



Case History

PARAFFIN REMOVAL IN PIPELINES

Oil Pipeline plugged with Pariffin
Eugene Island area in Gulf of Mexico

Production Company had 4 miles of 6½" pipeline with a paraffin plug approximately 3000 feet in length. The plug prevented the transfer of production. The customer tried pumping from both ends of the pipeline to remove the paraffin. This resulted in a harder paraffin plug. After batching N-SPEC 120 concentrated, paraffin was easily removed from the line and production was back on line.

Oil Pipeline production reduced due to paraffin deposition
South Marsh Island area in Gulf of Mexico

Production Company had 3 miles of 8½" pipeline with an injection pressure differential of 900 psi above the main pipeline. N-SPEC 120 was batched into the pipeline in the evening. The next morning, the pipeline had the same pressure as the main pipeline. Three months later, pipeline differential is between 40 to 50 psi above the main pipeline with twice the production being moved as before.

Total Production Pipeline
Grand Isle area in Gulf of Mexico

Approximately 3 miles of 4½" pipeline with less than a one inch ID due to paraffin build up. Production Company spent over one million dollars trying to open the line with out success. They were in the process of abandoning the pipeline. After using N-SPEC 120, they now are able to flow production through the pipeline. This saved the customer approximately three million dollars for replacement of the pipeline.

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Case History

Gas Lifted Wells with Paraffin Deposition

Paraffin build up on the inside of tubular and flow lines

Producers in Gulf of Mexico, North and South Louisiana are using N-SPEC 240-I to remove and prevent paraffin deposition on the tubular and flow lines of gas lift wells. This eliminates the need to run wire-line down the tubular to remove paraffin deposition. Also eliminates the possibility of trashing a well by losing wire-line and tools in wells and eliminates deferred production.

N-SPEC 240-I is injected into the gas lift gas at the well. The injection rate is typically 240 ppm of oil production.

PUMPING ROD WELLS

Paraffin build up on sucker rods

Producer in South Louisiana had a number of pumping rod-well with a severe paraffin problem. Producer continuously injected and batched paraffin inhibitors. The inhibitors yielded minimal prevention of paraffin deposition. After approximately 6 months, these wells had to have rigs pull the tubing to strip the rods out and remove the paraffin.

With the continuous injection and batch treatment of N-SPEC 120, the paraffin problems were controlled. Approximately 16 months later, and still no paraffin deposition. The N-SPEC 120 was continuously injected (at a rate of ½ gallon/100 bbl of oil) down the casing with a side stream flush. Once a week, 5 gallons was batched down the casing with approximately 4 hours of circulation of total well fluid the casing circulating valve was opened and the flow line valve closed.

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Case History

AMINE SYSTEM CLEANOUT Using N-SPEC GS-40

A major gas company consulted with N-SPEC Pipeline Services / a division of Coastal Chemical Co., LLC about converting from DEA to a selective gas N-SPEC product at their 200 MMSCF/day south Louisiana gas plant. An N-SPEC technician and sales representative designed a plan of action to maximize cleaning of the amine system and taking precautions to prepare the clean system for start up with minimum foaming and operations problems. The system heater and pumps were used to heat and circulate a 20% by volume blend of N-SPEC GS-40 to 80% fresh water for a 24 hour period. Samples of the cleaning solutions were taken periodically to evaluate the cleaning status and condition of N-SPEC products.

The system was then drained, flushed, rinsed and filled with fresh water and a defoamer additive to further control the foaming action due to residuals of cleaning fluids, dissolved hydrocarbons, foulants. All drained fluids were evaluated and final approval for return to service was checked.

The waste was collected in frac tanks for nonhazardous waste disposal. The operator approved filling the system with gas Spec materials. There was constant concern given to the foaming issue resulting in an overall pleasant successful changing start up job.

CASE #1

Pressure differential:

Three miles of natural gas pipeline had been in service for approximately 30 years. The line had approximately 150 pounds differential and had never been pigged.

Application:

Batches of N-SPEC 120 with water and batches of N-SPEC 105 with water were pumped into the pipeline ahead of different types of pigs. The pigs went through the line without becoming stuck. The first 5 lbs. density pig with N-SPEC 105 removed approximately 7,980 lbs. of solids. The pressure differential was reduced to 75 pounds.

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Case History

CASE #2

Preparation for In-Line-Inspection tool:

Ninety miles of 36" pipeline had been pigged numerous times with the use of solvents and surfactants to clean the line for the preparation of running an inline inspection tool. I-L-I tool was run and broke into three pieces.

Application:

Batches of N-SPEC 120 with water and batches of N-SPEC 105 with water were pumped into the pipeline ahead of different types of pigs. The I-L-I tool was then run and received in excellent condition. I-L-I tool company commented, that they had never seen their tool run and received so clean.

CASE #3

Removal of "Black Powder":

A pipeline company had run approximately 200 pigs to eliminate "black powder" building up on compressor. After runs, approximately one drum of "black powder" was removed and compressor continued to have build up problems.

Application:

Four batches of N-SPEC 120 with water were pumped into the pipeline ahead of different types of pigs. Approximately 43,000 lbs. of "black powder" was removed. Pipeline efficiency was also improved by approximately 5%.

CASE #4

Removal of Solids:

One hundred and twelve miles of 26" pipeline in South Texas was cleaned with the application of batches of N-SPEC 120 with water and batches of N-SPEC 105 with water. Approximately 284,000 lbs. of solids were removed from the pipeline with approximately sixteen runs of N-SPEC. The efficiency of the line was improved by approximately 25%.

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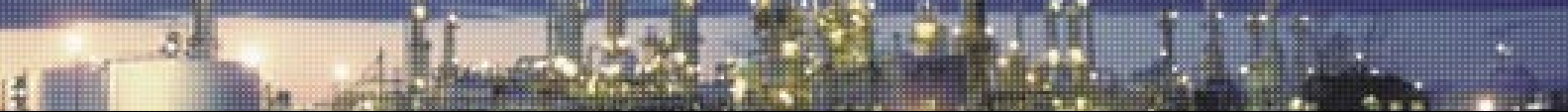
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Case History

CASE #5

Improved In-Line-Inspection:

Pipeline Company had cleaned pipeline with numerous runs of pigs and chemicals. Tool was run and data showed no severe anomalies with questionable findings. After cleaning line with N-SPEC products, In-Line – Inspection tool was re-run. Data indicated approximately 90 feet of severe corrosion. The severity was so severe, pipeline company closed mainline valves after reviewing data and replaced the ninety feet of pipe.

GLYCOL SYSTEM

Using N-SPEC GS-40

Major oil company requested N-SPEC Pipeline Services / a division of Coastal Chemical Co., LLC to evaluate their 100 MMSCF glycol system to optimize its operation in anticipation of an additional gas rate of 300 MMSCF to be added their existing 40 MMSCF rate. We evaluated a current glycol analysis, consulted with N-SPEC and got approval for reclamation of the glycol (5000 gallons).

N-SPEC Pipeline Services provided a technician, contracted a crane, vacuum truck, hot oil truck, frac tank, air compressor, air driven pumps and roust about crew to turn key the draining, flushing, chemical cleaning, mechanical cleaning and injection of the complete system including the BTEX exchangers. N-SPEC Pipeline Services recommended a 20% by volume blend of N-SPEC GS-40 with 80% fresh water to be circulated for 8 hours with heat (hot oil truck) and allow overnight soaking to maximize cleaning results. A hot oil truck was used because the field fuel gas system was out of service due to the new well hook up in the field.

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Case History

Once the system was drained, flushed and filled with fresh water a defoamer product was used to further remove chances of foaming at start up time. Flushing and rinsing to remove residuals and traces of hydrocarbon/surfactant foulants must follow all chemical cleaning procedures to minimize foaming and contaminants fouling at start up.

The waste was handled by approved vendors, N-SPEC Pipeline Services delivered virgin glycol for start up and picked up the drained glycol for reclamation. Reports from the producing company indicates a 2# dew point for their 70 MMSCF rate with optimum operating parameters recorded throughout the unit.

HEAT TRANSFER SYSTEM

Using N-SPEC GS-40

A major pipeline company asked N-SPEC Pipeline Services / a division of Coastal Chemical Co., LLC to consultant and provide turn key services to clean their heat transfer fluid system. N-SPEC Pipeline Services visited the south Texas location, evaluated the vessels and piping in the 2,400 gallons heat transfer fluid system. There were 8 multiple users manifolded overhead throughout the plant, each with dead ends, pipe elevation differences and drains.

N-SPEC Pipeline Services provided a cleaning consultant technician who directed approved vendors to drain, flush, fill to circulate, drain, flush, check for residuals and foulants and purge the remaining water for preparation to fill with Chem Therm 550 for start up.

N-SPEC Pipeline Services used a 20% by volume blend of N-SPEC GS-40 with 80% fresh water, heated to 180 F° with their system heater and circulated with their system pumps at operating condition for 12 hours. The system was then displaced with fresh water until all traces of cleaning chemicals were removed followed by purging all lines and vessels with compressed air to remove residuals.

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Case History

The resulting waste was handled as nonhazardous waste. The drained existing heat transfer fluids were sold as fuel make up. The reported comment from the operator was their heat transfer system experienced better than expected results - better heat transfer temps throughout with less fuel gas consumption to heat fluids. He further stated that although we were 24 hours mobilization away, we were chosen to do the job over local vendors due to the performance of our N-SPEC GS-40 product on their sample submitted for testing. It seems N-SPEC was the only product tested that showed any significant solubility of the scale submitted.

NATURAL GAS PIPELINE CLEANING WHILE ON-LINE 24 Inch x 85 Miles

Located:	Texas Panhandle Area
Gas Volume while cleaning:	~ 210 MMSCFD
Line Pressure:	~ 825 PSIG; MAOP 931
Pig Speed:	~ 7.4 MPH; 10.9 ft./sec.
Pipeline Built:	1960
Cleaning:	On-Line in operational mode
Number of Liquid Cleaning Runs:	7
Diluent Used:	Red Dye #2 Diesel Off-road Type
N-SPEC® Products Used:	N-SPEC® 50; 105; 304; and 333D
Types of Pigs Used:	Various Polly & Steel Body Types
Major Customer Taps:	~ 8-10
Time Period for Cleaning:	7 Days
Amount of Solids Removed:	~ 60,000 pounds
Disposal Cost:	NONE

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Case History

SCOPE OF WORK

To secure cleanliness of pipeline for running of ILI tool to maximize the capability of ILI data results and improve pressure drop concerns.

HISTORY

Customer had attempted to dry clean pipeline using only mechanical pigs resulting in contamination of downstream compression system with contents of pipeline. N-SPEC® Pipeline Services cleaned the downstream compressor system removing over 60,000 pounds of black powder, asphaltenes, compressor lubricants and oils, and polymerized corrosion inhibitors. Improved pressure rating through suction header system ~ 50 PSIG. Filter change outs daily to now greater than 90 days.

Once compressor header system was liquid cleaned we turned our attention to the 24 inch by 85 mile pipeline and started liquid cleaning using N-SPEC® cleaning products and diesel as diluent. System pressure over the 85 miles was a 225 PSIG differential between the launch site and the compressor station receiver. After our third cleaning run the pressure drop was reduced by 100 PSIG and after completion of all seven liquid cleaning runs the pipeline pressure drop was at 85-90 PSIG across the pipeline.

The customer could now move ~20% more volume of natural gas with 3000-horse power that a week earlier took 6000-horse power to handle 20% less volume. Successful ILI tool data received.

Return on investment was less than 90 days.

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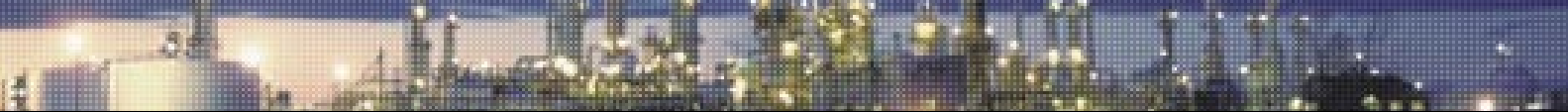
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Case History

- “BLACK POWDER”



- PARAFFIN



- SCALES



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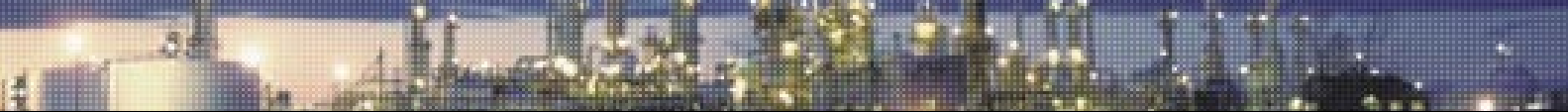
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Case History

CASE HISTORY - GAS LINE

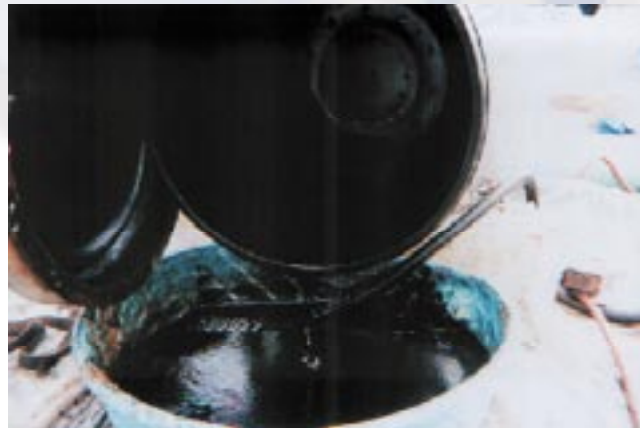
Problem: A 16 inch gas line 10 years in service had a severe high pressure drop caused by "Black Powder".

Solution: N-SPEC® & DILUTENT batched ahead of an 8 lb. density poly criss cross pig.

Removed 19 barrels (7980 lbs.) of solids in a single pig run.



N-SPEC® solution suspended 65% solids
247,000 lbs. of solids removed from 36 miles of 36"



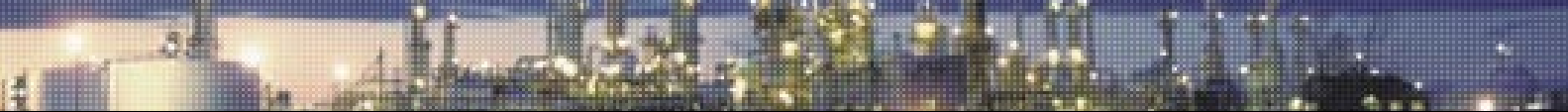
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Case History

CASE HISTORY – ADVANCED CHEMICALS REMOVE SLUDGE FROM GAS LINE

Problem: Gas transmission line having problems running maintenance pigs due to buildup of organic sludge in line.

Solution: Advanced chemical products used in conjunction with specially designed pig train removes all sludge from within line, greatly reducing energy cost related to gas compression.



PIPELINE CLEANING CASE HISTORIES “BLACK POWDER”

A 30”x 60 miles Natural Gas Pipeline in South Louisiana

- Customer tried to clean with Mechanical and solvent method
- Then with one cleaning run using N-SPEC® technology; removed over 50,000 lbs of solids



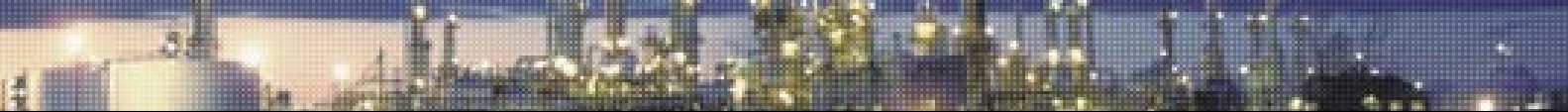
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PIPELINE CLEANING CASE HISTORIES "PARAFFIN"

- A 9 miles x 8" flow-line in South Pass area
- Production Natural Gas and Light gravity oil.
- Less than 1/2" ID
- We injected volumes of N-SPEC® and followed with pigs & Sea Water.
- 1st volume of chemical/no pigs; removed 100+ bbl of paraffin
- 2nd run Chemical & 4" #2 density poly pig
- Removed +1,050 bbl



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