Message

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Sent: 9/17/2021 7:53:40 PM
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Subject: New Indy Steam Stripper Update

We had a technical call with New Indy today and ORC had a call with New Indy counsel yesterday. We each discussed our concerns about taking the steam stripper offline for eight days for maintenance and routing all condensate to the ASB. Notes from the team's technical call are below. Generally, New Indy believes that they have learned a lot and by monitoring the oxidation reduction potential (ORP) in real time, they can control H2S emissions. They are installing a probe (should be completed today) in the foul condensate hard pipe to monitor the ORP real time. Also, SC DHEC asked New Indy to curtail production levels when the stripper is offline which is discussed in the letter dated 9/17/21 (I forwarded the email with the letter earlier today).

Reason for timeframe of stripper maintenance

- The preparation for the steam stripper maintenance takes 2 days and involves the flushing out, cooling and dismantling of the stripper column (taking off lid and taking out the trays). It also involves a lockout/tagout process for safety.
- Maintenance 3 days – maintenance of the column involves removing and hydro blasting the column trays (22 rows and 3 trays per row) and the inside of the empty column. The maintenance operation will also include the hydro blasting of the 3 pre-heaters, the reboiler, the Fibro filters (it filters the condensate before it enters the stripper column - inlet filter) and the lines that feed the preheaters.
- 2 days to restart - Back online is the reverse of the prep where the unit is reassembled.
- This use to be completed on a yearly cycle under the old process (bleaching). The stripper did have maintenance in May 2021. Since there are a few more streams being collected and sent to the steam stripper than before, there were signs of a need for maintenance. The facility is not sure if the indications for maintenance are a result of sludge buildup or if there is a problem with some trays. There were signs that the steam stripper removal rate was lower. Signs that indicated that the column needed maintenance were lower differential pressure (about 0.5 inches of water column) the normal DP is about 5 inches of water column, and lower temperature in the heat exchangers.
- Tracking the downtime but don't expect excess emissions. Downtime was meant in the 9/15/21, letter, not excess emissions.

ASB

- Condensate will be sent directly to ASB. No.2 recovery boiler is down which reduces production. No.2 boiler is supposed to come back online this Saturday and will figure out the condensate flow rate to ASB once everything is in place. Historically, 850 gal/min is the max rate so will be somewhere under that threshold.

- Feeding hydrogen peroxide into the pipe to help with the condensate and sulfate levels. Also looking to include an Oxidation Reduction Potential (ORP) monitor for ORP of the ASB.
- The hard pipe discharges condensate at about 15 feet below the surface of the ASB and the ASB is 20 feet in depth for the water column with 17 feet of 92% water of watery sludge and about 3-4 feet of free water.
- Dredging of the surface of the ASB is finished and just doing maintenance.
- Adding a second subsurface dredge starting tomorrow morning for the water sludge beneath the surface.
- Plan is to feed peroxide at 50% excess the calculated need. Can feed up to 3 times the amount of peroxide into the ASB to control the H2S. New Indy is confident that any spikes of H2S can be handled by the addition of peroxide and they have back up supplies ready for use.
- Operating the steam stripper at an effective steam ratio of 18% results in stripper maintenance on a yearly basis.
- Lately New Indy has been operating the stripper at higher effective steam ratios (~ 20% to 21%) to account for a drop off in methanol reduction which would result in maintenance every 6 months.
- The June 2021 performance test was done at the same time that remedial actions were taking place in the ASB but had to perform the test within the 180 day window.
- Second dredge will increase the capacity of the ASB to allow for containing any future upset problems.
- Sentry monitor in the ASB monitors the biological levels. The monitor for the hard pipe will look for more of the sulfur related compounds.

Regards,

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