

# Aramco Research Center

## *Emergency Response Plan*

**2024**



Aramco Research Center (ARC) at KAUST Internal Procedure			
Document No: ARC-P-004	Issue Date: 06/22/2022	Revision date: 07/07/2024	Revision No: 2
OE Process: 11.3 Emergency Preparedness			
Subject: Emergency Response Plan (ERP)			
	Next Review Date: 07/07/2025		
Issued by: Safety Compliance Group	Approved by: Manager, KAUST R&DC Div.		

## Document Verification

Signatures are Required in Approved Revisions.

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## Revision Control

Date	Rev.	Type & Effect of Change	Originator	Approved
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# Abbreviations

Abbreviation	Meaning
AED	Automated External Defibrillator
ALPD	Area Loss Prevention Department
ARC	Aramco Research Center
BMS	Building Management System
ECC	Emergency Control Center
EMO	Emergency Management Organization
EPC	Emergency Preparedness Coordinator
ERP	Emergency Response Plan
ERT	Emergency Response Team
FrPD	Aramco Fire Protection Department
IC	Incident Commander
ICP	Incident Command Post
IM	Incident Manager
KFD	KAUST Fire Department
KS	KAUST Security
PEEP	Personal Emergency Evacuation Plan
PO	Process Owner (SMS)
SCBA	Self-Contained Breathing Apparatus
SMS	Safety Management System
“911”	911 from a landline or 012-808-0911 from a mobile

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# 1 Introduction

The intent of this document is to serve as a reference guide for how ARC will respond to a variety of emergency scenarios that may occur in the facility.

This document complies with the requirements and expectations referenced (e.g., GIs, SMG, OE, etc.) in the Appendix.

## Emergency

An incident that threatens People, Environment, Assets, and/or Reputation (PEAR).

## Scope

This ERP covers the ARC facility, Aramco personnel, contractors, and visitors.

## Authority to Activate the ERP

The following individuals have the authority to activate the ARC ERP:

- Incident Manager (IM)
- Incident Commander (IC)
- Any member of the Emergency Response Team (ERT) with emergency walkie-talkies
- ARC on-call personnel (outside of standard working hours)

The ARC IC will manage all emergency Level 1's in the field with the assistance of support organizations. If the IC escalates an emergency to Level 2 or 3 he/she will keep managing tactics in the field with assistance from support organizations and from the IM in the ECC.

## Review, Maintenance, and Distribution

This ERP must be reviewed and updated on an annual basis or as otherwise required. FrPD, ALPD, and KFD will review the changes and provide feedback.

The final approval is given by the highest-ranking staff member, in this case is ARC HEAD.

The ERP will be sent to all ARC staff electronically and an awareness session given in Q2 to ensure all ARC employees are familiar with the material in the ERP.

## Location of Chemical Hazards

The Appendix contains Maximum Allowable Quantity (MAQ) maps detailing the chemicals generally found in labs throughout the building.

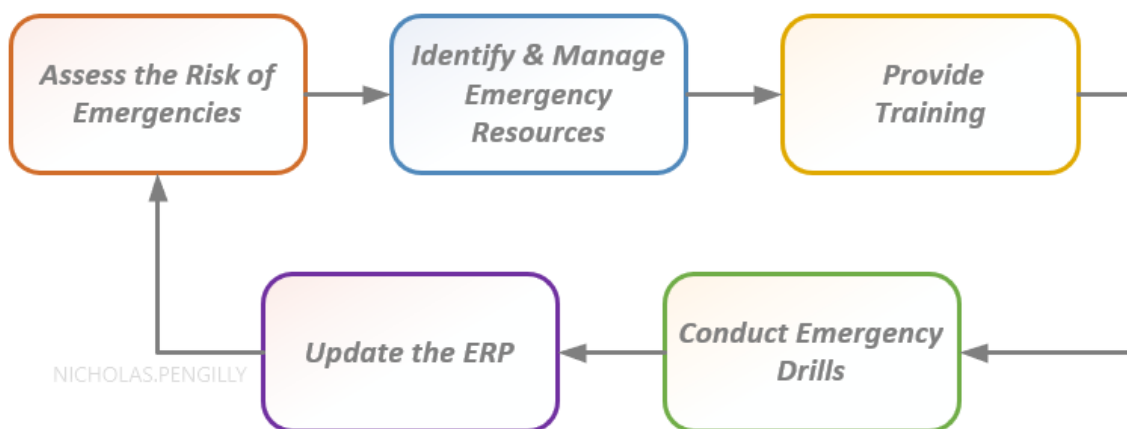
## Other Response Plans & Procedures

Refer to Corporate COVID-19 Pandemic Response Protocol

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## Emergency Preparedness Administration

ARC pre-incident plans are a combination of the Emergency Preparedness SMS Element 8 Processes. The processes will identify the risks/emergencies that ARC may have to manage; subsequently, training is planned and executed, relevant resources procured and maintained, required staff instated into the EMO, and the ERP is developed. The planning and preparation of mock drills is further considered pre-incident plans.



Emergency procedures for identified scenarios are included in the section, Pre-Incident Plans, and can be used as a guide in responding to identified emergency situations. If new credible scenarios are developed, a pre-incident plan should be developed and the ERP should be updated as per the above graphic. FrPD and other support documents should be included in the development of emergency procedures.

## Emergency Level Definitions

Emergencies are classified into Levels 1, 2, or 3 to specify the response and notification required. The KAUST ECC will be activated for any Level 2 or 3 emergency. This will ensure any potential negative impacts on PEAR is minimized.

Refer to GI 6.000.



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## Emergency Level 1

- The management and recovery is handled by ARC staff
- Resources are available locally
- Limited or no assistance by third-party departments (KFD)
- Limited consequences
- There is immediate control and containment of the incident

### Examples:

- Small chemical spill
- Minor injuries

## Emergency Level 2

- Requires a wide range of company resources and equipment
- This type of incident results in multiple injuries; a single fatality
- Impacts the company operations, facilities, or revenues
- Potential reputational and social media impacts
- May be escalated to the KAUST ECC

### Examples:

- Fire
- Multiple injuries; single fatality

## Emergency Level 3

- Requires a wide range of company and external resources
- This type of incident results in multiple injuries and fatalities
- Immediately escalated to the KAUST ECC
- The impacts extend beyond the site and may affect public health, safety, and/or the environment

### Examples:

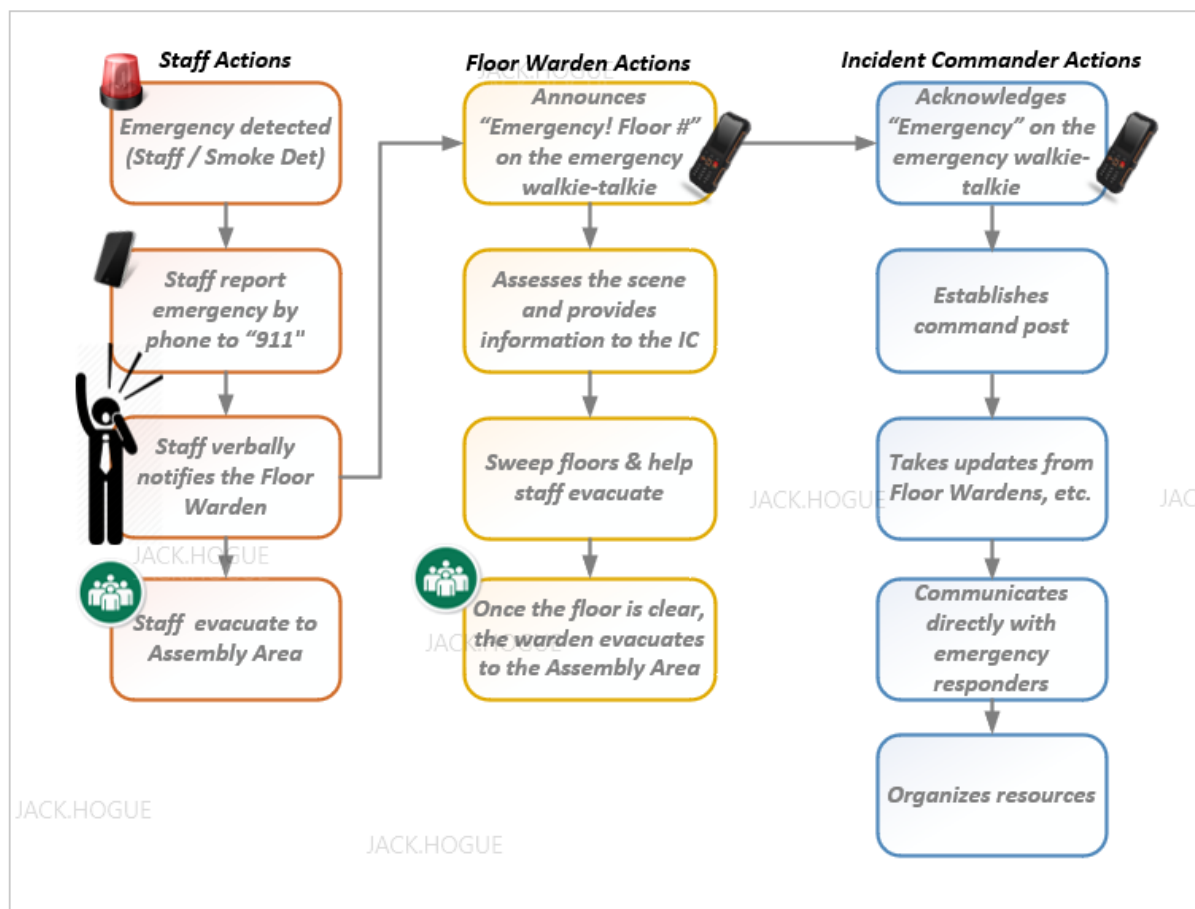
- Large fire, explosion, chemical exposure, pandemic, terrorism
- Multiple fatalities and multiple major injuries

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## 2 Notification Procedures

### Basic Response & Notification Flowchart for ARC Staff

1. **Call 911 from a landline or 012-808-0911 from a mobile**
2. **Tell your Floor Warden or Emergency Responder Staff**
3. **Evacuate**



Employees are the first line of defense and, from a safe location, they are mandated to report any emergency (e.g., fire, gas leak, and/or medical emergency) to KAUST "911".

The employee that reports the emergency will notify their Floor Warden. The Floor Warden will announce the emergency on the ARC emergency walkie-talkie system stating, "emergency at location" (e.g., room 1234 on floor 1, high-hazard room, etc.). The Incident Commander (IC) will acknowledge the call by repeating, "emergency at location" on the walkie-talkie. The IC will assume responsibility and manage the emergency.

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## Management Response



The Manager, KAUST R&DC Div. is expected to join KAUST Emergency Operations Team in the event of a Level 2 or Level 3 emergency to assume the role of the Incident Manager.

The Incident Commander with the consensus from the Incident Manager will decide if an emergency should be escalated from Level 1 to Level 2.

The IM shall notify the Administration Area Head of all Level 2 and potential escalation to Level 3 emergencies. Any affected Administration Area Head or Corporate Management have the authority to declare a Level 3 emergency.

## Special Notifications

ARC has a 24/7 occupied BMS room. The operators are available all hours, weekends, and holidays. ARC also has on-call personnel available after working hours, weekends, and holidays (see Emergency Quick Card).

The on-call personnel schedule is posted every month in the BMS room and the contractor's workshop; it is sent to the BMS control room personnel, the Maintenance Contractor Foreman, and to the ARC Safety Compliance Group.

The schedule is updated each month by KAUST R&DC Support Unit and circulated to relevant parties.

## Situational Reporting & Threshold Triggers

All reports or situational updates are to be made by the IC only.

When the IC evaluates that the Level 1 emergency may become a Level 2, the IC must inform the IM immediately.

For any Level 2 or greater emergency, the IC must inform the IM immediately.

The IC will receive additional support from the IM during escalated emergencies. It is essential that the IC be in charge at the scene during any level of emergency. Upon the arrival of KFD, they will assume the IC role.

## General Reporting Guidelines

Any emergency incident must be reported through the Aramco EHSM System.

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### ARC Emergency Response Team (ERT)

Position	Normal Incumbent	Responsibility
<b>Incident Manager</b>	Manager, KAUST R&DC Div.	<ul style="list-style-type: none"> <li>Provides support to the IC and is typically the senior management person at the facility/site/location responsible for organizing, directing, and coordinating logistics for all response activities.</li> <li>The IM provides resource allocation and strategic direction in support of the IC; the IM typically does not engage in tactical decisions regarding mitigation of the emergency.</li> </ul>
<b>Incident Commander</b>	Compliance Group Lead	<ul style="list-style-type: none"> <li>Receives emergency notification via walkie-talkie.</li> <li>Appointed by the Manager, KAUST R&amp;DC Div.</li> <li>Has overall responsibility for the management of the incident at the emergency site, except for Level 2 and 3 emergencies.</li> <li>Establish the incident command post.</li> </ul>
<b>Asset Protection Officer</b>	Support Unit Supervisor	<ul style="list-style-type: none"> <li>Receives emergency notification via walkie-talkie</li> <li>Reports to IC.</li> <li>Provides building schematics as required.</li> <li>Provides maintenance work force as needed.</li> </ul>
<b>Floor Wardens</b>	Volunteer Employees	<ul style="list-style-type: none"> <li>Be informed of any person in their area of responsibility who may need assistance in the event of an emergency evacuation and by using a PEEP.</li> <li>Receive emergency notification via walkie-talkie or verbally from staff reporting the emergency.</li> <li>If the incident occurs on the Floor Warden's area of responsibility they will announce "Emergency at location X" on the walkie-talkie.</li> <li>Help guide employees to the assembly areas during an emergency.</li> <li>Provide the Assembly Area Warden information on the status of their area of responsibility.</li> </ul>
<b>Traffic Wardens</b>	Volunteer Employees	<ul style="list-style-type: none"> <li>Receive emergency notification via walkie-talkie.</li> <li>Receive directions from IC as to where to support the incident response activities.</li> </ul>
<b>Spill Team</b>	Volunteer Employees	<ul style="list-style-type: none"> <li>Receives Verbal Emergency Notification via Floor Warden</li> <li>Reports to IC and awaits their command.</li> <li>Provide immediate emergency HAZMAT response as needed and upon direction by the IC</li> </ul>

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Position	Normal Incumbent	Responsibility
<i>First Aid Team</i>	Volunteer Employees	<ul style="list-style-type: none"><li>Receives verbal emergency notification via Floor Warden</li><li>Reports to IC and awaits their command.</li><li>Provide immediate first aid response as needed and upon direction by the IC</li></ul>
<i>Assembly Area Wardens</i>	Volunteer Employees	<ul style="list-style-type: none"><li>Receive verbal emergency notification via Floor Warden.</li><li>Report to IC on headcount.</li></ul>
<i>Designated Assistance Personnel</i>	Volunteer Employees	<ul style="list-style-type: none"><li>Assist a person with a PEEP; this may involve the use of an Evacuation Chair.</li></ul>

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## 3 General Response Procedures

For initial response procedures, please refer to “Initial Response Actions” section in the Appendix.

### Evacuation Plan

Upon hearing an emergency alarm, all personnel will immediately stop all work, evacuate to the nearest Assembly Area. All Emergency Response Team members shall utilize the necessary emergency response equipment (e.g., hi-visibility vest, walkie-talkie, megaphones, etc.).

The following are actions to be taken in an evacuation:

- Quickly shut off all equipment that cannot be left unattended if safe to do so.
- Ensure offices and laboratories are not locked.
- Use the nearest escape exit or stairs - DO NOT use the elevators.
- Never assume a false alarm. Evacuate even if the alarm stops sounding, unless instructed from the IC to do otherwise.
- Proceed in an orderly manner until you reach an Assembly Area.
- Assist anyone who appears to be having difficulty evacuating, but DO NOT place yourself at risk.
- If you cannot assist someone who requires it or there is a downed employee, report their location to the nearest ERT member, KAUST Security or Firefighter, or call 911 (012-808-0911 if calling on mobile) and inform them of the situation.
- Keep doors in stairways closed and close all doors behind you unless there are personnel directly behind you evacuating.
- Personnel requiring a Personal Emergency Evacuation Plan (PEEP) should follow their personal plan defined in the Appendix.
- Remain in the Assembly Area and do not re-enter the building, even if the alarm has stopped sounding until the "All Clear" is announced by the IC or Fire Department
- If you have any relevant information regarding the incident or information which you feel is important to the emergency responders, pass the information to the nearest Emergency Response Team member, firefighter, or call 911 (012-808-0911 if calling on mobile) and pass the information on to them for onward dispatch to the Incident Commander.
- Stay in the Assembly Area, as directed by the Assembly Area Warden, until the ALL CLEAR SIGNAL is given by IC.

On discovering a fire and without putting themselves in danger and only if possible, occupants should:

- Isolate any power, gas, fuel, etc.
- Close the door, once all occupants have evacuated the room, to stop the spread of the fire.
- If the fire alarm has not been automatically activated, raise the alarm by activating the nearest manual pull station and evacuate the building.

The building's alarm can be activated by any, all, or a combination of the following means:

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- Manually, by the operation of a manual pull station.
- Automatically, by activation of a smoke detector, flame detector, sprinkler head, or toxic gas monitoring alarm.
- On exiting the building, the Incident Commander should confirm that someone has called 911 (012-808-0911 if calling on mobile).

On discovering a small fire, a Floor Warden should only attempt to extinguish the fire with an appropriate Fire Extinguisher if:

- They are trained to use that extinguisher.
- They do NOT put themselves in any danger whatsoever.
- They are fully confident that they can extinguish the fire.
- They are not alone.
- The alarm has been raised to alert other building occupants and the Fire Department.
- By calling for assistance and attack the fire with the extinguishing equipment provided, but only if you are trained and confident to do so. If you are not trained to use a Fire Extinguisher you should close the door to the room where the fire is, once all occupants have evacuated the room, leave the building immediately and proceed to the nearest Assembly Area. (See Appendix 1 for maps of Assembly Areas and Emergency Exits.)
- DO NOT put yourself or others in danger!

If they discover a fire that they are not going to attempt to extinguish they should, without putting themselves in danger and only if possible:

- Isolate any power, gas, fuel, etc.
- Close the door to stop the spread of the fire unless, of course, there are persons directly behind you evacuating.

Raise the alarm by activating the nearest “Manual Pull Station” and assist in the Emergency Evacuation of the building

## Contingency Plan for Extended Emergency Evacuations:

1. The ARC Incident Commander shall ensure that there is drinking water available for extended emergency evacuation events. This is done by either ensuring that there is a sufficient supply of bottled water stored in a safe and accessible location in or near the Assembly Area, or send a volunteer or ERT member to buy water at the local commissary. If the second option is performed, the person shall not incur any expenses and shall follow Aramco expense reporting criteria.
2. In case of the need to use restroom facilities, DOW Chemical can be utilized as agreed upon between Aramco Research Center (ARC) and DOW Chemical.
3. The Incident Commander may decide for everyone to leave the site. If this happens, personnel shall remain available by phone in case there is vital information that is needed for the incident or investigation purposes. If there is a need for personnel to leave offsite, he or she must get permission from their direct supervisor and the ARC Incident Commander.



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## Emergency Response Important Locations

ARC has 2 default ICPs, however only one command post is setup and used during a single emergency. They are subject to change by the IC based on wind direction, location of the emergency, and the need for “line of sight”.



## Shelter in Place

If ARC staff are required to shelter in place (e.g., flood, sand storm, etc.), the Floor Wardens will receive the notification via the walkie-talkie and verbally direct staff to shelter in place by saying, “emergency - shelter in place”.

Employees should take the following action when told to shelter in place:

- Return to their desks and stay away from windows if possible.
- Stay out of hallways.
- In the event of an “Act of Terrorism” or “Active Shooter” there may be additional requirements such as lock doors and take cover under your desk. These instructions will be announced on the walkie-talkie and Floor Wardens will verbally communicate the instructions to their floors if safe to do so.



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## Stay at Home

If ARC staff are required to stay at home, their direct supervisors will contact them on their personal phones to communicate the requirement. Direct supervisors will be contacted through the management chain of command.

## ERT Initial Response Actions

### Manager, KAUST R&DC Div./Incident Manager (IM)

- Evacuate safely and proceed to ICP.
- Support IC as needed. If the emergency is likely to be escalated to Level 2 or 3, call 012-808-0911 to confirm the location of the ECC and then proceed to the ECC to act as the IM.
- Announce the emergency level escalation based on the IC assessment.

### Incident Commander (IC)

- Activate this plan by acknowledging the emergency over the walkie-talkie, "Emergency in location XX".
- Evacuate safely and proceed to set up the ICP.
- Receive de-brief from relevant staff (e.g., ERT).
- Assess the emergency and advise IM on escalation of level.
- Decide on rescue efforts.
- Brief external response departments as required and direct additional support as needed.

### Assembly Area Wardens

- Evacuate safely and proceed directly to their assigned Assembly Areas.
- Open the Assembly Area Box, put on vest, and get the headcount list.
- Receive headcount from Floor Wardens.
- Using the walkie-talkie, report each Floor Wardens headcount status to the IC.
- Direct employees to the safest area upon the IC direction.
- Announce any information given by IC (e.g., all clear).

### Floor Wardens

- Sweep your assigned floor while yelling in each room "Evacuate!!!" and note anyone that is unable to evacuate (e.g., downed employee)
- Do not attempt to rescue a downed employee unless you have been trained, authorized, are sure that the employee was not exposed to a harmful substance (e.g., toxic chemical), and believe that you can do so safely.
- Evacuate safely and proceed to an Assembly Area.
- Report to the Assembly Warden:
  - Location swept: (Floor XX)
  - Whether your floor is "all clear" or not. If not, clearly explain why not.

### ARC Support Group Leader

- Evacuate safely and proceed to ICP.
- Take report from IC about the emergency.
- Support IC on matters regarding the facility (e.g., fire pumps, power, etc.).

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#### ARC Spill Team Members

- Evacuate safely and proceed to ICP.
- Evacuate safely with required PPE and equipment for HAZMAT response
- Await direction from IC.

#### ARC First Aid Team

- Evacuate safely and proceed to ICP, if not engaged in a medical response.
- Evacuate safely with a first aid kit / PPE required for first aid response, if not engaged in a medical response.
- Await direction from IC.

#### Traffic Wardens

- Evacuate safely and proceed directly to your assigned Assembly Area.
- Put on high-visibility vest and go to your assigned gate.
- Direct emergency service personnel in and restrict non-essential traffic.
- Assure a clear path for medical teams when needed (i.e., hold elevator doors and building's doors).

#### Emergency Gas Tester

- Evacuate safely and proceed to ICP.
- Await direction from IC.

## Site Security Control

Once a Level 1 emergency is declared, access to the site will be restricted by the ARC Traffic Wardens and/or KAUST Security, if needed. If the IC and the IM declare a Level 2+ emergency, KAUST Security will secure the site. When the IC declares the situation to be "All Clear" employees are typically allowed to re-enter the facility and resume work if safe to do so.

Access to the area where the emergency took place shall be restricted in all level 2 and 3 emergencies to enable the collection of evidence for investigating the cause of the emergency. The site may also be temporarily restricted in Level 1 emergencies based on the discretion of the IC and Manager, KAUST R&DC Div. to facilitate a complete investigation.

## Decontamination

Emergency showers in the building are used for decontamination in the case of chemical spills involving an employee or small group of employees.

KFD can set up a decontamination booth and assist with decontamination in case the building decontamination facilities are not sufficient for a large number of people.

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## 4 Emergency Response Organization

The local emergency response organization for ARC is shown in the Emergency Organization Chart below.

### Incident Command Structure

**Incident Commander (IC):** The Asset Protection Officer acts as the IC until KAUST Emergency Response arrives to assume command, if needed. The IC manages the site including access, staff evacuation, reporting, etc. A key role is providing all required information to the Emergency Responders of the site-specific hazards and any other relevant information. The IC also collates information from the Emergency Response Team Members and communicates where appropriate. The Asset Protection Officer or his backup will always be prepared to perform the role of IC.

**KAUST IC:** The Chief Emergency Responder responsible for the overall strategy of the emergency response, for suppression, and control tactics at the site.

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## 5 Communication During Emergencies

### Communications Systems and Equipment

ARC use “Emergency walkie-talkies” as their primary communication system in ARC, these radios are held by all emergency responders. Persons assigned with Emergency walkie-talkies shall carry it on their person at all times while onsite (KAUST, ARC).

### Department Communications Plan

Efficient and simple communications are crucial to effective emergency response. ARC uses a simple walkie-talkie system for all communication within ARC. If the walkie-talkies fail, a secondary communication system will be initiated through mobile phones and/or runners.

### Methods for External Communications

Only the IC is to communicate with external departments (KFD, KAUST ECC, etc.) during an emergency.

### Methods for Internal Communications

The Assembly Area Wardens will verbally communicate with ARC staff in the Assembly Area; only key information will be announced. For example:

- There is a fire emergency, please wait patiently in the Assembly Area.
- The emergency is under control, please wait patiently in the Assembly Area.
- The Incident Commander has given the all clear, please return to work.
- Please remember to socially distance in the Assembly Area.

Mobile phone communications are used by chief position holders to communicate with their staff when to “stay at home” (i.e., during a pandemic response).

### Protocols for communicating with Media/External Stakeholders

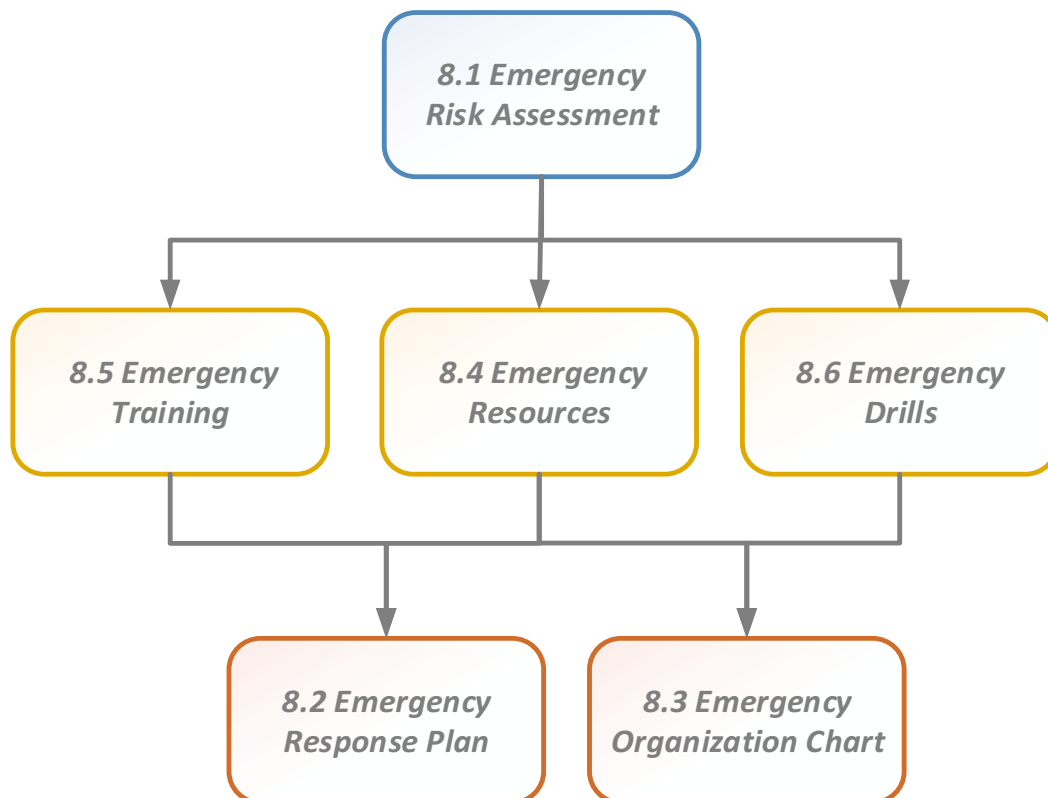
ARC staff members shall not communicate with media (including social media) or external stakeholders about an emergency or incident. Any external communications related to an incident should go through appropriate company approval processes and channels including review by ARC Management and Corporate Communications Teams.

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## 6 Emergency Preparedness Evaluation

Emergency preparedness is managed annually according to the flow chart below. Each box represents an SMS Process for Element 8 Emergency Preparedness. The entire process is reviewed using the Operational Excellence methodology, Plan-Do-Check-Adjust.

Initially, a risk assessment is conducted to determine what emergencies ARC will prepare for and subsequently what training, resources, and drills are required. These ultimately feed into the ARC Emergency Response Plan (this document) and the Emergency Organization Chart implemented at ARC (see graph below).



The following methods will be used to evaluate the effectiveness of this ERP and overall ARC Emergency Preparedness.

- Evaluation and critique of emergency drills
- SMS Process KPI scores
- SMS LPCR score

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## Document Review

This Emergency Response Plan will be enhanced, at a minimum, annually (refer to SMS Process 8.2) and updated as required with respect to:

- Departmental organizational changes.
- Departmental operational changes.
- World events that indicate the need for supplementary Emergency Response Plans.
- Findings during drills or events that indicate the need for an update.
- Items in the Appendix can be updated without issuing a new revision of the ERP.

This ERP must be reviewed and updated on an annual basis or as otherwise required. FrPD and ALPD will review the changes and provide feedback.

Approval is given by the highest-ranking staff at ARC, the Head of ARC.

## Emergency Drills

Emergency drills will be conducted throughout the year (minimum of four total per year) to ensure ARC is prepared and able to handle emergency situations that may arise (refer to Process 8.6). Focus is placed on:

- Holding emergency drills based on the credible scenarios that may occur at the facility.
- Identifying improvements that can be made in the response and proposing corrective actions.
- Closing corrective action items by their due date.

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## 7 Appendices

### Emergency Contacts

*Can be updated without issuing new revision of ERP.*

- KAUST Emergency
  - 012 808-0911
- Manager, KAUST R&DC Div. (IM)
  - Hamad Saiari
  - 050 340-2718 / 012 427-3333
- KAUST Research Center Group Leader (IM Backup)
  - AbdulWahab Ghamdi
  - 053 213-1056
- ARC Support Group Leader
  - Meshal Otaibi
  - 055 586-6856 / 013 872-3833
- Emergency Preparedness Coordinator (IC)
  - Hussain Alyami
  - 056 882-7259 / 013 427-3383
- Safety Officers
  - Almalki, Ibrahim A (IC Backup)
  - 059 483-6900 / 012 427-3377
  - Majid Almahmoudi
  - 056 746-7229
- Safety Compliance Group Leader (IC)
  - Yami, Hussain
  - 056 882-7259 / 013 427-3383
- Radiation Protection Officer (RPO)
  - Jalal M. Borshaid
  - 013 876-2738
- Environmental Coordinator
  - Almalki, Ibrahim (IC Backup)
  - 059 483-6900 / 012 427-3377
- Environmental Protection Department (EPD) Emergency Contact
  - Michael Cowie (Environmental Consultant)
  - 013 880-9747

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## References

*Can be updated without issuing new revision of ERP.*

- GI 0008.006 Emergency Management Program
- GI 1786.001 Hazardous Material Emergency Response
- GI 6.000 Incident Notification, Reporting, & Investigation
- SMS Element 8, Emergency Preparedness
- Corporate OE 11.3, Emergency Preparedness
- SMG 08-001-2022, Emergency Preparedness
- Saudi Aramco COVID-19 Pandemic Response Protocol

## ARC Alarm Systems

*Can be updated without issuing new revision of ERP.*



### *Fire Alarm (Da-Da-Da-Da)*

- Audible & visual alarming system
- Activated automatically when smoke is detected.
- Activated manually by staff

## ARC Gas Alarm Set Points

*Can be updated without issuing new revision of ERP.*

Gas Type	Normal Reading	1 <sup>st</sup> Alarm Set Point	1 <sup>st</sup> Alarm Action	2 <sup>nd</sup> Alarm Set Point		2 <sup>nd</sup> Alarm Action
H <sub>2</sub> S	0 PPM	5 PPM	Continuous Horn	10 PPM		Continuous Horn
LEL	0%	5%	Continuous Horn & Red light	10%		Continuous Horn & Red light
CO <sub>2</sub>	0 PPM	1.00 vol%	Continuous Horn & Red light	2.00 vol%		Continuous Horn & Red light
O <sub>2</sub>	20.90%	19.50%	Continuous Horn & Red light	18.50%	23.5%	Continuous Horn & Red light
H <sub>2</sub>	0.00%	800 PPM	Continuous Horn & Red light	1000 PPM		Continuous Horn & Red light



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## Initial Response Actions

*Can be updated without issuing new revision of ERP.*

This section provides an overview of the key initial response actions for employees, Floor Wardens, and the Incident Commander. A more thorough list of initial response actions, including additional positions, is located in Section 3, General Response Procedures.

## Employee Response



**1**

*The employee must report the emergency to "911" (012 808 0911) as soon as it is safe to do so.*

**2**

*If safe to do so, the employee must tell an **ARC emergency responder** (Floor Warden, Assembly Warden, Traffic Warden, etc.) there is an emergency. An ARC emergency responder will notify all ARC emergency responder staff.*

**3**

*Upon hearing an alarm, being told to evacuate, or after reporting the emergency, staff should turn off equipment / secure experiments quickly (if safe to do so) and evacuate the building. Staff should assemble at the nearest Assembly Area unless instructed otherwise.*

**4**

*Staff should remain in the Assembly Area and listen to any directions from the Incident Commander and Assembly Warden. Staff should not re-enter the building until the Incident Commander gives the **ALL CLEAR**.*

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## Floor Warden Response



*The Floor Warden should immediately call out on the walkie-talkie when they become aware of an emergency "Emergency! Lab XXXX on floor #" using the ARC emergency walkie-talkie.*



*All Floor Wardens must sweep their floors (if safe to do so) yelling, "Evacuate" or "Shelter in Place". Floor Wardens must note any staff unable to evacuate (assisting only if trained to do so).*



*Upon reaching the Assembly Area, the Floor Warden should inform the Assembly Warden whether their floor is clear or not, so that the Assembly Warden can report this information to the Incident Commander. "Floor # is Clear" or "## Employees Down on Floor #"*



*Floor Wardens should remain in the Assembly Area like all other staff until the Incident Commander gives the all clear to return to the building.*

JACK.HOGUE

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## Incident Commander



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## Personal Emergency Evacuation Plan (PEEP)

*Can be updated without issuing new revision of ERP.*

A PEEP is a tailored evacuation plan for individuals who may not be able to reach a place of safety unaided or within a satisfactory period of time in the event of any emergency without assistance.

The PEEP is to be completed by the individual requiring a PEEP, their supervisor, and the Designated Assistance Personnel. The completed PEEP shall be communicated to their Floor Warden.

### Special Requirements:

In the event of an emergency evacuation, should it be identified that any occupants who will require a PEEP or special equipment, the details of the provisions and requirements should be clearly outlined in the PEEP form below.

If special equipment is required (e.g., Evac-Chair), contact the Safety Compliance Group.

### Required Actions:

- Personnel requiring a PEEP shall inform their Floor Warden and obtain their signature on the PEEP Form.
- The Designated Assistance personnel shall assist a person with a PEEP; this may involve the use of an Evacuation Chair (Evac-Chair).

## Who needs a PEEP?

A PEEP may be required for staff with:

- Mobility impairments
- Sight impairments
- Hearing impairments
- Cognitive impairments
- Other circumstances

A temporary PEEP may be required for:

- Short-term injuries (e.g., broken leg)
- Temporary medical conditions
- Those in the latter stages of pregnancy

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## Personal Emergency Evacuation Plan (PEEP) Form

*Can be updated without issuing new revision of ERP.*

PERSONAL EMERGENCY EVACUATION PLAN			
Name			
Department			
Building Level and Area			
Phone Number			
AWARENESS OF PROCEDURE			
_____ is informed of an Emergency Evacuation by placing an "X" in the relevant box.			
<input type="checkbox"/> Audible Alarm System		<input type="checkbox"/> Visual Alarm System	
<input type="checkbox"/> Other (please specify):			
DESIGNATED ASSISTANCE			
The following have been designated to give _____ assistance to get out of the building in an emergency.			
Name and Signature			
Contact Details (Floor, Area, & Phone)			
Name and Signature			
Contact Details (Floor, Area, & Phone)			
METHODS OF ASSISTANCE (e.g., transfer procedures, methods of guidance, etc.)			
EQUIPMENT PROVIDED and MEANS OF COMMUNICATION			
PERSONALIZED EVACUATION PROCEDURE (a step-by-step account beginning with the first alarm)			
1			
2			
3			
4			
NEXT REVIEW			
Signed by Individual		Date	
Signed by Floor Warden		Date	
Signed by Supervisor		Date	

*To be completed by the Supervisor, Individual, and Designated Assistance employees.*

*(If the individual works in more than one building, then it may be necessary to prepare a separate PEEP for each building)*

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## Personal Emergency Evacuation Plan (PEEP) Form (Example)

*Can be updated without issuing new revision of ERP.*

PERSONAL EMERGENCY EVACUATION PLAN			
Name	Employee A (EA)		
Department	Engineering		
Building Level and Area	Level 2, Office ##		
Phone Number	12345678		
<b>AWARENESS OF PROCEDURE</b>			
Employee A is informed of an Emergency Evacuation by placing an "X" in the relevant box.			
<input checked="" type="checkbox"/> Audible Alarm System		<input checked="" type="checkbox"/> Visual Alarm System	
<input type="checkbox"/> Other (please specify):			
<b>DESIGNATED ASSISTANCE</b>			
The following have been designated to give (EA) assistance to get out of the building in an emergency.			
Name and Signature	Employee B (EB) <i>Employee B</i>		
Contact Details (Floor, Area, & Phone)	Floor 2, Area 4, 01234567		
Name and Signature	Employee C (EC) <i>Employee C</i>		
Contact Details (Floor, Area, & Phone)	Floor 2, Area 4, 87654321		
<b>METHODS OF ASSISTANCE (e.g., transfer procedures, methods of guidance, etc.)</b>			
EA can walk to the stairwell where he will require 2 persons and the Evac-Chair to go down the stairs.			
<b>EQUIPMENT PROVIDED and MEANS OF COMMUNICATION</b>			
Evac-Chair is located on the wall in stairwell XX; communications will be by mobile phone or walkie-talkie to other emergency response members as required.			
<b>PERSONALIZED EVACUATION PROCEDURE (A step-by-step account beginning with the first alarm)</b>			
1	On activation of an alarm, EA will make his way to stairwell XX.		
2	EB and EC will meet EA in the stairwell and when the stairwell is clear of other evacuees, assist EA down the stairs using the Evac-Chair. EB or EC will first inform their Floor Warden by mobile (provide number) or walkie-talkie that they are proceeding down the stairs. The Floor Warden may aid with the evacuation of EA, if needed.		
3	The Floor Warden will inform the Assembly Area Warden when their floor is clear (including EA).		
4			
<b>NEXT REVIEW</b>			
This plan will be reviewed annually.			
Signed by Individual	<i>Employee A</i>	Date	
Signed by Floor Warden	<i>Floor Warden</i>	Date	
Signed by Supervisor	<i>Supervisor</i>	Date	

*To be completed by the Supervisor, Individual, and Designated Assistance employees.*

*(If the individual works in more than one building, then it may be necessary to prepare a separate PEEP for each building)*

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## Emergency Response Equipment & Supplies

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ARC has various physical Emergency Resources that are required for effective emergency response, these are monitored and managed using SMS Process 8.4.

Building 39 has the following emergency (i.e., safety and fire protection) systems throughout ARC:

- Combustible gas detectors (LEL).
- Smoke detectors placed in all areas.
- Oxygen detectors
- Hydrogen detectors
- Carbon dioxide detectors
- Carbon monoxide detectors
- Heat and smoke detectors (in the Advanced Computing Room)
- Fire sprinklers
- Fire hydrants (outside)
- Emergency lighting
- Emergency exit lights
- Fire extinguishers
- Fire hose connections
- Manual fire alarm (i.e., pull stations)
- Fire alarm system
- Automatically operated fire door

The following equipment is housed in Fire Pump Room:

- Electric engine fire water pump
- Jockey fire water pump

Section reserved for locations of AED Devices

Section reserved for Evacuation Chair and also for handicap chair



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## Pre-Incident Plans

*Can be updated without issuing new revision of ERP.*

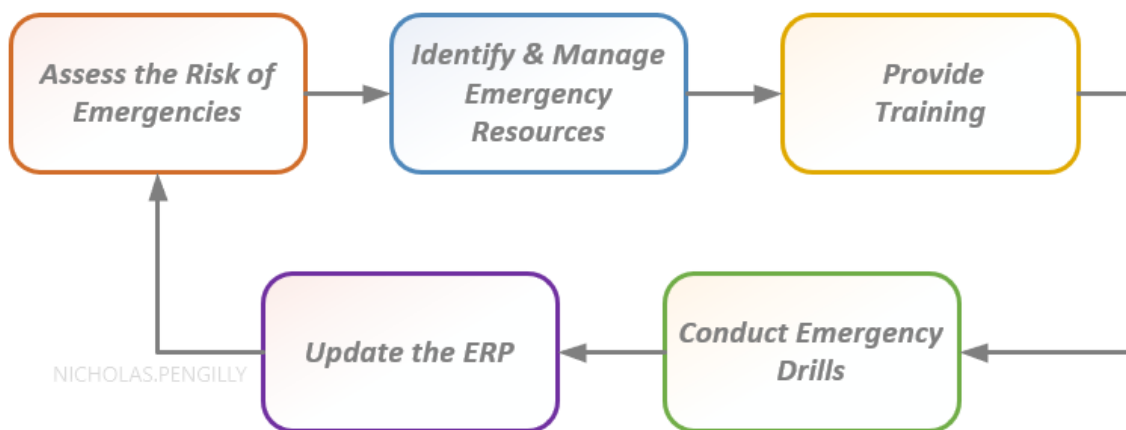
## General Flow

Time	Phase	Description of Activity
0 - 2 Minutes	Initial Actions	Employees notice an emergency. Employees calls “911” to report the emergency. Employees notify their Floor Wardens of the emergency.
		Floor Wardens/emergency responders call “Emergency - Floor #” on the emergency walkie-talkie; IC acknowledges call.
		Floor Wardens start to evacuate the building, performing a sweep to ensure that the floor is clear.
		General staff members start evacuating.
2 - 10 Minutes	Communications	ARC IC debriefs support services and begin emergency management.
		IC surveys the emergency, confirms reporting the emergency to “911”, and establishes the incident command post (ICP).
		General staff completely evacuated from ARC.
		External resources arrive on site (e.g., Fire, Ambulance, Security).
10 - 15 Minutes	Response Actions	Floor Wardens report to Assembly Area Wardens.
		IC receives updates from Assembly Wardens that all buildings and floors are clear.
		Support Group reports to ICP and organizes resources (e.g., Gas Tester, technicians, etc.).
15 Minutes - X Hours	Managerial Actions	IC updates ARC Manager of emergency and provides updates.
		IC manages the situation until "Under Control" or escalates to level 2 or 3.
		IC or ECC manages the situation until "All Clear".
		ARC returns to normal operations.

ARC pre-incident plans are a combination of the Emergency Preparedness SMS Element 8 Processes. The processes will identify the risks/emergencies ARC may have to manage; subsequently training is planned and executed, relevant resources procured and maintained, required staff instated into the EMO, and the ERP is developed. The planning and preparation of mock drills is further considered pre-incident plans.



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Emergency procedures for identified scenarios are included in the above section (Pre-Incident Plans) and can be used as a guide in responding to identified emergency situations. If new credible scenarios are developed, a pre-incident plan should be developed and the ERP should be updated as per the above graphic. KFD and other support organizations should be included in the development of emergency procedures.

## Chemical Exposure - Gas Leak

In the case of a gas leak, notify your Floor Warden if it is safe to do so, and immediately evacuate to your nearest Assembly Area.

Inform others of the emergency on your way out of the building so that they may also evacuate, but **do not pull the fire alarm unless there is a concurrent fire**, as this will cause the ventilation system to shut down and increase the spread of contamination throughout the building.

Follow the standard procedure to report the emergency.

Evacuate to a safe location (evacuate at least 150 ft upwind if outside). Do not attempt to rescue downed employees in areas of potential contamination unless trained to do so and wearing the appropriate PPE.

IC should take note of the risk of the gas release depending on the size and type to ensure that the Assembly Areas are all located outside the areas of potential contamination.

## Liquid Chemical Spills

Isolate the spill area as much as possible without placing yourself in danger. Close doors, barricade the area, etc.

Follow the standard procedure to report the emergency.

Evacuate to a safe location (evacuate at least 150 ft upwind if outside).

The ARC Spill Team or KAUST HazMat will respond to the emergency.

## Small Fire

For a small office fire (e.g., waste paper fire emergency), follow the R.A.C.E.E. procedure:

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**Rescue** any injured person that is in immediate danger if you can do so without putting yourself at risk.

**Alarm** warn others (Verbally/Pull the alarm/Report the emergency. ***Call 911 from a landline or 012-808-0911 from a mobile***

**Contain** the fire by removing any fuel or electrical equipment in the area.

**Extinguish** the fire if you are trained.

**Evacuate** the building by the shortest, safest route (no elevators) and report to the Assembly Area.

To use an extinguisher, remember this acronym: PASS - Pull, Aim, Squeeze, Sweep.

Follow the standard procedure to report the emergency.

## Large Fire/Explosion

For a large fire or explosion, notify your Floor Warden and immediately evacuate to your nearest Assembly Area.

Follow the standard procedure to report the emergency.

KFD will decide on the best course of action to recover/manage the situation.

## Elevator Emergency

Elevator occupants use the elevator emergency phone (this calls KAUST 911 directly) as indicated on placard posted inside elevator.

KFD are able to assist and perform elevator rescues and additional support can be given by the Manufacturer's 24-hr Response personnel, if required.

Two emergency elevator keys are located in the Knox Box at the reception desk.

The IC also engages any other required staff (ARC Support Group, technical staff, etc.) who may be needed to support KFD.

Following rescue and any repairs, the IC decides whether the elevator will be put back in service

## Minor Medical Incident/Injury (Non-Emergency)

ARC has trained First Aid responders. When a staff member is injured at work, ARC First Aid responders shall administer first aid and report a minor injury.

The ERP will not be activated.

## Major Medical Emergency (Major Injuries/Downed Employees)

When a staff member is injured and requires hospitalization, trained ARC First Aid responders shall administer first aid if safe to do so and within their knowledge of expertise.

Follow the procedure to report the emergency. Notify the Floor Warden, who will notify the IC, who will assume control of the emergency.

Stay with the victim until help arrives, unless it is not safe to do so. Do not move the victim unless they are in an unsafe location.

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## Hostile/Terrorist Attack

In the event of observing a hostile attack on or near ARC, personnel should seek shelter (shelter in place) until told to do otherwise or until it becomes unsafe to do so (e.g., if a fire is spreading nearby). Personnel should move away from windows and shelter under their desks. If the hostile attack is related to armed attackers, employees should close all window shades or cover windows and lock all doors until the situation is resolved and an all clear is given. If medical support is needed, employees should follow the medical emergency response plan. Call 911 from a landline or 012-808-0911 from a mobile.

The IC may elect not to set up an ICP outside, and instead coordinate the response from a safe location in the building. Any communications or instructions will be passed via walkie-talkies to the Floor Wardens, who must verbally communicate these instructions to all employees on their floors. The BMS operator, when directed by the IC, should manage the alarm system to prevent evacuation of the building unless necessary for safety (e.g., the fire alarm should only be activated in case of an actual fire). Employees should not try to leave the building or premises unless instructed to do so.

## Drone/Missile Attack

In the event of a drone/missile attack, the IC will provide direction to all ERT members using the walkie-talkie about the next steps or actions based on instruction from KAUST Security. The ERT members will then disseminate IC's commands to ARC staff. The IC may call for the immediate evacuation or a shelter in place of ARC according to KAUST Security's directions.

## Power Failure

In the event of a power failure to the ARC facility:

If it's safe to do so, shut down and secure all lab operations and manually turn off all power to lab instrumentation; lab operators will physically close all hazardous gas cylinders.

If the lab ventilation fails (e.g., fume hoods), **immediately evacuate the labs and secure the lab by closing all doors.**

If the power failure affects the whole building and the power does not return, guidance will be given from the IC to the ERT as to what the next steps to follow will be (i.e., evacuate or shelter in place).

Ensure the IC, during normal hours, or the after-hours on-call person is notified of the power failure.

The IC will coordinate with KAUST Power Operations and Utilities Department to notify them of the power failure and request support as required.

Upon the return of power, the IC instructs all personnel on when to return to normal operations and communicates when it is safe to resume lab operations and power up laboratory instrumentation.

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## HVAC Failure to Building

In the event of an HVAC failure in ARC building:

If the HVAC shuts down, guidance will be given from the IC to the ERT as to what the next course of actions will be.

If the power failure affects the whole building, follow the procedure below for restarting the BMS Systems:

- Step 1: Switch ON for Chilled Water Pump System through BMS workstation.
- Step 2: Switch ON for Chillers systems with 10-minute delay for staging between the units through BMS workstation.
- Step 3: Switch ON for Air Handling Units with 5 minutes of staging, Exhaust Fan Systems with 5 minutes of staging, Fan Coil Units through BMS workstation.
- Step 4: Monitor and control the Pressure Differential Transmitter on Chilled water piping Sensor and Temperature Sensor Set point on Chilled water Pump-Secondary Pump systems through BMS workstation.
- Step 5: Monitor the Pressure Transmitter on Air Handling Unit Duct Sensor and Temperature Sensor Set point on Air Handling Units systems through BMS workstation.
- Step 6: Monitor all systems after archiving the set points through BMS workstation.

## Pandemic Response

ARC will utilize corporate's response plan for any pandemic.

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## Credible Scenario Locations of Risks

*Can be updated without issuing new revision of ERP.*


ARC has identified the following credible scenarios that may occur:

- **Fire/smoke or explosion due to hydrocarbon / hydrogen loss of containment**
  - Cylinder rooms, labs, receiving area, HazMat area
- **Fire/smoke during hydrocarbon disposal and transfer**
  - Receiving area, labs
- **Lethal poisoning/asphyxiation due to chemical/gas release**
  - Cylinder rooms, labs, receiving area, mechanical room, HazMat area
- **Chemical spills/loss of containment**
  - Labs, storage rooms, receiving area
- **Natural disasters (flooding/sandstorm)**
  - ARC facility
- **General medical emergencies**
  - ARC facility
- **Data leakage and cyber attacks**
  - ARC facility
- **Confined Spaces**
  - Mechanical rooms, chiller area, bathrooms, corridor areas, elevators shafts
- **Falling from heights**
  - ARC Main Building, roofs of ARC
- **Electric shock/electrocution (<240 V)**
  - ARC facility
- **High voltage electrocution/arc flash (>4000 V)**
  - Mechanical rooms, electrical room
- **Drone attack by a hostile party**
  - ARC facility
- **Active shooting by a hostile party**
  - ARC facility

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## Risk Assessment

*Can be updated without issuing new revision of ERP.*

<div><div>أرامكو السعودية</div><div>saudi aramco</div></div> <div></div>					Facility: All ARC Facilities in KAUST				Department: ARC	Date prepared: March 2021	
Division: N/A									Date Issued: March 2021		
ID	Hazard	Causes	Consequences	Existing Protection	L	S	R1	Tolerable Y/N	Measures	R2	Action By/ Drill Required
4.	Chemical Spills / Loss of Containment (H2SO4 / NaOH)	Mishandling of Samples  Spill	Minor Injury.  Minor damage to the facility.  Minor Financial damage.	PPE  Special Spill Kit (Drum Leak Spill Kit)  Emergency Showers and Eyewash	2	2	4	Y	N/A	4	Drill Required
5.	Natural Disasters (Flooding / Sandstorm)	Heavy Rain  Weather Changes  Infrastructure Failure	Damage to the facility results in the closure of ARC	None	1	2	2	Y	N/A	2	Drill Required

*The full Risk Assessment will be included with the ERP at the ICP*

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## Training Requirements and Plan

*Can be updated without issuing new revision of ERP.*

ARC has various training plans that are required for effective emergency response, the emergency training is planned and managed using SMS Process 8.5.

## KFD Annual Review Meeting

*Can be updated without issuing new revision of ERP.*

KFD will be invited to participate in an annual review meeting related to the ERP and Credible Scenarios for ARC. This meeting is intended to ensure that KFD is updated on the risks at ARC, that coordination on equipment capabilities and potential requirements is maintained, and that KFD's expertise and insight is captured in the updates to the ERP. Meeting objectives will be to:

- Review ERP
- Review Credible Scenarios
  - Chemical exposure
  - Fire
  - Explosion
  - Medical emergency
  - Chemical spill
  - Confined space

## Emergency Control Center (ECC)

*Can be updated without issuing new revision of ERP.*

ARC will use the Fire Station ECC, located in KAUST Fire Station, or other designated location as decided by the KAUST Incident Commander, in the case that the emergency is escalated to Level 2 or 3.

## Walkie-talkie Checking Procedure

ARC will conduct, by SMS 8.3 Process Owner, regular radio call tests to gain a representative KPI of emergency responder coverage and availability.

## Hazardous Materials List

*Can be updated without issuing new revision of ERP—However, relevant parties should be notified of any new hazards*

The Chemical Management Team has the list for all hazardous materials at ARC; ARC has various combustible liquids and gases throughout its complex.

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## After-Incident Investigations/Restrictions

*Can be updated without issuing new revision of ERP.*

### Level 1 Emergency

The Incident Commander will issue the “All Clear” for employees to return to work with no restricted access to the facility.

The Incident Commander may choose to restrict access to the facility or if corrective safety actions are required.

### Level 2 Emergency

The Incident Commander will issue the “All Clear” for employees to return to work in specific unaffected areas of the facility.

The Incident Commander will restrict access to certain parts of the facility pending formal investigations. The ARC Incident Commander and Manager, KAUST R&DC Div. will decide when the restrictions are to be lifted in alignment with the investigation teams.

### Level 3 Emergency

ARC will be closed to all employees except essential work (electrical and mechanical technicians, janitors, specific laboratory technicians, etc.) while the facility is assessed for readiness to return to normal operation and until formal investigations are completed. This will be communicated to Chief Position Holders. The Chief Position Holders will notify their staff when to return to work.



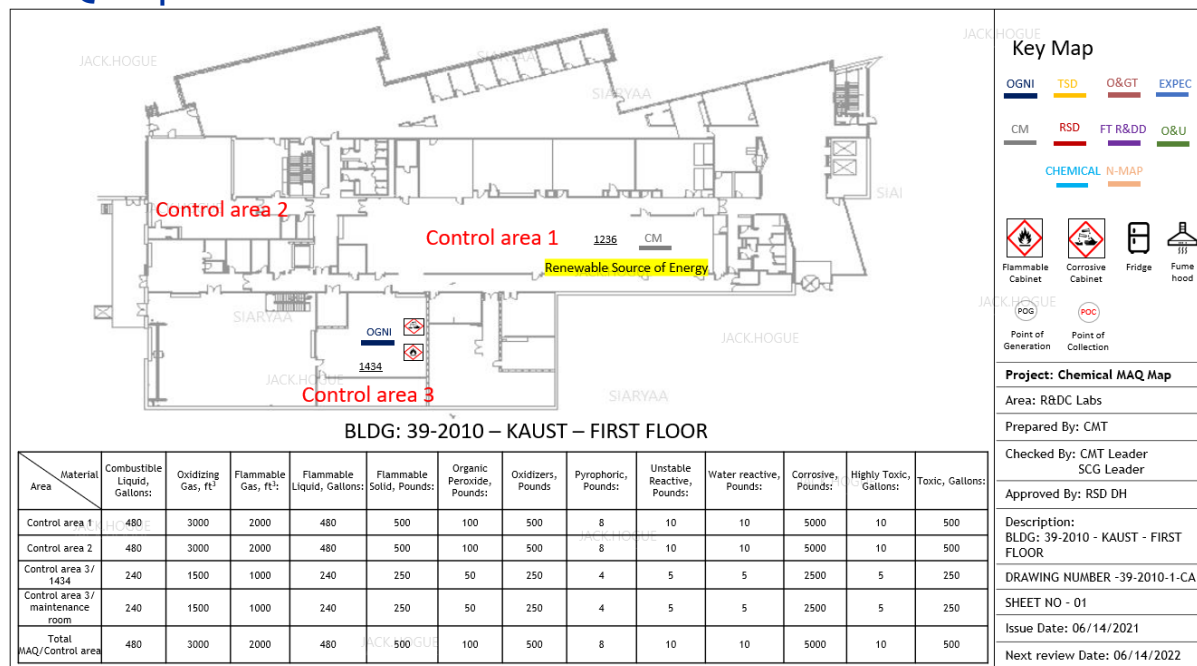
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## Maximum Allowable Quantities (MAQ) Drawings

Can be updated without issuing new revision of ERP.

### MAQ Maps - First Floor



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06/22/2022

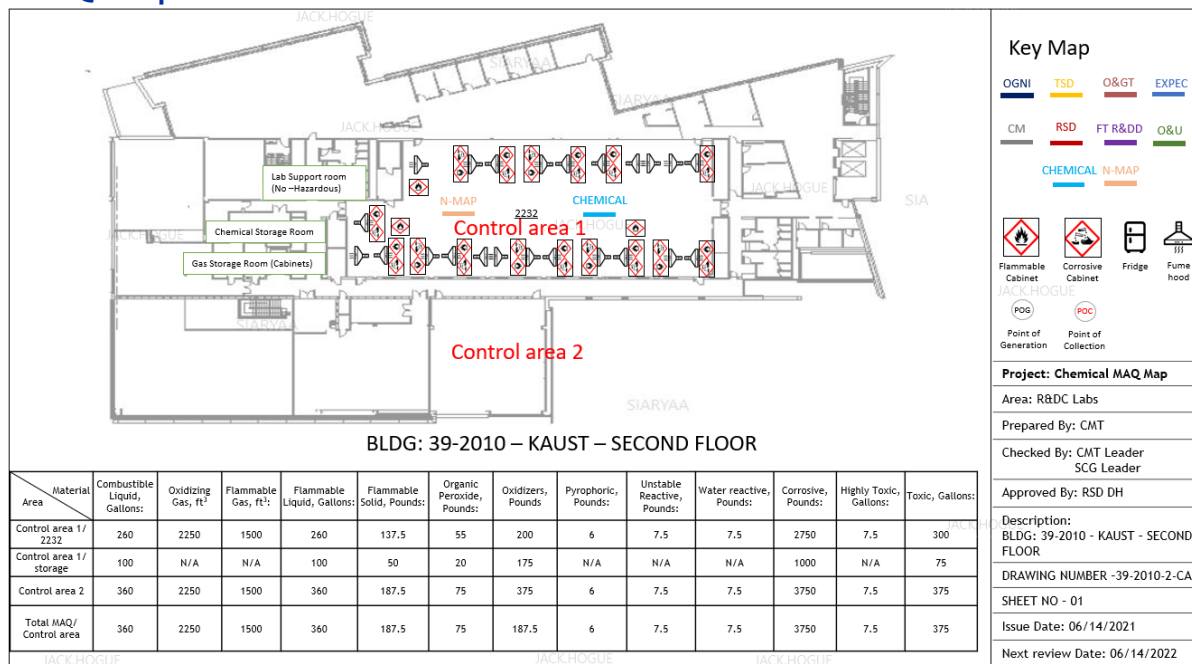
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Revision  
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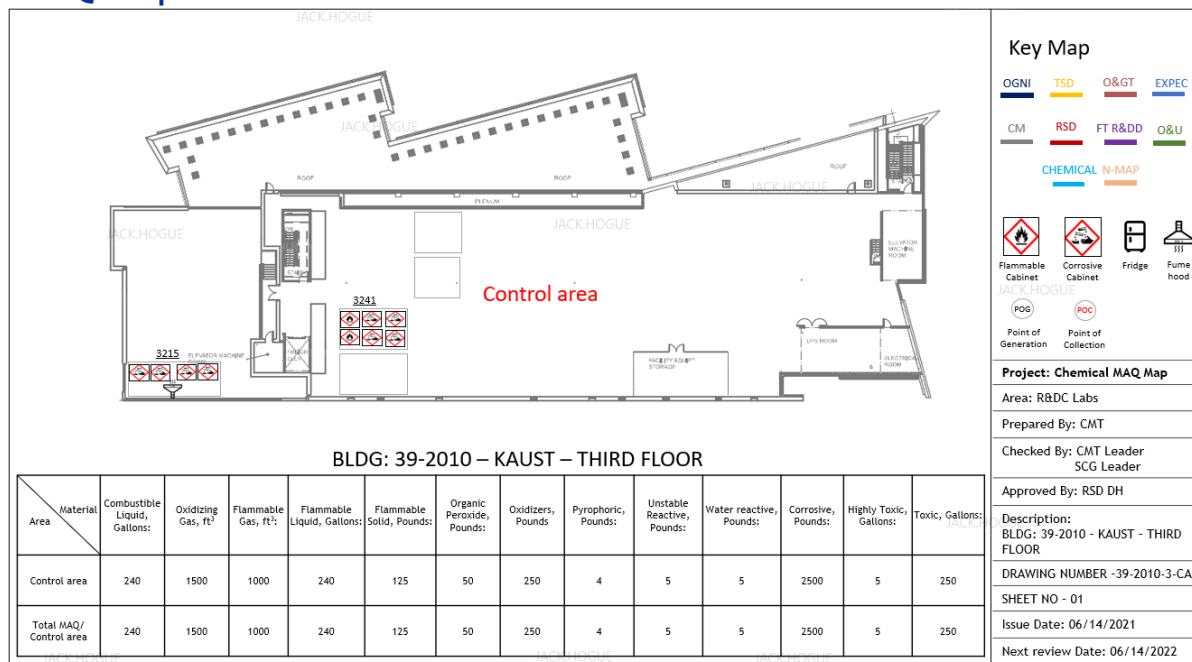
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## MAQ Maps - Second Floor



## MAQ Maps - Third Floor



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## Lab List with Assigned Supervisor

*Can be updated without issuing new revision of ERP.*

Lab #	Unit/Group Name	Supervisor	Mobile No.	Email
1235 1236	Combustion & Sustainable Energy Systems	Sarah A. Al Aqeel	055 602-3311	sarah.aqeel.1@aramco.com
2232	Advanced Materials & Catalysis	Khalid A. Almajnoui	056 891-7959	khalid.majnoui@aramco.com
1434 1435 2430	Intelligent Sys, Sensing & Robotics	Ali H. Al Shehri	056 196-2000	ali.alshehri@aramco.com
2431	AI for Science	Sahejad Patel	053 610-5453	sahejad.patel@aramco.com
Building Facilities	Support Unit	Meshal G. Otaibi	055 586-6856	mehsal.otaibi@aramco.com
1252 3234	KURC	AbdulWahab H Ghamdi	053 213-1056	abdulwahab.ghamdi.3@aramco.com

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## Head Count - ICP Checklist

*Can be updated without issuing new revision of ERP.*

This is to be used by the IC in an emergency evacuation for headcount.

<i>Floor #</i>	<i>CHECK</i>
1	
2	
3	
4	

<i>Group</i>	<i>CHECK</i>
Spill Team Present	
Traffic Wardens in Place	
First Aid Team Present	
Permit Writer Present	

<i>Assembly Area Established</i>	<i>CHECK</i>
AA #1	
AA #2	

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## Emergency Quick Card


*Can be updated without issuing new revision of ERP.*

### ARC Emergency Quick Card


1

*Call **911** from an  
Aramco landline*

OR

*012 808 0911*

2

*Follow the script below when reporting an emergency...*

This is an emergency

Say where the emergency is...

I am calling from Building 39, Floor 1, etc.

Say how many people need help...

There are ## people hurt


Identify yourself...


My name is XYZ; my KAUST badge number ###


Provide your contact details...

My phone number ### ### ####

3

*Tell your Floor Warden or any ARC emergency responder  
there is an emergency ...*

*There is an emergency  
in my Lab!*

*OK, I will get the ARC  
emergency responders to help.*

**Other Important ARC Contacts**  
*Incident Commander:*  
**Hussain Al Yami 0568827259**  
*Incident Commander Back Up:*  
**Almalki, Ibrahim A 0594836900**  
*ARC Support Supervisor:*  
**Otaibi, Meshal G 0555866856**  
  
**For help from 4PM – 7AM**  
**call 050 371 2203**

Saudi Aramco: Company General Use