

Well Testing

1. Initial production tests at surface after wellbore cleanup and fracing. Sometimes called initial potential or IP.

When a **well** is ready to produce for the first time, the **production** staff has an estimate of what will come out—**oil**, gas, or a combination. Still, they want to know how much and under what pressure, to better understand the reservoir's mechanics and to design the facilities needed to process the **production**.

An **initial well test**, the *potential test*, provides a best estimate of the maximum daily producing capability of the **well** under a fixed set of circumstances. Under most circumstances onshore, a gas **well** may be flowed with no restrictions and with the **production** being flared. The time period of the **test** depends on the circumstances, but concern for wasting a valuable resource and abiding by emission permits generally restricts a flare **test** to a few hours. The flow rate and pressure performance are carefully measured, and the results are converted mathematically into what is called an *open-flow potential test*. This gives the rate, expressed in MMcf/d, at which the **well** will produce without backpressure from the surface equipment.

For an **oil well**, the **initial test** has more issues. Flaring the entire stream is usually not a feasible or even a legal option. Instead, a portable **test** unit consisting of a separator, meters, and storage tanks are brought to the **well** site for the **test**. The gas is flared; the water and **oil** are separated and stored for later removal. The length of the **test**, usually numbered in hours, is limited by available storage.

IP= Initial Production

IPF = flowing

IPP = pumping

COF = calculated

open-flow

CAOF = calculated

absolute

open flow

Well Testing

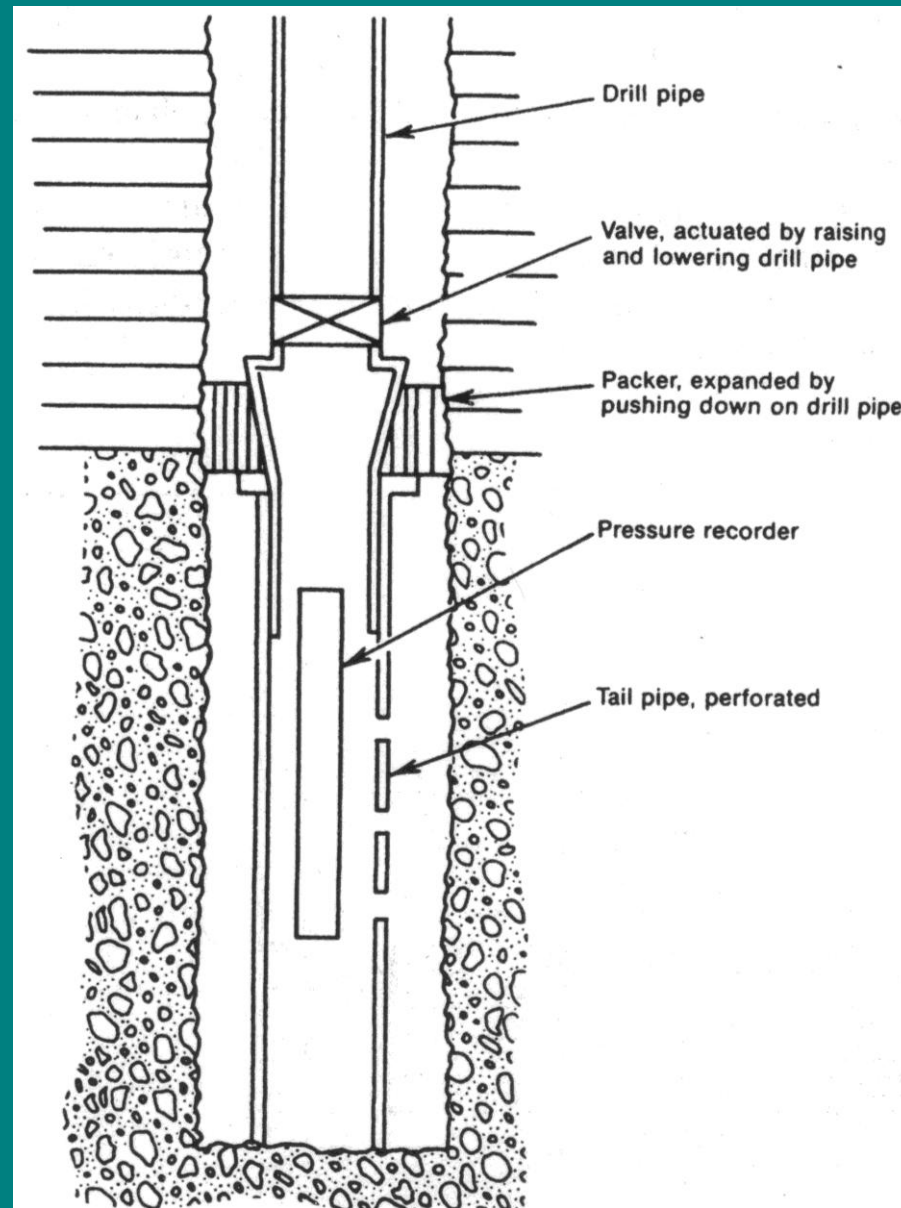
2. Various types of surface pressure tests (usually for gas wells).
This data is also used to calculate bottom-hole pressures

3. THE DST!!! Or Drill Stem Test

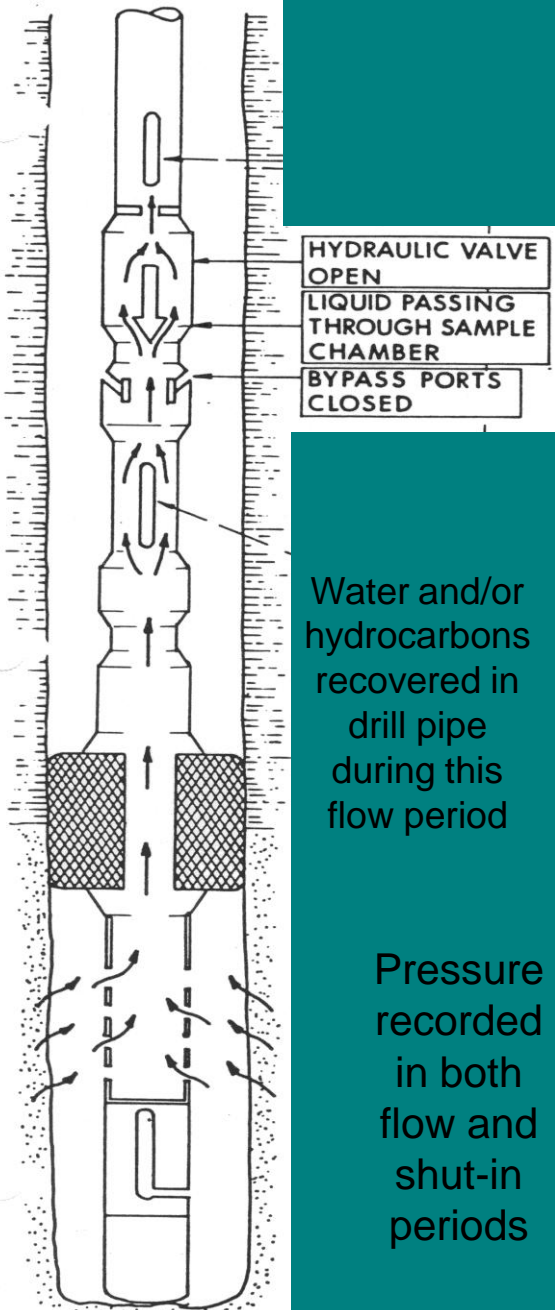
Used in both oil and gas wells, in cased or uncased wells.
Very, very common test so learn about them!!

Used to determine

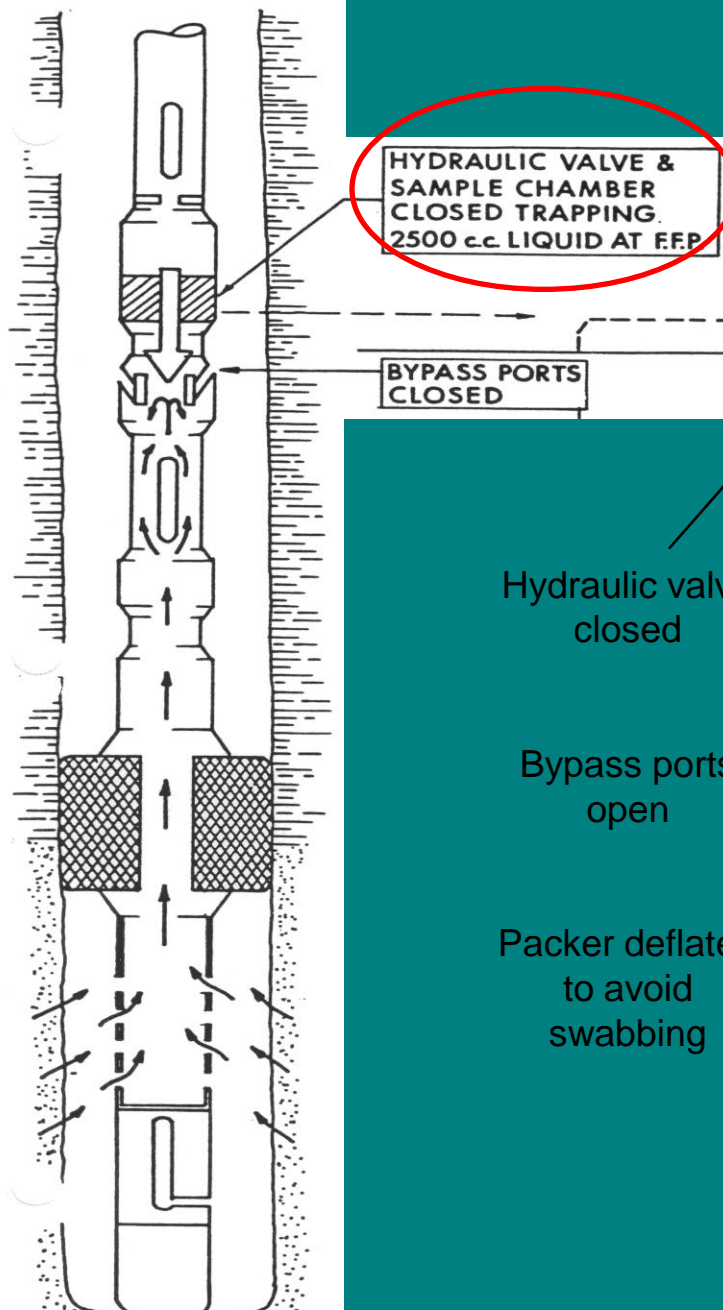
- formation permeability
- boundary conditions of reservoir
- formation pressures
- fluid (oil and water), and gas recovery from formation



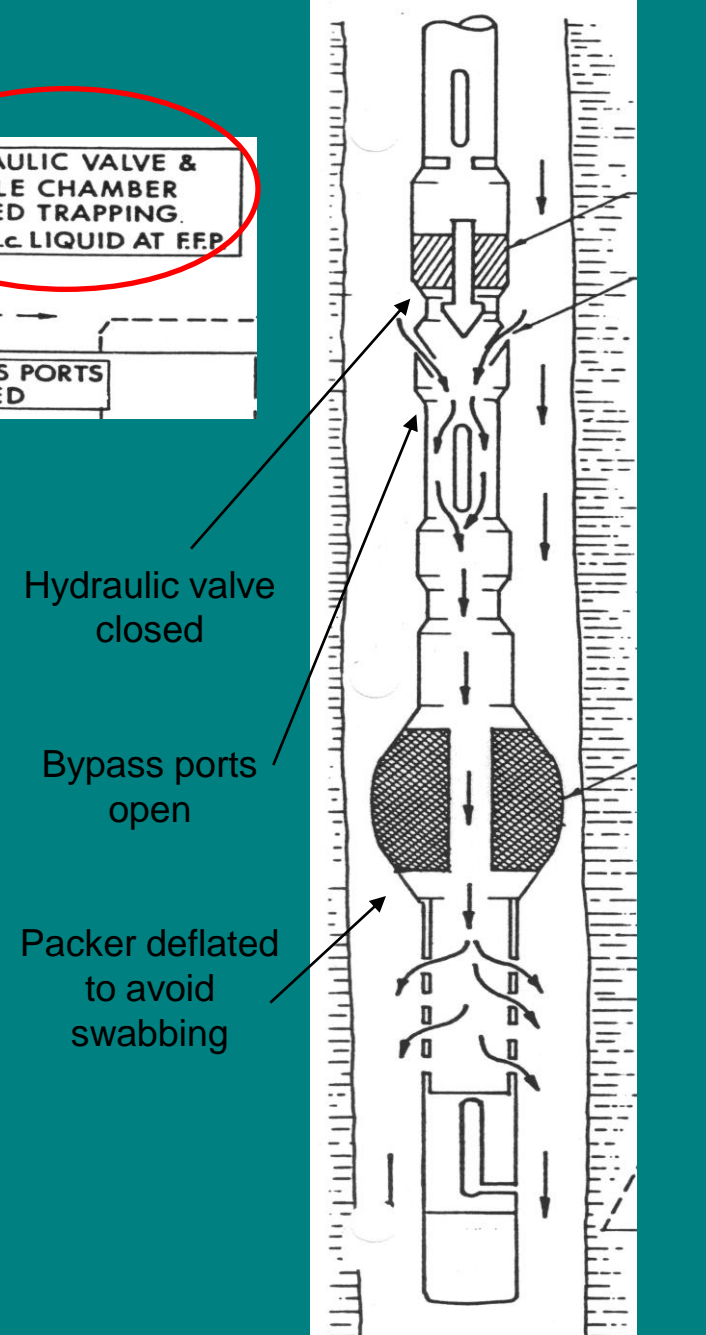
DST tool schematic



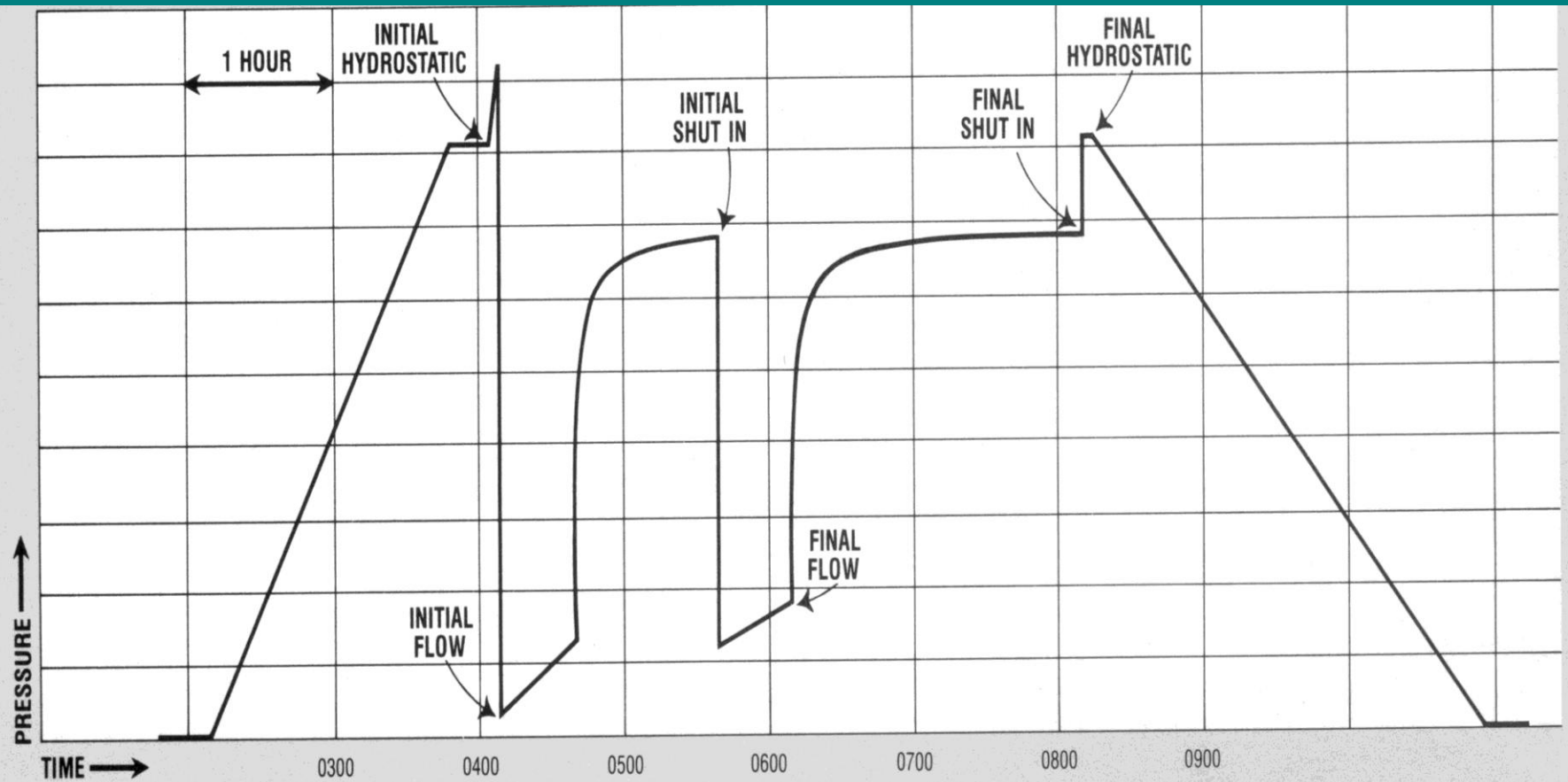
Flow Period



Shut In Period



Tripping out (or in)



The DST (Drill-stem Test) chart

Pressures are at test depth

Initial hydrostatic pressure

Tool open

Initial flowing pressure

Final flowing pressure

Tool closed

Initial shut-in pressure

Pipe recovery

DST NO. <u>1</u>	
<u>4022'</u> INITIAL	TO <u>4048'</u> FINAL
IHH- <u>2053 psi</u>	FHH- <u>2035 psi</u>
TO <u>20</u> Min	TO <u>60</u> Min
IFP- <u>227 psi</u>	IFP- <u>471 psi</u>
FFP- <u>638 psi</u>	FFP- <u>1063 psi</u>
TC <u>45</u> Min	TC <u>90</u> Min
ISIP- <u>1678 psi</u>	FSIP- <u>1693 psi</u>
REMARKS	
<u>186' DRY GAS</u>	
<u>248' HEAVY GAS CUT MUD</u>	
<u>234' SALT WATER</u>	