Attachment "I"
Formation Testing Program
Zelman#1 Injection Well

Maximum Allowable Bottom Hole Injection Pressure Request of 6575 psi.
Since the Facility will be receiving fluids with a specific gravity ranging from 1.0 to 1.26; we are requesting a maximum allowable bottom- hole pressure of 6575 psi based on our fracture gradient of 0.90 psi/ft.

Fracture Pressure = Fracture Gradient x depth
$$= 0.90 \text{ psi/ft x } 7306$$
$$= 6575 \text{ psi}$$

The corresponding surface pressure range is from 3411 psi for 1.0 specific gravity fluids to 2589 psi for 1.26 specific gravity fluids as calculated below.

For: 1.0 SG Fluids   For: 1.26 SG Fluids
Psurface = Pbtm – Phydrostatic   Psurface + Pbtm-Phydrostatic
Psurface = ((.90)-(.433)(1.0))(7306))   Psurface=((.90-(.433)(1.26)(7306))
Psurface = 3411 psi   Psurface = 2589 psi

See "Attachment K" for operational details on monitoring of fluid density and corresponding surface pressures.

Zelman: Offset Fracture Pressure Calculations:
 Well 37-033-30327:
Fracture Gradient = (Psurf + Phydostactic)/depth
$$= ((3800 + (0.052)(8.33)(7233))/7233$$
$$= .9585 \text{ psi/ft}$$

Well 37-033-20333
Fracture Gradient = (Psurf + Phydosractic)/depth
$$= ((3750 + (0.052)(8.33)(7266))/7266$$
$$= .9493 \text{ psi/ft}$$

Maximum injection Rate Requested is 2396 bbl/day.
 This rate is based upon the data and calculations on the Green Glenn #1 injection test.

Average Injection Rate and Average Injection Pressure
The proposed average injection rate is 2000 bbls per day with an average bottom hole injection pressure of 5500 psi.

Fracture Gradient of Confining Zones
No fracture data is available in the area on the confining zones, the Onondago Limestone and the Helderberg Limestone. However, gas storage in the Chert/Oriskany formations throughout Pennsylvania confirms reservoir confinement by the Onondago and the Helderberg.

Punxsutawney-Driftwood Field
Helvetia Pool

1,850'S 41°05'00"
11,050'W 78°42'30" (4)

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF MINES

Oil and Gas Division
HARRISBURG

LUTHERSBURG
QUADRANGLE: Penfield ☑ 7½' ☒ 15'

PERMIT NO. ~~GIB 327~~

033-20327

MAP REFERENCE: 9S 17W S63 W117

WELL RECORD

KIND OF WELL: Gas
(Oil, Gas, Other)

	Size of Casing and Tubing	Used in Drilling	Left in Well	Packers: Type, Size and Depth
COMPANY: New York State Natural Gas Corporation				
ADDRESS: #2 Gateway Center, Pittsburgh 22, Pa.	13-3/8"	59'	59'	
FARM John R. Potter ACRES 68	9-5/8"	1251'	1251'	BHS @ 1248'
WELL(FARM)NO. 2 CO. SERIAL NO. N-790	7"	7305'	7305'	BHS @ 7234'

ELEVATION: 1640.60 LEASE: 58357

TOWNSHIP: Brady COUNTY: Clearfield
DRILLING DRILLING
COMMENCED: 8/31/60 COMPLETED: 9/29/60

PRODUCTION: 30,370,000 cubic feet

PERFORATIONS AT:

ROCK PRESSURE: 3293 psig 4 days.

WELL TREATMENT: (Shooting, Acidizing, Fracturing Etc.)
9/27/60 - Fractured w/20,500 gals. water, 1,000 gal. MCA, 150 lbs. gel and 20,000 lbs. sand. Breakdown pressure 2400 lbs.; maximum pressure 3800 lbs; minimum pressure 2350 lbs.; final pressure 3800 lbs. Original open flow of 7,312,000 cubic feet increased to 30,370,000 cu.ft. a/f Rock pressure b/f 3318 lbs. in 11 days

CEMENTING DATA: (Size Pipe, Depth, No. Bags, Date

8/31/60 - 13-3/8" cem. @ 70' w/50 sacks

9/4/60 - 9-5/8" cem @ 1248' w/50 sacks cem., 15 sacks aquagel, & 25 sacks quadroflos

RESULTS AFTER TREATMENT:

ROCK PRESSURE AFTER TREATMENT:

9/13/60 - 7" cem. @ 7234' w/125 sacks.

REMARKS:

FORMATION	TOP	BOTTOM	GAS AT	OIL AT	WATER AT (Fresh or Salt Water)	REMARKS
Surface	0	15				
Sand & shale	15	143			FW 75	
Red shale	143	146				
Sand & shale	146	205				
Coal	205	209				
Sand & shale	209	217				
Shale & sand	217	303				
Coal or black shale	303	306				
Shale & sand	306	320				
Shale	320	340				
Sand	340	550				
Shale & sand	550	580				
Sand	580	650				
Shale & sand	650	692				
Sand	692	733				
Red shale	733	735				

(Over)

FORMATION	TOP	BOTTOM	GAS AT	OIL AT	WATER AT (Fresh or Salt Water)	REMARKS
Sand & shale	735	1010				
Black shale	1010	1020				
Sand & shale	1020	2293				
Shale	2293	2295				
Shale & sand	2295	2601				
Sand & shale	2601	3415				
Shale & sand	3415	4015				
Sand & shale	4015	5025				
Shale & sand	5025	5475				
Sand & shale	5475	5680				
Shale & sand	5680	5857				
Sand & shale	5857	6030				
Lime & shale	6030	6137				
Lime	6137	6195				
Shale & shells	6195	6642				
Lime	6642	6750				
Shale & shells	6750	7219				
Onondaga lime	7219	7233				
Chert	7233	7288				
Sand	7288	7317	7291-7303			
Lime	7317					
Total Depth		7318				
Sample Study						
Tully	6642					
Onondaga	7219					
Chert	7233					
Oriskany	7288	7317	7291-7303			

DATE __October 28,_____ 19 60

APPROVED New York State Natural Gas Corporation OWNER

BY _D L Borger_____

TITLE

Superintendent of Operations

DM-OG-4-56

File under Nat'l Bank DuBois

PENFIELD D 272

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF MINES

Oil and Gas Division
HARRISBURG

083-20333

QUADRANGLE: *Luthersbuag* Penfield [X] 7½' [ ] 15'   PERMIT NO. ~~CLE-333~~

MAP REFERENCE: 9S 17W S63 W117 & 118   KIND OF WELL: __GAS__
(Oil, Gas, Other)

WELL RECORD

	Size of Casing and Tubing	Used in Drilling	Left in Well	Packers: Type, Size and Depth
COMPANY: New York State Natural Gas Corporation				
ADDRESS: 2 Gateway Center, Pgh. 22, Penna.	13 3/8"	96'	96'	
FARM H. E. Ginter Est. ACRES 172	9 5/8"	1285'	1285'	BHS @ 1287
WELL(FARM)NO. 1 CO. SERIAL NO. N-796	7"	7335'	7335'	BHS @ 7267

ELEVATION: 1642.34   LEASE: 60986

TOWNSHIP: Brady   COUNTY: Clearfield

DRILLING COMMENCED: 12-1-60   DRILLING COMPLETED: 12-23-60

PRODUCTION: 10,504,000 cubic feet

PERFORATIONS AT:

ROCK PRESSURE: 2340 psig 70 hrs.

WELL TREATMENT: (Shooting, Acidizing, Fracturing Etc.)
12-22-60-Fractured w/20,000 gals. water, 200 lb. gel, 1,000 gal acid and 20,000 lb sand. Breakdown pressure 3000 lbs; maximum pressure 3750 lb. Original open flow of 48,000 cubic ft. in chert and 3825,000 cubic ft. in Oriskany increased to 10,405,000 cubic ft. A/F. R.P. b/f 2450 lbs 24½ hrs. dead weight.

CEMENTING DATA: (Size Pipe, Depth, No. Bags, Date

12-3-60 - 13 3/8" cem. w/90 sax

12-7-60 - 9 5/8" cem. @ 1287 w/50 sax cem &

RESULTS AFTER TREATMENT: _____   20 sax aquagel

ROCK PRESSURE AFTER TREATMENT: _____   12-16-60 - 7" cem @ 7267 w/125 sax

REMARKS: * Well Permit Request and all initial Records Referred to this Well as "DuBois Deposit National Bank Trustee Etal". They are in fact Successor Trustee Under the Henry E. Ginter Deed of Trust. In the Interest of Brevity, We have Established and are Using the Farm Name as Recorded Above.

FORMATION	TOP	BOTTOM	GAS AT	OIL AT	WATER AT (Fresh or Salt Water)	REMARKS
Surface	0	5				
Sand & shale	5	105				
Shale & Sand	105	150				
Sand & Shale	150	340				
Coal	340	345				
Sand & Shale	345	375				
Shale & Sand	375	468				
Coal	468	474			458	
Shale & Sand	474	532				
Sand & Shale	532	735				
Sand	735	785				
Sand & Shale	785	1720				
Shale & Sand	1770	2165				
Sand & Shale	2165	4310	3385-92 (Show)			
Shale & sand	4310	5170				
Sand & Shale	5170	5405				

(Over)

FORMATION	TOP	BOTTOM	GAS AT	OIL AT	WATER AT (Fresh or Salt Water)	REMARKS
Shale & Shells	5405	6150				
Sand & Shale	6150	6425				
Shale & Shells	6425	6686				
Lime	6686	6784				
Shale & Shells	6784	7248				
Lime	7248	7266				
Chert	7266	7314	7267 & 7300			
Sand	7314	7343	7316-25			
Lime	7343					
Total Depth		7344				
Sample Study						
Tully	6686					
Onondaga	7248					
Chert	7266					
Oriskany	7314	7343				

DATE   January 24   , 19 61

APPROVED New York State Natural Gas Corporation OWNER

BY _____

TITLE

Superintendent Operations

Attachment "J"
Stimulation Program
Zelman#1 Injection Well

In the event stimulation is necessary to enhance injectivity the proposed treatment would be as follows: Pump 1,000 gallons MCA acid, 20,000 lbs 20/40 sand in 20,000 gallons fresh water with 150 lbs of gel down the tubing while monitoring both tubing and annulus pressures. Freshwater will be treated with Iron Control (Fe-Oxyclear) & Clay Stabilizer (Cla-Sta XP) at a rate of 1/1000 gal & 2/1000 gal respectively. (See Attachment "O" for MSDS sheets) Maximum treatment pressure would not exceed 6480 psi bottom- hole pressure.   Stimulation would be performed on an as needed basis and would have prior approval of the EPA.

Attachment "K"
Injection Procedures
Zelman#1 Injection Well

The Following injection procedures will be utilized during the operation of the Zelman#1 Injection Facility:

The produced fluids will be unloaded from vacuum trucks through a discharge manifold into a epoxy lined steel tanks. It will be treated at this point with an oxygen scavenging agent and corrosion control additives; FE Ox Clear and Alpha 2278W.

Then, the fluid will be pulled from these tanks and filtered to 10 microns nominal particle size and discharged into additional epoxy lined steel tanks.

Next the produced fluids will be pulled from the filtered tanks through the high pressure pump, equipped with shut down switches set at 6500 psi bottom-hole pressure being calculated in real time and low side at 200 psi. Corrosion Inhibitor, Alpha 3207, will be added. Specific gravity, rate and volume will be monitored with a dens-o-meter, flowmeter, and totalizer. Bottom-hole pressure will be calculated and monitored in real time Utilizing Meyers Mwell software package.

The produced fluids will be discharged from the pump through a checkvalve at the wellhead down the tubing and into the Chert/ oriskany formation. Surface tubing and tubing annulus pressures will also be recorded with a 2 pen recorder as a back up to the digital data.

Attachment "L"
Construction Procedures
Zelman#1 Injection Well

PLAN TO DRILL

1. Ensure all necessary state and federal permits, vendor contracts, and insurances are in order.

2. Post E&S plans, permits, and site ID Sign.

3. Construct Location per Erosion and Sediment Control Plan.

4. Set 8' of 24.5" (88#/ft) J55 conductor casing with back hoe; and cement to surface.

5. Hand grout with 15 sacks class A with 2 % CaCl.

6. Move in top-hole rotary drilling rig & rig up.

7. Nipple up on 24.5" casing.

8. Pick up 17 ½ Bit and drill to 180'.

9. Run 170'of 16" (65#/ft) H-40 grade casing with centralizer on each joint.
   Run Cement Basket 65'.

10. Cement 16" casing to surface with 130 sacks of class A cement with ½ # cello-flake and 2% Calcium Chloride per sack. Cement is to be mixed at 15.6 #/gal with a yield of 1.18 cu ft / sack. Calculated volume is based on 50% excess. See attached calculations.

11. Wait on Cement for 12 hours.

12. Nipple up on 16" casing, pick up 14 ¾" hammer bit, drill to 390' and trip out of hole.

13. Run 375' of 11 ¾" (42 #/ft) H-40 grade casing with a centralizer on each joint.
    Run cement basket at 160'.

14. Cement 11 ¾" casing to surface with 255 sacks of class A cement with ½ # cello-flake and 2% Calcium chloride per sack. Cement is to be mixed at 15.6 #/gal with a yield 1.18 cu ft/ sack. Calculated volume is based on 50% excess. See attached calculations.

15. Wait on cement for 12 hours.

16. Nipple up on 11 ¾" casing, pick up 10 5/8" hammer bit, drill to 1225'and trip out of hole.

17. Log well; Run G.R., caliper, SP, Dual Induction, Density and Neutron Porosity.

18. Run 1200' of 8 5/8" (32 #/ft) J-55 casing with a centralizer on every 2 joints. Run cement basket at 360'.

19. Cement 8 5/8" casing to surface with 315 sacks of class A cement with 1/4 # and 2% Calcium Chloride per sack. Cement is to be mixed at 15.6 #/gal with a yield 1.18 cu ft/sack. Calculated volume is based on 30% excess. See attached calculations.

20. Wait on cement for 12 hours.

21. Install 11" 5M x 8 5/8 8 rd. wellhead

22. Rig down and move out top-hole rig.

23. Move in and rig up bottom hole rotary rig

24. Nipple up 11" 5M DR Blow out preventer and annular preventer.

25. Test stack to 4000 psi.

26. Pick up 7 7/8" hammer bit and trip in hole.

27. Drill to total depth in the Helderberg Limestone at an estimated 7388'.

28. Catch cutting samples every 30' from 6500'-7200'.

29. Catch samples every 10' from 7200' to TD.

30. Trip out of hole.

31. Run open hole logging suite to consist of Gamma Ray, Caliper, dual induction, neutron porosity, density porosity and temperature. Run logs from TD to surface casing seat with Gamma Ray log to surface.

32. Run 4 ½" (11.6 #/ft) N- 80 casing to bottom of Onondago Limestone at 7306' Run centralizer on every 3 joints from 7306-5000'.

33. Set casing on cement packer shoe and cement casing back to 5000' ft with 340 sacks of class A with ½ # cello-flake and 2% Calcium Chloride per sack. Cement is to be mixed at 15.6 #/gal with a yield of 1.18 cu ft/sack.

34. Lift blow out preventer stack and set casing slips and wellhead assembly.

35. Wait on cement for 24 hours.

36. Run CBL log on 4.5" casing.

37. Trip in hole with 3 7/8" tri-cone on 2 3/8" work string and blow hole dry.

38. Drill out cement packer with air/foam.

39. Trip to bottom and clean hole.

40. Trip out of hole and Pick up Baker Oil Tools packer assembly.
    Baker model 45A4 "AL-2" Lok Set Casing Packer with on/off seal assembly

41. Trip in hole with 2 7/8" (6.4 #/ft) N-80 tubing and set packer at base of production casing at 7300'.

42. Pressure test 2 7/8" tubing x 4 ½" casing annulus to 4500 psi.

43. Rig down and move out rotary rig.

Attachment "L"
Construction Procedures
Zelman#1 Injection Well

The following is the proposed casing and cementing program for the Zelman #1 Injection Well.

*Hole Size (In)	Casing Size (In)	Casing wt (#/ft)	Depth (Ft)	Cement Volume (Sacks)	Top of cement
28	24.5	88	8	15	surface
17.5	16	65	170	130	surface
14 ¾	11 ¾	42	375	255	surface
10 5/8	8 5/8	32	1200	315	surface
7 7/8	4.5	11.6	7306	340	5000'
	2 7/8	6.4	7300		Packer at 7300

Cement Volume Calculations:

Note: Annular volumes, volume between casings, casing capacities and cement slurry yields were obtained from Halliburton cementing tables.

24.5" casing job   (Class A with 2% CaCl)
Hole size =	28"
Casing size =	24.5"
Annular volume =	1.0022 cu. ft. / lin. ft.
Length of cement column =	8 lin. ft.
Percent excess =	100%
Excess factor =	2
Slurry yield =	1.18 cu. ft. / sack

Sacks required = ((Annular Volume between casing and open hole) (length of cement column) (excess factor)) / slurry yield

Sacks required = ((1.022 cu. ft. / lin. ft.) (8 lin. ft.) (2))/ 1.18 cu.ft. / sack

Sacks required = 13.86 sacks = **15 sacks**

16" casing job (Class A with 2 % CaCl & ½ #/sack cello-flake)

Top of cement =	surface
Hole size =	17.5"
Casing size =	16"
Outer Casing size =	24.5"
Annular volume between casing and open hole =	0.2741 cu. ft. / lin. ft.
Annular volume between casings =	1.7062 cu. ft. / lin. ft
Length of cement column in open hole =	162 lin. ft.
Length of column between casing =	8 lin. ft.
Casing capacity =	1.2684 cu ft. / lin. ft.
Shoe joint length =	32 lin. ft.
Percent excess =	50%
Excess factor =	1.5
Slurry yield =	1.18 cu. ft. / sack

Sacks required = (volume in shoe joint +annular volume in open hole + annular volume between casings) (excess factor) / yield

Sacks required = ((1.2684 cu. ft. / lin. ft.) (32 lin. ft.)+ (0.2741 cu. ft. / lin. ft.) (162 lin. ft.)+ (1.7062 cu. ft. / lin. ft.) (8 lin. ft.)) (1.5) / 1.18 cu.ft. / sack

Sacks required = 125.46 sacks = **130 sacks**

11 ¾"casing job (Class A with 2 % CaCl & ½ #/sack cello-flake)

Top of cement =	surface
Hole size =	14 ¾"
Casing size =	11 ¾"
Outer Casing size =	16"
Annular volume between casing and open hole =	0.4336 cu. ft. / lin. ft.
Annular volume between casings =	0.5154 cu. ft. / lin. ft
Length of cement column in open hole =	205 lin. ft.
Length of column between casing =	170 lin. ft.
Casing capacity =	0.6700 cu ft. / lin. ft.
Shoe joint length =	32 lin. ft.
Percent excess =	50%
Excess factor =	1.5
Slurry yield =	1.18 cu. ft. / sack

Sacks required =(volume in shoe joint +annular volume in open hole + annular volume between casings)(excess factor) / yield

Sacks required =((0.6700 cu. ft. / lin. ft.) (32 lin. ft.)+ (0.4336 cu. ft. / lin. ft.) (205 lin. ft.)+ (0.5154 cu. ft. / lin. ft.) (170 lin. ft.)) (1.5) / 1.18 cu. ft /sack

Sacks required = 251.61 sacks = **255 sack**

8 5/8"casing job (Class A with 2 % CaCl & 1/4 #/sack cello-flake)

Top of cement =	surface
Hole size =	10 5/8"
Casing size =	8 5/8"
Outer Casing size =	11 ¾"
Annular volume between casing and open hole =	0. 2100 cu. ft. / lin. ft.
Annular volume between casings =	0. 2643 cu. ft. / lin. ft
Length of cement column in open hole =	825 lin. ft.
Length of column between casing =	375 lin. ft.
Casing capacity =	0.3422 cu ft. / lin. ft.
Shoe joint length =	32 lin. ft.
Percent excess =	30%
Excess factor =	1.3
Slurry yield =	1.18 cu. ft. / sack

Sacks required = (volume in shoe joint +annular volume in open hole + annular volume between casings) (excess factor) / yield

Sacks required = ((0.3422 cu. ft. / lin. ft.) (32 lin. ft.)+ (0.2100 cu. ft. / lin. ft.) (825 lin. ft.)+ (0.2643 cu. ft. / lin. ft.) (375 lin. ft.))(1.3) / 1.18 ft. sack

Sacks required = 312.12 sacks = **315 sacks**

4.5"casing job (Class A cement)

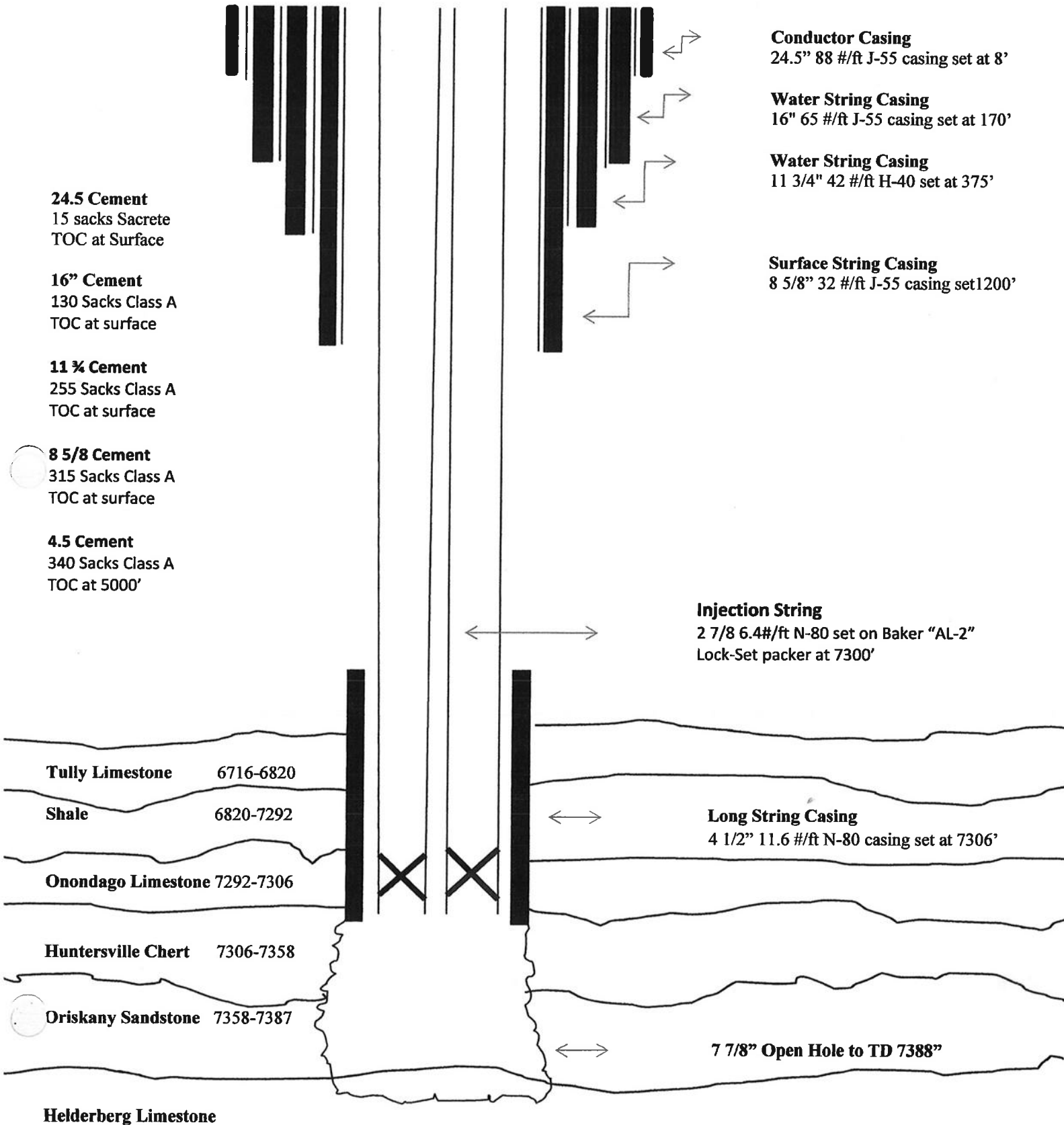|	
Top of cement =	5000 ft.
Hole size =	7 7/8"
Casing size =	4.5"
Outer Casing size =	8 5/8"
Annular volume between casing and open hole =	0.2278 cu. ft. / lin. ft.
Length of cement column in open hole =	2306 lin. ft.
Casing capacity =	0.872 cu ft. / lin. ft.
Percent excess =	10%
Excess factor =	1.1
Slurry yield =	1.71 cu. ft. / sack

Sacks required = (annular volume in open hole) (excess factor) / yield

Sacks required = (0.2278 cu. ft. / lin. ft.) (2306 lin. ft.) (1.1) / 1.71cu.ft./ sack

Sacks required = 337.92 sacks = **340 sacks**

ZELMAN WELLBORE SCHEMATIC

Elevation 1697'

Conductor Casing
24.5" 88 #/ft J-55 casing set at 8'

Water String Casing
16" 65 #/ft J-55 casing set at 170'

Water String Casing
11 3/4" 42 #/ft H-40 set at 375'

Surface String Casing
8 5/8" 32 #/ft J-55 casing set1200'

24.5 Cement
15 sacks Sacrete
TOC at Surface

16" Cement
130 Sacks Class A
TOC at surface

11 ¾ Cement
255 Sacks Class A
TOC at surface

8 5/8 Cement
315 Sacks Class A
TOC at surface

4.5 Cement
340 Sacks Class A
TOC at 5000'

Injection String
2 7/8 6.4#/ft N-80 set on Baker "AL-2"
Lock-Set packer at 7300'

Tully Limestone   6716-6820

Shale   6820-7292

Long String Casing
4 1/2" 11.6 #/ft N-80 casing set at 7306'

Onondago Limestone 7292-7306

Huntersville Chert   7306-7358

Oriskany Sandstone   7358-7387

7 7/8" Open Hole to TD 7388"

Helderberg Limestone

Attachment "M"
Casing and Cementing Data

Casing Data	Size (inches)	Type	Weight	Grade	Set Depth (ft)	Collapse Press. (psi)	Int. Yield Press. (psi)	Axial Loadings (lbs)	Basket (ft)	Centralizers
Conductor	24.5		88	J-55	8					
Water String	16	LT&C	65	H-40	170	670	1640	439000	65	every joint
Water String	11.75	LT&C	42	H-40	375	1070	1980	307000	160	every joint
Surface Casing	8 5/8	LT&C	32	J-55	1200	2530	3930	417000	360	every 2 joints
Long String	4.5	LT&C	11.6	N-80	7306	6350	7780	223000		every 3 joints
Injection String	2 7/8	EUE	6.4	N-80	7300	11160	10575	144960		

Cement Data	Size (inches)	Class	Amount (sacks)	CaCl %	Celloflake (#/sack)	Yield (cu.ft./sack)	Density (#/gal)	Volume (bbls)
Conductor	24.5	sacrete	15	0	0.00	1.18	15.6	3.15
Water String	16	A	130	2	0.50	1.18	15.6	27.32
Water String	11.75	A	255	2	0.50	1.18	15.6	53.59
Surface String	8 5/8	A	315	2	0.25	1.18	15.6	66.2
Long String	4.5	A	340	0	0.00	1.18	15.6	71.45
Injection String	2 7/8	N/A						

Unloading Dock

ZELMAN INJECTION WELL SURFACE FACILITY

Secondary Containment

Un-filtered
500 bbl tank

Un-filtered
500 bbl tank

Un-filtered
500 bbl tank

Un-filtered
500 bbl tank

Filter

Pump

Filtered
500 bbl tank

Filtered
500 bbl tank

Filtered
500 bbl tank

Filtered
500 bbl tank

Wellhead

2" LP

2-9/16" 5M

2-9/16" 5M

7-1/16" 5M

2-1/16" 3M

11" 3M

2" 3M

8-5/8" Tubing

4-1/2" Tubing

2-7/8" Tubing
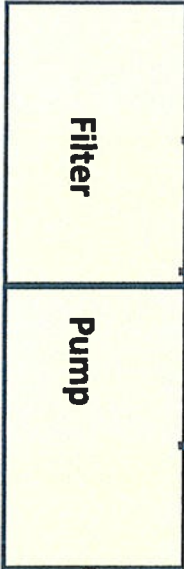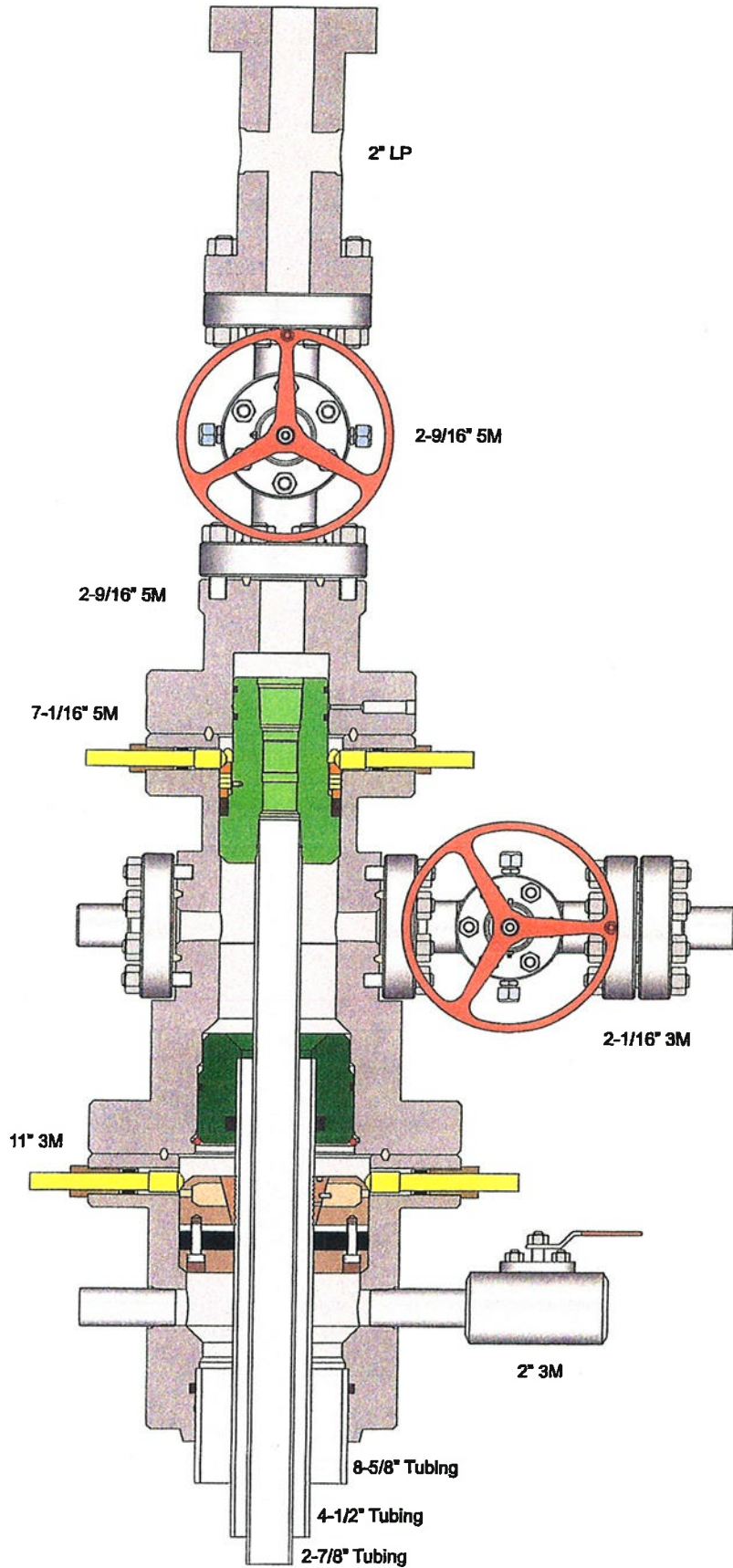
MODEL A-3™ AND AL-2™ LOK-SET RETRIEVABLE CASING PACKER

Product Family Nos. H64630 and H64628

DESCRIPTION/APPLICATION

The Model A-3 Lok-Set Packer combines advantages of a retrievable packer with features of a permanent packer. Its ability to lock down tubing forces provides for a broad range of applications, including production, injection, zone isolation, and remedial operations. The packer is set with right-hand rotation while slacking off tubing weight. Right-hand rotation with slight tension applied releases the packer.

The Model AL-2 Lok-Set Packer is similar to the Model A-3 and is recommended when a larger-than-normal bore size is required.

FEATURES/BENEFITS

- Holds pressure from above and below, without relying on set-down weight, tubing tension, or hydraulic hold-down
- Provides tubing anchoring with tension applied, suitable for pumping wells or injection, controlling tubing forces related to change fluid temperatures
- Opposed, non-transferring, dovetail slips prevent packer movement associated by changing differential pressures, while allowing the landing of the tubing in tension, neutral, or compression
- Rotational release provides ease of operation in combination with the L-10 On-OffTubing Connector
- Packing element compression is locked in by ratcheting action of lock segments, also permitting rotation in only one direction

ACCESSORIES

To provide a simple and reliable injection system for retrieving the injection string without having to unseat the packer:

- Model L-10 or L-316 On-Off Sealing Connectors, Product Family Nos. H68420 and H68422.
- Baker Blanking Plug can be used in the seating nipple profile of the on-off sealing connector to provide a means of plugging the lower zone while the tubing is being pulled.
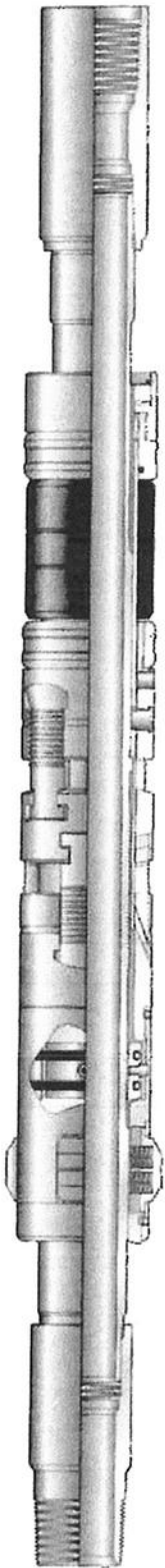
**Model A-3 Lok-Set
Retrievable Casing Packer
Product Family No. H64630**