Abstract: Application of the API/NPRA SVA Methodology to Transportation Security Issues

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Security Vulnerability Analysis (SVA) is becoming more prevalent as the issue of chemical process security is of greater concern. The American Petroleum Institute (API) and the National Petrochemical and Refiner’s Association (NPRA) have developed a guideline for conducting SVAs of petroleum and petrochemical facilities. The author was the contractor involved in preparation of the guidelines which were published in May, 2003. In 2004, the same organizations contracted to further enhance the guidelines by adding the ability to evaluate transportation security risks (pipeline, truck, and rail).

The importance of including transportation and value chain security in addition to fixed facility security in a SVA is that these issues may be critically important to understanding the total risk of the operation. Most of the SVAs done using the API/NPRA SVA and other SVA methods were centered on the fixed facility and the operations within the plant fence. Transportation interfaces alone are normally studied as a part of the facility SVA, and the entire transportation route impacts and value chain disruption are not considered. Particularly from a national, regional, or local infrastructure analysis standpoint, understanding the interdependencies is critical to the risk assessment.

Transportation risks may include weaponization of the asset by direct attack en route, sabotage, or a Trojan Horse style attack into a facility. The risks differ in the level of access control and the degree of public exposures, as well as the dynamic nature of the assets.

The public exposures along the transportation route need to be carefully considered. Risks may be mitigated by one of many strategies including internment, staging, prioritization, conscription, or prohibition, as well as by administrative security measures and technology for monitoring and isolating the assets.

This paper will illustrate how these risks can be analyzed by the API/NPRA SVA methodology. Examples will be given of truck, rail, and pipeline.