

ANTON 安東



Fracturing service

东方智慧 全球分享
Oriental wisdom , Global sharing

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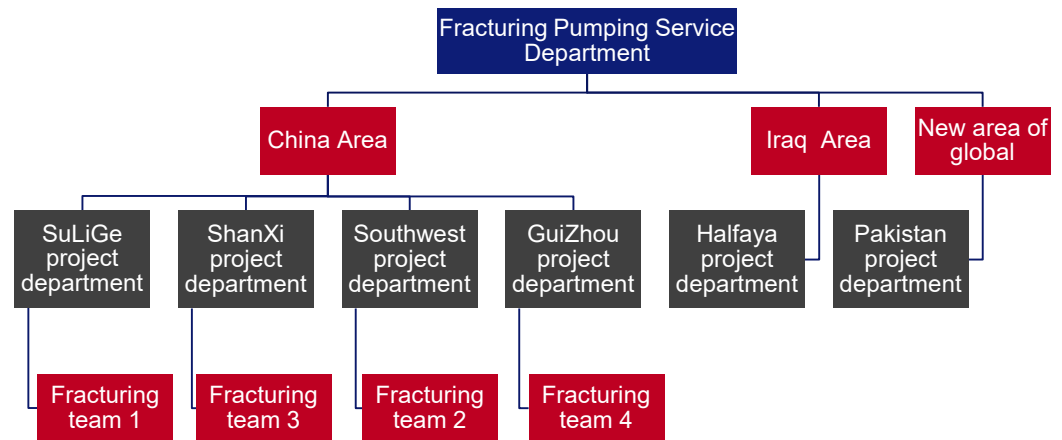
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1、 Brief introduction

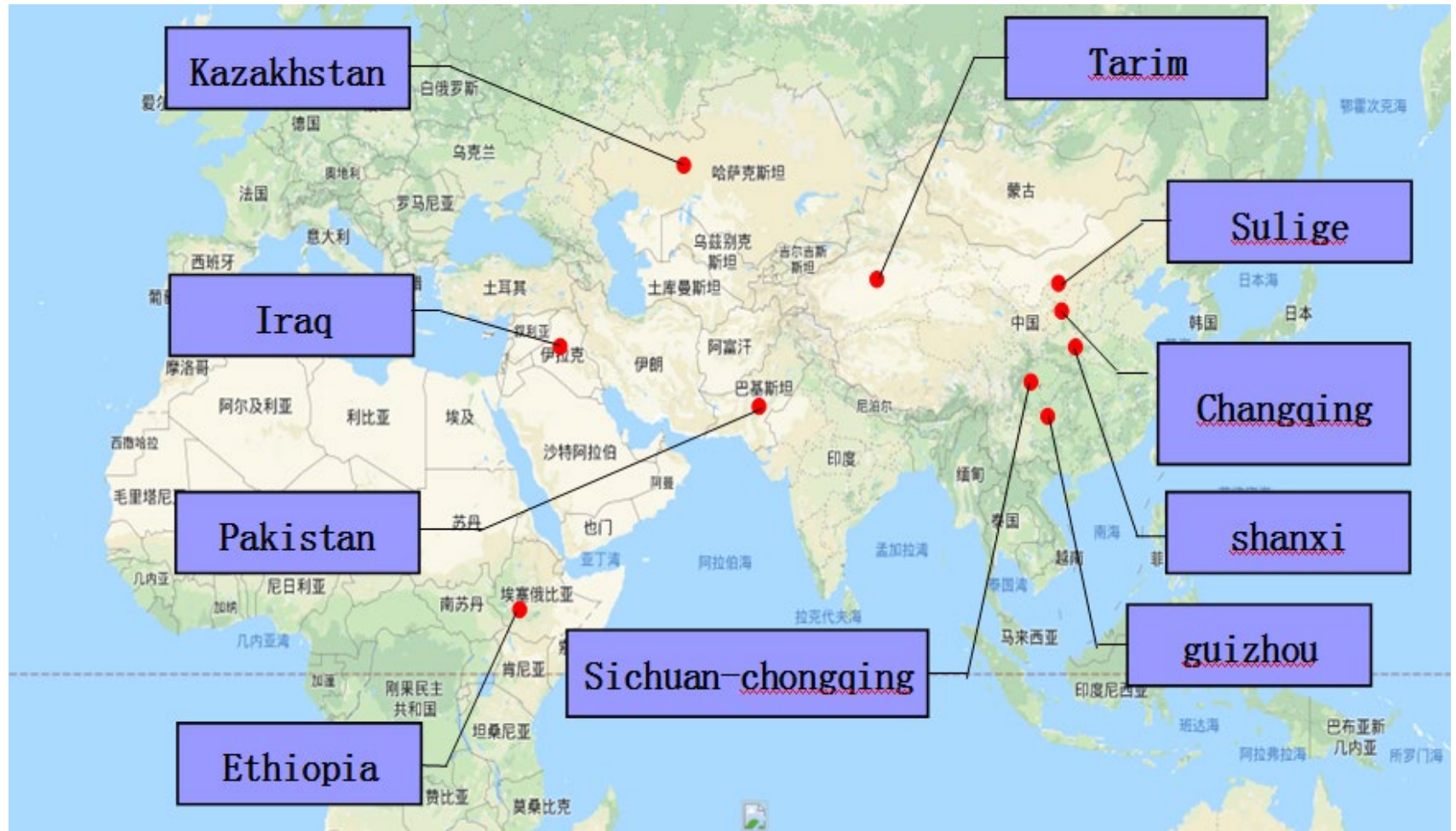
ANTON pumping service is established in 2010. The company is located in Suining city Sichuan province. The pumping capacity is 100000HP. It has 180 employees total, including 10 senior engineers and 45 specialty technicians. It has 6 Fracturing teams. (4 teams in china, 2 teams in overseas)

Suining base(80,000m²)



1、 Brief introduction

Service Area



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2、Fracturing Equipment

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2000HP Fracturing truck



2500HP Fracturing truck

Name	Specifications and Models	Number (set)
Pumping truck	2500HP	16
Pumping truck	2000HP	31
Liquid nitrogen truck	1000K	3



1000K liquid nitrogen truck

(100000HP pumping capacity)

2、Fracturing Equipment



130barrel blender truck



Mixing truck

Name	Specifications and Models	Number (set)
Blender truck	100/130bbl	9
Mixing truck	4.0-8.0m ³ min	4
Instrument truck	Network control	8



Instrument truck

2、Fracturing Equipment

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Name	Number	Name	Number
Suit Liquid tank	6000m ³	Sand tank truck	20Set*15m ³
Acid tank	700m ³	Sand hoarding	7 Set

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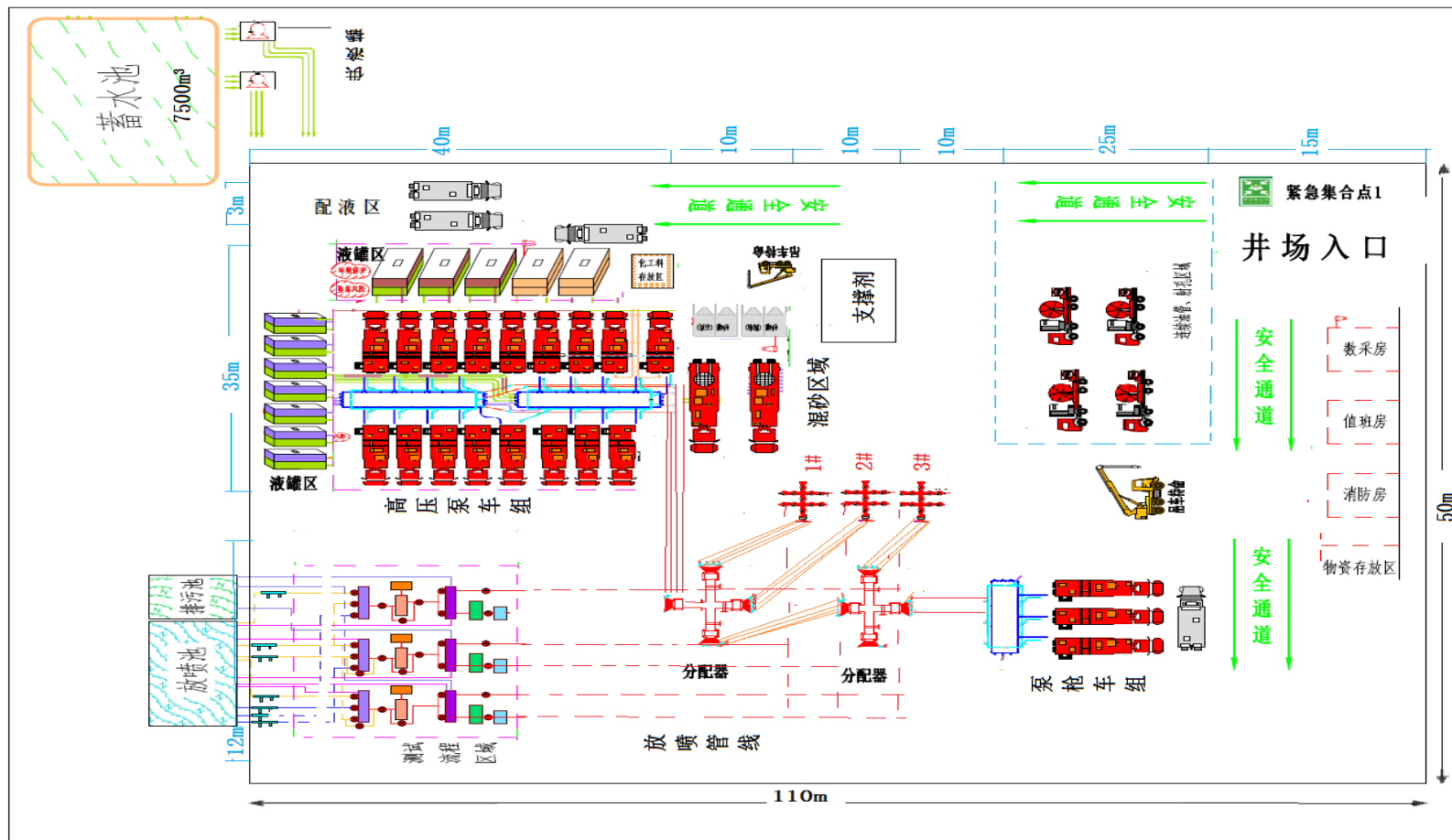
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3、Typical Technology

(1) Shale gas factorization pumping technique

The Standardized well site layout



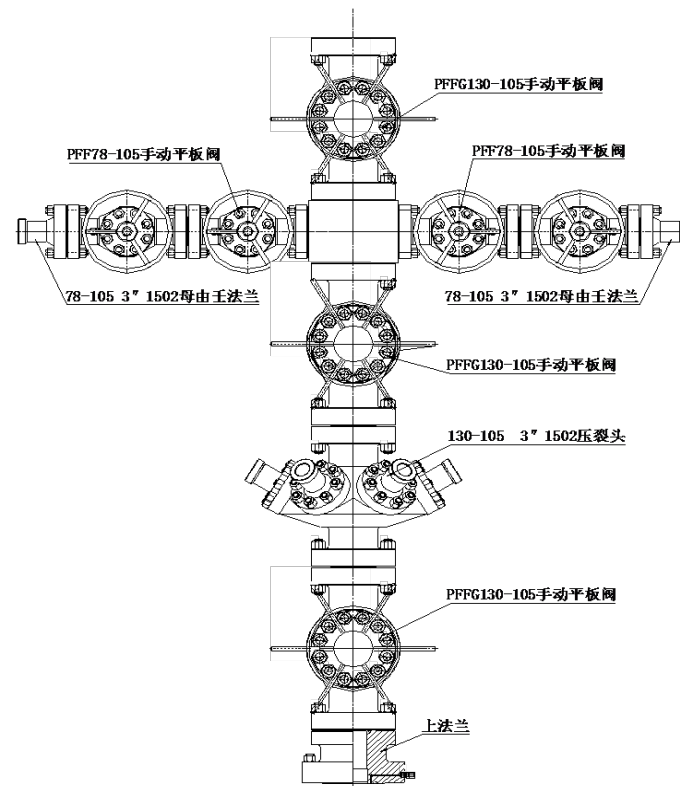
3、 Typical Technology

(1) Shale gas factorization pumping technique

Multipass injection head



Frac tree

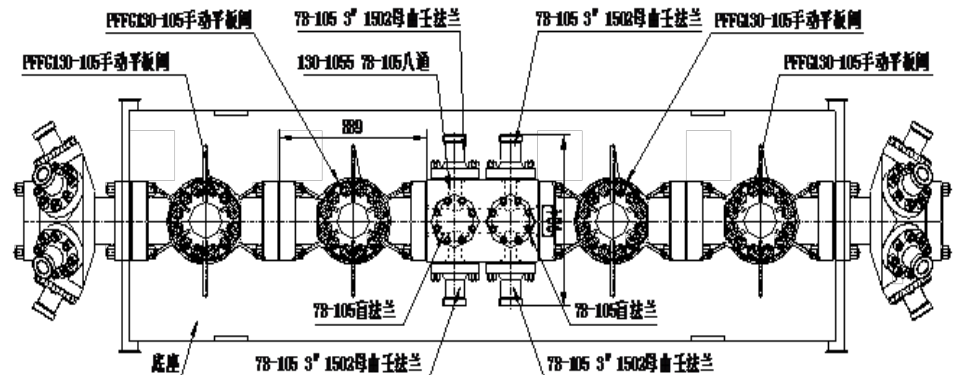


3、Typical Technology

(1) Shale gas factorization pumping technique

Big path fracturing distribution manifold

- ◆ The key of fracture on the Platform;
- ◆ The main path is 130/180mm, 105MPa;
- ◆ It can satisfy to 3~5 wells continuous operation on the same platform .

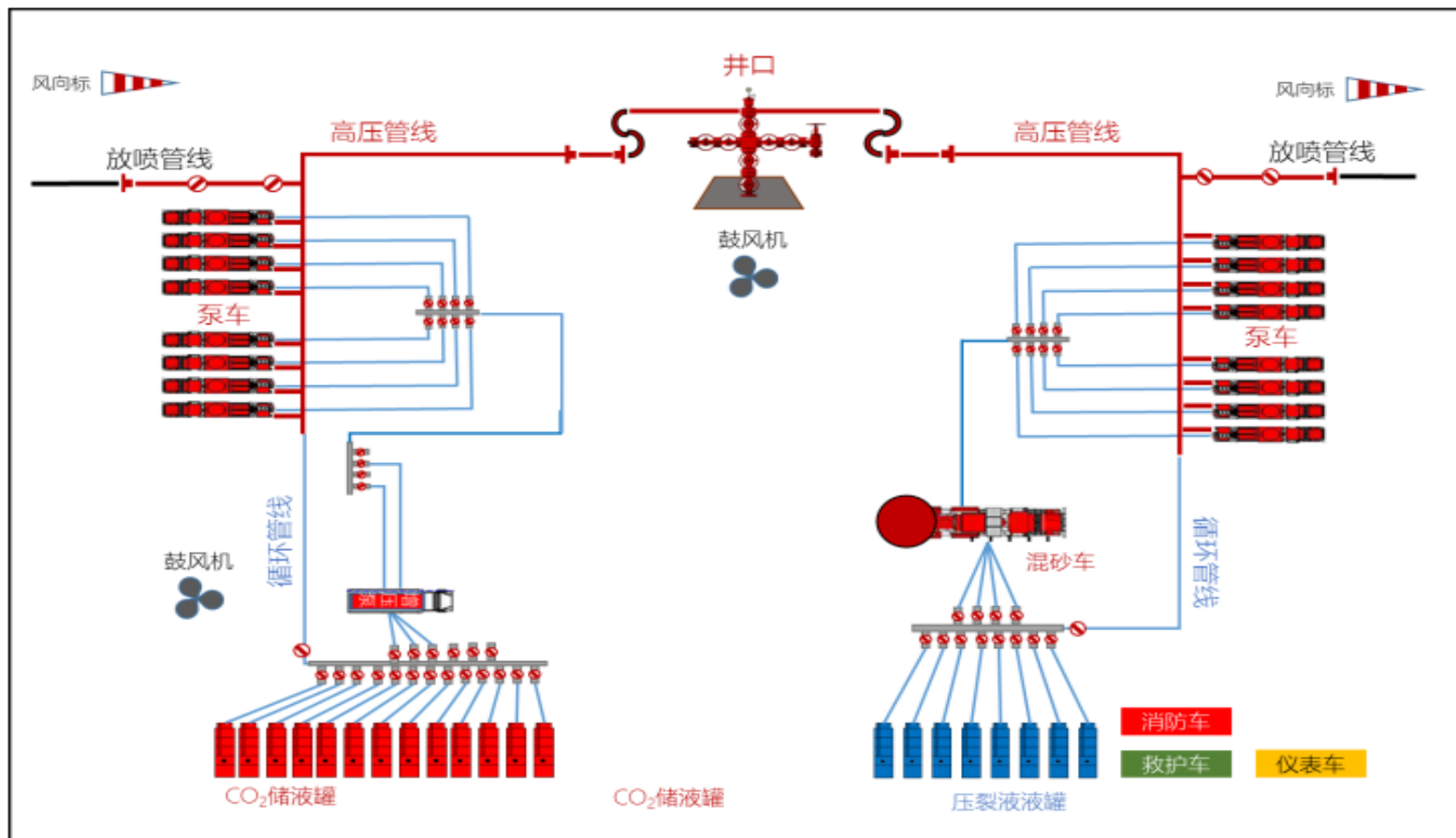


Big path high pressure manifold

3、Typical Technology

(2) Supercritical CO_2 fracturing technique

The Standardized well site layout of CO_2 enhanced energy /foam fracturing



3、Typical Technology

(2) Supercritical CO_2 fracturing technique

Matched CO_2 booster pump and low pressure manifold, CO_2 supply rate is 4.0-8.0 m^3/min .

CO_2 booster pump



CO_2 low pressure manifold

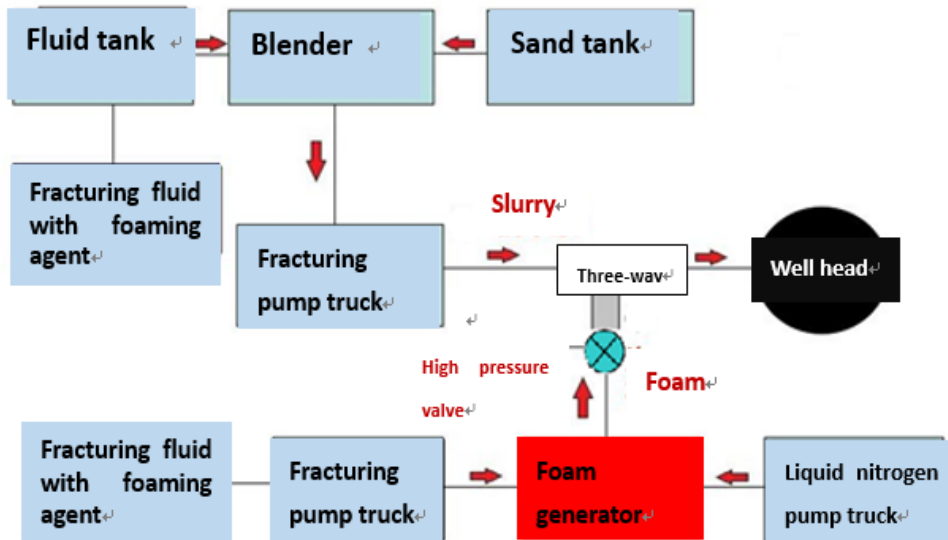


3、Typical Technology

(3) N₂ foam fracturing technology

Matched foam generator , maximum work pressure is 70MPa, maximum work rate is 5.0m³/min。 It can supply N₂ or CO₂ foam fracturing. The foam density is 0.1~0.9g/cm³。

Foam fracturing equipment layout



The foam generator



3、Typical Technology

(4) Compound Temporary Plugging Fracturing Technology

Formed the way to adding different kinds of temporary plugging material , completed equipment upgrade.



- Small particle (< 5mm)
- Adding way: mixing tank of blender
- Rate : 60-120kg/min



- Large particle (6-12mm)
- Adding way: Special pumps (Anton equipped with pumping trucks) or risers in high-pressure pipelines.
- Rate :200kg/min.



- ball
- Adding way: ball injector

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4、Service Performance and Case

last 3 years service performance :

No.	Area	Project	Customer	Wells/segments	year	remark
1	Changqing	Hydraulic fracture	The No.4 Gas Production plant , changing Oil field	110/235	2016-2018	
2		Hydraulic fracture	The No.5 Gas Production plant , changing Oil field	73/203	2016-2018	
3		Hydraulic fracture	Changqing project department	3/90	2016-2018	
4		Hydraulic fracture	The No.3 Gas Production plant , changing Oil field	102/254	2016-2018	
5		Hydraulic fracture	The No.1 Gas Production plant , changing Oil field	7/19	2016-2018	
6		Hydraulic fracture	The No.6 Gas Production plant , changing Oil field	30/89	2016-2018	
7	Yanchang	Hydraulic fracture	Department of exploration	58/116	2016-2018	
8	Southwest	Shale gas	Southwest oil/gas field	35/965	2016-2018	
9	Southwest	Tight gas	EOG、 Southwest oil/gas field	15/123	2016-2018	
10	Shanxi	CBM	AAGI	187/391	2016-2018	
11	Guizhou	CBM	Guizhou energy investment group	37/68	2016-2018	
12	Overseas	Hydraulic fracture	UEP、 Halfaya、 Suke	27/33	2016-2018	
13	Total			684/2586		

Typical service performance case:

- ◆ In 2011 , The first shale gas horizontal well staged fracturing construction in China:wei X-1 well
- ◆ In 2012 , The first Coiled tubing drag fracturing technical services with bottom sealing was done in Daniudi field ,NorthChina oil & gas Branch ,SINOPEC. In 2018 years we completed 40 segments horizontal fracturing in one trip.
- ◆ In 2014 , we completed the No.1 horizontal well “staged fracturing and Temporary Plugging Fracturing Technology” in tight oil block o north of Jiangsu province. We provided fracturing and test services.
- ◆ In 2014 , The drilling, completion and fracturing in tight sandstone gas were performed for the first time in sulige area.
- ◆ In 2014 , The first hydraulic fracturing in carbonate reservoir, in Iraq.
- ◆ In 2017 , 5 wells hydraulic fracturing were done in carbonate reservoir in the Republic of Kazakhstan. The highest production was 220000m³/d.
- ◆ In 2017 , promote and popularize ”Anton Full Scale Hydrau-frac technique ”.

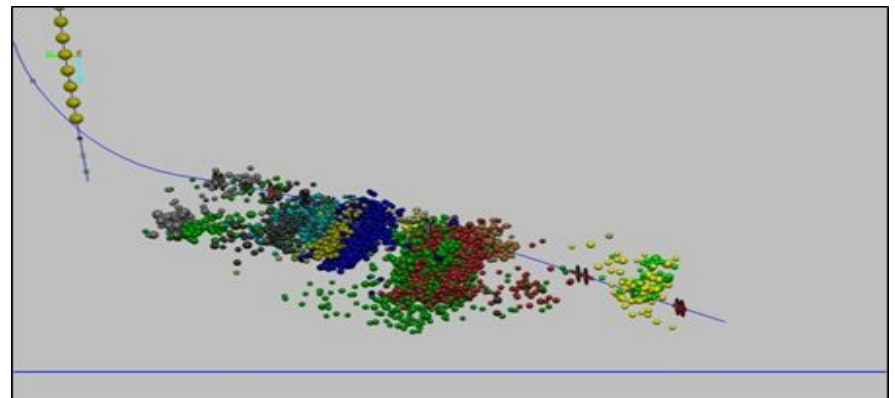
4、 Service Performance and Case

The shale gas horizontal well fracturing construction:

The first shale gas horizontal well staged fracturing construction in China:wei X-1 well
use rapid drilling plug + sandblasting perforation staged fracturing technology

- Injection method: casing fracturing
- The main construction parameters as follows.
- Stage number :12 segments
- Design Displacement:15.9m³/min
- Total amount o fuild :24640m³
- Total amount of sand:1041.2t

965 segments of fracturing have been completed in Changning、Weiyuan、 Yibin blocks in the past 3 years.



4、Service Performance and Case

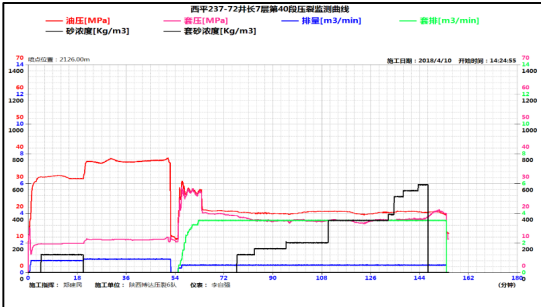
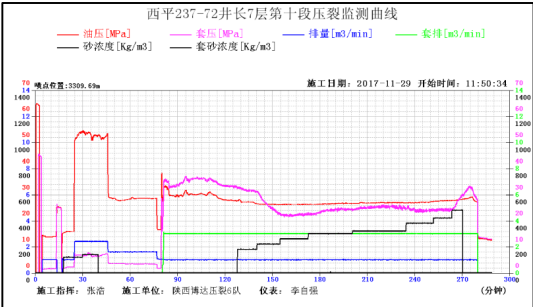
Coiled tubing drag fracturing technical services with bottom sealing:

More than 100 wells and 1000 segments were fractured. completed 40 segments horizontal fracturing in one trip , the minimum reservoir thickness of 0.9m is accurately located in the vertical well.

Xipi-XX Well

Casing	PBTD	reservoir	Horizontal length	stages
5½"	3615	Chang 7	1529.7m	40

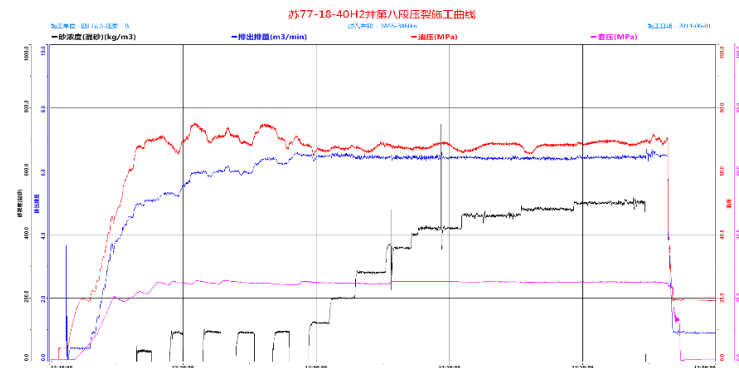
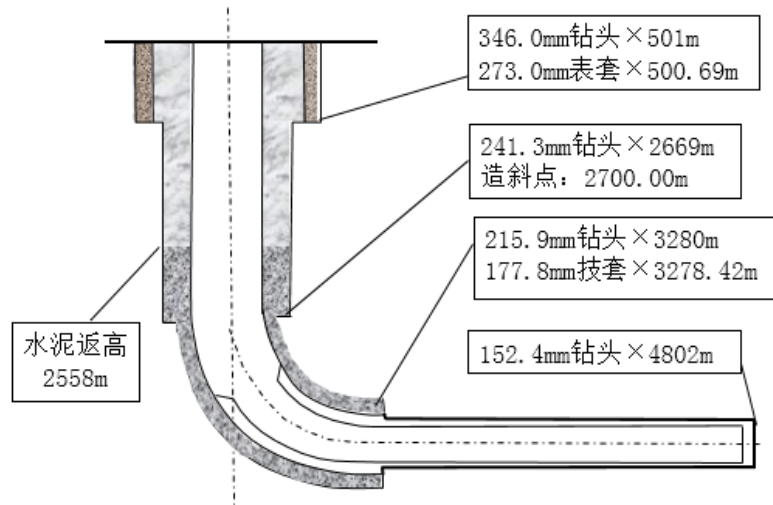
- 2018.3-4: completed 40 segments horizontal fracturing in one trip , 2.5h/stage , the output of up to 31.2m³/d becomes the highest in the block.



4、Service Performance and Case

Integrated drilling ,completion and fracturing services:

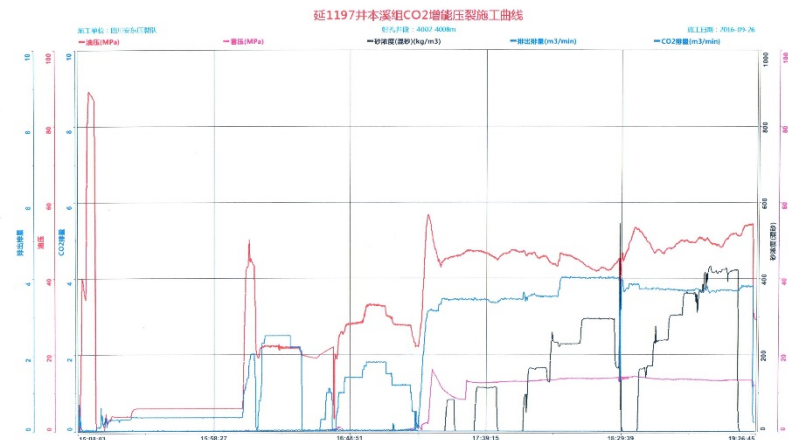
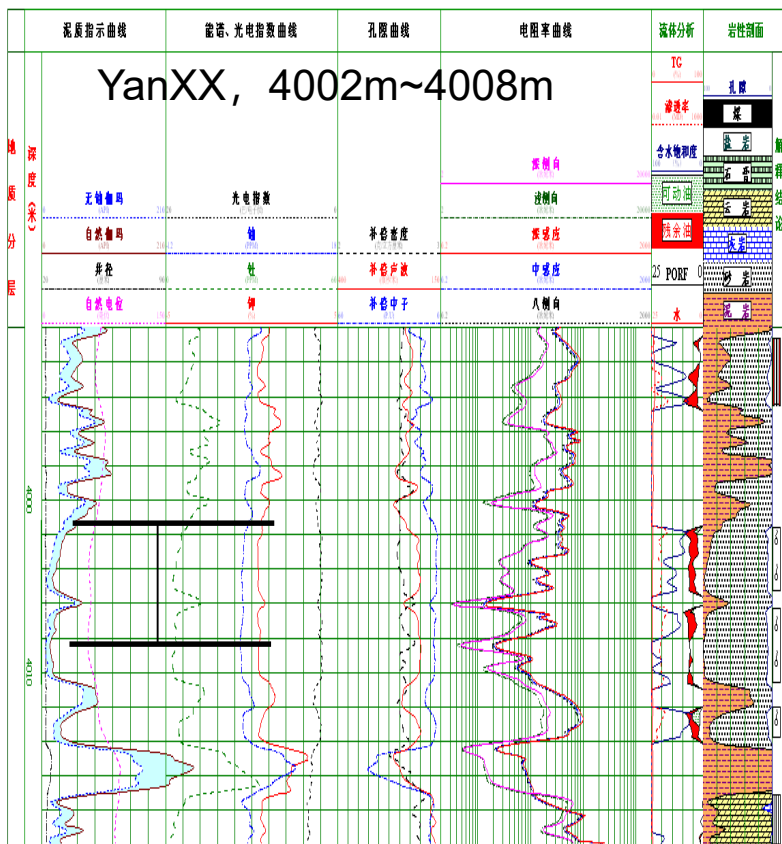
SuXX well ,completion depth is 4802m, Horizontal well external packer staged fracturing technology and 13 segments hydraulic fracturing were completed. The volume of liquid is 6003m³,the sand is 666m³, Gas production is 2.7×10⁴m³/d.



4、 Service Performance and Case

Supercritical CO₂ fracturing technique services

It has been used in Sulige gas field and Yanchang oil field for more than 10 wells, the application depth exceeds 4000 m.

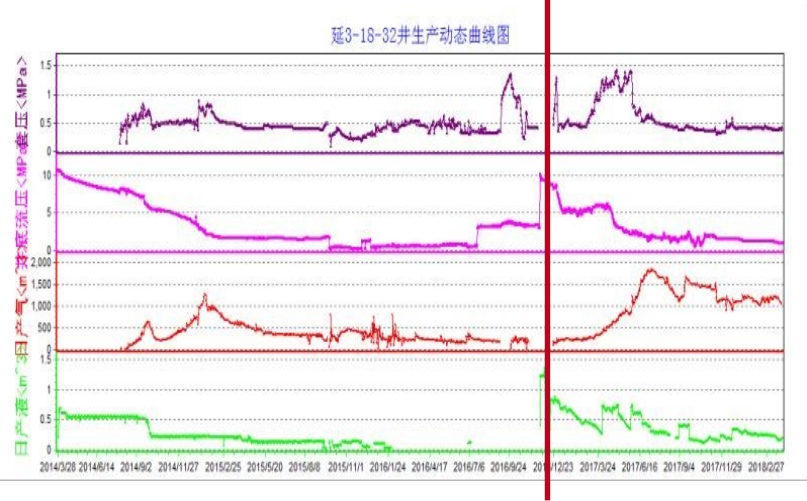
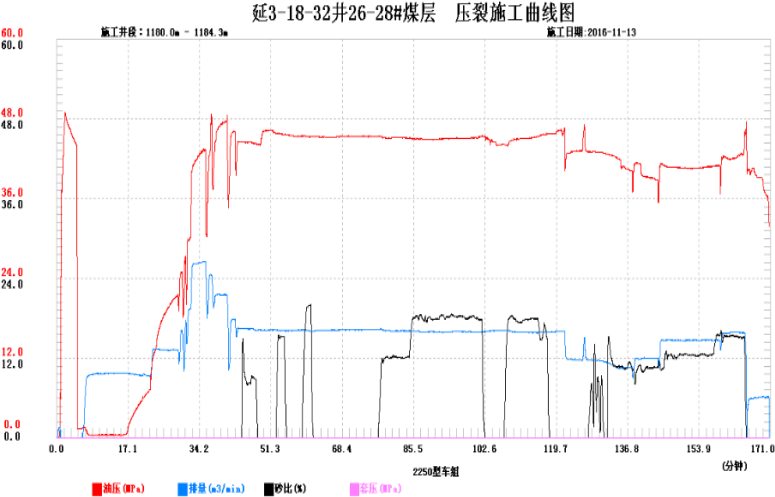


The rate of CO₂ is 2.5m³/min, the volume of CO₂ is 60m³, the pressure is 56.8MPa, the liquid is 426m³, the sand is 53m³.

4、 Service Performance and Case

N₂ foam fracturing technology services

It has been used in CBM for more than 10 wells, the yield is 3~8 times than before.



- (1)rate: 5.0-6.5m³/min;
- (2)form liquid:460m³;
- (3)Liquid nitrogen: 115t;
- (4)sand : 28m³

The highest production is 1846m³/d.

4、Service Performance and Case

Application of Compound Temporary Plugging Fracturing Technology

By the end of 2018, our company has completed 126 wells (including 120 vertical wells and 6 horizontal wells) of temporary plugging fracturing technology services, and achieved very good production.

Anton oil compound temporary plugging fracturing application

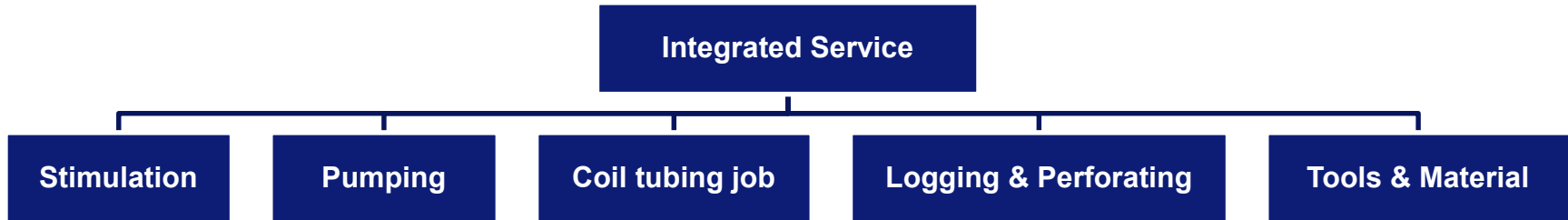
NO	custmer	year	amount	Well-type	construction technology
1	Changqing 1 st oil production plant	2015年	44	Vertical or directional wells	Interlayer steering
2	Changqing 12 th oil production plant	2015年	20	Vertical or directional wells	Interlayer steering
3	Daqing 10 th oil production plant	2016年	16	Vertical or directional wells	Interlayer steering
4	Yanchang	2015	35	Vertical wells	Inlayer steering
5	Changqing	2017-2018	6	Horizontal well	Multi-seam steering in stage
6	Xinjiang	2017-2018	5	Vertical wells	Inlayer steering

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5、 Integrated Service

Provide design、 equipment、 tools|、 fracture material integration of technical services.

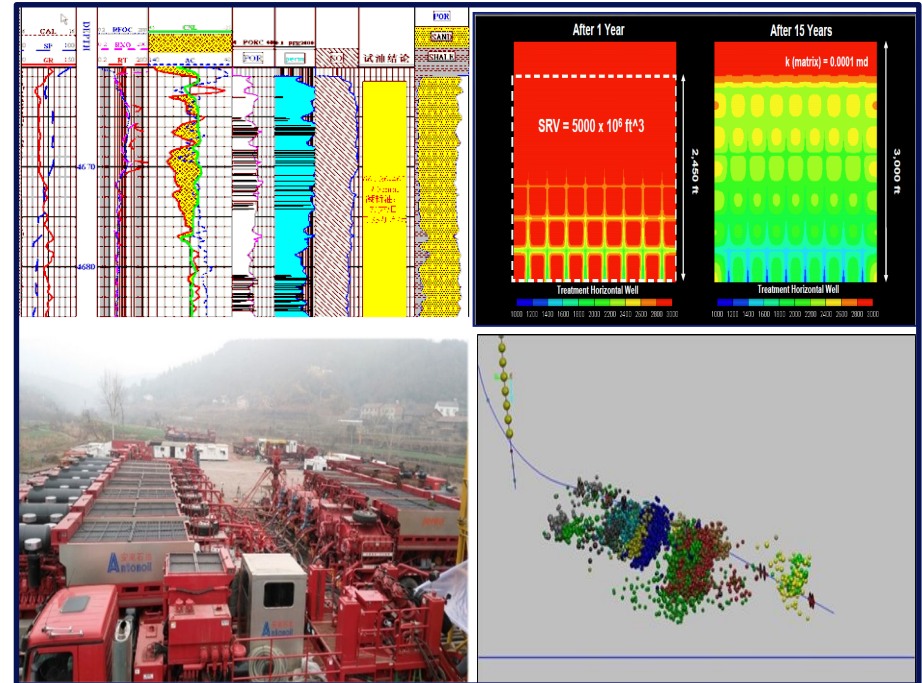
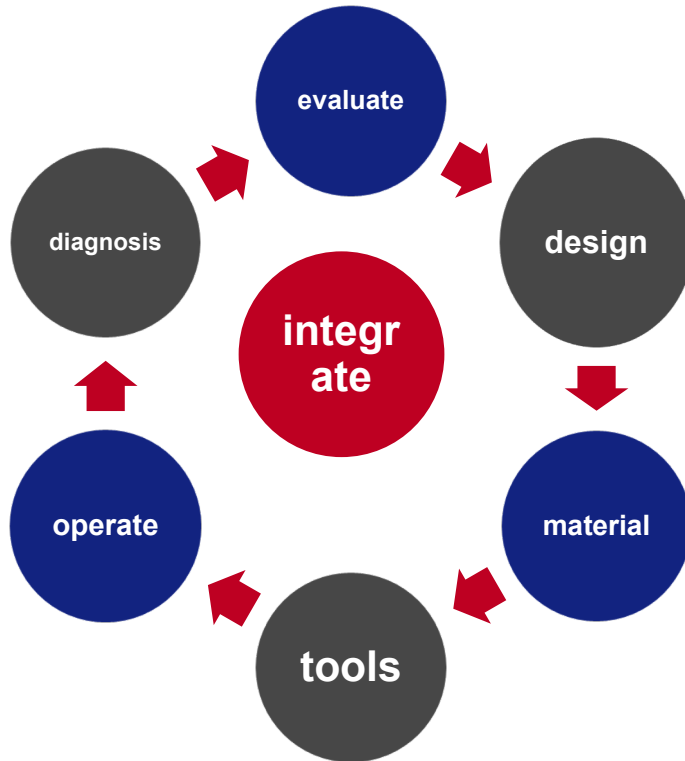


Equipment and Materials:

- We have 120 sets main Frac equipment and supporting equipment; has 100000hhp hydraulic fracture service capability
- We have 11sets coiled tubing units, 1.25"-2.375"
- We have all kinds of series logging & perforating service capability.
- We have new type stimulation fluid 、 ultra low density proppant;
- We have a complete range of downhole completion tools.



5、 Integrated Service



- Provide integrated simulation services, including reservoir evaluation fracturing design、 organization and implementation、 post-fracturing diagnosis etc.
- Integrated technical services for tight gas & oil reservoirs 、 shale gas and CBM.
- Rich experience in domestic and overseas service.

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THANKS!

Helping others succeed...

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