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COMMUNITY RADIATION MONITORING PROGRAM

ANNUAL REPORT

October 1, 1990 – September 30, 1991

by
E. Nathan Cooper
Richard D. McArthur

June 1992

MASTER

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**COMMUNITY RADIATION MONITORING PROGRAM
ANNUAL REPORT**

October 1, 1990 – September 30, 1991

**by
E. Nathan Cooper
Richard D. McArthur**

**Water Resources Center
Desert Research Institute
University and Community College System of Nevada**

Publication # 45695

**prepared for
Nevada Field Office
U.S. Department of Energy
Las Vegas, Nevada**

June 1992

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SECTION 1

INTRODUCTION

The Community Radiation Monitoring Program is a cooperative effort between the U. S. Department of Energy (DOE), the U. S. Environmental Protection Agency (EPA), the Desert Research Institute (DRI), a division of the University and Community College System of Nevada, and the Nuclear Engineering Laboratory of the University of Utah (U of U). This eleventh year of the program began in the summer of 1991 and the work continues as an integral part of the DOE-sponsored long-term offsite radiological monitoring effort that has been conducted by EPA and its predecessors since the inception of nuclear testing at the Nevada Test Site (NTS).

The primary objectives of this program are still to increase the understanding by the people who live in the area surrounding the NTS of the activities for which the DOE is responsible, to enhance the performance of radiological sampling and monitoring, and to inform all concerned of the results of those efforts. One of the primary methods used to improve the communication link with the potentially impacted area has been the hiring and training of local citizens as Managers and program representatives in 19 communities adjacent to and downwind from the NTS. These Managers, active science teachers wherever possible, have succeeded, through their training, experience, community standing, and effort, in becoming a very visible, able and valuable asset in this link.

Other methods that are used to further the goals of the program include presenting public education forums in many communities, disseminating information on radiation, weapons testing, energy and related subjects, and developing and maintaining contacts with local citizens and elected officials in the offsite area. The public presentations have evolved largely into being made to identified and selected audiences, such as schools and service clubs, who request information on specific subjects.

The responsibilities of the entities involved in the program, documented in previous reports (see references), briefly are as follows: DOE provides funding and management guidance; EPA is responsible for all technical aspects of the program, i.e., equipment installation and maintenance, sample collection and analysis, data analysis and dissemination and management support; the U of U provides semi-annual technical training for Station Managers and Alternates; and DRI organizes the public outreach part of the program, hires and manages Station Managers and Alternates, interacts with people in the communities, disseminates information, and does limited data verification through independent sample collection and analysis.

SECTION 2

STATIONS AND STATION MANAGERS

GENERAL COMMENTS

The number and locations of the Community Radiation Monitoring Stations did not change during this year (see Figure 1). There is still some consideration being given to establishing one or two more stations in this network, specifically at Mesquite and Elko, Nevada, but budget limitations have delayed those actions. Minor relocation of stations had to be done at Indian Springs, Nevada, and St. George, Utah. Both locations are really better in public exposure and appearance than were the old sites. At least three more stations are scheduled for relocation in the future, for technical and cosmetic reasons.

Figure 1. Community Radiation Monitoring Station Locations.

Station Managers and Alternates were in place at all 19 stations at the end of the fiscal year (see Table 1). The changes listed below were made in the roster:

Cedar City, Utah – Mel Baldwin has retired from teaching and was promoted to Station Manager Emeritus (which means he is off the payroll but still a Program representative in his community and will attend the Summer training session).

Glade Sorenson was promoted to Station Manager.

Don Newman, science teacher at Cedar City High School, was hired as Alternate Manager.

Ely, Nevada – Floyd Ricketts and Lou Papez, Co-managers, have retired from teaching and have resigned from the program.

Becky Murdock, science teacher at White Pine High School, was hired as Station Manager.

Gloria Mullen, science teacher at Ely Middle School, was hired as Alternate Manager.

Las Vegas, Nevada – Dr. Hiram Hunt, Station Manager since the program began, has retired from his teaching responsibilities at the University of Nevada, Las Vegas, and has resigned from the program.

Roy Reeder, science teacher at Rancho High School, was hired as Station Manager.

Don Curry, science teacher at Rancho High School, was hired as Alternate Manager.

Pahrump, Nevada – Larry Goins, Alternate Manager, has resigned because of time constraints in his teaching and coaching duties at Pahrump High School.

Dan Donnelly, science teacher at Pahrump Middle School, was hired as Alternate Manager.

St. George, Utah – Kelly Bringhurst, geology professor at Dixie College, was hired as Alternate Manager.

On April 1, 1991, all Station Managers and Alternates were signed to professional part-time contracts with the Water Resources Center of DRI, and any hires subsequent to that were put under contract. This is an administrative change that has no financial impact on the program.

Eight of the original Station Managers hired during the summer of 1981 are still in those positions, and the four that were hired when new stations were added to the network later have not changed. There are 17 Station Managers and 17 Alternate Managers on the DRI payroll, with the Station Managers at Salt Lake City and Amargosa Valley paid from other sources.

TABLE 1
STATION MANAGERS AND ALTERNATES
September 30, 1991
COMMUNITY RADIATION MONITORING PROGRAM

ALAMO

Clark M. "Rick" Hardy (Lorna)
P.O. Box 394
Alamo, NV 89001
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(W) (702) 725-3321

(Alternate)

Dell Sullivan (Marva)
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(H) (702) 725-3544

AMARGOSA VALLEY

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BBQ Ranch, Box 1
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(Alternate)

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BEATTY

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(W) (702) 553-2902

(Alternate)

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(Alternate)

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ELY

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OVERTON

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MANAGER TRAINING

Two training sessions for Station Managers and Alternates were conducted by Dr. Gary Sandquist of the U of U during this fiscal year. Agendas, attendance lists and transcripts of the "Station Manager Reports" are included in Appendix A of this report.

The Winter training session was held at the Palace Station Hotel in Las Vegas on December 27–28, 1990. Twenty–two Managers and Alternates attended the two full day gathering and heard a review of radiation training and several other relevant presentations, and took a tour of the new EG&G Energy Measurements Facility at Nellis Air Force Base. The program operation, as reported by our Station Managers and Alternates, was proceeding normally and going well.

The Summer training session was held in Brian Head, Utah, the week of August 5–9, 1991. This session, the fourth consecutive year in Brian Head and the eleventh summer training effort for this program, was attended by 16 Station Managers and 13 Alternate Managers.

The agenda for the training was developed by Dr. Sandquist with the assistance of JoAnne Burrows (DOE/NV), and was excellent as usual. Logistic support and arrangements were provided by DRI. The EPA provided their usual excellent support and training for station equipment operation.

Among those present for the session were Mary Lehman from the Nevada Desert Experience in Las Vegas, Bruce Church and JoAnne Burrows from DOE/NV, Bob Taft from REECO, President James Taranik of DRI, representatives from DOE and EG&G at Rocky Flats, and four representatives of local governments of cities around the Rocky Flats facility. Other people of note who attended parts of the event were Bob Nelson and Rudy Cruz from DOE/NV, Roger Jacobson from DRI, and Jim Payne and Jerry Martin from EPA/Las Vegas.

The training session was conducted by Dr. Sandquist, with assistance from Dr. Mike Slaughter, also from the U of U. Guest speakers included Bob Nelson (DOE/NV), Jackie Schmidt (PNL/Hanford), Steve Oberg (INEL), Bonnie Pauley (EG&G/Rocky Flats), Al Howard (DOE/Rocky Flats), Bruce Church (DOE/NV), Bob Taft (REECO) and Jim Taranik (DRI). The overall effort was generally very well received and the program was well conceived and executed. Verbatim quotes from participants (trainees) and evaluations for the 1991 Summer training session are included in Appendix A.

MANAGER PERFORMANCE EVALUATION

Performance of Station Managers and Alternates is evaluated throughout the year by two basic methods. The first is weekly checks on the regularity of visits to their stations, which are recorded each time they are there. The other is through personal discussions with the people themselves and with people with whom they interact. Personal visits between DRI staff and the Managers and Alternates are an integral part of this process.

The overall performance from our people, judged on either or both of the above criteria, has improved over preceding years. They are more conscientious about station visits and equipment checking than in the past, and they seem to be more interested in assisting with program goals. Significant help has been rendered in identifying audiences to whom we can make presentations in our outreach efforts. There is a sense of enthusiasm apparent from these people at our training sessions that hasn't been as great in the past. Some who were a bit careless in the past in recording station visits have improved a great deal during the year. Sample collection, reporting equipment problems and generally following EPA Standard Operating Procedures and the DRI Job Description have also improved. Our Station Managers and Alternates are well accepted in their communities, and are generally considered the local sources of knowledge on radiation and nuclear matters. The program would certainly not be effective without their presence and assistance.

SECTION 3

PUBLIC INTERACTION

OUTREACH EFFORTS

This year began with a considerable amount of time devoted to identifying target audiences in selected communities, along the lines of advice given by Dr. Vincent Covello last year. The first attempt in our outreach activities was to concentrate on local schools (see Table 2). After the workshop presented to selected teachers from the Clark County School District, we became very involved with making presentations to students in the local schools. The subjects presented and the time and place of those presentations were selected by teachers, which seemed to work quite well.

Presentations were made to more than 800 people during the year, of whom more than 75% were students in grades 4 through 12. About 100 of the adults who saw our presentations were teachers. This direction for outreach efforts is a rather direct change from past public meetings, where, over the preceding nine years, it is estimated that more than 95% of the offsite residents who attended town meetings were adults.

The number of people reached in these meetings during the year is double that of any other year since the program began, and this number does not include a tour of the NTS on April 10 for 51 seniors and three teachers from Moapa Valley High School. Further, it does not include program representatives participating in the Career Day held at Beatty High School on April 25, where approximately 150 students heard presentations from DOE and contractor staff.

Documents relating to program outreach activities this year are included in Appendix B of this report.

SITE VISITS

Eighteen of the Community Radiation Monitoring Program sites were visited at least four times each during the year by DRI staff. No effort was made toward visiting the Salt Lake City station, since the Station Manager there is under separate contract to DOE. These visits, usually accomplished as a part of the data verification effort, included stops at many other locations in our areas that do not have official stations. In addition to contacting Station Managers and Alternates, some time was spent visiting with school and elected officials and other local citizens as a part of the audience identification and meeting arrangement aspect of the program. These contacts, built up over the years, serve to simplify the task of disseminating information to residents of the offsite areas.

OUTREACH EFFORTS

DATE	LOCATION	AUDIENCE	SUBJECT	PRESENTER/ AFFILIATION	ATTENDANCE ADULTS STUDENTS
10/25/90	Las Vegas, NV	Clark Co. Science Teachers Outreach Workshop	"Joint Verification Experiments" "Environmental Restoration Program"	Nick Aquilina/DOE Joe Fiore/DOE	28 0
			"Science & Technology Education Program (STEP)" "ABC's of Radiation"	John Hall/DOE	
			"ABC's of Radiation"	Bama McKnight/REECo	100
01/25/91	Henderson, NV	7th & 8th grades - 4 classes Burkholder Jr. High School.		Bama McKnight/REECo	4
01/25/91	Las Vegas, NV	9th grade - 1 class William Orr Jr. High School.	"Archaeology of Pre-History of NTS"	Louise Pippin/DKI	1 26
01/30/91	Overton, NV	12th grade - 4 classes Moapa Valley High School	"What Happened to the Sheep" "Offsite Radiation Monitoring"	David Wheeler/DOE Milton Chilton/EPA	4 78
02/01/91	Las Vegas, NV	9th grade - 1 class William Orr Jr. High School	"Emergency Response Training"	Layton O'Neill/DOE	1 25
02/01/91	Las Vegas, NV	7th grade - 1 class William Orr Jr. High School	"Joint Verification Experiments"	Nick Aquilina/DOE	1 19
02/15/91	Las Vegas, NV	7th grade - 2 classes Washington Jr. High School	"ABC's of Radiation"	Bama McKnight/REECo	2 25
02/15/91	Las Vegas, NV	8th grade - 2 classes Washington Jr. High School	"Spill Test Facility" and "Nevada Test Site"	Bob Taft/REECo	2 28
02/20/91	Overton, NV	12th grade - 4 classes Moapa Valley High School	"History of Nuclear Testing"	Bob Taft/REECo	4 78
03/19/91	Beatty, NV	10th, 11th, 12th grades - 2 classes, Beatty High School	"Nevada Test Site: Past, Present and Future"	Nick Aquilina/DOE & Bob Taft/REECo	2 45
04/29/91	Las Vegas, NV	8th grade - 2 classes Kenny Guinn Jr. High School	"ABC's of Radiation"	Bama McKnight/REECo	2 60
05/28/91	Indian Springs, NV	6th, 8th, 11th & 12th grades -	"ABC's of Radiation"	Bama McKnight/REECo	3 71
08/20/91	Ely, NV	White Pine Chamber of Commerce	"Downwind Radiation Effects on the Population of Ely" "Offsite Radiation Monitoring"	David Wheeler/DOE Daryl Thome/EPA	27 0

Table 2 Cont – OUTREACH EFFORTS

DATE	LOCATION	AUDIENCE	SUBJECT	PRESENTER/ AFFILIATION	ATTENDANCE ADULTS STUDENTS
09/16/91	Indian Springs, NV	11th, 12th grades – 3 classes Indian Springs High School	“History of Nuclear Weapons Testing”	Bob Tati/REECo	3 45
09/19/91	Indian Springs, NV	11th, 12th grades – 3 classes Indian Springs High School	Response given to questions generated by 09/16 presentation	Bob Tati/REECo	3 45
09/20/91	Delta, UT	American Legion Banquet	“Joint Verification Testing”	Charles McWilliam/DOE	114 0
ATTENDANCE TOTALS					201 645

COMMUNICATION

DRI staff maintain reasonably close contact with our employees, the Station Managers and Alternates, through frequent telephone calls, written materials, the continuing clipping service and the direct contacts made during field visits. Any problems or questions that arise in the communities are relayed, if necessary, to either DRI or EPA staff, which has gotten us some good publicity at times. Notification of announced nuclear tests is made by telephone to Station Managers and Alternates as soon as DRI staff get the call.

Contacts with the public continue on a fairly frequent basis, as has been discussed in earlier sections of this report. Very frequent contacts, in person and on the telephone, occur between DOE, EPA, U of U and DRI program personnel. These contacts serve to maintain the open channels of communication and to preserve the momentum of the project.

SECTION 4

DATA VERIFICATION

The thermoluminescent dosimeters (TLDs) that were used by DRI for our data verification effort in FY 1991 were acquired from and analyzed by the Radiation Measurements Facility staff at the College of Engineering and Applied Sciences, Arizona State University. The dosimeters and the reader equipment are the same as those used by EPA, with whom we are comparing results.

The emplacement of the DRI dosimeters is done on a random basis, and at time periods designed to duplicate those of EPA deployment. Each quarter two sets of TLDs were installed at each of six stations by DRI, which covered 18 of our 19 stations at least once during the year.

The results of comparisons between DRI and EPA data indicate two things of importance:

1. No data collected and analyzed by either agency indicate that radiation levels at any location were outside the range of natural background.
2. The data collected by each agency at each location compared favorably enough to indicate that there were no variations that would suggest any problem in equipment or analysis methods.

Since there were still some differences in time of installation and collection between efforts of DRI and EPA, there will be more done to make the exposure periods of the TLDs coincide during the next fiscal year. The trips made to the stations in the offsite area by DRI staff for the TLD run are combined wherever possible with the other business of the program, such as outreach meeting arrangements and contacts with local officials and Station Managers.

SECTION 5

SUMMARY

After more than 11 years of operation, the Community Radiation Monitoring Program is in good order. The primary objective of the program, informing people in the offsite areas about the NTS and nuclear-related subjects, seems to be well received in those communities. The format of the program, that of hiring people in the communities to be knowledgeable spokespersons on nuclear matters, has apparently worked nicely. That group of 35 people, our Station Managers and Alternates, remains enthusiastic about the program and are excellent representatives of the agencies involved. These people are considered a valuable resource and point of contact in their communities by all concerned, and there is minimal turnover. The training sessions for Station Managers are well attended and well received. These people are doing a good job.

The program emphasis and operating methodology are undergoing gradual changes to meet developing technologies, but this serves to enhance the effectiveness of the program. The program representatives from the agencies involved, the DOE, the EPA, the U of U and DRI, have developed an excellent working relationship, which works for the betterment of the program. The cooperation between these staff people and the Station Managers has been a key to the success of the program.

As experience teaches us ways to improve our communication with the public, including special interest groups, community leaders and particularly the younger generation, we will continue to get closer to achieving our programmatic and personal goals. We are offering information and opportunity, and are seemingly making a difference.

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APPENDIX A

Station Manager Training Sessions

COMMUNITY RADIATION MONITORING PROGRAM

STATION MANAGERS WINTER TRAINING SESSION

DECEMBER 27–28, 1990

PALACE STATION HOTEL, LAS VEGAS, NEVADA

<u>Thursday</u>	<u>Activity</u>	<u>Sponsor</u>
<u>27 Dec. 90</u>		
7:45 a.m.	Continental Breakfast	DRI
8:00 a.m.	Welcome—Winter Session Overview	G. Sandquist, U of U
8:15 a.m.	Comments by DOE/NV Manager	N. Aquilina, DOE
9:15 a.m.	Review of Station Operations/Procedures	G. Sandquist, U of U
9:45 a.m.	Radiation Training (Video Tape)	G. Sandquist, U of U
10:45 a.m.	Break	
11:00 a.m.	NTS Archeology	L. Pippin, DRI
12:00 noon	Lunch	
1:30 p.m.	BIER V Report	G. Sandquist, U of U
2:30 p.m.	Break	
2:45 p.m.	Public Presentations (Video—V. Cavello)	J. Burrows, DOE
3:45 p.m.	Break	
4:00 p.m.	Nuclear Testing outside the NTS	D. Thome', EPA
6:30 p.m.	Dinner at Nick's Supper Club 15 Lake Mead Drive, Henderson, Nevada	
<u>Friday</u>	<u>Activity</u>	<u>Sponsor</u>
<u>28 Dec. 90</u>		
7:45 a.m.	Continental Breakfast	DRI
8:15 a.m.	Depart for EG&G Facility	
8:45 a.m.	Areal Measurement Operations	J. Tipton, EG&G
11:15 a.m.	Return to Palace Station	
11:30 a.m.	Update on Cold Fusion	G. Sandquist, U of U
12:00 noon	Lunch	
1:30 p.m.	Station Managers Reports	Station Managers/Alternates
2:30 p.m.	Break	
3:00 p.m.	Round Table Discussion	All Participate
	Summary of Training Session	G. Sandquist, U of U
	Evaluation of Session	J. Blackburn, DRI
	Administrative Details	N. Cooper, DRI
4:00 p.m.	Farewell and Dismissal	G. Sandquist, U of U

ATTENDEES
WINTER TRAINING SESSION
Las Vegas, Nevada
December 27 – 28, 1990

ALAMO	Clark M. "Rick" Hardy	Station Manager
AMARGOSA VALLEY	Kenneth G. Garey	Station Manager
AUSTIN	William S. (Bill) Cox	Station Manager
	Thomas J. Brannan	Alternate Manager
BEATTY	John C. Lisle	Station Manager
	Richard A. Johnson	Alternate Manager
CALIENTE	Brent H. Perkins	Alternate Manager
CEDAR CITY	Melvin D. Baldwin	Station Manager
	Glade V. Sorensen	Alternate Manager
DELTA	Beverly Jean DeWyze	Alternate Manager
ELY	No attendance	
GOLDFIELD	No attendance	
INDIAN SPRINGS	Larry L. Hathhorn	Alternate Manager
LAS VEGAS	Hiram Hunt	Station Manager
	Roy Reeder	Station Manager
MILFORD	Dale E. Jensen	Station Manager
	Morden Leon Gay	Alternate Manager
OVERTON	Nicklas J. Bowler	Station Manager
	Jack W. Nelson	Alternate Manager
PAHRUMP	Albert J. Giannotti	Station Manager
RACHEL	Christy S. Castleton	Station Manager
SALT LAKE CITY	Gary M. Sandquist	Station Manager
ST. GEORGE	John F. (Jack) Heppler	Station Manager
SHOSHONE	Brian W. Brown	Station Manager
	Kenneth W. Smith	Alternate Manager
TONOPAH	Mark E. Howard	Alternate Manager

COMMUNITY RADIATION MONITORING TRAINING SESSION STATION MANAGER REPORTS

**DECEMBER 27 – 28, 1990
LAS VEGAS, NEVADA**

The 1990 Winter Station Manager's Training Session, a function of the Community Radiation Monitoring Program, was held at the Palace Station Convention Center December 27 and 28, 1990. Dr. Gary Sandquist presided.

The Station Manager and Alternate were both invited to come forward and give their reports and to respond to the following:

- Station operation (measurements)
- Unusual events

Gary Sandquist, University of Utah – Salt Lake City, UT:

Gary:

There has been reasonably firm continuous operations. One time there was a problem with the PIC, could have been the result of the unusual bad weather and moisture getting into the system, although the other instrumentation has operated well. All the measurements and data have been normal. A calibration is performed weekly, where a source is taken out and put on the detector to see that the operation is functioning. We have a telemetry capability, an up-link to a satellite and down-link to Las Vegas. There have been no unusual events. The station has now been included as part of our environmental data base and the Nuclear Regulatory Commission (NRC) for the reactor operations.

Rick Hardy, Station Manager – Alamo, NV:

Rick:

In Alamo we haven't had any unusual events at the station. I have been using "The Harnessed Atom" with some of my classes and have taken them to the station to check the operation out. The station readings are running in the high 12 to 13.

No Report from Austin, NV: – Station Manager and Alternate did not attend session

John Lisle, Station Manager and Rick Johnson, Alternate – Beatty, NV:

John:

The Beatty station has been running normal, about 15–16 Micro R per hour. Up until just a few days ago we haven't had any problems, but the air sampler quit. Other than that all has been operating well. "The Harnessed Atom" is being used in the 8th grade, and I will probably be taking the class for a station tour shortly. I took my Freshman class to the station, as I do at the beginning of each year and I happened to have a senior with us, who was taking the class over again. He said that for the past four years he has been going by the station daily to look

at it as he basically knew of its operation. Last week a group contracted to the Air Force from Ford Aerospace, had to go through the back gate of the Test Site. One of them inquired about the Geiger counter and asked if he could take it with him. There was another person helping him put it together and checking it out and as soon as it was turned on it pegged and they couldn't figure out what was wrong. It turned out that this person had just had his thyroid gland burned out with radioactive iodine, and that the the hottest thing he recorded was the guy that was working with him.

Rick:

My brother was visiting with us and I took him to the station and showed him the operation. Other than what has been reported by John, I don't have anything further to add.

No Report from Caliente, NV: Alternate Brent Perkins was ill the last day of the session

Melvin Baldwin, Station Manager and Glade Sorensen, Alternate – Cedar City, UT:

Mel:

The station is running well but there has been some trouble with the noble gas sampler. We are getting a vacuum but no pressure, but hopefully we will get that solved. We have also had a little trouble with the tritium sampler. With the excessive cold weather the barometer froze up. Other than that it has been operating well. Mel expressed appreciation for the work that EPA does in taking care of the equipment and keeping things going.

Glade:

Just before Christmas I had someone from the school journalism department come by and ask about the monitoring station. I gave a good explanation about its operation and they did a three or four paragraph article which was entirely different from what I had explained to them. The press prints whatever they choose, whether it is the right thing or not.

Beverly DeWyze , Alternate – Delta, UT:

Beverly:

Tom Judd, the Station Manager, was unable to attend this session. The equipment in Delta has been working well, even through this cold spell. I checked the station out last Wednesday and everything seemed to be operating well, in spite of the fact that we got down to -30° which is the record low in my lifetime. The readings have been 10 and 12 Micro R's. I have taken a couple of classes over to see the station. I am also involved in the local education association, and since the station is located in front of the School Board Offices, I gave all of the School Board members a tour of the station. One thing that was interesting is that the Branch Agricultural agent has used the barometer quite regularly in checking it before different sprays were allowed to be used, and also the Boy Scouts use the barometer regularly in doing their merit badge requirements. The barometer stopped a couple of times a couple of months ago, but not during the cold spell.

No Report from Ely, NV: – Station Co-Managers did not attend session

No Report from Goldfield, NV: – Due to frozen pipes Station Manager was unable to attend

Larry Hathhorn, Alternate – Indian Springs, NV:

Larry:

Jim Hopkin is at a family gathering in Wyoming and was unable to attend. There was something unusual that happened. The entire station has been moved. We now have a brand new PIC and the latest state-of-the-art air sampler, and also a new operating noble gas sampler. The station is much more visible now, it has only been moved about 20 feet but it was previously behind the transformer, and now it is out facing the street. It was in the proposed driveway for the new gymnasium so it had to be relocated. The readings continue to be consistent.

Dr. Hiram Hunt, and Roy Reeder, Station Managers – Las Vegas, NV:

Roy:

This is a little difficult because my orientation is scheduled for Monday, and so I can't speak with any knowledge, but I will be going through orientation with Herb.

Lois:

Stated that she is thankful that Las Vegas does have a new Station Manager. Hiram doesn't feel well today, so he has asked that I give the report. At the Las Vegas station nothing unusual has happened. The readings have remained normal, there has been no public inquiry about the station. Only one thing has happened since we last met and that is that the noble gas sampler had quit working when the station was checked before Christmas.

Dale Jensen, Station Manager and Leon Gay, Alternate – Milford, UT:

Dale:

The station has been working well, but had one problem with the air sampler, I notified Herb and the next day it was changed out, so got good response on that. Except for that everything has been working well, taking into consideration that it got down to -35° and the barograph was still running. I didn't really realize how many people came to the station, as it is located at the Library and I spend most of my time at the High School, till we got some snow. I realized that many leave tracks in the snow going by the station. At last summer's session I reported on the tomato project, and I can report that it went fine. I put a few tomatoes on the PIC and I didn't get a call from Herb. It was quite an interesting project. The readings are normal, however, slightly elevated from last year, but don't know the cause of that.

Leon:

I don't have anything to add to Dale's report. I do enjoy helping Dale take care of the station, the only time I don't enjoy it is when it is so cold. I have taken care of it in a few snow storms and it does get cold. I enjoy being with all of you.

Nick Bowler, Station Manager and Jack Nelson, Alternate – Overton, NV:

Nick:

There has not been anything unusual happen since the last Training Session. The barograph has just stopped one time. On the air sampler, the elapsed timer third digit doesn't reset. When it was checked out the person reset it rather than repairing the problem. That is the only problem we have had with the air sampler. The other equipment all works well. The readings are fairly constant between 9 1/2 and 10 1/2. I really enjoy working with the equipment and coming to these training sessions, and enjoy meeting with you.

Jack:

I don't have anything to add. We trade off going to the station and I read it once a month. The equipment has worked well, and I enjoy working with all of you.

Al Giannotti, Station Manager – Pahrump, NV:

Al:

Larry Goins, the Alternate, is not able to be here today. He is home repairing pipes that were frozen in his rental house. There have not been any problems with the station, except for the noble gas sampler. It is usually fixed when I go to the station on Mondays. On Christmas eve day I was a little late going to the station, as it was nice and cold, and Herb's crew from EPA had already been there to pick up samples. I had two students asked about Art Jarvis, who had come to the school and gave a neat presentation. I had to inform them that he had retired, so now they were just going to have to listen to me. If you get in touch with Art, tell him that he left a lasting impression on some students.

Christy Castleton, Station Manager – Rachel, NV:

Christy:

The noble gas sampler has also had some problems. Other than that the equipment has been operating well. The readings have been normal. My Alternate Ruth Agee was unable to come because of the weather. Their ranch was frozen solid.

Ken Garey, Amargosa Valley, Nv:

Ken:

There has been a little activity, visitors especially. Something noteworthy, the Update Transportation Committee held one of the two meetings they held in the State of Nevada at our Community Center. One of the speakers was a Dr. Carter, who is very familiar with the Community Monitoring program. He directed some of his questions to me, and it was certainly meaningful to me of how important the Community Monitoring Stations were to our area, and to the Nevada Test Site of what we hope to achieve and what we were achieving. During the day a lot of people go in and out of the Community building and they stop by the Station. I was called as a Deputy Sheriff to keep the peace, because it was anticipated that some protestors might try to disrupt the meeting. Luckily there were no disturbances. The station is working

fine. The quality assurance requirements are requiring some change—out of the equipment. I find my dials and gauges in different positions, where I have a routine that I can collect the data quite rapidly I now have to check the checklist carefully to see that it is read right. I have had some unusual barometric pressure changes during the last month. We also have a NOAA weather station at the ranch and any unusual weather occurrences are reported, like severe lightning and any rainfall over a half inch. There is a toll free number to call to report these incidents. I made some copies of the barograph charts and sent them in where they could see the extreme changes that were occurring. They now have a record of these high and low pressure areas, and of how high and low they were. The service from EPA is fine.

Jack Heppler, Station Manager — St. George, UT:

Jack:

The station has operated normally, and haven't had any serious problems with it. We had a meeting where Dave Wheeler came up and gave a presentation to the Chamber of Commerce. He did an excellent job. I liked that particular presentation, it was very forthright, probably one of the better that I have heard. He did an outstanding job, and whoever is responsible for that needs to be thanked. There were some feelings vented and some hostilities. I think somethings came out that needed to. I thought it was a very successful event. It wasn't a Town Meeting kind of a thing, but just with the Chamber of Commerce, more on the idea that JoAnne Burrows presented to us earlier. I fully support that type of program, and feel that it is the way to go. There has not been any unusual activity at the station. Just prior to leaving I was contacted by a lady who publishes a newspaper in the Washington County area called the Senior Sampler, to get my opinion on an article that is going to appear that she is doing on the compensation. I had a good conversation with her, however, I don't know what will be in the article. She also got a picture of me to go with it. The station has operated in the normal range, just a little problem with the noble gas sampler. Other than that the equipment has been phenomenal. I want to express my thanks to all the people we have to work with. Nate, Herb and the whole gang, you do just a tremendous job. Our thanks to you and we appreciate it.

Brian Brown, Station Manager — Shoshone, CA:

Brian:

Everything has worked well. The timer on the air sampler went out once. I went to a presentation on the Yucca Mt. project in Furnace Creek, CA which is now Death Valley about two to three weeks ago. It was interesting, however, they could have used some of Vince Covello's assistance, in some cases of the introverted scientists being stuck in front of a group of people. Our High School and Junior High School is closing down next year, and the medical clinic is also relocating within the year, so the station will be located in an abandoned parking lot behind the tennis court. You might want to think about moving it to a more visible location.

Daryl:

Do you have a suggestion as to where the station should be moved to?

Brian:

I think if you were to speak to Susan Sorrels in Shoshone, she probably wouldn't mind letting us locate on her property. Ken Smith, my Alternate, couldn't make it this afternoon as his wife was ill.

Mark Howard, Alternate – Tonopah, NV:

Mark:

Larry Woods is spending some time with his family in California and unable to be here. Things have been running very smoothly. Have had no equipment problems that I am aware of. I did have an opportunity to use the station with my classes. We had someone come to the school to give a presentation on Yucca Mt. so I spent a whole week in preparation giving my Nevada History class information based on the Yucca Mt. and the Test Site, and took the class down and took them through the station. It was very interesting to the class and a very good asset to my teaching unit there. I appreciate the opportunity I have to come and study and see these things that I am very interested in. I only teach computer science in the science field, but the Nevada history current events is an important part for my study and I appreciate that.

Daryl Thome' – EPA: It is great to get all of you together again. The EPA route men see you all the time, but I only get to see you twice a year. I watch your family grow, and it is great to get together again. Have a safe trip home and let me know where we are going next summer. We will go and set up the station wherever you want the training.

Gary Sandquist dismissed the session at 3:00 p.m.

ATTENDEES
SUMMER TRAINING SESSION
Brian Head, Utah
August 5–9, 1991

ALAMO	Clark M. "Rick" Hardy	Station Manager
	Dell Sullivan	Alternate Manager
AMARGOSA VALLEY	Kenneth G. Garey	Station Manager
AUSTIN	William S. (Bill) Cox	Station Manager
	Thomas J. Brannan	Alternate Manager
BEATTY	John C. Lisle	Station Manager
CALIENTE	Judy A. Foremaster	Station Manager
	Brent H. Perkins	Alternate Manager
CEDAR CITY	Glade V. Sorensen	Alternate Manager
	Donald Newman	Alternate Manager
DELTA	Thomas S. Judd	Station Manager
	Beverly Jean DeWyze	Alternate Manager
ELY	Rebecca S. Murdock	Station Manager
	Gloria Ann Mullen	Alternate Manager
GOLDFIELD	Myron A. Johnson	Station Manager
INDIAN SPRINGS	James M. Hopkin	Station Manager
	Larry L. Hathhorn	Alternate Manager
LAS VEGAS	Roy Reeder	Station Manager
	Don M. Curry	Alternate Manager
MILFORD	Dale E. Jensen	Station Manager
	Morden Leon Gay	Alternate Manager
OVERTON	Jack W. Nelson	Alternate Manager
PAHRUMP	Albert J. Giannotti	Station Manager
RACHEL	Christy S. Castleton	Station Manager
SALT LAKE CITY	Gary M. Sandquist	Station Manager
ST. GEORGE	John F. (Jack) Heppler	Station Manager
	Kelly N. Bringham	Alternate Manager
SHOSHONE	Brian W. Brown	Station Manager
TONOPAH	Laurance (Larry) Woods	Station Manager
	Mark E. Howard	Alternate Manager

COMMUNITY RADIATION MONITORING PROGRAM STATION MANAGERS TRAINING SESSION

**August 5 – 9, 1991 – Brian Head Royale, Brian Head, Utah 84719
1-800-443-8824**

<u>Monday, 5 Aug.</u>	<u>Activity</u>	<u>Sponsor</u>
7:30 a.m.	Continental Breakfast	DRI
8:00 a.m.	Welcome and Update: Session Overview	G. Sandquist – U of U
8:15 a.m.	Current Events at DOE	B. Church – DOE
8:45 a.m.	DOE Outreach Program	J. Burrows – DOE
9:00 a.m.	Update of Community Monitoring Program	N. Cooper – DRI
9:15 a.m.	Station Manager's Reports	Station Managers
10:30 a.m.	Break	
10:45 a.m.	Round Table Discussion	All Participate
12:00 a.m.	Lunch	
1:30 p.m.	Basic Nuclear Radiation Monitoring	G. Sandquist – U of U
2:30 p.m.	Break	
2:45 p.m.	Radioactive and Chemical Hazards	M. Slaughter – U of U
3:45 p.m.	Break	
4:00 p.m.	EPA & NRC Regulations Relative to Radiation	G. Sandquist – U of U
5:00 p.m.	Session Ends	
7:30 p.m.	CRMP Family Night of Entertainment	
<u>Tuesday, 6 Aug.</u>	<u>Activity</u>	<u>Sponsor</u>
7:45 a.m.	Continental Breakfast	DRI
8:15 a.m.	Radiological Emergency Management	G. Sandquist – U of U
9:30 a.m.	Break	
9:45 a.m.	Transportation Accidents	V. Rogers – U of U
10:45 a.m.	Break	
11:00 a.m.	Nuclear Reactor Accidents	V. Rogers – U of U
12:00 a.m.	Lunch	
1:30 p.m.	Nuclear Attack	G. Sandquist – U of U
2:30 p.m.	Break	
2:45 p.m.	Examination & Review of Radiological Hazards	V. Rogers – U of U
3:45 p.m.	Break	
4:00 p.m.	Environmental Conditions at DOE Sites	G. Sandquist – U of U
5:00 p.m.	Session Ends	

<u>Wednesday, 7 Aug.</u>	<u>Activity</u>	<u>Sponsor</u>
7:45 a.m.	Continental Breakfast	DRI
8:15 a.m.	Opposition to Continued Nuclear Testing	E. Finnage – U of U
9:30 a.m.	Break	
9:45 a.m.	U.S. Nuclear Testing Program	N. Aquilina – DOE
10:45 a.m.	Break	
11:00 a.m.	General Discussion of Nuclear Testing Program (past/present/future)	All participate
12:00 a.m.	Lunch	
1:30 p.m.	Station Operation Practice Session	U of U, EPA
3:30 p.m.	Station Update, Noble Gas Monitoring System	D. Thome' – EPA
5:00 p.m.	Session Ends	
6:00 p.m.	Hosted Picnic at Duck Creek Campground (if inclement weather – Lions Pavilion in Parowan)	DRI
<u>Thursday, 8 Aug.</u>	<u>Activity</u>	<u>Sponsor</u>
7:45 a.m.	Continental Breakfast	DRI
8:15 a.m.	Background on DOE Sites and Environmental Restoration	G. Sandquist – U of U
9:45 a.m.	Break	
10:00 a.m.	Introduction to Environmental Restoration at DOE Sites Participants include the following speakers & organizations	
	Gene Schreckhise	PNL
	Bruce Napier	Westinghouse
	Other	BMI
12:00 a.m.	Lunch	
	Mike Slaughter	U of U
	Guest speaker	INEL
	John Stone	SRL
1:30 p.m.	Resume Session	
5:00 p.m.	Open Discussion of DOE environmental Programs	All Participate
5:30 p.m.	Session Ends	
<u>Friday, 9 Aug.</u>	<u>Session</u>	<u>Sponsor</u>
7:45 a.m.	Continental Breakfast	DRI
8:30 a.m.	Indoor Radon Hazards	V. Rogers – U of U
9:30 a.m.	Break	
9:45 a.m.	Public Perception of Risk	G. Sandquist – U of U
10:45 a.m.	Break	
11:00 a.m.	HLW Activities of Yucca Mountain	E. Willmot
12:00 a.m.	Lunch	
1:30 p.m.	Potential Health Effects	V. Rogers – U of U
2:30 p.m.	Break	
2:45 p.m.	Bush Administration's Energy Plan	G. Sandquist – U of U
3:45 p.m.	Break	
4:00 p.m.	Summary of Training Session	G. Sandquist – U of U
	Evaluation of Session	N. Cooper – DRI
	Administrative Details	N. Cooper – DRI
5:00 p.m.	Farewell and Dismissal	G. Sandquist – U of U

NOTES:

STATION MANAGER REPORTS BRIAN HEAD, UTAH

August 5, 1991

Gary Sandquist, University of Utah – Salt Lake City, UT:

Gary

Our station is unusual as we are on a University campus. He recalled that when the station was going to be installed he had in mind putting it behind an iron gated barricade, as he felt that the station would be better protected. However, Bruce Church was visiting and proposed that it would be better to locate it outside the reactor station. The station is highly visible, since there are about 5,000 students that walk by it each day. Most of the people in the College of Engineering are aware of the station. There are about a half dozen graduate students that are required to spend some time on the station. The students change out the filters and know how the station operates. It is very important that the students with a nuclear background be able to understand radiation monitoring in the environment.

Rick Hardy, Station Manager and Dell Sullivan, Alternate – Alamo, NV:

Rick

The station is well accepted in the community and the people feel comfortable. It is part of the community and is located by the bank. People see it daily and kids check it to see what the barograph is doing. A few of the adults also check to see what is going on with the weather. There have been a couple of school tours and a test site tour for the students, which also included students from Lincoln County High School. Tourists stop occasionally to inquire about the station. The seventh and eighth grade science class students get instruction on the station on a regular basis. There isn't much organizational interest as Alamo is a small community. The equipment seems to be working good and the new noble gas sampler is much quieter.

Ken Garey, Amargosa Valley, NV:

Ken

Being retired, he frequently speaks to groups and serves on a number of committees. Nye County is very active in the Yucca Mountain controversy, and there is a Nye County Advisory Committee for the Yucca Mountain studies. Ken also serves on the advisory board for the proposed Nevada Science Center Museum. He has the preliminary drawings and back up data with him. With the close proximity of the Community Center to the station, it gets a lot of visibility and a lot of visitors. Ken has conducted a number of tours for tourists that come through. Two tours were conducted for the school with 40 people, and individual impromptu tours on eight occasions with 25 people. Ten people from our community attended the test site tour, and other public interactions occurred with about 50 people. The community attitude is favorable. They are glad that the station is there and they are content with the data and that

DOE is fulfilling its obligation to protect the public. He encouraged science fair topics, if information could be sent out prior to the science fair it might give the students a chance to get some data. He also suggested the sponsorship of a grade—school poster contest. As for the equipment, he feels that the vibration from the new noble gas sampler is going to have a detrimental effect on the other equipment on the platform. He has isolated the barograph by putting some foam rubber under it. The outstanding event of the year was the actual start of the Yucca Mountain Site Characterization Study and the formal initiation of the Nevada Science Center Museum project.

Ken is a reserve Deputy for Nye County, and for a number of years has been picking up the protesters at the Test Site. This last protest was well organized and was probably the Greenpeace group. They created a lot of attention by making a lot of noise, crashing cymbals and blowing horns. They used bongo drums, first started out playing soft and slow then they got louder and faster and the faster and the louder they pounded the more the crowd would react. Then the cymbals would crash together and that was when they would run for the barricades or start jumping the fences. Then there was a bugle and whistle and they would tone it down. Whoever is orchestrating these events is using the same tactics used by the Chinese in Korea.

Bill Cox, Station Manager and Tom Brannan, Alternate — Austin, NV:

Bill

The station is pretty much accepted. There are those who know about it and are interested in it, and they check it out frequently. He has had an opportunity this past year to show each of the deputies in the Sheriff's Department about the station and how it works. One of them was amazed that there was radiation in the air around the community. There were no school tours this year. Probably individual tours were around eight, which included students and visitors to the community. The only problem was with the PIC where the electrical material is and that gave out a high reading of around 49 or so for a few hours. Other than that, there have been no abnormalities.

Tom

Tom indicated excitement about the program that JoAnne Burrows proposed. Austin has the highest levels of radiation of all the stations, and he thinks that most of it is from natural causes. Tom would like a presenter to come up and talk to the P.T.A. or Lions Club about ways to decrease the radon levels in the individual homes and the adverse effects of the sun. He thinks they need to be better educated on radon and ultraviolet rays from the sun.

John Lisle, Station Manager — Beatty, NV:

John

The station has run well, except one problem where the magnetic recorder went crazy and wound the whole tape over in about a half hour and just kept running. He pulled the tape out and called Herb. EPA was there the next day and fixed it. There is not much reaction from the

community. They are aware of the station. He has had phone calls asking why Beatty has the second highest radiation reading in the state. He indicated it was because of some of the mining and the rock around there. A lot of people from Beatty have either worked at the Test Site, or have lived in Beatty for many years. We also have 35 people who work at the Beatty low-level dump site, so a lot of those people already know about the station. There are a lot of new miners that are not concerned about it. There were three presentations in the community this past year. The DOE people came out and gave presentations to his classes, which lasted all afternoon, and then talked to the Fire Department EMT's. There were probably about 90 people in attendance. Yucca Mountain just put on a presentation, and it showed the difference in doing a presentation on what DOE (Yucca Mountain group) think the public wants to hear, and what they really want to hear. There were only four that attended the Yucca Mountain meeting. John also attended a workshop that was sponsored by the Nevada Science Project funded by the DOE. One of the presentations was on nuclear waste management. It was surprising that the teachers knew very little about this. These were all science teachers, most of them elementary teachers. He feels there is a real need to talk to the teachers as they were not aware of what is going on.

Judy Foremaster, Station Manager and Brent Perkins, Alternate – Caliente, NV:

Judy

The new noble gas sampler is in and is a lot quieter. The community is familiar with the station and they don't ask many questions. The most common question asked is if she has ever noticed a change in any of the readings, and when she says no that seems to satisfy them. She also feels there is an apathy as most of the residents have been born and raised there and take the NTS and everything related to it for granted.

Brent

My main inquiry from people is about the weather.

Glade Sorensen, Alternate and Don Newman, Alternate – Cedar City, UT:

Glade

The community has a positive outlook regardless of what goes on, except for about two or three people. Regardless of what goes on they will always have a negative outlook. There has not been a school tour of the station, however, he explains it in all his classes. The school reporter for the newspaper came by and took pictures of the equipment and put an article in the school newspaper. As we are at the station, people often inquire the purpose of it. Mel Baldwin has stated that the Senior Citizens would like to go on a tour of the NTS, however, they feel that a two-day tour might be too difficult for them. They do have an interest in going if it could be done in one day. Some Southern Utah University communications majors contacted Mel, came by and filmed him while he was changing the filters at the station for a community T.V. broadcast. However, we haven't heard anything more on it. There was a new air sampler installed and it has been working great. The noble gas had only been in about a week when we had problems with the vacuum, and the timing didn't work.

Don

Teaches Biology and Earth Sciences at the Cedar City High School. No further report.

Tom Judd, Station Manager and Beverly DeWyze, Alternate – Delta, UT:

Tom

As for as the assessment of the program, we get some passers-by. The Sheriff's Office is real close so we get some inquiries from the deputies. Most of the community reaction is apathy. Some are interested in the barograph, and many still think it is a weather station. When he told an elderly gentlemen about the station, his response was that it was 40 years too late. Tom stated that he liked to teach his science classes with the view-graphs provided. They are really helpful. We have talked with different people but haven't had any requests for presentations. The station works great and he wants to thank University of Utah for the credit course.

Beverly

We just got the noble gas sampler, and if you are a short person there is need to hold up the lid. Otherwise it can come down and hit you in the head.

Rebecca Murdock, Station Manager and Gloria Mullen, Alternate – Ely, NV:

Rebecca

Has taught at both the high school and middle school and she will be going back to the middle school teaching general science and earth science. When she first moved to Ely from the Reno area, she figured the station was just some electrical equipment for the school, but finally found out about the station when one of the EPA people was checking it out. She stopped by and he gave her a tour last fall. Most of the people in the community have no idea of what the station is. She just started the beginning of June so hasn't been there long enough to see a change of attitude. We have plans of doing more in the classroom and bring the students out and give them a tour of the station and also encourage other teachers to give their students a tour. She also introduced Gloria Mullen, the new Alternate, a 7th grade life science teacher who just started the middle of July.

Myron Johnson, Station Manager – Goldfield, NV:

Myron

In our community it seems like most of the people have a general acceptance of nuclear things. However, there are some people in town that would take a negative attitude regardless. The town has been very slow so haven't had much interaction. The mines are closed down at the present, with just one small operation going, so this has affected the whole community. He had contact with 25 people over the past year. A couple of tours were set up with the school, but with inclement weather they were canceled. Some of the people in the community went on a NTS tour, and most of them came back with positive remarks. It has changed some of their attitudes to see what goes on there. It has been very positive working with the EPA, DRI and DOE people. If there is ever a problem there has been somebody right out to take care of it.

The new noble gas sampler works good and most of the equipment has worked well over the year. Probably the most outstanding thing that happened over the year was the explosive truck that blew up about 18 miles south of Goldfield. It had a definite impact on the hazardous materials program with that and another accident north of Goldfield. The trucks were going through improperly labeled. He visits the station on a daily basis, and if he is unable to be there Tina Tatum checks on the station.

Jim Hopkin, Station Manager and Larry Hathhorn, Alternate – Indian Springs, NV:

Jim

With the building of the new gymnasium, the station had to be moved. It is now in a more visible location in front of the high school. With people coming in to athletic events it can be seen so more people are aware of it. However, for the most part they still don't want to know any details. He didn't take any of his classes to the station last year. In the classroom he has given the students comparisons between the pollution of a coal fired plant compared to a nuclear plant using the information that Dr. Sandquist had given out. He invited them to go and look at the station and if they had any questions to let him know. For the next planned tour of the NTS only those students who have an interest in visiting the Test Site will go. He plans to talk to the leaders of the Senior Citizens group to see if they would be interested in having a presentation.

Larry

Bama McKnight gave presentations to three classes and that went very well. He has taken his classes on a tour of the station.

Roy Reeder, Station Manager – Las Vegas, NV:

Roy

He has been the Station Manager for about 5 months, and Don Curry, the new Alternate, will be here on Wednesday morning. They both teach at Valley High School. In terms of the operation of the station, there are few problems. The refrigeration went out in the tritium sampler and a few minor problems occurred with the barograph. Roy's assessment of community reaction is that people don't know it's there. They probably think that it is an extension of the EPA project next door. He had some interesting responses from students and adults when talking to them about the station. Some think that because the station is at that specific location, there must be a high level of radiation present. He has taken students out and showed them the operation of the station, and is considering putting some information in the monthly student newsletter that is sent out to the parents.

Dale Jensen, Station Manager and Leon Gay, Alternate – Milford, UT:

Dale

Most of the people in our community are aware of the station and its purpose, mostly by contact with the students of all the sciences at the high school. He applies it to his biology, physics,

chemistry and physical sciences classes in the Junior High level. Most people are aware that it is not a weather station, as was their opinion at first. When the explosion of the chemical plant occurred in Henderson, he was at a track meet and a lady came up and told him there was a radiation cloud coming our way and that everyone had better get out of there. He immediately went to the station, then checked and found out that it was a chemical reaction and explained to her there wasn't any danger. Because there is a lack of interest in our community shows that there is not any real fear of what is taking place on the NTS. He thinks that is a positive sign. He takes school tours to the station. There have been 45 students that have been involved in formal tours with classes. Students, when they see either Leon or myself, come by and talk about the station. The station is located across the street from what we consider in Milford to be one of the best Chinese restaurants in Utah, and we get a lot of visitors. A number of times we have had people come up and inquire of the happenings at the station. We have not been able to have a Test Site tour as we have a problem with the two days that it would take.

Ken Giles came to Milford and spoke to an avid wildlife group. One of the concerns in western Utah is that the deer herd between Milford and the Nevada line is primarily gone. Some 25 years ago there was a large deer herd and now it has been depleted to almost nothing. Ken gave a great presentation. He showed slides and had a question and answer period. There were a lot of changes of opinions based on what he related from the studies. The information received from the newsletters is very helpful. It gives me an update of the agenda relating to nuclear energy. Some of the articles he uses in his class discussions. The equipment has operated well, with just a little problem with the air sampler having to be changed out a couple of times. The community is quite stable. We are on the main line of the U.P. Railroad, and feel that the biggest concern of the community is the transportation of hazardous material on the railroad. We visit the station a minimum of three times a week. Our relationship with the EPA, DOE and DRI people has been great. Anytime there has been a problem, EPA has been right there to correct it.

Leon

When he changes the air sampler, he turns it off to reset, and when he flips the switch back on it hasn't come on. He has used the emergency switch a few times, which is a good hit on the top, and it starts right up.

Jack Nelson, Alternate Station Manager – Overton, NV:

Jack

Because of the recent building in Overton the station is now located between the new Library, the new Fire Station and the Medical Clinic, so the traffic and visibility have increased. With greater visibility there have been more inquiries about the station. Also, more local interest has been shown in the station as people come by when we are changing the filters and checking out the station. Nick Bowler has taken his science classes over for a tour of the station, and one of the scout merit badges is to visit a governmental agency, so the scoutmasters have made contact with us. We have given a tour to the scouts for their merit badge. This past year there

have been presentations from Milton Chilton from EPA, who gave a good presentation. David Wheeler's presentation of the sheep kill struck a lot of interest among the seniors with a lot of follow-up discussion, and probably the highlight of the presentations was Bob Taft, who really gave a great presentation on the history of the nuclear testing and showing historic pictures. With the help of Bruce Church, we went on a trip to the Test Site, taking 100 high school seniors at the end of the year. The equipment has run well, with very few problems.

Al Giannotti, Station Manager – Pahrump, NV:

Al

In Pahrump the people just have apathy. They think that if he is there checking out the station that everything must be O.K. There are very few inquiries. Most are from the kids that are at the park or softball players. There have been some problems with the noble gas sampler, similar to the problem Delta had with the lid falling down. He plans to make contact with the senior citizens, as they are the most active group, for a presentation. The equipment runs good. He said that he has attended the training sessions for six years. Everyone says what a good job we do in taking care of the stations; however, Gary, Nate, Juana and Bob deserve credit for putting this training session together. It is a tremendous feat to put this program together.

Christy Castleton, Station Manager – Rachel, NV:

Christy

There has been a bit of a population explosion in Rachel. We have 8 to 10 new property owners, and several of them have inquired about the station. The PIC went crazy one day, but EPA changed it out and it's working fine now. On the comment from Beverly about being too short, so far the lid hasn't fallen on my head. There have been some interesting occurrences in the valley this summer that brought quite a few people to town. One was a wedding at my house with 300 people attending. Several guests stayed over night and toured the station the next day. Rachel is also the "UFO Watcher Capitol of the World" and last week they had a UFO watchers convention and there were a lot of people from all over the world. We also had a test site tour this year. The station has been working great and appreciate all the support we get from EPA, DRI and DOE.

Jack Heppler, Station Manager and Kelly Bringhurst, Alternate – St. George, UT:

Jack

Jack introduced the new Alternate, Kelly Bringhurst, who teaches geology at Dixie College. Kelly was responsible for a tour of the Test Site this year. The interactions stay about the same. We continue to get inquiries from the Chamber of Commerce, relayed from people who are moving here. In terms of attitudes toward the program, he does not see much of a change. There are those that are against anything to do with nuclear, and those who either don't care, or don't see a problem with it. There were approximately six classes taken on a tour of the station this year. David Burr, the former Alternate, involved about 100 people. He gave presentations to two service clubs during the past six months. The station is currently in the

process of being moved and we are trying to relocate it on the Dixie College campus. The high school is building a gymnasium on the location of the present station. Kelly has been with the program for a short time and has been down to the station and has watched several events that go on. The equipment has operated really well. The new noble gas sampler is wonderful, the people who live close by it have said thank you, as the noise level has gone down considerably. Everything seems to be working well. There haven't been any major problems. St. George is changing and growing so fast. The Spectrum did a news article on the station. Some Southern Utah University journalism students interviewed me, a doctor at the medical center and Janet Gordon. When the station is relocated, we plan on getting some information out into the community about what it is and where it is located.

Kelly

Teaches geology, an introductory general education physics course, and energy and the environment. The department took about 10 students and 5 faculty members down for a NTS tour. The whole group felt that it was very interesting. He would also like to get some of the educational materials that were mentioned. He feels that they will make good use of the station on the college campus since both he and Jack have classes they could take out. With the present location, it is prohibitive to get students over to the high school. There is a weekly forum at the college and he will make use of this time to talk about aspects of the program.

Nate indicated that Mayor Karl Brooks, who is also an official of the college, suggested that as soon as the station is moved we appear before the Chamber of Commerce to explain what we are doing there and why there was need to move the station.

Brian Brown, Station Manager – Shoshone, CA:

Brian

Alternate Ken Smith could not attend the session. The station is located in a place where it does not get much public exposure. It is back behind the school which is now closed down, so you might want to consider moving it. Our kids (7th through 12th grade) are going to be bused to Beatty and Pahrump, depending upon which is closer. There doesn't seem to be any change in attitude toward the program. Either people don't mind or they are against it and if they have a mind set it doesn't matter what you say. There was one school tour to the station, and two or three people stop and ask questions. Even though there are no businesses in Shoshone, there is an active Chamber of Commerce. They would probably welcome a presentation. There is no growth in the community. This last February Brian attended a convention at the Sahara hotel where Greenpeace and other groups met. There were several thousand people there, and it was very interesting to observe. Our normal background radiation is between 10 and 12 in Shoshone.

Larry Woods, Station Manager and Mark Howard, Alternate – Tonopah, NV:

Larry

Probably most of the people consider the Tonopah station is just there. Those that are really

aware of it understand what the station is doing and have a good concept of it. Larry has had a few people come up and talk to him about the station. The equipment has been running great and he expressed his appreciation for all the help from the EPA people. They do a fine job. There have been two mines close in the past year or two. Candelaria mine, which is about 60 miles away, with their shutdown, caused about 30 or 40 families to move out, and this February Cyprus mine, which used to be the old Anaconda mine, closed down and we lost about 300 families. There is speculation that with the "place over the hill" (the Tonopah Test Range), we may be losing more from there as there is talk of some of the programs being cut. The Test Range does employ about one-third of our population, so if they were to make cuts it would drastically affect us.

Mark

For those of you that are short and have problems with the lid on the air sampler falling down, it happens to everyone if you don't push it up far enough so that it catches. Mark took his Nevada history class on a tour of the station and discussed the Test Site and nuclear radiation. A presentation was also given on Yucca Mountain that the students really enjoyed. There is not a great deal of interaction with the community. Most of them that know about the station work at the Test Site and the rest of them don't care, however, they are pretty supportive of Test Site programs.

COMMUNITY RADIATION MONITORING PROGRAM 1991 SUMMER TRAINING SESSION

COMMENTS FROM STATION MANAGERS AND ALTERNATES (only slightly edited)

- All speakers should follow Covello's presentation advice — show tape early in session.
- Block sunlight from viewgraph screen.
- **Overall very worthwhile conference.**
- Need to generate more discussion within group.
- Have an NRC speaker talk on emergency response to reactor accidents.
- Hand out hard copies of viewgraphs (those with words).
- Would like to see continued dialogue between our organization and community groups such as Mary Lehman's group (NDE), plus an explanation of the "new generation" of nuke power plants.
- Presenter would be taken more seriously by people in programs such as this if you would cut your pony tail. The majority of your audience are conservative people with broad experience and a conservative background (60s protests, nuclear protests, etc.). The material covered was outstanding.
- **The entire session was excellent. I appreciate the efforts of all concerned.**
- The edited tape conflicted with what Covello was saying are principles of good communication.
- The guest speakers were especially interesting and impressive.
- Would like to hear some experts in solar, geothermal, wind, etc. and NRC on why we can't have "standardized" reactors.
- Presentations could be shorter — one hour blocks by one person can be very difficult to listen to and learn from.
- **Excellent (overall) conference....topics and speakers.**
- Could tighten schedule slightly....fewer breaks, one or two evening sessions, optimal viewing of tapes, etc.
- **Excellent training session — equally valuable to the training is the interaction with others.**
- Would prefer more of a technical program, but understand it is hard to cover all levels of understanding.

- The educational benefits of the session were great as always.
- Public interest group interaction is always interesting.
- Continuing information on other DOE sites....would be interesting.
- **Good conference, well organized.**
- Station Manger's report went on much too long.
- Enjoyed the debate between Mary, Bruce and Bob.
- Thanks for inviting Mary Lehman.
- Would enjoy hearing more from Bruce and Bob.
- **The family night was a nice thought.**
- Mike Slaughter was a great teacher and good resource.
- Some presenters just dragged on – need to watch tape on public communications.
- (Thursday's) technical talks were too scientific and lost many of us.
- Bringing in Mary Lehman as rep for NDE was very informative and worthwhile – other presentations such as this would be very good.
- Somewhat technical in certain parts but overall a true learning experience.

Note: Boldface indicates multiple comments – same words.

APPENDIX B

Documentation of Outreach Efforts

October 2, 1990
St. George, Utah

Dear Nate:

I have enclosed a copy of a letter that I recently sent out to some people who were considering moving here to St. George to retire but had seen the TV program on the "downwinders" and were very concerned. A friend of theirs that lives here called and asked if I could do something so I offered to write a letter. I just sent it so I do not know the outcome but I thought you would appreciate getting a copy for your files.

Hope all is going well with you. Thanks for a great summer session and for all the help and support that DRI provides. See you in December.

Jack Heppler

ps. The chamber meeting went really well. I have had a lot of calls about it. Dave Wheeler did a good job in spite of some tough questions. It is the most honest presentation I've seen. It is very up front and to the point. It could be revised a little but I believe that it would make a great presentation for our Town Hall Meetings if we continue them.

October 2, 1990
St. George, Utah 84770

Dear Mr. & Mrs. Wilson

I have been asked by Dawn Roberts to write a letter to you in response to some questions and concerns you have concerning radiation levels here in St. George. Let me assure you from the onset that I am a very honest person with no axe to grind and I don't work for the Chamber of Commerce! I have lived in Southern Utah all my life and have spent the last 26 years teaching at the Jr. High School, Dixie High, and am now at Dixie College. My undergraduate work was in physics, chemistry, and mathematics and my graduate work has been in the life sciences so I am well versed in all the major sciences.

For the past 10 years I have been operating a radiation monitoring station which is located on the Dixie High School parking lot on 700 South. The equipment at the station looks for particulates and gases of various types that are associated with both nuclear testing and natural radiation. There are two things that have become very evident to me during the past decade of monitoring the station. (1) The radiation that was deposited in the 50's and 60's has now subsided to below normal background and currently, in my opinion poses no threat whatsoever; (2) The only anomalies that I have observed have been the cloud from the Russian accident at Chernobyl (which was seen at many places on the earth) and when there is a low pressure front and more naturally occurring Radon escapes from the soil. The fact is that the background readings are lower in St. George than they are in many other cities like Salt Lake, Denver, or other areas with higher elevation than St. George. The closer you get to the Sun the more background you receive. So our moderate elevation helps to protect us from natural sources.

Let me say Mr. & Mrs. Wilson that I am not an Ostrich with my head in the sand on the issue of problems associated with radiation. Neither am I naive enough to believe much of what I see or read about radiation from the media. There were errors made in the past. It was a unique time in the history of this nation and of the world. It is easy to point fingers without knowing all the facts because it is such an emotional issue. No one will ever know if cancers were induced by the above ground testing because it is impossible to point at a given cancer and say that one was caused by the Nevada Test Site! It just can not be done any more than we can say that a given woman going in for a Mammography will get breast cancer due to exposure to the X-rays even though we believe it will happen in a certain number of cases.

It is unfortunate that the media hype has given this area such a bad and undeserved name. Our vegetables don't glow in the dark. Neither do our people! You can raise a garden here and eat the food from it. You can breathe the air here and it doesn't make your eyes water. I guess the bottom line for me Mr. & Mrs. Wilson, is that I personally believe that there is currently NOT a problem with radiation from the Nevada Test Site here in the St. George area. I have lived in St. George for 26 years and I have 7 of the neatest kids on the face of the earth and one super granddaughter that lives here also. If I were the slightest bit worried about radiation levels I would get my family out as quickly as possible. No one could pay me enough to place my family in jeopardy. If I believed for one minute that there were the slightest problem my family and I would be gone and I would get very noisy about the situation.

I plan to teach a few more years and then retire here in St. George and enjoy my family for a long time. I honestly believe that you would be perfectly safe in doing the same thing!

Thanks for taking the time to read my remarks. If you have any questions please call me at home or at my office at Dixie College. If I can not answer your questions I will certainly find someone who can.

Sincerely:

Jack Heppler
Community Radiation Monitor
Professor, Natural Sciences
DIXIE COLLEGE
St. George, Utah
Home Phone 1-801-673-4556
Work Phone 1-801-673-4011 Ex. 364

**PRESENTATION AGENDA
SELECTED ACTIVITIES - U.S. DEPARTMENT OF ENERGY
NEVADA OPERATIONS OFFICE**

Conference Room - Clark County School District
Curriculum and Instruction Division
601 North 9th Street
Las Vegas, Nevada
3:00-5:00 p.m., October 25, 1990

3:00 - 3:10	Introduction	Nick Aquilina
3:10 - 3:40	Joint Verification Experiment USA/USSR Nuclear Testing	Nick Aquilina
3:40 - 3:55	Environmental Restoration Program Nevada Test Site	Joe Fiore
3:55 - 4:10	Science and Technology Education Program (STEP)	John Hall
4:10 - 4:50	ABCs of Radiation	Bama McKnight
4:50 -	Questions and Discussion	

Nick Aquilina - Manager, Nevada Operations Office, U.S. Department of Energy

Joseph N. Fiore - Director, Environmental Restoration and Waste Management
Division, NV/USDOE

John B. Hall - Branch Chief, Technology Development Branch, NV/USDOE

Charles D. (Bama) McKnight - Training Officer, Reynolds Electrical and
Engineering Company, Inc.

MOAPA VALLEY HIGH SCHOOL

P. O. BOX 278
OVERTON, NEVADA 89040
Telephone 397-2611

LAS VEGAS

Dr. Larry Moses
Principal

Mr. Len Czarnecki
Asst. Principal

FEB 1 - 1991

RECEIVED
WATER RESOURCES CENTER

DESERT RESEARCH INSTITUTE
2505 CHANDLER AVENUE, SUITE 1
LAS VEGAS, NEV. 89120

DEAR MR. COOPER,

I WANT TO TAKE THIS TIME TO THANK YOU AND YOUR STAFF FOR THE PRESENTATION AT MOAPA VALLEY HIGH SCHOOL. I HEARD MANY FAVORABLE COMMENTS FROM THE STUDENTS AND I FELT LIKE IT WAS QUALITY TIME VERY WELL SPENT. THE PRESENTATION THAT MR. DAVID WHEELER GAVE REALLY SPARKED SOME INTEREST WITH SOME OF THE STUDENTS. I FELT THE ADDED PITCH FOR SOME POSSIBLE CAREER OPPORTUNITIES IN RELATED SCIENCE FIELDS WAS AN EXCELLENT THING FOR THE SENIORS TO HEAR ESPECIALLY AS THEIR PREPARING TO GO TO COLLEGE. THANK YOU FOR THE TIME AND KNOWLEDGE YOU SHARED WITH US. I FELT BOTH PRESENTERS DID A FINE JOB, WAS WELL PREPARED AND ADDED NEW DEPTH TO OUR SUBJECT MATTER. WE HOPE TO SEE YOU IN THE FUTURE.

THANK YOU

Jack Nelson

JACK NELSON
TEACHER MOAPA VALLEY HIGH

THE DAILY Spectrum

Saturday, February 9, 1991

'Doc' examines St. George radiation

by Ray Eldard
Staff Writer

ST. GEORGE — Doc Heppler's heard it all.

The Dixie College professor knows all about the fear of radiation connected with St. George, but he'll also be the first to tell you Dixie is as safe a place to be as any.

And Doc should know.

For the past 10 years Jack Heppler, known to most as Doc, has been the station manager of St. George's Community Radiation Monitoring Station.

Established in 1980, by the U.S. Department of Energy (DOE), the U.S. Environmental Protection Agency (EPA), the University of Utah and UNLV's Desert Research Institute, the radiation monitoring station is one of 18 locally-managed stations in Utah, California, Arizona and Nevada.

Heppler has been with the radiation monitoring program since its inception in 1980.

Then a teacher at Dixie High School, where the monitoring equipment is still located, Heppler and the other station managers underwent training at the University of Utah in Salt Lake City.

"We went through a two-week training program, learning how to use the equipment and the techniques for measuring and monitoring radiation," Heppler said during an interview in his Dixie College office.

And learn he did.

Three times a week Heppler operates the thermoluminescent dosimeter, adjusts a tritium sampler and interprets data from a pressurized ion chamber.

In other words, he checks for radiation.

The information is analyzed weekly and posted at the monitoring station. Some information is even transmitted by satellite to Nevada where EPA officials can monitor radiation levels 24 hours a day.

And what does the information tell Doc?

"We're doing fine."

In fact, during the decade that Heppler has been participating in

the monitoring program, he's never had a dangerous reading.

"The last high one was Chernobyl," Heppler said the 1986 radiation cloud, the result of a major accident at the Soviet nuclear facility, registered at the St. George station.

"The cloud circled the earth several times," he said. "We picked it up twice."

Though the radiation level was nothing to be concerned about, Heppler said it caused enough of a change in the readings to tell what it was.

"I've never found anything that even came close to the acceptable standards," Heppler said.

Of the stations in Utah — there are stations in Cedar City, Milford,

Delta and Salt Lake — St. George has the lowest readings, Heppler said that is due to our lower elevation.

Denver, Colo., will have higher readings because it's that much closer to the sun.

Of the 18 monitoring stations that surround the Nevada Nuclear Test Site, St. George is among the five lowest readings registered.

In a year, the average city would register anywhere from 200 to 300 micro roentgen. The average for St. George is from 75 to 80.

Still, Utah's radiocative reputation comes back to haunt it.

"I got a phone call just this morning," Heppler recalls laughing.

parking lot is one of 18 locally-managed stations in the Community Radiation Monitoring Program. (Spectrum / Ray Eldard)

A woman was thinking about moving to St. George with her family, but her husband wanted to know if they could grow tomatoes here.

"I told her, 'Yes. You can eat them too!'" One guy even called me from back east wanting to know if it was true that our roads glowed at night."

Heppler said that any remnant of St. George's radiocative past is of no threat today.

"Anything that's there has been decayed so much into the background that you're getting more radiation from the radon in the soil."

But don't let the radon worry you either, Doc's keeping an eye on that too.

William E. Orr Junior High School

1562 EAST KATIE DRIVE
LAS VEGAS, NEVADA 89109
(702) 799-5573

Herbert D. Baker
Principal

Mrs. Daisy L. Miller
Assistant Principal

February 1991

Nate Cooper
Las Vegas Science Center
2505 Chandler Avenue, Suite 1
Las Vegas, Nevada 89120

Dear Mr. Cooper,

Thank you and all of your staff for coming out and giving excellent presentations to science students at Orr Junior High. The programs were all very well organized and stimulating. One of our aims is to meet the career needs of our students. The variety of topics you gave enabled my students to view future jobs as well as looking at the existing job market. Some recommendations for future programs, 1) more overheads and handouts to provide more visual information, 2) hands-on learning, 3) develop a handout to give to teachers after presentation on the effectiveness of the program or any recommendations for future possible topics, and 4) a card listing the following information for your organizational records - name of teacher, name of school or location, name of program, ages of the youth, how many youth reached.

It has been a pleasure meeting you and your staff. The presentations given were important as forums for the sharing of thoughts and ideas. I would like to thank you again and I'm looking forward to seeing you later this year.

Sincerely,

Ms. Beth Isaacs
Science teacher

LAS VEGAS

FEB 1991

**RECEIVED
WATER RESOURCES CENTER**

CLARK COUNTY SCHOOL DISTRICT

2832 EAST FLAMINGO ROAD LAS VEGAS, NEVADA 89121 TELEPHONE (702) 736-5011

LAS VEGAS

MAR 7 1991

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WATER RESOURCES CENTER

BOARD OF SCHOOL TRUSTEES

Mrs. Shirley Holst, President
Mr. Robert Forbuss, Vice President
Mrs. Lucille Lusk, Clerk
Mrs. Virginia Brooks Brewster, Member
Mr. Donald R. Faiss, Member
Mrs. Patricia A. Bendorf, Member
Mr. Dan Goldfarb, Member
Robert E. Wentz, Superintendent

DESERT RESEARCH INSTITUTE
2505 CHANDLER AVENUE SUITE 1
LAS VEGAS, NEV. 89120

DEAR MR. COOPER,

JUST A NOTE OF THANKS FROM THE SENIOR CLASS
OF MOAPA VALLEY HIGH SCHOOL. ON FEB 20TH MR. BOB TAFT AND
MYSELF GAVE AN EXCELLENT PRESENTATION ON THE HISTORY OF
THE NEVADA TEST SITE. IT SPARKED ENOUGH INTEREST THAT IN
EACH OF THE FOUR CLASSES THE NEXT DAY THERE WAS FOLLOW UP
DISCUSSION AND QUESTIONS ABOUT THE USA'S NUCLEAR POLICY.
MR. TAFT SEEMED VERY QUALIFIED TO ANSWER ANY QUESTIONS THAT
CAME UP ABOUT THE TEST SITE AND ITS PROGRAMS. THANKS AGAIN
FOR COMING AND PLEASE COME BACK AND VISIT SOON!

THANK YOU

JACK NELSON
TEACHER MOAPA VALLEY HIGH

DIXIE COLLEGE
St. George, Utah 84770
(801) 673-4811

Preparation for Life

Natural Science Division

**Mr. Nate Cooper
Desert Research Institute
2505 Chandler Ave. Suite #1
Las Vegas, Nevada 89120**

LAS VEGAS

APR 24 1991

Dear Nate:

**RECEIVED
WATER RESOURCES CENTER**

I received some information today that I thought might be interesting to you and the people at EPA. Dixie High School is going to build another gymnasium and some more classrooms and will probably need the station moved to another location. I don't know what your feelings are but this might be a good time to consider moving the station to the college campus. I am sure that I could make the contacts needed to get permission. Let me know what you decide and what part you want me to play.

Things have settled down a bit here. I decided not to take the position of Dean here at the college. I have just got too much to do. I am getting rid of some of my committee assignments at the end of this quarter. I just got too involved. I still do not have a name for an assistant manager but I will continue to search. Hope to see you soon.

Sincerely:

Jack
Jack Hopper

LAS VEGAS

MAY 24 1991

May 24, 1991

RECEIVED
WATER RESOURCES CENTER

Nate Cooper
2753 S. Highland
Las Vegas, NV. 89102

Dear Nate:

On behalf of the Beatty Volunteer Fire Dept., I would like to express our sincere appreciation for the time and effort put into the presentation in Beatty on March 19, 1991.

It is with the information that you help to provide that gives our Dept. and many others a better understanding of the activities within our community which may require response to.

It is the hope of our Dept. that additional presentations and training will be possible in the future.

Once again, Thank You.

Sincerely,

Bob Davis, President.

BD/kbq

B-10

BEATTY

Nevada's Gateway to Death Valley National Monument

**INDIAN SPRINGS HIGH SCHOOL
SEPTEMBER 19, 1991**

Questions from students of the American Government senior class and two American History classes directed to Bob Taft, DOE.

9:00 a.m. American Government class – Mr. Hathhorn and Ms. Richardson and 16 students present:

1. If Yucca Mountain depository is approved, when do you think it will actually be in operation?
2. Does every new bomb have a name?
3. How much more powerful are today's nuclear weapons?
4. What role did you play in the test fire program?
5. Where are we and what are our strengths in comparison with other countries?
6. Is Los Alamos like the Test Site?
7. Is all of the work at the test site strictly military or do they do research?
8. How does nuclear testing affect the environment?
9. Does the nuclear testing at the Test Site affect the vegetation?
10. Where are the nuclear weapons stored?
11. Has there ever been a scare where a nuclear bomb was to go off but didn't?
12. Why do you feel Yucca Mountain is a good place for the depository site?
13. You were telling us that other countries reprocess, why doesn't the U.S. do this?
14. How far away is the Yucca Mountain from the outskirts of Las Vegas, and do you feel it would be a problem with the growth of Las Vegas?
15. If Yucca Mountain isn't approved where else could the waste be put?

11:00 a.m. American History class – Mr. Pullen and Ms. Richardson and 12 students present:

1. In the late 1950's were there any studies on how the people were affected?
2. What are the chances of something happening in the U.S. like Chernobyl?
3. Please summarize the differences of past and present nuclear testing.
4. How is nuclear testing going to help us in the future?
5. Would there be a way to test on the moon?
6. How many people have died from radiation accidents?
7. Would that be a fair statement to make where coal is not a nuclear product?
8. Do you think there is a high risk for the people in Indian Springs of getting cancer?
9. Why do some of the tests make large craters?
10. Will the NTS ever run out of land to do nuclear tests?
11. Has there ever been a fallout from above-ground testing that would affect the ozone layer?
12. Between the pro-and anti-nuclear groups, which do you feel are the most abundant?
13. If a railroad line was in, what areas would the railroad come from?

1:20 p.m. American History class – Ms. Richardson and 17 students present:

1. How long does it take to build a nuclear bomb?
2. How much did the first bomb cost?
3. Do other world countries spend as much money as we do in the nuclear field?
4. How are the nuclear bombs stored?
5. After a nuclear test, why do you follow the effects of the test?
6. How do nuclear tests effect the land and water in general?
7. What about funding problems? (reference to newspaper article)

8. Are bombs like the “fat guy” still being made?
9. How much does a nuclear bomb weigh?
10. How long has the Nevada Test Site been in operation?
11. How far is Yucca Mountain from here?
12. How much radiation does it take to kill a person?
13. Where is the waste kept now?
14. If Yucca Mountain is used for nuclear waste depository, how will the waste be transported?
15. Have there ever been tests that haven’t gone off?
16. When a bomb is set off, can the crater be re—used for another test?
17. Were any of the bombs tested at NTS used in the Persian Gulf?

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