Design-Based Safety

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Hijacking Shakedown

Are challenging new private-sector projects on environmental hazards becoming blood sports? Have environmental safety issues become a pervasive socially acceptable reason to confront and badger our federal, state and local authorizing agencies to delay, block or reject the development of huge new projects? Are public hearings on new pipelines, energy development and mining just tools to remove the welcome mat to private-sector industrial development? These three questions have led to my strong suspicion that our empire-building enterprises are being hijacked by a shakedown. This abusive politicizing of environmental and safety concerns appears to be highway robbery of our economy, reducing our middle class and contributing to growing poverty because there is a lack of well-paying employment.

It appears to me that a messenger is needed to overcome this unwarranted attack on private enterprise. The most likely envoy is a system safety engineer who can convey the fact that design-based safety was able to land people on the moon and ensure their safe return by eliminating monstrous hazards. This same design-based safety expertise can eliminate environmental hazards. Most people are totally unaware of the fact that the dramatic growth of green engineering provides environmentally friendly design. Several articles in the August 13, 2013 issue of *Engineering News Record* (ENG) tell how large contractors are benefiting from safety programs that focus on safe design. New multi-million dollar projects are really complex systems with many hazards arising from different priorities. Large international construction firms apply these same key principles of system safety by examining the proposed plans to identify each and every hazard, and provide a reliable, safer design, use safety appliances or adopt a safer method so that the entire system becomes hazard free. These system safety programs have demonstrated the effectiveness of reducing both environmental and human hazards. However, these positive results are concentrated among larger firms, with little input for the public.

During the last decade, green engineering services worldwide have grown from $30 billion to more than $50 billion [Ref. 1]. The reason for this amazing growth in design-based safety, construction safety management and lifecycle project safety management is that these large firms could not sustain the high cost of environmental damage and injuries to people with insurance. The losers are those proposed projects experiencing hijacking shakedowns from special interest groups that want to prevent them from starting. These anti-development fanatics display charismatic ignorance in their drive to delay or reject projects for environmental and safety reasons. With this no-go political ideology, a significant amount of new development never occurs and green system safety engineering has no chance to prove its worth.

The message to those who "cry wolf" is that they are the culprits who are preventing the green engineering market from reaching $100 billion a year and causing our country to endure a continuing poverty economy. Absent in the anti-development pronouncements is any cooperative participation or acceptance of design-based safety. Their intent is to kill pipelines, gas and oil development, and mining as they ignore the existence of technology that will protect the environment. These self-proclaimed environmentalists are like Gulliver's six-inch-tall Lilliputians, always at war or talking about how they will capture corporate America. Their strategy is to impose needless costs for every proposed project by calling for groundless reviews and investigations, and making speculative allegations to cause costly delay after delay. Their goal is to bankrupt their corporate victim so the project is discontinued.

The proliferation of not-for-profit special-interest groups has politicized new project approval so that reason and fact are often excluded. The opponents' battle cry is to cite environmental hazards created nearly a century ago and allege that these same hazards will start all over again with the new project. These special-interest groups ensure that environmental science is never relayed and is artfully concealed from the public.

The media are often the worst offenders. They rely on yellow journalism to report unsubstantiated speculation about the environmental damage that new pipelines, oil and gas wells, and mines will produce. It is said that the journalists who publicize the outlandishly biased statements of the opposition are favored for authoring this propaganda. One only needs to read newspapers to become aware of a senseless furor to prevent mining on land that is worthless for grazing and ill-suited for camping or recreation.

To become effective system safety messengers, we also need to become aware of how our tax system clouds the issues of design-based safety. Taxation appears to be an easy method to delay or stop the development of new private-sector projects. The traditional practice of giving corporations the same treatment as real living persons hinders design-based safety. When profits are taxed twice — first on the non-person corporations and again on the individual who is a real-person investor — an oxymoron is created. In my opinion, a two-class society of earned and unearned incomes is not working. We need a trade-off of taxing only real people's incomes regardless of how that income was acquired (by labor, investment, royalties, etc.). It becomes a joke to even tax non-person corporations, as most large firms avoid profit taxation with politically granted exemptions.

To develop middle-class participation in capital growth, our individual retirement account (IRA) programs that make savings for retirement tax free appear to be working, as they provide investment capital for new environmental-safety projects. When new projects use public lands, the public is entitled to a fair market-price royalty on (1) products mined, (2) use of land for grazing and (3) sales tax on products to pay for services (gas tax to fund roads and highways).

The reason for including the controversial subject of taxation in design-based safety is so that sustainable costs can be calculated on the design and management of private-sector project development. Bankers are the gatekeepers of investment capital. They are suspect of market manipulations of hoarding metals to drive up prices in the futures market. Civil lawsuits may occur, but they are slow in coming up with the facts. Meanwhile, uncertainty about the market price for raw materials prevails.

This is all just to say that good system safety engineering is not enough, as politics and economics are foreboding obstacles. For these reasons, the system safety engineer has an important role in coordinating the design-based safety features with employers or their clients. It is more important that the system safety engineer describe, in lay terms, how these features will reliably prevent environmental and people hazards. Facts showing how system safety will make the project safer need to be presented. Each hazard needs an explanation as to how a mechanical or other physical feature will eliminate that hazard. People need to know how sensors and detectors can automatically interrupt the activation of a hazardous condition. Further, the re-evaluation of a rare event's prevention needs to be included, as overlooking a rare event because it is low risk is contrary to basic reliability mathematics.

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The role of the system safety engineer is that of a messenger in defining — in simple language — how improved design reliably works. This critical information becomes the tool that management can use to counter wrongful statements publicized by the media. Industrial management cannot afford the proliferation of false propaganda that incites fear in the general public. Management must develop its own corps of journalists who, in their reporting, cross-examine those in opposition and reveal how their allegations are not factual.

Design-based safety is the vehicle that will advance the professional status of system safety engineers as they expand their role by being the messenger and key information person in stopping the senseless hijacking shake-down of new enterprises so our nation can return to its former prosperity. I believe the good news is that within the next decade, the international environmental marketplace will double. This will provide many new careers for system safety engineers who will become skilled messengers to the private sector.

References

1. Hickoc, Stephen. “Looking at Markets — Looking at Global Regions,” *Engineering News Record*, p. 36-52, August 13, 2013.