



# Case Study BP Caspian Integrity Management



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## 1 Integrity Management

As for any integrity management system its purpose is to set in place and implement the systems and processes to assure ongoing availability of plant and equipment. These then need to be implemented under the specified operating conditions to ensure there is no foreseeable danger of failure endangering safety of personnel, asset value or the environment. The contract which iicorr currently hold with BP in the Caspian region is in accordance with these requirements. However, iicorr initially took on a two part contract 1) operating existing systems on existing on and offshore facilities and pipelines, and 2) developing new systems and processes for new-build assets.

System limits were defined in discussions with BP and other interested parties, along with definition of what was to be included within the iicorr integrity scope, and where there were maintenance requirements. By discussing and agreeing the scope at an early stage in the contract it is less likely that there will be a gap in the integrity system – as any gap could pose a threat to integrity and therefore a threat to personal safety, asset availability or the environment. These discussions have identified responsibilities and ensured items such as instrument tubing and walkway gratings are not missed from some form of assessment; in these cases it was agreed that iicorr take responsibility for their assessment.

Initially the Aberdeen and Baku work were seen as two separate projects requiring separate approaches. New procedures and methodologies were developed in Aberdeen for the new build assets while in Baku existing systems were utilised to manage inspection. Methodologies and procedures were developed tailored to BP requirements and software was developed for the RBI assessment of pressure pipework, pressure vessels, tanks, PSVs, offshore pipelines, onshore pipelines, etc in accordance with the iicorr supplied methodologies. A high technology approach was taken by iicorr for the new build assets as extensive use has been made of exotic materials as BP have an aim for no invasive inspections in the first five years of operation. In order to test the effectiveness of inspection techniques proposed for this scope iicorr have undertaken a number of tests including for example SLOFEC on thin wall duplex piping.

Merit was seen in merging the two sides of the project within the first year of operation to facilitate cross learning and ensure operations could benefit from the development work being undertaken by iicorr on the new build facilities.

iicorr then reviewed existing BP Caspian management documentation and assisted BP in restructuring and re-writing the key management documents.

As delivery for the new build assets was achieved, including risk based strategies and schemes, BP extended the contract to cover additional assets to the extent that iicorr are now the responsible IIA for all Caspian Assets for BP, including Central Azeri, East Azeri, West Azeri, Shah Deniz, Sangachal Terminal and BTC pipeline and facilities.

The benefits of the new methodologies have been recognised by the operations group and as a result iicorr are transferring all existing RBI assessments into the iicorr Questar RBI software (based on the new iicorr methodologies) and redefining inspection mitigation and monitoring requirements for all existing facilities and



pipelines. When complete this will provide a fully auditable and justifiable trail for the existing assets.

The development work continues but a new phase has commenced as deliverables are issued to the Baku based team for implementation and the new build facilities near completion and go into operations. A number of additional activities have commenced including inspectability surveys to ensure fabrication is in line with design and determine if there will be any difficulties with inspection once in operation, development of inspection isometrics, baseline surveys, compilation of design and operational dead legs, vibration surveys, advice on corrosion coupon and probe location, advice on sand monitoring, etc.

During development stages the majority of personnel have been based in Aberdeen developing systems. However this focus is starting to change as operations commence on the new build assets. The team in Baku is steadily increasing and with it the local content is increasing. From contract commencement iicorr saw fit to man its Baku office with local Azeri staff with the minority being made up of Ex-pat staff. iicorr also employed graduate engineers, currently three with plans to increase this by to five within the coming weeks. These graduate engineers have been taking part in a training regime set up by iicorr, with an aim of replacing all expat personnel to a timeframe agreed with BP. All graduates are making a positive contribution to the project in Aberdeen, and the aim is for them to take lessons learned in the development stages in Aberdeen back into operations in Baku.

At present the BP Caspian contract is running on schedule and to budget in all areas including Operations, and development for ACG, BTC, Shah Deniz, KCA Duetag drill rigs, and Botas International Limited for BTC in Turkey. All KPI are being met, including personnel, and technical targets including all planned and unplanned workbooks being completed with no outstanding work. In addition Quarterly Performance Reviews consistently have shown a good picture on delivery and safety performance with no accidents or incidents resulting in injury or lost time. iicorr implemented a score card system across the operating facilities to monitor perceived performance by the asset managers. Scores have been consistently high (average greater than 80%), with a high good to excellent recorded in all areas including HSE, Service Quality, Project Management, Documentation, Planning and Delivery, Skills Competency, Organisation, Response to Customer Requests, and Customer Interface.