

# CNAT 2023

ANNUAL REPORT



Edition  
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May 2023  
CNAT Communication  
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## Almaraz NPP

### TECHNICAL FEATURES

**Reactor Type**  
Pressurized Water Reactor (PWR)

**Vendor**  
Westinghouse

**Thermal Power**  
2.947 MWt (U-I) - 2.947 MWt (U-II)

**Fuel**  
Enriched Uranium Dioxide (UO<sub>2</sub>)

**Number of Fuel Assemblies**  
157

**Gross Electric Power**  
1.049,43 MWe (U-I) - 1.044,45 MWe (U-II)

**Net Power Generation**  
1.011,30 MWe (U-I) - 1.005,83 MWe (U-II)

**Cooling**  
Open Circuit. Arrocampo Dam.

### Owners

*Iberdrola Generación Nuclear,  
S.A.U. (52,7%)*

*Endesa Generación,  
S.A.U. (36,0%)*

*Naturgy Generación Térmica,  
S.L.U. (11,3%)*

### Location

Almaraz (Cáceres, Spain)

### Start of Commercial Operation

September 1, 1983 (U-I)

July 1 1984 (U-II)

### Existing Operating License

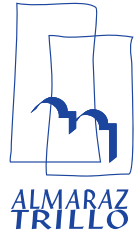
November 01, 2027 for Unit 1

October 31, 2028 for Unit 2

### Cycle Duration

18 months for both units





## Trillo NPP

### TECHNICAL FEATURES

#### Reactor Type

Pressurized Water Reactor (PWR)

#### Vendor

KWU

#### Thermal Power

3.010 MWt

#### Fuel

Enriched Uranium Dioxide (UO<sub>2</sub>)

#### Number of Fuel Assemblies

177

#### Gross Electric Power

1.066 MWe

#### Net Power Generation

1.003 MWe

#### Cooling

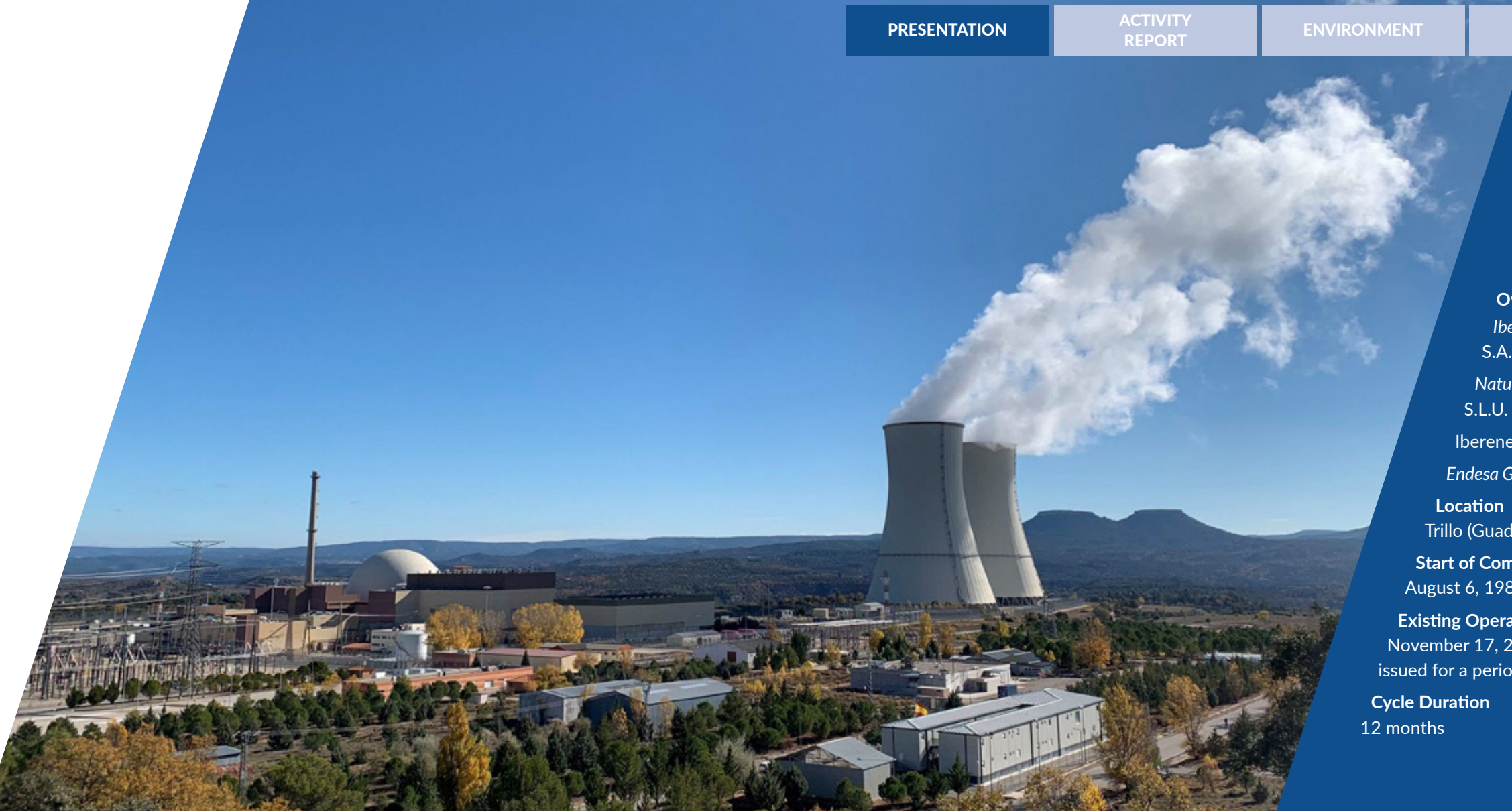
Natural Draft Cooling Towers

PRESENTATION

ACTIVITY  
REPORT

ENVIRONMENT

SOCIAL



#### Owners

*Iberdrola Generación Nuclear,*  
S.A.U. (49%)

*Naturgy Generación Térmica,*  
S.L.U. (34,5%)

*Iberenergía, S.A.U. (15,5%)*

*Endesa Generación, S.A.U. (1,0%)*

#### Location

Trillo (Guadalajara)

#### Start of Commercial Operation

August 6, 1988

#### Existing Operating License

November 17, 2014

issued for a period of 10 years

#### Cycle Duration

12 months

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

Javier Ugedo Álvarez-Ossorio

For yet another year, we managed to bring electricity to various industries and to nearly 6 million Spanish households, and all this thanks to the efforts made by the professionals who form the Almaraz-Trillo team. Excellence is one of our hallmarks and a driver for the work of our team, whose efforts made it possible to end the year with a great performance in many areas such as refueling outages, in which outstanding results were obtained, as well as in the achievement of targets relating to nuclear safety, radiation protection and work implementation quality. It is worth mentioning the results achieved in occupational safety, where we accumulated 7 accident-free refueling outages, certainly an impressive achievement.

In 2023, we requested to renew the Operating License of Trillo Nuclear Power Plant for a further ten years, expecting a resolution from the Ministry of Ecological Transition in November 2024. We face this great responsibility by focusing on our work, doing it to the best of our ability and proving our nuclear professionalism every day.

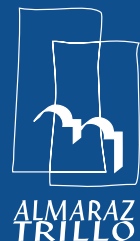
In the case of Almaraz Nuclear Power Plant, we further contributed to the electricity system, generating every kilowatt-hour in a safe and reliable manner, while at the same time preparing to comply with the deadlines set by the National Energy and Climate Plan (Spanish acronym, PNIEC).

For this purpose, we made a series of organizational adjustments, including the creation

of the Asset Transition Department, which aims to help the organization adapt to this new scenario and to position the team of professionals at Almaraz as a reference in the upcoming process of asset transfer to the national radwaste agency (ENRESA).

This year saw a change in the management of Trillo NPP. Javier Vallejo retired after leaving Trillo NPP in a great position as a leader of excellence in the nuclear industry and as a world reference facility in terms of technology, safety and reliability. Alberto Porras, former Maintenance Manager with an outstanding professional career at the plant, replaces Javier Vallejo as new plant manager. I am confident that Alberto will take the plant to even higher levels of excellence.




**WANO1**

Our power plants are ranked in WANO's highest category, thus highlighting their exemplary performance and operational standards”



Our power plants are ranked in the highest category of WANO (World Association of Nuclear Operators), thus highlighting their exemplary performance and operational standards. Their indicators reflect their operational reliability and stability, allowing nuclear energy to generate CO<sub>2</sub>-emission free electricity and to account for over 20% of all power generated in Spain.

In 2023, €85 million (50 at Almaraz and 35 in Trillo) were invested to improve personal and nuclear safety, to comply with regulatory requirements, as well to update and upgrade equipment in line with the state of the art, all with the intent to maximize the reliability of our sites.

Thanks to continued investment, both plants are technologically updated in condi-

tions to continue operating for as long as necessary.

The plants are an important driver of economic and social development in their areas of influence, generating 2,900 and 1,300 jobs in Almaraz and Trillo, respectively, including direct, indirect and induced jobs. In addition, during refueling outage periods, 1,200 and over 1,000 additional professionals join the workforces of Almaraz NPP and Trillo NPP, respectively.

On the other hand, during 2023, no accident was recorded at Almaraz NPP. As for Trillo, it achieved more than 290 days without any accident at the end of the year. The implementation of CNAT's A-CERO Plan (Zero Accidents), recognized as a strength by WANO, contribu-

ted to achieving these extraordinary results and positioned both plants as international Industrial Safety benchmarks within the nuclear industry.

The classification of Almaraz and Trillo as WANO 1 stations resulted in an increasing number of visits to our plants by international operators in search of references for their development or improvement programs. During 2023, the two plants received visits from delegations from the Netherlands, Poland, France, Germany, Sweden, South Korea and China, among others.

I would like to conclude by reiterating my recognition and gratitude to all CNAT professionals who, thanks to their hard work, made it possible to achieve the magnificent results presented in this Report.



## January

- Elvira Romero, *counselor of the Spanish Regulator (CSN)*, visits Trillo NPP.

## February

- Almaraz NPP 1 reaches 300 million MWh of power generation.
- Information Committee for Almaraz NPP and Trillo NPP.
- Information Committee for Almaraz NPP and Trillo NPP.

## March

- CNAT requests from the Spanish Ministry for Ecological Transition and Demographic Challenge to renew Trillo NPP's operating license.
- Javier Díes, *counselor of the Spanish Regulator (CSN)*, visits Trillo NPP.

## April

- The 29<sup>th</sup> Refueling Outage starts at Almaraz NPP Unit 1.
- Elvira Romero, *CSN counselor*, visits Almaraz NPP.

## May

- The 35<sup>th</sup> Refueling Outage starts at Trillo NPP.
- The 29<sup>th</sup> Refueling Outage at Almaraz NPP Unit 1 concluded 63 hours ahead of schedule, marking a milestone for an all-time low collective dose and being the fifth consecutive outage with no work-related accidents.
- Almaraz NPP reaches 600 million MWh of power generation.
- Francisco Castejón, *counselor of the Spanish Regulator (CSN)*, visits Almaraz NPP.

## June

- Javier Díes, *CSN counselor*, visits Almaraz NPP.
- Trillo NPP completes its 35<sup>th</sup> Refueling Outage 54 hours ahead of schedule, this being the second consecutive accident-free outage.

## September

- Almaraz NPP completes 1 year without lost-time accidents.
- CNAT renews its environmental management certification.

## October

- Almaraz NPP Unit 2 first connected to the power grid 40 years ago.
- Annual Meeting of CNAT Managers.
- Trillo NPP completes one million hours worked without lost-time accidents.
- Annual Onsite Emergency Plan drill at Almaraz NPP.

## November

- Annual Onsite Emergency Plan drill at Trillo NPP.

## Diciembre

- Alberto Porras, new plant manager at Trillo NPP.

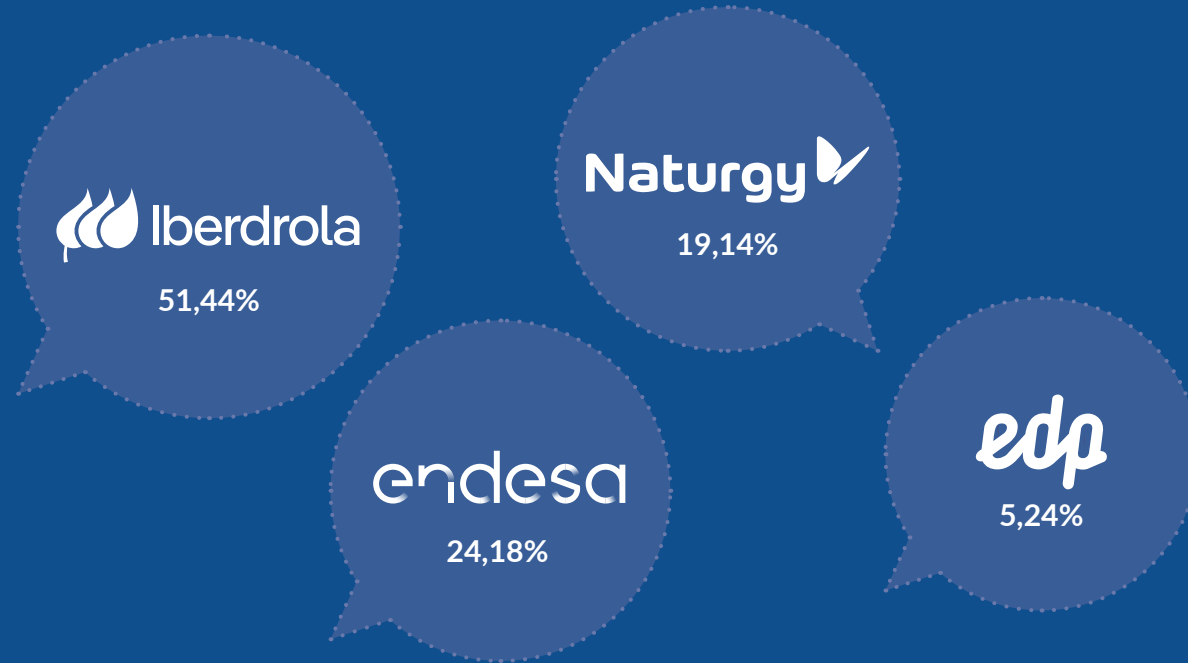
# Milestones 2023





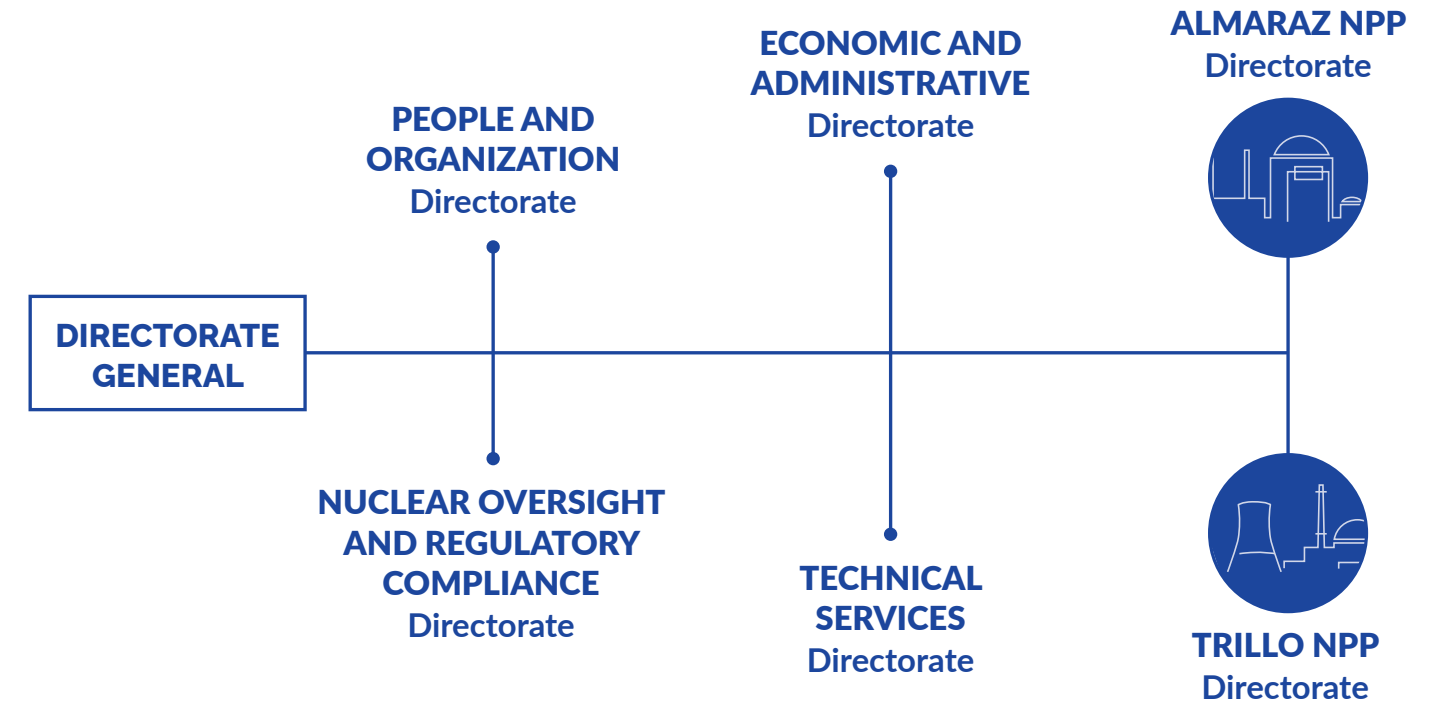
## Owner Companies

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:





## MISSION

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 performance of the Almaraz and Trillo nuclear power plants.

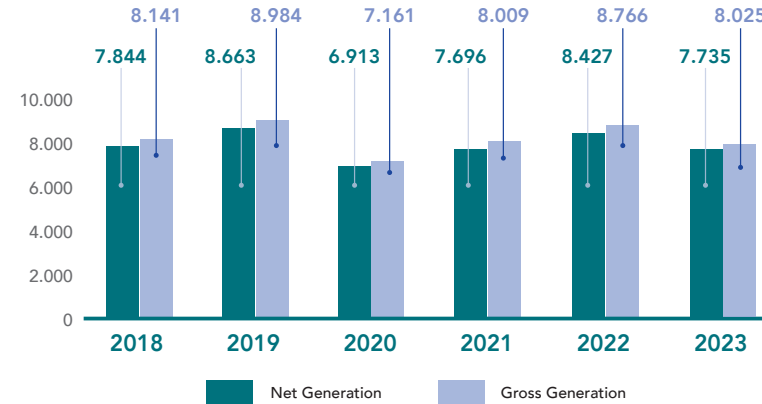
## VISION

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

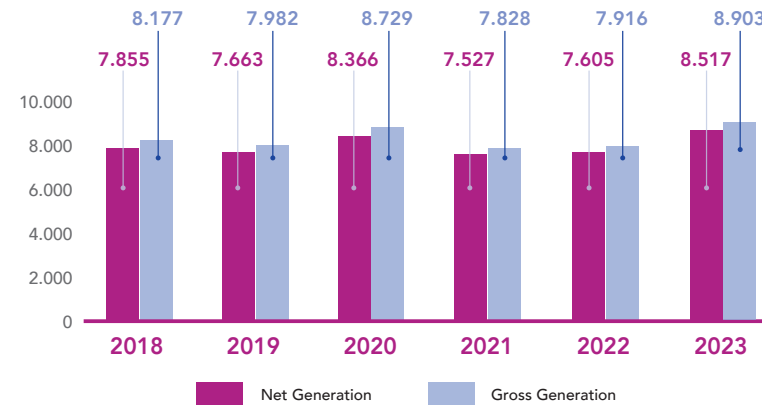
model in which individual participation and development favors enhanced safety, productivity and efficiency standards.



Production of ALMARAZ NPP U1 (GWh)



Production of ALMARAZ NPP U2 (GWh)



## Operations

### Almaraz Nuclear Power Plant

The gross power generated between both units at Almaraz Nuclear Power Plant amounted to 16,928 GWh, whereas their joint net generation reached 16,252 GWh. As for gross power generation, it was 8,025 GWh of Unit 1 and 8,903 GWh for Unit 2. The accumulated gross power generation of Almaraz Nuclear Power Plant from the start of commercial operation amounts to 610,976 GWh.

Almaraz covers 7% of the annual electricity demand of the country, generating each year the energy equivalent to the consumption of 4 million households in Spain.

Unit 1 operated stably during the entire period except in early January and November, when load was reduced on both occasions at the request of the Central Load Dispatcher within the framework of load following requirements. In addition, power was reduced due to turbine valve testing and to the 29<sup>th</sup> Refueling Outage from April 16 to May 25.

Unit 2 operated stably throughout the period except for minor load reductions needed to test turbine valves, an automatic reactor scram on May 16 due to an electrical anomaly in relay cabinets, as well as two load reductions to 68.5% in January and March within the framework of load following requirements by the Central Load Dispatcher.

In 2023, Almaraz Nuclear Power Plant reported 4 licensee events to the Regulator -CSN- (2 in U1 and 2 in U2).

On October 17 the site conducted the annual Onsite Emergency Plan drill, which began with the flooding of the protected area due to torrential rains and a fire outbreak in the 4th Emergency Diesel Generator (4EDG), with a subsequent automatic shutdown of both Almaraz NPP reactors due to the loss of offsite power supply.

### Trillo Nuclear Power Plant

In 2023, the gross power generation of Trillo Nuclear Power Plant was 8,294 GWh, whereas the net power generation amounted to 7,734 GWh. The accumulated gross power generation of the station from the start of commercial operation amounted to 288,472 GWh, totaling 276,473 hours coupled to the grid. Trillo covers 3% of the country's annual electricity demand,

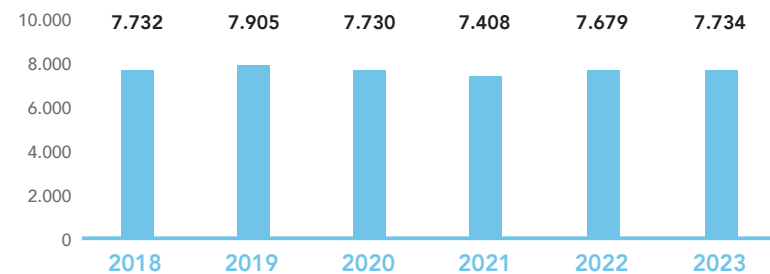
equivalent to the consumption of 2 million households in Spain. Trillo Nuclear Power Plant operated stably throughout the year, with the exception of load reduction requests from the Central Load Dispatcher, and also the refueling outage and general maintenance period of this Alcarria-based facility (central Spain).

The 35<sup>th</sup> Refueling Outage began on May 24. The plant was shut down until June 23<sup>rd</sup> due to the refueling outage. In 2023, the plant had

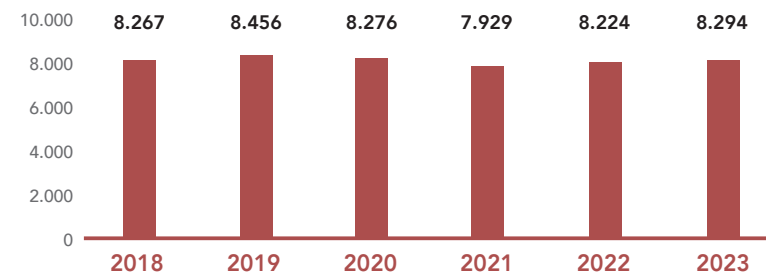
no automatic reactor scrams. In 2023, Trillo Nuclear Power Plant reported 3 licensee events to the CSN.

The annual Onsite Emergency Plan (Spanish acronym, PEI) drill was held on November 23, simulating the onset of an emergency caused by a beyond design basis earthquake and a fire, followed by an aftershock, loss of offsite power supply, automatic reactor scram and the impossibility to start up the emergency diesel generators.

Net Generation of TRILLO NPP (GWh)



Gross Generation of TRILLO NPP (GWh)





# Planned Refueling Outages



## Almaraz Nuclear Power Plant

The work corresponding to the 29<sup>th</sup> Refueling Outage of Almaraz Nuclear Power Plant Unit 1 began on April 16<sup>th</sup> at 11:59 p.m. Once outage work was completed, the plant reconnected to the grid at 8:38 p.m. on May 20, thus beginning the thirtieth 18-month operating cycle. The 29<sup>th</sup> refueling outage was completed 63 hours ahead of schedule, marking the milestone of an all-time low collective dose in Almaraz NPP and the fifth consecutive outage with no work-related accidents.

Over 13,000 maintenance activities were carried out, implementing 30 design modifications some of which were related to requirements from and commitments to the Spanish Regulator (CSN).

During this high workload period at the plant, more than 1,200 additional professionals from some 70 specialized collaborating companies joined the regular workforce, most of them coming from the area around the facility.



### Trillo Nuclear Power Plant

The 35<sup>th</sup> shutdown for refueling outage and general maintenance at the Trillo Nuclear Power Plant began on May 24 and ended 54 hours ahead of schedule without any work-related accidents on June 23, 2023.

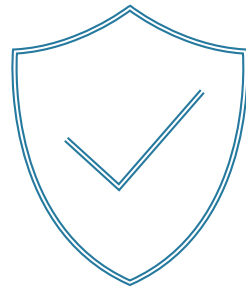
The program for this 35<sup>th</sup> refueling outage included the implementation of nearly 4,000 tasks.

In addition, design modifications were implemented to finalize work programs launched in previous years, to adapt the facility to new industrial requirements and to enhance site availability.

To help the regular workforce in the implementation of all these activities, over 40 specialized companies provided their services, employing more than 1,000 workers.



## Radiation Protection and Safety



The stations were operated normally in 2023, without any significant incident impacting nuclear safety, radiation protection or occupational and/or environmental safety.

In the case of Almaraz Nuclear Power Plant, the collective dose was 321.27 mSv per person for both units, whereas in the case of Trillo Nuclear Power Plant it was 249.28 mSv per person. Measured results confirmed that, once again, the personal dose of radiation workers was significantly lower than the legal limits.



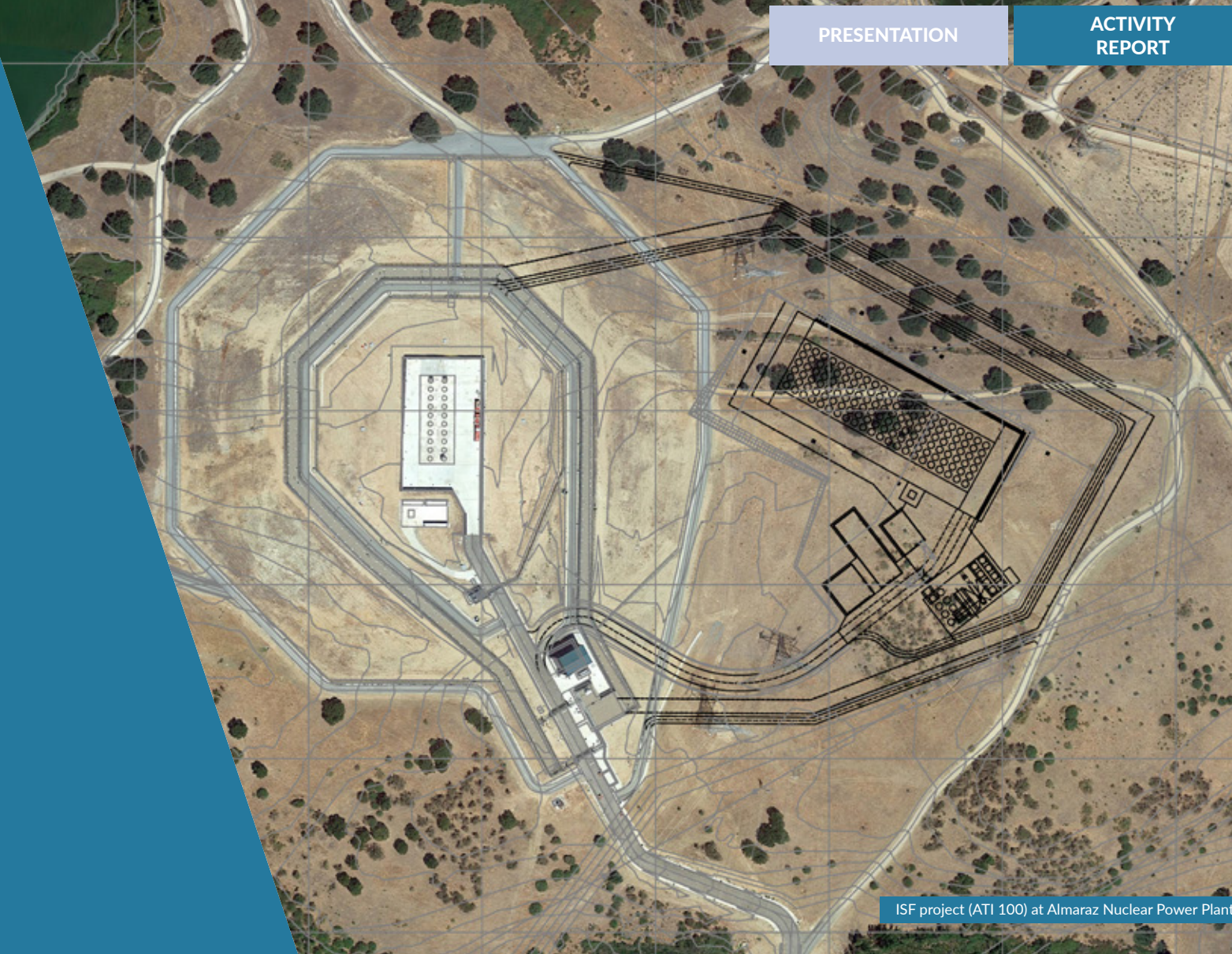


# Technological Updates

In 2023, 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.

Almaraz Nuclear Power Plant carried out a number of works and tasks to upgrade structures and equipment:

- > The activities required for the new Interim Storage Facility with capacity to fully empty the two spent fuel pools (ATI-100) are continuing. After completing the Basic Project Design, the Environmental Impact Study (EIS) of the project was submitted to the Ministry for Ecological Transition and Demographic Challenge so as to obtain the Environmental Impact Assessment (EIA) and the Implementation and Erection Authorization Request (IEAR), which was also sent to the Nuclear Regulator (CSN) for evaluation. Ongoing development of the Construction Design.
- > Activities to equip the site with a new decontamination workshop and warehouse where operational waste and steam generators can be managed, is underway.
- > The company completed the plan to replace motorized actuators (limitorque model SMA), as part of the obsolescence management program.
- > The procurement of a complete set of spare parts for cooling pump internals at Almaraz NPP reactor, was completed.



ISF project (ATI 100) at Almaraz Nuclear Power Plant.

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 was developed as a continuation of *the project for renewal of safety motors (Spanish acronym, REMSE)*.
- > Continuation of works to replace low-voltage breakers (model HFB replaced with model HFD) 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 (I&C systems subject to environmental qualification).
- > As part of the Digital Transformation Plan, the installation of Wi-Fi access points begun in industrial buildings to enable device connectivity as a way to improve plant operation and maintenance.



Trillo Nuclear Power Plant carried out a number of works and tasks 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 in the nuclear component cooling system (TF), with the aim to facilitate maintenance work if needed.
- > Completion of the pump procurement process to renew pumps in RS system (emergency feedwater), UT system (gas-oil supply) and RN system (low pressure drainage) (purchase of spare parts).
- > Works relating to installation of new pumps in UF system (essential chilled water) continue as part of the obsolescence management program, with completion date being 2024.
- > Procurement of high-pressure oil pumps for the emergency cooling and residual heat removal (TH) system was completed, with replacement scheduled for 2024.



Trillo Nuclear Power Plant installed a new shielded single-phase transformer.

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.
- > The new single-phase armored transformer (manufactured in 2022) was installed in position AT03 of the generation transformer bank, moving the former transformer to the spare position.
- > Work continues within the project to upgrade Hartmann & Braun actuators.
- > Pressurizer spray valve control was renewed.
- > The project to renew the reactor regulation system (YR) and main feedwater control system (RL) was awarded.
- > As part of the Digital Transformation Plan, the installation of Wi-Fi access points begun in industrial buildings to enable device connectivity as a way to improve plant operation and maintenance.

### Improved Safety

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

#### At Almaraz Nuclear Power Plant

In 2023, the implementation of improvement proposals included within the Regulatory Periodic Safety Reviews for Renewal of the Operating Permits, was completed. This included the following:

- > Installation of protection tent for Extensive Damage Mitigation Guidelines (EDMG) equipment.
- > Circuit breakers were installed in all positions of the 6.3 kV bus associated to the Fifth Diesel Generator, with the aim to facilitate alignment to different Safeguard Buses, ensuring the use of mechanical interlocks to prevent two trains or units from being connected in parallel.

- > The Cathodic Protection system was improved with the installation of a new anode bed and two new rectifier transformers.

#### At Trillo Nuclear Power Plant

- > Work continued on activities linked to the Regulator's Technical Instruction (derived from the requirements of GL 2008-01) for prevention and removal of gas accumulation in pipes.
- > Work continued to adapt to the ATEX (explosive atmosphere) standard relating to fire protection.
- > 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 revisions of Trillo NPP's Integrated Aging Management and Evaluation Plan (Spanish acronym, PIEGE) for submittal to the Spanish Regulator (CSN).



Almaraz Nuclear Power Plant installed circuit breakers in all positions of the 6.3 kV busbar associated to the Fifth Diesel Generator.

#### Common to Both Stations

- > In 2023, the evaluation of seismic characterization project results for both power plants (seismic Complementary Technical Instruction) was completed, concluding that results were acceptable and that no additional actions were required. This evaluation was sent to the Regulator (CSN), which is yet to provide its assessment.
- > Work continued to develop tasks aimed at ensuring the Environmental Qualification of Mechanical Equipment (Spanish acronym, CAEM).







## 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 2023, AENOR's certification follow-up audit rendered satisfactory results. In addition, we comply with v, which is the reference quality standard for the nuclear industry and the basis of our Quality Assurance Manual, the requirements of which are permanently audited both in-house by the Quality Assurance units at the plants and corporate headquarters, as well as externally by the Spanish Nuclear Regulatory Agency (CSN).



With the aim to know our level of organizational excellence, we request international evaluations voluntarily, such as the Peer Reviews by WANO (World Association of Nuclear Operators), and CNAT participates in these international evaluations of other plants. In 2023, CNAT participated in 5 Peer Reviews.

We also received 4 benchmark visits and requested an MSM (Member Support Mission) in the area of Human Performance.

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 that can avoid more relevant incidents from occurring. With that aim, a powerful indicator system is used to monitor all our processes and activities.

## Environmental Policy

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 general business activities, are derived.

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:

- USING primary materials and energy rationally, and minimizing the generation of waste and conventional and nuclear effluents.
- AVOIDING inadequate stockpile of waste and effluent discharge in non-authorized places.
- 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.



## Action Lines

Regarding environmental aspects, in 2023 CNAT further carried out important work 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, as well as promotion of environmental awareness in this area during onsite work coordination meetings.

- > 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.
- > Improvement in the monitoring and control of Trillo NPP discharge parameters.
- > 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 of Trillo NPP.



## Environmental Audits

CNAT's Environmental Management System has been certified by AENOR since 2005, in accordance with international standard UNE-EN-ISO-14001:2015. From September 25 to 28, 2023, the Environmental Management System Certification Renewal Audit was carried out by AENOR Confía S.A.U., whose auditors reviewed the work performed at the Almaraz and Trillo plants, as well as the activities carried out at the Headquarters. The final audit result was "compliant evaluation".

The Environmental Management Certificate, after eighteen years of validity, was renewed

in 2023 until November 28, 2026, 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 the AENOR audit, an in-house system audit was carried out in June as part of the verification process required by the system.

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



## 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 Torrejón dams: 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 a water quality assessment to monitor physico-chemical properties and the content of metals and other undesirable substances, as well as the characteristics of certain 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 indepen-

dent 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 Transport, 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 2023 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.







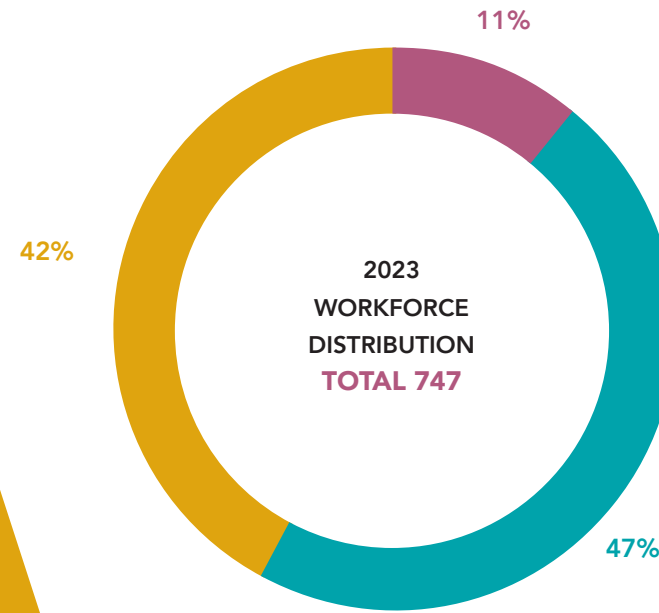
## Weather Studies

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 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.







- Almaraz NPP
- Trillo NPP
- Headquarters

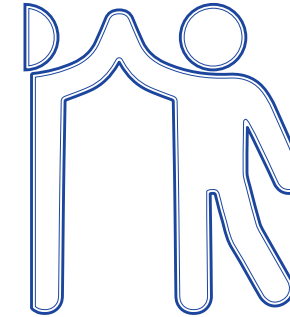
## People Management

People are the main asset of *Centrales Nucleares Almaraz-Trillo*. 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, 2023, CNAT's team was comprised of 747 highly qualified and experienced professionals, 55% of them college undergrads. CNAT's workforce is based mostly in Extremadura, with 337 workers in Almaraz Nuclear Power Plant (45%), in Castile-La Mancha with 322 workers at Trillo Nuclear Power Plant (43%) and in Madrid, with 88 workers at the Headquarters (12%).

In 2023 there were 35 new recruits, all of whom underwent an induction training program and received preparatory training before taking ownership of the responsibilities inherent to their job position. It is important to note that CNAT's staff is supported by nearly 750 workers from specialized service companies during normal operation and by 1,000 - 1,200 additional workers who come to the plants during refueling outage periods.

**we are  
equal  
we are  
partners**



## 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.* On December 19, 2022, the General Directorate for Labor informed that it was registered and recorded.

CNAT's new Equality Plan aims to create, establish and implement actions which address the priority needs identified in the priority

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

- > 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 include genre-related aspects in the occupational risk prevention policy and tools.
- > To disseminate, apply and facilitate protection measures for cases of genre violence.

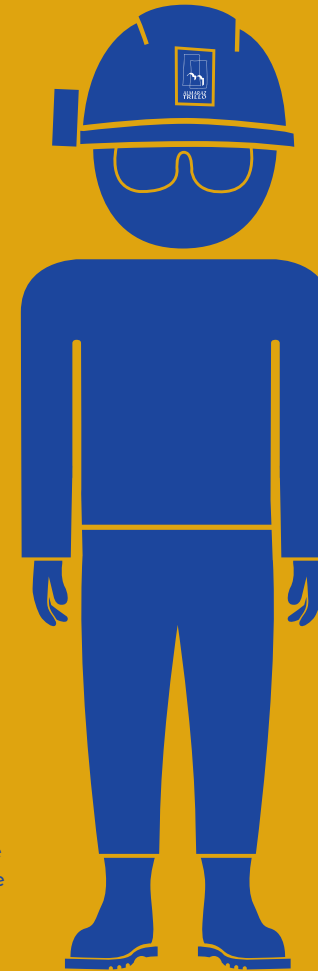


A total of 39 measures were defined with the aim to achieve targets, establishing 21 follow-up indicators to facilitate progress monitoring.

In order to facilitate the implementation of actions proposed within this Equality Plan, the aim is to establish 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 Social Representatives and another seven members appointed by CNAT Management. The latter will come from 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.



**FOLLOW  
THE RULES.  
SAVE YOUR LIFE**



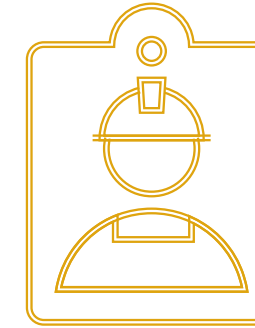
#### **Life Saving Rules**

are behavioral standards and expectations which should be strictly adhered to as they are linked to high risk activities

## **A-CERO Plan**

With the conviction that all work-related accidents can and must be avoided, CNAT is firmly committed to the Prevention of Occupational Risks. For this reason, the company continues to enforce its priority Plan "A-CERO", used to further improve the preventive culture and leadership with the goal of achieving ZERO accidents in the workplace.

The lines and processes put in place are now consolidated: Life Saving Rules (LSR) and Preventive Safety Observations (PSO), evolving towards a more mature preventive culture in the organization which is reflected in the achievement of more demanding and challenging targets.



#### Priority Areas:

- > Improved tagout process.
- > Leadership and Motivation: LEADERSHIP in personal safety continues to be promoted, supported by the chain of command and integrated within the organization, with specific actions such as:
  - Consolidation of the process to investigate, analyze and report accidents and incidents with the aim of identifying root causes, promoting organizational learning and, based on the resulting actions, avoiding their repetition.
  - Consolidation of a Preventive Safety Observations (PSO) program

including the participation of both CNAT and collaborating companies, focusing on the base of the accident pyramid, favoring the detection of failures and helping to set the desired safety expectations for the organization.

- The program for acknowledgment and achievements continues to be used in the area of prevention for both individuals and groups.
- > Reduction and elimination of risks: This includes action lines focused on minimizing or eliminating existing risks in our facilities (chemical risk, electric arc, elimination of openings, lighting deficiencies, etc.).

#### 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 (Project Group) 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.







## Health Surveillance

CNAT's Industrial Safety service has a Basic Health Unit (Spanish acronym, *UBS*) which monitors the health of employees in our 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.

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. Throughout 2023, COVID monitoring continued.

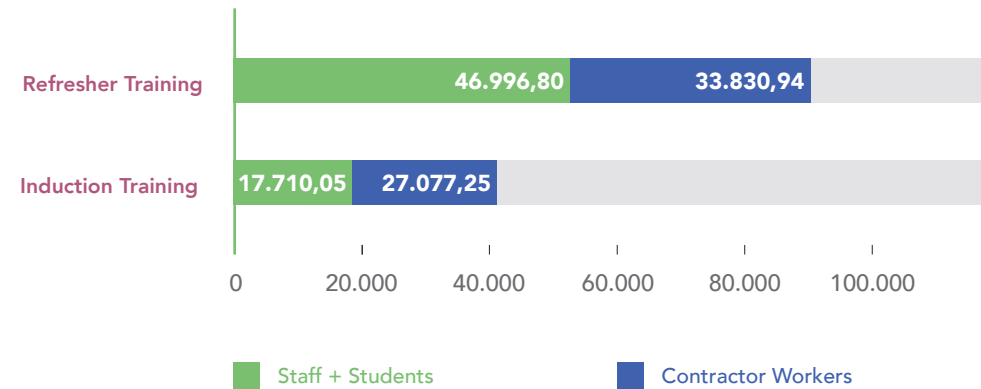
In order to maintain our workforce's health at the highest quality standards, the following health promotion campaigns were carried out within the scope of CNAT as a Health Promoting Company, with volunteer participation: colon cancer screening (fecal occult blood), annual gynecologic examinations, nutritional assessments, Ophthalmological Pathology Screening

campaign through the use of non-mydriatic retinography, oral and dental health by performing an intraoral 3D scanner, study of the biomechanics of the Footprint, Ergonomics in the workplace.

These activities were carried out during the following virtual workshops: "Light, healthy dinners", "Healthy aging: How to prevent joint aging", "Love yourself: How to promote your self-esteem", "First aid for children, everything you need to know". 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 "Glaucoma".



## GENERAL DISTRIBUTION TRAINING PROGRAM, 2023



## Training

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 2023, a total of 861 induction training and refresher training courses were held, totaling 125,615.04 hours of training for 4,802

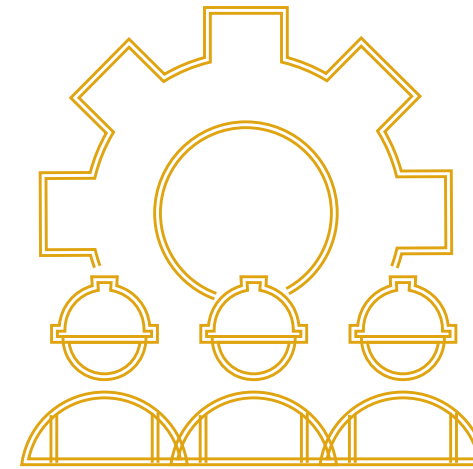
workers, including future main control room operators (6 students currently in training).

Refresher training represented 64.35% of all training programs, whereas induction training amounted to 35.65%.

In 2023, a total of 747 CNAT employees participated in training actions, totaling 64,706.85 hours of training, for an average of 86.85 training hours per employee. Before they can join the workforce, future main control room operators

undergo qualification programs which in 2023 involved a total of 4,862.9 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 2023, a total of 60,908.19 hours of training were delivered to 4,082 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, as well as taking part in institutional meetings with local and regional agencies.

This year, 2023, half-yearly information sessions with the mayors of nearby municipalities and with the media were held in the form of face-to-face meetings, including the review of useful data on operational results as well as hints on upcoming plans and projects.

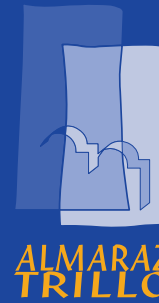
Meetings were held with mayors of the areas surrounding both stations. Similarly, the plants were represented at the Almaraz and Trillo Information Committees organized by official nuclear energy agencies with the intend to serve as a forum where information requests are met.

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 social-economic, 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.

In the course of the year, the Information Center has continued to be used for institutional visits and corporate events.

Additionally, the website ([www.cnat.es](http://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 2023 was €296 million, with Spanish suppliers accounting for 93 % of all awarded contracts (851 out of 791).



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