







## 2. Activities Report

- OPERATIONS
- PLANNED REFUELING OUTAGES
- RADIATION PROTECTION AND SAFETY
- TECHNOLOGICAL UPDATES
- QUALITY



### **1. Introduction**

- MESSAGE OF CNAT'S CHIEF EXECUTIVE OFFICER (CEO)
- MILESTONES 2022
- CNAT PROFILE



## **3. Environment**

- ENVIRONMENTAL POLICY
- LINES OF ACTION
- ENVIRONMENTAL AUDITS
- ENVIRONMENTAL MONITORING PROGRAM



- PEOPLE MANAGEMENT
- EQUALITY PLAN
- A-CERO PLAN
- HEALTH SURVEILLANCE
- TRAINING
- RELATIONSHIP WITH SOCIETY





# **1. Introduction**

- MESSAGE OF CNAT'S CHIEF EXECUTIVE OFFICER (CEO)
- MILESTONES 2022
- CNAT PROFILE

## Almaraz Nuclear Power Plant (U1 - U2)

### **TECHNICAL FEATURES:**

Reactor TypePressurized Water Reactor (PWR)VendorWestinghouseThermal Power2,947 MWt (U1) 2,947 MWt (U2)FuelEnriched Uranium Dioxide (UO2)Number of Fuel Assemblies157Gross Electric Power

1,049.43 MWe (U1) 1,044.45 MWe (U2)

Net Power Generation 1,011.30 MWe (U1) 1,005.83 MWe (U2)

**Cooling** Open circuit. Arrocampo Dam

### **OWNERS**

Iberdrola Generación Nuclear, SAU (52.7%) Endesa Generación, SAU (36.0%) Naturgy Generación Térmica, SLU (11.3%)

LOCATION Almaraz (Caceres, Spain)

**START OF COMMERCIAL OPERATION** September 1, 1983 (U1)

July 1, 1984 (U2)

**EXISTING OPERATING PERMIT** Until November 1, 2027 for Unit 1 and until October 31, 2028 for Unit 2

**CYCLE DURATION** 18 months for both units





## **Trillo Nuclear Power Plant**

### **TECHNICAL FEATURES:**

**Reactor Type** Pressurized Water Reactor (PWR) Vendor KWU **Thermal Power** 3.010 MWt Fuel Enriched Uranium Dioxide (UO2) Number of Fuel Assemblies 177 **Gross Electric Power** 1.066 MWe **Net Power Generation** 1,003 MWe Cooling Natural Draft Cooling Towers (Tagus River)

#### **OWNERS**

Iberdrola Generación Nuclear, SAU (49%) Naturgy Generación Térmica, SLU (34.5%) Iberenergía, SAU (15.5%) Endesa Generación, SAU (1.0%)

**LOCATION** Trillo (Guadalajara)

### **START OF COMMERCIAL OPERATION** August 6, 1988

**EXISTING OPERATING PERMIT** Issued in November 17, 2014 for a period of 10 years

### **CYCLE DURATION**

12 months



### **Message of CNAT's Chief Executive Officer (CEO)**

### Javier Ugedo Álvarez-Ossorio

Coinciding with the release of this report, it is my pleasure to present to you the results obtained by Centrales Nucleares Almaraz-Trillo (CNAT) in 2022, year when I undertook the position of CEO.

Our goal is to generate electricity in a safe and reliable manner, always ensuring that people's safety is given an overriding priority The performance of our stations in 2022 was excellent, as certified by the World Association of Nuclear Operators (WANO) which, in light of the results achieved by Trillo NPP during the Peer Review in March 2022, ranked the plant as a WANO level 1, which was the same ranking achieved by Almaraz two years earlier. These results do not only acknowledge the remarkable work carried out by CNAT professionals, but also further encourage us to keep striving for excellence as a way to maintain that ranking and undertake existing opportunities for improvement.

In 2022, the gross power generation of the Almaraz and Trillo nuclear power plants totaled 24,907 GWh. In the particular case of Almaraz, the 16,682 GWh generated was the fourth best joint production record of both units ever. As for Trillo, it generated 8,224 GWh. The figures achieved by our three reactors account for 42.5% of all power generated by Spain's nuclear fleet and 10% of the country's electricity consumption. The excellent performance indicators of our reactors reflect their operational reliability and stability, allowing nuclear energy to generate  $CO_2$ -emission free electricity and to represent over 20% of all power generated in Spain.

As I said earlier, our goal is to generate electricity in a safe and reliable manner while ensuring people's safety is always given an overriding priority. This is clearly illustrated by our performance within the A-CE-RO Plan in 2022, year when we had no work accidents at Trillo NPP and the milestone of 612 days without a lost-time accident was achieved. As for Almaraz, we reached a new record of 1126 days and over 6.9 million hours worked with no lost-time accident.





CNAT continued with the rollout of its investment plan, within the framework of a process launched a few years earlier to enhance safety and regulatory compliance





In May 2022 we received the WANO Follow-Up, continuation of the Peer Review mission that took place in January and February 2020 at Almaraz NPP. The evaluation team, comprised of five international experts, assessed very positively the progress made in the Areas for Improvement identified two years earlier, encouraging the organization to continuously exercise a questioning attitude in all our work activities.

In 2022, CNAT continued with the rollout of its investment plan, within the framework of a process laun-

ched a few years earlier to enhance safety and regulatory compliance, as well as to further maintain power plant availability through equipment renewal, an initiative included within the company's obsolescence management program.

In addition to this, I would like to highlight the importance of innovation as a key driver for progress and continuous improvement at CNAT.

In this area I would like to mention some projects carried out during 2022, such as process digitalization and the use of inspection drones and robots to minimize workforce exposure, especially in high-dose areas. Some preliminary tests were also conducted to obtain radioisotopes in the reactor of Trillo NPP, as a step prior to the production of drugs used to treat specific types of cancer. Although this project is still in the testing phase and has to prove its viability, we are hopeful its feasibility can be confirmed in the future.

Lastly, I would like to highlight the exceptional work of CNAT professionals, who were the essential driving force behind the achievement of all the milestones described throughout this Report.



## **Milestones 2022**



## **Owner Companies**

The distribution of shares amongst CNAT's owner companies in the combined installed power of both stations, is as follows:



## **Organizational Structure**

The organization chart shows the organizational structure of the Economic Interest Grouping CNAT:



On November 15, Javier Ugedo Álvarez-Ossorio became CNAT's CEO after the Board of Administrators of Centrales Nucleares Almaraz-Trillo, AIE (Spanish acronym, CNAT) approved his appointment as replacement of Eduardo Lasso de la Vega, who held the position during the previous ten years.

Phi Heitta

## Mission, Vision, Strategic Pillars

CNAT's Mission is to generate electricity in a safe, reliable, economically sound and environmentally friendly manner, ensuring long-term operation by means of optimal operation of Almaraz and Trillo nuclear power plants.

Our Vision is aimed at placing Almaraz and Trillo nuclear power plants amongst the best in terms of safety, quality and costs, using a management model in which individual participation and development favors higher safety, productivity and efficiency standards.

To achieve its mission and move forward on the course set by its Vision, CNAT develops its strategy based on the following strategic pillars:







# **2. Activities Report**

- OPERATIONS
- PLANNED REFUELING OUTAGES
- RADIATION PROTECTION AND SAFETY
- TECHNOLOGICAL UPDATES
- QUALITY

## **Activities Report** OPERATIONS / Almaraz Nuclear Power Plant



### Production of ALMARAZ NPP U1 (GWh)



### Production of ALMARAZ NPP U2 (GWh)



The gross power generated between both Almaraz Nuclear Power Plant units amounted to 16,682 GWh, whereas the joint net generation reached 16,032 GWh. As for the gross power generation of Unit 1, it was 8,766 GWh, whereas for Unit 2 it amounted to 7,916 GWh. The accumulated gross power generation of Almaraz Nuclear Power Plant from the start of commercial operation until December 31, 2022, was 594,048 GWh (299,183 Unit 1 and 294,865 Unit 2).

Unit 1 operated stably throughout the period, from January 9 when the 28th refueling outage concluded, until the end of the year, with the exception of early April when load was reduced to inspect a FW recirculation valve and June 23, when preventive maintenance testing of the turbine was carried out.

Unit 2 operated stably throughout the period until September 26, when the 27th refueling outage began, with a duration of 39.5 days. During this period there was also an automatic shutdown due to actuation of turbine protections. In 2022, Almaraz Nuclear Power Plant reported 7 licensee events to the Regulator -CSN- (3 in U1 and 4 in U2).

The Onsite Emergency Plan (Spanish acronym, PEI) was carried out on April 21, declaring different events ranking from categories 1 to 3, some of which required specific responses from the Spanish Civil Guard (police force) onsite.

## **Activities Report** OPERATIONS / Trillo Nuclear Power Plant





### Net Generation of TRILLO NPP (GWh)



In 2022, the gross power generation of Trillo Nuclear Power Plant was 8,224 GWh, whereas the net power generation amounted to 7,679 GWh.

The accumulated gross power generation of the station from the start of commercial operation until December 31, 2022, was 280,178 GWh, totaling 268,439 hours coupled to the grid. Trillo operated stably throughout the year, with the exception of the refueling outage period between May 14 and June 18.

Refueling Outage R434 began on Saturday, May 14 and ended in June 18, operating after that at 100% (rated power) from June 23 until December 31.

In 2022, Trillo NPP had no automatic reactor scrams. In 2022, Trillo Power Plant reported 5 licensee events to the CSN.

The annual drill of the Onsite Emergency Plan (Spanish acronym, PEI) was carried out on November 17, recreating an emergency scenario of fuel damage which was detected due to increased primary circuit activity, followed by a loss-of-coolant event which eventually reached Category 3 "Site Emergency".

### Gross Generation of TRILLO NPP (GWh)

# **Planned Refueling Outages**

### **Almaraz Nuclear Power Plant**

The 28th planned outage for refueling and maintenance at Almaraz Nuclear Power Plant Unit 1 began on November 22, 2021 and concluded on January 9, 2022, date which marked the start of the 29th operating cycle after the unit reconnected to the grid at 04:15 AM. In this refueling outage, Almaraz NPP Unit 1 carried out over 13,500 maintenance activities, implementing 23 design modifications some of which were related to requirements from and commitments to the Spanish Nuclear Regulatory Agency.

During this period of intense work activity at the station, where the regular workforce was joined by more than 1,100 supplemental workers mostly from the municipalities around the power plant, most COVID 19 protection measures were maintained and reinforced with the aim to protect individuals against the risk of coronavirus transmission. In 2022, Almaraz NPP Unit 2 had its 27th refueling outage, with a duration of 39.5 days from September 26 to November 5. Some of the main activities carried out during this outage were as follows: induced-current inspection of three steam generators, ultrasound inspection of nozzles and vessel bottom penetrations, visual inspection of lower vessel internals, motor replacement in cooling pump RCP-2, maintenance on diesel generators 2 and 5, change of 6.3Kv motors in residual heat removal pump RH-A, inspection of main feedwater (FW) turbine-driven pump "B" and of auxiliary feedwater (AF) motor-driven pump "A", as well as implementation of multiple design modifications.





### **Trillo Nuclear Power Plant**

The 34th planned outage for refueling and maintenance at Trillo Nuclear Power Plant began on May 14 and ended on June 18, 2022, with a total duration of 35.2 days.

Out of the 4298 activities carried out during this refueling outage, the main ones were as follows: replacement of 40 fuel assemblies, spring testing in upper internals of the reactor pressure vessel, visual inspection of fuel assembly flow restrictors, inspection of one of the reactor coolant pumps, inspection of reactor coolant pump seals, capacity testing of batteries in redundancy 2/6, electrical and mechanical inspection of redundancy 1/5, inspection of valves in main steam loop 20, inspection of quick shutoff valve in train 10 of the nuclear component cooling system, replacement of AQ generation breaker, inspection and cleaning of essential cooling system lines, inspection of body 1 in low pressure turbine.

With regards to the secondary circuit, all sludge was removed and the tubesheet of steam generators was visual inspected. As for the primary circuit, an induced-current inspection was carried out on all (100%) tubes in YB10B001.

To help the regular workforce with the implementation of all these activities, over 40 specialized companies provided their services, employing more than 500 workers mostly from the area around the power plant.

# **Planned Refueling Outages**



## Radiation Protection and Safety

The stations were operated normally in 2022, without any significant incident impacting nuclear safety, radiation protection or workforce and/or environmental safety.

In the case of Almaraz Nuclear Power Plant, the collective dose was 486.23 mSv per person for both units, whereas in the case of Trillo Nuclear Power Plant it was 312.06 mSv per person. Measured results confirmed that, once again, the personal dose of radiation workers was significantly lower than the legal limits.



TRILLO NPP Collective Dose (mSv.p)





# **Technological Updates**



In 2022, CNAT continued with the rollout of its investment plan within the framework of a process launched a few years earlier to enhance safety and maintain power plant availability through equipment renewal. This initiative is included within the company's obsolescence management program.

### **At Almaraz Nuclear Power Plant**

- A number of works and tasks were carried out to upgrade structures and equipment:
- → Activities required to build a new Interim Storage Facility (ISF) with full capacity to empty both spent fuel pools (ATI-100) were undertaken: Basic design, Environmental impact studies, Geotechnical profiling and Resolution of interference with the foreseen location.
- → Exchangers in the RH system (residual heat removal) and CS system (chemical and volume control) were replaced.

- → The company continues with the plan to replace motorized actuators (limitorque model SMA), as part of the obsolescence management program.
- → Adaptation to the APQ standard on Chemical Product Storage.

In terms of Instrumentation and Control and electrical conditions, the following tasks were further developed:

- → Inspection and replacement of mid-voltage safety motors and stockpiling of strategic spare parts as a continuation of the REMSE project for renewal of mid-voltage electrical safety motors.
- → Continuation of works to replace low-voltage breakers and Power Center breakers, changing OTOMAX and NOVOMAX models with the new EMAX model.
- → Continuation of activities to renew safety instrumentation, power sources and cards in control and protection systems due to end of their calculated service life.

Almaraz NPP replaced exchangers in the CS system (chemical and volume control)







Trillo NPP completed the manufacture of a new main transformer.

### **At Trillo Nuclear Power Plant**

A number of works and tasks were carried out to upgrade structures and equipment:

- → Work continues within the strategic plan to refurbish diesel generators (safeguard and emergency motors and electrical generators) with the aim to ensure operation until the end of the station's service life.
- → Work continues within the strategic plan to refurbish main reactor coolant pumps, with the implementation period stretching from 2022 to 2024.
- → Continued procurement of strategic spare parts for valves and quick shutoff valve actuators, with the aim to facilitate maintenance work if needed.
- → Renewal of pumps in RS system (emergency feedwater), UT system (gas-oil supply) and RN system (low pressure drainage).
- → Works relating to installation of new pumps in UF system (essential chilled water) continued, as part of the obsolescence management program.

- → High-pressure oil pumps were purchased with the aim to replace old pumps over the next few years.
- In terms of Instrumentation and Control and electrical conditions, the following tasks were further developed:
- → Installation of new generation breaker was completed during refueling outage R434 (2022) due to obsolescence of the original breaker.
- → Manufacture of a new shielded single-phase transformer was

completed, so as to replace one of the main transformers currently in operation during refueling outage R435 (2023) and to restore the availability of a spare piece of equipment.

- → Work continues within the project to upgrade H&B actuators. Work continues to refurbish cards and procure additional stock.
- → The electrical generator monitoring system was upgraded during refueling outage R434.
- → Pressurizer spray valve control was renewed.



Some of the main activities aimed at enhancing safety, were as follows:

### **At Almaraz Nuclear Power Plant**

In 2022, the implementation of improvement proposals included within the Regulatory Periodic Safety Review (PSR) for Renewal of Almaraz NPP's Operating Permit, was completed. The main tasks were as follows:

- → Improvements to increase available nuclear component cooling system margins by installing a new exchanger cleanup system and replacing pump chillers.
- → In 2022, as part of actions to transition to the new Fire Protection (FP) standard (NFPA 805), the installation of Design Modifications was completed.



### At Trillo Nuclear Power Plant

- → Work continued on activities linked to the Regulator's Technical Instruction for prevention and removal of gas accumulation in pipes.
- →Work continued to adapt to the ATEX standard relating to fire protection.

### **Common a Both Stations**

- → The project for seismic characterization of power plants (seismic Complementary Technical Instruction) was completed, obtaining the hazard curves required by the Regulator (CSN) and launching subsequent actions with the aim to assess project results. Project-related actions will continue in 2023.
- → Within the framework of Long-Term Operation, the Spanish Nuclear Forum (Foro Nuclear) will continue working on life management actions, as well as preparing required Integrated Aging Management and Evaluation Plan revisions (Spanish acronym, PIEGE) for submittal to the Spanish Regulator (CSN).
- → Work continued to develop tasks aimed at ensuring the Environmental Qualification of Mechanical Equipment (Spanish acronym, CAEM).



Almaraz NPP completed the installation of Design Modifications intended to allow the transition to a new FP standard (NFPA 805)



New exchanger cleanup system at Almaraz NPP

# Quality

Quality, embedded in all activities carried out at our company, is considered paramount by CNAT to consolidate trust amongst our owners, surroundings, workers and collaborating companies. Ever since 1995, our company's commitment to quality has been recognized by the Spanish Association of Standardization and Certification (AENOR), which granted CNAT the official certificate accrediting that our Quality Management System complies with standard UNE EN ISO 9001:2015 on production of electricity generated by nuclear power.





In 2022, AENOR's certification renewal audit rendered satisfactory results. In addition, we comply with UNE 73401, which is the reference quality standard for the nuclear industry and the foundation of our Quality Assurance Manual. UNE 73401 requirements are permanently audited both in-house by the Quality Assurance units at the plants and corporate headquarters, and externally by the Spanish Nuclear Regulatory Agency (CSN).

With the aim to better know the level of excellence in our organization, we voluntarily request international evaluations such as Peer Reviews by WANO (World Association of Nuclear Operators), which in March 2022 formed a team of international experts to conduct an in-depth performance

analysis at Trillo NPP, comparing our plant against the best standards of the nuclear industry. The Peer Review resulted in the identification of strengths, such as the Emergency Response Organization activation system and the improved system used to report events to WANO, as well as of Areas for Improvement in the fields of Organizational Effectiveness, Engineering, Operations and Maintenance.

In May 2022, Almaraz NPP hosted the Follow-Up visit of the WANO Peer Review held in January and February of 2020. The evaluation team, comprised of five international experts, assessed very positively the progress made in the Areas for Improvement identified two years earlier. Continuous Improvement is part of CNAT's organizational culture, which is why every year we manage around 5,000 improvement and corrective actions based on information coming from external evaluations, independent in-house assessments (Quality Assurance audits and inspections, as well as specific evaluations and other Nuclear Oversight activities), and self-assessments carried out by each unit of their own activities and processes.

Additionally, low-level events are trended with the aim to determine preventive actions which can avoid more relevant incidents from occurring. With that aim, a powerful indicator system is used to monitor all our processes and activities.



# **3. Environment**

- ENVIRONMENTAL POLICY
- LINES OF ACTION
- ENVIRONMENTAL AUDITS
- ENVIRONMENTAL MONITORING PROGRAM

# Environment

ENVIRONMENTAL QUALITY MANAGEMENT



CNAT's commitment to respecting the environment is embodied in the organization's Environmental Policy, which drives ongoing performance improvement and the application of the Environmental Management System, reflecting Management's commitment and constituting the guiding principle from which environmentally-related annual target programs and business activities in general, are derived.

## **Environmental Policy**

CNAT's environmental policy is defined according to its organizational goal and context, taking into consideration the environmental nature, magnitude and impacts of activities, products and services, and establishing itself as the master reference framework of its Environmental Management System, which sets and reviews environmental targets. The policy establishes the following commitments:

- To fully integrate environmental aspects into the organizational strategy with the aim to ensure protection of the environment, preservation of the natural setting and prevention of contamination.
- To improve continuously all processes with environmental consequences.
- To know and assess the environmental risks and opportunities of activities carried out, with the aim to ensure expected results are achieved.
- To comply with applicable environmental regulations and requirements voluntarily subscribed, keeping an attitude of ongoing compliance.

 To integrate environmental management in all organizational activities and levels, including design, supply, operation and maintenance; identifying, preventing, controlling and minimizing their environmental impact as much as possible:

 $\rightarrow$  USING primary materials and energy rationally, and minimizing the generation of waste and conventional and nuclear effluents.

 $\rightarrow$  AVOIDING inadequate stockpile of waste and effluent discharge in non-authorized places.

- $\rightarrow$  **CONSIDERING** the development or application of new technologies to improve efficiency in the generation of electrical power, in the research of environmental aspects and in the promotion of energy savings.
- To motivate, inform and train personnel on the importance of respect for the environment, fostering the development of an environmental culture and disseminating the Environmental Policy in and out of the Organization, including collaborating companies.
- To be transparent in the sharing of information on environmental results and actions, ensuring the availability of channels needed to favor communication with stakeholders.
- To implement and maintain an updated, standardized Environmental Management System.

# Lines of Action

Regarding environmental aspects, in 2022 CNAT further carried out important actions included within the Environmental Management Program, such as the following:

- Actions aimed at minimizing the production of low and intermediate radwaste: strengthening material declassification processes (used oil, active carbon, metals and others).
- Definition and implementation of action lines aimed at minimizing the generation of hazardous and non-hazardous waste in both stations.
- Improvement to contamination prevention systems: enhancements to the gas-oil containment system to prevent a potential diesel generator spillage in the Alternative Emergency Management Center (Spanish acronym: CAGE) building at Trillo NPP.
- Improvement of thermo-ecological conditions in the Arrocampo dam, through optimization of discharge line temperature control and progressive repair of thermal separation screen sections at Almaraz NPP.
- Actions aimed at reducing the risk of legionella by replacing the filling in cooling towers (TEVA)
- Reduction of greenhouse gas emissions through the analysis of fluorinated gas leaks in cooling systems.



CNAT's Environmental Management System has been certified by AENOR since 2005, in accordance with international standard UNE-EN-ISO-14001:2015. From September 19 to 23, 2022, a Quality System Certification Follow-Up Audit was conducted by AE-NOR INTERNACIONAL S.A.U, whose auditors reviewed the stations of Almaraz and Trillo, as well as the activities carried out at the Headquarters. The audit outcome was "Conformity Assessment".

The Environmental Management Certificate, after seventeen years of validity, was renewed in 2020 until November 28, 2023, thus recognizing the engagement of Management and the collective effort of the entire Organization over the years. However, each milestone of this nature should be seen as a new starting point towards a better environmental performance of the company.

Prior to any AENOR audit, an in-house system audit is carried out as part of the verification process required by the system. The audit corresponding to 2022 took place in June, with no non-conformities being detected.

The Spanish Regulator also performed a number of inspections at both stations to determine compliance with various environmental aspects.

# Environmental Audits



## Environmental Monitoring Programs

The stations of Almaraz and Trillo have historically implemented different environmental monitoring programs to confirm that both their radiological and conventional activities have no significant impact on the environment.





## **Analysis of Aquatic Ecosystems**

Basically, two environmental studies are carried out in the area around Almaraz Nuclear Power Plant, including the Arrocampo and Torrejon dams: the ecological research of the aquatic ecosystem and thermal research of the dams.

The scope of these surveillance studies is far-reaching because the Arrocampo dam is considered as another plant system built exclusively to provide industrial cooling and ultimately final heat dissipation to Almaraz NPP. Thus, it is necessary to have an accurate understanding of Arrocampo dam features in terms of its cooling capabilities in the short and long terms, as well as to ensure intensive control and monitoring of its physico-chemical parameters (especially temperature) and biological parameters. The environmental analysis around the Trillo power plant currently involves monitoring the Tagus River, into which plant discharges are channeled, and the Entrepeñas reservoir, downstream from the plant.

The analysis scope includes an assessment of water quality from a physico-chemical perspective, as well as of the content of metals and other undesirable substances, It also looks into the characteristics of various aquatic ecosystem elements such as sediments, benthic algae, phyto- and zoo-plankton and ichthyofauna.



# **Environmental Radiation Monitoring**

The Almaraz and Trillo power plants continuously and strictly control and monitor their own radioactive effluent releases. Nevertheless, with the aim to experimentally verify the impact that their radioactive effluents might have on the environment, the stations implement an Environmental Radiation Monitoring Program (Spanish acronym, PVRA) which directly measures radiation levels near the station, as well as the content of radioactive substances in a series of environmental samples taken in a set of sampling points.

All abiotic elements and living organisms representative of the ecosystems in all natural areas around the plants (aerial, terrestrial and aquatic), are fully monitored.

Both stations collect a large number of samples annually with the aim to carry out multiple types of analyses (gamma spectrometry, beta activity, environmental dose, strontium, tritium and radioiodines). The accuracy of analytical results is ensured through a quality control program carried out by an independent lab and also by an independent surveillance program (Spanish acronym, PVRAIN) carried out by the Spanish Regulator (CSN).

Furthermore, in the case of Almaraz NPP, there is a collaboration agreement with CEDEX by which this official agency, which reports to the Spain's Ministry of Public Works, independently monitors the aquatic environment around the station. The Regional Government of Extremadura also monitors radiation independently through the Environmental Radioactivity Lab of the Extremadura University (LAUREX).

The results obtained in 2022 at both stations indicate that the radiological status of ecosystems in their vicinity has not changed significantly during the year. Natural background values have remained unchanged, thus confirming the absence of environmental effects caused by the release of radioactive effluents. These results were expected considering the nearly negligible radiological relevance of releases from both plants.



### **Weather Studies**

The nuclear power plants of Almaraz and Trillo have weather stations onsite which continuously measure and record key parameters, including temperature, rainfall, wind direction, wind speed, humidity and solar radiation. Meteorological information is very important for a number of environment-related applications. After more than thirty years monitoring and analyzing the meteorological conditions, the power plants have managed to accurately characterize weather patterns at their sites.

Both nuclear sites have the necessary redundancies to ensure ongoing availability of meteorological information.



# **4. Social**

- PEOPLE MANAGEMENT
- EQUALITY PLAN
- A-CERO PLAN
- HEALTH SURVEILLANCE
- TRAINING
- RELATIONSHIP WITH SOCIETY



People are the main asset of *Centrales Nucleares Almaraz-Trillo* (CNAT). Their collaboration, commitment and identification with the Organization are the best guarantee for safe operation of the Power Plants and fulfillment of business targets. Thus, the human resources policy aims to create a work environment which favors personal and professional development, playing close attention to the health and safety of employees. On December 31, 2022, CNAT's team was comprised of 763 highly qualified and experienced professionals, 53% of them college undergrads. CNAT's workforce is based mostly in Extremadura, with 357 workers in Almaraz Nuclear Power Plant (47%), in Castile-La Mancha with 319 workers at Trillo Nuclear Power Plant (42%) and in Madrid, with 87 workers at the Headquarters (11%). In 2022 there were 43 new recruits, all of whom entered an induction training program and received preparatory training before taking ownership of the responsibilities inherent to their job position. It is important to emphasize that CNAT hires the services of a large number of specialized companies which employ nearly 750 individuals during normal operation. During refueling outage periods, CNAT stations employ an additional 1,000 to 1,200 workers. CNAT carried out a follow-up audit of certification ISO 10667 on procedures and methods to assess people in work and organizational environments, with the aim to confirm our work methodology is comprehensive, rigorous and fully aligned to the requirements of the reference standard.

# **Equality plan**

Management and Workers' representatives from Centrales Nucleares Almaraz-Trillo, A.I.E. unanimously approved CNAT's new Equality Plan, which was drafted taking into account both the findings of a dedicated diagnosis, as well as the commitment made in the Collective Bargaining Agreement of Centrales Nucleares Almaraz-Trillo A.I.E.

CNAT's new Equality Plan aims to create, establish and implement actions which renew our commitment to equal treatment and opportunities, and also addresses the needs identified in the Equality Diagnosis. With that aim, the following general objectives were grouped into five strategic axes:

#### **1. LEADERSHIP AND AWARENESS**

- → To reinforce CNAT's commitment to genre equality in the organization in particular and society in general, and to raise awareness on this topic in both of them.
- 2. EQUAL TREATMENT AND OPPORTUNITIES AT THE WORKPLACE
- → To promote mechanisms and procedures for the recruitment and development of professionals, favoring the integration of women with the required level of qualification in all areas of the organization where they are underrepresented.
- **3. SALARY EQUITY**
- → To guarantee the principle of equal pay so that fixed and variable remuneration does not contain criteria by which some staff members could be discriminated on the grounds of genre.

To supervise remuneration policy application so as to ensure equal pay for work positions of equal value. 4. WORK-LIFE BALANCE

- $\rightarrow$  To facilitate professional,
- occupational and personal life reconciliation, regardless of genre, thus establishing a powerful tool that favors equal conditions for men and women through a wide and diverse range of measures.
- → To raise awareness amongst the workforce so that they understand that family duties are a shared responsibility, as well as a right and obligation, and to ensure that the exercise of these rights does not adversely affect the professional life

#### 5. OCCUPATIONAL HEALTH AND PROTECTION OF GENDER VIOLENCE VICTIMS

- → To provide personnel with the required knowledge and skills so as to prevent and channel a situation of potential harassment.
- → To cover genre-related aspects in the Occupational Risk Prevention policy and tools.
- → To disseminate, apply and facilitate protection measures for cases of genre violence.





# **Equality Plan**

A total of 39 measures were defined with the aim to achieve targets, establishing 21 follow-up indicators to facilitate progress monitoring.

In order to facilitate the implementation of actions proposed within this Equality Plan, the aim is to renew the Equality Committee, whose new members will be appointed by CNAT's Equality Plan Negotiation Commission. The composition of this work team will be based on parity criteria, including seven members appointed by CNAT Management. The seven members will come from the different company areas and represent the three work centers. As for the existing procedure which establishes the course of action in case of situations of harassment on the grounds of sex, workplace harassment and sexual harassment, during the negotiation process the Equality Committee decided to draft a new protocol differentiating between situations of harassment on the grounds of sex and sexual harassment, on the one hand, and of workplace harassment prevention on the other. Additionally, the new Equality Plan also includes a Right to Disconnect policy for the benefit of the workforce.



# A-CERO Plan



Under the basic presumption that all work accidents can and should be prevented, CNAT prioritizes the health and safety of individuals as well as the integration of Industrial Safety in all levels of the organization. Our commitment to the Health and Safety of individuals is a hallmark of Centrales Nucleares Almaraz-Trillo and has the ultimate aim of achieving and maintaining ZERO accidents.

In that sense, CNAT's Management launched in 2018 a multi-annual priority project called A-CERO Plan with the intent to enhance the organization's preventive culture. Actions within the A-CERO Plan are targeted to all CNAT staff as well as to personnel from contractor companies who carry out their work at our stations.

With that aim, two priority work lines and three cross-functional work areas were established in 2022 relating to other actions foreseen within this Plan.

#### **Priority Work Areas:**

- $\rightarrow$  Preventive Culture.
- $\rightarrow$  Reduction and Elimination of Risks.















#### **Cross-functional Areas:**

- → Training and Qualification: An ambitious program was developed with the aim to ensure an excellent industrial safety qualification of all workers at our stations.
- → Communication and Dissemination: In order to make the A-CERO Plan visible to everyone and demonstrate the overriding priority that CNAT gives to people's safety, the company keeps on launching impactful and effective communication campaigns to reach all individuals within the organization.
- → Plan Management and Follow-up: The idea is to maintain a structure that makes it possible to monitor Plan achievements, establishing new Plan lines or priorities, as well as reinforcing new or existing management, discussion, analysis and dissemination bodies including the Health and Safety Committee, the business activities Coordination Committee, Industrial Safety Committees and specific Work Groups.



CNAT's Industrial Safety service has a Basic Health Unit (Spanish acronym, UBS) which monitors the health of employees in the three work centers through the specialty of Occupational Medicine, defined by the WHO as "an area of medicine which, either individually or combined, studies preventive measures to achieve the highest degree of physical, mental and social well-being of workers, in relation to workers' health and working capacity, the characteristics and risks of their working environment, and the influence the latter has on the surroundings, as well as the promotion of measures to diagnose, treat, adapt, restore and classify the pathology produced or conditioned by work".

Medical checkups performed by CNAT's UBS are based on the specific Health Surveillance Protocols defined for each job position, in accordance with risk assessments made by Industrial Safety. The information gathered during medical checkups is treated and edited with the aim to produce required epidemic analyses and control reports for each specialty (findings, capabilities, absenteeism, diseases, psychosocial risk, audiometries, etc.). In addition, the UBS drafts the Annual Report and Planning required by applicable Occupational Risk Prevention regulations, the documentation required by Spain's Health Ministry and the paperwork resulting from the Promotion of Health.

# **Health Surveillance**

It also fulfills functions relating to health support, occupational accident or urgent care, and maintains both the Level 1 healthcare accreditation for acutely contaminated and irradiated individuals, as well as the required Regional Health Agency permits as a Health Center. The UBS also participates in emergency drills and drafts and/ or collaborates in the preparation of required documentation.

In 2022, pandemic prevention and control tasks continued, adapting to the actual evolution of the Covid 19 health crisis at all times.

With the aim to maintain the health of our workers within the best quality standards, a number of Health Promotion activities were revisited at our facilities with the intent to establish CNAT as a Company Promoting Healthcare. These activities, which were put to a halt during the pandemic, led to the following voluntary campaigns: Colon cancer screening (fecal occult blood), annual gynecologic examinations, nutritional assessment video-consultation, Opfthalmological Pathology Screening campaign through the use of non-mydriatic retinography, and an oral health campaign including a 3D intraoral scanner.

These activities were carried out during the following virtual workshops: "Knowing diabetes", "Anxiety, things you need to know to manage it effectively", "How can I keep a healthy back? Guide to postural hygiene", "Do you spend many hours in a seated position? Learn specific exercises to counteract it", "Managing and handling stress" and "Most common food intolerances". These campaigns and workshops were very well received by the workforce, whose participation in them was high.

Furthermore, the documentation sent to workers included their medical checkups together with information on "Hypovitaminosis D".



# Training

### **GENERAL DISTRIBUTION TRAINING PROGRAM, 2022**





The qualification of personnel working for Centrales Nucleares Almaraz-Trillo is a priority area of interest, which is why CNAT permanently allocates resources to prepare and develop annual training plans at each work center, including both induction and refresher training programs as well as courses on management skills.

In 2022, a total of 844 induction training and refresher training courses were held, totaling 145,043.4 hours of training for 5,159 workers, including future main control room operators (8

young students currently in training). Refresher training represented 55% of all training programs, whereas induction training amounted to 45%.

In 2022, a total of 777 CNAT employees participated in training actions, totaling 69,831.55 hours of training, for an average of 89.97 training hours per employee.

Before they can join the workforce, future main control room operators undergo qualification programs which in 2022 involved a total of 12,968 hours of training.

As for the process to requalify contractor personnel, CNAT keeps striving to enhance the training provided to them, promoting their participation in qualification activities prepared for staff, and preparing training actions which specifically target them. In 2022, a total of 62,246.85 hours of training were delivered to 4,374 workers from contractor companies.



## Relationship with Society



CNAT keeps fluid and dynamic relations with competent institutions within the remit of our stations, holding information sessions every six months (two at each plant), organizing meetings with mayors from the areas around the plants to bilaterally assess the relations of our stations with nearby municipalities and determine possible collaboration channels, participating in the Information Committees organized by Spain's Ministry for Ecological Transition and Demographic Challenge (Spanish acronym, MITERD), as well as taking part in institutional meetings with local and regional agencies.

In 2022, the majors of nearby municipalities and the media were provided every six months with information on the operation of the plants, including useful data on operational results as well as hints on upcoming plans and projects. Meetings were held with mayors of the areas surrounding both plants. Similarly, the plants were represented at the Almaraz and Trillo Information Committees organized by official nuclear energy agencies with the intend to serve as a forum where information requests are met.

The commitment of the Almaraz and Trillo nuclear power plants to their neighboring communities is reflected in collaboration agreements which have been repeatedly renewed within the framework of projects for economic-social, environmental and educational development. Similarly, CNAT renewed collaboration agreements with the most representative news agencies and press associations in the areas around the plants. These agreements allow senior students in Information Sciences to be trained and specialize in the field of nuclear electricity.

The number of visits to our Information Centers went down in 2022 due to the health crisis caused by COVID-19 Additionally, the public website www. cnat.es provides information of interest on activities carried out by our stations and their environments, thus contributing to further disseminate the role of the nuclear industry.

To ensure an ongoing quality improvement of products and associated services, CNAT strives to make sure suppliers are familiar with and participate in the company's work processes and protocols. The contract volume in 2022 was €481.9 million, with Spanish suppliers accounting for 94.37 % of all awarded contracts (684 out of 741).







#### ALMARAZ NPP

Apdo Correos, 74 10300 Navalmoral de la Mata Cáceres (+34) 927 54 50 90 ci.almaraz@cnat.es

### **TRILLO NPP**

Apdo Correos, 2 19450 Trillo Guadalajara (+34) 949 81 79 00 ci.trillo@cnat.es

#### **CN.NN ALMARAZ - TRILLO**

Avda. de Manoteras, 46-BIS Edificio Delta Nova 6. 5ªPlanta 28050 Madrid (+34) 91 555 91 11 comunicacion@cnat.es