

ABBY JOHNSON'S
INTERVIEW WITH JOE STROLIN

EUREKA COUNTY, NEVADA
YUCCA MOUNTAIN LESSONS LEARNED PROJECT

held in

CARSON CITY, NEVADA

March 18, 2011

1 MS. CLANCY: Today is March 18, 2011. This is Gwen
2 Clancy, and we are in Carson City starting our interview.

3 MS. JOHNSON: This is the Eureka County Lessons
4 Learned Video Project. My name is Abby Johnson. I'm the
5 Nuclear Waste Advisor for Eureka County, and today we're
6 interviewing Joe Strolin, who is the Executive Director of
7 the State of Nevada, Nuclear Waste Project Office.

8 Joe, when did you get involved in the Yucca
9 Mountain project?

10 MR. STROLIN: It goes back quite a number of years,
11 Abby. I was working for the State. I was working as a
12 deputy administrator over at the Department of Human
13 Resources, and I had known Bob Lux (phonetic) and his wife
14 for a while, and I had worked a little bit on Dick Bryan's
15 campaign when he ran for governor in 1982, and at the time
16 when Senator Bryan was setting up the office, he set the
17 office up initially under Executive Order. We didn't become
18 a statutory agency until 1985, but he set the office up by
19 Executive Order in about 1983. And, he brought Bob Lux over
20 to start the office.

21 Bob was initially in the old Department of
22 Minerals, I believe, doing a lot of other work that were
23 probably not too mineral related, but when he brought Lux
24 over, Bob hired a geologist that came out of California, who
25 had done a lot of work with the Nuclear Regulatory

1 Commission, licensing and things, had a nuclear background.
2 So, the geologist, Carl Johnson, started the technical parts
3 of the office.

4 Well, there was concern in the governor's office
5 and with Bob that we needed to involve the local governments,
6 and the state needed to take a look at what would happen if
7 this project came on, sort of a contingency planning effort,
8 and looking at the impacts to the State that could accrue
9 from this project if the thing actually took off and was
10 actually implemented.

11 So, the decision was made to expand the office and
12 add a position to it that would be non-technical, but would
13 look at all of these other ancillary aspects of the
14 repository project and its effects on Nevada. And, Bob knew
15 me, knew my background, and asked me if I would be interested
16 in coming over. And, I remember meeting with him and with
17 Senator Bryan, at the time, it was Governor Bryan, excuse me,
18 and I had pretty much agreed to do it. And, I remember both
19 of them telling me that, you know, we just need about a three
20 year commitment from you, given after three years, we think
21 this project will be over in three years. And, that was in
22 1984, I think it was June or July of 1984. So, that's how I
23 kind of got involved was coming over, agreed to establish the
24 planning part of the office.

25 And, eventually, that was transformed by the

1 Legislature in 1985 into an entire division for the agency.
2 We became the Agency for Nuclear Projects, still located
3 within the governor's office, with two divisions, a Technical
4 Division that was headed up by, at the time, Carl Johnson,
5 who was our geologist, and I headed up the Planning Division.

6 And, we've kind of progressed along the way for
7 quite a while, for a number of years. By 1989, 1990, we had
8 I believe about 21 or 22 employees that were actually working
9 in the office. Some of them were contract employees at the
10 time, but the number of people and the amount of office space
11 we had was considerable.

12 From there, I'd say that the--do you want me to
13 talk about the job, the kind of work I was doing?

14 MS. JOHNSON: Yeah, what kind of work you were
15 doing, and also sort of the long stretch of how you got to
16 here.

17 MR. STROLIN: Well, it's kind of a long stretch of
18 doing the same thing, kind of, but just a long period of
19 time. I headed up the Planning Division. We began to work
20 with the local governments, involve the governments that we
21 identified as the ones that would be affected for Yucca
22 Mountain. This was between '84 and in '87. So, I spent a
23 lot of time working with primarily Clark County, Nye County,
24 and Lincoln County as the three governments that we initially
25 identified as being most affected.

1 We also began what would become a pretty ambitious
2 effort, research effort. We set up a multi-dimensional
3 socioeconomic impact assessment study aimed at trying to
4 identify all of the various impact areas that would be
5 involved with the Yucca Mountain project, and how those
6 impacts might affect the State, its population, its
7 communities, Native American tribes, and communities within
8 the State. And, we eventually did a nationwide solicitation
9 to identify companies, or a company or companies that could
10 implement this kind of a project. We basically designed the
11 project in-house, and then put it out for bid.

12 And, in 1986, we selected a firm out of Arizona at
13 the time that was named Mountain West Research, who had put
14 together what we considered to be the best proposal that was
15 closest to what we were looking for. That project went on
16 from about 1986, in the fall of '86 is when we initiated our
17 first meeting, and it went on until, in various forms, until
18 probably the 1999 time frame.

19 At one time, it was the largest single
20 socioeconomic, sociological study ongoing in the United
21 States at the time. So, it was pretty ambitious. There was
22 over 30 researchers from, gee, I don't know how many, maybe
23 20 different universities and entities that were involved
24 with the work.

25 It involved basically the entire state. The focus

1 was primarily on Clark County and Nye County and Lincoln
2 County, the three most affected counties. We had ongoing
3 project components that addressed rural impacts. We had
4 components that addressed Native American impacts, impact to
5 urban areas, urban cities. We had a transportation component
6 that looked at the specific impacts of transportation,
7 property value impacts. It was pretty comprehensive, and it
8 resulted in the publication of probably over 200, 250
9 reports, specific reports, and it culminated in 2002 when we
10 rolled all of the results of that project into the State of
11 Nevada Impact Report. And, that's this three volume set of
12 material here that contains the synthesis of the years and
13 years of study that was done, and all the research that was
14 accomplished during that time, and the findings that were
15 done.

16 Since 2002, we have kind of gotten away from the
17 impact work. And, in 2002, the Department of Energy,
18 Secretary of Energy recommended the Yucca Mountain site to
19 the President for development as a repository under the
20 Nuclear Waste Policy Act. The Congress went ahead and
21 approved the President's recommendation. Governor Guinn at
22 the time vetoed it under the provisions of the Nuclear Waste
23 Policy Act, and the Congress subsequently overrode Guinn's
24 veto under the same provisions.

25 So, we went from sort of the studying

1 characterization phase, research phase of the work. In 2002,
2 things changed and it became much less a research effort, to
3 an effort to get ready for the next phase, which was
4 licensing. And, under the Nuclear Waste Policy Act, the
5 Department of Energy, within 90 days of Congress's action
6 overriding Guinn's veto, they were required, or should have
7 been required to submit a license to the Nuclear Regulatory
8 Commission for the Yucca Mountain project.

9 Well, of course, that didn't happen. They weren't
10 anywhere near ready to submit a license at that point. So,
11 they and us both worked pretty diligently toward engaging in
12 what we would do and what we would need to have in place to
13 engage in a licensing effort.

14 Just prior to the Guinn veto and then the override
15 of the site recommendation in 2002, I think it was probably a
16 year before maybe, we had another national search for a law
17 firm or a legal team that could represent the State of Nevada
18 in licensing. We did this in conjunction with the Attorney
19 General's office. We hired that legal team, and then my role
20 became very much more working with the legal team and working
21 toward integrating the stuff that we had done on the research
22 program toward how it would fit into licensing, what issues
23 might be most necessary or most relevant to the State's
24 contentions or objections that would be raised in licensing.

25 So, since about 2002, I've been pretty much focused

1 on the licensing issue, a little bit on the follow-ups and
2 things from the research, but primarily the focus has been on
3 licensing since 2002.

4 I continued to be the Planning Division
5 Administrator during all that time, and after we got formally
6 into licensing, I continued to work in that capacity up until
7 the spring of 2009. And, it looked like things were winding
8 down at that time, the new President, Obama, had been in
9 office, had just taken office. He had pledged then the
10 project, the Department of Energy was making noises that they
11 were going to discontinue the program, so it seemed like a
12 good time to leave. So, I retired in I think it was March of
13 2009.

14 Well, the new director that was hired after--Bob
15 Lux left a few months before I did--the new director that was
16 hired decided that he needed some help, so he asked me if I'd
17 come back under contract to work part-time with him until he
18 got up to speed, which I did. And, I did that until February
19 of this year. And, in February, the then director of the
20 agency, Breslow, Bruce Breslow, he was appointed to be the
21 head of the Department of Motor Vehicles for the State, and
22 when that happened, both Bruce Breslow and the new governor
23 asked me if I would come back and be acting director for a
24 short period of time, indeterminate period of time, I guess
25 is a better word, until a new director could be found, and

1 until the agency's budget was solidified and we had gotten
2 through the new legislative session. So, that's where I am
3 now. I'm the acting director. I expect to be here until
4 June or July, and hopefully we will have a replacement in
5 place by that time.

6 MS. JOHNSON: Let's move onto the next question.
7 Joe, you've told us about assembling your socioeconomic team.
8 Tell us about some of the findings that they had, and
9 especially about the findings related to the impacts of a
10 project dealing with radioactivity.

11 MR. STROLIN: Okay. Let me go back a little bit
12 and just explain how we sort of got to where we ended up with
13 the design of the studies.

14 Back in I believe it was the late 1970's, the
15 National Academy of Sciences did what became a seminal report
16 on we used to call it the "Green Book" that looked at--this
17 was way before there was any repository, or even a repository
18 that was planned, or no legislation for it--but, it had been
19 the recommendation of the National Academy of Sciences that
20 the way to deal with radioactive waste and spent fuel was to
21 dispose of it in a geologic repository.

22 And, as a follow-up to that sort of policy
23 recommendation that was made, they did a report on the
24 socioeconomic effects of radioactive waste disposal. And,
25 one of the key things that was highlighted in that report,

1 and that we really picked up on and used as a foundation for
2 the design of the study, was that a repository for disposal
3 of high-level radioactive waste and spent fuel was not just a
4 large scale industrial program or project, that it had
5 elements to it that were unique and that had the potential to
6 cause impacts and to allow impacts to occur in ways that they
7 wouldn't occur with a large scale industrial program. That
8 primarily related to the nuclear nature of the undertaking,
9 and not just the direct radiological impacts from exposure to
10 ionizing radiation.

11 It was also the fact that the people's perceptions
12 of things nuclear and things radioactive tended to be very
13 extreme. And, those perceptions themselves had the potential
14 to impact the way that the facility was viewed, and that the
15 risks and impacts of the facility would be felt and would be
16 experienced throughout the communities and states where they
17 were affected by this.

18 So, that's background, that's how we designed this
19 project. We needed to have a multi-dimensional program that
20 was going to look at what we called the standard effects of a
21 large scale project like this on a community and on a state.
22 And, the standard effects were things like population growth,
23 expenditures for equipment and things, impacts on
24 infrastructure of the transportation of materials back and
25 forth during construction, all of the standard things that

1 you would have to deal with as a result of a large scale
2 project of any kind.

3 But, then, we had another half of the study that
4 was dedicated--and, this was really unique and I don't think
5 anyone had ever really done this kind of work in this intense
6 way before. The other half of the study was called the
7 Special Effects Component of the project. And, the Special
8 Effects Component attempted to look at the impacts of risk
9 and risk perception that were associated with the project,
10 and what they meant to the State and to the people, and could
11 they be translated into economic terms, in terms of how would
12 these impacts either exacerbate or directly cause there to be
13 economic impacts to the State or communities as a result of
14 this project.

15 So, that was sort of the structure of the program.
16 We had about I think, as I said, there were at least 30
17 people, 30 researchers working on this. We had broken them
18 into various teams. We had economic demographic, we had a
19 sociocultural team, we had a risk perception team, we had an
20 urban impacts team, and we had a Native American team, and we
21 had a rural impacts team. And, this study was fairly well
22 coordinated. We would bring the teams together about four
23 times a year for discussions and for sort of cross-
24 fertilization so that the various components weren't working
25 in isolation, that they understood that they were working on

1 a comprehensive study that had to be integrated as it went
2 along.

3 The really interesting stuff was the Special
4 Effects portion of it, and the really ground breaking work
5 that was done. Early on, we found that there was very little
6 in the way of prior history to pull from, prior research that
7 had been done on these kinds of special effects, on the
8 perception of risk, people's perceptions of risk and how
9 those perceptions are formed and how they affect behavior,
10 and behavior has economic consequences. So, that's kind of
11 where we went.

12 We hired some of the best consultants that we could
13 find, and gave them quite a bit of latitude and freedom in
14 terms of developing the methodologies that they thought would
15 be best to get at this. We had a couple different ways that
16 we did it. We sort of triangulated it in two or three
17 different ways to try to understand and to be able to
18 eventually quantify some of these things.

19 One of them was very traditional. We asked
20 questions. We did survey research. It wasn't specifically
21 polling, because it was much more intense than polling. It
22 was a very intensive and targeted research project with the
23 questionnaires and the data collection instruments developed
24 in a very scientific way. So, we asked people what would you
25 do if, and we would develop scenarios about various

1 repository scenarios.

2 One would be a benign scenario. If a repository
3 was built in Nevada at Yucca Mountain, and it operated for a
4 number of years and there were no impacts, or no
5 transportation accidents associated with it, how would you
6 respond? You know, would you be more or less likely to start
7 a business in Nevada? Would you be more or less likely to
8 come to Nevada to visit, or to move here? Would you be more
9 or less likely to attend a convention in Nevada? And, we did
10 that with three or four different scenarios from the benign
11 to the extreme. And, the extreme was a scenario that
12 involved a nuclear accident, a nuclear incident, a release of
13 radiation from the repository, or from a transportation cask
14 carrying to the repository.

15 And, we found extreme views or extreme responses
16 and reactions to the various scenarios. On the one hand, the
17 benign scenario, while it did identify that there would be
18 behavioral responses to even a benign scenario, even the fact
19 that a repository was located in Nevada had a negative effect
20 on people's willingness to move, to live, work or visit
21 Nevada.

22 However, the release scenario, the more extreme
23 scenario, the results were very extreme, very significant,
24 that we had a large aversion factor to all of the questions
25 that were asked at the time. So, that was one area.

1 But, we had the problem of people will say things,
2 but that does not necessarily translate into what they will
3 actually do in the event that the scenario you're opposing
4 occurs. So, you have this disconnect between self-report and
5 then actual behavior, and how do you get at that? And, the
6 researchers are very concerned about not putting out extreme
7 and unsupportable kind of conclusions about risk and risk
8 behavior and what that would mean.

9 So, we decided to try to take another tact, and we
10 asked some of the psychology people and the sociology people
11 to get together with people and organizations that had
12 expertise in marketing research to try to understand and see
13 if we couldn't come up with a methodology that would allow us
14 to be able to say with some certainty how people really might
15 react under certain circumstances, not just based on what
16 they say, but based on behavioral things that they would do.

17 And, the researchers came up with some very, very
18 innovative approaches to how to do this, and taken primarily
19 from the marketing research, but then translated into
20 sociological and psychological context. And, it was stuff
21 that had never been done before, so it was groundbreaking,
22 and a lot of the researches got quite a bit of notoriety and
23 were able to help their careers, let's just say, as they went
24 along.

25 The main methodology that we used was we would ask,

1 they came up with this approach where they would ask people
2 how to associate reactions, or their first impressions, to
3 cities and towns and communities, you know, when you say the
4 name New York, what comes to mind, and then they would list a
5 bunch of things, first, second, third, fourth, fifth. When
6 you say Las Vegas, what comes to mind? When you say Nevada,
7 what comes to mind? When you say nuclear waste repository,
8 what comes to mind? And, this was done over the course of
9 quite a long time, with a number of focus groups. I think it
10 was primarily done face to face with large numbers of focus
11 groups.

12 We also did it with people, not just Nevadans, but
13 we did it with populations that were considered to be
14 important to Nevada, tourists, convention planners, business
15 organizations that were involved with helping businesses to
16 relocate to various locations.

17 And, what they found, to make a long story short,
18 what they found was that in general, Las Vegas and Nevada had
19 very high positives in terms of the reactions that people
20 had. The things that they associated with these places in
21 Nevada were generally pretty high.

22 On the other side of the coin, the responses and
23 the reactions, the weight that was given to things nuclear,
24 nuclear waste repository, nuclear waste transportation, were
25 extraordinarily negative, almost off the board they were so

1 negative. And, the conclusion that they were able to draw
2 was that--and, they were also able to make the connection
3 between the people that had the highest rating or the highest
4 view, the best view of the State of Nevada and Las Vegas,
5 were the people that tended to have actually visited Nevada
6 more often and had been actually visitors. So, there was a
7 connection between behavior and perception that they were
8 able to scientifically document.

9 So, the conclusion that they drew was that the
10 higher the positive rating of a place or location, the more
11 likely it was that people were to visit there and more likely
12 that they were to move there and more likely they might be
13 there to attend a convention there, or whatever. If that
14 image of a place became associated, directly associated with
15 a nuclear waste repository, that would have a significantly
16 degrading effect on the image, and it would lower that image
17 score considerably. And, the conclusion was that if Nevada
18 or Las Vegas became associated in people's minds with a
19 nuclear waste repository, that it would lower that image
20 score considerably, and, therefore, would have a negative
21 effect on visitation and other behavioral things of economic
22 consequences.

23 So, that was basically, those were the two
24 approaches that we took for the socioeconomic risk perception
25 part of the socioeconomic study.

1 MS. JOHNSON: So, Joe, how did DOE use this
2 information, if at all? Did you have an impact on the
3 Department of Energy's plans in any way, or how did the
4 knowledge that Nevada could be badly impacted in the case of
5 just having a repository, let alone a nuclear waste accident
6 of some kind, how did that interface with the DOE's planning?

7 MR. STROLIN: I don't think it really did. You
8 know, we made all of our information available to the
9 Department of Energy as we went along. We provided them with
10 the impact reports that contained all of the findings and the
11 scientific work that was done.

12 The Department of Energy is very traditional in the
13 way that they approach their environmental work. This is
14 all, for DOE's perspective, this was all rolled into their
15 Environmental Impact Statement and National Environmental
16 Policy Act work and responsibilities. And, they took a very
17 traditional role, took a traditional perspective on the NEPA
18 and EIS work.

19 They looked at all the traditional impacts of the
20 facility, basically came to the conclusion that there would
21 be no negative impacts on the State of Nevada, and that the
22 only impacts would be positive, and that would be in job
23 growth and in income that would come into the State from the
24 expenditures of the project, that sort of thing.

25 They specifically hired a researcher, I forget

1 where he came from, one of the universities back East, whose
2 job was specifically to take the risk perception findings
3 that the State had done, and to critique it, and of course he
4 critiqued it in a way that basically said it--he didn't agree
5 with the findings, and that there was no basis for it.

6 Also, NEPA did not require these kinds of impacts
7 to be taken into consideration. And, that's basically the
8 way it was. We're still in--we have contentions now that
9 are, for the Nuclear Regulatory Commission and the licensing
10 proceeding, that challenge the adequacy of DOE's
11 Environmental Impact Statement, based on a lot of the
12 findings from the work that we did on the impact study. But,
13 those things won't be litigated until we get through the
14 licensing proceeding and probably will end up in the courts
15 in an ultimate challenge to the EIS, you know, show the NRC
16 grant a license for the Yucca Mountain project, if it goes
17 that far.

18 MS. JOHNSON: Joe, we've been talking about the
19 State's impact assessment report, and I was wondering how the
20 local governments were involved?

21 MR. STROLIN: Okay. You know, that goes back to
22 way back to the very early days of the Agency, back in--when
23 I was hired in 1984, one of the first things that I was
24 tasked to do was to identify which local governments were
25 likely to be affected by this Yucca Mountain thing, and how

1 best to involve them in some of the State's activities, and
2 especially into the impact work that we were designing and we
3 were thinking about doing at the time.

4 And, one of the first things that I did, the first
5 trip I took, I remember in 1984, was I had set up a meeting
6 with representatives of Clark County, the City of Las Vegas,
7 the City of North Las Vegas, the City of Henderson, and
8 Boulder City was involved, Lincoln County, and Nye County.
9 And, we met in Las Vegas, and the purpose of that was to kind
10 of introduce them to the State's interest in the Yucca
11 Mountain project, or the new State agency, but also to begin
12 to involve them and to figure out how best to design a
13 mechanism whereby we, the State, could move forward with this
14 impact assessment work, but do it in a way that also involved
15 the local governments.

16 So, out of that first meeting, and the subsequent
17 meetings, came a decision to set up a coordinating committee
18 that was going to essentially, and we made this happen,
19 essentially the coordinating committee was made up of all of
20 what we designated as the affected local governments at the
21 time, and the State, and that committee became the oversight
22 committee for the entire study. When we put out the RFP in
23 1986 to do the impact study, it was developed with the
24 concurrence and with the help of this coordinating committee.

25 When we held the meetings to--or, held the

1 conferences to select the actual contractor for the study, we
2 had actually a subcommittee of the local government group.
3 We called it a local government steering committee. We had a
4 subcommittee of the steering committee that actually
5 evaluated the proposals and actually voted on the contractor
6 that helped us to select the contractor that was ultimately
7 selected. So, they were involved very heavily.

8 We also made sure that there were resources for the
9 local governments early on. In 1986, we actually set aside
10 some of the federal money that we were getting as the
11 designated host--potential host state. Under the Nuclear
12 Waste Policy Act, we designated, I don't remember the amount,
13 but it was a significant amount that was passed through to
14 these local governments. And, again, I believe the initial
15 ones that were involved were Nye County, Clark County,
16 Lincoln County. Then, Lincoln County eventually brought in
17 the City of Caliente in Lincoln, and they worked together on
18 that. We dealt with--I believe actually that the City of
19 Caliente became the Lincoln County entity on that
20 coordinating committee. We also had the Cities of Las Vegas,
21 North Las Vegas, Henderson, and Boulder City.

22 Later on, we brought in the Western Shoshone tribe,
23 Western Shoshone Nation, representative of the Western
24 Shoshone Nation, the Wapa (phonetic) Paiutes and the Las
25 Vegas Paiutes. So, we had quite a comprehensive little

1 steering committee that was there, and they were also
2 directly funded by the State. We had contracts with each one
3 of them, and we made annual appropriations to them.

4 That continued until about it was subsequent to
5 1987, and in--probably about 1988. In 1987, the Congress
6 passed the Nuclear Waste Policy Amendments Act, and in
7 addition to singling out Yucca Mountain as the only site to
8 be studied, the Act also changed the definition of who were
9 the affected units of government, state and local, that were
10 eligible for oversight funding.

11 And, it's sort of a long story, but it really goes
12 back to the creation by the State of Nevada of a separate
13 county that encompassed the Yucca Mountain region, and the
14 idea was to--really, it was a creature of the Legislature at
15 the time, but the idea was to make the Yucca Mountain, the
16 specific Yucca Mountain site its own official county within
17 the State of Nevada, and it was called Bullfrog County. It
18 actually passed the Legislature in I believe 1985. I think
19 it was '87 when it was passed.

20 MS. JOHNSON: '87?

21 MR. STROLIN: I think it was '87 when it passed.
22 Well, maybe it was '85.

23 MS. JOHNSON: You know, Rick Moore has a state map
24 with Bullfrog County on it.

25 MR. STROLIN: Oh, yeah, they're very rare.

1 MS. JOHNSON: Yes.

2 MR. STROLIN: We used to have them, but I have no
3 idea what happened to them. But, anyway, Bullfrog County was
4 created basically to give the State more control over the
5 oversight at the Yucca Mountain project. The concern was
6 that Nye County would have been the situs county at the time,
7 and the State I think wanted to be in the driver's seat and
8 not to have to deal with Nye County as the situs county. So,
9 the Legislature at the time set up Bullfrog County as the
10 site. The county commissioners were appointed by the
11 governor of Nevada, and the county seat was designated in law
12 to be Carson City. So, it was a very unusual sort of local
13 jurisdiction that had been established.

14 MS. JOHNSON: With no residents.

15 MR. STROLIN: With no residents, that's right, with
16 no residents at all. It was an unpopulated county.

17 But, one of the fallouts--and, by the way, Bullfrog
18 County didn't last too long. I think within a couple years,
19 it was challenged by Nye County and found to be
20 unconstitutional according to the Nevada Constitution. But,
21 it did have an effect because when Bullfrog County was
22 created, and it was created in 1985, because Bullfrog County
23 was in existence when the Nuclear Waste Policy Amendments Act
24 was going through Congress in '86, and was eventually passed
25 in early '87.

1 Nye County was very concerned about being cut out
2 of the process, and concerned that they would no longer be
3 eligible for any kind of impact assistance, or whatever,
4 should the project go forward. So, Nye and a few of the
5 other counties were able to get together and influence
6 Congressional legislation that became the Nuclear Waste
7 Policy Amendments Act in '87 to stipulate that an affected
8 unit of local government was not just the situs county, it
9 was now the situs county, plus any county that had contiguous
10 borders with the situs county. So, originally, that meant
11 that just Nye County would be the only other affected county,
12 because Bullfrog County was wholly within Nye County. The
13 only county with a contiguous border was Nye County.

14 Well, the problem came a couple years later when
15 Bullfrog County was declared unconstitutional. Nye County
16 became the situs county. And, with that designation as situs
17 county, that opened up the possibility for ten additional
18 counties that had contiguous borders with Nye County to
19 become designated as affected units of local government under
20 the Nuclear Waste Policy Act.

21 MS. JOHNSON: Nine additional, ten total.

22 MR. STROLIN: Oh, ten total, I'm sorry. Nine
23 additional; right.

24 So, once that happened, there had to be litigation,
25 as you know, there was litigation that occurred to force the

1 Department of Energy to recognize those contiguous counties
2 as affected units of local government. But, once that
3 litigation was successfully undertaken, the counties began to
4 receive, were eligible to receive direct payments from the
5 Department of Energy for oversight and impact assistance
6 work.

7 And, once that happened, the structure that we had
8 set up for working collaboratively with the counties and for
9 jointly managing the socioeconomic study, it pretty much
10 started to fall apart. We still would hold periodic
11 meetings. We still would keep them apprised of what was
12 going on. But, the counties began to do their own work and
13 to do the things that were most important to them, and were
14 no longer as closely involved with a single overall State
15 impact program, as we had envisioned it.

16 So, essentially, that's where we ended up. By the
17 time this impact report was put together, and the studies
18 were wrapped up and completed, the State was pretty much
19 working on its own. We took into account the individual
20 reports that were put together by the counties on impact, and
21 tried to incorporate, to the extent we could, the findings
22 and the conclusions of those reports. But, the overall work
23 really became a State product rather than a collaborative
24 effort on the part of the State and all the affected
25 counties.

1 MS. JOHNSON: Let's move on to the next question.

2 I know that over the years, there have been public
3 opinion surveys about how Nevadans feel about the Yucca
4 Mountain repository. I'd like you to talk a little bit about
5 that. What was learned from those surveys, specifically
6 about public opinion rather than the socioeconomic work, and
7 what the response of the Department of Energy and the nuclear
8 industry has been to that public opinion information, and
9 what they have done with it.

10 MR. STROLIN: Okay. The so-called public opinion
11 work that we've done, it was really an outgrowth of the
12 socioeconomic study. The early survey research that we had,
13 even though we weren't looking so much for public opinion
14 findings in that research, we were more interested in other
15 things, we did--because we had the opportunity and we were
16 doing such cross-cutting and comprehensive surveying of the
17 State, we, in the Nevada surveys that we did, we always
18 included several questions that had to do with do people
19 support or oppose the repository, how do they feel about the
20 State's--the position that the State was taking on the
21 program, what were the key risks that they saw, and just
22 specify what were the risks that were considered to be the
23 highest risks, and then we ranked them, that sort of thing.

24 Well, anyway, but we wanted these questions to be
25 more than just off the top of your hat polling questions.

1 So, we actually had the experts, the survey experts that we
2 had employed, we actually had them working on coming up with
3 questions that would be as fair, as unbiased, and as
4 meaningful as we could.

5 MS. JOHNSON: And, consistent, too.

6 MR. STROLIN: That sort of developed as we went
7 along. We started this, never expecting that we would be in
8 this, you know, 20 years later, 30 years later, but we
9 started this with the early survey research, and we wanted to
10 have this little component of that survey research.

11 So, we developed these questions, which became
12 questions that we have been asking now since 1986, about
13 every two years. But, there were several that were
14 consistent through all the years. We didn't want to just go
15 and ask people do you support or oppose Yucca Mountain. We
16 thought it needed to have a little bit more of a--a little
17 bit of a behavioral component to it, not just do you want it
18 or don't you want it.

19 So, the question that was developed and agreed upon
20 was, "If you had the opportunity to vote on whether or not
21 the Yucca Mountain high-level nuclear waste repository
22 program should be built in Nevada today, would you vote for
23 it or would you vote against it?" It was a very simple
24 question. So, our support and opposition question became
25 one, you know, how would you vote if you were given the

1 opportunity, so it put it into a context that people could
2 relate to and understand in terms of voting. And, we thought
3 we'd be more likely to get objective responses that way.
4 That was one of them.

5 The other question that we wanted to get at at the
6 time was sort of whether people supported the State's
7 position or not. But, we don't want to come right out and
8 say that because it would be biased. So, what we asked
9 instead, this question took a long time to develop and there
10 was a lot of back and forth and debate over how best to
11 phrase it, and it took a while to come up with. I don't have
12 the exact wording with me, but it basically said that there
13 was a qualifier or an explanation in the front of the
14 question that said, "Some people believe that the Yucca
15 Mountain project is safe and acceptable, and that the State
16 should go along--or should not oppose it. Other people say
17 that the Yucca Mountain project presents risks to the State
18 and that the State of Nevada should continue to oppose the
19 project, and continue to oppose the project even if that
20 meant turning down benefits that might be offered by the
21 Federal Government."

22 So, that's been a question that we've been asking
23 now since 1986, along with the vote question. We also had
24 some other questions in there about risks, what were the
25 risks that people perceived as the highest risks, so forth.

1 But, anyway, I'll try to get a little bit to the results.

2 So, from 1986 until the most recent one we just did
3 was last December in 2010, we have asked these same questions
4 basically. And, the results have been amazingly consistent.
5 Over the years, I would say, I don't have the exact numbers
6 in front of me, but between 60 and 70 percent of people who
7 were asked the vote question would vote against Yucca
8 Mountain, consistently year after year after year. If you
9 graphed it on a graph, the graph might go up and down a
10 little bit like this, but basically it was almost a straight
11 line across, with peaks at different times when opposition
12 would increase. There was a peak at the time when the site
13 recommendation was made, and Governor Guinn's veto was
14 overridden. So, different things could correspond with the
15 peaks in opposition to the project.

16 The same was true with the question on should the
17 State agree to the Yucca Mountain project, or should it
18 continue to oppose. That traditionally had a couple of
19 points lower than the vote question, but it's been consistent
20 at around 60 percent, 60 to 65 percent from 1986 until 2010.
21 And, it's really remarkable that there has not been that much
22 of a change, especially given some of the things that have
23 occurred in the public relations arena during that time.

24 You will recall that around 1990, the nuclear power
25 industry came into Nevada with a major well-funded public

1 relations campaign, almost a--it was almost in the nature of
2 an electoral campaign, a campaign for office, where the goal
3 of that campaign was to turn public opinion around, to the
4 degree where there would be support for the Yucca Mountain
5 project, and where the State would change its position.

6 All during that--that campaign lasted for, I think,
7 about four years, and all during that campaign, opposition
8 not only didn't decrease in the State, but opposition
9 actually increased. And, it was quite an interesting
10 phenomenon. And, in fact, I understand it is now one of the
11 examples that's used in some of the research programs and
12 things that teach polling, that they use the example of
13 unintended effect of a public relations campaign, having the
14 opposite effect that it was intended to have.

15 And, we were fortunate enough, we had surveys in
16 the field at the time that this campaign was going on, and so
17 we took advantage of that by reasking our questions again.
18 And, we found that with the expenditure of resources by the
19 industry, and the more the industry was running
20 advertisements telling people how safe nuclear waste was and
21 how good a deal Yucca Mountain was, the higher the opposition
22 level was going.

23 And, it really came down, the people that analyzed
24 it for us, the scientists that analyzed it for us, it really
25 came down to the credibility of the source, and the nuclear

1 industry, the folks that were funding this massive campaign,
2 were seen by most people as not credible and not believable.
3 And, therefore, the more they tried to convince people, the
4 less people believed them. It was kind of a fairly
5 interesting phenomenon.

6 MS. JOHNSON: Let's move onto the next question.

7 Joe, behind you, there is a picture of the crest of
8 Yucca Mountain and the view to the west.

9 MR. STROLIN: Uh-huh.

10 MS. JOHNSON: I was wondering, you must have gone
11 on more than one Yucca Mountain tour in the four decades that
12 you've been working on this project. What were your
13 impressions of Yucca Mountain tours, and what did you learn?

14 MR. STROLIN: Yeah, I've been up there I can't tell
15 you how many times, but many times, sometimes with the DOE
16 people and sometimes with other groups, and sometimes with
17 our own researchers.

18 The Department of Energy tours are probably the
19 most interesting in terms of what went on, or what would go
20 on. We made it a policy that whenever any of the State
21 people went out, whenever any of the local government folks
22 went, whenever there was a national group that did a tour of
23 Yucca Mountain that was being organized by DOE, we tried to
24 have one of the State technical people along on that tour,
25 because what we found was that--and, I've been on tours when

1 there were no Nevada technical people on the tour--the
2 Department of Energy used the Yucca Mountain tours as a
3 marketing tool, pure and simple. I don't think they made any
4 bones about it. Their goal in running those tours was to
5 promote public acceptance of the project.

6 And, when you went on a Yucca Mountain tour, if you
7 didn't have someone there who knew what was going on and knew
8 the realities of what was being presented by the DOE folks on
9 the tour, you would think that there was absolutely no reason
10 why this project could not go forward, that everything was
11 perfectly okay, that the mountain was the best site that
12 anybody had ever looked at. And, it was only the irrational
13 fears of the State and its people that were keeping this from
14 happening.

15 However, when our people were on the tour, it was a
16 very different experience because there was a lot of
17 interaction and give and take between the DOE technical
18 person and our people. And, not only that, but the DOE
19 people would be much, much more careful about what they said
20 and about the claims that they would make, and they would
21 always be--and they would tend to be always solicitous of the
22 Nevada person, and very careful about not overstating their
23 case. So, it was a much different tour.

24 When we were able to put our people on the tour
25 with them, you actually got a pretty good objective view of

1 what was happening. But, when they were by themselves, they
2 were--all bets were off in terms of what they were going to
3 say, and I could see that--and, we certainly didn't have
4 people on every tour. For a while, they were running these
5 tours, you know, several a week maybe, or more. So, I'm sure
6 that there was a lot of salesmanship that was going on that
7 was unrebutted in terms of the State.

8 One of the things that really strikes you, you
9 know, when you go to Yucca Mountain, that picture behind me
10 shows--this is a very old picture of Yucca Mountain. This
11 picture actually predates the Nuclear Waste Policy Act, and
12 DOE had been studying or looking at places for a repository,
13 and primarily only Yucca Mountain for a while, before the
14 Nuclear Waste Policy Act was passed. And, the drill rig up
15 on top of it, they had actually drilled a hole down through
16 the mountain, a small hole, like a well down through the top
17 of the mountain to kind of get core samples and sort of look
18 at what was the underlying structure of the mountain.

19 But, when the tours were taking place, that drill
20 rig was gone, so all you really had was the--there was
21 nothing up there, so all you really had was the road. The
22 view here is you're looking to the east, so you're looking
23 back toward the east, toward the Test Site, toward, if you
24 look the east and the north, to the north would be the Yucca
25 Flat areas, the areas where some of the testing occurred. To

1 the west, if you're standing on the top of that ridge and you
2 were looking this way toward--it would be looking toward the
3 west, you're looking toward Amargosa Valley and Death Valley
4 and that region.

5 And, just a little bit to the east and to the
6 south, are these very distinctive volcanic cinder cones, and
7 it's very impressive from the crest of Yucca Mountain to look
8 off to that side and to see these relatively young evidence
9 of volcanism in the area. And, that's been a major
10 contention with the State, between the State and DOE for
11 years and years about the potential for renewed volcanism at
12 Yucca Mountain, and whether or not that volcanic activity
13 could reoccur in that vicinity during the life of a
14 repository. And, you're talking geologic time here, you're
15 talking 10,000 years.

16 But, the cinder cones that exist there always were
17 very problematic for the DOE people on those tours, because
18 they stood there as stark evidence that this was a
19 geologically young region, and there was no real way to cover
20 that up and to deny it, other than to try to make the case,
21 as they always did, that these things were very old, and it
22 was not likely to be a recurring volcanism.

23 MS. JOHNSON: My recollection is that fairly
24 recently, in maybe the past five or six years, there's been
25 research on the low probability, high consequence event of

1 magma seeping in from one of those volcanoes into the
2 repository, and what the heat and moisture consequences would
3 be.

4 MR. STROLIN: Yeah, I understand that as well. As
5 a matter of fact, some of our contentions in the licensing
6 proceedings that's ongoing involve just that, and it involves
7 the dispute that's very, very much active right now between
8 DOE and the Nevada researchers about the potential for
9 renewed volcanism at the site, and that this sort of what
10 they call an igneous intrusion event, which wouldn't
11 necessarily require volcanic activity right at the site,
12 volcanic activity could occur, you know, significant
13 distances away, but it could result in small amounts of
14 intrusion of hot molten lava into parts of the repository.
15 And, that's all it would take to create quite an event within
16 the repository, and then perhaps even causing volcanic gases
17 and things to migrate up through the fractures of the rock
18 and the mountain, and actually enter the atmosphere, carrying
19 with them whatever radionuclides might have been released as
20 a result of contact with the containers. But, that is one of
21 the big issues in licensing that the State intends to push
22 forward on.

23 MS. JOHNSON: Let's move onto the next question.

24 Whatever you said before about just talking about
25 the complexity of the mountain, look at, you could say, you

1 know, this looks like a mountain, but it's underneath,
2 there's all these different kinds of rock and it's fractured.

3 We're rolling Tape 2.

4 So, when you look at the picture of Yucca Mountain
5 behind you, it looks like it's just one big solid rock
6 mountain. Is it?

7 MR. STROLIN: Well, hardly. Far from that. This
8 is a very complex structure, and one of the problems that DOE
9 has had from the very very beginning is the complexity of the
10 Yucca Mountain site. Other sites that were located in salt
11 formations and granite formations, they were relatively
12 homogeneous. They were single rock formations that, you
13 know, were relatively easy to characterize. You knew what
14 the properties of them were. You knew how things were going
15 to react. You knew whether water was there, or whether it
16 wasn't, whether the water moved fast, whether it moved slow.

17 Yucca Mountain is probably, of all those sites that
18 they looked at--they looked at nine sites--of all the sites
19 they looked at, Yucca Mountain is by far the most complex.
20 And, as you can see by the--I believe this is a little piece
21 that was put together by the Department of Energy that shows
22 samples of the various rock levels within the mountain. And,
23 you will see on this side of the chart, it shows you where
24 each one of these different kinds of volcanic rocks are
25 located.

1 And, it creates a patchwork of rock formations that
2 you have to understand in totality, so as I understand, and
3 I'm not a geologist, but as I understand, you need to
4 understand how this thing is going to function as a system.

5 One of the problems with it is that as you can see,
6 if you look at the picture of Yucca Mountain, it looks like
7 it's a solid mass. But, it's not. Underneath that, it's a
8 highly complex and highly fractured system of rocks, with
9 fractures running between all of the various rock formations
10 and rock members. And, one of the major problems with the
11 Yucca Mountain site is that it has a series of just fractures
12 and faults that are part and parcel of what's there. And,
13 those fractures and faults, they are all interconnected all
14 the way up and down through the mountain, and they provide
15 what they call fast water pathways. And, the fast water
16 pathways allow groundwater to migrate relatively quickly from
17 the surface of the mountain through where the repository
18 horizon would be, which is about somewhere around 2000 feet
19 below the top of the mountain, down the following 900 or 1000
20 feet below that to the water table below.

21 Originally, DOE had speculated that the groundwater
22 travel time, the time it gets from the surface to the aquifer
23 below the repository, that that would be in thousands or tens
24 of thousands of years, that it was very slow because the
25 mechanism by which it would have to flow was called matrix

1 flow. What it meant is like a sponge, that things were so
2 tightly woven in all of these rock formations, that the water
3 could only migrate by seeping very slowly through the very
4 small pores of the rock, sort of all you would in a very
5 dense, dense, dense sponge. So, it would move very slowly.

6 What they found was once they got into the
7 characterization work of the mountain, and what our people
8 found especially, our people were very much involved in these
9 studies, our State researchers were the ones that probably
10 forced a lot of the work that came about to make these
11 conclusions, what they found is that the groundwater travel
12 time through these rocks is very fast because it doesn't go
13 through the pores of the rocks. The water travels through
14 these interconnected fractures, and it goes down very
15 quickly.

16 Well, when you put 50 or 70 miles of tunnels under
17 that rock, you're opening up all of these faults and
18 fractures throughout the repository facility, and, so, you
19 have water that is going to be moving very rapidly down
20 through the rock into the tunnels, where the waste is going
21 to be emplaced. Now, DOE knew that, and the initial siting
22 guidelines that were developed in 1984 and '85 for all of the
23 repository sites that were under consideration at the time,
24 those initial siting guidelines had a disqualifying condition
25 that said that if groundwater travel time from the surface to

1 the repository horizon, not to the aquifer, but to the
2 repository horizon was more than--less than, I'm sorry, less
3 than 1000 years, the site had to be disqualified.

4 Well, it became apparent, and was documented
5 scientifically through radioisotope analysis, that the
6 groundwater travel time from the top of Yucca Mountain to the
7 repository horizon was less than 40 years, and that was
8 documented by the use of a radioisotope that was generated as
9 a result of nuclear testing that was done in the Pacific. I
10 don't remember the name of it now, but that isotope was found
11 in perched water that was below the repository horizon and
12 was definitively tied to the nuclear testing that occurred in
13 the Pacific in the Fifties. So, there is no doubt that water
14 travels very rapidly through the repository horizon.

15 The other problem is that even though Yucca
16 Mountain is above the water table, what they call the
17 saturated zone, it's in what they call unsaturated zone, it
18 is not dry. The unsaturated zone at Yucca is anywhere
19 between 85 and 90 percent saturated. So, you do have quite a
20 bit of water that already exists in the rocks that's kind of
21 sort of on its way migrating toward the water table.

22 One of the problems that you would encounter
23 because of the structure at Yucca Mountain, and the fractures
24 and faults that that comprises, is that one of the
25 characteristics of spent fuel is heat, thermal heat, not just

1 radioactive problems, but you have thermal heat, the thermal
2 dynamics in the repository, and you put that much spent fuel
3 giving off tremendous amounts of heat in those tunnels, it
4 raises the temperature of the surrounding rock to above the
5 boiling point, and that rock stays at that temperature for
6 several hundred years after the waste has been emplaced.

7 What that does is it drives all that moisture
8 that's in that unsaturated zone, it drives it away from the
9 repository horizon. But as the spent fuel decays and it
10 loses its heat signature, that water begins to migrate back
11 into the--through the rocks fractures and pores, and it
12 eventually all pours down into the tunnels and onto the waste
13 packages. And, when it comes back, it's been, because it's
14 been heated and because it's been exposed to highly corrosive
15 minerals in the Yucca Mountain subsurface in the rocks
16 themselves, the water comes back in a highly corrosive form.
17 And, because Yucca Mountain is above the water table, it's in
18 what they call an oxidizing environment. It creates
19 corrosion relatively rapidly.

20 And, some of the corrosion studies that we've done
21 have shown that the metal that is proposed to be used for the
22 containers to hold the waste at Yucca Mountain, when that
23 metal is exposed to water of the same consistency that would
24 be found in Yucca Mountain, that it begins to corrode, not in
25 a matter of years, but you can see evidence of corrosion in a

1 matter of months.

2 So, there are a lot of findings that have been made
3 over the years as a result, primarily focusing on this whole
4 issue of water movement through the mountain, and what does
5 it mean for waste isolation.

6 MS. JOHNSON: Let's move onto the next question.

7 We're talking about how the water moves through the
8 rocks, the fractured rocks in Yucca Mountain. Then, what
9 happens when it keeps moving and it gets to the water table?

10 MR. STROLIN: Well, that's the \$64,000 question.
11 That's really what the whole licensing proceeding is about.
12 Will Yucca Mountain be able to contain the spent fuel and the
13 radionuclides that comprise the spent fuel for the time
14 required for it to be benign by the time it reaches the
15 accessible environment? And, at Yucca Mountain, the
16 accessible environment really is the aquifer that underlies
17 Yucca Mountain, and from the aquifer to wherever the water is
18 actually going to be used for human consumption, or where it
19 interacts with other aspects of the environment.

20 Just as a side note, one of the real, I think, the
21 real fallacies of DOE's approach to Yucca Mountain all along
22 has been once they discovered that the travel time for the
23 groundwater was so rapid, and once they discovered that they
24 also had probably problems with the corrosion of the
25 canisters and the potential for a geologically early release

1 of certain amounts of the inventory at the repository, we're
2 talking over thousands or tens of thousands of years, but
3 earlier than would be allowed in regulation, they had to do
4 something to assure that their models, their performance
5 assessment models they call it, would show that the mountain
6 would be in compliance with the regulations for the release
7 of radionuclides over the life of the facility.

8 So, in addition to having the what they're defining
9 specialized containers and metal material for the containers,
10 drip shield that would be intended to try to keep this water
11 from impacting the containers for as long as they could, that
12 still wasn't enough. So, what they did is they designed a
13 site boundary for Yucca Mountain that corresponded with the
14 water flow, the underground flow of the aquifer at Yucca
15 Mountain, that instead of being like just a circle around the
16 site, a five mile or ten mile circle, there was I believe
17 five miles on the north, south and east of the site, but then
18 there was this long P-shaped site boundary that went, I
19 forget exactly--

20 MS. JOHNSON: 18 miles.

21 MR. STROLIN: 18 miles, 19 miles down to the south,
22 just before Amargosa Valley, where they considered the first
23 human settlement to be. And, the purpose of that was to
24 allow them to take credit for the dilution of radionuclides
25 in the aquifer before it became available for use at a point

1 where they considered the population most likely to tape into
2 it.

3 So, you really had the aquifer being used, which is
4 bizarre, the aquifer being used as part of the waste
5 isolation system for the Yucca Mountain repository. You're
6 actually assuming you're going to contaminate that aquifer to
7 a certain degree, but by the time the radionuclides get to
8 your artificial boundary to the south and west, it can meet
9 the regulatory release limits at that point, or likely could
10 not meet those release limits if the site boundary were
11 closer to the actual Yucca Mountain facility.

12 MS. JOHNSON: That's pretty ironic considering how
13 arid a State Nevada is and how little water there is overall.
14 I recall from the environmental assessments that were done at
15 the time when all nine sites were being considered, that one
16 of the drawbacks of the Yucca Mountain site at that time was
17 that if radiation were released into the water, that it could
18 actually be of a sufficient dose to harm an individual as
19 opposed to, for example, the site up in Washington State
20 where it would be so diluted by the Columbia River, that no
21 one human could drink an atomic cocktail.

22 MR. STROLIN: Uh-huh.

23 MS. JOHNSON: This looks like that would happen,
24 that one human would be drinking an atomic cocktail.

25 MR. STROLIN: Yeah, this is a schematic of--it's a

1 graphic representation of how Yucca Mountain, a radiological
2 release from Yucca Mountain would affect people and the
3 environment down gradient from the repository. It shows the
4 aquifer, and the aquifer would be the mechanism by which the
5 radionuclides would be transported from the site to potential
6 contact with people, livestock, the food chain, that sort of
7 thing.

8 And, it just shows the various ways that that--once
9 the aquifer has been contaminated, anything that's pumped out
10 of that aquifer is going to have an effect. It's going to
11 have an effect on people directly by ingestion of the water.
12 It's going to have an effect on livestock because the
13 livestock are fed the water, and it's going to have an effect
14 on the soil and the resulting agricultural activities that
15 are going on, which leads to the food chain.

16 And, then, as things dry up, which they invariably
17 do in the arid areas surrounding that part of the State, and
18 then the high winds that we have, if you have radioactive
19 contaminated water, eventually you will have radioactively
20 contaminated dust. So, you have a potential for aerosol and
21 dust suspension of the radionuclides.

22 So, you know, it is a fairly graphic picture, but
23 it gives you an idea of the concern that exists down gradient
24 from Yucca Mountain.

25 MS. JOHNSON: Let's move onto the next question.

1 Joe, in our conversation today, you've talked a lot
2 about risk perception and risk, and as you know, this is the
3 one week anniversary of the terrible tragedy in Japan, with
4 the tsunami and the effects on the nuclear power plants on
5 the Northeast Coast of Japan, which are still releasing
6 radiation as we speak.

7 Eureka County has been working on a report to look
8 at lessons learned so far, and of course we are just still
9 learning. I'm wondering what your opinion is of how
10 reliability in government, that is, people trusting in the
11 government to give them correct information and to do a
12 project correctly, thinking about what's going on in Japan
13 and thinking about the Yucca Mountain project, what your
14 reactions are?

15 MR. STROLIN: Well, I think this whole issue of
16 trust and confidence is central, I think, to the ability of
17 the Federal Government to move forward and to solve a
18 problem, a technological problem like spent nuclear fuel, a
19 problem that is so loaded with emotion in terms of how people
20 perceive things radioactive and nuclear, the events in Japan,
21 you know, the fear that's going through the country right now
22 about potential for radiation reaching the United States, the
23 run on potassium iodine tablets in this country, all of this
24 stuff is an indication that people have real concerns about
25 things that are nuclear. And, there are a lot of reasons for

1 that. I think that what we found in a lot of the research we
2 did, that these are not necessarily rational kinds of fears,
3 and they're not based on things that are real or can be
4 measured, but they are real to those people and to people
5 nonetheless. And, they have to be treated as real reactions
6 and as realities for people, and as shaping the context of
7 what we do in terms of trying to site facilities like power
8 plants, or site facilities like nuclear waste repositories.

9 If you don't have confidence in the institutions,
10 the government and the institutions responsible for ensuring
11 safety, if you don't believe what's coming out of the
12 government in terms of what they're telling you about the
13 safety of facilities, in the case of Yucca Mountain, it was
14 entirely fundamental that the State of Nevada and the people
15 in Nevada never believed the information that the Department
16 of Energy was coming out with about Yucca Mountain. It was
17 transparently one sided all the time. It was self-serving on
18 the part of the government. They made very little attempt to
19 take into account any information that was contrary to the
20 conclusions that they needed to have to make this project
21 work and to sell it to the President and to the Congress.

22 We often said that up until about 1987 when the
23 1987 Amendments Act was passed that singled out Yucca
24 Mountain, up until between '84, '83, and '87, within the
25 Department of Energy, there was a certain attempt to at least

1 look at whether or not these sites they were investigating
2 were suitable, and they were actually talking suitabilities,
3 whether is this a good site. The question being asked really
4 was is this a good site?

5 Now, they had a lot of, on all of the sites, they
6 had a lot of misinformation coming out and skewed
7 information, but generally the question was is this a good
8 site.

9 After 1987, the question changed. It changed
10 abruptly for Yucca Mountain. It was no longer is Yucca
11 Mountain a suitable site, even though they were just at the
12 very early stages of trying to understand the site and trying
13 to characterize it. The question became for everyone
14 involved in the project how do we make it work. How do we
15 make it work in spite of the flaws, in spite of what we might
16 find, in spite of the failures and the fallacies and the
17 faults and the fast water movement. Every disqualifying
18 condition they came upon from then on became a challenge to
19 overcome. How do we engineer around it? How do we fix it?
20 How do we obfuscate it? How do we build it into the
21 Performance Assessment Models so it won't affect it too much?
22 This was really very much the case.

23 And I really truly believe that a great deal of the
24 State opposition, I know in our office, a great deal of the
25 State opposition was fueled by the fact that we could not and

1 did not believe any of the information that they were giving
2 us and that was come out of, even the scientists that were
3 working for DOE, the way that their work was--the results and
4 their findings was used and was presented, they were
5 prohibited from publishing, they were prohibited from making
6 or writing papers, making statements unless they were cleared
7 by DOE. So, it was a very controlled process.

8 I think if you're going to have trust and
9 confidence in a siting project like this, or in a--with
10 respect to a nuclear power plant, especially things nuclear
11 that people have such concerns about, there has to be a
12 demonstrable openness to the process. So, I think trust and
13 confidence is probably the central characteristic of a
14 successful program.

15 MS. JOHNSON: Joe, you've been in this program a
16 long time, and I'm sure you've given a lot of thought to what
17 could be done better or what lessons could be learned. Do
18 you have any advice for us?

19 MR. STROLIN: Well, I don't know about advice, but,
20 you know, we've certainly learned a lot, being involved in
21 this program, a lot about what not to do. But, a few things
22 in terms of what are important, and I think from my
23 perspective, and we've written this, we've provided this to
24 the Blue Ribbon Commission, but from my perspective, the
25 single most important thing that should be learned and can be

1 learned from the Yucca Mountain experience to date is that
2 you cannot force a site on an unwilling state or an unwilling
3 community. It's a recipe for disaster.

4 Any future repository siting process, any future
5 process for siting a centralized storage facility for spent
6 fuel must be voluntary, and it has to be a real meaningfully
7 voluntary program. There are many ways to call something
8 voluntary that have fail-safes in it for the project
9 implementer where they rope you into it, where you can't back
10 out after you've gone so far. If that should be the way that
11 the next siting process is approached, I don't believe it
12 will work.

13 I think that you have to be able to provide
14 ironclad assurances to the potential host state, or a state
15 in which you are looking for sites, that they have the
16 ability to opt out of the process at any time without
17 penalty. That gives the state the sanction among its people,
18 among its elected officials, it allows them, it gives them
19 the permission to go ahead and engage in initial
20 negotiations, engage with you in the development of plans and
21 policies regarding the facility. It has to be an open
22 process where the science is not geared toward trying to make
23 the site work, but geared toward truly evaluating whether or
24 not this is a good site. The question has to be is this site
25 suitable? Is it a good site? Will it do what it is supposed

1 to do, period, without having to fix things, without having
2 to add in all sorts of man made and engineering fixes to
3 overcome what would otherwise be flaws, fatal flaws in the
4 site.

5 But, it really comes down to the volunteer process
6 and to the ability of the Federal Government to give up that
7 kind of control and say we are confident enough in the work
8 that we're doing, that we are willing to involve you in a
9 voluntary way, and you may bail out at any time if you think
10 the site isn't suitable or we're not doing what we say we're
11 supposed to be doing. That would be my advice, and that's
12 the thing that I've taken away from this project so far in
13 the many years that we've been battling with the Federal
14 Government over this.

15 MS. JOHNSON: Joe, thank you very much.

16 MR. STROLIN: Thank you.

17 (Whereupon, the interview was concluded.)

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