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Fuelling China's Clean Energy Future

ASX **SEH** 

### Disclaimer



Sino Gas & Energy Holdings Limited (ASX:SEH, "Sino Gas", "the Company") holds a 49% interest in Sino Gas & Energy Limited ("SGE") through a strategic partnership with China New Energy Mining Limited ("CNEML") to develop two blocks held under Production Sharing Contracts (PSCs) with CNPC and CUCBM. SGE has been established in Beijing since 2005 and is the operator of the Sanjiaobei and Linxing PSCs in Shanxi province. See Slide 15 for detailed structure.

Certain statements included in this release constitute forward looking information. This information is based upon a number of estimates and assumptions made on a reasonable basis by the Company in light of its experience, current conditions and expectations of future developments, as well as other factors that the Company believes are appropriate in the circumstances. While these estimates and assumptions are considered reasonable, they are inherently subject to business, economic, competitive, political and social uncertainties and contingencies.

Many factors could cause the Company's actual results to differ materially from those expressed or implied in any forward-looking information provided by the Company, or on behalf of, the Company. Such factors include, among other things, risks relating to additional funding requirements, gas prices, exploration, acquisition, development and operating risks, competition, production risks, regulatory restrictions, including environmental regulation and liability and potential title disputes. Forward-looking information is no guarantee of future performance and, accordingly, investors are cautioned not to put undue reliance on forward-looking information due to the inherent uncertainty therein. Forward-looking information is made as at the date of this release and the Company disclaims any intent or obligation to update publicly such forward-looking information, whether as a result of new information, future events or results or otherwise.

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This presentation should be read in conjunction with the Annual Financial Report as at 31 December 2015, the half year financial statements together with any ASX announcements made by the Company in accordance with its continuous disclosure obligations arising under the Corporations Act 2001 (Cth).

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### **Resources Statement**



The statements of resources in this release have been independently determined to Society of Petroleum Engineers (SPE) Petroleum Resource Management Systems (PRMS) standards by internationally recognised oil and gas consultants RISC (announced 10 March 2016) using probabilistic and deterministic estimation methods. These statements were not prepared to comply with the China Petroleum Reserves Office (PRO-2005) standards or the U.S. Securities and Exchange Commission regulations and have not been verified by SGE's PSC partners CNPC and CUCBM.

All resource figures quoted are unrisked mid-case unless otherwise noted. Sino Gas' attributable net Reserves & Resources assumes PSC partner back-in upon ODP approval (i.e. CUCBM take their entitlement of 30% interest in Linxing PSC and CNPC take their entitlement to 51% in the Sanjiaobei PSC) and CBM Energy's option to acquire an interest of 5.25% in the Linxing PSC (by paying 7.5% of back costs) is exercised. Reserves & Resources are net of 4% in-field fuel for field compression and field operations. Reference point is defined to be at the field gate. No material changes have occurred in the assumptions and subsequent work program exploration and appraisal results have been in line with expectations.

Information on the Resources in this release is based on an independent evaluation conducted by RISC Operations Pty Ltd (RISC), a leading independent petroleum advisory firm. The evaluation was carried out by RISC under the supervision of Mr Peter Stephenson, RISC Partner, in accordance with the SPE-PRMS guidelines. Mr Stephenson has a M.Eng in Petroleum Engineering and 30 years of experience in the oil and gas industry. Mr. Stephenson is a member of the SPE and MIChemE and is a qualified petroleum reserves and resources evaluator (QPPRE) as defined by ASX listing rules. Mr Stephenson consents to the form and context in which the estimated reserves and resources and the supporting information are presented in this announcement. RISC is independent with respect to Sino Gas in accordance with the Valmin Code, ASX listing rules and ASIC requirements.

#### Sino Gas' Attributable Net Reserves & Resources as at 31 December 2015

SEH Attributable Net Reserves & Resources	1P Reserves (Bcf)	2P Reserves (Bcf)	3P Reserves (Bcf)	2C Contingent Resources (bcf)	P50 Prospective Resources (bcf)
31 December 2015 (Announced 10 March 2016)	362	552	751	814	733
31 December 2014 (Announced 3 March 2015)	350	448	557	739	649
Total 2015 Change (+/-%)	+23% (2P)		+10%	+13%	
Gross Project 31 December 2015	1,250	1,962	2,723	2,831	2,954

Note 1. The estimated quantities of petroleum that may potentially be recovered by the application of future development project(s) relate to undiscovered accumulations. These estimates have both an associated risk of discovery and a risk of development. Further exploration and appraisal is required to determine the existence of a significant quantity of potentially moveable hydrocarbons. The probability of development of the contingent area is estimated to be 90%, with the additional probability of geological success assigned to prospective resources estimated to be 75%.

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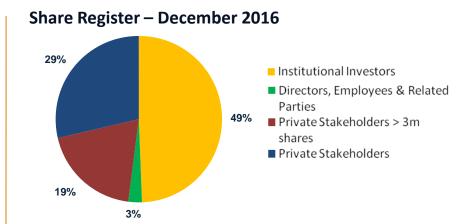


### **Company Snapshot**



#### **Corporate Information – as at 31 December 2016**

ASX Listed (S&P ASX 300)	SEH
Share Price	A\$0.115
Issued Shares	2,074m
Market Cap	A\$240m
Cash Balance	US\$44m
Drawn/undrawn debt facilities	US\$10/40m <sup>1</sup>



#### 12 Month Share Price Performance to 31 December 2016



Top Shareholders – Dec 2016	Shares (m)	%
FIL Investment Management	205.9	9.9%
Commonwealth Bank of Australia	193.3	9.3%
Kinetic Investment Partners	128.9	6.2%
SG Hiscock	123.6	6.0%
Perennial Value	109.8	5.3%

### **2016** Key Accomplishments



#### **Technical**

- ✓ Announced 23% increase in YE2015 net 2P reserves
- ✓ Successful Linxing (East) exploration including highest test rate from vertical well on field
- ✓ Average well test rate up 13% y/y

#### **Operational**

- √ 450,000 manhours LTI free
- ✓ Increased production >3x from 2015 exit to ~21 MMscf/d
- ✓ Pilot well cost down 11% y/y

### Regulatory

- ✓ Sanjiaobei and Linxing (West) CRRs endorsed by PSC partners
- ✓ ODP processes underway
- ✓ Linxing (East) CRR submitted

#### Commercial

- √ Finalised gas sales proceeds payment from Linxing
- Remitted gas sales proceeds offshore China
- ✓ Agreed Sanjiaobei pilot revenue allocation, received processing payment

#### **Financial**

- ✓ Generated ~US\$11 million gross SGE revenue
- ✓ Ended year with US\$44 million cash
- ✓ Extended Macquarie facility maturity to 2018

### **World-Scale Proven Reserves & Resources**



2P Reserves of 2.0 tcf (~325mmboe) gross<sup>1</sup>

2C Resources of 2.8 tcf (~470mmboe) gross<sup>1</sup>

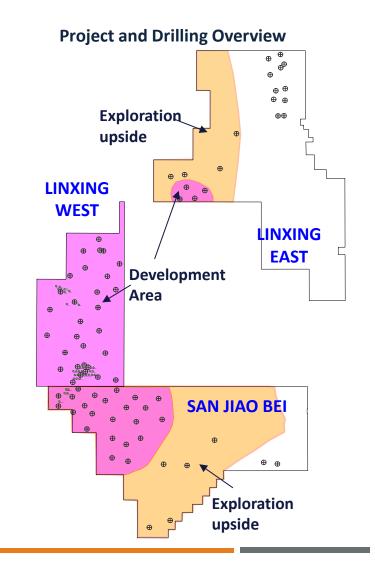
P50 Prospective Resources of 3.0 tcf (~490 mmboe) gross<sup>1</sup>

PSCs ~3,000km<sup>2</sup> (740,000 acres)

**Highly delineated resource** 

Analogous to major producing fields in basin

LNG equivalent scale at less than 20% of the equivalent LNG cost<sup>2</sup>



<sup>1.</sup> Reserve and Resource estimates as of December 31, 2015. Refer to slide 3 for details of the Company's net share of Reserves and Resources. To be read in conjunction with Resource Statement on slide 3. mcf to boe conversion 6:1.

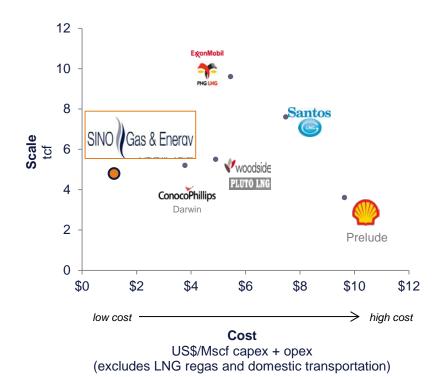
<sup>2.</sup> Compared to US\$/mcf capex + opex of Pluto, PNG, Gladstone, Prelude and Darwin LNG projects

### LNG Equivalent Scale at a Fraction of the Cost



- Sino Gas' Ordos basin projects expected to supply natural gas into China at similar scale to total output of major LNG projects
- Total cost (capex + opex) estimated to be less than 20% the average cost of these LNG projects

#### Sino Gas vs. major LNG projects<sup>1</sup>



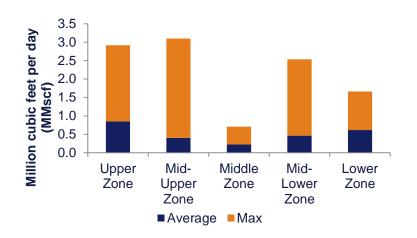


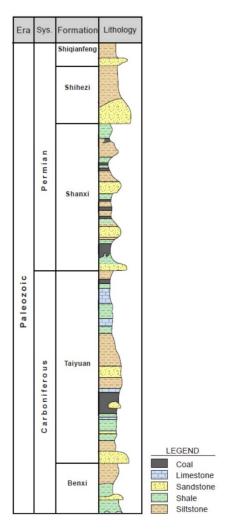


### Low Risk Reservoir, Proven Deliverability



- ~1,000m gross gas bearing section
- ≈ Stacked reservoir units up to 16 sands per well
- Analogous to other major producing fields in Ordos Basin Changbei (Shell), Sulige (CNPC), South Sulige (Total)
- Technology application driving year over year productivity improvements
  - Average pilot well brought onstream in 2016 tested ~1 MMScf/d
  - 2016 exploration well on Linxing (East) highest vertical test on PSCs to date (2.7 MMscf/d)





### **Low Cost Competitive Advantage**



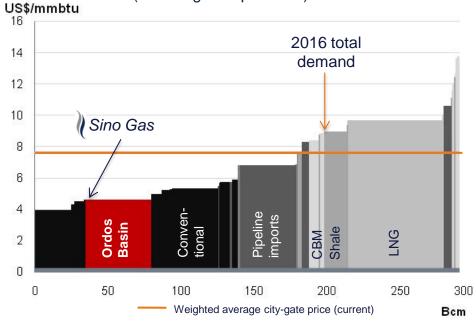
Significant cost advantage – estimated wellhead (excluding transportation) capex + opex of ~US\$1.20/mcf²

#### ➤ Low cost drivers:

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- Simple vertical well development, limited fraccing
- Moderate reservoir depths (~1,200-2,000m)
- Stacked reservoirs drive high per well ultimate recoveries
- High quality gas (~95% methane)
- Proximity to pipeline infrastructure
- Well developed service sector
- Imports and unconventionals (CBM/shale) expected to remain at the high end of the cost curve

# China 2020E City-Gate Supply Cost Curve (including transportation)<sup>1</sup>/mmbtu



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<sup>1.</sup> Source: IHS, China's Natural Gas Supply and Cost Outlooks, August 2016, assumes oil price in 2020 of US\$72.60/bbl, inclusive of transportation to city-gate

Based on RISC's base-case development of Reserves, Contingent & Prospective Resources at the wellhead, not including transportation to city-gate. To be read in conjunction with Resource Statement on slide 3.

### **Sustainable Low Cost Advantage**



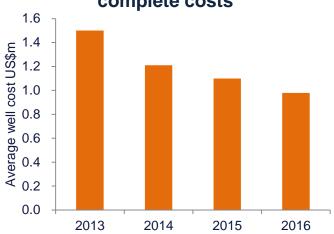
Well costs continued to improve in 2016

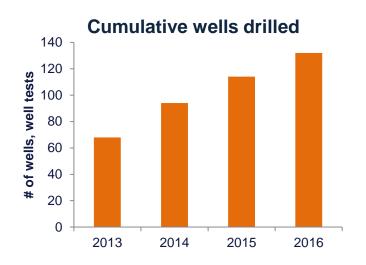
2016 vertical development well ~US\$1 million

2016 vertical well cost down ~11% vs. 2015

Further improvements anticipated in 2017

# Average vertical drill, frac and complete costs





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### Improving well performance



Well test continue to improve with ongoing technical optimisation

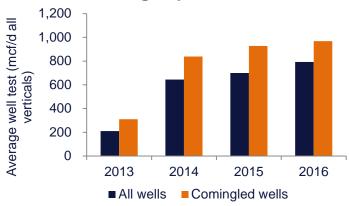
Cumulative number of well tests +36% to 147

2016 average of all well tests +13% y/y

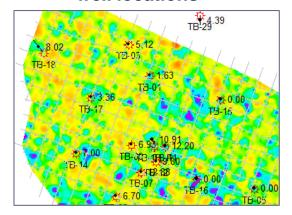
2016 average Linxing pilot well test +20% y/y Average pilot well brought onstream in 2016 >1 MMscf/d

Technology application, including optimising well placement, driving ongoing improvements

# Average vertical well tests including exploration<sup>1</sup>

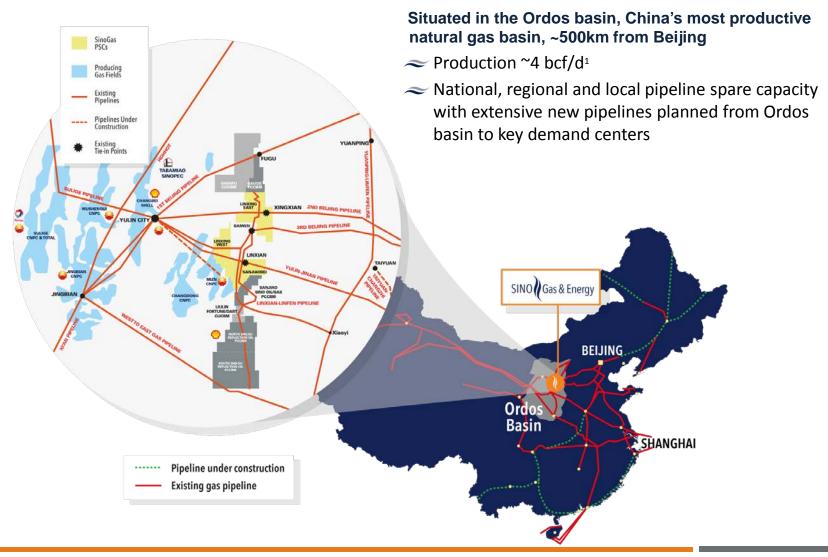


# Utilising seismic mapping to optimise well locations



## **Ready Access to Key Demand Centres**





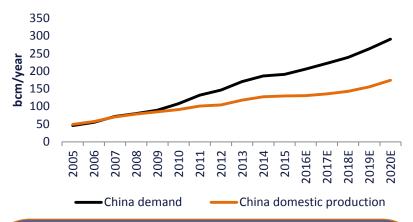
### China 13th Five Year Energy Plan



- ≈ 13<sup>th</sup> Five Year Energy Plan released on January 5, 2017 reinforces importance of increasing natural gas supply and demand
- ➣ Increases natural gas' target share of energy mix to 10% by 2020, up from less than 6% (191 bcm) in 2015
- Ordos Basin identified as strategic gas source
- Continues to prioritise deregulating the natural gas market to drive efficiencies in the value chain and improve access to infrastructure
- Specifically promotes natural gas for use in the power and transportation sectors and as a replacement fuel for coal and oil

Sino Gas' projects assist China in meeting clean energy targets





#### **Policy in Action**

- Firm pollution reduction targets and strengthened environmental enforcement mechanisms
- Regulated pipeline returns to reduce supply cost and drive demand
- Moratorium on new coal fired coal plants until
  2018, 85 plants in construction halted
- Subsidies for conversion from coal to gas
- Numerous high polluting factories shut down
- Bans on coal boilers within some large cities
- CO₂ Emissions Trading Schemes

### **2017 Work Program**



Key Objectives: Generate cash flow, drive future production, complete ODP<sup>1</sup>

Stable and reliable production and revenue

30-35 wells planned

2017 installed capacity ~45 MMScf/d

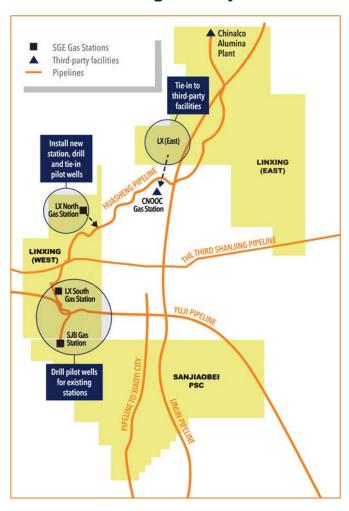
Complete ODP processes

Selective exploration

Well funded to complete program

Full year average production est. 18-23 MMscf/d

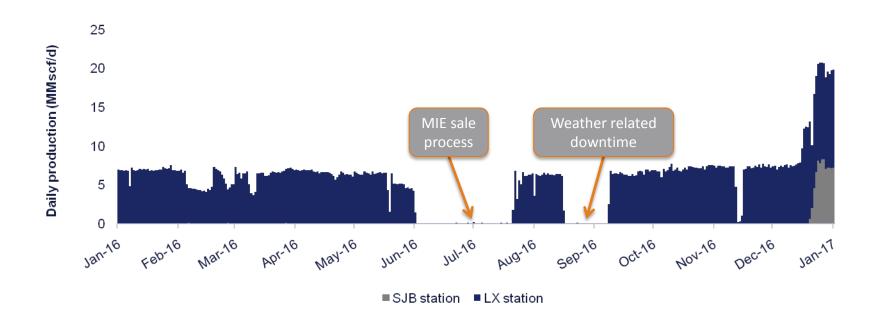
#### **2017 Work Program Key Activities**



### **Pilot Program Production**



- ≈ 2017 forecast full year average production 18-23 MMscf/d
- ≈ Processing capacity installed or available via third-parties expected to nearly double to 45 MMscf/d by late 2017/early 2018, from 25 MMscf/d in 2016



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### **Full Field Development Planning Underway**



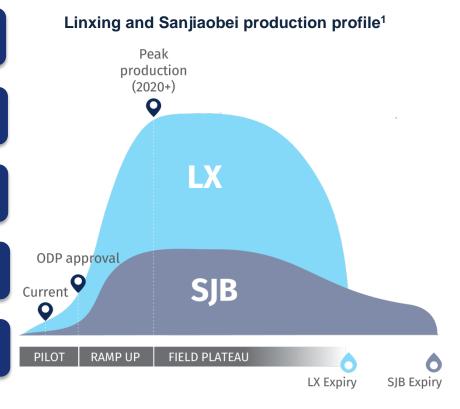
~2-3% China's domestic production at plateau

Production plateau in 2020+

Multiple low-cost central gathering stations

Utilise existing natural gas trunklines

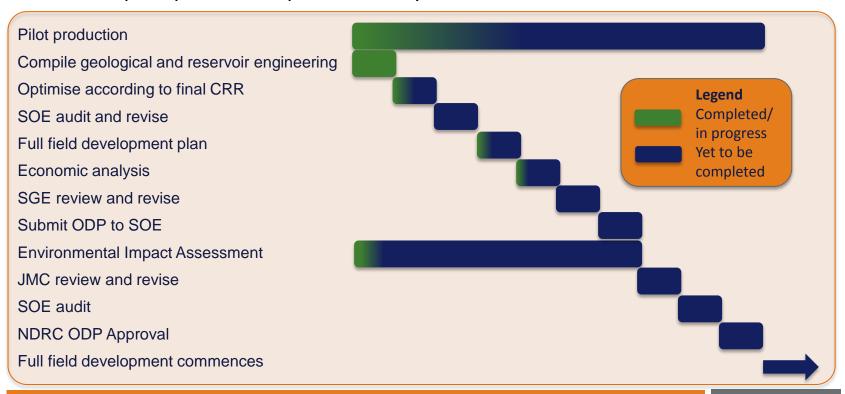
Long term gas sales agreements



### **Overall Development Plan Process**



- ≈ Strategic 2017 objective is completion of ODP processes
- ∼ ODP progressing in close cooperation with SOE partners
- ─ Five Year Energy Plan provides impetus to accelerate ODP
- ≈ Pre-ODP pilot production provides early cash flow



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### **Strong Strategic Partnerships**



#### ∼ China New Energy Mining Ltd

- Acquired 51% stake in SGE for US\$220 million in July 2016
- Well funded private Hong Kong company with strong China and international oil and gas expertise, strong China backing

#### ≈ SGE – Joint Venture Subsidiary

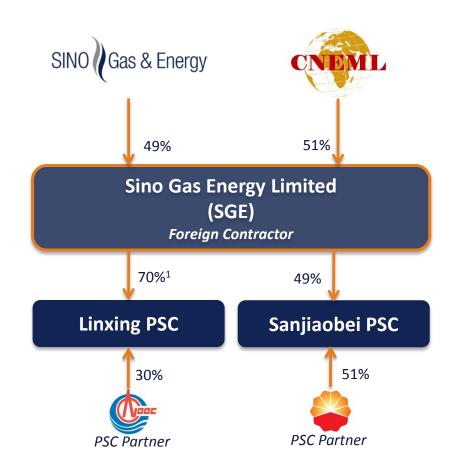
 PSC Operator partnered with major State Owned Enterprises (SOE) with extensive field development experience

#### **≈** CUCBM - Linxing PSC Partner

 100% owned subsidiary of CNOOC with an extensive international presence including in unconventional resources

#### **≈** CNPC – Sanjiaobei PSC Partner

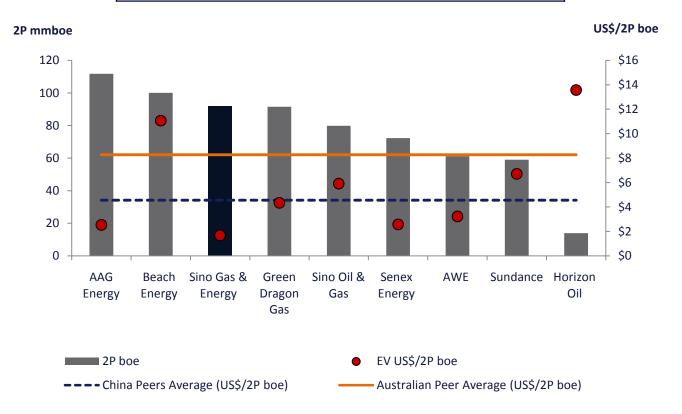
China's largest oil and gas producer



# Sino Gas Undervalued vs. Peers on Reserve Multiples SINO



Current trading metrics <sup>1,2</sup>						
US\$/boe	SEH	China peers	Aus List peers			
US\$/2P	1.68	4.56	8.28			
US\$/2P + 2C	0.68	3.65	1.19			



### **2017 Priorities**



### **Key Objectives**

- Maximise production, revenue, technical data collection
- Install additional processing capacity
- Complete ODP processes

#### **Technical**

- Update reserve and resource estimates
- Prepare full field development plan
- Targeted additional exploration

### **Operational**

- Target average production 18-23 MMscf/d
- Further well productivity and cost optimisation
- Install new CGS on Linxing (West) North and tie-in Linxing (East) exploration wells to third party facility
- Maintain safety record

### Regulatory

Complete ODP process on Linxing (West) and Sanjiaobei

#### Commercial

Secure additional gas sales agreements Receive Sanjiaobei gas sales proceeds

#### **Financial**

Prudently manage activity and spend to maintain strong liquidity

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## **Pilot Program Pictures – Linxing Central Gathering Station**















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### **Pilot Program Photos**





Sanjiaobei Central Gathering facilities commissioned



Pad Drilling Christmas Trees



Third Party Drilling Rig



Linxing East testing

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