



The South Texan

VOLUME 103 NUMBER 7

MARCH 2003

MONTHLY MEETING • MARCH 6, 2003



Speaker: **Dr. Reginald J. Dufour**

Professor of Physics and Astronomy,
Rice University

Subject: *"Recent Physics Learned
from the Hubble Telescope"*

Dr. Reginald J. Dufour will speak on recent physics learned from the Hubble Telescope. Scholarly areas include: Observational Astrophysics of Nebulae and Galaxies; Ultraviolet and Near-IR Emission-Line Spectroscopy; CNOSi Abundances and Chemical Evolution; Astronomical Image Processing; Wolf-Rayet Starburst Galaxies.

He came to Rice in 1976 following graduate work at Wisconsin and a two-year appointment as a National Research Council Postdoctoral Associate at the NASA Johnson Space Center. His research interests are in the areas of observational astrophysics related to gaseous nebulae and star-forming galaxies. His studies involve imagery and spectroscopy observations in the ultraviolet, optical, and near-infrared spectral regions using a variety of ground-based and space-borne telescopes. Dufour has been a guest observer with the IUE satellite since 1980 and a general observer with the HST since 1990. His current research projects are directed primarily towards UV spectroscopy and high resolution imagery of Galactic and extragalactic HII regions, with the aim of studying the chemical evolution of the CNO element group and Si. Toward these ends, he also studies the stellar population and star-forming history of irregular and spiral galaxies, using wide-band CCD imagery.

- B.S. (1970) Louisiana State University,
- M.S. (1971) University of Wisconsin at Madison
- Ph.D. (1974) University of Wisconsin at Madison

Workshop Announcements

Refer to pages 3 for detailed workshop topic and speaker information. Check the room assignments in the Hotel Lobby to join the group that interests you.

Process Engineering / Plant Operations

Topic: "Bulk Solids Handling – Evolving to meet the Increasing Demands of Changing Polyolefin Processes"

Speaker: Mr. David Daugherty, Sales Manager
Zeppelin Systems USA, Inc.
Houston, TX

Government Interaction Committee

Topic: "More Texas Legislature
Bills Affecting Chemical Engineers"

Chair: Dennis Griffith, Granherne Inc.

Process Safety Management

Topic: "Benchmarking for PSM Gap Analysis"

Speaker: Mr. Mike Sawyer, Process Safety
Consultant and Certified Safety
Professional

"STUDENT NIGHT"

April 3, 2003

All Juniors, Seniors and Graduate Students from the four STS Area Universities are invited for FREE DINNER and ONE BEVERAGE, plus an opportunity to interface with Chemical / Engineering Opportunities (CEO) staff.

How to Stay in Touch with South Texas Section

Website:

<http://www.sts-aiche.org>

Newsletter Access:

- 1) Snail Mail to all registered STS members - one week before meeting +/- one week.
- 2) Website at sts-aiche.org - click on Newsletter or Newsletter Archives - accessible mid-month, before meeting.
- 3) E-Mail - enroll at the Topica prompt at the bottom of the STS home page - includes URL to current Newsletter, accessible mid-month before meeting.

Workshops and Dinner Meeting Topics, Speakers, Synopses, and Bios:

About a week after meeting, speakers and topics appear on the website home page for the next month's meeting. Navigation keys home on detailed synopses and bios for each workshop or dinner meeting presentations.

Meeting Location BRADY'S LANDING

8505 Cypress

(Cypress at the Ship Channel Turning Basin)

For Directions see page 6

WORKSHOPS (NO FEES - NO RSVP) 5:30-6:30 p.m.

EXECUTIVE COMMITTEE 5:00-6:00 p.m.

SOCIAL PERIOD 6:00-7:00 p.m.

DINNER 7:00-7:45 p.m.

PRICE .. \$ 22.00 with reservation • 24.00 without reservation

Students and Unemployed 1/2 price

MEETING / SPEAKER 7:30-8:30 p.m.

AUTO - R.S.V.P. By 4:00 p.m., Tuesday, March 4, 2003

Call (713) 295-4847

Make reservation using the STS web site: www.sts-aiche.org

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GDS Engineers
9009 West Loop South, Suite 800
Houston, Texas 77096-1719
Ph: (713) 295-4681
Fax: (713) 667-9241
E-mail: dave.mitchell@gdseng.com

CHAIRMAN-ELECT

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5425 Polk Avenue, Suite H
Houston, Texas 77023-1486
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Fax: (713) 767-3761
mkolodne@tceq.state.tx.us

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PAUL TEMME

Valero Refining-Texas, L.P.
P.O. Box 5038
Houston, Texas 77262-5038
Ph.: (713) 923-3440
Fax: (713) 923-3561
paul.temme@valero.com

TREASURER

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Fax: (713) 839-7463
ernie.althaus@bigfoot.com

PAST CHAIR

AZIZ A. SIDDIQI, Ph.D.

Resochem Corporation
16630 Imperial Valley Drive Ste 156
Houston, Texas 77060
Ph: (281) 999-6111
Cell: (281) 723-4252
Fax: (281) 999-6181
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DR. RICHARD CHU

(Withdrew - Columbia Tragedy)
Replacement

JIM MORRIS, P.E.

3010 West Lake Crescent Drive
Kingwood Texas 77339
(281) 358-7986
ejmorris@vonl.com

POSITION 2, OUTREACH

RICHARD WILLSON, Ph.D.

Department of Chemical Engineering
University of Houston
S222D Engineering Building 1
Houston, TX 77204-4004
Ph: (713) 743-4308
Fax: (713) 743-4323
willson@uh.edu

POSITION 3, COMMUNICATIONS

KIM DIXON, P.E.

Ph: (713) 977-9755
kimdixon@ev1.net

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TIM MCMINN, Ph.D.

ExxonMobil Chemicals
4500 Bayway Dr.
Baytown, TX 77522
Ph: (281) 834-2633
tim402@hotmail.com

MEMBERSHIP CHAIR

JERRY GRESHAM

Gresham & Gresham
P. O. Box 820888
Houston, Texas 77282
(713) 780-1000
Fax: (713) 781-3300
gresham@pdq.net

PRINTING & MAILING

HOLLY PRO GRAPHICS

P. O. Box 8868
Houston, TX 77249-8868
(713) 742-5732
Fax: (713) 742-5820
typeforu@aol.com

NEWSLETTER EDITOR

JIM MORRIS

3010 West Lake Crescent Drive
Kingwood Texas 77339
(281) 358-7986
ejmorris@vonl.com

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From the Chairman

Dave Mitchell



Mars, the Roman god of war, became the name of a month. It may not be a good sign when war is so important that we name months after it. This segues into this month's topics of big, sky, and physics.

Speaking of big, I hope as many as possible can attend this month's meeting. When our speaker, Dr. Dufour, discusses a subject that is **a sphere with a 14 billion light year radius**, he has pretty much gotten the concept of big covered. Even in Texas.

Many of you have heard or read the fascinating book by Stephen Hawkins, A Brief History of Time. Hawkins holds the same Chair of Astronomy that Sir Isaac Newton once held! The book gives a light review of the giants of astronomy (& physics):

- Ptolemy
- Copernicus
- Galileo
- Newton
- Hubble
- Einstein

I loved the book and read it twice. My only trouble was I kept being confronted by so many topics, taken as axioms of which I had never heard. These Nobel Laureates were awarded in 1972, 1977, 1983, etc. This was a field that had really grown since I graduated!

Dr. Dufour has met Dr. Hawkins. He does quite a bit of other things to keep current in this field. Don't be left behind. Join us Thursday night. Catch up on physics and have some fun with your colleagues.

From the Editor

Jim Morris

Last month, Dr. Richard Chu provided input that appeared in the editorial about our September 1999 dinner meeting speaker, Dr. Don Petit, now a skywalker on the International Space Station. By tragic coincidence, the breakup of the Columbia occurred 1 Feb 2003 on reentry over crystal clear Texas skies, around 8:00 AM. Because of the crash investigation, Dr. Chu and his colleagues are on twenty-four by seven duty, causing him to withdraw as STS Director of Education. Dr. Chu provided this input about the crew, which will also appear in the CEP Editorial. Keep Dr. Petit, his crewmates, and the NASA team investigating this tragedy in your prayers.

In the wake of the Columbia tragedy, our fellow chemical engineer, Dr. Don Pettit, one of the current three crew members onboard the International Space Station, is still hanging in there. They are grieving and felt a little isolated up there when hearing the news. The trio had been scheduled to return in March, but the return will be delayed to June. A supply spacecraft, Progress, has successfully arrived at Station yesterday to bring fuel, food, equipment and mail.

The NASA Director of Flight Crew Operations, Bob Cabana, told the crew about Columbia tragedy within 24 hours, has assured the trio that he would keep them fully informed and tell the crew anything learned from the Columbia investigation. They also shared stories about Columbia's crew.

Dr. Chu

Workshops Announcements – detailed information

Process Engineering / Plant Operations

Speaker:

Mr. David Daugherty
Sales Manager,
Zeppelin Systems USA, Inc.,
Houston, TX

Subject:

“Bulk Solids Handling –
Evolving to meet the
Increasing Demands of
Changing Polyolefin
Processes”

The continuing evolution of polyolefin processes is having deleterious effects on traditional bulk solids handling technologies. Corporate mergers, new generation catalysts, high capacity throughput, variations in product packaging, geopolitical hurdles, and end-user demands of higher product quality are but a few of the challenges facing the Bulk Solids Handling Industry today. Responding to these challenges requires flexible and creative solutions. Mr. Daugherty will discuss these challenges facing the Bulk Solids Handling Industry and present an overview of advances made by the industry in response.

David Daugherty is the General Sales Manager for Zeppelin Systems USA, Inc. He has been active in Bulk Solids Handling for over 23 years

and was involved in the early advances of several pneumatic conveying technologies in the USA. David received his BS in Mechanical Engineering from McNeese State University. He is a member of H.E.S.S. and H.M.H.S.

Contacts: Jim Morris

281-358-7986

ejmorris@vonl.com

Steve Haynie

713-336-5221

Steve.Haynie@Equistarchem.com

David Karesh

832-351-6944

david.karesh@jacobs.com

Process Safety Management

Speaker:

Mr. Mike Sawyer, Process
Safety Consultant and Certified
Safety Professional

Subject:

“Benchmarking for PSM Gap
Analysis”

A strong capability in safety management greatly reduces the chance of a major loss, unscheduled shutdown, and other 'surprises.' Understanding how to apply 'best practices benchmarking' can allow organizations to meet or exceed their projected safety (prevention program) expectations. The presentation will define a protocol for gap analysis using benchmarking techniques which is designed to provide a roadmap of issues critical to the success of a safety program.

Mike Sawyer has over 20 years of experience in industrial and process safety projects. Currently, he provides expertise in applications relating to safety, loss control, process safety

management, and hazard analysis. He has facilitated numerous hazard studies, primarily HAZOPs, of industrial and petrochemical facilities throughout the world. He is a graduate of Texas A&M, a licensed engineer in Texas and Massachusetts, as well as a Certified Safety Professional.

Contact:

Jack Chosnek

(281) 538-0220

E-Mail: JC@knowledge1.net

Government Interaction Committee

Subject:

More Texas Legislature
Bills Affecting Chemical
Engineers

Chair:

Dennis Griffith
Granherne Inc.

Last month, the GIC met and decided to monitor some bills in the Texas Legislature that reduce the registration fee for a small engineering firm, that advance science education public schools, that affect admissions to graduate school programs, and that affect the licensing of radioactive source users. We will update the status of these bills and also go over bills that have been filed since the last GIC meeting.

We will have a short meeting at Brady's

Landing Restaurant beginning at 5:30 PM prior to the Social Period, which starts at 6:00 PM. Please feel free to drop in and join us.

Contact: Dennis Griffith,

Granherne Inc. a Halliburton Company

Phone 281-575-4582

Fax 281-575-4321

E-Mail: Dennis.Griffith@Granherne.com

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JOINT PROCESS ENGINEERING / PLANT OPERATIONS
AND CAST DISTILLATION SYMPOSIUM**



AMERICAN INSTITUTE OF
CHEMICAL ENGINEERS



The South Texas Section of the
American Institute of Chemical Engineers

Will Be Presenting

Spring Distillation Symposium

Radisson Hotel Astrodome – Thursday, April 3, 2003

Starts: 4:00 pm.

**Featuring Mr. Henry Z. Kister, Fluor Daniel,
and**

Dr. John Kunesh, Vice-Chair, Separations Division of AIChE

Symposium Details:

The Distillation Symposium is a joint effort of the Process Engineering / Plant Operations and CAST Workshop Groups. The symposium will start in advance of the usual 5:30 PM Monthly Meeting Workshops to hold two presentations by nationally recognized distillation professionals Mr. Henry Z. Kister and Dr. John Kunesh. A contribution of \$10 will be collected to defray expenses for the symposium. Refreshments will be provided. The 3 April 2003 Monthly Meeting will be Student Night, and students (and their professors) at our local universities are invited without contribution.

In addition to the presentations by Mr. Kister and Dr. Kunesh, there will be a book signing by Mr. Kister and Tabletop displays by many of the fractionation equipment suppliers. Details will be added as developed. Before April 2, place your reservation/inquiry by e-mail with Jim Morris (ejmorris@vonl.com, 281-358-7986) or Shane Tierling (shane.tierling@halliburton.com, 713-753-3692). On-the-spot registrations will start at 3:30 PM on 3 April 2003.

See page 5 for an abstract and biography of Mr. Henry Kister's and Dr. John Kunesh's presentations. We expect seating for 120.

Special Guests

Mr. Henry Z. Kister
Director, Fractionation Technology
Fluor Daniel

Noted Author of "Distillation Operations"
and "Distillation Design"

Dr. John Kunesh
Vice-Chair, Separations Division of
AIChE

Retired Technical Director, FRI

For More Information & Registration, e-mail:

Jim Morris, ejmorris@vonl.com or **Shane Tierling**, shane.tierling@halliburton.com

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You're on the Awards Nominating Committee!

Nominations Needed!!!

It's nearly **Annual Awards** Time again!

Please use this form or any reasonable facsimile to submit your nominations **before May 1, 2003** to

Tom Menn

or

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Ph.: 281 - 544 - 9066

E-Mail: thomasmenn@aol.com

Fax: 281 - 544 - 8826

E-Mail: sdiyer@shellus.co

Nominations are now being solicited for the following:

- ☐ 2002's Distinguished Service Award (STS Member over 35 years of age)
- ☐ 2002's Outstanding Young Member (STS Member under 35 years of age)
- ☐ 2002's Best Fundamental Paper (STS Members Only)***
- ☐ 2002's Best Applied Paper (STS Members Only)***

Nominee's Address & Phone No.

Your Address & Phone No.

Please: Only **ONE** Nomination per form! Thanks!!!!

***** - A legible copy of the nominated paper must accompany the nomination and the nominated paper must have been published in a recognized periodical.**

A copy of this form can also be e-mailed from: <http://www.sts-aiiche.org/#ANNOUNCEMENTS>

Mr. Henry Z. Kister

Director, Fractionation Technology,
Fluor Daniel, A Fluor Company
Aliso Viejo, California

“WHAT CAUSED TOWER MALFUNCTIONS IN THE LAST 50 YEARS?”

Nine hundred case histories of malfunctioning towers reported over the last 50 years were surveyed and analyzed. Our analysis shows rapid growth in the number of malfunctions with no signs of decline. Plugging, especially of tray active areas, packing and distributors, tops the malfunctions list. Coking (refinery towers only), scale and corrosion, and precipitation were the most common causes. The tower base comes second, where liquid level rising above the reboiler inlet caused premature flood and even internals damage. Attention to level measurement and kettle reboiler pressure balance are key preventive measures. Next follow tower internals damage, abnormal operation incidents (startup, shutdown, commissioning), assembly mishaps, packing liquid distributors, intermediate draws, misleading measurements, reboilers, and explosions. Tray design and tower simulation, two topics that receive much attention in the literature, are not high up on the malfunction list. The survey teaches numerous lessons on each of the malfunctions which are invaluable for achieving trouble-free design and operation of distillation towers.

Henry Z. Kister is a Fluor Corp. Fellow and director of fractionation technology (phone 1-949-349-4679, email henry.kister@fluor.com). He has over 25 years experience in design, troubleshooting, revamping, field consulting, control and startup of fractionation processes and equipment. Previously, he was Brown & Root's staff consultant on fractionation, and also worked for ICI Australia and Fractionation Research Inc. (FRI). He is the author of textbooks "Distillation Design" and "Distillation Operation," as well as 70 published technical articles, and has taught the IChemE-sponsored "Practical Distillation Technology" course 240 times. A recipient Chemical Engineering magazine 2002 award for personal achievement in chemical engineering, Kister obtained his BE and ME degrees from the University of NSW in Australia. He is a Fellow of IChemE, a Member of the AIChE, and serves on the FRI Technical Advisory and Design Practices Committees.

Dr. John Kunesh

Vice-Chair
Separations Division AIChE,
Retired Technical Director, Fractionation Research, Inc.
Red River, New Mexico

“SYSTEM LIMIT / ULTIMATE CAPACITY”

The concept of “system limit” or “ultimate capacity” has been around for over 40 years. In 1961 Tek (U of Michigan – consultant to FRI) combined the entrainment flood approach of Souders and Brown (1934) with the drop stability work of Hinze (1949, 1955) and came up with the concept that in a turbulent field there is a maximum capacity of counter flow devices that is a function of vapor velocity and system properties and is independent of hardware parameters. The liquid rate effect in the model he developed was empirical as the theoretical work was based on analysis of the forces on a single drop. Levich, in Russia, followed a similar line of reasoning as Hinze, and at the end of his development, he cautions that if there are multiple liquid drops, things change. At the time the model was further refined (1965) it was noted that at low liquid loads, measured capacity tended to fall below model predictions. This was not considered to be a problem at that time since the conditions in question were normally encountered under vacuum where tray pressure drop usually governed. Recent experimental work with modern, high capacity, low pressure drop devices confirms that at low liquid rates there appears to be a capacity ceiling which is independent of liquid loading.

John Kunesh is currently Vice Chair of the AIChE Separations Division (automatic succession to chair in 2004). He retired on September 30, 2002 from his position as Technical Director of Fractionation Research, Inc., a position he had held since 1984. FRI is a member sponsored research organization founded in 1954 dedicated to testing distillation column internals on a commercial scale to achieve fundamental understanding of their performance and to develop design methods. Operations include both testing of hardware concepts to further basic understanding of performance and testing of devices already in commercial use to provide an unbiased test. He was responsible for a staff of up to eighteen, with an annual budget of ~ \$1,000,000.

Prior experience includes 13 years in the Process Engineering Department at UOP where he was involved in design work, engineering management and project management. He is also a refugee from the synfuels programs of the late 70's and early 80's. He holds a BS, MS and PhD in Chemical Engineering from Carnegie-Mellon and is a Registered Professional Engineer in Illinois and Oklahoma.

CALENDAR OF EVENTS

DINNER MEETINGS

April 3, 2003

Future of the Professional or Something Related

Speaker: **Dr. Dianne Dorland**, AIChE National Chair
Dean, College of Engineering Rowan University Glassboro

"STUDENT NIGHT" All Juniors, Seniors and Graduate Students from the four STS Area Universities are invited for **FREE DINNER** and **ONE BEVERAGE**, plus an interfaceChemical / Engineering Opportunities staff.

May 1, 2003

"AWARDS NIGHT"

WORKSHOPS

April 3, 2003

"Spring Distillation Symposium"

Jointly sponsored by the Process Engineering/Plant Operations and Cast Workshop Groups

Speakers: **Mr. Henry Z. Kister**, and **Dr. John Kunesh**

SPECIAL EVENTS

May 5-8, 2003

Offshore Technology Conference

Annual Technical Meeting to be Announced



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AIChE's South Texas Section

What have you done today as a professional chemical engineer to aid your fellow citizen or yourself? Join us and you'll be working with topflight, dedicated people with an unprecedented opportunity to exchange ideas and information in one of the fastest-growing fields of engineering. **Can you afford not to participate?**

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Name: _____

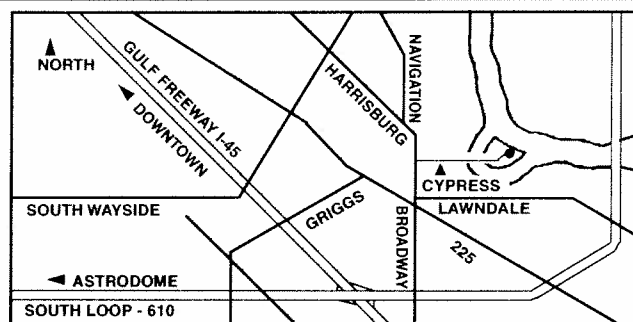
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National Member of AIChE? YES ☐ NO ☐



DIRECTIONS TO BRADY'S LANDING

FROM 610: Follow 610 around past the Astrodome, heading east. Follow 610 East to 225 West. Follow 225 West to Broadway (1st light). Turn right onto Broadway. Cypress Street is 5 blocks down. Turn right onto Cypress and follow the signs to the restaurant.

FROM 1-10: Take 1-10 East to 610 (east of downtown), take 610 South. Follow 610 to 225 West. Follow 225 West to Broadway (1st light). Turn right onto Broadway. Turn right onto Cypress Street is 5 blocks down. Turn right onto Cypress and follow the signs to the restaurant.

SH-225 - Westbound (If closed on March 6, 2003)

DESCRIPTION: Exit Ramp to IH-610 EAST LOOP northbound. Total closure continuously from 9 pm Friday, February 21, to 5 am Monday, February 24. Detour to Broadway and U-turn to SH-225 eastbound to IH 610-East Loop northbound.

TEXAS TECHNOLOGY SHOWCASE

**March 17 - 19, 2003 • Radisson Hotel
Astrodome, Houston, Texas**

The process industries along the Texas Gulf Coast face an enormous challenge to remain globally competitive and meet state air quality standards for ozone. Chemical plants and refineries will be most heavily impacted. These drivers will not be limited to Texas in the future, as other states also adopt stricter rules for NOX emissions. With this in mind, the Texas Technology Showcase will offer the latest in processing and combustion technologies, and best energy management practices that can result in improved environmental performance, increased energy efficiency and reduced costs at chemical plants and refineries. Addressing these energy, environmental, and cost factors will be an important part of the strategy to keep your plant in business in the coming years.

The Texas Technology Showcase will be a three-day event, combining technical sessions plenary addresses by business, political and government leaders, special forums on selected topics, an exhibition, and tours of Showcase plants. Hear from industry leaders, technology experts, government agency staff and suppliers about the latest developments in the areas of NOx and VOC reduction, plant optimization, separations and distillation, combined heat and power cycles, pumps, motors and compression, sustainability, supply chain optimization, survival strategies for small and medium sized plants, and resources for technology development, commercialization and deployment.

Participating companies that will be profiled during the Texas Technology Showcase include Calpine, Chevron Phillips Chemical Company, Dow Chemical, ExxonMobil, Merisol, Rohm and Haas Texas Inc., and Valero Energy Corporation.

For detailed information and to download a registration form, please go to the Texas Technology Showcase Website at www.showcasetexas.org.

Dennis Griffith, GIC Chair

GDS Engineers

Petrochemical • Refining • Industrial

GDS is a 500 person engineering and construction management firm, with offices in Houston, Baytown, and Texas City. We perform front end and detailed design on projects up to \$100 MM TIC for refineries, petrochemical, polymers, and gas processing units.

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- Unit debottlenecking and optimization studies
- Tower and vessel design
- Heat exchanger design
- Process troubleshooting
- Flare/relief system analysis, including DIERS sizing
- System hydraulics
- Environmental consulting, including NOx reduction.
- Process hazards analysis (HAZOP, etc.)

For information, please contact

Mike Najarian, P.E., process engineering manager

ph: 713-667-9162 • fax: 713-667-9241

email: mike.najarian@gdseng.com

The GDS website is: www.gdseng.com

VOLUNTEERS NEEDED

2003 Offshore Technology Conference May 5, 6, 7, & 8, 2003

The South Texas Section, A.I.Ch.E., has again been selected to staff one of the OTC "Conduct" Committees. We have been asked to provide personnel for the Proceedings Distribution Committee. Volunteer are also needed to help out with the Registration Committee and National AIChE's booth in the lobby.

For agreeing to serve as a member of the "Conduct" Committee by attending an orientation session on Friday, May 2, (time & location to be announced) and serving as either a Proceedings Distribution or Registration Conduct Committee member for one-half (1/2) day; each volunteer

will receive:

1. A complimentary OTC Registration
2. A complimentary Parking Pass for the OTC
3. A Reserved Parking Place the day of your Conduct Committee assignment.

For Additional Information; please contact:

Tom Menn
281-485-3719

or

Dave Pay
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- Infrared Thermography
- Steam Air Decoke Monitor & Control
- Partial Discharge Testing of Motors and Generators
- Mechanical Integrity Inspection and Analysis



Process Diagnostics



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