

# History of Well Integrity

**A History of Well Integrity in the Operations Phase and its Business Impacts to the Oil and Gas Industry**

***Delivered by Simon Sparke, International Well Integrity***

# International Well Integrity



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In today's webinar, we will cover these key areas:

WELL  
INTEGRITY  
TRAINING



WELL  
INTEGRITY  
CONSULTANCY



ABANDONMENT  
GUIDENCE

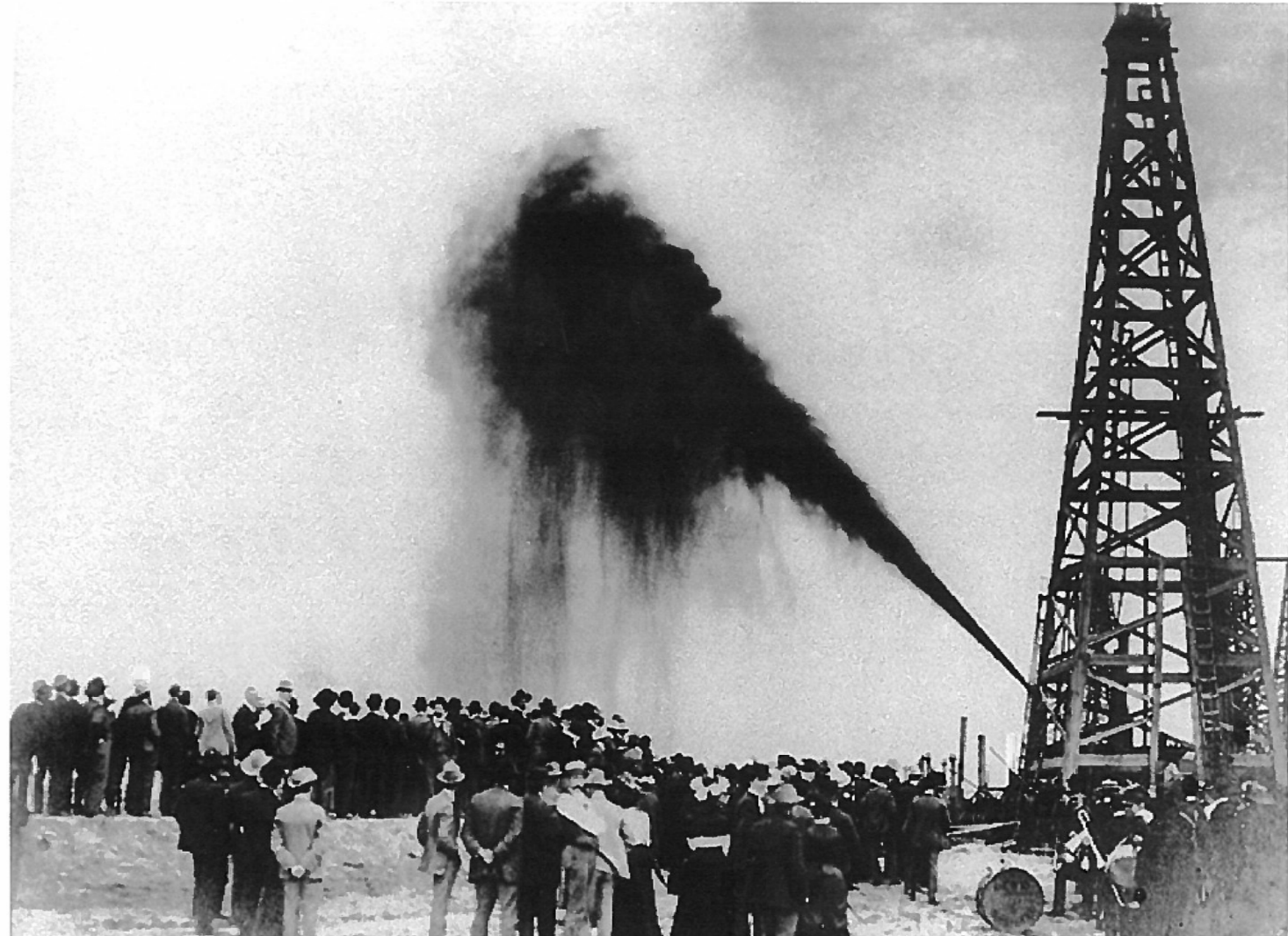


# This is where it all began....



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- Spindletop 1901
- Well construction



# Spindletop, April 2013



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# Well integrity in the construction phase

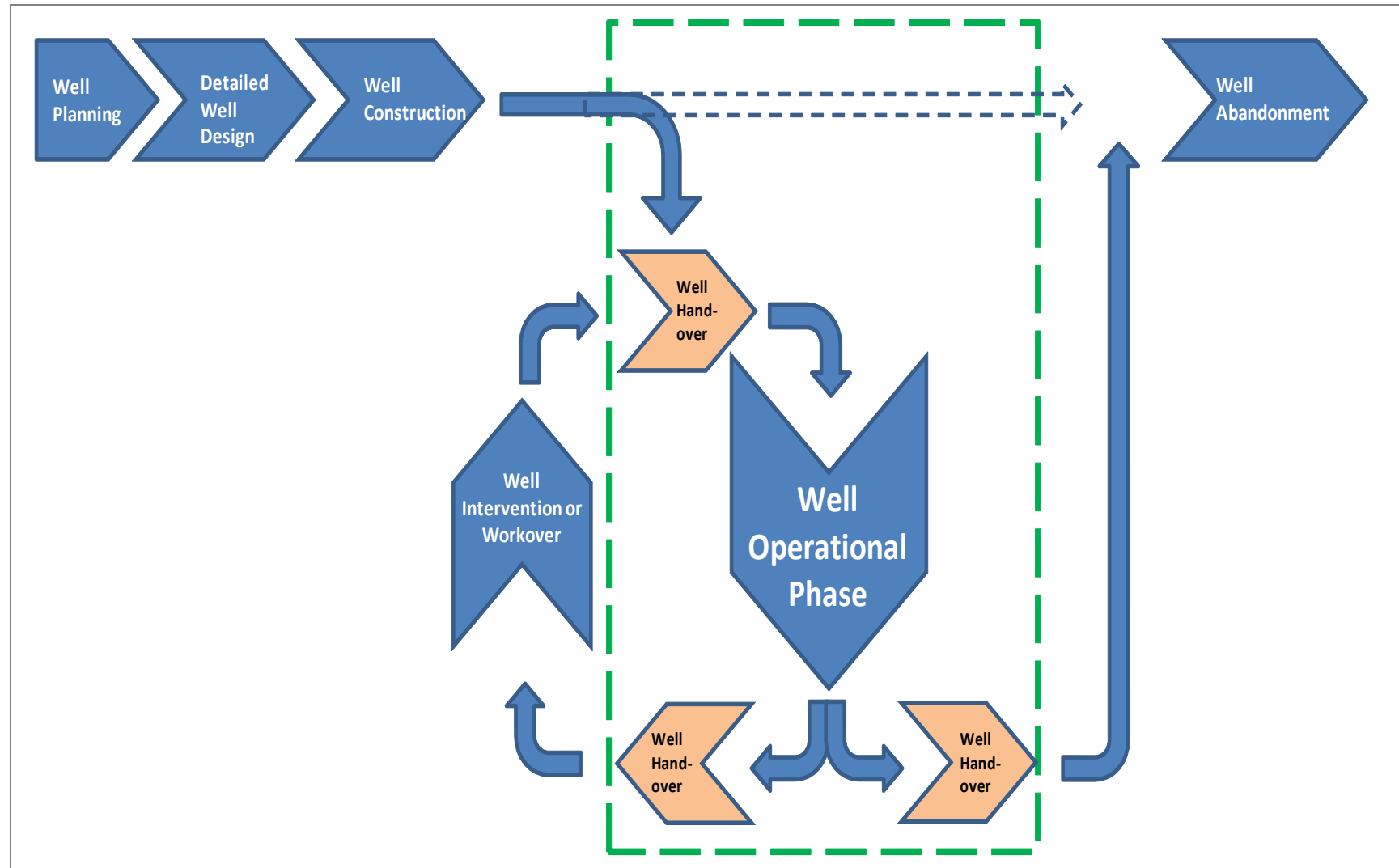


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# What have the last 2 events got in common?

They occurred in the CONSTRUCTION PHASE. This presentation concerns the OPERATE PHASE.



# Elgin/Franklin – HPHT leak to atmosphere



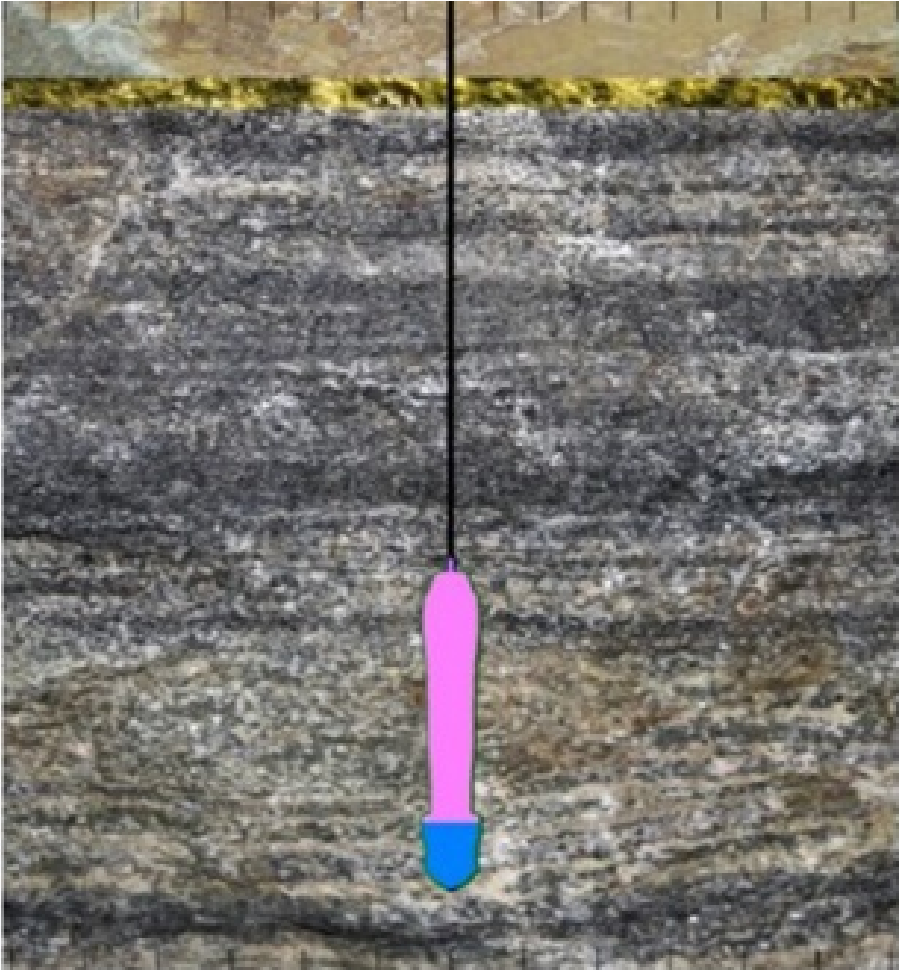
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# Onshore USA – Salt cavern blowout



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# Piper Alpha – UKNS – July 1988



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# Montara – Timor Sea – Aug 2009



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# Aliso Canyon – Los Angeles – October 2015



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# What have these last 5 events got in common?

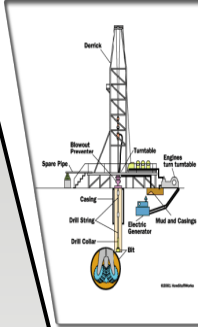
- They all occurred in OPERATING wells.
- Most people automatically think of Deepwater Horizon when blowouts are under discussion, and there is a huge difference -:
  - Construction phase – well has BOP's, mud/kill fluid and reservoir pressure is NOT intentionally brought to the surface
  - Operate phase – well has Christmas tree and valves, and reservoir IS intentionally brought to the surface
- Today we will discuss well integrity in detail and gain a better understanding of **well integrity in the operate phase and its history.**

# Well lifecycle and ownership

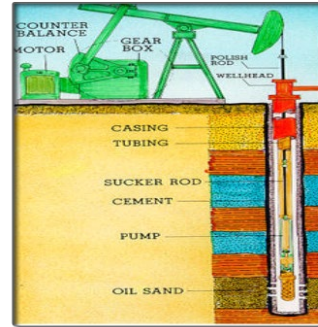


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**Design & construction**



**Well production**



**Well intervention**



**Well intervention**



**Well Decommissioning**



**Well handover**



**Well handover**



**Well handover**



**Well handover**



# A History of Well Integrity

Source of 15 SCF/Min where does the leak rate come from?

**15 SCF/Min. It is my understanding this originates from the ability of one man to put out a fire with a portable fire extinguisher**



SOUTHWEST RESEARCH INSTITUTE  
Post Office Drawer 28510, 6220 Culebra Road  
San Antonio, Texas 78228-0510

**API 14A SUBSURFACE SAFETY VALVE  
RESEARCH STUDY-YEAR 4**

Prepared by  
E. B. Bowles, Jr.  
P. L. Spencer

SwRI Project No. 04-3245

Prepared for  
The American Petroleum Institute  
Production Department  
2535 One Main Place  
Dallas, Texas 75202-3904

March 1991

Approved:  
  
Danny M. Deffenbaugh, Director  
Fluids Systems Department

United States Patent  
Taylor, Jr. [15] 3,696,868  
[45] Oct. 10, 1972

[54] **WELL FLOW CONTROL VALVES AND WELL SYSTEMS UTILIZING THE SAME** *Primary Examiner—James A. Leppink Attorney—E. Hastings Ackley*

[72] Inventor: Donald F. Taylor, Jr., Dallas, Tex.  
[73] Assignee: Otis Engineering Corporation, Dallas, Tex.

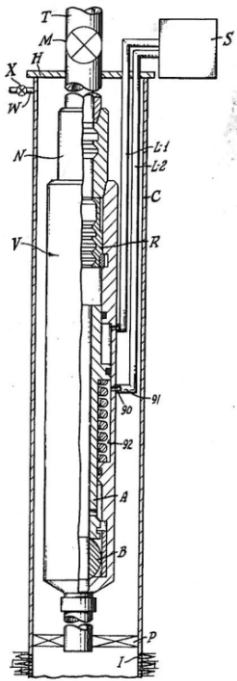
[22] Filed: Dec. 18, 1970  
[21] Appl. No.: 99,534

[52] U.S. Cl. ....166/315, 137/384.8, 166/224  
[51] Int. Cl. ....E21b 33/00  
[58] Field of Search.....166/224, 224 S, 315; 137/384.8, 630.19

[56] **References Cited**  
UNITED STATES PATENTS  
3,543,793 12/1970 Dollison .....166/224  
3,310,114 3/1967 Dollison .....166/224  
R25,471 11/1963 Fredd .....166/224

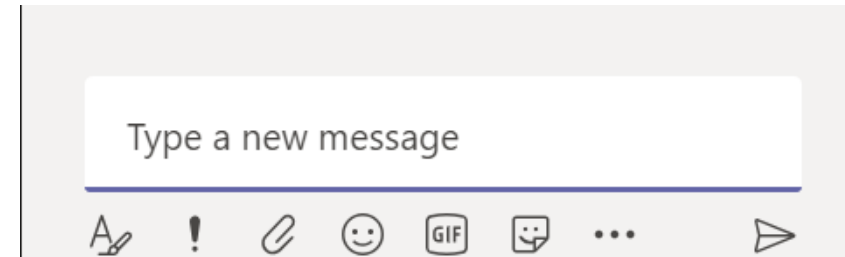
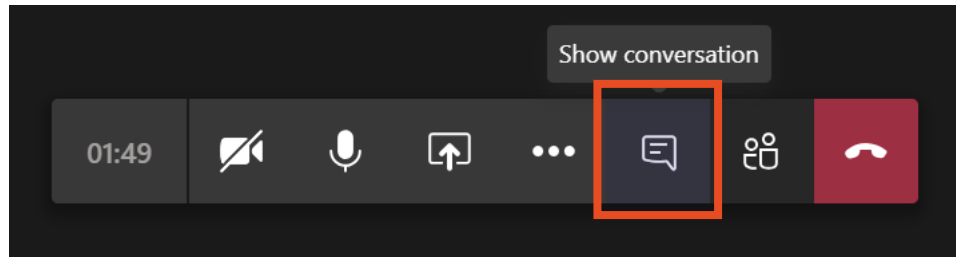
[57] **ABSTRACT**  
A valve for installation in a flow conductor for controlling flow of fluids through the conductor, which may be controlled from a remote point and which may act automatically as a safety valve, including means for positively propping the valve in the open position to hold the same in such open position when desired, for performing various well service operations through the valve, for taking the valve out of operation permanently or for flowing the well without affecting operation of the valve, and further including means for locating and operating a supplemental flow control valve at such point in the flow conductor. Also includes a releasable restraining device for holding the valve in the open position which is movable to a position freeing the valve for normal functioning.

**24 Claims, 17 Drawing Figures**



# Questions & Answers

Please use the conversation tab to write down your questions.



**Thank you for your time, connect with me...**



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[www.internationalwellintegrity.com](http://www.internationalwellintegrity.com)



[simon@internationalwellintegrity.com](mailto:simon@internationalwellintegrity.com)



[www.linkedin.com/internationalwellintegrity](http://www.linkedin.com/internationalwellintegrity)