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COMMERCIAL HUMAN SPACEFLIGHT: SELF-REGULATION IS THE FUTURE

Abstract

In 2004, the US private spaceflight industry welcomed a law (i.e. the Commercial Space Launch Amendment Act (CSLAA)) postponing until December 23, 2012 or until an accident occurs, the ability by the FAA to issue safety standards and regulations except for aspects of public safety. The Congress later extended the original deadline nearly three years to October 1, 2015. It goes without saying that while government regulations are postponed a commercial spaceflight company has in any case all interest to build the safest vehicles according to the state-of-art. No doubt that their engineers will routinely apply established technical standards for developing subsystems and equipment, like pressurized tanks, batteries or pyro valves. They will also need to take decisions about redundancy levels when defining, for example, the on-board computers architecture, or the landing system. There will be trade-offs to be made considering cost and mass constraints and acceptable risk thresholds defined. Some key safety decisions will be taken at technical level, other will be necessarily deferred to the company management due to potential impact on cost and schedule. Therefore the issue is not truly about making or not a commercial space system safe-by-design, but to ensure that best practices are known and always applied. This paper will show that the traditional role of the government in establishing safety regulations and certifying compliance is no longer valid for highly advanced products and operations, and that instead the relevant industrial community should take the lead in developing safety standards and policies while the government would maintain an overall supervisory role. As an example, the Presidential Commission that investigated the Deepwater Horizon oil-rig disaster in the Gulf of Mexico of April 2010 (11 workers killed plus an oil spill that caused an environmental catastrophe), recommended that "the gas and oil industry must move towards developing a notion of safety as a collective responsibility. Industry should establish a "Safety Institute", this would be an-industry created, self-policing entity aimed at developing, adopting, and enforcing standards of excellence to ensure continuous improvement in safety and operational integrity offshore". In other words third-party certification under the responsibility of the commercial spaceflight community as a whole is the direction of the future. This paper reviews a similar experience, the so-called "Classification Societies", which has been successfully in place since centuries in maritime business, proposes an implementation scheme, and discusses potential liabilities issues and how they could be mitigated.