Measurement
Bern, May 2025

Airborne Radiometrics – Profiles of the Measurement Teams

Measurement Team Switzerland

National Emergency Operations Center (NEOC)

The NEOC is the Swiss federal center of expertise for exceptional events. It is operational on a 24 hours a day basis and is the first point of contact for the partners of civil protection. It operates a national reporting and situation center. The NEOC is in the portfolio of the Federal Office of Civil Protection (FOCP). In the field of radioactivity, it has the competence to order that immediate measures be taken to protect the population. For this purpose it assesses the radiological situation and uses various methods to measure radioactivity. Among these are the measuring team of aerial radiometrics consisting of specialists from the NEOC, militia members of the military reinforcement of the NEOC as operators as well as of pilots and technicians of the Swiss Air Force. The members of the ARM teams train measuring flights and deployment scenarios once a year for one week.

NBC EOD Centre of Excellence

The NBC EOD Centre of Excellence is the specialist body of the Swiss Armed Forces for all issues relating to NBC, ordnance disposal and demining. The NBC task force's main resource is a radiological reconnaissance system of radiometry vehicles and helicopters. The deployment of both resources allows for an efficient identification of the radiological situation even in urban areas. The NBC task force can be backed up by other militia units if necessary. Mobile NBC detection vehicles for immediate analysis of samples complete the unit's heavy equipment for NBC reconnaissance and delineating contaminated areas. Another task of the NBC EOD unit consists in decontaminating people, patients, equipment and vehicles. The Swiss Air Force provides both staff and equipment for the deployment of the radiometry helicopter.

Helicopter NEOC and NBC EOD Centre of Excellence

Helicopter type	Super Puma AS 322 M1 (Military helicopter, unarmed)
Maximum airspeed	310 km/h
Maximum recommended load	4100 kg
Maximum flight duration (with operational configuration)	3 h 20 min
Flight crew	2 pilots, 2 operators, 1 flight technician/loadmaster
Optimum flight altitude / speed during measurement flight	90 m / 150 km/h

Measuring technology NEOC and NBC EOD Centre of Excellence

16 liters sodium iodine detectors (NaI(Tl) detectors) with additional Geiger-Mueller-counter

Application area	Assessment of gamma dose rate Nuclide-specific radiological mapping Searching for sources
Total weight	340 kg

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Federal Department of Defence, Civil Protection and Sport DDPS
Federal Office for Civil Protection FOCP
National Emergency Operations Centre NEOC

Measurement Team France

Nuclear Safety and Radiation Protection Authority (ASNR)

The Nuclear Safety and Radiation Protection Authority (ASNR) was created in 2024 from the merger of the Institute for Radiological Protection and Nuclear Safety (IRSN) and the Nuclear Safety Authority (ASN). As an independent administrative authority, the ASNR ensures, on behalf of the State, the control of civil nuclear and radiation protection activities in France. It also carries out research, expertise, training and public information missions in the fields of nuclear safety and radiation protection. In a radiological emergency, the ASNR evaluates the nature and severity of the event, its evolution, its possible developments, as well as the proven or potential radiological consequences of the situation. The ASNR mobile unit can be mobilized in the event of a crisis to assess the radiological situation, in particular using its set of measuring means adapted to environmental measurements such as those implemented by helicopter.

Helicopter/s

Helicopter type	AS350/AS355 Ecureuil with lateral baskets
Maximum airspeed	260 km/h
Maximum recommended load	2250 kg
Maximum flight duration (with operational configuration)	2 h 30 min
Flight crew	1 pilot, 2 operators
Optimum flight altitude / speed during measurement flight	70 m / 80 km/h but mission-dependent

Measuring technology

4 sodium iodine detectors detectors, 4 liters each with additional Geiger-Mueller-counter

Application area	Assessment of gamma dose rate Nuclide-specific radiological mapping Searching for sources
Total weight	100 kg (+ 30 kg baskets)

Measurement Team Germany

Federal Office for Radiation Protection (BfS)

In the German Federal Office for Radiation Protection, the Federation's competences in the field of radiation protection have been concentrated. The BfS executes manifold tasks in the field of nuclear accident management and environmental radioactivity. These include the airborne mapping of gamma dose rates and artificial radionuclides released during radiological incidents as well as the airborne mapping of gamma dose rates, primordial and artificial radionuclides otherwise distributed in the environment. The BfS is subordinated to the Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection.

Federal Police Flight Service (BPOLFLD)

The Flying Corps of the German Federal Police with its six Federal Police flying squadrons that are separately located all over Germany, sees itself as a comprehensive service provider for the Federal Police bureaus and other national and international public agencies (among others for the BfS) and performs a multitude of tasks on a daily, mostly 24/7 basis. The German Federal Police is subordinated to the Federal Ministry of the Interior and Community.

Helicopter/s

Helicopter type	Eurocopter EC 135 T2i
Maximum airspeed	257 km/h
Maximum recommended load	770 kg
Maximum flight duration (with operational configuration)	1 h 30 min
Flight crew	1 pilot, 1 co-pilot
Optimum flight altitude / speed during measurement flight	1-2 radiation protection experts

Measuring technology

4 sodium iodine detectors (NaI(Tl) detectors)

Application area	Determination of gamma dose rate Detection of radiation anomalies and/or radiation sources
Total weight	100 kg

1 high purity germanium detector (HPGe detector)

Application area	Identification of gamma-emitting radioactive material Activity determination in the event of freshly deposited surface contamination
Total weight	30 kg

Measurement Team Czech Republic

National Radiation Protection Institute (SÚRO)

The SÚRO is a public research institution engaged in professional activities in the field of population protection against ionizing radiation and it was established by the decision of the chairman of the State Office for Nuclear Safety (SÚJB). The mobile group of the SÚRO, which is involved in the radiation monitoring network of the Czech Republic, carries out ground and aerial monitoring of radioactivity. These tasks are performed jointly with the Czech Army and the Czech Police, which provide mainly air vehicles. Joint training of SÚRO and Army of the Czech Republic (314th CBRN Early Warning Centre and 24th Transport Air Force Base) takes place regularly several times a year.

Army of the Czech Republic (AČR)

The 314th CBRN Early Warning Centre is a military unit dealing with the monitoring and evaluation of the radiation, chemical and biological situation on the territory of the Czech Republic and abroad. Its task is also to warn of the possible use of weapons of mass destruction against our country or allies. AČR is involved in radiation monitoring network and together with SÚRO provide radiation surveying of the Czech Republic.

Helicopter/s

Helicopter type	Mil Mi-17 (military helicopter, unarmed)
Maximum airspeed	280 km/h
Maximum recommended load	4 000 kg
Maximum flight duration (with operational configuration)	3 h 45 min
Flight crew	2 pilots, 1 flight technician, 6 operators
Optimum flight altitude / speed during measurement flight	100 m AGL 100 km/h

Measuring technology

4 sodium iodine detectors (NaI(Tl) detectors)

Application area	Assessment of gamma dose rate Nuclide-specific radiological mapping Searching for sources
Total weight	200 kg

Measurement Team Lithuania & USA

Radiation Protection Centre (RSC)

Radiation Protection Centre (RSC) serves as the regulatory authority for radiation protection in Lithuania, tasked with overseeing public and environmental exposure, regulating practices involving ionizing radiation sources, and contributing to the formulation of national radiation protection policy under the mandate of the Minister of Health. Within the domain of emergency preparedness, RSC is responsible for managing radiological emergencies, mitigating their consequences, operating an early radiation warning system, conducting radiological consequence assessments, performing aerial and ground radiation surveys, and providing radiological data-based recommendations to the government for protective actions to be taken. RSC establishes and enforces radiation protection requirements for all state and municipal institutions involved in rescue, search, and remediation tasks, ensuring compliance with these regulations. It organizes, coordinates, and conducts radiological (dosimetric, spectrometric, and surface contamination) investigations; coordinates the sampling process of reconnaissance teams under the Fire and Rescue Department, performs radiological analyses, and evaluates the results; assesses the results of radiological (dosimetric, spectrometric, surface contamination) investigations and, based on the findings, provides recommendations for protecting the population, workers, and the environment from harmful ionizing radiation exposureAdditionally, RSC oversees radiation protection control and supervision in contaminated areas, monitors the progress and quality of decontamination efforts, and ensures that specialists working in these zones undergo individual radiation exposure monitoring and protective equipment checks. Following the removal of ionizing radiation sources, it assesses contamination levels in personnel, equipment, and the surrounding environment. It authorizes the removal of equipment or objects from areas previously exposed to radiation and permits the departure of decontaminated individuals. When necessary, it arranges for the medical assessment and treatment of individuals exposed to radiation. It makes the final determination on whether radiation sources or contaminated objects have been adequately managed and whether further radiation protection measures are required. Furthermore, RSC notifies radioactive waste management authorities about the need for collection, transport, treatment, and storage of ionizing radiation sources and contaminated objects. It also provides preliminary information on their physical characteristics and radiation status, including equivalent dose rates and radionuclide identification, and issues permits for the transportation of radioactive materials.

Aviation board (AB) within State Border Guard Service under the Ministry of the Interior of the Republic of Lithuania (SBGS)

In terms of radiation emergency State Border Guard Service under the Ministry of the Interior of the Republic of Lithuania (SBGS) at the national level together with RSC and Fire and Rescue Department implements aerial and ground radiation reconnaissance, analysis of samples, measurements and transmission of survey data. SBGS AB operational 24/7, main tasks – state border protection, search and rescue, air support for other law enforcement organizations, airborne radiometry (in cooperation with RSC), Frontex activity.

National Nuclear Security Administration Office of Nuclear Incident Policy and Cooperation (NNSA NIPC NA-81)

The Office of Nuclear Incident Policy and Cooperation (NIPC) develops policy and provides capacity-building emergency preparedness training to counter and respond to radiological and nuclear incidents, accidents, and terror threats. As part of this mission the office shares knowledge of nuclear and radiological threats with federal, state, local, and international partners by conducting training, exercises, and information exchanges. Leveraging the capabilities of the U.S. response community, NIPC carries out domestic and international capacity-building programs and assists in developing nuclear incident response policy in the United States and with international partners. Additionally, experts provide nuclear and radiological technical support to U.S. and foreign partners; operational support for major public events and emergencies; international nuclear and radiological incident modelling capabilities; and tabletop exercises. NIPC also provides long-term equipment loans to foreign partners, offers subject matter expertise to develop international guidance and standards with the International Atomic Energy Agency (IAEA), and coordinates with the IAEA's Incident and Emergency Centre for international radiological or nuclear incident response. NIPC also conducts international exercises, counter nuclear smuggling scenario-based policy discussions, and delivers radiological medical training for foreign first responders and partners.

Helicopter SBGS

Helicopter type	H145/BK117 D-3
Maximum airspeed	140 kt (280 km/h)
Maximum recommended load	600 kg
Maximum flight duration (with operational configuration)	2,5 h
Flight crew	2 pilots, 2 operators, + 1 observer
Optimum flight altitude / speed during measurement flight	300 ft (100 m)/ 50–65 kt (100–130 km/h)

Measuring technology

Kit of 4x2L sodium iodine detectors (NaI(Tl) detectors) an backup kit containing 2x4L sodium iodine detectors (NaI(Tl) detectors) with additional Geiger-Mueller-counter and neutron detector

Application area	Assessment of gamma dose rate and identification of radionuclides Dose-rate specific radiological mapping Searching for sources
Total weight	200 kg

88.127d 05.2025