The Care and Handling of Tubing

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Care in handling either new or used tubing will result in fewer operational difficulties and less maintenance.

Preparation and Inspection Before Running

Handle with thread protectors in place until ready to stab.

Before running the first time, or after excessive pulling, drift with mandrel to insure passage of pumps, swabs, and packers. The drift mandrel, to be effective, must be made the proper size. The manufacturing tolerances of the tubing are such that there will be some variation in the inside diameter and the API drift mandrel is calculated to be 3/32" smaller than the nominal inside diameter of the tubing. Pumps, swabs, and packers are manufactured to fit this size. The drift mandrel diameter for tubing in general use in this area is:

1.947" for 2-3/8" O. D. 4.00 lb. non-upset tubing.
1.901" for 2-3/8" O. D. 4.60 lb. non-upset tubing.
1.901" for 2-3/8" O. D. 4.70 lb. upset tubing.
2.347" for 2-7/8" O. D. 6.40 lb. non-upset tubing.
2.347" for 2-7/8" O. D. 6.50 lb. upset tubing.

The length of the drift mandrel is a means of checking straightness and 42" is considered for length.

Elevators should have links of equal length and the assembly should be in good working order. Heavy elevators and spiders are recommended for long strings. Tubing tongs which will not crush the tubing should be used and they should fit properly to avoid cutting of the pipe surface. Pipe wrenches are not recommended because they contact only a small portion of the circumference of the tubing and may cut or crush the pipe. Cutting of the pipe not only reduces its strength but is a safety hazard due to sharp slivers.

Tubing threads should be inspected while the tubing is on the rack, but immediately before running. Remove the protectors from pipe and couplings of a number of lengths and inspect for cleanliness and adequacy of thread compound. Blowing sand can get under the ends of the thread protectors and become mixed with the lubricant. If necessary, clean pipe threads, coupling threads, and all protectors. When thoroughly dry, apply thread compound over the entire surface of all cleaned threads and apply clean protectors.

When pulling the tubing into the derrick, care should be taken that the tubing is not bent and that the couplings or protectors are not bumped, which could cause flattened couplings or damaged pipe threads on the field end.

The foregoing check on the condition of tubing and tools is of vital concern since transit, handling, and storage may cause damaged threads, dried or dirty thread compound, crushed or bent tubing, and crushed or dented couplings. Spiders, tongs, dies, etc. may be worn-out and ineffective or of the wrong type. At this point "Don't Take Chances—Be Sure."

Stabbing, Making Up and Lowering

When each length of tubing is ready to stab, remove thread protector from the field end. Apply thread compound if necessary. The thread compound should be kept in a covered cantainer and the brush should be kept clean. The thread tolerances of both pipe and coupling are held very close in manufacturing in order to obtain joint strength and sealing properties. If a small amount of sand, or other solid, is trapped between the thread elements of the pipe and coupling, either complete joint make-up can not be attained, or the threads may be damaged due to galling. In either case, the result may be leakage in the joint or insufficent joint strength to hold the entire string.

In stabbing, lower the tubing carefully to avoid injuring threads at the point of contact. Stab vertically, for a tilted stab may damage the threads. When running doubles or triples, intermediate supports should be placed in the derrick to limit bowing and hold the tubing in line. Intermediate supports may also be required when running singles during periods of high wind in order to eliminate the possibility of damaging threads.

The tubing should then be screwed slowly by hand or by using tongs. Joints should be made tight with tongs. On an API joint, tightness is achieved when the face of coupling covers pipe threads. Experience may indicate a tight joint with one or two threads exposed, but any great variation from one joint to another may indicate that the threads are damaged on those joints with exposed threads. In these cases, back out the joint and examine the thread for damage. Minor damage may be repaired with a small three-cornered file. Then carefully remove filings and re-dope the joint with thread compound.

Find bottom with extreme caution as setting tubing down heavily may cause excessive bowing or a sharp kink which could prohibit passage of pump, swab, or packer. An accurate length tally of the tubing as run, including make-up loss of each joint, will help to prevent setting heavily on bottom.

Pulling Tubing

Position the break-out tongs close to the coupling. Do not hammer the coupling as it may go out of round. If tapping is required, use the flat face of a hammer, and tap lightly at the center and completely around the coupling. The center of the coupling is the thickest portion and tapping this area will produce better results, as will light blows around the coupling, rather than opposite sides.

Disengage all of the thread before lifting the tubing out of the coupling and do not jump the tubing out of the coupling.

Tubing stacked in derricks should be set on a wooden platform, as steel or concrete may damage the pipe threads. Intermediate supports will prevent excessive bending. Protect all threads with thread compound and protectors if tubing is not to be re-run immediately.

If the foregoing procedure is followed, operational difficulties and maintenance will be kept to a minimum.