ROPE MAKING IN HISTORICAL TIMES

The application of sails about 3000 B.C. in the Mediterranean area called for rigging, and this stage could have been reached only after much inventiveness and skill had been devoted to rope making, splicing and the use of blocks. Putting aside speculation, some knowledge is derived from cordage that has been found in the course of excavation.

The earliest fragment so far known to be preserved dates from the Badarian or pre-dynastic period in Egypt. It is not to be assumed that the knowledge of rope making originated there, but merely that the climatic conditions have favored preservation. This cord is of flax fiber composed of two right-hand yarns twisted together left-handedly, which shows the fundamental technique of rope making was well known by this time. The spinning of individual yarns of flax by the distaff and whorl was already known.

Rope of the 6th Dynasty, composed of a half grass possibly, has been found. It is known that such fiber, and more particularly that of the date palm, was employed for rope making in ancient Egypt and is even employed at the present day. Both Theophrastus and Pliny confirmed that the Egyptians used papyrus fiber for rope, but no specimen has so far been found.

Rope making scenes are depicted on some Egyptian tombs, the earliest representation of which is probably that on a tomb of the 5th Dynasty at Thebes. A man and a boy are depicted and the inscription is “Twisting Ropes of Boat Building”; the representation is not abundantly clear, as detail is lacking, but it can be interpreted by collation with other available material with which it agrees so far as it goes.

The same remark applies to a similar scene on another painting at Saqqarah, Thebes, of the 6th Dynasty; in this case some detail appears to have been omitted by the artist. We assume that, in both cases, papyrus fiber was used. The clearest representation of rope making that has been found is on a wall painting in another tomb at Thebes of the 18th Dynasty. This and the foregoing mutually elucidate and amplify each other and from the picture it is clear that the technique represented had not undergone any change in the interval.

Evidence is afforded by representations on Egyptian and Assyrian sculptures of heavy weights being hauled by means of ropes by gangs of men, that rope making must have been an industry of great importance. Possibly the most vivid representation of this means of transport is that of a colossus by Sennacherib (706 – 681 B.C.) given on a bas-relief from Nineveh.

The colossus is mounted on a sledge to which are attached eight or more ropes, each of which is hauled by a gang of men working under task masters, helped by men using pinching bars behind the sledge. Neither the number of men nor that of the ropes can be taken as factual so it is not possible to deduce what must have been the pull sustained by each rope; with a like reservation we judge that the ropes were as thick as a man’s wrist. That this form of transport was well organized is shown by the fact that a squad of men with a cart on which are spare rollers and ropes is depicted.

Further evidence in rope making is attested by the account of the invasion of Greece by Xerxes in 480 B.C. given by Herodotus of the bridge of boats used by the conqueror’s army to cross the Hellespont at Abydos – its narrowest point where it is nearly a mile wide, with a current of about 3 miles per hour. Available accounts are not too precise but apparently boats or barges were lashed together by six cables, two of flax of Phoenician make and four of “biblos” i.e. papyrus of Egyptian make.

The flax cable is stated to have weighed one talent per cubit (say 2 cwt. per fathom) which would have meant a circumference of about 42 inches which is incredible, but then we know Herodotus was not strong on figures. However they may be discounted, the task of making six miles of such cable can only be said to be stupendous.

In 1942, when British troops were encamped near Cairo in Egypt, they excavated one of the Tura Caves on the East Bank of the Nile. Amongst other articles they found a large block of stone of identical size and shape to those used in the building of the Pyramids. Around this block was a length of rope, the free end of which was evidently handled by a team of men whose skeletons were also found. Under the block were traces of wooden rollers used to ease its movement to the mouth of the cave.

Continued on Page 2...
It is thought the Nile was wider in those days, so that rafts could be brought up to the entrances of some of the caves and the stones were then loaded and floated downstream, for landing on the West bank near the Pyramid building sites. In this instance, however, the cave must have fallen in, burying the occupants alive before their task was completed.

The rope was made from papyrus or Nile reeds, instead of the ‘yarns’ or ‘threads’ spun from fiber, which is the material used today. The remarkable feature is, however, the forming of the reeds into a ‘strand’ and the laying of the three strands into a rope, with opposing twists. This form of construction follows exactly the same principle employed in modern times. A similar piece of the same rope has been tested by the Carbon14 method in the British Museum Laboratory, and found to date from the period of 300-50 B.C.

This small sample was cut off and given to an officer who was with the South African Forces in Egypt during the War and who later presented the piece to Mr. G.C. Hawkins, the known English spinner.

It must be supposed that some advance in technique had been effected before or about this period in mechanical means for spinning yarn and forming strands; maybe it was the equivalent of crank-actuated ‘wimble’ or ‘spinner’, still used until recently for making ropes of straw from sheaves of corn.

Passing over the art as practiced in other countries without observing any advance, we come to the UK; here we can only skim the subject for a paper on the history of rope making in England might be written. There were rope makers in London during the Roman occupation.

By the 13th century, rope making was a common trade as is evidenced by the occupative surname ‘roper’ or ‘raper’. Robin the roper was accorded a place in William Langland’s Vision concerning Piers the Plowman, 1362, as representative of an honorable and ancient calling. There were ropers’ guilds, notably in Newcastle-upon-Tyne, about a century later.

Editor’s note: The papyrus rope was 2-1/4” diameter (7” circumference).
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THE INTERNATIONAL WORKBOAT SHOW ENJOYS A SUCCESSFUL RETURN TO NEW ORLEANS

The International WorkBoat Show returned to New Orleans in November after a two-year absence. Hurricane Katrina forced the cancellation of the 2005 show.

Many were unsure what to expect, but the attendance topped 2004, the last time the WorkBoat Show was held in the Big Easy at the Morial Convention Center. The show was well attended by the industry, with Captains, Mates, Engineers and Deck Hands in addition to many Purchasing Agents and Operational personnel.

There were several excellent papers and discussion periods. The Cordage Institute members that had exhibits were Puget Sound Rope, Southwest Ocean Services, and Southwest Synthetic Systems. The show will return to New Orleans in November 2007.

FIRST FPSO APPROVED FOR THE U.S. GULF OF MEXICO

Late last year, the U.S. Minerals Management Service approved a plan from Petrobras to use the first floating production, storage and offloading (FPSO) vessel in U.S. waters. Production of the Cascade and Chinook fields in the deepwater U.S. Gulf of Mexico is scheduled to begin in 2009. The two fields are located in the Walker Ridge block, about 180 miles south of the Louisiana coast.

Petrobras, a Brazil state oil company and a leader in deep and ultra-deepwater development and production, has a proven track record of operating FPSO’s since 1979. Fifteen such production systems are currently operating offshore Brazil, with nine additional systems under construction.

MMS approved the conceptual development plan on November 29, 2006. “The next step is for Petrobras to submit a deepwater operation plan detailing development of the fields,” said Caryl Fagot, an MMS spokesperson.

Now that the operator has submitted an application for a permit to use an FPSO in the U.S. Gulf, it remains to be seen if other companies with deepwater and ultra-deepwater prospects will fall in line and more strongly consider FPSO’s as development tools. Fagot would not speculate on additional permit applications for FPSO’s.

The MMS conducted an environmental impact statement (EIS) and comparative risk analysis in 2001, and the agency decided to accept applications for use of an FPSO development scheme the next year. The final EIS, which covers a specific deepwater area offshore the Western and Central Gulf, examined the possible effects of FPSOs that were proposed for use in deepwater development. The EIS evaluated a permanently moored, double-hulled ship-shape FPSO with up to 1 million bbls. of crude oil storage capacity.

The final document found that the potential site-specific impacts are essentially the same as with other deepwater developments and production systems. It also found that most of the risk of oil spills is associated with shuttle tankers, not the FPSO itself, and that the risk is comparable with other deepwater systems and pipelines.

Petrobras said the development and production plan call for the FPSO to be moored in water depths of approximately 2,500 meters (8,200’). During the first phase of development, two subsea wells in the Cascade field and one subsea well in the Chinook field would be connected to the FPSO. Oil would be transported via shuttle tankers while natural gas would be transported through a pipeline. Depending upon the reservoir, additional new wells could be connected to the FPSO.

With the FPSO concept, Petrobras would introduce six new technologies that have never been applied in the U.S. Gulf. They include FPSO’s with turrets that disconnect to

Continued on next page...
allow the vessel to be removed from the production site in the event of hurricanes or other storms. Other technologies include transportation via shuttle tankers, submerged pumps, self-sustainable risers, torpedo piles and polyester mooring lines.

“More detailed engineering studies will give continuity to the process,” Petrobras said in a statement, “including the elaboration of the deepwater operational plan, which will include the entire technical detailing, demonstrating these new technologies will attend to or surpass current requirements for operations in the Gulf of Mexico.”

Visit www.workboat.com for updated commercial marine news.

NATURAL GAS AND TUG DEMAND GO HAND IN HAND

Natural gas consumption in the U.S. is expected to rise 38 percent in the next 20 years. Seventy percent of the new homes built this year are powered by gas, the cleanest burning of the fossil fuels. The use of natural gas by electric companies to fire their power-generation plants has increased a whopping 30 percent in five years. Meanwhile, domestic gas supplies have been flat over the past 11 years.

Liquefied natural gas imports currently account for just 2 percent to 2.5 percent of U.S natural gas supplies, but that is expected to rise to 16 percent by 2030. So, what does this all mean to the workboat sector? The answer is more work as LNG tankers, which require specially designed ship docking tugs, bring in more product. But before the LNG can be brought in, LNG storage and regasification terminals must be built, and establishing a new LNG supply chain is an expensive and lengthy process. It includes building terminals to liquefy the gas, tankers to transport LNG to the U.S., and LNG terminals and pipelines to gasify LNG and distribute it to U.S. markets.

Kathy Bergen Smith, Correspondent WorkBoat Magazine, December 2006

FREEPORT LNG TERMINAL TO OPEN IN 2007

Companies that plan to build and operate liquefied natural gas facilities in the U.S. must be willing to wade through miles of red tape and have deep pockets. “Everything in this business seems to be big,” Bill Henry, vice president, Freeport LNG Development LP, said at the Clean Gulf Conference & Exposition held in New Orleans in October.

Freeport LNG is building a $700 million LNG storage and regasification terminal on Quintana Island near Freeport, Texas, about 70 miles south of Houston. The site is located approximately six miles from open water. The Freeport LNG terminal is being developed in response to the growing need for new natural gas supplies for commercial, industrial and residential consumers in Texas. “We’re a terminal operator, not a buyer or seller of natural gas,” said Henry.

The first phase of the LNG terminal, which will include one berth and two storage tanks, will have a send-out capacity of 1.75 bcf per day (bcf/d) beginning in early 2008. The construction of the terminal’s Phase I began in 2005 and is scheduled to be completed in late 2007, according to Henry.

Henry said there are 576 pilings under each tank, which are built to withstand 150-mph winds and 183-mph gusts. In addition, there is a protection levee designed to handle a 21-foot storm surge. By the fourth quarter of 2009, Phase I capacity will be fully contracted under two separate long-term terminal use agreements with ConocoPhillips (1 bcf/d) and Dow Chemical (0.5 bcf/d). However, as part of its agreement with ConocoPhillips, Freeport has retained 0.5 bcf/d of capacity from commercial start-up until the fourth quarter of 2009.

Phase II is currently in the permitting process and will add up to 1.15 bcf/d of marketable capacity plus additional peaking capacity. Almost 40 percent of Phase II capacity is already sold to Mitsubishi and ConocoPhillips under long-term contracts. Phase III is currently in the early stages of the permitting process.

Ken Hocke, WorkBoat Magazine Focus, December 2006

BOW SECTION OF NAVY’S AMPHIBIOUS ASSAULT SHIP BEING BUILT WITH 24 TONS OF SCRAP STEEL FROM WORLD TRADE CENTER

The USS New York is about 45 percent complete and should be ready for launch in mid-2007. Katrina disrupted construction, but the 684-foot vessel escaped serious damage, and workers were back at the yard near New Orleans two weeks after the storm.

MTS Currents December 2006

Visit us online at: www.ropecord.com to order or learn more about Cordage Institute Standards & Guidelines
**Knots & Notes**

**SAMSON AWARDED PATENT FOR REDUCED RECOIL ROPE**

Samson has been awarded a patent (#7127878) for the construction and performance of a Reduced Recoil Rope®. The “snap back” factor, in the use of most ropes, can cause severe injury to rope handlers and equipment in ship mooring operations. Samson’s Reduced Recoil Ropes are designed to absorb the energy released by the rope when it breaks, “snap back”, thus reducing the tendency of the rope to recoil.

Samson’s Mooring Defender™ rope is a 12-strand High Modulus fiber mooring line based on this unique patented technology. Like Samson’s other high performance mooring ropes, Mooring Defender is high in strength, has superior abrasion resistance, and low elongation. When Mooring Defender is subjected to excessive tension loads, the lower elongating fibers will break first, transferring the load to the remaining specially designed control fibers. This creates an indication of rope failure before the rope becomes completely separated. In a conventional rope, the rope will break without warning, causing unpredictable and potentially dangerous movements of the broken ends.

Dr. Rafael Chou, Vice President of Research and Development and contributor to the patent application said, “The need existed for improved ropes that, when subjected to excessive tension loads, failed in a controlled manner. The construction of Mooring Defender fills this key safety need. The rope is prevented from snapping back, thus minimizing injury to people or equipment. With this technology in place, we now have the ability to develop products with reduced recoil properties for other applications.”

**DEEP SEA MINING**

Deep sea mining for sand, gravel, diamonds, oil and gas as a by product of oil has been conducted for many years. In the 1980s there was a flurry of investment and excitement about the prospect of mining the sea floor for manganese nodules. It turned out that the land-based sources for the contents of the nodules was well supplied and the economics of extraction at sea was not sensible at that time, however this may change. While expensive, diamond mining off the coast of Africa is well underway and dredging operations for sand and gravel continues all over the globe driven by increasing construction activities. There is a renewed interest and investment in deep sea mineral mining.

*Maggie L. Merrill, Marine Technology Reporter, January 2007*

**NS SAVANNAH TO DEPART SHIPYARD**

The National Historic Landmark vessel, the NS Savannah, which was the United States’ first nuclear-powered commercial ship, will be towed from Colonna’s shipyard in Norfolk, VA. The Savannah will remain there, undergoing routine maintenance, until a contract for drydocking is awarded. The Maritime Administration has begun preparations for decommissioning the ship’s nuclear reactor. All fuel was removed more than 30 years ago. The entire operation will begin at Colonna’s Shipyard in Norfolk, VA and it will end at Pier 23 in Newport News.

*Marine Technology Reporter, January 29, 2007*

**SAMSON APPOINTS TONY BON AS PRESIDENT**

Samson has announced the appointment of Tony Bon to serve as the Company’s President, effective January 1, 2007. His background and experience are well suited to his new role with the company and will poise Samson for future growth.

Bon has been a valued member of the Samson team since 1974 when he began on the manufacturing floor in Samson’s Massachusetts facility. He soon progressed to Production Superintendent, and later transferred in 1980 to Samson’s Ferndale, Washington factory to be Plant Manager. Since then he has held positions as Materials Manager, Vice President of Operations, Senior Vice President, and most recently Chief Operating Officer (COO), overseeing Samson’s sales, operations, and research and development activities. Bon also enjoys a seat on the Board of Directors for United Way of Whatcom County.

Steve Swiackey, the Company’s former President, said, “Tony has had extensive association with the company and so I am pleased he is taking over the helm of our senior leadership team.” Dr. Rafael Chou, Samson Vice President of Research & Development, noted that “Tony’s long company history and his deep understanding of our products make him an ideal candidate to solidify our position as the leading high-performance cordage company in the world.” “Although the majority of my experience is in operations, working closely with sales over the past 3 years has firmly grounded me in that aspect of the business as well,” noted Bon. He added, “I look forward to serving Samson in this broader capacity.” In his new role, Bon will have complete responsibility for the day to day operations of Samson. Bon succeeds Steve Swiackey, the Company’s President from 1985 to December 2006. Swiackey will remain with the Company and assume the position of Chief Executive Officer (CEO), retaining overall responsibility for Samson.
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**ropecordNEWS**

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