

# Implementation of Supply Chain Management in Upstream Oil & Gas

**David Simpson A\***

MuleShoe Engineernig, USA

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**\*Corresponding author:** David Simpson A, MuleShoe Engineernig, USA

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## Opinion

The current global reaction to the SARS COVID-19 virus has put the term “Supply Chain Management” into the mainstream consciousness. This term has been in the industrial consciousness for many years, both in a good way and in a not so good way. In upstream Oil & Gas production the concept of Supply Chain Management has created untold disruptions and difficulties for nearly half a century.

In the 1970s, automakers and large retailers began using computers to work towards the goal of “just in time” inventory control. This concept is based on the idea that a part or sub-assembly will arrive on the loading dock just as needed to allow the warehousemen to take it off the truck (or train or boat or airplane) and directly to the assembly floor without the requirement to warehouse it between delivery and use. For a retailer, this inventory control approach required the analysis of consumer trends and adjusting both the magnitude and mix of products on the shelf to satisfy those trends. Both of these fields were ripe for improvement and the advent of widespread computing power facilitated that improvement.

By the 1980s PhD and master’s candidates were writing thesis on “just in time” inventory control and had coined the term “Supply Chain Management” to speak to the entire supply chain from raw materials through to retail-customer purchase. The focus and intent of Supply Chain Management is to:

1. Manage units of production to provide commodities as required with minimal on-site warehousing
2. Manage tools of production to minimize the amount that they constrain the production process

These new terms are crucial to understanding Supply Chain Management and why I contend that its implementation in Oil & Gas has curtailed production while adding costs. Units of production are the things that go into the final product. Tools of production are the things that stay in the factory or store when the final product leaves (like robots, assembly lines, factory lighting, compressed air systems, shelving, etc.).

It is easy to imagine that if an assembly facility that relied heavily on pneumatic tools were to lose its compressed air source, production would grind to a halt which encourages a facility that relies on pneumatic tools to have redundant air compressors with extensive spare parts warehousing for the compressed-air system components.

Supply Chain Management moved to Oil & Gas in the late 1980s and a careful analysis of a proper implementation of these management concepts would show:

- 1) Our units of production are hydrocarbon molecules and there is no really good method to manage the supply of those molecules
- 2) Our tools of production are valves, valve repair kits, pipe, tanks, pumps, compressors, gensets, etc.
- 3) A proper implementation of Supply Chain Management to Oil & Gas would take

extraordinary measures to ensure that:

1. Repair/replacement equipment was immediately available
2. Field workers are adequate in number and extensively trained in repairing and diagnosing failures in all of the tools of production
3. Cost control would focus on unit costs not total costs.

Unfortunately, proper implementation was simply not the direction that the Oil & Gas industry chose to take. Our industry has decided to apply techniques appropriate to units of production to tools of production. Before this process was imposed on the industry, field workers decided for themselves what tools and spare parts they would carry on their vehicles. Supply Chain Management (as implemented in Oil & Gas) vilified the idea of carrying spare parts, calling them "squirrel stores" and making it a dismissal offence to have them. Prior to this practice, if a field tech found a dump valve diaphragm leaking (a common occurrence), he replaced it from his truck and the well was shut-in for somewhere between zero time and an hour depending upon the specific field tech. After Supply Chain Management got involved, the field tech was required to shut in the well and request a work-order to fix the leaking diaphragm, acquire authorization, generate the paperwork to charge the repair

kit to the well, pick up the parts, install the parts, and try to get the well back online-3 to 5 days of lost production.

Stories like this are repeated across the industry a hundred times a day and result in cost-per-dollar-revenue increasing by a multiple of several hundred times the costs that were common prior to implementing these processes. There are many published papers showing that Supply Chain Management has reduced total costs, but these reports are always on a total-cost basis, and not related to changes in production. When you look at unit costs or total profit it is easy to see that the "benefit" is a huge negative.

At this time, Supply Chain Management departments exist in every Major Oil & Gas company and nearly all Independent Producers have joined this suicide pact. Supply Chain Manager positions are deeply entrenched executive positions in far too many companies. It is possible that the current "pandemic" will shine a bright light on exactly how ineffective structured Supply Chain Management implementations have been across the world and this one industry my finally look at what blindly following the flavor of the decade has done to production effectiveness. But probably not.

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