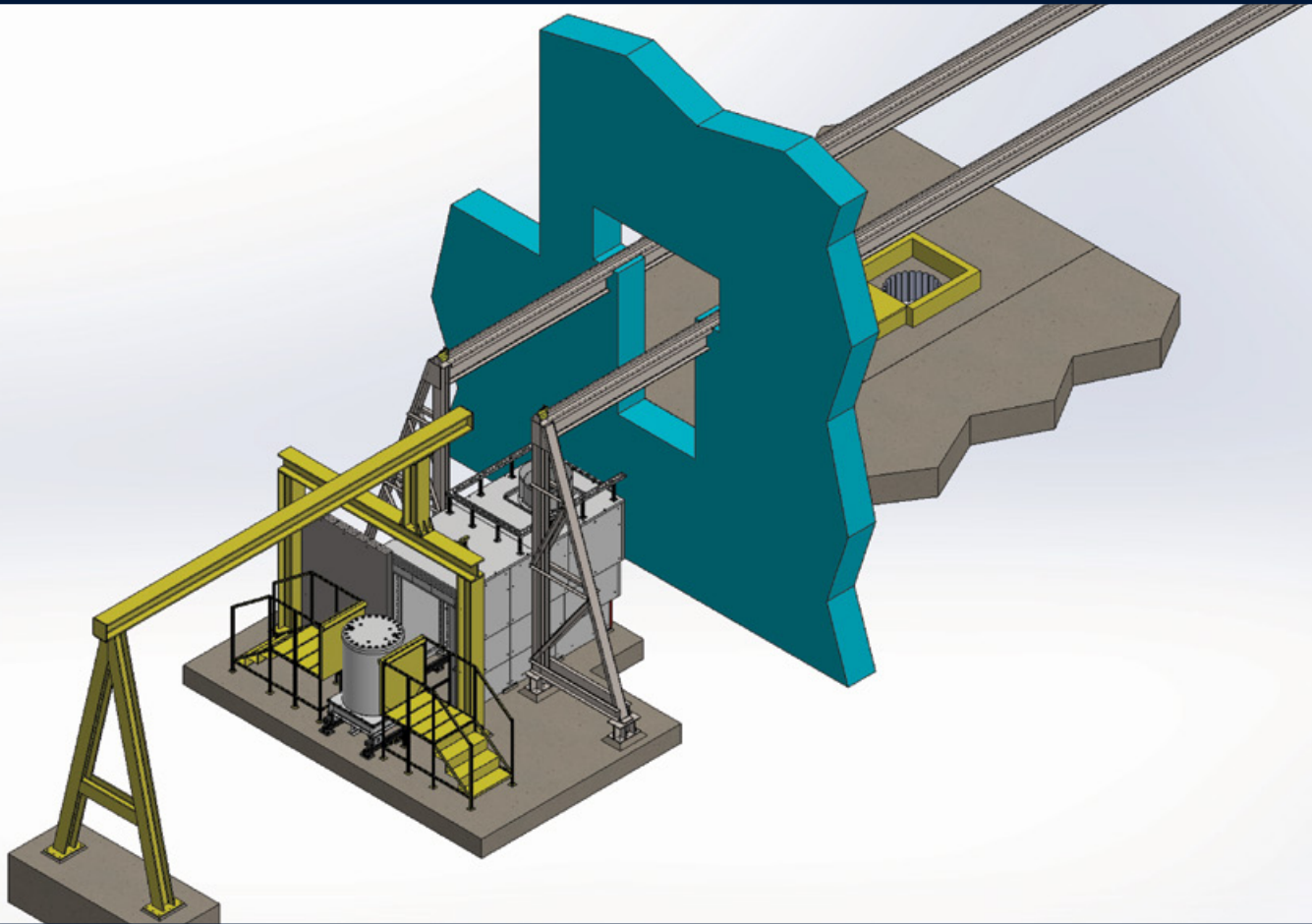




NDA Estate Supplier Case Study



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Company Name (s): Aquila Nuclear Engineering

Company Type (s): Tier 3, SME

Project/Contract Title: Berkeley Chute Silo Project - flask and export facility

SLC/NDA Client:

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Brief summary

In 2012, Aquila was asked by a Tier 2 contractor to provide competitive tenders for the design, manufacture and installation of 2 packages of work for the Chute Silo Project at Berkeley.

Package 1 Flask

This was quoted at £860k.

Package 2 Export Facility

This was quoted at £1200k.

Aquila was deemed competitive on both by the Tier 2 company. During the tendering stage, Aquila suggested a number of fundamental changes which would reduce the price significantly. However, for unknown reasons these were not accepted by the Tier 2 company.

The contractual situation, between Tier 2 and Magnox, was terminated and in support of a Magnox self performance project, Aquila was asked to quote Magnox direct for the same packages that incorporated some Magnox project team simplification. Aquila was also allowed to offer design changes and won both contracts for £570k and £530k respectively.

In Summary-

As a small company, Aquila was able to provide improved customer focus, leading to stronger relationships.

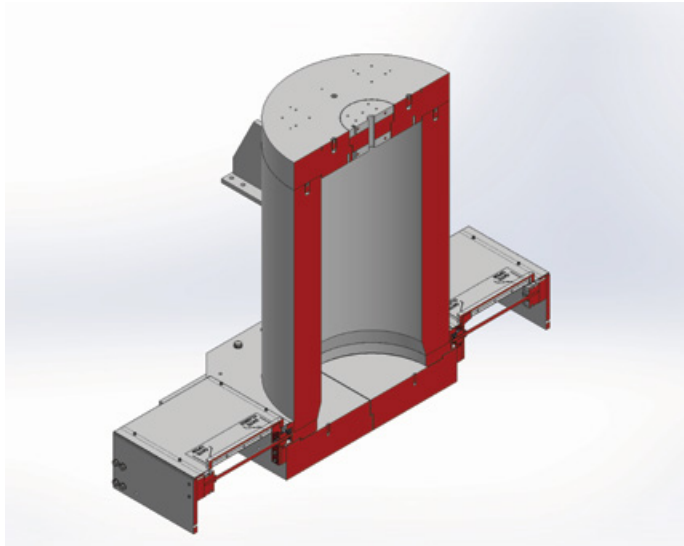
An excellent working relationship between Aquila and the Magnox project team, enabled honest and open discussion, encouraging challenge, innovation and fitness for purpose.

The simplification also resulted in a programme reduction of 3 months.

Aquila Saved £960k of taxpayers' money to meet the same functional requirements, quoted 12 months previously.

Aims & objectives of the contract

The project was to design, manufacture, factory test, install and commission, two pieces of plant for the Chute Silo Project at Berkeley; a Shielded Transfer Flask & an Import/Export Facility.



During tendering, Aquila prepared a risk register highlighting a number of areas where we could mitigate risk by addressing the fundamental design and manufacturing philosophy from the outset. The principal areas for risk mitigation included:

1.1 Pintle grab re-assessment

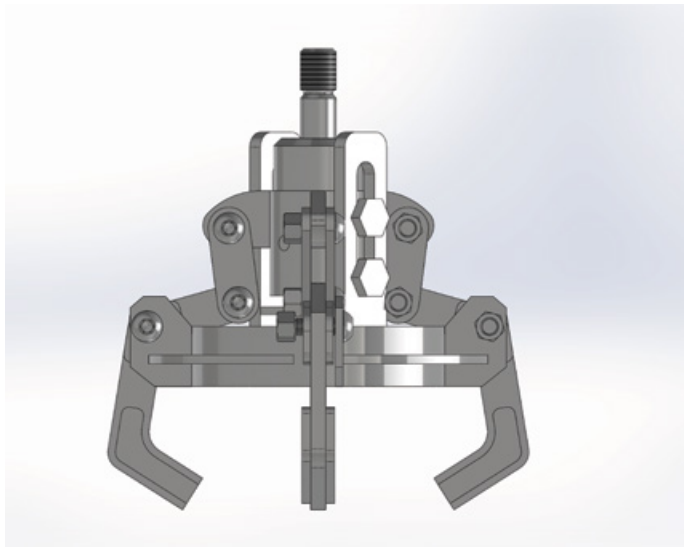
The ITT, presented a design of pintle grab which was unproven. Our position was to assess the design proposed but also offer a Commercially Off The Shelf (COTS) solution, working with an industrial materials handling supplier. The successful replacement of the bespoke pintle grab, eliminated a number of technical and therefore commercial, risks from the contract and saved Magnox in the region of £30k to £40k.

1.2 Cable reeling re-assessment

The ITT, presented a cable reeling system, integrated with the pintle grab. Adopting a COTS grab, eliminated the need for cable reeling. Our concern with the cable reel, arose due to potential conflict between its principal of operation and that of the pintle grab which could give rise to erroneous load cells measurements. The elimination of this aspect is estimated to have saved between £15k to £20k.

1.3 Assay System

This feature was removed from integration into the transfer flask and treated as a separate work package. Although there is still a cost for the assay system, it is a much simpler solution and does not complicate the design of the Transfer Flask. Excluding this scope from the work package, saved an estimated £20k to £25k of engineering and manufacturing activities.



1.4 Gamma Gate flags

Rather than design sensors within the Transfer Flask gamma gate, located at the base of the system, we incorporated physical flags which could be easily detected by remote cameras which were already required within the solution. These flags will indicate the fully open position of the gamma gate, therefore eliminating the need for electrical design, control sensors, wiring, logic and validation. This approach saved in the region of £15k to £20k.

1.5 Material Supply

The flask body and top, comprises forged sections which were the basis of the safety case. Within the tender assessment period, we identified that the supplier of these forgings could provide a competitive advantage to Aquila in terms of delivery, price, integrated manufacture and quality. This supply was sourced within Europe and offered significant savings both in price and delivery. We estimate this research at the front end, saved in the region of £85k.

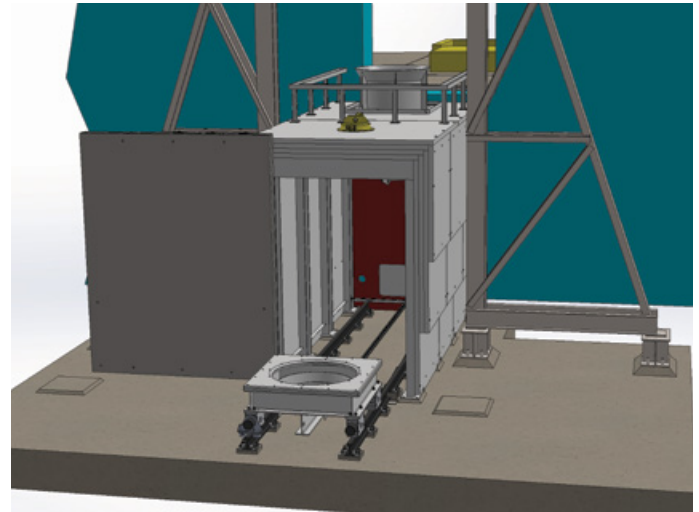
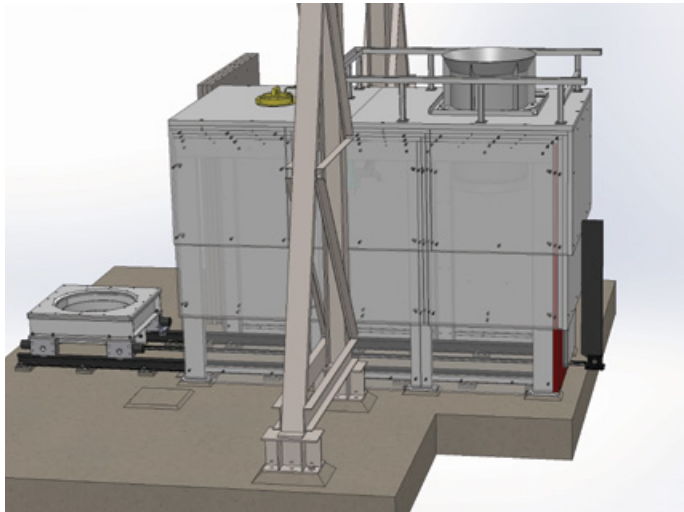
1.6 Programme, contingency and Project Management

By adopting this pragmatic approach we were also able to reduce the original project programme and contingency, significantly. As we are all aware, the longer a project runs the costlier it is. Also, the simpler it is, the lower the contingency. These two points played a significant part in cost reduction which accounted for a further reduction of about £100k.

Total savings for the Transfer Flask in the region of £290k

2 Import/Export Facility

The Import/Export facility is, in effect, a small, shielded cell which allows DCIC to be loaded with waste baskets from the Transfer Flask. It includes de-lidding equipment for the DCIC and a position for DCIC inspection and un-bolting. The DCIC moves between stations on a bogie, running on rails. A hoist on an overhead runway beam, is used to transfer the DCIC from the cross-site transporter onto the bogie. The Import/Export facility is located outside the Active Waste Vault facility building and interfaces with the external portion of the CSM rail structure, on which the Transfer Flask runs.



2.1 Shielded Cell Design

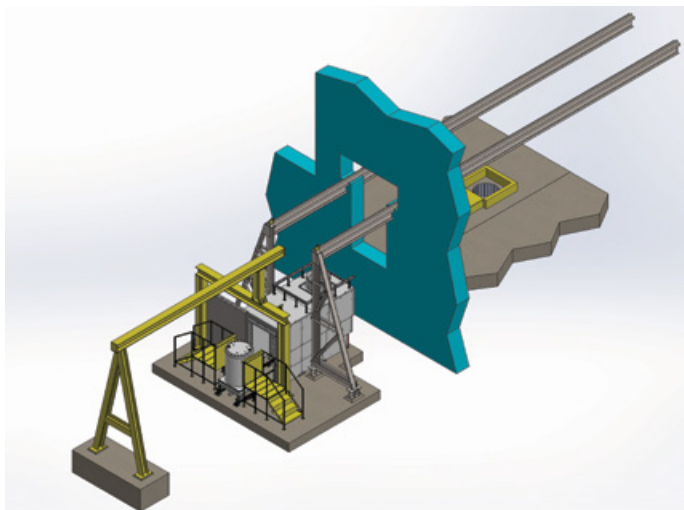
The original proposal showed a mild steel, fully welded structure which although workable, did result in high cost due to the number of manufacturing operations required to produce a welded assembly. During the bid, Aquila redesigned the complete cell using a frame and steel slab construction. This eliminated weld preparations, welder qualification, non destructive testing and assembly on site using special lifting equipment. Our design saved in the region of £90k to £120k.

2.2 Trolley, Rail and transfer system

In place of a highly over engineered trolley and rail assembly, shown in the scheme design, the Aquila design proposed the use of standard COTS rails and wheel assemblies. This resulted in a low profile, simple, fabricated trolley. The original scheme also included an on board drive with accurate positioning system. At Aquila, we replaced this with a COTS linear chain drive. The savings adopting a COTS solution amounted to £60k to £80k.

2.3 Drum lid removal

We again replaced a complex, engineered drum lid removal assembly, with a manual positioning and lifting arrangement. Employing a more flexible drum lid lifting solution, also allowed the design to offer radiological shielding within the shielded cell. Our solution saved significant design, precision manufacturing, works assembly and testing. A saving for this area amounted to between £45k and £55k.



2.4 Hoist Rails

The original design proposed a two rail system, one for the DCIC and the other for the drum lid removal station. The Aquila design, integrated both rail functions saving design, manufacture and most importantly, installation costs. The integration offered a saving in the region of £35k to £45k.

2.5 Canopy

The complete Import/Export facility was originally housed within a building canopy, with the canopy doubling up as supporting steelwork for the shielded cell door. This was an extremely expensive option. By adopting a stand-alone shielded cell with integral shield door, we eliminated the need for not just the canopy steelwork, but the requirement for a canopy completely. Elimination of the canopy saved from £120k to £160k.

2.6 Access platform

By adopting a standard suite of access ladders and platforms used to access the top of the shielded cell, we were able to again reduce the price for special solutions. This resulted in savings of around £20k to £45k.

2.7 Programme, Contingency and Project Management

As with the Transfer flask, by adopting a pragmatic approach we were also able to reduce the original project programme and contingency significantly. These points played a significant part in cost reduction which accounted for a further reduction of about £120k to £165k.

Total saving for the Import Export Facility in the region of £670k

Summary

Tier 3s have been denied access from the coal face of providing innovative solutions to the nuclear industry, over the past 15 years. These solutions are not complex, they are in fact, simple and pragmatic based around an assessment of the objectives and engineering a fit for purpose application.

These two contracts demonstrate that, by allowing end users to deal direct with engineering solution providers at Tier 3 level, the relationship can save huge amounts of money and accelerate the programme.

Quote from Chris Burden Project Manager Chute & Silo Magnox



“The Aquila offer was a breath of fresh air, simple, pragmatic and very competitive. Magnox are tasked with undertaking decommissioning at pace and at good value. Working with Aquila from the Tier 3 arena, goes a long way towards helping us achieve this.”

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