ESRI PUG 2005

Web Services & ArcGIS Server

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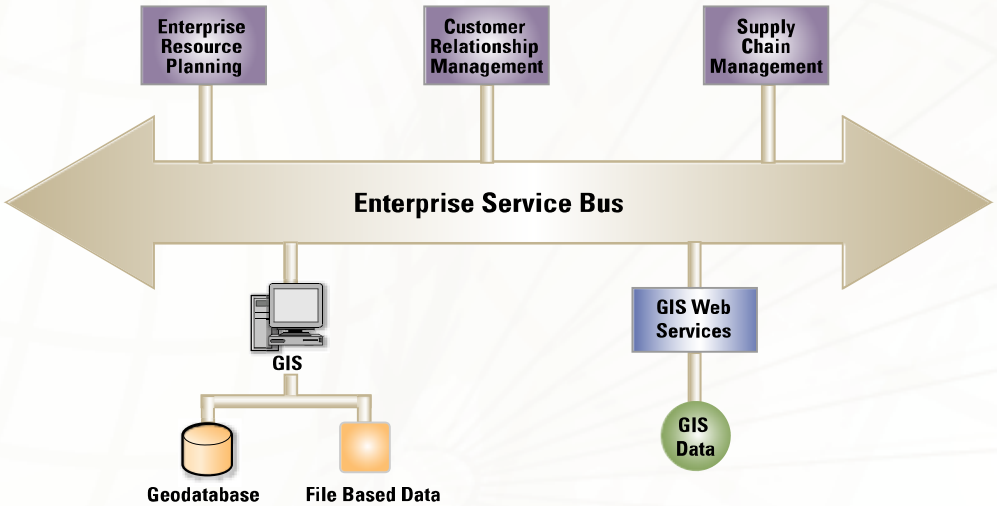
Presented by **BRAD TAGGART**
product manager

petroweb

Services-Oriented Architecture



Workflow Integration via Web Services and Messaging

"A new trend is now underway to integrate heterogeneous application logic using services based architectures developed originally for Web computing. This concept is referred to as a Services-Oriented Architecture (SOA) and will be used to integrate existing information systems in order to automate business practices, work flows, and information flows both within and across organizations.

SOA was developed by IBM, Microsoft, and other leading IT industry organizations to support the building of applications that integrate existing computing technologies into solutions-based systems.

GIS will be a key part of these implementations."

- ESRI

WHY WEB SERVICES

- A standard, uniform way to represent and transfer data (XML)
- A common, extensible message-processing format (SOAP)
- A common service description language (WSDL)
- A way to locate services (UDDI)

GIS SERVER TECHNOLOGIES

- **Geopublishing**
  - Streets
  - Weather
  - Images
- **Geoprocessing**
  - Address Finder
  - Route Finder
  - Proximity

OIL and GAS EXAMPLES

- AOI
- Data Entry
- Proximity Searches
- Elevation Web Service

AREA OF INTEREST USE CASE

User Enters AOI

Select Data Types

Notification of
New Data

Service Monitors
New Data Intersection
With User AOI

User Views Map
and Report

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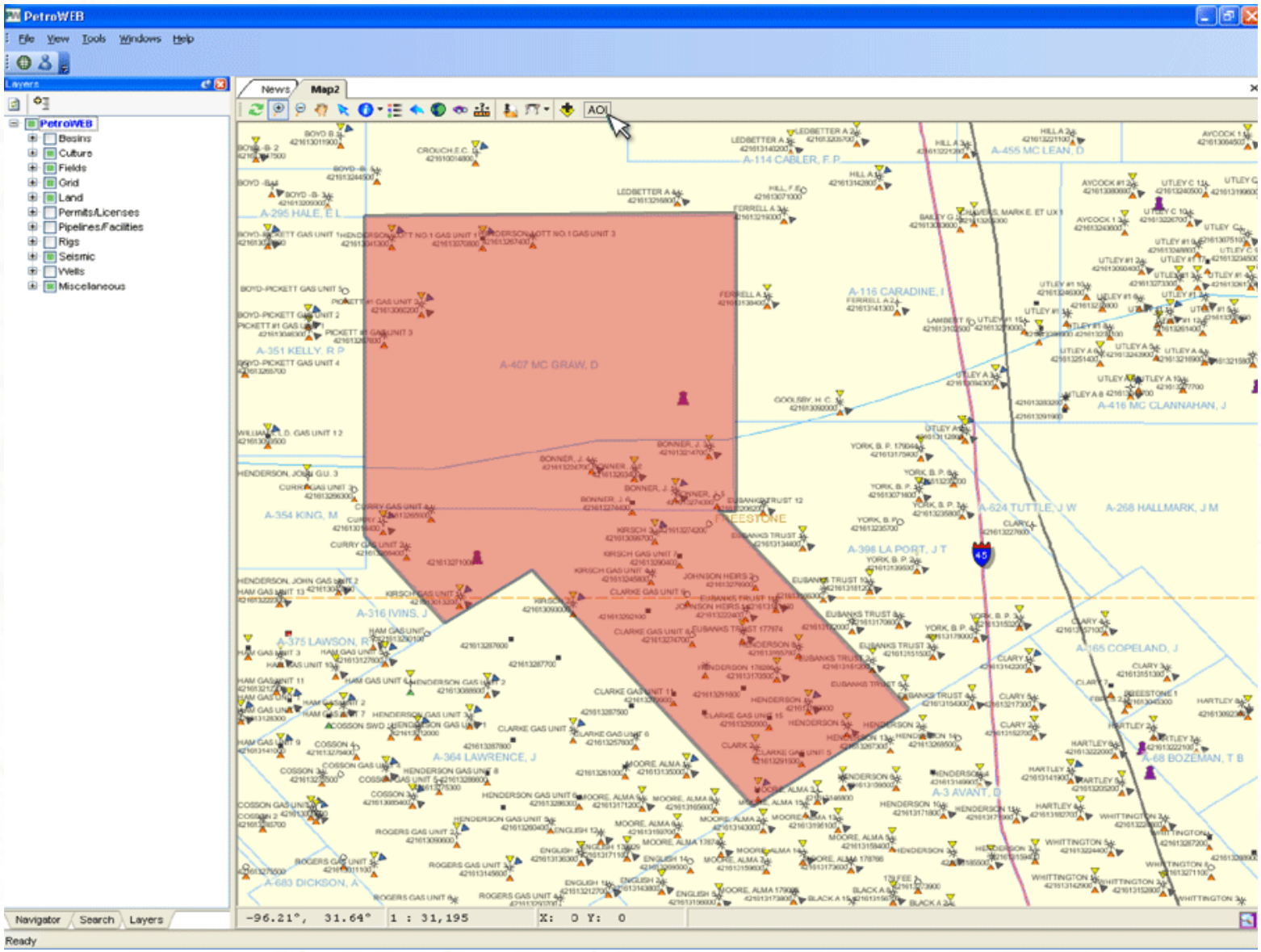
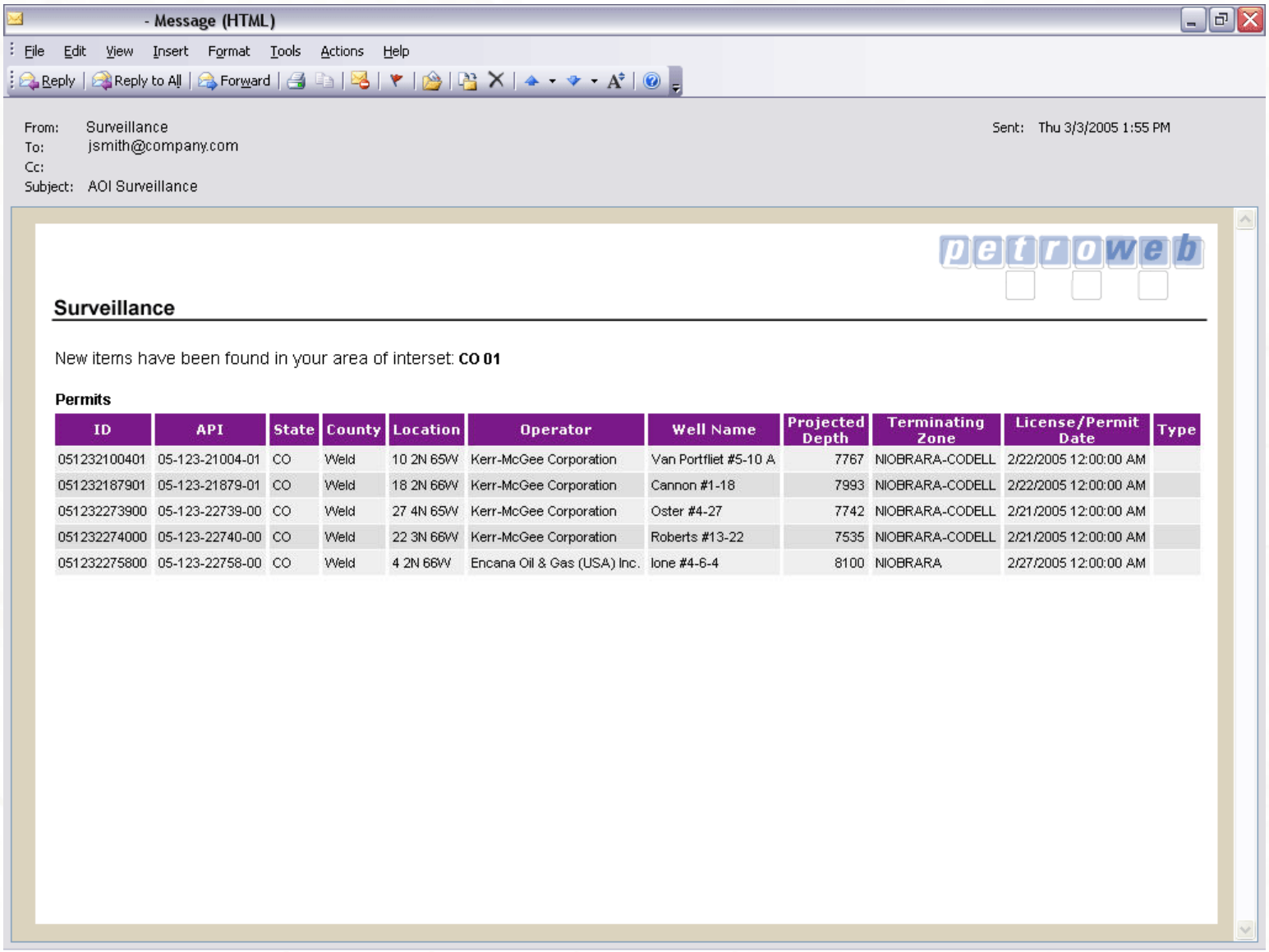

PetroWEB
File View Tools Windows Help
Layers
PetroWEB
Basins
Culture
Fields
Grid
Land
Permits/Licenses
Pipelines/Facilities
Rigs
Seismic
Wells
Miscellaneous
News
Map2
AOI
A-114 CABLER, F P
A-455 MC LEAN, D
A-295 HALE, E L
A-116 CARADINE, I
A-351 KELLY, R P
A-407 MC GRAW, D
A-416 MC CLANNAHAN, J
A-354 KING, M
FREESTONE
A-624 TUTTLE, J W
A-268 HALLMARK, J M
A-398 LA PORT, J T
A-316 IVINS, J
A-375 LAWSON, R
A-165 COPELAND, J
A-364 LAWRENCE, J
A-68 BOZEMAN, T B
A-3 AVANT, D
A-683 DICKSON, A
Navigator
Search
Layers
-96.21°, 31.64°
1 : 31,195
X: 0 Y: 0
Ready



- Message (HTML)

File Edit View Insert Format Tools Actions Help

Reply | Reply to All | Forward

From: Surveillance
To: jsmith@company.com
Cc:
Subject: AOI Surveillance

Sent: Thu 3/3/2005 1:55 PM

Surveillance

New items have been found in your area of interset: **CO 01**

Permits

ID	API	State	County	Location	Operator	Well Name	Projected Depth	Terminating Zone	License/Permit Date	Type
051232100401	05-123-21004-01	CO	Weld	10 2N 65W	Kerr-McGee Corporation	Van Portfliet #5-10 A	7767	NIOBRARA-CODELL	2/22/2005 12:00:00 AM	
051232187901	05-123-21879-01	CO	Weld	18 2N 66W	Kerr-McGee Corporation	Cannon #1-18	7993	NIOBRARA-CODELL	2/22/2005 12:00:00 AM	
051232273900	05-123-22739-00	CO	Weld	27 4N 65W	Kerr-McGee Corporation	Oster #4-27	7742	NIOBRARA-CODELL	2/21/2005 12:00:00 AM	
051232274000	05-123-22740-00	CO	Weld	22 3N 66W	Kerr-McGee Corporation	Roberts #13-22	7535	NIOBRARA-CODELL	2/21/2005 12:00:00 AM	
051232275800	05-123-22758-00	CO	Weld	4 2N 66W	Encana Oil & Gas (USA) Inc.	Ione #4-6-4	8100	NIOBRARA	2/27/2005 12:00:00 AM	

DATA ENTRY USE CASE

Data Entry Operator
Enters Legal Description
of Well

System Sends Legal
to Web Service

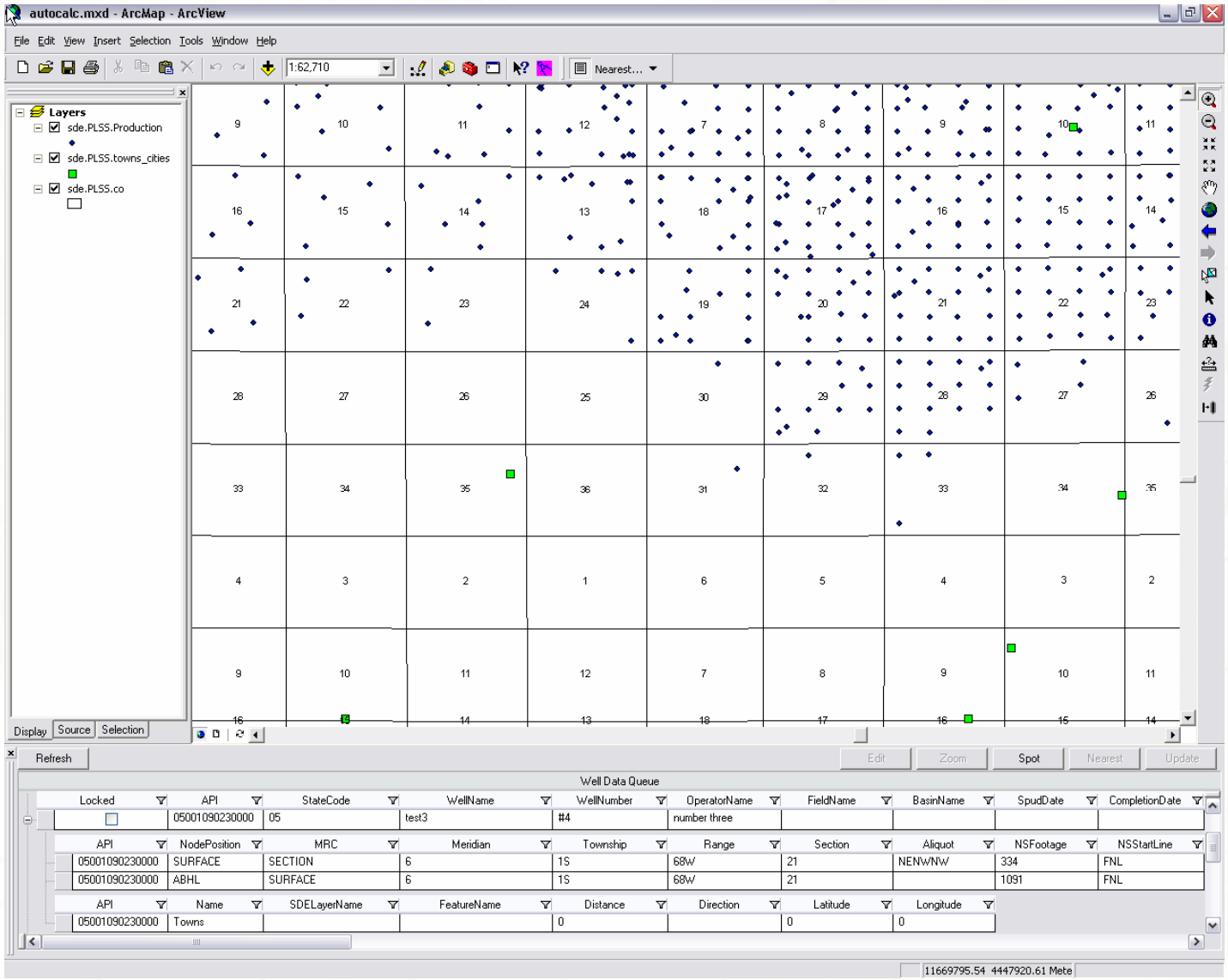
6-12N-68W-12 SENE

100°56'45.06"W
41°22'33.71"N

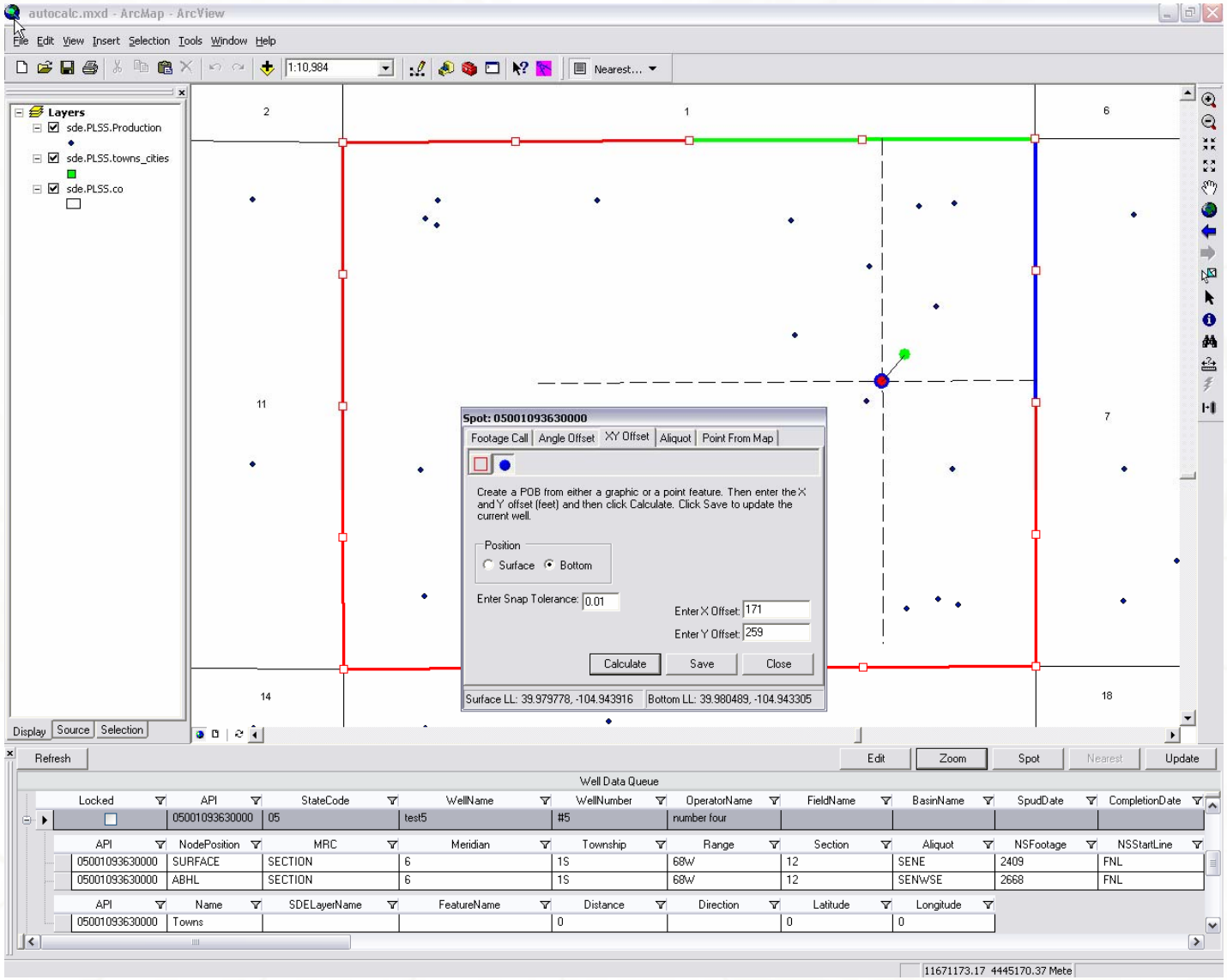
Coordinates are Returned
to Data Entry Client

Service Creates Spatial
Location for Well

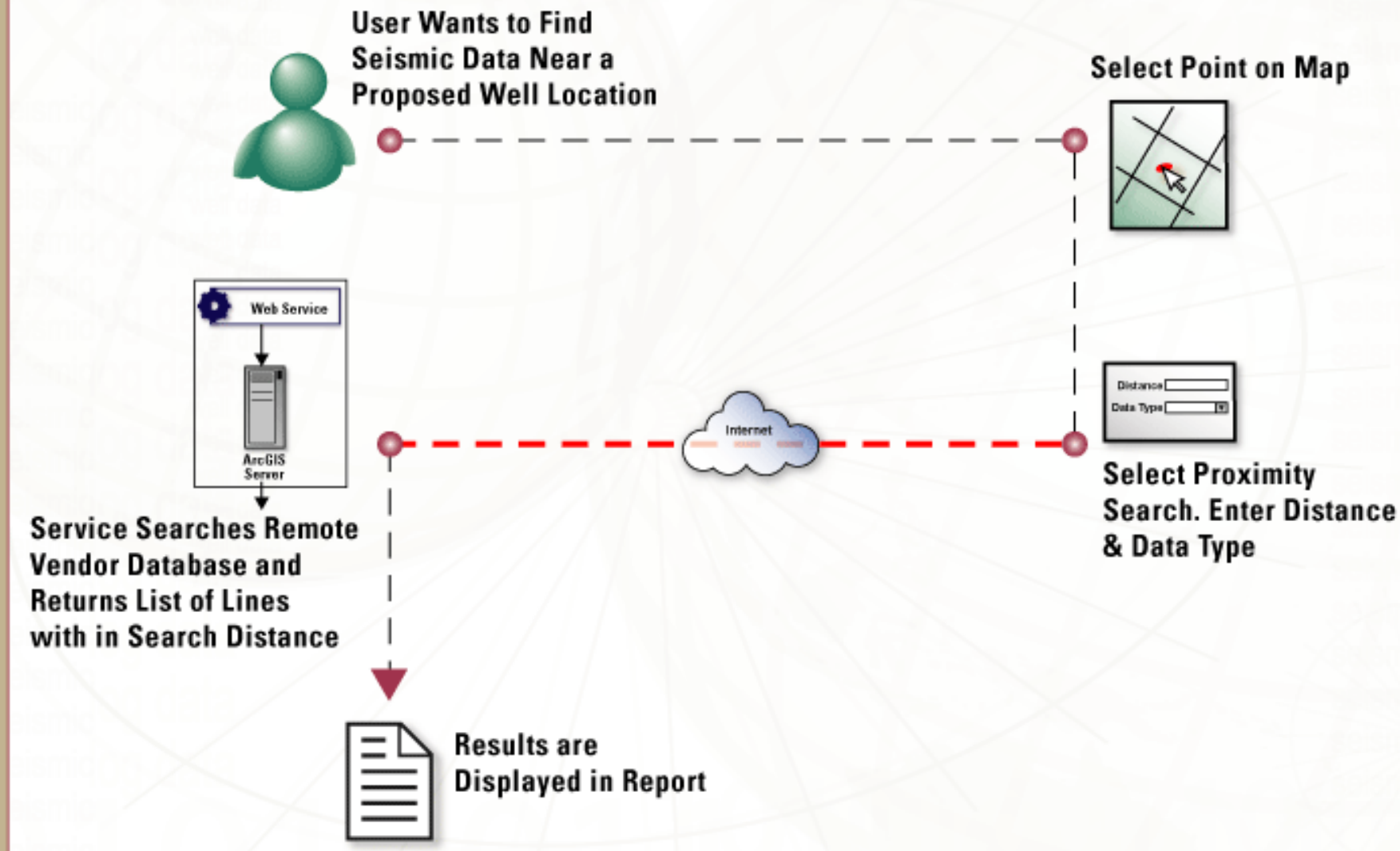
DATA ENTRY USE CASE



DATA ENTRY USE CASE



PROXIMITY SEARCHES USE CASE



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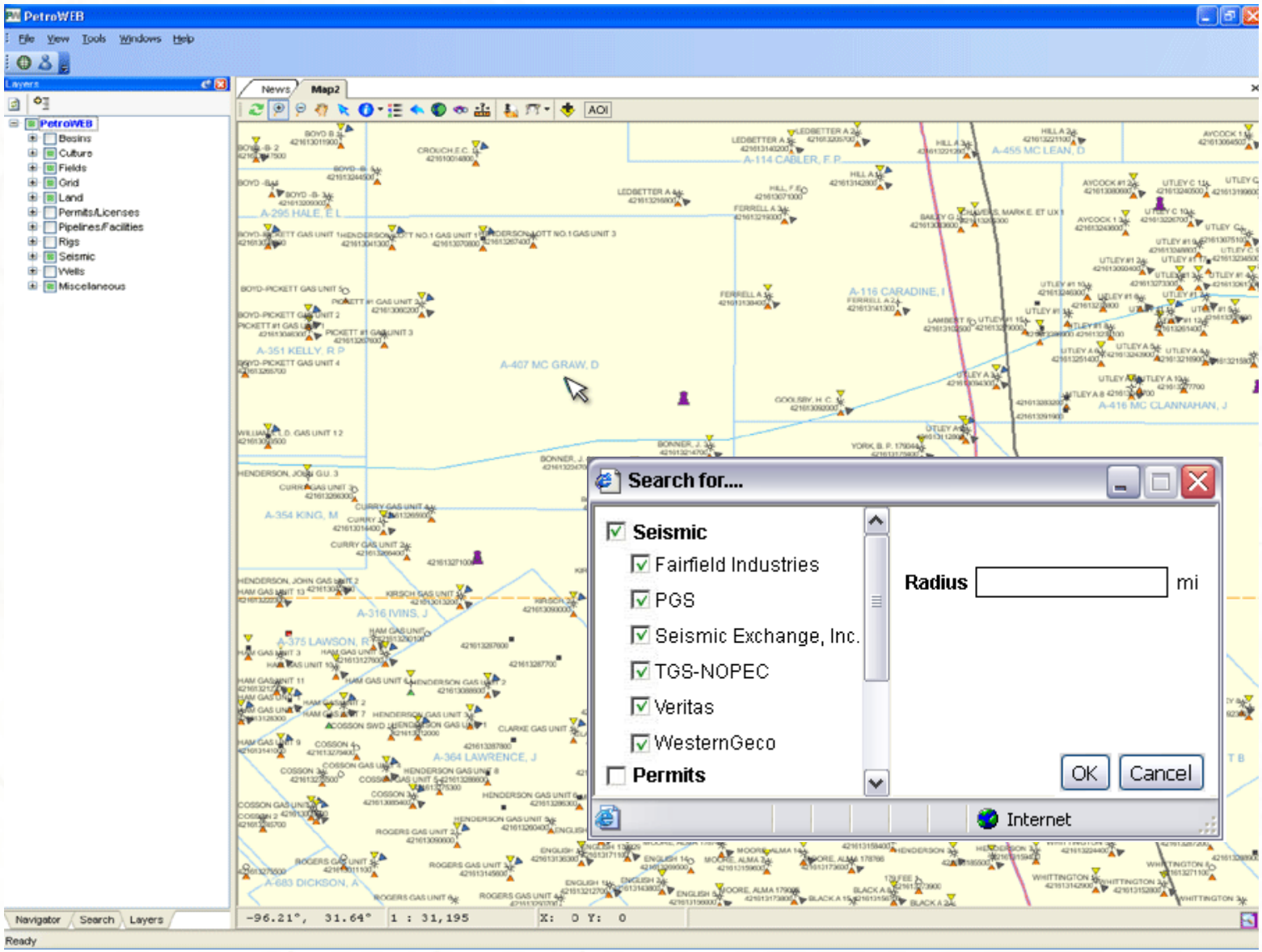
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File View Tools Windows Help
Layers
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Rigs
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Wells
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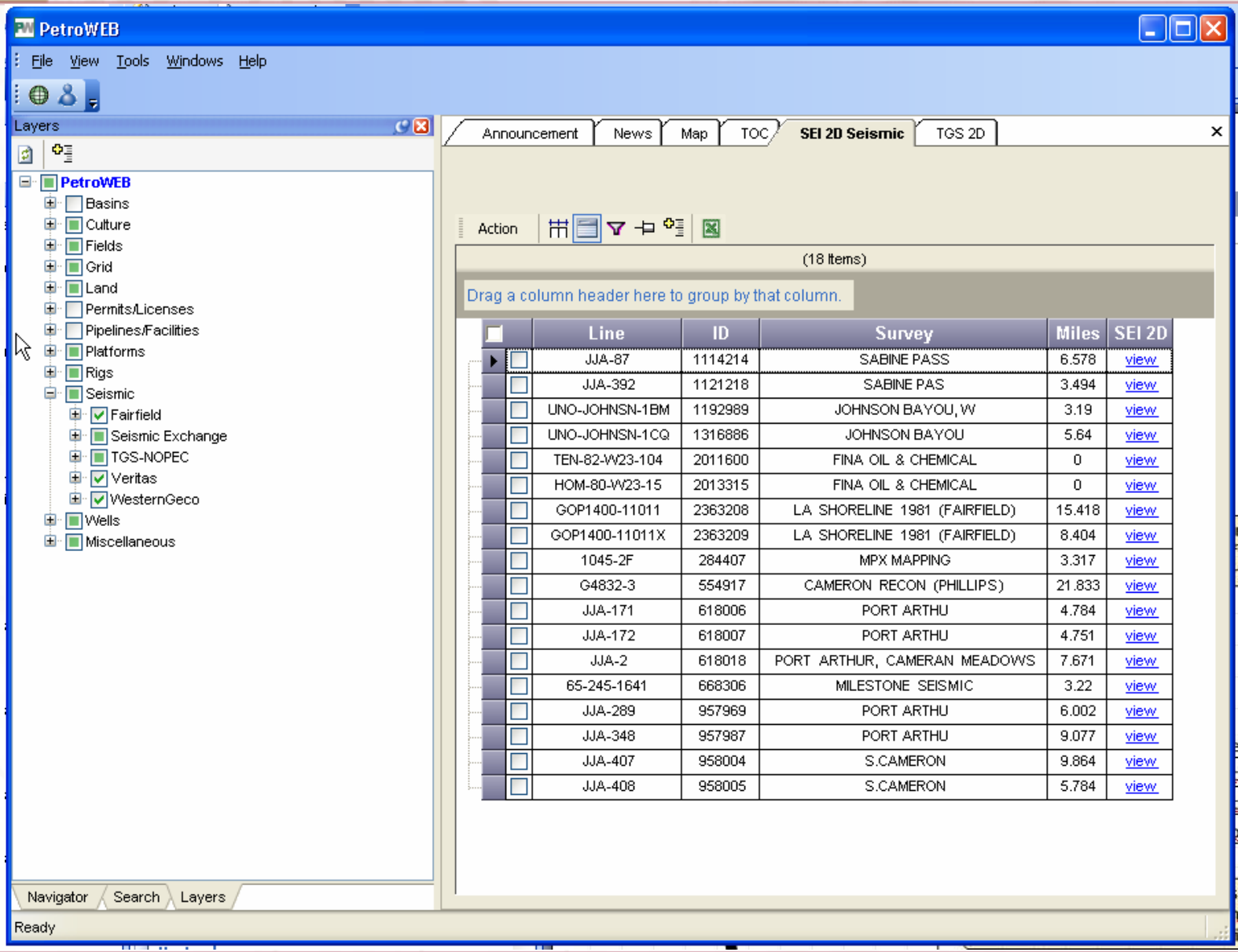
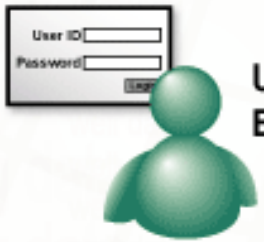
A-416 MC CLANNAHAN, J
A-354 KING, M
A-316 IVINS, J
A-375 LAWSON, R
A-364 LAWRENCE, J
A-683 DICKSON, A
Search for....
Seismic
Fairfield Industries
PGS
Seismic Exchange, Inc.
TGS-NOPEC
Veritas
WesternGeco
Permits
Radius
mi
OK
Cancel
Internet
Navigator
Search
Layers
-96.21°, 31.64°
1 : 31,195
X: 0 Y: 0
Ready



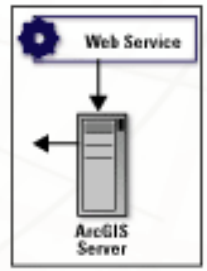
Line	ID	Survey	Miles	SEI 2D
JJA-87	1114214	SABINE PASS	6.578	view
JJA-392	1121218	SABINE PAS	3.494	view
UNO-JOHNSN-1BM	1192989	JOHNSON BAYOU, W	3.19	view
UNO-JOHNSN-1CQ	1316886	JOHNSON BAYOU	5.64	view
TEN-82-W23-104	2011600	FINA OIL & CHEMICAL	0	view
HOM-80-W23-15	2013315	FINA OIL & CHEMICAL	0	view
GOP1400-11011	2363208	LA SHORELINE 1981 (FAIRFIELD)	15.418	view
GOP1400-11011X	2363209	LA SHORELINE 1981 (FAIRFIELD)	8.404	view
1045-2F	284407	MPX MAPPING	3.317	view
G4832-3	554917	CAMERON RECON (PHILLIPS)	21.833	view
JJA-171	618006	PORT ARTHU	4.784	view
JJA-172	618007	PORT ARTHU	4.751	view
JJA-2	618018	PORT ARTHUR, CAMERAN MEADOWS	7.671	view
65-245-1641	668306	MILESTONE SEISMIC	3.22	view
JJA-289	957969	PORT ARTHU	6.002	view
JJA-348	957987	PORT ARTHU	9.077	view
JJA-407	958004	S.CAMERON	9.864	view
JJA-408	958005	S.CAMERON	5.784	view

ELEVATION WEB SERVICE USE CASE

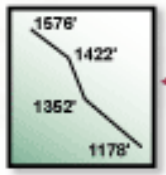


User Logs into Elevation Service

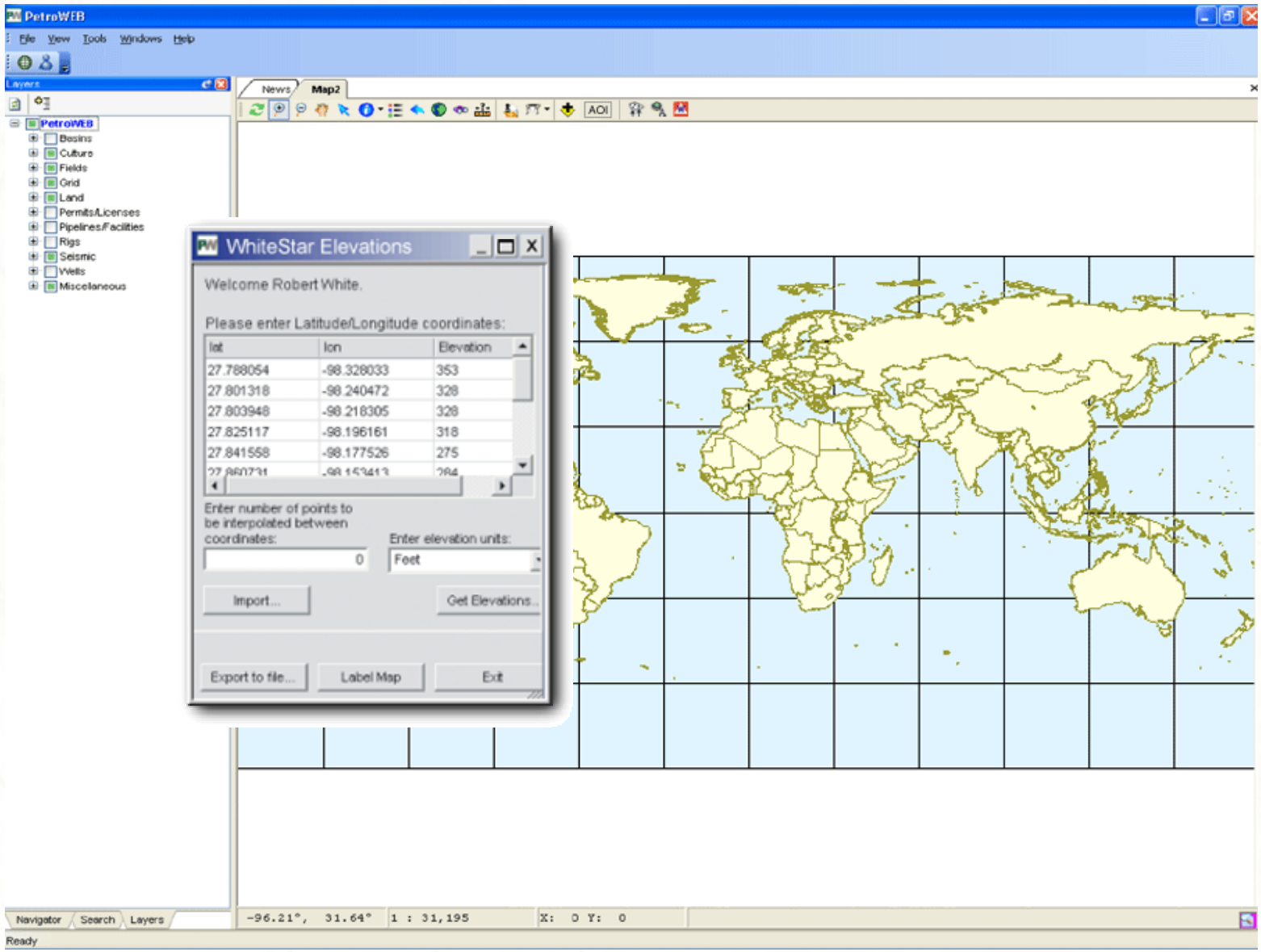
Selects a Pipeline on Map



WHITESTAR Web Service Calculates Elevations Along Feature



Elevations are Plotted Along Feature on Map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Permits/Licenses
Pipelines/Facilities
Rigs
Seismic
Wells
Miscellaneous
News
Map2
AOI
WhiteStar Elevations
Welcome Robert White.
Please enter Latitude/Longitude coordinates:
lat
lon
Elevation
27.788054 -98.328033 353
27.801318 -98.240472 328
27.803948 -98.218305 328
27.825117 -98.196161 318
27.841558 -98.177526 275
Enter number of points to be interpolated between coordinates:
0
Enter elevation units:
Feet
Import...
Get Elevations...
Export to file...
Label Map
Exit
Navigator
Search
Layers
-96.21°, 31.64°
1 : 31,195
X: 0 Y: 0
Ready

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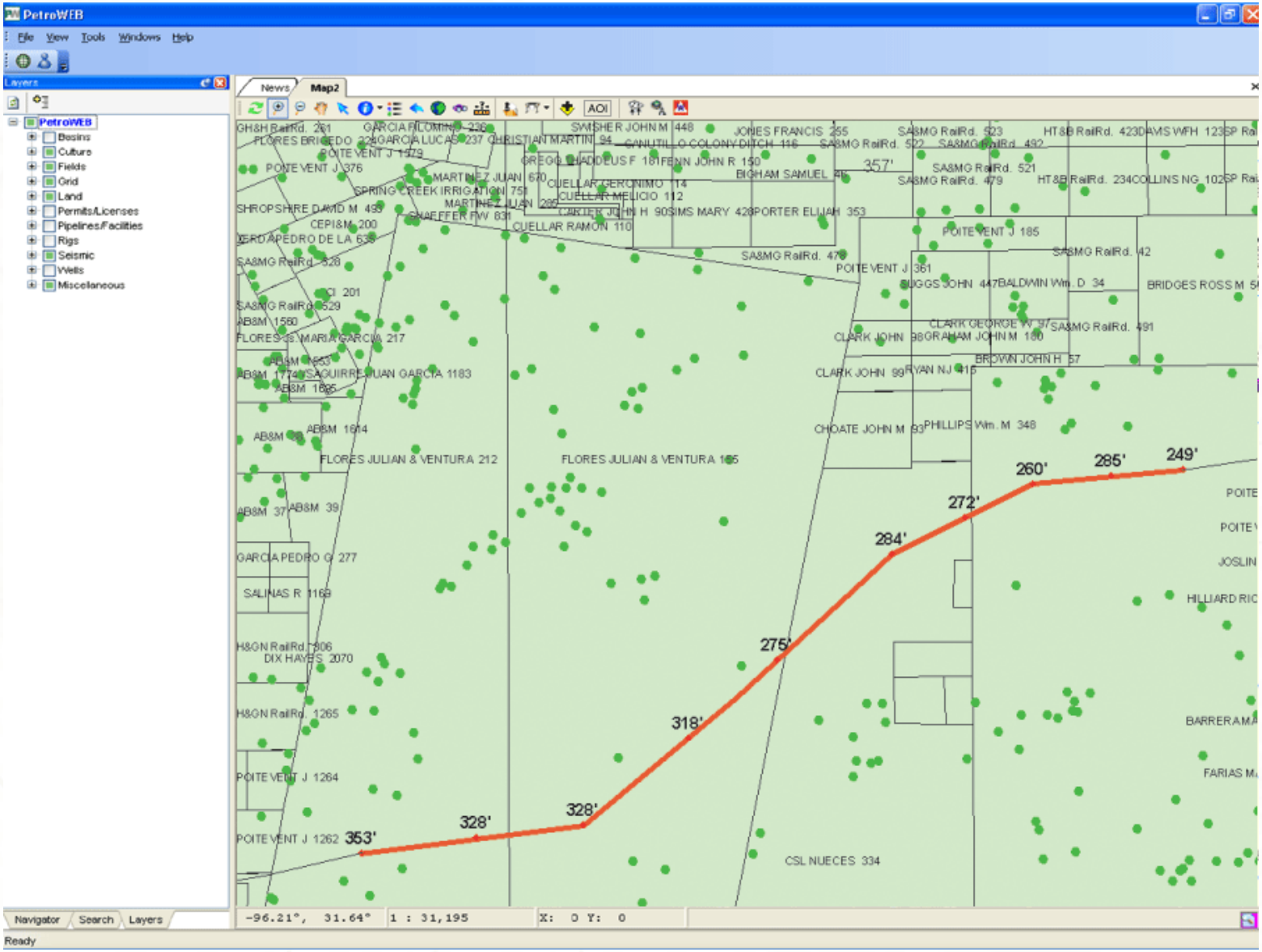
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Map2
AOI
FLORES JULIAN & VENTURA 212
FLORES JULIAN & VENTURA 185
GARCIA PEDRO G 277
SALINAS R 1169
DIX HAYES 2070
POITE VENT J 1264
POITE VENT J 1262
CSL NUECES 334
353'
328'
328'
318'
275'
284'
272'
260'
285'
249'
-96.21°, 31.64°
1 : 31,195
X: 0 Y: 0
Navigator
Search
Layers
Ready

PETROLEUM COMPANIES

Web Services (SOA)

- Tend to operate in distributed locations around the globe
- Producers of large data sets
- Consumers of large data sets
- Need highly specialized “pieces” of functionality
- Heterogeneous software environment

Enterprise GIS

- Share spatial data
- Interoperate with non-GIS applications
- Integrate GIS with other IT technologies
- Centralize focused geoprocessing

CONCLUSION

Web Services and ArcGIS Server can be customized to provide high value data/functionality to a Petroleum Company pursuing a Service Oriented Architecture.