

## LIDIA SUAREZ

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Lidia Suarez a Chemical Engineer with Stratus Engineering, Inc. Ms. Suarez has over 35 years of experience delivering chemical and process engineering support to clients on various projects including refining and chemical processes, utilities, and overpressure protection.

### **EDUCATION**

B.S., Chemical Engineering, University of Florida, 1984

### **TECHNICAL EXPERTISE**

- Process Design Refining, Chemicals and Gas Processing
- Relief Studies and Flare Analysis
- Process Troubleshooting
- Raw Water and Waste Water Treating Systems
- Flare Gas Recovery Systems
- HF Alky Release Mitigation
- Hazard Analysis

### **TECHNICAL EXPERIENCE**

As a chemical engineer Ms. Suarez has been involved in numerous projects. Representative projects include the following:

- New Fuel Gas Drum – Sized and designed a new fuel gas mixing drum. Project followed from conceptual design through installation.
- SATS Gas plant study – Studied SATS gas plant feeds and unit's capability.
- Off Gas Delivery System – Designed piping system to deliver excess off gas to offsite consumer.
- FCC Superheater – Studied FCC superheater tube failure and developed revamp options.
- FCC Feed & Slurry Pumparound Upgrade
- FCC C3/C4 Splitter Internals & Exchanger Upgrade
- HF Alky Feed, Heat Exchange, and Utility Upgrade
- Coker Naphtha - Developed piping arrangement to route Coker Naphtha to the DHT unit for treatment during GOHT outage.
- FCC Main Fractionator Heat Integration Study
- FCC Steam Generation and Superheater System – Troubleshooting of steam carryover issues and design of system modifications to correct steam quality issues.
- Amine System Treating Study
- Gas Oil Hydrotreater Feed Desalter Upgrade
- Ammonia Plant Studies
- Multiple Unit DCS Installation & Upgrade
- Refinery Raw Water Project – Project work included data gathering for design basis development, project scope definition and equipment selection and project execution. Scope included new filters, softeners and RO system and ancillary equipment. Work completed from conceptual phase through phase 4.
- Refinery Utilities Process Support – Work included troubleshooting various operational issues such as clarifier and softener operation.

- Raw Water Filters – Evaluated Raw Water Filters’ efficiency and recommended maintenance plan.
- Multiple Unit Relief Valve Analyses
- Multiple Unit Flare Studies
- Potable Water and Safety Shower Operation – Potable Water system hydraulic study performed. Potable water booster pump designed and installed. Follow up hydraulic survey performed.
- Plant Water Balance – Developed Refinery water balance supporting water treating expansion project.
- Raw Water Rental Clarifier – Specified and designed temporary rental clarifier installation.
- Alky Deluge Water Supply – Specified new pumps for Alky Unit Deluge system.
- Water Treating Technical Support – Provided technical support for various utilities systems including BFW, Cooling Water treatment and Waste Water treatment. Work included utilities equipment inspections during turnarounds.
- Waste Water Revamp Master Plan – Developed phased master plan to upgrade Refinery’s entire Waste Water Treatment units in various stages.
- Process Waste Water Lift Station – Hydraulic study performed, lift station variable speed pumps specified and new line sized. Project followed from conceptual design to installation.
- API Oily Water Separator – Designed new oily water separator. Project followed from conceptual design through installation.
- Dissolved Air Flotation Unit – Project designed from conceptual phase through phase 4 engineering.
- Waste Water Clarifiers Upsets Troubleshooting – Troubleshooting various Waste Water Clarifier upsets.
- Waste Water Effluent Filters – Evaluated various types of filters to handle Refinery Waste Water effluent upsets. Specified and sized appropriate filters.
- Cooling Water System Survey – Surveyed Refinery’s entire cooling water system (7 cooling towers) and determined hydraulic and heat loads of each cooling water tower.
- New Cooling Water Tower Design – Specified and provided process support for the design and installation of a new cooling water tower and the expansion of an existing tower.
- Cooling Water Systems Technical Support – Provided technical support for various cooling water systems including monitoring key heat exchanger performance.
- Utility Air System Survey – Analyzed cause of Refinery shutdown due to air system failure. Key operational issues needing attention were identified. Project list developed.
- Flare Systems Survey – Studied flare systems’ power outage cases and developed load mitigation options.
- Flare Gas Recovery System – Process support for Flare Gas Recovery project from conceptual design through installation and start up.
- Pump Performance Study and Specification – Studied various pump’s performance and specified numerous pumps for various applications.
- Raw Water Clarifier Revamp – Worked with vendor to implement design changes to improve clarifier performance.
- Incinerator Alternate Routing – Completed analysis and design of various streams that vented to the tail gas incinerator and rerouted to alternate units.
- Condensate System Study – Completed plant wide condensate study including hydraulic analysis and implemented design changes to recover condensate that was being sent to the waste water unit.
- Ultralow Sulfur Kerosene to Ultra Low Sulfur Diesel Blend Project – Designed and implemented a blend station to blend ULSK into ULSD.
- Firewater System Upgrade – Implemented a project that included new firewater tank, firewater diesel driven pump and new firewater distribution lines.
- Deaerator Bypass – Designed an emergency deaerator bypass line to enable deaerator repairs.

- New Propane Export Facilities – Designed new propane export facilities including new propane bullet, pumps and metering station.
- New Deaerator Design – Completed design basis for a new deaerator operating in parallel with an existing deaerator.
- Boiler Feedwater Treating Facility – Designed a new boiler feedwater treating unit consisting on sand filters, softeners and reverse osmosis units.
- HF Alky Curtain System for HF Release Mitigation - Designed a system to mitigate HF releases. System consisted of water curtains and elevated monitors.

#### **TEACHING AND SEMINARS**

- Operator & Foreman Refinery Training – Developed training material and taught process specific classes for operators and foremen.
- Engineering Training – Taught pressure relief systems analysis workshop to refinery engineers.
- Spanish Training - Taught conversational Spanish for Houston Community College.
- Industrial Influent Water Systems Seminar Instructor – Developed training material and taught.

#### **LANGUAGES**

Ms. Suarez speaks and writes Spanish fluently. She has performed technical translations for gas exploration companies, pharmaceutical companies, and others.

## **WORK EXPERIENCE**

### **Stratus Engineering, Inc.**

Houston, TX (January 1996 to Present)

As a Chemical Engineer with Stratus Engineering, Ms. Suarez specializes in process design, process safety management and project management. She has performed numerous projects in the refining, chemical and gas processing industries.

### **San Jacinto and Houston Community College**

Pasadena, TX (April 1993 to Dec. 1995)

Ms. Suarez performed as Instructor for the Chemical Plant Technician Training Program. The Training Program included process chemistry, math, reactors, distillation columns, pumps, furnaces, compressors, process instrumentation, control, and safety. Ms. Suarez also taught conversational Spanish.

### **Nalco Chemical Company**

Houston, TX (Feb. 1989 to Mar. 1993)

Ms. Suarez served as Sales Representative responsible for selling and servicing water treatment chemicals in the Petrochemical Industry. She was involved in the start up of the utilities systems in grass roots Ethylene Plant. Ms. Suarez trained over 1000 operators in basic chemistry, equipment functionality, control, application, trouble shooting, safety, and statistical process control.

### **Anheuser-Busch, Inc.**

Houston, TX (Aug. 1985 to Feb. 1989)

As Plant Engineer II her responsibilities included managing the Brewery's environmental affairs. Ms. Suarez was also in charge of initiating, designing and implementing capital projects such as expansion of reclaim water system, CO control for boilers, and installation of the energy management system. She as well trained operators in environmental affairs and new equipment operation.

### **Proctor and Gamble**

Cincinnati, OH (Sept. 1984 to Aug. 1985)

Ms. Suarez functioned as a Product Development Engineer. Her responsibilities included product and process development, scale-up, and refinement. Ms. Suarez was involved in the pilot plant scale manufacture of a prototype formula. Design and conduct consumer acceptance tests and interpret results was also a part of her duties.

## **COMPUTER SKILLS**

Knowledgeable in all MS Office products, Visio, Applied Flow Technology's AFT Fathom, HYSYS Simulator, Visual Flow, Flarenet, and Process Engineering Tools (PETS®)