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DOE/OR/06029--T1

DE83 001655

MASTER

NUCLEAR SKILL RELATED TRAINING

AND

JOB IDENTIFICATION AND PLACEMENT SERVICE

FOR

MIGRANT AND SEASONAL FARM WORKERS

SPONSORED BY:

DEPARTMENT OF LABOR
OFFICE OF FARMWORKER PROGRAMS

DEPARTMENT OF ENERGY
OFFICE OF INDUSTRIAL CONTRACTS

FUNDED BY:

COMPREHENSIVE EMPLOYMENT AND
TRAINING ACT (CETA)
TITLE III, SECTION 303

OPERATED BY:

CENTER FOR NUCLEAR STUDIES
MEMPHIS STATE UNIVERSITY

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RECRUITING

NSRT PROGRAM RECRUITING

In May of 1978, the representatives of the Center for Nuclear Studies at Memphis State University invited operators of CETA (U.S. Comprehensive Employment and Training Act) migrant and seasonal farmworker programs to Memphis to explain a plan to train farmworkers to become "Nuclear Reactor Operators" and "Radiation Technicians."

Despite the skepticism of many of them, most of the farmworker program operators went home and started recruiting as they had been asked to do. Farmworker program participants who expressed interest and got through preliminary screening were then given much more extensive examinations by Nuclear Studies' representatives.

The use of industrial screening procedures and selection standards assured that trainees who were accepted would be eligible for employment. The Center for Nuclear Studies also provides screening services for the nuclear industry which allows first-hand knowledge of industrial screening procedures and assures compliance with these standards. All screening tests are also being validated in accordance with guidelines of the Equal Employment Opportunity Commission published in part 1607 of the Code of Federal Regulations, Title 29.

In addition to industrial screening standards, applicants must also meet requirements of American National Standard ANSI-3.1 (1980) "Selection and Training of Nuclear Power Plant Personnel" and ANSI-18.7 "Screening of Nuclear Facility Personnel." Medical standards are also identified in these standards and part 50 of the Code of Federal Regulations, Title 10. The Center for Nuclear Studies assures compliance with these criteria. The Comprehensive Employment and Training Act of 1974 also provides certain qualifications for eligibility of an individual for training and support under the Act. The DOL 303 Grantee was responsible for assuring eligibility under Title III of the CETA Act.

A primary consideration in recruiting and screening of applicants for the NSRT program is that both females and members of minority groups are included as program participants. Special efforts are therefore made to recruit eligible females and minority group members.

Table 2a. Description of NSRT Class #1

NAME	HOMETOWN	303 GRANTEES	AGE	ETHNIC
Bautista, Maria	Weslaco, TX	HEP Pan Am. Univ. Edinburg, TX	27	HAF
Benham, Joe	Orlando, FL	Adult MSFW Assoc. Orlando, FL	26	BM
Breiwa, Michael	Bowling Green, KY	Dept. of Human Resouces Bowling Green, KY	23	WM
Brown, Aaron	Central City, KY	Dept. of Human Resources Bowling Green, KY	19	WM
Castillo, Sara	Eagle Pass, TX	HEP-UTEP El Paso, TX	19	HAF
Du Gard, Phillip	Owensboro, KY	Dept. of Human Resources Bowling Green, KY	26	WM
Ellis, Mickey	Dora, AL	Ala. MSFW Council Montgomery, AL	21	WM
Ellis, Terri	Dora, AL	Ala. MSFW Council Montgomery, AL	20	WF
Grimes, Steve	Bowling Green, KY	Dept. of Human Resources Bowling Green, KY	24	WM
Kline, Robert	Madera, CA	Central Valley Opport. Co. Madera, CA	21	WM
Lopez, Alfredo	Salina, KS	ORO Development Corp. Salina, KS	20	HAM
Martinez, Raul	San Juan, TX	HEP Pan Am. Univ. Edinburg, TX	19	HAM
Mascareno, Tim	Emporia, KS	ORO Development Corp. Salina, KS	19	HAM
McKeever, Johnny	Nauvoo, AL	Ala. MSFW Council Montgomery, AL	29	WM
Mease, Richard	Danville, VA	MSWF Council Raleigh, NC	20	BM
Mosley, Ronny	Morgantown, KY	Dept. of Human Resources Bowling Green, KY	19	WM
Newman, David	Owensboro, KY	Dept. of Human Resources Bowling Green, KY	20	WM
Puckett, Curtis	Brownsville, TN	Tenn. Opportunity Program Newbern, TN	19	WM
Rigsby, Sandra	Jasper, AL	Ala. MSFW Council Montgomery, AL	26	WF
White, James	Gretna, VA	MSWF Council Raleigh, NC	19	BM

Table 2b. Description of NSRT Class #2

NAME	HOMETOWN	303 GRANTEES	AGE	ETHNIC
Anzures, Yolunda	Los Lunas, NM	H.E.L.P. Albuquerque, NM	21	HAF
Astronomo, Jose	Stockton, CA	City of Stockton MSF Stockton, CA	19	PAM
Barton, Michael	Jasper, AL	Ala. MSF Council Montgomery, AL	22	WM
Barton, Shirley	Jasper, AL	Ala. MSF Council Montgomery, AL	23	WF
Blasdel, Dennis	Moses Lake, WA	HEP Wash. State Univ. Pullman, WA	19	WM
Butler, Randy	Dyersburg, TN	Tenn. Opportunity Prog. Newbern, TN	29	WM
Byers, Rick	Payson, IL	Migrant Opport. Prog. Phoenix, AZ	23	WM
Casey, Timothy	Orlando, FL	ADULT MSF Council Tallahassee, FL	27	WM
Garza, Richard	Weslaco, TX	HEP, Pan Am. Univ. Edinburg, TX	19	HAM
Grijalva, Boni	Stockton, CA	HEP, Univ. of Pacific Stockton, CA	22	HAF
Hammonds, Daniel	Phoenix, AZ	Migrant Opport. Prog. Phoenix, AZ	22	WM
Holcombe, Dwayne	Florence, AL	Ala. MSF Council Montgomery, AL	24	WM
Holcombe, Terry	Florence, AL	Ala. MSF Council Montgomery, AL	24	WM
Jenkins, Peter	Moses Lake, WA	HEP Wash., State Univ. Pullman, WA	19	WM
Ledezma, Robert	La Feria, TX	HEP Pan Am Univ. Edinburg, TX	24	HAM
Maldonado, F.	Mercedes, TX	HEP Pan Am. Univ. Edinburg, TX	21	HAM
Martinez, Porfirio	Eloy, AZ	MOP Phoenix, AZ	24	HAM
Penera, Alfonso	Stockton, CA	HEP Univ. of Pacific Stockton, CA	23	PAM
Prescott, Gregory	Carbon Hill, AL	Ala. MSF Council Montgomery, AL	19	WM
Pride, Lisa	Newbern, TN	Tenn. Opportunity Prog. Newbern, TN	19	WF
Salazar, Clemente	Coyote, NM	HEP-NNMCC El Rito, NM	29	HAM
Torrecampo, Manuel	Stockton, CA	City of Stockton MSF Stockton, CA	25	PAM

Table 2c. Description of NSRT Classes #3

NAME	HOMETOWN	303 GRANTEES	AGE	ETHNIC
Bridges, Rex	Jasper, AL	Ala. MSFW Council Montgomery, AL	22	WM
Broach, David M.	Church Point, LA	L.A.M.P. Ville Platte, LA	19	WM
Cantu, Abel	Edinburg, TX	H.E.P./P.A.U. Edinburg, TX	18	HAM
Carroll, Edward J.	Madison, KY	T.O.P.S. Bowling Green, KY	19	WM
Chavez, Luis	El Paso, TX	H.E.P./UTEP El Paso, TX	21	HAM
Escobar, Gilbert	Pharr, TX	H.E.P./W.S.U. Pullman, WA	22	HAM
Evans, Timothy G.	Moses Lake, WA	CETA Center Moses Lake, WA	24	WM
Gadberry, Michael	Moses Lake, WA	H.E.P./W.S.U. Pullman, WA	19	WM
Gonzalez, Guadalupe	Memphis, TN	T.O.P.S. Newbern, TN	19	HAM
Norris, Gregory P.	Jasper, AL	Ala. MSFW Council Montgomery, AL	21	WM
Perez, Rodolfo	San Juan, TX	H.E.P./P.A.U. Edinburg, TX	21	HAM
Roman, Mark C.	Moses Lake, WA	CETA Center Moses Lake, WA	22	WM
Sanchez, Hector P.	Phoenix, AZ	M.O.P. Phoenix, AZ	19	HAM
Shields, Anita C.	Somerville, TN	T.O.P.S. Newbern, TN	21	BF
Smith, Dexter L.	Florence, AL	Ala. MSFW Council Montgomery, AL	19	WM
Soyars, Ronnie D.	Paducah, KY	T.O.P.S. Bowling Green, KY	22	WM
Velasquez, Joe J.	San Juan, TX	H.E.P./P.A.U. Edinburg, TX	19	HAM
Washington, Earl M.	Montgomery, AL	Ala. MSFW Council Montgomery, AL	20	BM
Willett, Steve J.	Paducah, KY	T.O.P.S. Bowling Green, KY	20	WM
Williams, Kevin P.	Tiptonville, TN	T.O.P.S. Newbern, TN	20	WM
Wolfe, Phillip D.	Jasper, AL	Ala. MSFW Council Montgomery, AL	27	WM

Table 2d. Description of NSRT Classes #4

NAME	HOMETOWN	303 GRANTEES	AGE	ETHNIC
Arhelger, Daniel	Owensboro, KY	T.O.P.S. Bowling Green, KY	28	WM
Barnes, Jerry	Ripley, TN	T.O.P.S. Newbern, TN	24	WM
Benavidez, Joe L.	Beeville, TX	M.E.T. Beeville, TX	19	HAM
Benavidez, Laura J.	Nixon, TX	M.E.T. Beeville, TX	18	HAF
DeLos Santos, Teresa	Cuero, TX	M.E.T. Beeville, TX	18	HAF
Evans, Roy	Fitzgerald, AL	Ala. MSFW Co. Montgomery, AL	18	WM
Gooch, Jackie	Ripley, TN	T.O.P.S. Newbern, TN	26	WM
Guerin, Eric	Colorado Springs, CO	H.E.P.-Univ. So. Colo. Pueblo, CO	18	HAM
Guerrero, Victor	Santa Ana, CA	H.E.P.-Univ. of Pac. Stockton, CA	19	HAM
Hardin, Daniel	Jasper, AL	Ala. MSFW Co. Montgomery, AL	22	MW
Johnson, Samuel	Basile, LA	L.A.M.P. Ville Platte, LA	18	WM
Martinez, Ruben	Pueblo, CO	H.E.P.-Univ. So. Colo. Pueblo, CO	18	HAM
Perez, Ricardo	Mercedes, TX	M.E.T. Beeville, TX	19	HAM
Phillips, Cedria	Ragland, AL	Ala. MSFW Co. Montgomery, AL	19	WF
Rhodes, Roger	Water Valley, KY	T.O.P.S. Bowling Green, TN	20	WM
Segura, Debbie	Pueblo, CO	H.E.P.-Univ. So. Colo. Pueblo, CO	19	HAF
Simons, David	Sumiton, AL	Ala. MSFW Co. Montgomery, AL	25	WM
Stacy, Steven	Beaver Dam, KY	T.O.P.S. Bowling Green, KY	21	WM

Table 2e. Description of NSRT Classs #5

NAME	HOMETOWN	303 GRANTEES	AGE	ETHNIC
Aguiniga, Hector	Turlock, CA	H.E.P.-Univ. of Pac. Stockton, CA	18	HAM
Casey, Jerry	Russell Spgs. KY	T.O.P.S. Bowling Green, KY	18	WM
Cooper, Bryan	Moses Lake, WA	H.E.P.-Wash. St. Univ. Pullman, WA	20	WM
Echartea, Pedro	San Benito, TX	H.E.P.-Pan Am. Univ. Edinburg, TX	20	HAM
Fowler, Gary	Sumiton, AL	Ala. MSFW Co. Montgomery, AL	22	WM
Guthrie, Greg	Carbon Hill, AL	Ala. MSFW Co. Montgomery, AL	19	WM
Haley, Richard	Carbon Hill, AL	Ala. MSFW Co. Montgomery, AL	21	WM
Hamra, George	Tiptonville, TN	T.O.P.S. Newbern, TN	23	WM
Jones, Jerry	Port Gibson, MS	Miss. Delta MSFW Co. Clarksdale, MS	28	WM
Lopez, Aurelius	Espanola, NM	H.E.P.-NNMCC El Rito, NM	28	HAM
Neat, Leon	Dunnville, KY	T.O.P.S. Bowling Green, KY	19	WM
Norris, Tim	Adamsville, AL	Ala. MSFW Co. Montgomery, AL	21	WM
Pierce, Darlene	Charlo, MT	H.E.P.-Wash. St. Univ. Pullman, WA	18	WF
Ramos, Cruz	Canutillo, TX	H.E.P.-UTEP El Paso, TX	24	HAM
Ramos, Samuel	Canutillo, TX	H.E.P.-UTEP El Paso, TX	19	HAM
Randolf, Mary Jane	Owensboro, KY	T.O.P.S. Bowling Green, KY	28	WF
Snell, Daniel	Weslaco, TX	H.E.P.-Pan Am. Univ. Edinburg, TX	18	HAM
Veazey, Martin	Maplesville, AL	Ala. MSFW Co. Montgomery, AL	18	WM
Victory, Nellie	Watsonville, CA	H.E.P.-Univ. of Pac. Stockton, CA	20	PAF
Villegas, Victor	Woodlake, CA	H.E.P.-Fresco St. Univ. Fresno, CA	20	HAM
Walker, Brian	Paris, TN	T.O.P.S. Newbern, TN	21	WM

PLACEMENT

The bottom line of the NSRT Program was the timely placement of the graduate into unsubsidized, productive and gainful jobs within the nuclear electric power industry. To assure of this result, a systematic approach was established and validated for the NSRT Program as per the following segments:

- * Contact with employers
- * Program review by industry
- * Continuous liaison with industry
- * Interviews for NSRT graduates
- * Plantsite visits by staff and graduates
- * Placement of graduates
- * Follow-up of graduates' progress

Placement of NSRT graduates was at the 90% level as a result of this placement policy. See Table 3. Because of this training at MSU/CNS, these graduates have entered the world of the employed contributor to society with input into the United States economy.

Table 3. Placement of CNS/NSRT Graduates

COMPANY	NUCLEAR STATION	NSRT PROGRAM					TOTAL
		I	II	III	IV	V	
Virginia Electric Power Co.	Surry	1	3	3	0	3	10
Mississippi Power & Light	Grand Gulf	5	1	2	1	2	11
Southern California Edison	San Onofre	4	3	0	0	0	7
Carolina Power & Light	Brunswick	3	2	0	6	3	14
Texas Utilities Generating Co.	Comanche Peak	1	1	1	0	0	3
Commonwealth Edison	La Salle	0	1	2	0	0	3
Public Service Electric & Gas of New Jersey	Hope Creek	0	0	3	2	1	6
Sacramento Municipal Util. Dist.	Rancho Seco	0	2	0	0	0	2
Pacific Gas & Electric	Diablo Canyon	1	0	0	0	0	1
Arkansas Power & Light	Nuclear One	1	0	0	0	3	4
Bechtel Corp.	Grand Gulf	1	0	0	0	0	1
Wash. Public Power Supply Sys.	WNP 3-5	0	1	0	0	0	1
Industrial Resource Mgmt. Corp.	Junior Health Physicist	0	1	0	0	0	1
Tennessee Valley Authority	Browns Ferry	1	0	0	0	0	1
Portland General Electric	Trojan Nuclear Station	0	1	0	0	0	1
Cincinnati Gas & Electric	William H. Zimmer	0	0	1	0	0	1
Connecticut Yankee Atomic Power	Connecticut Yankee	0	0	1	0	0	1
Nuclear Support Services	Junior Health Physicist	0	0	1	0	0	1
MSU/Nuclear Studies	BPS/NIG Degree Program	0	0	1	0	0	1
Daniel Construction	River Bend	0	0	0	1	0	1
Louisiana Power & Light	Waterford	0	0	0	1	0	1
United Technologies	Health Physicist	0	0	0	0	1	1
Other Placements	Military/College	1	0	2	2	3	8
Total Placements		19	16	17	13	16	81
Total Screened/Accepted for Training		21	22	21	18	21	103
Total Graduated		20	16	19	15	20	90
% of Graduates Placed		95%	100%	90%	86%	80%	90%
Date of Completion		3/79	12/79	6/80	12/80	6/81	
Average Starting Salary		14,302.93	16,053.18	17,861.74	17,931.83	19,821.78	

The NSRT Program has impacted the nuclear industry on a national scale by providing it with well-trained manpower for entry-level positions of "Reactor Operator" and "Health Physicist." Many of the operators have received RO licenses from the Nuclear Regulatory Commission.

Figure 1
NSRT Recruiting - Placement Activity

Legend

- Department of Labor 303 Grantee Office
- Home Base of NSRT Graduates
- ▲ Placement of NSRT Graduates

PERFORMANCE

The NSRT Program demonstrated itself as an efficiently run organization utilizing available resources to their optimum level. The NSRT program helped in combating unemployment and underemployment in the nation by providing the electric generating industry with their most essential resource - trained, qualified workers.

TOTAL PLACEMENT RATE

The NSRT Program exceeded the national average in the placement of CETA clients. NSRT placed 90% of its graduates into permanent unsubsidized jobs. This compares to a national placement rate of 47.2%.

SIGNIFICANT SEGMENT PLACEMENT RATE

This graph illustrates that the NSRT Program is extremely efficient in placement of difficult to serve clients.

*1978 CETA figures

By September of 1978, 24 persons had been selected from among 104 tested, and they were in Memphis ready to begin the intensive six-month training program. By March of 1979, when the first training cycle ended for the 24 former farmworkers:

20 graduated with certificates of competence making them eligible for entry-level employment as "Nuclear Reactor Operator" or "Radiation Technician" trainees,
18 were employed by utility companies in training related jobs,
2 others who graduated included one who went on to study nuclear engineering at the University of Tennessee and one who secured unsubsidized employment with an electronics company,
3 had been transferred to other CETA training, and
1 failed the program, but later returned in another training cycle, completed, and now works for a utility in Texas.

Whatever skepticism existed at the onset of the program was overcome quickly by the success of the first group of trainees.

The second group, after another six months, produced 16 placements in training related jobs. Altogether, between September 1978 and June 1981, the Center for Nuclear Studies trained five groups of farmworkers. The training was financed through special grants from CETA Title III, Section 303 funds administered in the Office of National Programs, the Office of Farmworker Programs.

The total cost included standard CETA classroom allowances at the minimum wage rate plus \$35 a week subsistence, since all trainees were away from home and living in Memphis State University residence halls during training.

The Center for Nuclear Studies in no way functioned like a traditional CETA prime sponsor. On the other hand, the Center took referrals from CETA farmworker programs, did additional screening and testing, and provided the highly specialized training which was followed by effective, specifically-targeted job development and placement activities.

Although none of the training for farmworkers was funded by the Department of Energy, the Center for Nuclear Studies was in a position to identify the job opportunities and provide needed training because of a long-standing relationship with the Department of Energy for which the Center has done periodic research. In addition, the quality of training offered by the Center is recognized and sanctioned by the Department of Energy. Consequently, graduates of the Center are accepted readily by industry because industry knows the Department of Energy accepts the Center's training as part of the necessary steps leading to full certification by the Nuclear Regulatory Commission for nuclear reactor operators and other technicians.

TABLE 4. PLACEMENT OF NSRT GRADUATES

ETHNIC COMPOSITION	GRADUATES - 90			PLACEMENTS - 81		
	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL
WHITE	48	7	54	43	7	50
BLACK	4	0	4	3	0	3
HISPANIC-AMERICAN	22	6	28	20	5	25
PACIFIC ISLANDER	2	1	3	2	1	3
NATIVE-AMERICAN	0	0	0	0	0	0
TOTALS	76	14	90	68	13	81

TRAINING

CURRICULUM SUMMARY

The Nuclear Skill Related Training program was composed of three separate, but inter-related programs. Each of these programs is designed to provide entry-level skills into existing job categories within the nuclear industry. A brief summary of each program follows:

Nuclear Reactor Fundamentals

This program is directed toward the job category of "Nuclear Reactor Operator," and provides a sound fundamental background in operating theory, preparing the student for further specialized technical training at a nuclear power plant. The objective of this program is to fulfill (in conjunction with the Reactor Startup Experience program) the requirements of "Phase I" of ANSI/ANS-3.1, Appendix A - "Typical NRC Approved Reactor Training." The Nuclear Regulatory Commission has reviewed this program and determined that the "fundamentals course submitted. . . is appropriate for inclusion (in an overall Reactor Operator training program) and would satisfy our requirements for fundamentals training."

The NRF program consists of 10 modular subjects, normally delivered over 17 weeks of instruction. The subjects covered are:

- * Mathematics
- * Physics-Mechanics
- * Heat and Thermodynamics
- * Fluids
- * Electricity
- * Nuclear Physics
- * Reactor Physics
- * Basic Instrumentation
- * Power Plant Chemistry and Materials of Construction
- * Radiation Protection

The NSRT Program additionally included a pre-mathematics refresher course intended to reintroduce students to a learning atmosphere, and also to emphasize basic mathematics skills required during mathematics and subsequent modules.

Reactor Startup Experience

The RSE program is provided to complete the requirements of Appendix A, ANSI/ANS-3.1. A minimum of 3 reactor startups are performed by each student on the Memphis State University AGN-201 research reactor. The practical experience gained during critical manipulations allows the students to apply the principles learned during the NRF program.

The exercises performed during the RSE are:

- * Reactor Startup
 - * Estimated Critical Position
 - * $1/M$
- * Relative Neutron FLux Distribution Plot
- * Power Calibration Through Activation Analysis
- * Poison Reactivity Importance Functions

During these exercises, the students become acquainted with controlled approaches to criticality; recognition of indications of sub-critical and critical assemblies; methods of safely manipulating reactor power level; compensating for reactivity changes; accumulating, interpreting, and plotting data; and monitoring for radioactivity.

Radiation Technician Fundamentals

This program is directed toward the various job categories within the nuclear industry which involve handling, measuring, or monitoring radioactive materials. The course stresses current regulations, industrial procedures, radiological hazards, and radiological control philosophy.

The RTF program includes 7 modular subjects, augmented by "hands-on" laboratory experience whenever applicable. The subjects covered are:

- * Radiation Physics
- * Principles of Radiation Detection
- * Rules and Regulations
- * Biological Effects of Radiation, and Exposure Control
- * Environmental Monitoring
- * Records, Reports, and Administration

The RTF program provides the student with a solid foundation in: sources and characteristics of radiation; radiation detection and measurement; biological effects of radiation, personnel exposure control; radioactive contamination; regulatory aspects affecting radiation technicians; and practical experience in the use of radiation detection and measurement systems.

Each of the three programs was developed under the standard of industrial relevance. Critical reviews of course content, scope, and applicability have been conducted in order to insure useful training is being provided and important topics are not being overlooked. The programs are presented in modular form in order to provide an easily adaptable platform which can be adjusted to accommodate new or changing industrial requirements.

Table 5. NSRT Schedule

SCREENING

Operator Screening Examination
Orientation - Pre-math
Mathematics
Evaluation - Transfer of unqualified applicants

NSRT TRAINING

Physics-Mechanics
Electricity
Nuclear Physics
Radiation Physics
Principles of Radiation Detection and Lab
Biological Effects of Radiation and Exposure Control
Contamination and Waste Disposal Lab
Environmental Monitoring, Regulation, Records and Reports
Heat and Thermodynamics
Fluid Mechanics and Reactor Plant Components
Reactor Physics
Instrumentation
Chemistry and Materials of Construction
Reactor Operation Training
Final Examination

PLACEMENT OF GRADUATES

Interviews
Plant Site Visits
Placement

ACADEMIC RECOGNITION

The NSRT trainee has been awarded academic credit for his/her effort in the individual modules of both the Nuclear Reactor Fundamentals and Radiation Technician Fundamentals programs.

It has been through involvement of University faculty in the development phase of training programs which has made possible the acceptance of training courses for academic credit through established University disciplines. At present, a total of 36 semester credit hours may be awarded by academic departments at Memphis State University as described in Table 1.

Table 1. Recognition of Academic Credit

PROGRAM	MODULE	ACADEMIC DEPARTMENT/COURSE	SEMESTER HOURS
Nuclear Reactor Fundamentals	1. Mathematics	Mathematics 1211	3
	2. Physics	Physics 2111	4
	3. Heat		
	4. Fluids	Physics 2112	4
	5. Electricity		
	6. Nuclear Physics	Physics 4110	3
	7. Reactor Physics	Physics 4220	3
	8. Radiation Protection	Biology 2780	4
	9. Chemistry	Chemistry 1010	3
	10. Instrumentation	Eng. Tech. 2411	3
			<u>27</u>
Radiation Technician Fundamentals	1. Radiation Physics	Physics 4021	3
	2. Radiation Detection	Physics 4022	3
	3-6. Rules/Regulations	Physics 4030	3
	7. Biological Effects	Biology 2780	4
			<u>13</u>

All these courses may be applied toward a degree in the MSU University College which is directed toward individual career development in the industry. This program represents the first consolidated attempt by a university to develop and implement an academic program for technicians employed in the nuclear industry.

SUPPORTIVE SERVICES

The Center for Nuclear Studies made a concentrated effort to provide the NSRT trainee with all the supportive services necessary to create a healthy academic atmosphere. These services involve housing at the Conference Housing section of Richardson Towers; this included accessibility to cafeteria services for breakfast and dinner. Trainees were housed in adjacent rooms to enhance coordination and provide opportunities for cultural development and supplementary tutoring. Trainees were also allocated a stipend for a 40 hour work week to cover cost of housing, food, other essentials and recreation. All textual materials, papers, pencils, and other training materials essential to the program were provided in addition to the weekly stipend.

Recreation activities on a group basis were made available to CNS trainees. Activities included tours of the city, athletic activities of Memphis State University, group outings and picnics, and invitations to MSU sponsored activities.

The Memphis State University Student Health Center was available to all CNS trainees for emergency medical attention. More serious conditions requiring specialized services were referred to one of the twenty-two City of Memphis hospitals.

The Center for Nuclear Studies, in cooperation with MSU's Student Counseling Services, developed a continuing counseling and development program to serve the needs of CNS trainees as they made the transition into the industrial environment of the nuclear electric industry. These programs provided self-awareness seminars, values assessment clinics, and personal assertiveness counseling. They also provided sessions in cultural enrichment, seminars in budget management, consumer economics, political and economic situations on a national level.

SUMMARY

The success rate of the NSRT Program - based on placement in unsubsidized employment - was 90 percent. Most of the participants who did not graduate from the NSRT Program were transferred to other less technical programs, such as TAT, REECO, and the EAST/SLAC programs, and obtained skills that made them employable elsewhere.

The follow-up process at the Center for Nuclear Studies continues. Officials here can list place of employment, technical rating, and salary of all of the 90 graduates. Several are now full-fledged nuclear reactor operators licensed by the Nuclear Regulatory Commission.

The common goals of the two Federal agencies and the private sector blended to make the project possible. The long-standing relation between the Center for Nuclear Studies and various Federal agencies, including the Department of Energy, helped identify the need for training to fill the projected job openings and gave sanction to Memphis State University's Center for Nuclear Studies as a qualified deliverer of training. The utilities need the trained workers. The Department of Labor through its Office of Farmworker Programs, using CETA, Title III, Section 303 funds, was able to identify potential trainees who needed the jobs and to aid in establishing a program that could recruit farmworkers from virtually anywhere in the nation, train them at a central location, and place them in unsubsidized jobs at dozens of nuclear installations around the country.

PUBLICITY

Nuclear Skills Graduate Advises Future Student

By Janette Baughman

LOS LUNAS—"You'll like your instructors. It may seem like they are getting on your case, but they're not. They want you to succeed. You'll learn to deal with pressure."

These were words from Yolanda Anzures as she spoke candidly about her experiences at the Nuclear Skills Center in Memphis, Tenn.

She was telling Theresa Torres, another Los Lunas area girl who will be studying there, all about the program which has led her to a job with a starting salary of \$7.98 an hour and the prospect of earning an annual salary of \$24,000 in two years.

Yolanda, daughter of Rosemary Padilla of Los Lunas, left Saturday for her new job with South California Edison. Theresa, who is the daughter of Mr. and Mrs. Adenago Torres of Peralta, leaves Jan. 13 for Memphis to begin studies in the Nuclear Skills Training Program.

Speaking of her experiences while taking the six-month course, Yolanda said she was first told about radiation, "so you know what it's all about."

Classes which began at 8 in the morning consisted of straight lecturing and continued until 5 p.m., with a break for lunch. "Then you go home and study for another three or four hours," she said.

"You will meet people from all over. I met two from the Philippines," she said.

"Make friends; you are going to want that," she advised Theresa. She said she and her classmates helped each other a lot. "When you understand something and someone else has trouble with it, you explain it."

"You're going to spend six months with these people, eight hours a day, so make friends. Of course, there will be days when you get tired of looking at them; but, in the long run, you will be glad they are friends."

Speaking of Carlos Moreno, the Nuclear Skills Program manager, Yolanda said, "When you have a problem, you can count on him. He's your friend." She recalled one day when she

just had to get out of class and get away from it all. "Carlos realized I had a problem. He made me talk about it until I cried. He knew I had to cry. Then I was alright."

NEWS-BULLETIN Photo

Yolanda Anzures, right, who recently graduated from the Nuclear Skills Center and begins a \$16,000 a year job in California, gives some pointers about the course to Theresa Torres, who begins studies at the center this month in Memphis, Tenn. Other training programs in other areas also are available. Interested persons, who must have been employed in farm-related work, may contact Steve Gonzales at the Home Education Livelihood [HELP] office in Los Lunas for information.

She said even the guys have down days. "Everybody has an off day. You will learn to live with that, too."

Yolanda added that the instructors are friends, too. They let you know everything about themselves. "There are days when they are tired of lecturing, so you just sit and rap and you learn a lot," she said.

Speaking with enthusiasm, Yolanda advised Theresa she would have to get used to the pace. There's homework from the first day on and times when you have to go through a book in four days," she said.

One of the designers of a reactor and modifier was an instructor for two days, taking them through a reactor. He asked the students questions to check what they had learned and gave them "good answers if they didn't know them."

Despite the fast pace and the hard work, Yolanda feels it all was worth it. But final exams and the earning of three certificates at graduation weren't the last of the tasks. She had to take a four-hour exam for the California company before they would interview her.

And her studies are not over. Come March she will be taking another six-month course similar to the one she had, but centered on one reactor.

"You have to work two years before you are licensed," Yolanda pointed out. "By the time we go for our license, we'll probably have to have a bachelor's degree before they license us."

Yolanda was hired to work in Units II and III of the California nuclear plant, but they are under construction, so she will be in Unit I for the present. There are good medical and dental benefits with the company, which also will pay for her move to the West Coast.

Eventually she will be working as a reactor operator. Her certificates are in reactor fundamentals, radiation

[Please turn to Page 5]

Nuclear

[Continued from Page 1]

technics and a reactor startup.

With a few final words of advice for Theresa, Yolanda said, "I think you'll like it. Don't let things get on your nerves. You have to be willing to study. Don't be afraid to ask questions. Don't rely too much on your calculator; you have to think things out.

"You may have to teach people geography while you're there," she added. "Some of them don't know New Mexico is in the United States."

Looking a bit in awe at all she heard, Theresa asked a few questions, listened attentively, determined to succeed, just as Yolanda has,

Nuclear operators have new power in their hands

By MARY JACQ WATSON

Six months ago, Michael Barton was an unemployed student and his sister, Shirley, the mother of a two-and-a-half-year-old son, was working at a low-paying job.

Today, as auxiliary nuclear reactor operators and radiation technicians, they are sorting through job offers from power companies across the southeast — none of them beginning at less than \$14,000 a year.

They are new graduates of a strenuous, six-month training program in nuclear skills at the Center for Nuclear Studies at Memphis State University.

Shirley and Michael, the children of Walker State Technical College instructor Willie Barton, heard about the program for migrant farmworkers from their father.

Since both of them lived on the family farm with their parents and helped with the work, and both of them met low-income requirements, they passed the standards set by the Alabama Migrant Seasonal Farmworkers Council and were permitted to take a six-hour written examination in Montgomery.

Michael, 22, and Shirley, 23, are both graduates of Walker High School. Michael has an associate of science degree in engineering from Walker College, as well as one year at the University of Alabama in Tuscaloosa. Shirley attended Walker College for two years.

"We had been told the test had a lot of physics in it, so Michael wasn't going to take it," Shirley said. "He was just going to drive with me down there. But he ended up taking the test and beating me out."

They waited a week for the test results, and were notified that they had scored above the cut-off margin. They then traveled to Memphis for an interview, but found that they had been accepted for the study program without an interview.

Conference housing was provided for the 28 students who began the six month program, but only 17 finished, among them three women. Michael graduated top in the class.

"It was a long six months," Shirley said. The students were in class from 8 a.m. until 5 p.m. each weekday, studying environmental monitoring, rules and regulations, reactor physics, nuclear physics, chemistry, fluid flow, math, physics mechanics, and other subjects.

They took each subject one at a time, studying it non-stop until it was finished and then taking up another, without a break. "It was nasty," the Bartons agreed.

But one of the most rigorous aspects of the six-month period was that there was no time for recreation. The Bartons were in class all day and studied during their evenings. They drove home every weekend to be with Shirley's son, Christopher, who was staying with his grandparents.

Mountain Eagle family living

Jasper, Ala., Fri., Dec. 28, 1979—Page 5

"Practically all we had time for was studying," said Shirley.

Although both Bartons received three certificates, qualifying them to work in several capacities at nuclear power plants, both have chosen jobs as auxiliary nuclear reactor operators. He will work for Carolina Power and Light in Southport, N.C., and she at Vicksburg, Miss., for Mississippi Power and Light.

Shirley has no compunctions about donning the hard hat, boots, jeans and chambray shirt of the reactor operator, but she has found the fact that she is female to be a problem.

"The power plant feels that women are more susceptible to falling in love with other workers, and they can't have married employees. They also worry about us getting pregnant, so they don't like to hire women. But then, some of them like it because it boosts morale and the men work harder to show off," she laughed.

But as far as the money goes, "I don't think a woman in Walker County can do better," she said.

Carolina Power and Light would not hire Shirley and Michael both, since they have a rule about hiring brothers and sisters.

The Bartons will be required to work for two years before they are certified as nuclear reactor operators. "They've really buckled down on that since the Three-Mile Island incident, and that's good," Shirley explained.

Neither is afraid of working in a nuclear power plant, they said.

"I think the only people who are afraid of nuclear power are the ones who aren't educated about it. It's safer than many other forms of energy, including coal," Shirley explained.

"Nuclear power is very safe. If anything goes wrong, it cuts itself off."

"No one's been killed by it," said Michael.

A new class will be starting soon. Tests have recently been conducted in Jasper for possible prospects.

Michael Barton finished top in class; sister Shirley was one of three women

Basin grads

Two Moses Lake youths recently completed nuclear studies programs at Memphis State University. Peter Jenkins, left, and Dennis Blasdel have been offered jobs with the Washington Public Power Supply System.

—WSU photo

Local students in nuke field

Peter Jenkins and Dennis Blasdel of Moses Lake have graduated from the Memphis State University/Center for Nuclear Studies/Nuclear Skill Related Training Programs.

The programs are cosponsored by the Department of Energy and the Department of Labor and funded under Title III, Section III of the Comprehensive Employment and Training Act of 1973.

The six-month long training program in nuclear reactor operations and radiation technician fundamentals have qualified Blasdel and Jenkins for entry-level positions within the nuclear electric power industry, either as a reactor operator or radiation technician. Both have been offered positions with Washington Public Power Supply System at Richland.

A fourth cycle of training will begin July 7, 1980. Persons with agrarian backgrounds interested in learning more about the programs should get in touch with the CETA Center, 502 South "C" Street or Northwest Rural Opportunities, 914 No. Stratford Rd.

Both young men were recruited by the High School Equivalency Program at Washington State University.

Martinez Graduates From Nuke Program

An Eloy resident graduated from the Memphis State University Center for Nuclear Studies-Nuclear Skill Related Training Program recently while participating in the Migrant Opportunity Program.

Porfirio Martinez will be able to enter the nuclear electric power industry either as a reactor operator or radiation technician. He has studied for six months in nuclear reactor operations and radiation technician fundamentals.

Martinez has been offered a position at the San Onofre Nuclear Station with the Southern California Edison Company in San Onofre, Calif. His fourth cycle of training will then begin in July.

Porfirio Martinez

Persons with farmwork backgrounds interested in learning more about the programs that can be made available to them may get in touch with the Migrant Opportunity Program, Inc., Phoenix, for further information.

COMPLETE NUCLEAR PROGRAM — Raul Martinez and Maria Elena Bautista have graduated from the Memphis State University-Center for Nuclear Studies-Nuclear Skill Related Training Programs. Martinez, son of Mr. and Mrs. Higenio Martinez of San Juan, is a graduate of the Pan American University High School Equivalency Program (HEP). Ms. Bautista is the daughter of Mr. and Mrs. Vicente Bautista Sr. of Weslaco and is a graduate of Weslaco High School. The programs they attended are co-sponsored by the Department of Energy and the Department of Labor and funded under Title III, Section III of the Comprehensive Employment and Training Act of 1973. The six-month long training program in nuclear reactor operations and radiation technician fundamentals has qualified both for an entry level position within the nuclear electric power industry either as a reactor operator or radiation technician. Martinez has taken a position at the Rancho Seco Nuclear Station with Sacramento Municipal Utility District in Sacramento, Calif. and Bautista has taken a position at the Grand Gulf Station with Mississippi Power and Light in Port Gibson, Miss. A second cycle of training will begin June 4. Persons with agricultural backgrounds interested in learning more about the programs should contact Hortensia Silva, H.E.P. counselor, Emilia Hall, room 207, Pan Am phone 381-2521. (Pan Am Photo)

QUALIFY FOR NUCLEAR STUDIES— Counselor Hortensia Silva of the High School Equivalency Program at Pan American University, left, congratulates Rudy Perez, center, of Weslaco, and Abel Cantu, right, of Edinburg, for being selected to attend the Memphis State University Nuclear Studies Program beginning this month. They graduated from the H.E.P. at Pan Am and passed a six-hour qualifying examination.

HEP Graduates Chosen For Nuclear Studies

Two young men who have graduated from the High School Equivalency Program at Pan American University have been chosen to take part in the Memphis State University Nuclear Studies Program beginning Jan. 14.

They are Abel Cantu, son of Mr. and Mrs. Federico Cantu of Edinburg, and Rudy Perez, son of Mr. and Mrs. Tomas Perez of Weslaco.

The youths are among 24 chosen from across the nation to take part in this six-month program. Par-

ticipants must be migrant or seasonal farmworkers and must pass a six-hour qualifying examination. Completion of this program will enable them to work as nuclear power plant operators.

Persons interested in obtaining more information about future training sessions may contact Ms. Hortensia Silvia, counselor with the High School Equivalency Program, at 381-2521.

Four from county in reactor program

"Providing a Second Chance" is the theme of the Alabama Migrant and Seasonal Farmworkers Council, Inc., which is headquartered in Montgomery with four regional offices located throughout the state.

Sandra Rigsby, Mickey and Terri Ellis, and Johnny McKeever, all residents of Walker County, have taken the opportunity the AMSFW Council provided and embarked upon a six month high skill training program in nuclear reactor operations and radiation technician fundamentals. The program is co-sponsored by the Department of Energy and

Department of Labor at Memphis State University, Center for Nuclear Studies, Memphis, Tennessee. The nuclear training program is designed to prepare students for employment as nuclear reactor operators and radiation technicians in the nuclear power industry, where entry level positions average \$8 to \$12 an hour.

The AMSFW Council, Inc. recruited the four Walker County residents through its Eutaw office. The students were provided financial, supportive and counseling services from

the agency during their tenure at Memphis State University. The MSU Center for nuclear studies also provided similar services in addition to placement after graduation.

Johnny McKeever has taken a position with the Arkansas Power and Light Co., based in Russellville, Ark.; Mickey and Terri Ellis and Sandra Rigsby have accepted positions with the Mississippi Power and Light Co. of Ports Gibson, Miss.

According to Michael Evans, management information specialist for the AMSFW Council, these four students,

seemingly caught up in that vicious employment-unemployment cycle, seized the opportunity to improve their lives in the non-agricultural job market. The students went from operating a farm implement to operating a nuclear power plant in just six months.

Persons interested in the nuclear skills training program or any of the many programs offered should contact the regional office in Eutaw. The address is : AMSFW Council, Inc., 309 Greensboro Ave., Eutaw, Ala. 35462.

INDUSTRIAL SUPPORT

The Center for Nuclear Studies views the placement of the Nuclear Skill Related Training Program graduate in a training related unsubsidized job as the bottom line objective of the NSRT Program. Through the five NSRT Programs operated by the CNS eighty-one graduates were placed into entry-level positions within the nuclear industry, as reactor operators and health physicists.

Presumably, MSU/CNS has had tremendous support from the utility companies in meeting the placement objectives of the NSRT Program. Many utility companies across the country have recognized the NSRT Program as a manpower development project which meets the insatiable requirement for a well trained labor force to operate their nuclear power plants.

The attached letters from industry attest to the aforementioned statement and serve to illustrate the industrial support for the Nuclear Skill Related Training Program.

VIRGINIA ELECTRIC AND POWER COMPANY

Surry Power Station
P. O. Box 315
Surry, VA 23883

September 10, 1980

Mr. Lamond Godwin
Director-Office of National Programs
Employment and Training Administration
U.S. Dept. of Labor
Washington, D.C. 20213

Dear Sir:

I wish to take this opportunity to congratulate the department on providing a valuable program for training nuclear operators for our industry. In an effort to insure this program is continued, I have been requested, by the Director-Center for Nuclear Studies at Memphis State University, Mr. Carlos Moreno, to give my evaluation of the benefits of his program. As you know, we in the nuclear industry must have the most qualified operators available to insure safe and continued operation of a nuclear power generating facility.

The input into our training program must come from various sources to give a strong base of experience to build upon. Some come from the military nuclear pwr programs, some come with engineering degrees, some come straight from high school, and some come from programs such as the one at "Memphis State". I have interviewed applicants from every graduating class. We have hired graduates from each class and they are presently in our Control Room Operator's Development Program. They are all doing very well in the program I might add. I am looking forward to again interviewing and making job offers to the next class in Dec. of this year. Our company also utilizes a pre-employment screening exam from Memphis State to aid us in selection of applicants for operator positions. The industry needs this constant flow of qualified/trained people into the nuclear power field.

If we are truly interested in providing jobs to those Americans who come from low income situations, want to work to develop a career, we must keep this program.

Keep up the good work, and I'm confident unemployment in our country will be reduced. Everyone should have the opportunity to work.

Yours very truly,

Gregory E. Kane, Superintendent
of Operations (804) 357-3184,
Extension 215

✓cc: Mr. Carlos Moreno
Director-Center of Nuclear
Studies
Memphis State University
Memphis, Tennessee 38152

TEXAS UTILITIES GENERATING COMPANY

2001 BRYAN TOWER • DALLAS, TEXAS 75201

September 22, 1980

BILLY R. CLEMENTS
VICE PRESIDENT

Mr. Lamond Godwin
Director, Office of National Programs
Employment and Training Administration
U.S. Department of Labor
Washington, D.C. 20213

Dear Sir:

This letter concerns the renewal of the NSRT Contract at Memphis State University Center for Nuclear Studies in Memphis, Tennessee. The last three graduating classes from the nuclear training program at Memphis State have supplied Texas Utilities Generating Company with three employees (1 per class). They have the type of training that is necessary for our company to operate a power plant. The training for operators in the nuclear utility industry must be quite detailed and explicit and Memphis State, one of the few institutions training operators, is meeting that need. We certainly plan to employ personnel who have participated in the training program at Memphis State in the near future and feel them to be vital for the industry and our company.

We would like to encourage your support in promoting the training programs which are being provided at Memphis State.

Sincerely,

BRC:mkg

cc: Mr. J. Carlos Moreno ✓
Program Director
Memphis State University
Center for Nuclear Studies
Memphis, Tennessee 38152

Carolina Power & Light Company

September 10, 1980

Mr. Lamond Godwin, Director
Office of National Programs
Employment & Training Administration
U. S. Department of Labor
Washington, DC 20213

Dear Mr. Godwin:

Carolina Power & Light Company, a rapidly growing electric utility located in the Carolinas, has been involved in nuclear power as an energy source for almost a decade. In addition to our H. B. Robinson Nuclear Plant in Hartsville, S. C., and our Brunswick Nuclear Plant in Southport, N. C., we are constructing the Harris Nuclear Plant near Raleigh, N. C.

Faced with a continuing need for qualified nuclear-trained personnel, it is disturbing to hear that funding for the DOE-DOL sponsored Nuclear Skill Related Program at Memphis State University - Center for Nuclear Studies is in question. Typically there are a limited number of sources for nuclear personnel, and for the past two years, CP&L has conducted on-campus recruiting trips to MSU-CNS. Several graduates of the NSRP have been hired as Auxiliary Operators, and have proven to be well qualified, promotable employees. We plan to continue to utilize the program as a source of new employees, and have scheduled a recruiting trip to MSU in November.

I sincerely hope that a favorable decision can be made concerning the availability of funds for the program, and that MSU-CNS can continue to help alleviate the shortage of nuclear trained personnel.

Sincerely,

Steven M. Allen
Senior Recruitment Representative

SMA:dac

✓cc: Mr. Carlos Moreno, Program Manager

September 11, 1980

Mr. Lamond Godwin
Director, Office of National Programs
Employment and Training Administration
U. S. Department of Labor
Washington, D.C. 20213

Dear Mr. Godwin:

I have recently learned that complications exist in the funding of the CETA program being conducted at Memphis State University--The Center for Nuclear Studies. I was formerly the Training Supervisor at the Center, responsible for the academic administration of the CETA program. I am currently the Training Supervisor at Washington Nuclear Plant #1 and #4, located in Richland, Washington and am responsible for the training and qualification of the operating staff at these units. This background information is, I believe, relevant to the comments which follow concerning the value of this particular program.

I have the advantage of a unique perspective on the value of the Nuclear Skills Relating Training (NSRT) program conducted by MSU. My involvement inside and outside the program prompts me to call your attention to several significant facts concerning this CETA effort.

1. This program has had an extremely successful placement of graduates in the nuclear industry. The success stories available from this program should be an example to the other CETA funded programs in the nation.
2. A continuing demand for trained employees exists in the nuclear industry. The NSRT program provides a pool of entry-level personnel who have proven their capability to master the highly technical subjects involved in nuclear power. Utility employers recognize and appreciate the availability of this manpower source.
3. The NSRT program is providing valuable data to the MSU-CNS effort to establish a valid screening instrument to predict success on NRC license examinations. This tool is greatly needed by the utility industry to optimize the expensive training process and reduce carry-over costs to utility customers.

I trust that the above facts have demonstrated the high value I feel this program represents. I urge you to exercise the authority of your position to clear up any difficulties in the funding of this program, so that it may continue at the pace and productivity it has demonstrated in the past.

Sincerely,

James W. Dutton
P. O. Box 606
Benton City, WA 99320

cc: J. Carlos Moreno
D. Wayne Jones✓

INTRODUCTION

The Nuclear Skill Related Training (NSRT) Project operated by the Center for Nuclear Studies, Memphis State University grew out of several concerns:

- (1) The U.S. Department of Energy was aware of the increasing need for nuclear reactor operators and radiation technicians among other projected skill shortages in the growing nuclear-based industry. There was awareness of the fact that the jobs existed throughout major sections of the nation, presenting a need for training that could not be met by the traditional CETA skill training programs which rarely make placements on a national scale.
- (2) The U.S. Department of Labor, administering CETA, had funds in Title III, Section 303 that could be used to train persons - namely, farmworkers - who would be recruited from many locations, be trained at a central location, and then be placed in jobs around the country.
- (3) The Center for Nuclear Studies, working closely with the U.S. Department of Energy and the Nuclear Regulatory Commission, offered certified training to nuclear technicians. Many of the Center's regular students have been sent to Memphis by their employers. In many cases, faculty members from the Center have provided training at employers' expense at or near the nuclear installations. The high level of training offered by the Center's faculty also solved problems of certification and safety.

When all of these concerns came together, an OFP grant to the Center for Nuclear Studies to recruit and train migrant and seasonal farmworkers for jobs in the nuclear industry followed. The Center was left to establish its own linkages with farmworker grantees after OFP informed the grantees of the project and encouraged participation and

cooperation. Farmworker grantees were authorized to provide preliminary screening and to pay transportation to Memphis once those recommended passed the Center's additional screening. The opening of the recruiting by the Center for Nuclear Studies was the meeting of farmworker grantees in May of 1978, when about 10 farmworker programs sent representatives.

In summary, the objectives of this program were: to recruit, test, select, and train migrant, seasonal farmworkers for unsubsidized employment in the nuclear power industry.