Ultrasonic Tank Testing a Resounding Success

SGS Colombia S.A. was awarded the contract to perform storage tank inspections for the expansion of the Cartagena Refinery. All inspection services were performed in accordance with applicable Health, Safety and Environment (HSE) requirements.

The storage of dangerous goods in tanks involves risk to the population, the environment, and the surrounding area, and must therefore be executed safely. Periodic inspection of the tank's condition, and in particular the tank's bottom and shells, is of the utmost importance, in order to prevent disasters from happening and to reduce economic and environmental risks.

The expansion of the Cartagena Refinery is a strategic project for Colombia. The project aims to expand the refinery's capacity to

140 thousand barrels a day, as

well as to improve the quality of the fuels to meet national and international environmental standards, and to optimize financial and operational indicators. It is estimated that the project will be completed by 2010.

The Chicago Bridge & Iron Company N.V. (CB&I), responsible for the engineering, procurement and construction of the Cartagena Refinery expansion project, awarded SGS Colombia the contract for inspecting the refinery's storage tanks.

SGS Colombia was responsible for the inspection of floating-roof and conical-roof tanks with sizes between 20,000 to 130,000 barrels. In terms of the non-destructive testing (NDT) services for storage tanks, the inspection carried out by SGS Colombia

included the evaluation of tank bottoms and roofs, as well as tank shells.

Ultrasonic Tank Testing

For the inspection of tank bottoms and roofs, SGS inspectors used ultrasonic testing (UT) methods, such as B and C scan in order to detect corrosion. B scan provides a cross-sectional image of the material and detects material thinning, which is caused by corrosion in the inside of tank walls. The C scan is used as one of the last tools during the inspection process as it is more accurate than the B. The C scan is able to make cross-sectional images and identify failures of items located underground.

Conventional ultrasonic testing equipment works on the principle of sending a pulsed beam of high ultrasound from a handheld transducer, which is placed upon the surface of the tank being tested. A sound energy in the form of waves is produced and propagated through the material, and then partially returned from areas with internal imperfections, such as corrosion or from the back of the material

wall. By analyzing the returning sound, useful information about the condition of the tank walls can be collected.

Cost-Effective Solutions & No Accidents with SGS On-Site

For the assessment of the wall thickness of tank shells, SGS used an ultrasonic crawler, a tool designed to cost-effectively take ultrasound thickness measurements on above-ground ferro-magnetic structures, without the need for costly scaffolding or industrial rope access.

The inspection services required 12 qualified SGS inspectors in order to ensure precise performance of the inspection, as well as correct identification and orientation of the imperfections and reporting of the findings. The SGS inspection services were carried out in accordance with applicable Health, Safety and Environment (HSE) requirements, in

addition to the API 653 Programme.

From March to April 2009, SGS Colombia personnel who were involved in the project worked for 50 days and reached a total of 4,800 work hours. Due to the HSE supervision by SGS, no accidents occurred during the runtime of the project, which

involved a million work hours in total.

SGS offers comprehensive NDT and inspection services, and has the necessary experience, accreditations and advanced equipment to expertly carry out controls, inspections and measurements to ensure security and safety, for both existing and new installations. Our inspection services are completed by our Asset Integrity Management Services, providing clients with a clear line of sight for all inspection, reporting and asset integrity management activities.

For more information, please e-mail industrial.global@sgs.com [1] or visit www.sgs.com/ndt [2].

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