



VICEROY NORTHWEST INSTITUTE FOR CYBERSECURITY EDUCATION AND RESEARCH



CySER Virtual Seminar

Peyton Richmond

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*Operational Technology Cybersecurity in the Chemical Process Industries:
Implications of Compromised Distributed Control Systems and Safety Instrumented Systems*

Apr. 1, 2025, 1:10 – 2 PM Pacific

Team Link: [Click here to join the meeting](#)

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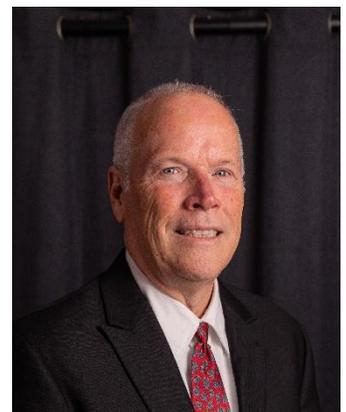
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Abstract:

Cybersecurity risks are increasing in the chemical process industries as hacking tools for Windows-based systems and operational technology (OT) increase in sophistication. This increases the likelihood that computers in the chemical process industry will be subverted and used to cause operational issues as evidenced by major incidents such as Stuxnet, Triton, and the Colonial Pipeline Ransomware. Since large industrial chemical processes and their layers of control and safety strategies are extremely complicated it will be difficult for an attacker to achieve specific goals. This will likely result in failed initial attempts to subvert chemical process industry OT systems as occurred in the Triton incident. Thus, it is critical that chemical process operators identify such attempts when they fail so they can prevent even more severe consequences that would result if the attackers were to succeed. In this presentation we explore those issues and describe using a university distributed control system (DCS) to increase the awareness of undergraduate chemical engineering students to modern chemical manufacturing and the risks posed by attacks on industrial OT cybersecurity.

Bio:

Peyton C. Richmond, PhD, P.E., is an Associate Professor of chemical engineering at Lamar University in Beaumont, TX. He received a BS from Lamar University and a PhD from Texas A&M University both in Chemical Engineering and is a licensed professional engineer in the State of Texas. He has more than 17 years of experience in the refining and petrochemicals industry working for Phillips Petroleum Company, Chevron Chemical Company, and Chevron Phillips Chemical Company with extensive operational hands-on control engineering experience at both refining and petrochemical sites. He joined Lamar University in 2006 and has been active in ABET since 2010 and is a current ABET EAC Commissioner. Richmond currently enjoys teaching thermodynamics and the plant design sequence, enhancing the curriculum with safety and operational insights gained through industrial experience.



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