

# LIFTING LETTER

**2 COVER STORY:  
SPECIALTY  
RIGGING**

**The Right Tools:**  
Barnhart's team of engineers  
have customized a wide  
range of rigging tools and  
techniques for the  
toughest challenges.

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**Winter 2007**

A Publication of Barnhart

**B**arnhart has a reputation for being one of the best crane companies in the country, offering lifting solutions coast-to-coast. However, Barnhart's equipment inventory is hardly limited to cranes, and our value to our customers is not limited to equipment only.

There is a distinct difference between 'owning rigging' and 'being a rigger' in the same way there is a difference between providing engineering and being engineers. Barnhart has gained a reputation for innovation – not just for better use of existing tools, but also for actually developing new ones. This edition of the newsletter profiles a variety of tools we developed to meet very specific needs of our customers. Proving that we don't simply rely on the most obvious way to solve our

customer's problems, we often develop tools to provide the **BEST** way, which means safer and faster with less interruption to other activities.

Barnhart's team of top engineers have customized or created a wide range of specialty rigging tools and techniques that can be adapted for the toughest lifting and transportation challenges. Barnhart tools such as the Tip Stick, Slide Systems, Tri-Blocks, Pull-Up Gantries, and Specialty Hoists, offer a wider variety of options to our customers, and helps ensure that we don't look for one way to do the work. Instead, using Barnhart's diverse inventory of equipment, and the best engineers and riggers in the business, we can create the best way to get your project completed safely and on time.

# THE RIGHT TOOLS FOR THE JOB

## Tri-Block

**Barnhart's Tri-Block system** allows cranes to self tail a variety of loads, eliminating the need for an additional crane for tailing. This system has proven especially beneficial when erecting wind turbine towers in remote, rough locations. With the **Tri-Block**, some congestion is eliminated, less equipment management is required and costs are reduced significantly.



# Slide System

In this example Barnhart was called on to assist in replacing a heat exchanger. This project required Barnhart's **mini hydraulic slide system** due to column and ceiling clearance issues. The slide system is an efficient means for moving large and small equipment. When combined with other Barnhart techniques the slide system gives users the ability to efficiently move loads from 100 to 1,000 tons safely.



# Tip Stick

Barnhart off-loaded and positioned two turbine runners used in a hydro-electric powerplant. The work occurred inside the tight quarters of the dam and special equipment was required. The Barnhart

team utilized the **Tip Stick** which was designed specifically for this lift. The **Tip Stick** is a hydraulically controlled, lift beam that allows an object to be lifted and rotated.

### 500 Ton Hoist

Here Barnhart is setting a turbine and a generator using four 400-Ton Gantries in stator frame configuration with the **500-Ton Hoist**. Gantry are used to pick and carry large loads using a variety of track options. Barnhart often combines the gantry with tools such as heavy swivels, slide systems for side shift capability and our Modular Lift Tower to elevate the entire system.



### Pull-up Gantry

Under the right situation, the **Pull-Up Gantry** is the perfect tool to lift heavy equipment. In this case, the same generator was lifted twice in two different locations. The **1000-Ton Pull-Up Gantry** safely lifted the 300-Ton generator directly from the deck of a barge to a Goldhofer, and was used again to lift it from the trailer to a waiting rail car. The efficient use of this tool saved the customer both time and money.





## POWER GENERATION: Combined Cycle Construction

While the boom of gas fired power generation ended several years ago, the demand for energy has not. As one of the leading companies providing heavy transportation and rigging for movement of the turbines, generators and boiler modules associated with these projects, Barnhart was called to Tallahassee to complete yet another combined cycle project. Barnhart has erected more than 325 gas and steam units over the past ten years and this two unit cogeneration facility was safely added to the list. A unique aspect of this project was the location of the rail siding...right next to the Heavy Lift Crane. With this set-up, Barnhart was able to use a 360-Ton 718 ring crane to take the modules directly from rail to final position.



## PROJECT REVIEWS



### OIL AND GAS REFINING: Los Angeles Reactor Transport

Barnhart was hired to transport a 700 Ton reactor from the Port of Los Angeles to an area refinery for installation. The reactor was loaded onto an 18-line doublewide Goldhofer PST self propelled platform trailer. The 4.5 mile path to the refinery went through the city of Los Angeles, so a specific route had to be developed to avoid the city's underground utilities. On multiple occasions the route survey required the team to switch from one side of the street to the other to avoid utilities. In addition, Barnhart had to construct steel

plate bridges which were used in a "leap-frog" fashion to transverse the under-street utility conduits. The transport process required the coordination of over 25 government agencies and utility companies.

After the reactor reached the refinery and was staged in front of the reactor foundation, the Barnhart team began the erection process.

To lift and slide the vessel into position Barnhart used six legs of the lift system gantry. The reactor

was moved into a pre-constructed structure. Barnhart placed strand jacks on top of the structure to be used to lift the vessel into position. When the positioning was complete, four of the gantry legs were reconfigured and utilized as the tailing mechanism during the lift operation. Finally, the strand jacks were engaged and the reactor was lifted to vertical. From that point the reactor was lowered to its final position on the anchor bolts.



**To lift and slide the vessel into position Barnhart used six legs of gantry. The reactor was moved into a pre-constructed structure for lifting around the reactor base.**





## NUCLEAR POWER: Feedwater Heater Removal and Replacement

Barnhart was hired to remove three Feed Water Heaters (FWH's). The heaters were placed in two separate rows inside containment cells. The cells were arranged such that there was limited area for staging of both the old and new FWH's in the auxiliary and turbine hall bays. As the old heaters came out, new heaters had to be sequenced to let the welding contractor tie in the heaters within the same 22 day critical path schedule.

Each line of the FWH's had to be removed from their cells using a floor mounted rail and steel plate system. Then the newly designed

Barnhart Powered Saddles rolled the vessels to a location directly below a hatchway leading to the auxiliary bay floor above. The 53-Ton auxiliary by overhead crane provided the hook to lift the FWH from the saddles (assisted by a tailing 37.5-Ton chain hoist) at an angle of approximately 45 degrees and into the auxiliary bay. Once the heaters had cleared the opening, they were placed onto a transfer cart for the subsequent Goldhofer loadout.

The team swapped all six FWH's and completed the project safely within the critical path time allowed!

**As the old heaters came out, new heaters had to be sequenced to let the welding contractor tie in the heaters within the same 22 day critical path schedule.**





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*Partners International is a global ministry that works to create and grow communities of Christian witness in partnership with God's people in the least Christian regions of the world.*

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Barnhart welcomes you to check out Partners International and join us in supporting this worthwhile organization.



**POWER GENERATION:  
Generator And Turbine Haul**

Barnhart was contracted to receive one generator and one turbine from rail, haul the loads 8.5 miles to the job site, and then set them on the foundation. In addition, Barnhart was asked to install three transformers that the company had already hauled and stored on-site in early 2007.

The major challenge of this project was a crossing of a low limit bridge. To spread the weight of the load, the engineering plan required that Barnhart haul the generator and turbine across the bridge on a double-wide 14-line Goldhofer electronic steer platform trailer (PSTe) for maximum distribution of the load. However, the rest of the route was not wide enough to allow the use of a double-wide configuration. Only a single-wide trailer would make it.

The solution was to execute the road haul on a single-wide Goldhofer, and then just ahead of the bridge a second Goldhofer PSTe was placed alongside. The cargo was then transferred to the center of the now

double-wide configuration using the Barnhart slide system. Once the bridge was crossed, the operation was reversed and the rest of the haul was continued in a single-wide configuration.





### CRANE SERVICE: Lifting Wind Blade Molds in Little Rock

Wind Power is becoming a major source of energy in the United States. For over 10 years, Barnhart has been involved in the construction of wind farms all over the country. The market has become so hot that Danish-based LM Glasfiber, the world's largest manufacturer of wind blades, has moved their North American headquarters to Little Rock, AR. Recently, Barnhart's Little Rock branch was hired to offload LM Glasfiber's wind blade moulds. Within 48 short hours the team provided a 50-Ton and 60-Ton hydraulic crane with two 8' spreader bars to place them onto the heavy haul trailer for transport to the plant site.





**POWER GENERATION:  
718 Sets Ethanol Vessels**

Recently, Barnhart's Chicago branch was asked to help set processing equipment in an Iowa ethanol plant. Because the work was within an operating facility, the available work area was very confined making the mobilization, assembly and operation of cranes

very difficult. Thorough planning and effective communication as well as a tremendous craft team, Barnhart literally overcame obstacles to finish in less than half of the original allotted time. Barnhart assisted with setting both the process vessels and

steel for the plant expansion. Using a LS718 crawler crane, the team set a total of ten process vessels. Interestingly one of the most complicated lifts was a small 19,000 lb. vessel which had to be set between two of the plant's building structures.

## Branch Profile: **OKLAHOMA CITY**

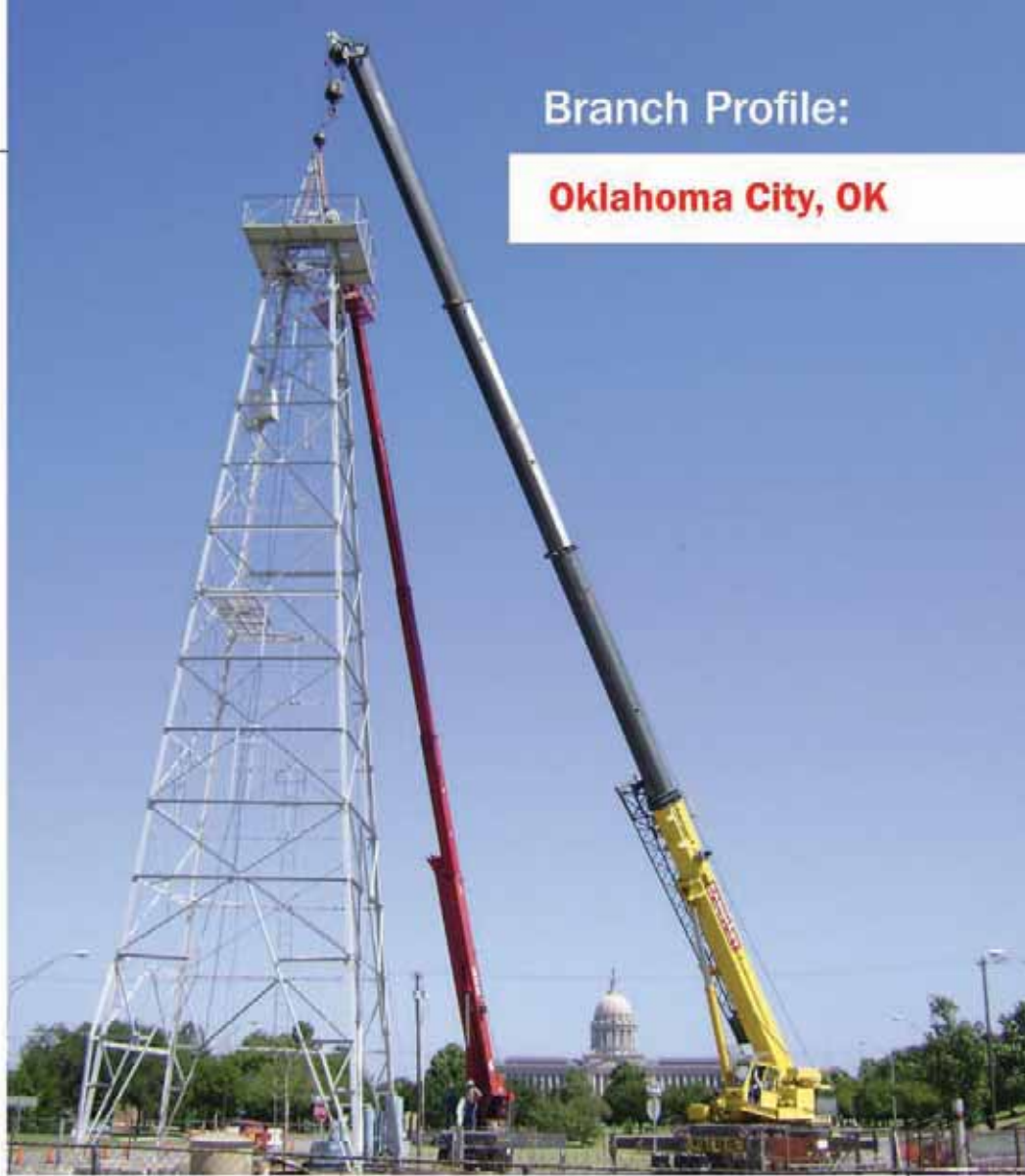
In March 2006 the Barnhart branch in Oklahoma City was established. Serving central Oklahoma, as well as the Texas panhandle, the OKC team is growing and serving a wide variety of customers. Like all Barnhart branches, the Oklahoma City team is equally dedicated to both safety and satisfying the needs of the customer. Because of that dedication, OKC's crane operators have been winning over new customers with each job they perform.

It shouldn't be a huge surprise that the oil and gas industry accounts for a large portion of the Oklahoma City Branch's work. Branch Manager David Houck said that, "most of our work involves oil rig moves, servicing gas refineries, and moving oil storage tanks." The power generation market has also been a key to OKC's growth, having served many of their power plants across the state. Other projects have ranged from the construction of cellular communication towers, billboard erections, HVAC mechanical, and a wide variety of general construction jobs.



## Branch Profile:

**Oklahoma City, OK**



**"Barnhart has an incredible reputation as one of the best and largest crane and rigging companies, and that reputation is blazing its way across the Great Plains. We look forward to continuing to serve the Sooner State."**

Although Oklahoma City is just getting started, they have the support of Barnhart's substantial network of resources from across the country, including cranes from 8.5 Tons to 1760 Tons, hydraulic gantries, Goldholfer platform trailers, forklifts and other unique rigging tools. Houck proudly exclaims, "Barnhart has an incredible reputation as one of the best and largest crane and rigging companies, and that reputation is blazing its way across the Great Plains. We look forward to continuing to serve the Sooner State."

Equipment Profile:

## Barnhart Slide System



**S**ometimes the toughest equipment moves involve the shortest distance. Transferring machinery in tight quarters with little headroom can be a daunting challenge.

Barnhart's slide system is the answer to that challenge. The system can be installed as an elevated track, or installed under overhead obstructions that cannot be moved. This tool allows for situations with very restrictive headroom.

**Low impact on most sites due to minimal space requirements and excellent load spreading capabilities.**

Like all of Barnhart's equipment, the slide system gives our customers another efficient and flexible tool ensuring their job just doesn't get done, but it gets done right.



# Slide System

- The Barnhart slide system can handle nominal loads of 500T
- An optional turntable allows for travel in one direction, rotating the load to any angle and continuing the slide/skid operations to a final location.
- Low impact on most sites due to minimal space requirements and excellent load spreading capabilities.
- Unlimited track combinations can free-span up to 40'.
- The slide/skid system operations are 100% remote. No personnel needed to advance the load to the next position. The hydraulic slide shoe system allows for all movement to be carried out by a remote operator.

## COMMON HAND SIGNALS

**Rigger's  
Corner**

 Main Hoist	 Auxiliary Hoist	 Hoist Load	 Hoist Load Slowly	 Stop
 Raise Boom	 Raise Boom & Lower Load	 Lower Load	 Lower Load Slowly	 Emergency Stop
 Lower Boom	 Lower Boom & Raise Load	 Swing Boom	 Swing Boom Slowly	 Travel (mobile eqpt)
 Retract Boom 2 hands	 Retract Boom 1 hand	 Extend Boom 2 hands	 Extend Boom 1 hand	 Dog Everything

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 Sliding Systems from 100 to 1000 tons  
 Fork Lifts to 120,000 lbs  
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 Strand Lifts to 700 tons  
 Hoists to 500 tons  
 Modular Lift Towers to 2100 tons

**TELESCOPIC BOOM CRANES**

110 cranes from 17.5 to 80 tons  
 25 cranes from 100 to 180 tons  
 15 cranes from 210 to 500 tons

**LATTICE BOOM CRANES**

Crawlers from 250 to 700 tons  
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 Ringer cranes from 360 to 1,760 tons

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 discharge and storage, RO/RO, Barge/Rail  
 Loading Heavy Lift Services  
**Decatur, AL** – Barge Dock,  
 Cranes to 500 tons, RO/RO

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**OPPORTUNITY**  
 for us and  
**YOU**

We're growing and expanding into new markets and we will be looking for new opportunities. As one of the nation's largest crane and rigging companies we can help you expand your capabilities to land that next big project. If you need a partner or would like to become part of our team give us a call or visit our website.

**BARNHART**  
 Minds Over Matter

1.800.587.3249  
 www.barnhartcrane.com  
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**BARNHART**

**1701 Dunn Avenue**  
**Memphis, TN 38106**

**www.barnhartcrane.com**  
**1-800-587-3249**  
**sales@barnhartcrane.com**

