

# Nuclear News Forum: A historic date

*The following are statements by 11 leaders from the nuclear industry, nuclear organizations, and government that commemorate the 50th anniversary of President Dwight Eisenhower's "Atoms for Peace" speech before the United Nations General Assembly on December 8, 1953.—Ed.*

## Much of the vision has become reality

BY SPENCER ABRAHAM

The nuclear arms race was in high gear when President Eisenhower delivered his historic "Atoms for Peace" address to the United Nations in December 1953.

"This greatest of destructive forces can be developed into a great boon, for the benefit of mankind," the American President told a world still stunned by the devastating bombings that helped bring World War II to a close.

Since that famous speech 50 years ago, much of Eisenhower's vision has become reality. Advances in nuclear technology have improved the lives of millions of people through new ways to diagnose and treat disease, through faster and better communications and industrial processes, and by providing a more reliable supply of energy to fuel the world's economies.

Eisenhower's calls to promote "peaceful use of atomic energy" and to diminish the threat of nuclear conflict have been principal missions of the Department of Energy and its predecessors.

The Energy Department produced the nuclear deterrent that has preserved and protected America's national security and helped us win the Cold War. Today, the Department of Energy is responsible for the safety and reliability of our nuclear weapons stockpile, and is responsible for U.S. initiatives to reduce the global danger from the proliferation of nuclear materials and other weapons of mass destruction.

Eisenhower called on the nations of the world to make atomic energy "serve the needs rather than the fears of mankind" by applying atomic science to "agriculture, medicine and other peaceful activities" such as electricity production.

Today, nuclear energy produces about 20 percent of our nation's electricity, in addition to 77 percent of the electricity in France, 44 percent in Sweden, and 28 percent in Japan. Because it is a clean, reliable, and affordable source of electric power, the Energy Department is supporting deployment of a new generation of nuclear plants in the United States by the end of this decade.

We also are collaborating with nine other nations to develop advanced reactor technologies—in a program called Generation IV—for deployment after 2010 but before 2030.

The Department of Energy leads our nation's efforts to harness nuclear fusion—the process that lights the sun and stars—for the production of hydrogen and electricity in the future. The Department represents the United States in negotiations for the International Thermonuclear Experimental Reactor project, a major international undertaking to demonstrate the scientific and technological feasibility of fusion energy.

In the medical area, work begun decades ago by the Energy Department's Office of Science to understand the fundamental nature of matter and energy is now providing miraculous new tools for the noninvasive diagnosis and treatment of disease.

The Department's research in nuclear high-energy and condensed-matter physics has led to the development of ultrasound equipment and medical imaging technologies (such as PET scans and MRIs) that give physicians a view of the inner workings of the human body to help in diagnosing and treating diseases.

Our research also has led to the developments of new treatments for cancer and other illnesses. Every day, 10 000 cancer patients are treated with electron beams from linear accelerators developed by this research. Now scientists are using PET scans to develop new treatments for problems ranging from drug addiction to degenerative diseases.

Through our continuing contributions to nuclear medicine, science and energy, and through our nonproliferation activities, the Department of Energy is sustaining its vital role as the steward of President Eisenhower's "Atoms for Peace" legacy of ensuring that "the miraculous inventiveness of man shall not be dedicated to his death, but consecrated to his life."

*Spencer Abraham is Secretary of the U.S. Department of Energy.*

## The ideal of "Atoms for Peace"

BY MOHAMED ELBARADEI

During its relatively brief history, the pursuit of the "Atoms for Peace" ideal has been marked by contrasts: the proliferation concerns associated with nuclear weapons often overshadowing the widespread humanitarian benefits of peaceful nuclear applications; the accumulation of spent fuel and radioactive waste frequently receiving more attention than the environmental advantages of nuclear power as an energy source relatively free of greenhouse gas emissions; and the vast strides made in nuclear and radiation safety performance still obscured, in the view of many, by lingering memories of the accidents at Three Mile Island and Chernobyl.

But five decades of experience have also taught the nuclear community a number of lessons. We have made great strides technologically, introducing inherent safety features, defense in depth, and better emergency planning. On the safety and security fronts, we have learned to use risk management to place the greatest emphasis on areas of greatest vulnerability, thereby enhancing performance. And we are learning, slowly but surely, that efforts to prevent nuclear proliferation must be accompanied by parallel efforts to reduce global and regional sources of insecurity and instability—such as chronic conflicts, poverty, and the suppression of human rights.

Marie Curie once said, "Nothing is to be feared; it is only to be understood." It is my sincere hope that the international nuclear community, and the public it serves, can reach a common understanding on comprehensive strategies for moving forward on both of the fronts suggested by the "Atoms for Peace" concept: on the one hand, working towards the ultimate goal of a nuclear weapons-free world by developing global approaches to security that do not depend on nuclear weapons as a deterrent; and on the other hand, continuing to explore new and more effective ways to apply the power of the atom—in nuclear medicine, agricultural production, water resource management, energy production, and many other applications—for the enduring benefit of humankind.

*Mohamed ElBaradei is Director General of the International Atomic Energy Agency.*

# Years of progress— Past and future

BY LARRY FOULKE

On December 8, 1953, President Eisenhower remarked that he felt “privileged to address the General Assembly of the United Nations” about the launching of the age of the peaceful atom. Fifty years later, 11 000 members of the American Nuclear Society are privileged to celebrate the social and economic benefits of the science and technology that evolved from his leadership. We are helping humankind. We are making a difference in people’s lives with electrification, better health, more efficient industrial processes, medical marvels, food safety, and clean air and water.

It is not coincidental that the origin of the Society is closely related to the “Atoms for Peace” initiative. Two days after the Atoms for Peace address, a small group of engineers and scientists from the infant atomic energy field met in New York City. They were to consider forming what they were calling an Institute of Nuclear Science and Engineering. Such an organization—they would write in the invitation for the next meeting—would, in part, stimulate the declassification of nuclear information, in line with Eisenhower’s plan. The following October, after a heated discussion, the group settled on a name: the American Nuclear Society.

Eisenhower’s words laid the foundation for our organization, our profession, and an entire industry. I believe he would be proud to know that today, we live in a world of nuclear science and technology—and its wonders are still increasing at an exponential rate. In the next 50 years, innovations in the use of radiation and radioisotopes in medicine and food supplies will astonish those of my generation who may still be here because of breathtaking advances. The renaissance of nuclear power will fuel world economies, reduce poverty, and increase quality of life in all nations. Advances in nuclear power will support human exploration and settlement of new worlds under the seas and in outer space.

Thanks, Ike.

*Larry Foulke is President of the American Nuclear Society.*

# Great promises, fast expansion, slowdown

BY ANDREJ STRITAR

The decision made by the American government in 1953 to offer to humankind the use of fissile material for peaceful purposes was an incredible step forward during the tense political situation of that period. It is also worth noting how quickly that initiative was adopted by other nations, and how things have really developed in the direction envisioned by President Eisenhower. It is amusing for us baby-boomers to see how enormous the enthusiasm was for anything atomic that was presented in the books and articles during that period. Almost everything was planned to be powered by the atom: ships, planes, rockets, trains. . . .

But, as the decades have passed, the enthusiasm has diminished. In 1979, Three Mile Island happened, and in 1986, Chernobyl—and almost as suddenly the word “atom” changed from something most promising to something most threatening. For years, politicians didn’t want to speak about it, and most of the population simply wanted to forget it. Nobody wants to mention all the benefits that we had—and still have—from the atom. That is, except for us few enthusiastic professionals, who are sure that harness-

ing of the atom is making this world better.

As I see it now, scientists and engineers perhaps were successful much too quickly 50 years ago. We had to recognize that it also takes other, softer knowledge and skills to properly master technologies that are as complex and potentially dangerous as is the use of the atom. As a consequence, in the last few decades we have been putting more and more emphasis on mastering the human aspects of using the atom by trying to prevent the inherent sloppiness of us humans from causing any harmful effects.

The results of our work are clear: Nuclear energy is producing about 16 percent of the world’s electricity, and it is still the fastest growing primary energy sector. It will have to remain an important part of the energy mix also in the future. Where else could we get the energy for all the billions of people who would like to move from poverty to a decent life?

*Andrej Stritar is President of the European Nuclear Society.*

# “These are not idle words. . . .”

BY HAJIMU MAEDA

When U.S. President Eisenhower delivered his “Atoms for Peace” speech at the United Nations General Assembly in 1953, the Cold War was intensifying. The threat of atomic warfare opened the door to the promise of peaceful uses of nuclear power.

Since then, nuclear power has earned an essential role in the energy sector, providing reliable and environmentally friendly electricity. Some 430 nuclear power reactors are operating in 32 countries and regions around the world.

Some European countries derive more than half of their electricity from nuclear power. A nuclear renaissance has begun in the United States as the power market recognizes the competitive advantage of well-run nuclear plants. China and India, two of the great developing countries of Asia, are pressing ahead with large-scale nuclear power development programs to meet immense demand for electricity and to halt environmental degradation.

The peaceful use of nuclear technology has made such a positive impact on the welfare of people that it is hard to imagine our world without it. But nuclear power’s foundation is fragile. To preserve this valuable asset for civilization, the nuclear nonproliferation doctrine must be obeyed in international politics. For the nuclear power industry, we must establish a safety culture that ensures that serious accidents never occur.

Fourteen years have passed since the World Association of Nuclear Operators (WANO) was founded to encourage nuclear power operators to work together. Nuclear safety has improved considerably since 1989. Nuclear events have been reduced, worker exposure to radiation has fallen, and the reliability of nuclear generation has improved.

However, nuclear safety performance varies from country to country. Even in countries where nuclear power plants have operated successfully for many years, some plants have not. Even more disturbing is that some plants with good operating records have fallen victim to overconfidence and suffered serious events.

On this anniversary of the “Atoms for Peace” speech, WANO renews its commitment to maximizing nuclear safety at each member plant. And as Eisenhower said, “these are not idle words or shallow visions.” It is how we intend to ensure that the promise of the peaceful uses of nuclear power is fulfilled.

*Hajimu Maeda is Chairman of the World Association of Nuclear Operators.*  
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# Atoms for Peace after 50 years

BY NILS DIAZ

President Eisenhower's "Atoms for Peace" speech was very much a product of its times. It reflected his concern about the potential horrors of nuclear warfare that could be fought with the then recently developed hydrogen bombs. It also reflected his hope that the fears of a nuclear war would be overshadowed by the as yet untapped potential of peaceful atomic energy. The president told the United Nations General Assembly that he wanted nuclear energy "to serve the needs rather than the fears of mankind."

Eisenhower's vision has been fulfilled in important ways. The end of the Cold War reduced anxieties about a catastrophic nuclear exchange between the United States and the Soviet Union. And the peaceful applications of nuclear energy have contributed greatly to improving human welfare in the 50 years since Eisenhower's address. In 1953, nuclear power for commercial electrical generation was still a distant prospect, medical applications of radiation were in an early stage of development, and widespread distribution of radioisotopes for a myriad of industrial and research uses was just getting under way.

How far we have come! In 2002, 444 operating reactors with a capacity of 363 844 MWe produced power in 33 countries. In the United States alone, nuclear power produces one-fifth of our electricity. In addition, the NRC and 32 states administer more than 21 000 licenses for medical, academic, industrial, and other uses of nuclear materials. Unheralded, nuclear energy serves the needs of millions of people in the United States and worldwide.

And yet, fears remain, even if not in the form that prevailed in 1953. Public opposition to nuclear power, often based on exaggerated fears, has become a prominent feature of the political landscape over the past three decades. The concerns must be addressed for nuclear power to continue making a vital contribution to global energy sufficiency. This can be done most effectively by continuing to improve the safety and reliability of nuclear plants and by providing strong, predictable, and credible regulation. Such measures will not win the thunderous applause that Eisenhower received from the General Assembly after his speech, but they will help to fulfill the objectives he outlined so eloquently that day.

*Nils Diaz is Chairman of the U.S. Nuclear Regulatory Commission.*

## Clean air and dependable electricity

BY JOHN L. SKOLDS

In his December 1953 speech on "Atoms for Peace," President Eisenhower spoke with wisdom, courage, and conviction. As a result of the "avenue for peace" that he paved, the world has been the great beneficiary of nuclear energy for nearly half a century. At times, we have struggled to understand and accept this wonderful resource. But a fair accounting demonstrates the positive contribution of nuclear power to the world's clean air, as well as to its supply of abundant and dependable electricity.

The world is a different place than it was during Ike's administration. The global population has doubled, there are many more developed countries, natural resources have diminished, fossil fuels are a contentious subject of foreign policy, and the demand for clean air and water has grown. All of these changes make nuclear

power more valuable and important than ever.

Indeed, nuclear energy currently produces about 20 percent of the nation's supply of electricity, thereby displacing millions of tons of pollutants each year that might otherwise be released into the environment. With production efficiency levels higher than for any other energy source, nuclear power adds critical reliability and stability to the national grid and provides a substantial margin of energy independence for the United States. In achieving these benefits—and in developing this technology at one time shrouded in secrecy and fear into an energy source dependable, efficient, and above all safe—we have fulfilled President Eisenhower's vision and met the challenge he set forth.

We recognize that companies such as Exelon Nuclear and others have been given stewardship of this resource. It is up to us now to maintain and even build upon the sustained, high-level performance of the last few decades so that America and the world can move forward on nuclear power with the same wisdom, courage, and conviction so vividly displayed by President Eisenhower 50 years ago.

*John L. Skolds is President and Chief Nuclear Officer of Exelon Nuclear.*

## For the benefit of all mankind

BY LUIS E. ECHÁVARRI

Half a century has elapsed since President Eisenhower presented in his historic address to the UN General Assembly his bold vision of the transformation of a world dominated by fear and destruction into one of "peace, happiness and well-being," where the power of atomic energy would be harnessed for the benefit of all mankind.

The momentum created by this address quickly paved the way to the establishment of many intergovernmental cooperation initiatives aiming at developing nuclear energy as a powerful energy source capable of sustaining the energy-hungry economic development of the post-war decades.

The Nuclear Energy Agency (NEA) of the Organization for Economic Cooperation and Development (OECD) was set up in 1958 precisely for that purpose. Twenty years later, the aftermath of the 1973–74 oil crisis led to a wider acknowledgement that the expansion of nuclear generating capacity could provide one of the keys in reducing the energy vulnerability of the OECD area as a whole.

This recognition was not without challenges—political, technical, and increasingly, social. The emergence of an industrial capability to make good use of new reactor models, and the creation of independent authorities to regulate their deployment and foster a nuclear safety culture, have shaped today's nuclear energy picture.

Energy policies need to integrate several major factors, including the economic viability of available systems in liberalized energy markets, long-term security of supplies, and sustainable development issues related to preserving the environment and preventing climate change from greenhouse gases. In addition, between now and 2030, world energy demand is expected to increase by two-thirds, and demand for electricity to double. From these perspectives, nuclear energy, which presently accounts for one quarter of total OECD electricity supply, will likely need to form an important component of future world energy mixes.

The "Atoms for Peace" message of Dwight Eisenhower remains a key reference for countries of the world eager to contribute to global development. It is also a major incentive for continued multilateral efforts in setting up international cooperation among nations for a world of peace and prosperity.

*Luis E. Echávarri is Director-General of the OECD Nuclear Energy Agency.*

# Bilateral efforts aided Atoms for Peace

BY ALEXANDRE RUMYANTSEV

The “Atoms for Peace” speech, which was delivered on December 8, 1953, by U.S. President Dwight Eisenhower at the UN General Assembly, inaugurated a new phase of U.S. policy in the field of international cooperation in the use of atomic energy for peaceful purposes. In his speech, President Eisenhower appealed for use of the peaceful atom for the benefit of mankind and for rendering assistance to non-nuclear countries to get access to the welfare secured by the peaceful use of atomic energy.

In the framework of this initiative, a number of bilateral agreements on the peaceful use of nuclear energy were concluded.

The USSR responded to the U.S. leader’s call by commissioning a nuclear power plant of 5 MW—which was the first nuclear power plant in the world—on June 27, 1954. Successful operation of the first nuclear power plant laid the ground for rapid development of nuclear power in Russia, on the basis of various types of reactors.

In 1957, this U.S. initiative, along with similar proposals made by the USSR, facilitated the establishment of the International Atomic Energy Agency, whose priority objective became the coordination of international cooperation in the use of atomic energy for peaceful purposes and the prevention of nuclear weapons proliferation.

Two aspects are attributed to the process of energy utilization of the atom to benefit mankind’s social and economic development: prohibiting nuclear weapons manufacture and ensuring only peaceful uses of atomic energy. This approach has been followed by Russia and the United States for many years, consolidating scientists and politicians not only of their respective countries, but also in other states, in order to maintain and strengthen the peace.

*Alexandre Rumyantsev is Minister of the Russian Federation for Atomic Energy (Minatom).*

# Meeting energy needs of the next 50 years

BY J. MICHAEL EVANS

Shortly after U.S. President Eisenhower delivered his “Atoms for Peace” speech, the tiny town of Arco, Idaho, became the first community in the world to receive its entire supply of energy from nuclear power. This historic event underscored Eisenhower’s words that “The United States knows that peaceful power from atomic energy is no dream of the future.”

Five decades later, the U.S. nuclear industry continues to make “peaceful power from atomic energy” a reality—one that is reflected in the safe operation of the 103 U.S. nuclear reactors that provide 20 percent of the nation’s electricity.

For more than 20 years, the people at the Institute of Nuclear Power Operations have worked closely with their industry counterparts to promote excellence in the operation of nuclear power plants. Over this time, the safety and reliability of our nation’s nuclear power plants has improved remarkably.

But what about the next 50 years?

By 2053, the U.S. population is expected to grow by 120 million people—an amount that is greater than the entire population of the United States west of the Mississippi.

Electricity will be vitally important in meeting the needs of our growing population, and we know that nuclear energy has the least

environmental impact of all the electricity generating options available.

But nuclear energy’s place in the future energy mix is predicated on safety. Our technology requires a daily rededication to a strong nuclear safety culture. It’s just that simple, and it’s just that hard.

The industry has made tremendous progress since the “Atoms for Peace” speech and since the 1200 residents of Arco, Idaho, became part of atomic history. Together, we can ensure that we safely meet the energy needs of the 400 million people who will live in the United States 50 years from now.

*J. Michael Evans is President and Chief Executive Officer of the Institute of Nuclear Power Operations.*

# Poised for another half-century of success

BY JOE F. COLVIN

“The United States knows that peaceful power from atomic energy is no dream of the future. That capability, already proved, is here—now—today. Who can doubt, if the entire body of the world’s scientists and engineers had adequate amounts of fissionable material with which to test and develop their ideas, that this capability would rapidly be transformed into universal, efficient, and economic usage?”

President Dwight D. Eisenhower said this in 1953 when he delivered his landmark “Atoms for Peace” speech to the United Nations. He pledged that the United States would lead the way toward developing those peaceful uses. Fifty years later, nuclear technology produces the electricity used in one of every five American homes and businesses, and has thousands of industrial, medical, and other uses.

Clearly, nuclear is a proven, domestic source of electricity. It serves 100 million Americans, and is now the most economical, widely available energy source. With stable pricing because of low fuel costs, it’s likely to remain the most economical in the future. And, as our energy and environmental policy is more closely linked, the fact that nuclear plants don’t pollute the air is more important than ever.

Like Eisenhower, the Bush administration and Congress realize the value of nuclear energy. Policymaker support for the Yucca Mountain repository, DOE’s Nuclear Power 2010 program and other support for new plants, the inclusion of nuclear energy in the President’s hydrogen initiative, and many other policy actions are proof that nuclear energy is poised for another half-century of success. Congress and the administration are acting to ensure that nuclear energy continues to be a part of the nation’s energy future—to use nuclear energy as a mainstay in improving our nation’s energy security and to help reduce our dependence on foreign oil.

The promise of nuclear energy that President Eisenhower articulated was of a power that could be harnessed “to the needs of agriculture, medicine, and other peaceful activities,” including “abundant electrical energy in the power-starved areas of the world.”

We are continuing to launch new, innovative applications for nuclear technology, including water desalination, hydrogen production, and deep space travel. It is critical to the future economical and environmental soundness of this country and the world that the nuclear industry fulfills that promise. We must—and we will. **■**

*Joe Colvin is President and Chief Executive Officer of the Nuclear Energy Institute.*