

ORTEC and ANTECH have collaborated on the development of nuclear materials assay systems over many years. Not only have they supplied NDA systems of the fixed-installed variety, but they have also successfully supplied vehicle mounted equipment for mobile applications. The detailed specification of such a vehicle depends upon the detailed requirements of the end-user and the constraints within which the system will be used. Vehicle size, weight, type, as well as the desired range of measurements, sample forms and detection limits shape the specification of the final mobile measurement vehicle.

The ORTEC wide range of instrumentation solutions and the ANTECH track record of engineering design, construction and delivery of mobile measurement systems are brought together to provide a custom made measurement solution.

ANTECH has provided mobile laboratories in many formats and configurations, ranging from small vans to large containers mounted on flat bed trucks. Usually the laboratory is designed starting from a bare vehicle chassis, thereby ensuring maximum flexibility to meet application requirements. In the case of a containerised system, the starting point is a standard shipping container.



A Recent Case Study

Nuclear metrology in emergency conditions: A mobile environmental laboratory for the Institute for Radiological Protection and Nuclear Safety (IRSN), France.¹

Background: The IRSN is tasked with the assessment and prevention of nuclear and radiological risk in France. Its areas of responsibilities range from management of risks related to nuclear activities in industry, medicine or even of natural origin. In the event of a nuclear accident or incident, the IRSN role is to support the action of public authorities, offering technical, health-related measures to ensure the protection of population, workers, environment, or to restore the security of facilities. If necessary this would include the deployment of emergency response vehicles and mobile laboratories. This emergency operations vehicle provides for transportation of a team together with its equipment: radiation protection, sampling and measurements, with satellite communications.

Overview: The vehicle described here allows preparation and measurement of environmental samples in laboratory conditions, but in a mobile vehicle. It is fitted with a satellite communications station to ensure the Emergency Technical Centre is fed with reliable and accurate data. The vehicle provides a fully equipped mobile counting room, incorporating both low- and high-resolution gamma spectrometers (NaI and HPGe), Alpha-Beta counter, sample preparation area with fume cupboard, as well as toilet and refrigerator.

Measurement Equipment Summary

- 4 Shielded NaI(Tl) spectrometers, 10–15 min/sample <50 Bq/kg for Cs-137.
- HPGe spectrometer (ORTEC Detective) dual use in laboratory shield or as a portable spectrometer. 3 hour battery life.
- Gross Alpha Beta Counter for Pu-239 and Sr-90 samples. 50 mm diameter smear samples 0.4 Bq (α) and 0.04 Bq (β).
- Liquid Scintillation counting of β -emitters H-3 or C-14.
- Sample Preparation area with fume cupboard.

(All equipment is shock-mounted against damage while vehicle is in motion.)



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Mobile Nuclear Assay Laboratories and Systems

Installed Facilities

Power Sources

- Local A/C Mains Supply
- On Board 5 kW Petrol Generator
- 12 V DC backup battery emergency power
- ~24 hour autonomy of electrical supply

Services

- Lighting
- Mains A/C power ring
- Air Conditioning
- Hot and cold water
- Lavatory
- "Grey water" storage
- Fire and intruder alarms
- Satellite communications integrated in the laboratory vehicle or hand-held: phone, fax, internet, video conference and data transfer
- Lockable Radioactive Source storage

Vehicle Details²

- 2.9 Litre, 156 BHP Diesel 6.5t gvw
- 6 Speed Gearbox
- ABS Braking
- Optimised Suspension
- Power Steering
- Electric Windows
- Air Conditioning
- Satellite Navigation system
- Fold-out Awning



ORTEC and ANTECH stand ready to meet your needs for Mobile laboratories and assay systems. Each vehicle is custom-designed to meet precisely the operational need. In the first instance, please contact either your local ORTEC or ANTECH office or representative for an initial discussion.

²Alternative configurations available.

Specifications subject to change
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