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Crisis Management Arising from Technological Risks and its Models in South Pars: A Systematic Review

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Abstract
Important events in recent decades in term of the political, economic, social, geographical and human show that societies are constantly undergoing technological hazards, this indicates that the amount of technology that could be useful, can be dangerous to human life and organizations. Because every organization is facing multiple crises in his life, managers and decision makers of the organization should reflect measures till their organizations are ready to deal with potential crises and so enable it to make, following the occurrence of an unexpected event could continue to operate with minimal damage. Oil and gas refinery in the world and they often deal with hazardous chemicals and most of the industrial operating units with various equipment such as isolated towers, storage tanks, pumps, compressors and pipelines are under work high pressure and temperature, so the incidents such as spills of toxic substances, fires and explosions in the units is possible and obviously learned the prevention of risks and the creation of necessary infrastructure, such organizations is a priority. The first step in planning for crises that ecological risks, understanding of the crisis and its management is that this study is to review the history of research conducted in this domain, an effective step in crisis management is to identify the responsible practice.

Keywords: crisis management, risks; south pars, damage

Introduction
Major Events in chemical industry such as Felix in England in 1974; Bhopal disaster in India in 1984, Sozo accident in Italy in 1975 and Psovdnia accident in Texas in the US in 1989 to wide variations in patterns of process safety, deal with emergency situations and crisis management were derived [1]. These accidents may be caused by process failures, defective design, defective equipment, human error or external factors such as floods, earthquakes and terrorism is a bad thing. Accident statistics suggest that the crisis management process is an important problem in the process industry and to think of ways to control and eliminate the hazards and achieve a level of reliability. On the other hand, short overview of some of these points are indicative of the last twenty years, since the crisis, many oil and gas industry have occurred in the downstream sector, most similar to the maligned, or even have a predictable and delays caused by employees or managers have occurred. In other words, the components of which are predictable.
in refinery gas because they often deal chemical risk and most of the industrial, storage units with various operating equipment such as isolated towers tanks, pumps, compressors and pipelines to work under pressure and high temperature, the incidents such as spills of toxic substances, fires and explosions is possible in the

units. In the oil and gas industry in Iran, there are many events; the largest economic hub of the country's energy is no exception. For example, the number of workers killed due to fire of Pars Petrochemical explosion in the gas leak and fire accidents in 1390 in Asalooye and killed two people in 1391 in one of the refineries in Assaluye the event of burn gas by cooling and killed one person and injured people in the 1392. As every year we witness such events. In order to prepare the active forces in the South Pars deal with unexpected events, interventions such as conducting disaster preparedness exercise was conducted in 1392 at the outlet of a comprehensive model for crisis management was endorsed. The first step in planning for crises those ecological risks, knowledge and methods of crisis management are that this study review past research has been done in this area, to take effective steps to identify the responsible management of the crisis.

2. Definition of terms

Crisis

Crisis is adverse event with the unintended consequences are vulnerable to a specific profile as follow:

• The crisis is a threat to the organization.
• The crisis is not a normal event sometimes unexpected and sudden.
• In crisis, there is little time to decide. If in the event there is no time pressure, it is not a crisis event.
• In a crisis situation is intolerable and should circumstances change cannot get hung up on.

Crisis Management

Crisis management and resourcefulness cope in the face of threats before, during, and after the threat.

Crisis management is the management of risk in the risk management function to assess potential threats and finding a way to avoid the threats that exist.

Crisis management during the crisis period since the start of the event to start recovering (Reset) function.

Crisis management objectives

• Readiness for crisis
• Respond quickly and appropriately to crisis
• Create clear and effective lines of communication during crisis
• Approval rules accepted for delivery to end crisis

Aspects of Crisis Management

Crisis management has three important aspects that should be present in every model of crisis management. In fact, the crisis management model defined by these elements:

• Ways to respond to a real crisis is also a crisis in mind. The real crisis is always a crisis that is not necessarily formed in the minds of people.
• Measures, indicators or metrics to define what scenarios are that a crisis should be based on responses to the crisis and response mechanisms to be activated.
• Communication is needed in response to the crisis phase and form.

Types of crisis

The crisis itself has many types and potential crises are countless workplace but they can be classified. It is important that any sort of crisis, a crisis management strategy has its own demand. Lerbinger [2] has identified eight different types of crises, including natural disasters, technological disasters, war and conflict, crime, corporate wrongdoing, violence in the workplace, rumors, and terrorist attacks. Among them, we have to define a technological disaster:

Technological disasters caused by human use of science and technology come into being. The starting point is the breakdown or failure of technological systems.

Some technological crises occur, however, due to human mistakes. Usually the culprit is someone technological crises but natural disasters are not always that way.

Examples of technological crises are software failures, industrial accidents (accident), release of oil into the sea (company BP in the Gulf of Mexico).

In a split in the lower layers, technological crises and sudden crises, crises can be divided under the ashes.

• Sudden crises - and usually occur due to a sudden incident management is to blame for the crisis. Smoldering Crisis - the crisis of a small devastation caused by the negligence of the management of a crisis, and certainly in the formation of such a crisis, the culprit.

Crisis Management Team

Crisis management is a multi-functional team of people, those who are supposed to manage any crisis situation. Usually from all departments in the organization is the appropriate response to be given to all audiences. Members of the team are usually predetermined. Members of the team have the ability to manage and communicate well. The benefits of having these capabilities include:

• Simple and easy exchange of ideas in the various departments of the organization
• Review and monitor assumptions about how to plan for crisis

• gather their views on the potential crises and how to manage them
• Encourage new and successful experience in crisis management
The crisis management team is expected duties or functions under:
• Organize and design a plan for crisis management
• Selection of members for each crisis
• Training for staff and members of the crisis management plan

Site Contingency Plan for disasters
This plan is prepared to approximate an organization in crisis. Under the plan, the training exercises are performed. The plan states during the crisis should speak on behalf of the organization. After the first hours of a crisis is vital and this project proved that every function defined in crisis plan should begin with how quickly and at what time. Because accuracy is very important information and misinformation may make the situation worse, the plan also includes information and guidance to decision makers in the short-term long-term effects of their decisions and help them evaluate it.
Business Continuity Planning
In every crisis, business continuity may be interrupted. For example stop production lines. Some input and output channels are closed. Stop selling the product. The plan for this is to minimize the amputation. The plan must initially be recognized for all the functions and processes of a business and for each of these processes is a continuing plan scheme to be prepared. Business continuity plan is a holistic management process that identifies potential threats, acts of intimidation during the research processes occurred. The project creates a framework for the organization offers high resistance and the ability to create that as a good protection for movable and immovable assets of the organization [3].
Leadership competencies in crisis management
A key point is that organizations need to manage the crisis during a crisis, with appropriate changes in their structure, ready and prepared to handle the crisis. Context of the restructuring of the organization shall be made by the leadership of the organization. Doing this will require competencies that are as follows:
• Creating an environment of trust
• Change the mindset (modified) organization during crisis
• Identification of weaknesses and vulnerabilities
• The right decisions and do them with courage and strength
• Learning from crisis to really make a difference

3. Comprehensive model for crisis management

James and Wooten [4] argue that the crisis has 5 phases: signal detection, preparation and prevention, restriction Crisis, Recovery and ordinary business, and learn. Each phase requires specific management skills and competencies. These competencies include:
• Honesty and integrity
• Positive Intentions
• Capability
• Mutual respect
• Transparency
Each phase has a question or problem to improve the structure and operations, crisis management, should develop appropriate answers and solutions. The key issues include five phases:
• Signal detection - predicting the crisis and outlining its dimensions
• Preparedness and Prevention - Disaster divert from its route
• Siege crisis - control and limit the damage to life and property, as an organization, reputation and dignity are preserved.
In this phase, managers are quick to limit the scope of the crisis and allow rapid and widespread crisis to the next phase of their business.
• Reset the ordinary business - in this phase to the loss of life, money and fame are not compensated and business returned to normal. In this phase of business continuity planning is done. It offers programs for individuals, financial and technological resources for business continuity done. However, in this phase the executives are also very active in organizational resilience.
• Learning - the principal challenges of this phase is to understand how the lessons learned from the crisis and the lessons learned how to communicate and inform the people.
Augustine [5] argues that crisis management has six basic steps:

Step 1: Avoiding of crisis - the cheapest and easiest step by step to reduce the costs of crisis management strangely, on many occasions, but this step can be skipped.
The problem is that the managers of unfortunate events, they cannot escape this problem, a serious problem. So solve this problem in a model of crisis management, a key step in improving. Managers must ensure that he is always a threat lurking and managers must continuously perform the following steps:
• A list of all the things that can cause harm, be prepared
• The likely consequences of each of the risks identified
• Estimated cost to avoid any risk
• Everyone in the organization can be a source of crisis management should therefore make clear what is expected of employees to the risk of crisis is the least.
Staff costs cannot be said to be low, but expected to work with greater safety. Employees cannot be ordered at the time, but you risk sensitive expected to reduce the rate of adverse events.
Step 2: Preparation for crisis management - the first step in this process is that management is not very sure of himself must have a plan for dealing with the crisis.
Communications Test and exercise are the most important tools readiness. Plan of emergency and have a plan to deal with the crisis. In the middle of a crisis does not create relationships and introduce people to each other. Lessons learned in this regard are as follows:
• The establishment of a crisis center
• Crisis Management Team members are pre-determined
• Appropriate communication facilities and communication channels are always open, and have the design of parallel (multi). High reliability is important here. Most importantly, these devices are tested and use them to practice in most of the time they become crises.
Step 3: Understanding the Crisis - the stage of crisis management is the most challenging step. How can we be sure that a crisis is occurred? How recognize a crisis. Sometimes the crisis in the minds of employees or customers is formed to the floor. Sometimes the name of a problem and the problem appeared to be incorrectly classified, technical issues has focused more on perceptual and cognitive issues. Highlights in this area include:
• The alarm (alarms) note
• Those are responsible for preventing accidents, which are good sources for detection and recognition
• Workshop participants and the staff members are better informed of their crisis
• Auditors and independent auditors to know the right people are creeping crisis
• Methods and techniques for classification of adverse events and use of knowledge crisis.
Step 4: The siege of the crisis - the crisis management phase involves the most difficult decision and of course in a very short time. Who or what parts of the organization must be helped. What are the priorities? For example, in a nuclear reactor accident at Three Mile Island, a decision that people get out of their homes Chaos and turmoil is likely to cause the formation of fault or whether to tell people to stay home and of course it is compromised lives. The main problem at this stage is the lack of timely access to information is correct. Information systems that are used to help decision are a major step.
Highlights in this area include:
• Experience has shown that the best companies have a crisis of great value to a final Central in mind and it's always worth the wait and at all times the value of their actions.
• The first thing is that after the crisis, the life of human beings. Anything should not risk human lives is more and deaths.
• Organizational culture and so transmitted shall be such that all know what is the ultimate value, what is the stand, and no reaction other people do not. They have no reaction other than a coordinated response by the organization do not even think about it. Inaccurate reflection events magnify or zoom out actions that are not in the long term interests of the organization.
• In the early hours of the crisis, important steps must be taken:
• A full-time (24 hours) trying to arrest the crisis because others are working normally.
• In contact with third parties and the public sector is a sound organization.
The order is not a single sound.
• For those who really need the information, the information is given.
• The crisis management team should include people who are blunt words to say through honest and not allow they to be diverted reactions.

Truth is told, I should say at the first opportunity.
Step 5: Resolving the Crisis - is an old saying that if you're a road safety margin, at the time of the accident might have been if just sit. The need for quick action to resolve the crisis is critical. Highlights in this area include:
• The most important thing is speed. Crisis as a monster devouring everything in there is really no time to rest.
Step 6: The benefit of crises - Highlights in this area include:
• What should be learned from the crisis?
• Maybe even create new opportunities for business.
A summary of the major components of a theoretical model for crisis management can be summarized in Table 1.

Table 1: Main components of a theoretical model of crisis management

	Prevention	Preparation	Recognition	Arrest	settlement	Use
Components of the theoretical model of crisis management literature	-Stochastic model - Risk analysis model of technological disasters - The cost of accidents	- Emergency response plan - Plan to deal with disasters - Team and crisis management Chamber - Communications - Exercise	- The recognition of the crisis and its dimensions - Crisis warning system	- Pyramid strategy and organizational values - The decision - Model of Public Relations	-Providing resources for quick action in resolving the crisis and compensation	- Accident Analysis Model - Learning Model - Lessons learned from legislation

A survey was conducted among 22 major Singapore, researchers found which (82 percent) of these companies have no information on the process called business continuity management in dealing with technological risks and (92%) of them when you encounter an unexpected event, at the moment the solution reduce the damage caused by the event and deal with it makes sense. The researchers concluded that not only are foreign companies with business continuity management, but no written plan to reduce the damage caused by the crisis that may it is not their business exposure. The study authors suggested that the Singapore government should force companies has announced plans to anticipate and ways of dealing with the present crisis, to place a business continuity thinking and the corporate use of financial incentives and tax breaks [6]. Savage, [7] referring to the September 11 attacks and the problems caused by this event, the necessity of having a business continuity plan (BCP) is necessary for organizations. He proposed a plan to achieve organizations (BCP), including the following steps:
Risk analysis and business impact
Documentation activities necessary to prepare the organization to deal with unexpected events (such as recovery strategies affected areas)
Identified and authorized activities related to the process when an unexpected event coverage
Testing process
Training
They continuously update the implementation processes and risk coverage
The work Savage, [7], and to develop it, researchers business continuity planning is a multi-stepped approach at the organizational level and can be used as part of the design. They have their way with three levels of senior management, IT managers and staff monitor and concluded that the presented method higher-level managers and employees in the private and governmental organizations to implement and run [8]. This is shown in the following figure 1.

4. The current model of crisis management in South Pars

In this section we attempt to the physical components of the current crisis in the South Pars case management model and our analysis. Wherever review helpful suggestions for improving the management of the current

crisis is reached. These proposals will be presented and improved model elements are introduced. Total of two basic components of the current model of crisis management that are discussed here:
A) Operational guidelines for crisis management and b) Site Contingency Plan to deal with the crisis
Practical guidelines for crisis management - ERP Emergency Response Plan this recipe from general safety regulations harmonized with the companies producing oil and gas from the talk, Total, Shell and BP and gas treatment is applicable to all companies.

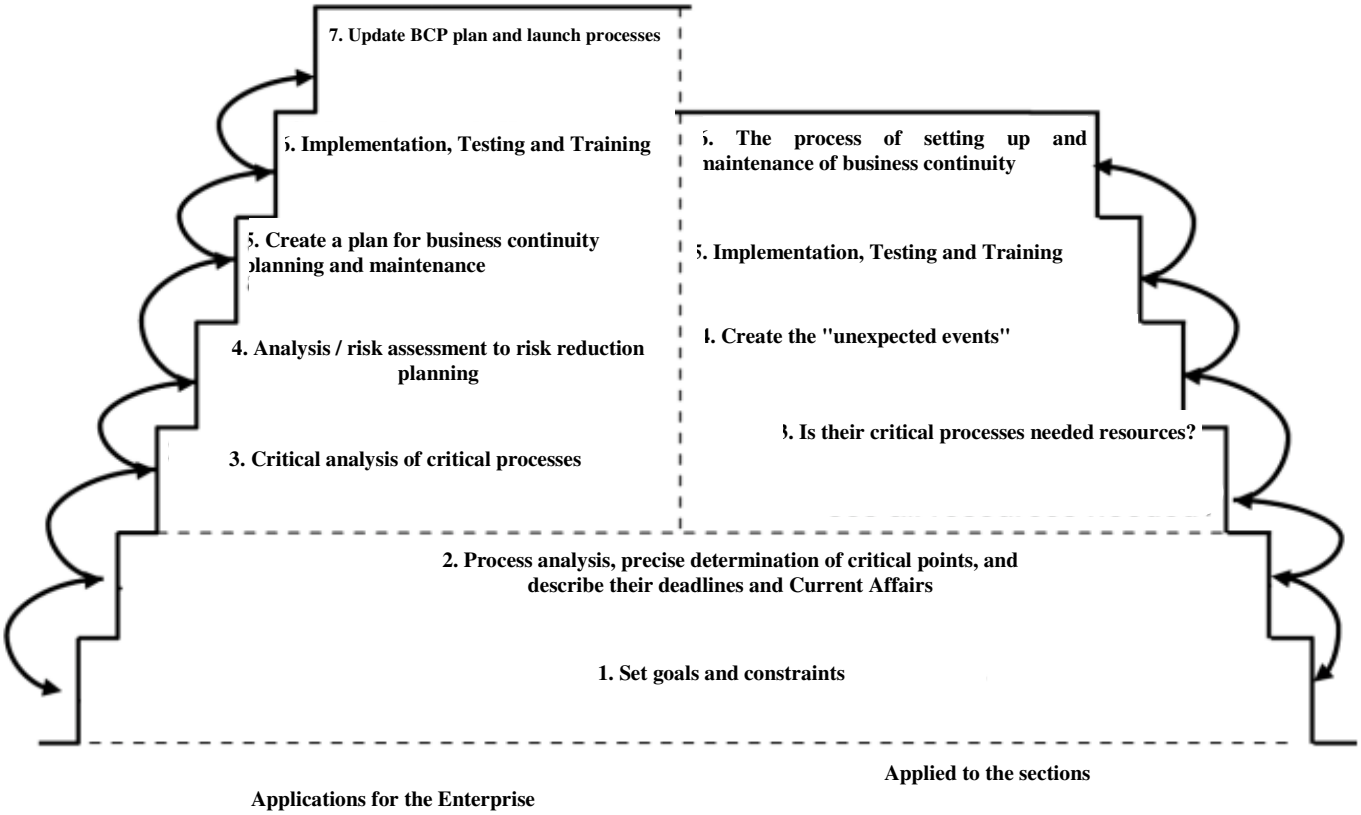

Figure 1: governmental organizations to implement

The crisis was linear model used in this instruction the four phases of mitigation, preparedness, response and recovery, has been established as follows:
• Prevention of actions before, during and after the crisis to prevent the hazards or reduce the harmful effects of doing this.
• Preparation: collections actions that increase an organization's ability to carry out the various stages of crisis management. These phases include data collection, research, planning, management structures, training, resources, training and exercises are.
• Deal: Following the crisis, the emergency services aimed at saving lives reduce property damage and prevent the spread of damage done to the environment and infrastructure. Deal includes search and rescue, health care, security, transportation, firefighting, hazardous materials control, and information is a warning.
• Rehabilitation: the restoration of a damaged area after the crisis to normal conditions with regard to all aspects of sustainable development and safety regulations [9].
Deal with emergency situations and exposure guidelines for companies to refine a model from the National Iranian Gas Company, linear models and the crisis of European crisis management professional formulas is extracted and edited. The linear model proposed for the organization of all gas refining companies and how to interact with the headquarters based in Tehran by refining the management pyramid model chosen. The instructions for how to interact with people at the accident scene as Emergency Response Team with the highest level of participation and vice versa is provided (Figure 2).

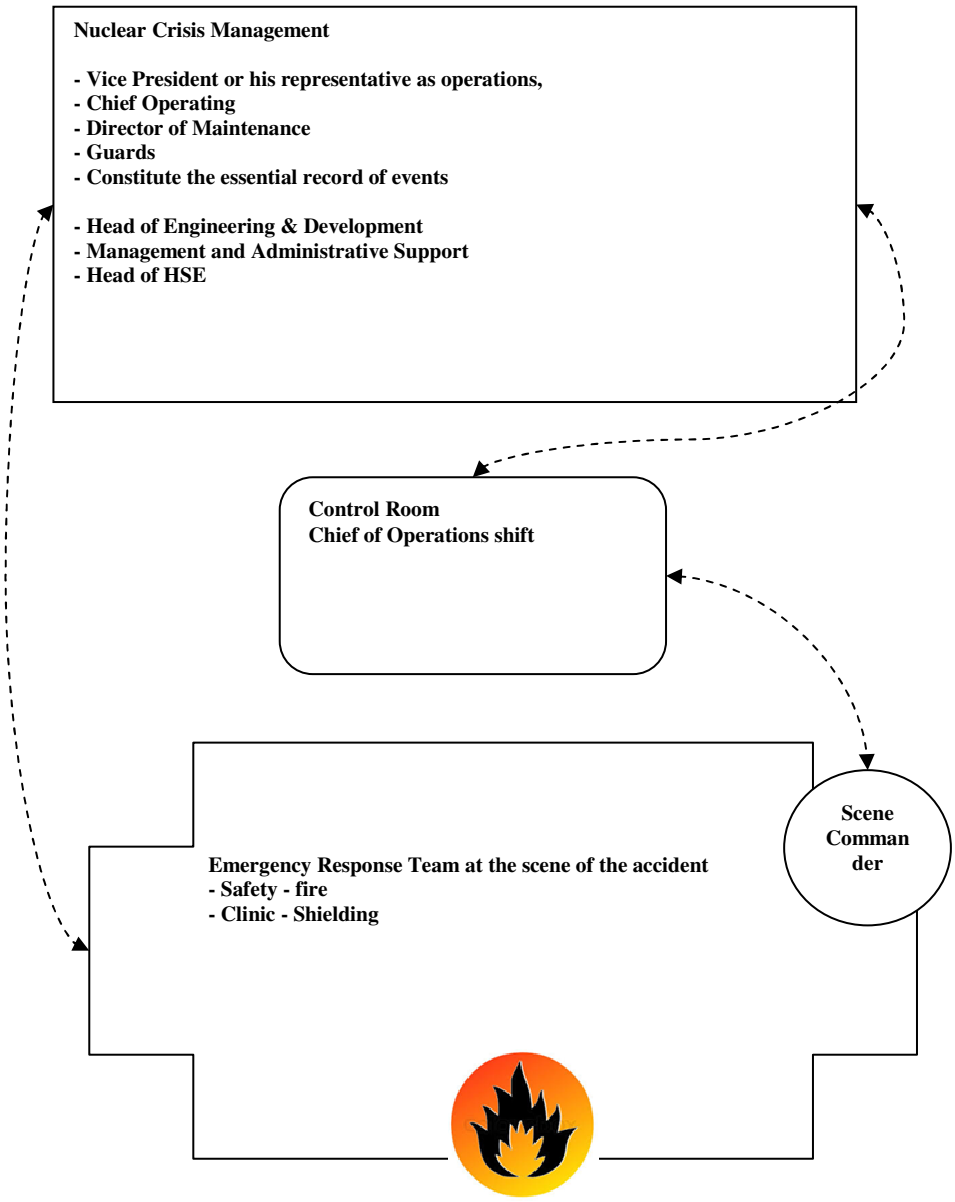

Figure 2: an overview of the components and relations, crisis management, linear model of Total

The three main groups in terms of coping and dealing with the crisis will be involved in a refining company include:

• Emergency Response Team at the scene of the accident, including safety, fire, and safeguard the clinic. It's the scene of the incident commander via a bridge to communicate with the control room. Scene commander operations that could representative of the type of accident, water, electricity and steam or group is refining and shift operation is selected by the president.

• Chief of Operations Control Room shift commander at the scene by means of communication with the head of operations in the control room shift their fundamentals.

If the incident so that the president can shift operations to cope with crisis management, control and guide the operation of the refinery and the refinery Deputy communicate VP Operations and ordered to take action and formed Crisis Management Cell (CMC) [10].

• Core Crisis Management or his representative as Vice President of Operations, Chief Operating, Chief of Engineering and Development, Maintenance Manager, Administrative and Management Support, guards and head of safety, health and environment as well as events constitute the essential record. The best tools for

communication and crisis management Chamber include guidance system in coordination with the Emergency Response.
These devices include LCD connected to CCTV Emergency Response Team stationed at the refinery to view full function, radio and pager phones are necessary, practical guidelines. First aid instructions into three functional areas of preparedness, response and recovery returns and it is not reflected in the crisis prevention stage.
First aid instructions into three functional areas of preparedness, response and recovery divided and it is not reflected in the crisis prevention stage.

5. The core functions of disaster management

Crisis management is the core important functions as follow. However, these tasks are considered and divided between core members.
• Record all activities of the Crisis
• Establish communication between team members and frequent communication with emergency assistance system in the control room
• Risk assessment
• notify the Director of the National Gas Company operation in case of a devastating global
• Establish communication and rapid reaction between Kangan refinery control rooms, making the sea water, condensate transport
• Who's census record, missing the injured group of emergency operations at the scene of an accident?
Scene Commander
• Reporting to the control room of nuclear crisis management
• Select the fastest and safest route to reach the accident site and the movement of personnel
• Ensure the work stoppage, isolate and reduce pressure
Safety Representative
• Ensure that all safety guidelines are adhered to scene of accident
Fire chief
• Manage and allocate power to different parts of the volcano
Head of Safeguarding
• ensure that the other parties to the accident scene
Operations control room
Important functions in the control room emergency department are as follows.
• Estimates of the log
• Select Scene Commander
• Ensure the performance of existing systems such as alarm monitors, emergency stopping and starting them
• Notify neighbors of events
• Connect Nuclear Crisis and Emergency Response
• Provide technical assistance to eliminate the accident occurred and prevent the spread of the beam
Important decisions in the current model
Decisions regarding the crisis
Emergency due to any unplanned event and outside of normal operating conditions that cause risk to personnel, equipment and environment, or the whole company, arise. It should be noted that these guidelines differ between crisis and emergency conditions exist:
Situation or condition that does not require foreign aid in emergencies and situations or conditions that require external support (e.g. neighboring refineries or petrochemical plants and nuclear crisis management of National Iranian Gas Company), an individual called crisis.
Emergency has been divided into three categories:
• An explosion in the tank, pipes and fittings, devices
• Leaks in tanks, pipelines and fittings,
• Fire in the tank, pipes and fittings,
The incident is an event that causes the formation of an emergency. Recipe of the accident, according to its severity, can be divided into three types:

• Incident details: Most of the people in the refinery and the service are operational.
• Serious incidents must Assistance Team (ERP) controlled and does not need foreign aid.
• The main event: an event that requires external support (eg, oil and gas refineries, petrochemical or neighbor) is everyone should have an emergency or incident with a number that provides direct communication with the control room, contact. In an incident that could be serious or chief general manager, operations shift to nuclear crisis that is the Managing Director, will call, and if he is not available, should be performed following order: Operations Manager, Head of Operations, Head of Health, Safety and Environment, Director of Administration & Logistics Management. It should be noted that each of these individuals are able to make decisions and crisis management should be whether or not the act. If not, head of operations, emergency disaster to shift responsibilities and group leaders will be responsible for the supervision to continue.

If the answer is yes, then Chief of Operations Manager or Operations Management call shift and operations management has decided to build nuclear crisis management and through them to all members of the Crisis Management Crisis Management invites to the nuclei in the room.

However, three important parameters in determining the classification of disasters and emergencies that include:

• The number of people that their safety is compromised more than one person
• Sudden and unforeseen event operation is stopped.
• As a result of the accident, danger to adjacent units and the surrounding areas outside the refinery.

Decision to leave, accumulation, and refinery discharge

Leaving Place: to hear a continuous siren or see the flashing red lights, staff leave and safe refuge.

Accumulation at the site of accumulation: accumulation occurs when an incident or potential incident will affect parts of adjacent units or otherwise in the event of fire (Fire \ Unit Zone) be exceeded. First aid decision by members of the alarm can be sounded out. Refinery Evacuation: This decision will be taken when the staff gathered in potentially affected by the incident takes place the decision of the Crisis Room.

Improve decision making in the current model

There is a decision problem that must be addressed and improved. The question is whether the crisis is an ongoing event and does not require that the current nuclear crisis management. While the existing model, a simple model can be used, but due to certain circumstances Asaluye the topography of the region, especially with very large refineries, to me, compact and close together and well connected in terms of feed and diversity of products and the potential domino effects and synergy of events, and with regard to specific categories of special circumstances refineries in the area of crisis, how can we make better decisions in this regard.

This decision is important from two perspectives:

• First, if the crisis is a trouble maker wrongly regarded as a minor incident, response to treatment may be performed at the right time and the delay in response to the crisis caused irreparable damage.
• Second, if the error is deemed a minor incident as a crisis, then may be additional costs such as team building, leaving work, irregularities in the workplace, stop wasteful processes, etc. imposed by the organization.

6. Discussion and conclusions

Technological crises are an integral part of human life; unwanted technological disasters take place, and perhaps cannot be prevented from occurring; but can they manage to impose a lesser loss to societies; because human life has always been associated with the need to deal with multiple crises. Before addressing the specific crisis situation and introduce a systematic approach to dealing effectively; it should be noted that there is a crisis, or directly into a system or external influences have disrupted the system. In both cases, the analysis can be considered as a systematic advance. Because the task of crisis management, effective decisions based on accurate information in order to reduce losses and quickly control the crisis. The systematic process of identifying actions and reactions are done. Otherwise decisions will be nothing but trial and error and considering the three factors, time constraints, threats and surprises cannot expect the place to be for such an approach. Surely the whole point of crisis planning for unforeseen circumstances will be considered. So we can define the crisis on the system this way: system components in a given context based on the criteria set out deliberately to interact together with their relationships. In any system variable

constituent elements that must be maintained and protected within a certain territory, otherwise they ate equilibrium systems as far as possible complete abolition of it.
Administrative steps to improve its crisis management plan offered in the following:
Step 1: identification of key variables and how they relate
• identify the factors controlling, managing and planning (enabling variables, and variables related to the process)
• Define success in terms of crisis management measures aimed
• Measuring interactions of variables
• Implementation of fuzzy cognitive map and analyze the role of various factors in successful crisis management
Step 2: Provide a model system to study the domino effect of events in the series
• Understand the main functions in the whole complex system of crisis management and incident investigation refining
• Functional Resonance Model
• The accident scenarios, taking into consideration the synergy effects of accidents and domino
Step 3: Developing a statistical model for the classification of events with potential technological crisis
• Understand the current model set Crisis
• Identifying indicators of the current model should be improved in the new model
• Developing new models by combining the results of the current model and measures to improve
Step 4: Developing scenarios of crisis, according to the actual situation and the principles of protection of the scenarios
• Recognition of new scenario of crisis is exacerbated by the use of functional models
• Identifying new crisis management scenarios using functional resonance
• Provide protection principles with the new scenario of crisis and crisis management
• Delphi method for final approval of Protection

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