Grupo Energía Bogotá

We improve lives through sustainable and competitive energy

Audit and Risk Committee

Ordinary

Meeting No. 120

Date June 22, 2023

2023

3

STUDY TOPICS AND RECOMMENDATION TO THE BOARDS OF DIRECTORS

a. Related Party Transaction: Amendment to the Intercompany Credit Agreement between GEB and Gebbras

b. Control Architecture Policy

c. Update of the GEB Risk Matrix

Topic: **Update of the Strategic Risk Matrix of GEB**

Type of Request: **Recommendation**

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Conclusions and/or Requests

Proposal from the OSH Management for the inclusion of the strategic process safety risk:

Process safety incidents occurring during the operations of GEB and its subsidiaries that may cause or have the potential to impact people, operational assets, community infrastructure, or the environment.

Reasons and/or arguments

A recommendation is requested from the committee for the following reasons:

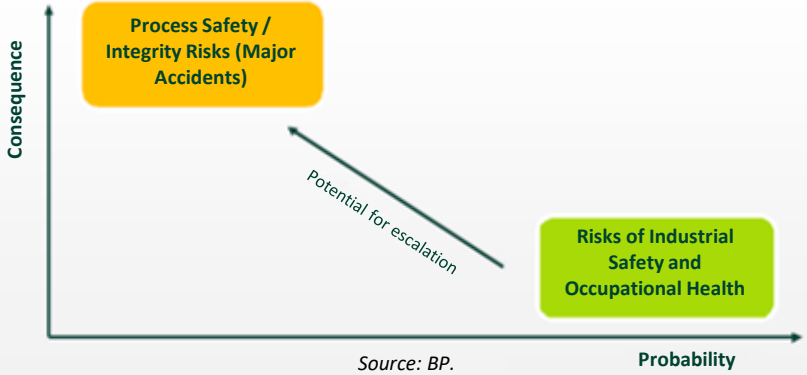
- Compliance with regulatory frameworks in the countries where GEB operates.
- Systematic management of operating risks, with better control of the unplanned and uncontrolled release of hazardous materials and energy, reducing impact on people, the environment, assets, and reputation.
- Improved rating with insurers
- Improvement in Business Continuity, leveraging safety practices to reduce costs associated with interruptions and enhance savings in insurance premiums and penalties for non-compliance as a supplier

INDUSTRIAL SAFETY VS. PROCESS SAFETY

Industrial Safety and Process Safety

Different Impact

- **Industrial Safety** focuses on high frequency and low consequence incidents compared to process safety incidents.
- **Safety of Processes** focuses on incidents of low frequency and high consequence (process-related).



Source: BP.

Industrial Safety

Occupational Risk

Process Safety

Technological Risk

Industrial Safety

Occupational Risk

Occupational Accident

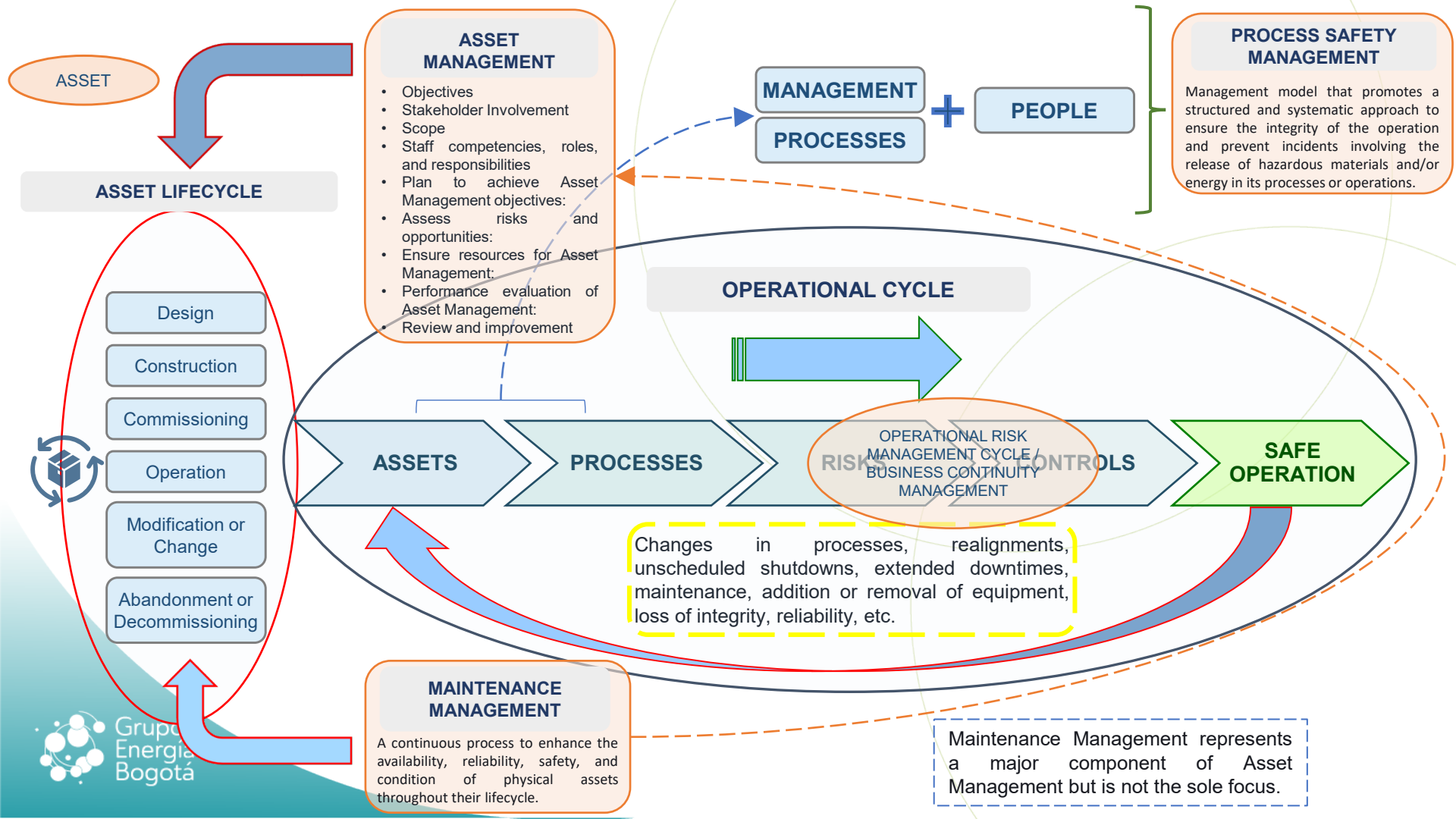
Accident Frequency Rate

Process Safety

Technological Risk

Major or catastrophic accident

Process Safety Incident Frequency Index


ASSET
ASSET LIFECYCLE
Design
Construction
Commissioning
Operation
Modification or Change
Abandonment or Decommissioning
ASSET MANAGEMENT
Objectives
Stakeholder Involvement
Scope
Staff competencies, roles, and responsibilities
Plan to achieve Asset Management objectives:
Assess risks and opportunities:
Ensure resources for Asset Management:
Performance evaluation of Asset Management:
Review and improvement
MANAGEMENT
PROCESSES
PEOPLE
PROCESS SAFETY MANAGEMENT
Management model that promotes a structured and systematic approach to ensure the integrity of the operation and prevent incidents involving the release of hazardous materials and/or energy in its processes or operations.
OPERATIONAL CYCLE
ASSETS
PROCESSES
RISKS
CONTROLS
OPERATIONAL RISK MANAGEMENT CYCLE / BUSINESS CONTINUITY MANAGEMENT
SAFE OPERATION
Changes in processes, realignments, unscheduled shutdowns, extended downtimes, maintenance, addition or removal of equipment, loss of integrity, reliability, etc.
MAINTENANCE MANAGEMENT
A continuous process to enhance the availability, reliability, safety, and condition of physical assets throughout their lifecycle.
Maintenance Management represents a major component of Asset Management but is not the sole focus.
Grupo Energía Bogotá

R20. Process Safety Incidents in the Operations of GEB and its subsidiaries.

Risk 20

Process Safety Incidents in the Operations of GEB and its subsidiaries.

Process safety incidents occurring during the operations of GEB and its subsidiaries that may cause or have the potential to impact people, operational assets, community infrastructure, or the environment.

Causes

1. Low maturity level in process safety culture within GEB, ST, and subsidiaries.
2. Lack of leadership in safety process management.
3. Isolated efforts by the core business areas (O&M) and the cross-functional support areas (engineering, reliability, integrity, etc.) to manage process safety based on risks
4. Weaknesses in the identification of high and very high risks associated with the operation of GEB's assets and its subsidiaries and inadequate management of the identified risks.
5. Lack of accountability in safety
6. Insufficient engagement or awareness in the risk analysis of asset processes at each stage of their lifecycle.
7. Lack of knowledge of process safety at all levels of the organization.
8. Inadequate management of process safety incidents (reporting, alerting, investigating, reporting with cause identification and action planning, generating lessons learned, and monitoring) to facilitate learning from past experiences.
9. Lack of governance in OSH - PS for deployment and adoption in subsidiaries.
10. Absence of performance and outcome measurements and metrics (indicators) for process safety.

Consequences

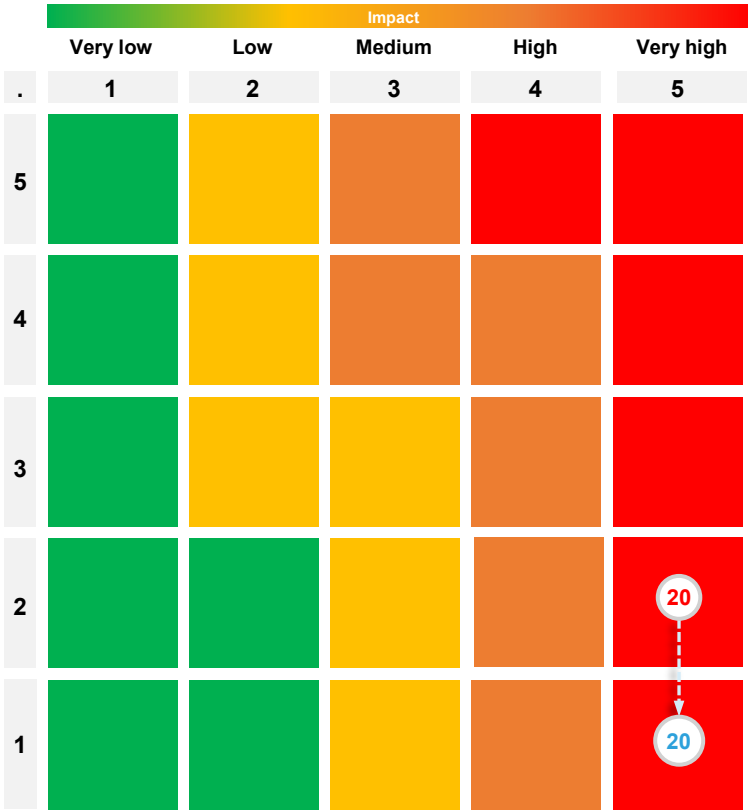
1. Fatalities / Disabling injuries
2. Economic losses
3. Penalties, sanctions, and/or demands. Closure of work centers or the company
4. Effects on image and reputation
5. Effects on project timetables and compliance (delays)
6. Inability to access investment fund capital
7. Loss of stock value in the stock market
8. Poor rating by asset insurers
9. Loss of business continuity
10. Inability to engage in alternative energy value chain businesses

Controls

1 to 9 Implementation and strengthening of the Process Safety elements worked on by the Cultural Transformation Program in Occupational Safety and Health.
1 to 9 Incorporation of human resources in the corporate office and subsidiaries for the development, implementation, and follow-up of the process safety management model.
1 and 2. Inclusion within the competence's matrix and training plan of the basic aspects of operating risks and CSP according to the responsibilities of each role within the company.
1.3 and 7. Induction and reinduction in process safety for GEB staff and its subsidiaries. Disclosure of flyers on process safety topics to promote knowledge and corporate identity.
2 and 10. Design and implementation of performance measurement indicators and results in Process Safety at each organizational level and among contractors.
1 and 3. Gap analysis in Process Safety and a Strategic Action Plan to address these gaps.
1 and 9. Strategic visibility of the impacts of risks associated with an unplanned and uncontrolled loss of hazardous substances and/or energies with consequences for people, finances, assets, and the environment.
4 and 6. Adjustments to the process of identifying hazards and analyzing risks of each subsidiary's processes to ensure that operating risks are systematically evaluated.
4 and 10. Management indicator to monitor the closure and/or attention and/or implementation of measures for treating high and very high risks identified.
8. Adjustments to the reporting and investigation process of each subsidiary to ensure that incidents are reported, investigated, and disclosed in a timely, structured, and permanent manner.
8 and 10. Management indicator to monitor the closure and/or attention and/or implementation of the activities for the closure of the action plans outlined in the investigation reports of incidents.
8. Follow-up on the implementation of action plans derived from investigations of process safety incidents and lessons learned.
8 and 10. Design and implementation of the incident indicators in Process Safety Tier 1 and 2.
2 and 9. Ratifying the commitment to Safety, Health and Well-being from the Board of Directors to executives, primary committees, process leaders, and employees.
9. Definition and implementation of the Management Model in CSP with scope to the subsidiaries and articulation with the business continuity and asset management models, in the subsidiaries that have implemented them.
5. Explicit inclusion of consequences (sanctions or constraints) due to noncompliance in the contracts, with indicators and legal obligations in Process Safety.
3. Defining construction and/or maintenance procedures that include safety parameters in the designs or in the planning for executing works or maintenance activities.
5 and 10. Performance assessments in safety, occupational health, and process safety applied to all contractors.

Strategic Risk Matrix Grupo Energía Bogotá - Proposal

#	Residual	Risk
1	1	Failure to repay debt, credits, and other financial obligations
2	2	Breach of the contract between Trecsa and the government (PET 001/2009)
3	4	Occupational accidents in the operations and activities performed by GEB and Subsidiaries
4	20	**Process Safety Incidents in the operations of GEB and its Subsidiaries**
5	3	Regulatory changes unfavorable to the company's interests
6	11	Failure to fulfill the business plan
7	12	Breach of the ethical and/or regulatory framework in terms of compliance
8	6	Lack of continuity in the strategy or failure to implement the corporate governance practices
9	7	Inadequate management of the corporate strategy at subsidiaries
10	8	Failure to fulfill the appropriate shareholder role in decision-making at companies where GEB holds a non-controlling interest
11	16	Non-continuity of the business
12	9	Not having the appropriate and motivated human capital to develop the strategy
13	15	Loss of confidentiality, integrity or availability of the Company's information assets and/or cyberassets
14	17	Loss of competitiveness and/or reliability of the business operation due to inadequate digital transformation
15	18	Loss of profitability, viability and business continuity due to inadequate management of climate change
16	5	Potential differences between partners in non-controlled companies
17	10	Financing restrictions and/or increase in borrowing costs
18	13	Effects on GEB's reputation.
19	14	Participation in non-strategic investments
20	19	Human Rights violations committed by GEB, an employee, partner, or contractor of GEB.



IR# Inherent Risk / Uncontrolled Risk Assessment

CR# Controlled Risk / Controlled Risk Assessment

CONTEXT AND JUSTIFICATION

GAS TRANSPORTATION AND DISTRIBUTION

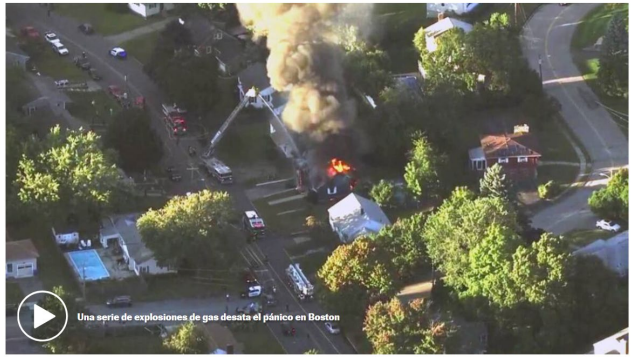
OVERPRESSURIZATION OF A NATURAL GAS DISTRIBUTION SYSTEM CAUSES FIRES AND EXPLOSIONS IN MERRIMACK VALLEY, MASSACHUSETTS, USA.

EL PAÍS

United States

One dead and 25 injured in a series of gas explosions in Boston.

A multitude of fires in homes and businesses on the outskirts of the city triggered massive evacuations and chaos.



One of the homes destroyed by fire in Lawrence, on the outskirts of Boston.
Videos: AP / ATLAS

Video Links:
https://www.youtube.com/watch?v=QWItfZ7KvIE

- **WHAT HAPPENED:** On September 13, 2018, a series of explosions and fires were caused by overpressurization of the low-pressure lines in the natural gas distribution system owned by Columbia Gas in Merrimack Valley, Massachusetts. As a result of this major accident, the company was fined USD 53 million and subsequently sold by its parent company, NiSource, after pleading guilty to this incident.
- **ROOT CAUSES:** Investigations identified weak engineering management as a primary root cause, with inadequate planning and supervision of the construction project leading to the abandonment of a main cast iron pipeline without relocating the regulator detection line to the new polyethylene main pipeline. It was also found that the low-pressure natural gas distribution system was designed and operated without adequate overpressure protection.
- **IMPACTS:**

EXTERNAL DAMAGES

- 1 fatality
- 22 people with injuries and burns
- 131 structures destroyed
- Operations suspended in surrounding areas, affecting 10,894 customers

COMPANY LOSSES

- USD 143 million in claims payments.
- Payment for 4,000 hotel guests, 160 apartments. Over 8,000 people utilized temporary housing.
- Restoration included the installation of 18,500 new gas appliances.

ELECTRIC ENERGY TRANSMISSION

LACK OF MAINTENANCE ON HIGH-VOLTAGE LINES LEADS TO CATASTROPHIC FIRE (CAMP FIRE) IN BUTTE COUNTY, CALIFORNIA - USA.

Video Links:
https://youtu.be/-o_O04I7r0I

- **WHAT HAPPENED:** On November 8, 2018, a wildfire began in Butte, California, known as the Camp Fire, which consumed approximately 62,000 hectares, an area traversed by Pacific Gas and Electric Company (PG&E) electric transmission lines. Subsequently, multiple victims sued PG&E and its parent company before a definitive cause was determined, alleging that PG&E failed to properly maintain its infrastructure and equipment. In May 2019, California state investigators declared PG&E responsible for the fire.
- **ROOT CAUSES:** Investigations identified the failure of a poorly maintained steel hook that held a high-voltage line as a key cause of the fire. A report by PG&E to the CPUC on December 11, 2018, noted that "a hook designed to support power lines on the tower had broken prior to the fire, showing signs of wear."
- **IMPACTS:**

EXTERNAL DAMAGES

- 85 fatalities
- 3 people with injuries and burns
- 18,800 structures destroyed and 62,000 hectares razed.
- Operations suspended in areas nearby, affecting thousands of customers.

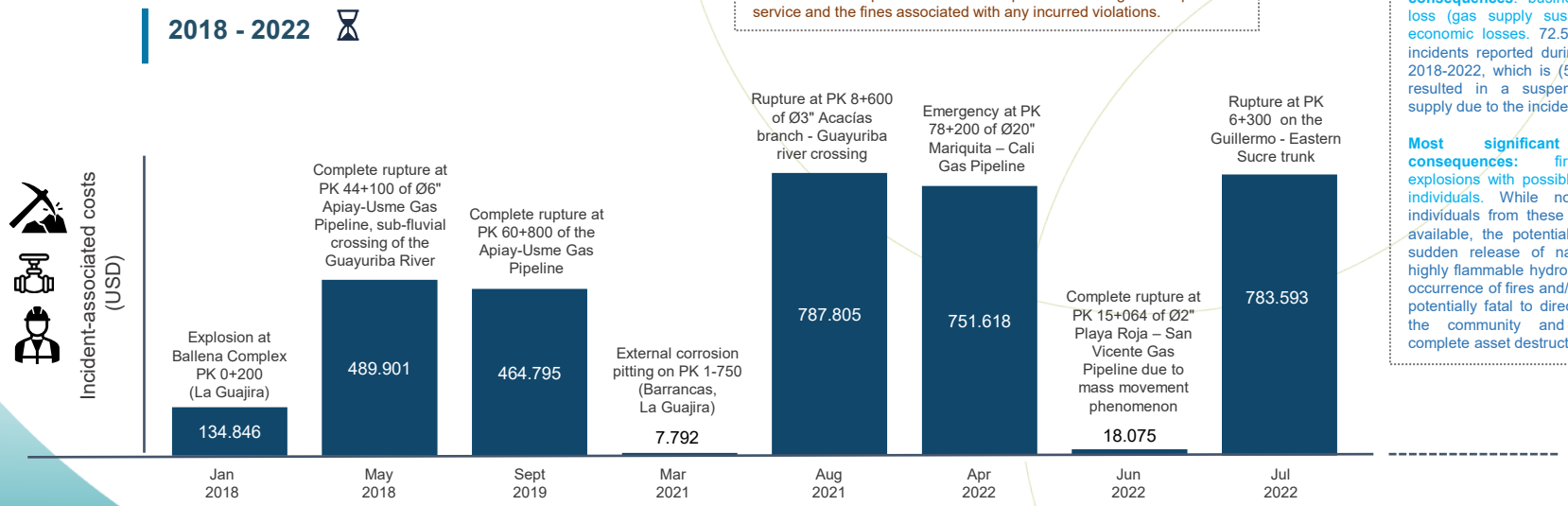
COMPANY LOSSES

- USD 55 million in claim payments.
- Stock value decreased by 50%.
- Bankruptcy declared.
- Reputational damage.

LEARNING FROM THE EXPERIENCE – SOME PS INCIDENTS AT TGI.

GAS TRANSPORTATION

2018 - 2022



NOTES

Note 1: The chart displays a representative sample of 8 incidents out of a total of 69 reported during the period from 2018 to 2022. Some were selected based on the associated cost and others based on the type of threat that caused the incident. It is clarified that the costs do not include the value of lost profit due to the suspension of the gas transportation service and the fines associated with any incurred violations.

Most significant actual consequences: business continuity loss (gas supply suspension) and economic losses. 72.5% of the PS incidents reported during the period 2018-2022, which is (50 out of 69), resulted in a suspension of gas supply due to the incidents.

Most significant potential consequences: fires and/or explosions with possible impacts on individuals. While no reports to individuals from these incidents are available, the potential impact of a sudden release of natural gas (a highly flammable hydrocarbon) is the occurrence of fires and/or explosions, potentially fatal to direct staff and/or the community and leading to complete asset destruction.

Source: Northern / Eastern Central / Southwestern Superintendencies of TGI (March 2023)

LEARNING FROM THE EXPERIENCE – SOME PS INCIDENTS AT CÁLIDDA

GAS TRANSPORTATION AND DISTRIBUTION

2008 - 2023

	Oct 2008	Jun 2010	Mar 2017	Sept 2020	Mar 2023
Volume Released:	13,500 Sm^3	5.5 Sm^3	10.5 Sm^3	4,324 Sm^3	1,400 Sm^3
Affected Customers:	38 industrial customers, including EDEGEL Thermal Power Plant	1 industrial customers	69 industrial customers	5,313 customers	3,809 customers
Repair Cost:	USD 800,000	USD 150,000	Repair Cost: USD 2 million	USD 15,000	USD 615,000
	Ø20-inch steel pipeline rupture due to third-party activities at PK 56+047 (Callao)	Ø4-inch pipeline elbow failure opposite the Paper Mill Center, El Agustino (Lima)	Pipeline integrity loss due to mechanical damage at river crossing (Pte Bella Unión, Lima)	Ø200 mm polyethylene pipe rupture caused by third-party activities (Lima)	Polyethylene pipeline rupture caused by torrential rains (Lima)

NOTES

Most significant actual consequences: business continuity loss (gas supply suspension) and economic losses.

Most significant potential consequences: fires and/or explosions with possible impacts on individuals.

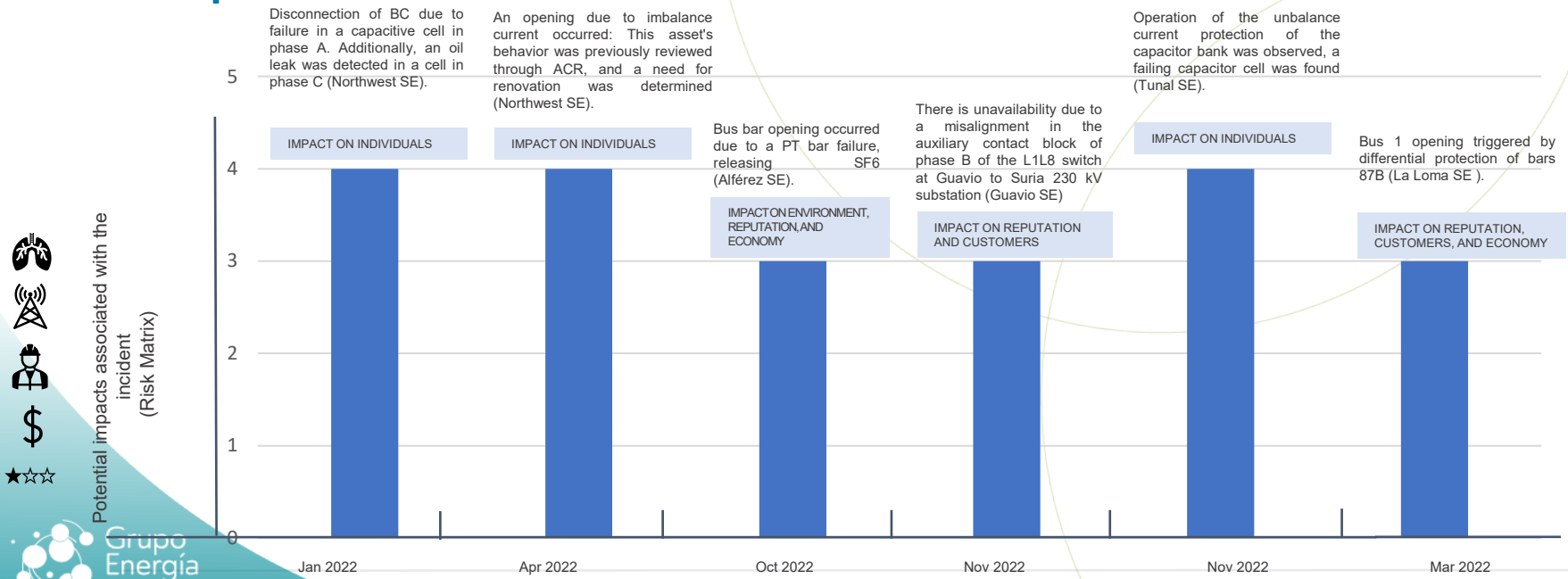
Note 1: Economic impact calculation does not include the lost profit from the suspension of the gas transport service and any associated fines.

Source: OSH and Process Safety Coordination at Cálidda (May 2023)

LEARNING FROM THE EXPERIENCE – SOME PS INCIDENTS AT ENLAZA

ELECTRIC ENERGY TRANSMISSION

2022 - 2023



Source: Event Follow-up File - Reliability Area of Enlaza (March 2023)

IMPORTANCE OF PROCESS SAFETY AS AN ENABLING ELEMENT IN ENERGY TRANSPORT PROCESSES

1. **Compliance with the regulatory framework** (operational risks and process safety) **in the countries where Grupo Energía Bogotá operates.**

2. **Systematic management of operating risks** (reducing the frequency of unplanned and uncontrolled release incidents of hazardous materials and/or energy and their associated impact on people, the environment, assets, and reputation).

3. **Best insurer ratings** (Business Interruption + Property Damage + Machinery Breakdown)

4. **Access to ESG capital** (environmental, social, and governance) **and stock market listings, performance measurement of the Dow Jones Sustainability Index.**

5. **Opportunity to participate in the value chain** (generation, transformation, transportation, distribution) **of alternative energies** (e.g., hydrogen business).

6. **Business continuity, in case of operational incidents, leverages process safety practices to reduce costs associated with interruptions and improve business efficiency** (costs such as insurance premiums and penalties for non-compliance as a provider of products or services).

Request

According to Item 14 of Article 9 of the Rules of the Audit and Risk Committee, it is recommended to the Board of Directors:

Approve the modification of Grupo Energía Bogotá's Risk Matrix as presented by the Management.

Committee Function

Article 9. Functions of the Committee:
14. Recommend to the Board of Directors the risk matrix for the company and its subsidiaries.

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