

# **Official Transcript of Proceedings**

## **NUCLEAR REGULATORY COMMISSION**

**Title:** Stakeholders Meeting on Uranium Recovery

**Docket Number:** (not applicable)

**Location:** Denver, Colorado

**Date:** Wednesday, June 13, 2001

**Work Order No.:** NRC-259

**Pages** 1-69

**NEAL R. GROSS AND CO., INC.  
Court Reporters and Transcribers  
1323 Rhode Island Avenue, N.W.  
Washington, D.C. 20005**

(202) 234-4433

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

+ + + + +

STAKEHOLDERS MEETING

RISK INFORMATION IN THE REGULATION OF  
MATERIALS AND WASTE DISPOSAL  
CASE STUDY ON URANIUM RECOVERY

+ + + + +

WEDNESDAY

JUNE 13, 2001

+ + + + +

DENVER, COLORADO

+ + + + +

The Stakeholders Meeting convened in the Forum Room, Executive Tower Hotel, 1405 Curtis Street, Denver, Colorado, at 7:08 p.m., Lawrence Kokajko, Facilitator.

PANEL MEMBERS:

LAWRENCE KOKAJKO, Facilitator

PATRICIA RATHBUN

MARISSA BAILEY

ROBERT BARI

MICHAEL LAYTON

ED GROVE

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

## I-N-D-E-X

1		
2	<u>Opening Remarks</u>	
3	Lawrence Kokajko . . . . .	3
4	P a t r i c i a           R a t h b u n	
5	. . . . .	7
6	Background Information, Marissa Bailey . . . . .	9
7	Study Results, Bob Bari . . . . .	18
8	<u>Comments</u>	
9	Pat Mackin/Center for Nuclear Waste . . . . .	33
10	Regulatory Analyses	
11	Melvin Leach/Nuclear Regulatory Commission . . . . .	38
12	Gerd Wiatzke/Senes Consultants . . . . .	41
13	Louis Carson/NRC Region 4 . . . . .	42
14	Ken Weaver/State of Colorado Department . . . . .	45
15	of Public Health and Environment	
16	John Hamrick . . . . .	48
17	Mike Weber/Nuclear Regulatory Commission . . . . .	51
18	Dennis Sollenberger/NRC Office of State . . . . .	54
19	and Tribal Programs	
20	Clifton Farrell/Nuclear Energy Institute . . . . .	55
21	Katie Sweeney/National Mining Association . . . . .	61
22	Oscar Paulson . . . . .	65
23	<u>Closing Remarks</u>	
24	Lawrence Kokajko . . . . .	66

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1

P a t r i c i a R a t h b u n

2

. . . . . 67

3

P-R-O-C-E-E-D-I-N-G-S

1  
2 MR. KOKAJKO: Good evening. I'd like to  
3 welcome you this evening. My name is Lawrence Kokajko  
4 and I'm the section chief of the Risk Task Group in  
5 the Office of Nuclear Material Safety and Safeguard.

6 I would like to welcome everyone to this  
7 stakeholder meeting on uranium recovery and thank you  
8 for wanting to participate. I recognize that some of  
9 you were at the earlier meeting today, perhaps all of  
10 you, and I do appreciate you coming out and spending  
11 your free time to be with us, because I believe this  
12 is an important activity.

13 The NRC is focused on safety, and we view  
14 the use of risk assessment techniques to be one tool  
15 to help us achieve our goal of maintaining our focus  
16 on safety, and to help achieve this the Risk Task  
17 Group was formed and is responsible for efforts  
18 related to risk informing the materials and waste  
19 activities, and it reports directly to the office  
20 director, and so that should give you an indication of  
21 how important we think it is.

22 As a result of our workshop in April 2000,  
23 it was suggested that we consider case study approach  
24 to determine what areas in the materials and waste  
25 arenas could be amendable to risk informing. These

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 case studies would cut across a spectrum of regulated  
2 activities within the materials and waste arenas. It  
3 would be used to do several things.

4 The first is to test the draft screening  
5 criteria that would enable us to determine if a  
6 proposal was amendable to risk informing. The second  
7 is to tease out any possible safety goals that were  
8 embedded in any staff action and determine the  
9 feasibility of developing broader draft safety goals.  
10 Additionally, the staff will use the case studies to  
11 gain insights on risk informing regulatory processes  
12 and will identify tools, data, and guidance needed to  
13 support a risk-informed approach.

14 I hasten to point out that we do not  
15 intend to make or consider a regulatory decision or  
16 position tonight. We only intend to gather input on  
17 these topics as they relate to testing or screening  
18 criteria in the development of safety goals.

19 Moreover, I would like for you to think  
20 broadly when we say risk informing the framework.  
21 Risk informing the framework could involve changing  
22 rules, but it is also and perhaps more likely to mean  
23 using risk information in licensing, inspection, and  
24 enforcement processes and decisions. In doing so we

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 will focus our resources on the most safety  
2 significant items.

3 When the case study plan was presented in  
4 September 2000 one comment that we received was we  
5 should have early stakeholder involvement before we  
6 reach any conclusions regarding the case study area  
7 under consideration. Tonight's meeting is one of  
8 several planned meetings, and this is your chance to  
9 provide your input on the uranium recovery case study.

10 Dr. Patricia Rathbun will be our  
11 facilitator tonight and will coordinate our  
12 discussion. Ms. Marissa Bailey of the Risk Task Group  
13 will discuss how we got to where we are today and  
14 where we intend to go. She will be followed by Dr.  
15 Robert Bari and Mr. Edward Grove of the Brookhaven  
16 National Laboratory, who are our contractors working  
17 on this particular case study.

18 This meeting is open to everyone,  
19 including but not limited to NRC staff, licensees,  
20 applicants, federal, state, and local government  
21 organizations, non-government organizations, public  
22 citizens groups, manufacturers, users, industry and  
23 trade association representatives, and anyone in  
24 between. Everyone is invited to provide any  
25 thoughtful insight or commentary on this case study as

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 applied to our objectives. While we will provide  
2 early information regarding our review to date we are  
3 seeking your comments on what we have done, but more  
4 importantly, your thoughts on what we should do  
5 related to implementing the case study action plan.

6 I would like to add that we will have an  
7 integration meeting on or around October 25, 2001, to  
8 provide our feedback on our work on all case study  
9 areas, with a final report due out around the end of  
10 the calendar year. I encourage you to sign the  
11 attendance sheet since all who do so will be contacted  
12 prior to the integration meeting.

13 Also tonight we will be seeking your  
14 feedback on what you thought about the meeting. One  
15 way of doing so is a feedback form that you can mail  
16 in to us. Also at any break you can see a member of  
17 the Risk Task Group -- and for those people who are  
18 representing the Risk Task Group please raise your  
19 hands -- and provide any comments directly to one of  
20 us.

21 With that in mind I'd like to turn it over  
22 to Dr. Rathbun to help us facilitate our meeting.

23 Dr. Rathbun.

24 DR. RATHBUN: Thank you very much,  
25 Lawrence.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 I'd like to join Lawrence in welcoming you  
2 here tonight to the public meeting put on by the Risk  
3 Task Group. I realize that there's many things you  
4 could be doing tonight. You could be sleeping, you  
5 could be going to the ball game, but we really  
6 appreciate your being here, because this is how we  
7 make progress. We make progress by taking your  
8 feedback and listening to it and moving on.

9 My name as he said is Pat Rathbun, and I'm  
10 in charge of a number of the communication activities  
11 that are going on in the Office of Nuclear Materials  
12 Safety and Safeguards. As Mike Weber pointed out  
13 earlier today, we have a number of strategic goals,  
14 and one of them is to improve the way in which we  
15 communicate with the stakeholders and thereby  
16 hopefully engender more confidence in what we do, so  
17 my job is to be sure that everyone gets to talk,  
18 everyone gets to speak, gets to get their two cents  
19 worth in.

20 Before we start let's take a look again at  
21 our meeting objectives, and the primary objective is  
22 actually number two. We're here to take your  
23 comments. We're also here though to brief you on the  
24 status of our case study work, particularly our case  
25 study on uranium recovery.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 I'd like to take a quick look at the  
2 agenda. If you would just run through the agenda with  
3 me so you know where we're heading and will know how  
4 we got there once we get there. You've heard from  
5 Lawrence. I'm just going to do a little bit of brief  
6 administration here.

7 Ms. Marissa Bailey, who is the project  
8 manager for the cast study approach, will be bringing  
9 you up to date on the status of where we are, and then  
10 Dr. Robert Bari and Mr. Ed Grove from the Brookhaven  
11 National Laboratory will do the briefing for you on  
12 what they have found to date.

13 I guess the next thing I want to just talk  
14 about is a few of the ground rules. I've been at this  
15 meeting all day, and this is not a group who needs  
16 ground rules. You are all doing beautifully, but I  
17 think the most important thing is if you could hold  
18 your questions until after Dr. Bari finishes speaking?  
19 When you come to the microphones to make your talk --  
20 and we'll have people in the audience that will have  
21 microphones -- it's very important that you say your  
22 name and say your last name really clearly because  
23 this is not a transcribe situation.

24 Again, I don't really need to say this,  
25 but we're going to try and finish and 9:00 so when it

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 comes time to talk we'll just all need to watch our  
2 time. Other than that, after what I've seen today,  
3 you're fine.

4 Marissa, if you could take the stage now.

5 MS. BAILEY: Good evening. My name is  
6 Marissa Bailey. I'm a senior project manager in the  
7 Risk Task Group, and my purpose here this evening is  
8 to give you background information on the case study.  
9 Basically what I'd like to do is explain to you why  
10 we're conducting the case studies, how we're  
11 conducting them, and also just talk to you about where  
12 we're going to be heading with the case studies.

13 Before I begin with that, however, I'd  
14 like to repeat our objectives for this meeting. The  
15 first objective is to basically inform you of the  
16 status of the case study. The second objective and  
17 really what's more important is we would like to get  
18 your comments and feedback on how we're doing with the  
19 case studies, how we should proceed with them, how you  
20 think we're doing with applying our screening  
21 criteria, any input that you may have as far as what  
22 needs to be changed with the screening criteria. Also  
23 if you have any just general comments on how risk  
24 information should be incorporated into the waste and

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 materials regulatory processes, we're also taking  
2 comments on those.

3           So why are we conducting the case studies?  
4 The primary purpose for conducting the case studies is  
5 to test the draft screening criteria and also to  
6 examine the feasibility of developing safety goals for  
7 the nuclear materials and waste arenas. Other reasons  
8 for conducting the case studies is that we hope it  
9 will give us insights on how we can risk inform our  
10 regulatory processes and also gain insights on the  
11 tools, data, guidance that we would need to implement  
12 a risk-informed regulatory approach.

13           As Lawrence mentioned in his presentation  
14 earlier today -- and I think he also alluded to it  
15 earlier -- NRC has been in the process of developing  
16 an approach for using risk information in our  
17 regulation of nuclear materials and waste. One of the  
18 handouts that we've given you that's attached to the  
19 agenda is a definition for risk-informed regulation.  
20 To us that really is simply a way for us to focus our  
21 resources on safety to help us improve our regulatory  
22 decision-making process, to help us be more effective  
23 and efficient in the way we regulate, and to reduce  
24 unnecessary regulatory burden.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1           We also see risk information as a way to  
2 focus or to identify and address any shortcomings in  
3 our current regulatory system, so in some instances it  
4 may be that a risk-informed approach means an increase  
5 in regulatory requirements in regulatory burden.

6           The framework for risk-informed  
7 regulations in the nuclear materials and waste arenas  
8 is detailed in a June 1999 commission paper that's  
9 known as SECY 99-100. That paper basically introduced  
10 a systematic five-step process for implementing -- for  
11 moving towards risk-informed regulations in NMSS.  
12 Those five steps are to identify the candidate  
13 regulatory applications that would be amendable to  
14 risk-informed regulations; to decide how to modify  
15 those regulatory applications so that they are risk-  
16 informed; to change the current regulatory approach to  
17 implement the risk-informed approach; and to develop  
18 or adapt risk-informed tools to move toward a risk-  
19 informed approach.

20           In this five-step process we're on step  
21 one. We are very early in the process of identifying  
22 those regulatory applications that might benefit from  
23 using risk information.

24           To help us identify what regulatory  
25 applications would benefit from using risk information

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 we drafted the screening criteria. The screening  
2 criteria once they're finalized is really a decision-  
3 making tool. What we're asking ourselves is where in  
4 the regulation of materials and waste would risk  
5 insights provide a value, and we're hoping that by  
6 applying the screening criteria we can make those  
7 decisions in a consistent manner.

8 Our draft screening criteria were  
9 developed in a fairly interactive public participatory  
10 process. Back in August of 2000 we had a workshop to  
11 solicit comments and recommendations on how we should  
12 incorporate risk-informed approaches in NMSS. During  
13 that workshop we introduced a strawman for the  
14 screening criteria, and as a result of that workshop  
15 we -- the screening criteria were refined and  
16 developed to their present state, so that today the  
17 screening criteria basically comes in the form of  
18 seven questions that we would ask to help us determine  
19 whether an activity can be risk-informed.

20 The first four criteria basically ask  
21 whether a risk-informed approach would support the  
22 agency's performance goals of maintaining safety,  
23 improving efficiency and effectiveness, reducing  
24 unnecessary regulatory burden, or helping to improve  
25 public communications. The fifth criterion addresses

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 the availability of quality data and models to support  
2 a risk-informed approach. The sixth criterion  
3 addresses the cost of implementing a risk-informed  
4 approach: could a risk-informed approach be  
5 implemented at a reasonable cost, and the seventh  
6 criterion addresses other precluding factors. Given  
7 that the first six are met, is there something else  
8 out there that should or could prevent us from moving  
9 towards a risk-informed regulatory approach?

10 Another outcome of that April 2000 meeting  
11 was the general consensus that case studies would be  
12 a good way to test the draft screening criteria. The  
13 case studies would be a retrospective look at a  
14 spectrum of activities in the nuclear materials and  
15 waste arenas, the uranium recovery being one of those  
16 activities. And individually and cumulatively each of  
17 those case studies should illustrate to us what's been  
18 done in materials and waste and whether they were  
19 risk-informed and to what extent they were risk-  
20 informed.

21 The second objective of the screening  
22 criteria is to examine the feasibility of developing  
23 safety goals for the materials and waste arenas. I  
24 think one of your handouts also is the definition of  
25 safety goals, but basically what we're trying to

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 determine in this case studies is whether it's  
2 feasible for NMSS, given the diversity of activities  
3 that we regulate, is it feasible to try to broadly  
4 define an acceptable level of risk, a level of what is  
5 safe enough?

6 So what we're trying to do in the case  
7 studies is we're trying to determine whether there are  
8 safety goals or elements of safety goals that are  
9 imbedded in those past decisions that are related to  
10 the case study activities and whether those elements  
11 of safety goals have a common thread, and then whether  
12 those elements of safety goals also could be expanded  
13 broadly to cover other nuclear materials and waste  
14 activities.

15 The overall structure for how we're  
16 conducting the case study is described in our case  
17 study plan, and that's one of the handouts you have  
18 this evening. This plan was also developed in a  
19 public participatory process and was issued back in  
20 October 2000. The draft screening criteria that I  
21 described to you earlier can be found in section four  
22 of the case study plan, and as I've mentioned -- and  
23 if you look at them those are really a series of  
24 questions that we would ask to determine whether an

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 activity could be risk-informed or should be risk-informed.

2 The areas that we are conducting the case  
3 studies on are also identified in the case study plan.  
4 Those are gas chromatographs, static eliminators,  
5 fixed gauges, site decommissioning, which is focused  
6 on the decommissioning of the Trojan Nuclear Power  
7 Plant, transportation, which is focused on the  
8 transportation of the Trojan reactor vessel, uranium  
9 recovery, storage, which is focused on the seismic  
10 exemption that was given to the independent spent fuel  
11 storage installation at INEEL for the TMI2 fuel  
12 debris, and gaseous diffusion plans, which -- that  
13 case study is focused on the seismic issues associated  
14 with the Paducah GDP.

15 The uranium case study is really looking  
16 at the overall process for uranium recovery. However,  
17 we did decide to choose White Mesa and Smith Ranch as  
18 examples for the case studies so that we would have  
19 some real sites that we could apply our screening  
20 criteria on and also look at. I'd like to point out  
21 that White Mesa and Smith Ranch were chosen really for  
22 no particular reason other than it was convenient and  
23 it was accessible, or they were convenient and  
24 accessible.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1           As I've said before the purpose of the  
2 case studies are to test the draft screening criteria  
3 and to derive safety goals and to gain insights in  
4 risk informing our process and the tools needed for  
5 that. They are retrospective studies. The intent of  
6 the case studies is not to look at -- not to reopen or  
7 reassess previous decisions that were made by the  
8 staff or by the commission in those particular areas.

9           The case studies basically involve  
10 answering three sets of questions for each case study  
11 area, and those questions are identified in section  
12 seven of the case study plan. Those are screening  
13 criteria analysis and risk analysis questions, safety  
14 goal analysis questions, and then the questions that  
15 we would ask once some draft safety goals were  
16 developed, and Dr. Bari will be going over those  
17 questions in detail in his presentation.

18           I'd like to emphasize that what we've  
19 planned to do today is to present our preliminary  
20 answers to some of those questions, preliminary  
21 answers and observations, and I want to emphasize they  
22 are preliminary answers, and our observations also are  
23 just that. At this point we've made no decisions and  
24 we've come to no conclusions about the case studies.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 We're really presenting you with this information so  
2 that we can get your feedback.

3 And finally I'd just like to go over our  
4 schedule for the case studies: where we've been and  
5 where we're going. As I mentioned, we had the  
6 workshop in April 2000 and out of that workshop came  
7 the draft screening criteria and the idea for using a  
8 case study approach to test the draft screening  
9 criteria. In September 2000 we drafted the case study  
10 plan and we presented that at a public meeting, and in  
11 October 2000 we issued our final case study plan.

12 In November we began our case studies and  
13 last February we held our first case study meetings on  
14 the gas chromatographs, static eliminators, and fixed  
15 gauges, and last May we held our stakeholder meeting  
16 on decommissioning and transportation.

17 This evening we'll be discussing uranium  
18 recovery. In late July, probably July 31, we'll be  
19 holding another stakeholder meeting to discuss our  
20 case studies in storage and the GDPs. We hope to put  
21 out draft reports for all the individual case studies  
22 in September, and as Lawrence mentioned in October we  
23 hope to hold an integration meeting where we can pull  
24 together the results of all the case studies and

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 present that to our stakeholders and discuss that with  
2 you.

3 The final reports for the case studies are  
4 scheduled to be issued in December, and in March of  
5 2002 a final consolidated report which would pull  
6 together the cumulative results of the case studies  
7 and have findings on what the screening criteria looks  
8 like, what the feasibility of the safety goals are for  
9 NMSS, and in summer 2002 if we find that they are  
10 feasible we hope to present our first draft of the  
11 safety goals. And that concludes my presentation.

12 Bob?

13 DR. RATHBUN: Thank you very much,  
14 Marissa.

15 Now I would like to introduce Dr. Robert  
16 Bari from Brookhaven National Laboratory, who will  
17 present the results. Bob?

18 MR. BARI: Thanks, Pat.

19 My name is Bob Bari. I'm from Brookhaven  
20 National Laboratory, and in the study that we did have  
21 underway actually I was working with Ed Grove, who  
22 also is of Brookhaven National Laboratory.

23 What I'm going to do tonight is tell you  
24 about the study as it currently exists. I'll go  
25 through a little bit of the background. It will be

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 perhaps redundant with what you heard from Marissa a  
2 few minutes ago -- go through our preliminary  
3 impressions of the draft safety questions, the case  
4 study questions, and then go into the draft screening  
5 criteria, which are really the heart of the case study  
6 plan, give you some preliminary observations and then  
7 also some conclusions.

8 We started this study just about two  
9 months ago in April, and the focus has been both on an  
10 uranium mill and an in situ leaching facility. We  
11 wanted to be as broad as possible in this study and  
12 thought that we needed to look at both types of  
13 facilities. I'll emphasize that this is a work in  
14 progress and we're going to complete this study at the  
15 end of the year and hopefully it will be available to  
16 you at least in draft form some time in September or  
17 so. There is a website that the Risk Task Group  
18 maintains, and you can already find some preliminary  
19 information such as the case study plan itself on that  
20 website, and I encourage you to stay tuned there. As  
21 other information becomes available it will appear on  
22 that website.

23 The case study draft questions themselves  
24 were designed to meet objectives related to current  
25 and potential information that exists in a risk form

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 that could be useful in this area. The feasibility  
2 and usefulness of safety goals in the area and also  
3 information needs for risk informing the uranium  
4 recovery area itself, and these are categorized into  
5 three broad areas, two of which we'll be chatting  
6 about tonight.

7 The first are screening criteria analysis  
8 questions and risk analysis questions, secondly safety  
9 goal questions, and third, questions upon developing  
10 safety goals. These we will not be discussing  
11 tonight. We're too early in the study to do that.

12 The uranium milling area is being studied  
13 with a focus on the White Mesa facility in Blanding,  
14 Utah. This is being done because it's, as Marissa  
15 pointed out, it's a convenient study for us to use for  
16 example purposes a facility that was licensed by NRC  
17 in 1979 and has processed 4 billion tons through 1999  
18 of uranium. It has mill tailings on site and it  
19 happens to be the only operating mill and is currently  
20 scheduled for transfer to DOE in 2025.

21 On the in situ site we're focusing on  
22 Smith Ranch in Wyoming as our example. It was  
23 licensed in 1992 by the NRC. It has a demonstrated  
24 annual production capacity of 770 tons of uranium.  
25 Current annual production capacity is 580. The site

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 has inactive and active wells, and it has recently  
2 been granted a license renewal by the NRC. We did  
3 visit the White Mesa site yesterday and we plan to  
4 visit Smith Ranch on Friday.

5 There are several screening questions if  
6 you've had the opportunity to look at the case study  
7 plan. You will see that there are several questions  
8 that are posed that help to guide this study, and what  
9 I'm going to do now is take you through many of them.  
10 I paraphrased them in each of these view graphs and  
11 I'll give you some of our preliminary impressions of  
12 where we are on those various questions.

13 The first one deals with risk information  
14 that's currently available out there to help us  
15 determine to what extent we can risk inform the  
16 uranium recovery area. On document that's been very  
17 interesting to look at is NUREG-1531, which is the  
18 environmental impact statement for the Atlas Uranium  
19 Mill. There they really took to hear the risk-based  
20 concepts and seemed to have used it very well in  
21 understanding the doses that folks would receive, the  
22 possible accidents that might occur.

23 And also as a follow-up to that the people  
24 involved with the Atlas also produced a paper at the  
25 ANS conference in 1996 where they were looking at

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 alternatives for disposal of the tailings. One was  
2 reclamation, another one was do nothing, and a third  
3 one was to move it, and they used risk information to  
4 help make a decision or to at least come to a  
5 conclusion on their part.

6 Another environmental impact statement  
7 that we found interesting for its risk information --  
8 in the risk information area was NUREG-1508, the Crown  
9 Point in situ leach facility, and another study that  
10 is underway is one by the Center for Nuclear Waste  
11 Regulatory Analysis on in situ leaching. This study  
12 is not currently available but I believe there is a  
13 sign-up sheet for that. If you'd like to get a copy  
14 NRC can provide it to you when it does become  
15 available.

16 The next question deals with the quality  
17 of studies. As I mentioned, Atlas seems to -- the EIS  
18 seems to be a very interesting study in terms of risk  
19 information, both in terms of looking at risks from  
20 accidents and also risks which they call incident-free  
21 risks, which are really the normal chronic releases  
22 that one would have in any enterprise, and one has to  
23 measure this and assess it, and this is exactly what  
24 they did. They were interested in particular in  
25 looking at alternative disposal options.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1           Also the ANS paper on Atlas was an  
2 interesting one and it supported the conclusions that  
3 it came to. It was not an in-depth paper. We could  
4 not really assess the methodology per se, but it  
5 seemed to be well posed in terms of the questions it  
6 asked and the conclusions it came to. The regulatory  
7 analysis center's paper also looks at radiological  
8 releases, worker risks, and environmental impact, and  
9 hopefully it will be a document that you could also  
10 review.

11           We did not see the document yet. We did  
12 have a chance to chat with a member of that institute  
13 to get some preliminary impressions of its content.

14           The next question in the case study plan  
15 asks about the need for additional studies in this  
16 area. There are two general areas where one can  
17 benefit from the strengths of the risk-informed  
18 approach. One is in the realism of scenarios, and  
19 this is really a general strength of a risk-informed  
20 approach. One tries to be as realistic as possible,  
21 not conservative in the analysis. One wants to get  
22 the best possible analysis to the fore in these  
23 studies, and hopefully this is the type of thing that  
24 we will see more of as studies are done in this area.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 Another strength of risk assessment is  
2 that it expresses uncertainties. One first assesses  
3 uncertainties and tries to quantify them as best as  
4 possible. It helps you to understand what you know  
5 about what you don't know.

6 The next question deals with the use of  
7 risk information by NRC and the licensees. NRC has  
8 considered risk in the transportation area connected  
9 with uranium recovery. The EISs for Crown Point and  
10 Atlas both have used risk information. More generally  
11 and broadly in the uranium recovery area there has  
12 been use of risk type information to the extent that  
13 dose equates -- chronic doses equate with risk and  
14 also as I mentioned the study by the center. The NRC-  
15 sponsored study by the Center for Nuclear Waste  
16 Regulatory Analysis considers risk.

17 The next two questions are lumped here.  
18 One deals with societal benefit of the current  
19 operation and the other is with public perception.  
20 The societal benefit is clear for this case study. It  
21 provides an energy resource of uranium, important for  
22 nuclear reactors, which presumably are important for  
23 electricity generation.

24 Public perception depends upon the site.  
25 Factors to be considered are environmental impact and

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 public health on the one hand and economic and social  
2 value to the community on the other hand, in which the  
3 facility sits.

4 The next question deals with the basis for  
5 the current regulations. There's quite a bit here.  
6 It starts with -- not necessarily starts with, but a  
7 major document is the Act of 1978, the so-called  
8 UMTRC. The standards set by the Environmental  
9 Protection Agency figure in very strongly, the working  
10 understanding with other agencies that -- such as the  
11 mining agency, MSHA, is important here, and then a  
12 slew of pieces of the Code of Federal Regulations come  
13 to play here.

14 Singled out is 10 CFR 40, Appendix A,  
15 which was congressionally mandated and not a risk-  
16 informed document, very deterministic and prescriptive  
17 in its presentation. NRC was embarking or considering  
18 embarking on 10 CFR Part 41, and this has now been  
19 discontinued.

20 Explicit or implicit safety goals in  
21 regulatory documents -- as Lawrence mentioned earlier,  
22 part of this activity is to tease safety goals out of  
23 the documentation that we review and come across. One  
24 very elegant statement of a possible overarching  
25 safety goal for this area, uranium recovery, would be

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 one that we found in the generic environmental impact  
2 statement, NUREG-0706, and I'll just quickly read it  
3 to you.

4 "Operation of uranium mills and the  
5 management of mill tailings -- they are appropriately  
6 short. The public health and safety and preservation  
7 of environmental values. So this is a top-level  
8 statement for uranium mills at the time. This is a  
9 more than 20 year-old document now. And also in the  
10 framework document for risk informing the materials  
11 and waste area SECY 99-100, the commission notes that  
12 both public and worker risks are important, to be  
13 dealt with, and in fact they do put forth four  
14 strawmen risk metrics to be considered broadly again  
15 the waste and materials area.

16 One relates to fatalities. A second  
17 relates to a frequency of a large dose perhaps on the  
18 order of 25 rem. A third relates to possibly setting  
19 a dose cap as a goal, and a fourth, which is not  
20 easily related to this area but perhaps relevant to  
21 others is one related to criticality within an  
22 operation.

23 The next question relates to the basis for  
24 the development of strategic goals, performance goals,  
25 and measures. Of course, the current approach is 10

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 CFR 40, Appendix A, the standards set by the  
2 Environmental Protection Agency, and individual state  
3 standards.

4 The next question in the safety goal area  
5 deals with safety goals, limits, or other criteria  
6 implied by decisions for evaluations. We do have  
7 NRC's radiological concentration for air and water  
8 effluents, the EPA standard for groundwater, and  
9 occupational protection guidelines and standards.

10 The next question relates to tools and  
11 data needed for validation of safety goals. If one  
12 were to formulate safety goals in this area how do you  
13 know that you've met the safety goal? When do you  
14 know that you're there? And on this area models and  
15 data for risk to workers during operation would be  
16 important. These would have to be developed. They've  
17 been partly developed, but these were the types of  
18 information and tools that would be needed. Models  
19 and data for both long-term and short-term  
20 environmental impacts would be very important too.

21 The next question deals with who are the  
22 populations potentially at risk? I've separated this  
23 out into two areas. One is during normal operations,  
24 and this seems to be mainly the workers, and then  
25 during off-normal events. Well, this would include

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 the nearby population in the area, and then one would  
2 consider after operation ceased there would be those  
3 who would come in contact with the site, either  
4 directly or via liquid pathway exposures.

5 What would be the potential consequences  
6 to the populations at risk? Well, for workers there  
7 would be various consequences. One would be in the  
8 industrial -- normal industrial accidents,  
9 transportation, chemical risks at some of the  
10 facilities, exposure to radon and other radionuclides.  
11 For the public it would be exposure to effluents from  
12 off-normal events, for example, wind-blown  
13 particulate, yellow cake, groundwater contamination,  
14 and transportation accidents.

15 The next question addresses the parameters  
16 to be considered in formulating safety goals. There  
17 are a range of parameters to be considered in this  
18 area. One is related to the populations at risk:  
19 workers versus public; individuals and individual  
20 goals be formulated and/or societal goals; off-normal  
21 events, normal events should both be considered, one  
22 or the other; acute fatalities/latent fatalities,  
23 serious injuries for the uranium recovery area. It  
24 would be hard to see acute radiological fatalities at

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 this point in our evaluation -- and environmental  
2 damage and property damage.

3 These are all valid risk indices or risk  
4 categories for consideration in formulating safety  
5 goals in this area. Our minds are open right now as  
6 we proceed through this.

7 So what's the feasibility of developing  
8 safety goals is the next question in the case study  
9 plan. We believe this is something that is worth  
10 pursuing. It would help to focus regulatory  
11 oversight. We very much would like to get your input  
12 to this and hopefully during the next phase of this  
13 meeting tonight we'll get some of that.

14 The next question focuses on methods,  
15 data, results, safety goals, or regulatory  
16 requirements to risk inform similar cases. Thinking  
17 broadly, there may be in the low-level waste area some  
18 issues, challenges that could benefit from similar  
19 approaches, and also closer to home for the uranium  
20 recovery industry are byproduct material disposal,  
21 which could be risk-informed in a similar way.

22 The next set of questions relate to  
23 developing safety goals. Once they're developed --  
24 and we don't have those yet, so this is deferred.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1           The draft screening criteria themselves as  
2 you heard a few minutes ago are really there to be  
3 tested by these various case studies, and we've done  
4 this in some of them and we're proceeding to others  
5 now. But the whole idea ultimately of why do we want  
6 to do this -- we'd like to ultimately have final  
7 screening criteria so that in the waste and materials  
8 area when one considers a challenge -- an issue a  
9 safety issue and one wants to know whether risk-  
10 informed methods information could be useful we'd like  
11 to be able to turn to the screening criteria and  
12 understand how to efficiently and effectively use them  
13 in regulatory application, so that's our ultimate goal  
14 in this.

15           So the draft screening criteria -- the  
16 first four are very thinly disguised statements of the  
17 NRC's high strategic objectives: maintaining and  
18 improving safety. Here the risk-informed approach  
19 could be helpful in balancing various risks,  
20 understanding radiological and non-radiological risks  
21 in the uranium recovery area.

22           The next question relates to improving  
23 efficiency or effectiveness in the regulatory process.  
24 It could be helpful to the regulator in reviewing

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1       submittals by licensees. It could be helpful to  
2       inspectors in prioritizing resources for inspections.

3               The next question relates to reducing  
4       unnecessary regulatory burden. It could be helpful  
5       very much here in understanding the importance of  
6       various issues, trying to separate the important from  
7       the unimportant and working together with the  
8       regulator in focusing on those issues.

9               The fourth of these questions relates to  
10       communicating regulatory decisions. Putting these  
11       various regulatory decisions in a risk context could  
12       be very helpful. Understanding risk effects on  
13       workers and public could be a very effective way to  
14       communicate how a decision has been made.

15              The next question relates to sufficient  
16       information models that would exist or would they have  
17       to be developed to support a risk-informed approach.  
18       There are bits and pieces of models out there that can  
19       be used. Some would have to be developed depending  
20       upon the exact applications, and as Marissa said,  
21       we're very early in this process but I think this is  
22       a very valid question.

23              The next question is can a risk-informed  
24       approach be implemented at a reasonable cost and  
25       provide a net benefit? One thing to observe here and

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 recognize is that there probably should not be a  
2 revolution towards a risk-informed approach. Rather  
3 we should do this in a very evolutionary way. There  
4 are some tools in place. There's information from  
5 other areas where risk-informed approaches have been  
6 tried, so I believe that we need to move in a  
7 deliberate way, understanding what we're doing,  
8 gaining from lessons learned. I think this is a  
9 potentially positive approach to take.

10 And do other factors exist which would  
11 preclude implementing a risk-informed approach?  
12 Again, we'd like to hear from you about that here  
13 tonight. In our studies so far over the last two  
14 months we haven't found any show stoppers in this  
15 area.

16 Observations, very preliminary  
17 observations: the Atlas risk studies showed how risk  
18 information can be used to provide additional  
19 perspective. I think they've done that very nicely.  
20 ALARA principles have demonstrated to be useful in  
21 regulation in this area, and the current study by the  
22 center suggests a potential efficacy of risk-informed  
23 approaches, but again, we haven't seen that full  
24 study, but it promises to be a useful one.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 Preliminary conclusions: expanded use of  
2 risk information seems possible in the uranium  
3 recovery area. Safety goals may be feasible here. It  
4 seems to be rudiments of them already in various  
5 documents; the question of being able to craft them  
6 effectively and putting together a cogent story in  
7 this area.

8 We found in this study that the screening  
9 criteria have been effective for us in terms of trying  
10 to understand how to proceed and this may be also a  
11 case in some of the other studies that have been done  
12 and possibly in the ones that remain, but it's too  
13 soon to tell, but so far the questions seem to be  
14 reasonably posed.

15 That concludes my talk. Thank you for  
16 your attention.

17 DR. RATHBUN: Thank you very much, Bob.

18 We're going to have to ask your indulgence  
19 now as we need to take about a five-minute break so we  
20 can reset up the microphones, and then when you come  
21 back from your break you can ask all the questions you  
22 want. So I think somewhere around 8:00 we should have  
23 it done.

24 (Whereupon, a short recess was taken.)

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 DR. RATHBUN: Before we start taking your  
2 questions and comments I want to clarify something  
3 that I probably did not make clear earlier. This  
4 meeting is being recorded and it will be sent to a  
5 transcriber, so we are on the public record, so I just  
6 want to make sure that I didn't make that too  
7 complicated, but she just isn't doing a regular  
8 transcriber thing, but that will get done next.

9 Okay. What kind of questions do you have  
10 for the risk group tonight? Sir?

11 MR. MACKIN: My name is Pat Mackin for the  
12 Center for Nuclear Waste Regulatory Analyses, and I  
13 have a couple of comments and questions. The first  
14 dealt with Dr. Bari's discussion of ALARA, and finding  
15 that ALARA principles were useful in your assessment  
16 so far.

17 I guess I'm asking for a little  
18 clarification on that, because I'm wrestling with the  
19 same issue in the assessment we're doing of ISL  
20 facilities; there are a number of instances where  
21 risks are extremely low for certain kinds of things  
22 that can go wrong, and if they're low how does ALARA  
23 come in? How much extra effort should you put into  
24 tackling something that isn't much of a problem to

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 begin with? And I'm wondering if you had any success  
2 dealing with that question.

3 MR. BARI: Well, as I indicated, we're  
4 early on the study. What we're really trying to say  
5 here is that you should recognize both the benefits  
6 and the cost of implementing ALARA, and to the extent  
7 that you can do that of course you should.

8 MR. MACKIN: Can I ask another one, make  
9 another comment?

10 MR. BARI: Yes.

11 MR. MACKIN: You said -- I was trying to  
12 make notes -- I think it was on slide 16 and 25 you  
13 mentioned that there were bits and pieces of tools and  
14 models available for doing risk assessments. One of  
15 the things we think we have found is that there is an  
16 overarching technique for looking at risk, the  
17 integrated safety analysis process, which I think was  
18 originated by the chemical industry and it's now used  
19 by certain NRC licensees and programs as well, and  
20 that's a fairly well-established step by step kind of  
21 process.

22 What we found is that since that process  
23 exists the only question is whether there are  
24 techniques available to look at your particular  
25 problem, and for the NRC's mission it seems like there

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 are accepted techniques for looking at things like  
2 doses that are generated from dispersal of materials  
3 either in air or the water or the food chain, and that  
4 there are computer codes available to assist with that  
5 kind of assessment, so in fact the tools might already  
6 exist in many of these areas.

7           The place we found the need to be a little  
8 creative maybe is it might not be efficient or cost  
9 effective or even useful to do a by the numbers  
10 integrated safety analysis of some problem. If you  
11 look at a specific problem and its nature, the  
12 materials involved, the kinds of operations that go on  
13 in a facility, you may find that the best thing to do  
14 is to tailor that approach to the specific problem  
15 you're doing, and you might be able to streamline  
16 things and actually avoid unnecessary effort, because  
17 some of that process can be quite expensive and time  
18 consuming.

19           MR. BARI: I agree with that. You're  
20 exactly right. In fact, what I would advocate is a  
21 screening type approach where you look at the various  
22 initiators of events, things that can go wrong, and  
23 then try to bound them in some way, get a sense of  
24 their relative importance, and then you focus on the

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 big rocks that are still sticking out of the water and  
2 put your emphasis there.

3 And you're quite right about the chemical  
4 industry. There are approaches there, the so-called  
5 HAZOP approaches, which I think can lend itself very  
6 nicely to this area, particularly -- we were at White  
7 Mesa yesterday and I could see HAZOP approaches being  
8 used there along with as you say, the back end looking  
9 at the doses, the emissions and effluents, and there  
10 are standard approaches there. And there again, you  
11 might -- don't want to use a full-blown transport  
12 theory for effluents --

13 MR. MACKIN: Right.

14 MR. BARI: -- where a simpler analysis  
15 might be best applied.

16 MR. MACKIN: I have one more comment if I  
17 can. One of the screening criteria is that it would  
18 help communicate a problem or a decision --

19 MR. BARI: And maybe the problem too.

20 MR. MACKIN: I agree with you, except one  
21 difficulty I see is if you end up using some sort of  
22 probabilistic approach it may be very difficult to  
23 communicate results of that nature to some  
24 stakeholders, to some members of the public who are  
25 not familiar with those approaches. So I think those

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 of us who are engaged in that have to be careful about  
2 how we use the results, make sure they're translated  
3 in terms that are readily understood.

4 MR. BARI: That's quite correct as well.  
5 I didn't mean that -- didn't want to imply that one  
6 would present the arcane results of some statistical  
7 analysis to let's say the uninitiated in that area.  
8 However, there are simple very qualitative statements  
9 of risk that people can understand in terms of their  
10 every day lives if one presents that rather than a  
11 rule that they might not understand, may in fact also  
12 be presented in some arcane way it may be better to  
13 have a simple measure of risk against some  
14 understandable safety goal if one such thing were  
15 formulated.

16 MR. LEACH: My name is Melvin Leach, NRC  
17 Licensing Branch.

18 Marissa, you gave the five-step process  
19 that came out of SECY 99-100. The first four of those  
20 appear to be sequential steps. I'll just go over them  
21 for everybody's ease of reference: identify candidate  
22 applications; decide how to modify the approach;  
23 change the approach; and then implement risk-informed  
24 approaches. Those seem to be sequential steps. The  
25 fifth one concerns me if that's viewed as the last

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 step of the sequence, which is develop or adapt risk-  
2 informed tools.

3 In the reactor side of the house I think  
4 we got the tools after some of the approaches were in  
5 place, and I'm thinking of the significance  
6 determination process site specific work sheets. I  
7 don't know how much you're familiar with that, but the  
8 fact that those were not in place a year earlier or so  
9 made a lot of work for the inspectors and enforcement  
10 specialists within the agency and made our process  
11 somewhat vague for licensees and members of the  
12 public, because it wasn't clear how we were doing  
13 business.

14 So I'd encourage you to get the tools in  
15 place at the right time to support whatever approach  
16 we take.

17 MS. BAILEY: I think you're right, and I  
18 think really if you look at those five steps that are  
19 presented in SECY 99-100 they look like they're  
20 supposed to be sequential steps, but if you really  
21 look at them the only thing that really needs to occur  
22 step number one is the first one, is to identify the  
23 application, the regulatory applications. The other  
24 four steps can occur I think in parallel, or step five

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 could occur before step two, so I think we do  
2 recognize that, but thank you for the comment.

3 DR. RATHBUN: Lawrence has a comment.

4 MR. KOKAJKO: Mel, I know you know this,  
5 but for other members of the audience who don't you  
6 are correct that it is not a sequential thing. In  
7 fact, even what you think is a sequential probably is  
8 not because we're looking at a number of programs  
9 within NMSS and the NRC. They could be portable  
10 gauges all the way up to decommissioning: spent fuel  
11 transportation, spent fuel storage, so we're looking  
12 at a far broader range of things than just uranium  
13 recovery.

14 Uranium recovery is just really a  
15 relatively small subset of what we're looking at right  
16 now, and it's because of that diversity -- each  
17 program is starting off at a little different level in  
18 terms of risk assessment and risk management, and  
19 because of that that's why you see this sort of  
20 stilted view of the approach. In an ideal world I  
21 think we would approach it a little bit differently,  
22 but even if you go back to NRR and the reactors WASH  
23 1400 came out with very little information when you  
24 think about it, yet it was a very effective and a very  
25 good predictor of plant behavior over the long haul.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1           So we do recognize that, but SECY 99-100  
2 was developed because it was looking at a broad range  
3 of regulatory applications, not just uranium recovery.

4           MR. LEACH: Mel Leach again. I would ask  
5 that when you look at your screening criteria at the  
6 end of this you look at what got kicked out in the  
7 process, because if the screening criteria never kick  
8 anything out they're not really doing much for you,  
9 and if criterion five never does anything then maybe  
10 we don't need criterion five for example, and if none  
11 of them as a group kick anything out then perhaps we  
12 don't have the right screening criteria.

13           MR. KOKAJKO: Thank you for your comment  
14 on that. You also understand that besides these case  
15 studies Risk Task Group is also doing other work in  
16 systems of four divisions, and in fact, either on  
17 other applications we are using the screening criteria  
18 now, and it has in fact kicked things out. So we  
19 think the screening criteria is working.

20           Does it need refinement? We think so.  
21 There's a couple of questions that I think probably  
22 need to be changed, but in general we think it's been  
23 effective, and other divisions are using it now, IMNS  
24 being one of the more notable ones, particularly in  
25 the application regarding rulemaking.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 DR. RATHBUN: Marissa, did you want to add  
2 to that?

3 MS. BAILEY: I was trying to tell Jim to  
4 put that on our --

5 DR. RATHBUN: Thank you.

6 Next question. Sir, in the red jacket.

7 MR. WIATZKE: Gerd Wiatzke, Senes  
8 Consultants.

9 We were one of the authors of the paper on  
10 Atlas and as I mentioned at the break we have the  
11 information that we presented at the PSA '96 meeting,  
12 and we certainly could provide that to you to give you  
13 more detail on that. Also, we've been involved in  
14 risk assessment for a long time for the mining  
15 industry, and several of the initiatives that we're  
16 aware of were in fact University of South Carolina  
17 Medical Center.

18 I believe they've done a major risk  
19 workshop in around '95-96 at which the German Ministry  
20 of Finance presented their risk-based approach on the  
21 decommissioning of the former East German uranium  
22 mines, and I can provide you information when I get  
23 back on that material, but it was an enormous  
24 challenge for them to deal with 6,000 contaminated  
25 objects that was transferred to them all at once, and

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 they had to come up with an approach under their law  
2 and the risk-based approach was the one they selected  
3 for moving ahead, so I can provide you separately with  
4 some information on that.

5 MR. KOKAJKO: Thank you very much.

6 DR. RATHBUN: Another question?

7 MR. CARSON: Louis Carson, NRC Region 4  
8 inspector. I was noticing on slide number 18 on  
9 potential consequences to the populations at risk you  
10 point out the chemical risk to workers. However, when  
11 you get to the public section of it we don't seem to  
12 be looking at chemical risk to population groups, and  
13 that could occur as a result of transporting material  
14 from say Atlas to wherever the material is going to be  
15 resent. There's going to be chemicals associated with  
16 that. I'm not sure -- informed the NUREG for that  
17 address.

18 Those chemical issues are for an  
19 operational ISL or traditional mill. They're what are  
20 called hazardous bulk chemicals that are under the 29  
21 CFR 1910 standard for bulk hazardous chemicals, the  
22 PSM standard for which possibly your organization  
23 could identify through those type of operations what  
24 type of chemical operations that if released would not  
25 only injure or potentially injure occupational workers

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 but if they released off site presents a hazard in  
2 terms of the general population.

3 It seems that the only area whereby  
4 chemicals -- where you seem to be addressing or  
5 recognize have to do with stationary situations  
6 whereby you're looking at groundwater chemistry or  
7 groundwater chemicals affecting the environment, for  
8 which I'm not sure how you really look at the risk  
9 there in terms of risk assessment really having hazard  
10 to anything but the environment and what level it is.  
11 However, if you have a chemical release that harms the  
12 population and that falls to the EPA domain and  
13 potentially something called a chemical safety board  
14 for which -- assesses blame and potential corrective  
15 actions of not only the operator but the regulatory  
16 agency.

17 So I seem to notice that your slides are  
18 necessarily just chemical risk to populations.

19 MR. LAYTON: Yes. I'm Mike Layton with  
20 the Uranium Recovery Program at NRC, and Louis's point  
21 is well taken, and I would like to maybe expand a  
22 little bit on what Bob presented when he referenced  
23 the report that the Center for Nuclear Waste  
24 Regulatory Analyses is working on.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1           Chemical hazard to both worker and public  
2 impacts was considered as a part of that analysis, and  
3 the report is in the final stages of being completed  
4 and should be available for public review very  
5 shortly. And Pat Mackin, who presented the first  
6 couple of questions has been working rather closely  
7 with Brookhaven in bringing them up to speed with what  
8 types of analyses and concerns that they evaluated in  
9 their effort, so that is being caught and encompassed  
10 in the effort that Brookhaven is pulling together on  
11 this.

12           DR. RATHBUN: Louis, does that answer your  
13 question or did you want to give us some more  
14 suggestion?

15           MR. CARSON: I guess the principal  
16 suggestion that would give me some comfort is to know  
17 that in your assessments that you're looking at,  
18 uranium recovery against the -- I think it's NUREG-  
19 1501 standard for PSM chemical safety analysis that  
20 the field cycle group has and that you're using that  
21 type of protocol to look at chemical risk, because  
22 even within that one of the documents referenced was  
23 a risk assessment process that the chemical industry  
24 uses, and I'm not sure NRC is necessarily using it,  
25 particularly in the area of uranium recovery.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 DR. RATHBUN: Thank you very much.

2 Next question? Gentleman in the blue  
3 shirt.

4 MR. WEAVER: Ken Weaver, State of Colorado  
5 Department of Public Health and Environment. And I  
6 waited until the end because this is really a side  
7 note or a footnote even to this, but it relates very  
8 much to the uranium recovery facilities, the operating  
9 uranium mill which we do have in Colorado, so there's  
10 more than one.

11 These criteria seem not to be zero based.  
12 They seem to begin instead with the current regulatory  
13 framework as it would apply to existing regulated  
14 facilities, just reading through that, and there's an  
15 irony that might seem to appear, which is that the  
16 safety goal might be what the doctors say, First do no  
17 harm. In other words, don't change something that,  
18 from an ALARA point of view, might be working.

19 In Colorado we've had decommissioning of  
20 a nuclear power generating station. We've had  
21 megacuries of cesium at our IO-tech facility and C&D  
22 commissioning of that, so we know that magnitude of  
23 risk.

24 But we also have a licensee, a public  
25 water treatment plant required to remove uranium and

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 radium decay-series material to make people's drinking  
2 water safer. The external radiation from the water  
3 treatment residuals requires the treatment plant  
4 operator to be a radiation worker, perhaps tens or  
5 hundreds of millirem per hour in some places, and yet  
6 a regulatory requirement or a piece of the framework  
7 that we have, the regulatory approach that we have  
8 really right now would prevent that radium-bearing  
9 material, uranium series material, from going to a  
10 tailings impoundment that is designed to withstand a  
11 maximum credible earthquake.

12 It has a thick clay liner. It will be  
13 covered with a thick cover that's designed to  
14 withstand a probable maximum flood series, and has a  
15 volume now or capacity of 1.8 million cubic yards, and  
16 yet isn't able to take a few thousand or even tens of  
17 thousands of cubic yards of this hundreds of  
18 picocuries per gram radium material from several  
19 drinking water supplies that want to treat and remove  
20 that from the water.

21 And so the irony is that from the ALARA  
22 point of view, there's something that would make the  
23 water safer, and it would enable that radium-bearing  
24 material to be away from those treatment plant  
25 operators, perhaps not needing a license for that

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 facility, and the material would be sequestered  
2 permanently out of -- clearly out of harm's way.

3 And so it might be a reasonable safety  
4 goal to have first in mind that you not stand in the  
5 way of reducing risk in the spirit of reducing  
6 exposure to individuals and releases to the  
7 environment as low as is reasonably achievable.

8 I wanted to leave that logic here, but I  
9 think it's a way to come to ground with some of the  
10 decisions we make when we do radiation control through  
11 our licenses, and the control is a little different  
12 from the dose risk harm considerations. The  
13 regulatory approach should enable that additional  
14 control and support that and at least not interfere  
15 with it.

16 DR. RATHBUN: Lawrence, do you have a  
17 question?

18 MR. KOKAJKO: I want to thank you for your  
19 comment. We appreciate what you're saying. You are  
20 correct in your initial assumption that we are  
21 assuming that the current regulatory framework is  
22 intact. That was the guidelines that was given to me,  
23 but however, within that hopefully we will look at  
24 whether or not we need to change that, whether or not

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 we need to take a look at the rules or licensing  
2 inspection or enforcement processes as we go on.

3 And this is not a -- we're not going to  
4 get there in a couple of weeks, but hopefully this  
5 time next year we may have something that may provide  
6 some meaningful guidelines for just what you're  
7 talking about, and if I'm invited back to the next,  
8 maybe I'll have something to say to you then. So  
9 thank you for your comment.

10 DR. RATHBUN: Okay. I guess that is our  
11 last -- I'm not trying to cut you off.

12 MR. HAMRICK: My name's John Hamrick, and  
13 I have something to share with you and also a comment,  
14 and then a comment of another who was not able to make  
15 it here to the meeting tonight.

16 But in part of what you're talking about  
17 tonight you're talking about estimating risks for  
18 workers, mill workers, that type of thing. I'm not  
19 sure that you're aware that NIOSHA is undertaking an  
20 epidemiology study, and they are close to proposing  
21 their model that they're going to be using to analyze  
22 their results with. I believe they're looking at some  
23 time possibly in the next three months to have the  
24 results of this epidemiology study available, so  
25 that's something you may want to -- and I can

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 certainly provide you more information if you need  
2 contacts. Dr. Thomas Bloom out of Cincinnati is  
3 heading that up for NIOSHA.

4 Also, slide 18 -- focusing on one that was  
5 talked about previously where we're talking about  
6 chemical risks and perhaps industrial and  
7 transportation risks -- in the nuclear industry we're  
8 all familiar with the ALARA principle, but there is  
9 not everyone agrees and there is some controversy  
10 about whether ALARA is appropriate for chemical risks  
11 where exposure thresholds may exist and that type of  
12 thing.

13 The comment that I have from Anthony  
14 Thompson is -- deals with slide 27. It says, Do other  
15 factors exist which would preclude implementing a  
16 risk-informed approach? And his comment has to deal  
17 with an in situ leach situation where interveners  
18 essentially in an informal atomic safety and licensing  
19 board procedure were able to really throw a monkey  
20 wrench into the system and into the process, and so  
21 there are other factors that exist that would preclude  
22 implementing, and in an informal process where  
23 interveners were allowed to present many thousands of  
24 pages of documents that then had to be considered in  
25 an informal process is certainly such a factor.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 DR. RATHBUN: Thank you very much.

2 Next question?

3 MR. KOKAJKO: Thank you for your comment.  
4 I appreciate it. I'd like to address your latter  
5 comment from your associate who's not here.

6 In fact, the seven screening criteria has  
7 been noted as perhaps being a little bit flawed just  
8 for something you said. Adverse stakeholder reaction  
9 would be something that could perhaps make it very  
10 difficult to do. However, just because someone goes  
11 before a hearing board it doesn't necessarily mean  
12 that you shouldn't do it.

13 When we were thinking adverse stakeholder  
14 reaction we were thinking something much broader  
15 scale, such as a public outcry on below regulatory  
16 concern, which the NRC tried to adopt back in the  
17 early '90s. There concerned citizen groups,  
18 environmentalists, and others banded together and  
19 spoke with one voice, which doesn't happen very often,  
20 and were able to get the ear of the Congress in a way  
21 that got our commissioner's ears, and so that would be  
22 a much broader scale type of thing.

23 We have identified the fact that we will  
24 need to look at adverse stakeholder reaction in terms  
25 of the seven screening criteria with a little more

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 fine eye. Just because one or two people are against  
2 it doesn't mean that we can reject it, and we are  
3 sensitive to that, and we will probably modify the  
4 seven screening criteria just so that doesn't happen.

5 MR. WEBER: My name is Mike Weber from  
6 NRC. I had a question and a comment. I'll start with  
7 the comment then I'll go to the question.

8 My comment is I was struck by your  
9 presentation on the availability of the risk  
10 information and the techniques because you focused on  
11 Atlas, and I think that's a good focus because there  
12 is a lot of information available, somewhat recent  
13 information in that area that can inform the analysis  
14 of the case study per uranium recovery.

15 My comment is given that you want to  
16 consider Atlas as part of your case study because in  
17 fact there you have a case in point where perhaps we  
18 did fairly elaborate, fairly effective risk analysis  
19 but ultimately came to a conclusion that differed from  
20 a conclusion reached by the US Congress, or at least  
21 potentially reached by the US Congress for a variety  
22 of reasons, and I think those reasons tend to be  
23 informing to us in terms of how the process may work  
24 outside of our little -- sometimes our technical  
25 sphere address the outrage factors in a different way

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 than we as technical folks typically approach a  
2 problem.

3 And indeed, that might be something you  
4 want to look at in terms of defining risk: Is risk  
5 just the technical risk, the hazard, as Dr. Saman  
6 [phonetic] would refer to it, or is risk really  
7 broader and includes outrage factor and how do we  
8 factor that into our risk-informing decision making?

9 My question is in looking at health risk,  
10 for example, from one vector alone, release of radon  
11 and radon daughter products from uranium milling and  
12 in situ mining what's the population and what is the  
13 time frame over which we're considering the health  
14 effects?

15 MR. BARI: In the study we're not  
16 exclusively looking at White Mesa and Smith Ranch.  
17 Atlas, to the extent that we have information to  
18 enrich the case study, will be part of it. That will  
19 definitely be the case. What we did find on it very  
20 intriguing and interesting, and if we do find  
21 information on other ISL's or mills, whether they're  
22 operating or not, we'll include that where it's  
23 relevant to the study.

24 As far as the risk parameters, with radon  
25 goes -- from my point of view it's too soon to tell in

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 terms of the risk study, but maybe I'll let Mike  
2 Layton talk about what they do.

3 MR. LAYTON: I'll try to shed some light  
4 on part of the question that Mike Weber had on what  
5 kind of time frame we're looking at whenever we're  
6 doing these evaluations for impacts from radon.

7 For in situ facilities which are -- I  
8 would characterize more as like an operational  
9 chemical facility, the type of exposure that we're  
10 concerned about whenever we do the licensing is really  
11 a life time risk to workers and members of the public.  
12 That's a little bit different with the mill tailings  
13 facilities, in which there are large volumes of low  
14 activity radioactive material that are going to be  
15 around for quite a long time, and the regulations that  
16 we work under really consider that risk for quite a  
17 long time, given that our design standard for control  
18 of the mill tailings facilities are the design  
19 standard of a thousand years to the extent practical,  
20 but in no case anything less than 200 years.

21 So it's quite a wide range of time frame  
22 as we're considering these risks.

23 DR. RATHBUN: Dennis?

24 MR. SOLLENBERGER: Dennis Sollenberger,  
25 Office of State and Tribal Programs, NRC.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1           One thing you may want to consider -- I  
2 notice in your reference documents you referred to the  
3 EIS for Appendix 8 of Part 40 the NRC issued. You  
4 didn't mention the EIS in support of the EPA  
5 standards, whether that was being considered, and  
6 since the EPA did set a different radon standard than  
7 NRC, there is a different risk base there for the  
8 radon release.

9           And also I think in about 1988 if my  
10 memory serves me right there was a study done by the  
11 National Academy of Sciences that were looked at the  
12 risk basis for the uranium industry regulation, and I  
13 think that ought be looked at, because again, they had  
14 some differences of opinion than those that were used  
15 for the basis of the regulations, so I think that  
16 would be worth your study, looking at that also.

17           MR. KOKAJKO: Thank you.

18           DR. RATHBUN: Do we have any more comment?

19           (No response.)

20           DR. RATHBUN: Okay.

21           MR. KOKAJKO: Pat -- Clifton, do you have  
22 any comments tonight? Clifton is from NEI. He always  
23 seems to have comments.

24           MR. FARRELL: Yes. My name is Clifton  
25 Farrell from the Nuclear Energy Institute. I just had

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 three items I wanted to ask you about, but first I  
2 wanted to preface the comment on something Mike just  
3 brought up, and I'm afraid if we try to start  
4 evaluating the political risk associated with  
5 decisions related to uranium recovery that's just  
6 opening a quagmire. I don't know where in heaven's  
7 name we'd ever start to try to provide some guidance  
8 there.

9 My first question is pertaining to the ISO  
10 recovery operations, the in situ mines, you made no  
11 comments as to how you plan on proceeding to either  
12 evaluate the existing risks at such facilities and how  
13 to incorporate them into your evaluation of the seven  
14 criteria, so I was hoping maybe you could tell us a  
15 little about how you're doing that. And I think  
16 perhaps there's a paper being presented tomorrow as I  
17 understand from the Southwest Research Institute which  
18 I gather is under -- has undertaken a study that  
19 started before this Risk Task Group was incorporated,  
20 and that might be very useful to really get our hands  
21 around that.

22 I have spent the last few years working on  
23 the risk informing of Part 70. That's the regulation  
24 related to fuel fabrication and the Mox people and so  
25 on, and this idea of the integrated safety analysis

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 was very thoroughly developed, and I think that's the  
2 type of study we need, both for a conventional mine or  
3 an ISO mine, but granted, the time and the scope of  
4 your study will not enable you to do that, but at  
5 least perhaps looking at some of the approaches that  
6 the integrated safety analysis follows might be useful  
7 there, again to get our hands on what are the true  
8 risks to the public or the workers from a Part 40  
9 operation.

10 I guess I would encourage us not to -- to  
11 stay with your suggestion, to go for only a  
12 qualitative statement of risk. I want to get us away  
13 from trying to get a highly detailed quantitative  
14 analysis, the PRAs that are used and are very  
15 appropriate for reactors at least in Part 70 where we  
16 do have a possibility of nuclear criticality the new  
17 regulations under Part 70 do enable you to either stay  
18 with a qualitative assessment or risk or you can go  
19 quantitative if you wish, but I think in terms of --  
20 we have to look at the overall risk of the operation  
21 and what is an appropriate level of detail and study,  
22 so that poses some just general comments on that.

23 I was a little curious about your comment  
24 on the delay -- or your caution in proceeding too fast  
25 with introduction of risk information into regulation

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 of Part 40 facilities. I think we have very good  
2 information in the past from adding this approach to  
3 the Part 50, the nuclear reactor licensees, the Part  
4 70 licensees, which is just in progress, and to some  
5 extend the Part 35 medical licensees, so I think we've  
6 got a lot of good background to work on and I think  
7 the impact on Part 40 licensees will be very positive  
8 both from the regulatory point of view but also the  
9 oversight point of view in terms of inspection,  
10 enforcement, and so on to help the inspectors to  
11 concentrate on issues of real risk significance as  
12 opposed to issues of lesser safety significance, so I  
13 think it's to our benefit to look at risk informing  
14 performance based approach.

15 I guess one final comment. I'm just  
16 wondering if our -- if the scope of work that you  
17 outlined is a little too broad? For example, I'm  
18 wondering if we should be spending a lot of time  
19 looking at possible models for quantifying exposures  
20 to the public or the environment or workers. I think  
21 there's a lot of work done as a previous comment is  
22 mentioned on that. I wonder also whether we should  
23 worry at this stage about the -- I keep calling them  
24 societal benefits or public perception. Granted, this  
25 is very important, but I think at this first stage we

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 need to know is there a possible application the risk-  
2 informed principle to Part 40 licensees, and if there  
3 is then I think we can advance to see if this can  
4 satisfy the need for public understanding of what  
5 we're trying to do.

6           Anyway, those are just a few observations  
7 from -- I'm sorry they were a little bit disjointed  
8 tonight, but things that I jotted down as you were  
9 going on, but --

10           MR. BARI: Yes. Thank you for all of  
11 those comments. In fact, I think they're very  
12 valuable.

13           I should clarify the purpose of our study.  
14 It's not to do a formal or even an informal risk  
15 assessment of any of the facilities that we noted here  
16 tonight. Really, we're taking a look at the broader  
17 question of can you bring the risk-informed approach  
18 to the waste and materials area in some vague similar  
19 way to the way it's been done in the reactor area, and  
20 that's really the challenge that's been put to us, so  
21 we're asking that question.

22           So we're not really doing risk assessments  
23 for each study and for each facility and then  
24 reflecting back and lessons learned and how will we  
25 use this in some regulatory context. In a perfect

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 world we may do all of that, in a perfect world with  
2 infinite time, but this is the approach heretofore, so  
3 in terms of the breadth -- the scope and its breadth  
4 it's really been fashioned to meet those goals as  
5 enunciated in SECY 99-100.

6 So exposure models -- we'll certainly look  
7 at those to the extent that we can in terms of  
8 understanding how they're applicable. In other case  
9 studies we've had we did take a look at how that might  
10 play out. For example, the decommissioning area with  
11 the types of models that have been used there.

12 In terms of my caution for going forward  
13 too quickly, really what I'm trying to say there is  
14 that one should not just graft on the risk paradigm of  
15 the reactor area into the materials and waste area and  
16 say we've got it, let's do it, and let's revolutionize  
17 how we're doing our regulation in this area. It may  
18 go quicker than I would think, but judging from what  
19 has happened in the past one needs to reflect on what  
20 one uncovers at each application, but I'm certainly  
21 not going to advocate holding it back over many years.  
22 So in terms of that question, that would hopefully  
23 clarify it a little bit for you.

24 In terms of qualitative statement of risk  
25 and safety goals, my personal sense of it is that we

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 should develop first some overarching goals and then  
2 if quantitative objectives are derived they should be  
3 really derived with those in mind rather than putting  
4 criteria out in the street, so I think we're in  
5 agreement there.

6 I think I could pull together your first  
7 few comments, which maybe to you seemed a bit  
8 disjointed, but to me one really does follow from  
9 another. As I mentioned, we are not doing risk  
10 studies per se for each of the facilities. We're  
11 trying to rely on existing risk information, and as  
12 you correctly pointed out there will be a paper  
13 tomorrow as we talked about, Pat's paper, and that  
14 will certainly as more information becomes available  
15 on that we will use that in our case study. I'm sure  
16 it's going to be valuable information to us, so it  
17 works in nicely with an absence of information on the  
18 ISL side, and now it's being done, so I hope that's  
19 helpful.

20 MS. BAILEY: I think I'd like to repeat  
21 again what the purpose of the case studies are, and  
22 that's number one, it's the draft screening criteria  
23 so that we can finalize our tool for determining  
24 whether a regulatory application can be risk informed.  
25 The second purpose of the screening criteria is to

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 examine whether safety goals are feasible for NMSS and  
2 what the form of those safety goals would be, whether  
3 it's just a quantitative statement or a qualitative  
4 statement or a qualitative statement with some sort of  
5 quantitative measures. At this point it's too early  
6 to tell.

7 And then the third and fourth goals of the  
8 case studies are to look at all these areas within  
9 NMSS retrospectively and try to determine whether  
10 there's some insights we can gain from them as to how  
11 we can risk inform all of the processes in the waste  
12 and materials arenas, the arena of recovery being one  
13 of them.

14 DR. RATHBUN: Okay. Katie?

15 MS. SWEENEY: Katie Sweeney, National  
16 Mining Association.

17 I'm glad you went over that again, because  
18 I think I'm still confused. I guess I hate to be like  
19 what's in it for us, but what -- how is this going to  
20 help industry, or is this solely to help NRC?

21 MR. KOKAJKO: I was going to ask if you  
22 had a question, by the way, because I called Clifton  
23 and I was going to ask if you had one, and I  
24 appreciate that comment. And I think I mentioned this  
25 morning this is a very modest effort compared to what

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 has been done in NRR in the reactor arena. It took  
2 NRR, depending on who you hear it from, 15 to 22 years  
3 to develop safety goals. We're going to try to do it  
4 in less than two, and it would be across a broad  
5 spectrum of activities.

6 What it will -- safety goals I think it's  
7 in the definition that you saw there -- I'd like to  
8 when I get into more colloquial term I would rather  
9 refer to it as how safe is safe enough? Would that be  
10 of benefit to uranium recovery if we could define how  
11 safe is safe enough?

12 MS. SWEENEY: Yes. Provide some  
13 definition.

14 MR. WEBER: -- less than it is now.

15 MR. KOKAJKO: That's another point. I'm  
16 glad Mike brought that up.

17 I will tell you a risk-informed approach  
18 will -- I'm hoping we will get to where we can say how  
19 safe is safe enough, but it's a two-edged sword.  
20 There are points -- and we have talked this over with  
21 other representatives of a number of regulated  
22 activities, and I think they recognize that yes, we  
23 might be able to reduce burden in one area or more, or  
24 a lot of areas, but there may be something where they  
25 and we have missed in our regulatory framework. We

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 said we should have been regulating this a lot more  
2 than we ever thought we should have.

3 And that's why I said earlier that it's  
4 just a tool. It's one tool to help us try to focus on  
5 safety. And I think you are as concerned about safety  
6 as I am, and in fact, maybe even more so, because you  
7 ensure safety. I'm trying to assure it by being the  
8 regulator, but the miners and the millers and  
9 everybody else, those are the people that are ensuring  
10 safety, and they're doing it on a day to day basis.  
11 You guys know more about what is a real risk and how  
12 to handle that than I can, and that's why we're having  
13 this meeting by the way, but more importantly, I have  
14 to rely upon you to help do that.

15 If in the regulatory processes you can  
16 tell me -- if we can learn together how safe is safe  
17 enough we will then have our benchmark by which you  
18 can determine how you will go apply your programs, how  
19 we will apply our programs.

20 Does that help?

21 MS. SWEENEY: Yes.

22 MR. KOKAJKO: And thank you for saying  
23 something.

24 MR. WEBER: If I could just build on what  
25 Lawrence said, even though I'm not up at the table,

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 even if we never get to some broad, lofty safety goal  
2 and even if we don't find that these criteria work --  
3 I don't happen to think we'll come out at that point,  
4 but let's say for the sake of discussion we conclude  
5 they're not worth anything and throw them away, at  
6 least one minimalist application of thinking about  
7 risk informing our regulatory activities is that it  
8 does change the mindset of the license reviewer, and  
9 it changes the mindset of the inspector or at least it  
10 should, so that as we go about doing or business, as  
11 we strive to become more effective and efficient we  
12 can hone in on those things that really contribute to  
13 risk, and those things that don't contribute  
14 significantly to risk, maybe those we ought to back  
15 off on.

16 And that's -- I think that's the payback  
17 to not only the license community but more broadly to  
18 the American public, because if there are areas that  
19 we don't need to be regulating as stringently then  
20 under our performance goals of reducing unnecessary  
21 regulatory burden and being more efficient and  
22 effective we ought to back off. We're obligated to do  
23 that under our regulatory program. So just my two  
24 cents.

25 MR. KOKAJKO: Thank you, Mike.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 DR. RATHBUN: Thanks, Mike.

2 Okay. Gentleman in the tan coat?

3 MR. PAULSON: My name is Oscar Paulson  
4 with Kennecott Uranium Company, and the last two  
5 speakers discussed the terms of real risk and what the  
6 real risks are, and the fact that the people working  
7 in the uranium recovery industry really understand  
8 these real risks, and certainly from the perspective  
9 of where I work and the things I see as well as being  
10 around other uranium operators the real risks, the bad  
11 and sometimes serious risks are not the ones that  
12 necessarily related to radiological health and safety  
13 and things like this, but the real risks for example  
14 are things like transportation risks; a worker being  
15 injured or killed driving a vehicle or piece of  
16 equipment, or a member of the general public being  
17 injured or killed in an automobile accident.

18 For example, when the Susquehanna tailings  
19 pile near Riverton, Wyoming was moved to another  
20 tailings repository there was an automobile fatality  
21 involved during the course of moving those tailings,  
22 and certainly that's a real risk, and it resulted in  
23 a real fatality.

24 Thank you.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1                   MR. KOKAJKO: Thank you for your comment.  
2 I'll note that same concept has been brought up in  
3 another case study. It was the Trojan reactor  
4 pressure vessel shipment case study where the licensee  
5 in conjunction with not only the environmental groups  
6 but the State of Oregon and Washington said, We only  
7 want one shipment instead of 44, instead of cutting up  
8 and having man-rem exposures and then having 44  
9 additional shipments we want one and no exposure. So  
10 we've -- coming across that already.

11                   We also -- I think Lou Carson mentioned  
12 earlier this evening that there may be other hazards  
13 than radiological. We note that. We appreciate your  
14 comment.

15                   I need to add as just a caveat that part  
16 of what we're doing -- we have to work within the  
17 framework that we're given right now, and so I'm not  
18 sure that I'm going to be able to address all the risk  
19 associated with all the operations. However, it may  
20 be something that requires further efforts on the part  
21 of the staff to try to assess better, and we may make  
22 some headway there, but I -- once again, we can't  
23 solve that problem tonight or in the very near term.

24                   But thank you for your comment.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 DR. RATHBUN: I just got the time-out  
2 warning from Tim, so we probably have time for one  
3 more, if there's one more question or comment.

4 (No response.)

5 DR. RATHBUN: If not, then I want to  
6 personally thank you for coming here tonight and  
7 giving up your evening to work with us. I certainly  
8 appreciate it and I know the team members appreciate  
9 it. I'd also like to thank you for being such good  
10 sports about the microphone.

11 Lawrence has just a few closing remarks  
12 for you and then enjoy the rest of your evening.

13 MR. KOKAJKO: Thank you, Pat.

14 I would like to thank you for  
15 participating tonight. As Pat said, I realize you  
16 have other things to do, and I appreciate your coming  
17 and taking the time to spend with us on this cast  
18 study stakeholder meeting on uranium recovery. We  
19 view feedback from those outside the agency as well as  
20 those from within to be an important ingredient in  
21 implementing the case study plan. Your input  
22 regarding the testing of the screening criteria and  
23 possibly development of safety goals is important to  
24 understanding what areas we can do to expand the use

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 of risk information in the materials and waste arenas  
2 at the NRC.

3 Before I finish tonight I want you to note  
4 that we have started this back in April of 2000 and  
5 we'll continue our integration meeting in October  
6 2001, at which we will provide more information on our  
7 review to date. Once again, I point you to the time  
8 line here. May 11 we had our last case study meeting  
9 in Rockville, Maryland, and if you go to the next  
10 slide you see we've just now completed June 13  
11 meeting, and we're going to be moving on as the  
12 schedule shows.

13 Once again, if you did not sign the  
14 attendance sheet I encourage you to do so so we can  
15 contact you to invite you to that integration meeting  
16 in October 2001. We hope to issue the reports at the  
17 end of the calendar year, as I mentioned earlier, and  
18 if feasible go into development and safety goals in  
19 2002. I anticipate that we'll be having other public  
20 meetings as we move through here to try to get more  
21 input on these matters.

22 As I mentioned in my opening remarks, we  
23 are interested in feedback on your views of how this  
24 meeting went, and the feedback forms are available at

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 the back or you can talk to one of us directly, and I  
2 think you can mail it in.

3 I'd also like to thank those involved in  
4 coordinating and presenting this meeting tonight,  
5 especially our facilitator Dr. Patricia Rathbun,  
6 Marissa Bailey, Candace Drummond, also Jim Dana,  
7 wherever he went to. Our subject matter expert, Mike  
8 Layton and Dr. Robert Bari and Ed Grove from  
9 Brookhaven National Laboratory, and I would especially  
10 like to thank Katie Sweeney of the National Mining  
11 Association for helping us get all this set up. Your  
12 help was invaluable and we appreciate the opportunity  
13 to be here today.

14 I'd like to seek your comments one more  
15 time. Going once, twice.

16 (No response.)

17 MR. KOKAJKO: If there are no other  
18 comments or questions this meeting is adjourned.  
19 Thank you very much.

20 (Whereupon at 9:00 p.m. the meeting was  
21 adjourned.)

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701