

SYSTEMS:

A COMPREHENSIVE APPROACH TO PROTECTING VITAL ASSETS IN TODAY'S HIGH SECURITY ENVIRONMENT

“MARINE DOCKS AND TERMINALS”

Williams Fire & Hazard Control stands alone as a company applying both experience and proficiency toward response AND equipment design.

When it comes to protecting marine docks and terminals, response solutions require a multi-faceted - carefully planned - approach. Williams' experienced staff embodies a full package of tailored product design, systems applications, custom engineering and fabrication, support, and training.

In early 2003, Williams was called upon to collaborate with a major gulf coast refinery during consultation and planning to protect a series of new state of the art dock facilities. This project would cover 4 new docks, ramps, and access ways with the work spanning a 3-year period.

Moving through site assessment, budgetary planning, and design review with the engineering firm contracted for the design/build of these new facilities, Williams designed and fabricated an integrated series of systems to address the site-specific requirements — all based upon piping, equipment arrangements, and electrical area classification concerns. The majority of equipment Williams provides is Class 1, Division 2 compliant and all equipment can be designed for compliance as required.

Williams' vast experience in response to marine vessel and dock related emergencies provided key insights into critical value added design features to augment the response systems' design. Williams' response and engineering personnel worked closely with both the owner and the engineering firm to integrate these features and strategic piping modifications into the overall dock facility's engineering package.

Primary consideration on this project was to offer



Dual agent monitor configurations elevated to 30 feet provide access to all dock exposures including dockside vessels.

versatile case effective protection for the widest range of possible emergency scenarios. Williams' proprietary high-volume remote-controlled stainless steel fire monitors with Hydro-Foam™ and Hydro-Chem™ equipped Ranger™ Nozzles mounted atop 35' towers served as the centerpiece of the systems for end of line delivery of hazards mitigation agents and foam solutions. The installed piping and monitor configurations provide powerful, long reach access to any location on the docks — including dockside vessels. This reach is aimed at protecting the dock facilities by fighting fires from a distance, as well as keeping vessel fires off the facility docks.

Custom manufactured, heavy-duty service, special coated electric actuators are used on all Williams' remote-controlled monitors. Hydraulically operated monitors are also available. Williams custom designed and fabricated 1% ThunderStorm® foam concentrate storage and delivery systems utilizing the elevated monitors for firefighting and vapor suppression operations for the entire dockside exposures. All components of the skid modules and equipment are of the highest quality, including final paints and coatings to assure long life.

ThunderStorm®'s primary advantage is superior fire-fighting and vapor suppression characteristics. In this project, however, an additional advantage of Thunder-

Storm® was also vital to the success of the system design. Since dock space is at a premium, the drastically reduced storage, staging, and manpower requirements for ThunderStorm® 1% concentrate made great sense logistically and economically. Part of Williams' comprehensive design approach included an integrated 3% mutual aid capability that allows remote introduction of dissimilar foam concentrate and proportioning in the event onsite 1% stores are depleted.

Custom PKW™ dry chemical storage and delivery systems were also included in this system resulting in a broad gamut of assets available for use in a variety of possible emergency scenarios. Flammable liquid extinguishment, vapor control, and pressure fire/flange problems are all addressed.

Strategically positioned remote-controlled Williams' oscillating monitors equipped with 265 gallon totes of 1% ThunderStorm® stand as sturdy sentinels to sweep and cover dock level trouble spots such as critical manifolds and control valves. Added protection under the main dock level is assured with additional remote controlled oscillating monitors that are strategically positioned not only to snuff fires below dock levels, but also to push flammable liquids or water level fires out from under the docks. Various dock level areas and access ramps are equipped with manual 500 gpm Williams monitors with self-educating Hydro-Foam™ nozzles. 55-gallon containers of 1% ThunderStorm® foam concentrate are furnished as their supply.

The crown jewel of the dock protection system is the thoughtfully engineered redundant control system capabilities. In emergency situations, controls must be reliable, easy, and intuitive — with functions and arrangements that offer simple control of complex systems. With this system, every monitor, deluge valve, and dry chemical system is equipped for manual override. Stainless steel NEMA 4X purged control panels are located at carefully selected vantage points. Each control panel is furnished with simple system operation instructions and diagrams.

An important feature Williams normally recommends is a single button "instant on" feature — which

was provided in this project. At every control point and dock house, a single clearly marked red "mushroom" button can be depressed in an emergency situation instantly initiating a pre-programmed activity chain within the fire protection system. Remote controlled monitors swing into position and begin automatic operation deluging predetermined targets with pre-selected nozzle flow patterns, flow rates, and applications. Multiple alarms sound, and remote indication is sent to the plant's central control room. Personnel in danger can evacuate under the cover of protective sprays in some areas as desired. While personnel are moving toward safety, a tremendous high volume response has automatically begun and will continue. The selected systems continue to operate until someone takes control at any one of several control panels. Foam solution — or simply water spray — can be initiated with this one button system during egress from the dock houses or at any control panel.



Control panels located throughout the system provide operations and emergency instant on capabilities

The icing on the cake of this system is wireless control capabilities, which allows full remote control of the response systems. The fire chief or other designated authority may control multiple systems operations from boat, helicopter, or any mobile or protected vantage point within range (typically 500 feet). Compact lightweight units are available with Class 1 Division 2 area classification compliance.

As project mechanical and electrical installations neared completion, Williams' field technicians

began final checkout and fine tuning of all systems. Williams' field technicians also managed a final series of testing and commissioning activities whereupon a comprehensive set of multi-color maintenance and operations manuals was turned over to the client. Williams also supervised all systems startup.

As a premier firefighting and hazards control company for 25 years, Williams Fire & Hazard Control applies an unmatched wealth of experience and knowledge toward equipment design/fabrication, systems design, and engineering. Williams' engineering and production staff skillfully address all aspects of such projects — from budgetary planning, concept, design and engineering, to fabrication, installation, training and support.