

# **SLP** Society of *Loss Prevention* *Update*

*In the Process Industries*

JUL 2011

## 20<sup>th</sup> Annual General Meeting of SLP

The 20th Annual General Meeting of SLP was held at Singapore Polytechnic Graduates' Guilds on Jun 28, 2011.

The meeting was attended by 15 members and commenced at 7.00 pm.

Mr. Tay Cheng Pheng, President of SLP and Mr. Ngiam Tong Yuen, Honorary Secretary of SLP shared the highlights of SLP from 2010/ 2011.

The members adopted the Minutes of the last Annual General Meeting held on Jun 30, 2010, Annual Report of SLP, and also the Annual Accounts for the year ended Mar 31, 2011.

Mr. Anthony Neo was elected the Honorary Treasurer for the one-year term from Jul 1, 2011 to Jun 30, 2012. Mr. Jaggi Ramesh and Mr. Chai Wee Thong were elected the Honorary Auditors for the financial year 2011/ 2012.

*Written By: Ms Penny Pan*

### Editor's Note

Welcome to  
Second Issue of 2011's  
SLP e-newsletter.

We hope you continue to find the e-newsletter informative and interesting.

If you have any articles, news, ideas, feedback or stories related to process safety that you wish to share, do write to us at: [secretariat@slp.org.sg](mailto:secretariat@slp.org.sg)

If your email address is going to change and you would like to continue to receive this e-newsletter, please contact us to update your contact information.

**Society of Loss Prevention in the  
Process Industries**

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*Mr. Tay Cheng Pheng and Mr. Ngiam Tong Yuen addressed the members at AGM.*



*Members who attended the AGM held at SPGG.*

# SLP BOOK PRIZE WINNER - MR KHOO PUAY NING

The 2011 SLP Book Prize Winner on Petrochemical Technology in Temasek Polytechnic went to Mr. Khoo Puay Ning. Puay Ning joined Temasek Polytechnic in 2008 to pursue a Diploma in Chemical Engineering and graduated in May 2011.

His lecturers have reported that he is a hardworking student who consistently seeks to improve his performance. He was awarded the "Distinction" grade for the top 5% of his cohort in Temasek Polytechnic.

He was particularly interested in Plant Safety and Loss Prevention, a subject that places great emphasis on workplace safety and health and the importance of environmental protection. The knowledge came very useful for the two projects that he worked on. The first was on API Oil-Water Separators and how these operating units helped to reduce the environmental impact of refineries. The second project was on the manufacturing process of polypropylene and how to mitigate the safety hazards and environmental impacts resulting from its manufacturing process.

He also did very well in the Student Intern Program where he was attached to Beijing Datsing Bio-Tech Co. His ability to use the knowledge and skill acquired in his study and to apply them to real-life applications at the workplace was noticed by his lecturers. He was subsequently selected to assist his lecturers in a research project on the integration of nano- and fuel cell technologies to produce a viable and clean alternative to fossil fuels.



*Puay Ning conducting his research project.*



*Puay Ning with his research poster.*

*Congratulations to you, Puay Ning.*

We at SLP wish you success in your future endeavours. We hope you will join us in SLP.

*Written By: Ngiam Tong Yuen*

## PROCESS SAFETY BEST PRACTICE FORUM 2011

SLP held its first-ever Process Safety Best Practice Forum at Singapore Polytechnic Graduates' Guild on May 20, 2011. For the first time, our members and other local Process Safety Professionals had gathered to share knowledge, good practices and know-how on process safety management.

It was a record turn-out for an SLP event -- 55 participants attended the forum. The forum opened with a key-note speech by the Guest of Honor, Mr. Go Heng Huat, Deputy Director of OSH Specialist Department, Ministry of Manpower. ExCo members Mr. CS Teng and Mr. Anthony Neo co-hosted the event.

There were four speakers. They came from companies belonging to the Pharmaceutical OSH Network. Each of them came with vast experience and background in process safety.

Mr. Solomon Lee from GSK Singapore covered Process Hazard Analysis and Process Revalidation Program. Mr. Wendell Harms from Pfizer Asia Pacific touched on Change Control workflow, key factors of effective change control and how change control is linked to other aspects of process safety management. Mr. Leslie Tsen from MSD Singapore shared his knowledge on pre-startup safety review (PSSR) workflow and key attributes for an effective PSSR. Mr. Lionel Naranjan Singh from Roche Singapore covered emergency response and challenges of setting up an emergency response organization in his company.

Best practice sharing by participants was the most important and useful feature of this forum. Care was taken in the design of the forum to allocate adequate time for discussion and sharing of know-how. One hour was set aside for this. Participants spoke passionately about their insights on best practices and their concerns about process safety management. The outcome exceeded our expectations.

The forum ended with Mr. Go Heng Huat taking questions from the participants on SS 506 Part III, emerging trends in process safety and the importance of good process safety management to ensure the success of a company. The event wrapped up with Mr. Ngiam Tong Yuen, Honorary Secretary of SLP presenting the Guest of Honor and all the speakers with tokens of appreciation.



*Mr. CS Teng welcomed participants to the forum.*



*Participants listened intently to the proceeding of forum.*



*Mr. Wendell Harms from Pfizer Asia Pacific.*



*Speakers: Mr. Solomon Lee from GSK Singapore.*



*Mr. Lionel Naranjan Singh from Roche Singapore.*



*Speakers: Mr. Leslie Tsen from MSD Singapore.*



*Mr. Go Heng Huat addressed the questions from the participants during Q&A session.*

*Written By: Anthony Neo*

# Management of Instrumented Protective Systems

By: Mr. John Thomasee  
Chevron Phillips Chemical Company

A talk on "Management of Instrumented Protective Systems" was organized by SLP on March 15, 2011 for members to learn more about the independent protective layers management practices and its implementation.

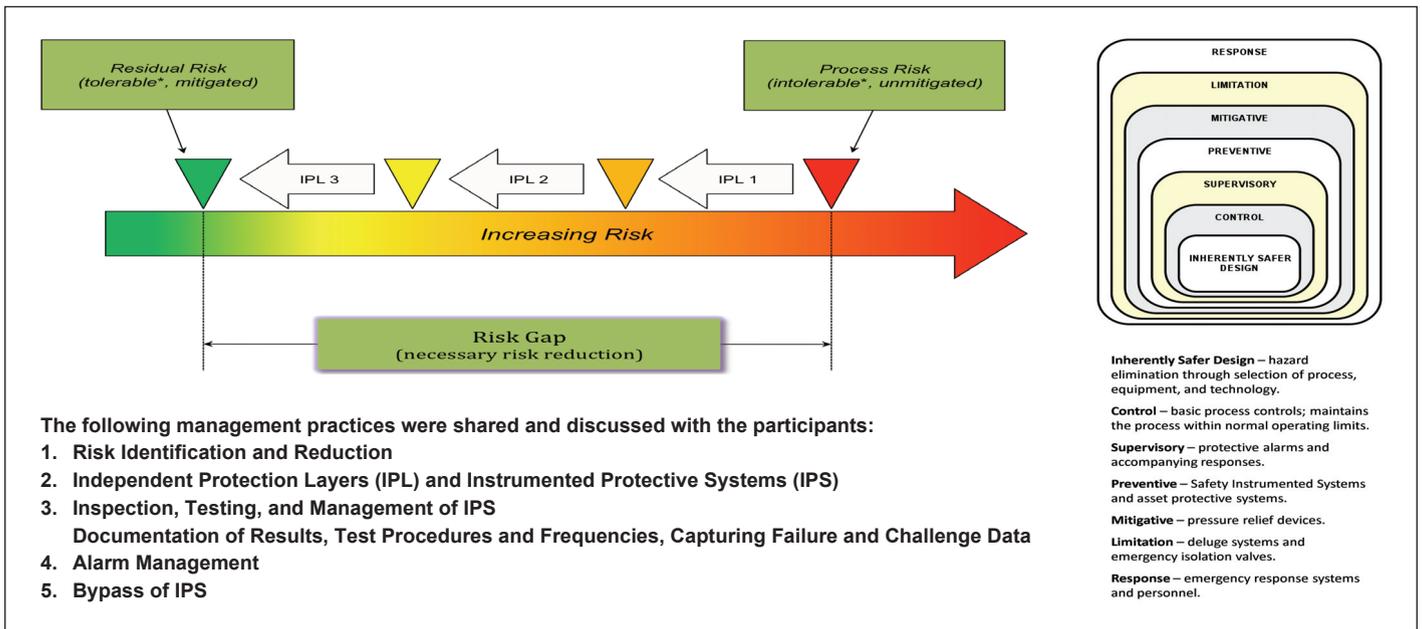
The speaker was Mr. John Thomasee, Corporate Safety Instrumented Systems and Automation Manager for Chevron Phillips Chemical Company based in Houston, Texas.

Some 30 SLP members and guests attended the talk cum dinner held at the Singapore Polytechnic Graduates Guild (SPGG).

In his introduction, Mr. Thomasee pointed out that during a Process Hazard Analysis (PHA) and Layers of Protection Analysis (LOPA), instrumented functions are allocated risk reduction credit, reducing intolerable risk down to tolerable risk. These instruments, logic solvers, and alarms must be identified and properly managed so that the functions will be available to help mitigate the hazard identified in the PHA.



Mr. John Thomasee giving talk on Management of Instrumented Protective Systems.



He emphasized that to help realize the required risk reduction, a written, effective IPS management work process must be in place and program elements should include:

- Roles and responsibilities - Includes a "Champion" - a single point of contact
- How IPS will be identified on process safety information
- Inspection, testing, and preventive maintenance frequencies and procedures
- IPS narratives
- Required documentation and records
- Bypass management
- Training

A lively discussion took place after the presentation and into the dinner. Clearly, most of the participants had benefited from the talk. Mr. Tay presented a token of appreciation to Mr. Thomasee for his time and efforts in sharing the knowledge with the participants.

# Pressure Relief Study and Evergreening - Why it is Important?

Mr. Chan Keng Yong & Mr. Edmund Phung  
Oil & Gas Consulting, Siemens Pte Ltd

*Are there documentations available on all the design basis of each of your pressure relief devices? Are these documents evergreen or up to date?*

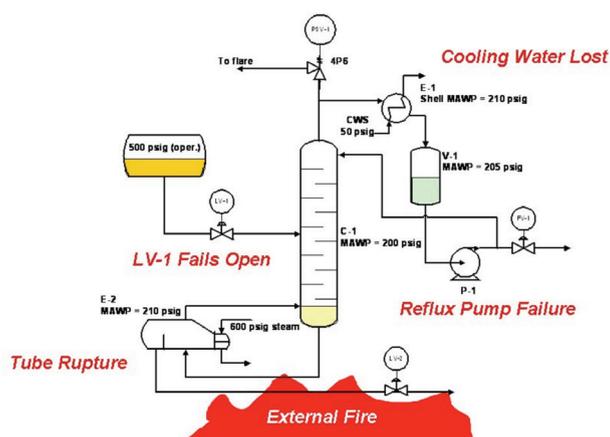
*Do you review, evaluate and update the pressure relief design basis for every change (MOC), expansion or debottleneck projects made to your plant?*

*Are you aware of the impact to the flare disposal system each time you add new relief devices to the flare header, or increased throughput of a unit beyond its original design?*

## Why these questions are important for a plant/facility and what are the safety implications?

A pressure relief device is typically the last line of defense (or last layer of protection) for an overpressure event. In some facilities, these are also termed safety critical devices. The consequences of an overpressure event can be severe or even catastrophic - safety, environmental, business interruption or even company closure impacts. Therefore, it is important to ensure that the pressure relief device is properly designed (in terms of size, type and location) and maintained (evergreen documents and periodic testing) to serve its purpose.

A pressure relief study comprises of detailed analyses and documentation of all the potential overpressure scenarios and its applicability, followed by the sizing calculations for each scenarios. This is also termed pressure relief design basis documentation. The following table lists a few examples of overpressure scenarios described in API 521 that one needs to consider in the analyses.



**Table 1: Examples of Overpressure Scenarios per API 521**

Cooling failure	Reflux failure
Closed outlet	Hydraulic expansion
External pool fires	Opening manual valves
Electric power failure	Heat-transfer equipment failure
Entry of volatiles	Instrument Air Failure

In the United States, pressure relief system design basis documentation is part of the process safety information (PSI), which is one of the fourteen OSHA Process Safety Management (PSM) elements. Even though most Asia countries do not have PSM or similar process safety regulations on pressure relief design basis, there are valid and beneficial reasons to implement this pressure relief study and maintain an evergreen document:

- It is Recognized and Generally Accepted Good Engineering Practice (RAGAGEP)
- It the Right thing to do for the Safety of the plant when making changes

Pressure relief study shall apply to both a newly designed and existing operating facility. For a newly designed facility, this can be done either at the FEED or detailed designed phase, and at the as-built phase to incorporate final installation changes.

For an existing operating facility, this study and documentation serves two purposes:

- To identify any potential overpressure hazards and deficiencies because the existing facility is not designed and built to the latest design codes, practices and regulations. The facility can then do a risk assessment to implement the retrofits or upgrades.
- To review safety impacts when making subsequent changes to the facility as part of MOC or hazard risk assessment. For example, a simple change such as installing a bypass line around a control valve may have an impact on the pressure relief design basis flowrate (or relief sizing) if control valve failure is one of the potential overpressure causes. Even if there is no final impact to the pressure relief sizing from the higher flowrate through the bypass line and control valve, the analysis and calculations need to be documented for future record and reference.

Pressure relief study documentation needs to be kept up to date or evergreen throughout the plant life as it is part of process safety information.