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Taking lead, GAIL organized two days HSE Conference & Exhibition, "The Oil & Gas HSE Conclave 2017 on 08-09 December at Hotel Radisson Blu Noida, for the very first time in the Indian Oil & Gas Industry’s history.

During the Oil & Gas HSE Conclave 2017, a diverse range of topics and subjects that involved critical and current issues relating to HSE management at national and international level were discussed.

This post event report attempts to contain the full record of the conference - summaries of all presentations, formal discussions and the summaries of floor discussions.

I would like to extend our appreciation to all the speakers, panellists and session chairs in contributing to the success of the Oil & Gas HSE Conclave 2017 event.

I would like to thank all participants for their contributions to the Conference program and for their contributions to the proceedings. I would also like to thank MOPNG, PNGRB, OISD, PESO, Oil & Gas PSU’s, Private Oil & gas companies, institutions, Contractors and Exhibitors for making the conference successful.

My appreciations are also to the GAIL organizing team for their extra ordinary efforts in making it happen, so successfully.

Dr. Ashutosh Karnatak
Chairman, Oil & Gas HSE Conclave 2017
Director (Project), GAIL (India) Limited
Organizing Oil & Gas HSE Conclave for Indian Oil & Gas Industry officials and their various stakeholders like Regulators, Institutions and major contractors was a unique initiative of GAIL. 375 invited delegates and 44 speakers and panellists from India and countries like Canada, Dubai, Singapore and Bahrain made the event a learning experience for HSE Practitioners and other professionals from Oil & Gas Sector. Lot of brainstorming and enriching discussions took place during ten technical sessions and two panel discussions. We received overwhelming feedback from participants. Sessions like “Economics of Safety”, “Role of Line Managers in HSE Management” and “CGD Safety” generated lot of interest amongst participants, besides other absorbing tech sessions.

Deep involvement of Top Management of GAIL and very active participation of functional directors, including that of Director (Projects), Director (Finance) and Director (HR) was appreciated by all delegates and panellists. Participation of Member PNGRB Shri S. Rath, ED (OISD) Shri V. J. Rao, MOPNG and PESO officials generated lot of enthusiasm and involvement amongst participants.

Eight foreign speakers, experts in their respective areas were real attraction on the dias and off the dias. Most of the feedbacks received find mention about their valuable contribution in the success of programme. Display of a skit on Pipeline Safety also brought uniqueness to this event. There was huge appreciation for our motivational speaker, a Para-olympian Ms Deepa Mallik. Her incredible story inspired everyone to take up Excellence in all activities. Many handkerchiefs were seen going wet, during her touching but meaningful discourse. Delegates were also benefitted with the presence of 17 Exhibition stalls by technology providers, manufacturers and suppliers in the field of HSE Management.

In this report, we have gone into details of all technical sessions and panel discussions to churn out the takeaways from the conference for the Industry colleagues. In fact, post event we organised a short meeting with some Industry colleagues, who had participated during the event and discussed all the take aways, beside our event partners working on the Post event report. I am sure, you will find it interesting and worth sharing with all colleagues. We shall be happy to receive your feedback.

Once again, I wish to thank all the Industry colleagues, regulators, institutions and contractors who participated in the event to make it successful. Big thanks to all the experts, speakers, session chairs and panellists for sharing their thoughts and for providing insight into various subjects. My special thanks to the Chief Guest and Key note Speakers for setting the tone for the conference.

I would like to thank MOPNG for their Patronage, GAIL CMD and Board of Directors for their guidance and support, my colleagues in Steering Committee, working committee and Corp HSE deptt for their unstinted hard work and commitment to make this event a success. Wish to thank media friends for attending pre-event Press Conference and the event itself and for providing coverage in print media. Last but not the least our event partners, anchors, scribes, registration desk, the venue providers all contributed a lot to make it memorable.

S.P. Garg
Convenor, Oil & Gas HSE Conclave 2017
Chief General Manager (HSE), GAIL (India) Limited
Participation of Delegates: 400
Deliberations across Tracks: 15
High Profile Speakers: 44
Day 1  December 08, 2017

Inaugural Session
The conference started with a welcome address from Dr. Ashutosh Karnatak, who thanked his team members for organizing and executing the event. Speaking about the importance of hosting events focused on health, safety and environment, he said this was a suraksha yatra (journey of safety), aimed at moving towards building a safer GAIL, a safer India and a safer world. Talking about the oil & gas industry, he said that the industry has many hazardous risks associated with it.

India’s growth is closely related to the energy sector and the demand for oil & gas has increased manifold over the last few decades, and managing the growing needs for oil & gas has also resulted in increasing exposure to risks and hazards. Thus, it’s necessary to not only comply with world safety standards, but also equally imperative to transition from a traditional approach to an integrated risk management approach. This further necessitates the delegation of responsibility of developing a safety culture at each level of the process and organization.

Talking about his organization’s suraksha yatra, that is their long standing commitment towards health, safety and environment, Dr. Karnatak shared a few examples of how the company has been steadily working towards transforming the organizational culture over the last few years. Realizing that lack of communication can be a huge risk, the company has adopted the integrated management system concept of Centre Integrated Management Growth (CIGR) at the corporate level in Noida, Uttar Pradesh, and Regional Integrated Management Growth (RIGR) at regional level, which is connected to the corporate office, thus standardizing maintenance practices across business, and helping analyse the root cause of any incident in an efficient manner. The company has also adopted a focused monitoring and governance system wherein all offices are expected to conduct fortnightly MIS reviews, and discuss any discrepancies in performances. In order to monitor this activity, a separate group called the Innovation Improvement Group has been established. Over the last 30 months, the company has also been celebrating a monthly Safety Day, wherein half a day is dedicated towards safety drills. This has helped in reducing the accident rate, as well as improving the SOP compliances, thus contributing towards bringing an overall behavioural change in the people.

The company has also installed the Central Pipeline Integrity Management Systems under which the entire pipeline network has been mapped, and the data thus made available can be used to study the health of the pipelines. The organization has also been working with organizations like NACE Foundation which provide expertise in the area of dealing with corrosion and training professionals in the domain. A Security Command and Control System has also been established particularly in the densely populated areas of NCR, besides installing Pipeline Intrusion Detection Systems, which have thus far helped detect and prevent upto 30 high loss incidents.

GAIL has also introduced many programs to educate and sensitize people about environment. One such initiative is the Hawa Badlo (change the air) initiative, aimed at encouraging people to switch to CNG vehicles. Besides this, the company has been adopting programs towards planting of trees and purification of water.
Speaking of the health aspect, Dr. Karnatak said that workforce health is a very important area for the organization, and towards this Dr. Chandra Tripathi, GM (MS) has taken all steps to ensure employees’ wellbeing. Elucidating on the importance of health, Dr. Karnatak also stressed the need for every person to give some time to themselves every day.

Concluding his address, Dr. Karnatak said that the organization is in the process of transforming its HSE culture by enhancing its approach and habits, and switching from reactive to proactive measures and from mere compliance to commitment.

V.B. Sant, Director General, NSC, India

Mr. Sant graced the occasion as the Chief Guest and enlightened the delegates on how HSE can be integrated with SDG (Sustainable Development Goals) goals and participation of various stakeholders to achieve those goals. During his speech, Mr. Sant talked about areas which need to witness development in order to bring about an improvement in the quality of human life. These include global challenges such as poverty & inequality, climate change and sustainability, areas which are a major concern the world over.

The United Nations General Assembly in their Agenda 2030 has described 17 SDGs which have listed down numerous targets that the UN, along with various stakeholders and partners, shall look to achieve. Three of these 17 SDGs are directly related to the issues of health, safety and environment. These are SDGs 3, 8 and 12. **SDG 3** is pertaining to health and wellbeing, and reducing the number of injuries and deaths from road accidents, hazardous chemicals, pollution etc. **SDG 8** seeks to ensure decent work and safe environment to everyone across the globe, and **SDG 12** is concerned with sustainable consumption and production.

In conclusion, he said that we all must contribute at different levels as member of civil society as well as global citizens. HSE professionals, in particular, need to play a more specific role in establishing robust HSE culture.
Mr. S. Rath (PNGRB), Dr. Waddah Ghanem (ENOC) and Mr. Ahmed Khalil (BAPCO) graced the occasion as the Guests of Honour and enlightened the delegates with their wealth of experience and wisdom on various aspects on HSE in Oil & Gas sector.

S. Rath, Member, PNGRB

Mr. S. Rath started his speech by sharing the thought that transformation in safety culture of an organization can be brought about only in a top-down manner, when there’s a strong leader at the top. However, involvement of persons at all levels is important, as involving people across hierarchies helps bring about acceptance for the changes that are sought to be introduced. Therefore, it is imperative that CEOs and other top management interact with employees across organizations. Periodic communication ensures the workforce and employees remain motivated and involved. Also, this helps bring about acceptance towards any changes more easily.

Speaking of HSE stewardship, he said that there are many changes to be brought about in the industry, and instead of waiting for a regulatory framework to be developed, or before compliances come into picture, it is important that members of the industry, the true stakeholders deliberate on those areas and discuss them.

Talking about the need to have a more inclusive approach to the concept of HSE, he said that the right kind of people, holding the right kind of knowledge need to be incorporated in the area of health, safety and environment. And this should include people from various other functional heads as well, like marketing, operations, etc.

Concluding his speech, Mr. Rath said that before looking to bring about changes around us, it is more important to bring about changes within us. Everyone needs to look inward and contribute to the HSE culture, and improve the world we are living in.
Dr. Waddah S. Ghanem, ED, EHSSQ & Corporate Affairs, ENOC

Dr. Waddah said it was always a pleasure for him to come to India, and he loves coming for the conferences to meet knowledgeable people and exchange views with them. He also pointed out that conversations in India often take a philosophical turn, which exemplifies humanitarian values and that’s what HSE is about.

Talking about changing HSE scenario since he started, he said earlier the domain was only about systems, processes and engineering, but at present it’s very different and has managed to impact our lives. The awareness has increased and improved so much that people from the most unrelated fields are also curious about occupational health.

Referring to changing technological trends, Dr. Waddah said that new kinds of risks have emerged, which require risk assessment from varied mindsets. Hence, it’s becoming increasingly important to involve more people with varied mindsets and thought processes in order to transform into a highly reliable industry. Speaking of the need to have more platforms where different stakeholders can discuss issues pertaining to HSE, he thanked GAIL for playing the role of a leader in this domain and organizing the event which allowed for organizations across the oil & gas industry to discuss and deliberate on areas of concern.

Dr. Waddah concluded the speech with the thought that while technology is making life easier on many accounts, it’s also bringing a number of challenges and risks with it.

Ahmed Khalil, Manager, HSE & Fire, BAPCO

Mr. Khalil started his speech by thanking GAIL for organising the event, as not many organizations dedicate so much time and effort to events like these. He felt it was truly remarkable, and reflective of the leadership at GAIL. The company’s ethical values are reflected, as it clearly understands the value of creating a safe environment by investing in the event. The event will enable the employees as well as other delegates to gain knowledge from experts in the conclave, thus enabling creation of a proactive, safe and HSE oriented work culture.

Organizations like these are considered believers, who know from experience that investing in HSE makes business sense. They greatly contribute to employee enhancement, resulting in increased productivity. They also lead to increased efficiency, reliability and better business continuity. Without paying due attention to HSE, it is difficult to operate facilities in challenging environments.
He said that while to some the cost incurred on HSE may seem very high, in reality incidents are far more costly, and their cost far exceeds the cost of health and safety. Giving the example of Bhopal Gas Tragedy, Mr. Khalil said that health and safety should be embedded in an organization’s DNA, and those who do not consider these areas important ultimately perish.

Mr. Khalil remarked that for any organization to succeed, involvement of workers at all level is required, from senior management to factory workers. And he categorically noted that this is clearly visible in GAIL’s case.

Talking about changes in India over the last 20 years, he said that there is a remarkable shift in the way health and safety are perceived as well as practiced. The ultimate aim is that at the end of the day everyone should be able to go home to his/her family, and ensuring it happens that way is a noble cause.

Remarking on GAIL’s record for the year 2016-17, he said the fact that GAIL had recorded an incident free year was applause worthy. Concluding the speech, Mr. Khalil said that he would be happiest to share his knowledge and experience, especially if it could help avoid even one accident.

Subir Purkayastha. Director (Finance), GAIL (India) Ltd.

The Director started his speech with the thought that HSE is not just an operational issue but also has both economic and non-economic dimensions. Profitability of a business depends on various factors, many of which are not in our control. And especially today, in the oil & gas industry when the prices are not in our hand, a business’ operational costs have to reduce in order to make profits. HSE is an aspect which has both long term and short term dimension, hence deserves as much importance as areas like marketing, HR and operations.

Referring to GAIL’s record of accident free days, he said that time has come to look beyond this, and instead, to also calculate a return on investment on HSE. The expenditure incurred on initiatives pertaining to HSE should be looked upon as an investment, as it is likely to result in improvement of the overall bottom line of the business.

Talking about the Bhopal disaster of 1984, he said the repercussions of that incident can be felt even today. The incident didn’t merely have economic consequences, it also had social, environmental and especially health consequences, the impacts of which can be felt till date in form of genetic disorders. He
said the tragedy was a stark example of what could happen if enough importance wasn’t given to the HSE policies. Moreover, the cost of prevention is much lower than the curative action or rectification fee an organization might have to otherwise pay. He ended his speech with the words that impact of HSE is not limited only to the organization, and has to start with the individual himself.

**P. K. Gupta, Director (HR), GAIL (India) Ltd.**

Mr. Gupta said that there is a lot of integration between HR and safety, as both are closely interlinked. Speaking of human life, the Director (HR) said that it’s God’s gift, and in order to safeguard it at the workplace it’s necessary for HSE policies and HR to revolve around each other and evolve together. ‘Safety’ and ‘HR’ are closely related as ‘safety’ is less systems and procedures driven, and more about how these get translated into action as well as how you behave at workplace. Building on this concept further, he added that most accidents are caused by human error, and in an industry like oil & gas where we are exposed to hazardous components constantly, they understand the importance of building on the concept even harder.

Talking of tangibles, he said building a strong HSE culture is about constantly building on your knowledge, being conscious in and around the workplace and ensuring SOPs are translated into action. In building the organizational structure focused on HSE, it’s also important to ensure that the thought of ‘nothing goes wrong’ shouldn’t merely be confined to an individual, but should also be shared with others to help bring about an overall change. Drawing reference from the Hindu culture, he said that only those who can inculcate the knowledge first in themselves before preaching it to others are the ones who can truly bring about a change.

Talking about the safety at installations, he said it could be brought about only when the leaders are 100% committed to the cause and respect the safety management systems. He concluded his speech with the thought that everyone should try and lead by example, and the commitment should be visible in actions whether in workplace or out of it.
V.B. SANT, DIRECTOR GENERAL, NSC, India

Mr. Sant talked about the factors relating to human behaviour. He mentioned that human error is not the root cause of accidents, and that it was reported this way because it was easier to observe on the site.

Talking of the need to analyse accidents, he said that the main root causes for accidents are lack of compliance to SOPs, decisions taken in a work group and work environment at the workplace.

Giving an example of the accident in Gulf of Mexico, he said there was a lack of compliance with safety operating procedures. Similarly, in case of the NTPC power plant incident, there was a diversion from operating procedures.

He said there could be 4 reasons for this kind of non-compliance exhibited by the workforce – 1) an individual may have taken an uninformed decision not to comply with SOP at that point in time, or 2) while working in a group we may sometimes choose not to assert our opinion or ourselves out of hesitation or fear of being wrong, etc., or 3) the complexity of work
environment, both physical and social (at the workplace), or lastly, 4) organization and management at the workplace.

Another important aspect that he highlighted was the need to check if compliance to the standard operating procedures is sufficient to have world class safety, a process which is known as compliance behaviour. Contrary to this behavioural pattern, there also exists another form of behaviour called the initiative driven behaviour which helps improve workplace safety at a much higher level.

He concluded his address with the statement, “Let us not confine ourselves to only behaviour based safety, but also open conversations on activity based safety. Similarly, let us move beyond compliance based safety towards initiative based safety.”

RAJEEV AGARWAL, PRESIDENT (PROJECTS), PETRONET LNG

Mr. Agarwal spoke of the organizational culture which can be understood by what goes on inside the company to get work done, and becomes the parameter for defining safety culture there.

The evolution of safety culture has moved from merely encouraging usage of safe equipment till the 60s, to focus on employee awareness and training in the 80s, to the safety measurement system in the 90s and finally, to a focus on improving safety culture in the last decade.

He explored various themes of the determined perception of the safety culture, as enumerated below:

**Barriers undermining safety culture** are low management visibility in the organization, poor or ineffective leadership, unclear organizational structure, ineffective systems and procedures, wrong customs considered the norm, communication and ineffective feedback procedures, low engagement with employees/contractors and a state of unhappiness at the workplace.

**Status of safety culture journey** helps the organization evaluate the level of its safety standard with the help of tools like surveys, questionnaires, behaviour based surveys etc.

**Opportunity for improving the safety culture** is available in the form of leadership, systems and procedures, engagement of all stakeholders, empowerment of individuals, communication, feedback, competence and training, behaviour based safety, human factors, contractor management, just culture, learning culture, near-miss reporting, incident reporting, workplace observation, investigation, inspection and audits.

**Sustainability of safety culture** is achieved through effective leadership in the organization, effective engagement with the stakeholders, effective change management, effective systems, effective learning culture, effective inspection parameters, and checks and balances.

Safety culture in an organization changes but it takes a significant period of time to do so and requires efforts from all stakeholders.
Talking about the dynamic, uncertain macroeconomic environment today, Mr. Gupta said that problems like price volatility, competitive new technologies, uncertain energy policies, excessive reserves, worsening fiscal terms, climate change and supply chain management are only some of the major challenges being faced by most businesses in the oil & gas industry, and form part of every discourse. Now it is necessary that areas such as occupational health, safety, environmental risks and challenges be given a similar platform and equal weightage.

He said that one could easily deduce a major fact from history – whenever industries compromise on preparedness and diverge from standard practices (including safety practices), it has results in immense financial and social losses. Sometimes the repercussions have been big enough to result in forced closure of businesses. Thus, the theme for the current conclave was very relevant with the rapid growth in oil and gas sector coupled with continually increasing aspirations of society.

Defining culture as an amalgamation of knowledge, values, ideas and attitudes which characterize people within an organization, he said it was also important to keep pace with evolving technological advancements, safety regulations, rules and procedures which affect our everyday activities. He said that an organization with a good safety culture can be determined by its continuous quest for knowledge.

Mr. Gupta said that a good organizational HSE culture has 4 elements – system of nourishing sound HSE management practices amongst young employees, culture of ownership and responsibility by everyone on an everyday basis, culture of people taking care of themselves as well as others, and learning from others’ and own mistakes.

Talking of GAIL’s initiative in this regard, Mr. Gupta said that GAIL has taken various steps to ensure behaviour based safety with programs like observing monthly safety day and leveraging IT into HSE function.

He concluded his talk by saying that designing a framework and establishing it is a continuous process.
Panel Discussion

Role Of Leadership in Developing World Class HSE Culture

Moderator: Mr. Ramabhadran Srinivasan (Managing Director - APAC, DuPont Sustainable Solutions, Singapore)

Setting the context of the panel discussion with respect to role of leadership in HSE culture, session moderator Mr. Srinivasan said that people need to visualize the world class HSE culture in order to adopt it. He asked the panellists to describe what they felt was the one thing which defines world class HSE culture. Asking the panellists to draw from their rich experiences, he asked them about that one challenge they faced which posed as a barrier in bringing about their desired change. He also requested each of the members of the panel to share one golden nugget of recommendation which could help achieve world class excellence and transform the existing culture.

Panellists: Dr. Waddah S. Ghanem (ED, EHSSQ & CA, ENOC), Mr. Rajeev Mathur (Managing Director, MGL), Mr. V J Rao (Executive Director, OISD), Dr. Chitram Lutchman (Managing Director, Safety Erudite Inc.) and Dr. Rahul Dasgupta (ED, Corporate Affairs, Oil India)
On the topic of what world class HSE culture looks like, Dr. Waddah opined that the one size fits all approach can’t be used here, as all organizations are different, and HSE leadership culture is largely influenced by the organization’s risk taking appetite as well as where it is placed at a particular point of time. Considering that economic challenges are a subset of global challenges, one has to ask these questions – How do organizations work on maintaining its safety culture when there is a stress in the economic environment? Is question of safety culture, and leadership in safety culture a priority in such a dynamic context? Only when the HSE culture is a priority regardless of the economic uncertainty, can one say that the organization is highly committed to it.

Mr. Rajeev Mathur said one has to look for leadership, as it helps the stakeholders in moving towards fulfilment of its goals. From safety point of view, it’s important to ensure the organization achieves the goal in a safe, reliable and consistent manner. Safety leadership is also about leading by example and influencing other stakeholders.

Mr. V.J. Rao stated that the difference between the current HSE and world class HSE scenarios is due to the apparent insufficiency of the current HSE culture, wherein root cause of most incidents and accidents is complacency on part of people or non conformity to SOPs. Using an example of a bicycle on the road without reflectors and another vehicle on the road at a faster speed, he demonstrated the fact that multiple failures and fatalities might have happened due to non-conformity to the safety requirement, and also due to gap in knowledge regarding need for reflectors. In an organization, such failures occur because right attention isn’t given to safety requirements, and leaders need to be more proactive in dealing with these situations.

Dr. Chitram Lutchman said, “A good safety culture is one where leaders create an environment that encourages workers to do the right thing, the right way, every single time.” He said these are brought about if leaders guide organizations into setting certain required behaviours, which are – 1) creating a shared vision; 2) managing change and adapting to the changing environment; 3) demonstrating genuine care for the people; 4) astute listening skills; 5) willingness to change; and 6) measuring and steering towards the right things.

Dr. Rahul Dasgupta said that an organization must be a learning organization that strives for excellence, where management’s role becomes very critical. He said if an organization achieves excellence, it is an indicator of the fact that it has a strong safety culture. Giving example of an exercise initiated by Oil India Ltd, the whole company shared the vision of its management, and worked with the Board to translate it into reality.

Speaking about the barriers the panellists had faced while trying to bring about the desired change, Mr. Rajeev Mathur said the company should stick to the drill irrespective of the SOPs, but when there’s an external influence, leaders need to be proactive instead of being merely reactive, and be willing to move from a transcriptive nature to a more transformative nature.

Mr. V.J. Rao said that the attitude of believing one can cross the bridge when it comes is the reason behind many accidents, and is killing the organizational culture. He said any warning signals that are witnessed must be dealt with immediately and that business and safety targets should be integrated.

Dr. Waddah Ghanem said that while discussing safety leadership, safety programs were most important, and various other aspects pertaining to health, safety and environment should be taught to workers. He felt that very often leaders lack training, and therefore the first challenge is *upskilling the leadership*. Also, leaders need to understand ‘casualties’, as they often lack in that area. Another challenge is the failure of the HSE manager to communicate what is required and what needs to be done. Lastly, leaders must learn to accept responsibility and accountability.
Dr. Chitram said that the challenge in management is managing people, as different generations have different perceptions. Hence, one needs to question whether the leadership can satisfy all their demands. Leaders need to learn to embrace heterogeneity and different perspectives to the same thing.

Finally, the panellists were asked to give one golden nugget of advice of what one can do to achieve world class excellence and a transformational culture. Mr. Rajeev Mathur said what holds good one day, will definitely change tomorrow. We therefore need to prepare ourselves, engage people, discover what else is required to be done in order to excel in the future and bridge the gap to sustain ourselves.

Mr. V. J. Rao concluded with the thought that we need to understand safety better and thus have a stronger grip over safety.” Dr. Waddah concluded with the thought that one needs to plan talent management and understand how employees are identified, trained and promoted to leadership positions tomorrow. Their attention and prioritization of the safety culture in the organization ought to be major criteria for their promotion.

Dr. Chitram mentioned leaders must prepare and plan for engaging with the workforce and protect them since the organization depends on them for solutions in the future. Dr. Rahul said organizations should strive for excellence, and learn every day. In addition, communication and deliberation with individuals at all levels of hierarchy is essential.

“The Oil & Gas Conclave, organised by GAIL India was a stupendous SUCCESS by way of an unblemished laudable professional management in all spheres of the event. I believe that it is the First time in my country that one distinguished NAVRATNA company has organised HSE not only for his men but also for all the industries having the same business. - Dr. B K Sikdar, Dy. Director (Medical)/Dy. Chief Inspector of Factories (Medical) & Certifying Surgeon, State of West Bengal”
Nukkad Natak (Skit)  
*(an attempt to educate the masses)*

*Nukkad Natak* (skit) was performed by the theatre group *Abhigyan Nattya Manch*, which was based on the theme ‘Oil and Gas Pipeline Safety in the country’ and it was organized with the intention to not only entertain but also communicate the important message regarding safety precautions to be observed while living in an area close to oil & gas pipelines.

The play comprised of three separate stories which had been intertwined with each other to convey the message of safety. These three storylines were as follows:

- First act entailed the story of the *sarpanch* (village head) who decides to encroach upon a piece of land close to a gas pipeline and build a house, and subsequently dig in the area unmindful of the hazard to health, and without the requisite permissions.
- The second story was a tale of a family which is burning fire close to their house which is a mere 30 meters away from the gas pipeline. The story explain that not only is the area in the vicinity of a gas pipeline govt. property (and no one individual’s property per se), it is also very unsafe to light a fire so close to a gas pipeline as the gas is highly inflammable and volatile.
- The third story was a narrative of two thieves who mistakenly assume the pipeline to be an oil pipeline, and wanted to steal the oil with the intention of illegally selling it, and how a lady comes and tells them that it’s actually a gas pipeline and any crack in the pipeline would lead to gas leakage, which might result in an explosion.
Glimpses of Nukkad Natak (Skit) on Oil & Gas Pipeline Safety
The aim of this session was to discuss the role of line managers, and how HSE management systems can be successfully implemented through them. The session provided an overview of their role in integrating any organisation’s HSE culture as related to the job and personal factors of employees at work place, besides outlining competency tools for developing line managers.
The session was chaired by Dr. Waddah S. Ghanem. Currently the Executive Director of EHSSQ & Corporate Affairs at the ENOC Group in Dubai, UAE, Dr. Ghanem has published several technical and theological books and papers in the past 5 years including 4 books. He set the context by outlining the current challenges pertaining to HSE implementation through line managers.

Rajiv Soni, Group Head (QHSE), L&T Hydrocarbons

Mr. Rajeev Soni started his speech with the thought that safety professionals are like catalysts in the reaction and that the reactants were line managers. A catalyst was said to propagate in the positive direction and negate in the negative direction. Hence, the first question in the context of the session was determining who was accountable and responsible for the job, who was to be the person, and who does the job. The second question pertained to how HSE professionals could facilitate the process and act as the catalysts for the line function’s requirements. A concern was expressed that top management does not possess enough knowledge about basic processes like work safety permits. He also said that line managers must be trained in the basics of safety, risk assessment and planning for safety proactively. In addition, risk areas of business needed to be identified and line managers must be educated on top three risk areas. Improving technical competency of line managers is also very critical.

Hari Kumar, Director (HSE) ENOC

Mr. Hari Kumar talked about how line managers are important throughout the life cycle of the business and that they may not be neglecting safety intentionally since they are under a lot of pressure. He noted that the main challenge lies in pushing the line manager into a dilemma of where to focus and how to prioritize, increasing the risks of committing mistake at some level. Strong message of ownership must be translated by CEOs across all functions to ensure HSE in all spheres of activities. In addition, he reported that all five causal factors for accidents as analyzed from the OGP database (capturing accidents and fatalities of 16 companies across 30 years) can be linked to the line managers’ function. The causal factors are lack of supervision, lack of competence, not learning from lessons, inadequate risk assessment and not communicating, which all go back to the line manager.

The speaker shared a very pertinent inadequacy pertaining to job responsibilities. A safety manager is seen to take up a lot of the line managers’ work and hence indirectly promoted shifting of responsibility and complacency amongst the line managers. He pointed out that we need to look at how we are assigning the KPIs and how we are holding them accountable for their jobs with respect to safety. Mr. Hari Kumar suggested that there is a need to look at right competency framework for the line manager,
both functional and behavioural. Functional competency refers to technical aspects and behavioural competency pertains to leadership, influencing skills, cultural practices, ethics and so on. However, he noted that it is not enough to have just these two competencies, one must also develop contextual competency, which relates to how you apply knowledge during a crisis. He concluded by recommending 5As to be adopted on road to safety – attitude, awareness, analysis (of risks), acceptance (of failures/mistakes) and act.

K. Ananda Rao, General Manager (HSE), HPCL

Mr. Ananda Rao started talking about the significant role line managers play by observing production targets, minimizing shutdown time and ensuring availability of plant/factory requirements, besides managing staff, material and other resources. Often, line managers are the ones to suffer due to production targets and accidents. He spoke about major accidents of the past such as the Bhopal gas incident and lessons learnt from them. He re-iterated the importance of educating the line managers to observe compliance and regulations. Importance of management systems rests in the fact that they indicate the processes and procedures at all levels, structural hierarchy, documentation control and management which becomes the process for adopting safety culture into our organizations. The leadership culture and perception of employees as stakeholders should be encouraged, thereby ensuring that safety becomes everyone’s priority and a core value. Front line manager is a critical link between accident and response as he is the first person to prevent accidents and can guide the people with instructions on how safely activities can be undertaken to prevent accidents or respond during contingencies.

He went on to define the responsibilities of the line manager, and to focus on minimum risk on execution. Line manager must focus on the goal of zero accidents but in the meanwhile, also encourage near-miss reporting. Talking about the Henrich Triangle, Mr. Rao noted that near misses cannot be taken lightly as it has been established that for every 300 near miss accidents, there could be 29 minor accidents, and one major accident. He concluded by establishing the importance of counselling, rewards and recognition in order to boost behaviour based safety in any organization.

S.P. Garg, Chief General Manager (HSE), GAIL (India) Ltd.

Mr. Garg started his session by noting that effective safety culture is obtained through putting together ‘something an organization is’ and ‘something an organization has’. Former consists of beliefs, attitudes and values of its members in the pursuit of safety and latter refers to company’s policies, controls etc. Both combined lead to a good safety culture in the organization. Focusing on the role of leadership, he said that behaviour of leaders can contribute in establishing a positive HSE culture and impact the ability of employees to take ownership on safety roles. Elaborating on the role of line managers, he mentioned that their role is much less visible and more accessible as opposed to the role of top management (where the role is more visible and less accessible). Most people on ground are in touch with the line managers and hence they are the people who influence tasks/procedures and exert maximum influence.

Talking about latent and active failures in observing safety, he used the example of ‘swiss cheese model’ to explain that an accident occurs when all the deficiencies (holes in cheese) get aligned. This is why the role of line managers and workers at the ground becomes very important, so that the deficiencies do not add up. Four of the five root causes identified by the OISD technical arm pertain to human error and
behaviour, which relate to people who are working on ground. One of the biggest problems faced by line managers is the difficulty in interpreting the needs of staff and senior managers. Another challenge in many organizations is that safety, operations and ISO manuals don’t interact with each other and the HSE professionals’ role to integrate all three becomes very critical so that the ground staff doesn’t get confused. Additionally, a line manager should demonstrate ownership and responsibility. Aligning the key performance indicators – both leading and lagging, with the associated operating manuals is critical. Finally, Mr. Garg talked about the importance of building functional and behavioural competence for line managers.

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It was very well organised program with impressive speakers. Well done & keep it up!
Kamal Singh, Executive Director, UN Global Compact Network India
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The session focused on the need for maintaining occupational wellness in the oil and gas sector and beyond. The speakers shared their knowledge and experience on statutory provisions related to occupational wellness and the role an organization is required to play. Various important areas like occupational hazards and ways of mitigation, predictive alarms and prevention of future occupational diseases etc. were deliberated upon.
Dr. R. Rajesh, the session chair, started the session by highlighting the need and importance for organizations to focus on health and wellness of the employees. He then went on to introduce the eminent panel of speakers before calling upon Dr. Rachel and Dr. Spyridon Trous to speak on the topic.

Dr. Spyridon Trous & Dr. Rachel Trous, BAPCO

Dr. Rachel Trous and Dr. Spyridon Trous from BAPCO presented an enlightening session on wellbeing, both at the work place and in personal life. They said that concept of well being has multidimensional character. It is the balance between resources and challenges of the physiological, social and physical status of each individual, and can be associated with numerous health, job, family and economically related benefits. The duo described wellness economic action plan. They described human behaviour as the array of every physical action and observable emotion associated with individuals. The session witnessed a novel tool in the form of ABC Chart, which is an observational tool that allows us to record information about a particular behaviour. Here A refers to antecedent/event that occurred before the behaviour was exhibited. B stands for behaviour and C stands for consequences. Having identified the triggers for behaviour, we can make ABC chart. The couple discussed two fundamental principles to achieve harmony and overall wellbeing – positive behaviour, and the ability to embrace and respect diversity. Dr. Rachel shared the ultimate recipe for healthy life using ingredients such as joy, exercise, humour, work, friendship, positivity, love, forgiveness, smile and family life. Dr. Spyridon Trous concluded the session by saying that no company in the world can be driven without humans, and therefore management need to invest in them.

B.K. Sikdar, Dy, Chief Inspector of Factories (Medical & C.S.), Govt. of WB

Dr. Barun Kumar Sikdar spoke on the topic of occupational hazards and its mitigation, specifically in the context of oil & gas industry. He explained the process of formation and extraction of hydrocarbons. He explained the operations and complexities involved therein across upstream, midstream and downstream oil & gas. Petroleum products are usually grouped into four categories: light distillates (LPG, gasoline, naphtha), middle distillates (kerosene, diesel), heavy distillates and residuum (heavy fuel oil, lubricating oils, wax, asphalt). He emphasised on the importance of the medical officer knowing the petroleum processes so that he/she can gauge the occupational hazards. He elaborated on the various forms of hydrocarbons affecting the target organs of personnel involved in refining/gas processing operations and statutory provisions therein. He also narrated the relationship of health affecting the business. He talked about various adverse outcomes of petroleum process such as toxicity, exhaust, acid rain and oil spills. He talked about benzene, toluene, hexane, propane, butane, xylene, naptha, pentane and multiple health hazards associated with each. He explained the important of exercise and how it increases the ventilation rate enormously, which increases tolerance towards toxic environments. He also covered hazards
associated to LPGs, toxic gases and vapours, and corresponding first aid, besides noting the individual clinical assessment and action plan for mitigation. Occupational health hazards can be addressed depending upon the nature of raw materials/chemicals being used, produced, transported and stored including the waste products, if any, in all the three main segments of the industry. He concluded the session with a set of recommendations such as formation of a team of professionals in every company for identification, recognition and assessment of different working environment. The goal is to make sure that the workers are healthy and uninjured, comfortable and safe as well as productive.

Dr. Chandra Tripathi, General Manager (MS), GAIL (India) Ltd.

Dr. Chandra Tripathi defined wellness as an active process of becoming aware of making choices towards a healthy and fulfilling life. Wellness is more than being free from illness; it is a dynamic process of change and growth. She quoted six dimensions of wellness, devised by Dr. Bill Hettler – physical, social, occupational, intellectual, spiritual and emotional, where occupational wellness is the topic of utmost interest where workplace is concerned. Refering to an ILO report, Dr. Tripathi shared that out of every 15 workers, a worker dies due to work related diseases or accidents. The human cost of their daily adversity is vast. Economic burden of poor occupational safety and health practices is 4% of global GDP per year. She said occupational wellness is very important in our HSE culture as our employees deal with hazardous materials. She talked about corporate wellness programs like ‘GAIL Ayush’ and GAIL health index matrix. Additionally, as part of the HR policy, both male and female employees can avail child care leave to manage their young ones without giving up on their active career. Also, employees can avail disability leave for up to 3 months in case of physical illnesses, injuries due to accidents, both in and outside the work place. While noting other initiatives, Dr. Tripathi mentioned that various awareness lectures and health camps for all employees and contract workers, counselling and monthly check-up session for high risk group of employees, and employee sensitization through electronic media, posters etc. are undertaken. She ended her presentation by discussing a case study and a sanskrit verse which says, “May there be wellbeing in all, may there be peace in all, may there be fulfilment in all, may there be auspiciousness in all.”

Dr. Manu Saksena, Chief Medical Officer, BHEL

Manu Sexena said that holistic wellness approach has nine dimensions – physical, emotional, intellectual, creative, environmental, financial, occupational, social and spiritual. He explained each and provided tips to enhance each area. He also delved into occupational wellness index and shared a questionnaire for testing it. Scores were assigned to various types of responses and final score could provide significant insights into the state of wellness, and what must a person do to further improve. Poor score may imply that one needs to change his/her job, average or moderate score may indicate that focusing on some areas may restore wellness and higher than that would indicate that the individual has adjusted to the work conditions very well. He explained that occupational wellness means successfully integrating a commitment to your occupation into a total lifestyle that is satisfying and rewarding. The development of occupational satisfaction and wellness is related to your approach toward work. Lastly he showed a movie on relevance of occupational wellness in public sector.
The session witnessed HSE experts from oil & gas industry share their knowledge on provisions for effective contract safety management. The talks included deliberations on areas such as criteria for selection of contractors, periodic safety performance review, loan of contractors; owners’ responsibility to manage contractor safety, etc. It also addressed the development of effective HSE management especially in the business environment which has thus far relied on outsourcing.
Mr. Khalil opened the session by briefly talking about the challenges faced in contracted services, and that prequalification of contractors and their training could go a long way in ensuring safety. He also highlighted the need to understand the contractors as well as the obligations towards them. He then went on to introduce the panellists and set the context for the session.

Dr. Chitram Lutchman, Managing Director, Safety Erudite Inc.

Dr. Chitram Lutchman started his talk with a trivia about exponential rise in oil consumption over the last decade. He shared some more figures pointing towards the state of workplace safety. About 2 million people die and 250 million are injured everyday due to workplace accidents, 80-90% of who are contractors. He went on to talk about the evolution of health and safety, starting from occupational health to OEMS (Operations Excellence Management Systems). He touched upon some oil spill accidents like Exxon Valdez, spill of Gulf of Mexico and how they affected the oil and gas industry. He highlighted the fact that contractors look after 80% of the operations and that is why it is important to take care of them. He ended his presentation with the concept of a Simplified Contractor Model. This model comprises of defining a clear scope of work for the contractors, assessing not just their qualification, but also their HSE capability and monitoring their performance. After close-out of project, performance evaluation and review should be done, based on which, contractor profile should be updated for future reference.

M. P. Jain, Chief General Manager (CO Quality & HSSE), EIL

Mr. M. P. Jain started his presentation with the discussion on various challenges/limitations associated with contractors such as migratory nature of work, diversity in languages and repetitive methods of awareness programs. He then discussed a short case study about a partial pressure tank, which was attached to the floor using only 12 bolts instead of required 14 bolts. During the air test itself, the head flew off leading to injury of two workers, resulting in labor unrest for a few days. He explained how this outcome could have been easily avoided. Mr. Jain also elaborated on HSE figures of different zones of India. Severity was found highest in northern India, followed by south, west and then east. These differences could be attributed to cultural differences, variation in levels of schedule pressure and so on. Such analysis could be used in designing training modules.
D.P. Nanda, General Manager (HSE), GAIL (India) Ltd.

Mr. D.P. Nanda started his presentation with a thought provoking quote by Trevor Kletz, “If safety is expensive, try an accident” and went on to talk about his contribution to safety, including his work on hazards and operability (HAZOP) concepts. He then discussed various parameters of evaluating contractors like awareness, competence and so on. Mr. Nanda provided holistic insights into contractor safety management covering all dimensions from contractor performance, incident prevention programmes, safety targets such as achieving zero incidents, enabling cultural changes and how employers can support contractors in creating a safer ecosystem to work. He elaborated on the need for supportive safety systems and documents like work permit systems, onsite emergency plans (ERDMP), roles & responsibility manual, fire protection manuals and HAZOP study. He emphasized on pre-contract and post contractor processes. He emphasised about the KPIs in contractor safety, including performance expectations.

Mr. Nanda touched upon the success of contractor safety program with a wide variety of examples from projects to O&M installations. He also spoke about other aspects of contractor safety including monitoring and control mechanism, gap analysis, trainings and so on. He concluded by discussing the importance of bringing about incremental changes in HSE with a reward and penalty system.

A.K. Gupta, Chief General Manager (CO-HSE), IOCL

Mr. A.K. Gupta comprehensively covered the subject of Personal Protective Equipment (PPE) during his session. He started by talking about how PPE comes at the end in hierarchy of controls and that it is the most neglected safety measure. He explained how there is no proper estimation of the number of PPEs required due to the huge number of work permits. This led to IOCL determining to develop PPE guidelines to assist the individuals issuing permits or ensuring compliance. The main attributes of the guidelines are that it is user friendly and that there is clarity regarding positive as well as negative features of PPE. He also touched upon the limitations of PPE, the importance of maintenance, shelf life and its safe disposal. Commenting on the quality of PPE, he noted that though PPE is ISI marked, it actually is not ISI complied, so a person who is not an expert will not know how to check the quality. He then emphasized on the common misunderstanding related to PPEs like hygiene issues, maintenance, hazards and so on. Concluding the session, Mr. Gupta spoke about how IOCL is taking initiative to spread awareness about PPEs across all its operations. Presently, PPE matrix has been displayed at 25 locations which, going forward, will increase to up to 200.

I benefitted tremendously from the presentations of the various speakers and panels. Overall, I felt the Conclave was a tremendous success. I also believe all participants took away many nuggets of knowledge that will be value added in their personal and work lives. - Chitram Lutchman, CEO, Erudite Safety
The session focused on working in the high pressure environment of hydrocarbons with its inherent risks and the importance to understand and manage the risks workers face. It also focused on need to involve technologies that reduce risk across all operations – upstream, downstream and midstream, as well as identifying safety challenges, and intervening before incidents occur, thereby making oil and gas industry a safer place to work.
Talking about the relevance of the session topic, Mr. Vijh stated that considering the rate of growth in India, energy sector has become more critical than ever as growth depends on the availability of energy resources. This scenario has established the importance of HSE not only for safeguarding workforce or environment but also a management tool.

Dr. S.C. Sharma, Former Officer on Special Duty (Energy) GoI, Founder Member & Chief Commercial Officer, Petronet LNG, Group GM ONGC

Dr. S.C. Sharma started by stating that HSE is, by far, the most important role in the oil & gas sector and is highly susceptible to accidents. Taking stock of major accidents over the last 20 years in this sector, he shared some of the most dangerous incidents and said that we have lost nearly $5-6 billion in these accidents. Therefore, we need strong HSE culture in place, requiring every company to maintain large number of HSE professionals. Commenting on the future of oil & gas, the speaker said that it will be difficult to predict the scenario in 2020, but it is certain that electric cars will significantly replace oil cars in the next 20 years. Growth in the production of shale oil & gas and renewable sources of energy, besides focus on energy efficiency, will define future energy landscape.

He noted that India and China are contributing to nearly half of the global energy demand growth, with 2016-17 growth recorded as 5.4% and 1.3%, respectively. In terms of crude oil price forecast, the speaker shared that WTI Oil price is expected to be at $55/bbl in 2018, hinting at the fact that disagreement on production cuts will continue to be an challenge within OPEC. As India tries to shift to a gas based economy, natural gas demand will reach more than double in the next 5 to 10 years.

Vidyaa Krishnan, Managing Director (Partner), Accenture Management Consulting

Ms. Vidyaa Krishnan talked about digital technology and its importance in the HSE sphere during her session. She started her presentation by sharing that investing in technologies can fetch as much as eight times the average expected RoI. She highlighted that the biggest advantage lies in the fact that there has been tremendous growth in the availability of open source softwares, which are widely available and accessible. Additionally, she mentioned that in many cases, one time investment in technologies like sensors continue to fetch returns for years together, wherein the aforementioned 8 times RoI seems like a conservative number. She then addressed the question of calculating the return on HSE. First way is to estimate equipment effectiveness. HSE index is highly correlated with all the production parameters. One can measure the safety incidence correlated with production and then determine what the impact on total output is.
Next she explained what the term ‘digital’ dimension encompasses. It refers to a process whereby an object or equipment gathers multiple information or data points. For example, a fit-bit wrist watch and mobile phone collect and display a lot of information about the wellbeing and other health attributes of a person. The other important digital trait is the ability to process data to make it intelligent and usable. She discussed various cases like digitally enabled safety using video analytics, digital plant and sensor tags for workers, etc. She discussed how technology can integrate multiple business processes spread across multiple locations and provides a single point to monitor, control and manage, saving significant time and cost, besides boosting productivity.

M.K. Sogani, General Manager (O&M – CO), GAIL (India) Ltd.

Mr. M.K. Sogani focused on how GAIL has been managing safety through new technologies in pipelines during his session. To begin with, he provided a detailed account of GAIL’s operations and how it is striving to transform India into a gas based economy. Moving to the primary focus of the session, the speaker discussed that safety and security must entail efficient operation, best maintenance practices, environment management, stakeholder management, adopting state of art technology, and so on.

Keeping these aspects in mind, GAIL has made significant investment to integrate technology with its safety and security agenda, particularly for its pipelines. GAIL is utilizing the GPS tracking solution for tracking of patrolman’s movement along the pipeline route to improve the effectiveness of line patrolling for which a centralized GPS/GPRS based tracking of foot patrolling personnel has been implemented for various locations. Patrolling of NCR region pipelines with GPS device is covered under recently awarded integrated security contract. Close circuit TV cameras have been installed at all the SV/IPs and terminals, which are being monitored centrally from respective P/L maintenance bases.

Additionally, mapping of all pipelines in GIS platform by field work for survey/data collection was carried out and a web application was developed and hosted on GAIL intranet containing all pipeline related information along with satellite imagery, cadastral maps, etc. Geo-database of entire pipeline network has been online, covering total length of the 2,033 km of pipeline across seven states. A total of 300 CCTVs have been installed in 139 stations along with 10 LCRs operated by one command and control centre. There is an online analyzers integrated gas quality monitoring system in place as well to ensure safe operation of pipelines.

Among other initiatives, GAIL is monitoring H₂S, moisture, methane, etc. using various analyzers and leak detection technologies. It has also been proactive in the introduction of new technologies such as electrical field mapping, xli–spectrum system for above ground pipeline inspection, stress concentration technology (sct), etc. Mr. Sogani spoke about the enterprise-wide software application in the form of centralized pipeline integrity management system (CPIMS) implemented, which comprises various modules, namely database module, threat & risk assessment module, pressure testing module and so on. Further, real time monitoring is enabled by the pipeline intrusion detection System (PIDS).

He shed light on various other campaigns and initiatives run by GAIL including the Sahyogi Scheme, training workshops in association with NACE and ASME and numberous awards & recognitions to encourage commitment to safety.
J.C. Sekar, CEO, Acuizen Technologies

Mr. J. C. Sekar spoke about the current business environment referring to it as VUCA – Volatile, Uncertain, Complex and Ambiguous. He defined it to mean things which change so dramatically and where pace of change is so high that nothing really works in order. Companies the world over are responding to these challenges by cutting down costs, majorly in the form of laying-off employees and outsourcing jobs to contractors. This trend is opening windows to many kinds of risks, of which EHS risk stands out, especially with increasing number of vendors and contractors. In order to minimize these risks, various controls are put in place, whose effectiveness depends on three factors – engineering, education and enforcement. Focusing on education, Mr. Sekar said that it refers to training professionals, as well as ensuring that it converts into effective learning. The three key challenges in this context are attention, retention and application. He noted that while there is a learning curve, we also have a forgetting curve. In order to keep knowledge alive, we need periodic reactivation. Unfortunately, most training sessions focus on provision of knowledge but not retention.

Living in the times of big data analytics and artificial intelligence, it is imperative to ensure that controls placed are enforced effectively to ensure that knowledge results in application. Through case study of how Acuizen worked with a Singapore based EPC firm to address the challenges of both education and enforcement, Mr. Sekar explained technology was used to curate and make information available in capsules which were easy to read and refer to, along with features such as geo-tagging and time stamping. Breaking down of information into small capsules presented in modular, contextual and multi-media rich formats allows micro-learning which boosts retention. Tracking the place, time and personnel involved in a certain activity ensures accountability and provides evidence of conformity. This aids management of risk controls and supports supply chains.

"Excellent overall experience in respect of technical discussion, motivational speech, conclave location & socializing over beautifully arranged lunches & gala dinner. Value addition by listening to eminent speakers of diversified fields. – Kaberi Kakati
Designation:-Deputy Manager (Chemical,) Brahmaputra Cracker & Polymer Limited."

"This Oil & Gas HSE Conclave was brilliantly executed by GAIL. I cannot appreciate enough the initiative of bringing thought leaders of global repute together to deliberate on the most critical issues impacting the hydrocarbon sector. The industry is already keenly waiting for the next edition. – Alok Raj Gupta, Founder & CEO, EnvEcoLogic"
In this session practitioners from industry shared their knowledge on the methodology adopted for internal benchmarking, key HSE performance indicators (leading and lagging) worldwide, comparison with world HSE standards, and interpreting the benchmarking results in HSE improvement in organisations.
Mr. Yasir Ahmed, the session chair, explained benchmarking as the process of identifying the industry best practices, and then comparing own practices with these standards or benchmarks. Explaining its importance as a standard matrix of measurement, he said it can be used to monitor the direction the organization is taking, especially in thematic areas such as HSE.

Hari Kumar, Director (HSE), ENOC

Mr. Hari Kumar started his presentation with the phrase – what gets measured gets done, emphasizing on the importance of reporting data or measuring performance of the organisation. This is called ‘management by objective’, as propagated by the management guru Peter Drucker, which aims at making business efforts result oriented. Measurement is essential in all phases of a project starting from engineering, building to operation. One of the important things that he highlighted is the fact that we focus on measuring the past in the form of outcomes. However, our approach should be future oriented and focused on predictive monitoring. The focus should be 80% on the proactive indicators and 20% of the reactive indicators. The gap between statistics and the true safety culture must be made clear.

He talked about various organizations providing benchmarking information for the oil and gas industry like OGP, OCIMF, LASTFIRE and UK energy institute to name a few. He talked about the need of KPI for both leading and lagging indicators. He also emphasized on integration of KPI indicators and HSE parameters with the organizational dashboard to have a higher impact. Mr. Hari Kumar explained the need to broaden the base of our measurement to be included in processes, SOP, corrective actions etc. He stated that it can be understood from OGP’s benchmarking analysis of last three decades how LTA rate has reduced from 1.2 to 0.27. This highlights the benefit of measurement. It allows us to learn from the past and develop future programmes.

Krishna Sambasivam, Head (HSSEQ), Vedanta Cairn

Mr. Krishna Sambasivam focused on the subject of internal benchmarking of safety performance. He shed some light on explaining the concept of benchmarking and how different types of indicators (relative or absolute, qualitative or quantitative) can be used, using examples of agencies such as OGP, Soloman, British Safety Council and so on. Benefits of benchmarking include performance evaluation, setting targets and visibility across organizations and so on. He expressed pity on the fact that we have a limited set of standard indicators across the industry in external benchmarking and most are more reactive in nature. There is an opportunity to develop more number of standard indicators that would also enable comparison at regional and global levels. He provided an insightful understanding of what internal benchmarking entails vis-à-vis external benchmarking. He, however, noted that more scope to slice and
dice data in internal benchmarking generates a potent risk of customizing data to our comfort, making the exercise counter-productive.

Mr. Sambasivam discussed various factors which can play an enabling role in undertaking the benchmarking exercise. These include leveraging technology (platform/tools/softwares), defining leading and lagging indicators, defining KPIs to measure relevant improvements and focus on most important categories first. He finally noted some very critical caveats to observe such as not stopping at just measuring but also analysing data to generate knowledge, data gathering shouldn’t ever stop but must be an ongoing process along with gap identification, overlapping of KPI’s should be avoided and so on. He concluded with a very meaningful thought, “Go deep dive when everything is fine. Define a new normal.”

Ramesh Raja, Lead Auditor & Technical Evaluator, DNV GL

Mr. Ramesh Raja started off his presentation with a very relatable example of how we bear in mind mileage performance before buying a Maruti vehicle, which basically reflects the concept and importance of benchmarking, encompassing data records, incidence, observations and assessments. Further elucidating the concept, he said that benchmarking is nothing but organization’s internal process improvement and comparison with best in class, learning and moving ahead. Holistic benchmarking is required to be carried out at three important levels, namely technical performance (risk models, designs etc.) operational performance (management of change, policy etc.) and, by far, the most neglected is organizational performance (competence etc.). He emphasized on the management of key performance indicators. Mr. Raja shared some thoughts to deliberate going forward. For example, after OSHA or HAZOP, there is a further opportunity to benchmark dimensions like monitoring and controlling. The speaker noted that HSE performance benchmarking starts from design data, process performance data and data from work processes. This continues into maintenance of records, performance reports, management system audits, events investigation, corrective actions and finally compliance.

I am very impressed with the quality of the event, quality of speakers, participants and arrangements. This was truly a professional development prorgamne and one that not many organizations would invest time and money in. This clearly show how committed and passionate you and Gail leadership about advocating and sharing HSE best practices. I have thoroughly enjoyed it and managed to network with a lot of good people. - Ahmed Khalil, Manager, HSE, BAPCO
The objective of this session was to share experience in the field of inbuilt fire protection systems, passive and active protection systems, and their application to control the hazards arising from fire risks in its initial stage by understanding latest trends in fire protection philosophy adopted across the sector.
Dr. Mishra, the session chair, spoke about the need for more sincerity and focus in investing in fire safety management. Setting the context, he expressed his concerns over various aspects of management, processes and technologies outlining the present fire safety practices.

Ahmed Khalil, Manager (HSE), BAPCO

Mr. Khalil started the session by giving a holistic picture of vast and extensive operations of BAPCO. He went over various major incidents such as those in Kuwait or at the Flixborough chemical plant, Bhopal Union Carbide factory, Pipe Alpha or the Bunce Field Fuel Depot fire. Common set of reasons which he identified leading to such accidents included poor planning, lack of coordination with local authorities, not adhering to the best design practices, absence of subject matter experts, lack of process safety system, aging assets and poor preventative maintenance as well as asset integrity management and so on.

Further analysing other inadequacies leading to major accidents, Mr. Ahmed counted additional factors such as poor investigation/root cause analysis, passive involvement of upper and middle management, absence of management of change, outdated standards and operating procedures, to name a few. There is a need to have robust response and safety plans more than ever because current challenges like local and international compliances, impact of social media, stakeholder involvement and overall competition level are intensifying. As a response, we need to have an effective emergency and crisis management system in place, build close coordination with local authorities and mutual aid organizations, conduct regular audits of fire and emergency response systems, upgrade equipment, and update systems and procedures. Additionally, it is indispensable to deploy resources who are adequately trained and experienced, besides ensuring that continuous training is imparted periodically.

The speaker provided insights into business resilience and importance of developing both defensive resilience (emergency response, business continuity etc.) as well as offensive resilience (ERM, compliance management etc.). He discussed the need to adopt incidence management tools such as ICS or Incident Command System. ICS deals with organizations built around five major functions which are applied to all incidents, large or small, making it very relevant and effective. Lastly, he spoke about three different levels of incident classification and expected response for minor, serious and major accidents, respectively.
Narayan Chaudhari, VP (Safety & Operations Risk), Reliance Gas Transportation

Mr. Narayan Chaudhari talked about fire safety management in hydrocarbon processing industry and started off the session by discussing the need for skill enhancement for firefighting staffs. Skill enhancement of these personnel must be undertaken through training, competency assessment, emergency response preparedness etc. He noted that fire safety management is the integrated part of HSE management system, stressing upon the fact that fire safety principle states that every fire is preventable. The basic objective is to prevent loss, primary containment and to minimize damage in case of fire.

Risk identification and prioritization are very important, besides having F&G Detection & Employee Alarm, Emergency Response and Control Plans in place. Equally important is to ensure that all relevant personnel are trained and oriented with respect to these response and control plans. Further elaborating the response strategy, Mr. Chaudhari explained the need to identify the approach whether you are going to have offensive or defensive strategy or managerial strategy for a particular incident, working together with external agencies, etc. Finally, management review and improvement systems such as CAPA (corrective action-preventive action) must be diligently observed.

L. Krishnan, General Manager (HSE), Vedanta-Cairn

Mr. L. Krishnan primarily discussed the Buncefield incident at Hertfordshire, UK, where the total losses crossed $894 million. Legal fees for Chevron and Total for civil claims came out to be around £58 million, besides causing severe air and ground water pollution. There were 43 reported injuries and hundreds of homes were evacuated, while many other houses were completely destroyed. Explosions were heard 200 km away and were audible as far as Belgium, France, and the Netherlands. The root cause was Level Indicator failure on Tank 912 (manual gauge was stuck) and High Level Alarm failure. Key recommendations related to safety critical equipment (SCE), time and resource allocation for process safety, auditing systems, hazard management competence, and board level involvement. Major HSE and fire risks are identified through HAZID (Structured What-If/ SWIFT), QRA (Quantitative Risk Assessment), FERA (Fire and Explosion Risk Assessment), and Qualitative Risk Assessment. He discussed preventive barriers and principles of fire protection, and active/passive fire protection systems.

The speaker explained that there must be a fire protection design and installation in place, which starts at the grass root level (at the design stage), then developing active and passive fire protection systems and finally installing, commissioning and maintaining these systems. Mr. Krishnan shared that Cairn is diligently working on developing various tools and systems for fire emergency situations.

Mr. P K Agarwal, DGM (F&S), Indian Oil Corporation

Mr. P K Agarwal provided a glimpse of how all critical systems are in place at all Indian Oil Corporation facilities and that number of fire and other incidents have come down over the years. He highlighted the fact that even a single incident in the oil & gas sector causes an uproar and fuss amongst public. They keep on highlighting the incidents and finding faults. He further noted that, unfortunately, the success stories and good initiatives of controlling fire incidents are not given any special treatment or highlighted with similar vigour.
Citing example of the Jaipur fire, he explained that there was no equipment failure and that the personnel in charge did not lack in any competence, skill or training, but just the act of overconfidence led to the accident. There was a 44 minute between fire and the linkage, which should have been enough time to take action, but this time was lost. This highlighted another facet that certain critical areas need more resources and manpower. Finally, Mr. Agarwal emphasized on scaling up investment on fire protection equipment.

I thoroughly enjoyed it and learnt many things…..I was very impressed with the senior leadership team in general - from operations, engineering, projects, HSE, HR and finance from GAIL who committed themselves to the 2 day event. A true reflection of GAIL’s leadership in safety and HSE. - Dr. Waddah S. Ghanem Executive Director, EHSSQ & Corporate Affairs, ENOC
Day two began with Mr. P.K. Gupta, Director (HR) GAIL (India) Ltd. addressing the delegates, who delivered a very short but lucid speech highlighting the main events of day one, running through the agenda for each session and the key ideas and deliberations for each of them. While he congratulated the participants for making time for the Conclave in their busy schedules, his main emphasis was on students who took part in the conference proceedings. Indicating for the proceedings to begin for the second day, he concluded by saying, “…more than anything else we are all here to learn and let us all remain learners”.

Panel Discussion

Aligning HSE Management & Business Continuity

Panel Moderator: Hari Kumar, Director, EHS, ENOC

Mr. Hari Kumar, while opening the panel discussion and giving a brief description of the concept of Business Continuity Planning, said that BCP talks about how to make alternative arrangements to provide basic services that ensure the business continues to function even in face of any major disruptions, and the session looked to highlight how BCP could be integrated with HSE. He laid down the following questions as the premise for the panel’s deliberations – Where does business continuity set lie? Is EHS important for business continuity or business continuity a part of the EHS management system? The panel debated these aspects and also ways that the business can continue and be resilient.

Panellists: Dr. Waddah S. Ghanem, ED, EHSSQ & CORPORATE AFFAIRS, ENOC; Dr. Chitram Lutchman, MD, Safety Erudite Inc.; Srikrishna Sambasivam, Head, HSSEQ, Cairn India, K.K. Nayak (GM, HSE, Cairn India)
Dr. Waddah, expressing his views on the topic, said that in the oil & gas industry, businesses are increasingly getting integrated and becoming part of a supply chain. And because of it, the supply chain is as strong as its weakest link. If certain businesses in this supply chain can’t give assurance of continuity, then the scale of loss is very big. For example, a scenario like potential refinery shutdown, any losses either upstream or downstream may result in disrupted supply of the crude oil, inability to ship in time, and adversely impact the crude oil price. Thus, both HSE and BCP are two sides of the same coin, which means that any risk in HSE is related to Business continuity. Discontinuity of businesses also affects national resilience. For example, in case of any discontinuity in critical services like supply of LPG, kerosene and other fuels, it becomes an issue of national interest since it not only affects the oil marketing companies in particular, but would also impact the people. Therefore the integration of business continuity planning and HSE management is essential.

Here, Mr. Nayak spoke about how Cairn India is increasing their preparedness to manage risk and how they are protecting their business continuity. The company’s risk management department is working actively on this front. This includes defining their top 10 risks, their mitigation factors and benchmarking all these risks. Also, these risks are continually updated with change in priorities and business plans. The company currently produces 28% of the India’s domestic crude oil and has plans to increase their production to about 50% to contribute to Prime Minister Modi’s Vision 2022. They have a plan to grow phase by phase and are taking risk management of associated risks into account as well.

Talking about how the concept of BCP came up, Dr. Chitram said it was after the global epidemic of SARS that swept across the globe crippling businesses that a need was felt to devise a system with the intent to keep businesses running to meet basic needs of society even during unforeseen catastrophes like a big strike in the oil & gas industry, or a terrorist attack, or loss of power due to hurricanes impacting the running of power grids, or an attack on cyber security impacting the internal communication systems. He mentioned that BCP is a part of the emergency planning, and essentially includes four steps – 1) Understand the potential ‘Risks’ in business, 2) Increased ‘Preparedness’ by providing training and drills, 3) ‘Respond’ as per the emergency management plan if hit by an interruption, and 4) ‘Recovery’ to bring the organization back to normalcy. Dr Chitram also laid emphasis on involving contractors in BCP who are also hit when a business is affected, which is something that is usually missed out.

Mr. Shrikrishna mentioned that BCP goes beyond emergency planning and is about business’ resilience throughout its life cycle, and questions whether a business is capable of handling disasters or not. It is actually investment oriented wherein the investors invest for the entire life cycle of businesses. In the oil & gas industry operational risk is something which comes in mind when one thinks about continuous
improvement. Organizations are very good at measuring the business risk and financial investment loss, but there is a dire need to focus on operational risks as well and find measures to prevent disasters.

On the topic of development and rolling out of BCPs, as well as activation of an emergency plan, Dr. Waddah said that an organization should have a chronic sense of unease so that they are always prepared for the worst possible scenario. The HROs should leverage upon the competencies within the organization and have a transitional hierarchy plan for times of crisis. In terms of response, they ought to have a reliable and multi layered system of communication. In terms of recovery, they should have reliability within the organization. With respect to HSE, we should know the possible things that can go wrong and accordingly plan for them. All levels of management should be integrated in the business continuity plan and there should be proper emergency plans in place.

Talking of harmonization of quality standards, Mr. Srikrishna said one should have a chronic sense of unease so that they are always prepared for worst of scenarios and learn from previous incidents. Business continuity is something more functional and hence the functional director on board, like the CEO should definitely be a member of the business continuity committee and should be accountable to conduct BCP’s. The performance of BCP’s can be measured by BCP audits, drills and reviews. Merely measuring the performance of BCP is not enough. Instead businesses should identify their gaps, correct them and increase their preparedness. Therefore, BCP is something which evolves over time.

Mr. Chitram’s quote, “Luck is an outcome of preparedness meeting chance”, emphasized that the best way to be effective is to practice and be proactive. Business continuity planning should be a part of the emergency management system. Hence, to be the most effective, the best way to do so is to practice, like by carrying out a drill and training everyone in what to do, when to do and how to respond effectively to a particular situation.

On the point whether BCP performance is effective or not, and whether the industry is prepared, Dr. Waddah focused on competency management and knowledge of our strengths and weaknesses. Competency and executive management are important. He said the industry is currently not prepared the way it should be, and that is largely due to the complexities within the systems of organizations. He felt that building simulations is the only way which can make us prepared. Readiness to invest in BCP’s during the early stages is another important requirement to mitigate and respond to the risks. Most importantly, there is a dire need for companies to enhance knowledge sharing about BCP’s and HSE management, because big incidents make organisations more aware, drive them to strengthen their management plans and reduce losses.

Mr. Nayak talked about succession plans and how it has thus far been looked upon as an HR domain, which he felt was not at all correct. He said that critical leadership roles must be well planned in advance so that induction, mentoring and training etc. can be done in a proper manner. For any meaningful deployment of BCP, competent and well trained people are required.

Dr. Chitram talked about the choice between testing your luck versus getting prepared in advance by developing a well designed and well researched plan of action. Giving the example of BP during the Deepwater Horizon oil spill on the Macondo Prospect, he said that things worked for BP because they had an incredible recovery plan, but if recovery plans are not intact, luck may not favor the organization. Plans could be measured only when regular exercises were run, and only then could the extent of effectiveness of the business continuity plans be known.
In this session, practitioners from industry shared their experience on various elements of process safety like processed hazard analysis, operating procedures, asset integrity, management of change, pre-startup safety review, work permit system, incident investigation, compliance audit etc. This session helped participants in understanding best practices adopted in process safety management across the world.
The session chair, Mr. Dutta, briefly spoke about the concept of process safety management. He outlined the current challenges in process safety management to set the tone for the session. After the speakers concluded their presentations, Mr. Dutta recapitulated key highlights. Explaining the importance of process safety, he revisited the Bhopal Gas Tragedy to focus on how ignoring basic aspects of process safety led to such a big disaster.

M. Gupta, Additional Director (Process), OISD

Mr. M. Gupta spoke largely on the operational design in refinery sector. He said that process safety management (PSM) in refinery entails multiple dimensions such as process hazard analysis, process safety information, operating procedure, training, safety review, mechanical integrity, work permit system, management of change, investigation and analysis, emergency planning and response, compliance audit, personal safety and occupational health. He highlighted the fact that all these elements are interrelated and cannot be isolated. Further elaborating on the subject, he defined process safety management as the application of management, principle and system to identify and understand and control the process hazards to protect employees, facility, assets and the environment. There are primarily two types of PSM – process safety in design and process safety in operations. He emphasized on proper training of the workforce and the management. It is also important to identify the hazards associated with the refineries and formulate a mitigation system. Moreover, Mr. Gupta also stated that the chronic problem in process safety was not taking lessons from previous mistakes and accidents. Maintaining SOP or reading SOP is one way of keeping process safe but it is not the only criteria to maintain the process safety. For example, if the steam trap is not properly placed then even after following SOP, it could lead to disaster. Sometimes we are misguided by the SOP. The speaker highlighted that near-miss reporting should be encouraged and the management should pay heed to the early warning signals. He elaborated on other important aspects to boost PSM such as mock drills, contractor safety, management of change and training. He shared that OISD maintains its website with regular updates on findings from every audit and lessons learnt.

Rakesh Mewada, Asst. Vice President, MGL

Mr. Rakesh Mewada spoke about industrial disasters, process safety (including definitions and process safety management), process safety v/s occupational safety, MGL customer base (process safety elements at MGL, SCE Barrier Model, asset life cycle). If you carefully analyze the causes of some of the major historical accidents you would find that there is one common element related to process safety which was missing prior to these incidents. Not observing PSM impacts the health, safety and environment as well as
results in loss of revenue, property and ultimately to reputation of company. He defined PSM as the framework for managing the integrity of operating system and process that handles hazardous substances. Talking about the difference between occupational (OS) and process safety (PS), he said that OS deals with personal safety with small consequences but higher frequency whereas PS deals with major hazards with big consequences but may not be as frequent. OS focuses on changing individual’s behavior while PS focuses on changing system design. He went over some of the PSM related practices at MGL. Considering that they have more than 9 lakh domestic customers and more than 200 CNG stations, besides the product being extremely inflammable, the level of risk is very high, creating a non-negotiable need for PSM in place. There are different SCEs in the design stage, construction stage and operation & maintenance stage. He also talked about HAZOP/QRA studies to identify and prevent hazards. To summarize, maintaining process safety is not just about safety of equipment, it’s also about developing and maintaining integrated systems and work process. It’s about ensuring the competency of individuals and team. It’s about creating and sustaining a world class operating culture, supported by values, behaviours and care.

Rahul Gautam, Chief General Manager (PC - Operations), GAIL (India) Ltd.

Rahul Gautam talked about the need of strategic process safety management in place of conventional PSM. Strategy based PSM consists of standards, compliances, continuous improvement and process safety risk management systems. He highlighted that Risk Based Process Safety (commitment to process safety, understanding hazard & risk, managing risk and learning from experiences) is being used to monitor and minimize risk to have effective PSM in place. Mr. Gautam went over 14 elements of process safety and explained how all elements can be clubbed under any one of the four element of PDCA (Plan, Do, Check, Act). He broke down PSM into four major parts, namely, commitment to process safety, understanding hazards & risks, managing risk and learning from experiences, and explained each breaking them further into more specific dimensions. He talked about various elements and sub systems of PSM. He also cited an example of a C2 plant where innovative instrumentation helped reduce the risk associated with the plant to almost nil. Further, he talked about improving contractor safety and proper management of contractors. In the end, Mr. Gautam spoke about the importance of communication with stakeholders, including police, fire departments, neighbours and media. Resorting to periodic review and learning from experiences should be a continuous process.

The view shared by certain speakers, especially from abroad, speakers are excellent. – Kumar Sourav Dutta, Manager, BCPL
Experts from industry shared the knowledge and experience by using case studies on economics of safety pertaining to industrial accidents, and ways of leveraging technology during design stage to ensure safety during operations and weighing them against ROI/VOI.
Talking about economics of safety, Mr. Purkayastha said that economical approach to health and occupational safety can be divided into macro and micro sub types, both with their own distinct approaches. Where the macro approach seeks to examine work related activities from a social point of view, the micro approach focuses on management control principles and procedures.

Mr. JC Sekar focused on the question whether the cost incurred in operational health and safety is an expense or investment. The bottom-line is how to get to the economics of safety. In the Indian context, a large part of the unorganised sector does not even get covered while counting the numbers. If we look at the taxonomy of safety costs, we can put them into three buckets. First is the cost in anticipation which includes things like how much you spend on safety systems, communication, training and maintenance cost. Second is the cost of consequence which is probably a lot of what we do today. And the third bucket is the cost of response, along with the additional legal cost associated with it.

An unhealthy behaviour of the workforce is going to further make the workplace environment unhealthy leading to lower employee turnover, lower employee commitment and satisfaction, and loss of productivity. This is the best justification for investment in occupational health and wellness. The 'presentism' is a much bigger problem than absenteeism. Presentism is the situation where you are at work but you are not supposed to be at work, maybe you are unwell, maybe you are carrying a virus that should not get to the rest of your audience, maybe you are having a very poor focus, maybe you are stressed out for some reason, and you are at work primarily because if you don't come to work you might lose your job. Cost of recovering from an accident, cost of hospitalizations, cost of loss of value at workplace are the costs we need to capture and that's where the sensitization or need for a healthy workplace becomes most important. Thus, it is time for us to take an integrated approach towards safety, health and sustainability costs.

Dr. Waddah S. Ghanem, ED (EHSSQ & Corporate Affairs), ENOC

Dr. Waddah S Ghanem having further highlighted on the concept of ‘presentism’, focused his presentation on three key areas for HSE practitioners to become cross functional and be more effective in their approach – Organisational factors (pertains to organisation, HRM, plant management along with economics and financial management); High-level strategic factors includes (CSR, corporate governance and accountability, and general management); and Intrinsic factor (personal factors- innovation, entrepreneurship, interpersonal skills and data analytics and decision making). He stated the need to
understand and address the changing challenges and their impacts on mental health and stress at work. Thus, financial tools must be used as investments, as opposed to the cost, to ensure occupational safety and health. The issue with occupational health is that one cannot sell it solely on financial terms as it also has impacts on society.

An accountable organization would see this as an investment into the societal values since it reduces the burden on health care systems and government. Outlining the importance of economics of safety, the speaker referred to HSE practitioner’s survey of about 2500 people, which indicated that understanding investment appraisal is critical to making sense of investment in OS&H and that NVP, IRR and ROI are important concepts that one must understand when one puts their money in an organization and in decision making.

Dr. Waddah concluded by saying that in the long term looking at presenting safety cases in a financially feasible way is not a blasphemy as organisation exists because of value maximization, so presenting OS&H in an economically feasible way increases the chances of acceptance of such practices.

S.K. Nandy, Chief General Manager (Operations), IOCL

Mr. S.K. Nandy covered the aspects of economic safety in two parts – one, during project investment phase and second when the project is in operation/construction phase. The question to be asked is how the cost can impact the balance sheet of the company. Investment in today’s hydrocarbon industry is not in billions but in trillions of dollars.

With the available infrastructure in place already and the hydrocarbon industry being very hazardous, the risk factor is going to increase much more because of three primary reasons. First, the exploration section is going deep into the sea which has more risk; second, processing plants are now being set up outside city limits, where supports in terms of fire-fighting may be less; and third, the growing complexity of the technology may lead to increase in hazards.

Mr. Nandy mentioned that accidents can potentially cause immense losses but then the dilemma is to work out the extent to which we should provide safety. He addressed this dilemma through a set of graphs which depicted that if you invest less in cost of safety measures, the cost of the incidents is more. If we have to go slightly beyond the threshold to narrow the risk gap, then it is worth it. During project formulation stage, just think about wherever optimisation is required. Also, if you are able to prove to your employees that you are providing a safe working place it will boost the workforce there.

Amit Jhalani, Deputy General Manager (BD-F&A), GAIL (India) Ltd.

Mr. Amit Jhalani started the presentation by establishing the importance of economics in every facet of life, be it personal or professional. Speaking of the objective of economics in HSE, he noted that it is very important to determine the value of what we are investing in, without which it is very difficult to understand the impact. Identification of cause of occupational injury and hazard motivates us to take problem more seriously. It helps us to understand connection between the way enterprise and market functions with respect to HSE issues. He went on to explain risk in the context of HSE. It is the measure of probability of hazard to harm human health, life, property, business and environment. So, to avoid risk, safety is important.

Further elaborating on costs of HSE, he explained that there economic cost (reflected in the balance sheet) and opportunity cost (non-monetary cost in terms of loss of life, health, pain etc.) associated with it.
Referencing a study done by HSE, UK, Mr. Jhalani noted that if we break down the cost into different components, then we see the non-financial human cost, i.e. cost of pain, loss is the major reason and loss of output is the second reason. All these costs need to be analysed before taking any cost benefit decision. Good practice in HSE can help make business productive and sustainable. It is more important to talk about investments in HSE rather than focusing too much on cost. We should find innovative ways to estimate the RoI on the amount which we have invested in HSE activities. As impacts of both economic and non-economic cost of hazard accidents on society is very high, safety should be given utmost priority.

“The entire program was very informative & beneficial. I feel proud to be a part of the first Oil & Gas HSE Conclave. The technical sessions and Panel discussions were very good. - Himadri Sarmah, DM (Chemical), BCPL
The session focused on building knowledge and sharing experiences on sustainable development, and it’s significance beyond industries. It also focused on how technological advancement can help achieve desired sustainable development. The speakers also discussed how sustainable business plans and practices were being implemented across industries, as well as various initiatives being undertaken by organizations for biodiversity conservation.
The session on biodiversity and sustainability was chaired by Dr. Annapurna Vancheswaran, Senior Director at The Energy & Resource Institute (TERI), who spoke at length about the meaning of sustainability and various ways in which sustainability is becoming important across industries. She also spoke about the various projects being undertaken by TERI currently.

Dr. N.A. Siddiqui, Professor & Head (HSE Engineering Dept.), UPES

Dr. N.A. Siddiqui started his talk by sharing a very eye-opening figure which indicates that India’s biodiversity has shrunk to only 10-15% now of what it used to be before independence. We need to focus on development without compromising on intergenerational equity. He commended the industries because they are at least doing something. He stressed on the need to have stricter rules. He noted that 1000 mammals till date have gone extinct and projected future rate of extinction is more than 10 times higher than the current rate. He defined sustainability as development that meets the needs of the present generation without compromising on the future generation’s needs. He further described it as the intersection of environmental, economic and social pursuits.

He mentioned that the sustainability pressures in developing countries like us include a growing population, increasing economic growth, increase in rural-urban migration, increasing pressure on markets and intensifying poverty. Discussing what we can do to address this loss of bio-diversity, Dr. Siddiqui explained the importance of sustainable development goals, indexed by UN’s Agenda 2030, which consists of 17 goals and 169 targets with the vision of ‘green’ growth. Additionally, the five P’s of the 2030 agenda are planet, people, peace, prosperity and partnership. Some of the strategies for improvement of biodiversity conservation are sustainable livelihoods and availability of sound management practices like watershed management, sustainable natural resource harvesting, management practices, participative adaptive management etc.

Rubina Sen, Senior Coordinator, GRI South Asia

Ms. Rubina Sen brought reporting perspective in the context of sustainability and how increasingly it is becoming important. To begin with, she defined sustainability as a balancing act which is defined as a requirement of our generation to manage the resource base such that the average quality of life that we enjoy ourselves can potentially be shared by all future generations. Elaborating on what is sustainability reporting, she said that it is like a bridge between what a company wants to achieve or its ambition and where it is right now. It helps in setting goals for measuring performances and managing change. It can be also understood as reporting of performance bridging between financial and non-financial parameters.

She emphasized on the need to account for sustainability reporting as what gets communicated gets understood. She also highlighted how GRI can help in measuring sustainability impacts and defining the measurement to sustainability reporting. She also highlighted how GRI can help in measuring sustainability impacts and defining the measurement to sustainability reporting. The biodiversity standard,
GRI 304: Biodiversity 2016, sets out reporting requirements on the topic of biodiversity. She further discussed various benefits of reporting and the probability of risk of occurrence if all the impacts are not taken into consideration. At the end she talked about the initiative called SDG Agenda 2030 South Asia which they started with all the companies who are members where they are taking each of these goals and trying to see how it can be really implemented and how company can really take actions on these SDGs goals.

Kamal Singh Bisht, ED & CEO, Global Compact Network

Mr. Kamal Singh Bist educated the participants by explaining the importance of achieving sustainability targets and the ways we can achieve it in our country. He set off by explaining the institutional importance of the global Compact Network and how it was officially formed as a body under the UN umbrella as UN Global Compact or UNGC. India is an important country from the points of view of sustainability. Achieving the sustainability targets of India would mean achieving 50% of the world targets. Most of the SDGs are aligned with the central government policies. Speaking of some recent development, the speaker noted that at the UNGC India meet, Indian states have started aligning themselves with the sustainable development goals. Assam and Sikkim have already signed MoU with the UNGC to commit to SDG, and six more states are following suit. Various initiatives which can help in achieving sustainability targets were listed out by him. Unfortunately nowadays, a lot of importance is being given to economic growth. He concluded, “Changing mind-set is the need of the hour. We need scientists and policy makers to change minds.” Mr. Singh shared multiple initiatives that Global Compact has been taking in terms of engaging CEO and collaborating with corporations to accelerate the cause of achieving sustainability goals.

Arvind Namdeo, General Manager (SD), GAIL (India) Ltd.

Mr. Arvind Namdeo kicked off his presentation by sharing a hard-hitting perspective that if we index the Earth’s age of 4.6 billion years to 46 years, then we have been here only about 4 hours ago and the industrial revolution is only 1 minute old. In this 1 minute we have exhausted 50% of the oxygen generation capacity of the Earth, in other words CO₂ mitigation, CO₂ sinks and 50% of the forests. He underlined that growth cannot be compromised but we can try to ‘live frugally’, not miserly but optimally. Changing mind-set is the need of the hour. While significant population in India still lacks access to resources, GHG emission is still quite high and there is an urgent need to balance growth and carbon intensity. He took the audience through GAIL’s sustainability journey, which started way back in 1984. Talking about the main product, he explained that switching to natural gas for power generation from coal fired plants would cut GHG emissions as much as increasing renewable energy capacity by 11%. Natural gas is the best transition fuel which India can resort to while switching from dirty hydrocarbons to clean renewable energy. Various projects and initiatives taken by GAIL to promote sustainable future was presented by him like delivering CNG and PNG in Delhi and Mumbai, changing all the furnaces of Firozabad to gas based furnaces to protect Taj Mahal, Behti Dhara project and many more. Among other initiatives, Mr. Namdeo noted that GAIL has been second only to ONGC in signing of Global Methane Initiative with US EPA. The Jubilee Tower at Noida, UP, is one of the tallest buildings which is a 100% green rated building.
The session outlined the process of integrity management of city gas distribution network. Industry experts shared their knowledge on designing pipeline infrastructure, as well as its operating and maintenance – materials used, fabrication and installation, inspection and testing, commissioning operations, their maintenance and modifications, etc. It also discussed the problem of abandonment of CGD network for domestic, commercial and industrial users.
The session chair, Dr. Kumar, said that the basic purpose of CGD was to reduce pollution in the metro cities. He explained how population growth, aging workforce, aging infrastructure, underground pipes and leaks, excavation and site restoration, etc. are some of major challenges being faced by operators.

K.K. Gupta, Former ED, Corporate HSE, Indian Oil Corporation

Mr. K.K. Gupta started his presentation by recalling the message of the conference chairman pertaining to proactive HSE culture, observing compliance, integrating risk management with day-to-day activities and so on. He also spoke about hazard identification, risk analysis and mitigation measures for the same. He defined risk as the likelihood that a specified undesired event will occur due to the realisation of a hazard, or during work activities or by the products and services created by work activities. Through safety culture ladder, he talked about building a safety culture moving from pathological, to reactive to proactive to finally becoming generative. Talking about CGD, Mr. Gupta explained the value chain of gas distribution and associated safety challenges. Foremost challenge is that CGD demands 360 degree safety to cover all its stakeholders. Other challenges include managing nearly 90% outsourced staff, training new employees and extensive intra-city commute for inspection leading to knee joint/shoulder pain due to excessive driving. Management of shifts and workload is very important as workers start developing fatigue after many years and safe level of performance cannot be expected from them. He spoke about additional challenges such as pipeline rupture, dangers due to excavation activities, need for public awareness/staff alertness, need for regular monitoring to check corrosion, soil erosion etc., quick emergency response, land scarcity for setting up CNG stations, and so on. He proposed sharing of good technical experience through suitable knowledge sharing e-portals. Additionally, he suggested preparing 100-200 questions relevant to working at the site with answers and circulate among all to enhance their awareness on safety. He concluded the session by explaining through iceberg theory that the tip of the iceberg that we might see are minor lapses but it indicates that a major part of inadequacies may be invisible (the better part of iceberg which is under water) and can potentially lead to bigger accidents.

S. Murli, Sr. Vice President (O&M), Mahanagar Gas Ltd.

Mr. S Murali talked about his company MGL (a JV of GAIL, SHELL & Govt. of Maharashtra), which is a pioneer city gas distribution company of India. Natural gas, being highly inflammable, poses various risks, and demands high level of safety preparedness. During gas delivery to customers and transportation, natural gas companies face many challenges to abide safety rules. Despite these challenges safety should be given priority and new methodology should be devised to maintain high level of safety standards. Busy roads, ongoing infrastructure projects, encroachments and space constraints are some of the challenges related to the MGL gas distribution network related work. Remote and cross country locations of the pipeline network bring additional difficulty resulting in lesser control and increased risk of third party damage. Mr. Murali explained risks pertaining to seasonal and temporary workforce who lack education and it becomes difficult to train and retain them. Among other issues, he touched upon safety
challenges pertaining to road safety and municipality excavations. In the end, he summarised the initiatives which have been taken by MGL such as the ‘sahayogi initiative’ for third party dialing if anyone is drilling without permission, and various other gas safety, environmental and gas conservation related initiatives.

Sagar Verma, Dy. General Manager (F&S), MNGL

Mr. Sagar Verma explained city gas distribution as an interconnected network of gas pipelines and the associated equipments used for transporting natural gas from a bulk supply high pressure transmission to the medium pressure distribution grid and subsequently to the service pipes supplying gas to domestic, industrial premises and CNG stations. Elaborating on MNGL, he talked about the extensive operations of fast growing consumer base and fast expanding gas distribution infrastructure. He mentioned about major threat in this sector relates to third party encroachment/damage leading to gas leakage/fire, pipeline corrosion, faulty fitting, material and workmanship. Mr. Verma explained three types of safety practices in CDG, namely safety in design, safety in laying and safety in operations & management, and further delved into each of the three tiers. He explained that audit (both internal and external) is a very critical tool to improve safety. He shared some of the initiatives and programme run by MNGL such as STC training, safety penetration through education, training and awareness, and new Fire Trace System installations at DRS and MRS.

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“The Entire Conclave was conducted excellently and very enlightening especially for Non HSE professionals like self. - P Balakrishnan, Chief Manager, Liaisioning, Mahanagar Gas Ltd.

Let me congratulate you and the entire team of GAIL for conducting such a mega event with vast participation of Oil & Gas professionals across India & abroad. It was indeed a great pleasure to be part of the event with lot of learning opportunities. - Ajoy Paul, GM (HSE) Mahanagar Gas Ltd.
SPECIAL SPEECHES: DR. K. K. AGARWAL

Keeping with the spirit of promoting good health and wellness, GAIL (India) launched a book on healthy living, titled ‘Healthy Lifestyle & Nutrition’, authored by the Dr. Chandra Tripathy, GM (Medical; Services), GAIL.

Padmashri Dr. K.K. Aggarwal, the renowned cardiologist and current President of the Indian Medical Association, inaugurated the book. He also gave an enlightening speech wherein he attached a philosophical insight to the concept of health and wellness, and spoke on the numerous benefits of not just allopathy, but also the ancient sciences of Ayurveda and homeopathy. He shed light on the concept of five elements that ascribe our physical existence. He used various references from the Hindu epics of Ramayana and Mahabharata to demonstrate his points. It is essential to have control over body (metabolism) and mind (intellect) that would lead to elimination of negative elements from life. As a result, it will lead to increased determination and focused work force.
Ms. Deepa Mallik, an Indian athlete and medallist at the Paralympic Games and a motivational speaker, was invited to the conclave to give a motivational speech and inspired the delegates present at the conference. She is a paraplegic and paralysed below her waist. A spinal tumour confined her to wheelchair 17 years ago, and she has been unable to walk since then. But the disability never stopped her from setting ambitious targets and achieving them. The lady holds the rare distinction of winning two medals for different sports - swimming as well as shot put. She was conferred with the Arjuna award in 2012 and Padma Shri in 2017.

She was invited to the conclave as a guest speaker to share her life story with delegates and inspire them. She spoke about her life story and how she fought through every obstacle, faced every misguided perception about living the life of a disabled person and emerged a winner. Through her inspirational words and bravery, she motivated the audience to not let circumstances impact their vision and to continue to strive towards personal excellence. Her unwillingness to let any difficulty or obstacle stop her from achieving her target was a lesson for all those present to never bow to adversity and to only use it to further fuel their resolve. Through her example, she also encouraged the HSE participants to place trust in each other, and work together towards establishing robust HSE culture.

The motivational speech by Ms Deepa Malik was the highlight of the event & I’m delighted to be the part of such an awesome event. Congratulations & Kudos again to the GAIL Team.

- Ratnapal Ramteke, Executive Engineer, ONGC
Glimpses from the Exhibition Arena
Key Take-aways from the Conference

- **HSE Performance** of line managers can be enhanced through building their behavioral and functional competence, and supported by evaluation against intelligently defined HSE related KPIs.
- **HSE culture** cannot be developed in silo by HSE professionals alone. It is supposed to be collaborative and HSE function must be integrated with other department functions.
- **It is very important** to define clear scope of work for contractors, assessing not just their qualification but also their HSE capabilities.
- **It must be the responsibility** of the primary contractor to ensure ownership and accountability of sub-contractors.
- **Meticulous watch** must be kept on all equipment used by contractors with the help of technologies like RFID tagging to enable inspection.
- **Technology integration** in HSE implementation is indispensable. It can enable monitoring and controlling activities across multiple locations at the same time, which means more effectiveness and less cost.
- **Benefits of benchmarking** include performance evaluation, setting targets and visibility across organizations and so on.
- **Increasing complexity and stakes** in oil & gas industry demand more investment in process safety, which is as important in design as it is in operations.
- **The extent of bio-diversity depletion and impacts of climate change** have reached alarming levels. Corporates must play an increasingly active role to integrate sustainability with their agenda. The culture of sustainability reporting is very important as accountability and transparency increase significantly.
- **Risk based Process Safety Management** should be followed. Effective risk assessment is the first step which can lead to better prioritization and significantly improved preventive mechanism.
ENVECOLOGIC is a fast growing research and consulting firm focusing on providing energy and sustainability solutions. Our focus is on addressing the present day challenges emerging due to depleting resources, global warming, climate change and an ever transforming complex energy sector.

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