

## XII<sup>th</sup> Trophées des Femmes de l'Industrie (Women in Industry Awards)

The XII<sup>th</sup> Trophées des Femmes de l'Industrie, organized by *Usine Nouvelle*, took place on September 28, 2023 at the Pavillon Wagram in Paris. The event was sponsored by Muriel PENICAUD, former Minister of Labour.

The objective of this competition is to honour exemplary female careers in all industrial sectors in order to encourage vocations in young girls. A total of 10 trophies are awarded, each corresponding to a category. In addition, there is the "Woman of the Year" award.

Helène MOURET, Director of the Technical Department at the Groupe INTRA, and employee of Orano Support, was nominated in the "Project Woman" category alongside Sylvie RICHARD, Director of the Program *Grand Carénage EDF* (winner of the award), and Ana ALVES, Director of Industrialization of Messenger RNA Vaccines at SANDI.

### Portrait of Hélène MOURET :

Doctor-Ing. in Process Engineering, mother of two children, Hélène MOURET is now Director of the Technical Department and Intervention Manager at the *Groupe d'Intervention Robotique sur Accidents* (INTRA) with 13 years of experience at Orano. She started out as an engineer then Head of Process Studies at the La Hague site. Her desire is to take on challenges by imposing herself in a complex socio-technical system that is very masculine. As a committed woman, Hélène campaigns for the promotion of the role of women in the industry, member of the associations « WIN France » and « Elles baugent ».



Hélène MOURET, Director of the Technical Department at Groupe INTRA

Philippe FAUQUET-ALEKHINE (Technical & Scientific Director)

### Briefs

#### Received at INTRA:

- January: Representatives of GIGN, FARN Civaux colonne 1
- February: Representatives of CHI B / DI / LIDEC / DP2D / CHI A
- March: A delegation from IRSN and JAEA (Japan Atomic Energy Agency)
- April: The Director of Information and Digital Systems DPNT, Ayhan ILDIZ
- May: A delegation of Military Physicians from Saumur
- September: A delegation of Heads of FLS-CEA, FINA RI

#### Visited by INTRA:

- May: KHG in Germany, GIGN in France
- June: ENRICH Robotics Challenge in Austria, IRSN
- November: CABRI reactor at the CEA in Cadarache and construction site of ITER (Experimental Fusion Reactor)

#### International Meetings:

- Mars : annual interdirection meeting INTRA-KHG (visio)
- March/June/October: (ER) Small Group Meeting organized by KAERI (South Korea) (visio)
- September: exchange with EDF Crisis Directorate (INTRA)



Visit at ENRICH in Austria

### Arrivals/Departures



◇ After 36 years spent at Chinon NPP as a management controller specializing in the monitoring of the unit outage budget on her last position, Corine DUFROU joined the Group as a Purchasing-Accounting and Logistics Support Assistant in January 2023, attracted by the autonomy and diversity offered by the position.



◇ After starting his career at EDF in 1993 in nuclear engineering in the commissioning and start-up tests of M4 level sites and then in design safety, Jean DUCRUET took over the management of the "Incidental and Accidental Operation" group at the level of the central services of the nuclear fleet. After a 5-year stint in EDF's R&D department in Chato as head of the Physical Measurements and Radiation Protection group, he returned in 2015 to EDF's Nuclear Production Division as head of the National Crisis Organisation branch. Seconded at the beginning of 2020 to the General Directorate of the National Gendarmerie, he managed as a liaison officer the interfaces between EDF and the Specialized Protection Squadrons of the Gendarmerie (PSPG) which ensure the latest level of protection of nuclear sites. In July 2023, he joined the INTRA Group as Chief Executive Officer.



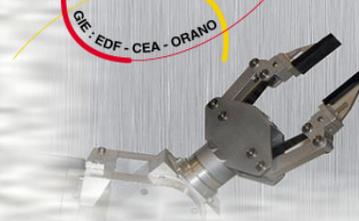
◇ Davy LANG joined the group in June 2018 to become a Pilot, specializing in the management of radiation protection equipment. He left the group and the CEA in May 2023 to fly to new horizons: the Automation Department of Chinon NPP.



◇ Benoit DENIZE joined the CEA as a mechanic on the OSIRIS reactor in Saclay and joined the group in January 2021 as a Pilot, motivated by INTRA's operational activities. He left the group and the CEA in 2023 to join the nuclear operations teams of the Chinon NPP (EDF), in the continuity of his involvement in the nuclear industry.



◇ After 20 years spent at the Paris Fire Brigade (GSPF) in command of an operational company, then in command of the firefighter executive training center and finally the detachment ensuring the safety of people and goods at the Guiana Space Center, Philippe KESSLER was made available to the Nuclear Inspection at the EDF-DPN for 4 years. After a brief return of 2 years at the GSPF, Philippe joined EDF in 2008 as a Fire Expert for the Nuclear Fleet in operation for 9 years. In January 2018, he joined the position of Chief Executive Officer at INTRA until his retirement in the summer of 2023. He leaves the mark of an exceptional contribution to the upgrading of the Group's operational capacity over a period that was marked by several real interventions on technical hazards, in particular at the CEA Saclay and Civaux NPP.



### Organization

## Inauguration of the new INTRA Group in the Belliparc area on March 23, 2023



After being housed for 27 years at the Chinon nuclear power plant, the INTRA Group has moved to new premises in the town of Beaumont en Veron. On March 23, 2023, the INTRA Group inaugurated its new facilities in the presence of representatives of the management of EDF, CEA, ORANO, local elected officials and partners.

On the occasion of this ceremony, the INTRA Group presented its means of intervention and carried out dynamic demonstrations.

The new address is :

Groupe INTRA – 24 Rue Yvette Cauchois – 37420 Beaumont-en-Veron – FRANCE.

Julien BLEUZE (Director of Operations)



Inaugural speech by Cédric LEWANDOWSKI, Chief Executive Officer of the EDF Group

### Edito

After I took up my position last year, I would like to look back on the highlights of 2023.

Cédric LEWANDOWSKI (Executive Director of Generation and Engineering - Nuclear and Thermal Fleet of the EDF Group) presided over the inauguration of the new INTRA premises in March 2023. This was seen as a testimony to EDF's recognition of the success of the INTRA Group's intervention at the Civaux nuclear power plant. Over the year, our activity was rich, varied and complementary: numerous exercises in close collaboration with EDF, CEA and ORANO, as well as an unprecedented exercise with our German partner KHG and the 2<sup>nd</sup> CBRN Dragon Regiment of the Army, a joint training with the gendarmes of the PSPG of Choaz and the organization of a demonstration day coupled with the holding of an international workshop. The group was also noticed at the XII<sup>th</sup> Women in Industry Awards.

At the crossroads of its trajectory, and after having succeeded in the shift to operability under the remarkable leadership of my predecessor Philippe KESSLER, the INTRA Group must now find serenity on a daily basis through collective efficiency and a short-, medium- and long-term investment vision: simplification of work processes, innovation (see Rad Sentinel article), new partners (GIGN, Sécurité civile, IRSN, ANDRA, etc.). A captivating and exciting human adventure!

Jean DUCRUET  
Directeur Général

## Projects

### Metrology - Innovation Project at the INTRA Group: Rad Sentinel

In emergency situations, such as industrial accidents, environmental incidents, or natural disasters, obtaining data quickly and accurately is essential to assess the situation and make informed decisions. However, the immediate collection and transmission of various data: radiological measurement, GPS position, images, 3D reconstruction and other crucial parameters, can be a major challenge. Rad Sentinel is a technological innovation that will meet this challenge. A versatile electronic box combined with multiple sensors, it can be easily transported on any intervention vector such as aerial drone or ground robot. This allows it to provide remote monitoring, transmitting crucial information to a centralized monitoring platform for immediate analysis. Its secure network connectivity provides responsible operators with quick access to data, facilitating informed decisions in emergency and crisis situations. This device can also be used in other key contexts such as maintenance operations in nuclear and industrial environments or the recognition of places inaccessible to humans.

The data collected in real time is recorded and their post-processing makes it possible to obtain quality deliverables characterizing the situation: 3D reconstructions, ortho plans, measurements positioned in the 3D model, etc.

The first users concerned are all the entities involved in the crisis that will go to the field to carry out reconnaissance following an event such as a nuclear accident. This data capture and retransmission in real time helps inform decision-making. Other potential users are those responsible for maintenance operations in nuclear environments to provide accurate monitoring and data collection to ensure safety and efficiency during work. Others could be the project managers who prepare the deconstruction sites of the future in confined and often inaccessible places.

This innovation elaborated by the INTRA Group is presented at the Challenge DPNT of EDF (April 2024).

Stephane FRENDOIS (Project Engineer), Pascal FLIX (Senior Expert Technician in Robotics, Pilot)



The heart of "Rad Sentinel" lies in its innovative electronic housing, designed to be both lightweight and robust. Incorporating a range of modular sensors, this box is the central pivot for data collection and transmission. Its modular cylinder design offers the possibility of integrating various sensors according to the specific needs of the user and it allows it to be easily attached to an aerial or ground drone. The system is equipped with a LORA (Long Range) transmitting antenna to communicate with its receiver over a distance of more than 2 km. With a built-in amplifier, it will be possible to increase this distance to 5 km.

### Project Transmission - EVERSAT

As part of the "Means of Transmission" project, the INTRA Group has purchased two Eversat Lightway V2 satellite suitcases. These cases allow the transmission of information provided by remotely operated vehicles (data, images, videos, streaming) in intervention in contaminated/unstructured areas to the PGRI (command module) located at the rear base and in the absence of the usual means of transmission (3G/4G/5G) destroyed or saturated following the initiating event. They are already being used by partners involved in the crisis who are very satisfied with them. Compact and self-pointing, they replace bulky and aging equipment. The next step is the training of the INTRA Group's stakeholders in early 2024 and operational commissioning in spring 2024.



Thomas LEPHAY (Project Engineer)

### Outdoor Robot Project

The Outdoor Robot project took a turn at the end of 2022, as the Management Committee approved the redefinition of its using concept. The current team, composed of Nicolas D'EPINAY (Strategic Pilot), Jean-Charles BRIAND (Operational Pilot), Didier BOUFFARD and Fabrice LEPEUVE (technical contributors) has finalized the expression of needs that will serve as the basis for the specifications. The project was divided into 2 batches: the machine with its modifications and the transmission. At the same time, prospecting made it possible to identify several companies that were met by videoconference and in person. We were also able to see several machines at work and talk to their operators. At this stage, 10 companies have caught our attention (all batches combined). The transmission package is carried out jointly with Thomas LEPHAY, Long Distance Transmission Project Manager. The quality of the exchanges with potential suppliers allows the project team to refine the requirements in relation to the reality of the market. We expect to launch consultations in the first half of 2024 after a Technical Committee dedicated to validating the technical choices.

Jean-Charles BRIAND (Project Engineer)

## International Workshop INTRA 2023 (IWIN 2023)

The INTRA Group organized the 12<sup>th</sup> edition of the INTRA International Workshop (IWIN2023) with the theme "The Manager and Stress in Operation" in a scientific and industrial conference format at the Salle Mansart in Avoine (France). The theme of this edition was a continuation of that of the previous edition, which concerned the stress of the Pilot. The conference opened with a welcome address by the Mayor of the city, Mr. Didier GODOY, followed by a welcome speech by the new Managing Director of the INTRA Group, Jean DUCRUET. Fourteen French, British, German, Japanese keynote speakers (INTRA, Orano La Hague - Site and Material Protection Unit, ENSOSP, Army 2<sup>nd</sup> RD, GIGN, University of Angers, CEA Marcoule Local Security Force, EDF Communication, St George University of London, KHG, JAEA, M-NEACE) offered oral presentations and written contributions; these are collected in proceedings published in English and French, available online on the INTRA website (<https://www.groupe-intra.com>). This day of October 12, 2023 brought together about fifty industrial participants, intervention professionals and also academics. It was a real sharing of experiences and methods that will undoubtedly contribute to making the Manager more efficient in intervention situations.

Philippe FAUQUET-ALEKHINE (Technical & Scientific Director)



## Demo Day 2023

The IWIN2023 conference was preceded by a robotics demonstration day (J-Demo 2023) organized the day before, October 11, 2023. The demonstration was combined with the animation of eleven stands. The theme of the day was "Telecommunications in Intervention". All the stands attracted a lot of interest with the active participation of KHG, GIGN, IDEALEX, VOKKERD, CNES, EVERSAT, SDIS37, FARN, FINA, INTRA, SHARK ROBOTICS. In addition to the telecommunications dimension, the cooperation dimension was also in the spotlight since, in the afternoon, the dynamic demonstration jointly engaged the INTRA group alongside the FARN (EDF Nuclear Rapid Action Force), the FINA (Orano National Intervention Force) and SHARK ROBOTICS. This made it possible to highlight the operational complementarity and possible collaborations between nuclear intervention units.

This combined edition IWIN2023 + J-Demo 2023 is a real success for which the INTRA Group has received many testimonials of satisfaction.

Julien BLEUZE (Director of Operations)

Philippe FAUQUET-ALEKHINE (Technical & Scientific Director)



## Operational activities at the INTRA Group in 2023



Placing lead mattresses on an irradiated and contaminated module

### Cadarache Exercise

- Missions :
- Interior/exterior visual reconnaissance
  - Indoor/outdoor radiological mapping
  - Maneuvering / Handling with the help of remotely operated robots
  - Radiological monitoring of the environment
  - Collaboration between CEA departments and the INTRA Group

### EDF CIVAUX Exercise

- Missions :
- Visual Inspections and Radiological Mapping by Robots
  - Placement of monitoring probes
  - Drone Visual Reconnaissance
  - Mapping by AUTONUC (team HELINUC - CEA DAM)
  - Collaboration with FARN (transport ERASE) and PSPG



Briefing INTRA-FARN at the INTRA command post



Abseiling of the INTRA team following a change in radiological conditions



X-ray probe placement by the remotely operated robot ERASE

## Operational activities at the INTRA Group in 2023

In 2023, the INTRA Group participated in 7 major exercises, with multi-day trips to EDF, CEA and Orano sites, as well as a joint international exercise with the German intervention group KHG and the 2<sup>nd</sup> CBRN Dragon Regiment (2<sup>nd</sup> RD) of the French Army. These planned exercises allowed to carry out a variety of operational missions, to confront the specificities of nuclear sites, as well as collaborations.

All the INTRA Group's means of intervention have been deployed in the context of exercises with varied, ambitious scenarios that make it possible to carry out complex operations inside and outside nuclear facilities.

The training or internal exercises organized every week, supplemented by these external exercises, allow for the professionalization and preparation of the INTRA Group's agents to deal with complex and unexpected situations. The regular implementation of intervention resources aims to acquire automatisms for better operational responsiveness.

The proposed scenarios allow the development of individual and collective capacities for adaptation, anticipation and innovation. Some activities pushed the agents to know and exceed their limits: helicopter flight in protective outfits, abseiling in CBRN DUVRY from the Nuclear Auxiliary Building of the CIVAUX NPP, long-term piloting in difficult conditions (darkness, heat, cold, mud, cramped spaces).

This year 2023 has been particularly rich in terms of collaborations with other intervention entities: HELINUC team of the CEA DAM (Directorate of Military Applications), EDF's Nuclear Rapid Action Force (FARN), the Orano National Intervention Force (FINA), the Institute for Radiation Protection and Nuclear Safety (IRSN), the National Gendarmerie Intervention Group (GIGN), the Chooz Gendarmerie Speciality Protection Squadron (PSPG), the German intervention group KHG, and the 2nd CBRN Dragon Regiment (2nd RD) of the French Army.

Julien BLEUZE (Director of Operations)

### Orano TRICASTIN Exercise

- Mission :
- Visual Inspections and Radiological Mapping (gamma, neutrons)
  - Solid/Liquid Sampling
  - Chemical measurements (multi-gas detector and pH evaluation)
  - Collaboration with UMPS Tricastin and FINA



Solid/Liquid Sampling



Collaboration with UMPS Tricastin and FINA

## Operational activities at the INTRA Group in 2023

### EDF CHOQZ Exercise

Missions :

- Visual reconnaissance by drone over the Meuse over a distance of 6km (identification of obstacles that may hinder the navigation of the FARN's nautical resources)
- Visual and radiological inspections in the gallery: Mission with 3 NERVA robots engaged simultaneously
- Collaboration with the PSPG of Choaz (Specialized Gendarmerie Protection Squadron) for a visual reconnaissance and radiological mapping mission (support for the management of a terrorist act)



Visual inspections and radiological mapping in long tunnels using a chain of relay robots



Support to the PSPG for visual and radiological reconnaissance following a terrorist act



Collaboration INTRA-FARN for visual reconnaissance by drone

### Orano FINA RI Exercise

Missions :

- Collaboration with the National Task Force of Orano (FINA) column RI « Télécom »
- Training for FINA RI: Deployment of telecom systems
- Transporting heavy loads by robot ERASE
- Preparing for the demo day INTRA
- Technical exchanges INTRA - FINA



Joint activity INTRA-FINA



Deployment of telecom systems FINA

## Operational activities at the INTRA Group in 2023

### INTRA-KHG-2RD Exercise

Missions :

- Placement of monitoring probes
- Visual reconnaissance with drone
- Taxiing in convoy
- Operational communication and radio
- Visual and radiological reconnaissance (real sources) and thermal reconnaissance with robots outdoor/indoor and CBRN piloting
- Visual reconnaissance with aerial drone and piloting in CBRN suit
- Source Retrieval with Outdoor/Indoor Robots
- Environmental Radiometric Beacon Monitoring
- Radiological inspection and decontamination of equipment and personnel
- Interoperability



Piloting aerial drones in contaminated indoor areas



HQ Briefing



Decontamination of an outdoor robot by militaries of the 2nd RD.



Activité collaborative EDLE (INTRA) – Telemax (KHG) – SPOT (KHG) pour reconnaissance visuelle et radiologique d'un bâtiment accidenté et potentiellement irradiant (présence de sources) et contaminé