



January 2015



Top Ten Tips for Tower Troubleshooting

By Bernie Slade

Not all towers are the same, but they share some fundamentals. The troubleshooting tips listed below can be used across a wide variety of towers to help bring about an efficient resolution to most problems.

1. Talk to the process operators. They have a wealth of knowledge even when expressed in non-technical language.
2. Verbal descriptions of a problem can be misleading. Often, selective information is provided unwittingly. You need to dig deep into the problem and obtain input from multiple sources.
3. Gamma scans are a relatively cheap and highly efficient way to obtain crucial information. "Seeing" into a tower always helps.
4. Instruments are not always correct. Heat and material balances will highlight discrepancies.
5. You can never have enough "good" data. Data collected at varying operating conditions is particularly useful.
6. Critical laboratory results should be verified by an external lab.
7. A field visit is important to verify the P&ID's for the tower piping, etc. Many drawings are not up-to-date.
8. Tower internal drawings often do not reflect changes made at turnarounds and shutdowns. Talk to the tray or packing vendors, but even this may not be enough.
9. Be present at the tower opening for the initial inspection. Trust your instincts, if something feels wrong, it most likely is wrong.
10. Verify personally that the tower internal modifications are correct at the final inspection. Try to be onsite for the initial startup phase of the tower.

About the Author

Bernie Slade has 25 years experience with Esso Engineering working in design, detailed engineering, factory/field testing, commissioning, troubleshooting, and operation of petroleum and chemicals distillation towers and their ancillaries. He has 12 years experience, also with Esso Engineering, in general petroleum and chemical plant design. In addition, Bernie participated in multiple unit startups and was the technical startup leader for an Atmospheric and Vacuum Pipestill startup in France.

Please contact Jerry Lacatena (jlacatena@carmagen.com) if you'd like more information on Carmagen's expertise in this area.

Upcoming Training Courses

- **Course 607**
Design and Maintenance of Aboveground Atmospheric Storage Tanks
February 24-26, 2015 in NJ
May 12-14, 2015 in Greece
 - **Course 1600**
Achieving World Class Maintenance Performance
March 17-19, 2015 in NJ
- For more information, see our website at www.carmagen.com.

Work Highlights

Fired Equipment/Heat Exchangers

- Over a period of several months, provided fired equipment support for multiple turnarounds at a US Gulf Coast refinery through a combination of offsite review of planned furnace modifications and onsite presence during the actual turnarounds.

Mechanical Engineering

- Reviewed and provided comments regarding new internals for major FCCU vessel at a refinery in Europe.

Process, Operations & Safety

- Performed scoping study support of an existing licensed naphtha hydrotreater covering requirements/mods to meet an alternate gasoline standard.
- Successfully completed litigation assistance to a foreign client and two legal firms defending owner's proprietary technology in the Far East.