Care and Handling of Sucker Rods

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Manufacturers attempt to deliver sucker rods to the user in the same condition as when they left mill. The processes of unloading, storage, and transportation to the field must be just as carefully carried out, since carelessness at any of these stages can nullify the efforts made at any other stage.

Before shipment the rods are gaged and inspected to be sure that all specifications have been met. Thread protectors are applied and the rods are covered with a protective coating. They are shipped to the user by rail, truck or ship.

Rail shipments are the most common means of transporting rods on the initial journey to the well. Two general methods of loading in railroad cars is used - the bulkhead load and the single unit floating load.

Two methods are also used in loading those rods shipped by motor truck to the field - bulk loading and package loading.

Inspection is the key note in every operation with sucker rods. Even assuming that the rods have been properly stored at the supplier's warehouse and the company warehouse, an initial visual inspection is important. Bent or kinked rods should be rejected. Missing thread protectors should be supplied.

Whenever they are lifted, rods should be properly supported to prevent the possibility of permanent bending. In general this requires support at the center and near the ends.

Sucker rods should be loaded on the truck and trailer on a rack with wooden cross supports and should be supported to prevent sagging at a number of points throughout the entire length of each rod. The wooden stringers should be equally spaced, using at least four stringers. Each layer of rods should be separated by a wooden spacer of sufficient thickness to prevent the forged ends of the rods from coming into contact with the layer above or below.

Truck and trailer combinations vary, but each design for hauling rods incorporates the principle of maximum safety for the rod. A continuous wooden deck placed upon the truck and dolly bolsters has been found to be a satisfactory foundation upon which to place the rod load. Both the rods and the spacers need to be securely anchored to prevent shifting during transportation. The spacers should be wider than the rod pile so that chains, cables, or metal ties will not come in contact with the rods. Blocks of wood, carefully arranged, will prevent direct contact between the rods and binder chains.

Rods should be carefully removed from the truck and laid down. Under no circumstances should they be dropped, pushed, pulled or thrown off the truck. Carelessness at this point can easily cause excessive sag in the rod, resulting in a permanent bend. Cold straightening will not repair the damage.

Rods should be placed on a suitable rack at the well, with stringers provided to support the rods and keep them off the ground. Each layer of rods should be separated by spacers, and in general the same recommendations as indicated above will apply to the rod pile at the well.

When rods are stored it is recommended that they be kept off the ground on wooden racks equipped with a minimum of four stringers, to prevent sagging. Spacers between each layer of rods should be provided in the same manner as for transporting rods.

If the rods are stored outside frequent inspections should be made to detect rusting. Proper choice of storage location should be made to minimize the action of corrosive atmospheres that tend to destroy the protective coating on the rod.

Thread protectors should be kept on all rods in storage. If the rods are new and have not been put into service, the manufacturer's thread protectors should be retained on the rod. If used rods are to be idle for a considerable length of time, the rods should be stored as recommended above; the threads should be cleaned and greased, and thread protectors applied.

The use of proper handling procedure for every rod operation cannot be overemphasized. Failure at any point may provide the conditions for a future rod break.

Accounts of unusual damage to rods have been recorded as resulting from failure to provide for proper unloading of the rods at the well. The rods should be unloaded with the pin towards the well head. If rods are received at the well in wired bundles, the wire should be cut with pliers to avoid the possibility of nicks. The secured package units are comparatively easy to load and unload, stack for storage, or transport for field use. Careful visual inspection of pins and couplings should be made before running rods in the well. Pins and couplings should be cleaned and lubricated and clean protectors installed.

Used rods should be handled in the same manner as new rods, including inspecting, cleaning and lubricating. Pits, nicks, or evidence of kinks or bends in any of the used rods should be noted and the rod set aside for further evaluation. API thread chasers can be used to repair damaged threads.

When the rods are picked up from a walkway or a rack, with elevators, they should be tailed in. The rod should not drag on the walk, ramp or ground. Rod elevators must be in the best possible condition to fit the taper of the rod. Rods should never be strained to the point where a permanent bend or kink is placed in the rod. Thread protectors should always be removed with care.

It is of the utmost necessity that all rod joints be made up to a predetermined torque to prevent pin failures, which are one of the causes of high production costs. The torque required to tighten a sucker rod joint depends upon the following variables: (1) surface condition of threads, (2) shoulder and coupling faces, (3) type of lubricant used, and (4) presence of foreign matter.

Torque figures must be determined by experience for any particular operation, district or field.

In order to make proper sucker rod joints, appropriate tools such as hand wrenches, power rod wrenches and elevators are required. When making rod connections, the crew must be sure that the rod is hanging correctly in the derrick or mast so the threads will not be crossed. Crossed threads should be chased with the proper tools. When rods are being run for the first time it may be adviseable to break and unscrew each joint several times to assure good make up. It should be remembered that it is better to have a joint too tight, and that it is difficult to overtighten with snap wrenches and very easy to undertighten.

Couplings should never be hammered when sucker rod joints are broken. Many failures can be traced directly to hammer or wrench blows on the hardened surface of the coupling. Such blows cause cracks to develop.

When pulled from the well, the rods must be inspected for kinks, corrosion, wear or other damage. Damaged rods should be fully evaluated before being used again. When rods are to remain out of service, pin and coupling threads must be cleaned and lubricated and clean protectors installed.