Multiple Choice – Clearly circle the correct answer. There is ONLY one answer to each statement.

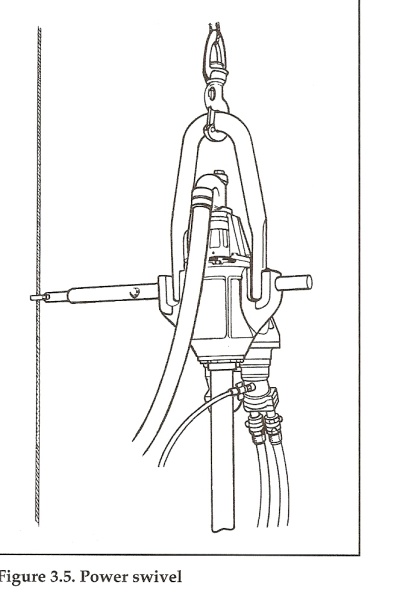
1. The subsystem of a workover rig that allows lifting is called:
   1. The hoisting system.
   2. The circulating system
   3. The rotating system
   4. The vertical displacement system
2. The component of the rotary system that transfers torque to the kelly is called:
   1. The rotary table
   2. The rotary bushing
   3. The kelly bushing
   4. None of the above
3. One of the reasons that Triplex pumps are more commonly used to circulate fluids is because:
   1. They are less expensive than duplex pumps.
   2. They provide smooth displacement at low volumes.
   3. They don’t have cylinder liners
   4. They don’t require pressure relief valves
4. To convert a water volume measured in cubic feet into a water volume measured in barrels you start with the volume in cubic feet and then:
   1. Divide by 5.614 ft3/bbl
   2. Multiply by 5.614 ft3/bbl
   3. Multiply by 5.614 bbl/ft3
   4. Ask an engineer for the correct answer
5. One of the advantages of a wireline rig over other types of workover units is:
   1. They are less economical that other options
   2. They can often rig up, complete a task, and rig down faster than other alternatives
   3. They allow heavy drilling operations to be conducted quickly
   4. None of the above.
6. The total load on the wireline is typically measured with:
   1. A line-speed indicator.
   2. A stuffing box.
   3. A lubricator.
   4. A weight indicator.
7. The device that moves the tubing in and out of the well on a coiled tubing rig is called:
   1. The reel
   2. The stuffing box
   3. The injector head
   4. The BOP
8. Snubbing refers to the following type of operation:
   1. Removing sand from the bottom of the well
   2. Ignoring the directions of the engineering staff
   3. Removing pipe from a well
   4. Forcing pipe into a well that is under pressure.
9. The best of these reasons to adjust the density of a completion and workover fluid is:
   1. To force completion and workover fluid into the formation
   2. To balance the formation pressure with a column of fluid of the correct weight
   3. To increase the cost of the well control
   4. To block the flow paths in a fracture to prevent reservoir fluids from entering the well bore.
10. One reason that limits the amount of salt you can add to water in order to increase its density is:
    1. You will exceed the saturation value of the brine and no longer get the salt into solution.
    2. The fluid ends up with salt dissolved in it.
    3. The salt changes into Sodium and Chloride ions when dissolved in water.
    4. The formation of crystals allows you to add additional salt into the water.

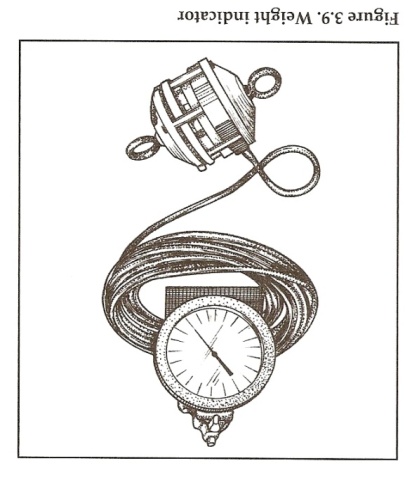
Fill in the Blanks:

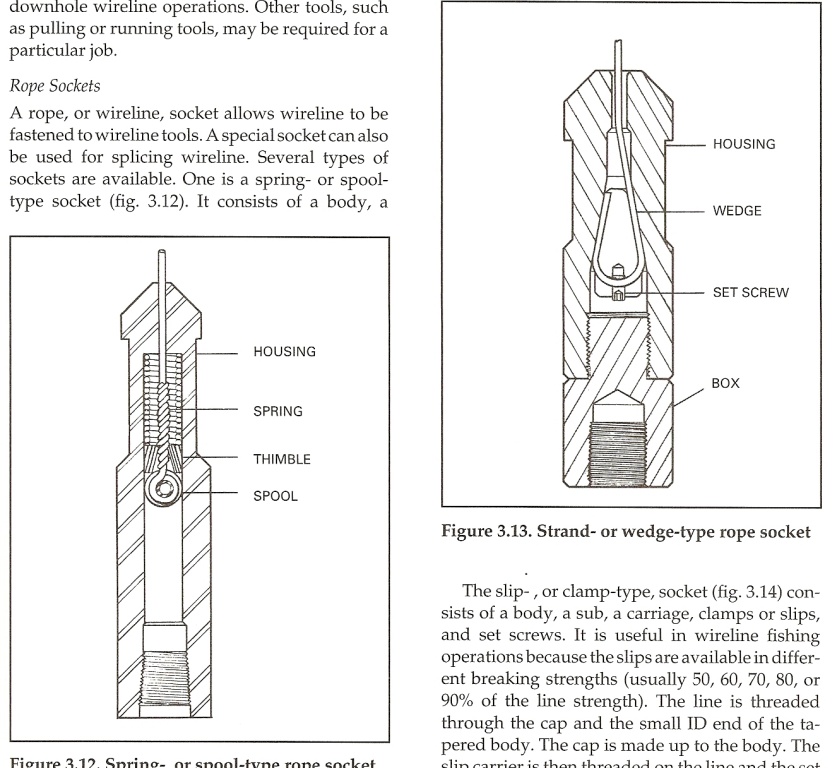
1. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a stable fluid added to the annular space between the tubing and the casing.
2. An increase in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ will cause the density of brine to decrease.
3. Another name for a large complex polysaccharide is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
4. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ will be added to remove the plug after a predictable amount of time.
5. A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a low-pressure preventer used for running tubing in or out of the hole without using a type of ram.
6. There are two types of slips which provide force to move the tubing in or out of the well in a snubbing unit, they are the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ slips.
7. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the primary means on converting liquid nitrogen into high pressure gaseous nitrogen.
8. The boiling temperature of liquid nitrogen is \_\_\_\_\_\_\_\_\_\_\_\_\_\_ ⁰F which is also equal to \_\_\_\_\_\_\_\_\_\_\_\_\_ ⁰R.
9. To remove sand from the well you may use a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
10. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is typically mounted above the master valve on the Christmas Tree or above the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ if one is installed.

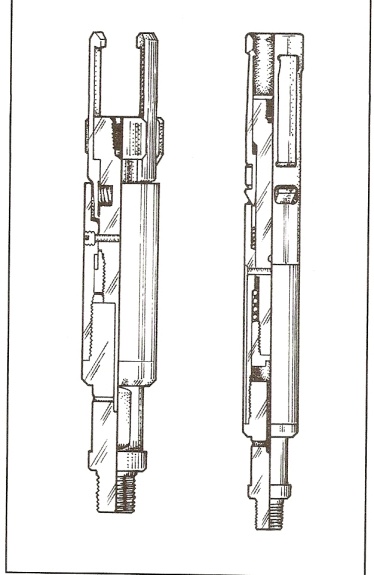
Match the name of the equipment to the correct drawing by placing the correct letter in the blank next to the drawing from this list:

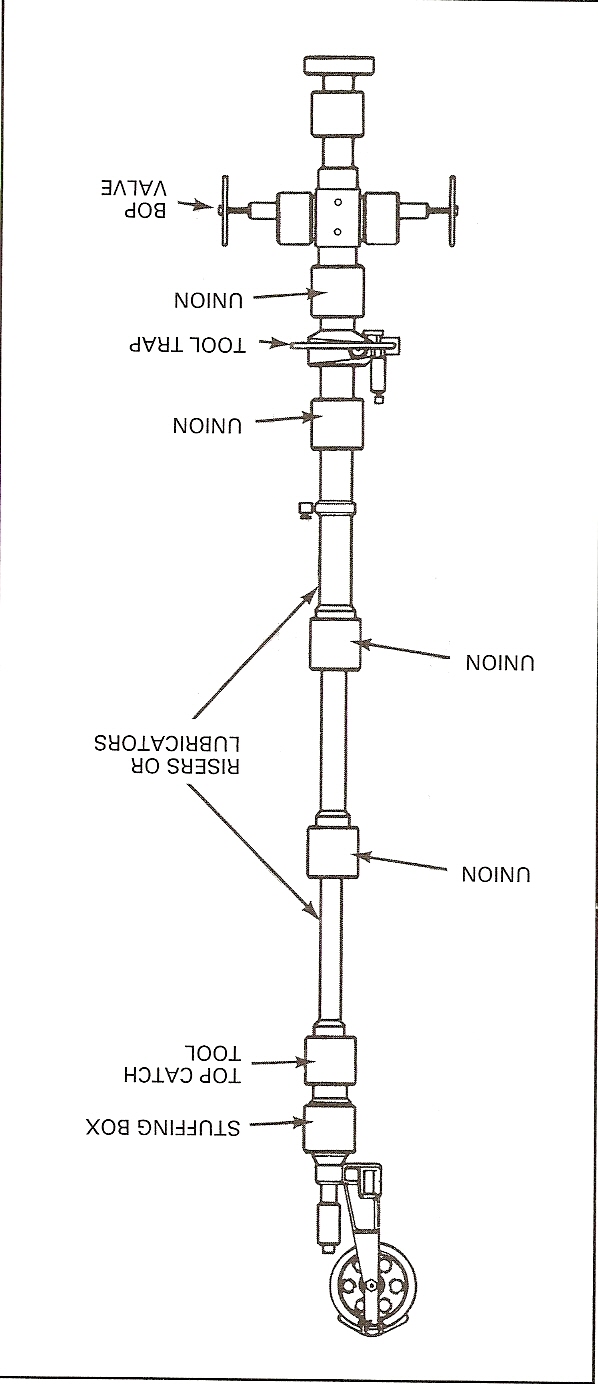
1. Hydraulic Jar
2. Rig-assisted Snubbing Unit
3. Stuffing Box
4. Wireline Pulling Tool
5. Master Bushing
6. Power Swivel
7. Rotary Table
8. Lubricator
9. Weight Indicator
10. Rope Socket
11. Kelly Bushing

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\_\_\_\_\_\_\_\_\_\_\_

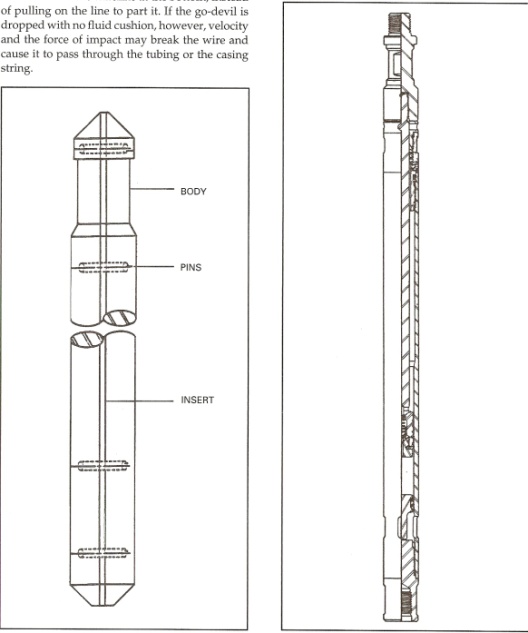
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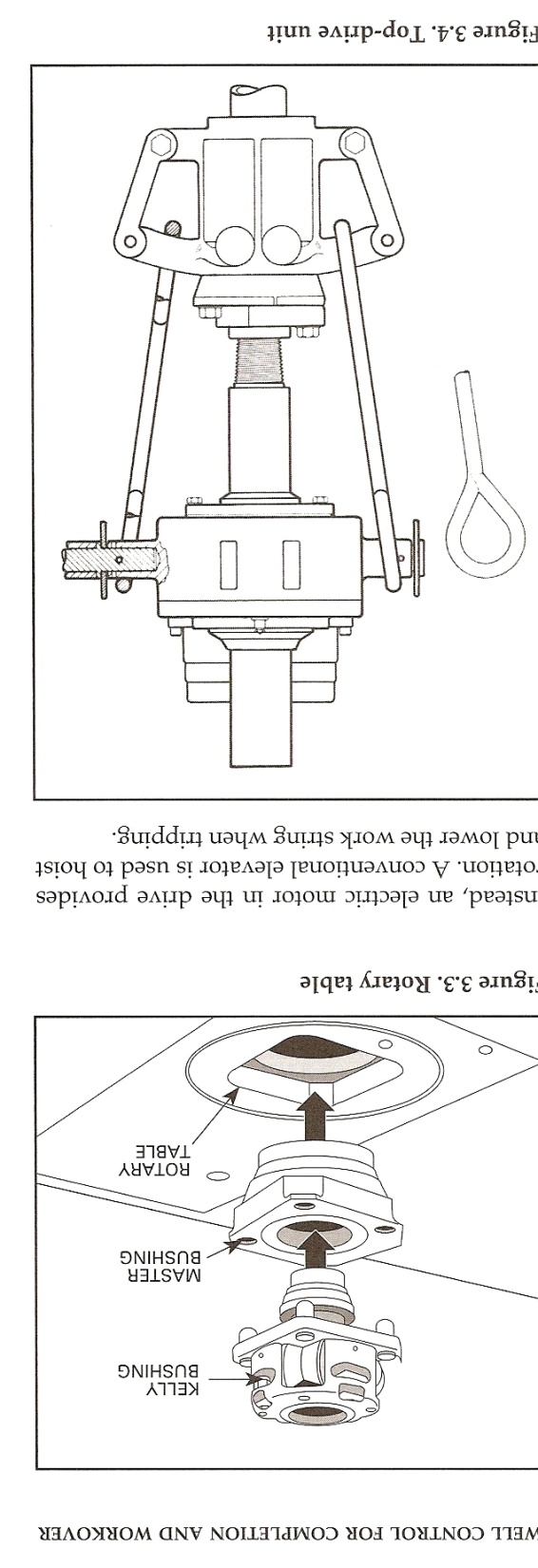
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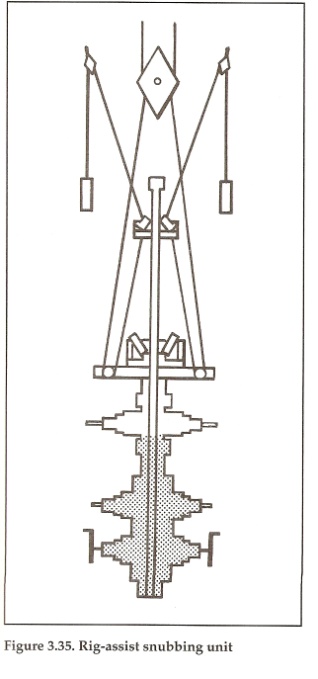
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Extra Credit (5 points)

Think about the wells that you have been assigned for this class and answer the following questions.

* + 1. What is the typical production rate for the 10 wells you have been assigned? Just give me a ballpark average for the group. Do not concern yourself with the exact value just give me a ballpark number based upon your observations of the past two weeks. Please include the units. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
    2. Approximately what fraction of your wells are using EFM instead of orifice plate meters? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    3. What route number and wells have you been assigned? Route \_\_\_\_\_\_\_\_\_; Wells \_\_\_\_\_\_\_\_\_\_\_

1. What is the most recent date for which data from the field is available? \_\_\_\_\_\_\_\_\_\_\_\_\_\_