International Atomic Energy Agency
Department of Nuclear Safety and Security

Incident and Emergency Centre

Perspectives for assessment and prognosis process from an NPP exercise and a response to a real event

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Introduction

- Purpose is to provide two examples from a real radiological emergency and an actual exercise at a nuclear power plant
- Focus will be on discussing observations and interactions from Member State perspective, followed by IAEA perspective

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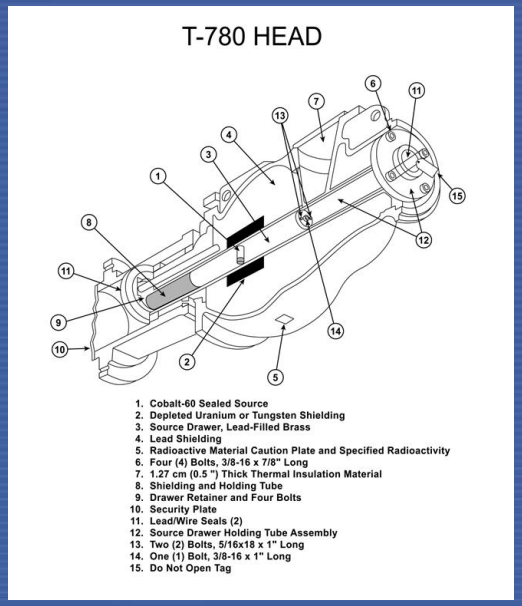
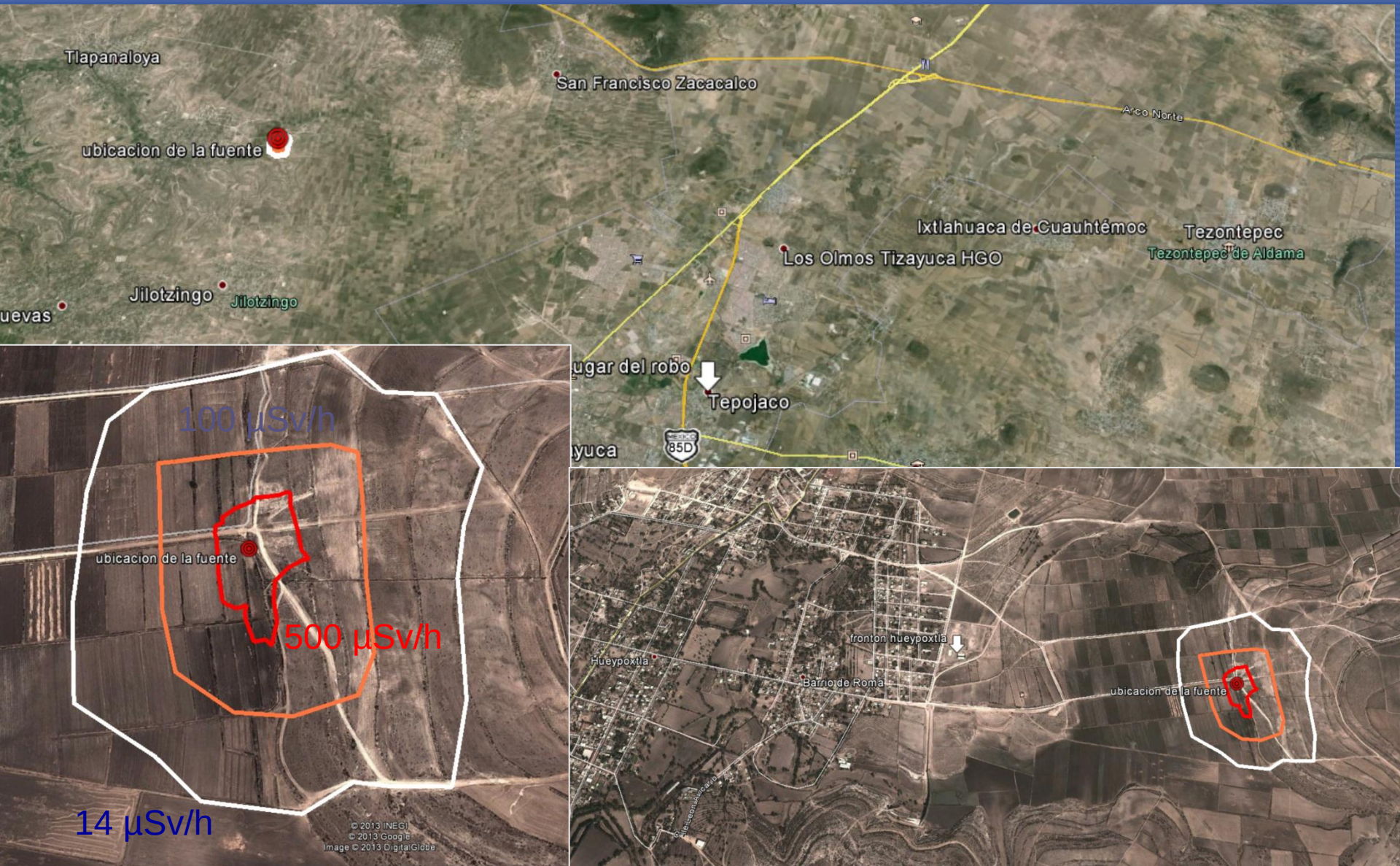
2013, Mexico, Co-60 Radiotherapy



Source location and survey



Source recovery

Final check after source recovery

Último monitoreo realizado 18 diciembre 2013

IAEA Role in Response

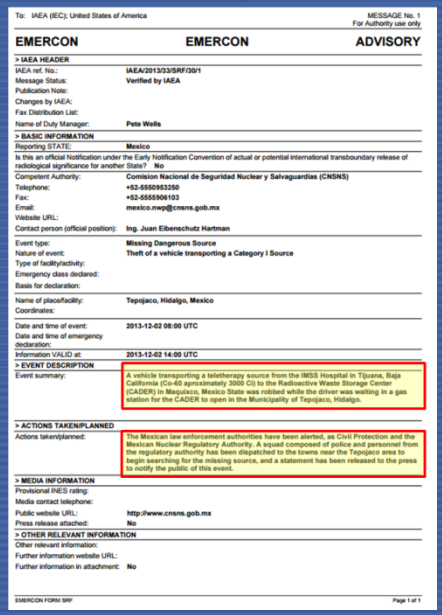
Notification and Official Information Exchange

- Initial notification from official contact point (CP)
- Information reviewed and published
- Technical details shared on Unified System for Information Exchange in Incidents or Emergencies (USIE)

"…vehicle transporting a teletherapy source …Co-60 approximately 3000 Ci…was robbed…."

"…authorities have been alerted…squad composed of police and personnel from the regulatory authority has been dispatched ….a statement has been released to the press to notify the public of this event…"

Technical details shared immediately



To: IAEA (IEC); United States of America — MESSAGE No. 1 — For Authority use only

EMERCON — EMERCON — ADVISORY

> IAEA HEADER

IAEA ref. No.:	IAEA/2013/33/SRF/30/1
Message Status:	Verified by IAEA
Publication Note:	
Changes by IAEA:	
Fax Distribution List:	
Name of Duty Manager:	Pete Wells

> BASIC INFORMATION

Reporting STATE:	Mexico
Is this an official Notification under the Early Notification Convention of actual or potential international transboundary release of radiological significance for another State?	No
Competent Authority:	Comision Nacional de Seguridad Nuclear y Salvaguardias (CNSNS)
Telephone:	+52-5550953250
Fax:	+52-5555906103
Email:	mexico.nwp@cnsns.gob.mx
Website URL:	
Contact person (official position):	Ing. Juan Eibenschutz Hartman
Event type:	Missing Dangerous Source
Nature of event:	Theft of a vehicle transporting a Category I Source
Type of facility/activity:	
Emergency class declared:	
Basis for declaration:	
Name of place/facility:	Tepojaco, Hidalgo, Mexico
Coordinates:	
Date and time of event:	2013-12-02 08:00 UTC
Date and time of emergency declaration:	
Information VALID at:	2013-12-02 14:00 UTC

> EVENT DESCRIPTION

Event summary: A vehicle transporting a teletherapy source from the IMSS Hospital in Tijuana, Baja California (Co-60 approximately 3000 Ci) to the Radioactive Waste Storage Center (CADER) in Maquixco, Mexico State was robbed while the driver was waiting in a gas station for the CADER to open in the Municipality of Tepojaco, Hidalgo.

> ACTIONS TAKEN/PLANNED

Actions taken/planned: The Mexican law enforcement authorities have been alerted, as Civil Protection and the Mexican Nuclear Regulatory Authority. A squad composed of police and personnel from the regulatory authority has been dispatched to the towns near the Tepojaco area to begin searching for the missing source, and a statement has been released to the press to notify the public of this event.

> MEDIA INFORMATION

Provisional INES rating:	
Media contact telephone:	
Public website URL:	http://www.cnsns.gob.mx
Press release attached:	No

> OTHER RELEVANT INFORMATION

Other relevant information:	
Further information website URL:	
Further information in attachment:	No

EMERCON FORM SRF — Page 1 of 1

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IAEA Role in Response

Informing the Public

- Immediately prepared public press release
- Coordinated with counterpart and released on IAEA homepage

"Mexico has informed the IAEA's Incident and Emergency Centre (IEC) of the theft of a truck carrying a dangerous radioactive source..."

"…The Mexican authorities are currently conducting a search for the source and have issued a press release to alert the public... IAEA has made an offer of good offices to Mexico…"

Mexico Informs IAEA of Theft of Dangerous Radioactive Source

The international radiation symbol, or trefoil, indicates hazardous radioactive material. (Graphic: IAEA)

Mexico has informed the IAEA's Incident and Emergency Centre (IEC) of the theft of a truck carrying a dangerous radioactive source used in medical treatment.

Mexico's "Comisión Nacional de Seguridad Nuclear y Salvaguardias (CNSNS)" said the truck, which was transporting the cobalt-60 teletherapy source from a hospital in the northern city of Tijuana to a radioactive waste storage centre, was stolen in Tepojaco near Mexico City at around 08:00 UTC on 2 December 2013.

At the time the truck was stolen, the source was properly shielded. However, the source could be extremely dangerous to a person if removed from the shielding, or if it was damaged.

The Mexican authorities are currently conducting a search for the source and have issued a press release to alert the public.

The IAEA has made an offer of good offices to Mexico, a process that makes the IAEA available to provide assistance if requested by a Member State, and the IEC remains in contact with the CNSNS.

Information with the public shared immediately

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IAEA Role in Response

Assessment and Prognosis

- IAEA Technical Team working in IEC received additional information from official CP
  - Pictures
  - Strategy to inform the public
  - Provided advice on expected radiation fields (on discovery), etc
- IAEA Technical Team provided radiation safety information and diagrams of equipment during source loading
- IAEA Technical Team understood response actions

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IAEA Role in Response

Assessment and Prognosis

…the Mexican authorities and the IAEA believe the general public is safe and will remain safe

…[IAEA] believes the actions taken in response to the discovery of the source are appropriate and follow Agency guidance for this type of event

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Mexico Says Stolen Radioactive Source Found in Field

The international radiation symbol, or trefoil, indicates hazardous radioactive material. (Graphic: IAEA)

Story Resources

- Mexico Informs IAEA of Theft of Dangerous Radioactive Source, 4 December 2013
- IAEA Incidents and Emergencies (IEC)
- Comisión Nacional de Seguridad Nuclear y Salvaguardias (CNSNS)

Listen to this story

Mexico has informed the IAEA's Incident and Emergency Centre (IEC) that it has located a dangerous radioactive source that had been missing since the truck on which it was being transported was stolen on 2 December 2013.

Mexico's "Comisión Nacional de Seguridad Nuclear y Salvaguardias (CNSNS)" said law enforcement authorities tracked the teletherapy device down to a field near the town of Hueypoxtla in Mexico State, very close to where the truck was stolen, at around 14:00 (20:00 UTC) on 4 December 2013.

The radioactive cobalt-60 source contained in the device has been removed from its protective shielding, but there is no indication that it has been damaged or broken up and no sign of contamination to the area. Police have secured the area around the source to a distance of 500 metres.

The source, with an activity of 3 000 curies (111 terabequerels), is considered Category 1. The IAEA defines a Category 1 source as extremely dangerous to the person. If not safely managed or securely protected, it would be likely to cause permanent injury to a person who handled it or who was otherwise in contact with it for more than a few minutes. It would probably be fatal to be close to this amount of unshielded radioactive material for a period in the range of a few minutes to an hour.

Mexican authorities are assessing potential radiation exposure to persons who may have been close to the unshielded source, and hospitals have been alerted to watch for symptoms of such exposure.

People exposed to the source do not represent a contamination risk to others.

Based on the information available, the Mexican authorities and the IAEA believe the general public is safe and will remain safe.

The CNSNS and the Instituto Nacional de Investigaciones Nucleares (ININ) are preparing plans to recover and secure the source.

The IAEA remains in close contact with the Mexican authorities. It believes the actions taken in response to the discovery of the source are appropriate and follow Agency guidance for this type of event.

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IAEA Role in Response

Assessment and Prognosis Procedures

IAEA has developed detailed internal procedures for assessment and prognosis and has conducted training of staff

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IAEA Role in Response

Impact of Harmonized Message

Radioactive material container from hijacked truck found empty in Mexico

Published time: December 04, 2013 23:21
Edited time: December 06, 2013 14:34

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Federal policemen stand guard in front of the National Institute for Nuclear Research (ININ) — the destination of the truck transporting a "teletherapy source" containing cobalt-60 which was stolen by gunmen on December 2 — in Maquixco, Mexico state on December 4, 2013. (AFP Photo / Yuri Cortez)

6.6K 579 2

Mexican police located a stolen truck which contained dangerous radioactive material the UN warned could be used to construct a "dirty bomb." The safety container holding that cargo was found empty, with the material abandoned nearby.

The IAEA believes that there is no risk to public health in Mexico after a stolen radioactive shipment from a truck was recovered in a field.

"Based on the information available, the Mexican authorities and the IAEA believe the general public is safe and will remain safe," the International Atomic Energy Agency said in a statement after the missing cargo of cobalt-60 enough to make a dirty bomb was found about half a mile from the container in central Mexico.

The UN watchdog said it been notified by Mexico's CNSNS nuclear safety authority that the protective shielding had *"no indication that it has been damaged or broken up and no sign of contamination to the area."*

It is *"absolutely certain that whoever removed this material by hand is either already dead or about to die,"* Juan Eibenschutz, CNSNS director, told Milenio television.

"It would probably be fatal to be close to this amount of unshielded radioactive material for a period in the range of a few minutes to an hour," he said.

The US which borders Mexico was happy to see the situation resolved.

"What's most important is that the vehicle and equipment were recovered and the situation was resolved," White House press secretary Jay Carney said.

General view on December 4, 20
Worker truck transporting a "tel
December 2. (AFP Photo / Yuri C

It is believed that the truck driver
stole their truck.

On Wednesday, The vehicle was
transporting cobalt-60 from a ho
nuclear safety director Juan Eiber
kilometer) from where the truck

Mexico's national nuclear safety commission CNSNS has said that the thieves, thought to be unaware of the contents which have now been located, removed it from its protective container and were exposed to dangerous levels of radiation.

"This is a radioactive source that is very strong," Eibenschutz told the AP, saying that exposure could cause death almost immediately if in close proximity.

"Fortunately there are no people where the source of radioactivity is," Eibenschutz added.

So far there were no indications that the theft of the cobalt was an intentional act of terrorism, said Eibenshutz. The stolen radioactive material was used in radiation therapy equipment that is now obsolete and is being phased out of Mexico's public health system.

Photo from cnsns.gob.mx

Federal police and the military have been mobilized in the municipalities of Hueypoxtla and Zumpango. CNSNS says the recovered radioactive material will be returned to a sealed case as soon as possible

An official familiar with similar cases told the AP that unintentional theft of radioactive materials are

"Based on the information available, the Mexican authorities and the IAEA believe the general public is safe and will remain safe," the International Atomic Energy Agency said in a statement…

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Impact of Harmonized Message

General view on December 4, 2013 of the place in Tepojaco, Hidalgo state where the Volkswagen Worker truck transporting a "teletherapy source" containing cobalt-60 was stolen by gunmen on December 2. (AFP Photo / Yuri Cortez)

It is believed that the truck drivers were sleeping at a gas station when gunmen assaulted them and stole their truck.

On Wednesday, The vehicle was found close to where it was stolen outside of Mexico City as it was transporting cobalt-60 from a hospital in Tijuana to a radioactive waste storage center. Mexico's nuclear safety director Juan Eibenschutz said radioactivity had been detected about a half mile (1 kilometer) from where the truck and container were located.

Mexico's national nuclear safety commission CNSNS has said that the thieves, thought to be unaware of the contents which have now been located, removed it from its protective container and were exposed to dangerous levels of radiation.

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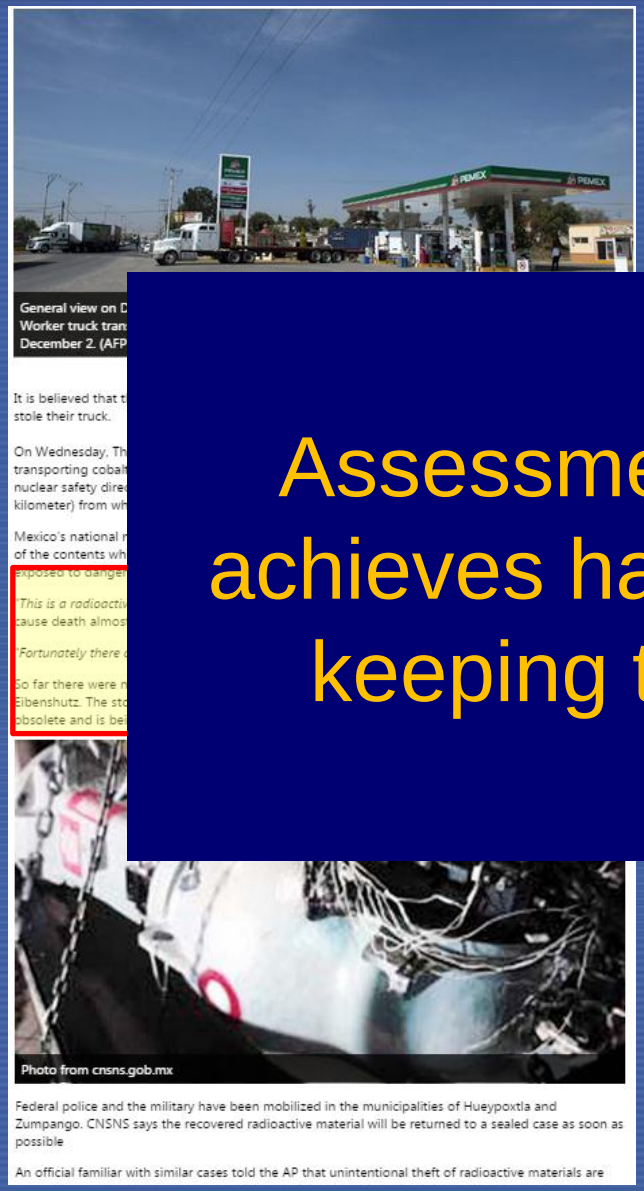
Impact of Harmonized Message



"Fortunately there are no people where the source of radioactivity is," Eibenschutz added. [Juan Eibenschutz, CNSNS director]

Assessment and prognosis process achieves harmonized public messaging keeping the public better informed

health system.

IAEA Role in Response
Assessment and Prognosis

- First notification from official CP
- Site area emergency at CANDU NPP
- IAEA Technical Team was asked by leader to confirm that this matches Emergency Action Levels (EALs) [in IAEA Safety Standards]
- Following sequence of events took place

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Assessment and Prognosis

Initial Contact

0:00

Contact established with CP (Phone)

IAEA Technical Team asked for information about the event based on data needed to establish status of critical safety functions + event classification

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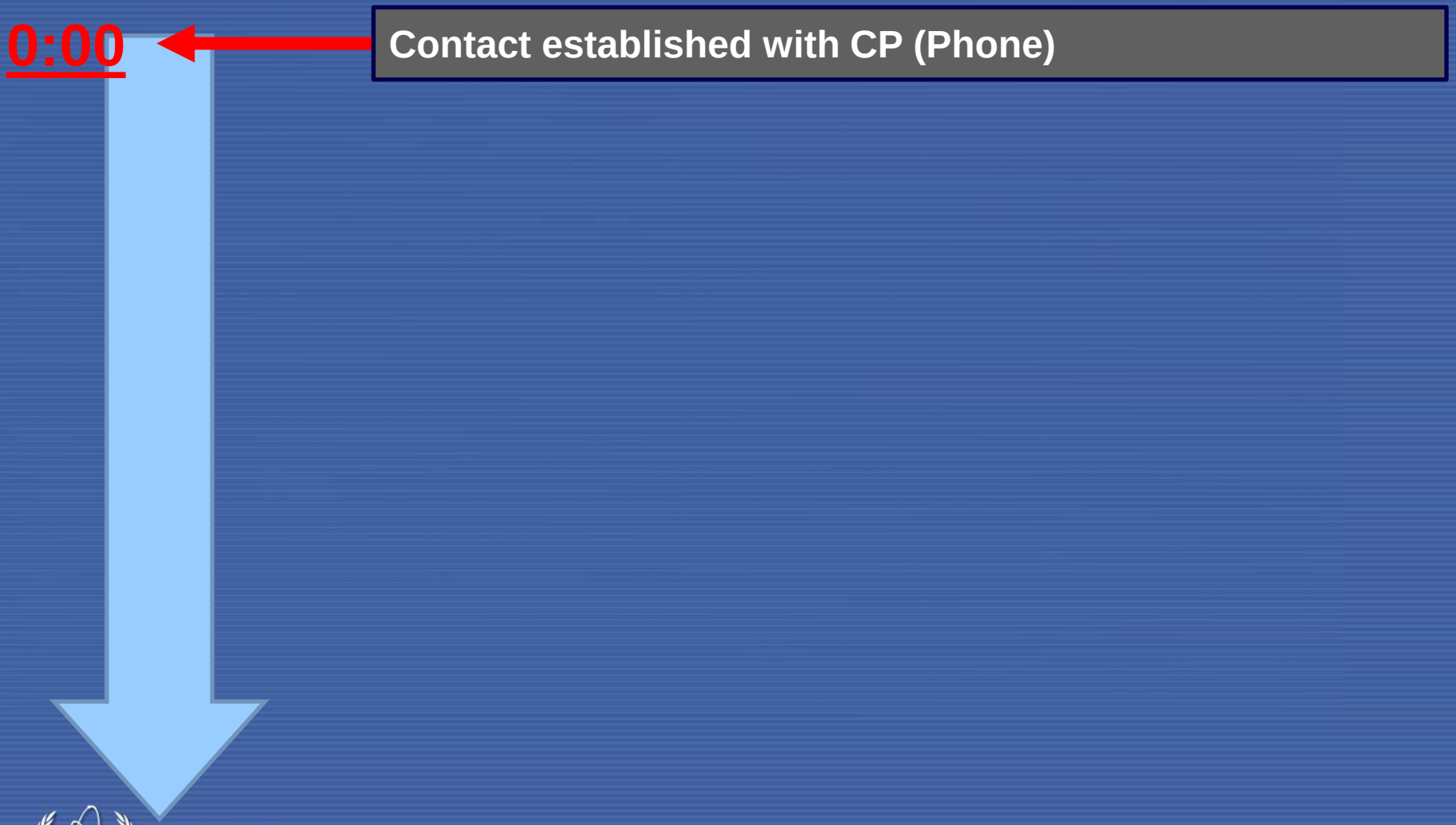
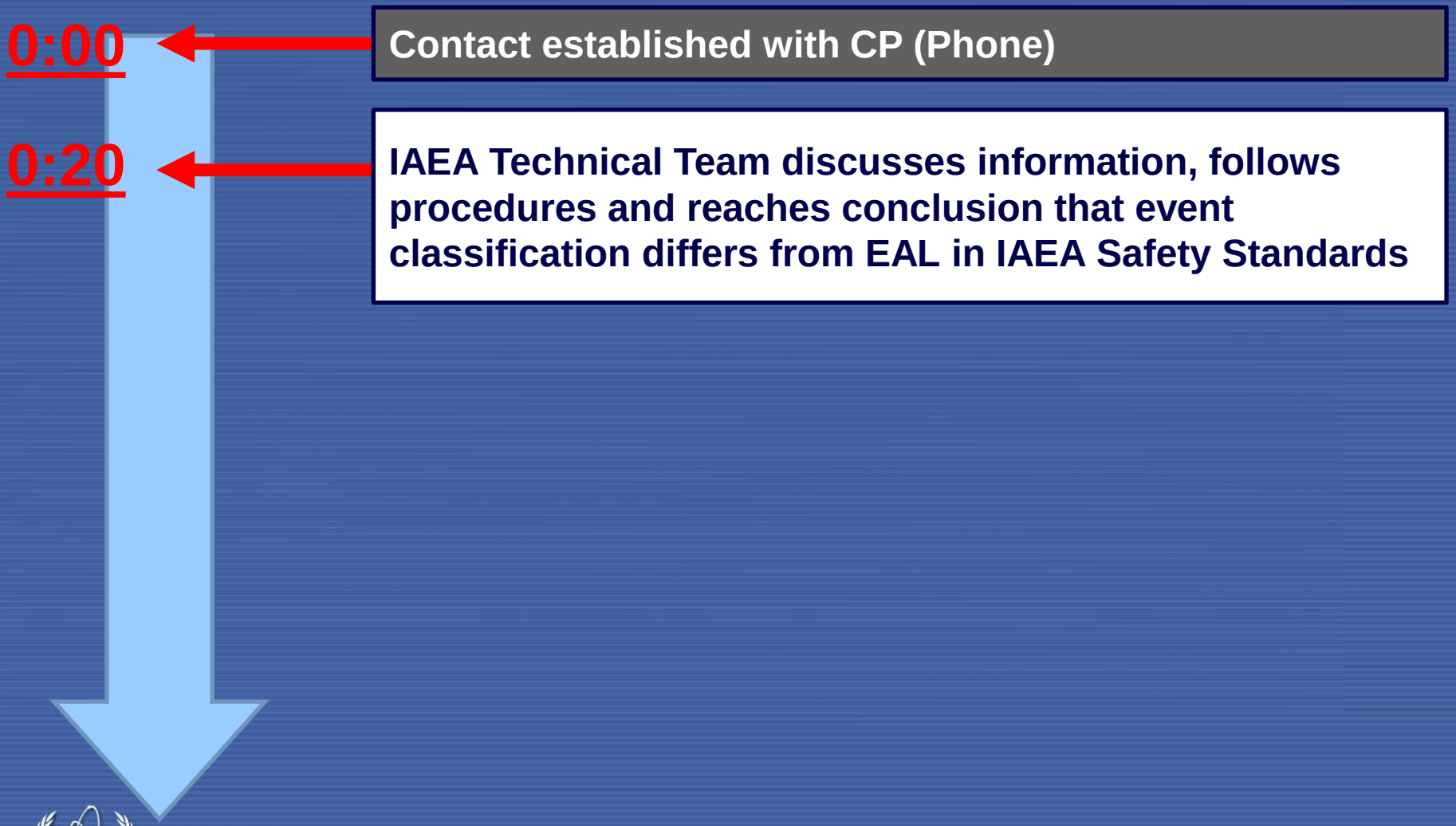
Assessment and Prognosis

Initial Contact



Assessment and Prognosis

IAEA Assessment



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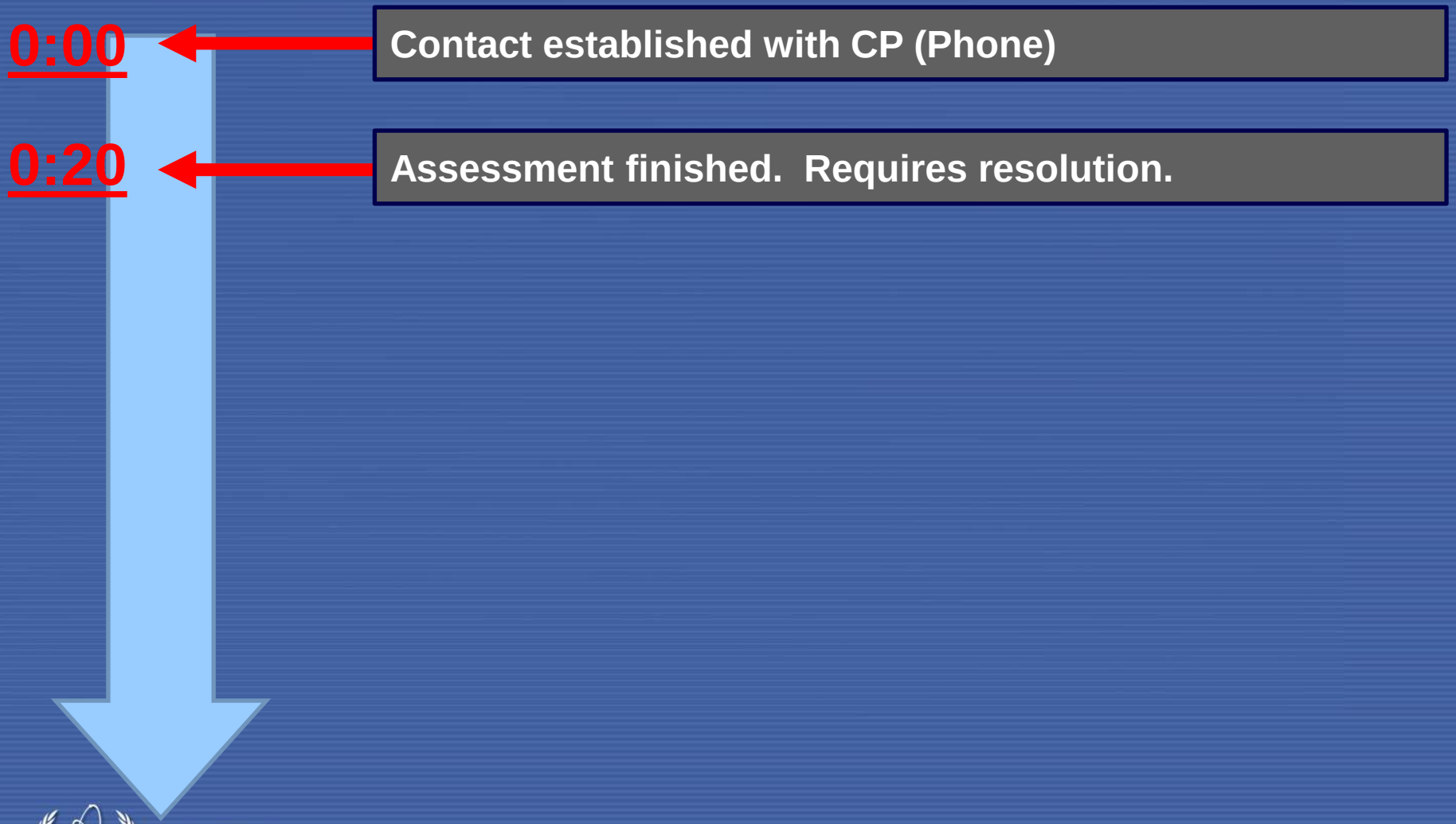
Assessment and Prognosis

IAEA Assessment



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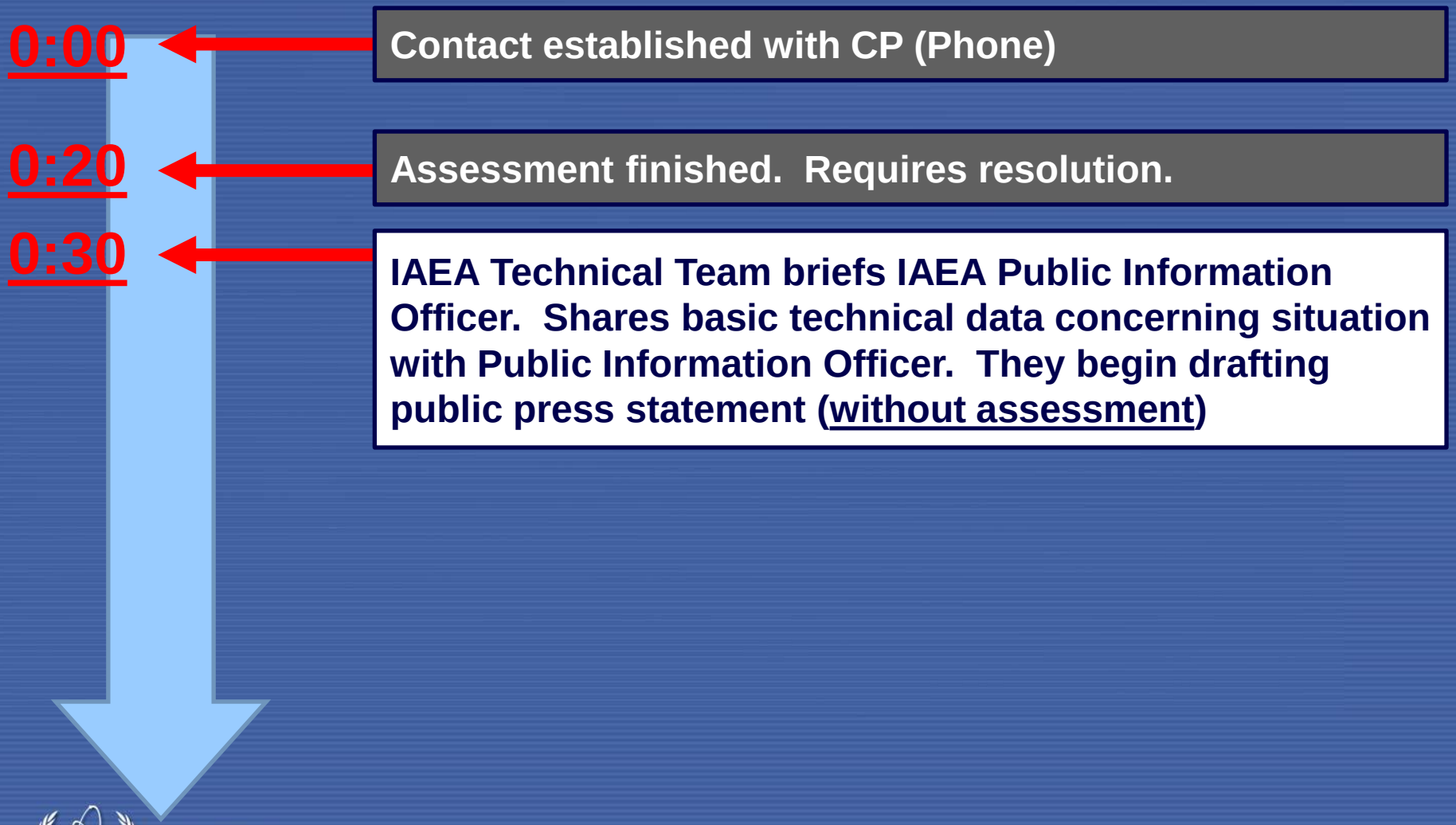
Assessment and Prognosis

Preparing Public Statement



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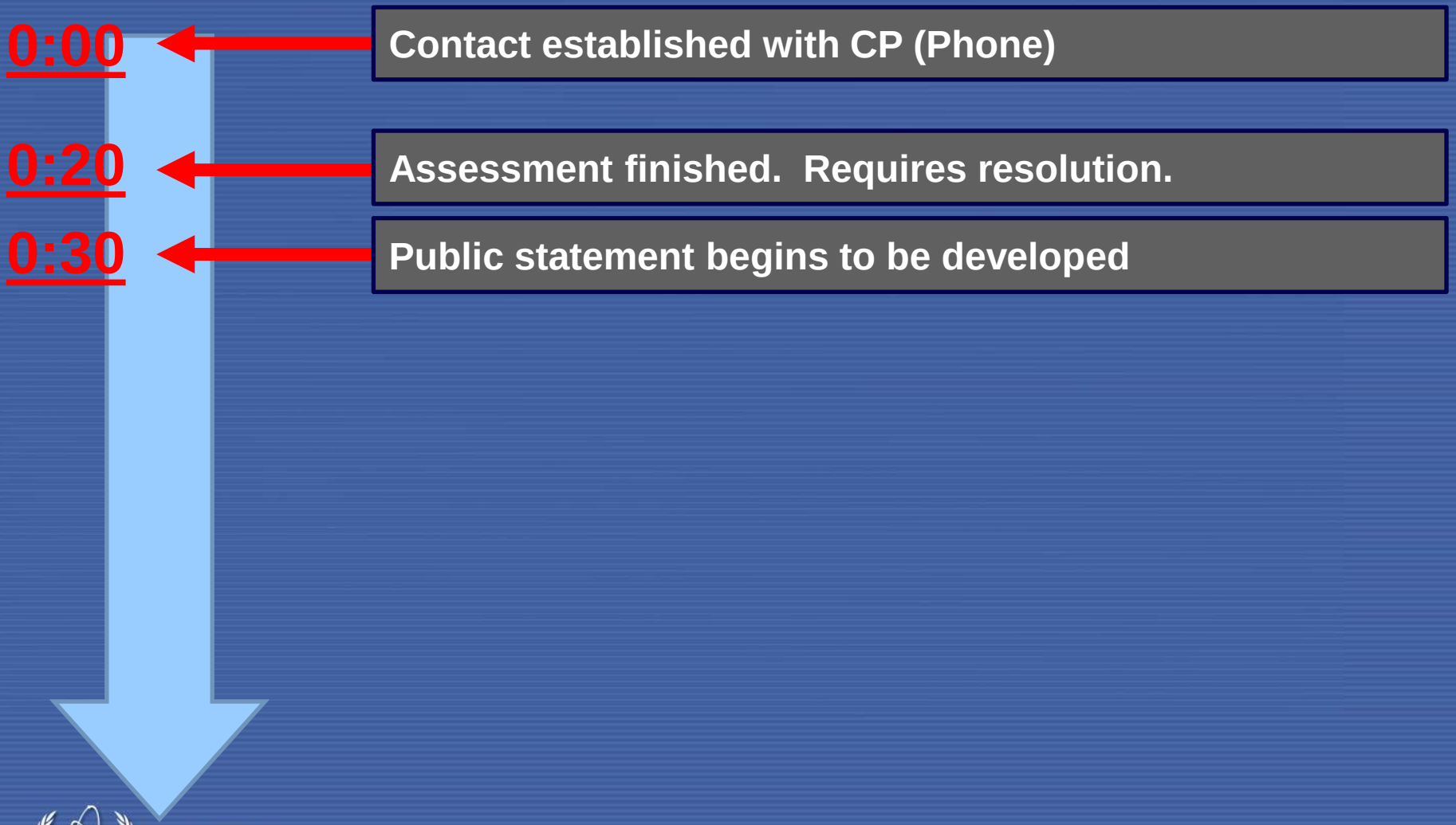
Assessment and Prognosis

Preparing Public Statement



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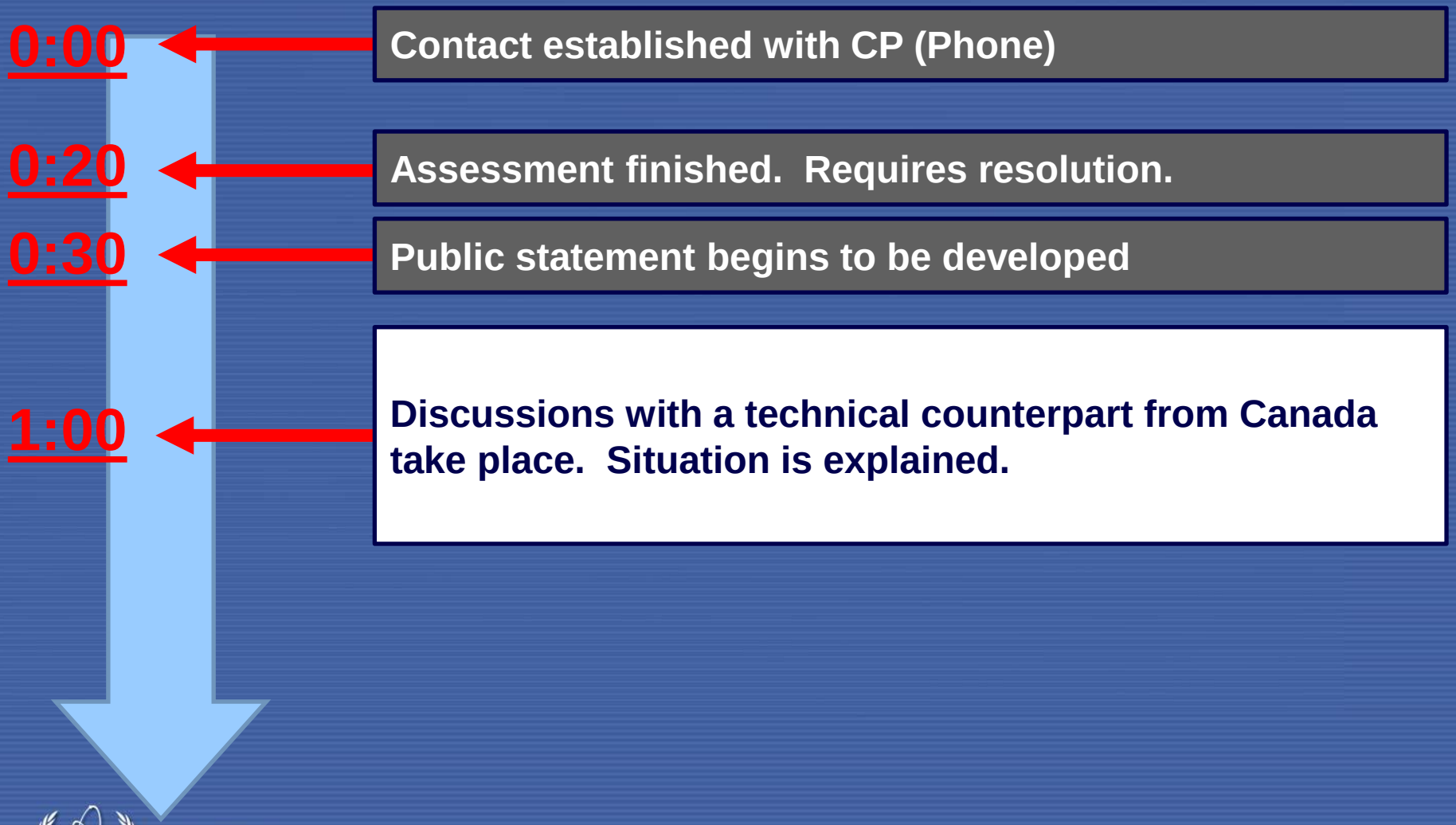
Assessment and Prognosis

Harmonizing Message



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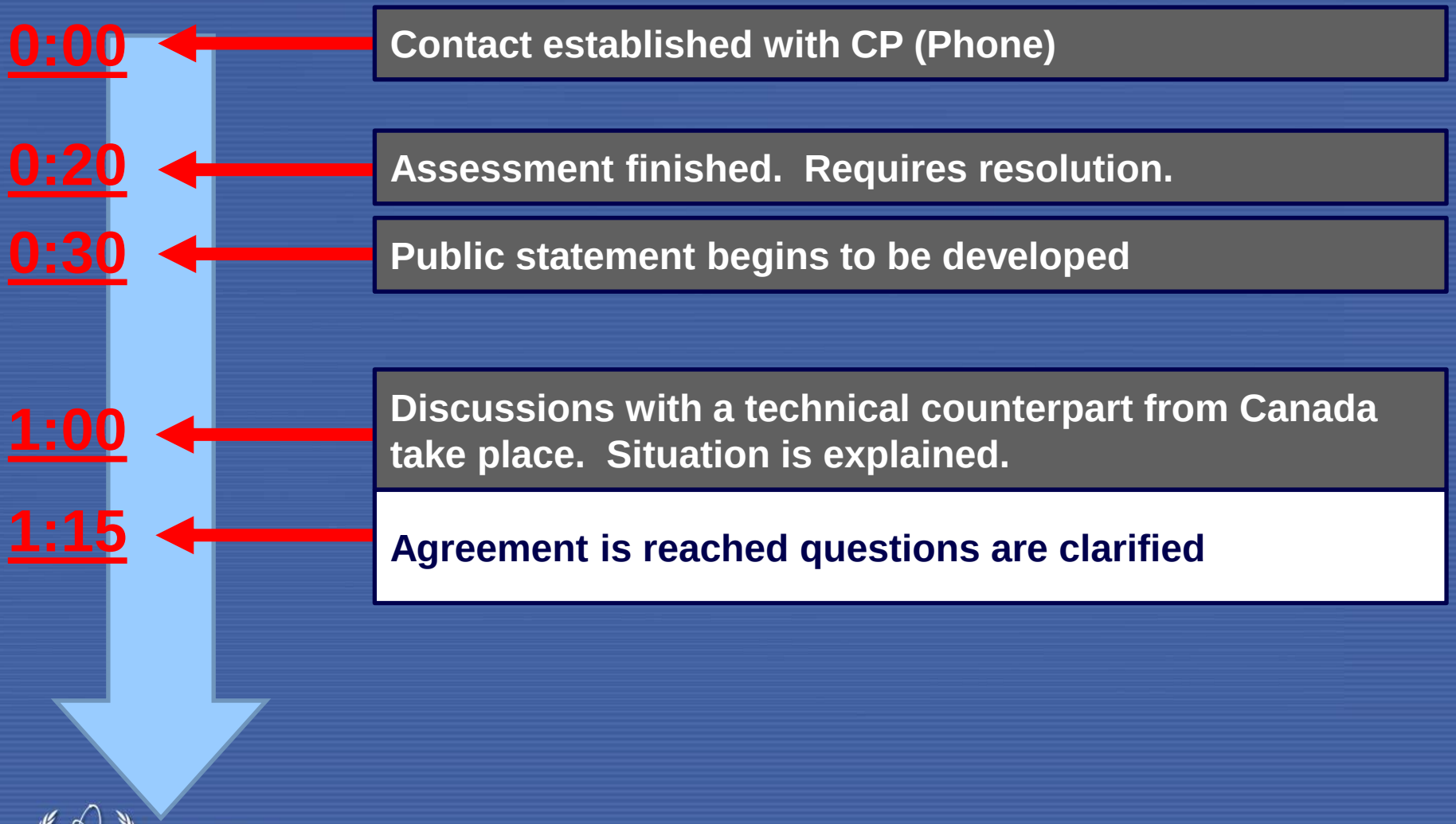
Assessment and Prognosis

Harmonizing Message



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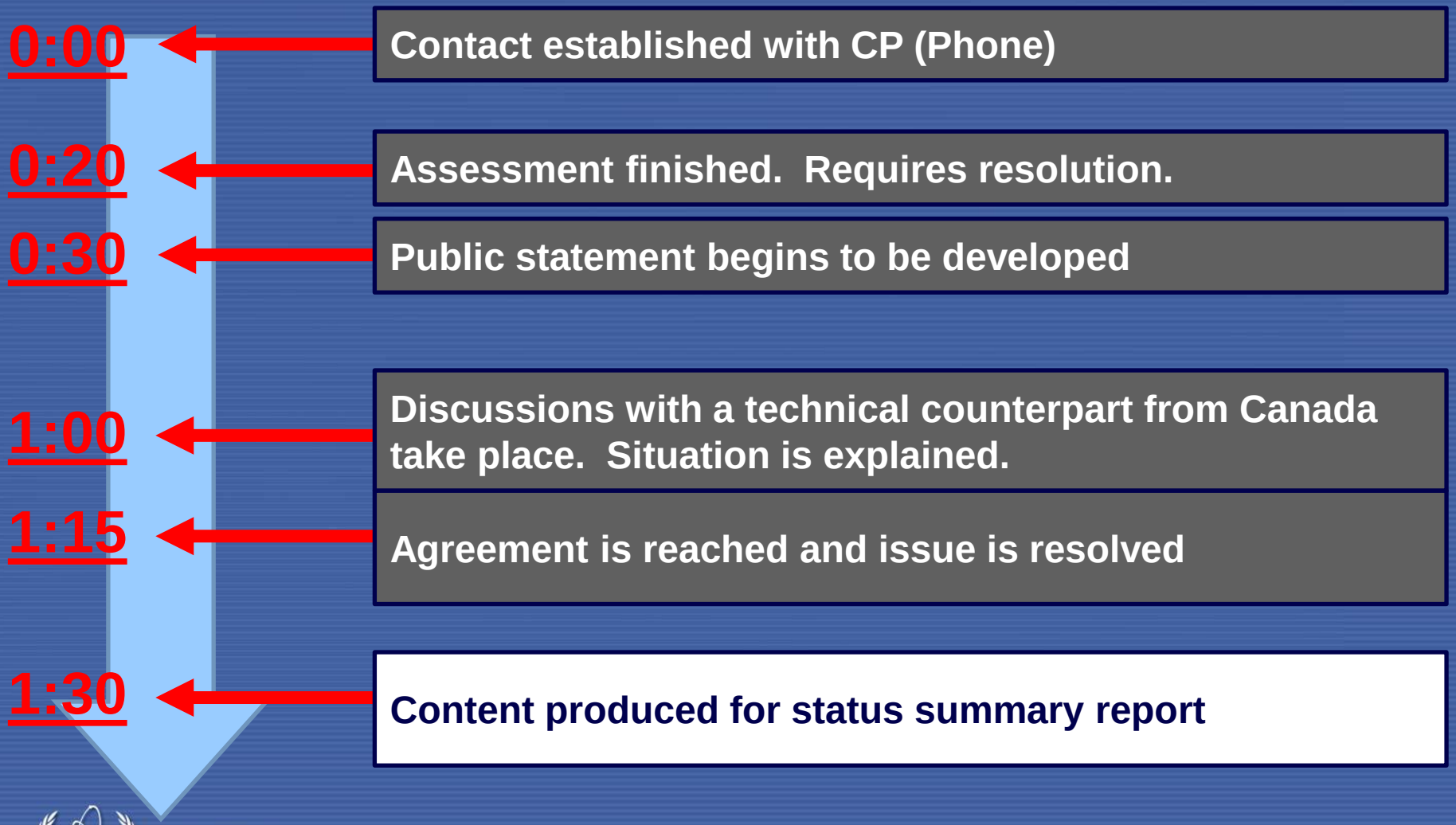
Assessment and Prognosis

Finalizing process



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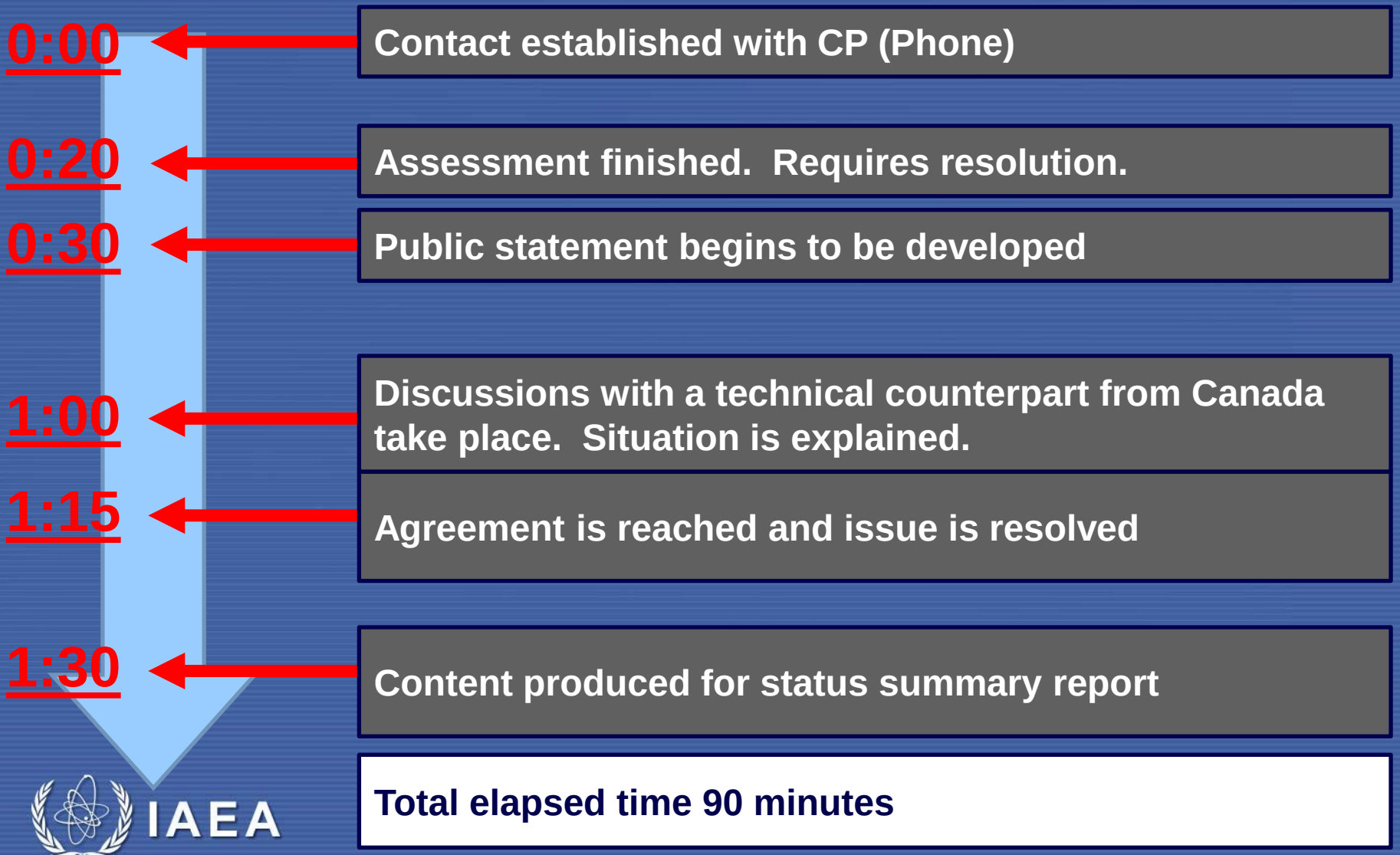
Assessment and Prognosis

Finalizing process



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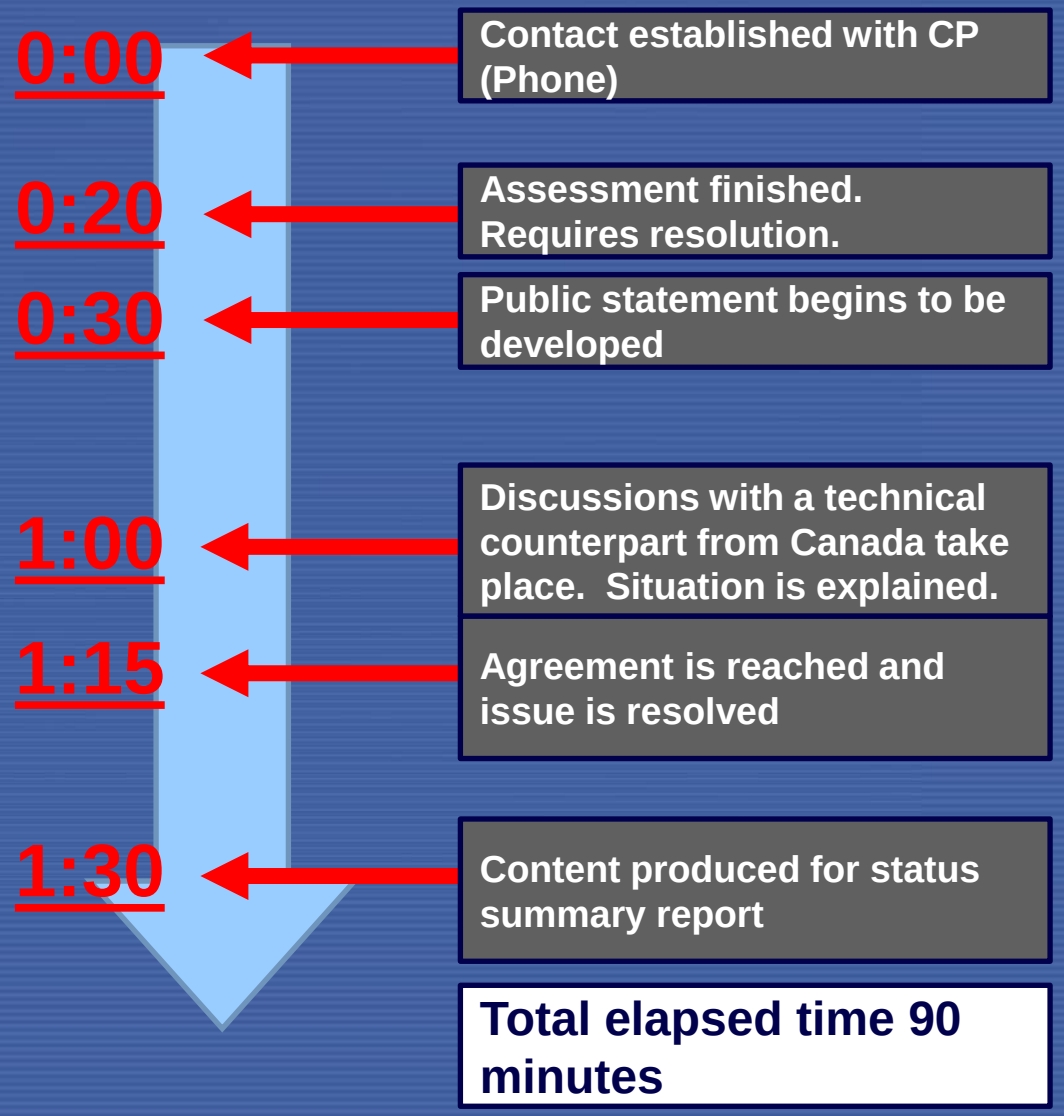
IAEA Role in Response

Parallel Member State Actions



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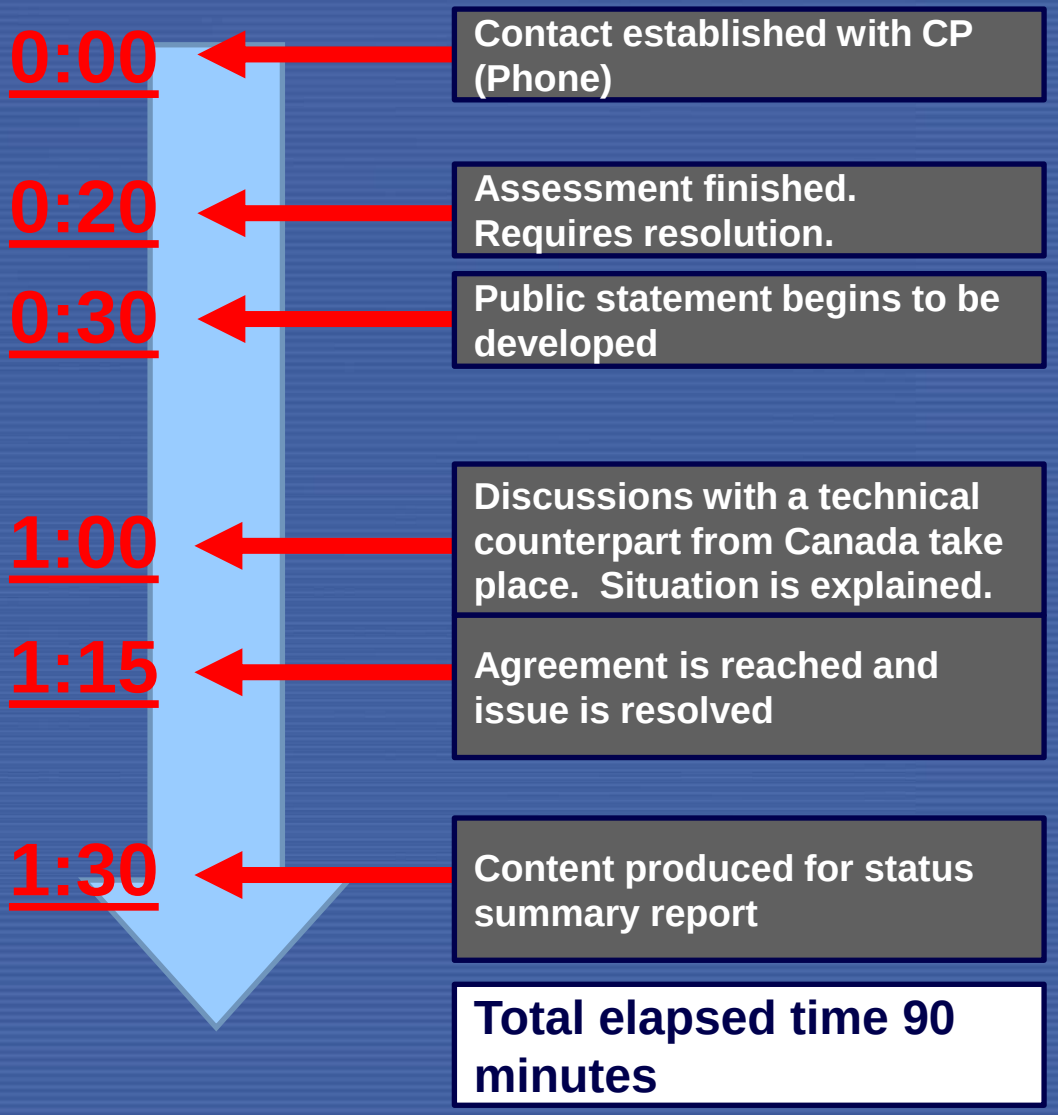
IAEA Role in Response

Parallel Member State Actions

In parallel CNSC was:

- Responding (as per response plan)
- Providing briefings to other Federal departments
- Providing information to media/public



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IAEA Role in Response

Parallel Member State Actions

In parallel CNSC was:

- **Responding based**
- **P**
- **P**

IAEA Assessment and prognosis does not replace Member State responsibilities or actions during a response

0:00 ← Contact established with CP (Phone)

0:20 ← Assessment finished.

1:30 ← Content produced for status summary report

Total elapsed time 90 minutes

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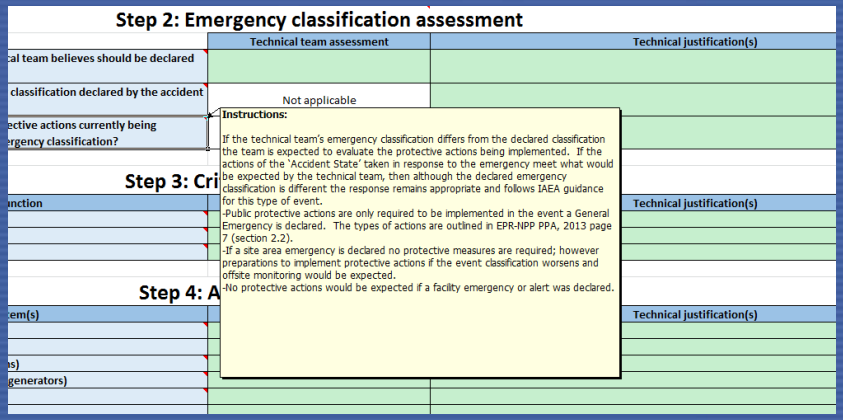
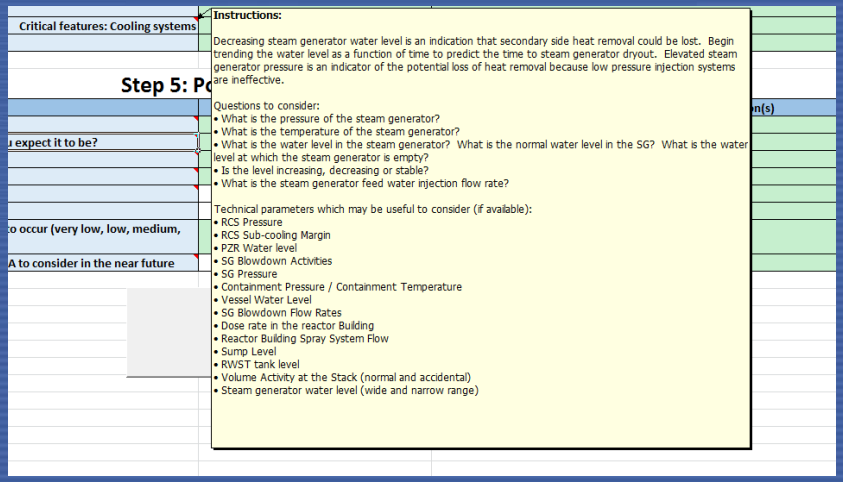
IAEA Role in Response

Customized Tools

- IAEA has developed tools for assessment and prognosis:
  - Reactors
  - Radiological sources
  - Environmental monitoring
  - Data handling
  - Other situations



- Details types of technical parameters and questions to consider



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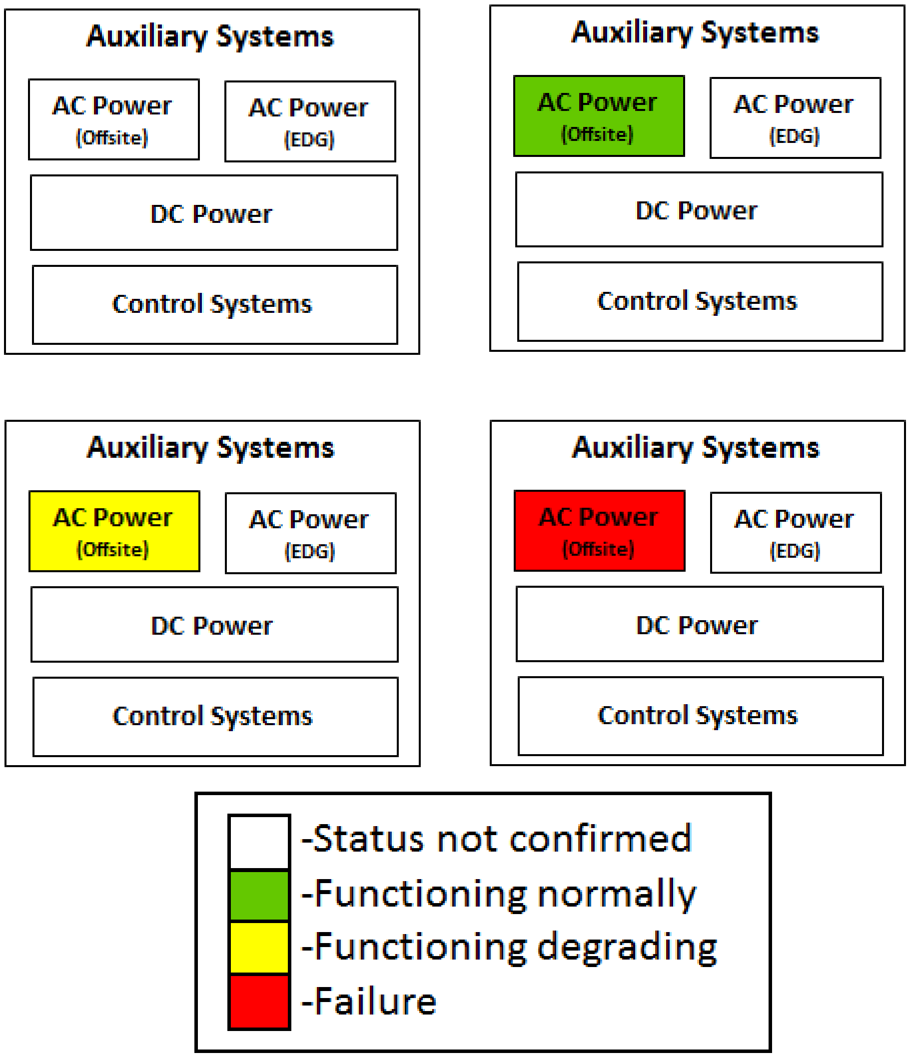
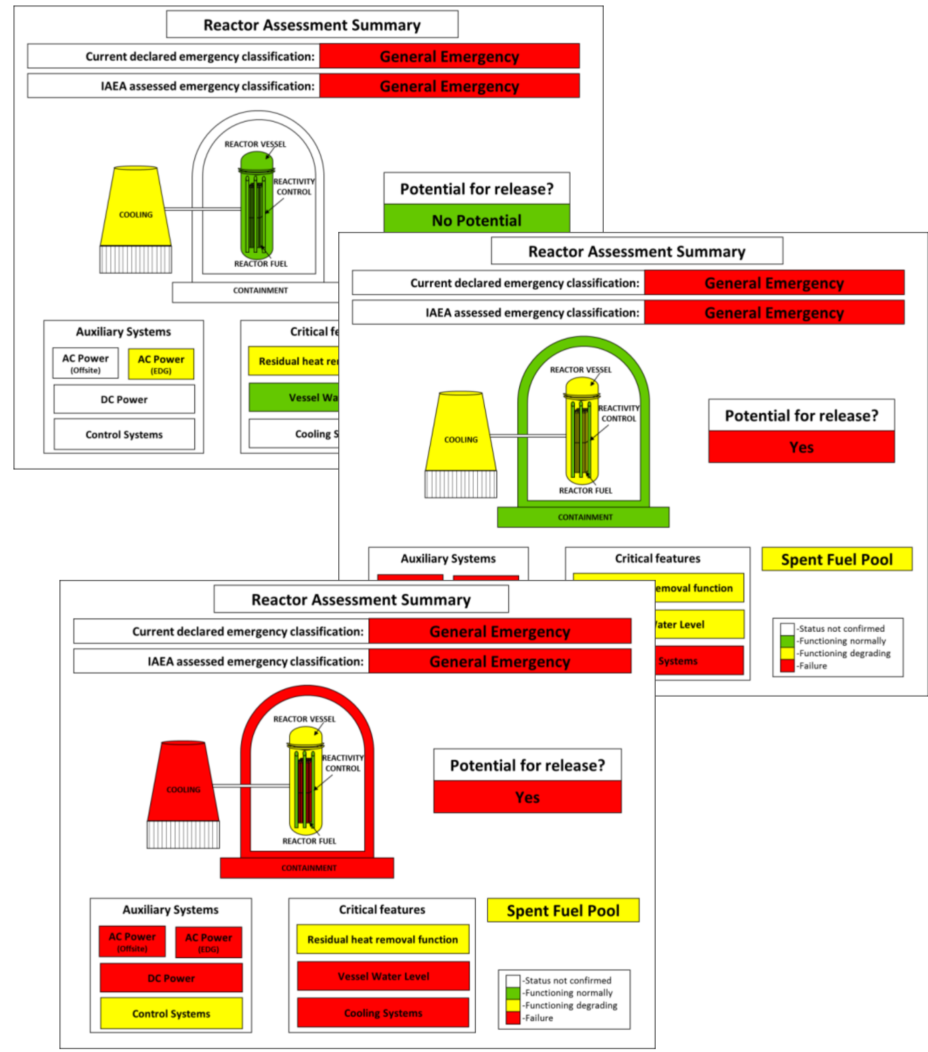
Simple, easy to understand visualizations



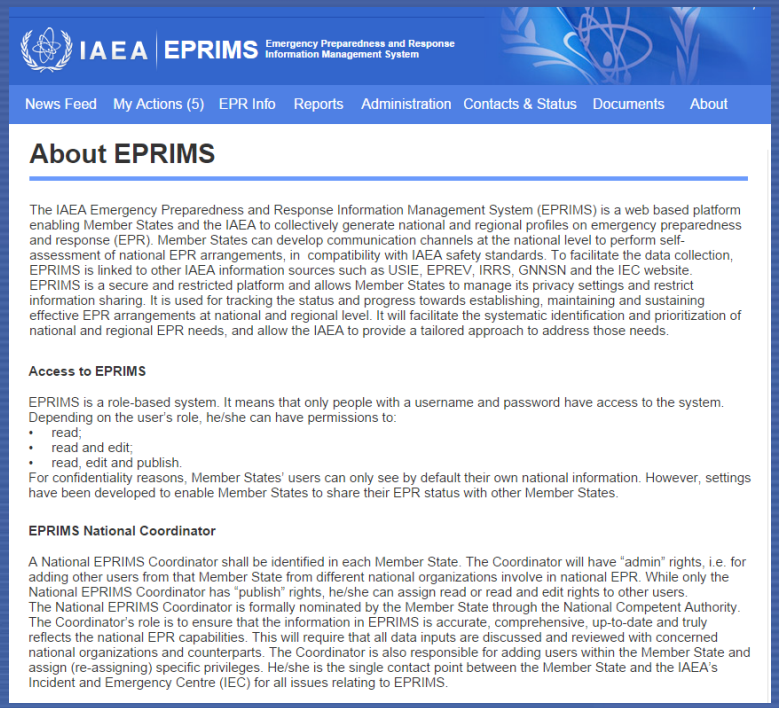


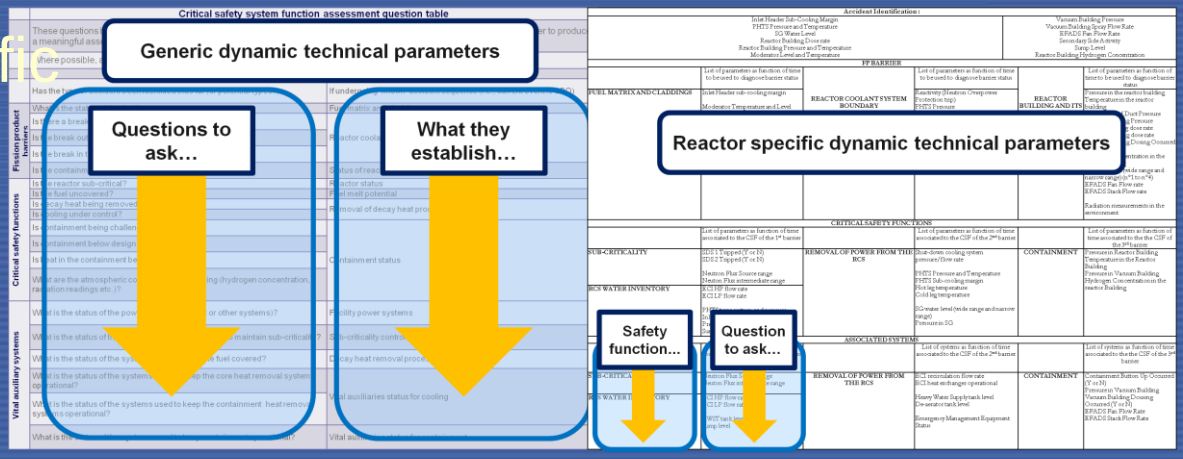
Track and communicate accident evolution

IAEA Role in Response

Supporting Databases

- Static parameters for NPPs
  - Technical data
  - Diagrams
  - Site data
- Dynamic parameters for NPPs
  - Critical safety functions
  - Technology specific





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Summary

- IAEA conducts assessment and prognosis in actual emergencies and exercises
- Member State support is needed
  - Very important to exercise process
- Sharing of information is essential
  - Sharing during preparedness phase (EPRIMS)
  - Sharing during emergency (USIE/IRMIS)
- Harmonizing technical message is important and valuable in keeping public informed

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Thank you!

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