Platform Holly Replacement Crane Project
Prevention First
October 20, 2010

www.venocoinc.com
Platform Holly

- Constructed in 1966
- Pre-dates modern design codes
- Pre-dates modern seismic criteria
### Existing Situation
- Crane (1966 vintage) wearing out, parts are obsolete
- De-rated to 9,100# @ 80’
- Pre-dates modern dynamic lift standards
- Slow hook speed (30 fpm)
- Does not support modern supply vessel operations (longer reaches required)
- Tier 0 2-cycle engine
- Platform not in conformance with modern seismic standards

### Project Goal
- Provide crane with safer dynamic ratings to support operations
- 20,000# dynamic @ 80’
- Higher hook speeds – safer operations (50 to 77 fpm)
- Address API and seismic design deficiencies
- Reduce Engine emissions
Platform Holly Replacement Crane

- Crane originally ordered in 2006, for 2007 delivery and installation
- An issue arose:
  - Parallel project (structural analysis modeling) identified structural issues that had to be resolved, as part of 1,000 year seismic upgrade
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Back in the day.......
Platform Holly

- Original stress calculations all done by hand
- IBM 360 was newly available, but FEA programs still in development – no commercial access yet available
Engineer speak:

“Quasi-static, modal, and non-linear transient dynamic analyses…. indicated need for increased damping coefficients….to minimize displacements and scalar time period for spectral response…..”
Translation:

“Platform Holly .... wiggles like a bowl of jelly...”
Engineer speak:

“Provide additional joint shear, load-transfer capacity and increased cross-sectional moment of inertia to reduce stress and likelihood of column buckling, punch-through and increased torsional and lateral stiffness…”
Translation:

- “Add steel.”

Crane placed into vendor’s storage (12 months)

Interference walk down (Nov 2007 – Mar 2008)

On-site structural work started April 2008
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As a result of structural upgrades, Platform Holly is now “Better than New”
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Resident Inspector....
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Existing leg used to be a fuel tank...
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[Detailed diagram with annotations and measurements]

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NOTE: FOR INFORMATION NOT SHOWN SEE DETAIL

B

1'-0" 1'-0"

6" TYP

5/16 TYP

1"

5/16

TRIM (E) PL TO ACCOMODATE KNIFE PL

SLOT FLANGE FOR NEW KNIFE PL

1 1/4" KNIFE PL
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Whew! Glad that is done (April – September, 2008)

Now it’s time for the bullfrog!

- Scarce. $400/day since March 2008
- Set September 12, 2008
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- Time to tear out the old!
  - Work started September 13, 2008
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Opening the deck….
- Work began September 24, 2008
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Set the new pedestal (2 big pieces)
- October 1, 2008 base
- October 9, top
- October 15, bearing
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We still have a leg to grout…. 

- Intended grouting contractor was a no-show
- Found replacement guy with small truck
- Performed grouting October 24, 2008
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Platform Holly Replacement Crane
EPA Tier 3, 0.01 g/bhp-hr pm, SBCAPCD
Source testing….

- November 4, 2008
- Level 3 verified catalyst available in Summer 2009
- Re-test with CARB Level 3 verified catalyst (Aug 2009)
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- Crane is first and only crane ever for NOV with a “Dummy Load” engine circuit
  - Permits DPF filter regeneration
  - Crane runs well with only occasional regeneration needed.
And finally the new fuel and water tanks....
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Resident Inspectors signed off project
What did this all cost?
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- Planning, permitting $195K
- Structural Modeling/Seismic $380K
- Crane $1,100K
- Pedestal $295K
- Bullfrog Standby $162K
- Bullfrog Rental $210K
- Structural Construction $2,220K
- Crane Erection $705K
Platform Holly Replacement Crane

$ 5.2MM
- 49,000 #s of steel reinforcement installed
- 30,000 sticks of weld rod
- 34,000 man-hours
- Not a single incident or accident of any kind
THANK YOU!

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