RAP60

DETECTION. IDENTIFICATION. ANALYSIS. RESPONSE.

RADIOLOGICAL ASSISTANCE PROGRAM | sixty years

STANDARD FORM NO. 64

Office Memorandum • UNITED STATES GOVERNMENT

TO : Principal Staff, Headquarters, and Managers of Operations

DATE: June 18, 1958

FROM : for General Manager R. E. Hollingsworth

SUBJECT: RADIOLOGICAL ASSISTANCE PLAN, REVISED JUNE 10, 1958

Reference is made to my memorandum of May 29, 1958, subject as above, which forwarded the AEC interim plan for handling radiological incidents. Attached is a revision of the plan including changes made just prior to the press release of June 10, 1958. You have already been informed of some of the changes by telephone. The entire plan has been reassembled and is provided here to give you a complete reference to the plan as it exists presently.

The attached revision includes provisions for a Radiological Incidents Center at Headquarters for rapid coordination of Headquarters activities that might be required in a serious incident, and it requires that this Headquarters Center be an information addressee on all messages to Headquarters regarding an incident (see subparagraph 4, paragraph D). However, it must be emphasized that there has been no limitation on the responsibilities of the Operations Offices as outlined in the May 29 plan for providing the immediate actions required to deal with the incident, or for calling upon any assistance that may be needed from other Operations Offices or the AEC-DOD Coordination Center, but it requires that the Headquarters Radiological Incidents Center be kept informed of and alerted to important situations with which it may have to deal. Operating procedures for this Incidents Center are still being worked out at Headquarters.

Other changes: Wording was inserted to re-emphasize that the DOD and the AEC are making a joint effort to coordinate capabilities for radiological assistance; corrected telephone numbers have been inserted for Albuquerque Operations Office on the regional map; and a requirement has been added that ALOO provide advisory personnel in the case of a weapon incident (section C.2.d.).

It should be noted that the plan contains provisions for its continuing revision, and the plan solicits pertinent suggestions from the Operations Offices. These suggestions are to be made to the Division of Biology and Medicine through appropriate channels.

Attachment:
Radiological Assistance Plan

Copies to: Members of Headquarters Committee on Radiological Assistance Plan

TABLE OF CONTENTS

01

RAP'S ORIGINS

The late 1950s was a time of growth for both the American and global nuclear industries. The United States saw a rapidly expanding application of radioactive materials and devices in industry, medicine, and agriculture as a direct outcome of the knowledge and expertise gained during the Manhattan Project. Nuclear power capacity in the United States was also expanding, while President Eisenhower's "Atoms for Peace" program funded and assisted in the design and construction of civilian nuclear power plants abroad in Western Europe, India, and Japan. The uranium fuel cycle and associated facilities were growing, as was domestic uranium mining. After a brief lull at the end of World War 2, an escalating nuclear arms race with U.S.S.R. began. The Soviet launch of the Sputnik probe to space in October 1957 further enhanced the international rivalry. The United States continued to grow the size of its nuclear weapons stockpile and, in 1960, the first nuclear-armed submarine undertook its first routine patrol.

With this expansion of nuclear materials and associated technologies throughout American life, the potential for radiological accidents or incidents—either at commercial nuclear power plants, involving nuclear materials transportation, or other radiological issues at other governmental or civilian research facilities—prompted the Atomic Energy Commission (AEC) to create the Radiological Assistance Program (RAP).

The AEC drafted the original Radiological Assistance Plan documentation from 1957 to 1958, laying the foundation of RAP's missions that remain to this day: radiation monitoring, decontamination assistance, and medical advice and analysis among other capabilities.

"This plan establishes the organization and procedure for coordinating the AEC and DOD capability for handling radiological incidents. The plan includes both weapon and non-weapon incidents… It must be clearly understood that the assistance provided and the responsibilities assigned herein do not in any way abridge state and local police authority."

– Radiological Assistance Plan, 1958

On June 10, 1958, the AEC officially founded RAP and equipped the program with a cadre of scientists, engineers, and technicians well suited to respond to any radiological emergency due to their extensive training in the design and manufacture of radiological products.

RAP leveraged the expertise within the AEC and its national laboratories and made those resources available to assist Federal, state, local, and tribal officials in dealing with any crisis that might arise from the use or transportation of radioactive materials or devices. RAP's first operations managers worked closely with U.S. state governors to inform each of them of the options for assistance during a radiological incident and of the procedures required to request assistance and support.

Through the years, RAP remained a program under the agencies into which the AEC evolved: first the Energy Research and Development Agency and then the U.S. Department of Energy. In 2000, RAP was moved to the newly formed National Nuclear Security Administration (NNSA), a semi-autonomous agency within DOE. Today RAP continues to reside within the nuclear security enterprise in NNSA's counterterrorism and counterproliferation organization.

02

THREE MILE ISLAND

The Three Mile Island Unit 2 reactor, near Middletown, Pennsylvania, partially melted down on March 28, 1979. This incident caused the most serious accident in U.S. commercial nuclear power plant operating history. A combination of equipment malfunctions, nuclear power plant design-related problems, and employee error led to the reactor's partial meltdown and radiation release.

The morning of the Three Mile Island accident, the RAP Team at the Brookhaven National Laboratory (BNL) in Upton, New York was activated to respond and support the Pennsylvania State Health Department. Prior to the Three Mile Island incident, no full-scale exercises of nuclear power plant accident response had been conducted. Members of the RAP team were airlifted by helicopter from BNL.

The Department of Energy committed significant resources to the response. DOE's personnel at the scene included staff from RAP, the National Atmospheric Release Advisory Center, and the Aerial Measuring System (AMS). RAP's responders conducted plume tracking, field environmental monitoring and sampling, sample analysis, and dose assessment. Since the release of radioactivity had already exceeded the plant's radiation monitor ranges, the data collected and analyzed were important for establishing the definitive quantities of the specific nuclides released during the first few weeks after the accident.

"For the field teams, radio communication was limited to rare instances when we were close to the PA Bureau of Radiation Protection (BRP) offices or had favorable geography. Mostly we relied on finding a pay phone and calling in our measurements of beta and gamma, the number of air, soil, water, and vegetation samples we had collected, and the locations of the measurements and samples. That worked early in the evening, but many of the phones were inside businesses which closed later that night so we were often getting data that we were unable to report. Communication from BRP to us would have been useful too if they had been told about a release or change in wind direction. With what we had that night, it wasn't going to happen."

– Alan Kuehner, Former DOE Region 1 RAP Manager


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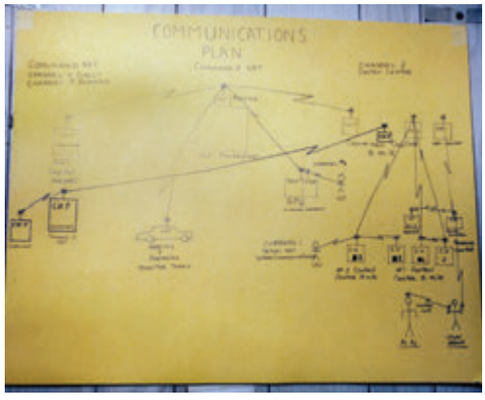


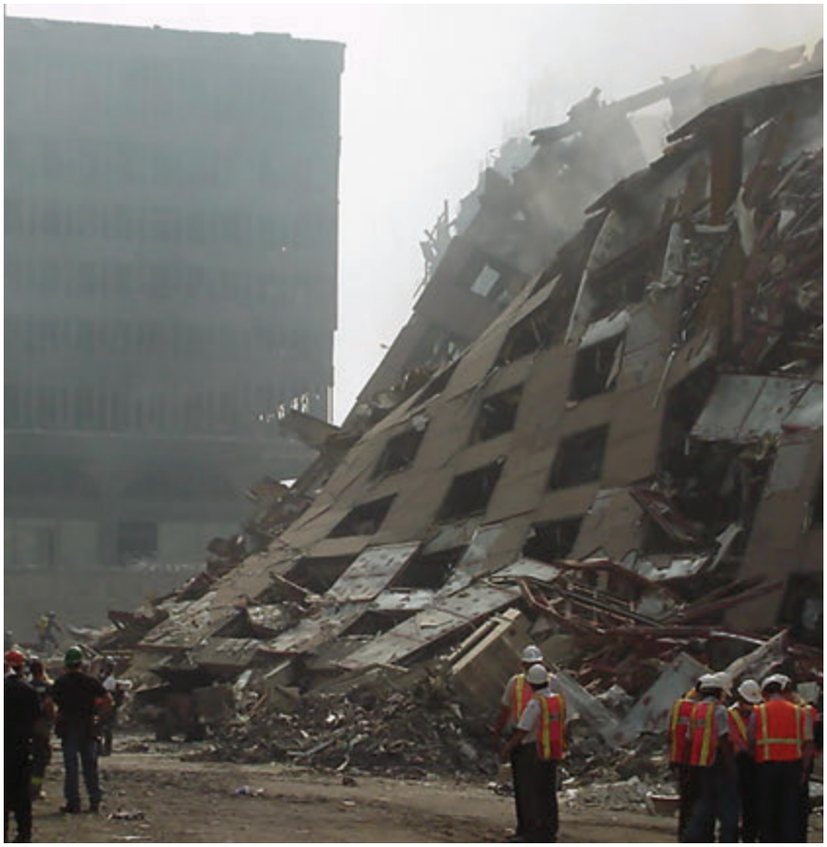
Following the accident, Federal and state agencies also executed a large-scale integrated environmental monitoring response. DOE, along with the Nuclear Regulatory Commission, the Environmental Protection Agency, the Department of Health, Education and Welfare (now Health and Human Services), and the Commonwealth of Pennsylvania conducted detailed studies of the accident's radiological consequences to the environment, to the general public, and to the personnel at the reactor site.

The Three Mile Island incident permanently altered the course of the U.S. nuclear power industry, resulting in more stringent regulations and oversight. It also changed the Federal response structure leading to the establishment of the DOE-led Federal Radiological Monitoring and Assessment Center. Today, RAP is a key player in the FRMAC and also supports the FEMA-led Radiological Emergency Preparedness Program that trains emergency responders in the actions to take if such an event were to occur again. Regional RAP programs are an essential partner to the state and local government agencies who have operational nuclear power plants in their areas of regulatory control.

03 SEPTEMBER 11TH

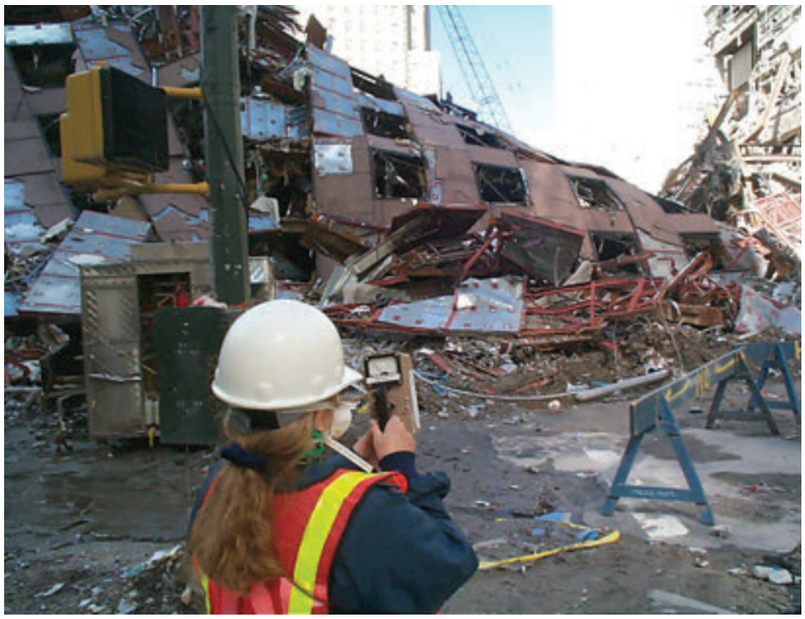
In the immediate aftermath of the September 11th terrorist attacks on our Nation, RAP, along with AMS and the Nuclear Emergency Search Team (NEST), was called to action by the New York City Department of Health to assist at Ground Zero in Manhattan. The request stemmed from a concern for the safety and well-being of the first responders and workers removing the debris from the site of the former World Trade Center towers. New York City was concerned about the potential for radiological materials, such as industrial radiography sources, being in the rubble. A RAP team deployed that evening and worked around the clock until September 17th, 2001.

RAP and AMS worked together to conduct aerial monitoring along with ground level measurements and contamination surveys on first responders, their equipment, and the truckloads of debris being removed from the site. Some members of the team slept on the streets near Ground Zero, and all of them worked long hours until additional DOE resources were called in to assist. With no evidence of radiological sources found in the debris at Ground Zero, the team's analysis enabled New York City to rule out radiological contamination from the list of health and environmental risks at the site.




DOE

In the months and years following the events of September 11th, the role of RAP evolved as did the Nation's overall radiological emergency posture. RAP made significant changes to its mission profile, which included the introduction of enhanced detection instruments and training from the NEST program. This new regional rapid response capability focused on the technical challenge of searching for difficult to detect radioactive materials in support of law enforcement investigations. The events of 9/11 also drove Federal, state, local, and tribal partners to improve interoperability and technical collaboration in order to have a consolidated radiological emergency response.



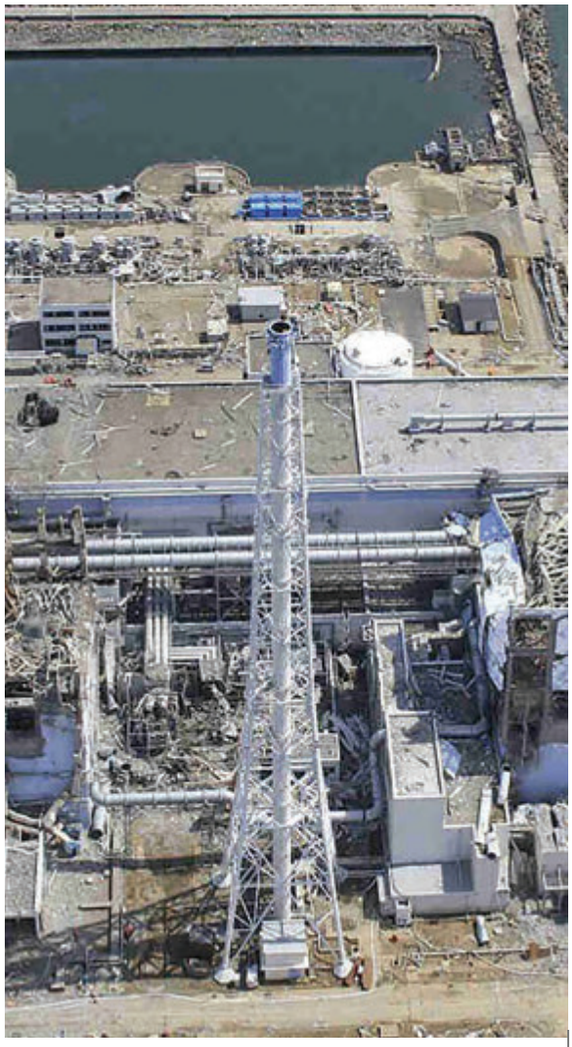

DOE

04

FUKUSHIMA

On March 11, 2011, Japan experienced a major earthquake measuring 9.0 on the Richter scale and a subsequent 15-meter tsunami, which disabled the power supply and cooling of three Fukushima Daiichi reactors. The U.S. Department of Defense (DOD) and the Department of State wanted to ensure that their decisions regarding the protective measures required to ensure the safety of their military and civilian personnel in Japan were technically sound. RAP personnel responded and worked together as an integrated team with personnel from NNSA's Consequence Management (CM), Nuclear Radiological Advisory Team, and AMS, as well as DOD and Department of State. NNSA emergency response teams included nuclear experts in predictive modeling, monitoring, sample collection, radiological dose assessment, laboratory analysis, and data analysis and interpretation. The deployment marked the first time that NNSA's full complement of radiological consequence management capabilities was fielded during a large-scale nuclear emergency.

Members from both RAP and NNSA's Consequence Management team assessed radiation releases from Japan's damaged nuclear power plants. This combined team provided technical analysis and advice to U.S. and Japanese government officials to support immediate decision-making and longer-term stabilization planning. They also conducted extensive technical analysis in support of potential mitigation and recovery strategies.

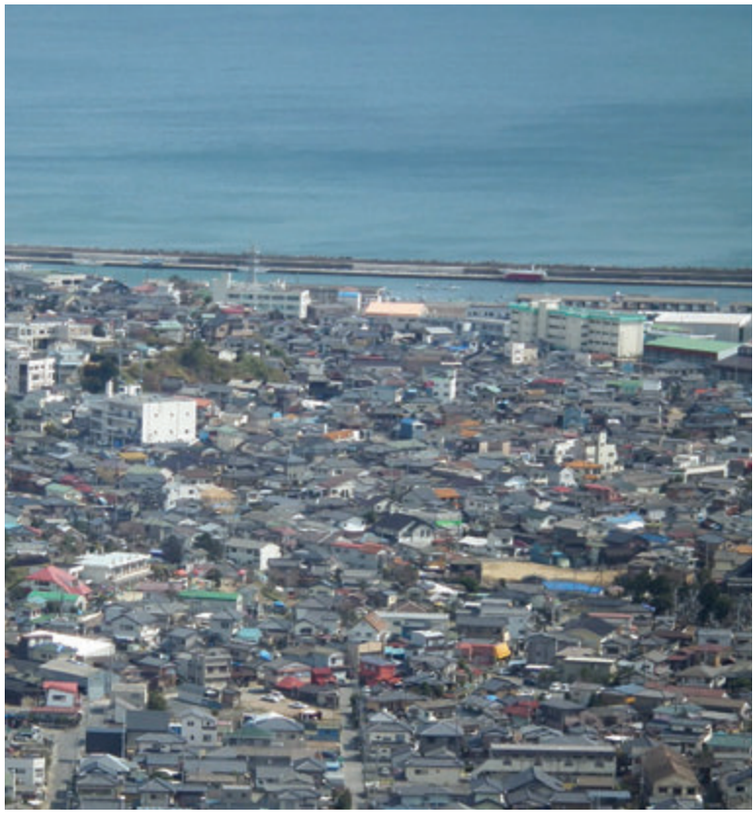


Team members traveled long distances in difficult conditions to assess levels of contaminant deposition and to quantify radiation dose throughout the areas affected by the releases. The response team's efforts provided real-time information to support decisions by the Japanese and U.S. governments that would impact the health and safety of people in Japan.

"The U.S.-Japan Emergency Management Working Group is a tangible display of our friendship with the people of Japan and our commitment to the long-standing alliance between our countries. Both governments are committed to energy security, nuclear energy safety, and the exchange of best practices in the area of emergency preparedness and response. We are excited to continue these fruitful technical interactions over the coming years."

–Jay Tilden, Associate Administrator and Deputy Under Secretary for Counterterrorism and Counterproliferation

For ten weeks following the disaster, NNSA scientists logged more than 500 flight hours with the primary responsibility to monitor radiological fallout and provide data to the U.S. and Japanese governments. Guided by years of planning and training, the integrated response teams successfully completed their mission and built an important partnership with the government of Japan.

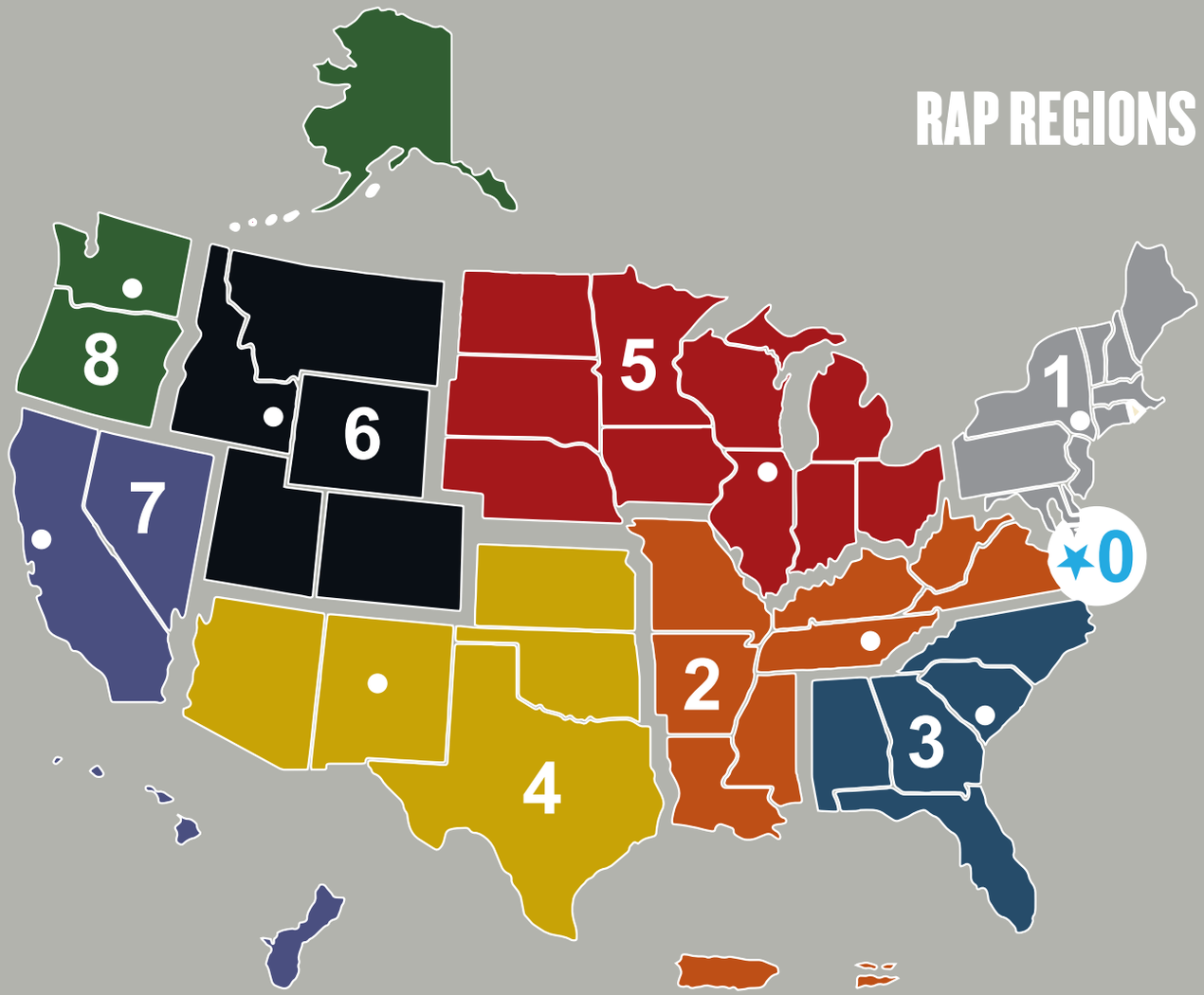


05

REGIONAL ALIGNMENT

Since RAP's inception, the program has been implemented on a regional basis to ensure timely responses. There are nine RAP regions across the United States. The teams are based at major DOE laboratory locations, with the exception of RAP Region 0, which is based in the National Capital Region. Each region has a minimum of three RAP teams and a minimum of eight personnel on each team. Teams are trained to coordinate with and support one another as well as Federal, state, local, and tribal authorities when assistance is necessary. Each RAP team includes a DOE/NNSA federal team leader, a team captain, a team scientist and health physics support personnel. The DOE/NNSA Federal team leader is a Federal employee, while the remainder of the team is comprised of scientific support personnel from within the national laboratory system. The RAP regions and their locations are listed below the map.

RAP REGIONS



RAP Region 0	Washington, DC
RAP Region 1	Brookhaven, NY
RAP Region 2	Oak Ridge, TN
RAP Region 3	Savannah River, SC
RAP Region 4	Albuquerque, NM
RAP Region 5	Chicago, IL
RAP Region 6	Idaho Falls, ID
RAP Region 7	Livermore, CA
RAP Region 8	Richland, WA

06

MISSION AND CAPABILITIES

RAP is the nation's premier first-response resource for advising Federal, state, local, and tribal decision-makers on steps to take to evaluate and minimize the hazards of a radiological or nuclear incident.

RAP support ranges from giving technical information or advice over the telephone to sending highly trained personnel with state-of-the-art equipment to the incident site were team members help identify, characterize, and minimize any radiological or nuclear hazards.

RAP's highly trained scientific and technical teams have access to the most advanced technology available through the national laboratory consortium. The personnel are trained to provide initial assistance in the mitigation of immediate radiation hazards. However, RAP team members are not involved in recovery and cleanup operations.

RAP has three primary support missions: Consequence Management, Crisis Response, and Regional Preparedness.

Consequence Management

Consequence Management activities occur after a known or suspected release of radioactive materials has happened. In such a situation, the extent of the problem needs to be accurately characterized and any contamination assessed by experts. This undertaking was the heart of the original RAP mission upon its inception.

To carry out the CM mission, RAP is prepared to perform a multitude of technical tasks to include: radiation surveys, measurement of contamination levels, and air sampling. These tasks help advise the proper courses of action to minimize the danger to the public and property. RAP always integrates its activities with other responding agencies to ensure the data is accurate and the analysis is technically sound.

In the event of a large scale CM response, RAP will fold its resources into NNSA's FRMAC. Alternatively, RAP may serve a support role to FEMA, the Federal government's designated lead for major CM responses.

Crisis Response

In times of crisis or heightened radiological or nuclear threats against the United States, RAP plays a key role in NNSA's counterterrorism response mission. Primarily in support of the Federal Bureau of Investigations (FBI), the Department of Homeland Security (DHS), or the DOD, RAP conducts joint training and exercises, designed to prepare and integrate operators and technical support into one team. This mission space evolved after September 11th and remains a top component of RAP.

Support for special events also falls under the crisis response category. Once a National Special Security Event (NSSE) or a Special Event Assessment Rating (SEAR) has been determined by DHS, the FBI or the U.S. Secret Service (USSS) may request RAP support. NSSEs include political occasions like the Republican or Democratic National Conventions or a State of the Union Address where the USSS is the lead. The Super Bowl, a SEAR-rated special event, is an example of where the FBI or state and local law enforcement may be the lead.

RAP has been requested several times to support incidents in which radioactive materials have been lost or stolen. In these cases, vehicle-mounted radiation detection systems are used to cover a large amount of area quickly. RAP utilizes special tools developed by NNSA to track this data on computer-based systems to differentiate between anomalies in the data from natural background radiation. This information helps law enforcement determine if areas still need to be investigated.

Regional Preparedness

Regional preparedness is vital to RAP's mission space. Through its strong interagency relationships, RAP coordinates and conducts regional preparedness activities with other Federal, state, local, and tribal authorities for joint participation in meetings, training, drills, exercises, and support for domestic preparedness.

Although RAP's mission is primarily based in the United States, the program also supports the Disaster Assistance Response Team at the U.S. Agency for International Development.

07 TOOLS AND ACTIVITIES

Federal Radiological Monitoring and Assessment Center

RAP teams are trained in the use of the FRMAC sampling processes. This technique includes systematically collecting standardized samples of ground, water, and vegetation from areas potentially subject to the release of radioactive materials. RAP personnel routinely apply these techniques to response scenarios.

Contamination Surveys

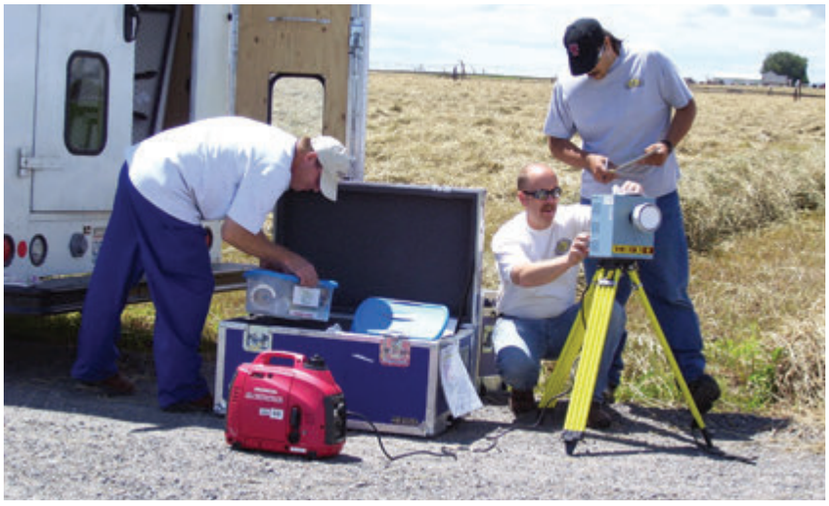
When RAP performs surveys for radioactive contamination, the best tools are instruments that can detect material that emits alpha, beta, or gamma radiation. Such contamination might come from radioactive material located within a ruptured shipping container or material that was accidently released into the environment.

Data Analysis

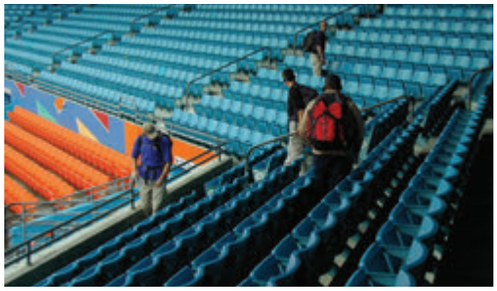
When the origin of the radiological material is not known, RAP's professional health physics personnel analyze the data collected from specialized instruments to determine the type and activity of the material present. Health physicists collect a spectra from the material (the unique fingerprint) to conduct an initial analysis and then transmit this data to the DOE Triage System. The Triage System, which is staffed by scientists at the NNSA national laboratories, fully analyzes the isotope or isotopic mix.

Air Sampling

RAP personnel can measure airborne radioactive material using air samplers to collect the material onto special filtering systems and then analyze the samples.



Radiation Detection



RAP uses a variety of radiation detection instrumentation to meet the changing and dynamic requirements of any situation where they might be deployed. Their tools include instruments that measure everything from natural background radiation to man-made high-level radioactive materials. RAP's instruments can also be concealed or made to resemble everyday items to avoid alarming the public while RAP members work in public venues or during major public events.

Real-Time Telemetry

RAP members can send readings from radiation detection instrumentation such as human portable and vehicle-mounted systems back to a central alarm adjudication command post in real-time for scientists to analyze. Using that data, scientists and team leaders can provide additional direction to the teams in the field or advise the requesting agency on possible courses of action. Options include re-directing or repositioning a team's location, determining the percentage of area surveyed, advising on detection distances, or advising on health hazards, etc.

Protective Gear

Depending upon the likelihood of radioactive contamination during an incident, sometimes RAP responders are required to wear personal protective equipment.

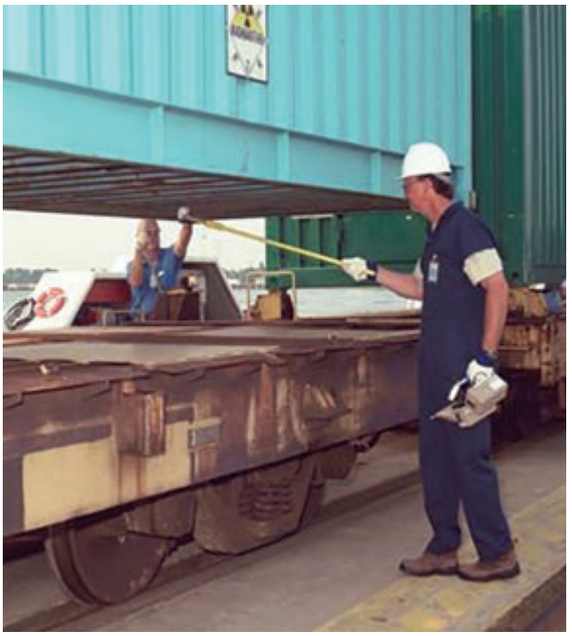

COWBOYS
SEAHAWKS
TOYOTA
AMERICAN FAMILY INSURANCE
RYLINK FIELD

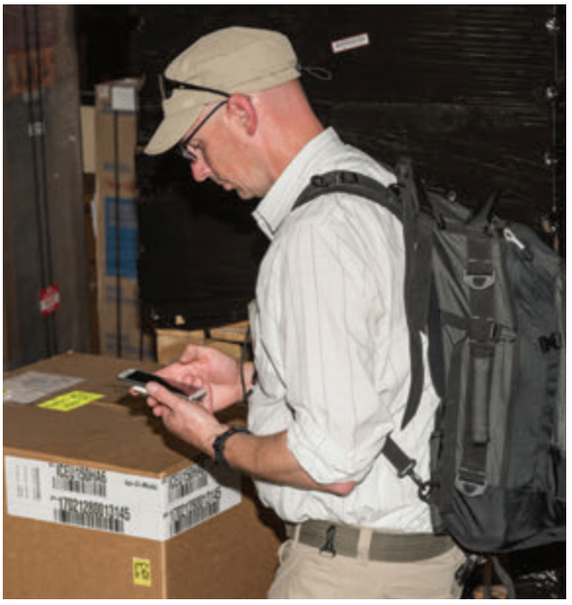
08

PATH FORWARD

When the Atomic Energy Commission created the RAP in 1958, the expertise to locate, characterize, and remediate radiological issues was only available through a small cadre of highly trained scientific and technical professionals. As nuclear applications across varying industries began to grow, the decision to expand these capabilities to Federal, state, local, and tribal responders became a necessity for public safety. Comprised of highly-skilled scientists and health physicists, RAP teams have armed officials throughout the country with the know-how to bring nuclear or radiological incidents to a safe and timely conclusion for the past six decades.

Through advances in science and technology at the national laboratories, the niche technical capabilities of RAP evolved. This enabled RAP to multiply their exclusive talents across the United States. By providing cutting-edge support and a deep understanding of radiological materials, RAP earned a reputation amongst the country's response communities as the apex of radiological scientific experts who augment counter and respond operations throughout the country.





Today, as we celebrate RAP's 60th anniversary, we look back at all the accomplishments of the many past and current members of RAP and thank them for their vital contributions to public wellbeing. Forging the path ahead, RAP is embarking on a new interagency vision with DHS and the FBI to develop a national radiological response enterprise that will further extend public health, safety, and national security capabilities to state and local law enforcement. With this expanding role as the Nation's leading Federal radiological/nuclear scientific advisor and response element, RAP will carry forth its 60 years of expertise and strong Federal, state, local, and tribal partnerships to counter and respond the 21st century geopolitical challenges facing our Nation today and in the future.

Since the early days of nuclear power, first responders across the United States have relied on the Radiological Assistance Program for technical expertise and knowledge. RAP supports other agencies and organizations when radioactive materials or radiation-producing machines are involved in abnormal incidents or accidents. Over the past 60 years of operations, RAP's experts have mitigated emergencies domestically and around the world. Their efforts include responses to some of the most serious disasters in modern history.

Most RAP team members have full time positions within the DOE's laboratories, sites, and plants, and yet they are on call to respond at a moment's notice. The Department of Energy and the National Nuclear Security Administration owe thanks to the past and current members of RAP for their vital contributions to public safety.

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