BJRS

BRAZILIAN JOURNAL
OF
RADIATION SCIENCES
11-01A (2023) | 01-17 | e2148

The Strategic Communication Planning in an emergency at the Almirante Álvaro Alberto Nuclear Power Plant (CNAAA)

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ABSTRACT

In a world where information has a high speed of propagation and is present in the most diverse media, it is essential to follow the news in order to keep the population informed about the actions taken, the real risks and the consequences of an alleged nuclear accident. Effective public communication is understood to encourage the implementation of appropriate protective actions by people at risk and reassure individuals who are not directly at risk, reducing rumors and fears. Thus, the Strategic Communication Planning (SCP) acquires high relevance in a context of panic control, disseminating the correct procedures that will directly contribute to the coordination of the nuclear emergency. In this sense, this work aims to present the steps of a SCP in the case of a nuclear emergency at the Almirante Álvaro Alberto Nuclear Power Plant. In this case, the SCP is divided into the Risk Management and Accident Management phases, being prepared in order to unite the legislation in force in the country with international agreements, technical standards and civil defense doctrines. It is understood that the SCP makes it possible to efficiently build communication channels with the public, as well as to provide authorities with strategies to disseminate information, creating performance indices to evaluate these strategies in relation to the stakeholders in the communication process, because only with a Implemented SCP will make it possible to create a continuous improvement in the information feedback processes with an increase in the quality of communications.

Keywords: **Strategic Communication Planning, nuclear emergency, Civil Defense, Almirante Álvaro Alberto Nuclear Power Plant, Brazil.**

ISSN: 2319-0612
DOI: https://doi.org/10.15392/2319-0612.2023.2148
Submitted: 2022-11-09
Accepted: 2023-06-22

1. INTRODUCTION

1.1. Presentation

In a world where information has a high speed of propagation and is present in the most diverse media, it is essential to follow the news in order to keep the population informed about the actions taken, the real risks and the consequences of an alleged nuclear accident, taking into account incorrect data directed to the public, in a predictable context of disinformation due to erroneous information known as fake news [1; 2].

Effective public communication is understood to encourage the smooth implementation of appropriate protective actions by people at risk and reassure individuals who are not directly at risk, reducing rumors and fears. So, this can facilitate relief efforts and also maintain public trust in organizations responsible for ensuring the public's well-being [1; 2].

The public must understand that there are many communication receivers and that there are differences in the dialogue according to the area covered, such as: information for the population provided for in the External Emergency Plan of the State of Rio de Janeiro (PEE/RJ[1]) with evacuation purposes from Emergency Planning Zones (EPZs), press releases, notice between specific institutions, information for specialists and communication from emergency centers to working professionals [1; 2]. Soon,

> The task of communicating depends on different factors, such as the receivers and the way in which the message will be sent. To be successful in the event of a disaster requires strategy and planning from the moment of prevention - today the main discussion among Civil Defense agencies - to the results of response and reconstruction. The biggest enemy of this complex system is, ironically, the lack of communication [2, p. 8].

In the specific case of the Almirante Álvaro Alberto Nuclear Power Plant (CNAAA), the External Emergency Plan is the State Decree No. 44,384, of September 11, 2013, which describes not only the attributions of the State Department of Civil Defense (SEDEC/RJ), but several responsibilities of other institutions and support bodies for the execution of the plan.

Thus, the Strategic Communication Planning (SCP), divided into the Risk Management and Accident Management phases, acquires high relevance in a context of panic control, disseminating

[1] In this paper, the abbreviations of Brazilian institutions and technical terms will keep the original form as they are known in the country. Thus, they will be presented in quotation marks and parentheses when they appear for the first time. As an example, we can mention the External Emergency Plan of the State of Rio de Janeiro (PEE/RJ).

the correct procedures that will directly contribute to the coordination of the nuclear emergency, centralizing and filtering information.

1.2. Justification

The theme of this paper was chosen due to the fact that one of the authors is a working member of the Angra dos Reis region and is directly linked to the functioning of the PEE/RJ, whose main responsibility is the coordination of the State Department of Civil Defense (SEDEC/RJ) through the Nuclear Emergency Coordination and Control Center (CCCEN), where he acts as coordinator and whose planning is aimed at a possible local nuclear emergency.

Glimpsing the daily work, attention was then paid to the need to observe points that already exist, but that need to be reviewed or even improved in the most diverse aspects.

It was understood that an even more elaborate SCP is essential with the objective of reflecting the existing information, carried out through:

- ✓ lectures within communities;
- ✓ offering regular courses to institutions that are part of the PEE/RJ;
- ✓ constant disclosures on the issue of nuclear emergency – which aim to make everyone aware of the existing dangers;
- ✓ interaction with schools for the dissemination of this information;
- ✓ use of social media for dialogue with the general public;
- ✓ improvement of the SMS register in the analyzed region;
- ✓ enhancement of signage as part of permanent visual communication;
- ✓ periodic training exercises - with a view to educating society and the agents of the Emergency Centers for a possible uncalculated accident - and, finally;
- ✓ a better distribution of calendars for the population – so that it can take more information about the care that needs to be taken in case of possible accidents.

The analysis of a work in the SCP area is justified by the intention of demonstrating that the programming of this communication with the public takes place from the need for Risk Management along with its procedures through a standard that manages these possible accidents.

Here, it is important to understand that everyone involved must be aware of the institutions' attributions and responsibilities in a permanent program, without making it difficult to define this obligation.

The commitments and prerogatives explained depend a lot on the synergy between the institutions that make up the Nuclear Emergency Centers at the federal, state and municipal levels, and can be improved with constant operational exercises for the evaluation and analysis of operational procedures from, for example, testing of all possible channels of communication.

This is because a difficulty to be exposed here concerns the human imagination in relation to the correct understanding of the consequences of exposure to ionizing radiation and how this actually occurs, as there is immense complexity about the understanding of these effects on the human body.

However, it is clear that the community, by watching numerous television programs with disclosures about nuclear explosions, such as those in Hiroshima, Nagasaki and nuclear accidents such as those in Chernobyl, Goiânia and Fukushima, end up linking this form of energy and its radioactive materials with diseases, such as cancer and genetic deformities without considering the positive points that balance the process of emitting daily ionizing rays on local communities.

In this sense, this paper aims to present the steps of a SCP aimed at communicating with the public in the various stages of a possible nuclear accident at the Almirante Álvaro Alberto Nuclear Power Plant (CNAAA). These are Risk Management and Contingency Plan.

2. MATERIALS AND METHODS

This research is based on a bibliographic and literature review [3] in order to make it possible to reconcile and propose an efficient SCP, uniting the legislation in force in the country - in the area of Civil Defense and Ionizing Radiation - with international agreements, technical standards and doctrines of civil defense in risk management and disaster management.

In addition, the suggestions contained in the documents of the International Atomic Energy Agency (IAEA) [1; 2] and the Organization for Economic Cooperation and Development (OECD) [4] were used as guides.

3. RESULTS AND DISCUSSION

3.1. Preparedness for Post-Accident Recovery

After the Fukushima Daiichi Nuclear Power Plant accident in 2011, the Nuclear Energy Agency (NEA) Committee on Radiological Protection and Public Health (CRPPH) started activities focusing on several important brainstorming analyses covering all the phases of a nuclear accident (i.e. preparedness, response, transition and recovery) with an importante cross-cutting focus on stakeholder engagement [4].

This is because accidents at nuclear power plants can cause major environmental and land changes, which end up impacting the lives of a large number of residents of the affected territories, modifying the environment and disrupting the socioeconomic fabric of society, making recovery management an extremely complex and time-consuming process multidisciplinary [4].

Thinking in advance globally (i.e. in a holistic and multi-sectoral manner, balancing health, social, cultural, economic, environmental impacts) aims to ensure that the emergency response strategy would tackle the emergency situation and would not delay or impede the recovery process [4].

Preparedness for post-accident recovery would benefit from adopting a comprehensive and operational generic framework covering key aspects such as public health, radiological monitoring and dose assessment, risk communication, decommissioning and environmental decontamination (both strongly associated with waste management), food and drinking water management, business continuity, and the wellbeing of affected people and communities [4].

Preparedness strategies should include actions targeting the resilience of societies and engaging local communities; the co-expertise process could largely help in meeting this goal. Finally, the idea of exercising post-accident recovery management to practice and evaluate the effectiveness and efficiency of stakeholder involvement, and/or of any other issues at stake for recovery. Exercising the national recovery plans and procedures in place should be enable assessment of the plan’s fit-for-purpose quality and its flexibility across a range of more or less severe scenarios. Preparedness for any scenario and scale is necessary but should be proportionate by thinking about “generic” arrangements scalable/flexible to a range of potential events [4].

A key aspect of improving this recovery process by the Committee on Radiological Protection and Public Health (CRPPH) of the Nuclear Energy Agency is to advance the preparation for recovery,

focusing on a holistic multidimensional approach, which will incorporate functional intersectoral linkages between various aspects of emergency impact on a society (eg health, environment, economic, social and cultural aspects). In this sense, among the various current issues for recovery, five major themes must be addressed, called here by TIPs (Topical Insights for Preparedness) for post-accident recovery: radiological monitoring and dose assessment; food safety management; environmental decontamination and waste management; business continuity; and the wellbeing of affected people and communities. In this sense, the TIPs would address to [4]:

a) Monitoring and dose assessment - Is an opportunity for stakeholder involvement. Discussion during "peace time" could help to share technical information (e.g. surveillance, food management, estimated doses vs. doses received, derivation of reference levels) and disseminate practical knowledge on radiological protection culture; A clear and meaningful link is needed between monitoring and dose assessment for both people and the environment; as well as environmental surveillance to inform human health, the issue of monitoring of the environment per se should be developed, since biodiversity preservation is also a protection goal; The development of the co-expertise process (e.g. by training experts to implement exchange with stakeholders using methods for pluralistic approaches); The elaboration of the evolution/termination process of a monitoring strategy. Plans for monitoring thought out in advance, should focus on links with food or drinking water restrictions and lifting, responsibilities among national, local organisations and stakeholders, use of data from various monitoring sources, process to re-evaluate the monitoring strategy as the situation evolves, elaboration of criteria that would help to define the termination, resources for monitoring needs, etc.

b) Environmental remediation and radioactive waste management - Exercises for waste management to check whether there is an adequate planning depth and level of involvement of authorities other than radiological/nuclear safety authorities; Existing waste estimation tools to compare different options for remediation on the basis of case studies; Among options to reduce the amount of waste, exploration of recycling of low-level contaminated materials as considered in Japan. This demands: i) the adoption of a threshold below which the waste is considered as a conventional one; and ii) the analysis of the possibilities to reuse weakly contaminated materials for specific purposes where low-dose impact is expected; Communication to the public of all waste-related issues, needs for stakeholder involvement and risk communication; Development of guidance for a

sustainable remediation approach, taking into account holistically environmental/radiological aspects, economic aspects, social aspects, etc.

c) Food issues - Strong overlap with many others (e.g. trade and economic situation, monitoring, waste management, stakeholder involvement, termination of a monitoring strategy); A specific public concerns with water usage (drinking water, irrigation, recreation) and should be addressed proactively; Food controls and more flexible criteria are needed to manage food safety. Regarding the regulatory strategy, any changes in the situation leading to release new radiological criteria should be explained and understood to avoid negative perception when values change. More than the issue of establishing those criteria, the regulation strategy needs to reflect and allow flexibility by entraining diet and cultural features. The goals of such strategy should be to: ensure the quality of the products; ensure consumer confidence; maintain the economy; New approaches are needed to cope with the issue of loss of image and/or for emblematic food products; consumers at risk (e.g. sensitive food, dietary habits).

d) Business issues - Developing policy and regulation strategies to avoid barriers to trade, for commodities in general – and fresh foods in particular (due to time/storage limitations). Certification for importing/exporting: recommendations about exemptions should be explored further in the preparedness phase; Entraining industry, other activities and people into a sustainable economic model for recovery. Economic considerations go well beyond the responsibilities of regulatory authorities and concerns a myriad of business activities; Developing a collaborative framework for national and local regulators in assisting with sustainable development; consideration of an all-hazards approach.

e) Well-being - Approaches/tools to develop for integrating mental health and psychosocial support (MHPSS) into decision-making to include e.g. well-being indicators, health surveillance strategy, training of healthcare professionals, mapping and adapting existing infrastructures and related available human resources at the local, regional and national levels; Definition of indicators for rating well-being levels and assessing the efficiency of MHPSS actions. These indicators should also integrate more logistical aspects, e.g. access to healthcare, public services for citizens, relationship of the community or groups to the natural environment; Develop guidance in connection with economic issues and the participatory process. Future guidance should consider how to engage participatory processes with the local population to agree on indicators of wellbeing/welfare, and to

agree on the trajectory towards sustainable living conditions, while considering the respect of ethical values (autonomy, dignity, control and privacy, justice).

3.2. The Civil Defense

With regard to Civil Defense,

> Civil protection and defense in Brazil, legally constituted by Law No. 12,608 of April 10, 2012, is organized in the form of a system called National Civil Defense and Protection System - SINPDEC, composed of a set of multisectoral bodies whose performance takes place under a matrix concept with vertical and horizontal dynamics, in the entire national territory [5, p.1].

In its conception, Civil Defense presents its attributions and lines of action well established, being a National Policy for the protection of the entire Society from the existing risks for natural, technological or mixed disasters, in the national territory, mainly acting, in the preventive and mitigating actions of the impacts. social, economic and environmental issues for disaster-vulnerable places. In this way,

> Art. 3 The PNPDEC covers prevention, mitigation, preparation, response and recovery actions aimed at civil defense and protection.
> Single paragraph. The PNPDEC must integrate itself with territorial planning, urban development, health, environment, climate change, water resources management, geology, infrastructure, education, science and technology policies and other sectoral policies, with a view to promoting development sustainable [6, p.5].

It is possible to perceive a strategic division Civil Defense Protection Policy (PNPDEC) for chronological action to avoid and/or act in a disaster starting in risk management with prevention, mitigation and preparation of the community with vulnerabilities and, later, actions management of a disaster, in case of occurrence, with response actions and recovery of the affected areas.

These systematic phases of actions provided for by the civil defense policy plus the divisions of risk management and disaster management, we can map the communications needs, in each phase, which makes it possible to create a SCP with the most customized audience between pre-disaster, in disaster and post-disaster.

In this way, in the moment before a nuclear accident, communications are more focused on the dissemination of the PEE/RJ to the population and the training of official agents who may come to work in an emergency situation that may occur at the CNAAA.

In this situation, the flow of information increases significantly, leading to the need for an improvement in the communication system. Basically, they are the pre-accident actions that serve to

know the risk, vulnerability, monitoring and elaboration of contingency plans, training and everything that is promoted to prevent, preventively, the nuclear accident or to mitigate the consequences in relation to the population and the environment, divided into: "*II - prevention actions: priority measures and activities aimed at avoiding the installation of disaster risks"* [6]. So,

> Effective public communication has been shown to encourage smooth implementation of appropriate protective actions by people at risk and reassure individuals who are not directly at risk, reducing rumors and fears. It can facilitate relief efforts and also maintain public trust in organizations responsible for ensuring the welfare of the public [2, p. 23].

During the disaster, the flow of information will certainly increase exponentially, mainly inter-institutional, forcing an improvement in the communication system with the affected public and the official agents, in the field, for harmony in the actions foreseen in the PEE/RJ, even after the disaster that in the principle of morality it is necessary to communicate the world about the assistance to the affected public, investigations in the scientific area for case study and all the consequences of a disaster, in this nuclear area, can cause, in order to prevail transparency in this communication.

3.3. The importance of the SCP

In the event of a nuclear emergency at CNAAA requiring evacuation, the procedure informs that the community must be communicated about the events in advance, demonstrating the boarding places and meeting points - which must have signage and public lighting - as well as the understanding of the routes to be followed and the norms of respect for the evacuation of vehicles.

It would then be through these information channels that the evacuated population would be able to understand the situation and the measures taken by each individual, in a way that would not generate despair, distrust, insecurity or ignorance about these applied procedures. There are still official agents who work in the emergency and who need to be always informed of occurrences to resolve personal doubts.

Effective public communication is understood to encourage the smooth implementation of appropriate protective actions by people at risk and reassure individuals who are not directly at risk, reducing rumors and fears. It can facilitate relief efforts and also maintain public trust in organizations responsible for ensuring the well-being of the public [1].

Thus, the SCP, in the Risk Management and Disaster Management stages, acquires high relevance in a context of panic control, disseminating the correct procedures that will directly

contribute to the coordination of the nuclear emergency, centralizing, filtering information and fighting , also, to fake news and the monopoly on the news shown by the media, centralization of disclosures to the press in a unique way.

The importance of the SCP is due to the fact that, in the event of an emergency at the Angra I or II nuclear plants, the absence of continuous planning would increase the vulnerability of affected communities due to the lack of permanent training, which can generate a lack of communication and information between interested parties (stakeholders), as shown in Figure 1.

Figure 1:*Communication Receivers*

Source: [1]

In emergencies, according to PEE/RJ, the Nuclear Emergency Information Center (CIEN) is responsible for disseminating communications and information to the press.

In Figure 1, some important stakeholders are presented, which will be discussed again later on, such as the involved population, press (local, national and international), public authorities (such as

Executive, Judiciary and Legislative Powers), the academic community, investors of the CNAAA, the nuclear operators and institutions related to Eletronuclear, the state-owned company responsible for the CNAAA, the International Atomic Energy Agency (IAEA) and the National Nuclear Energy Commission (CNEN) – in this case, the Regulatory Body in Brazil, represented by the Institute of Radiation Protection and Dosimetry (IRD).

It is also necessary to observe the communication receiving cycles and the effectiveness with which they are transmitted and understood by the public. In this case, information cycles would be a “differentiation” of information needs for specific groups. For example, for the "academic community", the greatest interest would be in the numbers and more in-depth studies on the consequences of the accident; for the "population", what to do in the emergency and what will be done after emergencies; and already with the "rescuers", what to do in the service and how to inform the population; etc.

This is because the concern of the IAEA, with nuclear and radioactive facilities have emergency planning with preparation and responses, in possible incidents foreseen in these facilities, with harmful consequences to the population and the environment.

In Brazil, this technical responsibility for standardization, control and inspection is the responsibility of CNEN, and with it the licensing of operations. However, there is a System for the Protection of the Brazilian Nuclear Program (SIPRON), whose coordinator is directly linked to the Institutional Security Office of the Presidency of the Republic (GSI/PR), where currently there are decrees, ordinances and general norms with guidelines in the attributions of each Institution in this mission of safeguarding the nuclear program, including the population and the environment.

Thus, consultation with relevant stakeholders must be based on effective communication mechanisms, based on transparency, inclusiveness, shared responsibility and effectiveness measures, and must allow for feedback to be accommodated in a timely manner [1].

The SCP is then divided into several cycles of interest and information needs produced in order to meet their specificities in these cycles, always cautiously and judiciously, in order to disseminate the information to the public as accurately as possible.

3.4. Risk Management

> Disaster risk management is characterized by the set of administrative decisions, organization and operational knowledge developed by societies and communities to establish policies, strategies and strengthen their capacities and resilience in order to reduce the impacts of threats and, consequently, the occurrence of possible disasters. In other words, risk management consists of adopting measures to reduce the damage and losses caused by disasters, before they occur [7].

Risk management is a chronological method of actions to be used in places with risk of disaster, whether natural and/or technological, which starts with the assessment of risk, threats and vulnerabilities until the evacuation of the population, if necessary, divided as follows:

A) Preventive Phase

In this stage, the identification of risks, mapping, monitoring and training of the affected community, etc., are carried out.

It is paper noting that at this stage the actions are marked out according to the classification contained in the Brazilian Codification of Disasters (COBRADE) [8], classified in the case of "Technological" accidents (2.1.2.1.0) - Disasters with radioactive substances and equipment for use in research, industry and nuclear power plants; Accidental leakage of radiation that exceeds the safety levels established in the CNEN standard NN 3.01/006:2011.

Regarding the Mapping, this is carried out in the EPZs; o Monitoring by Eletronuclear/CNEN/IRD; and Community Vulnerability studies in EPZs.

B) Mitigation Phase

In this case, they are measures to limit damages and losses, given that it is not possible to prevent all adverse impacts of threats. This phase is divided into structural and non-structural measures:

B.1) Structural measures

These are aspects of the infrastructure in the region that were installed and/or need constant maintenance, in this case, in the areas of the EPZs that make it difficult to implement the emergency plan, such as: road traffic conditions, lack of signage and lighting at meeting points and boarding of the population, structure of emergency centers, communications structure in the region, sirens installed in the alert system and installations of meteorological and radiological monitoring towers.

In this stage, the construction of barriers, information equipment (sirens), road signs, operations center, etc. Specifically with regard to structural measures, these are aspects of the infrastructure in the region that have been installed and/or need constant maintenance, in this case, in the areas of the EPZs that make it difficult to implement the emergency plan, such as: road traffic conditions,

lack of of signaling and lighting at the meeting and embarkation points of the population, structure of emergency centers, communications structure in the region, sirens installed in the warning system and installation of meteorological and radiological monitoring towers. The Nuclear Emergency Coordination and Control Center (CCCEN), the Nuclear Emergency Operational Coordinations (CopENs), the State Center for Disaster Management (CESTGEN), the National Center for the Management of a Nuclear Emergency Situation (CNAGEN), sirens and highway signaling (boarding point);

B.2) Non-structural measures

These are measures planned and carried out to mitigate a possible event, such as the municipal master plan, legislation formulated to guarantee planning meetings between federative entities and for simulations.

In addition to preparing contingency plans in which, generally, non-structural measures are of lower cost, providing a great positive effect on the population for the knowledge of vulnerabilities and the actions to be taken.

At this stage, laws, decrees, regulations, contingency plan, academic studies, etc. are observed. PEE, SCP, Decrees and Norms are involved in this stage;

C) Preparation Phase

At this stage, simulations are carried out, alert issuance, population evacuation, etc. In this stage, partial exercises, general exercises, sirens test throughout the day, from 10 am to 10 pm, daily silent tests, training of emergency professionals, etc.

3.5. Disaster Management

It starts when the disaster occurs with actions to mitigate losses and damages until the restoration of basic services, physical and humanitarian infrastructure, divided into:

A) Response Phase: emergency relief, social humanitarian assistance and harm reduction and loss in the community.

B) Recovery Phase: Seek to restore basic services, relocate people and rebuild affected areas.

However, the means of communication and processing of information between these centers lack operational procedures. What can be deduced is that there is no provision for opening a feedback channel with the public, leaving it to the Coordinator of the Center for Coordination and Control of Nuclear Emergency (CCCEN) to temporarily disclose information through a press release. or press

conferences for more special cases that need a deeper explanation of the activities carried out by the public authorities in the face of a nuclear emergency.

This is due to the scarcity of human resources in the area of communication; the lack of budget forecast for projects and/or programs for the permanent training of the population and professionals working in the area of nuclear emergency. It is understood, therefore, that the current dynamics of communication does not provide for different cycles of disclosure of data and other information, being analyzed without the specific categorization of each critical group, still needing to improve the customization of the cycles of interest.

At this stage, Contingency Plans are also adopted, which specify human and material resources and emergency care guidelines, based on an organization and forecast of the necessary relief and assistance actions for the population in the event of a disaster.

Specifically with regard to the rescue phase provided for by the PEE/RJ, the four centers will be staffed by previously registered human resources for disaster management, they are:

• National Center for the Management of a Nuclear Emergency Situation (CNAGEN) located in Brasília to meet the demands of CCCEN and CESTGEN;

• State Nuclear Emergency Center located at the General Department of Civil Defense, in downtown Rio de Janeiro, to meet CCCEN demands and keep CNAGEN informed;

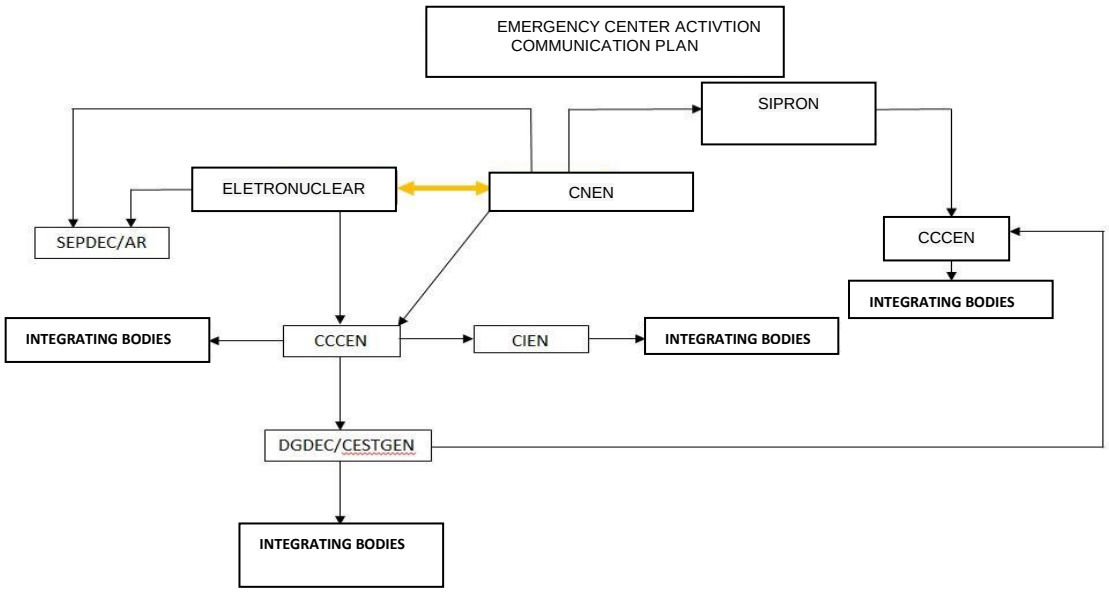
• Nuclear Emergency Coordination and Control Center in the Municipality of Angra dos Reis, whose objective is to coordinate, control and meet the necessary demands for what is planned in the PEE/RJ;

• Nuclear Emergency Information Center in the Municipality of Angra dos Reis, whose functionis to monitor the news, social networks and other information for the issuance of necessary communications to the public.

The Operational Centers are managed by CCCEN and are Detachments of Military Firefighters, Frade and Mambucaba, which were strategically placed east and west of the CNAAA, respectively, to attend, in the event of a nuclear emergency, the evacuation of the public, forming operational groups for support and shelter.

At this stage, there is a Communication Plan for Activating the Emergency Centers, as shown in Figure 2.

Figure 2: *Diagram of the drive phase*



4. **CONCLUSIONS**

It is understood that the SCP makes it possible to efficiently build channels of communication with the public at different stages, as well as provide authorities with strategies to disseminate these communications between cycles, produce models for releases and disclosures in the risk management phase, creating indices of performance to evaluate these strategies in relation to the stakeholders in the communication process.

Thus, only with a SCP implemented will there be a continuous improvement in the information feedback processes with an increase in the quality of communications.

It is concluded that the non-use of SCP can cause serious consequences in the face of a possible accident - from the exposure of the population, the environment and the harmful effects of ionizing radiation to psychological suffering and immeasurable material losses.

In view of this, it can be seen that the SCP, in collaboration with the population, which will receive the information, will be able to build a strategy that will execute the logistical actions to carry out the operations of dissemination of communications, demonstrating how the communications will take place by the institutions and other entities.

In this sense, it is understood the importance of communication in the face of the establishment of the nuclear accident. The training of this information mitigates and controls these means of communication with the firm objective of disseminating information about possible emergency situations.

In this way, the establishment of a SCP for communication with the public, in the different phases of an eventual nuclear disaster in the CNAAA, must observe in an overview, how the cycles of communication receivers and the effectiveness with which they are transmitted are understood by the target Audience.

REFERENCES

[1] IAEA. International Atomic Energy Agency. Manual for first respondersto a radiological emergency. Vienna, 2006. International Atomic Energy Agency. **Manual for first responders to a radiological emergency**. Vienna, 2006.

[2] IAEA. International Atomic Energy Agency. **IAEA EPR Communication, Communication with the Public in a Nuclear or Radiological Emergency**. Vienna, 2012.

[3] GONÇALVES, G. de L.; DELGADO, J. U.; RAZUCK, F. B. A bibliographical review on the concept of biological effects of ionizing radiation in Brazilian publications. **Brazilian Journal of Radiation Sciences**, v. 9, n. 1A, 2021.

[4] SCHNEIDER, T., MAITRE, M., BAN, N., OGINO, H., HOMMA, T., MAGWOOD IV, W. D., ... & YOSHIOKA, T. Preparedness for Post-Accident Recovery: Lessons from Experience. No. NEA-CRPPH-R--2020-1 (JA). **Organisation for Economic Co-Operation and Development (OECD)**, 2021.

[5] UNISDR. **Marco de Sendai para a redução do risco de desastres (2015-2030).** Nações Unidas, 2015. Available at : <*www.unisdr.org/we/inform/publications/43291*>. Accessed on: 25 Aug. 2022.

[6] BRASIL. Lei nº 12.608 de 10 de abril de 2012. **Institui a Política Nacional de Proteção e Defesa Civil – PNPDEC.** Dispõe sobre o Sistema Nacional de Proteção e Defesa Civil – SINPDEC e o Conselho Nacional de Proteção e Defesa Civil – CONPDEC e dá outras providências. Brasília, 2012.

[7] NAÇÕES UNIDAS. ESTRATÉGIA INTERNACIONAL PARA REDUÇÃO DE DESASTRES (ONU/EIRD). **Marco de ação de Hyogo (2005-2015): aumento da resiliência das nações e das comunidades frente aos desastres.** 2005. Available at : *www.integracao.gov.br/cidadesresilientes/pdf/mah_ptb_brochura.pdf*. Accessed on: 25 Aug. 2022.

[8] BRASIL. **COBRADE**. Available at : <DOCU_cobrade.pdf (www.gov.br)>. Accessed on: 25 Aug. 2022.