

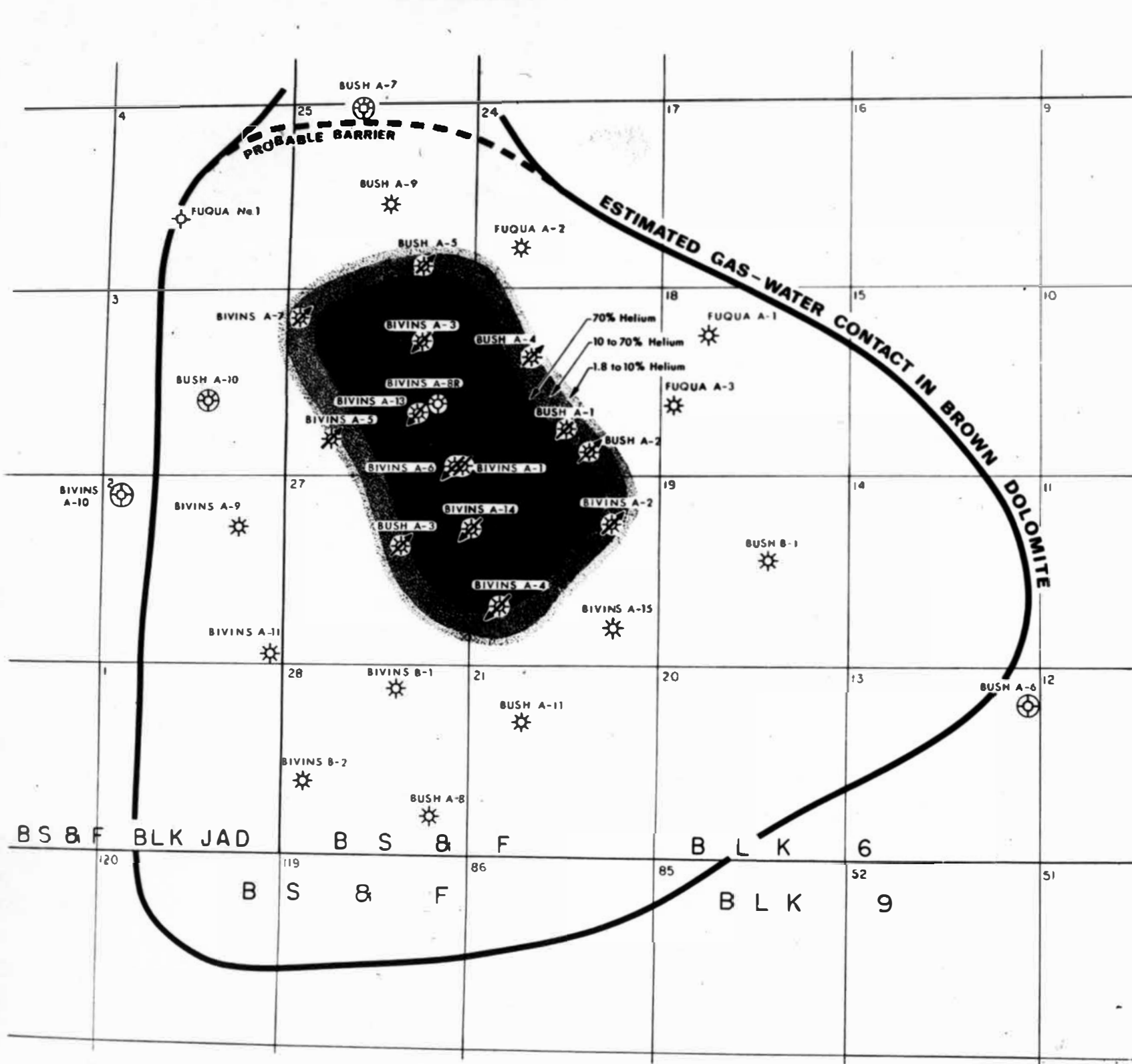
**BUREAU OF MINES
 DIVISION OF HELIUM
 PHYSICAL FACILITIES
 SYSTEMS MAP**

☼ = Gas Bearing Fields

BUSH DOME - CLIFFSIDE FIELD

Potter County, Texas

ESTIMATED LIMITS OF STORED HELIUM



LEGEND

- Native Gas Withdrawal Wells**
- Native Gas Withdrawal Wells Invaded by Stored Helium**
- Helium Injection Wells**
- Observation Wells, Small Amounts of Gas, or Gas With Water**
- Observation Wells, Water Only no Gas**
- Abandoned Gas Wells**
- Dry Holes Plugged and Abandoned**

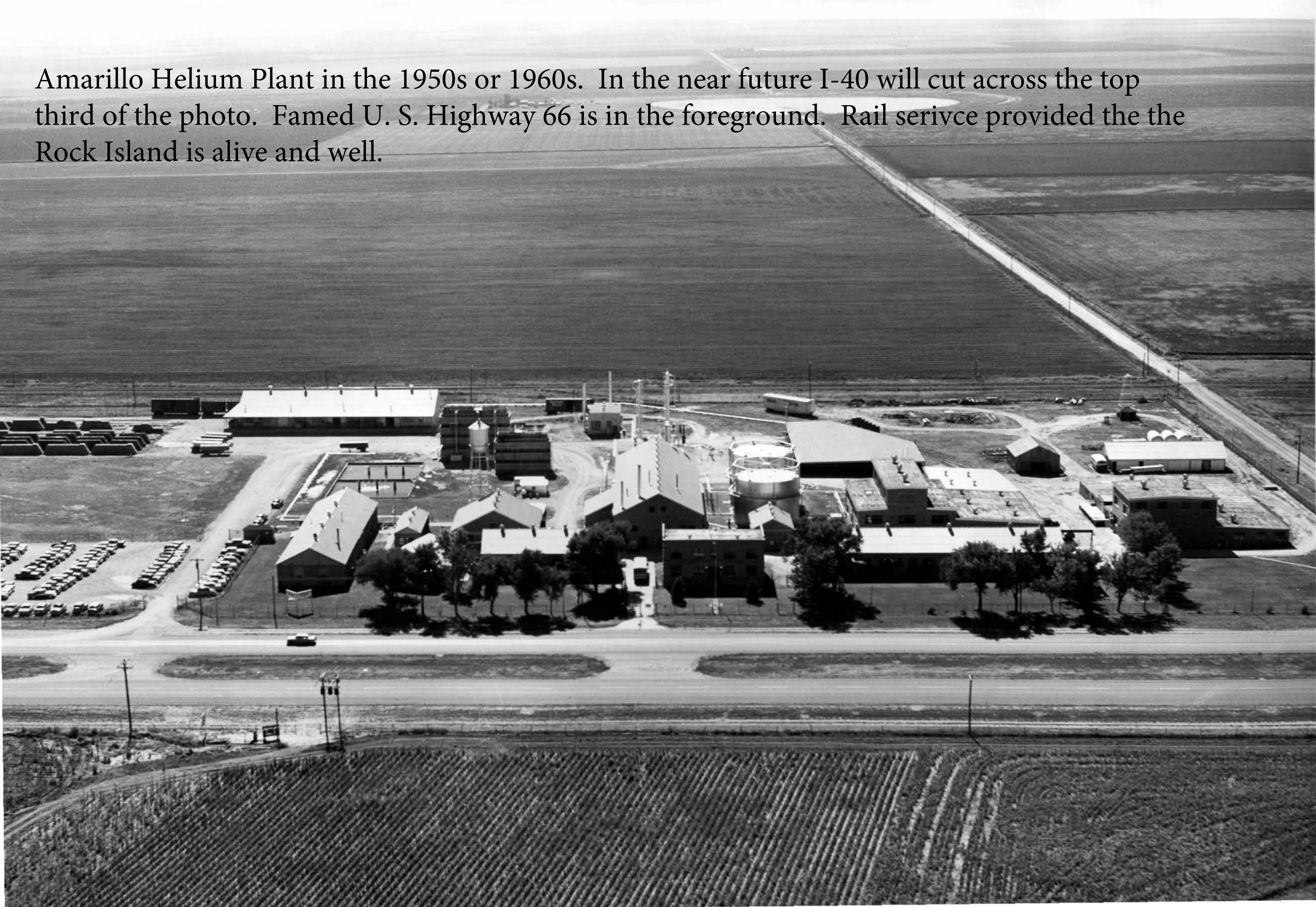


- Changed Blvins A-4 to Injection Well 1-25-72 DLS**
- Changed Estimated Limits of Stored Helium 2-3-72 DLS**

Amarillo Helium Plant circa 1930s. Looking southwest from U. S. Highway 66.



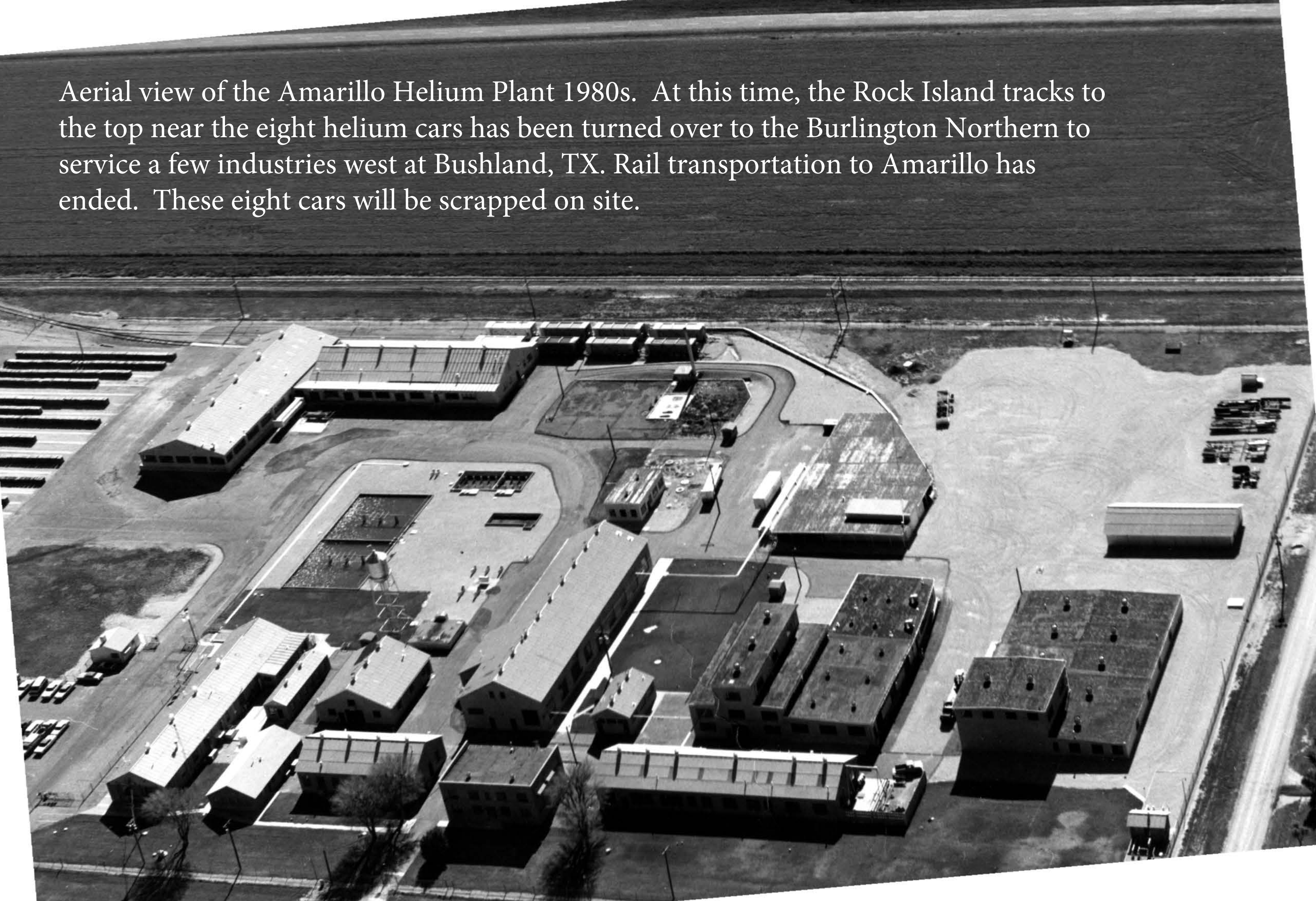
Amarillo Helium Plant in the 1950s or 1960s. In the near future I-40 will cut across the top third of the photo. Famed U. S. Highway 66 is in the foreground. Rail service provided the the Rock Island is alive and well.



Amarillo Helium Plant 1980s looking north. I-40 is in the foreground.



Aerial view of the Amarillo Helium Plant 1980s. At this time, the Rock Island tracks to the top near the eight helium cars has been turned over to the Burlington Northern to service a few industries west at Bushland, TX. Rail transportation to Amarillo has ended. These eight cars will be scrapped on site.

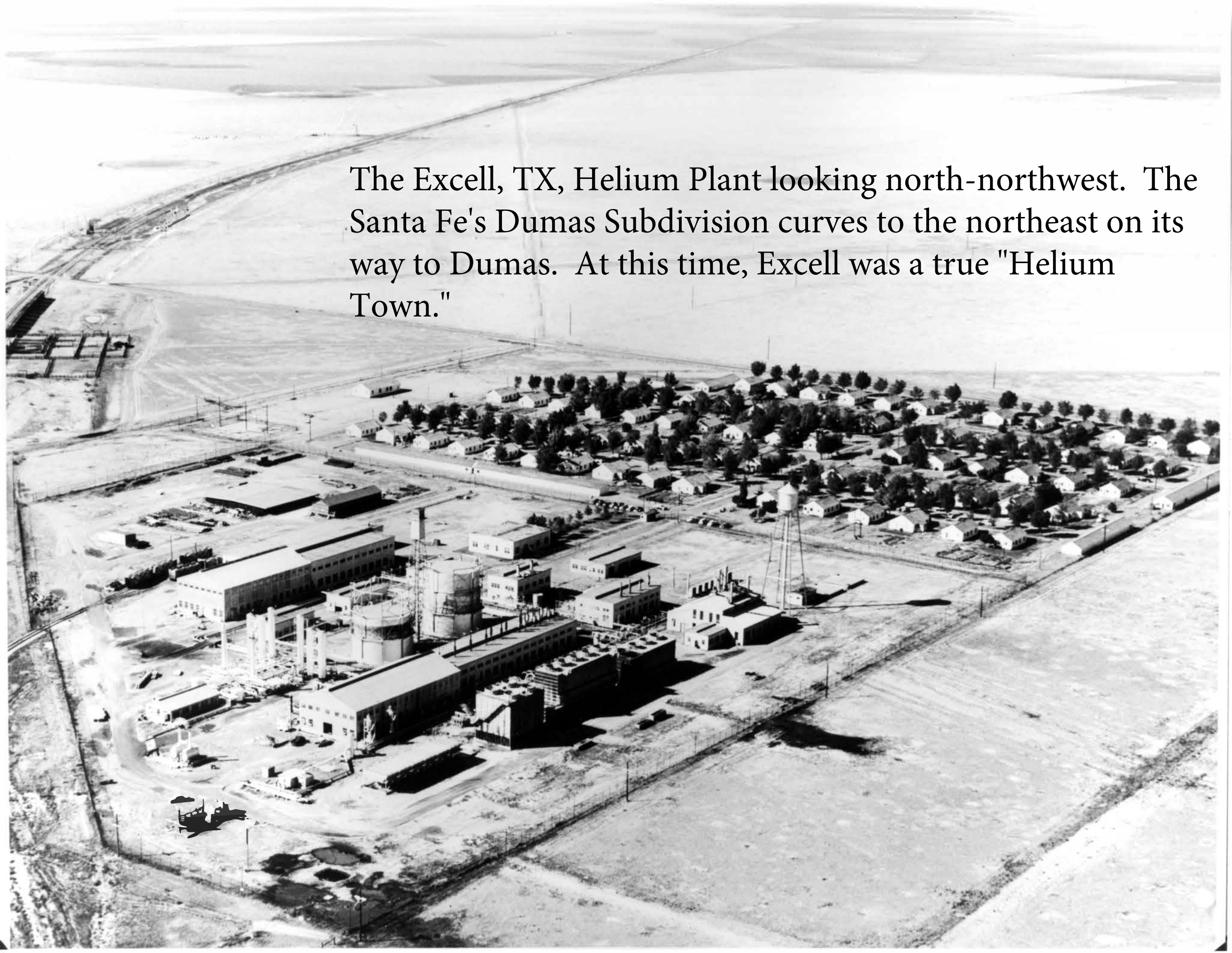




In better times a Rock Island 2-8-0 Consolidation type # 1779 pull a string of cars at the Amarillo Plant. Date is circa 1930s. The first car in the consist is USNX 100. The second car is also numbered 100, but the reporting marks are not visible. Note that the first car is not exactly like the second and third cars. The top row of tanks are inset.

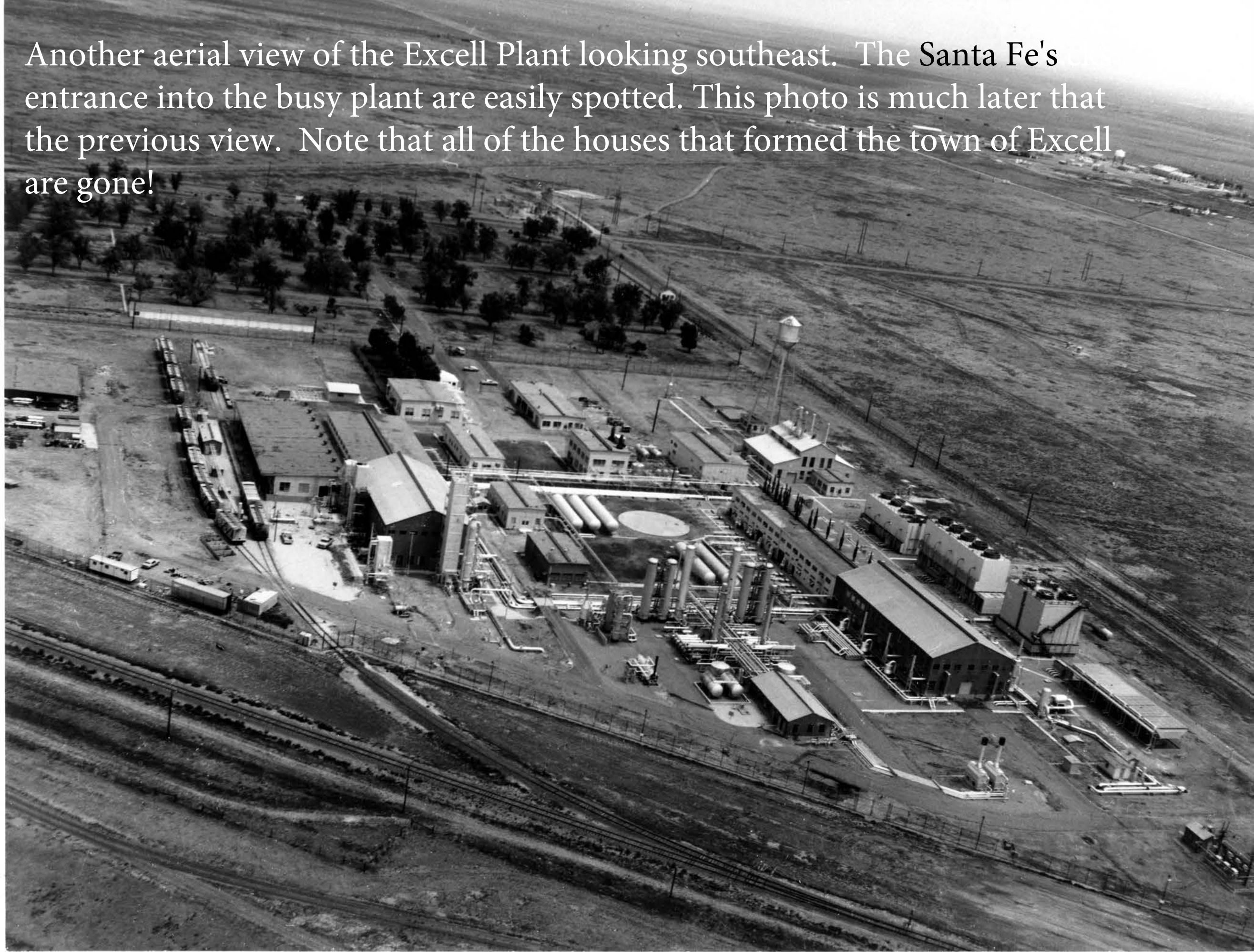


Same locomotive most likely on the same day, opposite side, and nicely lighted.

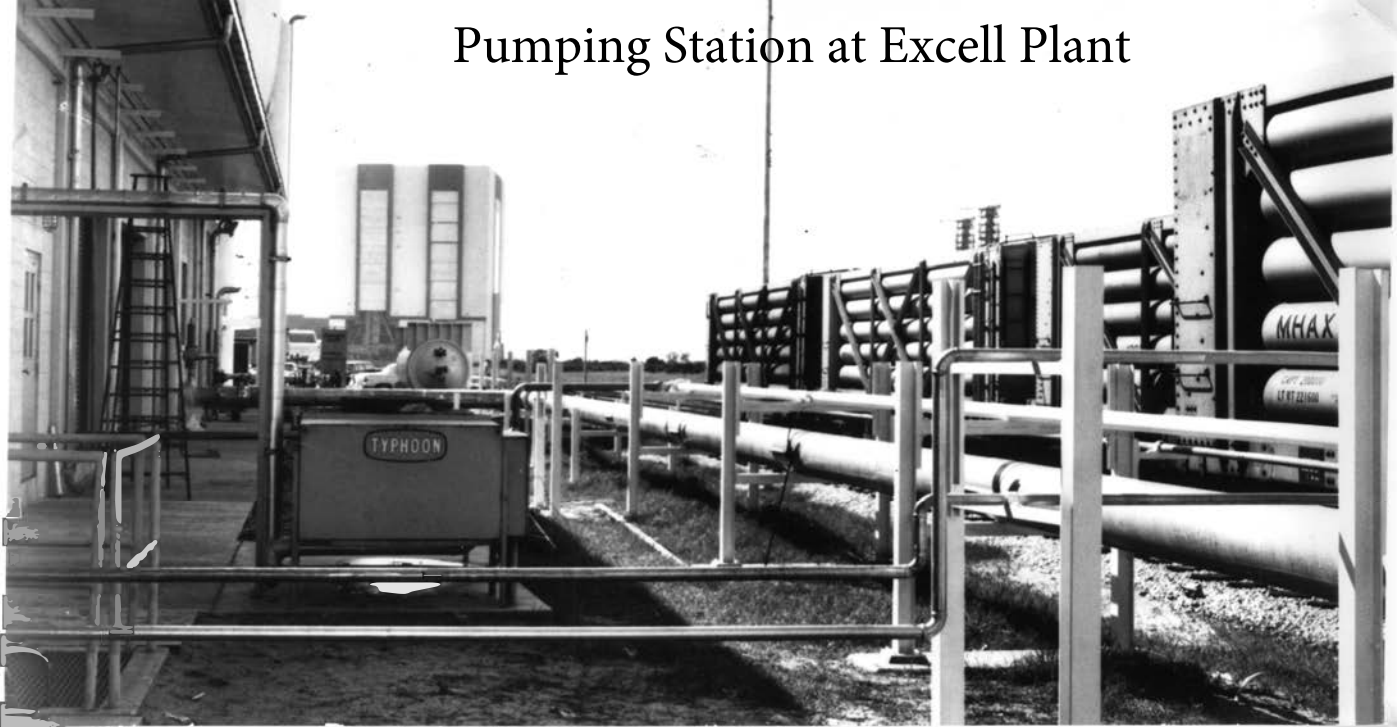
An aerial black and white photograph showing the Excell, TX, Helium Plant. The plant is a large industrial complex with several long, rectangular buildings, numerous cylindrical storage tanks, and a network of pipes and structures. To the northeast of the plant is a residential town with many small, single-story houses and scattered trees. A prominent water tower stands in the town. In the background, a railway line, identified as the Santa Fe's Dumas Subdivision, curves from the northwest towards the northeast. The surrounding landscape is flat and appears to be a mix of agricultural fields and open land.

The Excell, TX, Helium Plant looking north-northwest. The Santa Fe's Dumas Subdivision curves to the northeast on its way to Dumas. At this time, Excell was a true "Helium Town."

Another aerial view of the Excell Plant looking southeast. The Santa Fe's entrance into the busy plant are easily spotted. This photo is much later than the previous view. Note that all of the houses that formed the town of Excell are gone!

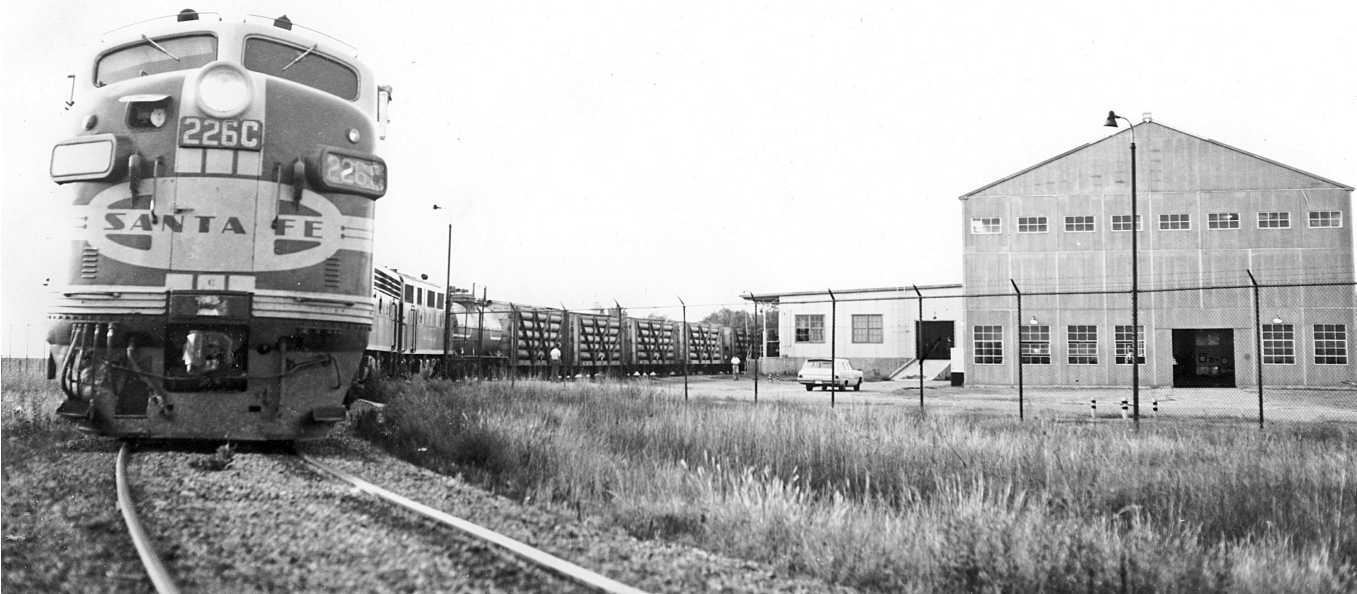


Pumping Station at Excell Plant



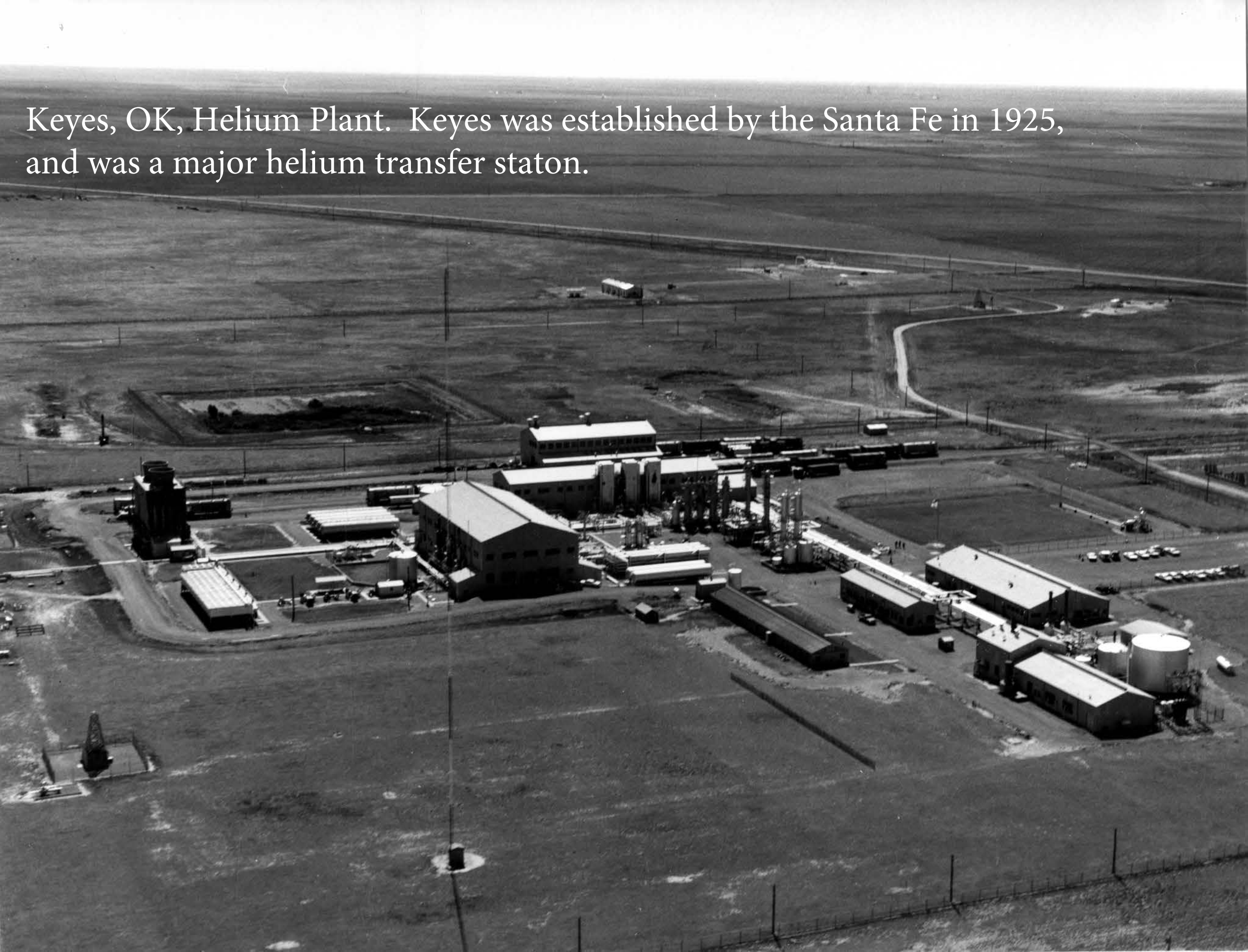
A set of Santa Fe F-units pushes a string of empty helium cars into the Excell Plant. The loaded cars are already on the main ready to head south toward Amarillo. The car coupled to the locomotives is MAHX 1018. Note how close the movement is to the fouling point. Talk about a tight squeeze!



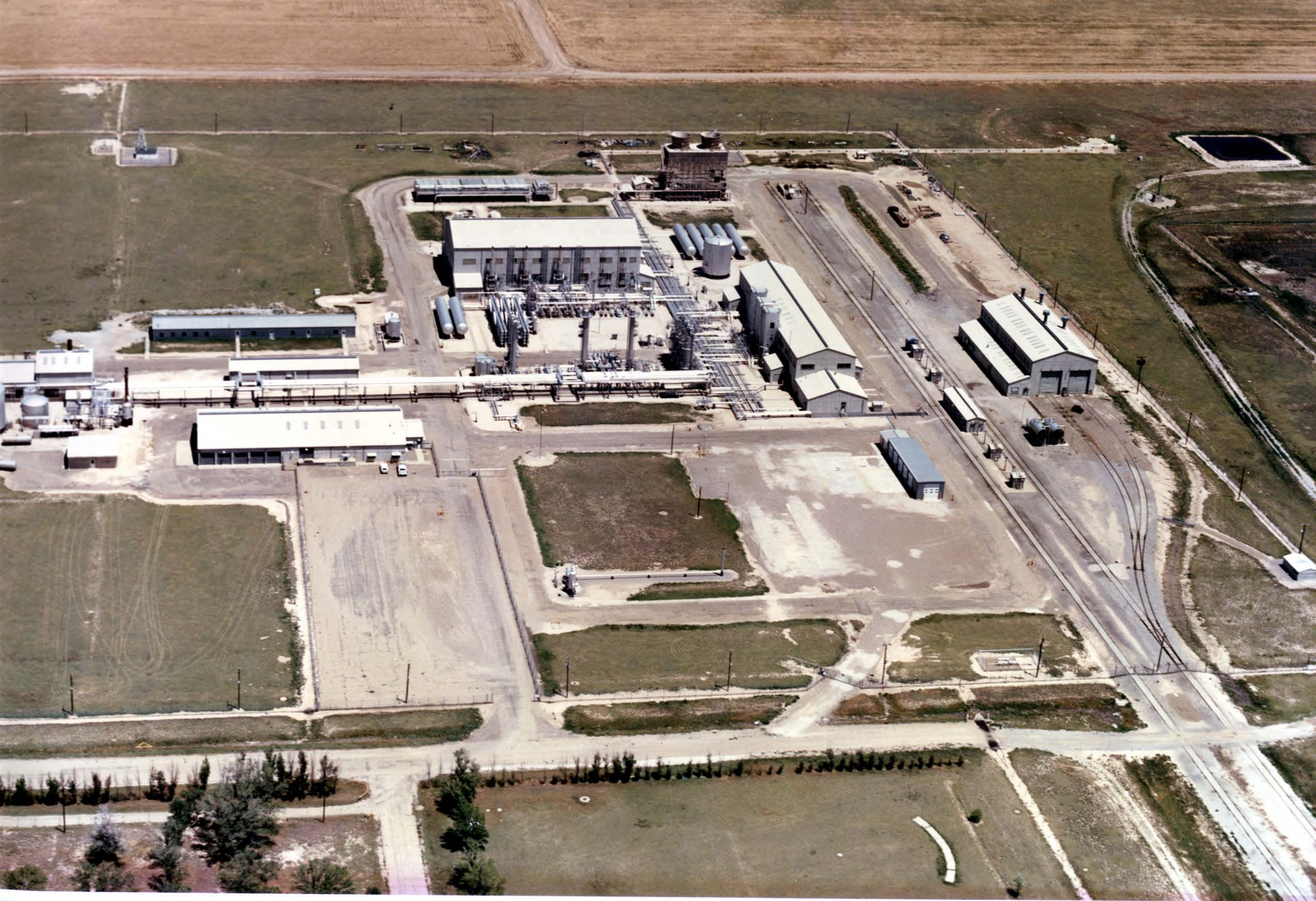


Same location, different day, different train pushing helium cars into the Excell Plant.

Keyes, OK, Helium Plant. Keyes was established by the Santa Fe in 1925, and was a major helium transfer station.









This is a photo retrieved from the Kansas Historical Society Site showing a very busy Santa Fe operation at Keyes. Helium cars galore, what looks like a conductor with a switch list, and brakemen on the tops of the cars in front of the pair of geeps giving hand signals! The date is the 1960s. Note that the car in the right foreground has wooden running boards.

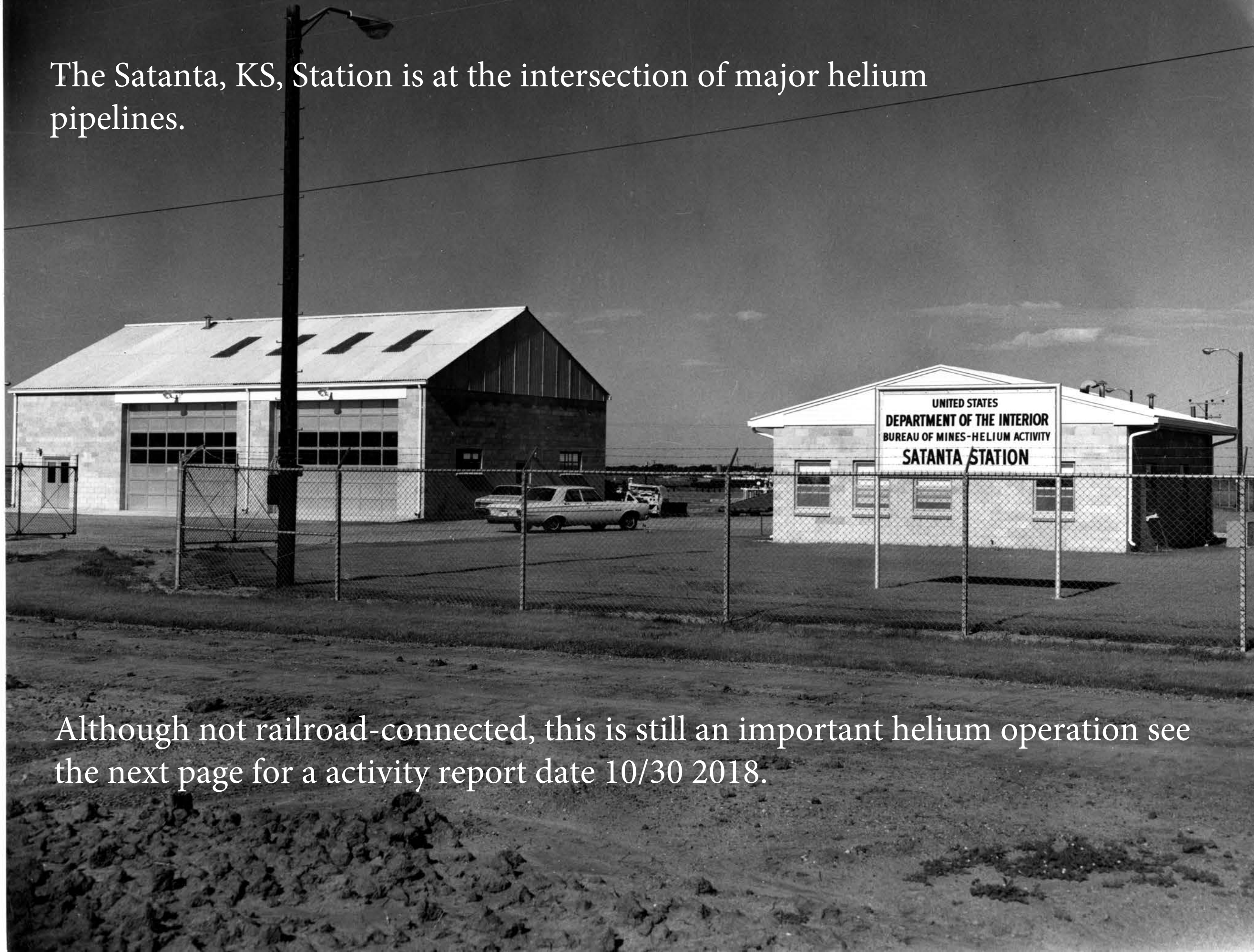
<https://www.kshs.org/index.php?url=km/items/view/212958>

The Cliffside field is located about 15 miles northwest of Amarillo, TX. Bush Dome, the storage reservoir, is the largest of four or five secondary domes in Cliffside field and was discovered in 1924. The dome was originally developed to supply helium-bearing natural gas for processing at the Amarillo helium plant. Production is from the Brown dolomite formation at about 3,300 ft. Prior to the injection of crude helium, pure helium had been injected and recovered from underground storage. The success of that project and additional studies confirmed that the reservoir was suitable for storage. Field wells were completed in 1961, and the field was converted from production to a simultaneous production-helium injection operation.

<https://www.onepetro.org/journal-paper/SPE-1624-PA>



The Satanta, KS, Station is at the intersection of major helium pipelines.

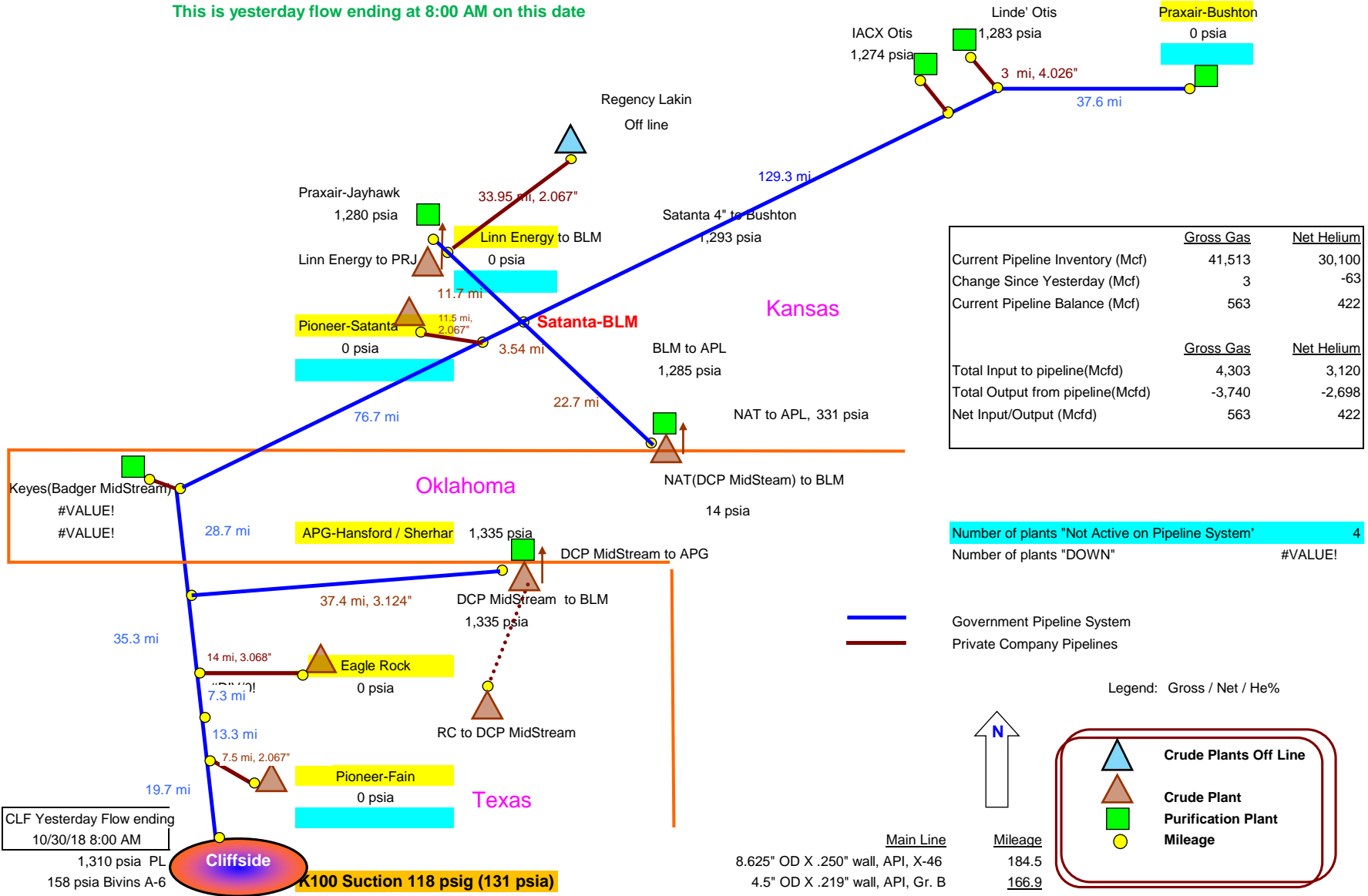


Although not railroad-connected, this is still an important helium operation see the next page for a activity report date 10/30 2018.

Bureau of Land Management (BLM) Crude Helium Pipeline Activity

Date: 10/30/2018

This is yesterday flow ending at 8:00 AM on this date



	Gross Gas	Net Helium
Current Pipeline Inventory (Mcf)	41,513	30,100
Change Since Yesterday (Mcf)	3	-63
Current Pipeline Balance (Mcf)	563	422
	Gross Gas	Net Helium
Total Input to pipeline(Mcfd)	4,303	3,120
Total Output from pipeline(Mcfd)	-3,740	-2,698
Net Input/Output (Mcfd)	563	422

Number of plants "Not Active on Pipeline System" 4
 Number of plants "DOWN" #VALUE!

Government Pipeline System
 Private Company Pipelines

Legend: Gross / Net / He%

- Crude Plants Off Line
- Crude Plant
- Purification Plant
- Mileage

CLF Yesterday Flow ending 10/30/18 8:00 AM	
1,310 psia PL	
158 psia Bivins A-6	
Cliffside Gas Field Prod	0 / 0 / 0.00% Mcf, 153 psia
Cliffside Gas Field Inject	0 / 0 / 0.0% Mcf, 158 psia
HEU HE production	3,680 / 2,715 / 73.77% Mcf, 1,310 psia
HEU inlet feed	17,115 / 2,718 / 0.00% Mcf, 147 psia
Residue Gas	9,368 / 0 / 0.00% Mcf, 680 psia
Total He to PL	3,680 MCF Gross / 2,715 Mcf Net He, 73.77% He, 1,310 psia

Main Line	Mileage
8.625" OD X .250" wall, API, X-46	184.5
4.5" OD X .219" wall, API, Gr. B	166.9
Total	351.4

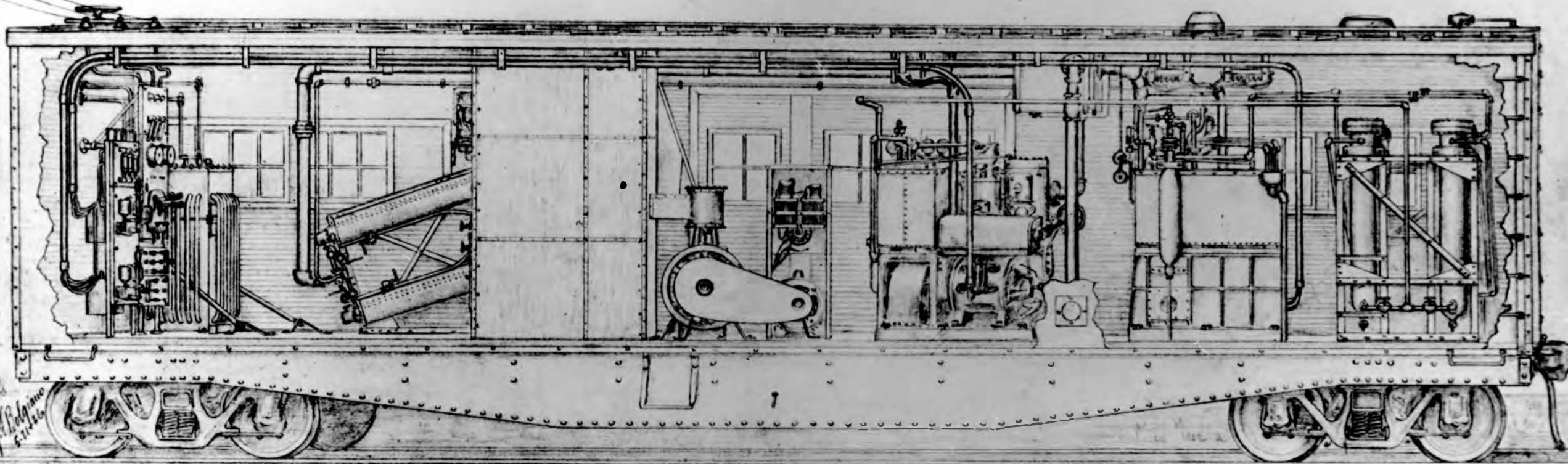
Day before
 Press. psia One day diff. psia
 1308 1

One of the most unusual and unique pieces of railroad equipment had to be this two-unit helium purification plant car. Almost no lettering is legible on the cars with the exception of the left car which has "U. S. HE CAR NO. 1" above the paired windows on



the left and "NEW 43" below the windows (but see next page). The location is almost certainly Amarillo. The sign on the building reads "170 SUB STATION B"

A cutaway view of Helium Purification Plant Car No. 1. It was designed by the Bureau of Mines and built by the "Engineering Division, McCook Field. At the lower right is a date of May 21st, 1926, which is in conflict with the date stenciled on the car in the previous photo. Perhaps the 1943 date is after a substantial rebuilding. More information would be welcome!



**HELIUM PURIFICATION PLANT.
CAR NO. 1.**

DESIGNED BY BUREAU OF MINES.

BUILT BY ENGINEERING DIVISION, MCCOOK FIELD.

DATE: MAY 21st 1926.
SKETCHED BY: *M.B. Romano*
APPROVED BY: *[Signature]*
MADE U.S.A.



Another early photograph of Helium Purification Plant Car No. 1. Location is unknown, but note that this is a single unit, and lettered for the U. S. Army Air Service. Other lettering is illegible.



MHAX 1009

DO NOT

HUMP

MHAX

1009

CAPY 23300
LT WT 23300 NEW 8-55



MHAX 1094

CAUTION HEAVY CAR
250,000 LBS

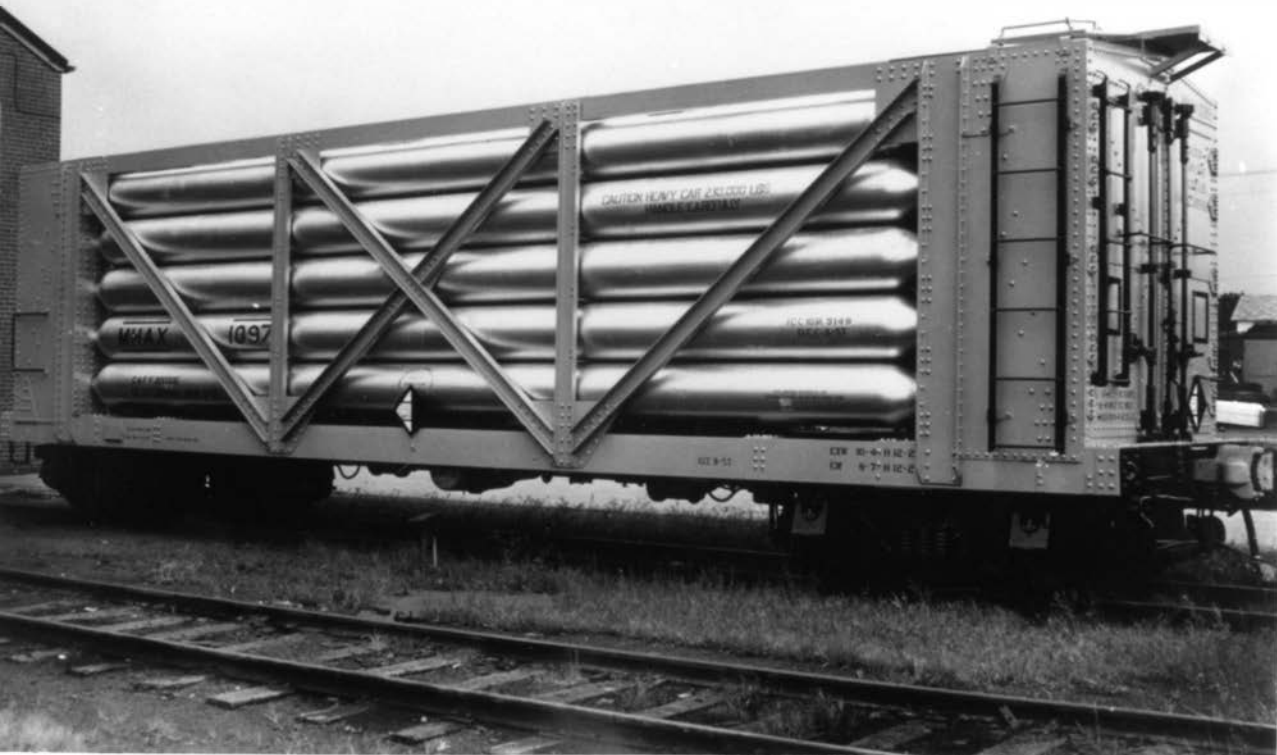
HANDLE CAREFULLY



MHAX 1094

CAST 20000
LT WT 220000 ACT 1957





CAUTION HEAVY CAR 250,000 LBS

WIA Y 1097

CEX 30-4-11-12-2
CM 9-7-11-12-2



icf

U. S. GOV'T. DEPT. OF INTERIOR
Helium Tank Car 9/57

icf

Lot 21-5033

Neg. No. 105283-D



MHAX 1114

MHAX 1114

CAPY 20000
LT W7230000 NEW 0-00

CAUTION HEAVY LOAD
DO NOT CLIMB

HANDLE CAREFULLY

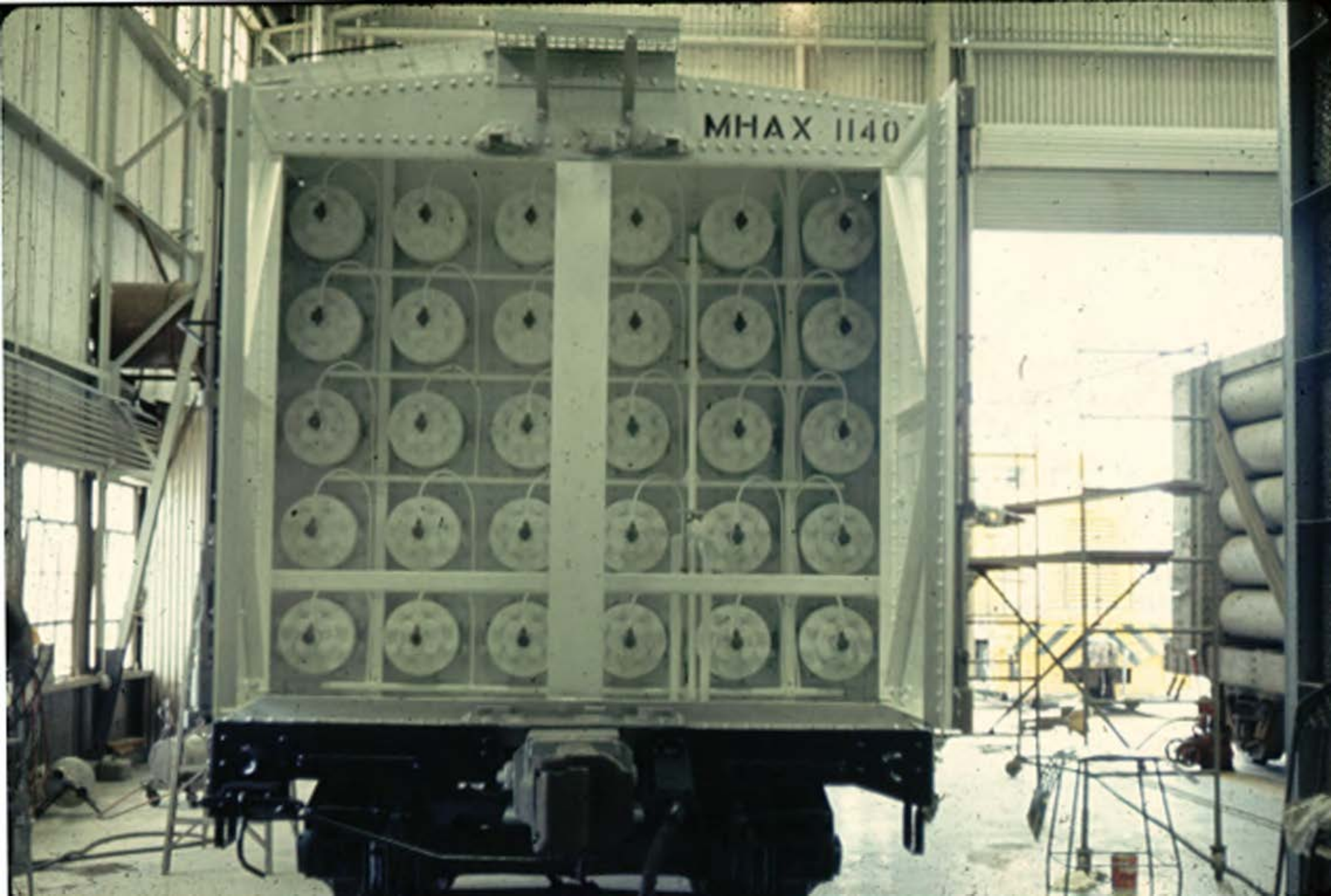


AMERICAN RAILROADS

0110
M 01000



MHAX 1140





HUMP

MHAX 1171

CAUTION
NO SET
BACK

ME

CC

HEAVY

MHAX

1171

1171





Pa 110

HELIUM

MHAX

1183

CAPT 10000
23RT 234728

HELIUM
CAPT 10000
23RT 234728



HELIUM

MHA

1248

HELIUM



HELIUM

DO NOT HUMP

MHAX

1242

W 12 LBS. 4000
LP BT 200000



DO NOT CLIMB

1243



CAUTION
DO NOT
CLIMB

DO NOT
CLIMB

DO NOT
CLIMB

DO NOT
CLIMB





ALL INFORMATION
CONTAINED HEREIN IS UNCLASSIFIED
DATE 08-14-2013 BY 60322 UCBAW/BJS

MHAX 1000

YOUNG
20 81

CE



REGINA

MHAX

CE

REGINA

MHAX 1000

CE



ATMX 1DD4

DO NOT

HUMP



ATMX

1DD4

CAPL 220000
LT WT. 231100 NEW 255

DO NOT HUMP



U.S. RAILROAD
MFG. CO. PHOENIX