



## Discussion

## The cost–benefit hurdle for safety case regulation



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## ABSTRACT

Following the Gulf of Mexico blowout of 2010, various parties called for the introduction of safety case regulation in the US. Such regulation is well known in various other jurisdictions around the world and is regarded as best practice for the regulation of rare but catastrophic events. New regulation in the US must pass the cost/benefit test or alternatively show why strict cost/benefit analysis is inapplicable. This paper argues that safety case regulation can surmount this hurdle. It argues that strict cost/benefit analysis is impossible for safety case regulation and it demonstrates this by providing a detailed critique of the attempts by the European Commission to provide a cost/benefit justification for the introduction of safety case regulation for offshore oil and gas production in its jurisdiction. The paper argues that such regulation can be justified in the US on other grounds; first, the polluter pays principle, second, the fact that society regards multiple fatalities occurring together far more seriously than the same number of fatalities occurring separately; and third, that the incidents to be prevented are viewed by the courts as criminal and therefore to be prevented as a matter of principle.

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## 1. Introduction

Following the Gulf of Mexico blowout of 2010, the Presidential Commission advocated the adoption of safety case regulation for offshore petroleum production in the United States.<sup>1</sup> The US Chemical Safety Board is also preparing a report on the Gulf of Mexico accident which will address the issue of safety case regulation.<sup>2</sup> The present paper does not seek to describe the safety case approach. It assumes that the reader has some familiarity with safety case principles. Readers who would like more information are referred to my article – “Explaining Safety Case” (Hopkins, 2012).

One of the hurdles that any agency advocating new regulations must face is the requirement that such regulation be justified, so far as possible, using cost/benefit analysis. The proponents of safety case regulation therefore bear the onus of either justifying the new regulatory regime on cost/benefit grounds, or explaining why strict cost/benefit analysis is impossible or inapplicable in the case at hand. The purpose of this paper is to consider the cost/benefit hurdle and to argue that safety case regulation for offshore petroleum production can in fact surmount it.

<sup>1</sup> National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling. *Deepwater: The Gulf Oil Disaster and the Future of Offshore Drilling*, p. 252.

<sup>2</sup> The CSB’s “Chevron report” canvases the introduction of a safety case regime for onshore facilities. This paper deals specifically with the offshore environment, but the issues and arguments would be broadly similar for the onshore case. A first draft of this paper was written to assist the CSB in its deliberations about safety case regimes.

## 2. The presidential order

The starting point for this discussion is the presidential order of January 18, 2011 on “Improving Regulation and Regulatory Review” (Executive Order 13563, reproduced in Sunstein, 2013:217–219). The relevant parts are as follows:

“By the authority vested in me as President by the Constitution and the laws of the United States of America, and in order to improve regulation and regulatory review, it is hereby ordered as follows:

... [Regulation] must identify and use the best, most innovative and least burdensome tools for achieving regulatory ends. It must take into account benefits and costs, both quantitative and qualitative. ...

... [E]ach agency must, among other things: (1) propose or adopt a regulation only upon a reasoned determination that its benefits justify its costs (recognizing that some benefits and costs are difficult to quantify)...

... Where appropriate and permitted by laws, each agency may consider (and discuss qualitatively) values that are difficult or impossible to quantify, including equity, human dignity, fairness, and distributive impacts. ...”

In short, the order recognises that

- Costs and benefits may not always be readily quantified and may need to be discussed qualitatively, and

- An argument for regulation may be based on values such as equity and dignity. Such values are in principle not reducible to monetary amounts and the argument therefore cannot involve weighing costs against benefits in any quantitative way.

The organisation responsible for policing the presidential order is the White House Office of Information and Regulatory Affairs. For three years, from 2009 to 2012, the office was headed by Cass Sunstein, often described as President Obama's "regulatory czar". Sunstein has subsequently written a book describing the principles on which he operated. I shall return to the presidential order and Sunstein's interpretation of it later.

### 3. The difficulty of doing cost/benefit analysis for safety case regulation

Cost/benefit analysis must begin by identifying and if possible providing a numerical estimate of the benefits. For example, a cost/benefit analysis for a regulation requiring a particular safety feature in new cars would need to begin by estimating the number of lives that would be saved by the implementation of such a regulation. Subsequent steps would include estimating the dollar value of the benefits, which includes placing a dollar value on the lives saved. One then needs to calculate the cost that companies would incur complying with the new requirement, and finally, compare the costs with the benefits (Sunstein, 2013:158).

There are numerous methodological and moral objections that can be made to valuing human life in this way. (Heinzerling and Ackerman, 2002). These objections will not be canvassed here, since the aim of this paper is to make the argument for safety case regulation within the parameters laid down by the Office of Information and Regulatory Affairs, as far as possible.

For safety case regulation the very first step in this process – quantifying the benefits – is impossibly difficult. There are various reasons for this. Safety case regulation is designed primarily to prevent major accident events, disasters in simple terms. But whereas the concept of fatality is well defined in the car safety scenario, a disaster is much more difficult to define. So exactly what it is you are counting is hard to pin down. How many deaths does it take to make a disaster? Or alternatively, how much environmental damage is necessary to qualify as a disaster? Furthermore, whatever the definition, disasters are rare, making it very difficult to make estimates of the number of disasters prevented. To give an example, suppose you wanted to show quantitatively that the UK and Norwegian offshore industry is safer as a result of the introduction of safety case regimes in UK waters in the early 90s and in Norway at about the same time. DNV expert Robin Pitblado lays out the problem as follows (personal communication). If by disaster we mean an event with large scale loss of life, there were two in the 1980s – the Alexandre Kielland, a semi-submersible drilling rig which capsized in Norway in 1980, killing 123 people, and the Piper Alpha platform off the coast of Scotland that caught fire in 1987, killing 167 people. That, says Pitblado, is 2 in 8 years. "Straight line projection, might suggest 6 could have occurred in the following 25 years – when in fact there have been none". On the face of it, this is a dramatic improvement, presumably attributable to the new safety case regimes. But it is obvious, he says, that the numbers are far too small to be relied on in this way. He also highlights the definitional issue by noting that he is not counting the 1991 sinking and total loss of a platform that was being towed out of a fjord in Norway (Sleipner A platform). No one was on board and the platform was not operating, but in slightly different circumstances there could easily have been major loss of life. This occurred after the new regime had taken effect in Norway. Counting this as a disaster gives a rate of one disaster in the

25 years since the advent of safety case regimes – still a 6-fold improvement over the decade of the 1980s. But to repeat, the numbers are too small to be conclusive.

The problem came into sharp focus in the European Union in 2011/2012. In response to the Gulf of Mexico accident the European Commission proposed to issue a directive to all member states to introduce safety case regimes for offshore petroleum production. In support of the new regulation, it commissioned a cost/benefit analysis that concluded that the benefits of the new regulation outweighed the costs, although not dramatically so (ECIA:58).<sup>3</sup> This analysis was a detailed effort to provide the kind of supporting argument envisaged by the presidential order on cost/benefit analysis. Nevertheless, it proved so controversial that a special expert review was commissioned to pinpoint the areas of dispute and if possible account for the differences. This expert review highlighted the difficulties involved in any attempt to carry out a cost/benefit analysis of safety case regulation and its chair concluded:

"In light of the inherent uncertainties ... it is difficult ... to evaluate the extent to which any analysis is or is not conservative. In essence, none of the analyses is wholly right or wrong. They reflect the effect of differing assumptions and approaches. Some may be more conservative than others, although the extent of any conservatism, or its converse, is difficult to judge".<sup>4</sup>

The following paragraphs canvas some of the issues that undermined the Commission's attempt to carry out a quantitative cost/benefit analysis.

#### 3.1. Defining major accidents

The first challenge for the Commission was to clarify the definition of major accident, so that it was clearer what was to be counted. This is a vital first step if one is to talk about any reduction in numbers that might be achieved by introducing a safety case regime. The cost/benefit analysis identifies two distinct categories of major accident. The first is accidents that result in major damage to or loss of installations. This definition is independent of and takes no account of whether there was any significant loss of life.<sup>5</sup> The second category of major accident is oil well blow out lasting more than 14 days (ECAn:17). The evidence is that these longer-lasting blowouts result in major oil spills with environmentally costly consequences.

It is striking that the number of fatalities played no role in determining whether an incident counted as a major accident for the purposes of cost/benefit analysis. The Commission notes that the UK authorities place a value on life of \$US 2.4million and concludes that "loss-of-life costs are not estimated to be significant when put into the context of the very large costs this report focuses on." (ECAn:4). This is one of the critical dilemmas of cost/benefit analysis of safety case regulation. It necessarily turns on the cost of infrastructure lost or damaged and the clean-up and compensation costs for major oil spills, which dwarf the monetised value of life lost. Yet in the minds of many people, a crucial part of the justification of a safety case regime is its capacity to protect human life, and in particular to reduce the risk of large scale loss of life such as occurred in Piper Alpha or the Gulf of Mexico accident.

<sup>3</sup> In fact the Impact Assessment considers various options of increasing complexity and it concludes that "the costs and benefits increase hand in hand with the complexity of the options" p. 56. This is not an overwhelming endorsement.

<sup>4</sup> Peer review meetings on the assessment of risks in the offshore oil and gas industry, 28 March and 2 May 2012, Summary Report. [http://ec.europa.eu/energy/oil/offshore/doc/20120703\\_summary\\_report\\_en.pdf](http://ec.europa.eu/energy/oil/offshore/doc/20120703_summary_report_en.pdf).

<sup>5</sup> [www.ogp.org.uk/pubs/434-17.pdf](http://www.ogp.org.uk/pubs/434-17.pdf).

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