilfield, Producing from the 1000-m Deep Tensleep Formation, Natrona County, Wyoming. Just to the NE is the Depleted Notches Dome Oilfield. Survey Area is 35nm by 20nm. Line-Spacing is 800m



A 30 by 50nm Survey Near Laredo in Webb County, Texas. Four Gas Wells were Drilled Recently to a Depth of 16,000' to the Wilcox Cretaceous Limestone in the Upper Western Anomaly.



Piñon Thrust Gas Field, Pecos County, Texas (Eastern Anomaly) was Producing (~30 BCF) at Time of Aerial Survey. Subsequently, 4 Producing Wells were Drilled on Anomaly, 5 Miles to the West.



After Surveys Had been Completed, but Unknown to the Operators, Producers were Independently Drilled on Positive Transient-Pulse Anomalies—Here's a Partial List

Updated/Corrected 1/06

Well	Location
Madeley 1-H	Shelby County, Texas
Garcia "JA" #1, #11- (multiple wells)	Starr County, Texas
Massey 1-H (blow out)	Shelby County, Texas
Krammer 1-H	Shelby County, Texas
Frank Yturria #1	Hildago County, Texas
Garcia #2	Starr County, Texas
Richards G.L. #1	Starr County, Texas
Bloomberg-Sam "D" #26 - (multiple wells)	Starr County, Texas
Moore "A" #4	Fort Bend County, Texas
Polly "OH" 3-H	Shelby County, Texas
Trinidad-Bridge #2H	Shelby County, Texas
SL17742 #1 (Offshore)	E. Cameron Block 4
Fash #1	Fort Bend County, Texas
Yturria-Greehey #1	Starr County, Texas
Sessions #1,#2	Cherokee County, Texas
Long Fellow #1	Pecos County, Texas
Allison #2	Pecos County, Texas
Diaz #1, #6, #5	Starr County, Texas
Villareal #1, #2	Starr County, Texas
Allison - 14 -2	Pecos County, Texas
Allison #1304, #2	Pecos County, Texas
Long Fellow -13 – 2901	Pecos County, Texas
Temple W. - West #40, #43 - (multiple wells)	Hidalgo County, Texas
Dingle #1	Hidalgo County, Texas
Polly 1-H	Shelby County, Texas

Any Risks in Airborne Transient-Pulse Surveys?
Few that We Know of, Except Perhaps, Pilot
Boredom.



Conclusions

- Airborne transient-pulse technology identifies the location of sub-surface hydrocarbons; **we have determined this empirically.**
- No unifying theory linking lightning strikes, geochemical REDOX cells, and passive telluric currents has yet been agreed upon, but likely exists.
- Over 100K miles of lines have been flown, and numerous anomalies found, and subsequently drilled, resulting in successful producers.
- Our statistics point to a valuable reconnaissance tool for industry, and certainly for governmental national resource surveys.