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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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PUBLIC MEETING ON THE

POST-SHUTDOWN DECOMMISSIONING ACTIVITIES REPORT

Waterford Town Hall

15 Rope Ferry Road

Waterford, Connecticut

Wednesday, August 25, 1999

The above-entitled meeting commenced, pursuant to notice, at 7:04 p.m.

PARTICIPANTS:

LOUIS "DUKE" L. WHEELER, NRC

MICHAEL MASNIK, NRC

JAMES LINVILLE, NRC

PHILLIP RAY, NRC

JOHN HICKMAN, NRC

ETOY HYLTON, NRC

CAROL JAMERSON, NRC

JIM WILSON, NRC

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PARTICIPANTS:

TIM JOHNSON, NRC

PAUL CATALDO, NRC

NEIL SHEEHAN, NRC

ANN HODGDON, NRC

FRANK ROTHEN, Northeast Utilities System

LARRY TEMPLE, Northeast Utilities System

ROBERT FRASER, Northeast Utilities System

BRYAN FORD, Northeast Utilities System

THOMAS SHERIDAN, Town of Waterford, CT

RON MCKEOWN

JOHN MARKOWICZ

JOE BESADE

ANDREA STILLMAN, State Representative

GERI WINSLOW

TERI CONCANNON, Nuclear Energy Advisory Council

PEARL RATHBUN

JOHN HELM

JEAN PEABODY

ROD KNIGHT

P R O C E E D I N G S

[7:04 p.m.]

MR. SHERIDAN: Good evening. We would like to get started. So those of you who want to sit down, maybe you want to grab a seat.

I am ~~Thomas~~ Tony Sheridan, the First Selectman of Waterford and, needless to say, what happens at Northeast Utilities is of great importance to us. I am pleased that we are having ~~to~~ this public session to hear from both the company and from NRC on the process for decommissioning Unit 1.

Before I introduce the gentleman in charge, what I would like to do is call on Teri Concannon. Where is Teri? I know she is here. There you are.

Teri, would you like to make a brief statement. We are looking for some representatives, citizens representatives on your committee. Would you like to come forward and really do a little bit of an advertisement here?

MS. CONCANNON: Thank you. For those of you don't know, my name is Teri Concannon, and I am the co-chair of the Nuclear Energy Advisory Council, which was created by the legislature in Connecticut in 1996, August 1st, and we have been going since then with a committee of 13, and we have been monitoring and providing oversight on behalf of the citizens of what has happened at Millstone and at

Connecticut Yankee. So we have got to the point now where we have seen the restart of Millstone 2 and 3, and we have the decommissioning of Millstone 1 and the decommissioning of Connecticut Yankee.

Now, Connecticut Yankee decommissioning has been underway for a little while, and they already have what is called as a Citizens Decommissioning Advisory Committee, or Council. But CDAC it is called anyhow. And they have representatives from the towns around Haddam Neck, in Haddam, and they meet on a monthly basis.

Now, we have -- people have approached us here, First Selectman ~~Thomas~~ Tony Sheridan and Millstone and you, to see if NEAC is prepared to play a role in monitoring or observing the decommissioning of Millstone 1 on behalf of the citizens. And it seems to make a lot of sense, rather than having a plethora of councils and committees and citizens involved, we have a subcommittee of NEAC which has for the past three years been in action, depending upon what is going on and has been looking at Connecticut Yankee. So at our last meeting on June -- no, July 15th, we voted to have a subcommittee truly active, in-place, to monitor and observe the decommissioning of Millstone 1.

And this committee, we have two co-chairs, Pearl Rathbun, who is here and Pearl is from Niantic and we have Kevin Ryan, who is a State Representative and he lives in

Montford, and they are going to provide the leadership for this subcommittee.

What we are looking for is members of the public who would be interested in also participating on the committee. We don't see it as taking a lot of time, but we see it as playing an important role in acting as a conduit for information that the citizens might like to have, responding to concerns that people would have, and providing a report on perhaps a quarterly basis. So my reason for asking to speak tonight is asking if anybody here, particularly those who live in the five mile ~~EPC~~ EPZ zone, that would be people who live in Montford, Niantic, East Lyme, Waterford and New London, if any people from those towns would like to be a part of the subcommittee of NEAC. EPZ

The meetings would be held in this area, so there isn't an issue of commuting long distances, and I think it would be a great opportunity. We certainly would welcome it. We have had other people in the past as members of other subcommittees we have had, and it is very, very important.

So if you are interested, there are several people you could let know. Pearl Rathbun. Pearl, ~~where~~ what is your phone number and how are you available?

MS. RATHBUN: Okay. I would be available either at my office, which is area code 860-739-2420, which is the

East Lyme Fire Marshal's Office.

MS. CONCANNON: Okay. Let me say that one again, 860-7 --

MS. RATHBUN: 739.

MS. CONCANNON: 739.

MS. RATHBUN: 2420.

MS. CONCANNON: 2420. And that is -- Pearl works in the East Lyme --

MS. RATHBUN: It is a combination of Fire Marshal, Emergency Services.

MS. CONCANNON: Emergency Services. So you could also find them obviously in the blue pages for East Lyme.

My phone number, if you are interested in calling me, I live now in Marlboro, which is 295-1117. We have also got e-mail and fax anything that would be convenient for you. And I will be here for the rest of the meeting, or -- it depends how late we go -- but I will be here for a while, and Pearl will be here. And we also have two other members of the council here, John Markowicz from New London -- from Waterford and John Helm from Groton. And Frank Rothen is also a part of NEAC.

So we welcome your input and look forward to hearing from you. Our next meeting is on September the 16th. That meeting is going to be held at Connecticut Yankee, because we are going to have a tour of the facility

to see how they are undertaking decommissioning at Connecticut Yankee. But we will addressing the decommissioning of both plants that night and devoting the meeting to that subject. So thank you very much. Thanks.

MR. SHERIDAN: Thank you, Teri.

The meeting tonight is not a public hearing, it is an opportunity to exchange information and there will be a public participation period as soon as both NRC and Northeast Utilities have an opportunity to make presentations.

What I am going to ask is that everyone respect everyone else's opinions, as usual, and that we be ~~consideration~~ considerate with our time. And we would hold it to three minutes, and we will go back and get you a second time if time permits, but to give everybody an opportunity to be heard fairly and appropriately.

I have to step out for a few minutes, but I will be back in about three-quarters of an hour, but that should be about the end of the presentations.

And I would like now to introduce Duke Wheeler, who is the NRC representative who will start the ball rolling here. And, again, thank you very much for coming, and we want to make this as open and public a process as we possibly can. Thank you. Thank you, Duke.

MR. WHEELER: Thank you, ~~Tommy~~ Tony. Good evening and

thank you for taking time to come to this meeting with the NRC staff tonight to participate in our regulatory program for the decommissioning of Millstone Unit 1. I am Duke Wheeler and the Licensing Project Manager for Millstone Unit 1 in the NRC's Division of Licensing Project Management. I am the NRC principal point of contact for the Millstone 1 facility.

Before going any further, I would like to point out a few things. There is a couple of sign-up lists in the back of the room, if you are not aware of it. This meeting is being transcribed, and I have a sign-up list in the back of the room for anybody who would like a copy of the transcript, if you would give us your name and address. There is also a sign-up list in the back of the room for anybody who would like to make comments to the staff after the prepared presentations. So, please feel free to put your name on those lists if you have not already done so and would like to get the transcript or make comments.

I would also like to point out that in the back of the room there is a couple of handouts. One of them is Northeast Nuclear Energy's Post-Shutdown Decommissioning Activities Report for Millstone Unit 1. It looks like this, it is a small document about 20 pages. I brought quite a few copies. If you would like a copy, feel free to get one at the back table.

The other handout that I have is a reference book. It looks like this, and it is entitled, "Staff Responses to Frequently Asked Questions Concerning Decommissioning of Nuclear Power Reactors." If you would like one of these, it is available in the back of the room for as long as supplies last.

We understand that substantial local interest may also exist for Units 2 and 3, but those plants are beyond the scope of this evening's meeting and we don't have the cognizant staff members present tonight to address interests related to our oversight of Units 2 and 3.

There are several purposes for having this meeting tonight. First, it is to give Northeast Nuclear Energy Company an opportunity to tell the NRC staff and the public what their plans are for decommissioning Millstone Unit 1. Another purpose of tonight's meeting is to make sure the public is aware of the decommissioning process for a permanently shutdown nuclear power plant. The third purpose is to provide a forum in which the NRC staff can receive public comments on the licensee's proposal and our process. And, finally, we are also here to fulfill a regulatory requirement to conduct a public meeting in the vicinity of the site soon after a licensee issues their Post-Shutdown Decommissioning Activities Report.

Before going any further, I would like to

introduce the rest of the NRC staff who are here this evening. Mr. Stuart Richards is the Director of Project Directorate IV in the Division of Licensing Project Management. His organization manages the licensing projects for all operating reactors in the NRC's Region IV, which is roughly the western half of the United States, plus all the decommissioning power plants across the entire United States.

To my right is Dr. Michael Masnik. He is the Chief of the Decommissioning Section under Mr. Richards, and he is my immediate supervisor. He supervises 12 Project Managers such as myself who are involved in various aspects of the decommissioning program which, at the present time, includes decommissioning-related activities at 17 nuclear power plants around the country.

One of those 12 professionals supervised by Dr. Masnik is Mr. Phil Ray, who is also working the slide projector, and he is the Backup Project Manager in our Decommissioning Section for Millstone Unit 1.

John Hickman is another Project Manager in the Decommissioning Section. He is a new addition to the section, coming to us from the Operating Rectors Licensing Project Organization.

Also with us tonight, in the back of the room, is Ms. Etoy Hylton and Ms. Carol Jamerson. Etoy has been

supporting the Decommissioning Section as a Licensing Assistant for a long time, but, unfortunately, we lost her in a reorganization, but, fortunately, we gained Carol and many of Etoy's responsibilities are being turned over to her. They are here to assist you with placing your names on the sign-up lists to request a copy of the transcript or the sign-up list for people wanting to make statements to the NRC staff.

Mr. Jim Wilson is an Environmental Specialist on our staff. He is in the back of the room.

From our Office of Nuclear Material Safety and Safeguards, Mr. Larry Camper was going to be here. He is the Branch Chief of the Decommissioning Branch, but yesterday morning he had to cancel out due to competing demands on his time. But we do have Mr. Tim Johnson with us. Tim is the Section Chief of the Facilities Decommissioning Section in the Decommissioning Branch.

From our Region I staff, we have Mr. Jim Linville. Jim may be familiar to many of you as the Director of the Millstone Inspection Directorate.

Mr. Paul Cataldo is here from our Resident Inspector's staff at the site.

Mr. Neil Sheehan is here from our Region I Public Affairs Office.

And Ms. Ann Hodgdon is here, and she is an

attorney specializing in decommissioning activities in our Office of the General Counsel.

What I would like to do now is to give you a brief outline of my presentation for this evening. In our previous meeting on February the 9th, I described the NRC's program for regulating the decommissioning of nuclear power plants. In that meeting I noted that our regulations require licensees to submit a Post-Shutdown Decommissioning Activities Report within two years of certifying to us that power operations have been permanently ceased and fuel removed from the reactor vessel.

I noted further that soon after the licensee submitted their PSDAR, we would advertise the availability of the PSDAR for your review and hold another meeting with you to respond to your questions related to decommissioning plans for the facility and provide you an opportunity to give us information that you believe might be useful to us in our regulatory oversight activities.

Northeast Nuclear Energy submitted their Certification of Permanent Shutdown to us on July the 21st of last year. They submitted their PSDAR on June the 14th of this year. We have advertised the availability of the PSDAR through various public communications and here we are tonight for our meeting with you.

Mindful that there may be people here tonight who

were not at our last meeting, I will quickly review most of what was covered in our last meeting before opening up this meeting for your participation. Topics that I will address tonight are, first of all, a quick comment on just what is decommissioning and then a few comments on those things that are not considered decommissioning from our perspective. I will comment on what the NRC's focus is during the decommissioning process and I will identify some alternatives that are available to the licensee during that process.

I will talk about what some of the decommissioning process requirements are. I will talk about the Post-Shutdown Decommissioning Activities Report, which is the primary focus of tonight's meeting. I will also comment on some of the financial aspects of the NRC's decommissioning regulations, and I will also describe some additional restrictions that we place on licensees.

Another important document that I will touch on is the License Termination Plan. Next, I will talk a little bit about decommissioning experiences elsewhere. We recognize that this is still new to the Waterford community, but it is not new to many other communities around the country.

I will also give you some information on how to contact me at NRC headquarters as your point of contact for

interest that you might have related to our licensing program for decommissioning power reactors and how it is being applied to Millstone Unit 1.

I will be followed this evening by Jim Linville, who will give a brief description of the NRC's inspection program for decommissioning plants.

First of all, what is decommissioning? Decommissioning is the removal of a power plant safely from service and a reduction of the residual radioactive materials at the site to permit release of the property and termination of the license.

There are some things that are not decommissioning from our perspective. Decommissioning does not encompass, from our perspective, any non-radiological decommissioning. If the licensee has a facility that has been cleaned of its radioactive contamination and is acceptable for release, if the licensee chooses to further cleanup or dismantle the facility, the costs incurred by such activities are not regulatory decommissioning costs.

Site restoration activities. If the licensee chooses to restore the site to its original character prior to the building of the power plant, those costs and activities are not under the regulatory power of the NRC.

Lastly, spent fuel management and funding. Because of the way in which our regulations are structured,

spent fuel management and costs are not considered part of the reactor and site decommissioning. Licensees of decommissioning plants across the country spend a significant portion of time and money dealing with safely managing and eventually disposing of the spent fuel. We expect the same will apply here at Millstone. Those costs associated with the care and management of the spent fuel are not regulatory decommissioning costs.

Now, what is the NRC staff's focus during the decommissioning of a power reactor? Quite simply, the NRC's primary focus is on the removal of radiological hazards. The first step in that process is to safely remove the facility from service and then the licensee reduces radioactive contamination to levels that will allow release of the site.

The licensee will then perform a detailed, final radiological survey and the NRC staff may perform a confirmatory survey to strengthen our assurance that the site meets the specified criteria for release.

Finally, if the release criteria are met and the terms and conditions of the License Termination Plan are met, and any hearing conditions that may apply are met, then the license may be terminated, and at this point NRC regulatory activities related to Unit 1 would ~~in~~ end.

With respect to decommissioning alternatives, the

licensee basically has three choices. One choice is to begin decontaminating and dismantling the plant soon after certifying to us that plant operations have been permanently ceased and the fuel removed from the reactor vessel.

A second choice is to place the plant in what we call SAFSTOR where decontamination and dismantlement activities are deferred to some later date. Licensees can choose to take up to 60 years to terminate the license. For example, they could put the plant in long-term storage or SAFSTOR for 50 years, then take five to 10 years to complete the dismantlement and decontamination as long as they complete the process within 60 years.

The third choice that they can adopt is a combination of the first two choices. An important point here is that the NRC has found either of these alternatives, or a combination of these alternatives to be acceptable. The risk to the public from decommissioning is significantly reduced from when the facility was in operation. In recognition of that reduced risk, our regulatory requirements may be reduced during decommissioning of the facility.

Now, what is involved in the process? The first thing we expect to see is the certifications from the licensee that they have permanently ceased operations and removed the fuel from the reactor vessel. As I noted

earlier, we received these certifications in a letter to the Commission dated July the 21st, 1998. Once these certifications have been submitted, the licensee cannot change their mind and go back and operate the plant again. These certifications are a significant step and they are an irreversible action. And as I noted for Millstone 1, the certifications have been submitted.

Next, we require the licensee to submit a Post-Shutdown Decommissioning Activities Report, or PSDAR, within two years of those certifications being docketed. We also require that a site-specific decommissioning cost estimate be submitted within the same timeframe. As I also noted earlier, the PSDAR was submitted on June the 14th, 1999, and, as noted in the PSDAR, the site-specific cost estimate will be submitted as a separate document. The licensee has not submitted a site-specific decommissioning cost estimate as of this date.

The PSDAR is required to provide a description of the planned decommissioning activities, and we also expect to see a schedule for the accomplishment of those activities. We require that the PSDAR include an estimate for the expected costs associated with decommissioning and we also require the licensee to provide the reasons for which they have concluded that the environmental impact associated with decommissioning is within the existing

bounds of the Environmental Impact Statements associated with the licensing of the facility or our rulemakings regarding decommissioning.

Our regulations require that soon after receiving the PSDAR, the staff will hold a public meeting in the vicinity of the site. This is why we are here tonight. The NRC staff does not review and approve the licensee's PSDAR, instead, the staff makes a determination as to whether or not the licensee has submitted the information required by our regulations.

The PSDAR accomplishes several things. First, it informs the public of the licensee's plans for decommissioning. It also aids us in planning our inspection activities. It forces the licensee to reexamine their financial resources available for decommissioning and it requires the licensee to evaluate the environmental impacts, as I mentioned just a moment ago.

One comment. The PSDARs we have received to date have been typically 15 to 20 pages long. This is acceptable for our purposes as long as they include the information required by our regulations.

Ninety days after the licensee submits their PSDAR, they can begin to actively dismantle the facility if they have chosen the DECON alternative, or, if they selected the SAFSTOR option, they would continue to keep the facility

in a safe, stable configuration. No NRC approval is required to begin dismantlement once the 90 day provision is satisfied. Since the licensee submitted their PSDAR on June the 14th, the 90 day period will end on September the 12th.

Now, regarding some of the financial aspects of our decommissioning regulations. In 1988, each licensee was required to set up a special trust fund to accumulate money needed for decommissioning the facility. We understand that state Public Utilities Commissions have certain regulatory authority over decommissioning trusts.

Our regulations control licensee access to those funds. We allow a staged access. At any time prior to and during decommissioning, the licensee would have access up to 3 percent of the amount of the decommissioning trust funds for decommissioning planning purposes. This is for planning, for getting ready for decommissioning, it is not for actual decontamination, demonstration projects or the like.

Licensees are also permitted access to an additional 20 percent of the decommissioning trust once we have received the PSDAR. Once we have received the site-specific decommissioning cost estimate, then they have full access to the decommissioning trust fund.

Our regulations are in addition to and do not take the place of Public Utility Commission controls. Licensees

must comply with both sets of regulations.

There are some additional restrictions placed on licensees once they begin the decommissioning process. First of all, licensees are prohibited from performing any decommissioning activity that would foreclose the release of the site for possible unrestricted use. They are also prohibited from performing any activity that would result in a significant environmental impact that has not been previously considered and evaluated. Likewise, they are also prohibited from performing an activity that results in or no longer provides reasonable assurance that adequate funds will be available to complete the decommissioning process.

When a licensee approaches the end of the decommissioning process, within two years of the time they expect the license to be terminated, we expect to receive a License Termination Plan. In this plan we expect to see, among other things, a detailed site characterization. We also expect to see an identification of any remaining dismantlement activities. We expect to see plans for site remediation, detailed plans for the final radiation survey, and a description of the end use of the site, if the licensee intends that the site be released under restricted conditions.

We expect to see an updated site-specific cost

estimate regarding the residual costs for finishing the decommissioning of the facility, and we would also expect to see a supplement to the environment report describing any new information or significant changes associated with the licensee's termination activities.

When we receive the License Termination Plan, we will notice receipt of it in the Federal Register, and it will be made available for public comment. Likewise, since we approve this plan by a license amendment, there will also be an opportunity for a public hearing, and the NRC will once again hold a public meeting ,similar to this one, in the vicinity of the site.

Once the licensee completes their site radiation survey, or concurrently with that survey, the NRC staff may perform an independent confirmatory survey. The license will then be terminated, as I indicated earlier, once we are satisfied that the plant has met the applicable release criteria, any conditions or terms that are imposed by the License Termination Plan, and any conditions resulting from our hearing process. This concludes my overview of the licensing aspects of our regulatory process for decommissioning power reactors.

Although the decommissioning of a nuclear power plant may be new to Millstone and the Waterford community, you do share this experience with other communities around

the country. Currently, there are 21 reactors that have started the decommissioning process. Two of these facilities have actually completed the process. There are 19 other reactors now in decommissioning. Six of them are currently being dismantled. There are nine facilities that are currently in SAFSTOR. Two additional facilities are planning on long-term storage and two facilities, including Millstone Unit 1, are planning for a combination of long-term storage and partial decontamination and dismantlement.

Lastly, I would like to leave you with my name and address as a point of contact for questions related to the NRC licensing program and how it is applied to Millstone Unit 1. Please feel free to contact me at NRC headquarters, the information on how to do that is on the slide.

There is also, by the way, I brought quite a few copies of my slides that is available in the back of the room. If you would like to pick up a copy, feel free to do so.

At this time, I would like to turn the microphone over to Jim Linville, who will discuss the program for our inspections at decommissioning power reactors. Thank you for you attention.

MR. LINVILLE: Thank you, Duke.

Good evening. As Duke said, I am Jim Linville,

the Director of the Millstone Inspection Directorate in Region I. Currently, all the Resident Inspectors at the Millstone facilities report directly to me.

While my focus is on the operating units at Millstone, I do have an interest in Unit 1 in that it has several systems that currently support the operation of the operating units. In the near future, one of the Resident Inspectors, Paul Cataldo, who Duke introduced earlier, will be transitioning to our Decommissioning Branch in the Region under the direction of Dr. Ron Bellamy, who was present at the February meeting here. This will occur as the pace of the decommissioning activities at Millstone 1 increase.

What we have done in Region I is basically to recognize that decommissioning projects that are being undertaken in the Region are a significant part of our work activity and have created a specific branch that solely looks at the decommissioning projects in the Region.

The distinction between stations with operating and permanently shutdown reactors is significant when it comes to how the Region performs its inspection activities. Here at Millstone Station, because of Units 2 and 3, which continue to operate, we have a significant pool of resources that we will use as decommissioning is undergone to help us with the inspection activity. Mr. Bellamy and I will be in continuous contact with the site inspectors.

We will determine what the appropriate mix of both resident and region-based specialists is that will come out and perform the required inspection activities. And a little later, I will get into the details of what those activities are.

The present resident effort for Millstone 1 is periodic tours. They are doing these at least monthly to ensure that there is no degradation of the facility. They are attending planning meetings that are being undertaken at the site, and they are keep both the regional office and headquarters staff informed of developments. And, again, we have a significant inspection resource there with five resident inspectors.

As Duke indicated, there has been significant experience in the NRC with decommissioning, and much of that experience has been in Region I. Maine Yankee has completed site characterization. They have selected Entergy as a decommissioning operations contractor to come in and run that facility for them, as has Millstone. A spent nuclear fuel island has been established, and they have put the plant in what is called an official cold and dark status as of the end of December of 1998. And at this point they have begun the major dismantlement and decommissioning efforts at the site. So there is currently a focus by the Radiation Protection Specialists from the regional office on the

activities at the site at Maine Yankee.

Similarly, Haddam Neck is continuing its characterization effort and they are now completing their modifications for a similar spent fuel nuclear island. Their major dismantlement and decontamination efforts will begin soon.

Several other facilities, Peach Bottom Unit 1, Three Mile Island Unit 2 and Indian Point Unit 1 are in long-term SAFSTOR condition and there are specific inspection activities that we do at those facilities. We have assigned inspectors to each of those facilities and they are required to visit them annual to assure that there is no degradation in the conditions at the plant as there is very little activity going on at them.

The major inspection activities in the Region when it comes to decommissioning of reactors for those that are actively undergoing dismantlement and decontamination, I will elaborate on at this point. There is a specific manual chapter that we use to ensure that all these inspection areas are appropriately covered.

The frequency of inspections is based on what is going on at the site from time to time. It is based on also input from members of the public that believe there is an area that we need to look at. We are glad to hear from you. It is based on a number of activities that are folded into

what is the best use of our resources at the times of heightened activity to ensure that dismantlement and decontamination is being done in a safe manner.

The areas of inspection are all-encompassing. We look at the organization of the licensee, its management and cost controls. We look at how they are doing their safety reviews, how they go about making changes to those safety reviews and associated procedures, and how they are going to make the modifications to the facility.

We look into their self-assessment process. Self-assessments are a significant factor in how we view licensee performance. We look at how they are doing their audits and who is doing the audits. We look at the findings that come out of those self-assessments and audits, and we look at how they track and implement corrective actions for the findings that they observe.

We look at the preparations for reactor fuel handling. We verify that there are certain fuel handlers -- certified fuel handlers trained on the staff, on site and able to perform fuel handling in a safe and competent manner.

We continually look at maintenance and surveillance testing. Annually, we look at cold weather preparations. There is frequent review of occupational radiation exposure.

And when we get to the final survey stage of the plant, our activities again will increase. We use contractors in accordance with an agreement with our Office of Nuclear Material Safety and Safeguards to verify significant confirmatory effort once the licensee's Termination Plan has been submitted, as Duke already explained.

We look at rad waste treatment. We look at effluents from the plant, and we look at the licensee's ability to monitor the effluents and their ability to monitor the environment. We do split samples with them. We take independent measurements, and we verify not only that the licensee's measurements are accurate, but their program to monitor the radioactivity is appropriate and has appropriate sensitivity and accuracy. We will not initiate a program where we will continually monitor the licensee effluents from the plant, whether they be solid, liquid or gaseous, but we do routine audits, and, as I said earlier, we do split samples to verify that their measurements are accurate.

We look at solid waste, rad waste management activities on site both during decommissioning and dismantlement and at the end when major components are removed, and we look at the transportation of those components and radioactive material offsite.

We look at the emergency preparedness of the facility. We would expect both in the areas of emergency preparedness and physical security there will be changes to the licensee's program for Unit 1 that is now submitted on the docket, and that Mr. Wheeler and his staff will review them and make appropriate licensing reviews, and any appropriate changes to the license and license conditions, and then we do inspections to verify that there are still adequate state of emergency preparedness and physical security.

We will have inspectors out here to monitor drills and exercises and, again, to report on those activities in written and public form. We think the public involvement in this process is important from a regional perspective as well as a headquarters perspective. All of our inspection reports will continue to be made available to you. Appropriate members of the Decommissioning Branch will be glad to attend future public meetings, and, also, we are available for comments, questions or concerns that you may have.

The Region I office can be contacted at the 610 number up there, you can ask directly for the Decommissioning Branch, and they will get you in touch with someone very quickly. We also have the 800 number indicated. And I would encourage you to remember that we

have a resident inspection staff at Millstone. Mr. Paul Cataldo is very familiar with the facility. I have listed his number there also, and he is also ready, willing and able to take any concerns or questions you might have.

Finally, you can get through to the headquarters Operations Officer and they know how to get hold of people in our Decommissioning Branch 24 hours a day, seven days a week, 52 weeks a year. So if there is something of great health and safety significance and you need to talk to somebody, we can get someone on the phone that can address your technical concerns whenever you think it is appropriate.

Thank you very much. At this point I would like to turn the meeting over to the utility to make their presentation.

MR. ROTHEN: Thank you very much.

My name is Frank Rothen, I am the Vice President of Nuclear Services at Millstone Station and I am the corporate officer responsible for the decommissioning of Millstone Unit 1.

In 1998, July, the decision was reached to cease operations at Millstone Unit 1. At that point in time we began an intensive benchmarking effort throughout the industry to determine the best method that we could find to decommission the unit. It was through those studies, and

working closely with the Nuclear Energy Institute, that we came to the conclusion that the best method for us would be to hire a contractor, an experienced contractor, to provide that service for us.

After going through a review process, we decided at that time to select Entergy, which was actively involved in the decommissioning process at the Maine Yankee site. We have formed a contract with Entergy which I feel is unique in the industry. We basically have established five goals for them to meet and they are rewarded financially for meeting those goals.

The five goals that have been established are (1) nuclear safety, (2) industrial safety, (3) regulatory compliance, (4) schedule, and (5) budget.

We really feel that this is in the best interests of the public, whose funds we are to protect, and it is also in the best interests of the utility. We basically have taken this agreement with Entergy and we have made a cost reimbursable contract with them, and the bulk of their incentives will be paid through their performance. They are penalized heavily if they don't -- if they fail to meet these performance goals. The emphasis, again, being nuclear safety and regulatory compliance, and the safety of the workers on the site.

We are very pleased with that arrangement and we

feel very comfortable that it protects the safety and health of the public and also the best interests of our rate-payers.

With that said, Entergy was brought on board. They have been with us now for 2-1/2 months. I am very pleased with their results to-date. They were active in the participation formulation and submittal of the PSDAR to the NRC. That was their first activity on site, and now they are here tonight to explain how they came to that conclusion.

The three people sitting on the dias with me are Larry Temple, the General Manager of the decommissioning of Unit 1. Robert Fraser, who is the Director of Decommissioning. He was also in charge of engineering at the decommissioning at Maine Yankee, so he comes with a great of experience. Bryan Ford, who is the Director of Nuclear Safety and Regulatory Affairs. And with that, I will turn it over to you, Larry.

MR. TEMPLE: Thanks, Frank.

Good evening, ladies and gentlemen. I would like to thank each of you for coming here tonight. Your presence indicates your interest in Millstone Unit 1 as the plant transitions into decommissioning. I would also like to thank you for the opportunity of making this presentation of the Post-Shutdown Decommissioning Report.

I would also like to go through the agenda that I am going to present. We will talk about the background, we will talk about the decommissioning options. Some of the information that we present will be some duplication of what Duke has already presented, but we will go into some in a little more detail as to how it pertains to Millstone Unit 1.

We will talk about the transition activities. We will talk about high level waste, and we will talk about low level waste. We will go in and discuss the preliminary cost estimate, and we will talk about the preliminary schedule, and then we will get to the conclusion.

Millstone 1 is a 652 megawatt boiling water reactor that began commercial operation in March of 1971. Over its operational life, Unit 1's total gross generation was 105,938,737 megawatt hours. This nuclear generation saved 179,300,000 barrels of oil. The plant was shut down on November the 4th, 1995 and has not operated since. On November the 19th, 1995, transfer of all fuel assemblies from the reactor vessel into the spent fuel pool for storage was completed.

On July the 17th, 1998, the Northeast Utilities board of directors decided to permanently cease further operation of the plant. Certification to the Nuclear Regulatory Commission of the permanent cessation of

operations and permanent removal of fuel from the reactor vessel, in accordance with 10 CFR 50.82 was filed on July the 21st, 1998. The NRC docketed the letter on July the 24th, 1998, at which time the 10 CFR Part 50 license no longer authorized operation of the reactor or placement of fuel in the vessel. This decision is not reversible.

On June the 14th, 1999, Northeast Nuclear Energy Company submitted, under the provisions of 10 CFR 50.82, the Post-Shutdown Decommissioning Activities Report to describe Millstone's planned decommissioning activities and schedule, provide a preliminary cost estimate and discuss the reasons for concluding that the environmental impacts associated with site-specific decommissioning activities are bounded by the appropriately issued Environmental Statements, specifically NUREG-0586.

The report was based upon the best information currently available and the plans discussed may be modified as additional information becomes available or conditions change.

To decommission a nuclear power plant, the radioactive material on the site must be reduced to levels that would permit termination of the NRC license. This involves removing the spent fuel, the fuel that had been in the reactor vessel, dismantling any systems or components containing activation products such as the reactor vessel

and primary loops, and cleaning up or dismantling contaminated materials. All activated materials generally have to be removed from the facility and shipped to waste storage facility. Contaminated materials may either be cleaned of contamination on site or they may be removed and shipped to the waste storage facility.

Two general methods or options for decommissioning nuclear power facilities are DECON and SAFSTOR. In the DECON method, the equipment, structures and portions of the facility and site that contain radioactive contaminants are removed or decontaminated to a level that permits termination of the license shortly after cessation of operations. In the SAFSTOR method, the facility is placed in a safe, stable condition and maintained in that state until it is subsequently decontaminated and dismantled to levels that permit license termination. The maximum time limit for this option is 60 years.

Millstone 1, like several other plants being decommissioned, is considering a combination of both the DECON and SAFSTOR methods. We are considering this method because specific conditions at the multi-unit Millstone Station requires that certain Unit 1 decommissioning activities be delayed and performed concurrently with the decommissioning of Units 2 and 3. Other considerations may dictate early scheduling of certain decommissioning

activities.

Therefore, the approach to decommissioning Millstone 1 can best be described as a modified SAFSTOR. In this approach, decontamination and dismantlement activities may be undertaken early in the decommissioning wherever it makes sense from a safety or economic viewpoint. The amount of decontamination work completed prior to a SAFSTOR period will depend on a number of factors currently under evaluation.

Transition activities for decommissioning, regardless of the method chosen. Each of these areas will be addressed separately. However, on this slide, I want to point out our emphasis on safety. As we move forward and focus on decommissioning planning and preparation, and actual work activities, nuclear safety, radiation safety, industrial safety and environmental safety will be of the utmost importance. Safety is the basis of our goals and objectives and will be a measure of our success.

Prior to the commencement of actually decommissioning, the plant must be put in a safe condition for the safety of the demolition workers and the public. Detailed planning and preparation of all activities, interfaces, engineering evaluations, and specifications must take place. System decontamination activities must be assessed to meet the objective of reducing the radiation

levels throughout the facility in order to minimize personnel exposure during dismantlement.

Another objective of decontamination activities would be to clean as much material as possible to unrestricted use levels, thereby permitting disposal as salvage and minimizing the quantities of material that must be disposed of by burial as radioactive waste.

During the initial portion of the planning period, a detailed site characterization will need to be undertaken during which radiological and hazard waste will be identified, characterized and quantified. This characterization establishes the scope of remediation and is an integral component to the decommissioning process. This information will also be used to ensure that worker exposure is maintained as low as reasonably achievable.

Some site facilities may have to be modified or constructed to support decommissioning and dismantling activities. Examples may include lay down areas to facilitate equipment removal and preparation for offsite transfer, upgrading roads to facilitate hauling and transportation, and modifications to the reactor building to facilitate access of large, heavy equipment.

As the plant transitions to decommissioning, there are many programs, processes and procedures that no longer apply and are not applicable to the shutdown and defuel mode

of operation. These programs, processes and procedures need to be realigned to the activities taking place and are essential to the successful transition of Unit 1 into decommissioning.

The primary focus of the operating technical specifications was on the reactor and protecting the health and safety of the public from operating events. In the shutdown condition, the focus of the technical specifications needs to be directed to the safe storage of spent fuel, thereby protecting the health and safety of the public. The defuel technical specifications have been submitted to the NRC and are in the review cycle.

Upon certification of permanent shutdown and removal of fuel from the reactor vessel, the plant is no longer authorized to operate or to place fuel in the reactor vessel. The certification changes the license basis of the plant to only possession of special nuclear material. Accordingly, the Plant Safety Analysis Report is being revised to reflect only those systems that support safe storage of spent fuel and the revised safety basis.

Entry into decommissioning also allows changed to the Quality Assurance Program. Currently, the Millstone Quality Assurance Program resides in a topic report that is common to the site, which includes the two operating units. Revision is necessary due to organizational changes,

responsibility shifts and a large reduction in scope. The Unit 1 Quality Assurance Program will be revised in parallel with the declassification of systems and receipt of the defuel technical specifications.

Transition activities for decommissioning must include preparations for dismantlement. Systems and equipment throughout the plant that are no longer needed are to be de-energized and drained. These actions ensure the safety of the decommissioning workers, and also ensures that freezing will not impact the piping integrity. The spent fuel is currently being stored in the spent fuel pool. During transition, and for the period of time that the spent fuel is stored in the spent fuel pool, the systems necessary for spent fuel pool operations may be consolidated into an island concept and configured for spent fuel cooling and cleanup. This island concept isolates the spent fuel pool and its supporting systems from other plant systems.

The characteristics of Millstone Unit 1 as a decommissioning site are inherently different from that of the operating Units 2 and 3. Unit 1 will transition into a separate, stand-alone entity both physically and organizationally, with distinct infrastructure and authority separate from the operating units. This separate, stand-alone entity allows Northeast Utilities to concentrate on the continued safe operation of Units 2 and 3, while Unit

1 is being decommissioned.

To accomplish this separation, several design packages will have to be planned and implemented. As stated before, procedures and processes will have to be realigned to more accurate reflect and control the work activities of a shutdown plant that is transitioning into decommissioning. Public interest in Millstone 1 will continue as the plant enters decommissioning.

Issues relating to decommissioning are different than those of an operating plant. There is a significant reduction in nuclear risk. Environmental concerns relating to the plant cleanup typically become the focus of the community. Activities such as spent fuel storage, License Termination Plan, site release criteria and unit characterization will be of interest.

As we move forward, we think that it is important for the community to have a vehicle to receive information pertaining to the decommissioning activities. An external web page, which is www.millstonestation.com has been developed for Unit 1 to communicate this information. As an example, the PSDAR that we are discussing tonight will be presented and links to the NRC home page will be included. The NRC home page contains an enormous amount of information and I encourage you to visit it.

Our home page for Unit 1 decommissioning will

include some generic information, however, our goal is to present information that is more specific to the decommissioning activities of Unit 1 and not to duplicate information that is already presented on the NRC home page. Communication and oversight of these decommissioning activities for Unit 1 will take place with the NEAC or the Nuclear Energy Advisory Council. This committee has been very effective in past activities in oversight of the restart of Millstone Units 2 and 3. Communications will also continue with the Millstone Action Committee.

High level waste, for this discussion, is referring to the spent reactor fuel. Congress passed the Nuclear Waste Policy Act in 1982, assigning the responsibility for disposal of spent nuclear fuel created by the commercial nuclear generating plants through the Department of Energy. This legislation also created a Nuclear Waste Fund to cover the cost of the program, which is funded in part by the sale of electricity from the Millstone plants.

The current Department of Energy estimate for startup of the Federal Waste Management System is the year 2010. For planning purposes, we have assumed that the high level waste repository, or some interim storage facility, will not be operational until then.

The spent fuel from Millstone 1 will initially be

stored in the spent fuel pool. We are considered design and license of a dry, independent, spent fuel storage installation. Should this occur, the fuel will be transferred and stored temporarily on site using licensed canisters until such time that the Department of Energy takes possession.

Once an independent spent fuel storage installation is in place, the spent fuel pool and support systems could be dismantled, along with other systems and equipment. Since the independent spent fuel storage installation consists of passive fuel storage, the plant could enter into the SAFSTOR mode with no active equipment running. The evaluation for this decision should be completed by mid-year 2000.

For this discussion, low level waste is any radioactive waste that is not classified as high level waste or spent nuclear fuel. Low level waste often contains small amounts of radioactivity dispersed in large amounts of material, but may also have activity levels requiring shielding and remote handling. It is generated by uranium enrichment processes, reactor operations, isotope production, medical procedures and research and development activities.

Low level waste is comprised of rags, papers, filters, solidified liquids, ion exchange resins, tools,

equipment, piping and sometimes concrete.

NRC regulations classify low level waste on the basis of potential hazards, such as the concentration of short-lived and long-lived radionuclides. Thus, low level waste usually, but not necessarily, includes waste with relative low concentrations of radionuclides.

Waste from Millstone 1 will be handled in accordance with regulations. Current plans are for any radioactive waste, either historical or generated during the transition to decommissioning, to be packaged and shipped to reduce the potential of contamination and to reduce the site source term consistent with ALARA practices. Contracts for waste burial in-processing are being developed.

The volume of waste is bounded by previously issued Environmental Impact Statements. A review was completed in June 1999 to ensure that the decommissioning activities for Millstone 1 are bounded by the Millstone Nuclear Power Station Final Environmental Statement dated June 1973 and the Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities, NUREG-0586, dated August 1998.

TLG Services, Incorporated, prepared a Millstone 1 decommissioning cost estimate in 1997. The methodology used by TLG to develop the decommissioning cost estimate follows the basic approach originally advanced by the Atomic Energy

-- Industry Forum, now the Nuclear Energy Institute, and their program to develop a standardized model for decommissioning cost estimates.

The current decommissioning cost estimate summarized on this slide uses updated information and data compared to the 1997 estimate to project the potential cost. Please note that this estimate is a preliminary cost estimate. 10 CFR 50.82 requires that a site-specific decommissioning cost estimate be prepared and submitted within two years following permanent cessation of operations. Following appropriate internal review and estimate refinement, a site-specific estimate will be issued to the NRC. Again, please note that this is a preliminary cost estimate.

The breakdown of the costs are as indicated. As you note, the different categories of staffing, the low level burial and processing, license termination, decontamination and removal, decommissioning and planning activities and other costs. The other costs includes costs such as insurance, property taxes, Energy, NRC, state fees and so forth. That total comes to $532,074,000.

The spent fuel storage costs are the costs associated with the siting construction, licensing and operation of an independent spent storage facility until the scheduled time for the DOE to take acceptance of the spent

fuel. The total for this preliminary estimate is $691 thousand -- or, excuse $691,681,000.

Licensees are currently required to complete the decommissioning process resulting in termination of the NRC license within a period of 60 years. The proposed modified SAFSTOR method completes the decommissioning in approximately 25 years. This estimate provides for decommissioning the site under current requirements based on present day costs and available technology.

Certain individual costs associated with decommissioning activities have increased at rates greater than inflation. For example, there have been significantly volatility in the issues surrounding waste disposal. Access and cost to low level waste disposal has been unpredictable and has escalated at rates historically greater than inflation over the past 10 years. The government's high level waste program has experienced a series of delays which have impeded the prompt decommissioning of the commercial reactors to-date. Waste disposal has become the primary driver in the escalation of decommissioning costs. Therefore, it is appropriate that we continue to review our cost estimates on a periodic basis.

We intend to pursue decommissioning using a modified ~~as~~ SAFSTOR as discussed earlier. The preliminary schedule presented may vary in response to the availability

of waste disposal facilities, more detailed planning or unforeseen circumstances. The modified SAFSTOR alternative provides the opportunity to remove selected components prior to a SAFSTOR period. The assumptions about the Department of Energy's inability to take possession of spent fuel has made the decision to investigate dry spent fuel storage at Millstone prudent. Dry spent fuel storage reduces the overall length of the decommissioning project and, therefore, the overall cost.

I would like to go over that preliminary schedule. The detailed cost estimate would be in July of year 2000. The initial unit characterization would be complete in December of 2000, and notice we say initial. Once you do the unit characterization, that is the basis that is used to compare to throughout the decommissioning process.

Active decommissioning would start in January of 2001. Should we end up with a decision to go to the dry fuel storage, the potential transfer to dry fuel storage could start in January of 2006 -- be completed in year 2006. Initial decommissioning would be complete in August of 2007. The SAFSTOR would start in September 2007. Start fuel transfer to the Department of Energy at the proposed 2010, and we have September of 2010 for that date.

The SAFSTOR would end in April 2020, with the site restoration complete in June of the year 2022.

In conclusion, the public environment and worker safety is our primary focus and will be measure of our success. The completion and method of decommissioning is dependent on (1) access to low level waste disposal sites, (2) permanent disposal of spent nuclear fuel, and (3) funding of the decommissioning activities.

This completes our presentation. Again, I would like to thank you for the opportunity to make this presentation.

MR. WHEELER: Thank you. Carol, do you have a list of people who have signed up to make comments? Could you bring it forward, please.

And while she is doing that, you heard the licensee invite you to check out the NRC's Internet web site, and I would like to repeat that invitation, and it can be found at www.nrc.gov -- it is not dot-com. Where is the list?

MR. SHERIDAN: Why don't we start with questions and then there is a signup sheet for anyone who wants to make statements at the back, so please feel free to do that. So, what I will start fielding questions and I will direct them to the appropriate people. So who would like to start?

MR. WHEELER: And I would ask -- go ahead.

MR. SHERIDAN: Go ahead. You also -- you do need to come up to the microphone. And spell your name so that

they can get the proper spelling down.

So, okay. Well, I am sure all of you can't be shy, so there are bound -- I have a question, but I would prefer to have someone else start. Who -- do I hear a question here?

[No response.]

MR. SHERIDAN: Okay. Then, Joe, you are the only person who has signed up. Would you like to come forward and make a statement?

MR. BESADE: Okay. I have to introduce myself as Joe Besade, former pipefitter at Millstone, been over there since '73 and was educated by the NRC -- oh, I started off with the Atomic Energy Commission, and then I had a lot of respect for them. And then once you got inside the perimeter of that plant, you found out who was the boss, it was the utilities.

MR. WHEELER: Joe, excuse me. Just as an administrative note here, just for the transcriber, to make sure we get it right, could you spell your last name, please?

MR. BESADE: B-e-s-a-d-e.

MR. WHEELER: Thank you. Sorry to interrupt.

MR. BESADE: Okay. Well, since these -- well, Mr. Galatis ~~Gladdis~~ got involved -- then I have an article here for you, is later the NRC cites NU for violations and they decide to

close the plant down, they are not going to do anything, where people should have been prosecuted, ~~gone~~ going to jail, nothing happens to anybody. And what upsets me is the politics involved. Also, with the NRC, who is concerned about the financial condition of the utilities. Don't you think they suffered enough by being down for 3-1/2 years? I didn't think it was the NRC's position to worry about the financial position of the utilities. It was the NRC's position to look out for the safety of the public.

And after seeing what is going on inside that perimeter of that plant, since '73 until being terminated maybe five years ago and becoming a member of the Citizens Regulatory Commission and most recently the newest chapter of Fish Unlimited who has brought charges the utility. And we find out now that it seems as though, in my opinion, and I strongly believe this, that you are all in bed with each other. And the NRC isn't going to bite the hand that feeds them.

The NRC is not looking out for the public across the country. I just dropped off a couple of items that were handed to me, or mailed to me, and that was some of the reasons for immediate closure of Millstone, both Millstone reactors, and I would like to read them.

Because they routinely release radiation into our air and water. Because of claiming number of cancers,

leukemia, Down's syndrome, birth defects and many other radiation and diseases that affect all of us.

To be in solidarity with the people of Long Island, these people would like to be slammed with radiation in the event of an accident at the Millstone, yet the NRC does not require their evacuation. Oh, as far as evacuation, we recently had three accidents on our local roads of 95, and you can see how long it took with trying to evacuate even our area. Just a little insert there.

Because the reactor, Unit 3, is not supposed to shut down five times in six months after spending over $1 billion and three solid years to bring into regulatory compliance. That was only a few systems. The NRC said they didn't have to go through all of them, which also upsets me as being a resident of 37 years of Waterford.

The NRC lies, deceives, cheats to prop up the failed nuclear power generation industry. NU lies, deceives and cheats to keep Millstone reactors limping along until they are sold to some large foreign -- possibly foreign, American Gen Energy Company to rock bottom rates. Meantime -- meanwhile, Millstone management continues to reap huge salaries and golden parachutes at the expense of overcharged rate-payers.

Because they are financially gross and excessive. Connecticut has the ability to be nuclear-free without the

loss of power. NU inadvertently proved this when all four of their reactors were shut down over three years.

Because this is not a sound, safe solution to the tons of low level radiation waste that they generate yearly.

Because the legal high level waste has a danger, period, not measured in years or decades, or even centuries, but in geological timeframes.

Because the whole Peaceful Atom campaign was and still is based on lies.

Because the nuclear power is killing us, both literally and financially, and for these reasons, it says to notify the Citizens Awareness Network, and it has the address and all.

The other thing is as far Northeast being reputable people, I went and bought one share and went to the shareholders meeting up in Cromwell, Connecticut. And at that time Mr. Mike Morris assured me that I would receive copies of the videotapes of the meeting because I was not allowed to make the videotapes myself, and I have been videotaping NU and NRC meetings for the past four years. I have also been to Washington and met with the Commissioners. I haven't got time to go into all of that, but I am very displeased as far as the Commissioners, and I don't believe that the majority of them understand nuclear plants, et cetera and how this business goes. They are not really

looking out for our safety.

The questions that I read to Mr. Mike Morris for the public -- You have stated that Northeast Utilities is committed to maintaining compliance with both the letter and spirit of the law for protection of the environment and practicing stewardship, by managing NU's operations with genuine care and being able to impact the activities on the environment. Yet Northeast Utilities is under federal criminal investigation into federal environmental crimes. Consistent with Northeast environment policies, please provide us with a timetable by which each and every individual implicated in environmental crimes at Millstone will be brought to trial. Please provide us with a list of individuals involved.

Because of NU's relationship of collusion with the state, Department of Public -- DEP and NU's failure to practice environmental stewardship at Millstone, Fish Unlimited and others had to sue Northeast Utilities to protect the collapsing winter flounder species. Our suit is continuing, but it is the first in a sequence that Fish Unlimited will bring to stop fish kills and lobster slaughter at Millstone.

Why does NU refuse to live up to its commitment of environmental stewardship so that is it necessary for citizens groups to go to court to force it to practice

environmental stewardship?

That was not my speech, it was written for me, and I read that at that meeting. And I just at this time hope you people can understand how I feel. I am the only one I guess that is going to be able to speak against this room full of people that are pro-nuclear. And I hope that somebody will come forward and let me show you, or show them the hundreds of hours of videotapes, except the 23 that were held behind closed doors with the NRC and NU.

I also have volumes of newspaper articles from four or five different newspapers, in chronological order, so that the average person can take and go through that, and then come to the conclusion that what I have just said and read in these first few pages, just what has taken place. And that the average individual is too busy making a living, and probably they are getting brainwashed by this latest bombardment of Northeast Utilities saying that we are the greatest as far as the power to Connecticut, we supply it all.

The other thing is the environmental, how much we look for them. Now, this is all BS. Well, I am a little frustrated right now and I think I will stop at this point. I was hoping somebody else would come forward.

MR. SHERIDAN: We have someone here, Joe, that wants to -- that has put their hand up.

MR. BESADE: Okay.

MR. SHERIDAN: Well, thank you very much.

MR. BESADE: I hope to hear from somebody real soon, because this is just the beginning, gentlemen.

MR. SHERIDAN: We have Andrea Stillman, our State Representative. Andrea, would you like to come forward?

MS. STILLMAN: Good evening, gentlemen. First of all, I would like to -- I guess you need my name, et cetera, for the record.

MR. WHEELER: If you would, please. Thank you.

MS. STILLMAN: Yes. It is Andrea Stillman, I am a Waterford resident and I am also the State Representative for the Town of Waterford. Do you need an address? Five Coolidge Court.

MR. WHEELER: Could you spell it, so that you can be properly transcribed?

MS. STILLMAN: S-t-i-l-l-m-a-n.

MR. WHEELER: Thank you.

MS. STILLMAN: Thank you. First of all, I would like to say thank you very much for being here this evening and opening the lines of communication. I have lived in this community for a little more than 25 years. I have been its State Representative for almost eight years, and in those eight years, I obviously have followed this whole issue of the Millstone plants and the NRC's involvement.

And it was obvious that during those years when the plants were not operating that lines of communication being open were extremely important.

Decommissioning a plant is a new program for this community, and so I thank you for being here and getting us started in explaining what the process is, how long it will take, how expensive it is, and knowing that you will have periodic meetings. I think the web site is a great idea, I am going to put it in my favorite places, although I wouldn't call it a favorite site, but, obviously, it will give me a chance to get into the site more readily.

I was starting to read through some of your documentation this evening, and I just had a couple of questions to clarify in my mind as to exactly what we are doing. Maybe some other people also have similar concerns.

In the first document, you spoke about the Maine Yankee plant and that there is a spent fuel nuclear island. I am not familiar with that. If you could explain a spent fuel nuclear island, where it is in relationship to the plant and give us some sense as to what that is.

MR. FRASER: Yes, I am Bob Fraser, I am the Decommissioning Director here at Millstone Unit 1. I was the Engineering Director during the design of the fuel pool island at Maine. The island is a concept of taking the support systems for cooling the spent fuel pool and putting

them into a protected area in the plant separate from the decommissioning activities, so that cooling of the pool is not interrupted during the decommissioning. It is really a concept of bringing everything to a stand-alone area by itself. It is not what you would call putting it out on an island.

MS. STILLMAN: I think that needed to be made clear. As we have heard previously, there are concerns about our waterways and we are a shoreline community, and when we hear about new islands, we get a little concerned.

I would assume at this point you have not evaluated the Millstone site in terms of where the island will be. Or if you have, can you share that with us?

MR. FRASER: We are in conceptual scoping stages of the engineering work to establish the island. Exact areas have not been identified, but it will be in the structure of where Unit 1 is right now.

MS. STILLMAN: Within the present structure?

MR. FRASER: Yes.

MS. STILLMAN: Okay. Because you did mention that there will be a lot of consolidations of systems, et cetera, and I was concerned as to whether you would be going beyond the boundaries of Unit 1.

MR. FRASER: No, we will not.

MS. STILLMAN: You will not. Okay. Let's see,

those were just, obviously, as we all continue to read this information, we will all have questions. Have you developed a schedule yet in terms of public meetings?

MR. ROTHEN: What we have committed to is that the Entergy Corporation will make -- will participate in every NEAC meeting and give a status report at every meeting where they are requested. And Teri Concannon told me tonight that she was appreciative of that and she would like them there. They will be at the meeting in Haddam Neck to give a status update of the Millstone Unit 1 decommissioning activities, and they will participate at every NEAC meeting where they are requested, and I think that is a good option for us right now, to use that vehicle.

NEAC has also formed a subcommittee, which was announced prior to your arrival at this meeting, where they are looking for some public participation in addition to the members of the NEAC, and similar to what was done by NEAC when they were looking at the 50.54(f) resolution for the Units 2 and 3 when we were doing that, so that is the vehicle we are using.

MS. STILLMAN: Okay. Well, I am glad to hear that because their meetings are certainly frequent and appropriate for that particular advisory committee. Obviously, we will all be watching how this moves along over many years. The questions do arise, though, about the high

level waste. You know, this is a community that has sort of learned to live with nuclear power and, unfortunately, a trust that was there was broken, and it takes a lot to restore it, and seeing this move forward smoothly would be one way of doing that.

And so I look forward to hearing more as the process moves along. If I can be of any assistance on a state level, please do not hesitate to ask me. I would be more than happy to help with any meetings you might need or gathering any information. And, again, I thank you for the meeting this evening. And as we hear more about 2010 approaching on high level waste and whether Yucca Mountain is actually going to be the real repository, I think will be something we will all be following, and, quite frankly, I have my doubts. And then you get into the whole issue of transportation. So there will be a lot to talk about over the course of this and I won't belabor this evening, but I thank you very much for allowing me to address you. Thank you.

MR. SHERIDAN: Thank you, Andrea.

If I may, can I ask a question from this microphone? Is that all right? Okay. Thomas Sheridan, S-h-e-r-i-d-a-n. I want to follow up on Andrea's point. I think it is probably the most important point to be discussed in terms of Waterford and our interest in having

the fuel removed from the pools to dry casks.

Now, I am sorry, I had to leave for a while, as you know. Do I understand correctly that that is what the plans are or will be?

MR. TEMPLE: As we stated in the presentation, that is under evaluation. And, you know, certainly, there are benefits associated with dry cask storage, but there is risks also that we have to evaluate. We have a time period to have that evaluation completed by mid-year 2000.

MR. SHERIDAN: If I may then, let me, on behalf of the community, put a plug in here to really encourage the company and the NRC to give that some very serious consideration. Dry cask storage has been shown nationwide to be an effective way of storing high level waste and it is also, as you probably are well aware of, but maybe a lot of the audience here is not, it is stored in casks that are already prepared for shipping, and that is a big plus, because it is the first step in the process of removing the waste from the community.

From Waterford's point of view, and, in fact, from all of Southeastern Connecticut's point of view, the high level waste issue is of critical importance. Thank you.

MR. ~~WHEELER~~ SHERIDAN: Any other questions? Ron. State your name and spell it, if you would, Ron.

MR. McKEOWN: My name is Ron McKeown,

M-c-K-e-o-w-n. I have I guess a simplistic question. If you were in our shoes relative to the risks and hazards, what are the critical, potentially hazardous, dangerous steps in the process, and when do they occur? I mean it seems to me these people have concerns about safety and concerns. I mean as things -- this is a process, and there must be some more significantly serious or dangerous steps in the process. What are they? What should we as the public be looking for to make sure it was done right, and when do they occur?

MR. FRASER: Okay. As I understand the question, you are wondering what the decommissioning risks are, the elevated areas of risk.

MR. McKEOWN: Yes.

MR. FRASER: And when will they be occurring. Let me preface that with that risks in decommissioning are orders of magnitude lower than when the plant was operating. The fuel has gone through significant decay, so the source term for any potential offsite release is much smaller.

With that being said, there are going to be activities that will have evaluations that are necessary prior to them being performed, such as handling the reactor vessel or such as transferring the fuel to a dry fuel storage facility, if that is a chosen path.

MR. McKEOWN: And those are effectively the

critical stages?

MR. FRASER: Those are two of the larger ones, yes.

MR. McKEOWN: And when do they -- roughly, when would they occur?

MR. FRASER: We look at dry fuel storage, again, if implemented, to be complete by the beginning of about 2006, and vessel segmentation, the exact timeframe has not been identified for that yet, where it is going to fit into the schedule.

MR. McKEOWN: You said when they would end. When would they begin?

MR. FRASER: Approximately two years before that.

MR. McKEOWN: So, 2004.

MR. FRASER: Roughly, yes.

MR. McKEOWN: So you are saying --

MR. FRASER: Again, we are refining the dates and activities right now.

MR. McKEOWN: So, if I understanding you correctly, that between now and the year 2004, there are no elevated time periods of risk that are above when the plant when was running?

MR. FRASER: During the entire decommissioning, there --

MR. McKEOWN: The entire decommissioning?

MR. FRASER: There are no areas of risk that are higher than when the plant was operating.

MR. McKEOWN: And during even that phase, which is below operational level, the spikes, if you want to call it, of potential risk don't occur until the year 2004? Am I saying that correctly?

MR. FRASER: That is -- I haven't heard it characterized in that way, but I think that could be --

MR. McKEOWN: Not a friendly word, I am sorry. Thank you.

MR. FRASER: But that is fairly accurate, yes.

MR. McKEOWN: Thank you.

DR. MASNIK: I might add, this is Mike Masnik, that those risks are primarily to the work force, too. I mean the risk associated with moving the vessel or moving these major components are primarily with the work force and not the members of the public.

MR. SHERIDAN: Geri.

MS. WINSLOW: Hi, I am Geri Winslow, I live in Waterford, Connecticut. Geri with G, G-e-r-i, W-i-n-s-l-o-w. I live in Waterford. I spoke at the February 9th meeting.

I have just jotted down a few things tonight. First of all, I guess I am little, you know, unhappy that SAFSTOR wasn't chosen as the choice for Millstone 1. I was

hoping that it would sit and deactivate a long longer. Because there is a sketchy thing there with what are we exactly going to do and what are we going to SAFSTOR. So I am a little confused. There is probably no details available yet about what exactly is going to be taken apart. I don't know how that could be changed, you know, that could be changed. Well, maybe we will SAFSTOR this and dismantle that. I just would have felt better if the entire thing was SAFSTORed for 30 years, I think that is the safer route to go.

Let's see, what else?

MR. SHERIDAN: Geri, would you like -- I think that question, if you put it in the form of a question, it deserves a response. Would you --

MS. WINSLOW: Well, I expect there will be more down the road. I was pleased to see, on the flip side of that, I was pleased to see the chart that nothing is going to happen immediately. There is going to be some time to make sure the plans are in place, and I am pleased about that.

So, but I do have -- I am uneasy about taking components of a plant out while two are up and running. I don't -- is that new? That is something that hasn't been done at any of the other plants. Because they are either -- the ones that have running plants and decommissioned plants, usually they go the SAFSTOR option, that is what I was told

in February.

DR. MASNIK: Mike Masnik again. Yeah, we have had some experience in that actually at the Three Mile Island plant where we had the worst accident in the United States, where we did some major decontamination and dismantlement of that facility. So, yes, we have to be concerned about the interaction between the two facilities and I think that is one thing that was brought out in tonight's discussion is that there is a lot of concern about interactions between the two facilities, and that is one of the things that we look at very carefully.

MS. WINSLOW: Okay. We hope so. On the high level --

MR. WHEELER: I was trying to keep up with some of the things that you are identifying here as your interests. I think I also heard you express an interest in the what and the when certain things might be happening. And I would invite the licensee to make any comments on perhaps what will be happening first or when, or repeat some of what was mentioned before.

MS. WINSLOW: Well, we do have -- you know, we have the outline of tonight to go by as an initial.

MR. WHEELER: You have that.

MS. WINSLOW: And I am sure that the public will be kept informed through the process.

MR. WHEELER: All right.

MS. WINSLOW: I am pretty confident about that. On the canister, the high level storage, you know, that is something that is of concern to me. And I am not sure about the waste being stored in the canisters. I have to check into that, because I have heard some of them leak. I have heard an expert talk. In fact, we had an expert come at one point in waste management. And I think it might be a good option, though, for Millstone 1. I am glad, you know, it won't be shipped anywhere. I don't want to see anything shipped through this town, because I am very concerned about that, too, even the low level components as they go back and forth. We just had a major accident out here. We have a real traffic problem on 95 almost all the time, and transporting waste is not something that I personally would like to see in this town.

MR. SHERIDAN: Geri, I have a substantial file on the canisters. I would be happy to share it with you and others if you care to give me a call.

MS. WINSLOW: And I just wanted it to go for the record that somebody mentioned all the oil that the operation of Millstone 1 saved. It might have saved a certain amount of oil, but let's not -- you answered my own question, created 916 metric tons of high level waste. So it is more of this and less of that, one or the other.

And, also, I am glad to see Millstone 1 finally decommissioned. In 1975 alone it released 2,970,000 curies of radiation into the air. So we don't want to see that again. So those are my comments. Thank you very much.

MR. WHEELER: Thank you, Geri.

MR. SHERIDAN: Are there any other comments? John.

MR. MARKOWICZ: John Markowicz, M-a-r-k-o-w-i-c-z, Waterford, Connecticut. I would like to pick up on Ron's question and ask it a little bit differently to both the company and Entergy, and also to the NRC. And the question is with respect to level of risk in the process for the two operating plants, and my concern is that there are some common systems that have to, I hope, very carefully be separated from Millstone 1 decommissioning and Millstone 2 and 3 operating, and there is a level of concern, from my experience, whenever you turn a switch off and something may be relying on it from a safety perspective at an operating plant. So could you address that? And I would like to ask the NRC a question related to that.

MR. ROTHEN: The number one priority that we gave Entergy when they arrived on site was the safe operation of our existing units, to maintain the systems that were on Unit 1 and, therefore, transferring responsibility to Entergy, that it was incumbent on them to maintain those

systems in a safe operating condition, which they -- we are pleased with the results, they have done an excellent job of that.

But to make sure that that continues, and when we look at the modifications necessary, and there are some design mods, we will physically alter the plant so that the ownership of those systems now will be transferred to the operating units. Primarily Unit 2 is affected, but there are a couple of systems for Unit 3. There are also administrative procedures that have to be changed and the ownership goes over to the operating units, as opposed to Unit 1.

We formed a committee that would look at the isolation of the unit and that committee is made up of Mike Brothers, the head of Operations, Ray Necci who is the head of Oversight, Dave Amerine who is the head of Engineering. They are all Vice Presidents. John Cowan, myself and it is chaired by project management. Lee Olivier has final say over any design mod that we have on those units. We also take them through a very rigorous review process that goes through the entire process of plant -- the PORC, SORC and the NSA, being the nuclear groups, and they do reviews on every one of those designs before they are allowed to be implemented, and that is the process we are going through right now, John. So, yes, we view that very seriously and

it is a direct threat to operations if, in fact, they have a problem, and we view it very seriously, and they are not allowed to do any work until it has gone through all those reviews to make sure it conforms.

MR. MARKOWICZ: I understand, I appreciate the answer, and I would hope that as part of these public presentations, either with the Nuclear Energy Advisory Council or whatever other vehicle, until those systems are fully segregated, that the briefings include the status of the process and where you are at.

And I guess if the NRC could comment upon my question. And, also, as a related -- you know, how are you going to watch this, is the question. And I am curious as to there is a shift in the Chain of command that you touched on, that Cataldo goes from Region I to DECON. And I am kind of hoping the answer is going to be -- and he will do that after all these systems are separated so there is no system that either slips through the cracks or there is some, well, I thought you had it over there because I am not longer over there, I am over here. Could you talk about that a little bit and make me more comfortable?

MR. LINVILLE: Yes. As the Director of the Millstone Inspection Directorate responsible for the oversight of the operating reactors, that issue is of utmost concern to me and my inspection staff. Now, as I said, Mr.

Cataldo will be reporting to the Decommissioning Branch Chief, but he will be a shared resource. He won't be full-time on just the decommissioning aspects. At the same time, the resident inspectors at the operating units will be looking at the modifications and their impact on the operating units very closely also. That is really of great concern to us and that is, as we understand it, the licensee's intent to perform those modifications before they really get into any serious dismantlement activities, and we intend to assure that is the case.

MR. MARKOWICZ: I understand your answer, Jim. I guess it is more specific. For those critical systems that are part of the transition that will be turned off and isolated, who do I call? Do I call Cataldo? Do I call --

MR. LINVILLE: You can call me.

MR. MARKOWICZ: Well, I am just saying -- I am just trying to get a feel for who is the person that has primary responsibility for those systems since they cross system boundaries, and who is that person in the NRC.

MR. LINVILLE: Well, the licensee is, obviously, ultimately responsible.

MR. MARKOWICZ: I am talking about the NRC.

MR. LINVILLE: But from the perspective of oversight, that is my responsibility. And all the residents report to me and they will all be looking at that as it

relates to the plant that they have responsibility for.

MR. MARKOWICZ: So you understand my concern?

MR. LINVILLE: Absolutely.

MR. MARKOWICZ: Duke, were you going to say something?

MR. WHEELER: No, that covers it, I think.

DR. MASNIK: I was just going to say that we did meet today and talk about shared systems, and when I left the office yesterday, my Division Director specifically reminded me that this is an area that he is very much interested in. So, I think there is a lot of management attention on this issue. We recognize the importance.

MR. MARKOWICZ: Thank you. I appreciate the opportunity to hear your comments and welcome you to Waterford and hope over the next 25 years everything works out just fine. May we live to see the end.

MR. SHERIDAN: Any other thoughts or questions?

MS. PEABODY: I am Jean Peabody, P-e-a-b-o-d-y. I have jotted a few things down.

MR. SHERIDAN: Jean, could you speak a little closer to the mike?

MS. PEABODY: Which one?

[Laughter.]

MS. PEABODY: This one? A few things briefly I jotted down was, one thing, it is hard for me to believe the

way the nuclear community goes on its merry, outrageous long way from the day one. I always think when I look up at all these good-looking, brainy men and connect you with the nuclear community, I don't understand that at all.

The other thing I wrote down that you are learning now, as I read, how to decommission a plant. You don't know how yet, but each one goes day by day, by day. In fact, in one of our meetings where I talked to the Bechtel gentlemen, I believe they are running up at Haddam, is that correct, and he had never touched a decommissioning before, and he was one of the big boys.

And the last thing I want to say to you, that only your paper work is superb -- only your paper work, and I have seen it all. Thank you.

MR. SHERIDAN: Thank you. We had another hand back there.

MR. KNIGHT: Hello, my name is Rod Knight, I am a resident of Connecticut, western part of the state. But just a simple question I think, in regards to the preliminary schedule, you show approximately 10 years, if I am reading the schedule correctly, for the removal of spent fuel from the pool to the DOE facility, starting in 9/2010, completing in April of 2020.

My first question, first part of the question is, number one, does this comply with or does this correlate to

the annual capacity reports and acceptance priority ranking, because 10 years seems like an awful optimistic period of time? Having looked through that several times, I have never been able to get any schedule to come out in 10 years for shipment of spent fuel. Just a question.

And I realize that this is a preliminary schedule, but I think it needs -- that area needs to be looked at again because it is a key factor in determining whether you go to -- whether you stay with wet storage or do to dry storage. And how long the fuel remains on site is going to be very important for that determination. And I guess it doesn't need to be answered now, but I think there should be some concern here about the 10 year period. And if anybody has any comments on that, that's fine, but, otherwise, I just wanted to make a point.

MR. SHERIDAN: Does anyone want to comment on that?

MR. FRASER: The short answer is, yes, it is in alignment with the acceptance schedule. The success path for fuel storage will be investigated, all avenues possible. We will not leave any stones unturned, if you will. It will be exhaustive to ensure that if, in fact, we do take the approach to go dry storage, that it is the correct approach.

MR. KNIGHT: Okay. Thank you.

MR. SHERIDAN: Other questions or comments? Well,

let me bring some closure to -- oh, Ron.

MR. McKEOWN: I'm sorry. Just two little quick questions. And I may have missed this, and I apologize if I did. I know you haven't been decommissioning a lot of plants over a long period of time, but in the United States, I think you referenced before, that the potential dangers are within the plant to the employees. Have there been any employees who have been injured radioactively within a decommissioning plant? And has any citizen outside of a plant, or a resident outside, offsite, ever been damaged or injured?

DR. MASNIK: Let's talk first about the worker. I am familiar with some instances of what we would call overexposure, where they got more radiation than the federal limit, and that has happened at a couple of occasions. I am familiar with one or two at Three Mile Island during the cleanup. As far as members of the public offsite, I am unaware of any radiation-related events involving members of the public. So, it has been pretty -- a pretty safe industry from that perspective. I mean you do have industrial accidents like you would at any construction site.

MR. McKEOWN: Thank you.

MR. SHERIDAN: Okay. I will make another attempt to bring some closure to this. First of all, I want to

thank -- oh, Joe, come on. Come forward.

MR. BESADE: Joe Besade again. I not only kept an eye on Millstone, I also went down and videotaped most of the meetings at CY since it has been shutdown. And I also have that on video, where there is a doctor concerned about the dry cask storage, and he is concerned about the 2000 anti-tank guns in this country that can take and penetrate the casks once they are above ground.

As far as the mistakes that were made with this decommissioning at CY, we find out that the client couldn't handle it himself, so they had to turn around and hire outside contractors due to the errors they were making. That is all documented.

So that I ~~don't~~ want the public to really get too enthused with what they hear here tonight by the majority of these people that are relying on this industry for their bread and butter. So with that, I will stop for a little while.

MR. SHERIDAN: Thank you. Any other thoughts or questions?

[No response.]

MR. SHERIDAN: If not, let me try and bring some closure to this. First of all, I want to thank both sides, NRC and NU for bringing some -- well, a substantial amount of information to the table. It is obviously the beginning.

Decommissioning of this unit is critically important to the State of Connecticut and to the Town of Waterford, and we want it done properly.

I will be available if there is any citizen that has any concern about the process. I would be happy to respond and help get the information that is needed to clarify any issue that might be out there. I know Andrea Stillman has promised to do likewise. We want it done properly, we want it done safely. It has been a long struggle for all of us in Southeastern Connecticut dealing with these issues and it would be, as Andrea said, wonderful to see everyone's confidence built in having this project go forward smoothly.

So, again, thank you, and thank you for coming.

[Applause.]

[Whereupon, at 8:58 p.m., the meeting was concluded.]

REPORTER'S CERTIFICATE

This is to certify that the attached proceedings before the United States Nuclear Regulatory Commission in the matter of:

NAME OF PROCEEDING: PUBLIC MEETING ON THE POST-SHUTDOWN DECOMMISSIONING ACTIVITIES REPORT

CASE NUMBER:

PLACE OF PROCEEDING: Waterford, CT

were held as herein appears, and that this is the original transcript thereof for the file of the United States Nuclear Regulatory Commission taken by me and thereafter reduced to typewriting by me or under the direction of the court reporting company, and that the transcript is a true and accurate record of the foregoing proceedings.

Jon Hundley

Official Reporter

Ann Riley & Associates, Ltd.

United States
Nuclear Regulatory Commission

PUBLIC MEETING

MILLSTONE, UNIT 1

POST-SHUTDOWN DECOMMISSIONING ACTIVITIES REPORT

August 25, 1999
Waterford Town Hall
Waterford, Connecticut

Louis L. Wheeler
Senior Project Manager
Project Directorate IV and Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

PURPOSES FOR THIS MEETING

- **Provide an opportunity for NNECO to present their plans for decommissioning Millstone 1**
- **Review the decommissioning process with members of the public**
- **Provide a forum for interested members of the public to make comments and ask questions of the NRC staff**
- **Fulfill a regulatory requirement**

NRC STAFF PRESENT

Office of Nuclear Reactor and Regulation

Mr. Stuart Richards, Project Director
Dr. Michael Masnik, Chief, Decommissioning Section
Mr. Phillip Ray, Project Manager
Mr. John Hickman, Project Manager
Ms. Etoy Hylton, Licensing Assistant
Ms. Carol Jamerson, Licensing Assistant
Mr. Jim Wilson, Environmental Specialist

Office of Nuclear Material Safety and Safeguards

Mr. Larry Camper, Chief, Decommissioning Branch
Mr. T imothy Johnson, Chief, Facilities Decommissioning Section

Region I

Mr. James Linville, Director, Millstone Inspection Directorate
Mr. Paul Cataldo, Millstone Resident Inspector
Mr. Neil Sheehan, Public Affairs Officer

Office of the General Council

Ms. Ann Hodgdon, Senior Attorney

OUTLINE

- What is/is not decommissioning
- NRC Focus
- Decommissioning Alternatives
- Decommissioning Process Requirements
- Post-Shutdown Decommissioning Activities Report
- Financial Considerations
- Additional Restrictions
- License Termination Plan
- National Perspective
- NRC Staff Point of Contact
- NRC Inspection Program for Decommissioning Power Plants

WHAT IS DECOMMISSIONING?

Decommissioning is defined as:

The removal of a facility safely from service and the reduction of residual radioactivity to a level that permits release of the property and termination of the license.

WHAT IS NOT DECOMMISSIONING?

Decommissioning does not include:

- **non-radiological cleanup/demolition.**
- **Site restoration activities**
- **Spent fuel management**

NRC FOCUS

The NRC focus is on the removal of radiological hazards.

- **Removal of the facility from service**
- **Reduction of radioactive materials to a level that allows site release**
- **Detailed final radiological survey**
- **License termination**

ACCEPTABLE ALTERNATIVES

- **DECON - Decontaminate and dismantle**
- **SAFESTOR - Long term storage followed by decontamination and dismantlement**
- **Combination of both**

INITIAL STEPS IN THE PROCESS

- Licensee Certifications
  - Operations permanently ceased
  - Fuel removed from the reactor vessel
  - Certifications are irreversible
- Operating license no longer authorizes fuel loading
- Post-Shutdown Decommissioning Activities Report
- Site-specific cost estimate

POST-SHUTDOWN DECOMMISSIONING ACTIVITIES REPORT (PSDAR)

The PSDAR is required to provide:

- **A description of planned decommissioning activities**
- **A schedule for the accomplishment of the planned activities**
- **An estimate of expected costs**
- **Reasons for concluding that the environmental impacts are bounded by previously issued environmental impact statements**

The NRC staff will hold a public meeting in the vicinity of the site.

The PSDAR is a summary description.

FINANCIAL CONSTRAINTS

- **Limit of 3% of the trust fund for decommissioning planning**
- **Limit of 20% prior to receiving the site-specific cost estimate, provided the PSDAR has been issued**
- **Full access not permitted until site-specific cost estimate is issued**
- **NRC constraints do not usurp state regulatory constraints**

ADDITIONAL RESTRICTIONS

The licensee is prohibited from performing any decommissioning activities that:

- **Forecloses the release of the site for possible unrestricted use; or**
- **Results in significant environmental impacts not previously considered; or**
- **Results in there no longer being reasonable assurance that adequate funds will be available.**

LICENSE TERMINATION PLAN

The plan will describe:

- **Site characterization**
- **Identification of remaining dismantlement activities**
- **Plans for site remediation**
- **Detailed plans for the final radiation survey**
- **Description of the end use of the site if restrictions are imposed**
- **Updated site-specific cost estimate of remaining costs**
- **Supplement to the Environmental Report describing any new information**

LICENSE TERMINATION PLAN (continued)

- **Plan receipt will be noticed in the *Federal Register* and the plan will be made available for public comment**
- **Opportunity for a hearing will be given**
- **NRC will hold a public meeting**
- **The plan will be approved by issuance of a license amendment**
- **Licensee continues to decommission the site and perform a site radiation survey**
- **NRC may perform a confirmatory survey(s)**
- **The license is terminated if the license termination plan was followed and the site meets the release criteria**

STATUS OF PERMANENTLY SHUTDOWN FACILITIES

Two facilities have completed decommissioning (Shoreham, Fort St. Vrain)

Nineteen power reactors are in decommissioning

- **Six are being decontaminated and dismantled (Trojan, Yankee Rowe, Big Rock Point, Haddam Neck, Maine Yankee, Saxton)**
- **Nine facilities are in long-term storage (TMI-2, Dresden 1, Fermi 1, VBWR, La Crosse, Peach Bottom 1, Rancho Seco, Indian Point 1, Humboldt Bay)**
- **Two facilities are planning on SAFSTOR (Zion 1 and 2)**
- **Two facilities are planning a combination of SAFSTOR and decontamination and dismantlement (San Onofre 1, Millstone 1)**

POINT OF CONTACT FOR LICENSING ACTIONS

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United States
Nuclear Regulatory Commission

MILLSTONE 1 DECOMMISSIONING

MEETING

WATERFORD, CONNECTICUT
August 25, 1999

James C. Linville
Director
Millstone Inspection Directorate
USNRC Region I

- Region I will manage the inspection program.

- For a station with operating and permanently-shutdown reactors, a mix of resident and regional specialists will perform the inspection activity.

- Present resident effort is periodic (approximately monthly) tours of Unit 1, attendance at planning meetings approximately weekly, available as necessary for interaction with the licensee. Also keeps the regional office and headquarters staff aware of developments.

- Region I has been involved in a number of ongoing reactor decommissioning projects.

- Yankee Rowe is completing dismantlement and decontamination.

- Maine Yankee has completed site characterization and has selected a Decommissioning Operations Contractor. A spent fuel nuclear island has been established and major dismantlement and decommissioning efforts have begun.

- Haddam Neck is continuing its characterization effort and is completing modifications for a spent fuel nuclear island. Major dismantlement and decontamination efforts have begun.

- Peach Bottom 1 is in a long-term storage SAFSTOR condition.

- Three Mile Island 2 is in a long-term SAFSTOR condition.

- Indian Point 1 is in a long-term SAFSTOR condition.

- For reactors in SAFSTOR, the inspection effort is a periodic inspection (approximately annually) to verify the condition of the facility and that degradation has not occurred, supplemented by frequent observations by the resident staff.

- For reactors in dismantlement and decontamination, a structured inspection program is established, based on the activities at the site.

- Areas of inspection are:

  - Organization, Management and Cost Controls

- Safety Reviews, Changes and Modifications
- Self-assessments, Audits, Corrective Actions
- Decommissioning Performance, Status
- Preparations for Reactor Fuel Handling
- Reactor Fuel Handling
- Maintenance and Surveillance
- Cold Weather Preparations
- Spent Fuel Pool Safety
- Occupational Radiation Exposure
- Final Surveys
- Radwaste Treatment, Effluents, Environmental Monitoring
- Solid Radwaste Management and Transportation

- Evaluation of Emergency Preparedness
- Physical Security

- Public involvement will continue. Inspection reports will continue to be made available, staff will attend meetings as appropriate.

  - The resident staff can be contacted at:

    860-447-3170

  - The Region I office can be contacted at:

    610-337-5000 or 800-432-1156

Northeast
Utilities System

Millstone Unit 1
Post Shutdown
Decommissioning Activities
Report

August 25, 1999

Agenda

- Introduction
- Background
- Decommissioning Options
- Transition Activities
- High Level Waste
- Low Level Waste
- Preliminary Cost Estimate
- Preliminary Schedule
- Conclusion

Background

- Began operation March 1971
- Shutdown November 4, 1995
- Decision to decommission July 17, 1998
- Decision to decommission is not reversible
- PSDAR submitted June 14, 1999

Decommissioning Options

- DECON
- SAFSTOR
- Modified SAFSTOR

Transition Activities

- Focus on decommissioning planning and preparation
  - Nuclear Safety
  - Radiation Safety
  - Industrial Safety
  - Environmental Safety
- Prepare the plant for dismantlement
- Separate Unit 1 from Operating Units
- Be responsive to community

Transition Activities

Planning and preparation

- Assess system decontamination activities
- Other preparation work (e.g., characterization, facilities setup)
- Align procedures and processes for decommissioning

Transition Activities

Preparation for dismantlement

- De-energize equipment
- Drain plant systems
- Isolate Spent Fuel Storage Pool and supporting systems from other plant systems

Transition Activities

Separate the Units

- Assure Unit 2 and 3 reliability
- Shared System Design Changes
- Procedures and processes

Responsiveness to community

- Developing web page
  www.millstonestation.com
- Establishing communication paths

High Level Waste (Fuel Storage)

- Law requires DOE to take responsibility for permanent storage
- Permanent storage by DOE of high level radioactive waste is scheduled to start in 2010 (previous schedule 1998)
- Currently evaluating if dry cask storage is best method for temporary storage prior to DOE shipment

Low Level Waste

- Most radioactive waste is low level waste
- Waste will be handled in accordance with regulations
- Volume of waste is bounded by previously issued environmental impact statements.

Preliminary Cost Estimate
(1999 dollars in thousands)

Staffing	$155,595
LLW Burial and Processing	$ 27,259
License Termination	$ 12,204
Decontamination and Removal	$174,789
Decommissioning Planning Activities	$ 29,057
Other Costs	$133,170
Subtotal	$532,074
Spent Fuel Management	$159,607
Total Decommissioning Estimate	$691,681

Preliminary Schedule

Long-Term Milestones

• **Detailed Cost Estimate**	**7/2000**
• **Initial Unit Characterization Complete**	**12/2000**
• **Active Decommissioning Start**	**1/2001**
• **Potential Transfer to Dry Fuel Storage**	**1/2006**
• **Initial Decommissioning Complete**	**8/2007**
• **SAFSTOR Start**	**9/2007**
• **Start Fuel Transfer to DOE**	**9/2010**
• **SAFSTOR End**	**4/2020**
• **Site Restoration Complete**	**6/2022**

Conclusion

- Public, environment and worker safety is primary focus
- Completion and method of decommissioning dependent upon:
  - access to low level waste disposal sites
  - permanent disposal of spent fuel
  - funding of the decommissioning activities

Northeast
Nuclear Energy

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Millstone Nuclear Power Station
Northeast Nuclear Energy Company
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The Northeast Utilities System

JUN 14 1999

Docket No. 50-245
B17790

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Millstone Nuclear Power Station Unit No. 1
Post Shutdown Decommissioning Activities Report

The Millstone Unit No. 1 Post Shutdown Decommissioning Activity Report (PSDAR) is being submitted in accordance with 10CFR50.82(a)(4)(i). The PSDAR is based on the best information currently available and the plans may be modified as additional information becomes available or conditions change. If plans change in a significant manner, Northeast Nuclear Energy Company (NNECO) will inform the NRC in accordance with 10CFR50.82(a)(7).

Final plans for long term fuel management are under development as part of the overall decommissioning planning process. Prior to July 17, 2000, both a spent fuel management plan, in conformance with 10CFR50.54(bb); and a site specific decommissioning cost estimate, in accordance with 10CFR50.82(a)(8)(iii), will be submitted.

There are no regulatory commitments contained within this letter.

If there are any further questions on the information provided in this letter, please contact Mr. Bryan Ford at (860) 437-5895.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

R. P. Necci
Vice President - Nuclear Oversight and
Regulatory Affairs

cc: See page 2

Attachment 1) Post Shutdown Decommissioning Activities Report (PSDAR)

cc: H. J. Miller, Region I Administrator
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Director
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Docket No. 50-245
B17790

Attachment 1

Millstone Nuclear Power Station, Unit No. 1

Post Shutdown Decommissioning Activities Report (PSDAR)

June 1999

MILLSTONE 1

POST SHUTDOWN DECOMMISSIONING ACTIVITIES

REPORT

JUNE 1999

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I. INTRODUCTION

Under the provisions of 10CFR50.82(a)(4)(i), Northeast Nuclear Energy Company (NNECO) hereby submits this Post Shutdown Decommissioning Activities Report (PSDAR) to describe the Millstone 1 planned decommissioning activities and schedule, provide a preliminary cost estimate, and discuss the reasons for concluding that the environmental impacts associated with site-specific decommissioning activities are bounded by the appropriately issued environmental impact statements (EIS), specifically NUREG-0586, "Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities" [Reference 1] and the Millstone Nuclear Power Station Final Environmental Statement [Reference 4]. This report is based upon the best information currently available and the plans discussed may be modified as additional information becomes available or conditions change.

Millstone 1 was shutdown on November 4, 1995 and has not operated since. On November 19, 1995 transfer of all fuel assemblies from the reactor vessel into the spent fuel pool (SFP) for storage was completed. On July 17, 1998 the Northeast Utilities Board of Trustees decided to permanently cease further operation of the plant. Certification to the Nuclear Regulatory Commission of the permanent cessation of operation and permanent removal of fuel from the reactor vessel, in accordance with 10CFR50.82 (a)(1)(i) & (ii), was filed on July 21, 1998 [Reference 5], at which time the 10CFR50 license no longer authorized operation of the reactor or placement of fuel in the reactor vessel.

II. OVERVIEW OF THE PSDAR

The objectives of the Millstone 1 decommissioning are to perform the work safely, to ensure that no adverse interactions occur with the operating units during decommissioning, and to complete the work in a cost effective manner.

Specific conditions which are unique to the multi-unit Millstone Station will require that certain Unit 1 decommissioning activities be delayed and performed concurrently with the decommissioning of Units 2 and 3. Other considerations may dictate early scheduling of certain decommissioning activities. Therefore, the approach to decommissioning Millstone 1 can best be described as a Modified SAFSTOR. In this approach, decontamination and dismantlement activities may be undertaken early in the decommissioning wherever it makes sense from a safety or economic viewpoint. For instance, given the future uncertainty over access to a low level waste disposal site, early shipment of certain components may be appropriate. The amount of decommissioning work completed prior to a SAFSTOR period will depend upon a number of factors currently under evaluation. It is also conceivable that, upon further evaluation, a full DECON approach may be preferable with the appropriate transfer of systems

shared with the other units, to control under the applicable unit(s). The plant will be maintained in a condition that initially maintains the spent fuel in the SFP.

Both the DECON and the SAFSTOR options are approaches found acceptable to the NRC in its Final Generic Environmental Impact Statement (EIS) [Reference 1]. The Modified SAFSTOR approach is described in the following sections. The planned decommissioning activities and the general timing of their implementation are described in Section III. The overall decommissioning schedule and the potential implementation of an independent spent fuel storage installation (ISFSI) are found in Section IV. The preliminary cost estimate is given in Section V and a discussion that provides the reasons for concluding that the environmental impacts associated with decommissioning Millstone 1 are bounded by previous EIS is given in Section VI.

Completion of the decommissioning schedule is contingent upon three key factors:

- continued access to licensed low level waste (LLW) disposal sites,
- removal of spent fuel from the site, and
- timely funding of the decommissioning activities.

Currently Millstone 1 has access to Chem-Nuclear Systems' Barnwell, S.C. disposal site and to the Envirocare disposal site in Tooele County, Utah. Escalation costs for the disposal of waste have been incorporated into financial planning. Additionally, Millstone 1 has considered the possibility that during the decontamination and dismantlement phases, access to the Barnwell low level waste disposal site could be denied or that the facility could be closed.

When Millstone 1 operations ceased, the Decommissioning Fund had accumulated sufficient funds to cover approximately one third of the preliminary cost estimate to complete the work. Additional funds will be collected while decommissioning activities are performed. The preliminary cost estimate and collection schedule are consistent with the Modified SAFSTOR approach to decommissioning Millstone 1.

Consistent with 10CFR50.82(c), Millstone 1 will address any funding shortfall that may arise due to collection of insufficient funds. The following two options are available to resolve the shortfall and will be pursued if needed: 1) request approval to accelerate collection of payments into the fund, and 2) finance the temporary shortfall once the Millstone 1 ratemaking case is completed.

The unavailability of the DOE high level waste repository may affect the decontamination and dismantlement schedule for Unit 1. Delays in the operation

of the repository have resulted in a significant increase in the cost of decommissioning and, depending on the decommissioning option chosen, may require the use of an ISFSI.

Under any eventuality such as unavailability of a low level waste disposal site, temporary shortfall in decommissioning funding, or other unforeseen circumstances, 10CFR50.82 requires Millstone 1 maintain the capability to suspend decontamination and dismantlement. Should such conditions arise, Millstone 1 will be prepared to suspend dismantlement and maintain the facility in a safe storage condition with appropriate funding.

III. DESCRIPTION OF PLANNED DECOMMISSIONING ACTIVITIES

Millstone 1 is currently planning to decommission using a Modified SAFSTOR approach in which the decontamination and dismantlement of the systems, components, plant structures and facilities (i.e. DECON) may be completed prior to and following a SAFSTOR period. In this plan, an ISFSI could be constructed and the transfer of spent fuel from the SFP could be completed before a SAFSTOR period. The SAFSTOR period would end with decontamination and dismantlement of any remaining systems, structures, and components and would commence in coordination with Unit 2 and Unit 3 decommissioning.

Spent fuel shipments from the ISFSI to DOE could be scheduled as soon as practicable following the repository commencing operations which is currently scheduled to be 2010. Delays in the operation of the repository will limit the transfer of fuel and increase the cost of long term spent fuel storage.

The following discussion provides an outline of the current decommissioning plan and the significant activities. The planning required for each decommissioning activity, including the selection of the process to perform the work, will be completed prior to the start of work for that activity.

A. Planning

Planning includes the preparation of licensing and design basis change documents and the PSDAR. Additionally, implementation of a site characterization plan, preparation of a detailed decommissioning plan, and the engineering development of task work packages would be accomplished. The detailed engineering required to support the decontamination and dismantlement of systems, structures, and components will be performed prior to the start of field activities.

General planning and preparation for decommissioning includes the following activities:

- Review and revise plant licensing basis documents as necessary, consistent with cessation of power operations. These documents include the Defueled Safety Analysis Report and the Technical Specifications.

- Develop a decommissioning organizational structure and select project staff.

- Identify the Unit 1 systems shared by Units 2 and 3 and revise the designs and the operation of these systems to isolate Unit 1 from Units 2 and 3.

- Review and reclassify systems, structures, and components consistent with cessation of power operations.

- Review and revise plant programs and procedures as necessary to be consistent with cessation of power operations.

- Prepare a plan for the spent fuel pool cleanup.

- Design and implement a spent fuel pool cooling system which is isolated from the remainder of the plant.

- Evaluate and choose a dry fuel storage system, if pursued. Investigate and prepare for the design and licensing of an ISFSI and prepare procurement specifications for a fuel canister system and various ancillary equipment.

B. Site Characterization

During the initial portion of the planning period a detailed site characterization will be undertaken during which radiological, regulated and hazardous wastes will be identified, categorized, and quantified. Surveys will be conducted to establish the contamination and radiation levels throughout the Unit 1 portion of the site. This information will be used in developing procedures to ensure that hazardous, regulated or radiologically contaminated materials are removed and to ensure that worker exposure is maintained as low as reasonably achievable (ALARA). Selected surveys of the outdoor areas in the vicinity of Unit 1 may be performed, although a detailed survey of the environs would likely be deferred pending decommissioning of Units 2 and 3. It is worthwhile to note that site characterization is a process that continues throughout

decommissioning. As decontamination and dismantlement work proceeds, surveys will be conducted to maintain current characterization and that decommissioning activities are adjusted accordingly.

The activation analysis of the reactor internals, the reactor vessel, and the biological shield wall will be undertaken as a part of the site characterization. Using the results of this analysis, these components will be classified in accordance with 10CFR61 and will form the basis for the detailed plans for their packaging and disposal. The material which is found to be greater than Class C (GTCC) will be stored with the spent fuel and potentially in an ISFSI prior to shipment.

C. Decontamination

The objectives of the decontamination effort are two-fold. First, to reduce the radiation levels throughout the facility in order to minimize personnel exposure during dismantlement. Second, to clean as much material as possible to unrestricted use levels, thereby permitting non radiological demolition and minimizing the quantities of material that must be disposed of by burial as radioactive waste.

The need to decontaminate structures, systems, and components will be determined by the schedule to dismantle them and by plant conditions. Early dismantling of contaminated components and systems may benefit from decontamination activities by reducing the radiation exposure to the workforce. Late dismantling may not require the components and systems to be decontaminated since the decay of the radiation sources will reduce the radiation levels by significant amounts.

Chemical decontamination of the Reactor Recirculation system may provide value through reduced worker dose. An evaluation will be performed to determine whether the expected reduction in the accumulated workforce exposure is justified by the costs associated with the decontamination. The evaluation results will be sensitive to the amount and type of work to be performed prior to a SAFSTOR period. Any decontamination method used will employ established processes with well understood chemical interactions. The resulting waste will be disposed of in accordance with plant procedures and applicable regulations.

The second objective of the decontamination effort will be achieved by decontaminating structural components including steel framing and concrete surfaces. The methods to accomplish this are mechanical, requiring the removal of the surface or surface coating, and are used regularly in industrial and contaminated sites.

D. Waste Management

A major component of the total cost of decommissioning Millstone 1 is the cost of packaging and disposing of systems, components and structures, contaminated soil, water and other plant process liquids. A Waste Management Plan will be developed to incorporate the most cost effective disposal strategy consistent with regulatory requirements for each waste type. The Waste Management Plan will be based on the evaluation of available methods and strategies for processing, packaging, and transporting radioactive waste in conjunction with the available disposal facility options and associated waste acceptance criteria.

E. Major Decommissioning Activities

As defined in 10CFR50.2 a "major decommissioning activity" is "any activity that results in permanent removal of major radioactive components, permanently modifies the structure of the containment, or results in dismantling components for shipment containing greater than Class C waste in accordance with 10CFR61.55." The following discussion provides the activities currently planned. As discussed earlier, these activities may be modified as conditions dictate.

The initial major decommissioning activities will be the removal of the drywell head and removal of the reactor vessel internals by segmentation. The drywell head would be sectioned and sent to a metal processor. The internals comprising the core shroud, core support structure, fuel guide plate, and upper portions of the control rod guide tubes may be GTCC waste which will be segmented, packaged into fuel bundle sized containers, and transferred to the SFP or ISFSI for storage and eventual disposal with the fuel. Using this approach all internals will be packaged and disposed of independent of the reactor vessel. When the internals segmentation effort is completed, the reactor vessel will be drained and any remaining debris removed. Without the internals present, several options are available for later removal and disposal of the reactor vessel: segmentation, sectioning into larger pieces, or disposal as an intact package.

Based on an evaluation of activity levels, ease of execution, personnel exposure, schedule constraints, disposal facility availability, and cost, segmentation of the internals may be postponed until after the fuel is removed from the SFP.

Removal of the reactor vessel follows the removal of the reactor internals and may not occur until after a SAFSTOR period. It is likely that the vessel

would be removed by sectioning or segmenting. Vessel sectioning or segmenting will permit a substantial portion of the waste to be sent to a waste re-processor instead of a near surface disposal site. The dismantling of the drywell and suppression chamber would be undertaken as part of the reactor building demolition.

Finally, the vessel could be shipped to a burial site with at least a portion of the internals intact. The NRC has licensed such an approach for the Trojan facility [SECY-98-231 October 22, 1998].

F. Other Decommissioning Activities

Other decommissioning activities include site specific planning; the design, licensing and construction of an ISFSI, if needed; and site characterization. In addition to the major decommissioning activities listed above, the following would be accomplished:

- Millstone 1 systems shared with the other Millstone units will be separated by modification or reconfigured to permit operation by Unit 2 and 3.

- Hazardous and regulated materials (e.g., asbestos, lead, mercury, PCBs, oil, chemicals) will be identified during characterization and plans will be developed for the removal of these materials.

- Plant components will be removed from the Turbine Building including the Turbine Generator, Condenser, Feedwater Heaters, Moisture Separators and miscellaneous system and support equipment.

- Miscellaneous solid waste will be removed including: control rod blades, local power range monitors, spent resins and filters, the Reactor Pressure Vessel Head Insulation assembly, the de-tensioner platform, and the Refuel Floor shield plugs. The larger components may be segmented and packaged for removal through the Reactor Building hatchway. The Reactor Building crane may need to be modified to meet requirements for these tasks and to handle the spent fuel casks.

- Liquid wastes will be processed and discharged using plant procedures in accordance with applicable regulatory requirements as the liquid waste inventories become available. Initially the inventories of the plant water systems will be processed. Upon completion of the segmentation and packaging of the reactor vessel internals, the reactor cavity and reactor may be drained and the waste inventory processed. When the spent fuel has been removed, the SFP will be

drained and the water processed. Systems will be isolated and deactivated in a sequence compatible with the operations previously described. Spent fuel pool systems will be isolated after removal of the spent fuel.

Radioactively contaminated or activated materials will be removed from the site as necessary to allow the site to be released for unrestricted access. Low level waste will be processed in accordance with plant procedures and existing commercial options, and sent to licensed disposal facilities or waste processors for further volume reduction. Wastes may be incinerated, compacted, or otherwise processed by authorized and licensed contractors, as appropriate. Mixed wastes are not expected to be generated during decommissioning. Existing mixed wastes, if any, will be managed according to all applicable federal and state regulations. Mixed waste will be transported only by authorized and licensed transporters and shipped only to authorized and licensed facilities.

G. Storage of Spent Fuel

The spent fuel will initially be stored in the SFP. Millstone 1 is considering design and license of a dry, ISFSI. Should this occur, the fuel will be transferred and stored temporarily on site using licensed canisters. For the period of time when the fuel will be stored in the SFP, the systems necessary for SFP operations may be consolidated into an "Island" concept and configured for SFP clean-up and cooling.

Congress passed the "Nuclear Waste Policy Act" in 1982, assigning the responsibility for disposal of spent nuclear fuel created by the commercial nuclear generating plants to the Department of Energy (DOE). This legislation also created a Nuclear Waste Fund to cover the cost of the program, which is funded, in part, by the sale of electricity from the Millstone 1 plant. The current DOE estimate for startup of the federal Waste Management System is 2010. For planning purposes, Millstone 1 has assumed that the high-level waste repository or some interim storage facility will not be operational until at least 2010. Shipments of fuel and GTCC waste to DOE is planned to be directly from the ISFSI if needed.

Millstone will also continue to investigate alternative fuel storage options such as the Private Fuel Storage initiative in Utah and the Owl Creek Project in Wyoming. Should alternative cost-effective opportunities arise, a different fuel storage approach may be pursued.

H. Final Site Survey and Termination of License

Since Unit 1 and Unit 2 are contiguous and have common structural boundaries, the plans for building demolition and for the license termination survey are currently to be implemented as a coordinated evolution for the two units. Consequently, the schedule for the Millstone 1 license termination will be constrained by the need to terminate the Part 50 license coincident with that of Unit 2. The use of the Millstone 1 ventilation stack by Unit 2 and Unit 3 may delay license termination for Millstone 1 until the stack is no longer required or the "ownership" for the stack is turned over to Unit 3. As a result of this delay in requesting license termination, the final site survey using Reference 6 may proceed in two phases: 1) internal structures surveyed as decontamination and dismantlement is completed, and 2) external areas surveyed in conjunction with completion of the Unit 2 decontamination and dismantlement.

Millstone 1 will prepare a License Termination Plan (LTP), which will define the details of the final radiological survey to be performed once the decontamination activities are completed. The LTP will conform to the format defined in Reference 7 and will address the limits of 10CFR20 using the pathways analysis defined in Reference 6. Use of this guidance ensures that survey design and implementation are conducted in a manner that provides a high degree of confidence that applicable regulatory criteria are satisfied. Once the survey is complete, the results will be provided to the NRC in a format that can be verified.

I. Site Restoration

The restoration of the Unit 1 area of the Millstone site will be undertaken when the 10CFR Part 50 license for Unit 1 is terminated. This event may coincide with Unit 2 and Unit 3 license terminations. Buildings, structures, and other facilities which are not currently known to be radiologically contaminated, such as the Strainer Pit, Intake Structure, and the Discharge Structure, will be dismantled, or will have been dismantled, as part of the building demolition effort after the final license termination survey for Unit 1. These buildings can be removed late in the building demolition phase since there is no decommissioning operational need to remove them earlier. Site restoration requires that all buildings be removed to an elevation 3 feet below grade or to an elevation consistent with the removal of the necessary amounts of contaminated material.

Although not within the scope of NRC regulation, Millstone 1 is presently considering restoring the site to a condition comparable to a natural state. In addition to the below grade structures, buried utilities may remain in

place and roofs of catch basins and manholes will be removed and the structures backfilled. Holes will be drilled in structure foundation mats, catch basins and manhole slabs to permit drainage and prevent the accumulation of water. Buried piping greater than 2 feet in diameter and tunnels will be removed and the trench backfilled or the crowns and roofs will be removed to an elevation 3 feet below grade and the facility will be backfilled. Areas on the site will be backfilled, graded, and landscaped.

IV. SCHEDULE FOR DECOMMISSIONING ACTIVITIES

Millstone 1 intends to pursue decommissioning utilizing a Modified SAFSTOR alternative. The schedule of decommissioning activities is attached as Figure IV-1. As discussed above, the actual schedule may vary in response to the availability of waste disposal facilities, economic resources, more detailed planning or unforeseen circumstances.

A. Planning and Preparation Period

Activities include site characterization, engineering evaluations and planning, development of procedures for dismantlement and disposal, design and procurement of special tools, and site preparation activities. Millstone 1 intends to complete these activities approximately 18 months after the initiation of decommissioning.

B. Decommissioning Operations and License Termination Period

Preliminary decommissioning activities will be performed such as the construction of temporary facilities (e.g., changing rooms, laydown areas, upgrading roadways), design and fabrication of special shielding and contamination control envelopes, and procurement of shipping containers and liners. Removal of NSSS components will be conducted for those systems and components not discussed above under the heading "Major Decommissioning Activities."

As discussed above, these activities may be split into two decontamination and dismantlement (D&D) periods: a selected decontamination and dismantlement period followed by a SAFSTOR period and then a final D&D period. Removal of the plant systems and components may take place as their functions are no longer needed and as they are identified as interference for large component removal. Removal of contaminated equipment and material from all contaminated areas can be scheduled for either D&D period. Specific decontamination of targeted building and facility areas will be scheduled at the most appropriate time to optimize worker dose reduction. Decontamination and

dismantlement of the SFP and associated systems will take place once the spent fuel is moved to an ISFSI or transferred to DOE.

Final site survey and license termination occurs as discussed above under the heading "Final Site Survey and Termination of License."

C. SAFSTOR Period

If appropriate, activities at Millstone 1 may be reduced to those necessary to monitor the safe storage of spent fuel and maintain adequate radiation protection. Corrective maintenance will be performed as necessary on active systems and components including the Radiation Protection Monitoring system, the SFP systems and/or the ISFSI.

D. Site Restoration Period

Demolition of the remaining portions of the containment structure and interior portions of the reactor building will use commercial demolition techniques. Removal of remaining buildings and other site structures will also use commercial demolition techniques. Site areas affected by the dismantling activities will be cleaned and the plant area graded as required to prevent ponding and inhibit the refloating of subsurface materials.

V. DECOMMISSIONING COST ESTIMATE

TLG Services, Inc. prepared a Millstone 1 decommissioning cost estimate in 1998. The methodology used by TLG to develop the decommissioning cost estimate follows the basic approach originally advanced by the Atomic Industrial Forum (now Nuclear Energy Institute) in their program to develop a standardized model for decommissioning cost estimates. The results of this program were published as AIF/NESP-036, A Guideline for Producing Commercial Nuclear Power Plant Decommissioning Cost Estimates [Reference 8]. This document presents a unit cost factor method for estimating direct activity costs, simplifying the estimating process. The unit cost factors used in the study reflect the latest available data at the time of the study concerning worker productivity during decommissioning including field experience. The current decommissioning cost estimate summarized in the following table uses updated information and data (relative to the 1998 estimate) to project the potential costs.

It should be noted that the estimating approach for the current estimate has changed from previously performed cost estimates. This estimate utilized an area based estimate methodology detailing descriptions and quantities of waste and the removal scheme on an area-by-area basis. This method more closely

resembles system and component removal approaches. Previous cost estimates were performed using data on a system-by-system basis.

This estimate is a preliminary cost estimate. This decommissioning cost estimate is in 1999 dollars. 10CFR50.82(a)(8)(iii) requires that a site specific decommissioning cost estimate be prepared and submitted within two years following permanent cessation of operations. Following appropriate internal review and estimate refinement, a site specific cost estimate will be issued to the NRC.

The Modified SAFSTOR alternative provides for the opportunity to remove selected components prior to a SAFSTOR period. Dry spent fuel storage reduces the overall length of the decommissioning project and therefore, may reduce the overall cost. The assumptions about DOE's inability to take possession of spent fuel has made the decision to investigate dry spent fuel storage at Millstone 1 prudent. Consequently, the costs of siting, constructing and licensing, an independent spent fuel storage facility have also been considered.

Millstone 1 Summary of Decommissioning Costs
(Thousands of dollars)

Staffing	$155,595
LLW Burial and Processing	$ 27,259
License Termination	$ 12,204
Decontamination and Removal	$174,789
Decommissioning Planning Activities	$ 29,057
Other Costs (Note 1)	$133,170
Subtotal	$532,074
Spent Fuel Management (Note 2)	$159,607
Total Decommissioning Estimate	$691,681

Notes:
1. Other costs such as insurance, property taxes, energy, NRC and State fees, etc.
2. Includes disposition of greater than Class C waste.

VI. ENVIRONMENTAL IMPACTS

10CFR50.82(a)(4)(i) describes the PSDAR and requires that it include "a discussion that provides the reasons for concluding that the environmental

impacts associated with the site-specific decommissioning activities will be bounded by appropriate, previously issued environmental impact statements." The following discussion provides our basis for drawing that conclusion and it is based on two previously issued documents:

1. NUREG-0586, "Final Generic Environmental Impact Statement (GEIS) On Decommissioning Nuclear Facilities" [Reference 1].

2. Millstone Nuclear Power Station Final Environmental Statement, Docket 50-245, 50-336, dated June, 1973 [Reference 4].

The decommissioning of Millstone 1 will have generally positive environmental effects, in that:

- Radiological sources that create the potential for radiation exposure to site workers and the public will be reduced.

- The intent of decommissioning is to return the site to a condition allowing unrestricted use.

The decommissioning of Millstone 1 will be accomplished with no significant adverse environmental impacts, in that:

- No Millstone 1 site specific factors should alter the conclusions of the GEIS or the Millstone Environmental Statement.

- Radiation dose to the public will be minimal.

- Radiation dose to decommissioning workers will be a fraction of the operating dose.

- The low-level radioactive waste removed from the site will occupy a small portion of the burial volume at approved waste disposal sites.

- The non-radiological environmental impacts are temporary and not significant.

The effects of decommissioning activities with respect to specific environmental issues are discussed below.

A. <u>Radiation Dose to the Public</u>

Radiation dose to the public will be maintained below comparable levels when the plant was operating through the continued application of

radiation protection and contamination controls combined with the reduced source term available in the facility.

B. Occupational Radiation Exposure

The occupational dose exposure for decommissioning Millstone 1 will be less than described in the GEIS because of two main reasons. First, Millstone 1 initiated a zinc injection program in 1987 that significantly reduced the buildup of contaminated corrosion products during the remaining plant operation period. Second, with the plant shutdown since 1995, natural decay of leading radionuclides will have reduced overall plant general dose levels significantly by the time D&D activities occur. The activities identified in Section III and the initial schedule (Section IV) resembles the DECON option. Therefore, the Modified SAFSTOR occupational and public dose exposure is compared to the DECON option dose in the GEIS. The occupational and public dose effects for a Modified SAFSTOR alternative are bounded by the DECON option. A total of 16.10 person-Sv (1610 person-rem) is estimated for decommissioning of Millstone 1 using a Modified SAFSTOR approach. The exposure from decontamination and dismantlement activities and the exposure during transportation of the low-level wastes is included in this dose estimate. NUREG-0586 [Reference 1], Table 5.3-2, estimates a total occupational dose of 18.74 person-Sv (1874 person-rem) for the DECON alternative for the reference BWR plant.

C. Low-Level Radioactive Waste Burial Volume

The GEIS [Reference 1] estimate for low-level waste disposal from a referenced BWR is 18,975 cubic meters (669,817 cubic feet) for both the DECON and SAFSTOR options. Millstone 1 estimates the low-level waste burial volume, would be 18,014 cubic meters (635,900 cubic feet) for the Modified SAFSTOR alternative. This includes, by a reduction of approximately 40 percent (industry standard), the utilization of present-day volume reduction techniques. For waste requiring deep geological burial, i.e., greater than Class C (GTCC) waste, Millstone 1 estimates that the volume will be at or below the 11.5 cubic meters anticipated for a reference BWR in the GEIS. These estimates support the conclusion that the previously issued environmental statements are bounding since the disposal of waste will require fewer resources, i.e., less waste disposal facility area, than what was considered in the GEIS.

D. Non-Radiological Environmental Impacts

The non-radiological environmental impacts from the Millstone 1 decommissioning are temporary and not significant. The largest

occupational risk associated with the decommissioning is the risk of industrial accidents. This risk will be minimized by adherence to work controls during decommissioning similar to the procedures followed during power operation. Procedures controlling work related to asbestos, lead, and other non-radiological hazards will also remain in place during the decommissioning. The primary environmental effects of the decommissioning are temporary and include small increases in noise levels and dust in the immediate vicinity of the site, and small increases in truck traffic to and from the site for hauling equipment and waste. These effects will be similar to those experienced during normal refueling outages and certainly less severe than those present during the original plant construction. No significant socioeconomic impacts or impacts to local culture, terrestrial or aquatic resources have been identified.

E. Additional Considerations

While not quantitative, the following considerations are also relevant to concluding that decommissioning activities will not result in significant environmental impacts not previously reviewed:

- The release of effluents will continue to be controlled by plant license requirements and plant operating procedures throughout the decommissioning.

- With respect to radiological releases, Millstone 1 will continue to operate in accordance with the Offsite Dose Calculation Manual during decommissioning.

- Releases of non-radiological effluents will continue to be controlled per the requirements of the NPDES and State of Connecticut permits.

- Systems used to treat or control effluents during power operation will either be maintained or replaced by temporary or mobile systems for the decommissioning activities.

- Radiation protection principles used during plant operations will remain in effect during decommissioning to ensure that protective techniques, clothing, and breathing apparatus are used as appropriate.

- Sufficient decontamination and source term reduction prior to dismantlement will be performed to ensure that occupational dose and public exposure will not exceed those estimated in the Final Generic Environmental Impact Statement [Reference 1].

- Detailed site radiological surveys will be performed prior to starting the waste campaigns to confirm the burial volume of low-level radioactive waste and highly activated components which require deep geological disposal.

- Transport of radioactive waste will be in accordance with plant procedure, applicable Federal regulations, and the requirements of the receiving facility.

- Plant ventilation systems, or alternate, temporary systems, will be maintained as long as needed in areas they service.

- Site access control during decommissioning will ensure that residual contamination is minimized or eliminated as a radiation release pathway to the public.

F. Conclusion

Based on the above discussions, Millstone 1 concludes that the environmental impacts associated with site-specific decommissioning activities will be bounded by appropriate, previously issued environmental impact statements. Should unforeseen circumstances arise that may exceed a bounding environmental impact, Millstone will seek prior NRC review and approval before proceeding.

VII. REFERENCES

1. USNRC, "Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities," NUREG-0586, August, 1988.

2. USNRC, "Generic Environmental Impact Statement in Support of Rulemaking on Radiological Criteria for License Termination of NRC-Licensed Nuclear Facilities," NUREG-1496, Volume 1, July 1997.

3. H.D. Oak et al., "Technology, Safety and Costs of Decommissioning a Reference Boiling Water Reactor Power Station," NUREG/CR-0672 (Prepared for the U.S. NRC by Pacific Northwest Laboratory, Richland Washington), June 1980 (Addendum 1, July 1983; Addendum 2, September 1984; Addendum 3, July 1988; Addendum 4, December 1990).

4. Millstone Nuclear Power Station Final Environmental Statement, Docket 50-245, 50-336, dated June, 1973.

5. B17388, NNECO letter to NRC, "Certification of Permanent Cessation of Power Operations and that Fuel Has Been Permanently Removed From the Reactor," dated 7/21/98.

6. USNRC, NUREG-1575, "Multi-Agency Radiation Site Survey and Investigation Manual (MARSSIM)," (Final Report).

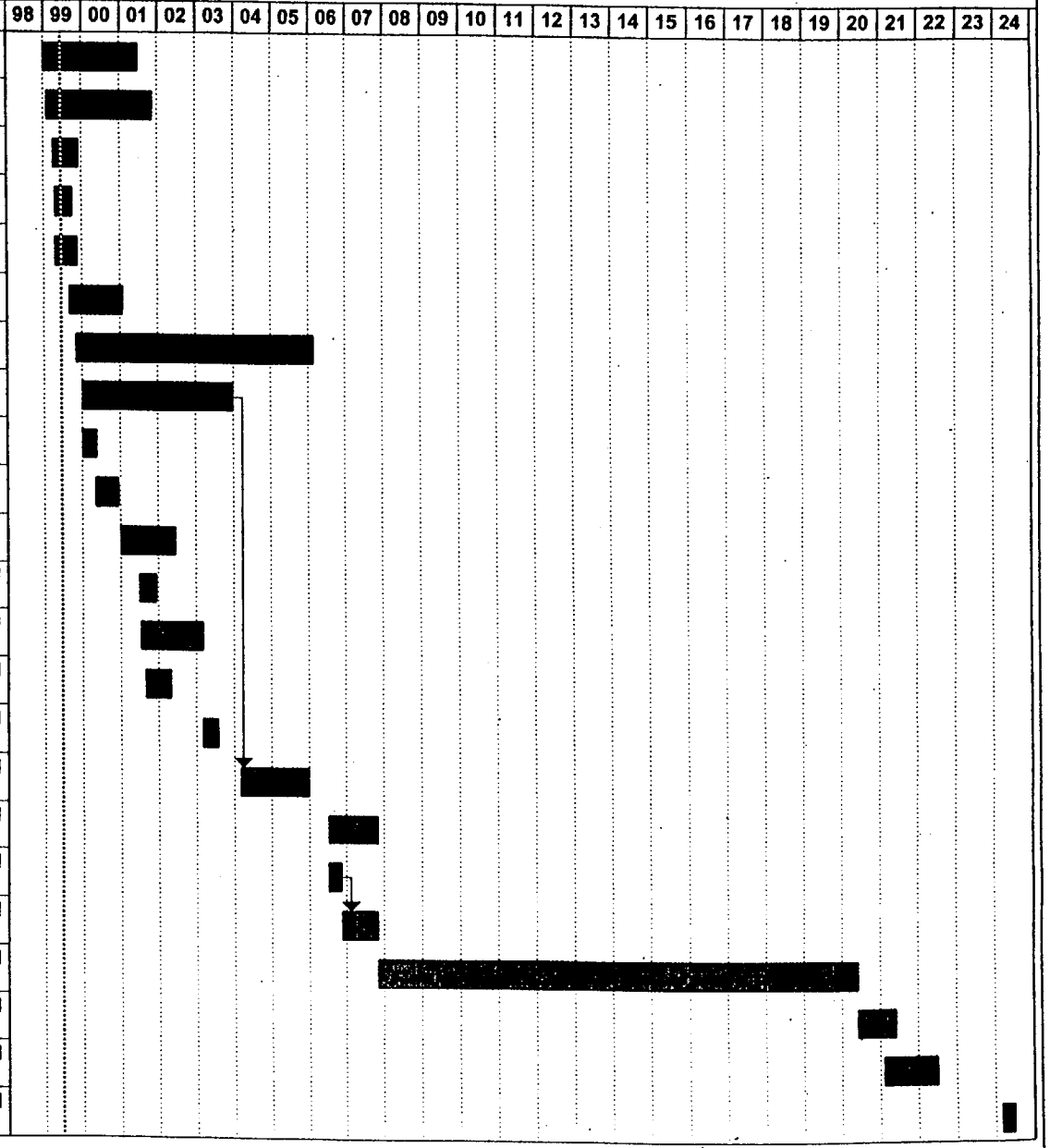
7. USNRC, NUREG-1700, "Standard Review Plan for Evaluating Nuclear Power Reactor License Termination Plans" (Currently in Draft for Comment Form).

8. AIF/NESP-036, A Guideline for Producing Commercial Nuclear Power Plant Decommissioning Cost Estimates.

FIGURE IV-1

MILLSTONE 1 DECOMMISSIONING SCHEDULE

ID	Task Name	Duration
1	DECOMMISSIONING PLANNING & PREPARATION	651d
2	ISOLATE U1 SYSTEMS FROM U2&U3	729d
3	DEFUELED LICENSE AMENDMENT	175d
4	PSDAR	119d
5	UPDATE FSAR	154d
6	SITE CHARACTERIZATION	370d
7	ISOLATE/DRAIN/DEACTIVATE SYSTEMS	1650d
8	DESIGN & CONSTRUCT ISFSI	1042d
9	FUEL INSPECTION	100d
10	FUEL POOL CLEANUP	160d
11	NRC REVIEW & LICENSE DRY STORAGE CANISTER	380d
12	RX BLDG COMPONENT REMOVAL	120d
13	TURBINE BLDG COMPONENT REMOVAL	432d
14	REMOVE REACTOR INTERNALS	177d
15	WASTE DISPOSAL SYS & BLDG DECON & REMOVAL	110d
16	TRANSFER FUEL / GTCC TO ISFSI	480d
17	COMPLETE DECONTAMINATION & DISMANTLEMENT	350d
18	REACTOR VESSEL REMOVAL	100d
19	RX BLDG SYSTEMS & COMPONENT DECON & REMOV	250d
20	SAFSTOR	3282d
21	FINAL SITE SURVEY/LICENSE TERMINATION	263d
22	SITE RESTORATION	370d
23	ISFSI D & D	90d



Project: PSDAR_SUM
Date:6/9/99

Task
Progress
Milestone
Summary
Rolled Up Task
Rolled Up Milestone
Rolled Up Progress