Initial

Re-Application

Received: **11/17/2021**

This application is placed in file for record. It MAY or MAY NOT have been reviewed to be determined Administratively Complete

November 10, 2021

New Mexico Energy, Minerals, and Natural Resources Department
Oil Conservation Division District IV
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
(505) 476-3440

RE: LONG SHOT SWD #1 AUTHORIZATION TO INJECT

To Whom It May Concern:

Attached for your review is Form C-108, Application for Authorization to Inject, and its supplemental documents prepared for Advance Energy Partners Hat Mesa LLC ("AEP") Long Shot SWD #1. In addition, Forms C-101 and C-102 have also been included with this package. Notices have been delivered to offset, operators, leaseholders, and the surface owner.

Any questions should be directed towards Advance Energy Partners Hat Mesa LLC's agent Lonquist & Co., LLC.

Regards,

Ramona K. Hovey
Sr. Petroleum Engineer
Lonquist & Co., LLC

(512) 600-1777
ramona@lonquist.com

Revised March 23, 2017

RECEIVED:	REVIEWER:	TYPE:	APP NO:

ABOVE THIS TABLE FOR OCD DIVISION USE ONLY

NEW MEXICO OIL CONSERVATION DIVISION
- Geological & Engineering Bureau –
1220 South St. Francis Drive, Santa Fe, NM 87505

ADMINISTRATIVE APPLICATION CHECKLIST

THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE

Applicant: Advance Energy Partners Hat Mesa LLC **OGRID Number: 372417**
Well Name: Long Shot SWD #1 **API:**
Pool: SWD; Devonian-Silurian **Pool Code: 97869**

SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED BELOW

1) **TYPE OF APPLICATION:** Check those which apply for [A]
A. Location – Spacing Unit – Simultaneous Dedication
☐ NSL ☐ NSP (PROJECT AREA) ☐ NSP (PRORATION UNIT) ☐ SD

B. Check one only for [I] or [II]
[I] Commingling – Storage – Measurement
☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM
[II] Injection – Disposal – Pressure Increase – Enhanced Oil Recovery
☐ WFX ☐ PMX ■ SWD ☐ IPI ☐ EOR ☐ PPR

FOR OCD ONLY
☐ Notice Complete
☐ Application Content Complete

2) **NOTIFICATION REQUIRED TO:** Check those which apply.
A. ■ Offset operators or lease holders
B. ☐ Royalty, overriding royalty owners, revenue owners
C. ■ Application requires published notice
D. ☐ Notification and/or concurrent approval by SLO
E. ☐ Notification and/or concurrent approval by BLM
F. ■ Surface owner
G. ■ For all of the above, proof of notification or publication is attached, and/or,
H. ☐ No notice required

3) **CERTIFICATION:** I hereby certify that the information submitted with this application for administrative approval is **accurate** and **complete** to the best of my knowledge. I also understand that **no action** will be taken on this application until the required information and notifications are submitted to the Division.

Note: Statement must be completed by an individual with managerial and/or supervisory capacity.

November 10, 2021
Date

Ramona Hovey – Agent of Advance Energy Partners
Print or Type Name

Ramona K Hovey
Signature

(512) 600-1777
Phone Number

ramona@lonquist.com
e-mail Address

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

FORM C-108
Revised June 10, 2003

APPLICATION FOR AUTHORIZATION TO INJECT

I. PURPOSE: _____Secondary Recovery _____Pressure Maintenance ____X___Disposal _____Storage
Application qualifies for administrative approval? ___X___Yes _____No

II. OPERATOR: Advance Energy Partners Hat Mesa LLC

ADDRESS: 11490 Westheimer Rd., Ste 950, Houston, TX 77077

CONTACT PARTY: Kem Ramnath PHONE:281-755-8173

III. WELL DATA: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.

IV. Is this an expansion of an existing project? _____Yes ___X___No
If yes, give the Division order number authorizing the project: _____

V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.

VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.

VII. Attach data on the proposed operation, including:

1. Proposed average and maximum daily rate and volume of fluids to be injected;
2. Whether the system is open or closed;
3. Proposed average and maximum injection pressure;
4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,
5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).

*VIII. Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval.

IX. Describe the proposed stimulation program, if any.

*X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted).

*XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.

XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.

XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.

XIV. Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

NAME: Ramona Hovey TITLE: Consulting Engineer – Agent for Advance Energy Partners

SIGNATURE: _____DATE: July 6, 2021
E-MAIL ADDRESS: ramona@lonquist.com

* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstances of the earlier submittal: _____

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate District Office

Side 2

III. WELL DATA

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

(1) Lease name; Well No.; Location by Section, Township and Range; and footage location within the section.

(2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.

(3) A description of the tubing to be used including its size, lining material, and setting depth.

(4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District Offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

(1) The name of the injection formation and, if applicable, the field or pool name.

(2) The injection interval and whether it is perforated or open-hole.

(3) State if the well was drilled for injection or, if not, the original purpose of the well.

(4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.

(5) Give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

(1) The name, address, phone number, and contact party for the applicant;

(2) The intended purpose of the injection well; with the exact location of single wells or the Section, Township, and Range location of multiple wells;

(3) The formation name and depth with expected maximum injection rates and pressures; and,

(4) A notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505, within 15 days.

NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.

INJECTION WELL DATA SHEET

OPERATOR: Advance Energy Partners Hat Mesa LLC

WELL NAME & NUMBER: Long Shot SWD #1

WELL LOCATION:	1,490’ FWL 2,100’ FSL	K	2	22S	33E
	FOOTAGE LOCATION	UNIT LETTER	SECTION	TOWNSHIP	RANGE

WELLBORE SCHEMATIC

WELL CONSTRUCTION DATA

Surface Casing

Hole Size: 26”

Casing Size: 20”

Cemented with: 1,990 sx.

or _____ ft^3

Top of Cement: surface

Method Determined: circulation

Intermediate Casing 1

Hole Size: 17.5”

Casing Size: 16”

Cemented with: 705 sx.

or _____ ft^3

Top of Cement: surface

Method Determined: circulation

Intermediate Casing 2

Hole Size: 14.75”

Casing Size: 13.375”

Cemented with: 680 sx.

or _____ ft^3

Top of Cement: surface

Method Determined: circulation

Production Casing

Hole Size: 12.250”

Casing Size: 9.625”

Cemented with: 2,105 sx.

or _____ ft^3

Top of Cement: surface

Method Determined: circulation

Liner

Hole Size: 8.750”

Casing Size: 7.625”

Cemented with: 325 sx.

or _____ ft^3

Top of Cement: 11,960’

Method Determined: calculation

Total Depth: 18,250’

Injection Interval

16,086 feet to 18,250 feet

(Open Hole) – 6-3/4”

INJECTION WELL DATA SHEET

Tubing Size: 7", 29 lb/ft, HCP110 EZGO FJ3 from 0' – 11,910' and 5-1/2", 19.8 lb/ft, HCP110 EZGO FJ from 11,910'-16,060'
Lining Material: Duoline

Type of Packer: 7-5/8"" X 5-1/2" Permanent Packer with High Temp Elastomer and Full Inconel 925 trim

Packer Setting Depth: 16,060'

Other Type of Tubing/Casing Seal (if applicable): _____

Additional Data

1. Is this a new well drilled for injection? ___X___Yes _____No

   If no, for what purpose was the well originally drilled?

   _____

2. Name of the Injection Formation: Devonian,

3. Name of Field or Pool (if applicable): SWD; Devonian-Silurian 97869_____

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail, i.e. sacks of cement or plug(s) used.

   No, new drill.

5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area:

Formation	Depth
Brushy Canyon	7,133'
Bone Spring	8,775'
Wolfcamp	11,960'
Strawn	13,246'
Atoka	13,439'
Morrow	14,147'

Advance Energy Partners Hat Mesa LLC

Long Shot SWD #1

FORM C-108 Supplemental Information

III. Well Data

A. Wellbore Information

1.

Well information	
Lease Name	Long Shot SWD
Well No.	1
Location	S-2 T-22S R-33E
Footage Location	1490’ FWL and 2100’ FSL

2.

a. Wellbore Description

	Casing Information				
Type	Surface	Intermediate 1	Intermediate 2	Production	Liner
OD	20”	16”	13.375”	9.625”	7.625”
WT	0.5”	0.495”	0.48”	0.545”	0.500”
ID	19.000”	15.010”	12.415”	8.535”	6.625”
Drift ID	18.812”	14.822”	12.259”	8.379”	6.500”
COD	21.000”	17.000”	13.375”	10.625”	7.625”
Weight	106.5 lb/ft	84 lb/ft	68 lb/ft	53.5 lb/ft	39 lb/ft
Grade	J-55 BTC	J-55 BTC	L-80 EZ-GO FJ3	HCP-110 BTC	Q-125 EZ-GO FJ3
Hole Size	26”	17-1/2”	14-3/4”	12-1/4”	8-3/4”
Depth Set	1,475'	3,030’	5,020’	12,160’	11,960’-16,086’

b. Cementing Program

To address recent concerns of insufficient surface casing cementing jobs in the offsetting region, the installation of this proposed cement program aims to decrease the probability of future migration of fluids due to improper placement of cement and to protect against impact to Underground Sources of Drinking Water (USDW).

The surface hole will be drilled with a 26" bit to 1,475' and set with 20", 106.5 lb/ft, J-55 BTC surface casing. If loss of circulation occurs while drilling, LCM pills of up to 80-100 lbs/bbl will be spotted/circulated as necessary. If circulation is unable to be regained, an open hole thixotropic cement plug will be considered as use for LCM and drilling will resume.

A 20" rigid body centralizer and 20" cementing baskets will be added to the body of the casing in order to ensure proper standoff from the bore hole and minimize cement "fall back" while cementing. A cement slurry followed by a second lead with increased quantities of LCM material thereafter. The remaining details of the cement program can be found below:

Casing String	Surface	Intermediate 1	Intermediate 2	Production	Liner
Lead Cement	Class H	50-50 POZ/Class H	50-50 POZ/Class H	50-50 POZ/Class H	50-50 POZ/Class H
Lead Cement Volume (sacks)	1,535	495	435	1905	325
Lead Cement Yield (ft3/sack)	1.74	2.5	2.5	2.51	1.31
Tail Cement	Class H	Class H	Class H	Class H	-
Tail Cement Volume (sacks)	455	210	245	200	-
Tail Cement Yield (ft3/sack)	1.35	1.18	1.19	1.19	-
Cement Excess	50%/20%	50%/20%	50%/20%	50%/20%	0%
Total Sacks	1,990	705	680	2015	325
TOC	Surface	Surface	Surface	Surface	11,960'
Method	Circulate to Surface	Circulate to Surface	Circulate to Surface	Circulate to Surface	Calculated

3. Tubing Description

Tubing Information	
OD	7.0” 5.5”
WT	0.408” 0.361”
ID	6.184” 4.778”
Drift ID	6.059” 4.653”
COD	7.000” 5.500”
Weight	29 lb/ft 19.8 lb/ft
Grade	HC P110 EZGO FJ3 HC P110 EZGO FJ
Depth Set	0-11,910’ 11,910’-16,060’

Tubing will be lined with Duoline.

4. Packer Description

7-5/8” x 5-1/2” TCPC Permanent Packer with High Temp Elastomer and Full Inconel 925 trim

B. Completion Information

1. Injection Formation: Devonian-Silurian

2. Gross Injection Interval: 16,086’-18,250’

Completion Type: Open Hole, 6-3/4”

3. Drilled for injection.

4. See the attached wellbore schematic.

5. Oil and Gas Bearing Zones within area of well:

Formation	Depth
Brushy Canyon	7,133’
Bone Spring	8,775’
Wolfcamp	11,960’
Strawn	13,246’
Atoka	13,439’
Morrow	14,147’

VI. Area of Review

No wells within the area of review penetrate the proposed injection zone.

VII. Proposed Operation Data

1. Proposed Daily Rate of Fluids to be Injected:

   Average Volume: 65,000 bpd – 75,000 bpd

2. Closed System

3. Anticipated Injection Pressure:

   Average Injection Pressure: 2,200-2,800 PSI (surface pressure)
   Maximum Injection Pressure: 3,217 PSI (surface pressure)

4. The injection fluid is to be locally produced water. It is expected that the source water will predominantly be from the Delaware, Bone Spring, Wolfcamp and Devonian formations. Attached are produced water sample analyses taken from the closest wells that feature samples from the Delaware, Bone Spring, Wolfcamp and Devonian formations.

5. The disposal interval is non-productive. No water samples are available from the surrounding area.

VIII. Geological Data

Devonian Formation Lithology:

The Devonian formation is a dolomitic ramp carbonate that occurs below the Woodford shale and above the Fusselman formation. Strata found in the Devonian formation include two major groups, the Wristen Buildups and the Thirtyone Deepwater Chert, with the Wristen being more abundant. The Wristen Groups is composed of mixed limestone and dolomites with mudstone to grainstone and boundstone textures. Porosity in the Wristen group is a result of both primary and secondary development. Present are moldic, vugular, karstic (including collapse breccia) features that allow for higher porosities and permeabilities.

The Thirtyone Formation contains two end-member reservoir facies, skeletal packstones/grainstones and spiculitic chert, with most of the porosity and permeability found in the coarsely crystalline cherty dolomite. These particular characteristics allow for this formation to be a tremendous Salt Water Disposal horizon.

Fusselman Formation Lithology:

The Silurian/Ordovician Fusselman Formation is stratigraphically below the Wristen Group and is above and separated from the Montoya Formation by the Sylvan Shale. The Sylvan Shale is the lower confining layer for the proposed Long Shot SWD No. 1 well. Fusselman facies include a laminated skeletal wackestone in the upper part and a buildup complex in the lower part composed of ooid and bryozoan grainstones. These grainstones can also be potentially prolific zones for disposal.

A. Injection Zone: Devonian-Silurian Formation

Formation	**Depth**
Rustler	1,446’
Salado	1,924’
Capitan Reef	3,006’
Delaware	4,973’
Brushy Canyon	7,133’
Bone Spring	8,775’
Wolfcamp	11,960’
Strawn	13,246’
Atoka	13,439’
Morrow	14,147’
Mississippian Lime	15,312’
Woodford	15,890’
Devonian	16,086’
Fusselman	17,317’
Montoya	18,250’

B. Underground Sources of Drinking Water

Across the area, fresh water wells are usually drilled at approximately 200-250’. The Rustler is known to exist in this general area and may also be another USDW and will be protected.

IX. Proposed Stimulation Program

20-65,000 gallon 20% HCL acid job

X. Logging and Test Data on the Well

There are no logs or test data on the well. During the process of drilling and completion resistivity, gamma ray, and density logs will be run.

XI. Chemical Analysis of Fresh Water Wells

No fresh water wells are located within two miles of the proposed location.

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

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

Form C-101
Revised July 18, 2013

☐AMENDED REPORT

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

1. Operator Name and Address	2. OGRID Number
ADVANCE ENERGY PARTNERS HAT MESA 11490 WESTHEIMER RD HOUSTON, TX 770077	372417
	3. API Number TBD

4. Property Code	5. Property Name	6. Well No.
	LONG SHOT SWD	1

7. Surface Location

UL - Lot	Section	Township	Range	Lot Idn	Feet from	N/S Line	Feet From	E/W Line	County
K	2	22S	33E		2100	S	1490	W	LEA

8. Proposed Bottom Hole Location

UL - Lot	Section	Township	Range	Lot Idn	Feet from	N/S Line	Feet From	E/W Line	County
	-	-	-		-	-	-	-	-

9. Pool Information

Pool Name	Pool Code
SWD; Devonian-Silurian	97869

Additional Well Information

11. Work Type	12. Well Type	13. Cable/Rotary	14. Lease Type	15. Ground Level Elevation
N	SWD	R	Private	3,578’
16. Multiple	**17. Proposed Depth**	**18. Formation**	**19. Contractor**	**20. Spud Date**
N	18,250’	Silurian-Devonian	TBD	ASAP

Depth to Ground water	Distance from nearest fresh water well	Distance to nearest surface water
200’	1,803’	>1 mile

☒**We will be using a closed-loop system in lieu of lined pits**

21. Proposed Casing and Cement Program

Type	Hole Size	Casing Size	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
Surface	26”	20”	106.5 lb/ft	1,475’	1,990	Surface
Intermediate 1	17.5”	16”	84 lb/ft	3,030’	705	Surface
Intermediate 2	14.75”	13.375”	68 lb/ft	5,020’	680	Surface
Production	12.25”	9.625”	53.5 lb/ft	12,160’	2,015	Surface
Liner	8.75”	7.625”	39 lb/ft	11,960’-16,086’	325	11,960’
Tubing		7” x 5-1/2”	29 lb/ft & 19.8 lb/ft	0’-11,910’/11,910’-16,060’	N/A	

Casing/Cement Program: Additional Comments

See attached schematic.

22. Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
Double Hydrualic/Blinds, Pipe	10,000 psi	15,000 psi	TBD – Schaffer/Cameron

23. I hereby certify that the information given above is true and complete to the best of my knowledge and belief. **I further certify that I have complied with 19.15.14.9 (A) NMAC ☐ and/or 19.15.14.9 (B) NMAC ☒, if applicable.** Signature:	OIL CONSERVATION DIVISION Approved By:
Printed name: Ramona Hovey	Title:
Title: Consulting Engineer	Approved Date: / Expiration Date:
E-mail Address: ramona@lonquist.com	
Date: July 7, 2021 / Phone: 512-600-1777	Conditions of Approval Attached

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240
Phone (575) 393-6161 Fax: (575) 393-0720
DISTRICT II
811 S. First St., Artesia, NM 88210
Phone (575) 748-1283 Fax: (575) 748-9720
DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone (505) 334-6178 Fax: (505) 334-6170
DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

Form C-102
Revised August 4, 2011

Submit one copy to appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name

Property Code	Property Name	Well Number
	LONG SHOT SWD	1
OGRID No.	**Operator Name**	**Elevation**
	ADVANCE ENERGY PARTNERS HAT MESA	3578'

Surface Location

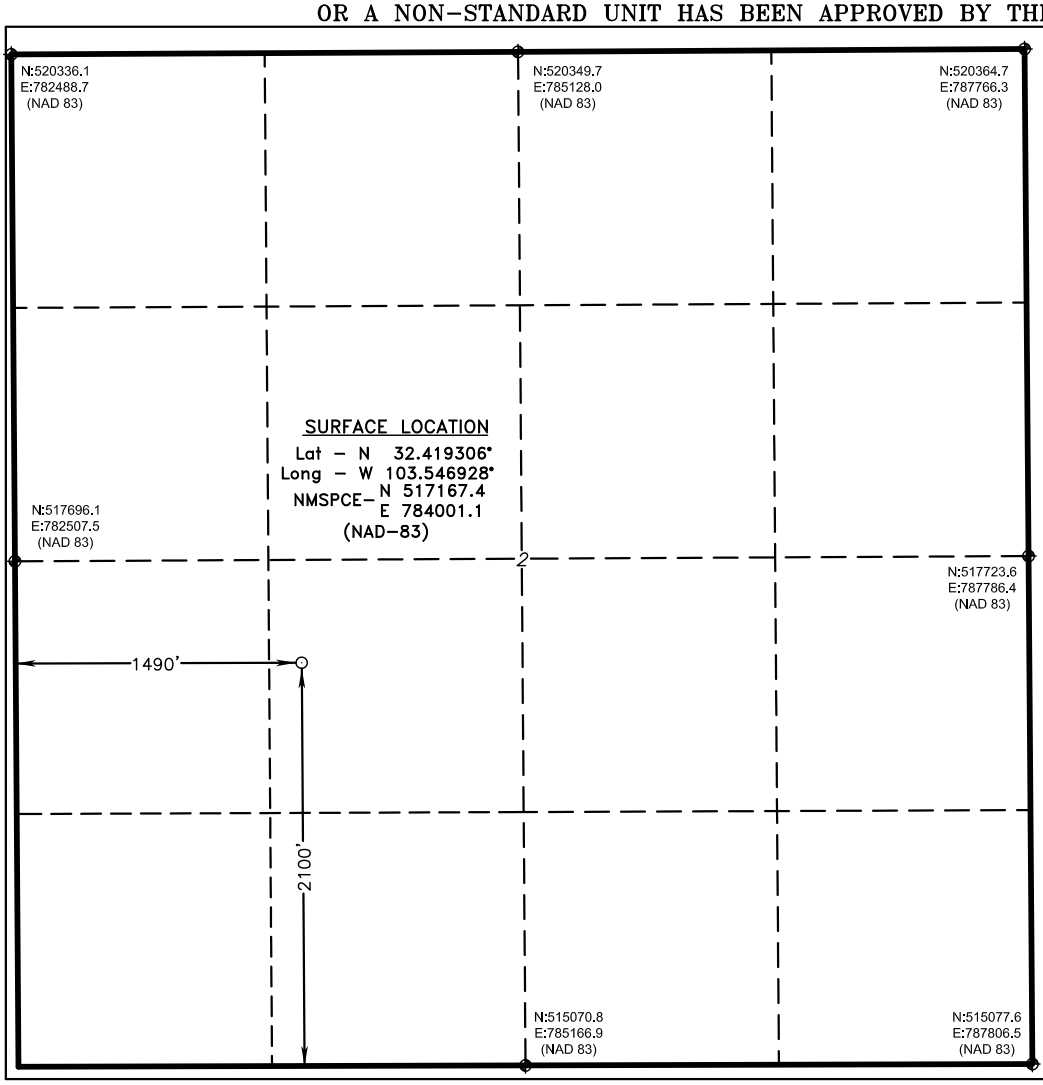
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	SOUTH/South line	Feet from the	East/West line	County
K	2	22 S	33 E		2100	SOUTH	1490	WEST	LEA

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	SOUTH/South line	Feet from the	East/West line	County

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unLEAsed mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature Date

Printed Name

Email Address

SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervison, and that the same is true and correct to the best of my belief.

FEBRUARY 28, 2020
Date Surveyed

Signature & Seal of Professional Surveyor

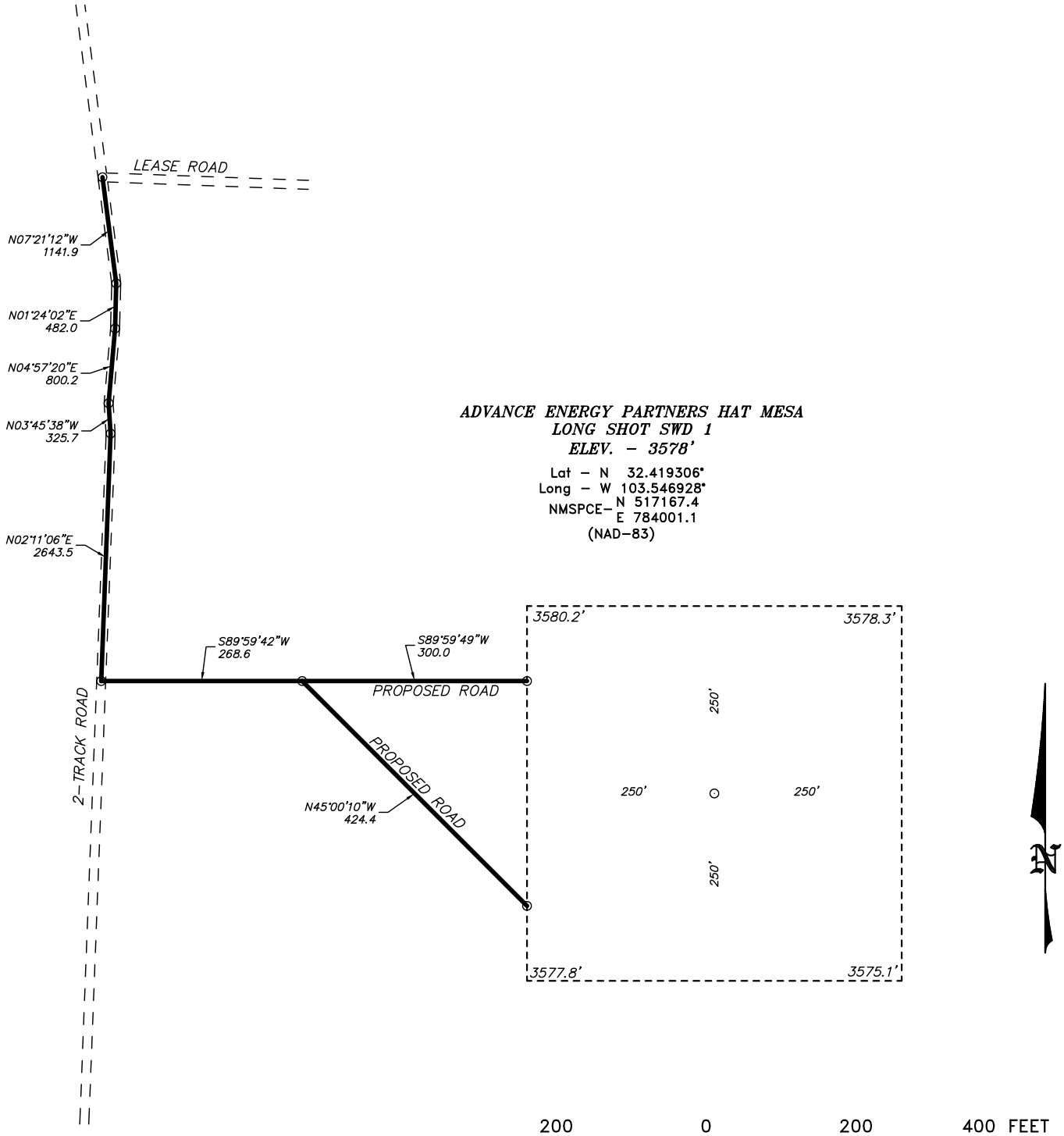
GARY L. JONES NEW MEXICO 7977 REGISTERED PROFESSIONAL LAND SURVEYOR

Certificate No. Gary L. Jones 7977
BASIN SURVEYS

0' 500' 1000' 1500' 2000' N
SCALE: 1" = 1000'
WO Num.: 35059

SECTION 2, TOWNSHIP 22 SOUTH, RANGE 33 EAST. N.M.P.M.,

LEA COUNTY, **NEW MEXICO.**



ADVANCE ENERGY PARTNERS HAT MESA

REF: LONG SHOT SWD 1 / WELL PAD TOPO

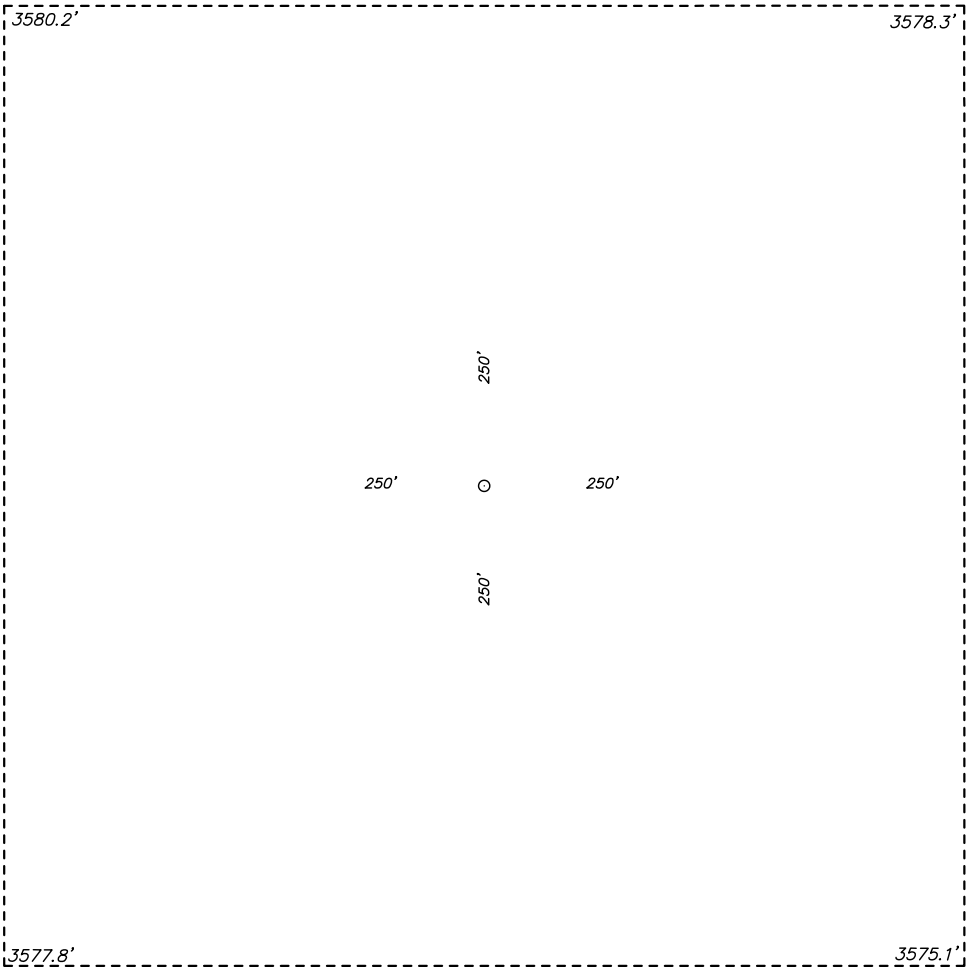
THE LONG SHOT SWD 1 LOCATED 2100' FROM THE SOUTH LINE AND 1490' FROM THE WEST LINE OF SECTION 2, TOWNSHIP 22 SOUTH, RANGE 33 EAST. N.M.P.M., LEA COUNTY, NEW MEXICO.

basin surveys
focused on excellence in the oilfield
P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(575) 393-7316 - Office
(575) 392-2206 - Fax
basinsurveys.com

W.O. Number: 35059	Drawn By: J GOAD	Date: 3-4-2020	Survey Date: 2-28-2020	Sheet 1 of 1 Sheets

SECTION 2, TOWNSHIP 22 SOUTH, RANGE 33 EAST. N.M.P.M.,

LEA COUNTY, **NEW MEXICO.**



100 0 100 200 FEET

SCALE: 1" = 100'

ADVANCE ENERGY PARTNERS HAT MESA

REF: LONG SHOT SWD 1 / WELL PAD TOPO

THE LONG SHOT SWD 1 LOCATED 2100' FROM THE SOUTH LINE AND 1490' FROM THE WEST LINE OF SECTION 2, TOWNSHIP 22 SOUTH, RANGE 33 EAST. N.M.P.M., LEA COUNTY, NEW MEXICO.

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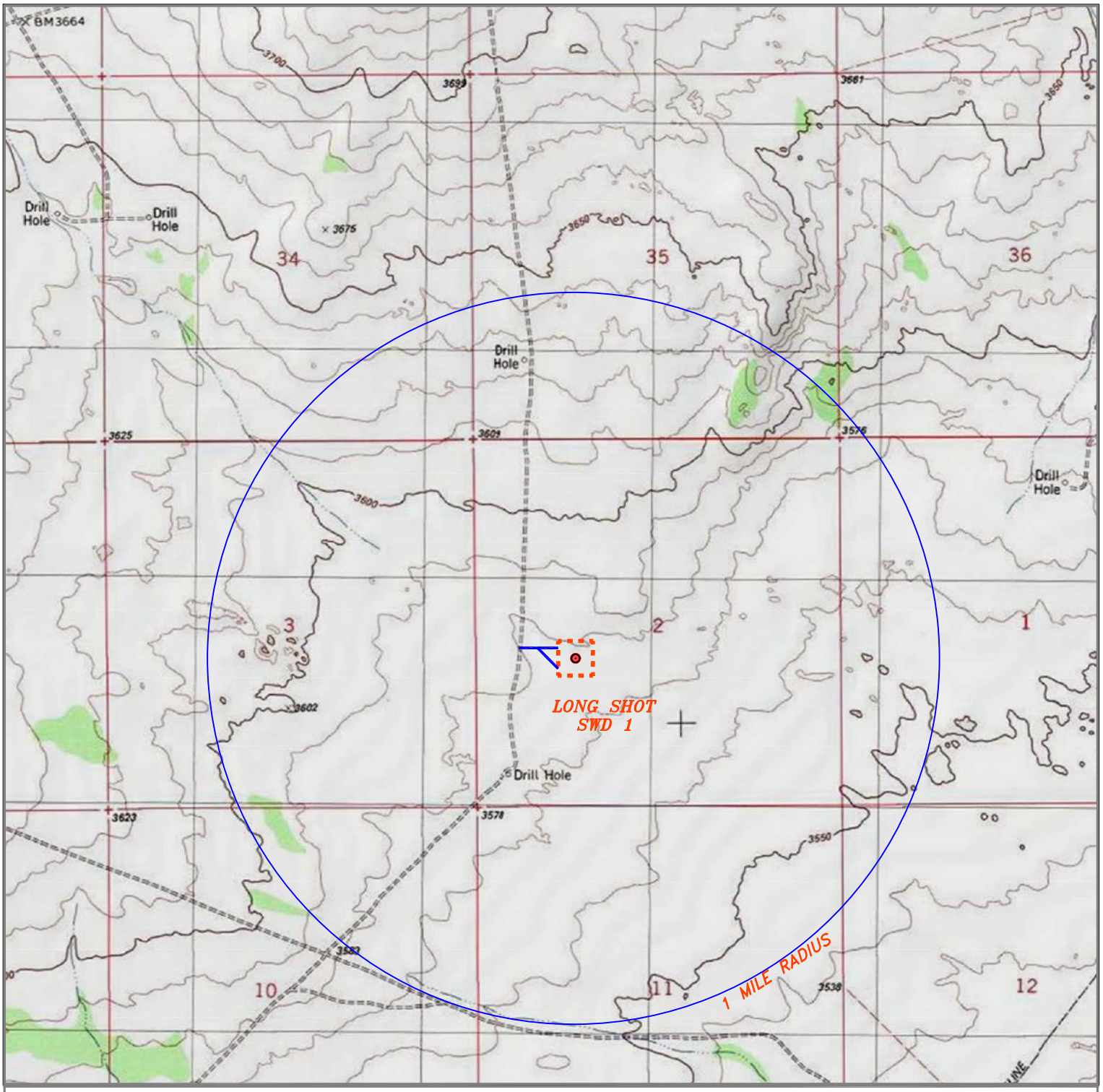
P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(575) 393-7316 – Office
(575) 392-2206 – Fax
basinsurveys.com

W.O. Number: 35059	Drawn By: J GOAD	Date: 3-4-2020	Survey Date: 2-28-2020	Sheet 1 of 1 Sheets



LONG SHOT SWD 1

Located 2100' FSL and 1490' FWL
Section 2, Township 22 South, Range 33 East,
N.M.P.M., Lea County, New Mexico.

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0' 1000' 2000' 3000' 4000'
SCALE: 1" = 2000'

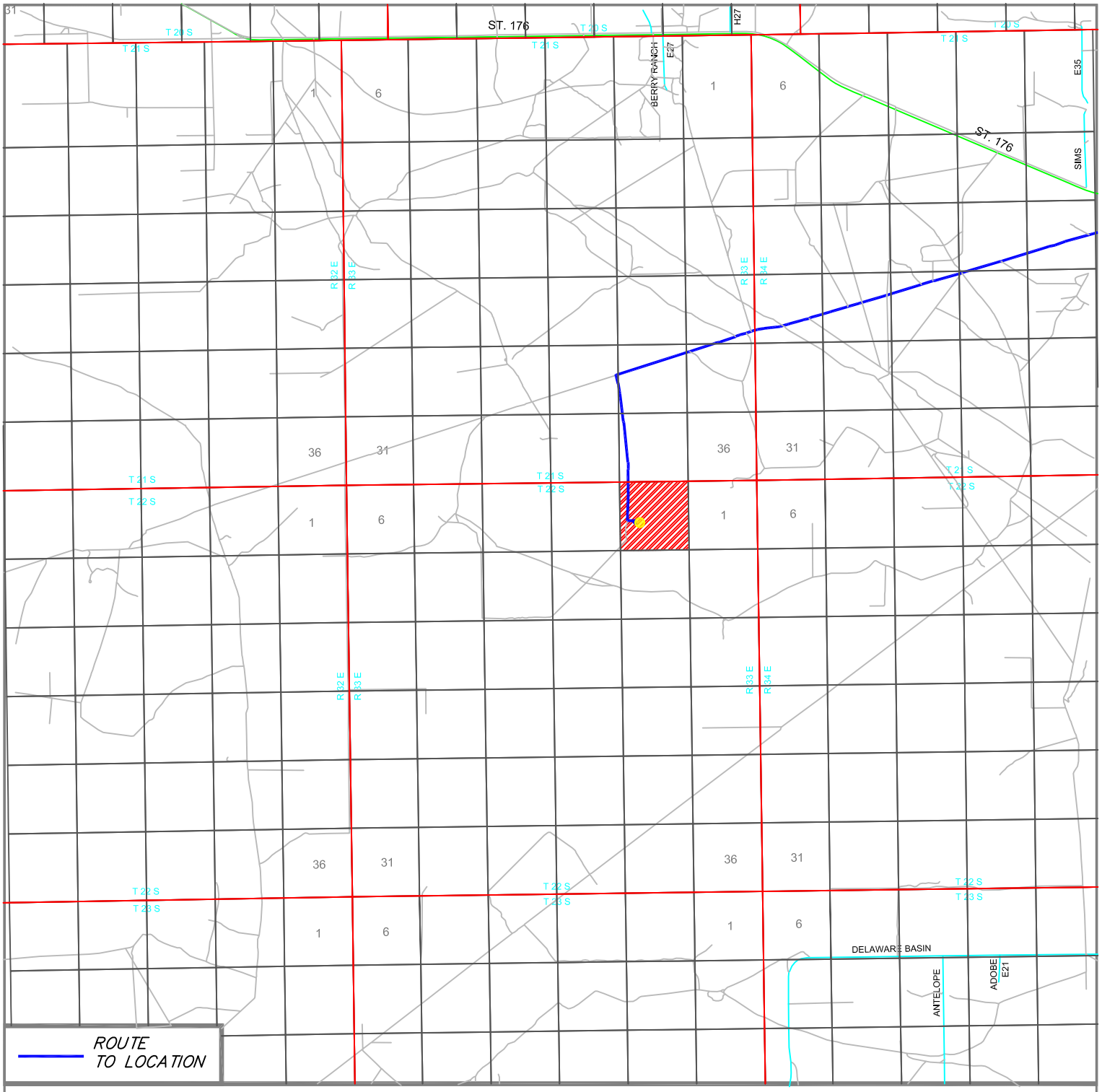
W.O. Number: JG 35059

Survey Date: 2-28-2020

YELLOW TINT – USA LAND
BLUE TINT – STATE LAND
NATURAL COLOR – FEE LAND

N

ADVANCE ENERGY PARTNERS HAT MESA



LONG SHOT SWD 1

Located 2100' FSL and 1490' FWL
Section 2, Township 22 South, Range 33 East,
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0 1 MI 2 MI 3 MI 4 MI
SCALE: 1" = 2 MILES

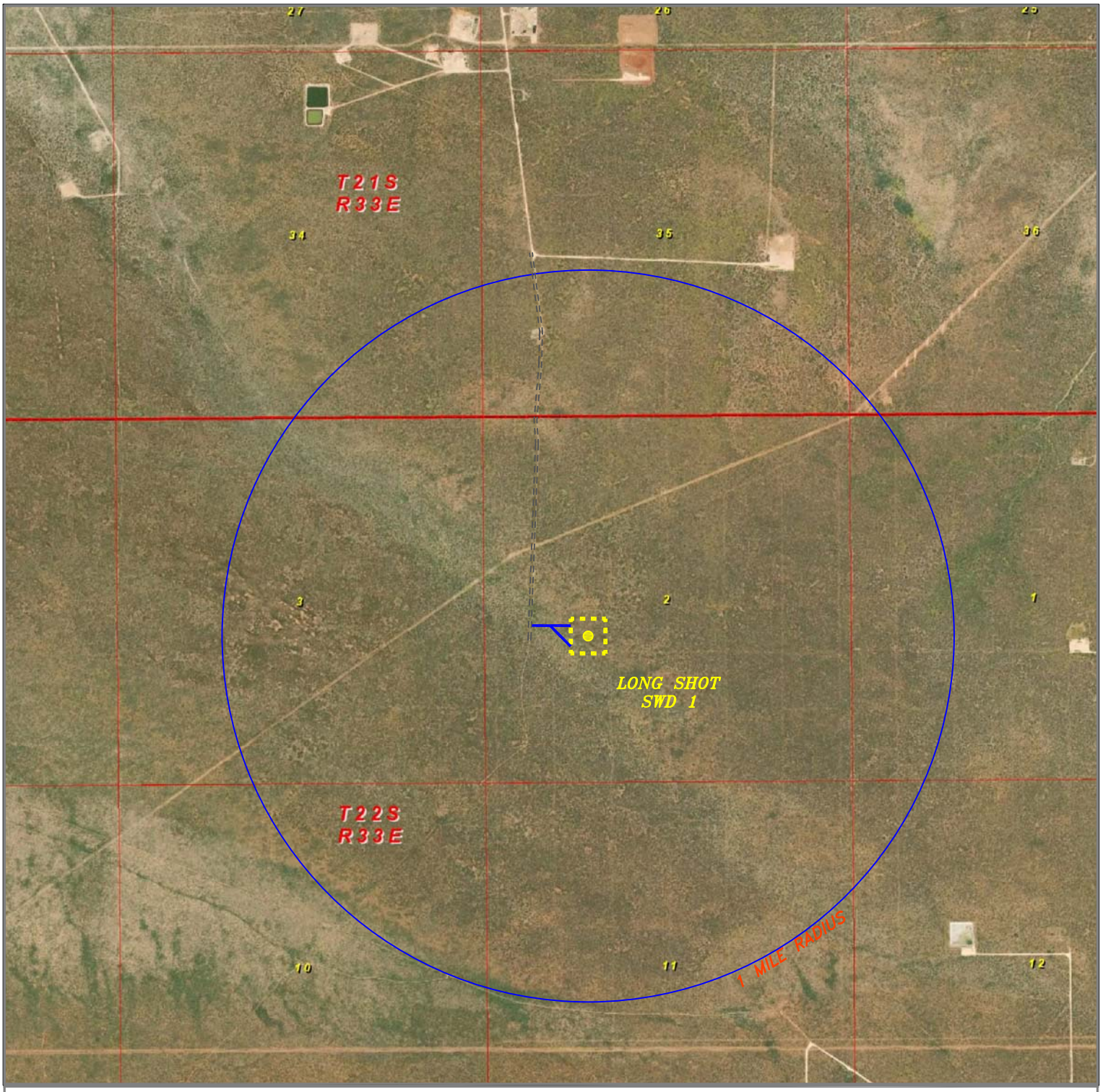
W.O. Number: JG 35059

Survey Date: 2-28-2020

YELLOW TINT – USA LAND
BLUE TINT – STATE LAND
NATURAL COLOR – FEE LAND

N

ADVANCE ENERGY PARTNERS HAT MESA



LONG SHOT SWD 1

Located 2100' FSL and 1490' FWL
Section 2, Township 22 South, Range 33 East,
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0' 1000' 2000' 3000' 4000'
SCALE: 1" = 2000'

W.O. Number: JG 35059

Survey Date: 2-28-2020

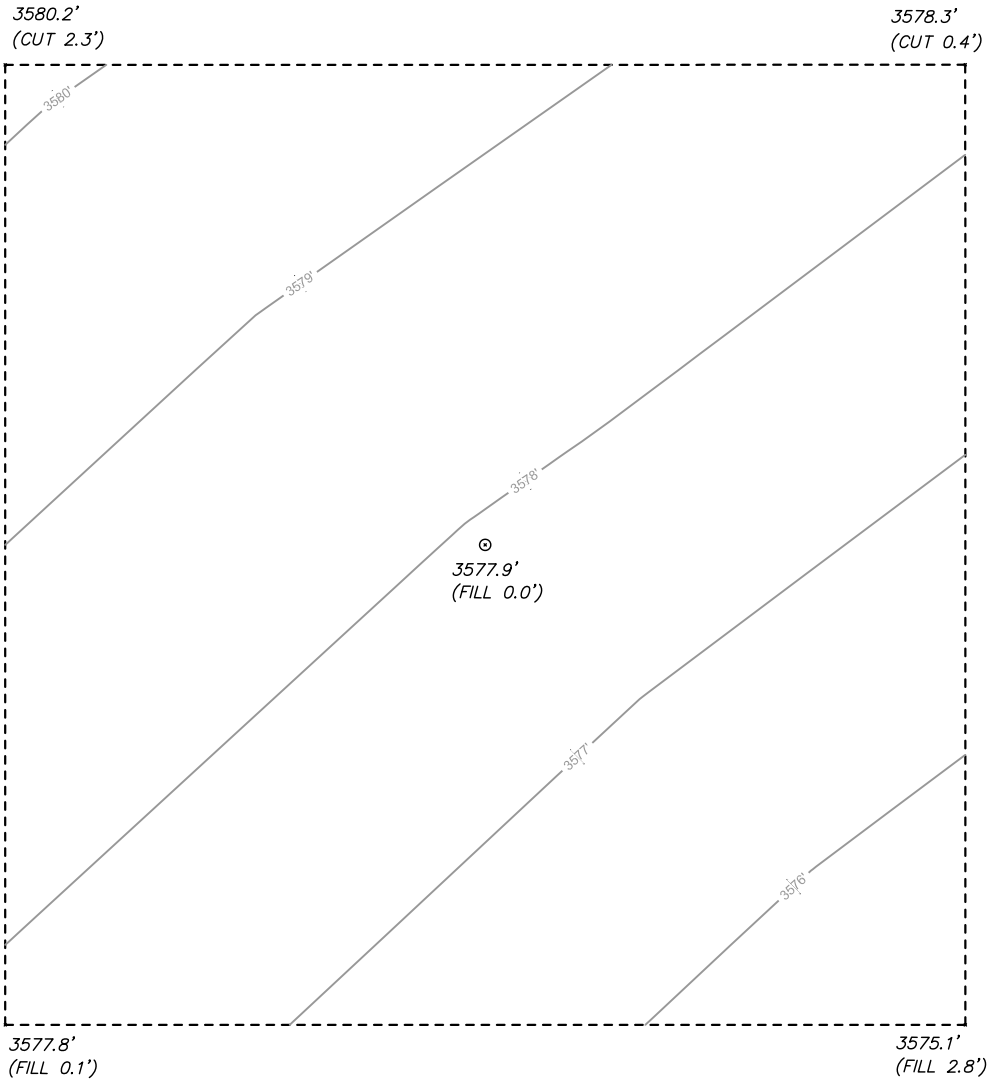
YELLOW TINT – USA LAND
BLUE TINT – STATE LAND
NATURAL COLOR – FEE LAND

N

ADVANCE ENERGY PARTNERS HAT MESA

SECTION 2, TOWNSHIP 22 SOUTH, RANGE 33 EAST. N.M.P.M.,

LEA COUNTY, **NEW MEXICO.**



N

100 0 100 200 FEET

SCALE: 1" = 100'

ADVANCE ENERGY PARTNERS HAT MESA

REF: LONG SHOT SWD 1 / CUT & FILL

THE LONG SHOT SWD 1 LOCATED 2100' FROM THE SOUTH LINE AND 1490' FROM THE WEST LINE OF SECTION 2, TOWNSHIP 22 SOUTH, RANGE 33 EAST. N.M.P.M., LEA COUNTY, NEW MEXICO.

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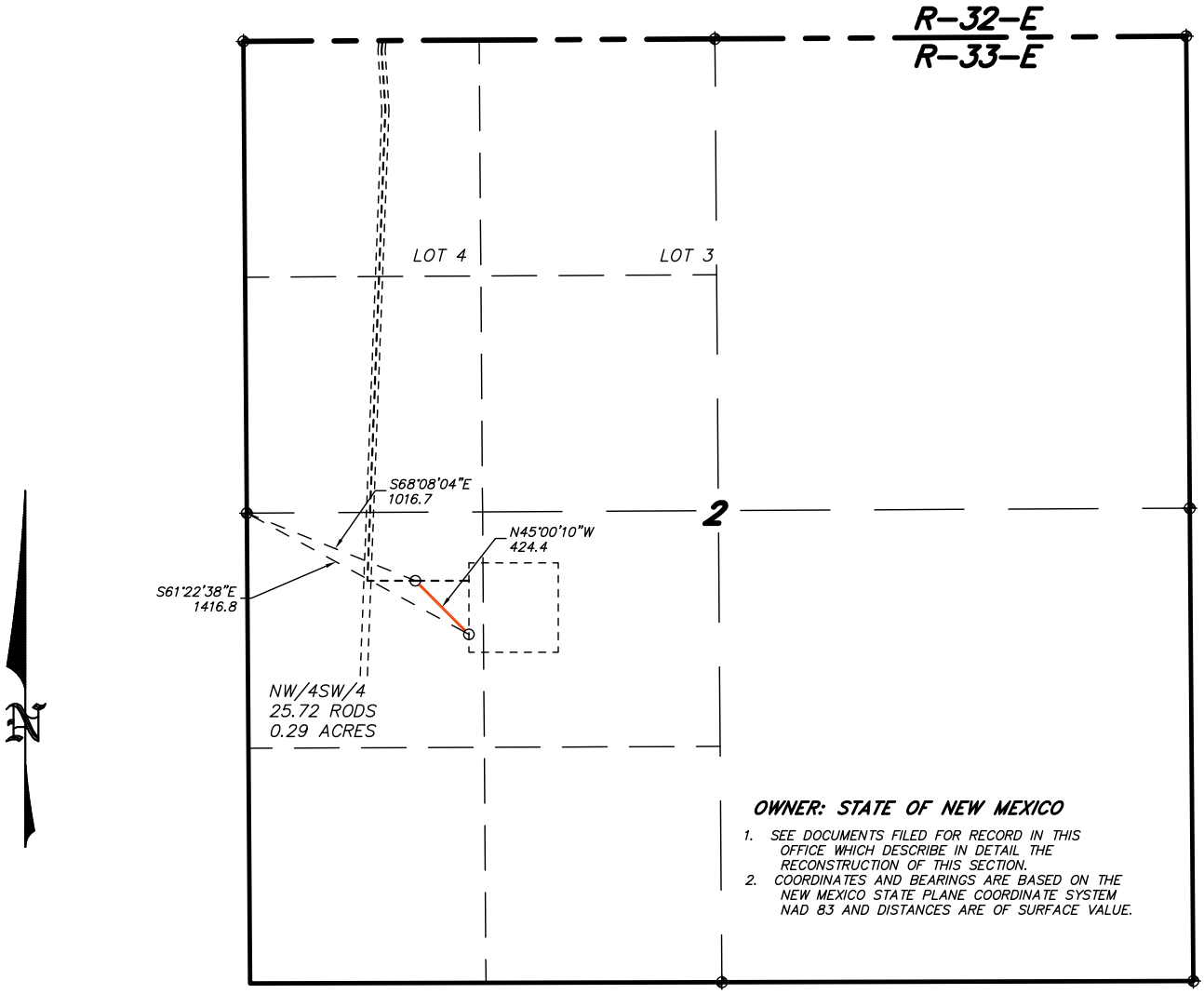
W.O. Number: 35059	Drawn By: J GOAD	Date: 3-4-2020	Survey Date: 2-28-2020	Sheet 1 of 1 Sheets

SECTION 2, TOWNSHIP 22 SOUTH, RANGE 33 EAST, N.M.P.M.,
LEA COUNTY, NEW MEXICO.



LEGAL DESCRIPTION

A STRIP OF LAND 30.0 FEET WIDE, LOCATED IN SECTION 2, TOWNSHIP 22 SOUTH, RANGE 33 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO AND BEING 15.0 FEET LEFT AND RIGHT OF THE FOLLOWING DESCRIBED CENTERLINE SURVEY.

BEGINNING AT A POINT WHICH LIES S61°22'38"E., 1416.8 FEET FROM THE WEST QUARTER CORNER OF SAID SECTION 2; THENCE N45°00'10"W., 424.4 FEET TO THE END OF THIS LINE WHICH LIES S68°08'04"E., 1016.7 FEET FROM THE WEST QUARTER CORNER OF SAID SECTION 2. SAID STRIP OF LAND BEING 424.4 FEET OR 25.72 RODS IN LENGTH AND CONTAINING 0.29 ACRES, MORE OR LESS, AND BEING ALLOCATED BY FORTIES AS FOLLOWS.

NW/4SW/4 25.72 RODS OR 0.29 ACRES

I HEREBY CERTIFY THAT THIS WAS PREPARED FROM FIELD NOTES OF AN ACTUAL SURVEY AND MEETS OR EXCEEDS THE REQUIREMENTS FOR LAND SURVEYS AS SPECIFIED BY THIS STATE.

GARY L. JONES, N.M. P.S. No. 7977
TEXAS R.P.L.S. No. 5074

GARY L. JONES NEW MEXICO 7977 REGISTERED PROFESSIONAL LAND SURVEYOR

1000 0 1000 2000 FEET

ADVANCE ENERGY PARTNERS HAT MESA

REF: LONG SHOT SWD 1 LEASE ROAD

A ROAD CROSSING STATE LAND IN
SECTION 2, TOWNSHIP 22 SOUTH, RANGE 33 EAST,
N.M.P.M., LEA COUNTY, NEW MEXICO.

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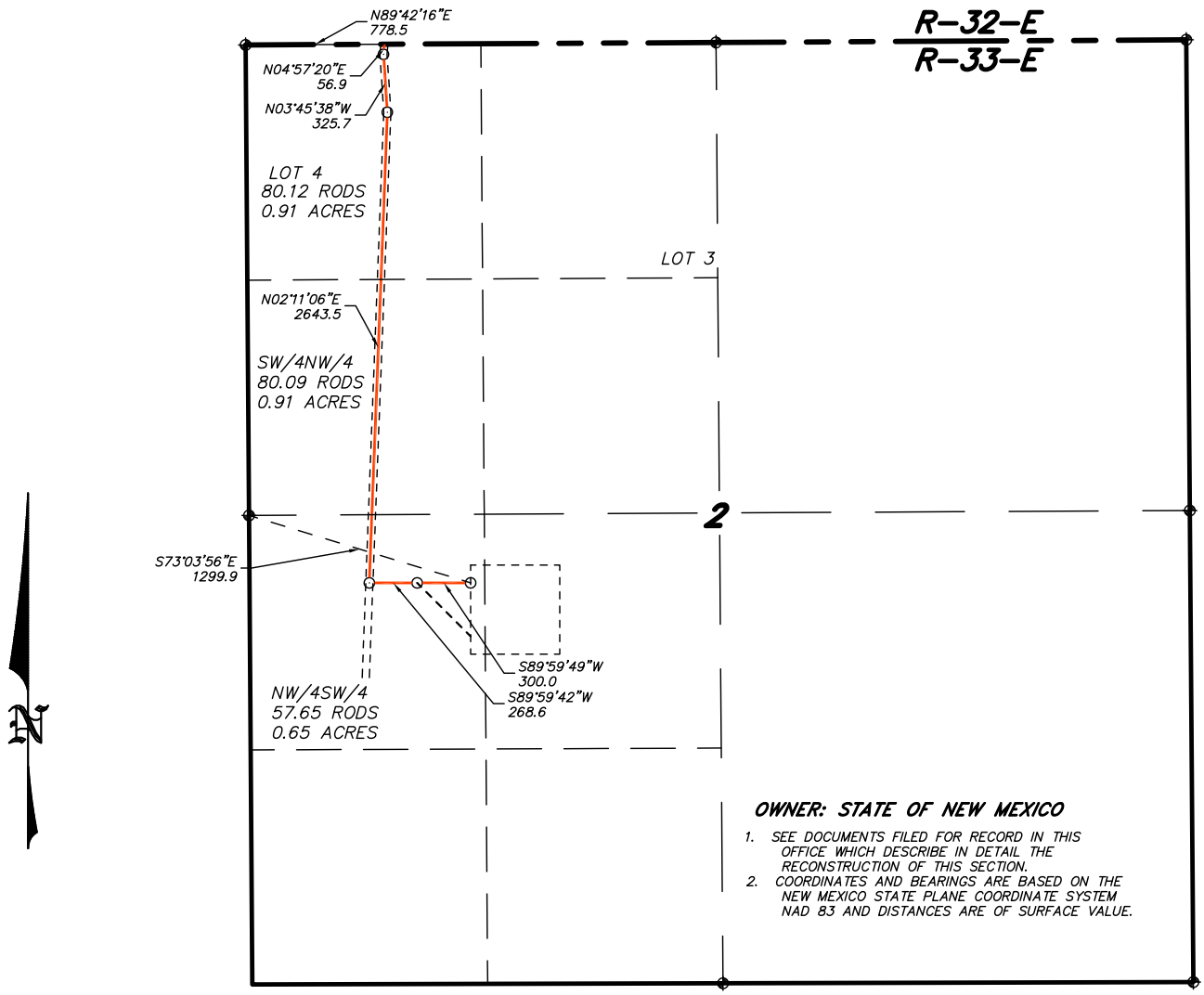
W.O. Number: 35059	Drawn By: J. GOAD	Date: 3-4-2020	Survey Date: 2-28-2020	Sheet 1 of 3 Sheets

SECTION 2, TOWNSHIP 22 SOUTH, RANGE 33 EAST, N.M.P.M.,
LEA COUNTY, NEW MEXICO.



LEGAL DESCRIPTION

A STRIP OF LAND 30.0 FEET WIDE, LOCATED IN SECTION 2, TOWNSHIP 22 SOUTH, RANGE 33 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO AND BEING 15.0 FEET LEFT AND RIGHT OF THE FOLLOWING DESCRIBED CENTERLINE SURVEY.

BEGINNING AT A POINT WHICH LIES S73°03'56"E., 1299.9 FEET FROM THE WEST QUARTER CORNER OF SAID SECTION 2; THENCE S89°59'49"W., 300.0 FEET; THENCE S89°59'42"W., 268.6 FEET; THENCE N02°11'06"E., 2643.5 FEET; THENCE N03°45'38"W., 325.7 FEET; THENCE N04°57'20"E., 56.9 FEET TO A POINT ON THE NORTH SECTION LINE WHICH LIES N89°42'16"E., 778.5 FEET FROM THE NORTHWEST CORNER OF SAID SECTION 2. SAID STRIP OF LAND BEING 3594.7 FEET OR 217.86 RODS IN LENGTH AND CONTAINING 2.47 ACRES, MORE OR LESS, AND BEING ALLOCATED BY FORTIES AS FOLLOWS.

NW/4SW/4	57.65 RODS OR 0.65 ACRES
SW/4NW/4	80.09 RODS OR 0.91 ACRES
LOT 3	80.12 RODS OR 0.91 ACRES

I HEREBY CERTIFY THAT THIS PLAT WAS PREPARED FROM FIELD NOTES OF AN ACTUAL SURVEY AND MEETS OR EXCEEDS THE REQUIREMENTS FOR LAND SURVEYS AS SPECIFIED BY THIS STATE.

GARY L. JONES, N.M.P.S. No. 7977
TEXAS R.P.L.S. No. 5074

1000 0 1000 2000 FEET

ADVANCE ENERGY PARTNERS HAT MESA

REF: LONG SHOT SWD 1 LEASE ROAD

A ROAD CROSSING STATE LAND IN

SECTION 2, TOWNSHIP 22 SOUTH, RANGE 33 EAST,

N.M.P.M., LEA COUNTY, NEW MEXICO.

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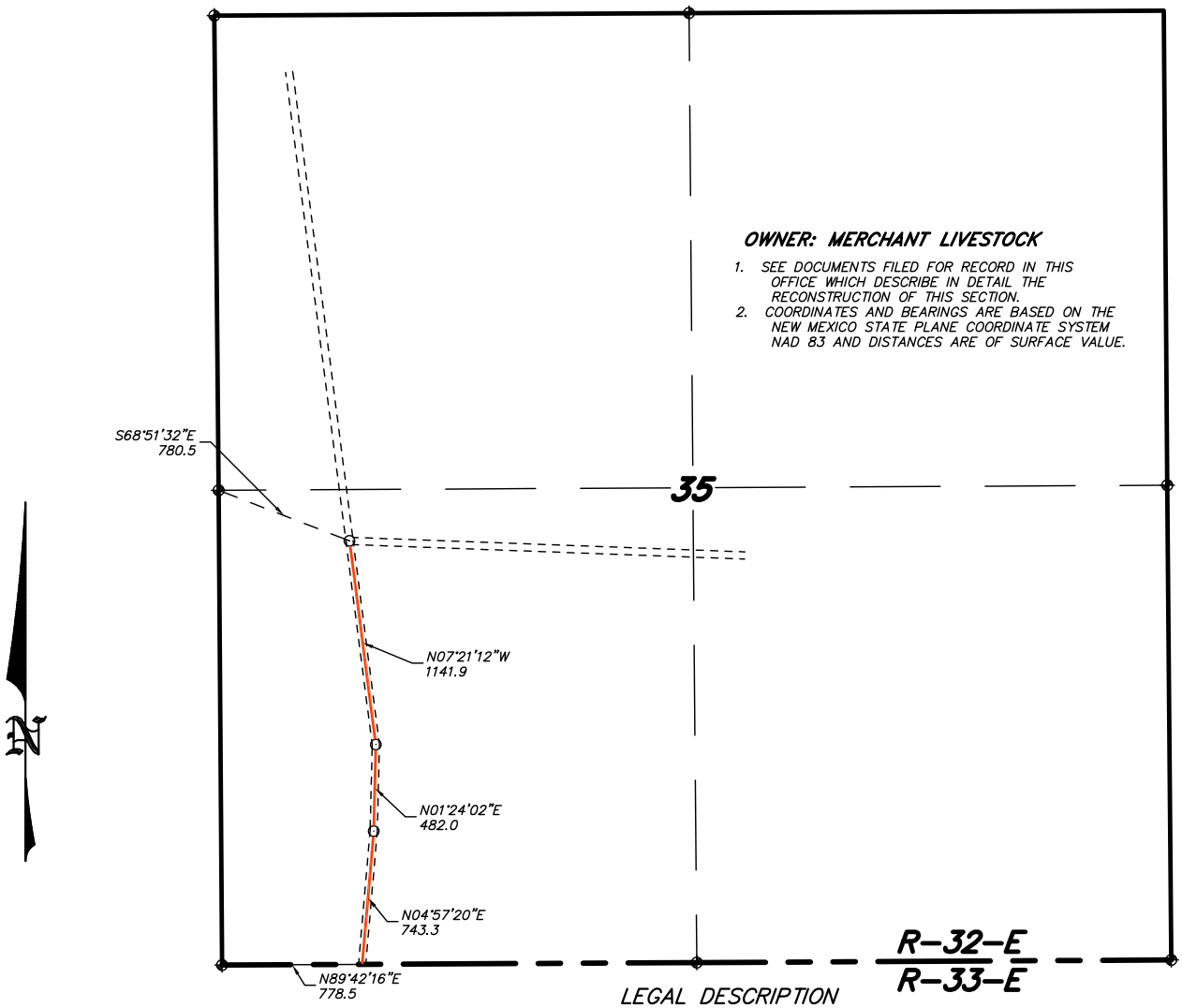
W.O. Number: 35059	Drawn By: J. GOAD	Date: 3-4-2020	Survey Date: 2-28-2020	Sheet 2 of 3 Sheets

SECTION 35, TOWNSHIP 22 SOUTH, RANGE 32 EAST, N.M.P.M.,

LEA COUNTY, **NEW MEXICO.**



LEGAL DESCRIPTION

A STRIP OF LAND 30.0 FEET WIDE, LOCATED IN SECTION 35, TOWNSHIP 22 SOUTH, RANGE 32 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO AND BEING 15.0 FEET LEFT AND RIGHT OF THE FOLLOWING DESCRIBED CENTERLINE SURVEY.

BEGINNING AT A POINT WHICH LIES N89°42'16"E., 778.5 FEET FROM THE SOUTHWEST CORNER OF SAID SECTION 35; THENCE N04°57'20"E., 743.3 FEET; THENCE N01°24'02"E., 482.0 FEET; THENCE N07°21'12"W., 1141.9 FEET TO THE END OF THIS LINE WHICH LIES S68°51'32"E., 780.5 FEET FROM THE WEST QUARTER CORNER OF SAID SECTION 35. SAID STRIP OF LAND BEING 2367.2 FEET OR 143.47 RODS IN LENGTH.

I HEREBY CERTIFY THAT THIS [illegible] WAS PREPARED FROM FIELD NOTES OF AN ACTUAL SURVEY AND MEETS OR EXCEEDS THE REQUIREMENTS FOR LAND SURVEYS AS SPECIFIED BY THIS STATE.

GARY L. JONES, N.M. P.S. No. 7977
TEXAS R.P.L.S. No. 5074

GARY L. JONES NEW MEXICO 7977 REGISTERED PROFESSIONAL LAND SURVEYOR

1000 0 1000 2000 FEET

ADVANCE ENERGY PARTNERS HAT MESA

REF: LONG SHOT SWD 1 LEASE ROAD

A ROAD CROSSING FEE LAND IN

SECTION 35, TOWNSHIP 22 SOUTH, RANGE 32 EAST,

N.M.P.M., LEA COUNTY, NEW MEXICO.

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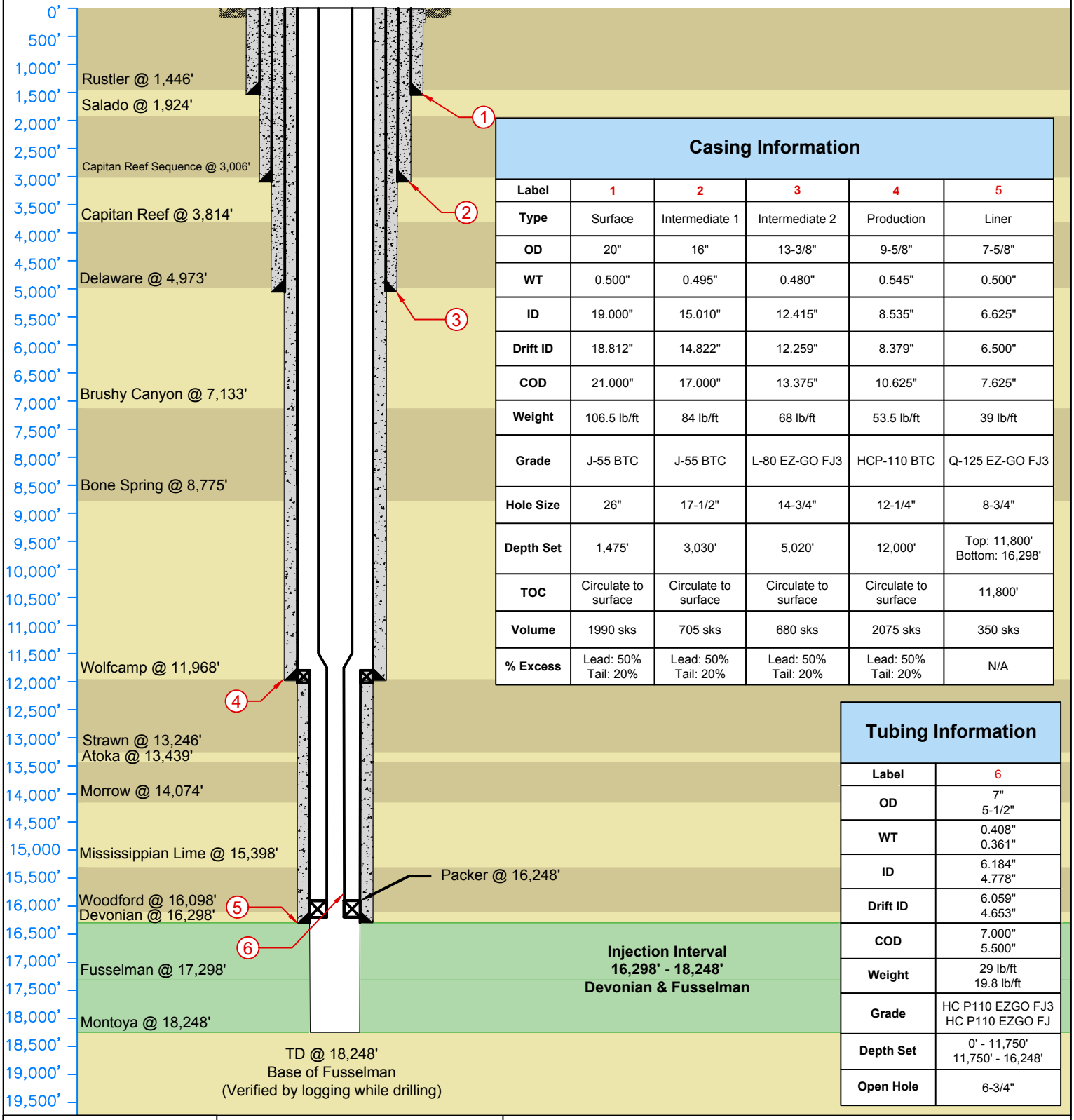
W.O. Number: 35059	Drawn By: J. GOAD	Date: 3-4-2020	Survey Date: 2-28-2020	Sheet 3 of 3 Sheets



Casing Information

Label	1	2	3	4	5
Type	Surface	Intermediate 1	Intermediate 2	Production	Liner
OD	20"	16"	13-3/8"	9-5/8"	7-5/8"
WT	0.500"	0.495"	0.480"	0.545"	0.500"
ID	19.000"	15.010"	12.415"	8.535"	6.625"
Drift ID	18.812"	14.822"	12.259"	8.379"	6.500"
COD	21.000"	17.000"	13.375"	10.625"	7.625"
Weight	106.5 lb/ft	84 lb/ft	68 lb/ft	53.5 lb/ft	39 lb/ft
Grade	J-55 BTC	J-55 BTC	L-80 EZ-GO FJ3	HCP-110 BTC	Q-125 EZ-GO FJ3
Hole Size	26"	17-1/2"	14-3/4"	12-1/4"	8-3/4"
Depth Set	1,475'	3,030'	5,020'	12,000'	Top: 11,800' Bottom: 16,298'
TOC	Circulate to surface	Circulate to surface	Circulate to surface	Circulate to surface	11,800'
Volume	1990 sks	705 sks	680 sks	2075 sks	350 sks
% Excess	Lead: 50% Tail: 20%	Lead: 50% Tail: 20%	Lead: 50% Tail: 20%	Lead: 50% Tail: 20%	N/A

Tubing Information

Label	6
OD	7" 5-1/2"
WT	0.408" 0.361"
ID	6.184" 4.778"
Drift ID	6.059" 4.653"
COD	7.000" 5.500"
Weight	29 lb/ft 19.8 lb/ft
Grade	HC P110 EZGO FJ3 HC P110 EZGO FJ
Depth Set	0' - 11,750' 11,750' - 16,248'
Open Hole	6-3/4"

LONQUIST & CO. LLC
PETROLEUM ENGINEERS | ENERGY ADVISORS
AUSTIN · HOUSTON · CALGARY · WICHITA
DENVER · COLLEGE STATION · BATON ROUGE · EDMONTON

Texas License F-9147

12912 Hill Country Blvd. Ste F-200
Austin, Texas 78738
Tel: 512.732.9812
Fax: 512.732.9816

Advance Energy Partners Hat Mesa LLC

Long Shot Unit SWD No. 1

Country: USA	**State/Province:** New Mexico	**County/Parish:** Lea
Location:	**Site:** 1,490' FWL & 2,100' FSL	**Survey:** S2-T22S-R33E
API No: NA	**Field:** Devonian-Silurian (Code: 97869)	**Well Type/Status:** SWD
NMOCD District No: 1	**Project No:** LE160	**Date:** 7/8/2021
Drawn: NJP	**Reviewed:**	**Approved:**
Rev No: 1	**Notes:**	

PROPOSAL#: 210624154130-B

CEMENT PROCEDURE & PROPOSAL

PREPARED FOR:

Ms. Ramona Hovey
EMAIL: ramona@lonquist.com
PHONE NUMBER: 512-585-0654

Advance Energy Partners

Long Shot Unit SWD #1

Lea County, NM

Service Point

Odessa
1400 S JBS Parkway Odessa, TX 79766
432-888-0413

Technical Writer

Kevin Swikert
kevin@wtcementers.com
713-562-0805

WTC Representative

Jon Reynolds
jon@wtcementers.com
432-257-1234

Advance Energy Partners
Long Shot Unit SWD #1
Lea County, NM

Surface

PROPOSAL#: 210624154130-B

WELL INFORMATION	
MUD	8.4# Spud Mud
OPEN HOLE	26" OH to 1475
CASING/INJECTION	20" 106.5# J55/BTC to 1475
MD	1475
EST BHST/BHCT	92-F / 85-F (0.8-F/100-FT)
NOTES	Standby charges start after WTC has been on location for more than 4-hrs.

VOLUMES

FLUID NAME	LENGTH (ft)	OD (in.)	ID (in.)	XS (%)	FACTOR (bbl/ft)	VOLUME (bbl)
Lead	1180	26	20	50%	0.4021	474.5
Tail	295	26	20	20%	0.3217	94.9
SHOE JOINT	40	20	19		0.3507	14.0

FLUIDS

SPACER

Fresh Water+Green Dye

VOLUME 20-bbl

Lead

100% Class H+4% Gel+1% CaCl2+0.005GPS NoFoam V1A

VOLUME	1535-SX	*475.7-bbls*
DENSITY	13.5-ppg	
YIELD	1.74-cf/sx	
MIX WATER	9.18-gps	
TOP OF CEMENT	Surface	
EXCESS	50%	

Advance Energy Partners
Long Shot Unit SWD #1
Lea County, NM

Surface

PROPOSAL#: 210624154130-B

Tail		
100% Class H+1% CaCl2+1% SMS+0.005GPS NoFoam V1A		
VOLUME	455-SX	*109.4-bbls*
DENSITY	14.8-ppg	
YIELD	1.35-cf/sx	
MIX WATER	6.39-gps	
TOP OF CEMENT	1180-ft	
EXCESS	20%	
DISPLACEMENT		
Displacement		
VOLUME	503.2-bbl	

Advance Energy Partners
Long Shot Unit SWD #1
Lea County, NM

1st Intermediate

PROPOSAL#: 210624154130-B

WELL INFORMATION	
MUD	10# Brine
PREVIOUS PIPE	20'' 106.5# CSG to 1475
OPEN HOLE	17.5'' OH to 3030
CASING/INJECTION	16'' 84# J55/BTC to 3030
MD	3030
EST BHST/BHCT	105-F / 94-F (0.8-F/100-FT)
NOTES	Standby charges start after WTC has been on location for more than 4-hrs.

VOLUMES

FLUID NAME	LENGTH (ft)	OD (in.)	ID (in.)	XS (%)	FACTOR (bbl/ft)	VOLUME (bbl)
Lead	1475	19	16		0.1020	150.4
Lead	949	17.5	16	50%	0.0732	69.5
Tail	606	17.5	16	20%	0.0586	35.5
SHOE JOINT	40	16	15.01		0.2188	8.8

FLUIDS

SPACER

Fresh Water+Green Dye

VOLUME	20-bbl

Lead

50% B_Poz+50% Class H+10% Gel+5% SALT+0.5% SMS+0.1% C-20+3PPS Gilsonite+0.25PPS Pol-E-Flake+0.005GPS NoFoam V1A

VOLUME	495-SX	*220.4-bbls*
DENSITY	11.8-ppg	
YIELD	2.5-cf/sx	
MIX WATER	14.19-gps	
TOP OF CEMENT	Surface	
EXCESS	50%	

Advance Energy Partners
Long Shot Unit SWD #1
Lea County, NM

1st Intermediate

PROPOSAL#: 210624154130-B

Tail		
	100% Class H+0.2% SMS+0.005GPS NoFoam V1A	
VOLUME	210-SX	*44.1-bbls*
DENSITY	15.6-ppg	
YIELD	1.18-cf/sx	
MIX WATER	5.26-gps	
TOP OF CEMENT	2424-ft	
EXCESS	20%	
DISPLACEMENT		
	Displacement	
VOLUME	654.4-bbl	

Advance Energy Partners
Long Shot Unit SWD #1
Lea County, NM

2nd Intermediate

PROPOSAL#: 210624154130-B

WELL INFORMATION	
MUD	10# Brine
PREVIOUS PIPE	16'' 84# CSG to 3030
OPEN HOLE	14.75'' OH to 5020
CASING/INJECTION	13.375'' 68# L80/EZ-GO FJ3 to 5020
MD	5020
EST BHST/BHCT	121-F / 105-F (0.8-F/100-FT)
NOTES	Standby charges start after WTC has been on location for more than 4-hrs.

VOLUMES

FLUID NAME	LENGTH (ft)	OD (in.)	ID (in.)	XS (%)	FACTOR (bbl/ft)	VOLUME (bbl)
Lead	3030	15.01	13.375		0.0451	136.6
Lead	986	14.75	13.375	50%	0.0563	55.6
Tail	1004	14.75	13.375	20%	0.0451	45.3
SHOE JOINT	40	13.375	12.415		0.1497	6.0

FLUIDS

SPACER

Fresh Water

VOLUME	20-bbl

Lead

50% B_Poz+50% Class H+10% Gel+5% SALT+0.5% SMS+0.1% C-20+3PPS Gilsonite+0.25PPS Pol-E-Flake+0.005GPS NoFoam V1A

VOLUME	435-SX	*193.7-bbls*
DENSITY	11.8-ppg	
YIELD	2.5-cf/sx	
MIX WATER	14.19-gps	
TOP OF CEMENT	Surface	
EXCESS	50%	

Advance Energy Partners
Long Shot Unit SWD #1
Lea County, NM

2nd Intermediate

PROPOSAL#: 210624154130-B

Tail		
100% Class H+0.2% SMS+0.1% C-20+0.005GPS NoFoam V1A		
VOLUME	245-SX	*51.9-bbls*
DENSITY	15.6-ppg	
YIELD	1.19-cf/sx	
MIX WATER	5.26-gps	
TOP OF CEMENT	4016-ft	
EXCESS	20%	
DISPLACEMENT		
Displacement		
VOLUME	745.6-bbl	

Advance Energy Partners
Long Shot Unit SWD #1
Lea County, NM

Production

PROPOSAL#: 210624154130-B

WELL INFORMATION	
MUD	9.2# Cut Brine
PREVIOUS PIPE	13.375'' 68# CSG to 5020
OPEN HOLE	12.25'' OH to 12000
CASING/INJECTION	9.625'' 53.5# HCP110/BTC to 12000
MD	12000
EST BHST/BHCT	176-F / 140-F (0.8-F/100-FT)
NOTES	Standby charges start after WTC has been on location for more than 8-hrs. SPACER MIXING ORDER: 1-PPB R-1300; 0.5-PPB SuspendaCem 6302; 2.5-PPB Soda Ash; 10-PPB ZoneSeal

VOLUMES

FLUID NAME	LENGTH (ft)	OD (in.)	ID (in.)	XS (%)	FACTOR (bbl/ft)	VOLUME (bbl)
Lead	5020	12.415	9.625		0.0597	299.8
Lead	6405	12.25	9.625	50%	0.0837	535.9
Tail	575	12.25	9.625	20%	0.0669	38.5
SHOE JOINT	40	9.625	8.535		0.0708	2.8

FLUIDS

SPACER

Fresh Water+ 2.5PPB Soda Ash +1PPB R-1300+0.5PPB SuspendaCem 6302+10PPB Zone Seal

VOLUME	40-bbl
DENSITY	8.34-ppg

Lead

50% B_Poz+50% Class H+10% Gel+5% SALT+0.5% SMS+0.65% C-20+3PPS Gilsonite+0.25PPS Pol-E-Flake+0.005GPS NoFoam V1A

VOLUME	1875-SX	*838.2-bbls*
DENSITY	11.8-ppg	
YIELD	2.51-cf/sx	
MIX WATER	14.2-gps	
TOP OF CEMENT	Surface	
EXCESS	50%	

Advance Energy Partners
Long Shot Unit SWD #1
Lea County, NM

Production

PROPOSAL#: 210624154130-B

Tail		
100% Class H+0.05% SuspendaCem 6302+0.5% C-20+0.5% C-47B+0.005GPS NoFoam V1A		
VOLUME	200-SX	*42.4-bbls*
DENSITY	15.6-ppg	
YIELD	1.19-cf/sx	
MIX WATER	5.22-gps	
TOP OF CEMENT	11425-ft	
EXCESS	20%	
DISPLACEMENT		
Displacement		
VOLUME	846.3-bbl	

Advance Energy Partners
Long Shot Unit SWD #1
Lea County, NM

Drilling Liner

PROPOSAL#: 210624154130-B

WELL INFORMATION	
MUD	12.5# OBM
PREVIOUS PIPE	9.625'' 53.5# CSG to 12000
OPEN HOLE	8.75'' OH to 16298
CASING/INJECTION	5.5'' 20# TBG to 11800; 7.625'' 39# Q125/EZ-GO FJ3 to 16298
MD	16298
EST BHST/BHCT	211-F / 172-F (0.8-F/100-FT)
LINER TOP	11800
NOTES	Standby charges start after WTC has been on location for more than 8-hrs.

VOLUMES

FLUID NAME	LENGTH (ft)	OD (in.)	ID (in.)	XS (%)	FACTOR (bbl/ft)	VOLUME (bbl)
Tail	200	8.535	7.625		0.0143	2.9
Tail	4298	8.75	7.625	0%	0.0179	76.9
SHOE JOINT	40	7.625	6.625		0.0426	1.7

FLUIDS

SPACER

Wt. Spacer 31.32GPB Water+10PPB PolyScrub 4320+252.23PPB Barite+2GPB HoleScrub 4310+0.5GPB HoleScrub 4305+1PPB R-1300

VOLUME	40-bbl
DENSITY	13-ppg

Tail

50% B_Poz+50% Class H+2% Gel+5% SALT+0.05% SuspendaCem 6302+0.75% C-20+0.7% C-47B+0.005GPS NoFoam V1A

VOLUME	350-SX	*81.7-bbls*
DENSITY	14.2-ppg	
YIELD	1.31-cf/sx	
MIX WATER	5.91-gps	
TOP OF CEMENT	11800-ft	
EXCESS	0%	

DISPLACEMENT

Brine

VOLUME	190.1-bbl

Advance Energy Partners
Long Shot Unit SWD #1
Lea County, NM

Drilling Liner

PROPOSAL#: 210624154130-B

DISPLACEMENT	
Wt. Displacement Spacer 31.32GPB Water+10PPB PolyScrub 4320+252.23PPB Barite+2GPB HoleScrub 4310+0.5GPB HoleScrub 4305+1PPB R-1300	
VOLUME	15-bbl
DENSITY	13-ppg
DISPLACEMENT	
OBM	
VOLUME	246.7-bbl

CHEMICAL DESCRIPTIONS		
CHEMICAL NAME	**CODE**	**DESCRIPTION**
B_Poz	WTC228	Poz - Fly Ash, Extender
Class H	WTC101	API Cement
Class C	WTC100	API Cement
Ch_Poz	WTC237	Poz - Fly Ash, Extender
ProLite		Blended Based Cement
Plexcrete SFA	WTC129	Cement Strength Enhancer
Gel	WTC102	Extender
Micro Crystal	WTC212	Cement Strength Enhancer
Micro Shell	WTC209	Cement Strength Enhancer
WTC1	WTC250	Extender
Plexcrete STE	WTC127	Cement Strength Enhancer
Gypsum	WTC111	Free Water Control, Extender
CaCl2	WTC112	Accelerator
SMS	WTC115	Free Water Control, Extender
SuspendaCem 6302	WTC005	Free Water Control, Anti-Settling Agent
R-33	WTC243	Lignosulfonate Retarder
R-1300	WTC201	Low Temperature Retarder
C-20	WTC223	Lignosulfonate Retarder
C-37	WTC224	Dispersant, Friction Reducer
C-47B	WTC216	Fluid Loss (polymers/copolymers - 300-F max)
C-17	WTC226	Fluid Loss and Gas Migration Control
FL-2252	WTC007	Fluid Loss for low density slurries.
EC-10	WTC120	Expanding Agent
Gas Bond	WTC126	Gas Migration Control (Hydrogen Generating)
Gilsonite	WTC003	Premium Lost Circulation Material, Free Water Control
Kol-Seal	WTC107	Lost Circulation Material
Pol-E-Flake	WTC106	Lost Circulation Material
Web Seal	WTC133	Premium Fiber Lost Circulation Material
Zone Seal	WTC207	Premium Lost Circulation Material
NoFoam V1A	WTC105	Liquid Defoamer
Water		Fresh Water
PolyScrub 4320	WTC232	Spacer Gelling Agent
Barite	WTC116	Weighting Agent
HoleScrub 4310	WTC234	Surfactant
HoleScrub 4305	WTC213	Surfactant
HoleScrub 4308	WTC215	Surfactant
Soda Ash	WTC164	pH Control
R-1300	WTC201	Low Temperature Retarder
SuspendaCem 6302	WTC005	Free Water Control, Anti-Settling Agent
Sugar	WTC119	Retarder
AI-1, Acid Inhibitor	WTC015	Corrosion Inhibitor
Plexcide 24L	WTC166	Biocide
Corplex	WTC134	Corrosion Inhibitor
Clay Max	WTC096	KCL Substitute
Zone Seal	WTC207	Premium Lost Circulation Material

Long Shot SWD No. 1
Oil & Gas Well
2-Mile Area of Review
Advance Energy Partners Hat Mesa
Lea Co., NM

PCS: NAD 1983 NM-E FIPS 3001 (US Ft.)

Drawn by: ER	Date: 6/4/2021	Approved by: CW

LONQUIST & CO. LLC
PETROLEUM ENGINEERS | ENERGY ADVISORS
AUSTIN • HOUSTON • CALGARY • WICHITA
DENVER • COLLEGE STATION • BATON ROUGE • EDMONTON

- Long Shot SWD No. 1 SHL
- 1/2-Mile Radius
- 1-Mile Radius
- 2-Mile Radius
- QQ Section [NM PLSS-2021]
- Section [NM PLSS-2021]
- Township [NM PLSS-2021]
- Lateral (58)

API (30-025-...) SHL Status-Type (Count)
- Horizontal Surface Location (59)
- Active - Gas (2)
- Active - Oil (2)
- Active - SWD (1)
- Permitted - Oil (1)
- Plugged/Site Released - Oil (6)
- Cancelled - Oil (2)
- Cancelled - Gas (1)

API (30-025-...) BHL Status-Type (Count)
- Active - Oil (19)
- Cancelled - Oil (3)
- Never Drilled - Oil (2)
- Permitted - Oil (33)
- Plugged/Site Released - Oil (1)

* Note: All coordinates shown are in NAD 83 GCS (DD). *
Data Sources:
Well Status - NM OCD (2021)
Well SHL Location - NM OCD (2021)
Well BHL Location - Enverus (2021)
Well Lateral - Enverus (2021)

LONG SHOT SWD NO. 1
32.41930557
-103.54692803

1 " = 0.6 Mi
1:38,000
0 ¼ ½ ¾ 1 2 Miles

Long Shot SWD No. 1
1-Mile Area of Review List

API (30-025-...)	WELL NAME	WELL TYPE	STATUS	OPERATOR	TVD (FT.)	LATITUDE (NAD83 DD)	LONGITUDE (NAD83 DD)	FIELD	DATE DRILLED
01793	PRE-ONGARD WELL #001	Oil	Plugged (site released)	PRE-ONGARD WELL OPERATOR	3705	32.42983630	-103.54965970		1/1/1900
41364	BATTLE #001H	Oil	Active	MARATHON OIL PERMIAN LLC	11011	32.44209290	-103.55294040	[97929] WC-025 G-06 S213326D, BONE SPRING	7/1/2014
41804	BEVO 11 FEDERAL #004H	Oil	Active	COG OPERATING LLC	10914	32.40092470	-103.53752140	[28432] GRAMA RIDGE, BONE SPRINGS, WEST	10/25/2014
42009	BATTLE #002H	Oil	Active	MARATHON OIL PERMIAN LLC	0	32.44319920	-103.55715180	[97929] WC-025 G-06 S213326D, BONE SPRING	1/16/2015
43891	TENDERLOIN FEDERAL COM #004H	Oil	Active	COG OPERATING LLC	10878	32.40078500	-103.53249700	[28432] GRAMA RIDGE, BONE SPRINGS, WEST	10/1/2017
43909	MERCHANT STATE UNIT #503H	Oil	Active	ADVANCE ENERGY PARTNERS HAT MESA, LLC	10985	32.44226800	-103.54447700	[97929] WC-025 G-06 S213326D, BONE SPRING	9/15/2017
44896	MERCHANT STATE UNIT #506H	Oil	New	ADVANCE ENERGY PARTNERS HAT MESA, LLC	0	32.44225100	-103.53572500	[97929] WC-025 G-06 S213326D, BONE SPRING	7/22/2018
45027	MERCHANT STATE UNIT #506Y	Oil	Active	ADVANCE ENERGY PARTNERS HAT MESA, LLC	11044	32.44225000	-103.53563500	[37870] LEGG, BONE SPRING	7/28/2017
45084	MERCHANT STATE UNIT #601H	Oil	Active	ADVANCE ENERGY PARTNERS HAT MESA, LLC	12131	32.44205900	-103.55069900	[97929] WC-025 G-06 S213326D, BONE SPRING	8/24/2018
45267	MERCHANT STATE UNIT #504H	Oil	Active	ADVANCE ENERGY PARTNERS HAT MESA, LLC	11,103	32.44211900	-103.53898300	[97929] WC-025 G-06 S213326D, BONE SPRING	11/12/2018
45268	MERCHANT STATE UNIT #505H	Oil	Active	ADVANCE ENERGY PARTNERS HAT MESA, LLC	10,930	32.44212000	-103.53888500	[97929] WC-025 G-06 S213326D, BONE SPRING	11/7/2018
45354	BATTLE 34 WC FEE #013H	Oil	Never Drilled	MARATHON OIL PERMIAN LLC	0	32.44123306	-103.55691655	[98033] WC-025 G-10 S213328O, WOLFCAMP	12/31/9999
45355	BATTLE 34 SB FEE #015H	Oil	New	MARATHON OIL PERMIAN LLC	0	32.44123651	-103.55681931	[97929] WC-025 G-06 S213326D, BONE SPRING	5/26/2019
45356	BATTLE 34 AV FEE #017H	Oil	New	MARATHON OIL PERMIAN LLC	0	32.44124336	-103.55662497	[97929] WC-025 G-06 S213326D, BONE SPRING	6/4/2019
45357	BATTLE 34 WD FEE #019C	Oil	Cancelled	MARATHON OIL PERMIAN LLC	0	32.44124005	-103.55672215	[98093] WC-025 G-09 S243232M, BONE SPRING	12/31/9999
45358	BATTLE 34 WC FEE #020C	Oil	Never Drilled	MARATHON OIL PERMIAN LLC	0	32.44124711	-103.55652791	[98033] WC-025 G-10 S213328O, WOLFCAMP	12/31/9999
45447	MERCHANT STATE UNIT #512H	Oil	Active	ADVANCE ENERGY PARTNERS HAT MESA, LLC	0	32.44211500	-103.53640600	[97929] WC-025 G-06 S213326D, BONE SPRING	2/11/2019
45448	MERCHANT STATE UNIT #602H	Oil	Active	ADVANCE ENERGY PARTNERS HAT MESA, LLC	11,880	32.44200000	-103.54856400	[97929] WC-025 G-06 S213326D, BONE SPRING	1/16/2019
45792	BATTLE 34 AV FEE #025H	Oil	New	MARATHON OIL PERMIAN LLC	0	32.44124005	-103.55672215	[97929] WC-025 G-06 S213326D, BONE SPRING	5/31/2019
46363	MERCHANT STATE UNIT #551H	Oil	New	ADVANCE ENERGY PARTNERS HAT MESA, LLC	0	32.44200100	-103.54869000	[97929] WC-025 G-06 S213326D, BONE SPRING	12/31/9999
46662	MERCHANT STATE UNIT #554H	Oil	New	ADVANCE ENERGY PARTNERS HAT MESA, LLC	0	32.44225300	-103.53684900	[97929] WC-025 G-06 S213326D, BONE SPRING	12/29/2019
46663	MERCHANT STATE UNIT #605H	Oil	New	ADVANCE ENERGY PARTNERS HAT MESA, LLC	0	32.44225300	-103.53695600	[97929] WC-025 G-06 S213326D, BONE SPRING	12/31/9999
46664	MERCHANT STATE UNIT #606H	Oil	New	ADVANCE ENERGY PARTNERS HAT MESA, LLC	0	32.44225300	-103.55674300	[97929] WC-025 G-06 S213326D, BONE SPRING	12/31/9999
46695	MERCHANT STATE UNIT #301H	Oil	New	ADVANCE ENERGY PARTNERS HAT MESA, LLC	0	32.44200100	-103.54882100	[97929] WC-025 G-06 S213326D, BONE SPRING	1/13/2020
46696	MERCHANT STATE UNIT #501H	Oil	New	ADVANCE ENERGY PARTNERS HAT MESA, LLC	0	32.44200100	-103.54907900	[97929] WC-025 G-06 S213326D, BONE SPRING	1/10/2020
46697	MERCHANT STATE UNIT #511H	Oil	New	ADVANCE ENERGY PARTNERS HAT MESA, LLC	0	32.44199200	-103.54365500	[97929] WC-025 G-06 S213326D, BONE SPRING	3/10/2020
46698	MERCHANT STATE UNIT #553H	Oil	New	ADVANCE ENERGY PARTNERS HAT MESA, LLC	0	32.44199100	-103.54354800	[97929] WC-025 G-06 S213326D, BONE SPRING	3/9/2020
46699	MERCHANT STATE UNIT #604H	Oil	New	ADVANCE ENERGY PARTNERS HAT MESA, LLC	0	32.44199100	-103.54344100	[97929] WC-025 G-06 S213326D, BONE SPRING	7/10/2020
46700	MERCHANT STATE UNIT #509H	Oil	New	ADVANCE ENERGY PARTNERS HAT MESA, LLC	0	32.44200100	-103.54895000	[97929] WC-025 G-06 S213326D, BONE SPRING	1/12/2020
46701	MERCHANT STATE UNIT #302H	Oil	New	ADVANCE ENERGY PARTNERS HAT MESA, LLC	0	32.44199700	-103.54651600	[97929] WC-025 G-06 S213326D, BONE SPRING	12/31/9999
46702	MERCHANT STATE UNIT #510H	Oil	New	ADVANCE ENERGY PARTNERS HAT MESA, LLC	0	32.44199600	-103.54640900	[97929] WC-025 G-06 S213326D, BONE SPRING	1/22/2020
46703	MERCHANT STATE UNIT #552H	Oil	New	ADVANCE ENERGY PARTNERS HAT MESA, LLC	0	32.44199600	-103.54630200	[97929] WC-025 G-06 S213326D, BONE SPRING	1/21/2020
46704	MERCHANT STATE UNIT #603H	Oil	New	ADVANCE ENERGY PARTNERS HAT MESA, LLC	0	32.44199600	-103.54619500	[97929] WC-025 G-06 S213326D, BONE SPRING	1/19/2020
47046	LOCO DINERO 36 2L STATE COM #004H	Oil	New	MARSHALL & WINSTON INC	0	32.44208500	-103.53349100	[97929] WC-025 G-06 S213326D, BONE SPRING	2/23/2021
47423	MERCHANT STATE UNIT #604Y	Oil	New	ADVANCE ENERGY PARTNERS HAT MESA, LLC	0	32.44199100	-103.54331600	[97929] WC-025 G-06 S213326D, BONE SPRING	12/31/9999

Long Shot SWD No. 1
Offset Operators - OCD
1-Mile Area of Review
Advance Energy Partners Hat Mesa
Lea Co., NM

PCS: NAD 1983 NM-E FIPS 3001 (US Ft.)

Drawn by: AG	Date: 6/22/2021	Approved by: CW

LONQUIST & CO. LLC
PETROLEUM ENGINEERS | ENERGY ADVISORS
AUSTIN · HOUSTON · CALGARY · WICHITA
DENVER · COLLEGE STATION · BATON ROUGE · EDMONTON

-MARATHON OIL PERMIAN LLC

-MARSHALL & WINSTON INC

-ADVANCE ENERGY PARTNERS HAT MESA, LLC

-NO ACTIVE WELLS

-COG OPERATING LLC

LONG SHOT SWD NO. 1
32.41930557
-103.54692803

T21S R33E
T22S R33E

1 " = 0.21 Mi
1:13,500
0 0.125 0.25 0.375 0.5 1 Miles

- Long Shot SWD No. 1 SHL
- 1/2-Mile Radius
- 1-Mile Radius
- Lateral (33)
- Section [NM PLSS-2021]
- QQ Section [NM PLSS-2021]
- Township [NM PLSS-2021]

API (30-025-...) SHL Status-Type (Count)
- Horizontal Surface Location (34)
- Plugged/Site Released - Oil (1)

API (30-025-...) BHL Status-Type (Count)
- Active - Oil (11)
- Never Drilled - Oil (2)
- Permitted - Oil (20)

Offset Operator(s)
- -ADVANCE ENERGY PARTNERS HAT MESA, LLC
- -COG OPERATING LLC
- -MARATHON OIL PERMIAN LLC
- -MARSHALL & WINSTON INC
- -NO ACTIVE WELLS

* Note: All coordinates shown are in NAD 83 GCS (DD). *
Data Sources:
Well Status - NM OCD (2021)
Well SHL Location - NM OCD (2021)
Well BHL Location - Enverus (2021)
Well Lateral - Enverus (2021)

Long Shot SWD No. 1
Offset Operators - BLM/SLO
1-Mile Area of Review
Advance Energy Partners Hat Mesa
Lea Co., NM

PCS: NAD 1983 NM-E FIPS 3001 (US Ft.)

Drawn by: AG	Date: 6/23/2021	Approved by: CW

LONQUIST & CO. LLC
PETROLEUM ENGINEERS | ENERGY ADVISORS
AUSTIN · HOUSTON · CALGARY · WICHITA
DENVER · COLLEGE STATION · BATON ROUGE · EDMONTON

-ADVANCE ENERGY PARTNERS HAT MESA, LLC
-V0-8405-0001

-MARATHON OIL PERMIAN LLC
-NMNM 132068

-NO ACTIVE LESSEE

-ADVANCE ENERGY PARTNERS HAT MESA, LLC
-V0-8405-0001

-MARSHALL & WINSTON INC
-VB-2095-0000

-COG OPERATING LLC
-NMNM 096243

T21S R33E

T22S R33E

-ADVANCE ENERGY PARTNERS HAT MESA, LLC
-VB-1570-0001

-DEVON ENERGYCO LP
-NMNM 096244

-ADVANCE ENERGY PARTNERS HAT MESA, LLC
-VB-1571-0001

-COG OPERATING LLC
-NMNM 096243

-CHEVRON USA INC
-NMNM 126489

LONG SHOT SWD NO. 1
32.41930557
-103.54692803

-COG OPERATING LLC
-NMNM 112939

-FIRST INTL BK OF AZ
-NMNM 017440

-FIRST INTL BK OF AZ
-NMNM 017440

-COG OPERATING LLC
-NMNM 112939

1 " = 0.21 Mi
1:13,500
0 0.125 0.25 0.375 0.5 1 Miles

- Long Shot SWD No. 1 SHL
- 1/2-Mile Radius
- 1-Mile Radius
- NM-SLO
- NM-BLM
- QQ Section [NM PLSS-2021]
- Section [NM PLSS-2021]
- Township [NM PLSS-2021]
- Lateral (33)

API (30-025-...) SHL Status-Type (Count)
- Horizontal Surface Location (34)
- Plugged/Site Released - Oil (1)

API (30-025-...) BHL Status-Type (Count)
- Active - Oil (11)
- Never Drilled - Oil (2)
- Permitted - Oil (20)

Lessee(s)
- -ADVANCE ENERGY PARTNERS HAT MESA, LLC; -V0-8405-0001
- -ADVANCE ENERGY PARTNERS HAT MESA, LLC; -VB-1570-0001
- -ADVANCE ENERGY PARTNERS HAT MESA, LLC; -VB-1571-0001
- -CHEVRON USA INC; -NMNM 126489
- -COG OPERATING LLC; -NMNM 096243
- -COG OPERATING LLC; -NMNM 112939
- -DEVON ENERGYCO LP; -NMNM 096244
- -FIRST INTL BK OF AZ; -NMNM 017440
- -MARATHON OIL PERMIAN LLC; -NMNM 132068
- -MARSHALL & WINSTON INC; -VB-2095-0000
- -NO ACTIVE LESSEE

Surface Owner
- State Land Office

* Note: All coordinates shown are in NAD 83 GCS (DD).
Data Sources:
Well Status, SHL Location, - NM OCD (2021)
Well BHL Location,Lateral - Enverus (2021)

SLO DATA: NMSTATELANDS.ORG
BLM DATA: NM-BLM

Long Shot SWD No.1
1-Mile Offset Operators and Lessees List

S/T/R	QQ UNIT LETTER(S)	OPERATOR	MINERAL LESSEES	MINERAL OWNER	ADDRESS 1	ADDRESS 2
34/21S/33E	I,J,N,O,P	MARATHON OIL PERMIAN LLC	-	-	5555 San Felipe St.	Houston, TX 77056
35/21S/33E	ENTIRE SECTION	ADVANCE ENERGY PARTNERS HAT MESA, LLC	-	-	11490 Westheimer Rd., Ste 950	Houston, TX 77077
36/21S/33E	M	MARSHALL & WINSTON INC	-	-	P.O. Box 50880	Midland, TX 79710
01/22S/33E	D,E,L,M	COG OPERATING LLC	-	-	600 W Illinois Ave	Midland, TX 79701
	G,J,O	-	COG OPERATING LLC	-	600 W ILLINOIS AVE	MIDLAND TX 797014882
02/22S/33E	ENTIRE SECTION	ADVANCE ENERGY PARTNERS HAT MESA, LLC	-	-	11490 Westheimer Rd., Ste 950	Houston, TX 77077
	A,B,C,F,G,H,I,J,K,N,O,P	-	DEVON ENERGYCO LP	-	333 W SHERIDAN AVE	OKLAHOMA CITY OK 731025010
10/T22S/R33E	E,F,G,H,I,J,K,L	-	FIRST INTL BK OF AZ	-	PO BOX 1546	MESA AZ 85201
	A,B,C	-	CHEVRON USA INC	-	1400 SMITH ST	HOUSTON TX 770027327
11/T22S/R33E	A,H,I,P	COG OPERATING LLC		-	600 W Illinois Ave	Midland, TX 79701
	D,E,L	-	FIRST INTL BK OF AZ	-	PO BOX 1546	MESA AZ 85201
	A,B,C,E,G,H,I,J,K	-	COG OPERATING LLC	-	600 W ILLINOIS AVE	MIDLAND TX 797014882
12/22S/33E	D,E	COG OPERATING LLC	-	-	600 W Illinois Ave	Midland, TX 79701

Long Shot SWD No. 1
1-Mile Offset Operators and Lessees List
NM-OCD (2021)

Offset Produced Water Analysis - Long Shot SWD #1																	
wellname	api	section	township	range	unit	county	formation	ph	tds_mgL	sodium_mgL	calcium_mgL	iron_mgL	magnesium_mgL	manganese_mgL	chloride_mgL	bicarbonate_mgL	sulfate_mgL	co2_mgL
SNAPPING 2 STATE #014H	3001542688	2	26S	31E	P	EDDY	WOLFCAMP	7.3	81366.4	26319.4	2687.4	26.1	326.7		50281.2		399.7	100
BELLOQ 2 STATE #002H	3001542895	2	23S	31E	C	EDDY	WOLFCAMP	6.8	119471.8	37359.2	5659.1	22.4	746.1		73172.5		1035.5	250
BILBREY BASIN 5 STATE COM #001H	3002540987	5	22S	32E	N	LEA	BONE SPRING 2ND SAND	6.6	109780.5	35119.1	4996.7	74.6	609.4	1.33	67200	97	7.5	100
GAUCHO UNIT #012H	3002541564	20	22S	34E	A	Lea	BONE SPRING 2ND SAND	7	109808.2	35202.7	5341.4	30.8	755.2	0.62	66984.9	280.6	1030	320
GAUCHO UNIT #013H	3002541565	20	22S	34E	A	Lea	BONE SPRING 2ND SAND	7.5	139904.6	46238.1	6396.8	47.2	863.7	2.1	85080.8	292.8	740	550
GAUCHO UNIT #015H	3002541566	20	22S	34E	D	Lea	BONE SPRING 2ND SAND	7.5	184420.1	55686.4	10540.1	47.6	1426	1.31	115274	268.4	765	770
GAUCHO UNIT #007H	3002534440	17	22S	34E	K	Lea	BONE SPRING 2ND SAND	6.4	151777.7	50554.2	5768.6	86.9	717.9	1.29	91600	244	0	200
GAUCHO UNIT #007H	3002534440	17	22S	34E	K	Lea	BONE SPRING 2ND SAND	6.7		49601	21	0	1	0	76000	281	586	352
GAUCHO UNIT #012H	3002541564	20	22S	34E	A	Lea	BONE SPRING 2ND SAND	6.9		37508	4553	17	806	0.65	68000	427	97	286
GAUCHO UNIT #013H	3002541565	20	22S	34E	A	Lea	BONE SPRING 2ND SAND	7		47943	1788	4.2	408	0.11	77000	305	1600	330
GAUCHO UNIT #014H	3002541571	20	22S	34E	D	Lea	BONE SPRING 2ND SAND	6.7		46477	4803	13	800	1.3	82000	220	624	330
GAUCHO UNIT #007H	3002534440	17	22S	34E	K	Lea	BONE SPRING 2ND SAND	6.5	166697.6	53586.1	9072	47.4	981.2	1.27	101677.1	61	675	350
GAUCHO UNIT #015H	3002541566	20	22S	34E	D	Lea	BONE SPRING 2ND SAND	5.42	158146.5	50243.6	9024	42.8	1042	1.08	96378.3	231.8	710	860
GAUCHO UNIT #011H	3002541184	17	22S	34E	O	Lea	BONE SPRING 3RD SAND	6.8		43301	5338	0	769	0	78300	122	640	120
GAUCHO UNIT #011H	3002541184	17	22S	34E	O	Lea	BONE SPRING 3RD SAND	7.5	156141.2	48642.5	6969.8	30.2	943.9	1.46	97977.9	305	1005	470
GAUCHO UNIT #010H	3002541183	17	22S	34E	O	Lea	BONE SPRING 3RD SAND	6.4		46191	3712	0	560	0	79230	183	700	100
GAUCHO UNIT #011H	3002541184	17	22S	34E	O	Lea	BONE SPRING 3RD SAND	6.5		48879	6182	11	802	0.12	88836	122	1240	70
GAUCHO UNIT #006	3002534789	17	22S	34E	P	Lea	BONE SPRING 3RD SAND	6.8		32062	4909	163	1027	2.4	61000	305	16	220
GAUCHO UNIT #010H	3002541183	17	22S	34E	O	Lea	BONE SPRING 3RD SAND	6.8		29047	8190	14	1367	0.41	63000	207	308	176
GAUCHO UNIT #011H	3002541184	17	22S	34E	O	Lea	BONE SPRING 3RD SAND	6.8		32064	8057	15	1472	0.58	67000	183	1309	220
GAUCHO UNIT #010H	3002541183	17	22S	34E	O	Lea	BONE SPRING 3RD SAND	5.58	165155.1	52757.1	9222	54.2	1040	1.44	100777.3	219.6	560	600
GAUCHO 21 FEDERAL #002H	3002540626	21	22S	34E	M	Lea	DELAWARE-BRUSHY CANYON	5.9	266467.8	71664.2	20660.8	50.2	3492.5	3.8	167562	366	0	400
GAUCHO 21 FEDERAL #002H	3002540626	21	22S	34E	M	Lea	DELAWARE-BRUSHY CANYON	6.5		95433	33964	36	5149	6.9	224384	366	210	200
GAUCHO 21 FEDERAL #002H	3002540626	21	22S	34E	M	Lea	DELAWARE-BRUSHY CANYON	5.8		70837	26020	39	4726	7.7	169000	37	341	880
BELL LAKE UNIT #009	3002520261	18	23S	34E	K	LEA	BONE SPRING		204652						130000	512	260	
BELL LAKE UNIT #002	3002508489	30	23S	34E	N	LEA	DELAWARE		52115						32200	451	529	
BELL LAKE UNIT #006	3002508483	6	23S	34E	O	LEA	DEVONIAN	7	71078						42200	500	1000	
ANTELOPE RIDGE UNIT #003	3002521082	34	23S	34E	K	LEA	DEVONIAN	6.9	80187						47900	476	900	

Affidavit of Publication

STATE OF NEW MEXICO
COUNTY OF LEA

I, Daniel Russell, Publisher of the Hobbs News-Sun, a newspaper published at Hobbs, New Mexico, solemnly swear that the clipping attached hereto was published in the regular and entire issue of said newspaper, and not a supplement thereof for a period of 1 issue(s).

Beginning with the issue dated
June 23, 2021
and ending with the issue dated
June 23, 2021.

Daniel Russell
Publisher

Sworn and subscribed to before me this
23rd day of June 2021.

Gussie Black
Business Manager

My commission expires
January 29, 2023
(Seal)

OFFICIAL SEAL
GUSSIE BLACK
Notary Public
State of New Mexico
My Commission Expires 1-29-23

This newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Laws of 1937 and payment of fees for said

LEGALS

LEGAL NOTICE
June 23, 2021

Advance Energy Partners Hat Mesa LLC, 11490 Westheimer Rd. Ste 950, Houston, TX 77077, is filling Form C-108 (Application for Authorization to Inject) with the New Mexico Oil Conservation Division for administrative approval for its salt water disposal well Long Shot SWD No. 1. The proposed well will be located 2100' FSL and 1490' FWL in Section 2, Township 22S, Range 33E in Lea County, New Mexico. Disposal water will be sourced from area production, and will be injected into the Devonian-Silurian formation (determined by offset log analysis) through an open hole completion between a maximum applied for top of 16,086 feet to a maximum depth of 18,250 feet. The maximum surface injection pressure will not exceed 3,217 psi with a rate as limited by pressure. Interested parties opposing the action must file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Drive, Santa Fe, New Mexico 87505, within 15 days. Additional information can be obtained from the applicant's agent, Lonquist & Co., LLC, at (512) 600-1777.
#36584

67112661 00255463

LONQUIST & CO., LLC
12912 HILL COUNTRY BLVD, STE F200
AUSTIN, TX 78738

DETERMINATION AND NOTICE OF AFFECTED PARTIES – NEW MEXICO

If an operator or mineral lessee has legal acreage or leases within one mile of the proposed salt water disposal well, their contact information is collected for notification purposes. Legal acreage of offset operators is gathered from the New Mexico Oil Conservation District's Permitting website. Minerals leased from the federal government are determined by referencing the Bureau of Land Management's Land and Mineral System Reports database. Minerals leased from the state government are determined by referencing the New Mexico State Land Office's Data Access database. Contact information for the affected parties is then extracted from the reports that were filed with the appropriate regulatory agency. Should any private minerals that are not public information fall within the one-mile radius, a title search was performed to discover the current lessee of those minerals or identifying the mineral owner of the acreage.

Notices were sent for the Long Shot SWD #1 application by mailing them a copy of Form C-108 on 10/18/2021. The individual tracking numbers are attached in the following pages of this application. Receipt of each application will be monitored and presented to the Oil Conservation Division upon request.

Ramona Hovey
Sr. Petroleum Engineer

Project: Advance Energy Partners Hat Mesa LLC
Long Shot SWD #1

Long Shot SWD #1				
Advance Energy Partners Hat Mesa, LLC				
NM OCD	**MAILING ADDRESS**	**TRACKING #**	**DATE SHIPPED**	**DATE RECEIVED**
OIL CONSERVATION DIVISION DISTRICT II	1625 N. FRENCH DR., HOBBS, NM 88240	9314869904300087841507, FEDEX 775081081531	10/18/2021, 11/01/21	11/9/2021
OIL CONSERVATION DIVISION DISTRICT IV	1220 S ST FRANCIS DR, SANTA FE, NM 87505	9314869904300087841514	10/18/2021	**10/26/2021**
SURFACE LANDOWNER	**MAILING ADDRESS**			
Faith Crosby, OGMD/Water, NM State Land Office	310 Old Santa Fe Trail Santa Fe, NM 87501	9314869904300087841521	10/18/2021	10/25/2021
GOVERNMENT AGENCY	**MAILING ADDRESS**			
Bureau of Land Management	620 E Greene Street Carlsbad, NM 88220	9314869904300087963636	10/18/2021	10/25/2021
Faith Crosby, OGMD/Water, NM State Land Office	310 Old Santa Fe Trail Santa Fe, NM 87501	9314869904300087841521	10/18/2021	10/25/2021
AFFECTED PARTIES	**MAILING ADDRESS**			
MARATHON OIL PERMIAN LLC	5555 SAN FELIPE ST., HOUSTON, TX 77056	9314869904300087841538	10/18/2021	10/29/2021
MARSHALL & WINSTON INC.	P.O. BOX 50880, MIDLAND, TX 79710	9314869904300087841545	10/18/2021	10/21/2021
COG OPERATING LLC	600 W ILLINOIS AVE, MIDLAND TX 79701-4882	9314869904300087841552	10/18/2021	10/22/2021
DEVON ENERGYCO LP	333 W SHERIDAN AVE, OKLAHOMA CITY, OK 73102-5010	9314869904300088069924	10/25/2021	11/1/2021
WELLS FARGO BANK NA	101 N PHILLIPS AVE, SIOUX FALLS, SD 57104-6738	9314869904300088156648	10/27/2021	11/1/2021
CHEVRON USA INC.	1400 SMITH ST., HOUSTON, TX 77002-7327	9314869904300087841583	10/18/2021	10/29/2021

October 18, 2021

OIL CONSERVATION DIVISION DISTRICT II
1625 N. FRENCH DR.
HOBBS, NM 88240

Subject: Long Shot SWD No. 1 Authorization to Inject -

To Whom It May Concern:

Attached for your review is Form C-108, Application for Authorization to Inject, and its supplemental documents prepared for Advance Energy Partners Hat Mesa LLC's Long Shot SWD No. 1 well. Section XIV of Form C-108 requires that the surface land owner on which the well is located and each leasehold operator within a one-half mile radius of the proposed well location be furnished with the application.

According to the New Mexico Oil Conservation Division, surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date in which this application was mailed to them.

Any questions should be directed towards OWL SWD Operating, LLC's agent, Lonquist & Co., LLC.

Regards,

Ramona K. Hovey
Sr. Petroleum Engineer
Lonquist & Co., LLC

(512) 600-1777
ramona@lonquist.com

October 18, 2021

OIL CONSERVATION DIVISION DISTRICT IV
1220 S ST FRANCIS DR
SANTA FE, NM 87505

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ramona@lonquist.com

October 18, 2021

Faith Crosby
OGMD/Water, NM State Land Office
310 Old Santa Fe Trail
Santa Fe, NM 87501

Subject: Long Shot SWD No. 1 Authorization to Inject -

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Lonquist & Co., LLC

(512) 600-1777
ramona@lonquist.com

October 18, 2021

MARATHON OIL PERMIAN LLC
5555 SAN FELIPE ST.
HOUSTON, TX 77056

Subject: Long Shot SWD No. 1 Authorization to Inject -

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Sr. Petroleum Engineer
Lonquist & Co., LLC

(512) 600-1777
ramona@lonquist.com

October 18, 2021

MARSHALL & WINSTON INC.
P.O. BOX 50880
MIDLAND, TX 79710

Subject: Long Shot SWD No. 1 Authorization to Inject -

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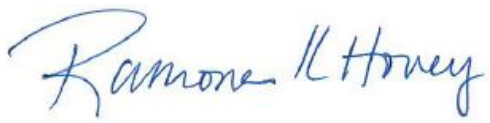
Regards,



Ramona K. Hovey
Sr. Petroleum Engineer
Lonquist & Co., LLC

(512) 600-1777
ramona@lonquist.com

October 18, 2021

COG OPERATING LLC
CONOCOPHILLIP
600 W ILLINOIS AVE
MIDLAND TX 79701-4882

Subject: **Long Shot SWD No. 1 Authorization to Inject -**

To Whom It May Concern:

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Ramona K. Hovey
Sr. Petroleum Engineer
Lonquist & Co., LLC

(512) 600-1777
ramona@lonquist.com

October 18, 2021

DEVEON ENERGYCO LP
333 W SHERIDAN AVE
OKLAHOMA CITY, OK 73102-5010

Subject: Long Shot SWD No. 1 Authorization to Inject -

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ramona@lonquist.com

October 18, 2021

WELLS FARGO BANK NA
101 N PHILLIPS AVE
SIOUX FALLS, SD 57104-6738

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Lonquist & Co., LLC

(512) 600-1777
ramona@lonquist.com

October 18, 2021

CHEVRON USA INC.
1400 SMITH ST.
HOUSTON, TX 77002-7327

Subject: Long Shot SWD No. 1 Authorization to Inject -

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Lonquist & Co., LLC

(512) 600-1777
ramona@lonquist.com

October 18, 2021

BUREAU OF LAND MANAGEMENT
620 E GREENE STREET
CARLSBAD, NM 88220

Subject: Long Shot SWD No. 1 Authorization to Inject -

To Whom It May Concern:

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Regards,

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Sr. Petroleum Engineer
Lonquist & Co., LLC

(512) 600-1777
ramona@lonquist.com

FedEx

TRACK ANOTHER SHIPMENT

775081081531

ADD NICKNAME

Delivered
Tuesday, 11/9/2021 at 11:30 am

DELIVERED

Signed for by: D.BERTHA

GET STATUS UPDATES

OBTAIN PROOF OF DELIVERY

FROM	TO
Houston, TX US	HOBBS, NM US

MANAGE DELIVERY

Travel History

TIME ZONE
Local Scan Time

Tuesday, November 9, 2021		
11:30 AM	HOBBS, NM	Delivered
7:05 AM	HOBBS, NM	At local FedEx facility
Saturday, November 6, 2021		
9:44 AM	HOBBS, NM	At local FedEx facility
8:19 AM	HOBBS, NM	At local FedEx facility
8:19 AM	HOBBS, NM	Delay Business closed- No delivery attempt
Friday, November 5, 2021		
11:55 AM	HOBBS, NM	Delay Customer not available or business closed.
10:37 AM	HOBBS, NM	On FedEx vehicle for delivery

7:08 AM	HOBBS, NM	At local FedEx facility
Thursday, November 4, 2021		
11:00 AM	HOBBS, NM	Delay Customer not available or business closed.
9:29 AM	HOBBS, NM	At local FedEx facility
9:29 AM	HOBBS, NM	On FedEx vehicle for delivery
8:47 AM	HOBBS, NM	At local FedEx facility
6:15 AM	LUBBOCK, TX	At destination sort facility
4:38 AM	MEMPHIS, TN	Departed FedEx hub
Tuesday, November 2, 2021		
6:31 PM	MEMPHIS, TN	Arrived at FedEx hub
Monday, November 1, 2021		
8:56 PM	HOUSTON, TX	Left FedEx origin facility
6:42 PM	HOUSTON, TX	Picked up
11:17 AM		Shipment information sent to FedEx

Expand History

Shipment Facts

TRACKING NUMBER
775081081531

SERVICE
FedEx 2Day AM

DOOR TAG NUMBER
DT106046676015

WEIGHT
0.5 lbs / 0.23 kgs

DELIVERED TO
FedEx Location

TOTAL PIECES
1

TOTAL SHIPMENT WEIGHT
0.5 lbs / 0.23 kgs

TERMS
Shipper

SHIPPER REFERENCE
LE160

PACKAGING
FedEx Envelope

SPECIAL HANDLING SECTION
Deliver Weekday

SHIP DATE
11/1/21

STANDARD TRANSIT
11/3/21 before 1:00 pm

ACTUAL DELIVERY
11/9/21 at 11:30 am

USPS Tracking®

FAQs >

Track Another Package +

Tracking Number: 9314869904300087841514

Remove ×

Your item was delivered to the front desk, reception area, or mail room at 9:42 am on October 26, 2021 in SANTA FE, NM 87505.

Delivered, Front Desk/Reception/Mail Room

October 26, 2021 at 9:42 am
SANTA FE, NM 87505

Feedback

Get Updates

Text & Email Updates

Return Receipt Electronic

Tracking History

Product Information

See Less

Tracking Number: 9314869904300087841521

Remove ×

Your item was picked up at a postal facility at 6:32 am on October 25, 2021 in SANTA FE, NM 87501.

Delivered, Individual Picked Up at Postal Facility

October 25, 2021 at 6:32 am
SANTA FE, NM 87501

Get Updates

See More

Tracking Number: 9314869904300087963636

Remove ×

Your item was delivered to an individual at the address at 3:45 pm on October 25, 2021 in CARLSBAD, NM 88220.

Delivered, Left with Individual

October 25, 2021 at 3:45 pm
CARLSBAD, NM 88220

Get Updates

See More

Tracking Number: 9314869904300087841538

Remove ×

Your item was delivered to the front desk, reception area, or mail room at 12:29 pm on October 29, 2021 in HOUSTON, TX 77024.

Delivered, Front Desk/Reception/Mail Room

October 29, 2021 at 12:29 pm
HOUSTON, TX 77024

Get Updates

See More

Tracking Number: 9314869904300087841545

Remove

Your item has been delivered and is available at a PO Box at 10:02 am on October 21, 2021 in MIDLAND, TX 79705.

Feedback

Delivered, PO Box

October 21, 2021 at 10:02 am
MIDLAND, TX 79705

Get Updates

See More

Tracking Number: 9314869904300087841552

Remove

Your item was picked up at a postal facility at 8:30 am on October 22, 2021 in MIDLAND, TX 79702.

Delivered, Individual Picked Up at Postal Facility

October 22, 2021 at 8:30 am

October 22, 2021 at 3:00 am
MIDLAND, TX 79702

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See More

Tracking Number: 9314869904300088069924

Remove ×

Your item was delivered at 8:45 am on November 1, 2021 in OKLAHOMA CITY, OK 73102.

Delivered

November 1, 2021 at 8:45 am
OKLAHOMA CITY, OK 73102

Get Updates

See More

Feedback

Tracking Number: 9314869904300088156648

Remove ×

Your item was picked up at a postal facility at 8:49 am on November 1, 2021 in SIOUX FALLS, SD 57104.

Delivered, Individual Picked Up at Postal Facility

November 1, 2021 at 8:49 am
SIOUX FALLS, SD 57104

Get Updates

See More

Remove ×

Tracking Number: 9314869904300087841583

Your item was delivered at 12:41 pm on October 29, 2021 in HOUSTON, TX 77002.

Delivered

October 29, 2021 at 12:41 pm
HOUSTON, TX 77002

Get Updates ⌄

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Feedback

Can’t find what you’re looking for?

Go to our FAQs section to find answers to your tracking questions.

FAQs

ADVANCE ENERGY PARTNERS HAT MESA LLC

LONG SHOT SWD #1

FSP Analysis

Lea Co., NM

Luis Canales
Lesly Carter
Emily Olson

July 13, 2021

LONQUIST & CO. LLC
PETROLEUM ENGINEERS | ENERGY ADVISORS
AUSTIN • HOUSTON | CALGARY • WICHITA
DENVER • COLLEGE STATION | BATON ROUGE • EDMONTON

GEOLOGIC AFFIRMATION

I have examined available geologic and engineering data and have found no evidence of open faults or other hydrologic connection between the disposal interval and underground sources of drinking water.

Emily Olson
Geologist
July 2, 2021

Project: Advance Energy Partners Hat Mesa, LLC
Long Shot SWD No. 1

Table of Contents

FIGURES

TABLES

1.0 OVERVIEW

The following report by Lonquist & Co. addresses the requested Fault Slip Potential (FSP) analysis on behalf of Advance Energy Partners Hat Mesa LLC for The Long Shot SWD #1 permit request.

2.0 KEY ELEMENTS

1. Structure maps on the tops of the proposed injection formation, centered on the proposed well location.
2. Two structural cross sections annotated with the top proposed injection formation and injection interval: one oriented along the strike of the proposed formation and the other perpendicular to the strike of the proposed formation.
3. Maps include an aerial extent greater than a radius of 5.6 miles centered on the proposed Long Shot location.
4. FSP modeling using Stanford Center for Induced and Triggered Seismicity (SCITS) software.
    a. Model Area of Interest (AOI) with radius of 9.08 Km.
    b. Model input includes known subsurface fault locations with faults segmented to a maximum length of 3 Km.
    c. Two models run for each known fault (ten models) with year-end at least 20 years into the future (Figure 1).
        i. First model run includes all permitted injection well volumes (obtained from DrillingInfo) in the AOI plus the proposed injection well
        ii. Second model run includes only the proposed injection well.

3.0 Executive Summary

The location of Long Shot SWD #1, the selected 10 injection wells, and faults in Lea County, New Mexico are shown on Figure 1. Long Shot SWD #1 permit application is targeting the Sildurian - Devonian formations at a measured depth of 16,086' to 18,250' (Figure 2)**.**

The FSP models included utilize Silurian-Devonian, Precambrian, Basement, Woodford, and Bone Spring level fault traces documented by the Texas Bureau of Economic Geology (BEG) Integrated Synthesis of the Permian Basin http://www.beg.utexas.edu/resprog/permianbasin/gis.htm.

The Bone Spring fault traces cut the highest, in a stratigraphic sense, within the AOI (Figure 3).

Injection fluids will be confined to the Devonian-Fusselman formation which is approximately 1000 ft above basement rock. None of the FSP models run utilizing these fault traces, proposed injection interval reservoir properties, and surrounding fluid injection data, demonstrated evidence these faults would slip.

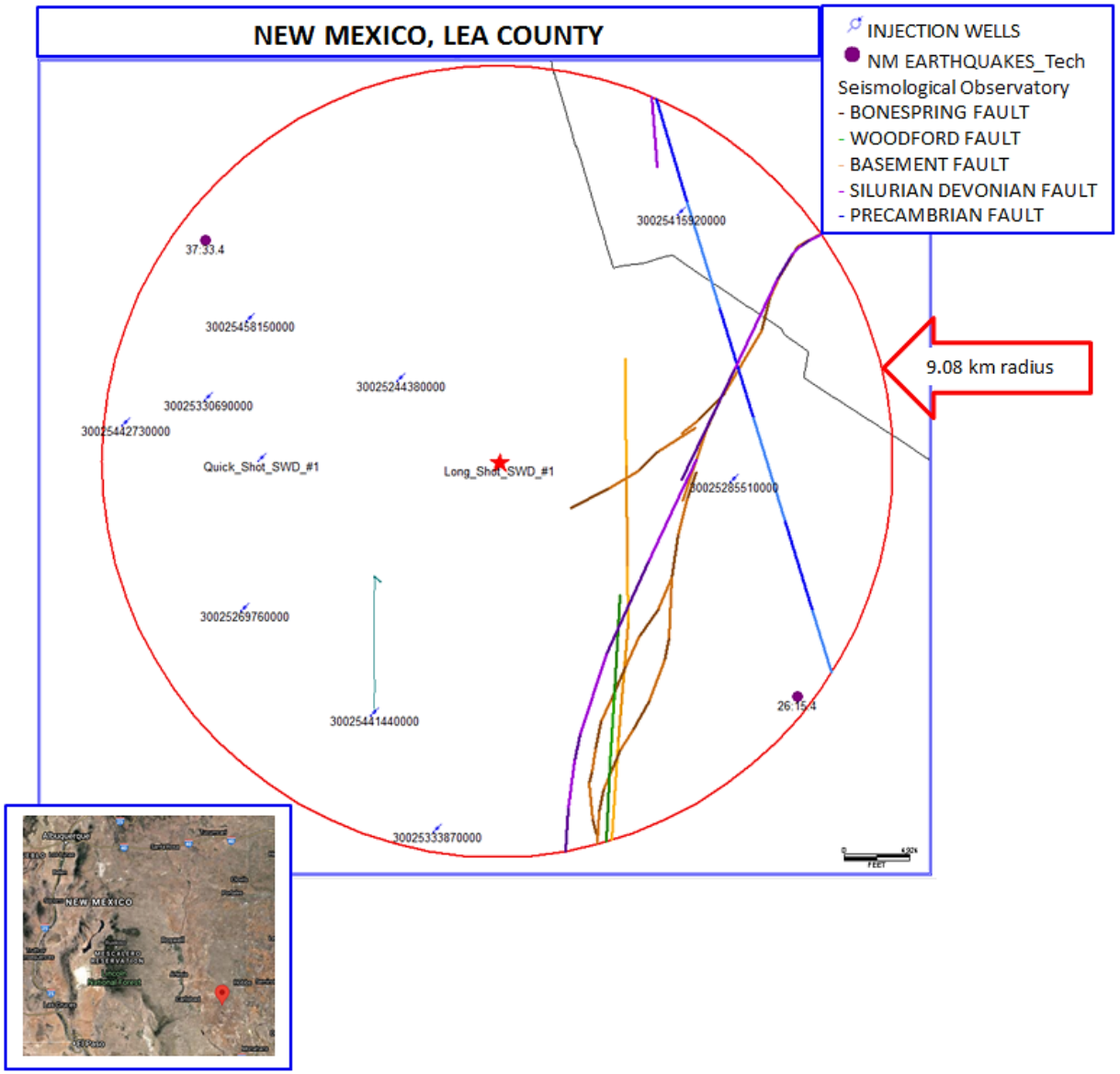


Figure 1 - Proposed location, and FSP analysis AOI.

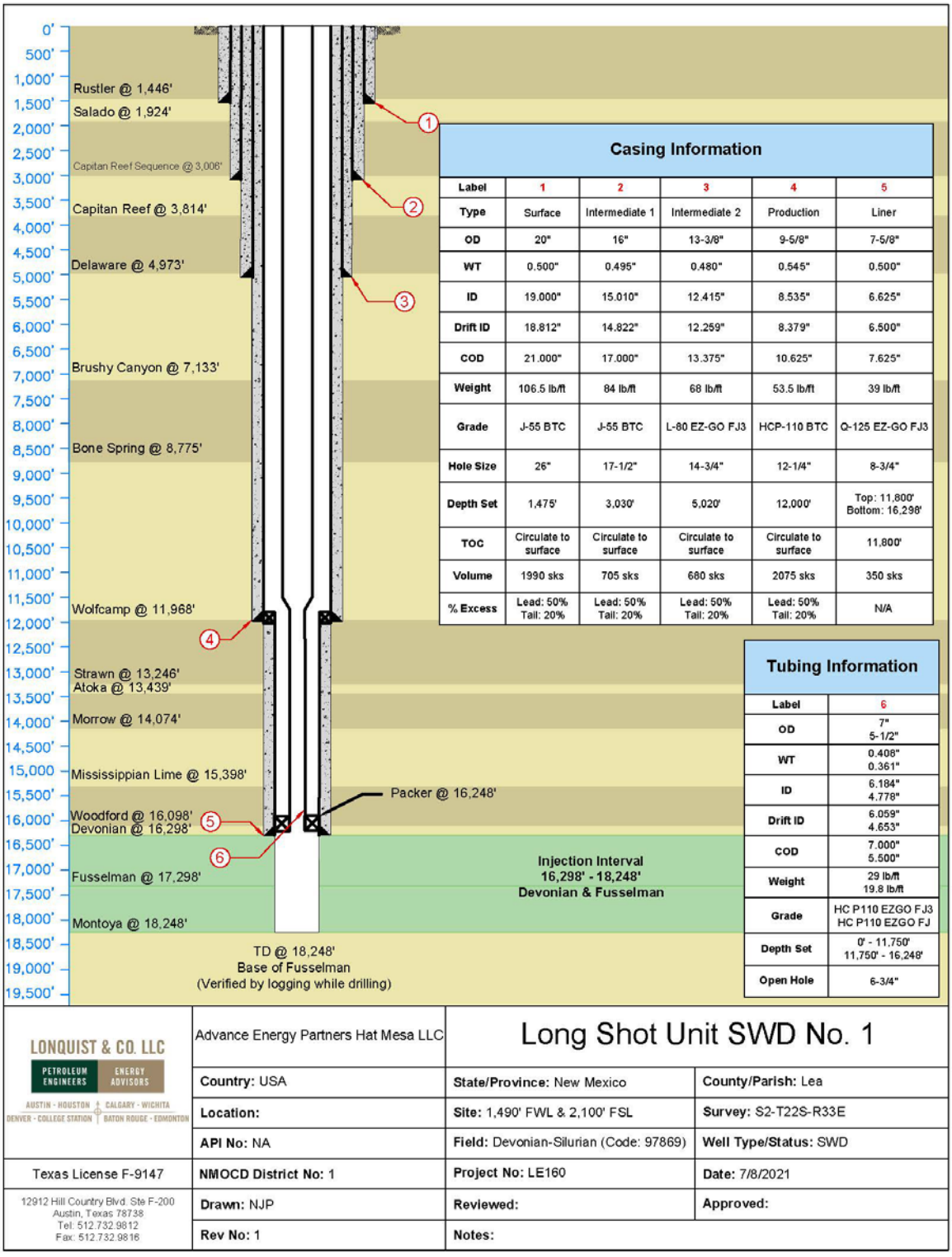


Figure 2 - Injection Target: Silurian-Devonian

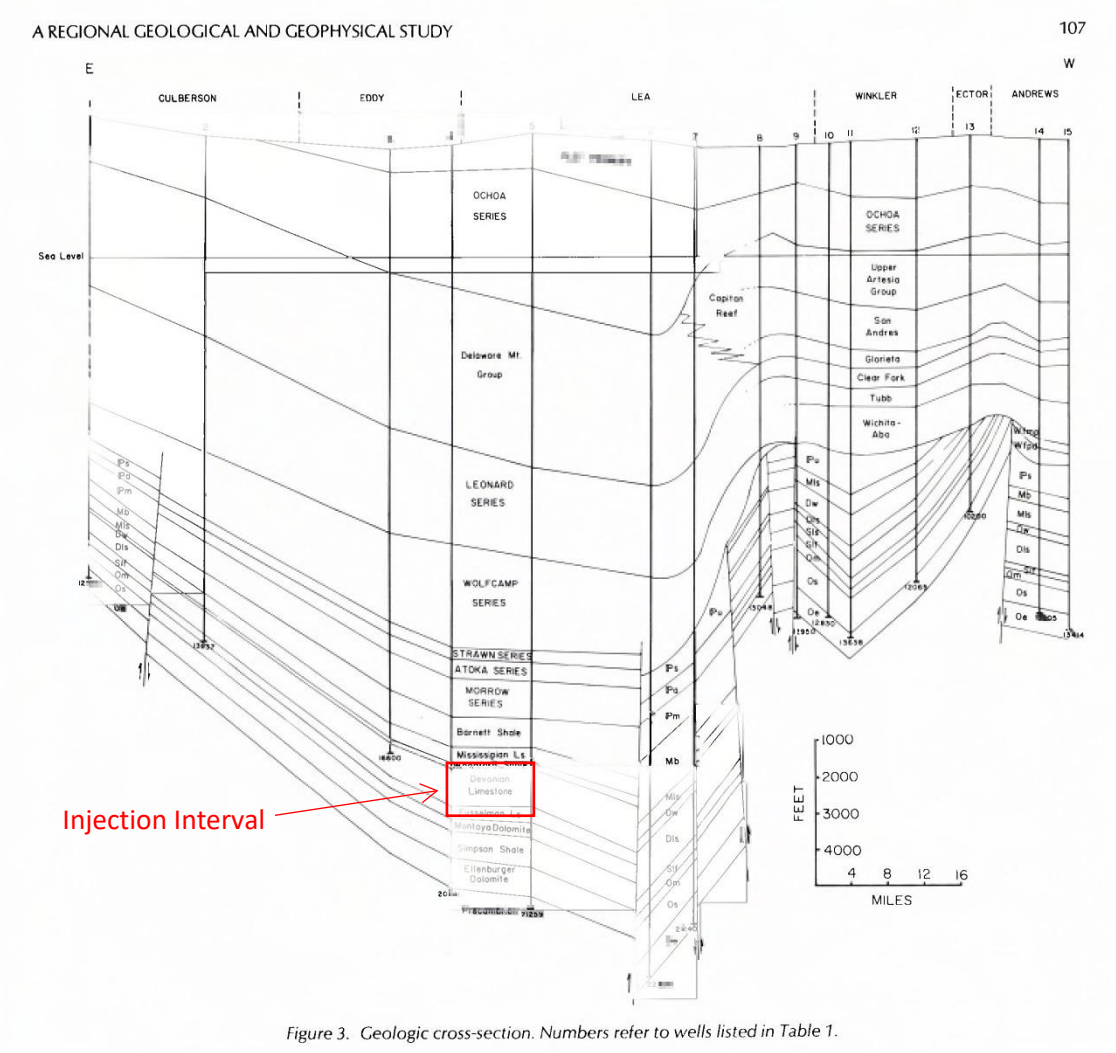


Figure 3. Geologic cross-section. Numbers refer to wells listed in Table 1.

(NM Geological Society Guidebook, 31st Field Conference))

Figure 3 - Delaware Basin generalized cross section.

4.0 Geologic Overview

The proposed Long Shot SWD #1 well is located in Lea County, New Mexico on the northern side of the Delaware Basin.

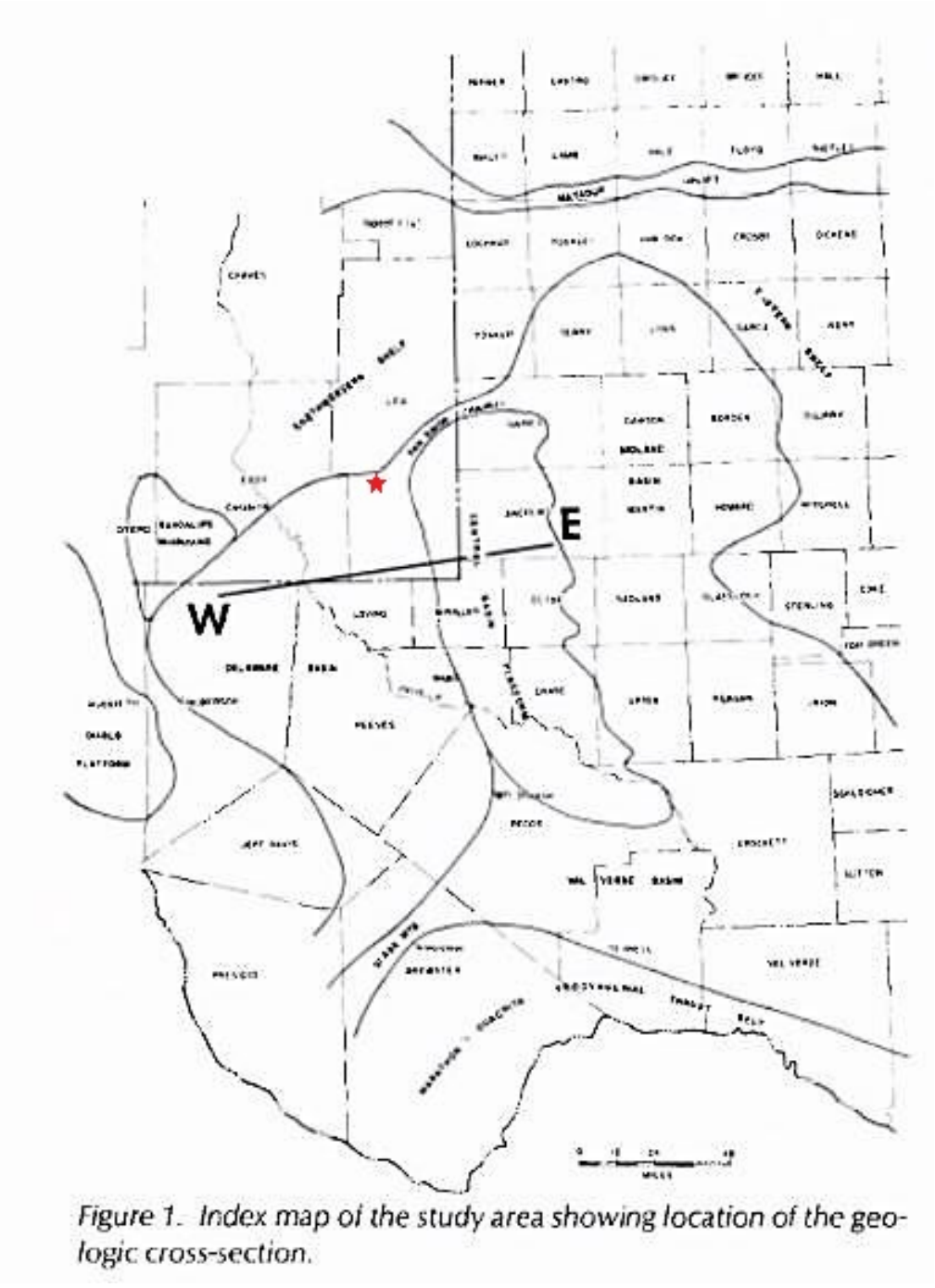
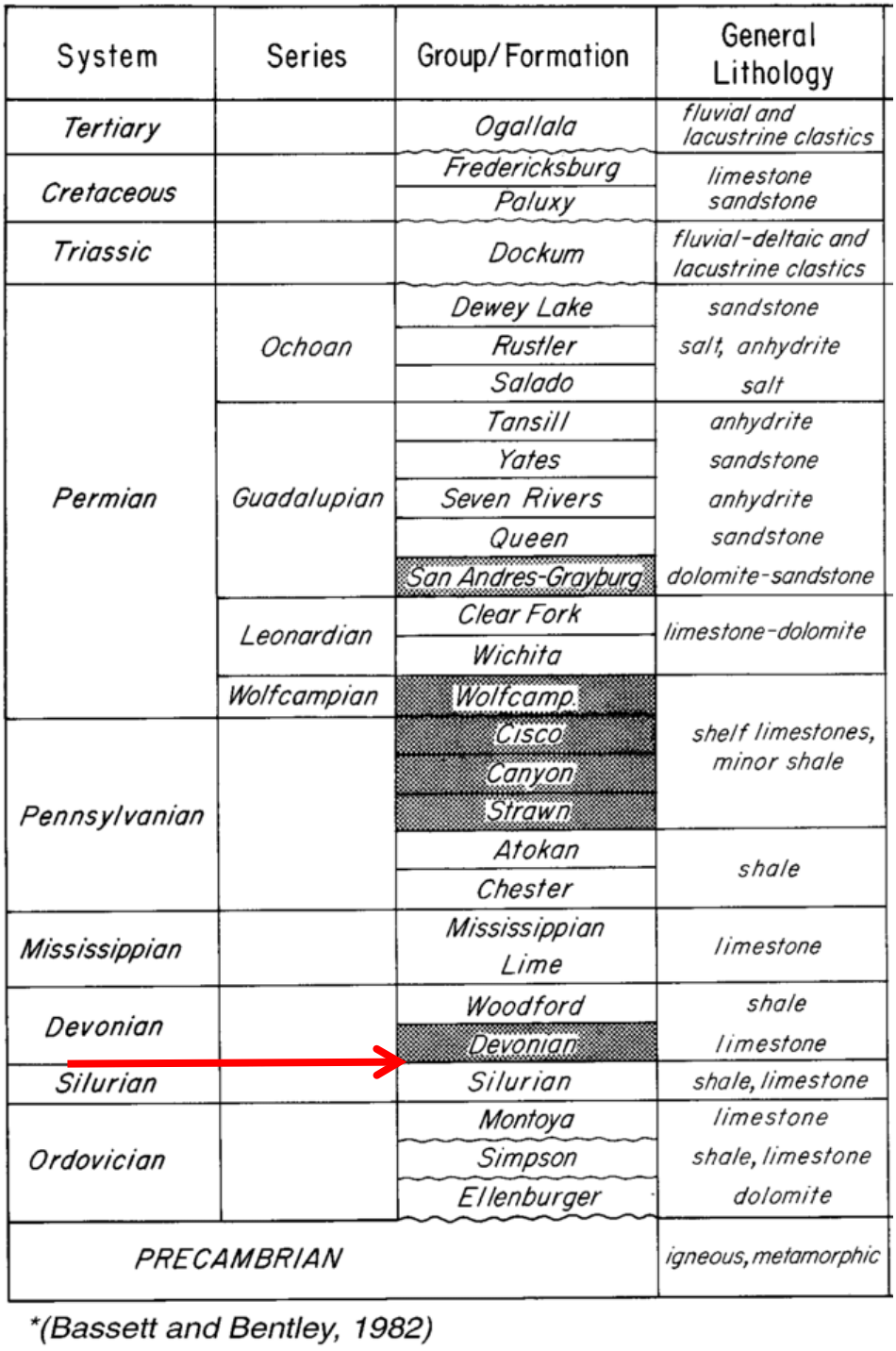


Figure 4 - Index map of West Texas geologic provinces with the location of proposed Long Shot SWD (Keller, 1980)



System	Series	Group/Formation	General Lithology
Tertiary		Ogallala	fluvial and lacustrine clastics
Cretaceous		Fredericksburg	limestone sandstone
		Paluxy	
Triassic		Dockum	fluvial-deltaic and lacustrine clastics
Permian	Ochoan	Dewey Lake	sandstone
		Rustler	salt, anhydrite
		Salado	salt
	Guadalupian	Tansill	anhydrite
		Yates	sandstone
		Seven Rivers	anhydrite
		Queen	sandstone
		San Andres-Grayburg	dolomite-sandstone
	Leonardian	Clear Fork	limestone-dolomite
		Wichita	
	Wolfcampian	Wolfcamp	shelf limestones, minor shale
Pennsylvanian		Cisco	
		Canyon	
		Strawn	
		Atokan	shale
		Chester	
Mississippian		Mississippian Lime	limestone
Devonian		Woodford	shale
		Devonian	limestone
Silurian		Silurian	shale, limestone
Ordovician		Montoya	limestone
		Simpson	shale, limestone
		Ellenburger	dolomite
PRECAMBRIAN			igneous, metamorphic

*(Bassett and Bentley, 1982)

Figure 5 - Stratigraphic column of the Delaware Basin

The proposed injection interval is in the Devonian Silurian section, indicated by the red arrow on the left.

Figure 1. Index map of the study area showing location of the geologic cross-section.

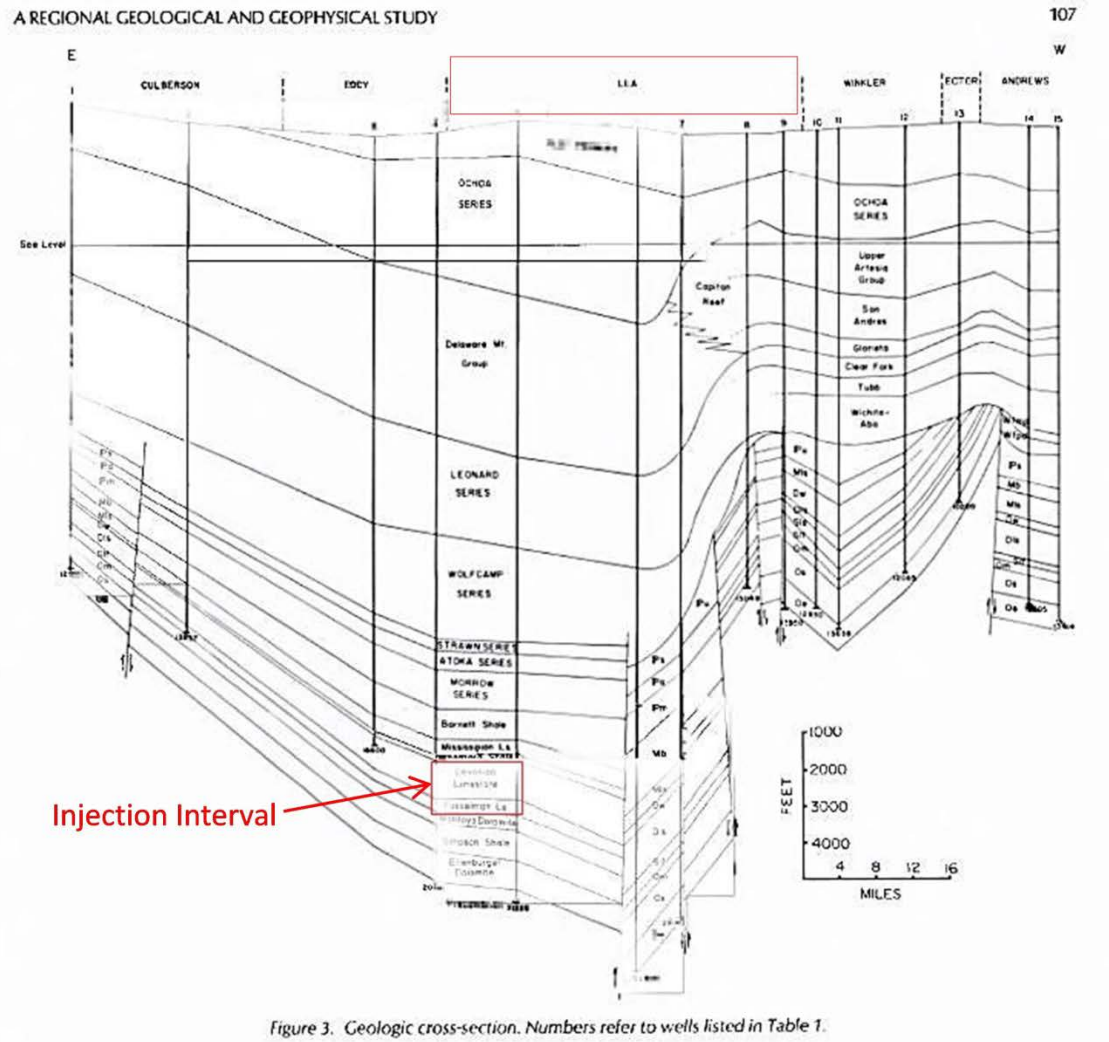


Figure 3. Geologic cross-section. Numbers refer to wells listed in Table 1.

Figure 6 - Published Regional Cross Section, annotated with key formations (Keller, 1980)

The geologic maps and cross sections which follow are in keeping with these regional studies. The proposed injection interval in the Devonian/Silurian section is proximal to the Silurian Devonian fault traces utilized in this FSP analysis

INJECTION INTERVAL CONFINING LAYERS – LONG SHOT SWD NO. 1

The Devonian-Silurian injection interval for the proposed Long Shot SWD No. 1 is contained by upper and lower confining layers. The upper confining layer is the Woodford Shale, which is approximately 200 feet thick on top of the Devonian Formation. The lower confining layer is the Sylvan Shale equivalent, which serves as a boundary between the Montoya and Fusselman. This shale layer provides a basal region for the injection interval of the Devonian and Fusselman formations. The low permeability nature of both the Woodford and Sylvan Shale equivalent would provide the Devonian and Fusselman formations appropriate confinement for saltwater disposal during the life of the well.

Emily Olson
Geologist
Lonquist & Co., LLC
July 2, 2021

Project: Advance Energy Partners Hat Mesa LLC
Long Shot SWD No. 1

5.0 Geologic Mapping

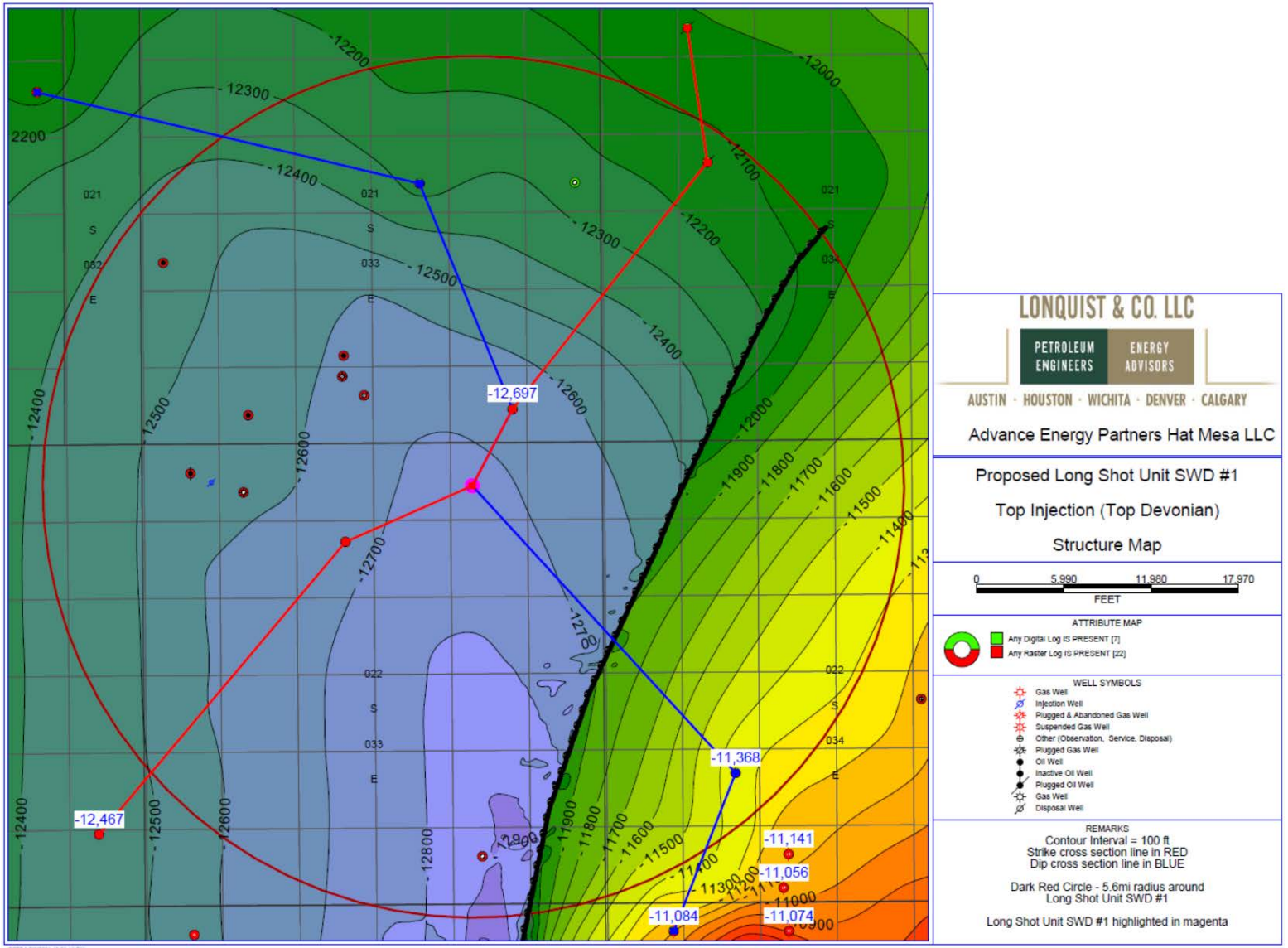


Figure 7 - Structure Top of Devonian

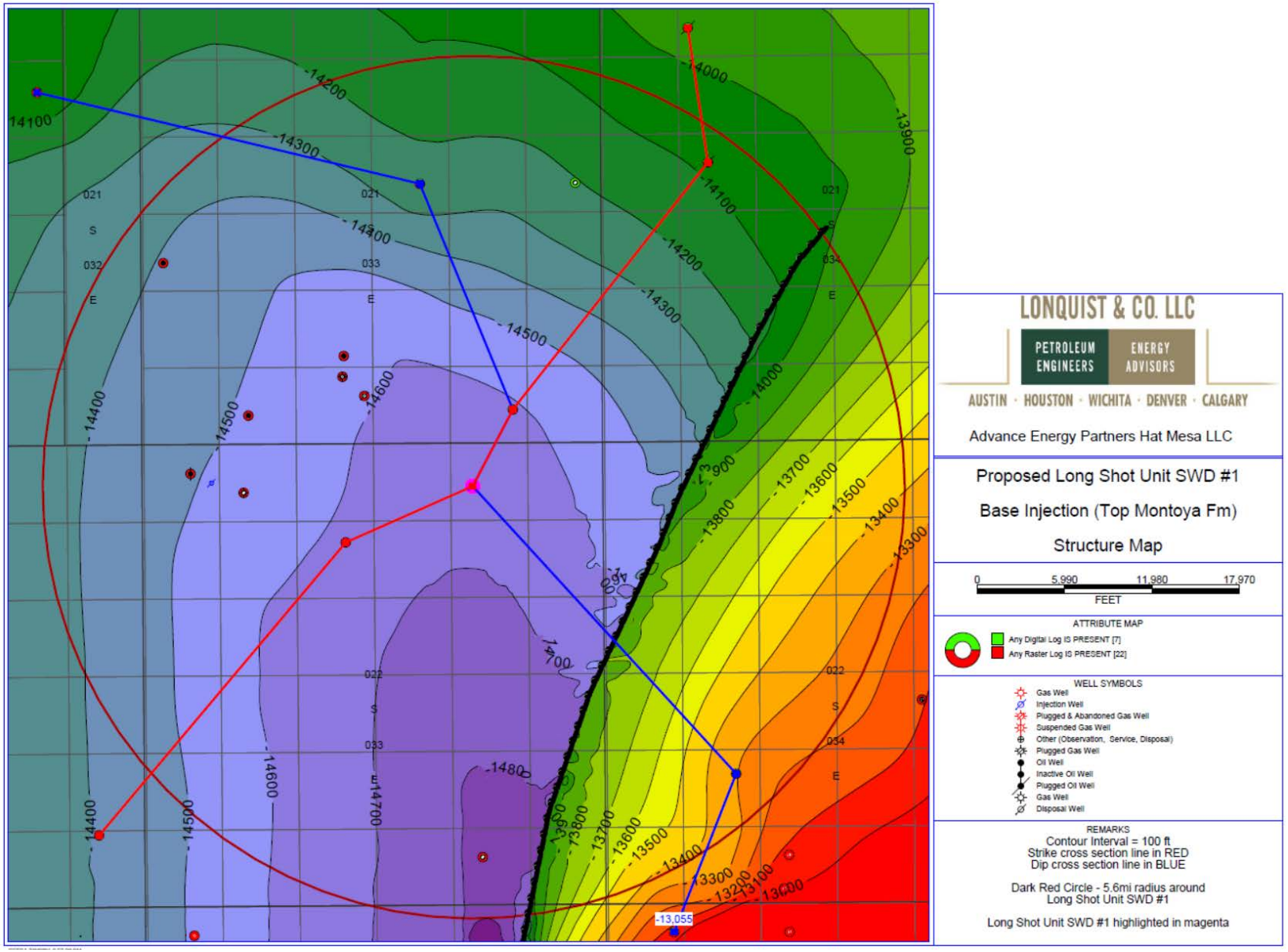


Figure 8 - Structure Top of Montoya

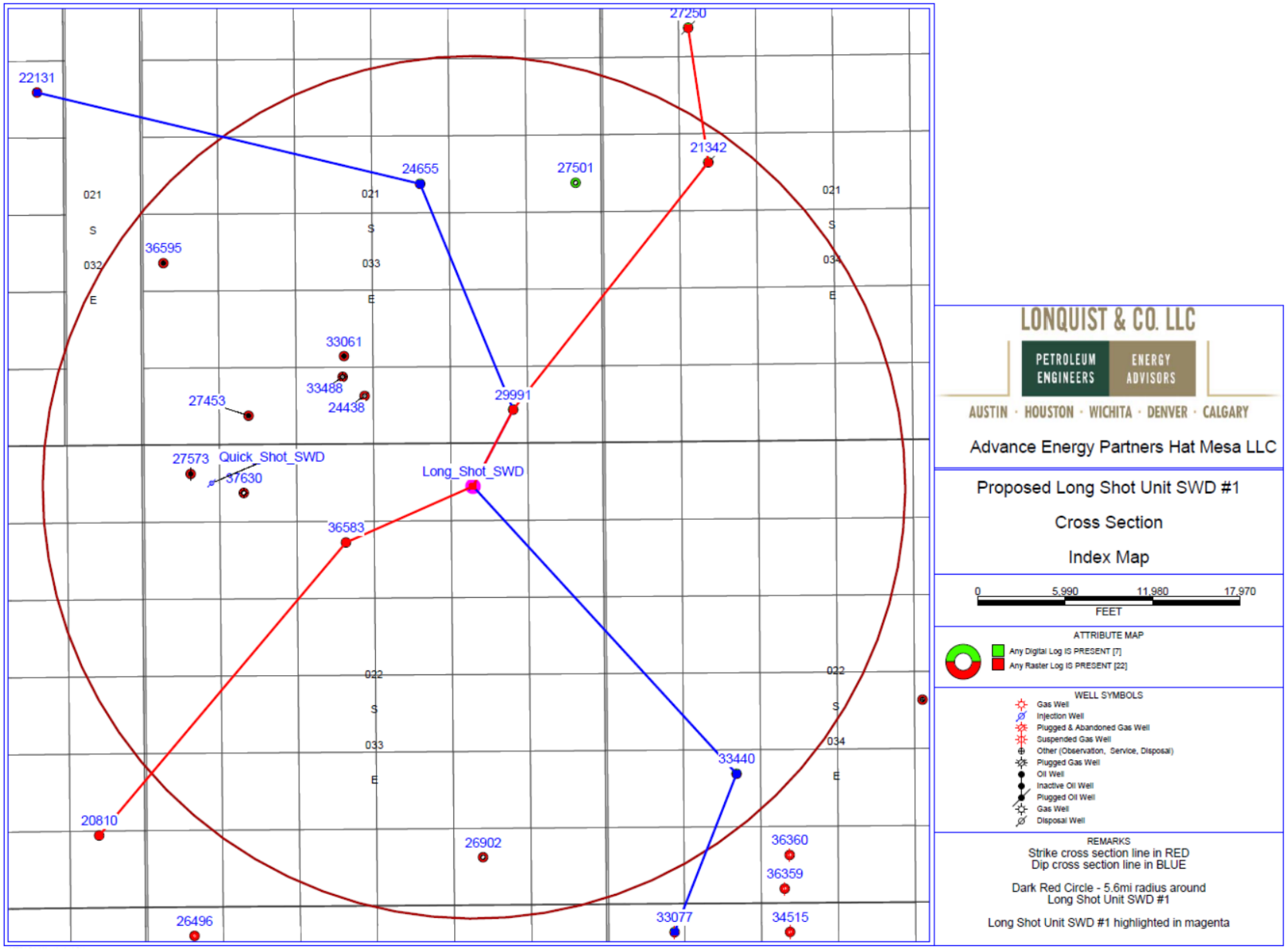


Figure 9 - Cross section index map

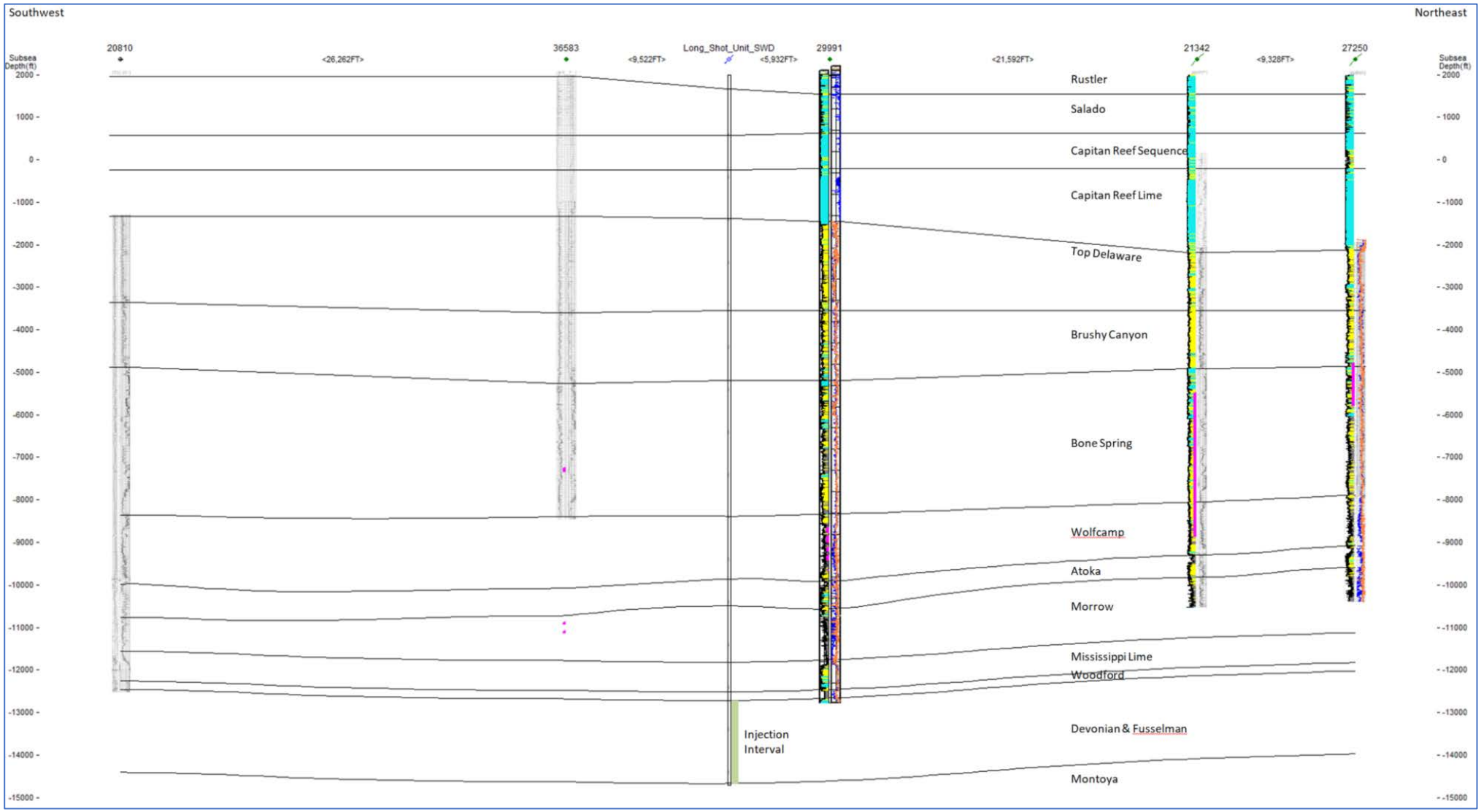


Figure 10 - Structural Cross Section – Strike. Proposed injection interval in green.

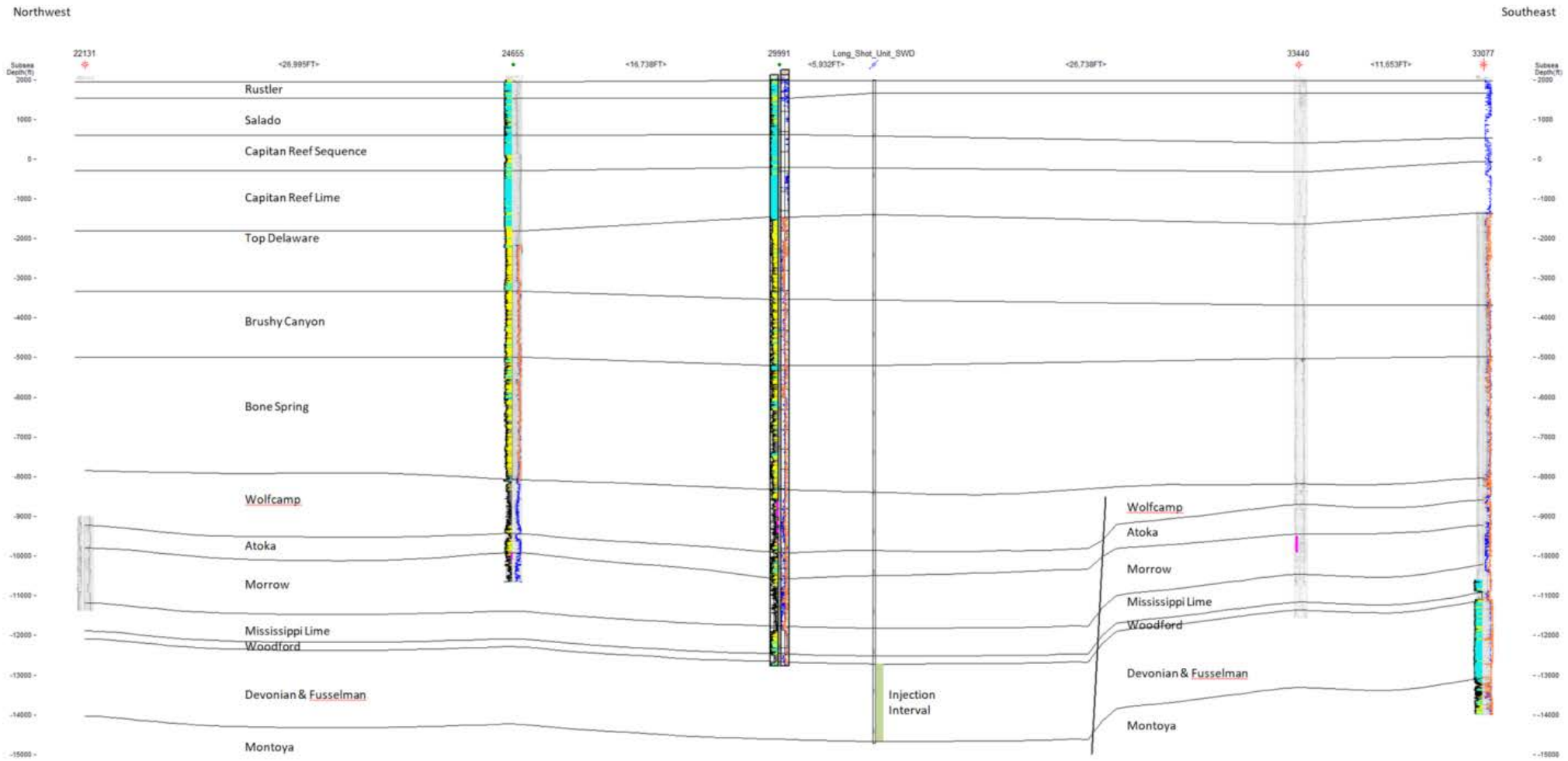


Figure 11 - Structural Cross Section – Dip. Proposed injection interval in green.

6.0 FSP Analysis MODEL 1 – Silurian Devonian Faults - All injectors

SCITS software (v 2.0) was used for the Fault Slip Potential (FSP) analysis.

Analysis includes:

- Fluid injection history from DrillingInfo within the 9.08 km AOI.
- Proposed rate (25,000 bpd) for Long Shot SWD #1.
- Proposed injection interval reservoir parameters and average depth.
- Local stress information, pressure gradients.
- Known fault locations within AOI, with faults segmented to a maximum length of 3 km.

Two FSP models were run, including year-end analysis 20 years into the future.

- Model #1: includes all permitted injection wells in the AOI plus the proposed injection interval (11 wells total).
- Model #2: includes only the proposed injection interval.

In summary, the proposed fluid injection does not significantly increase the risk that these "buried" faults will slip.

Figure 12 shows the location of existing fluid injection wells and the proposed Long Shot SWD #1 in relation to faults documented within the AOI. The Silurian Devonian fault traces utilized on this models are shown on **Figure 14**.

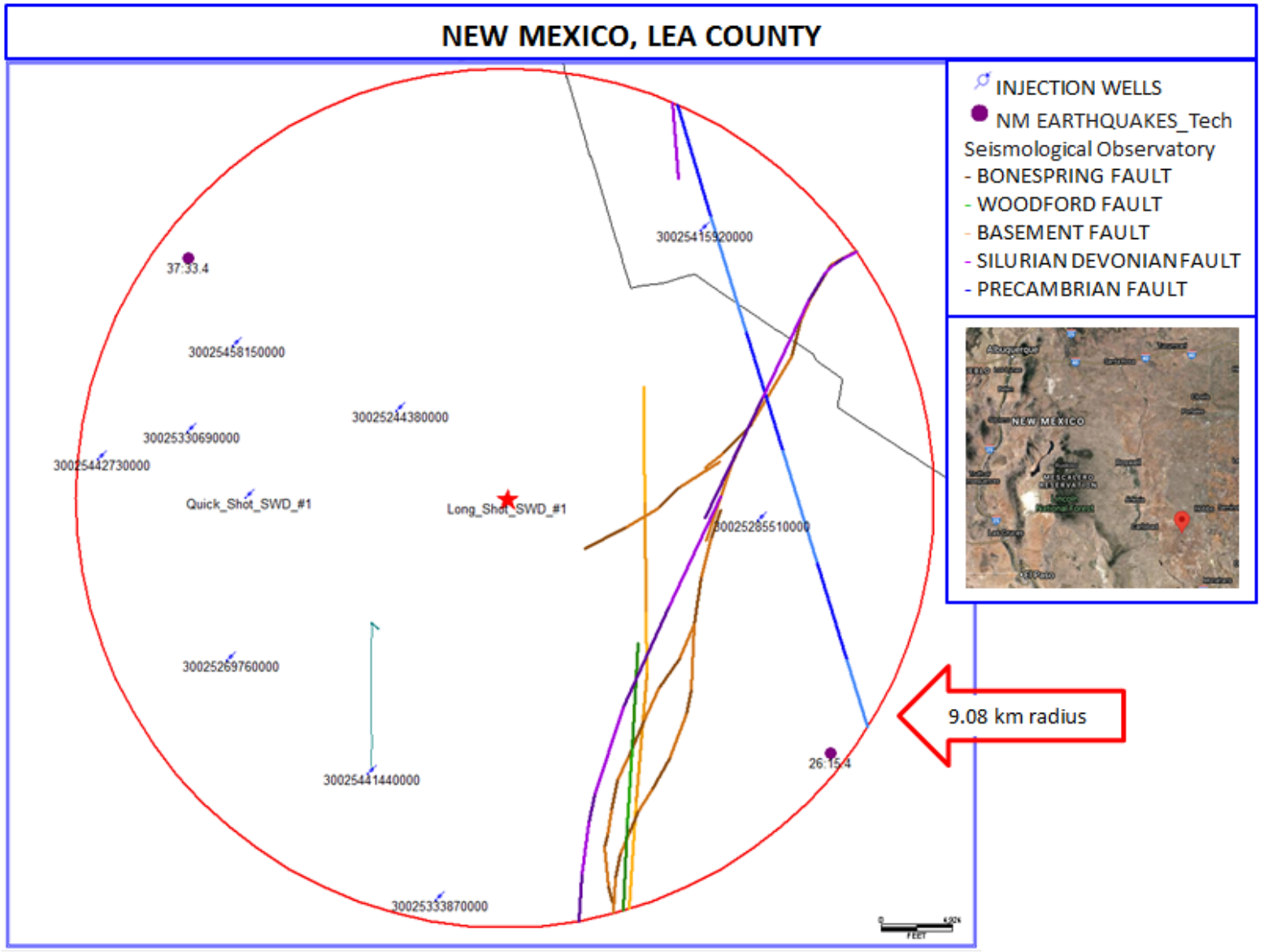
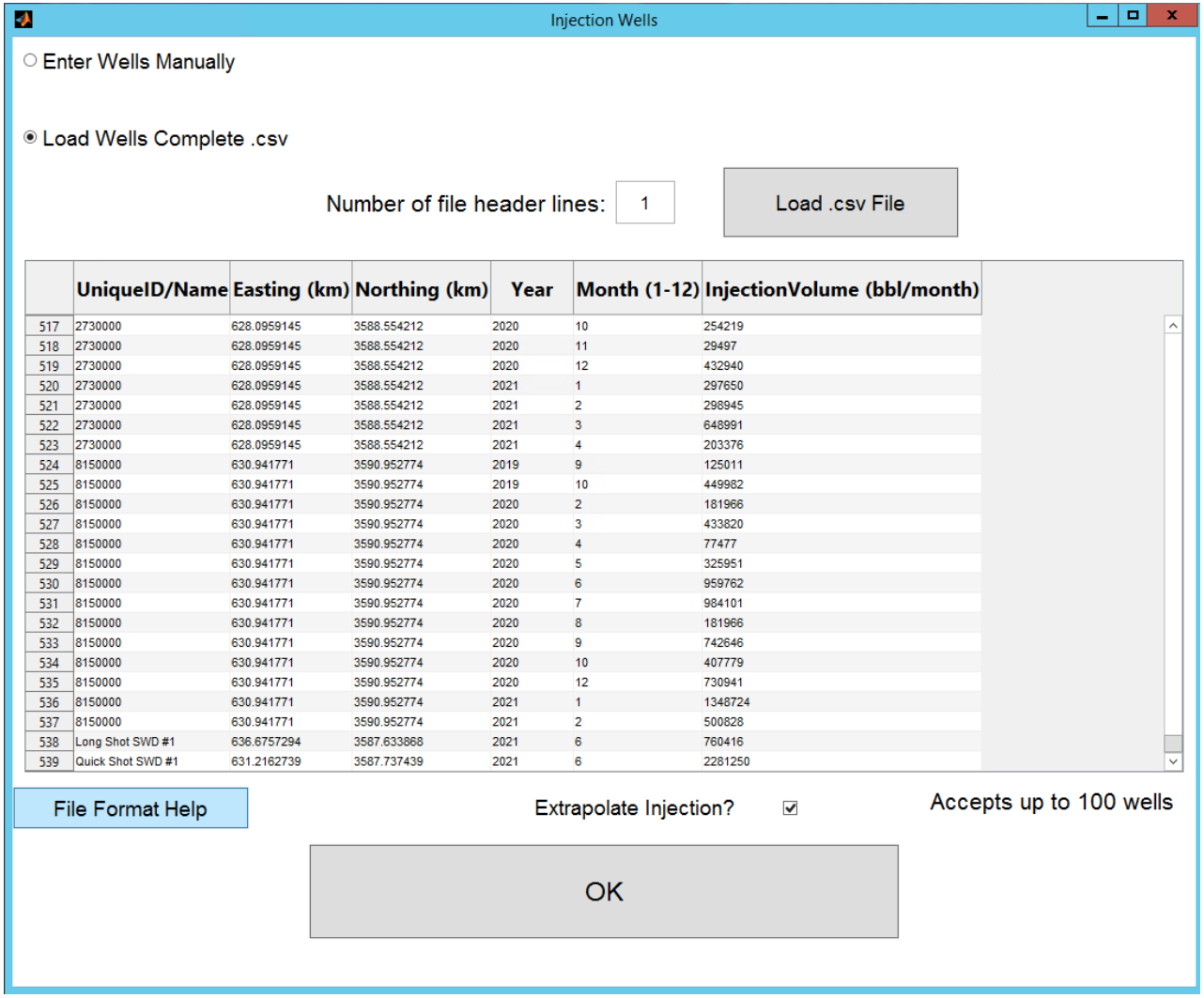


Figure 12 - FSP Analysis Injection Wells

Partial View of 11 Wells



	UniqueID/Name	Easting (km)	Northing (km)	Year	Month (1-12)	InjectionVolume (bbl/month)
517	2730000	628.0959145	3588.554212	2020	10	254219
518	2730000	628.0959145	3588.554212	2020	11	29497
519	2730000	628.0959145	3588.554212	2020	12	432940
520	2730000	628.0959145	3588.554212	2021	1	297650
521	2730000	628.0959145	3588.554212	2021	2	298945
522	2730000	628.0959145	3588.554212	2021	3	648991
523	2730000	628.0959145	3588.554212	2021	4	203376
524	8150000	630.941771	3590.952774	2019	9	125011
525	8150000	630.941771	3590.952774	2019	10	449982
526	8150000	630.941771	3590.952774	2020	2	181966
527	8150000	630.941771	3590.952774	2020	3	433820
528	8150000	630.941771	3590.952774	2020	4	77477
529	8150000	630.941771	3590.952774	2020	5	325951
530	8150000	630.941771	3590.952774	2020	6	959762
531	8150000	630.941771	3590.952774	2020	7	984101
532	8150000	630.941771	3590.952774	2020	8	181966
533	8150000	630.941771	3590.952774	2020	9	742646
534	8150000	630.941771	3590.952774	2020	10	407779
535	8150000	630.941771	3590.952774	2020	12	730941
536	8150000	630.941771	3590.952774	2021	1	1348724
537	8150000	630.941771	3590.952774	2021	2	500828
538	Long Shot SWD #1	636.6757294	3587.633868	2021	6	760416
539	Quick Shot SWD #1	631.2162739	3587.737439	2021	6	2281250

Figure 13 - FSP injection wells input Model 1

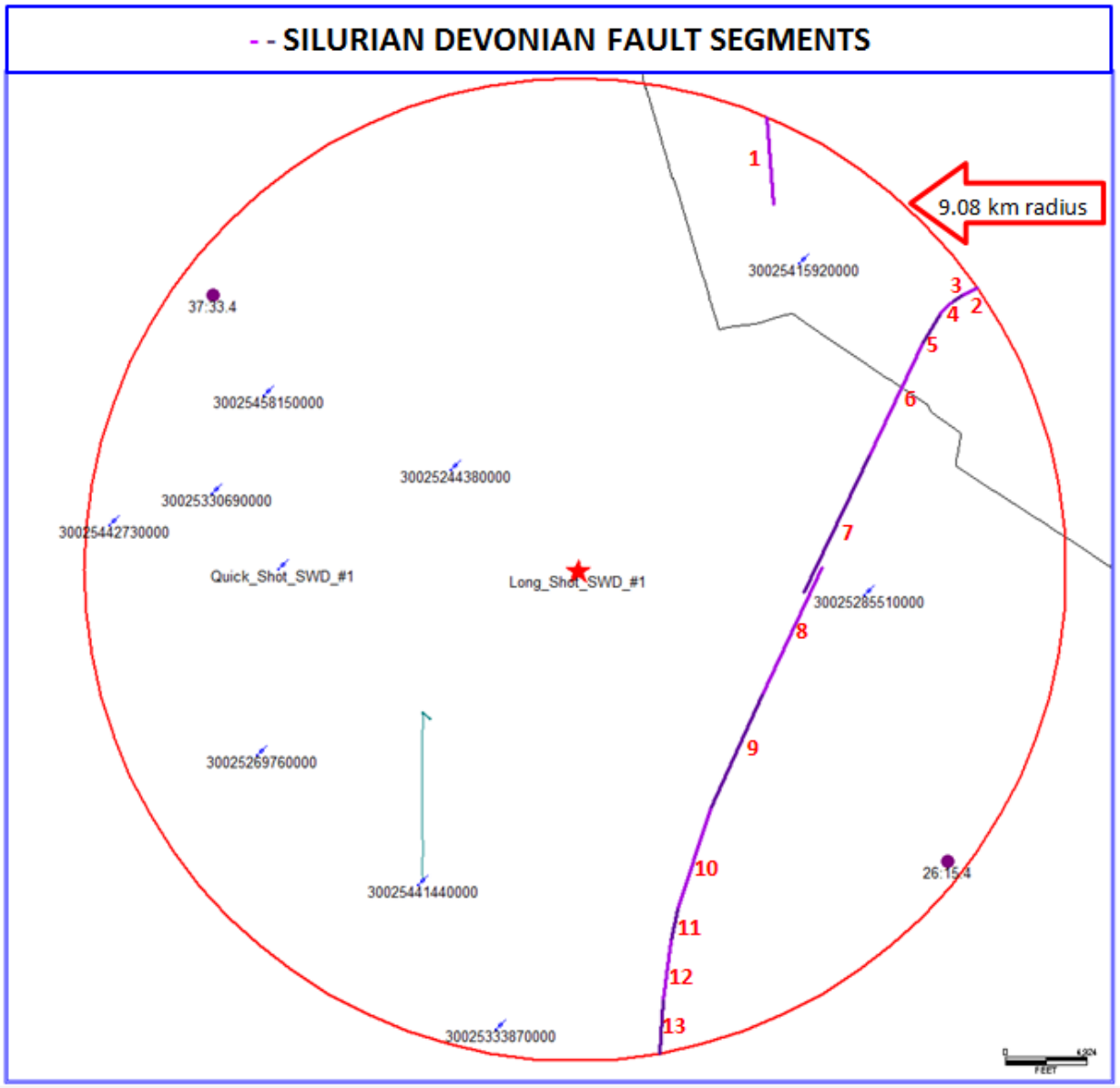
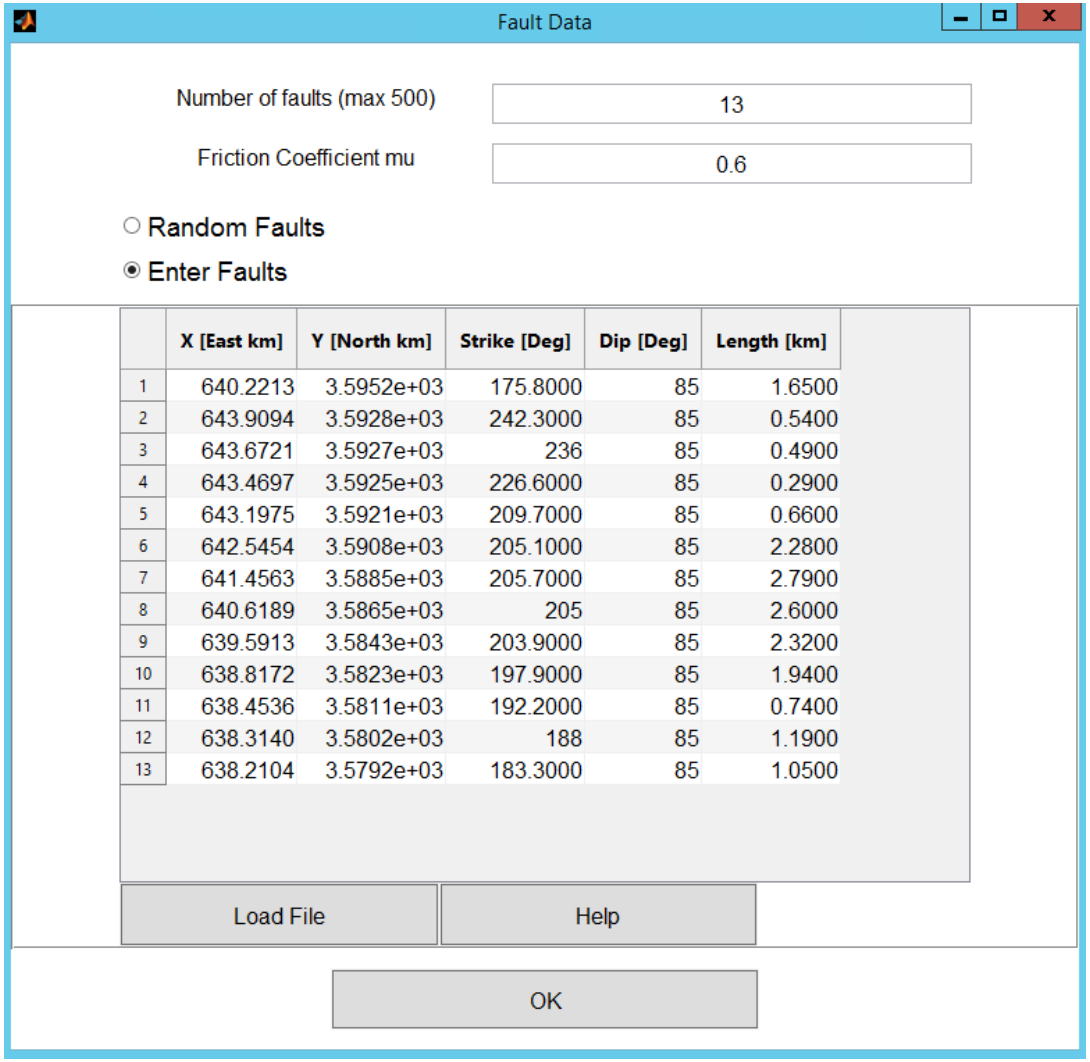


Figure 14 - Silurian Devonian Fault segments (13) used in FSP Analysis Models 1 and 2

Silurian Devonian Fault Segments

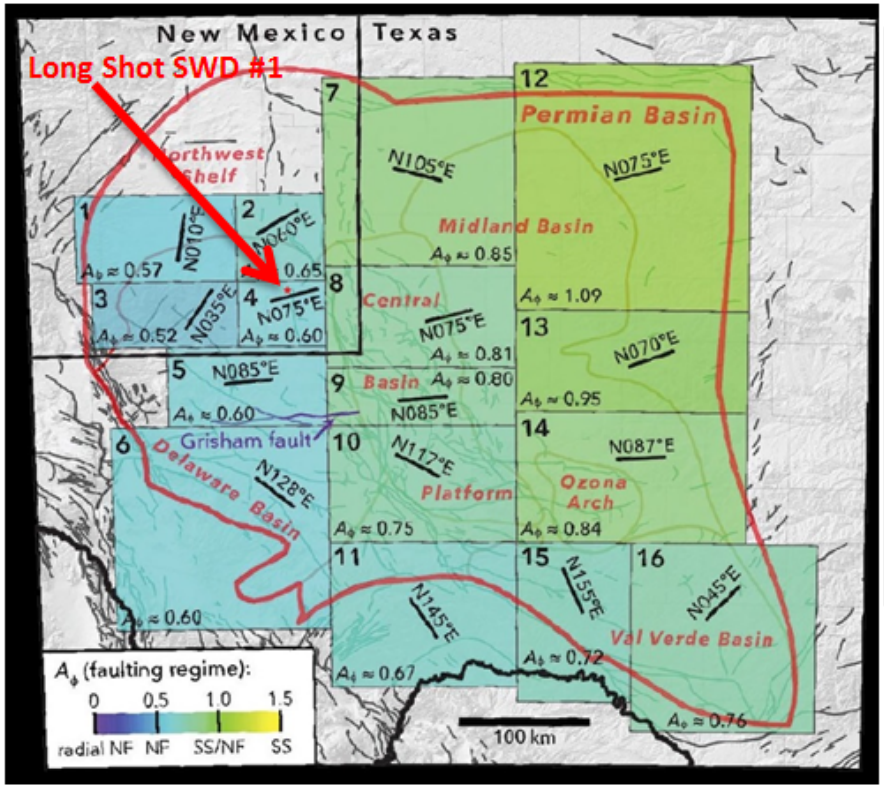


	X [East km]	Y [North km]	Strike [Deg]	Dip [Deg]	Length [km]
1	640.2213	3.5952e+03	175.8000	85	1.6500
2	643.9094	3.5928e+03	242.3000	85	0.5400
3	643.6721	3.5927e+03	236	85	0.4900
4	643.4697	3.5925e+03	226.6000	85	0.2900
5	643.1975	3.5921e+03	209.7000	85	0.6600
6	642.5454	3.5908e+03	205.1000	85	2.2800
7	641.4563	3.5885e+03	205.7000	85	2.7900
8	640.6189	3.5865e+03	205	85	2.6000
9	639.5913	3.5843e+03	203.9000	85	2.3200
10	638.8172	3.5823e+03	197.9000	85	1.9400
11	638.4536	3.5811e+03	192.2000	85	0.7400
12	638.3140	3.5802e+03	188	85	1.1900
13	638.2104	3.5792e+03	183.3000	85	1.0500

Figure 15 - FSP Fault input for Models 1 and 2

State of stress in the Permian Basin, Texas and New Mexico: Implications for induced seismicity

Jens-Erik Lund Snee[1] and Mark D. Zoback[1] February 2018 THE LEADING EDGE



"The $A\phi$ parameter describes the ratio between the principal stress magnitudes using a single, readily interpolated value that ranges smoothly from 0 (the most extensional possible condition of radial normal faulting) to 3 (the most compressive possible condition of radial reverse faulting)." (Snee & Zoback)

Shmax azimuth direction (N75°E) is taken from the mapped Area **4** corresponding to this FSP analysis published by Snee and Zoback. The maximum horizontal stress gradient is derived from the A Phi parameter (0.60) also for Area **4**

Figure 16 - Local Stress Parameters used (Snee and Zoback, 2018) Models 1 thru 10

Shmax azimuth direction (N075°E) is taken from the mapped Area **4** corresponding to this FSP analysis published by Snee and Zoback (Figure 16). The maximum horizontal stress gradient is derived from the A Phi parameter (0.6) also for Area **4**.

The same stress parameters are used for all models (1 thru 10).

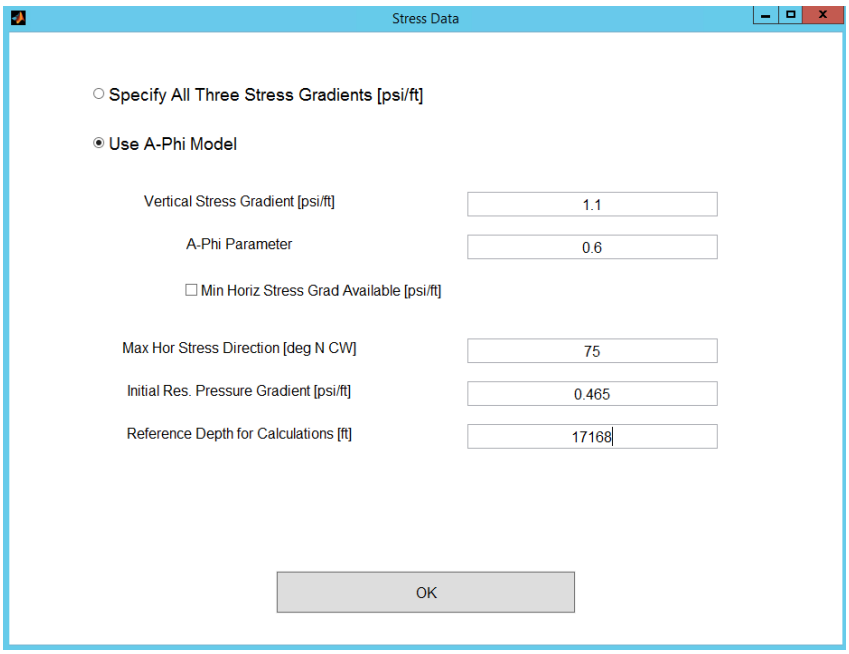


Figure 17 - FSP Stress & Reservoir depth input Models 1 thru 10

The following reservoir parameters were utilized for the AOI as input to FSP models 1 thru 10.

Backup information for these parameters is included in Appendix 1.

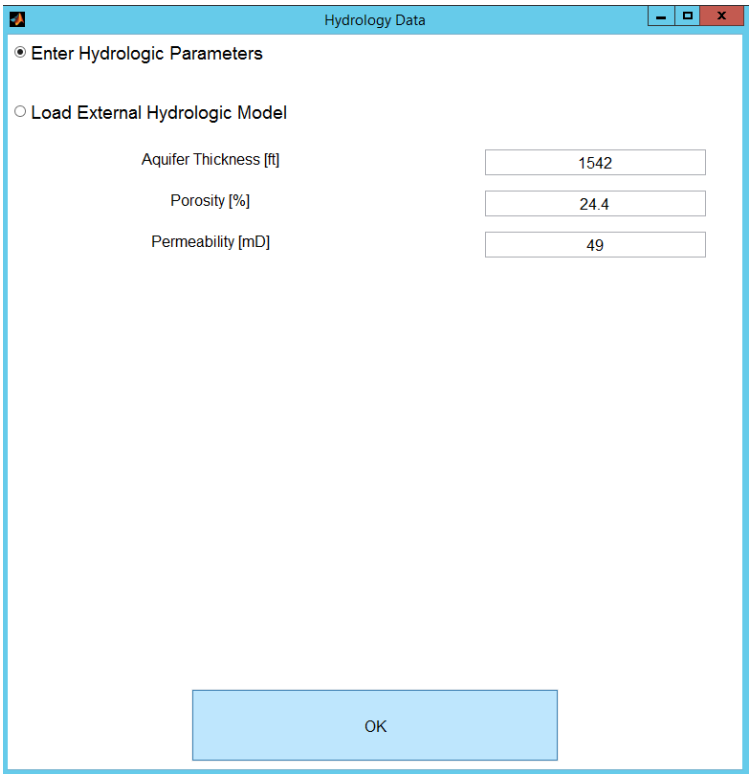


Figure 18 - Injection Interval (reservoir parameters) FSP Input Models 1 thru 10

Model 1 – Silurian Devonian

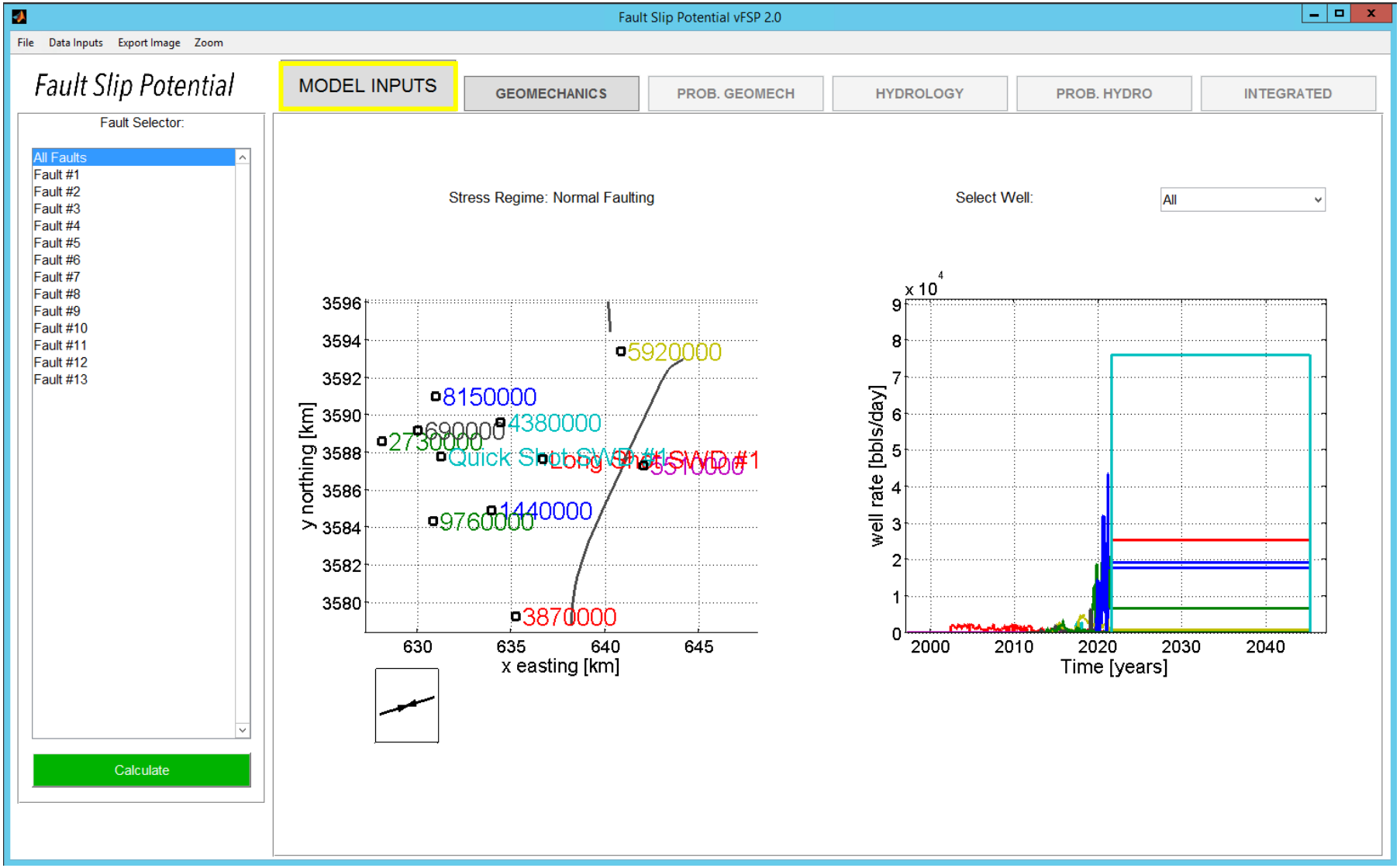


Figure 19 - FSP Model 1 Input: 11 injectors and 13 Silurian Devonian fault segments

Model 1 & 2

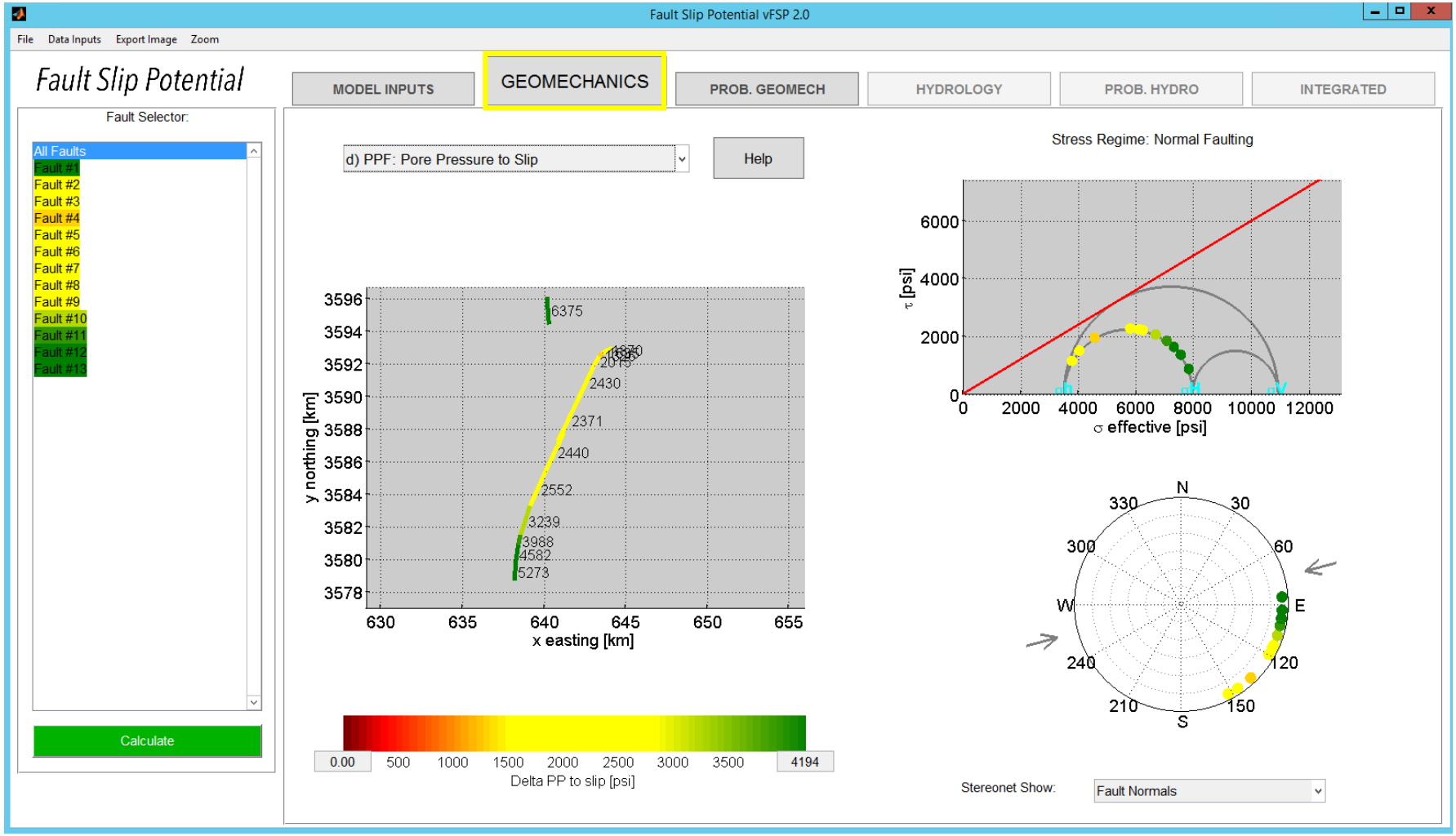


Figure 20 - FSP Geomechanics Tab, Model 1 and 2

Demonstrates pore pressure to slip (psi) for each fault segment, direction of SHmax, and a Mohr diagram with frictional slip line shown in red. Faults are colored by their horizontal distance to slip according to the color scale.

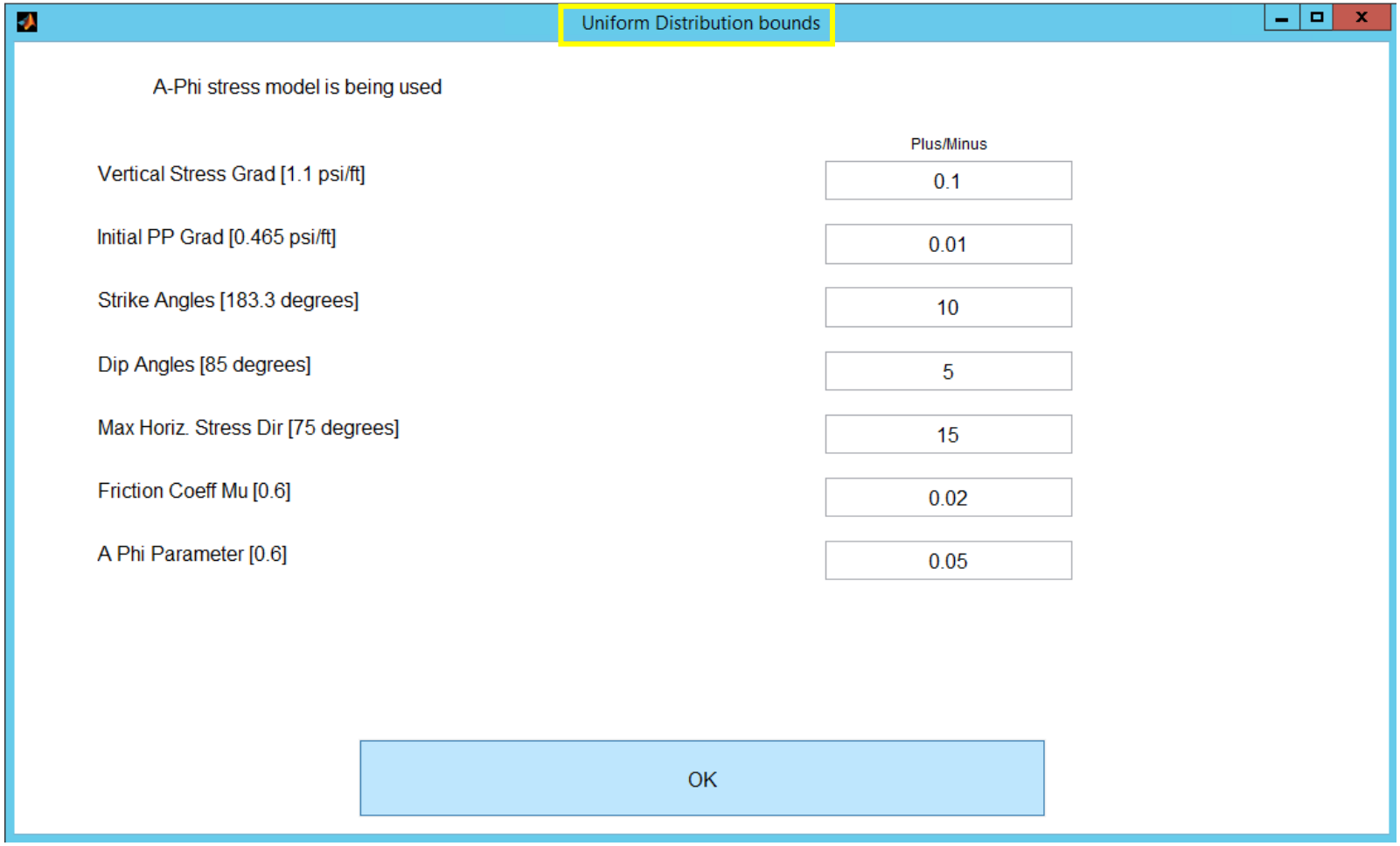


Figure 21 - Input for Probabilistic Geomechanics Tab

The FSP program performs a probabilistic Monte Carlo analysis based on user specified variability of input parameters for both Geomechanical and Hydrology calculations.

Model 1 & 2

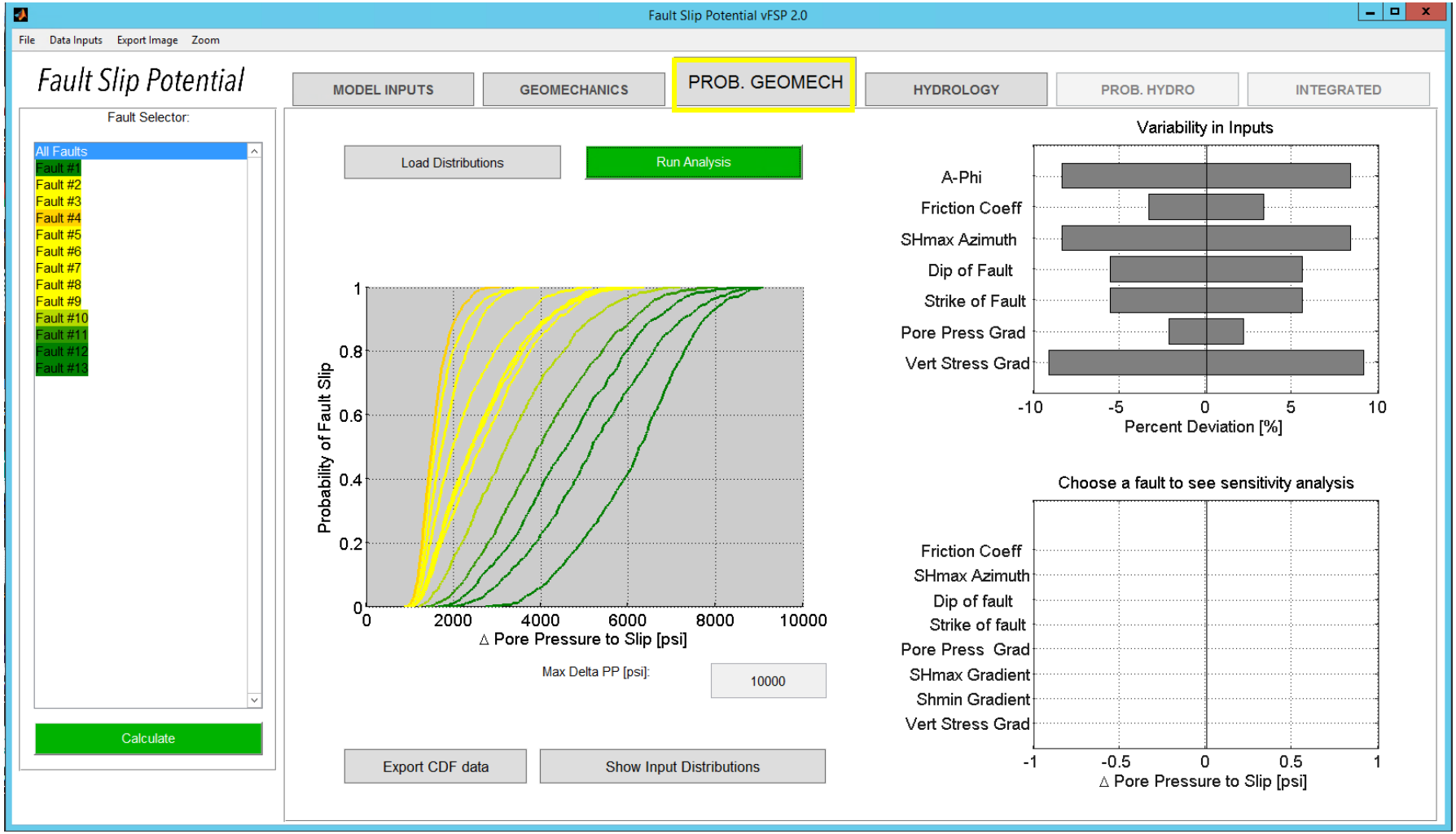


Figure 22 - FSP Probabilistic Geomechanics Tab, Model 1 and 2

Propagates the relative uncertainties through the model, producing a distribution of pore pressures to slip.

Model 1 – Initial conditions before Long Shot SWD #1 well is completed

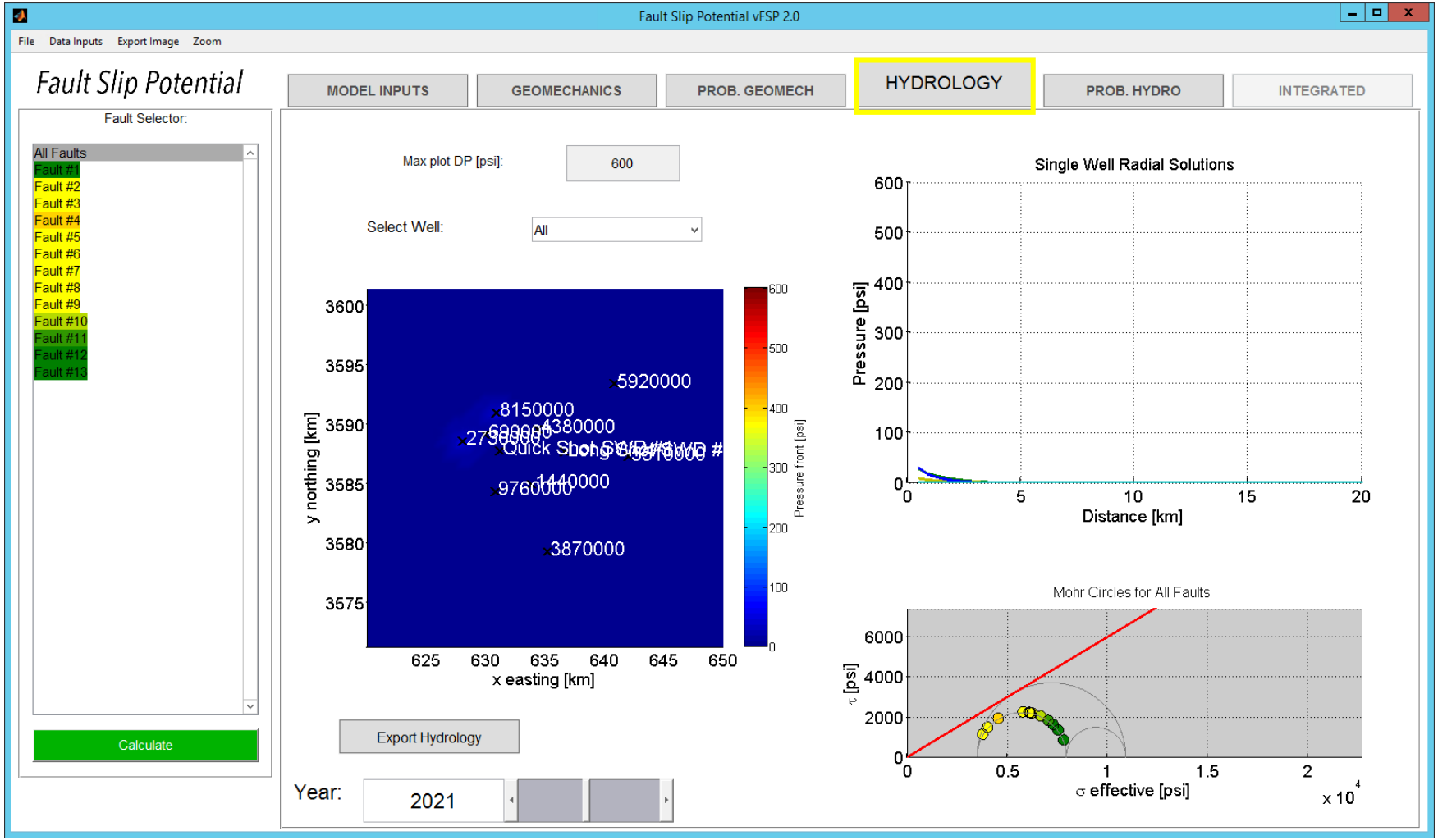


Figure 23 - FSP Hydrology Tab Before Proposed Completion

Demonstrates pressure change as a function of distance from each of the 11 injection wells in Model #1.

Model 1 - Conditions in 2041 after Long Shot SWD #1 well is completed

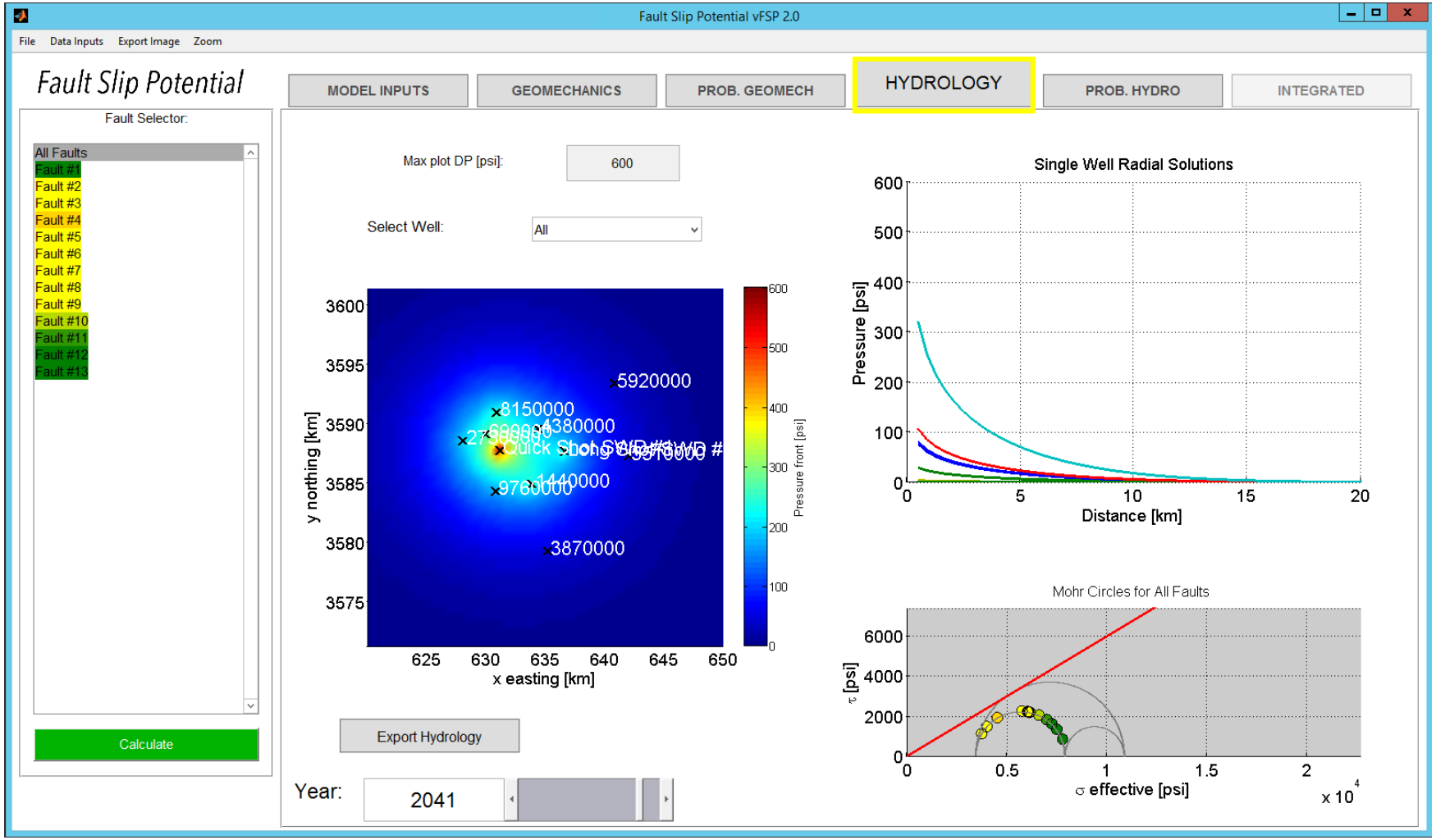


Figure 24 - Model 1 FSP Hydrology Tab

Projecting pressure changes away from each injector 20 years after completion.

Probabilistic analysis input utilized for this internal radial flow-based model

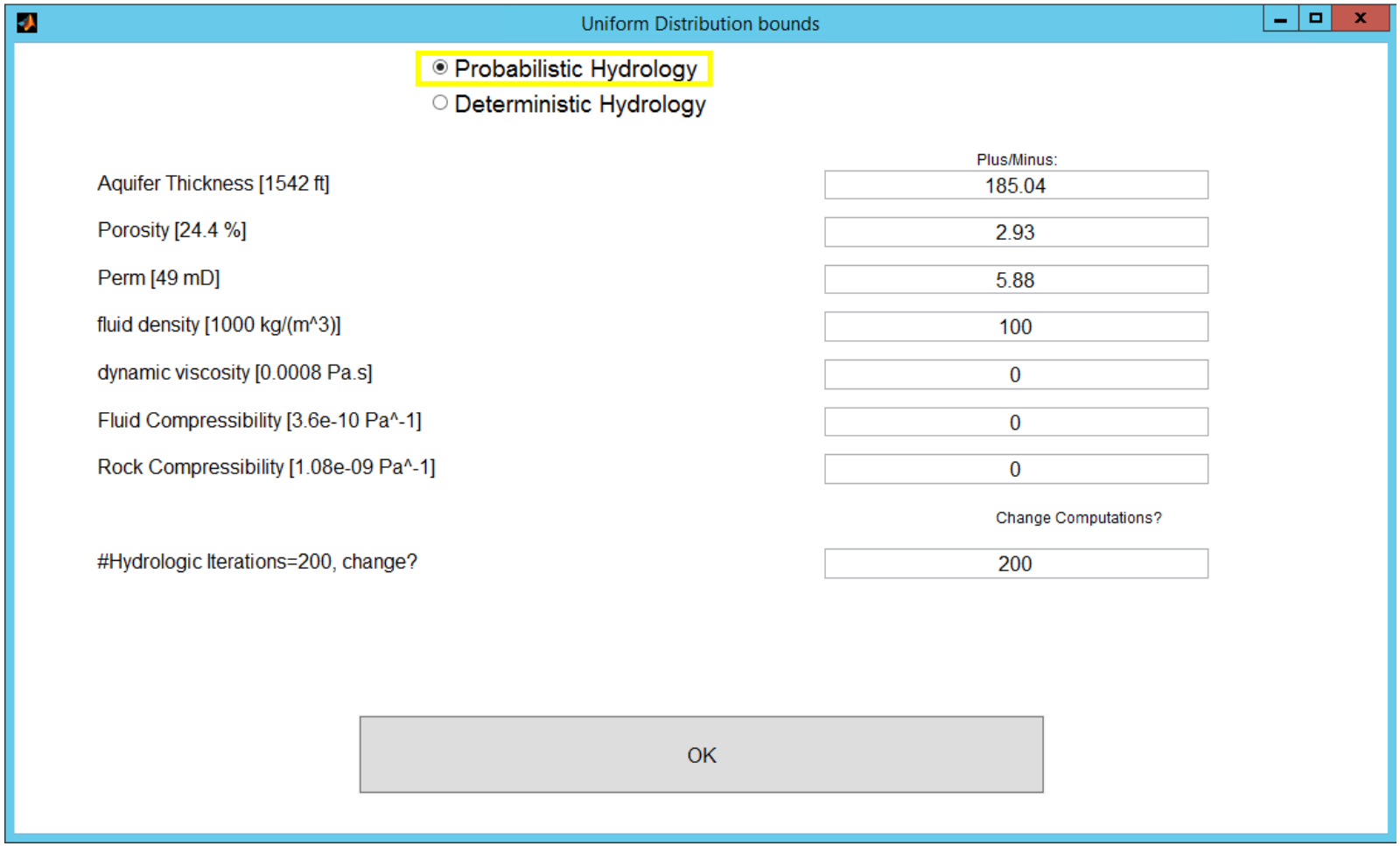


Figure 25 - Probabilistic Hydrology tab parameters Models 1 - 10

Model 1 – Initial Conditions before Long Shot SWD #1 well is completed

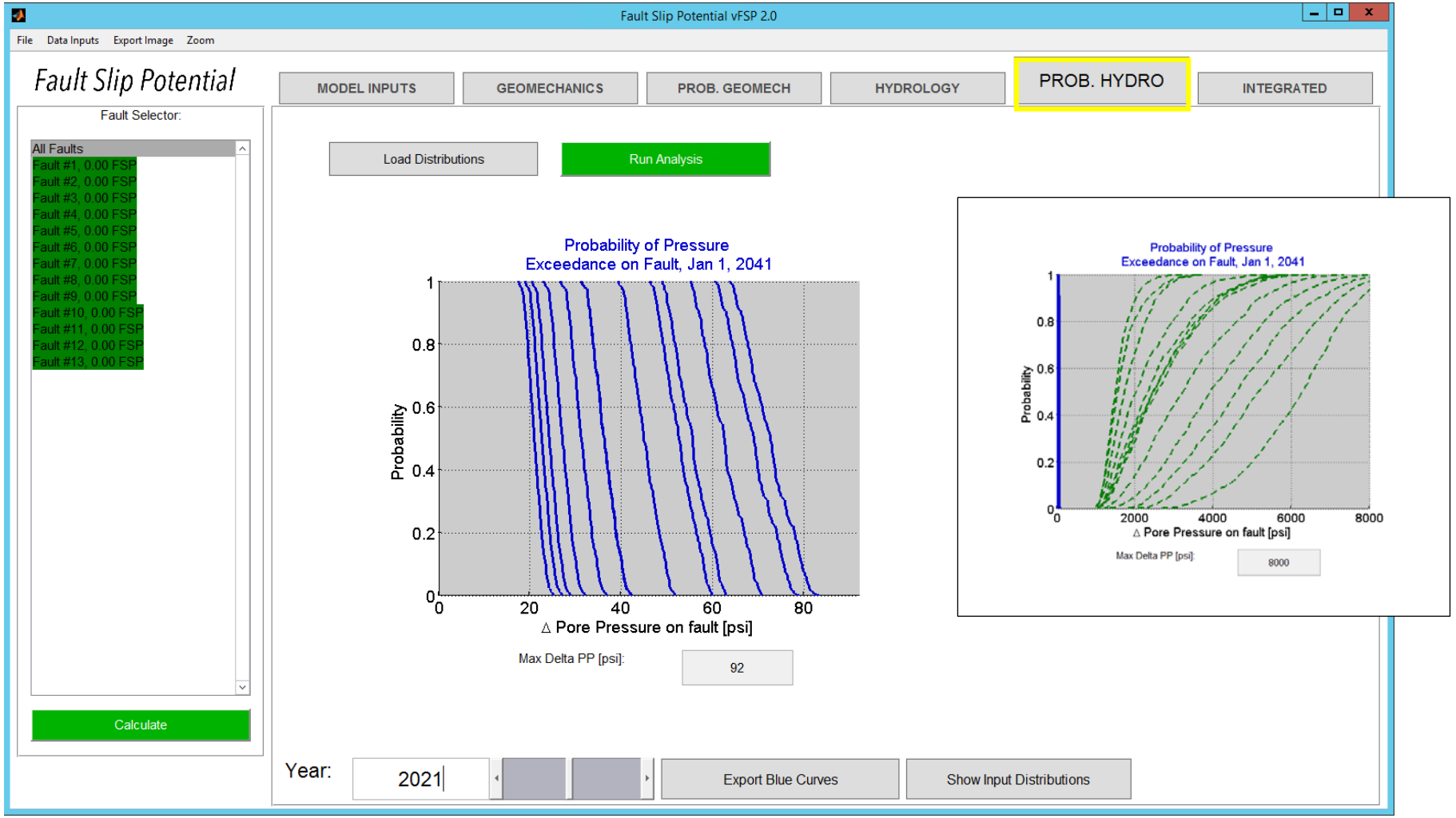


Figure 26 - Model 1 Probabilistic Hydrology Tab, before completion

The Probabilistic Hydrology tabs combine hydrology with the Probabilistic Geomechanical cumulative distribution function (CDF) of the pore pressure to slip.

Model 1 – Conditions in 2041 after Long Shot SWD #1 well is completed

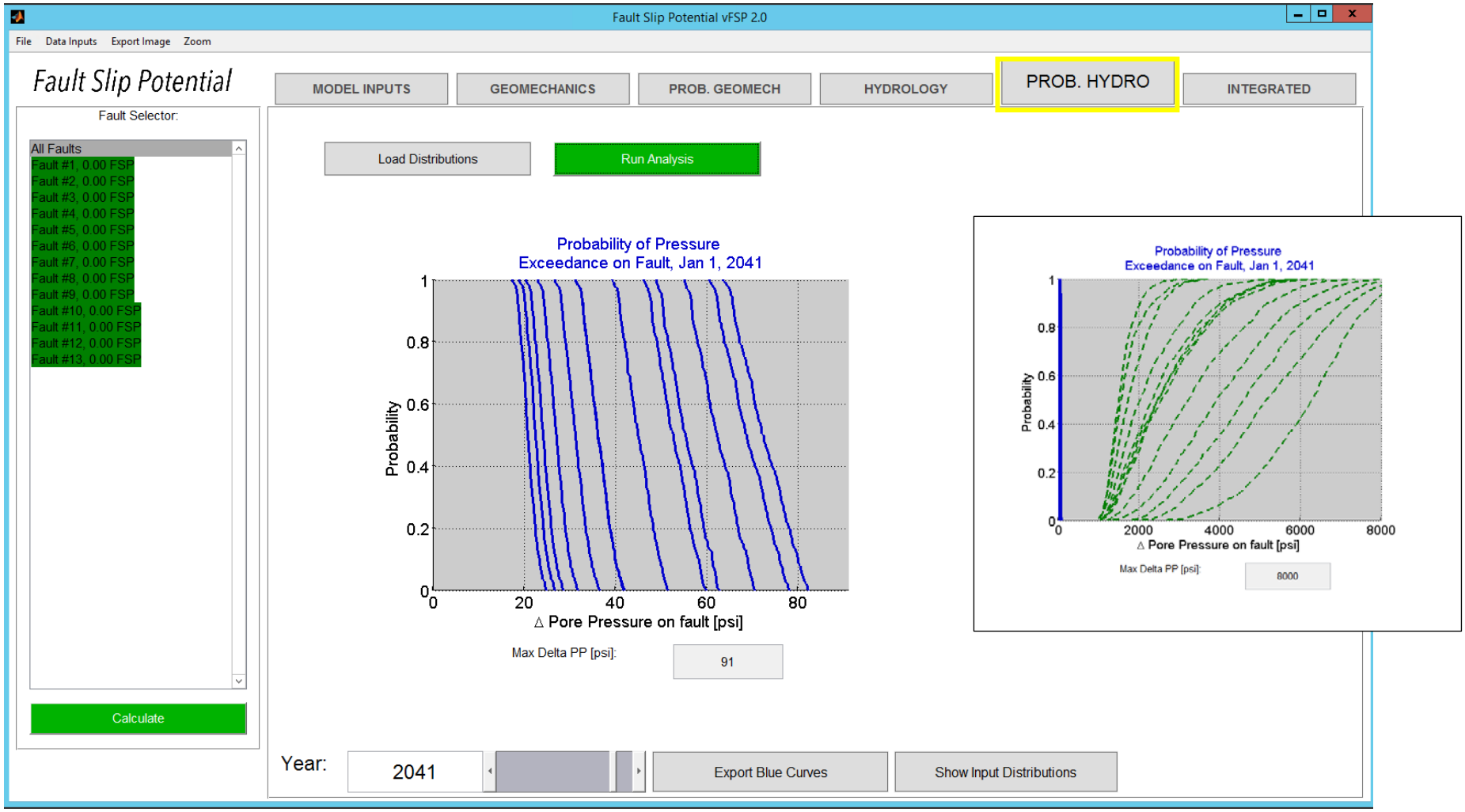


Figure 27 - Model 1 Probabilistic Hydrology Tab, 20 years after completion

The following integrated tabs show the combined results of probabilistic geomechanics and hydrology models run for all 13 Silurian Devonian fault segments.

Model 1 – Initial Conditions before Long Shot SWD #1 well is completed

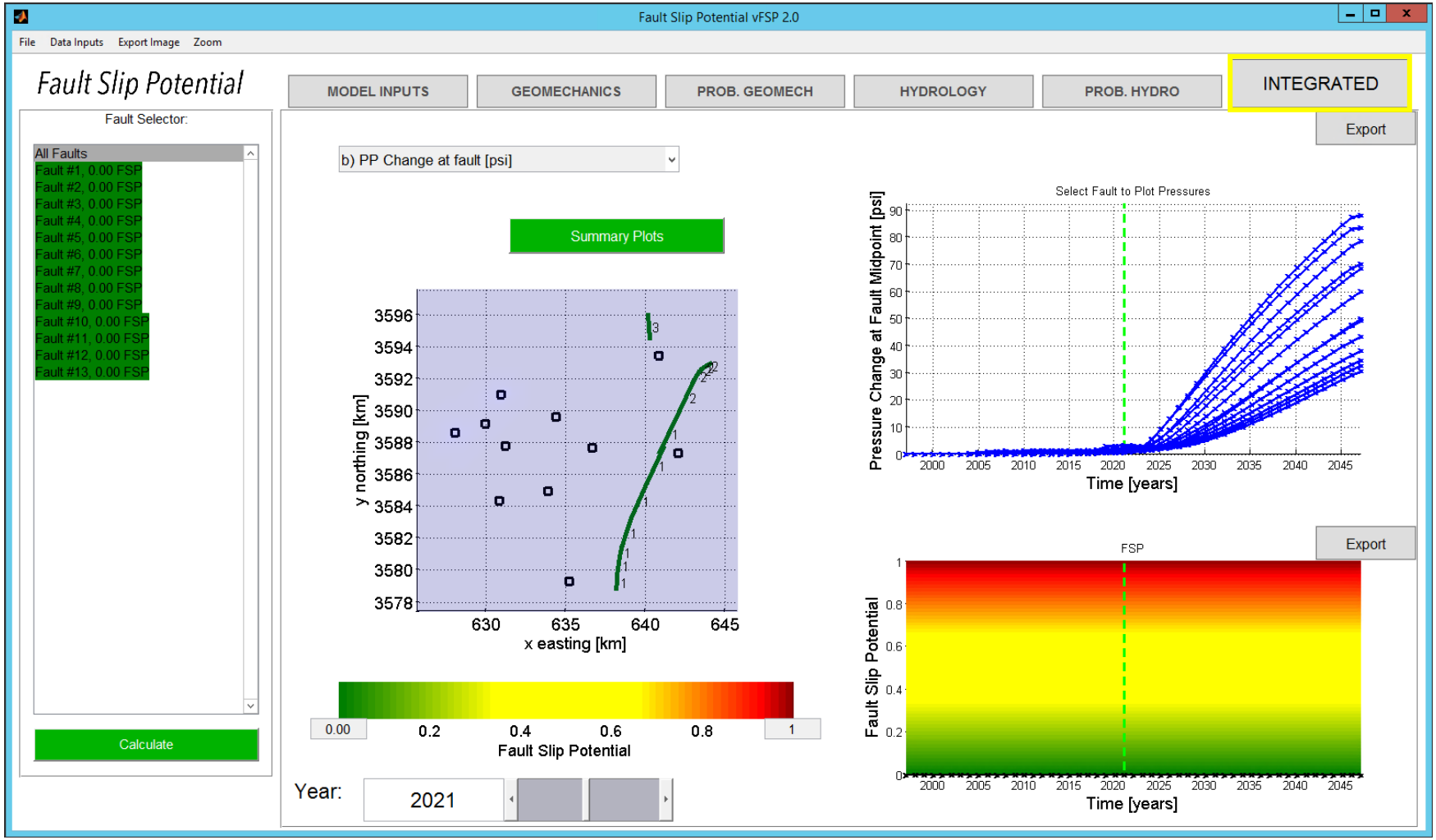


Figure 28 - Model 1 Integrated Tab, Initial Conditions before Long Shot Well is completed

Pore Pressure change (psi) is posted for each fault segment.

Model 1 – Initial Conditions before Long Shot SWD #1 well is completed

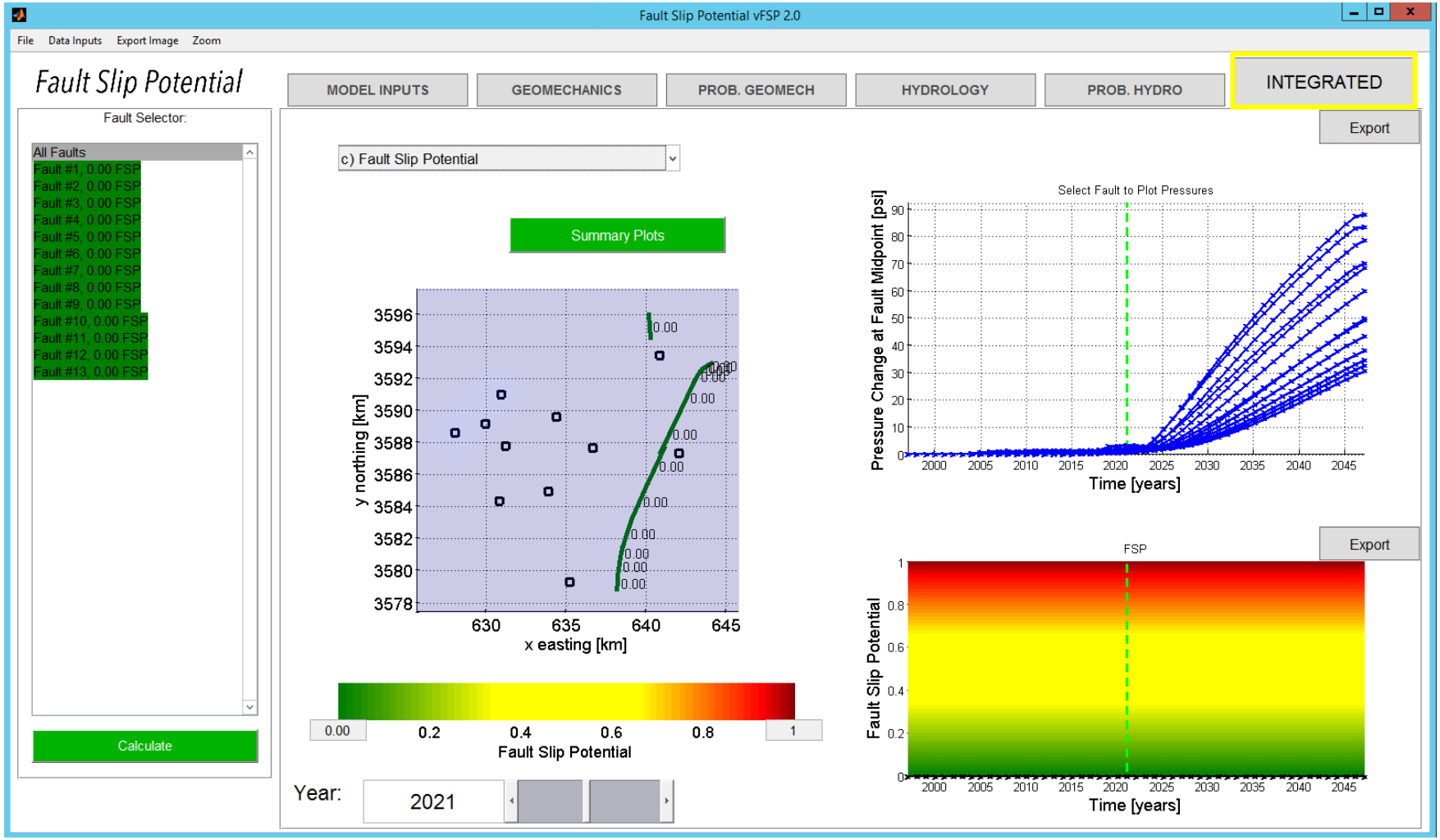


Figure 29 - Model 1 Integrated Tab, Initial Conditions

Fault Slip Potential for each fault segment is posted in percentage.

Model 1 – Conditions in 2041 after Long Shot SWD #1 well is completed

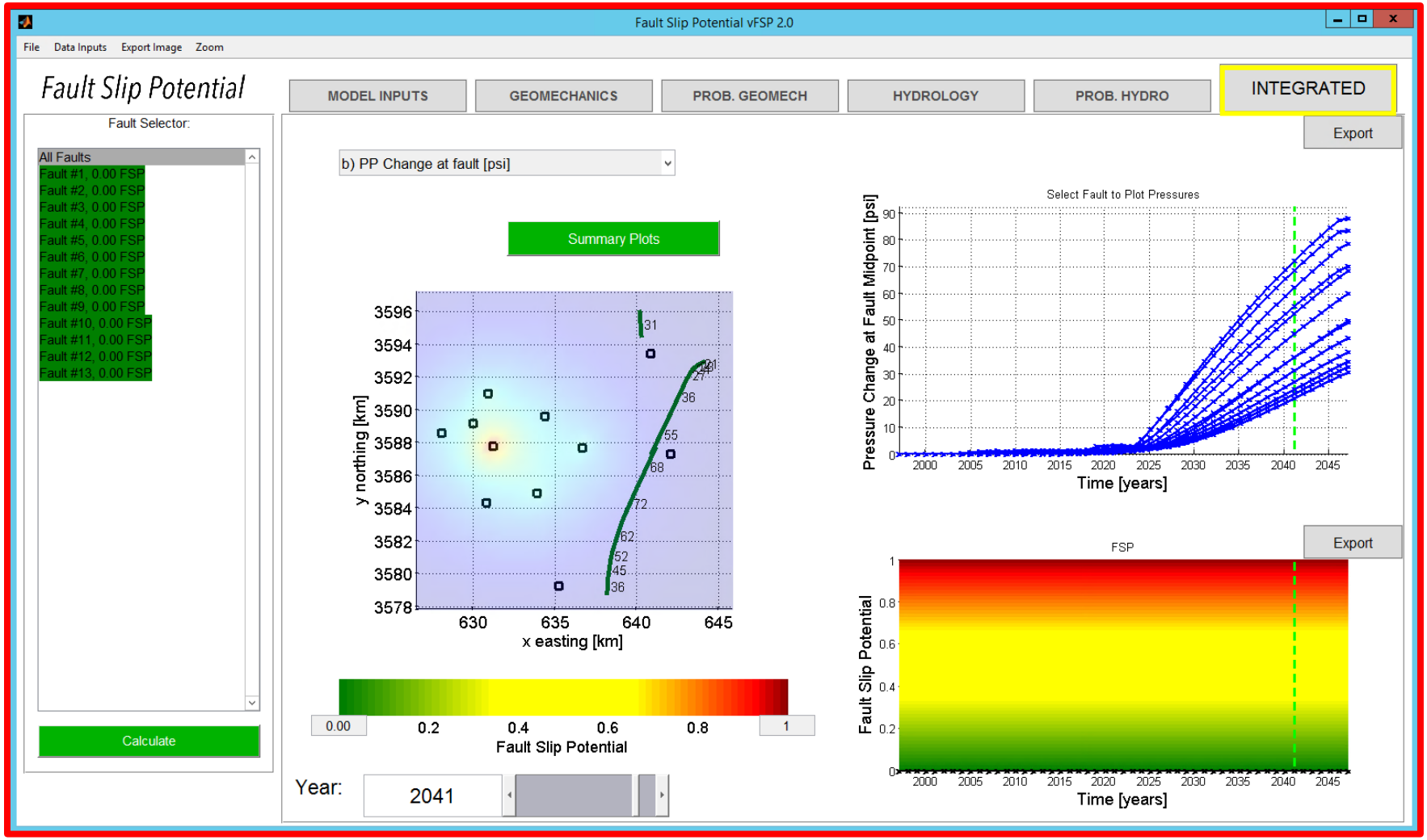


Figure 30 - Model 1 Integrated Tab, 20 years after completion

Pore Pressure change (psi) is posted for each fault segment.

Model 1 – Conditions in 2041 after Long Shot SWD #1 well is completed

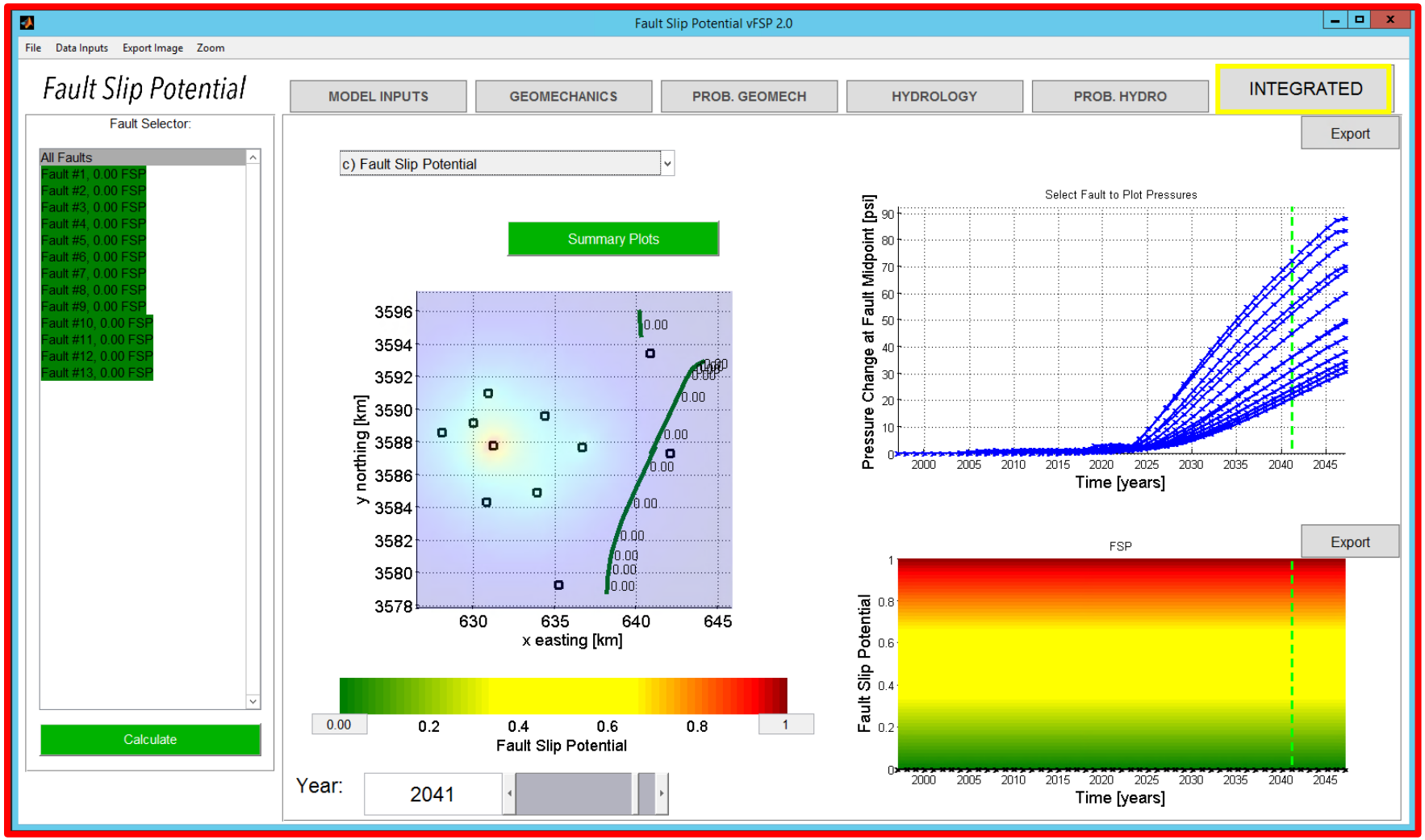


Figure 31 - Model 1 Integrated Tab, 20 years after completion

Fault Slip Potential for each fault segment is posted in percentage.

7.0 FSP Analysis MODEL 2 – Silurian Devonian Faults - only Long Shot SWD #1

Model #2 only incorporates the proposed Long Shot System completions with proposed rate for Long Shot #1 SWD (maximum injection rate of 25,000 barrels per day = an average of 760,416 barrels per month).

All other parameters remains consistent as Model #1 i.e. faults, stress regime, reservoir, and probabilistic parameters. Below is the only change regarding Model #1 with respect to injector data.

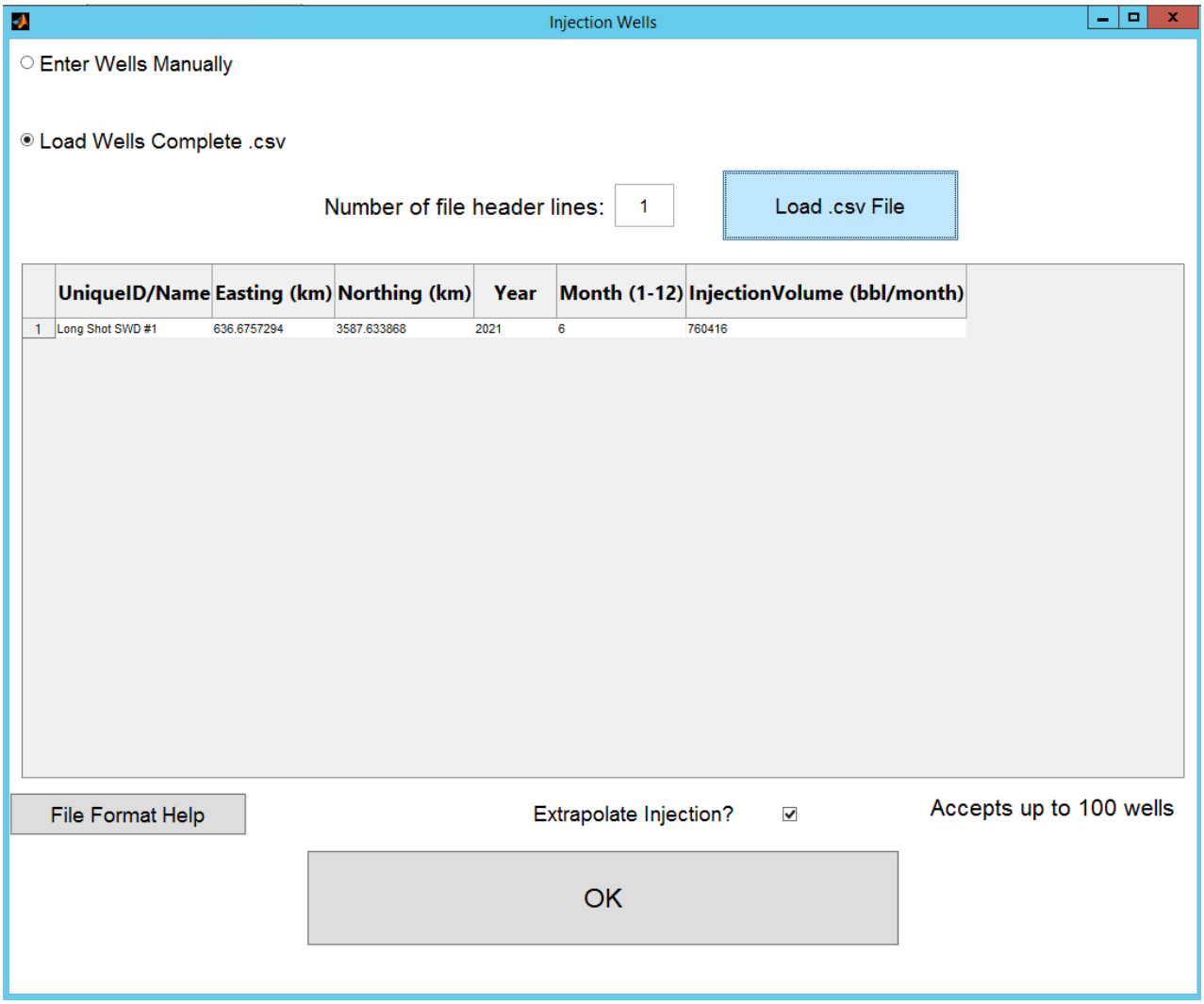


Figure 32 - Model 2 Injector Input

Model 2 - Silurian Devonian

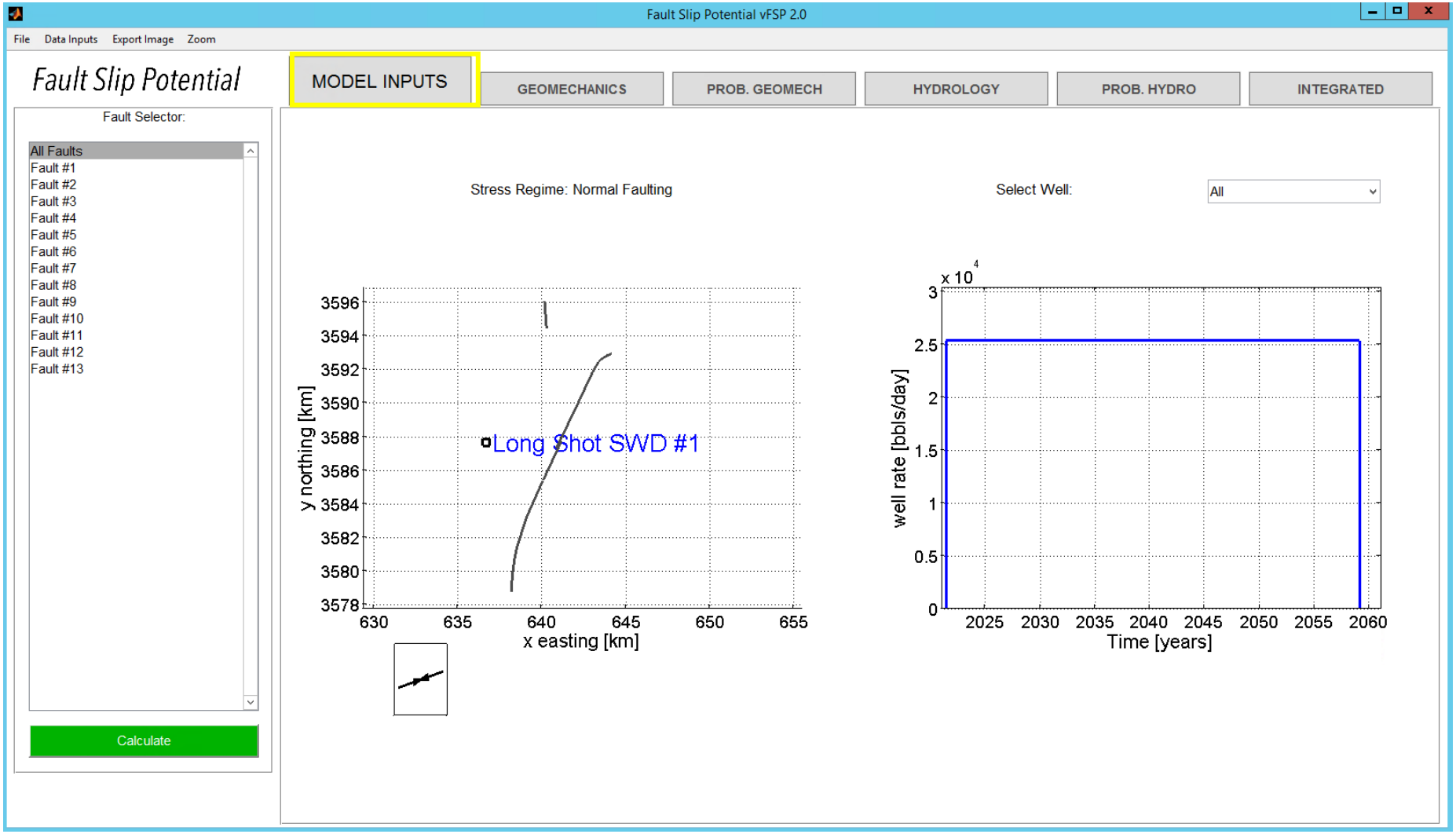


Figure 33 - Model 2 Inputs Tab

The following FSP result tabs are for the second model which includes only the proposed injection well.

Model 2 – Initial conditions before Long Shot SWD #1 well is completed

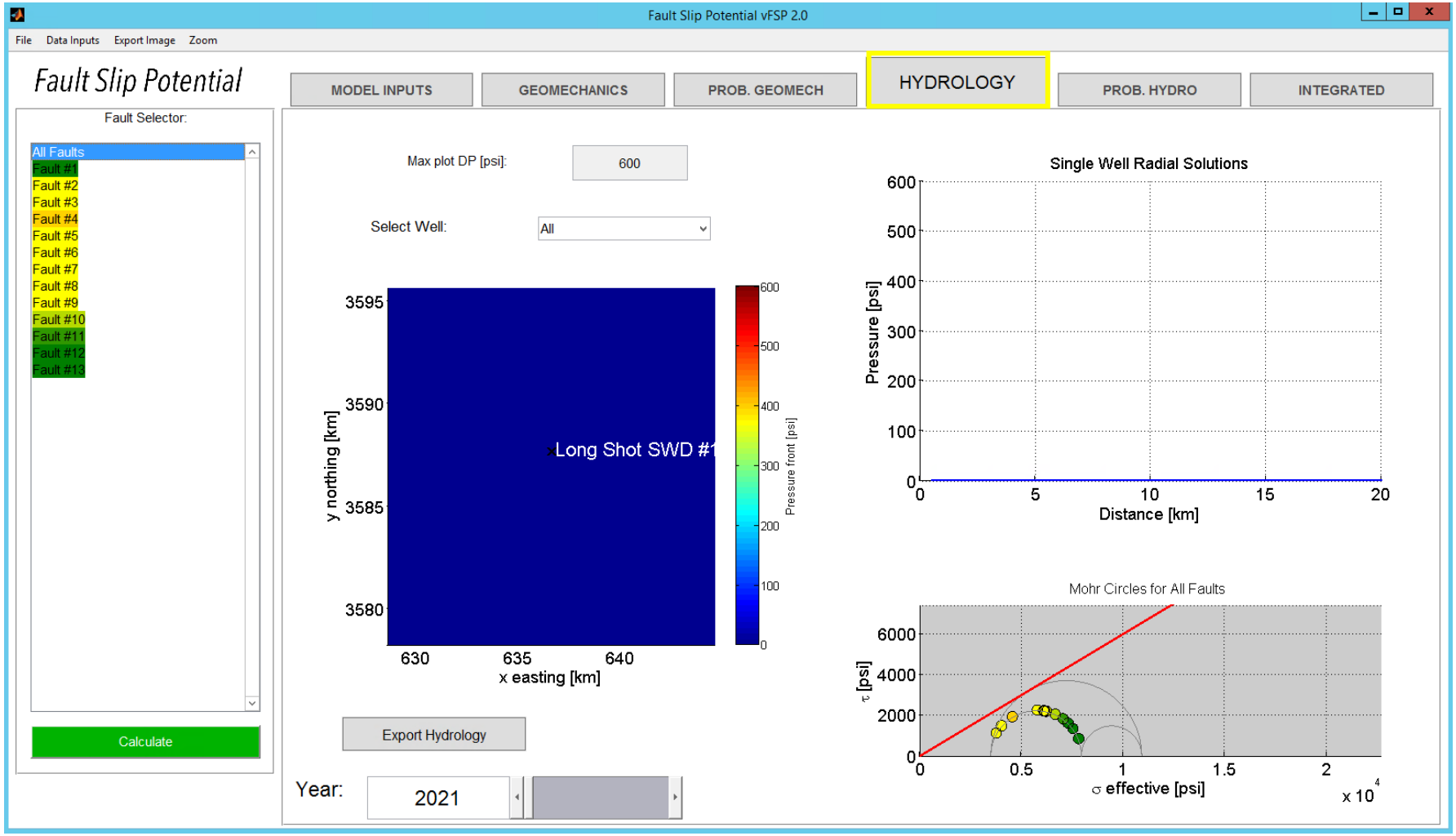


Figure 34 - Model 2 Hydrology Tab, Initial Conditions

Model 2 - Conditions in 2041 after Long Shot SWD #1 well is completed.

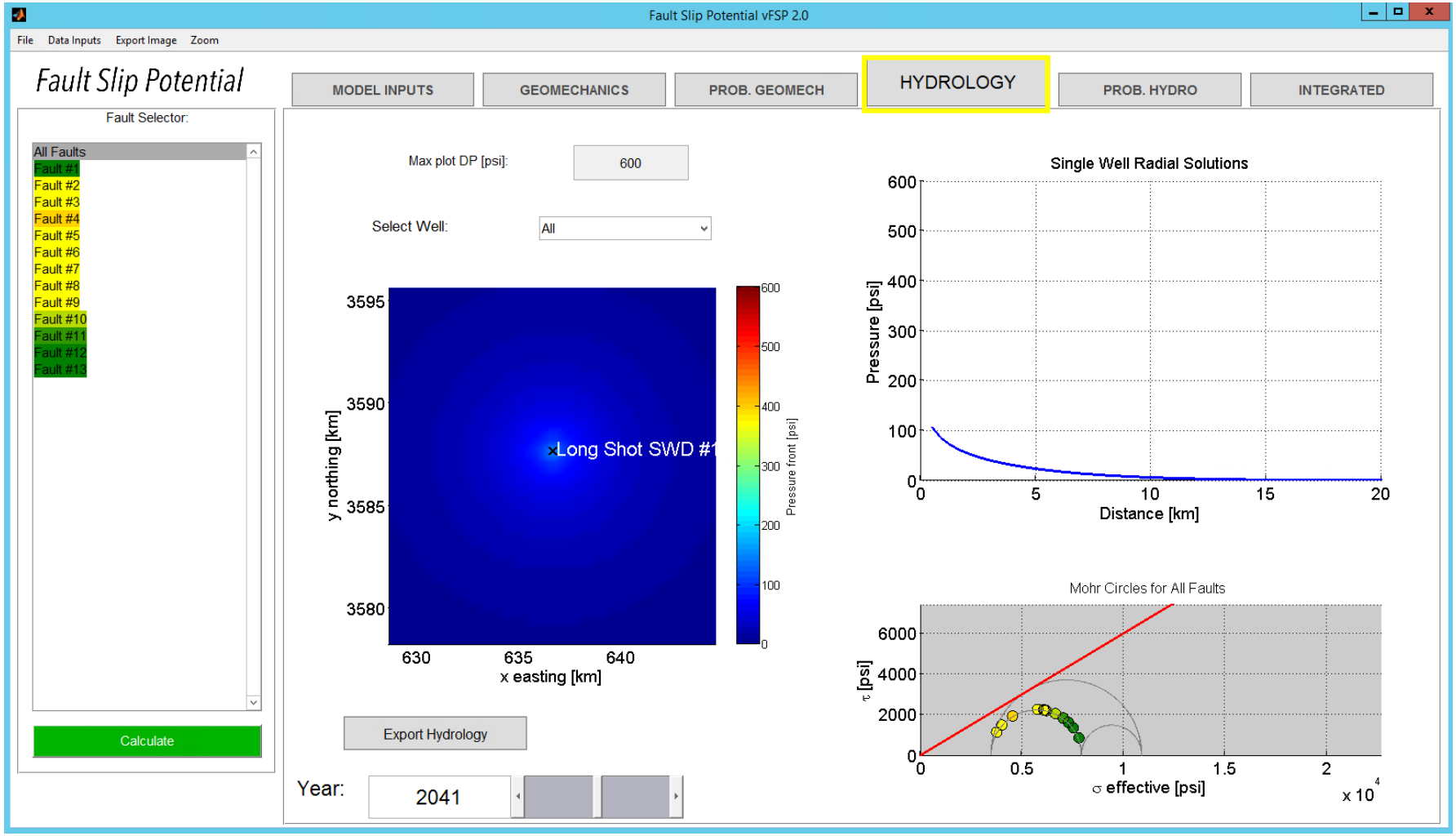


Figure 35 - Model 2 Hydrology Results, 20 years after Completion

Model 2 – Initial Conditions before Long Shot SWD #1 well is completed

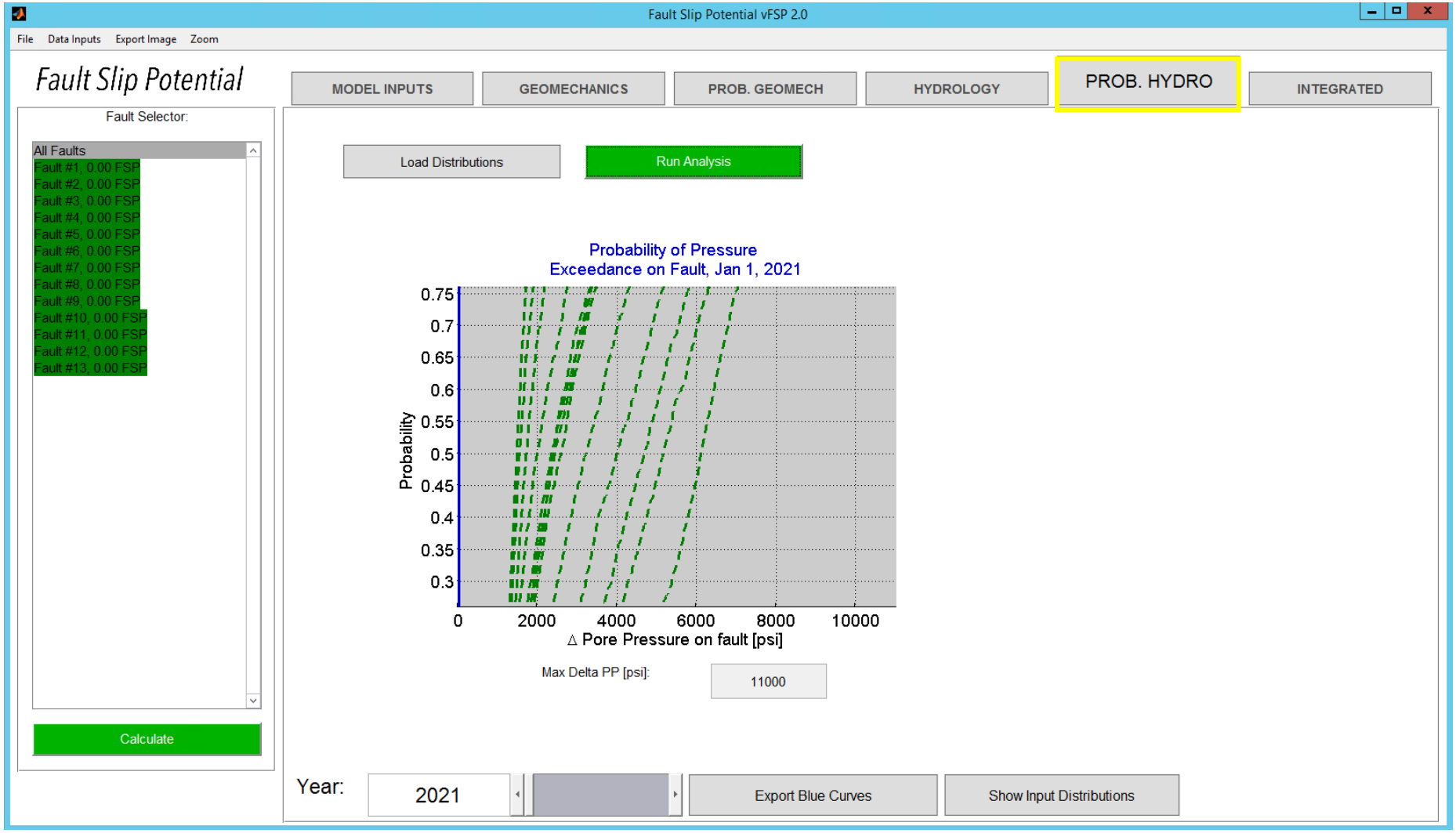


Figure 36 - Model 2 Probabilistic Hydrology Results Tab, Initial Conditions

Model 2 – Conditions in 2041 after Long Shot SWD #1 well is completed

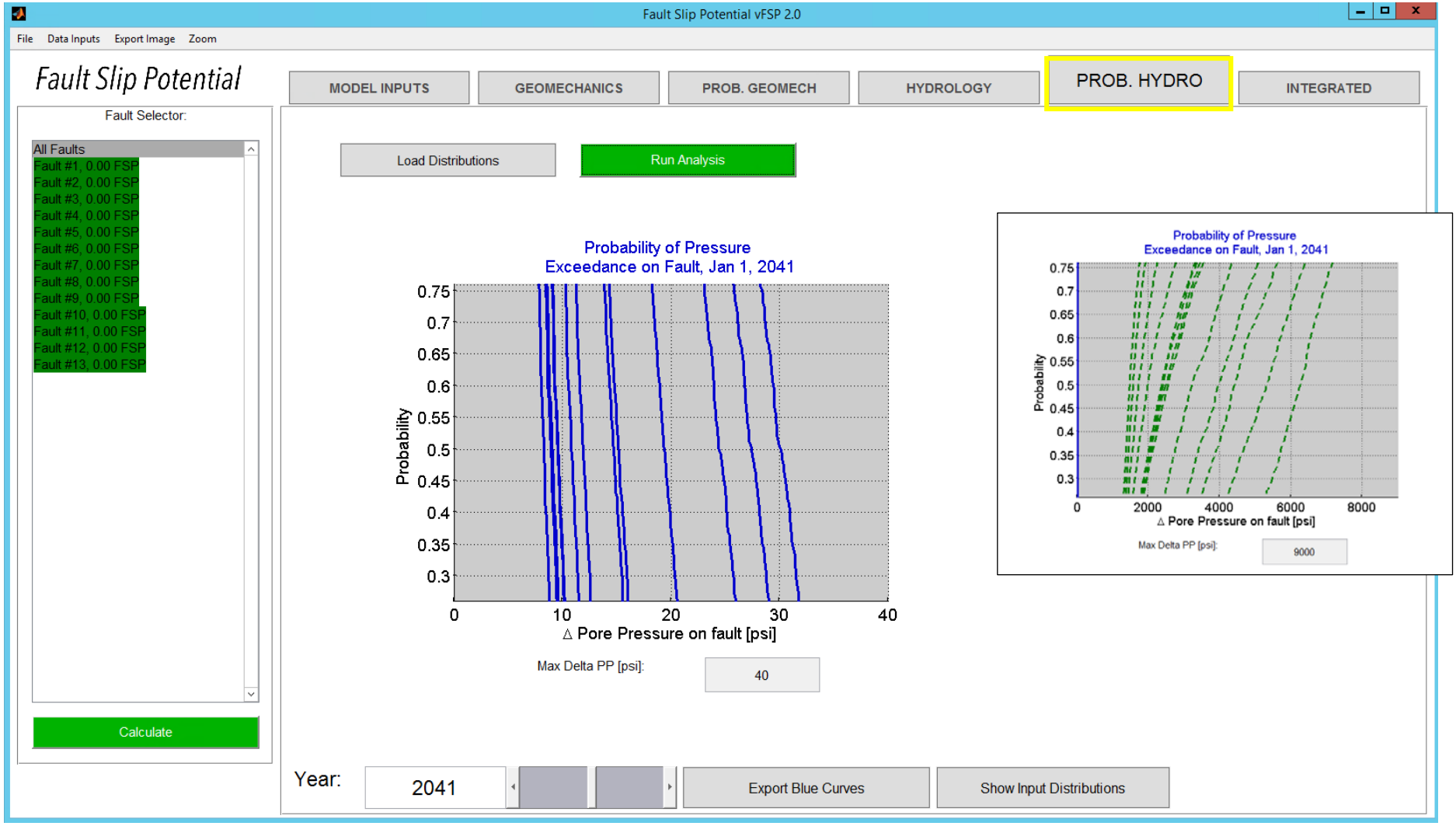


Figure 37 - Model 2 Probabilistic Hydrology Results Tab, 20 years after completion

Only includes proposed injector, held constant at the permitted rate.

Model 2 – Initial Conditions before Long Shot SWD #1 well is completed

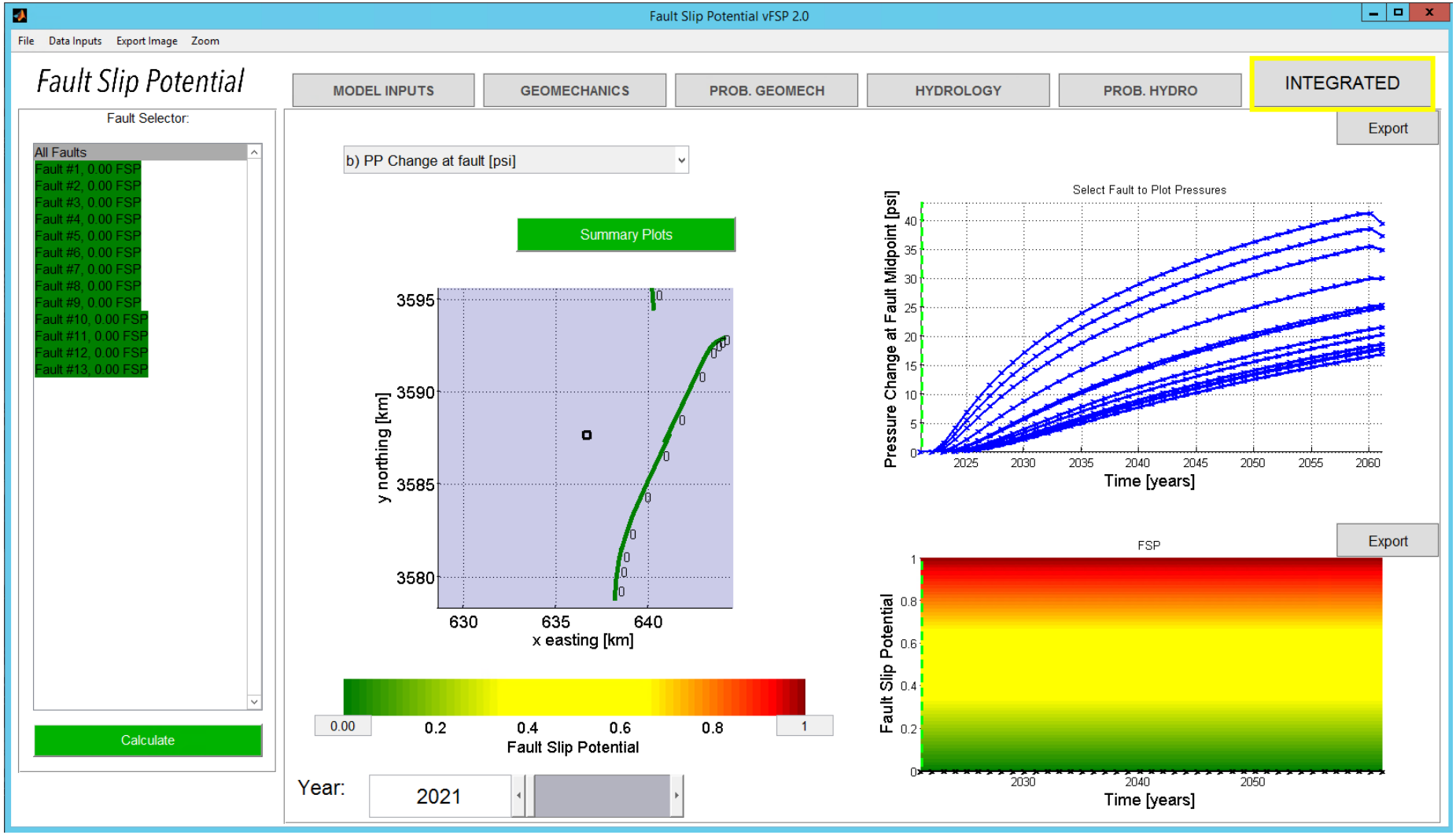


Figure 38 - Model 2 Integrated Results Tab, Initial Conditions

Pore Pressure change (psi) is posted for each fault segment.

Model 2 – Initial Conditions before Long Shot SWD #1 well is completed

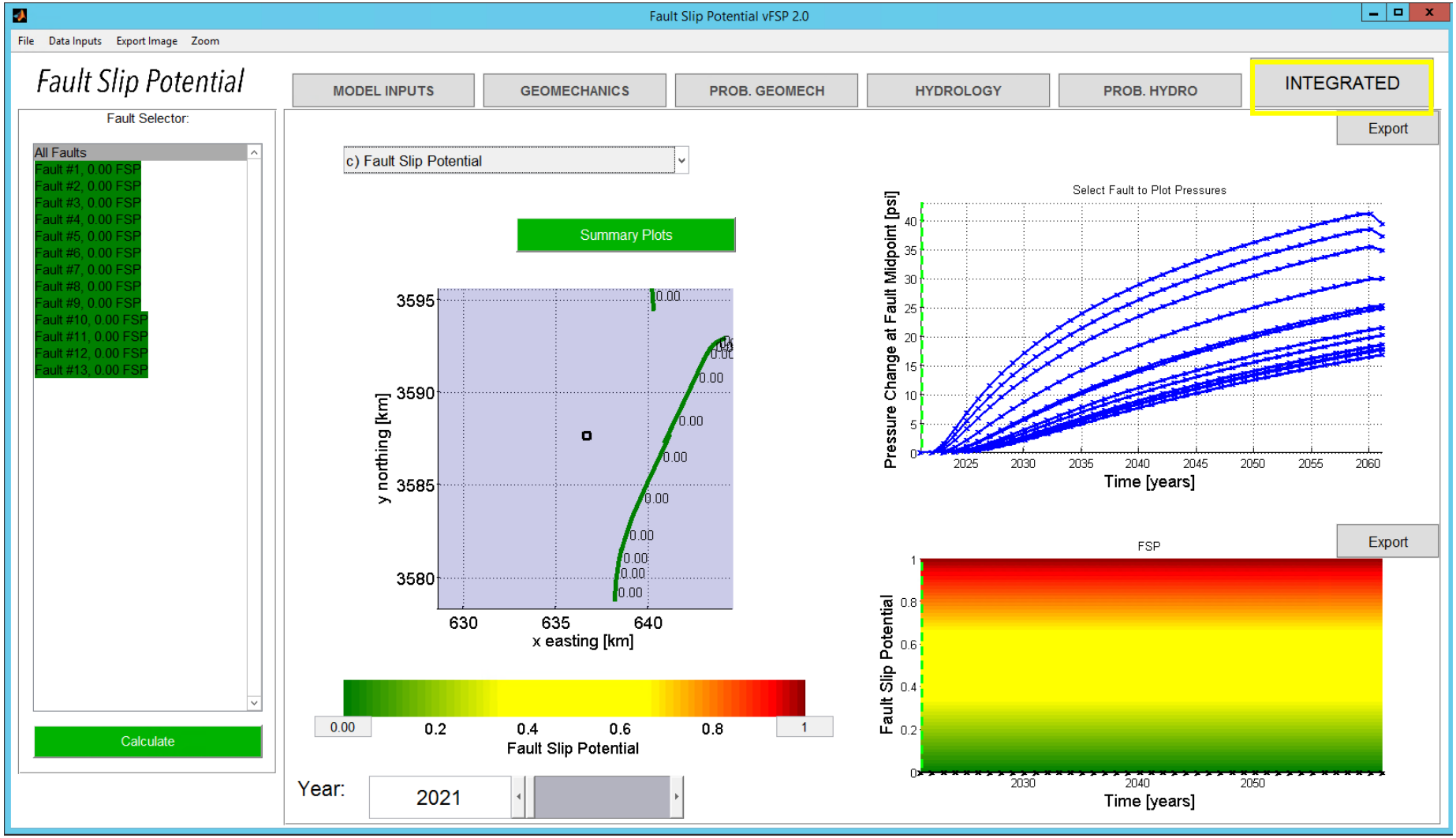


Figure 39 - Model 2 Integrated Results Tab, Initial Conditions

Fault Slip Potential for each fault segment is posted in percentage.

Model 2 – Conditions in 2041 after Long Shot SWD #1 well is completed

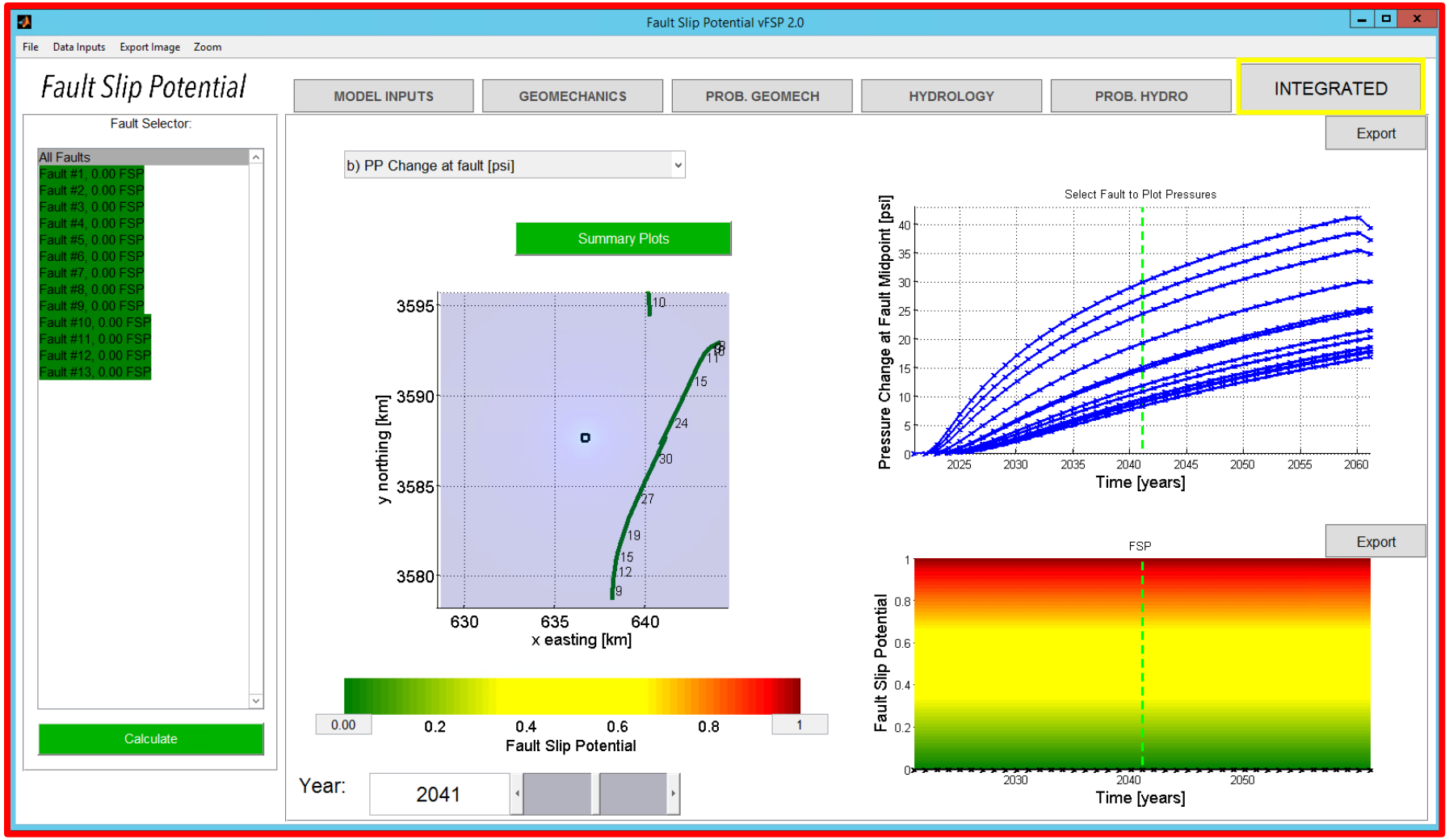


Figure 40 - Model 2 Integrated Results Tab, 20 years after completion

Pore Pressure change (psi) is posted for each fault segment.

Model 2 – Conditions in 2041 after Long Shot SWD #1 well is completed

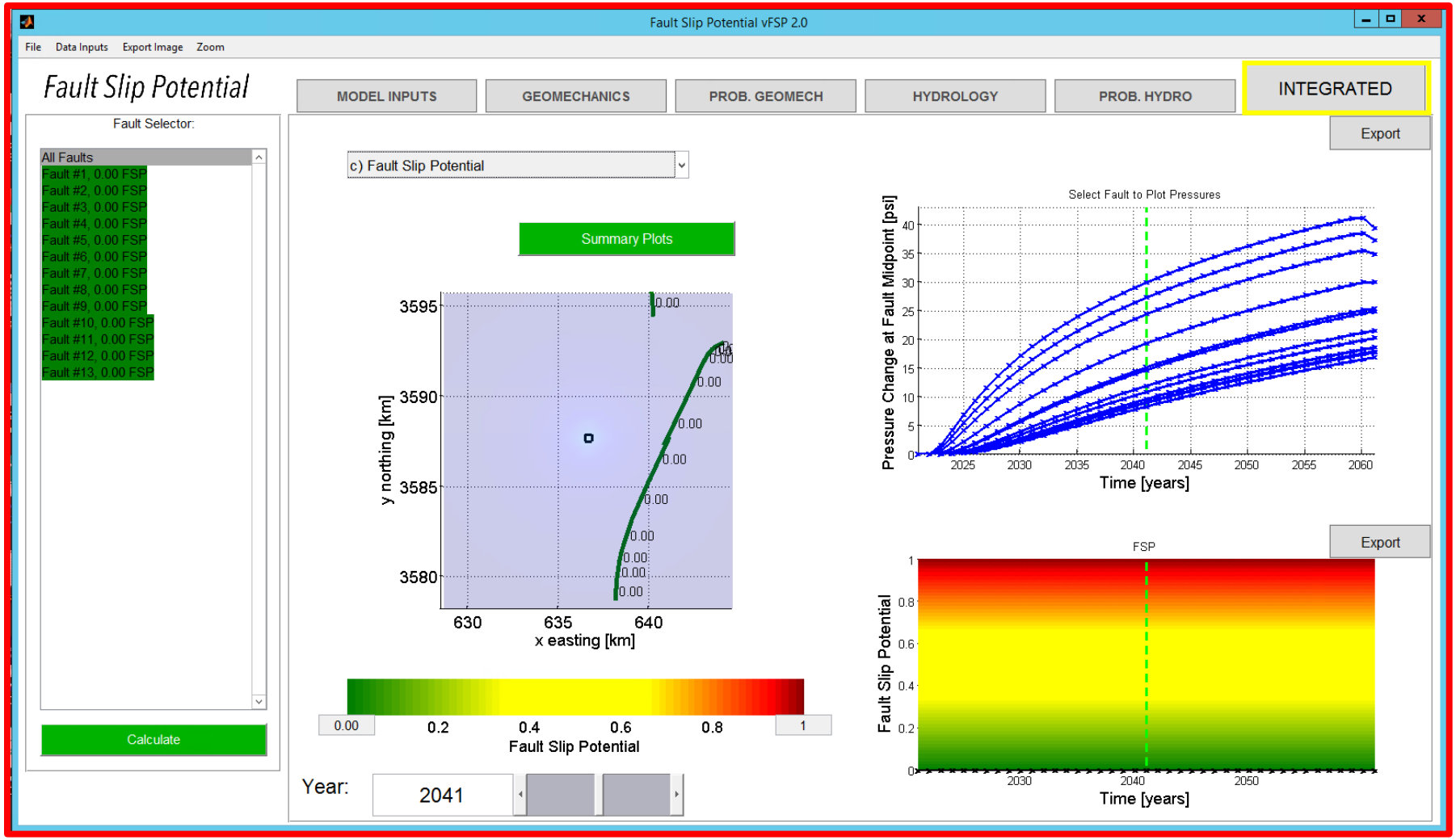


Figure 41 - Model 2 Integrated Results Tab, 20 years after completion

Fault Slip Potential for each fault segment is posted in percentage

8.0 FSP Analysis MODELS 3 and 4 – Precambrian Faults

Models #3 and #4 analyze Precambrian fault traces within the AOI, which utilize the same methodology as previous models. Input parameters for stress regime, reservoir, and probabilistic ranges are consistent with Models 1 & 2. Therefore, the following figures (42 to 51) illustrate the Precambrian fault traces used as input, and the FSP results tabs.

Model #3 incorporates all 11 injection wells, whereas Model #4 only uses the planned Long Shot Well completion with proposed maximum injection rate.

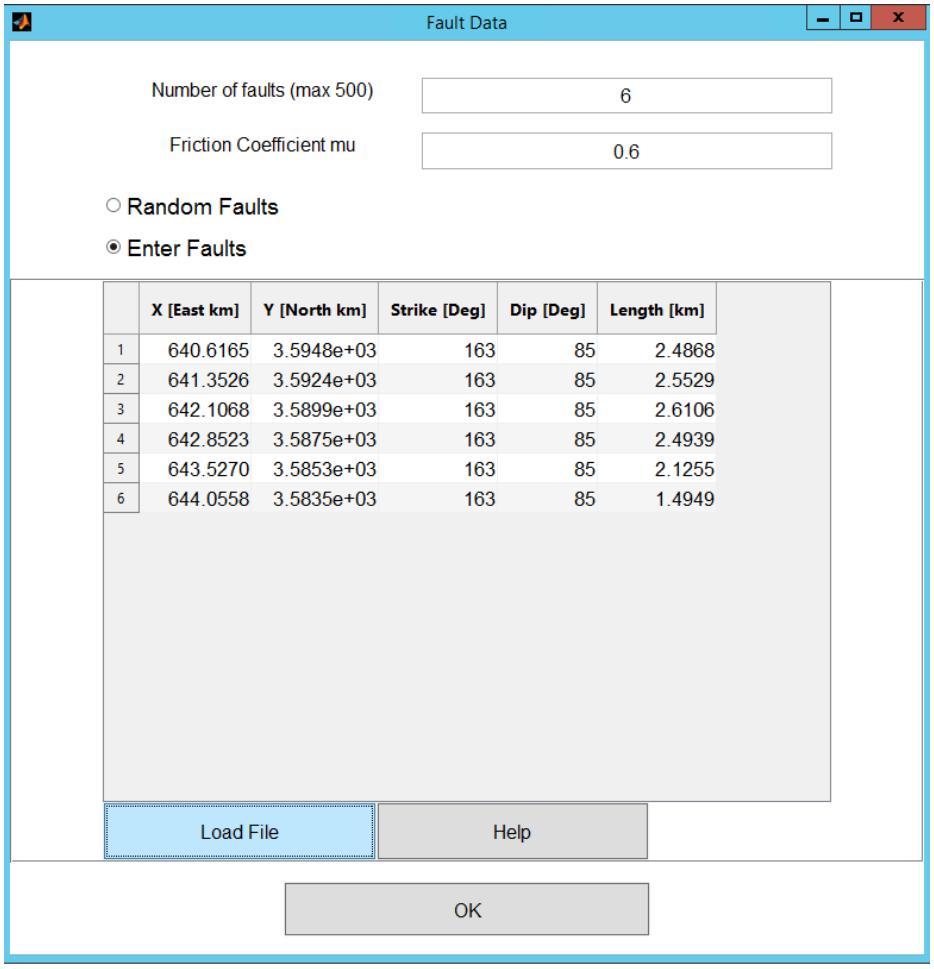


Figure 42 - FSP Fault input for Models 3 and 4

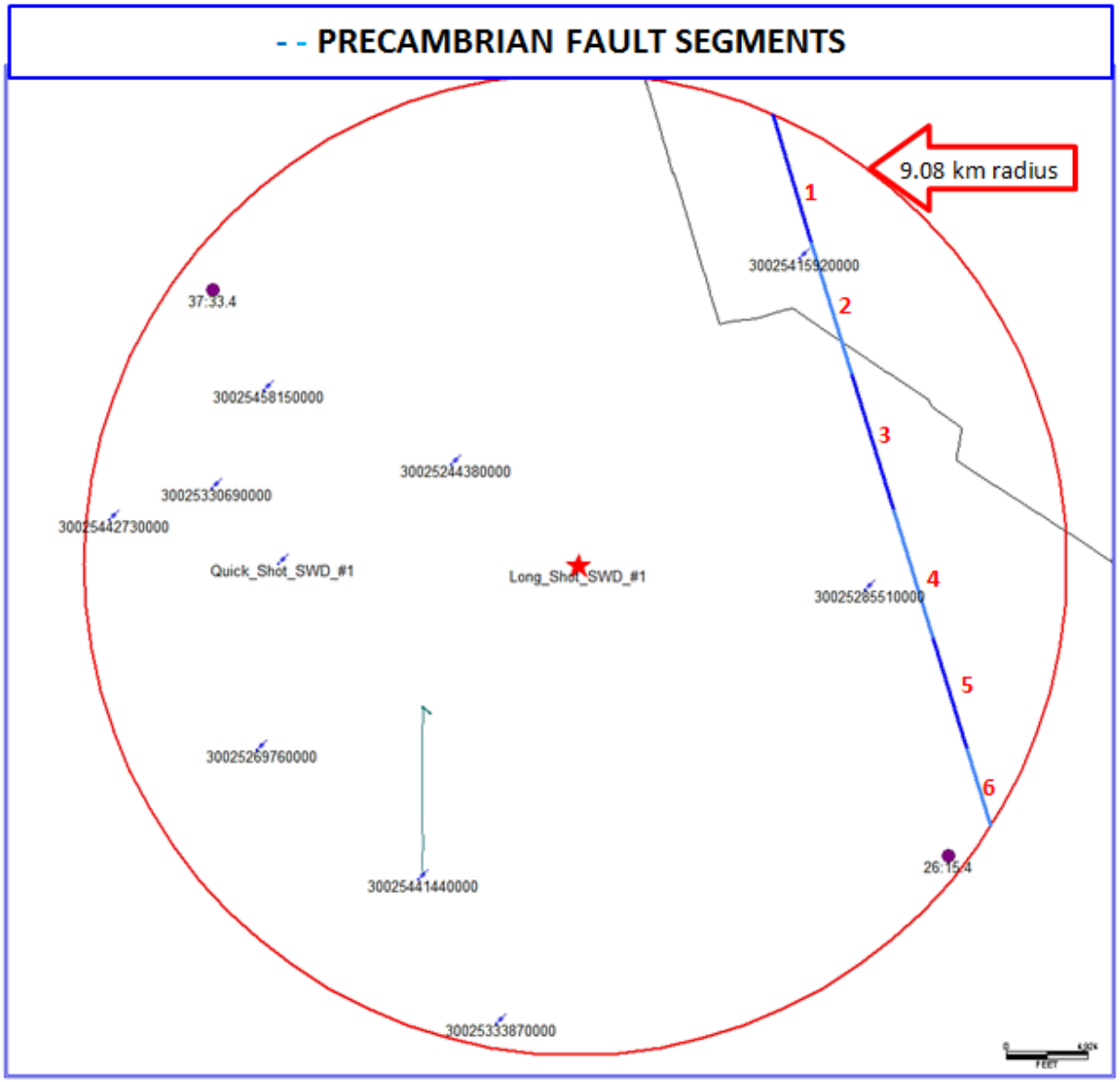


Figure 43 - Precambrian fault segments (6) used in FSP Analysis Models 3 and 4

Model 3 - Precambrian

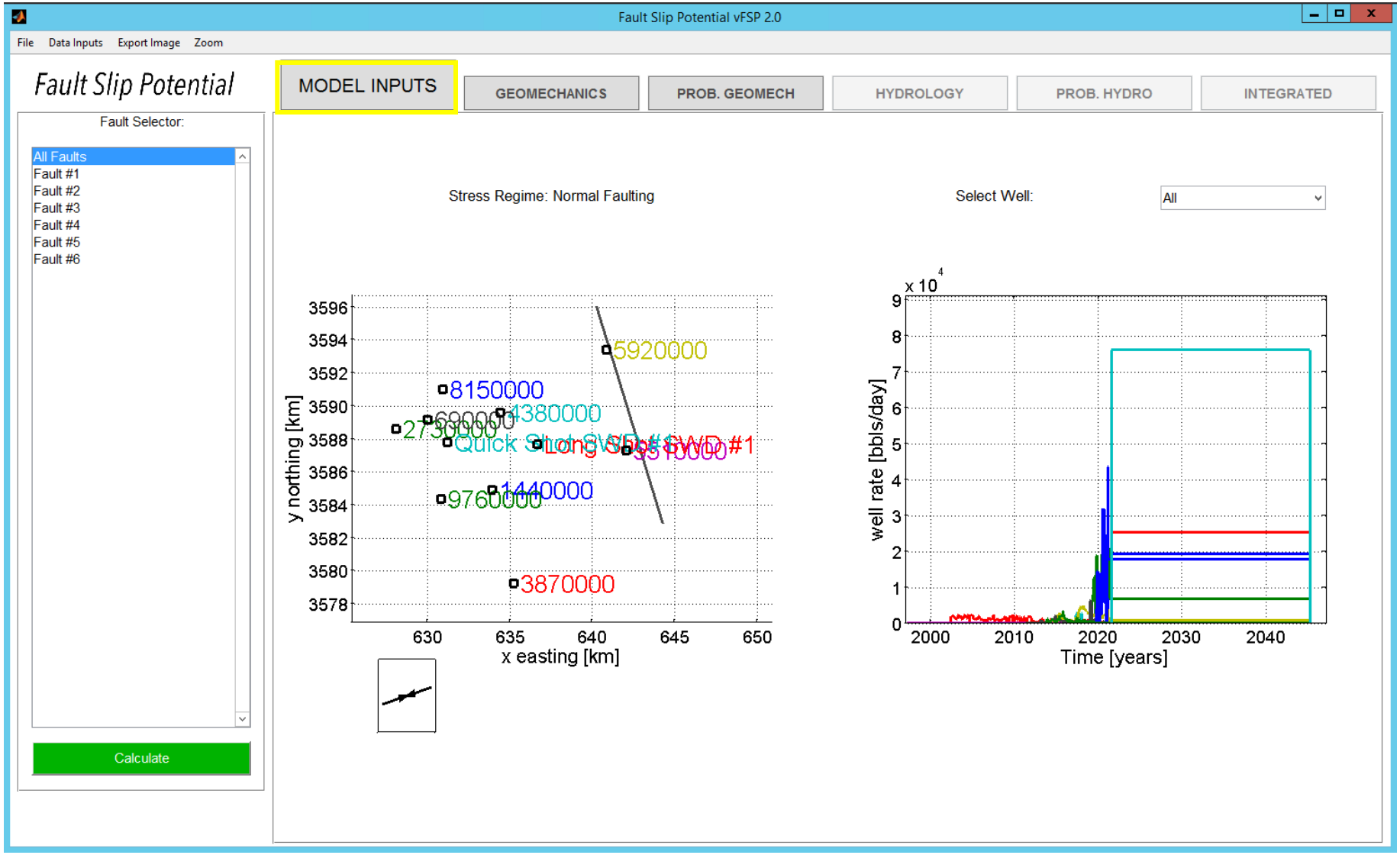


Figure 44 - FSP Model 3 Input: 11 injectors and 6 Precambrian fault segments

Model 4 - Precambrian

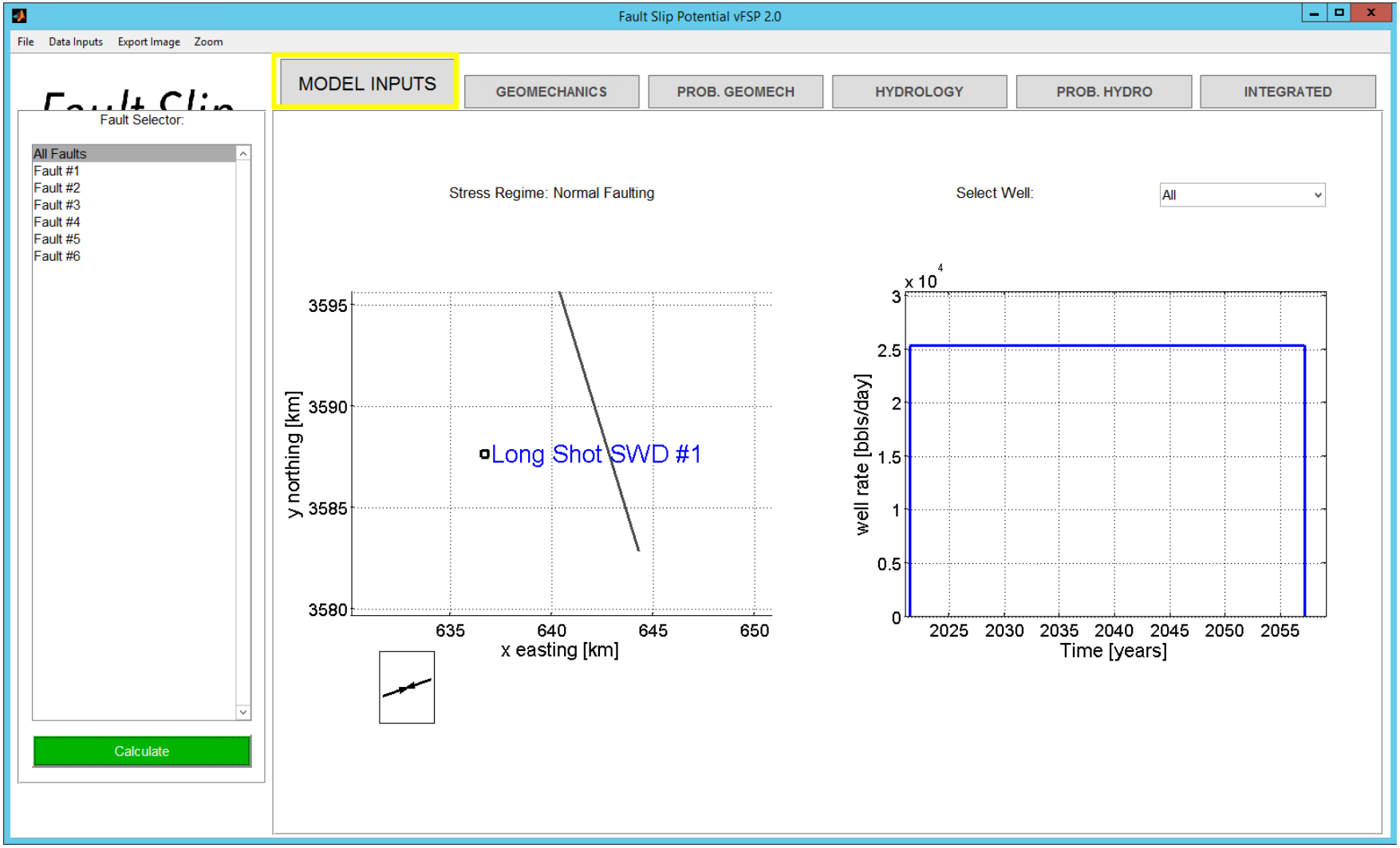


Figure 45 - FSP Model 4 Input: Only injector and 6 Precambrian fault segments

Model 3 and 4

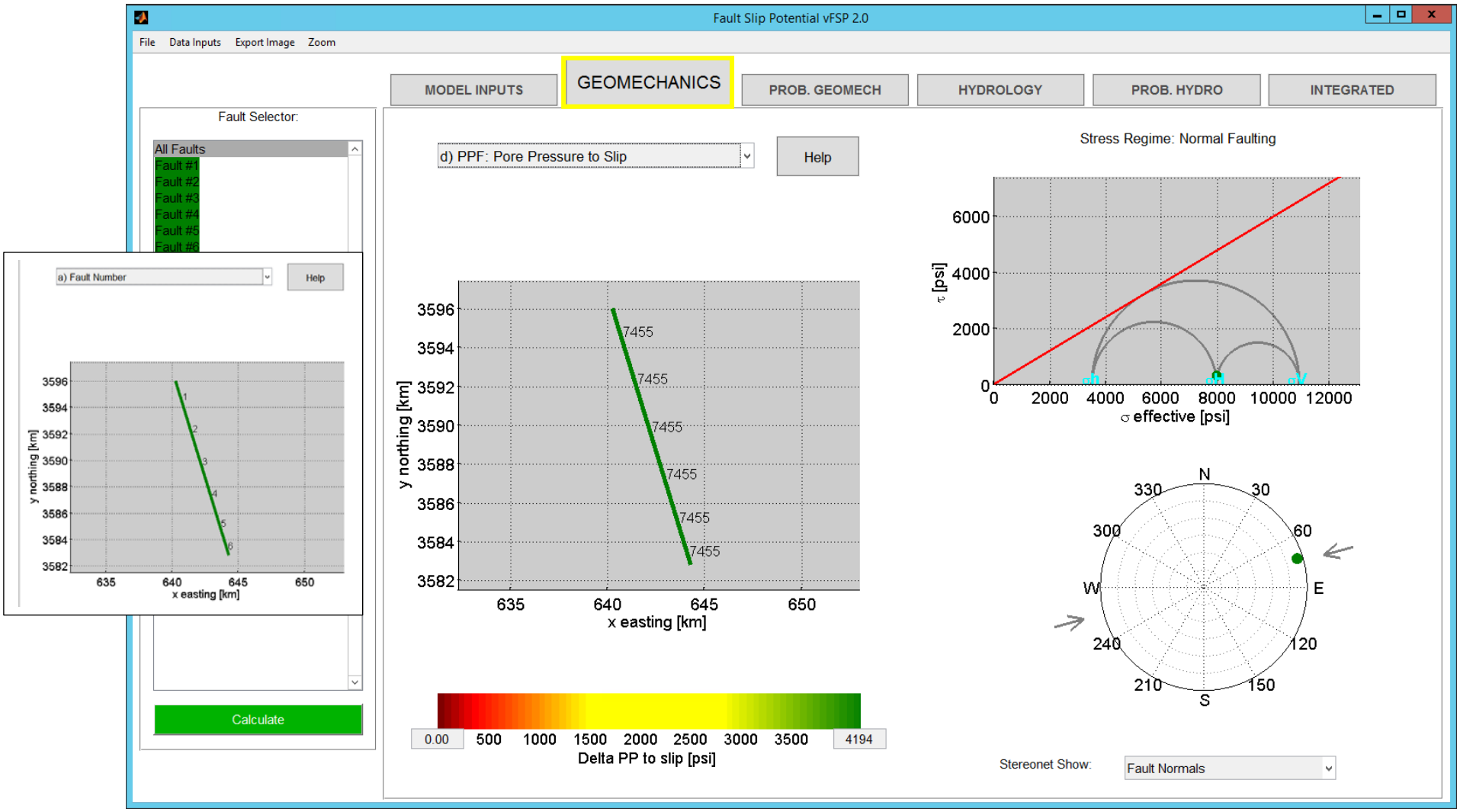


Figure 46 - FSP Geomechanics Tab, Model 3 and 4

Demonstrates pore pressure to slip (psi) for each fault segment, direction of SHmax, and a Mohr diagram with frictional slip line shown in red. Faults are colored by their horizontal distance to slip according to the color scale.

Model 3 and 4

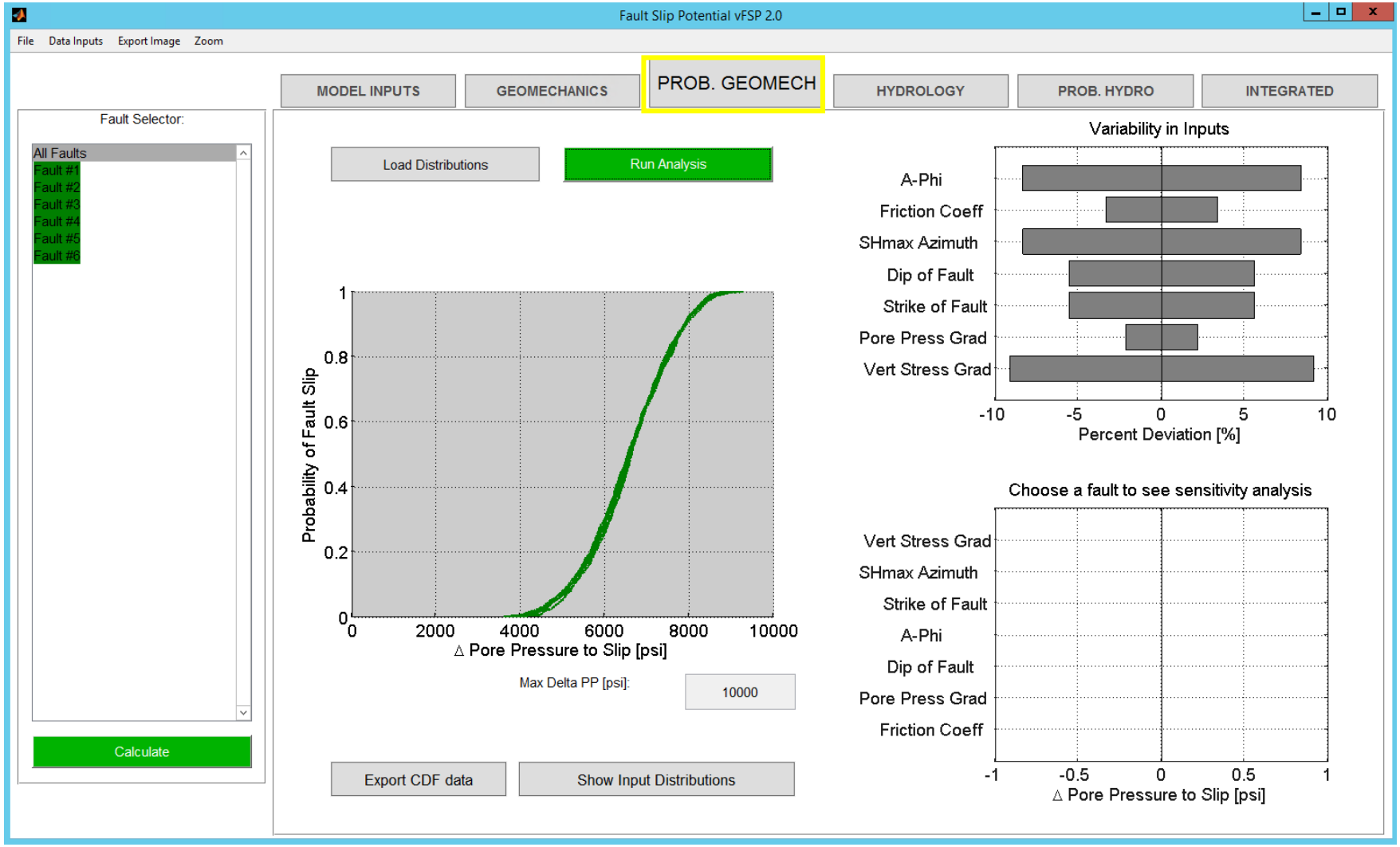


Figure 47 - FSP Probabilistic Geomechanics Tab, Model 3 and 4

Propagates the relative uncertainties through the model, producing a distribution of pore pressures to slip.

The following page shows the integrated tabs which combined results of probabilistic geomechanics and hydrology models run for all 6 Precambrian fault segments.

Model 3 – Initial Conditions before Long Shot SWD #1 well is completed

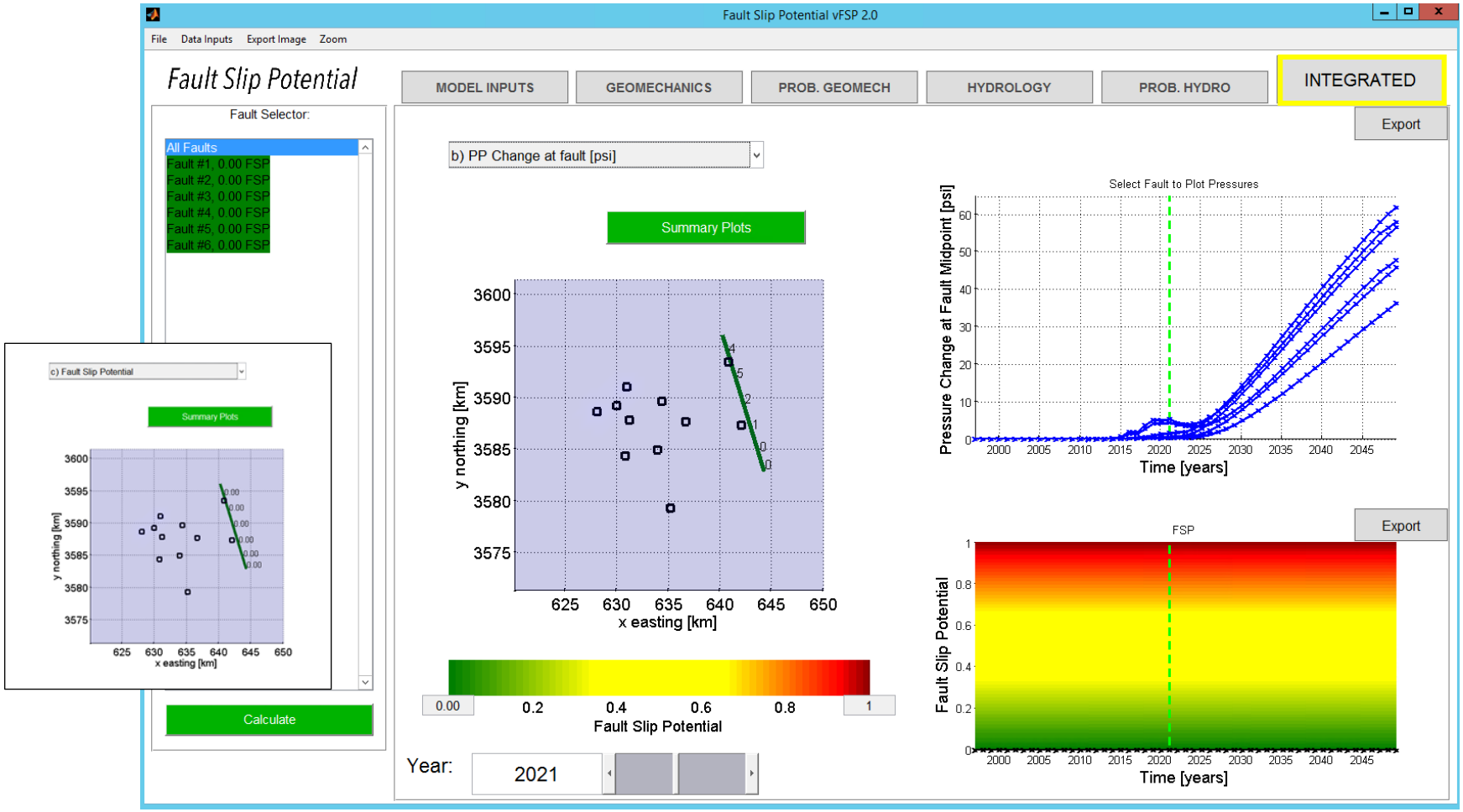


Figure 48 - Model 3 Integrated Tab, Initial Conditions

Pore Pressure change (psi) is posted for each fault segment.

Model 3 – Conditions in 2041 after Long Shot SWD #1 well is completed

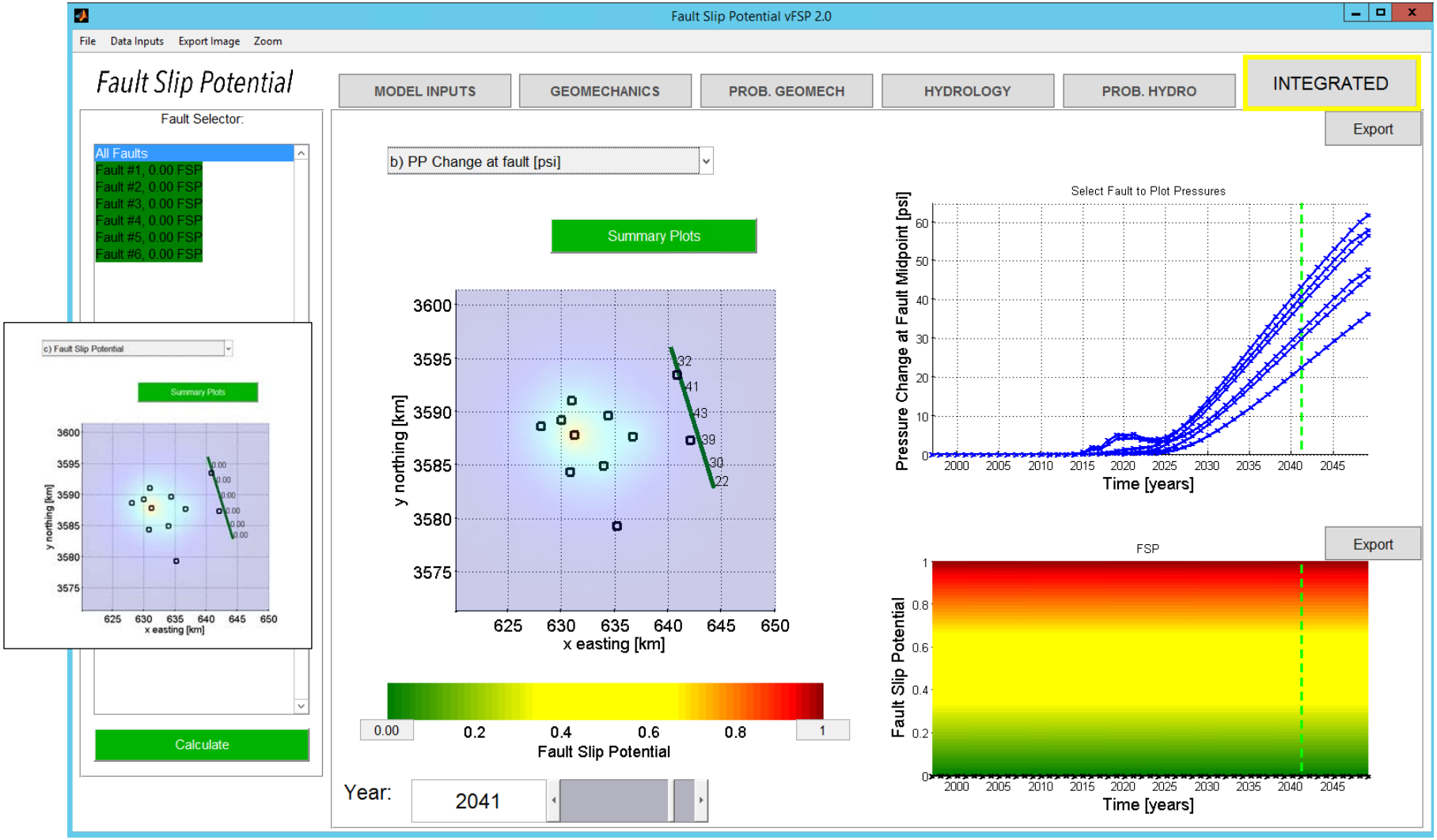


Figure 49 - Model 3 Integrated Tab, 20 years after completion.

Pore Pressure change (psi) is posted for each fault segment.

Model 4 – Initial Conditions before Long Shot SWD #1 well is completed

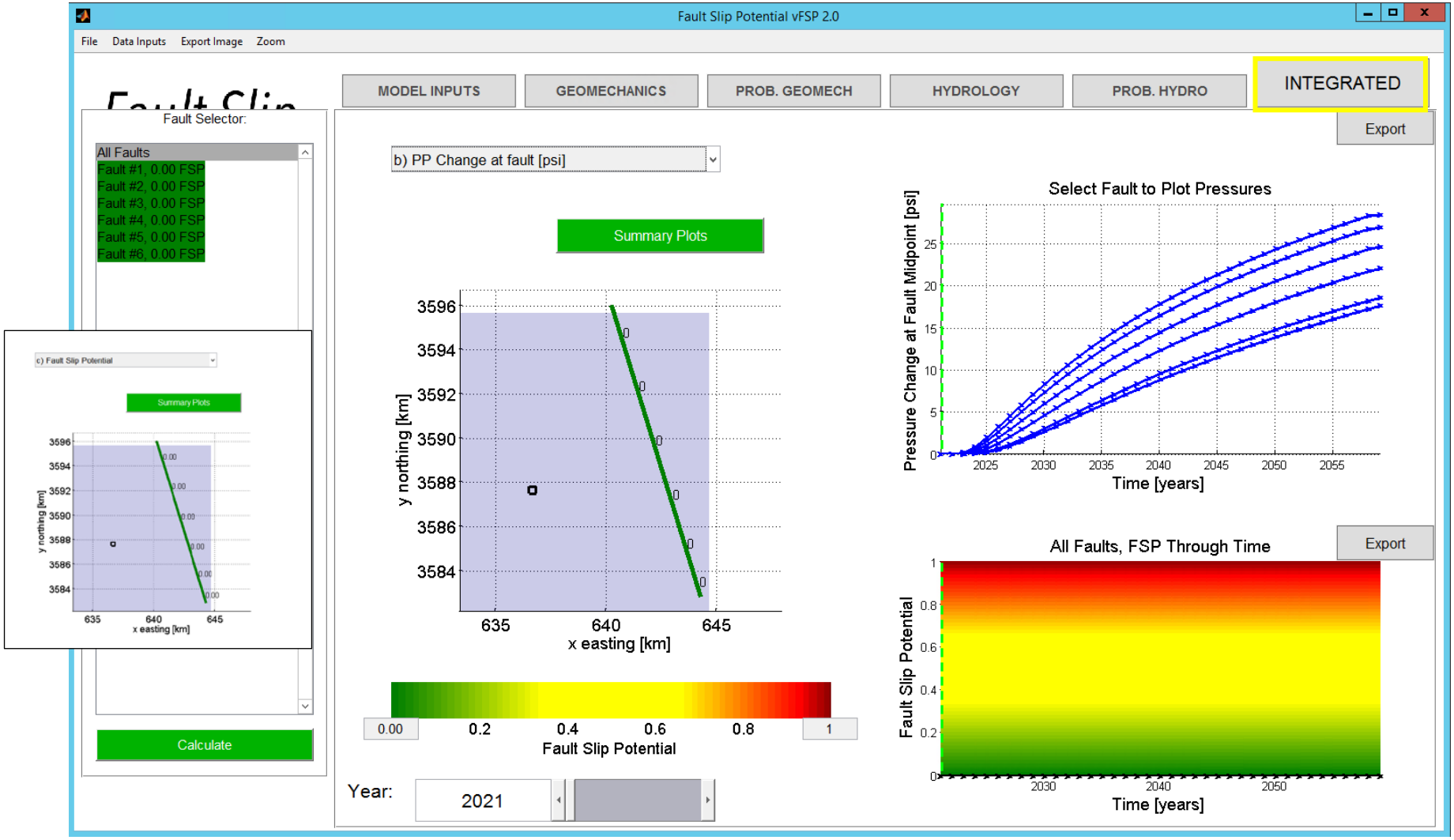


Figure 50 - Model 4 Integrated Tab, Initial Conditions

Pore Pressure change (psi) is posted for each fault segment.

Model 4 – Conditions in 2041 after Long Shot SWD #1 well is completed

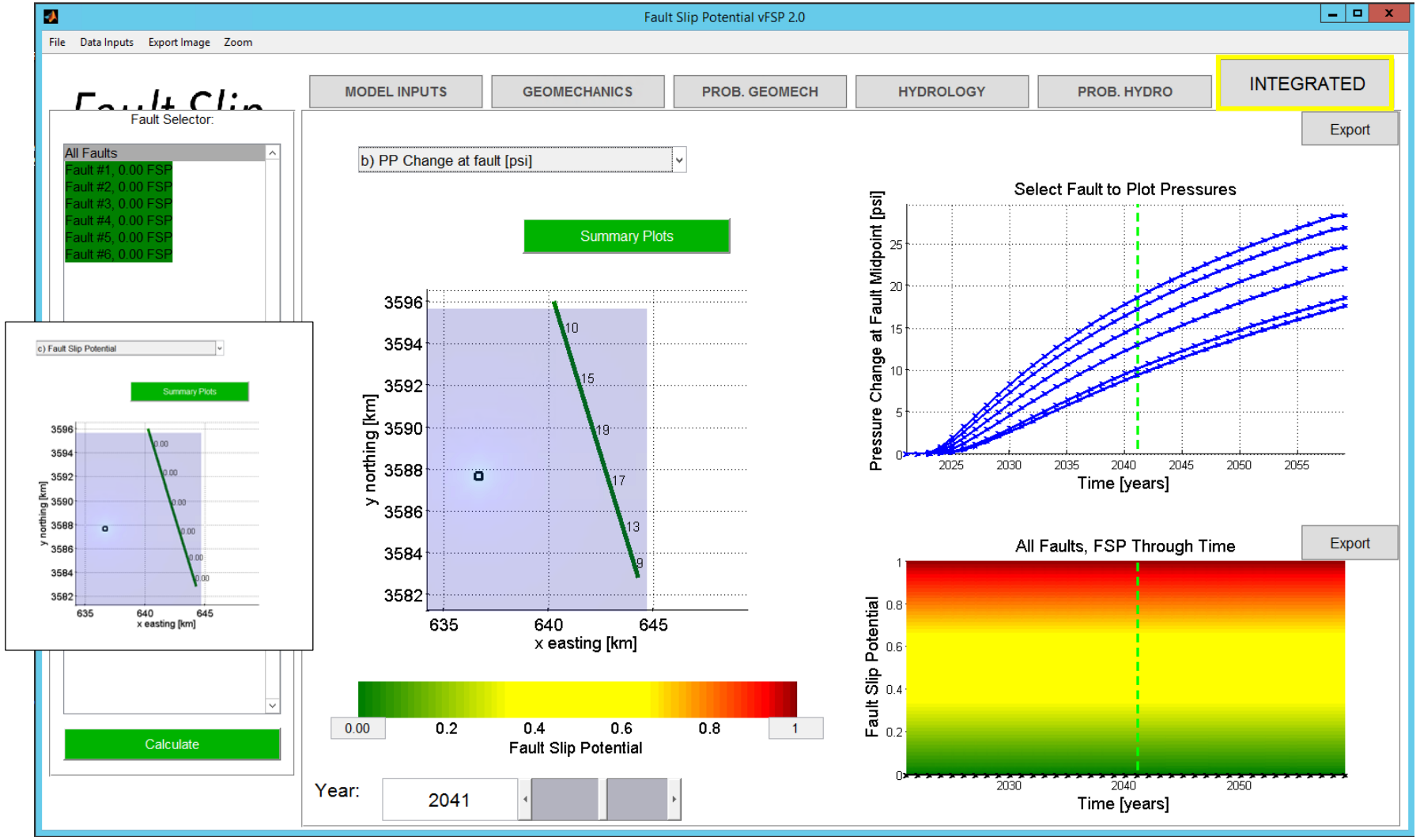


Figure 51 - Model 4 Integrated Tab, 20 years after completion

Pore Pressure change (psi) is posted for each fault segmet.

9.0 FSP Analysis MODELS 5 and 6 – Basement Faults

Models #5 and #6 analyze Basement fault traces within the AOI, which utilize the same methodology as previous models. Input parameters for stress regime, reservoir, and probabilistic ranges are consistent with Models 1 & 2. Therefore, the following figures (52 to 61) illustrate the Basement fault traces used as input, and the FSP results tabs.

Model #5 incorporates all 11 injection wells, whereas Model #6 only uses the planned Long Shot Well completion with proposed maximum injection rate.

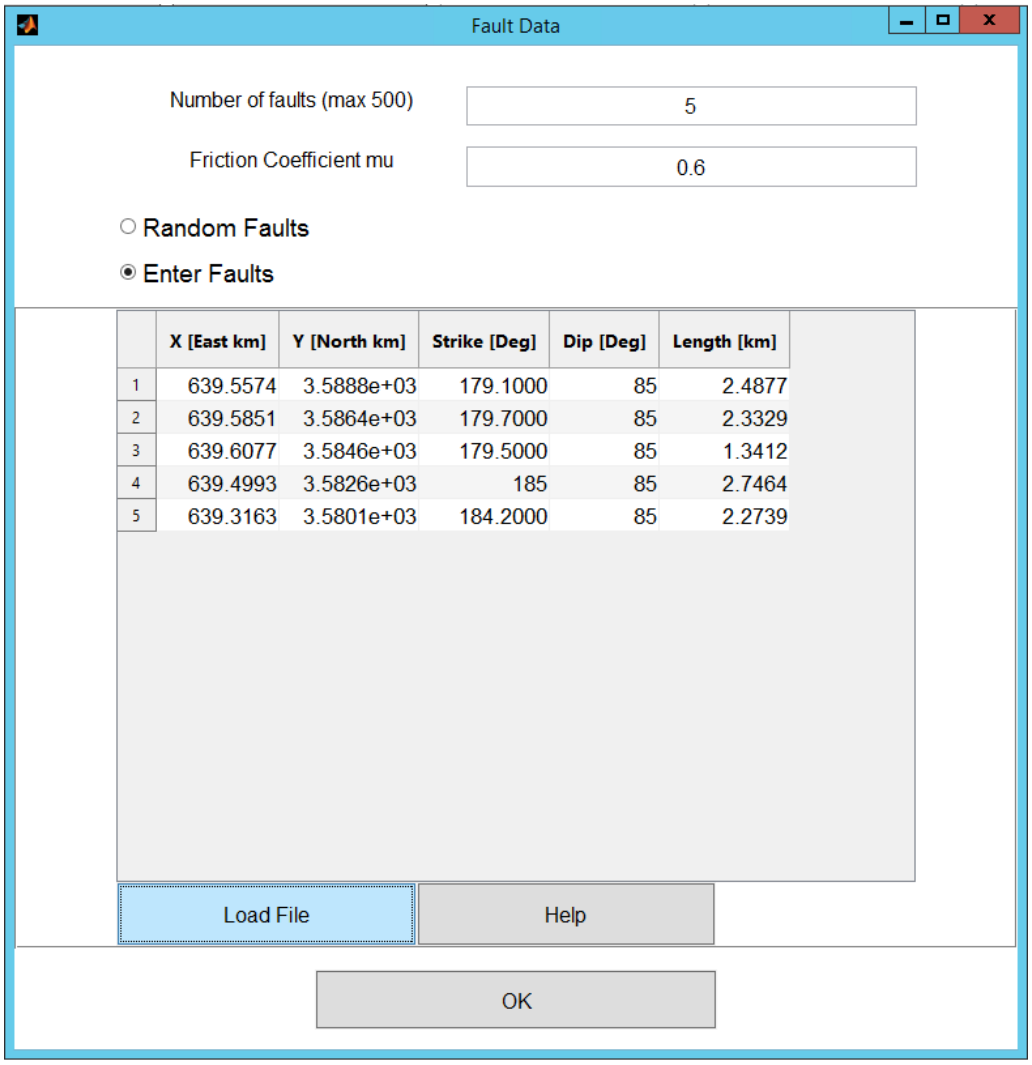


Figure 52 - FSP Fault input for Models 5 and 6

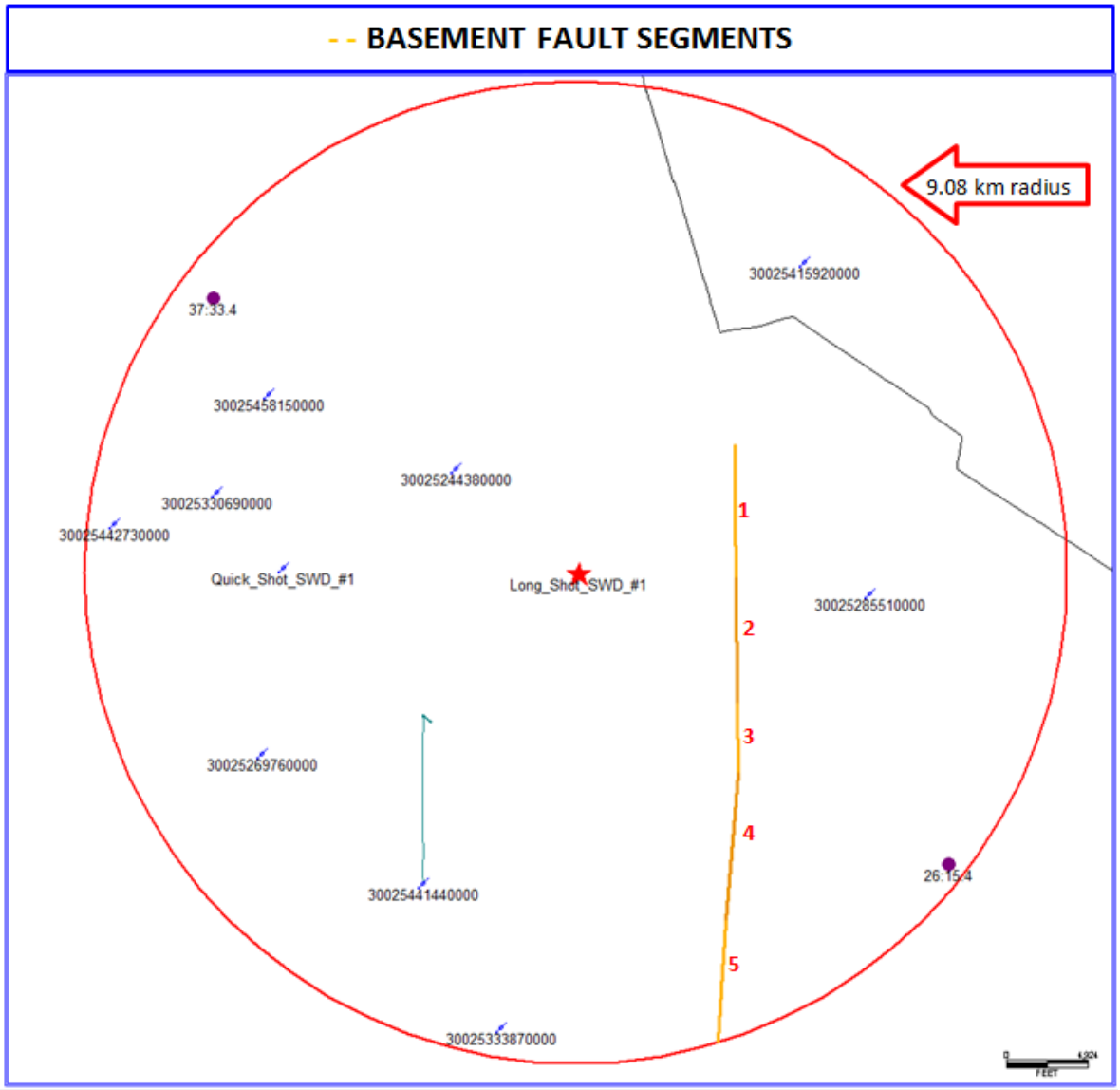


Figure 53 - Basement fault segments (5) used in FSP Analysis Models 5 and 6

Model 5 - Basement

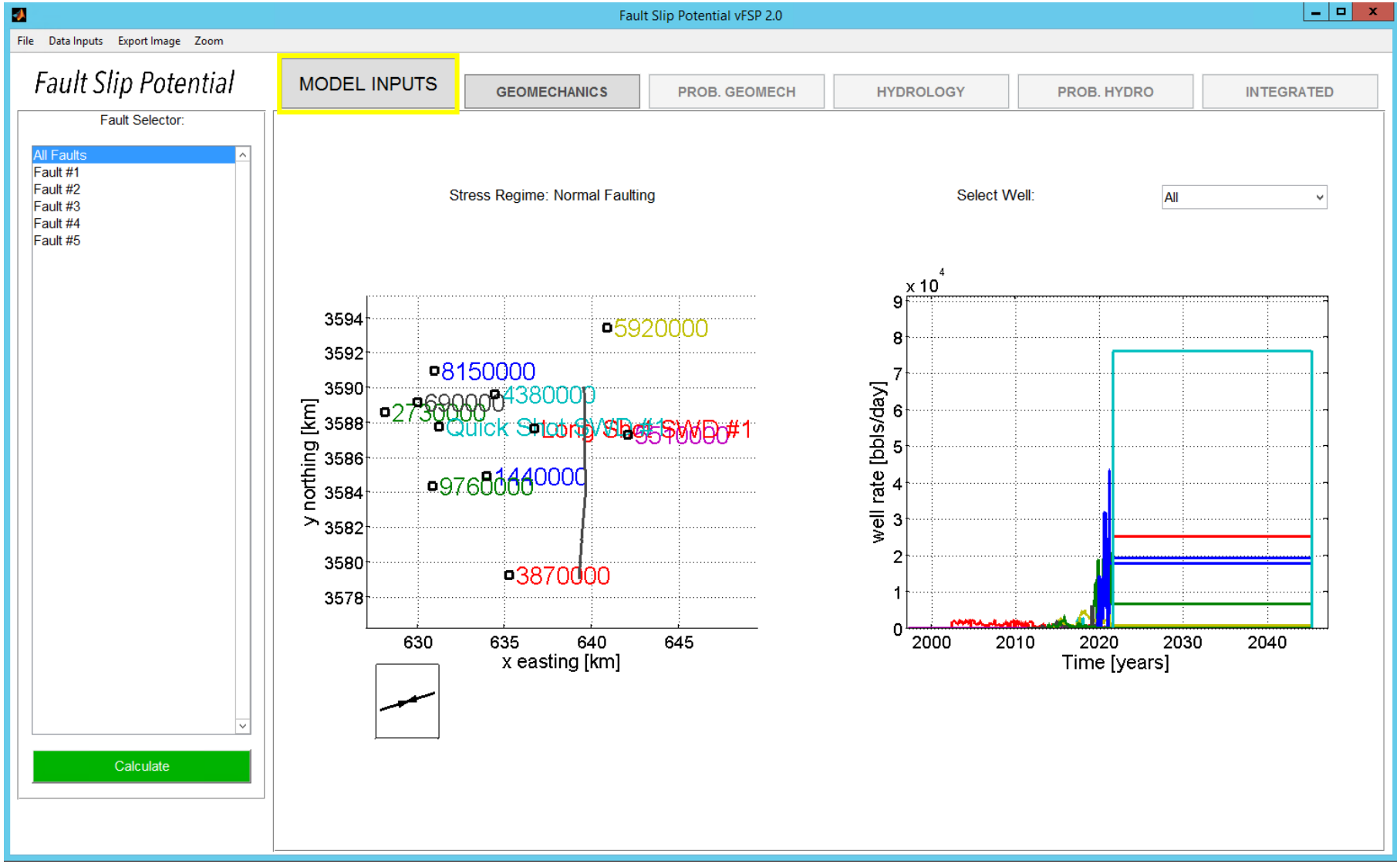


Figure 54 - FSP Model 5 Input: 11 injectors and 5 Basement fault segments

Model 6 - Basement

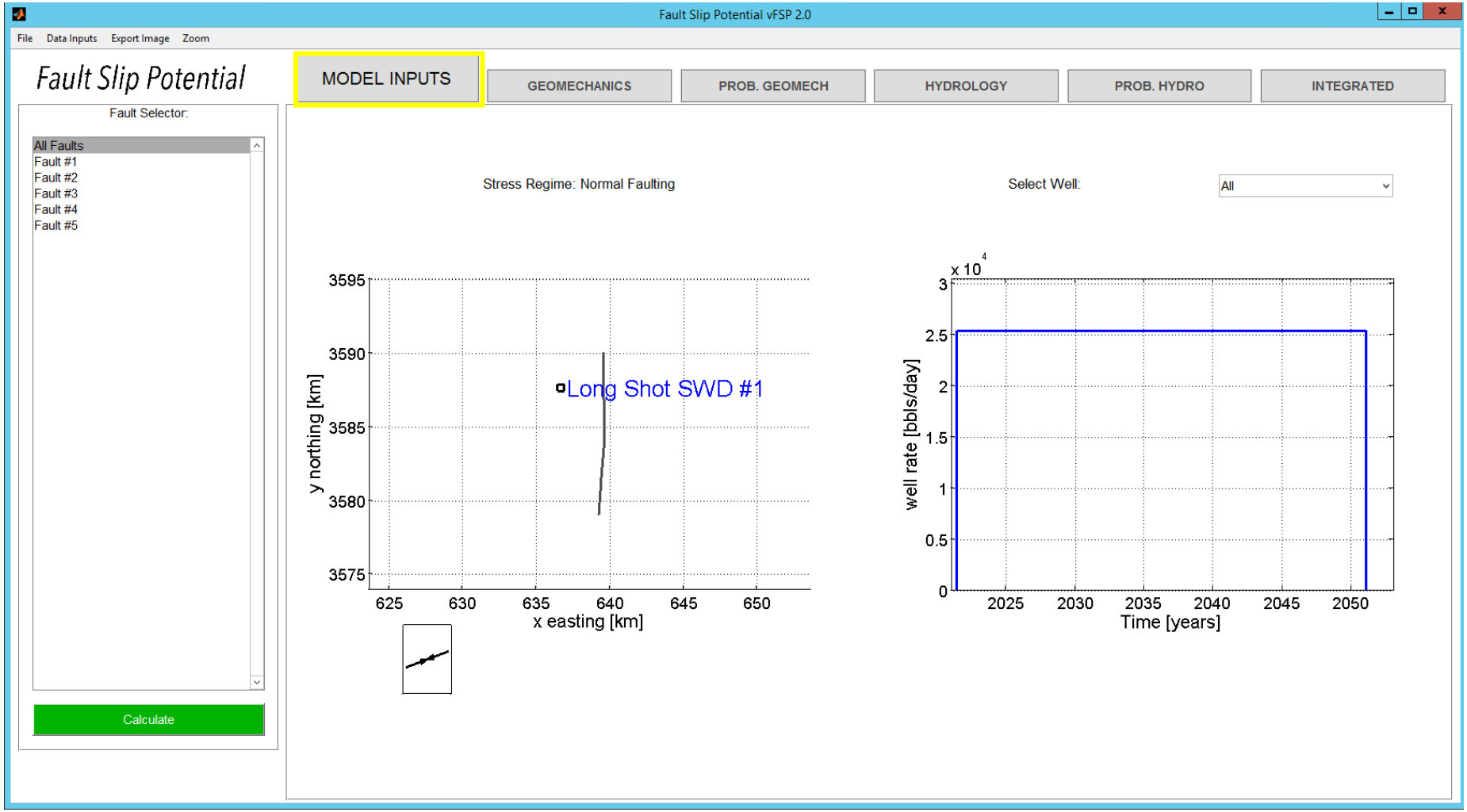


Figure 55 - FSP Model 6 Input: Only injector and 5 Basement fault segments

Model 5 and 6

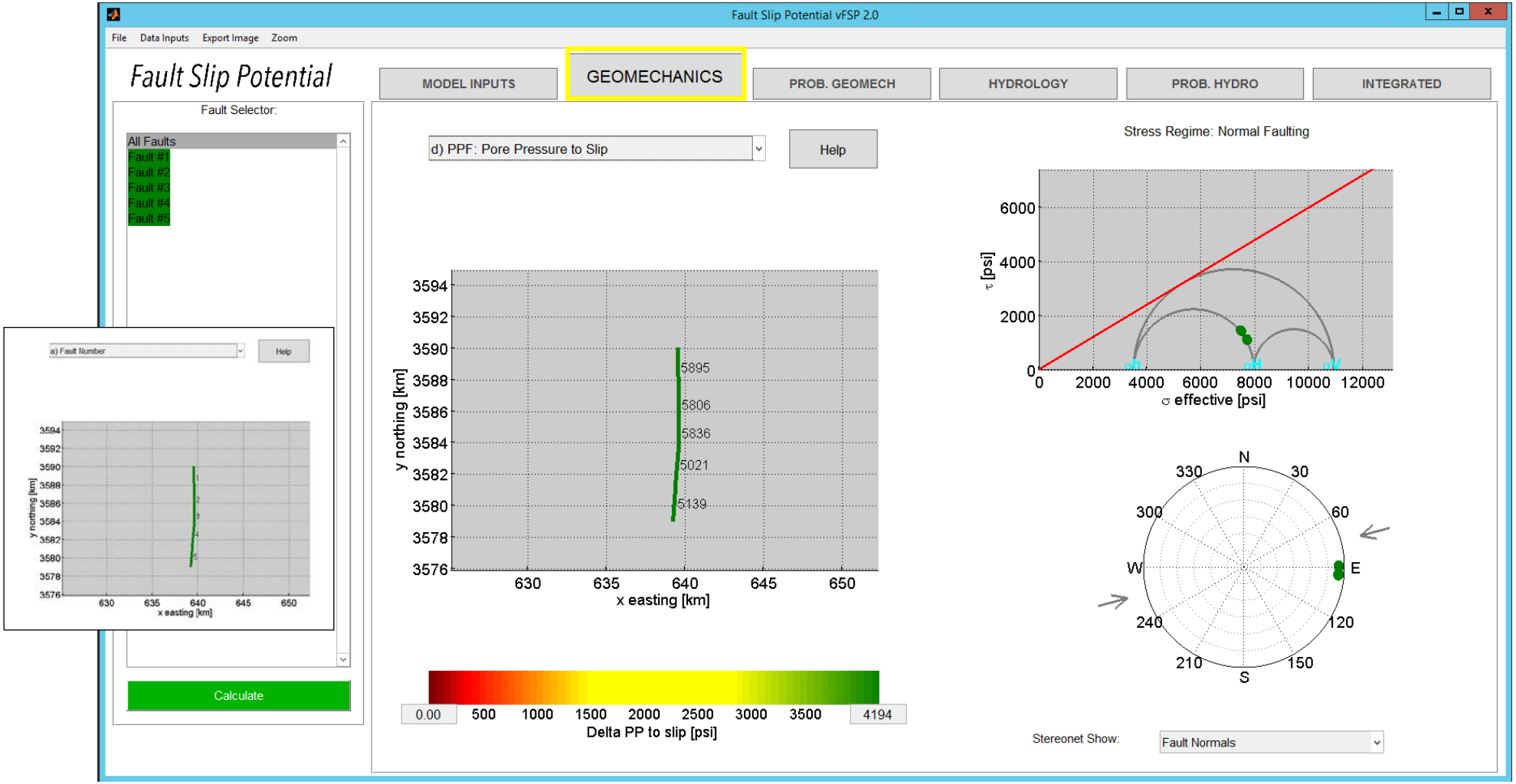


Figure 56 - FSP Geomechanics Tab, Model 5 and 6

Demonstrates pore pressure to slip (psi) for each fault segment, direction of SHmax, and a Mohr diagram with frictional slip line shown in red. Faults are colored by their horizontal distance to slip according to the color scale.

Model 5 and 6

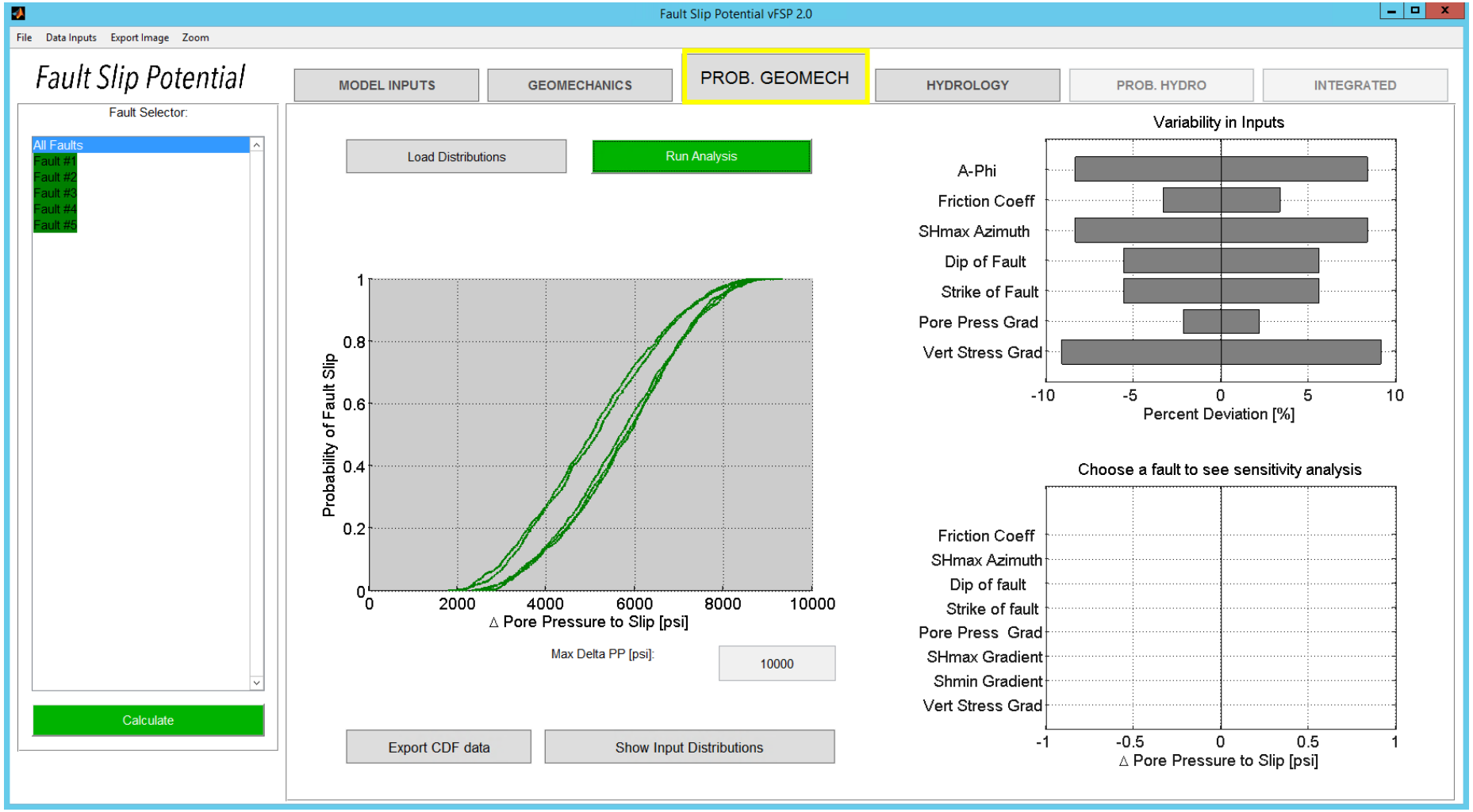


Figure 57 - FSP Probabilistic Geomechanics Tab, Model 5 and 6.

Propagates the relative uncertainties through the model, producing a distribution of pore pressures to slip.

The following integrated tabs show the combined results of probabilistic geomechanics and hydrology models run for all 5 Basement fault segments.

Model 5 – Initial Conditions before Long Shot SWD#1 well is completed

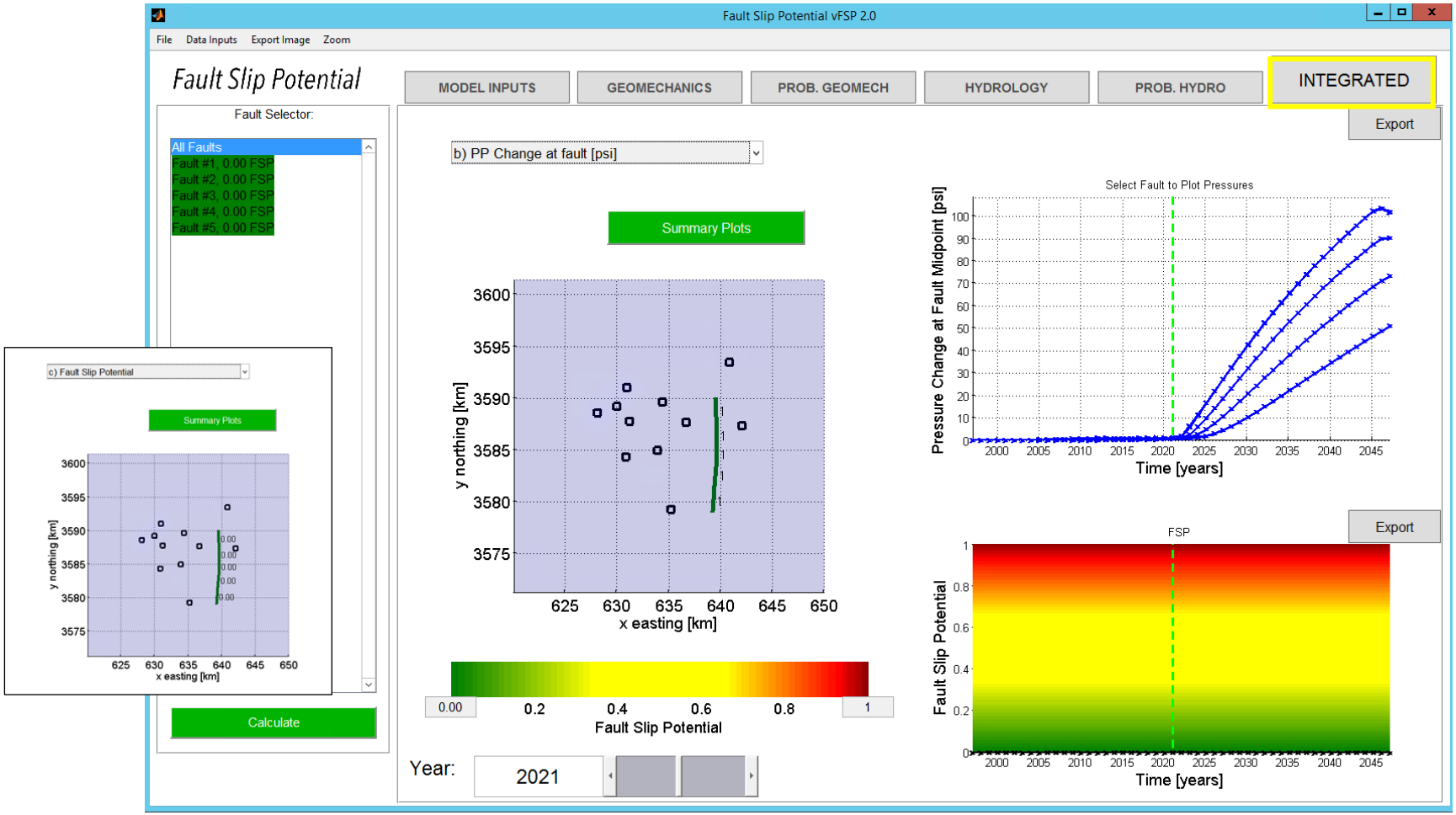


Figure 58 - Model 5 Integrated Tab, Initial Conditions

Pore Pressure change (psi) is posted for each fault segment

Model 5 – Conditions in 2041 after Long Shot SWD#1 well is completed

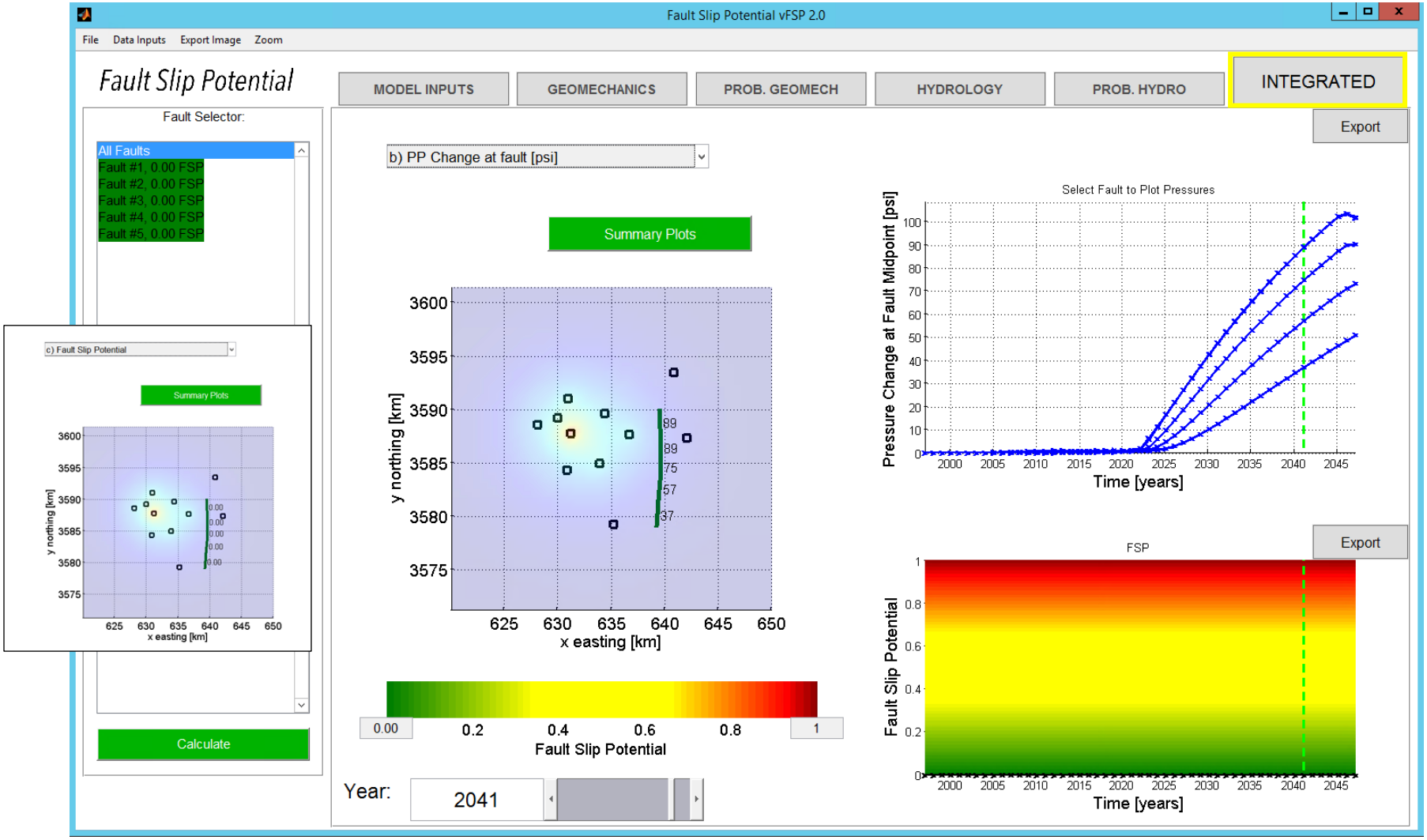


Figure 59 - Model 5 Integrated Tab, 20 years after completion

Pore Pressure change (psi) is posted for each fault segment.

Model 6 – Initial Conditions before Long Shot SWD #1 well is completed

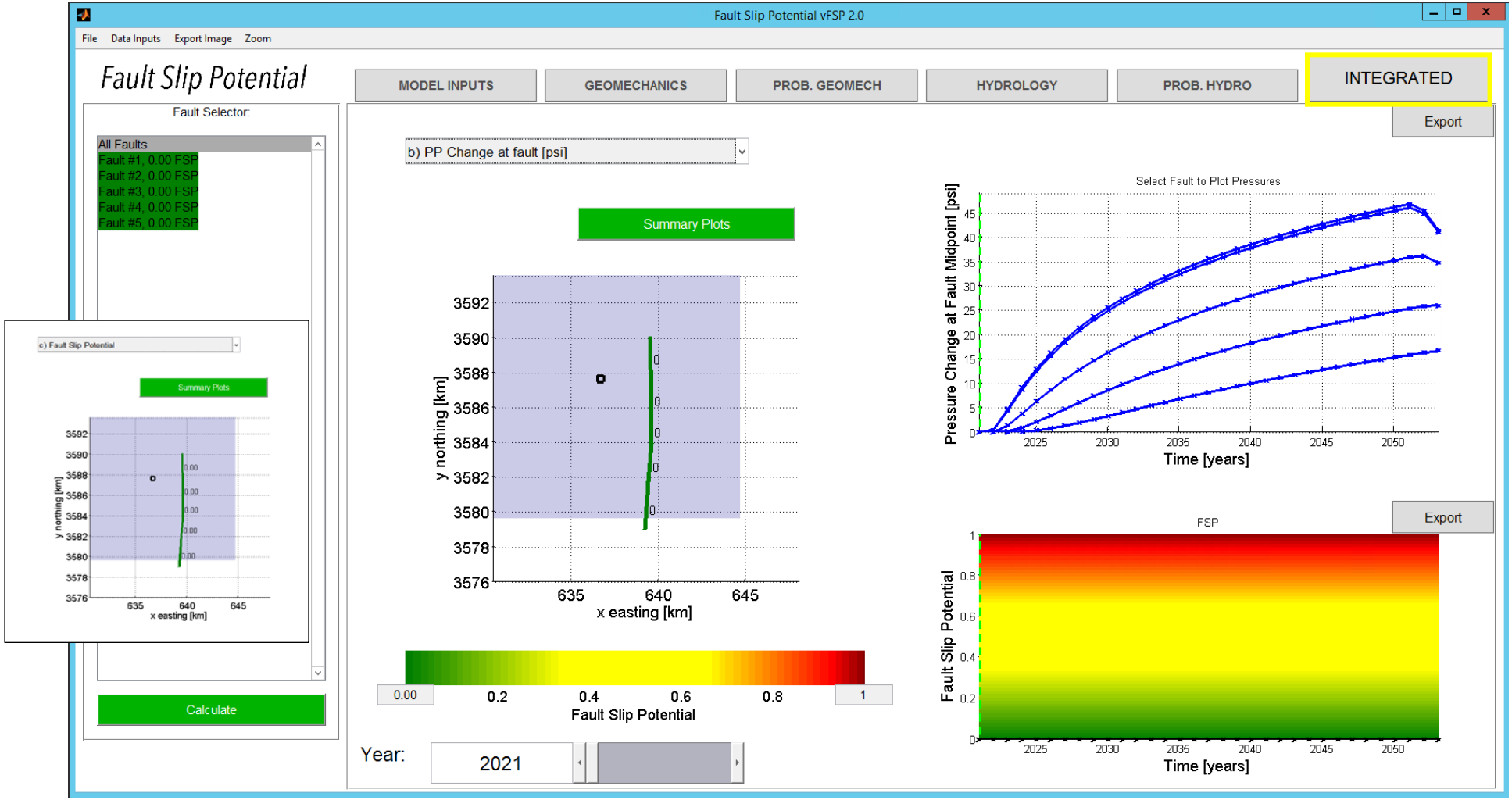


Figure 60 - Model 6 Integrated Tab, Initial Conditions

Pore Pressure change (psi) is posted for each fault segment.

Model 6 – Conditions in 2041 after Long Shot SWD #1 well is completed

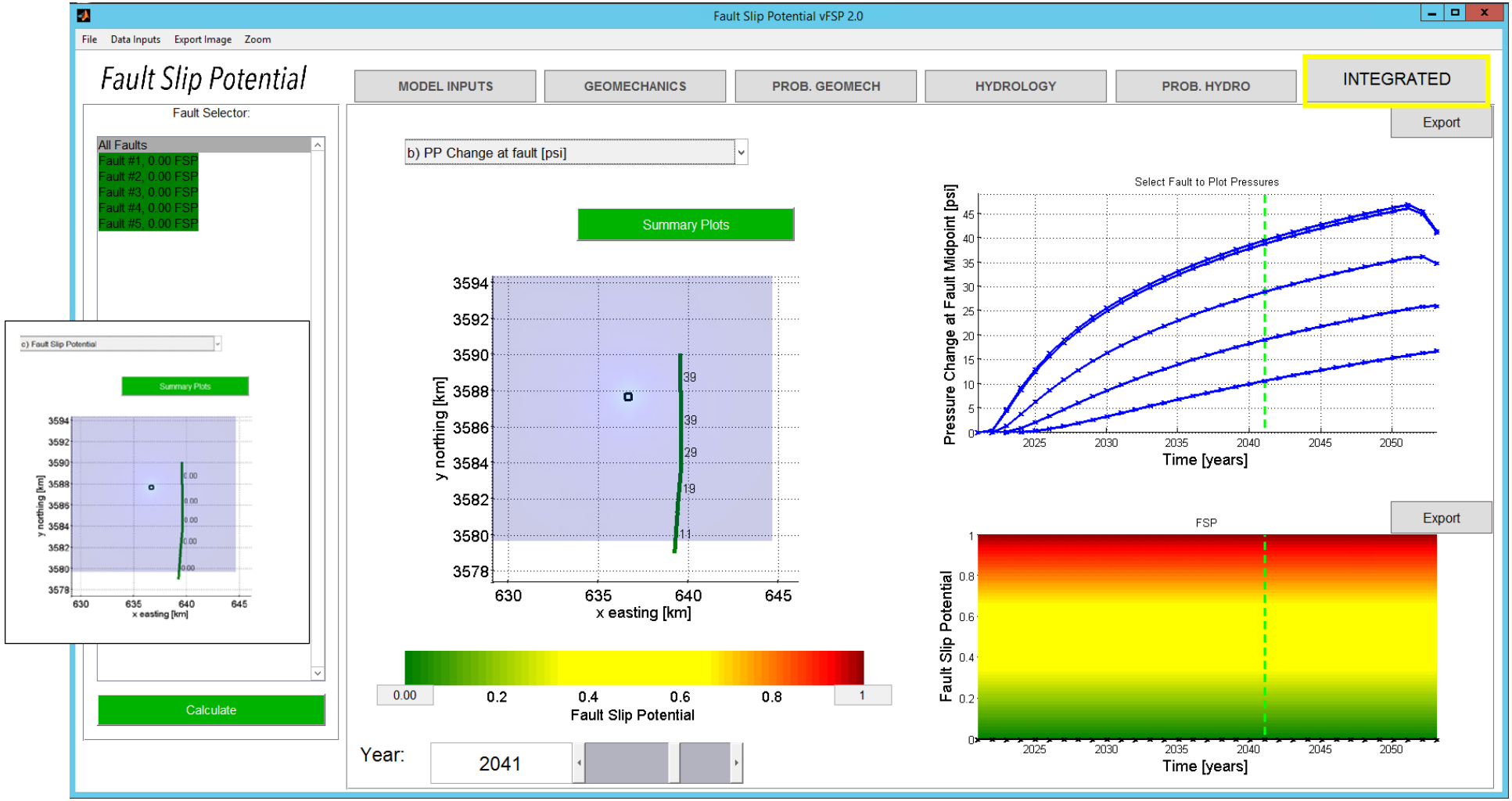


Figure 61 - Model 6 Integrated Tab, 20 years after completion

Pore Pressure change (psi) is posted for each fault segment.

10.0 FSP Analysis MODELS 7 and 8 – Woodford Faults

Models #7 and #8 analyze Woodford fault traces within the AOI, which utilize the same methodology as previous models. Input parameters for stress regime, reservoir, and probabilistic ranges are consistent with Models 1 & 2. Therefore, the following figures (62 to 71) illustrate the Woodford fault traces used as input, and the FSP results tabs.

Model #7 incorporates all 11 injection wells, whereas Model #8 only uses the planned Long Shot Well completion with proposed maximum injection rate.

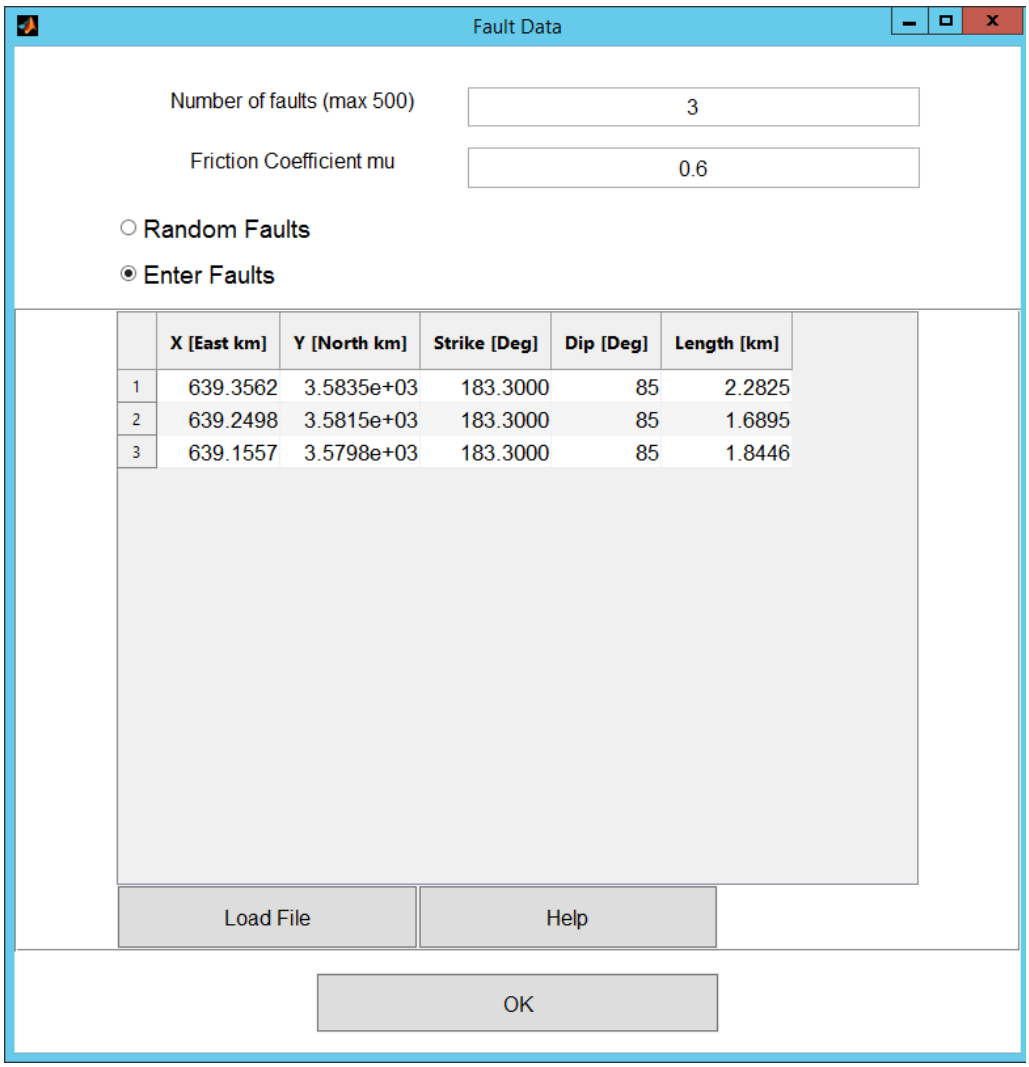


Figure 62 - FSP Fault input for Models 7 and 8

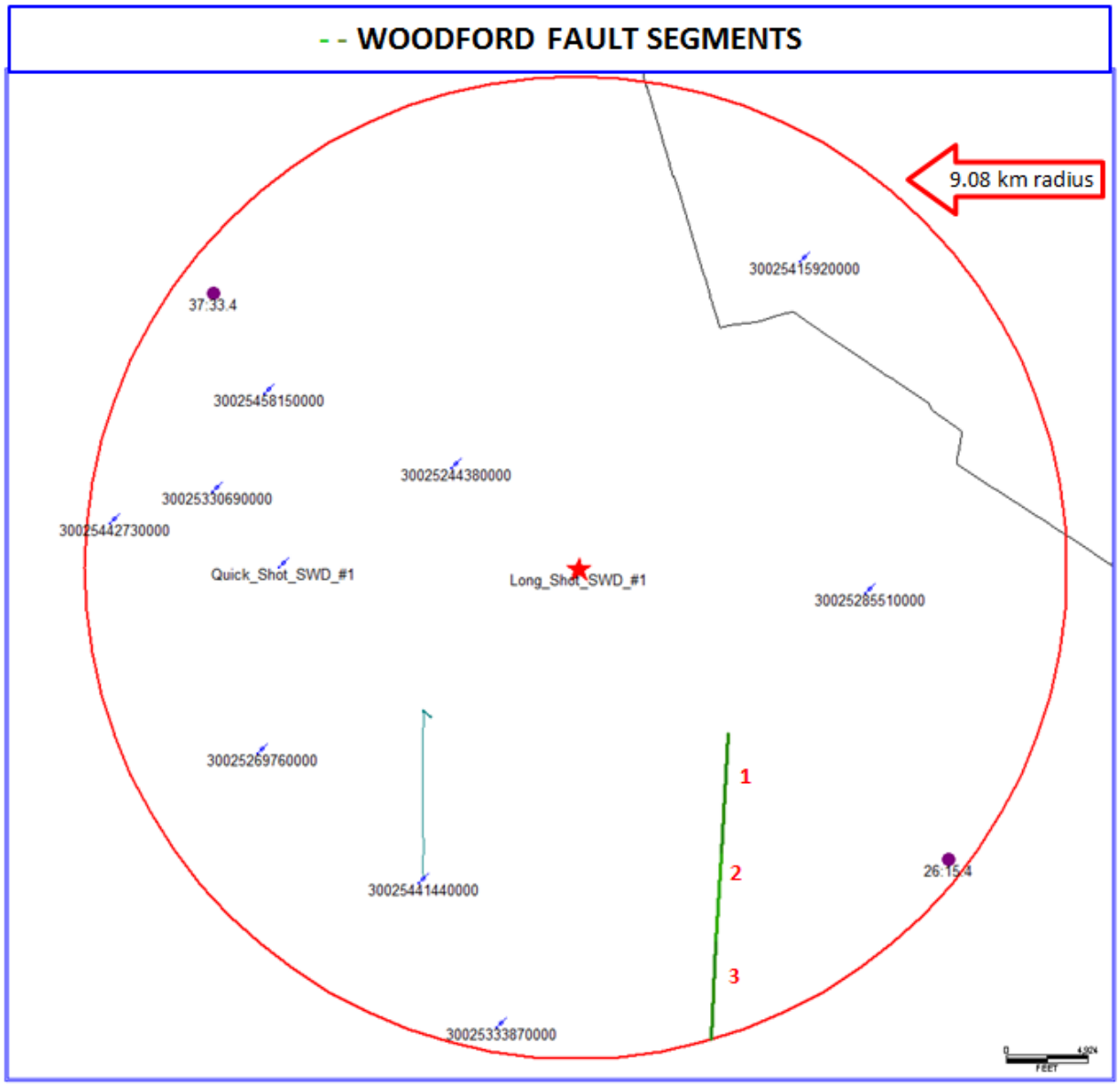


Figure 63 - Woodford fault segments (3) used in FSP Analysis Models 7 and 8

Model 7 - Woodford

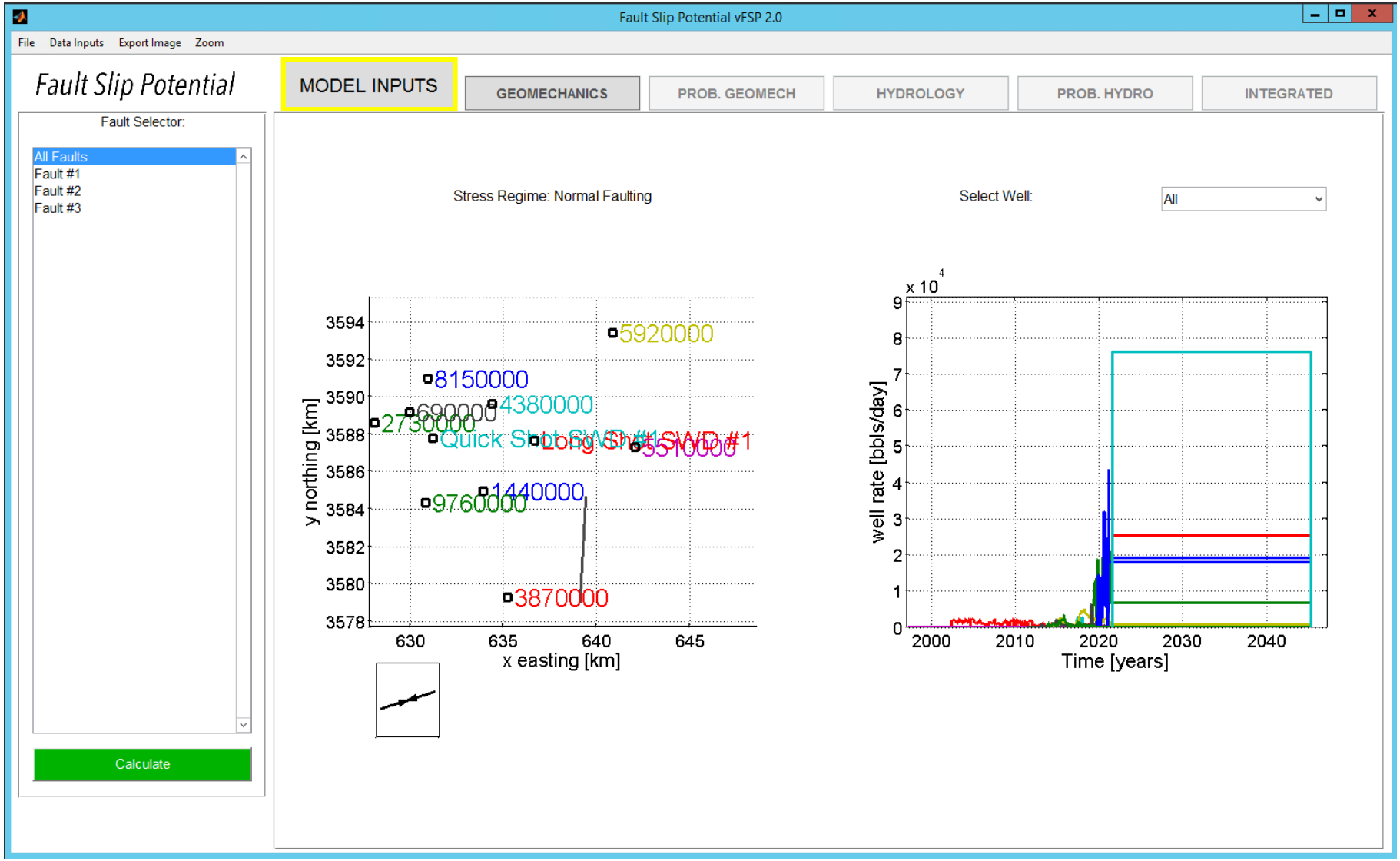


Figure 64 - FSP Model 7 Input: 11 injectors and 3 Woodford fault segments

Model 8 - Woodford

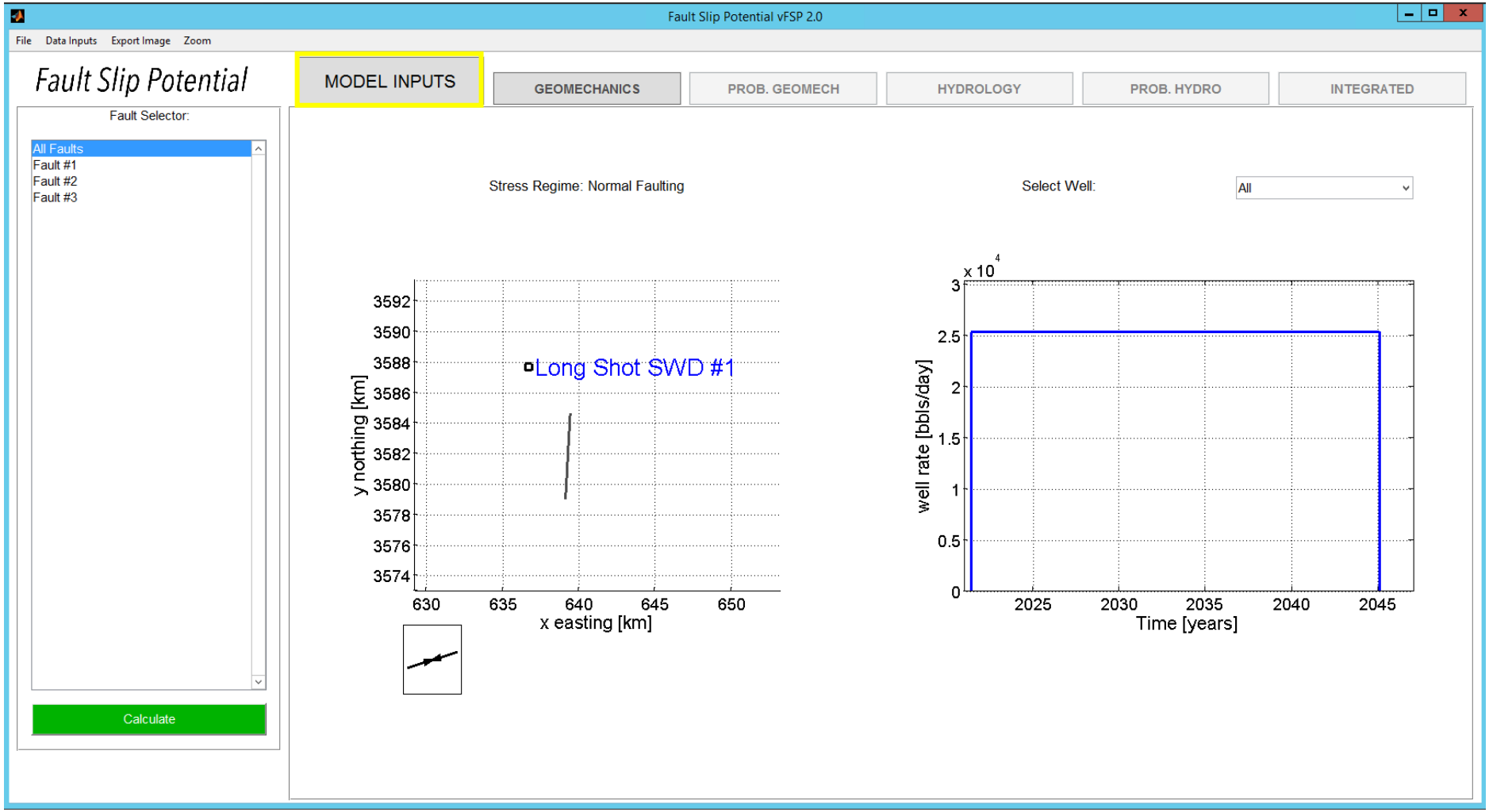


Figure 65 - FSP Model 8 Input: Only injector and 3 Woodford fault segments

Model 7 and 8

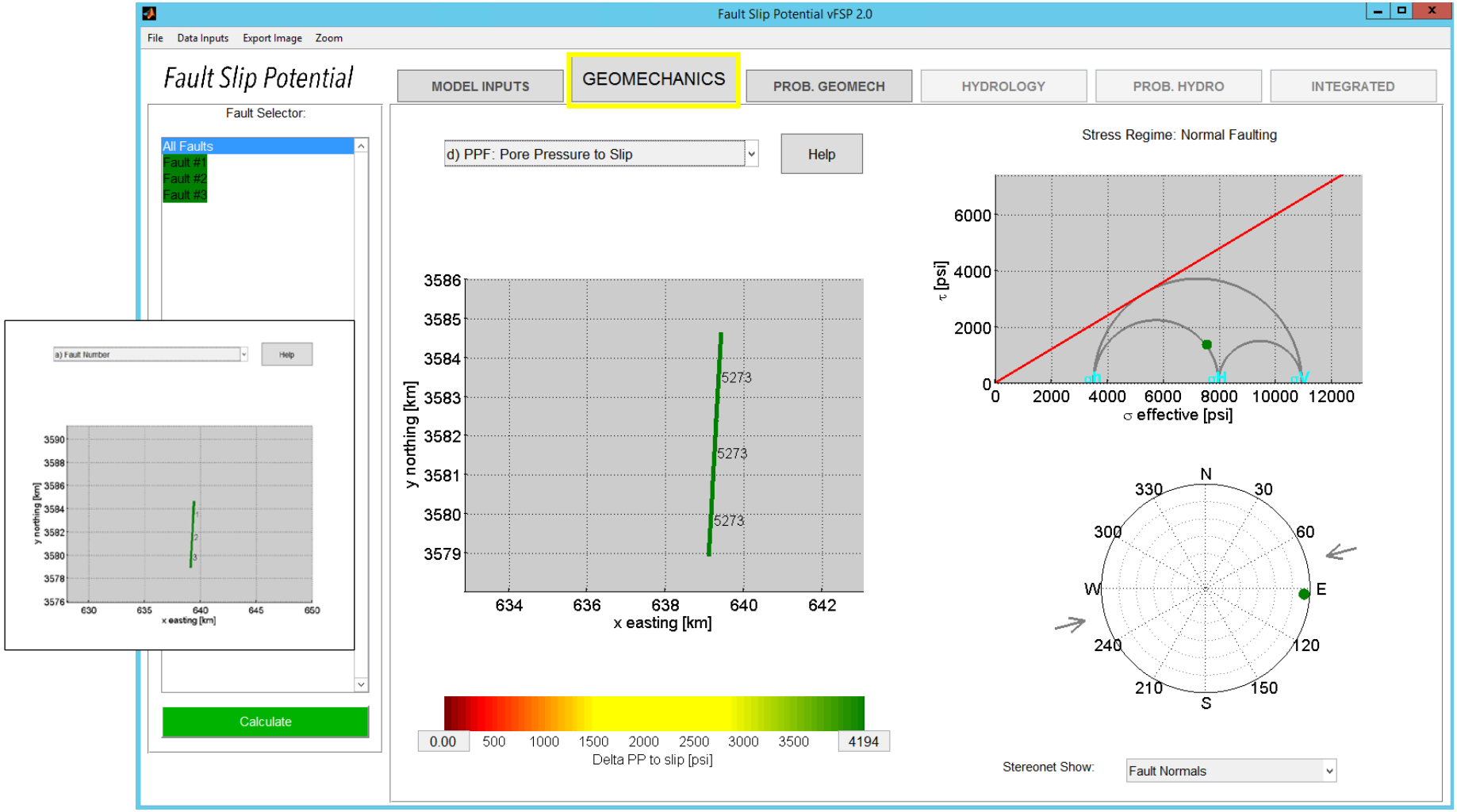


Figure 66 - FSP Geomechanics Tab, Model 7 and 8

Demonstrates pore pressure to slip (psi) for each fault segment, direction of SHmax, and a Mohr diagram with frictional slip line shown in red. Faults are colored by their horizontal distance to slip according to the color scale.

Model 7 and 8

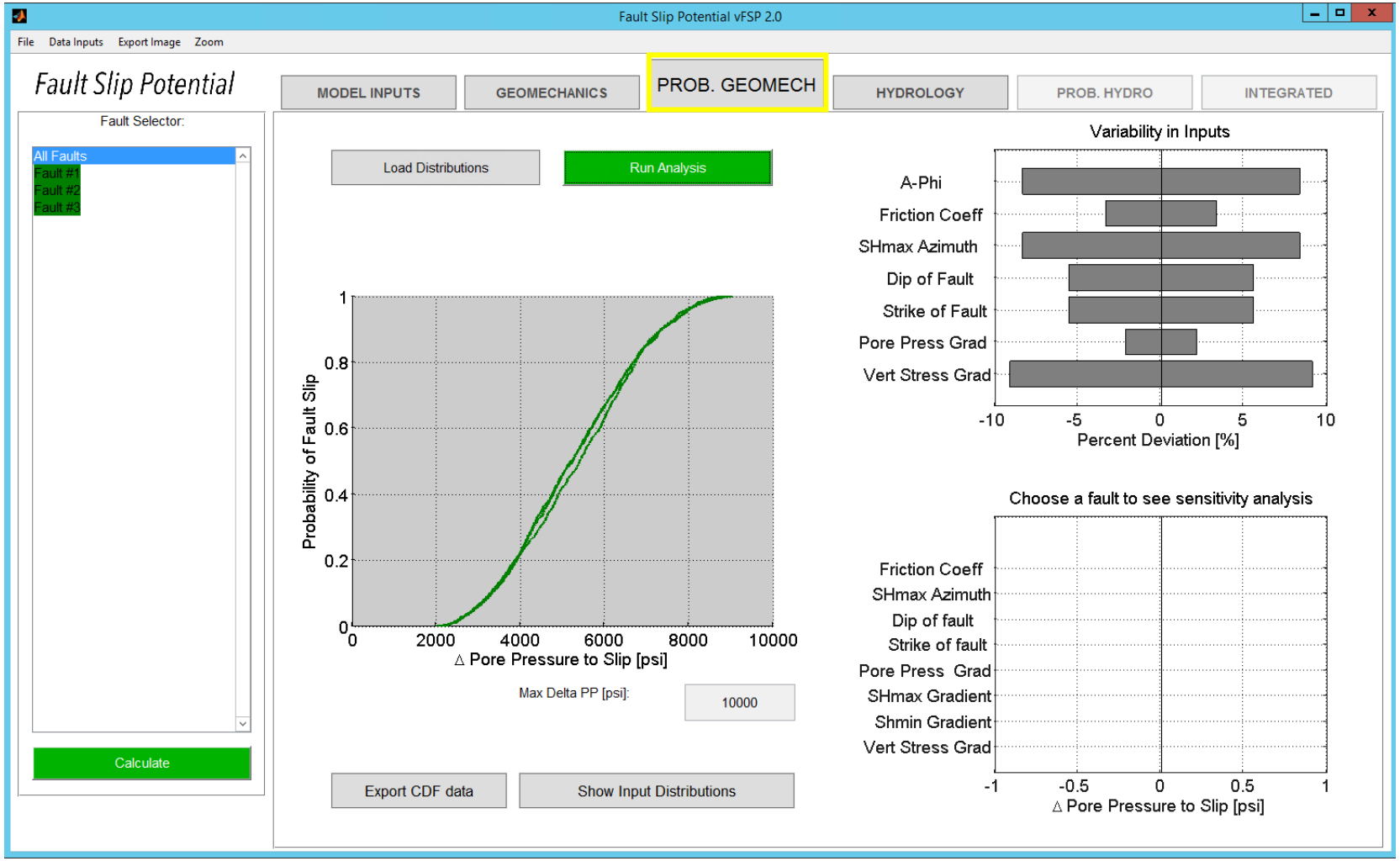


Figure 67 - FSP Probabilistic Geomechanics Tab, Model 7 and 8.

Propagates the relative uncertainties through the model, producing a distribution of pore pressures to slip.

The following integrated tabs show the combined results of probabilistic geomechanics and hydrology models run for all 3 Woodford fault segments.

Model 7 – Initial Conditions before Long Shot SWD #1 well is completed

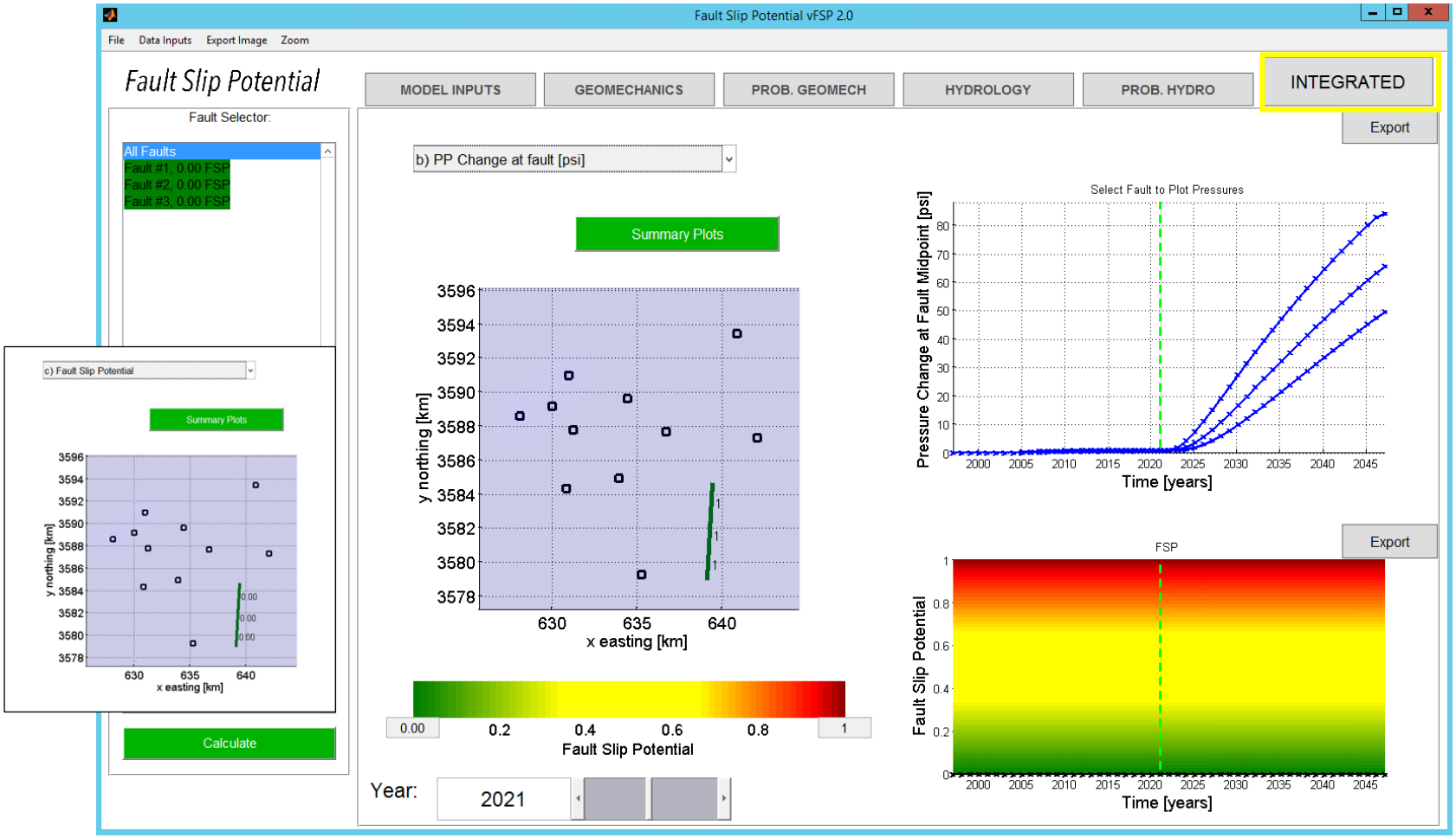


Figure 68 - Model 7 Integrated Tab, Initial Conditions

Pore Pressure change (psi) is posted for each fault segment.

Model 7 – Conditions in 2041 after Long Shot SWD #1 well is completed

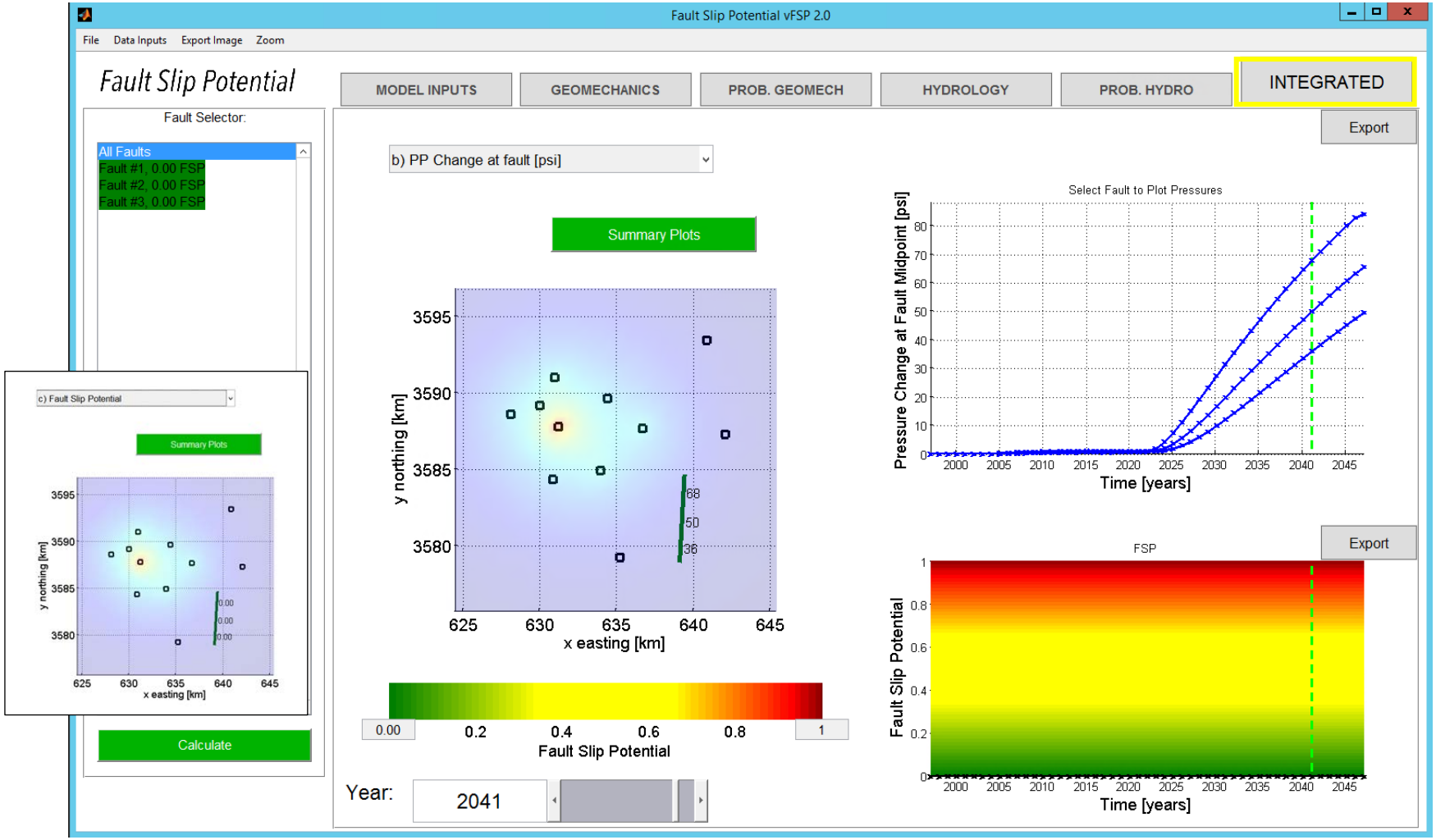


Figure 69 - Model 7 Integrated Tab, 20 years after completion

Pore Pressure change (psi) is posted for each fault segment.

Model 8 – Initial Conditions before Long Shot SWD #1 well is completed

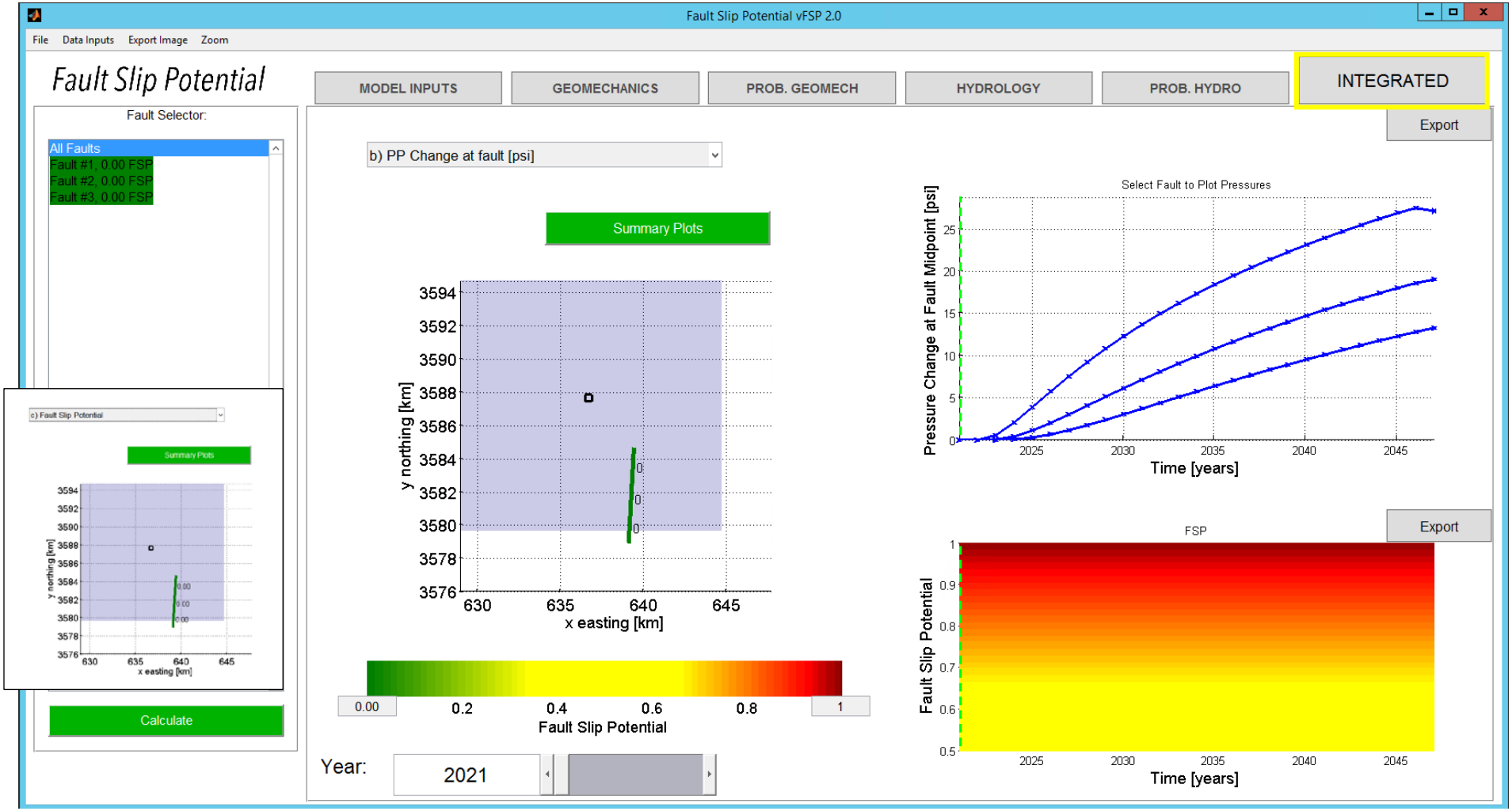


Figure 70 - Model 8 Integrated Tab, Initial Conditions

Pore Pressure change (psi) is posted for each fault segment.

Model 8 – Conditions in 2041 after Long Shot SWD #1 well is completed

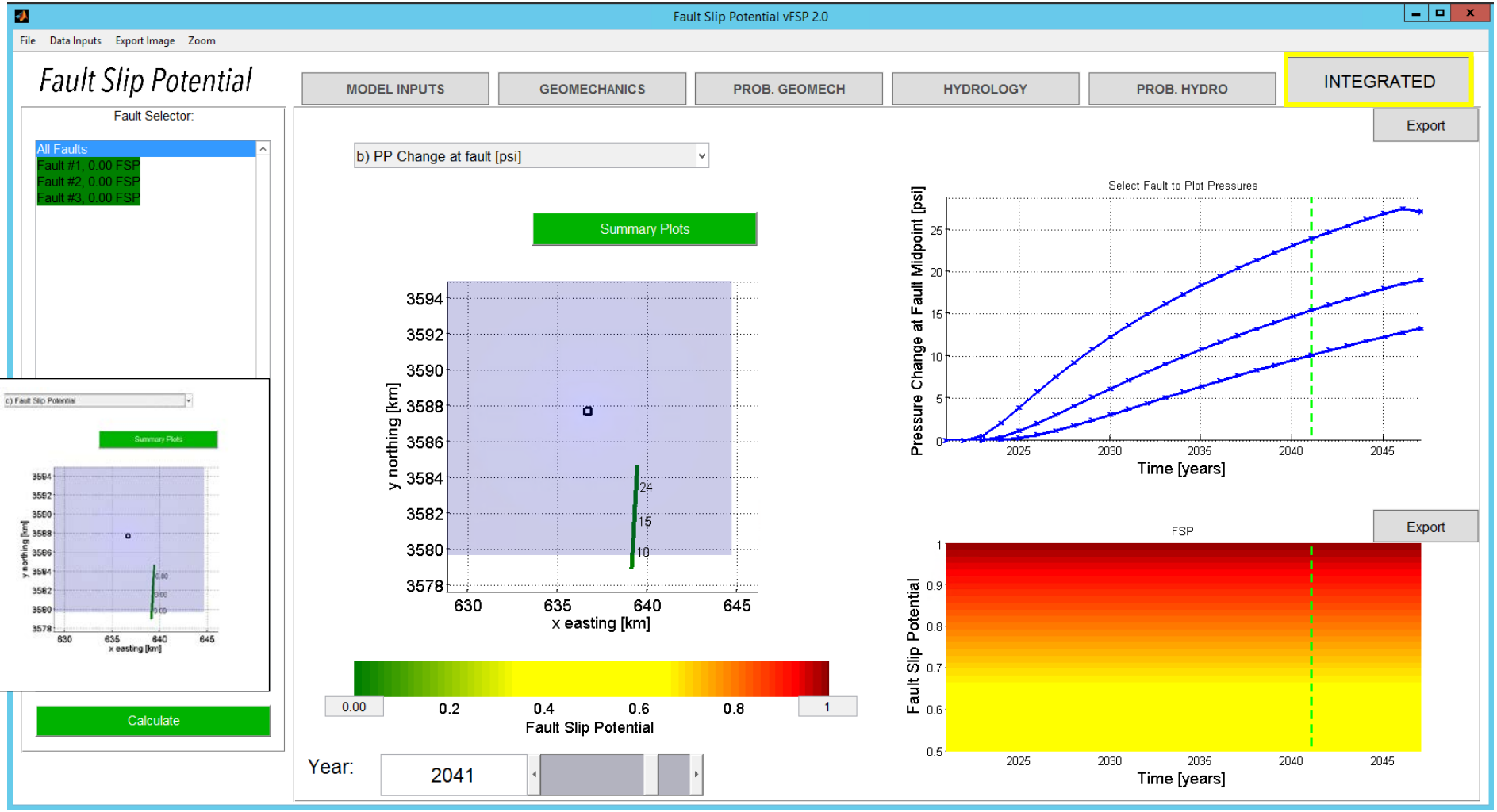


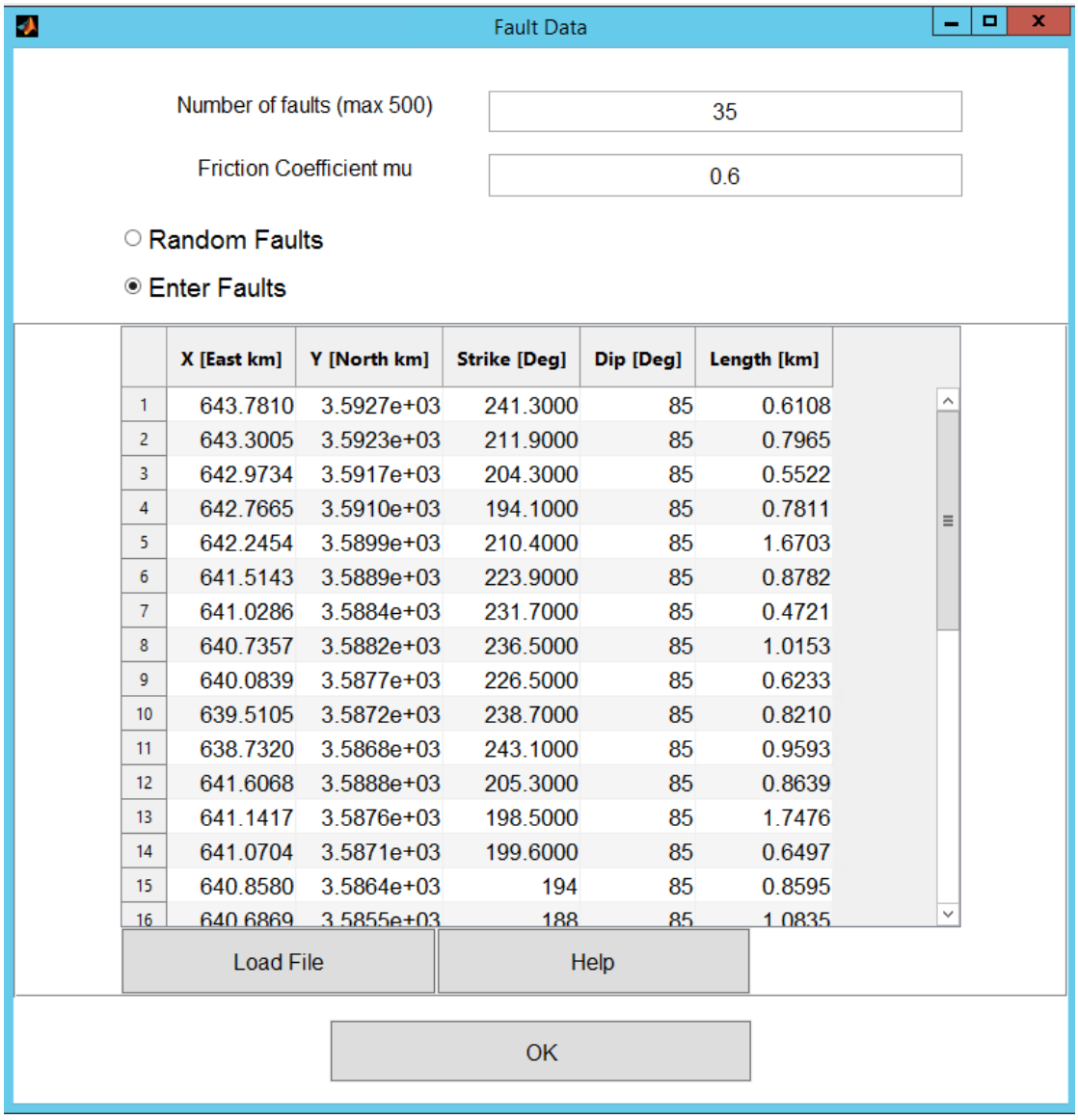
Figure 71 - Model 8 Integrated Tab, 20 years after completion

Pore Pressure change (psi) is posted for each fault segment.

11.0 FSP Analysis MODELS 9 and 10 – Bone Spring Faults

Models #9 and #10 analyze Bone Spring fault traces within the AOI, which utilize the same methodology as previous models. Input parameters for stress regime, reservoir, and probabilistic ranges are consistent with Models 1 & 2. Therefore, the following figures (72 to 81) illustrate the Bone Spring fault traces used as input, and the FSP results tabs.

Model #9 incorporates all 11 injection wells, whereas Model #10 only uses the planned Long Shot Well completion with proposed maximum injection rate.



	X [East km]	Y [North km]	Strike [Deg]	Dip [Deg]	Length [km]
1	643.7810	3.5927e+03	241.3000	85	0.6108
2	643.3005	3.5923e+03	211.9000	85	0.7965
3	642.9734	3.5917e+03	204.3000	85	0.5522
4	642.7665	3.5910e+03	194.1000	85	0.7811
5	642.2454	3.5899e+03	210.4000	85	1.6703
6	641.5143	3.5889e+03	223.9000	85	0.8782
7	641.0286	3.5884e+03	231.7000	85	0.4721
8	640.7357	3.5882e+03	236.5000	85	1.0153
9	640.0839	3.5877e+03	226.5000	85	0.6233
10	639.5105	3.5872e+03	238.7000	85	0.8210
11	638.7320	3.5868e+03	243.1000	85	0.9593
12	641.6068	3.5888e+03	205.3000	85	0.8639
13	641.1417	3.5876e+03	198.5000	85	1.7476
14	641.0704	3.5871e+03	199.6000	85	0.6497
15	640.8580	3.5864e+03	194	85	0.8595
16	640.6869	3.5855e+03	188	85	1.0835

Figure 72 - FSP Fault input for Models 9 and 10

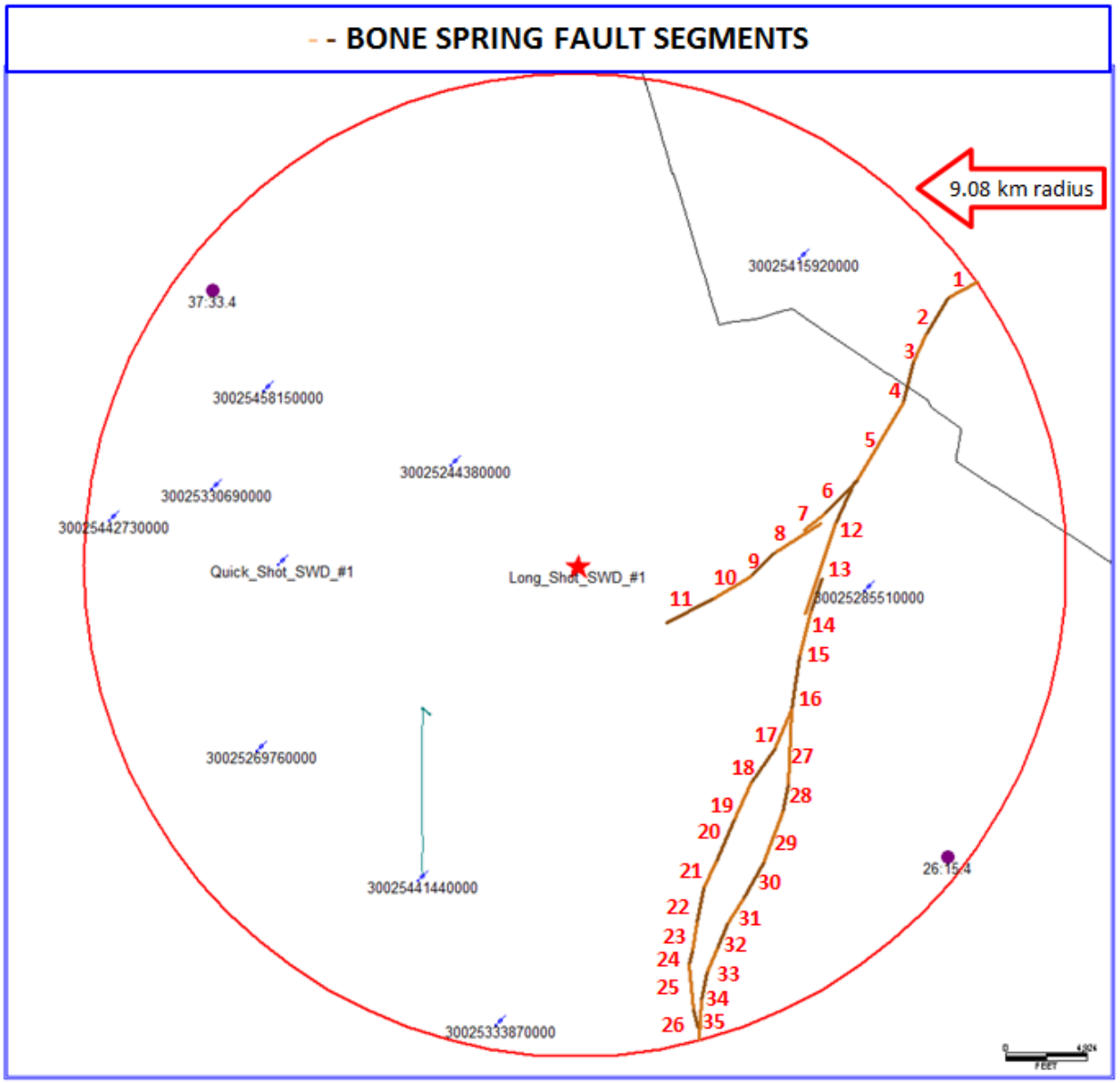


Figure 73 - Bone Spring fault segments (35) used in FSP Analysis Models 9 and 10

Model 9 - Bone Spring

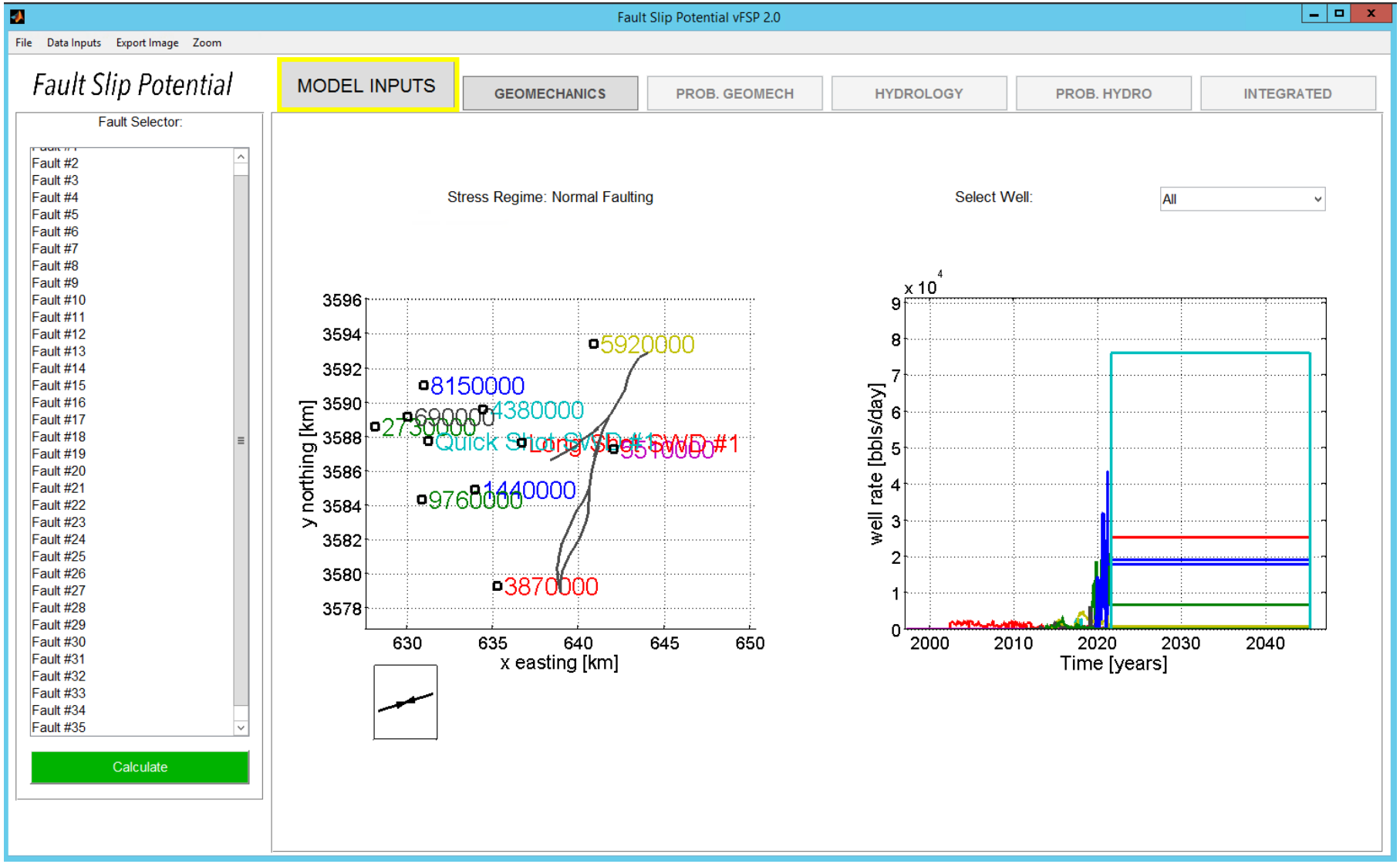


Figure 74 - FSP Model 9 Input: 11 injectors and 35 Bone Spring fault segments

Model 10 - Bone Spring

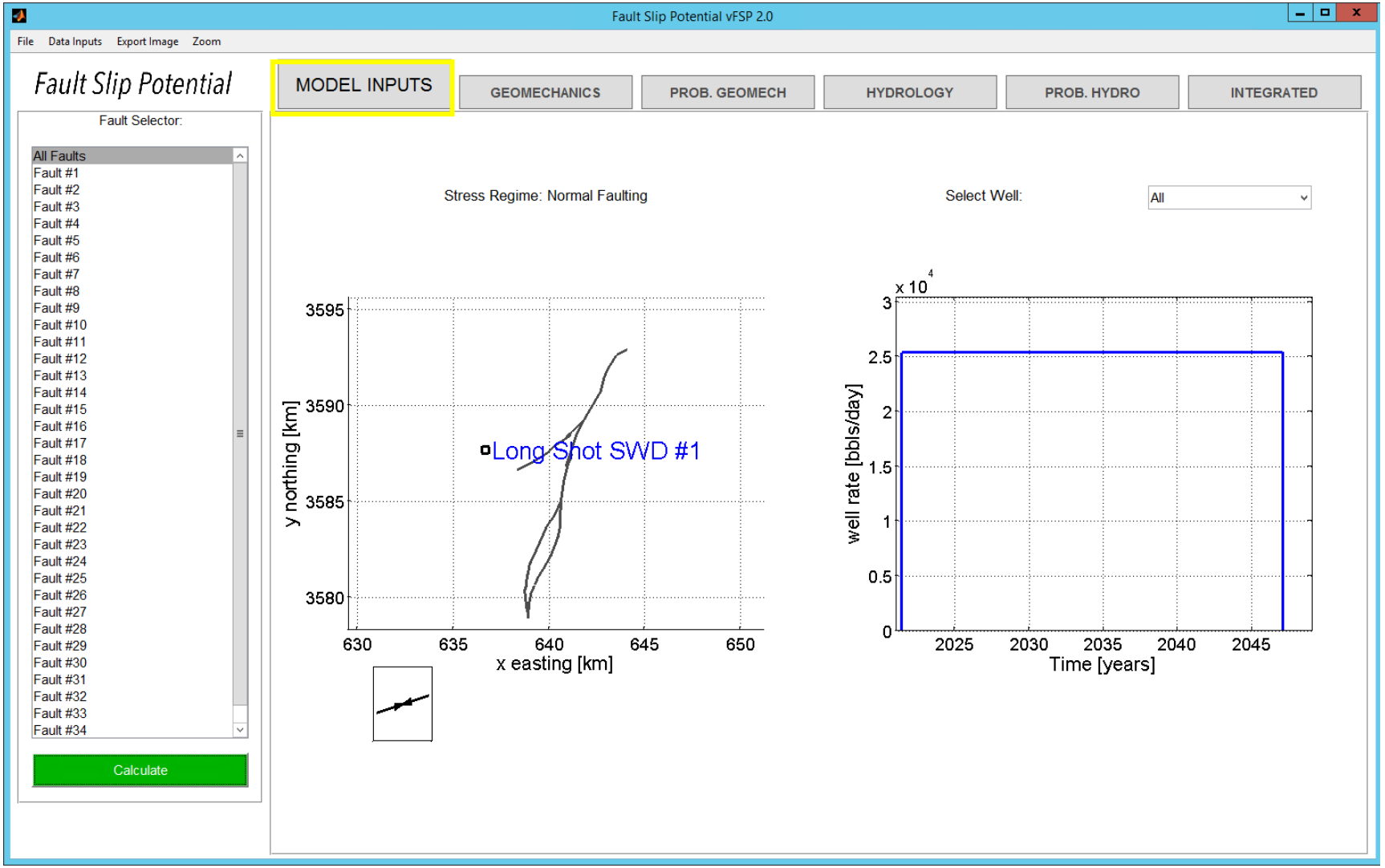


Figure 75 - FSP Model 10 Input: Only injector and 35 Bone Spring fault segments

Model 9 and 10

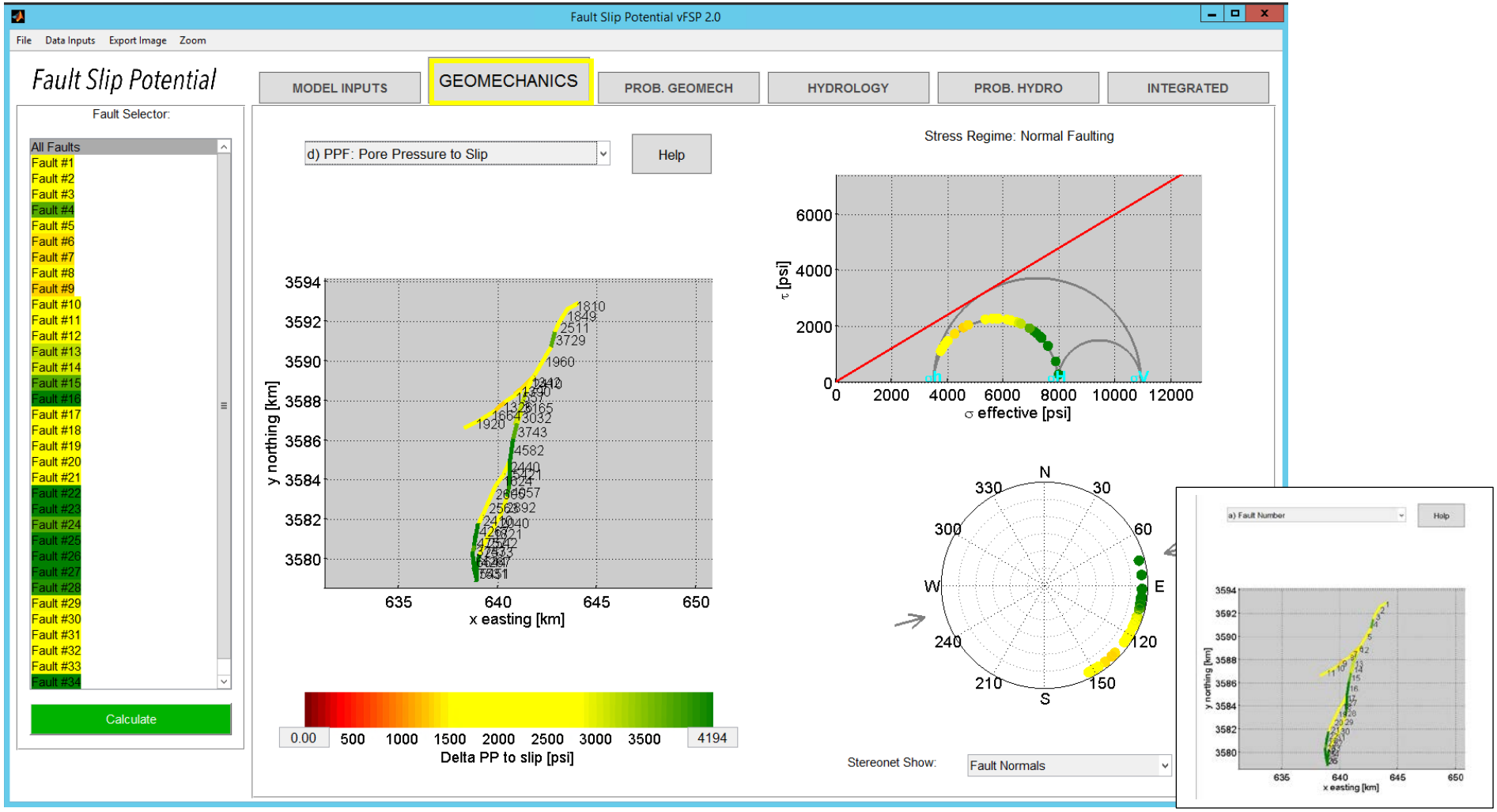


Figure 76 - FSP Geomechanics Tab, Model 9 and 10

Demonstrates pore pressure to slip (psi) for each fault segment, direction of SHmax, and a Mohr diagram with frictional slip line shown in red. Faults are colored by their horizontal distance to slip according to the color scale.

Model 9 and 10

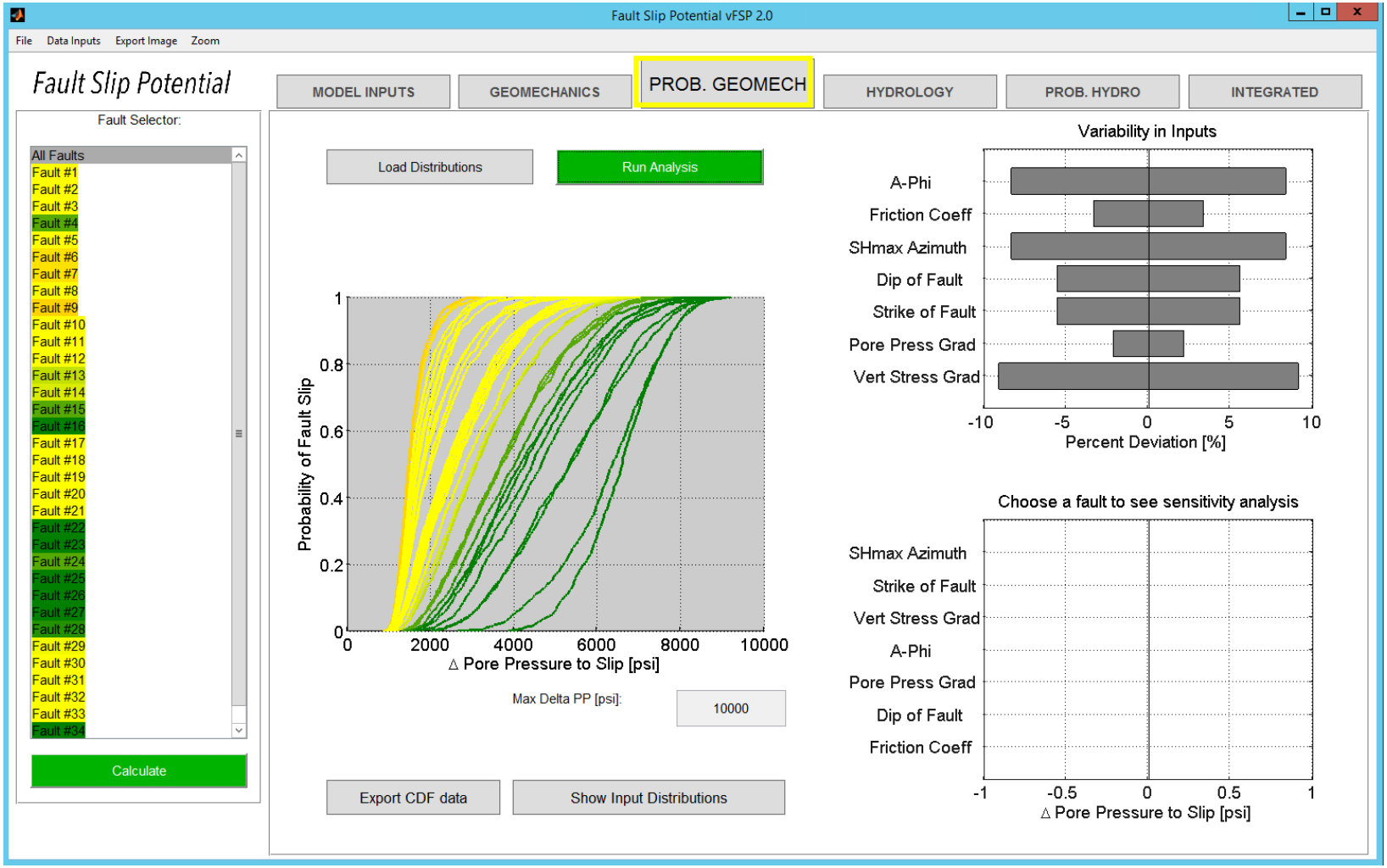


Figure 77 - FSP Probabilistic Geomechanics Tab, Model 9 and 10.

Propagates the relative uncertainties through the model, producing a distribution of pore pressures to slip.

The following integrated tabs show the combined results of probabilistic geomechanics and hydrology models run for all 35 Bone Spring fault segments.

Model 9 – Initial Conditions before Long Shot SWD #1 well is completed

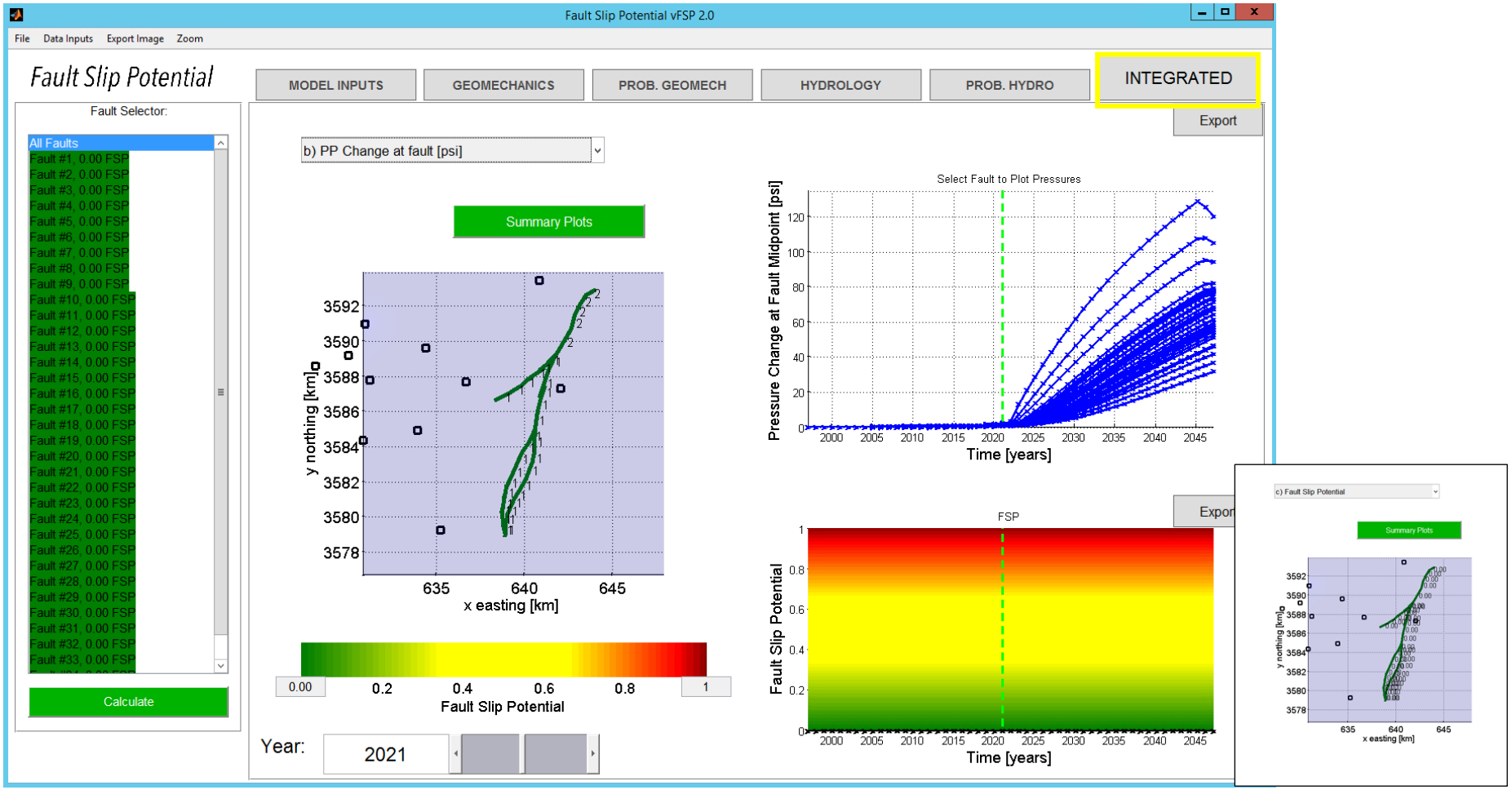


Figure 78 - Model 9 Integrated Tab, Initial Conditions

Pore Pressure change (psi) is posted for each fault segment.

Model 9 – Conditions in 2041 after Long Shot SWD #1 well is completed

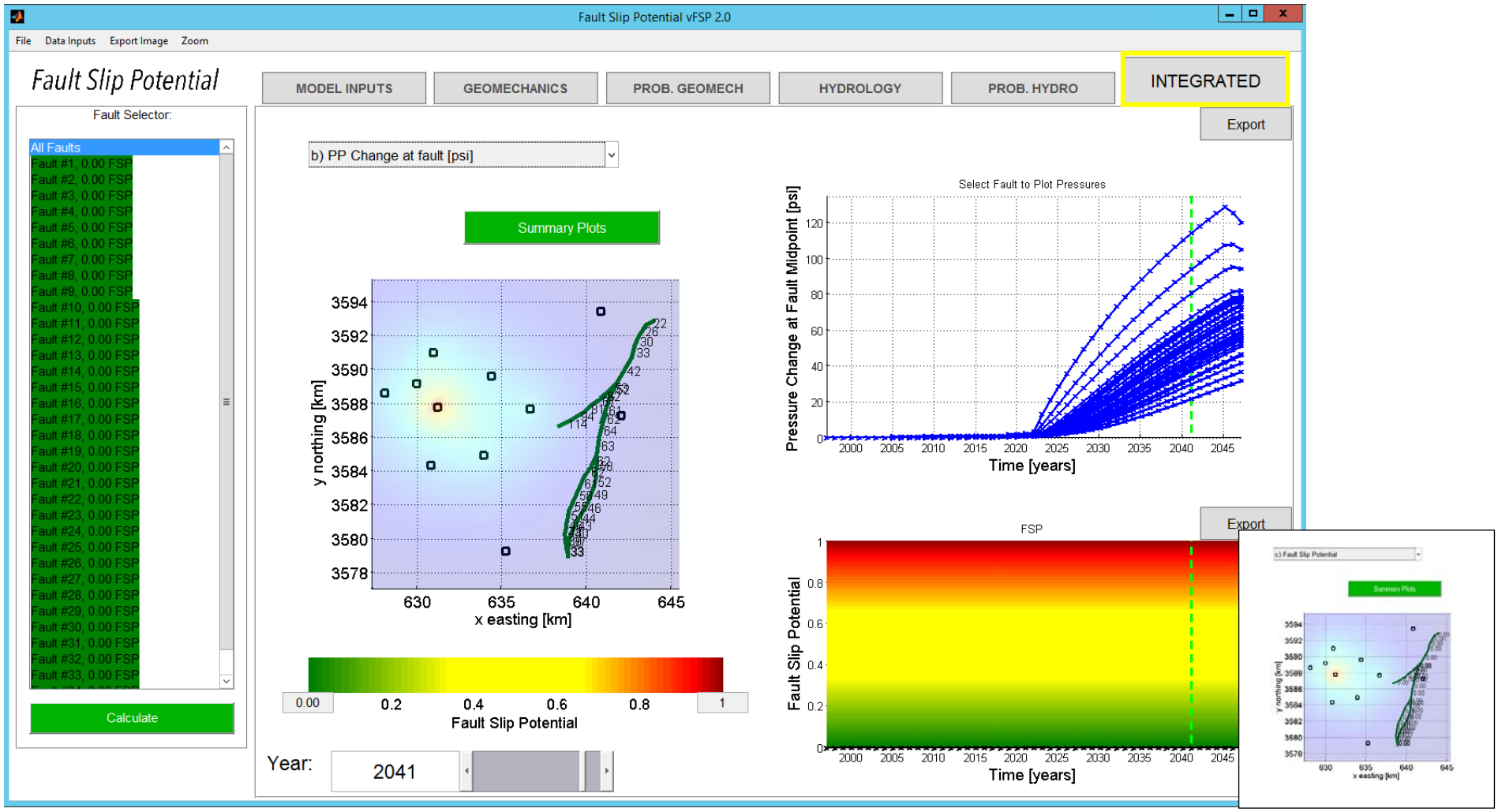


Figure 79 - Model 9 Integrated Tab, 20 years after completion.

Pore Pressure change (psi) is posted for each fault segment.

Model 10 – Initial Conditions before Long Shot SWD #1 well is completed

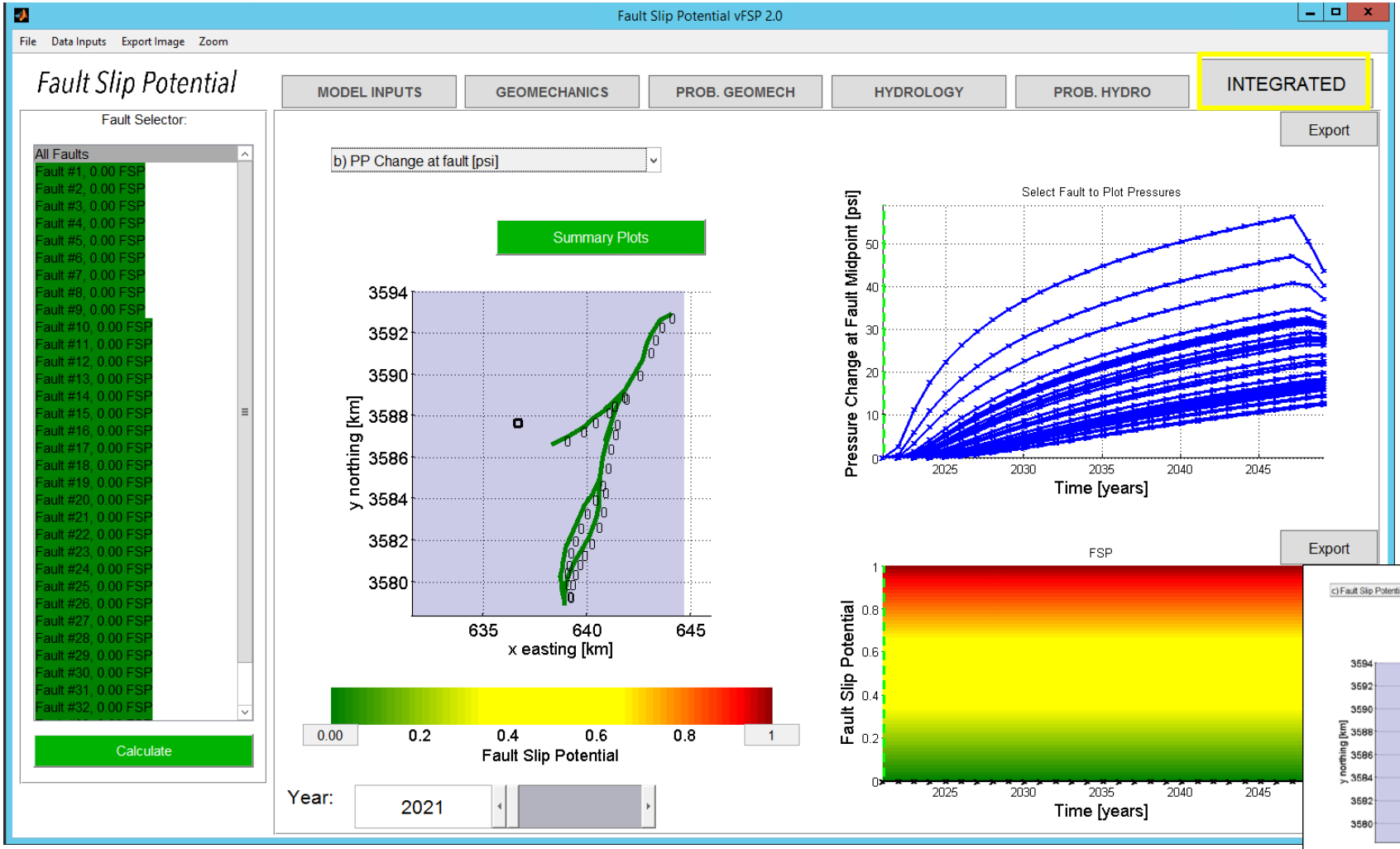


Figure 80 - Model 10 Integrated Tab, Initial Conditions

Pore Pressure change (psi) is posted for each fault segment.

Model 10 – Conditions in 2041 after Long Shot SWD #1 well is completed

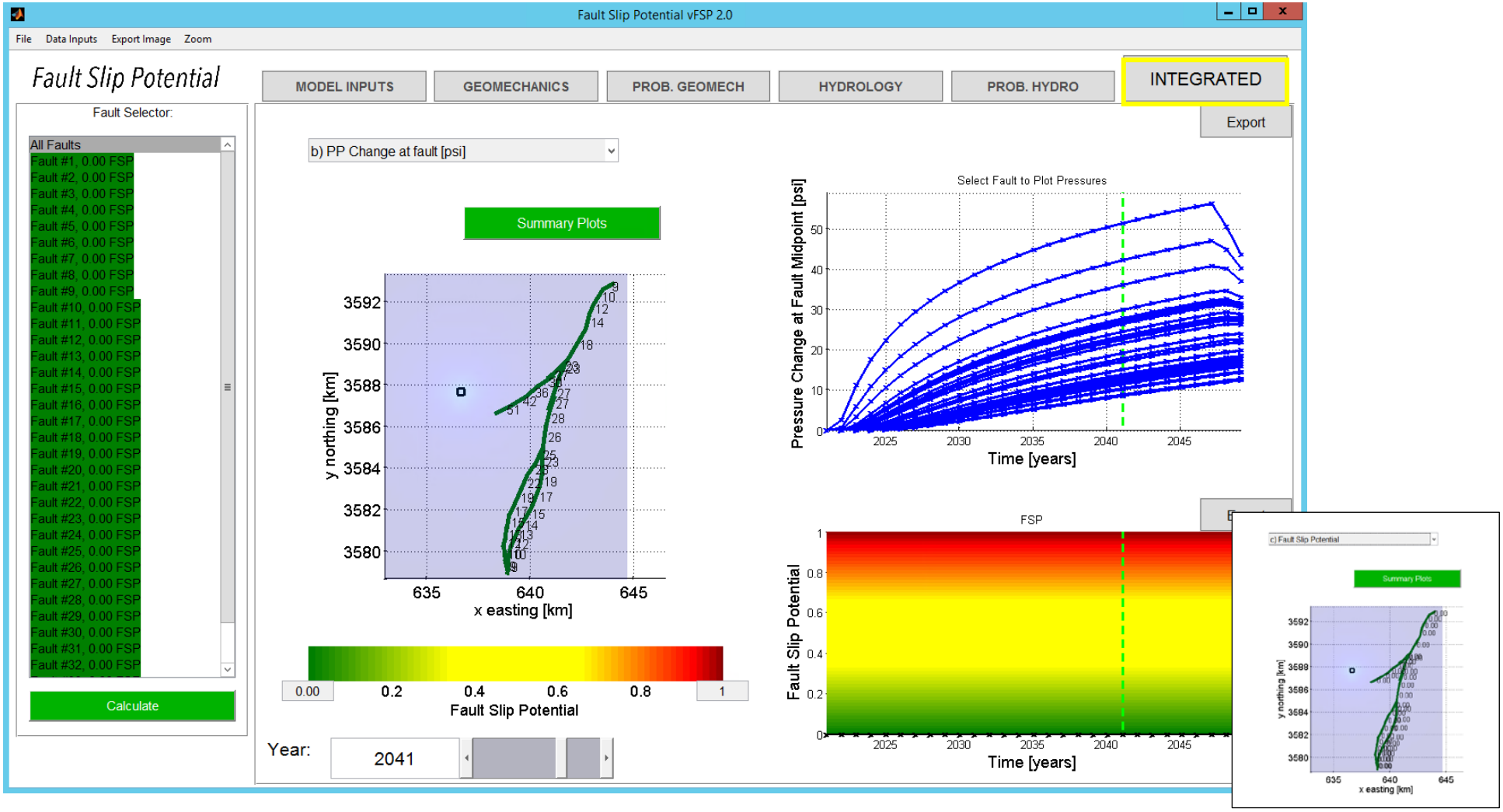


Figure 81 - Model 10 Integrated Tab, 20 years after completion

Pore Pressure change (psi) is posted for each fault segment.

12.0 MODEL 1 FSP Analysis Results

Model 1 10 Injection Wells, Long Shot SWD #1 & Silurian Devonian faults					
Fault	**Pore Pressure to Slip**	**PP Change 2021**	**FSP 2021**	**PP Change 2041**	**FSP 2041**
1	6375	3	0.00	31	0.00
2	1870	2	0.00	21	0.00
3	1535	2	0.00	23	0.00
4	1326	2	0.00	24	0.00
5	2015	2	0.00	27	0.00
6	2430	2	0.00	36	0.00
7	2371	1	0.00	55	0.00
8	2440	1	0.00	68	0.00
9	2552	1	0.00	72	0.00
10	3239	1	0.00	62	0.00
11	3988	1	0.00	52	0.00
12	4582	1	0.00	45	0.00
13	5273	1	0.00	36	0.00

Table 1 - Model 1 FSP Results per fault segment

13.0 MODEL 2 FSP Analysis Results

Model 2 Long Shot SWD #1 & Silurian Devonian faults					
Fault	**Pore Pressure to Slip**	**PP Change 2021**	**FSP 2021**	**PP Change 2041**	**FSP 2041**
1	6375	0	0.00	10	0.00
2	1870	0	0.00	8	0.00
3	1535	0	0.00	9	0.00
4	1326	0	0.00	10	0.00
5	2015	0	0.00	11	0.00
6	2430	0	0.00	15	0.00
7	2371	0	0.00	24	0.00
8	2440	0	0.00	30	0.00
9	2552	0	0.00	27	0.00
10	3239	0	0.00	19	0.00
11	3988	0	0.00	15	0.00
12	4582	0	0.00	12	0.00
13	5273	0	0.00	9	0.00

Table 2 - Model 2 FSP Results per fault segment

14.0 MODEL 3 and 4 FSP Analysis Results

Model 3 10 Injection Wells, Long Shot SWD #1 & Precambrian faults					
Fault	**Pore Pressure to Slip**	**PP Change 2021**	**FSP 2021**	**PP Change 2041**	**FSP 2041**
1	7455	4	0.00	32	0.00
2	7455	5	0.00	41	0.00
3	7455	2	0.00	43	0.00
4	7455	1	0.00	39	0.00
5	7455	0	0.00	30	0.00
6	7455	0	0.00	22	0.00

Model 4 Long Shot SWD #1 & Precambrian faults					
Fault	**Pore Pressure to Slip**	**PP Change 2021**	**FSP 2021**	**PP Change 2041**	**FSP 2041**
1	7455	0	0.00	10	0.00
2	7455	0	0.00	15	0.00
3	7455	0	0.00	19	0.00
4	7455	0	0.00	17	0.00
5	7455	0	0.00	13	0.00
6	7455	0	0.00	9	0.00

Table 3 - Model 3 & 4 FSP Results per fault segment.

15.0 MODEL 5 and 6 FSP Analysis Results

Model 5 10 Injection Wells, Long Shot SWD #1 & Basement faults					
Fault	**Pore Pressure to Slip**	**PP Change 2021**	**FSP 2021**	**PP Change 2041**	**FSP 2041**
1	5895	1	0.00	89	0.00
2	5806	1	0.00	89	0.00
3	5836	1	0.00	75	0.00
4	5021	1	0.00	57	0.00
5	5139	1	0.00	37	0.00

Model 6 Long Shot SWD #1 & Basement faults					
Fault	**Pore Pressure to Slip**	**PP Change 2021**	**FSP 2021**	**PP Change 2041**	**FSP 2041**
1	5895	0	0.00	39	0.00
2	5806	0	0.00	39	0.00
3	5836	0	0.00	29	0.00
4	5021	0	0.00	19	0.00
5	5139	0	0.00	11	0.00

Table 4 - Model 5 & 6 FSP Results per fault segment.

16.0 MODEL 7 and 8 FSP Analysis Results

Model 7 10 Injection Wells, Long Shot SWD #1 & Woodford faults					
Fault	**Pore Pressure to Slip**	**PP Change 2021**	**FSP 2021**	**PP Change 2041**	**FSP 2041**
1	5273	1	0.00	68	0.00
2	5273	1	0.00	50	0.00
3	5273	1	0.00	36	0.00

Model 8 Long Shot SWD #1 & Woodford faults					
Fault	**Pore Pressure to Slip**	**PP Change 2021**	**FSP 2021**	**PP Change 2041**	**FSP 2041**
1	5273	0	0.00	24	0.00
2	5273	0	0.00	15	0.00
3	5273	0	0.00	10	0.00

Table 5 - Model 7 & 8 FSP Results per fault segment.

17.0 MODEL 9 and 10 FSP Analysis Results

Model 9 10 Injection Wells, Long Shot SWD #1 & Bone Spring faults					
Fault	**Pore Pressure to Slip**	**PP Change 2021**	**FSP 2021**	**PP Change 2041**	**FSP 2041**
1	1810	2	0.00	22	0.00
2	1849	2	0.00	26	0.00
3	2511	2	0.00	30	0.00
4	3729	2	0.00	33	0.00
5	1960	2	0.00	42	0.00
6	1342	1	0.00	53	0.00
7	1390	1	0.00	62	0.00
8	1557	1	0.00	67	0.00
9	1326	1	0.00	81	0.00
10	1664	1	0.00	94	0.00
11	1920	1	0.00	114	0.00
12	2410	1	0.00	52	0.00
13	3165	1	0.00	61	0.00
14	3032	1	0.00	62	0.00
15	3743	1	0.00	64	0.00
16	4582	1	0.00	63	0.00
17	2440	1	0.00	62	0.00
18	1624	1	0.00	62	0.00
19	2605	1	0.00	61	0.00
20	2563	1	0.00	58	0.00
21	2410	1	0.00	55	0.00
22	2467	1	0.00	51	0.00
23	4757	1	0.00	46	0.00
24	3743	1	0.00	43	0.00
25	6644	1	0.00	39	0.00
26	7531	1	0.00	33	0.00
27	5421	1	0.00	58	0.00
28	4057	1	0.00	52	0.00
29	2892	1	0.00	49	0.00
30	2040	1	0.00	46	0.00
31	1821	1	0.00	44	0.00
32	2542	1	0.00	43	0.00
33	2573	1	0.00	40	0.00
34	4267	1	0.00	37	0.00
35	5451	1	0.00	33	0.00

Model 10 Long Shot SWD #1 & Bone Spring faults					
Fault	**Pore Pressure to Slip**	**PP Change 2021**	**FSP 2021**	**PP Change 2041**	**FSP 2041**
1	1810	0	0.00	9	0.00
2	1849	0	0.00	10	0.00
3	2511	0	0.00	12	0.00
4	3729	0	0.00	14	0.00
5	1960	0	0.00	18	0.00
6	1342	0	0.00	23	0.00
7	1390	0	0.00	27	0.00
8	1557	0	0.00	30	0.00
9	1326	0	0.00	36	0.00
10	1664	0	0.00	42	0.00
11	1920	0	0.00	51	0.00
12	2410	0	0.00	23	0.00
13	3165	0	0.00	27	0.00
14	3032	0	0.00	27	0.00
15	3743	0	0.00	28	0.00
16	4582	0	0.00	26	0.00
17	2440	0	0.00	25	0.00
18	1624	0	0.00	23	0.00
19	2605	0	0.00	22	0.00
20	2563	0	0.00	19	0.00
21	2410	0	0.00	17	0.00
22	2467	0	0.00	15	0.00
23	4757	0	0.00	13	0.00
24	3743	0	0.00	12	0.00
25	6644	0	0.00	10	0.00
26	7531	0	0.00	9	0.00
27	5421	0	0.00	23	0.00
28	4057	0	0.00	19	0.00
29	2892	0	0.00	17	0.00
30	2040	0	0.00	15	0.00
31	1821	0	0.00	14	0.00
32	2542	0	0.00	13	0.00
33	2573	0	0.00	12	0.00
34	4267	0	0.00	10	0.00
35	5451	0	0.00	9	0.00

Table 6 - Model 9 & 10 FSP Results per fault segmen

18.0 Recorded Seismicity

Between 1/1/1900 and 6/28/2020 **0 earthquakes** with magnitudes 2 or greater were recorded by **USGS** within the Long Shot FSP AOI.

Between 1/12/2017 and 6/28/2021 **2 earthquakes** with magnitudes 2 or greater were recorded by **MWTSO** within the Long Shot FSP AOI.

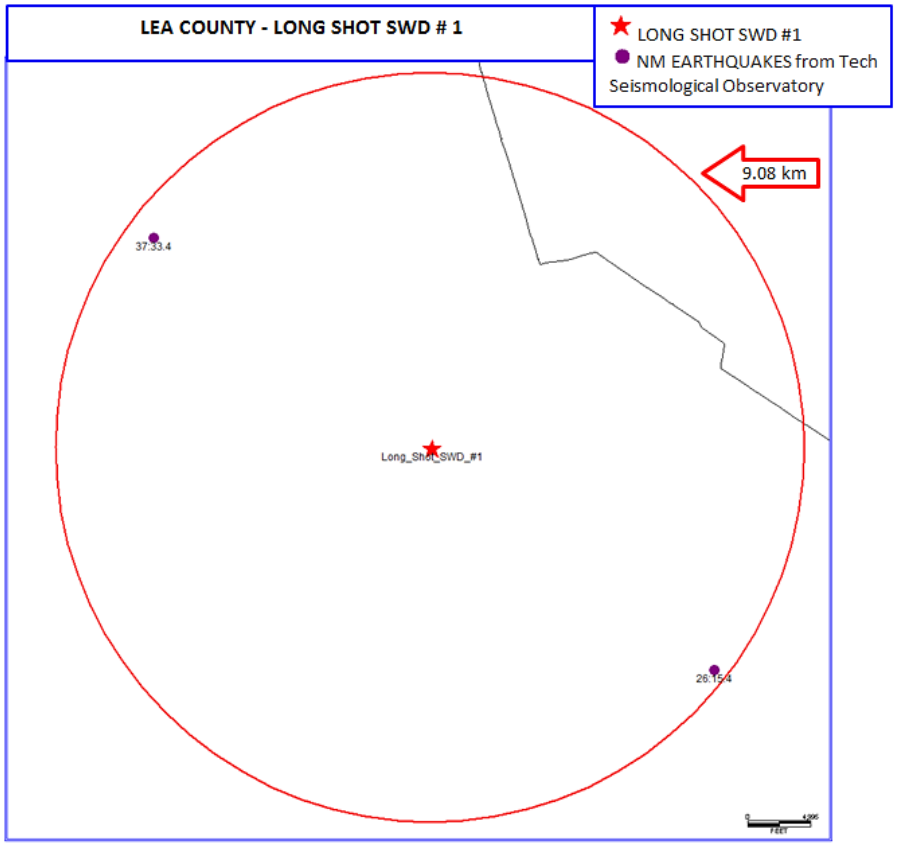


Figure 82 - MWTSO reported seismicity

0 Earthquakes with magnitude of 2 or greater inside the Long Shot FSP ANALYSIS AREA

Figure 83 - USGS Earthquake catalog within Long Shot FSP AOI

2 Earthquakes with magnitude of 2 or greater inside the Long Shot FSP ANALYSIS AREA

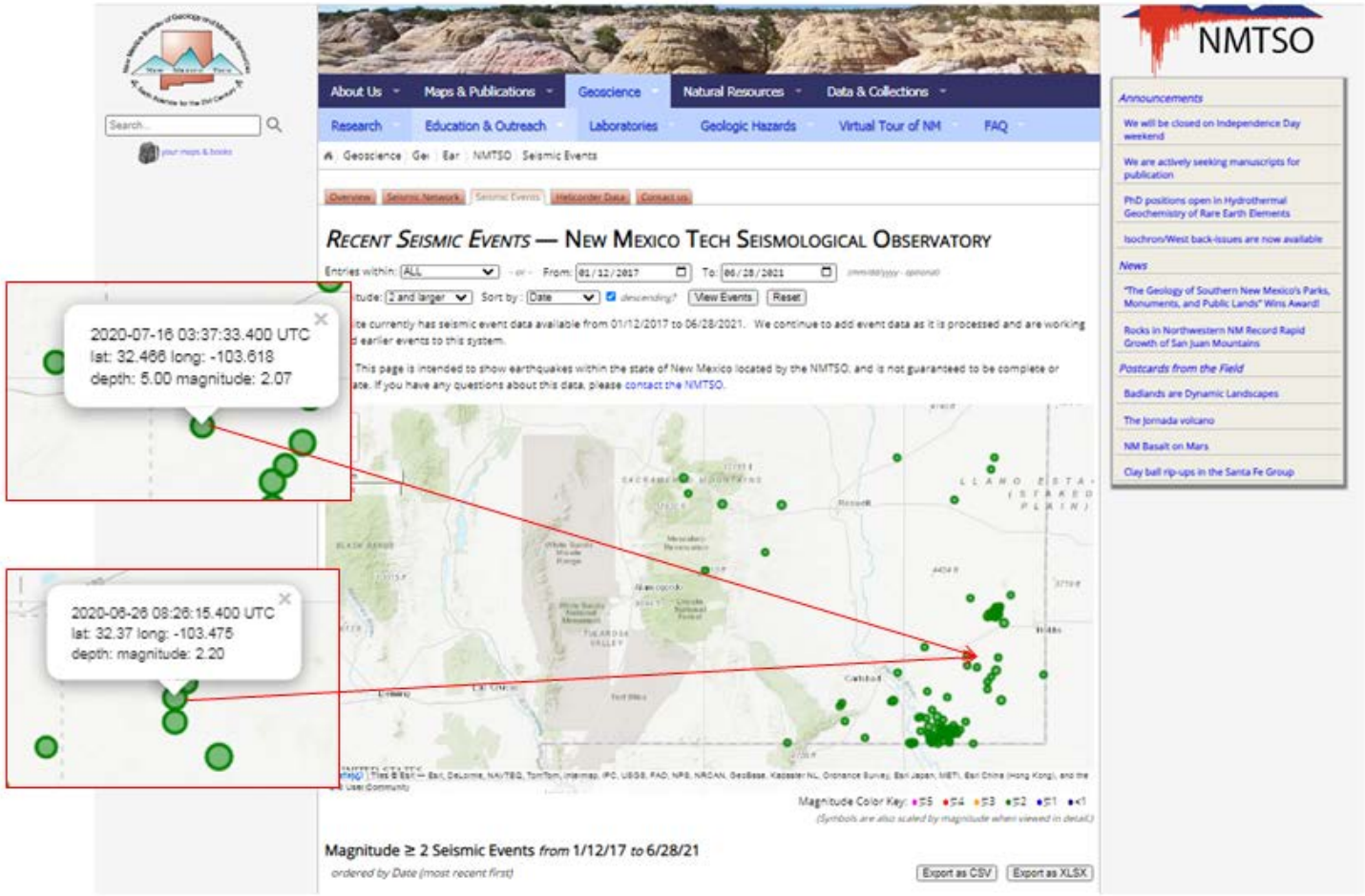


Figure 84 - MWTSO Earthquake catalog within Long Shot FSP AOI

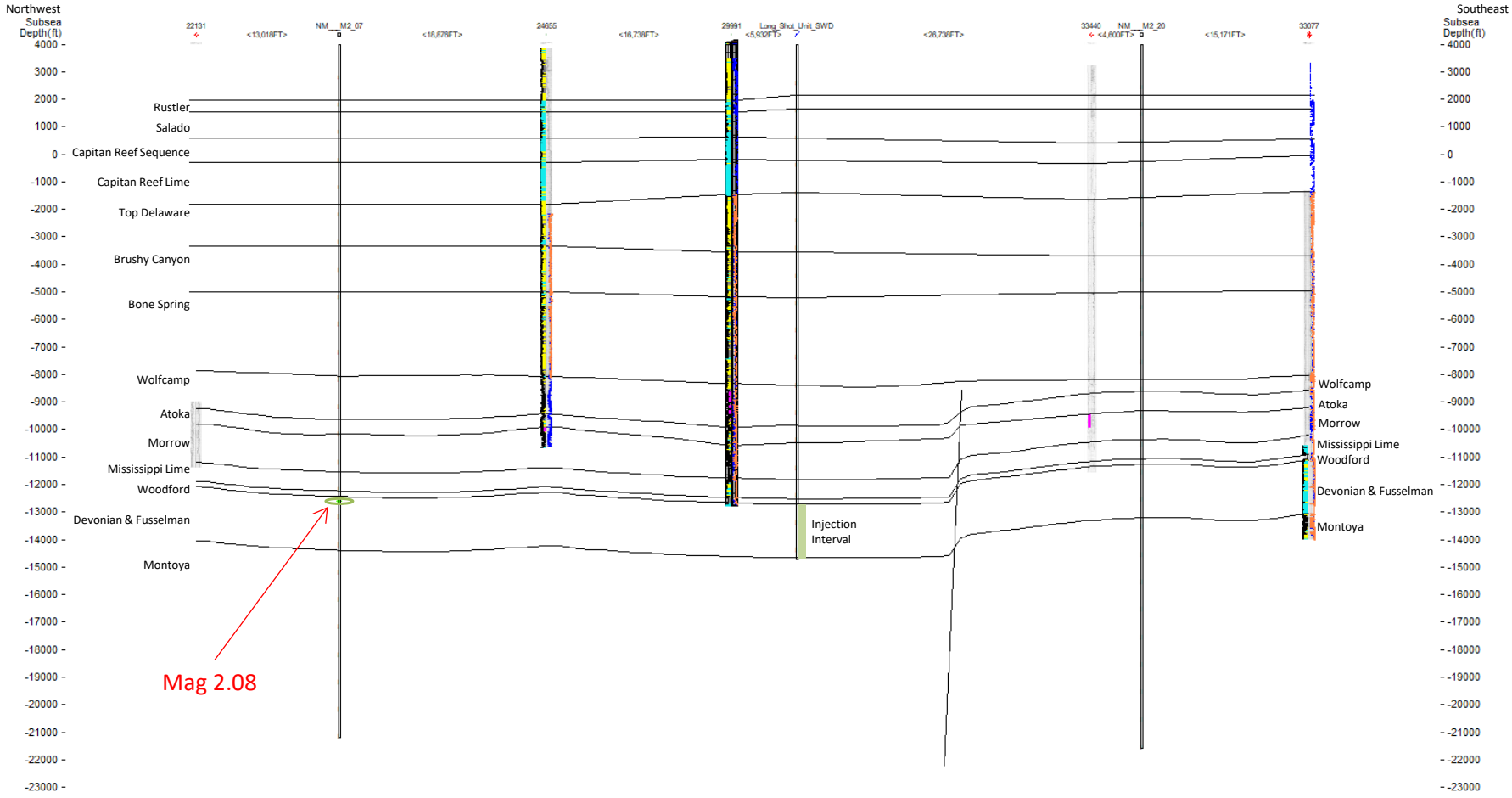


Figure 85 - Earthquake Cross section

The following table is a summary of the reported earthquakes with magnitude 2.0 or greater.

	EventID	Origin Date	Origin Time	Magnitude	Latitude NAD 27	Longitude NAD 27	Depth of Hypocenter (Rel to Ground Surface)	
							Km	ft
Long Shot	2020-07-16 03:37:33.4	2020-07-16	03:37:33.4	2.07	32.4658789	-103.6175113	5	16,404
	2020-06-26 08:26:15.4	2020-06-26	08:26:15.4	2.20	32.3698787	-103.4745195	-	-

Table 7 - Earthquake catalog within AOI

The MWTSO recorded seismic events name 2020-06-26 08:26:15.4 does not disclose a depth. The second event within the AOI 5km is 2020-07-16 03:37:33.4 with a depth of hypocenter of 5km.

19.0 Conclusion

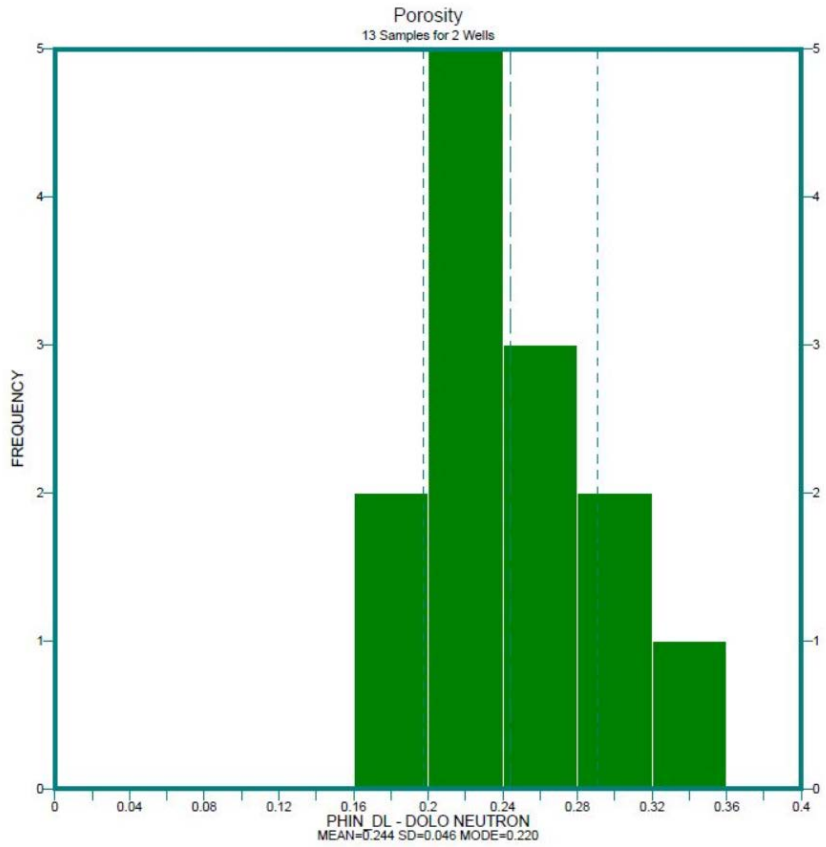
Ten FSP models were run within Long Shot SWD #1 AOI analyzing the following fault traces.

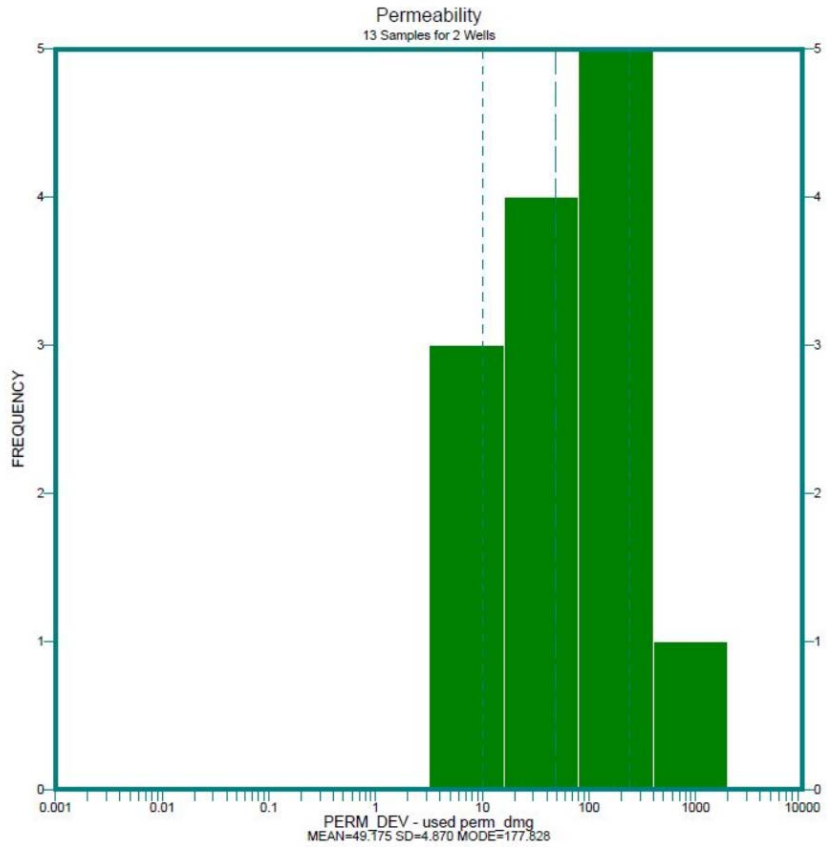
- Silurian Devonian
- Precambrian
- Basement
- Woodford
- Bone Spring

Two models were run for each set of fault traces, the first included all injectors within the AOI (including the proposed LONG SHOT location) the second model per fault set only includes the proposed SWD well. The reservoir and stress parameters for the proposed Silurian Devonian injection interval do not increase the potential for the faults analyzed to slip.

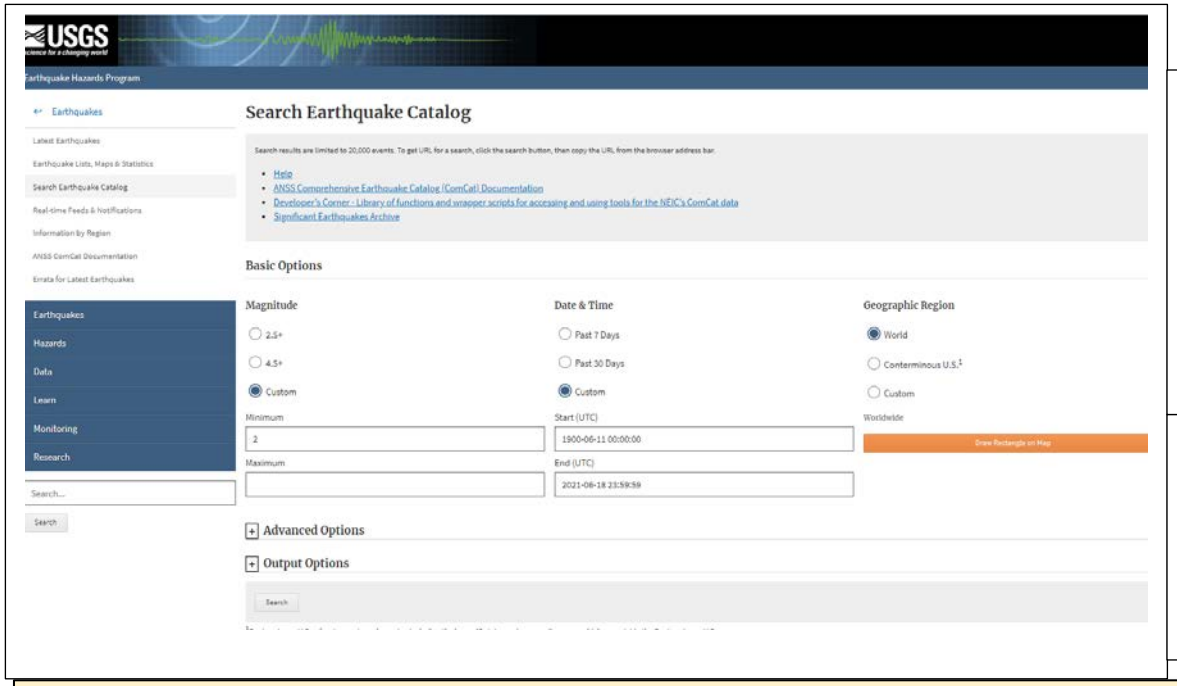
In our opinion the proposed LONG SHOT SWD #1 injection well does not pose a risk of increasing seismicity within this FSP AOI.

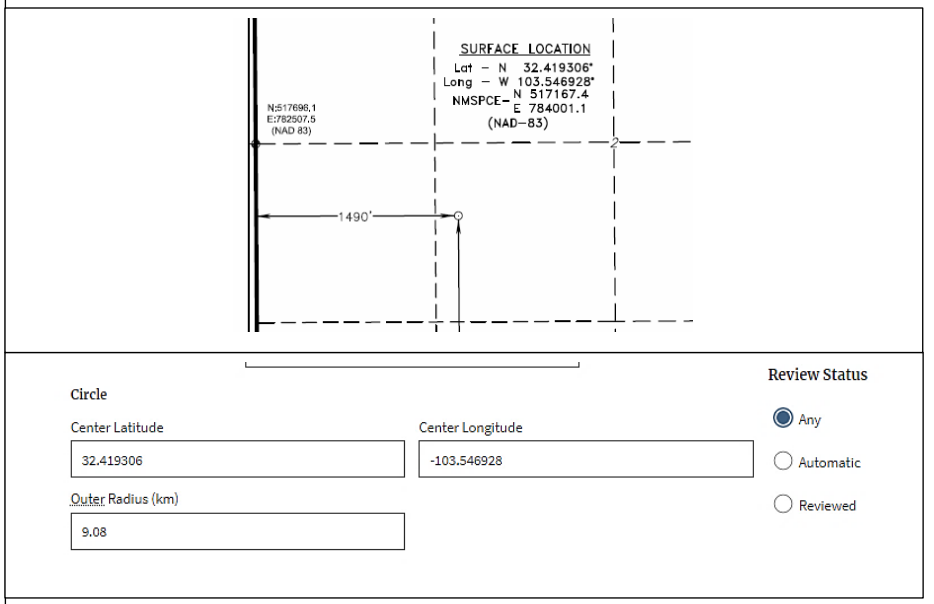
Appendix 1 - Reservoir Parameters Backup





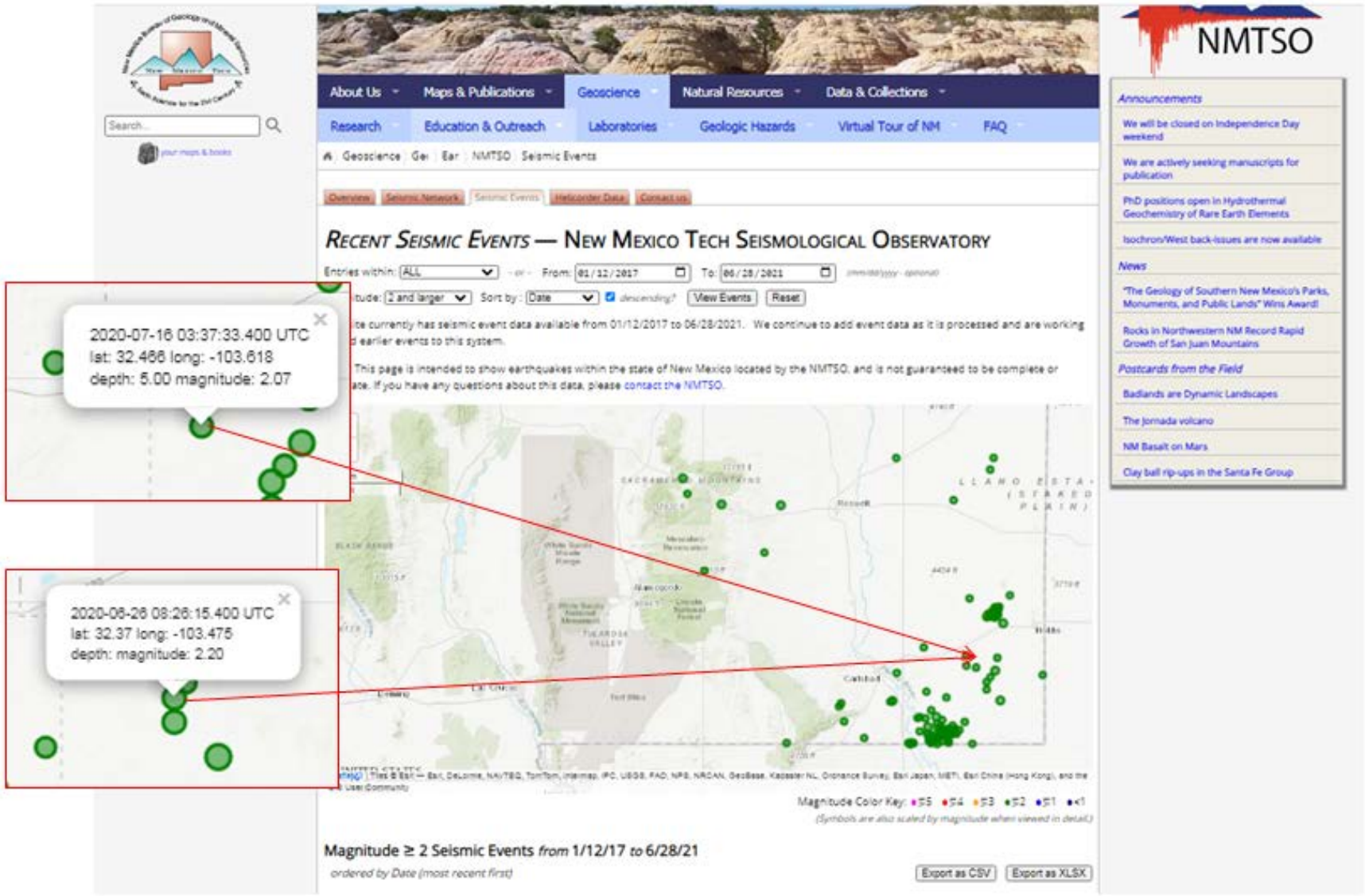
Appendix 2 - Earthquake Backup





0 Earthquakes with magnitude of 2 or greater inside the Long Shot FSP ANALYSIS AREA

2 Earthquakes with magnitude of 2 or greater inside the Long Shot FSP ANALYSIS AREA



Closest earthquake is (**ID 37:33.4**) 2020-07-16 03:37:33.4, Lat 32.46, Long -103.618, Mag 2.07 and it's 8.48 km away from Long Shot SWD#1

2nd Closest earthquake is (**ID 26:15.4**) 2020-06-26 08:26:15.4, Lat 32.37, Long -103.475, Mag 2.20 and it's 8.71 km away from Long Shot SWD#1