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Eaton Socon  
St Neots  
Cambs.  
PE19 8ET

Inspection Date 21<sup>st</sup> May 2021

**REF: D1 Tank, BIODYNAMICS, Colwick**

To whom it may concern,

Further to the visual, non-destructive internal inspection of the primary structure that forms D1 tank I can confirm that the condition of the elements as listed below are of a structurally sound and as designed condition without the requirement for any attention:

1. In-situ cast ring beam

The Pre-cast concrete (PCC) walls measuring 6m in height contained a cast-in HDPE liner with a extrusion welded seam connecting adjoining panels. This was limited to the top 1m of the tank and most likely have been limited to the top 1m as this would have been the designated 'gas zone'.

In the region of between 500mm to 1m below this liner shows a build up of Struvite on the PCC wall panel. This is evident on all PCC wall panels right down to the in-situ ring beam. This was locally removed and the PCC wall panel was exposed. The concrete was in excellent condition. In the environment of a Digester such as this structure- the Struvite appears to be have formed a secondary layer of protection to the PCC concrete.

There are some localised areas where in the immediate area below the 'gas zone' some very minor degradation of the PCC wall panel had occurred. The most likely cause of this was the operating level of the tank and the 'gas zone' may have been well below the liner (ie below the designed gas zone). One could assume that the operating level was most likely to have been ~1.5-1.7m from the top of the wall- this is based on the observation of where the struvite build up generally begins. We would recommend that these areas are treated with a suitable epoxy coating or alternative where this has occurred. Indeed, if it is to be that the operating level of the tank is to be consistently at this level then protecting the concrete to the bottom of the gas zone should be considered.

At the top of some PCC walls (less than 8 areas) there is some obvious signs of degradation and erosion of the PCC wall top. This causation of this would most likely have been from gas leaks from the double membrane gas tight roof.

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It is understood that Anaergia have made contact with a reputable lining/ coating/ concrete repairs contractor as per Digester 2 to make the necessary remedials.

From the inspection, it was understood that a new gas membrane is to be installed with a new fixing pattern. The optimum fixing method would be a resin and rod type arrangement. Some of the post-drilling carried out previously was done too close to the inner face and subsequently spalling had occurred. It is likely that this would have contributed to some gas leaks.

In terms of the slab and central plinth that the central column was located on- there are various remedial works that require doing:

- 1- There are areas in the slab where reinforcement is showing. This is only the upper section of the top matt- however if this was left without any works being carried out to remediate then more serious issues would likely occur with the slab in future years
- 2- The central plinth has debonded from the slab- the causation of such event most likely due to shock from the movement of the central column of which I was informed during the inspection that this had moved.

In the case of the structural slab and erosion of the cover to reinforcement there are many ways to overcome this. The most simple being a moderate depth of reinforced concrete slab to cover the full area.

In the case of the central plinth- the condition of the concrete was in good condition and this could be positioned back to where it is intended to be and tied and grouted back to the slab.

In both cases above A-Consult have given more detailed remediation measures in an e-mail to Dean Moody and Jason Bohonis on Tuesday 25/05/2021 14:36. I append said e-mail. This suggestion is by no means exhaustive- nor should it be implied as being a design.

We do recommend that the tank internals are inspected at every drain down/ decommissioning (ideally not longer than 5 years). It is especially pleasing that the tank supplier has been contacted to inspect this tank internally.

Your Sincerely



Steve Houghton  
Construction Manager BSc (Hons)

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