



U.S. COMMENTARY

REGULATORY CERTAINTY: THE NEW GAME IN TOWN

In recent years, many have regarded nuclear construction as the highest stakes game in town.

The gambling analogy goes something like this: A U.S. utility decides to enter the nuclear construction game. The stakes are high. The utility places its money on the hopes of completing plant construction on time and within budget. Timing is critical. If construction is completed efficiently and economically, the winnings could be big — for the utility, the stockholder, and the consumer. If construction is prolonged, if budgets are exceeded, the utility and its stockholders risk substantial loss — and the consumer could face massive rate increases.

The utility and its suppliers have played the construction game before — they both know the rules. There is, however, one element that neither the utility nor its suppliers have been able to control: Uncertainty.

For the past several years, electric utilities and suppliers have cited uncertainty — and in particular, NRC regulatory uncertainty — as one of the biggest risks associated with the construction of new nuclear generation.

Is plant construction nothing more than a game of chance? Do U.S. utilities really have to “bet their companies” in considering the nuclear generation option?

The answer to these questions is a firm **NO**.

While nuclear construction may not yet be a “sure thing,” there are many reasons to believe that there is finally an end to the high degree of regulatory uncertainty that has been the major worry of utilities and suppliers during the past decade.

Barton Cowan, Chairman of the Atomic Industrial Forum (AIF) Lawyer’s Committee, agrees. “The NRC is now showing a significant commitment to relax some of the over-conservatism that have been inherent in many of their regulations. They realize that many regulations really have to be weighed in terms of practicality, cost, and public health and safety.”



Answers To Million Dollar Questions

“What must I do to comply with regulation, and when must I do it?”

These are the million dollar questions that any utility will ask before it even considers building a new nuclear plant. We are fortunate to report that the NRC now has many of the answers to those questions.

In 1985 — which will probably be considered a banner year in terms of regulatory certainty — the NRC adopted significant rules and proposed valuable legislation which now add two key ingredients that were previously missing from the regulatory process: stability and predictability.

These new NRC actions will answer many of the questions associated with backfits, design completion, and severe accident policy, thus reducing the level of uncertainty to an acceptable level and allowing the utilities to have much greater control over the destinies of their projects.

While some of the NRC’s proposals are still being reviewed by Congress and have yet to become law, it should be possible — right now in 1986 — to initiate a new nuclear construction project utilizing a pre-approved, completed design, complete the project on schedule, and obtain the necessary licensing without the fear of NRC-related interruptions or delays. Let’s take a look at the process — as it exists today — for achieving timely, cost-efficient construction.



The Beauty of the Reference Design

The utility and its suppliers currently possess many available resources and technologies that will go a long way toward ensuring certainty during the construction and licensing processes. One of these resources is known as the *reference design*.

We now know that for any nuclear construction project to be a success, plant design must be nearly complete prior to groundbreaking. A completed design establishes and confirms processes, requirements,

and standards *up front*; therefore, it eliminates rework and helps prevent the possibility of NRC-issued changes during construction. The most logical way to achieve design completion is to use a *reference design* as a base.

Once the utility defines the type of plant it wants to build, it hires a supply organization that can replicate a successful, existing reference design and adapt it to the utility's requirements.

Will a reference design from a plant in New England be readily applicable to a proposed plant in California? Not necessarily. There will, of course, be differences. It is up to the utility — based on the supplier's recommendations — to choose a reference design that best fits its power requirements, environmental conditions, and budget parameters.



New Policy Eliminates "What Ifs"

During this design replication stage, the utility and supply organization will be complying with a new NRC regulation — one that really benefits design and construction.

The regulation is based on the NRC's new Severe Accident Policy, which requires that a plant-specific probabilistic risk assessment (PRA) be performed on each individual plant design prior to construction.

This pre-construction PRA acts as a "filter" to eliminate many of the "what ifs" associated with safety requirements. It allows the NRC to concentrate on the *predominant* accident scenario for the *specific* design, rather than looking at *perceived* risks; therefore, design engineering can be focused on mitigation of health and safety requirements.

The NRC has cited more than a dozen probabilistic risk assessments at specific plants, concluding that these have not identified a need for "fundamental (or major) changes" in the designs of U.S. plants currently operating or under construction.



Construction Without Interruption

The design is complete and is ready to be presented in application form to the NRC. The utility still has many questions.

Will the construction be interrupted by public intervention problems and backfit requirements? Will there be wasteful delays in obtaining the construction permit and operating license?

The answer to these questions is "no." There *is* now reasonable assurance that construction will proceed without interruption, that the licensing process will be disciplined and expedient.

Is the NRC solely responsible for making the licensing process expedient?

Again, the answer is **NO**.

Granted, positive NRC policies are vital to streamlined licensing and successful construction-without-interruption; but they are only policies. It is equally important for the utility and its supply organization to use foresight and planning to *strengthen* the benefits of new policies.

By establishing an integrated quality assurance plan for NRC review prior to the granting of the construction permit, the supply organization defines exactly *what* tasks it will perform, and how it will perform these tasks during construction. The plan establishes the criteria by which performance can be evaluated.

Once the NRC approves the construction permit based on this criteria, there is really only one major issue for the Commission to consider during the operating license hearing: Did the utility and suppliers meet the conditions of the previously-established quality assurance plan during the construction of the plant? Of course, the utility will have the needed documentation to prove that all quality standards were met.

With this approach, the granting of the operating license is no longer part of the critical path toward con-

struction completion. Once the utility demonstrates sufficient experience in complying with the quality assurance plan, such that *full* compliance is virtually ensured, it can apply for the license at any point of construction — from 20 percent completion to 50 percent completion. The only timing restraint is the award of the license to support fuel loading.



A Solution To The Backfit Problem

There is another major advantage to this exhaustive pre-construction work. By establishing the integrated quality assurance plan, the utility is better able to answer any questions that may arise from the public.

And, since the construction permit hearing is of such importance in determining the course of the construction project, this is the most logical point for the public to air any and all concerns regarding the proposed plant. By the time construction begins, all public inquiries will be resolved; therefore, there is no fear of intervention-delay during construction.

According to Bart Cowan, this discipline at the front-end of the process will supply a high level of confidence that the plant is designed properly and will be constructed properly.

"By establishing standards and discipline at the front-end, everyone knows the ground rules under which the construction will proceed," he said. "The public has a chance to look at a completed design and make meaningful comments. They only get to do it *one* time, but they do it at a time when they are most likely to have an impact on the decision-making process."

The NRC's newly-issued backfit rule is the glue which holds the whole construction schedule together. Up until this rule became effective, it didn't really matter how much design and detail went into the pre-construction planning; the fear of an NRC-issued backfit always loomed heavily over the project, threatening to un-do much of the already-completed construction.

The NRC has long realized the importance of applying better criteria to determine the feasibility of a backfit. In September 1985, the Commission finally issued the rule. Now — for the first time ever — any backfit consideration must be weighed on a cost/benefit scale and must be proven to provide a substantial increase in public safety.

"The rule starts from the premise that since the plant has already been licensed, there is already a reasonable assurance of public health and safety," explains Cowan. "Therefore, there is a standard that requires a substantial increase in overall plant safety, taking into account both the indirect and direct costs associated with the backfit."

Some of the factors to be considered in requiring the backfit include installation and maintenance costs, downtime costs, worker exposure, NRC costs, and the real benefits given the expected life of the plant.

The backfit rule even eliminates any possibility of a "catch 22" situation: Recently, the NRC stated that the backfit rule is not applicable to changes that *relax* requirements; it can only be applied to changes that are *new* requirements.



The Future Looks Even Better

It's clear that the major obstacles to timely plant construction are now behind us. New NRC rulings — coupled with better planning and designing on the part of the utility and its suppliers — ensure that a nuclear plant can be constructed within a six-year time frame. And there is even more reason to be optimistic about the future.

Last year, the NRC drafted "The Nuclear Power Plant Licensing and Standardization Act of 1985," a bill which supports the development and use of standardized plant designs and recommends criteria to streamline the current licensing process.

The NRC realizes the tremendous benefits associated with design completion prior to construction, and to that end, is advocating design stand-

ardization in its new bill. The Commission has stated that it "shall establish procedures, standards, and criteria permitting the approval of standardized facility designs for any utilization or production facility for industrial or commercial purposes, or any discrete subsystem thereof, for a period of ten years . . ." In the past, standard design approvals have been issued for a period of three or five years.

The NRC sees standardization as a way of focusing the efforts of the entire supply organization on the same goal: A standardized approach to construction, quality assurance, training, maintenance, and operations.

Replication, which was described earlier, and *duplication* are two types of standardization. Both provide the benefits of standardization.

The Atomic Industrial Forum has formed a Study Group to encourage the practical application of standardized nuclear power plants in the United States.

According to Cowan, "The Study Group recognizes that other existing standardization options, such as duplication and replication, will continue to be attractive in the near future. These options offer many of the benefits of standard plants and are not in conflict with, and would not detract from, the standardization goals shared by the industry and the NRC."

A significant portion of the NRC's proposed Licensing and Standardization Act also deals with one-step licensing — the combined issuance of a construction permit and operating license prior to construction.

For one-step licensing to work, the utility and supplier are required to determine all inspections, tests, documentation, and acceptance criteria prior to groundbreaking. With these elements in place, and with the design complete, suppliers and the NRC are "locked in" to a precise construction process.

This adherence to standards will convince the NRC that the project will be carried out in accordance with the Commission's policies; thus it is

only necessary to hold *one* hearing to determine both the construction permit and operating license. Following this hearing, the NRC issues the single license, and applies inspections, tests, and criteria to monitor the project during construction.

"The NRC has the authority, under the Atomic Energy Act as it exists today, to provide the benefits of one-step licensing without additional legislation," says Cowan. "One-step licensing's major benefit is to instill discipline in the licensing process; and I believe the NRC can achieve that without the passage of new legislation."

With or without new legislation, the utility and supply organization can set their own standards, prior to construction, that will produce the benefits of one-step licensing — and shorten construction time.



There's A New Game in Town

It's clear that the NRC is making great strides to lessen the regulatory conservatism of the past. They've adopted rules and proposed legislation that provide reasonable assurance that "chance" will be eliminated from the nuclear construction game. And, as long as the rules, regulations, processes, and technologies permit efficient and economical plant construction, the nuclear option will continue to be the most logical choice for supplying this country's future energy needs.

Cowan sums it up: "With a pre-approved, completed design — coupled with the benefits of one-step licensing — I think we can reasonably see a plant being constructed and on-line in a six-year time frame."

It can happen *now*. The ability exists. The regulations support it. With or without new legislation, utilities and suppliers can make it happen. Construction with certainty is the "new game in town."