(1)

1984 PROGRAM REPORT

on

THE ARMY-NAVY INITIATIVE
in the
NATIONAL CAPITAL AREA

in support of

THE DEPARTMENT OF DEFENSE SCIENCE AND ENGINEERING APPRENTICESHIP PROGRAM FOR HIGH SCHOOL STUDENTS

Contract No. N00014-85-C-0131

Administered by
The University of the District of Columbia
under a Grant from the Office of Naval Research
on behalf of

THE DEPARTMENT OF THE ARMY AND THE DEPARTMENT OF THE NAVY

March 1985

Submitted by:
Marylin Krupsaw, Program Director
Physics Department
College of Physical Science, Engineering & Technology

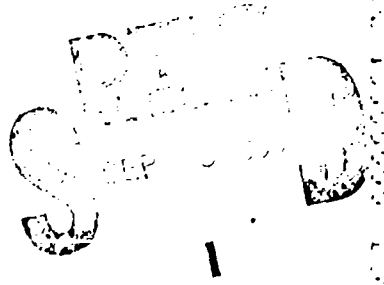


TABLE OF CONTENTS
1984 REPORT
SCIENCE AND ENGINEERING APPRENTICE PROGRAM

OVERVIEW.....1

PART I: PROGRAM DESCRIPTION.....3

PART II: EVALUATION.....11

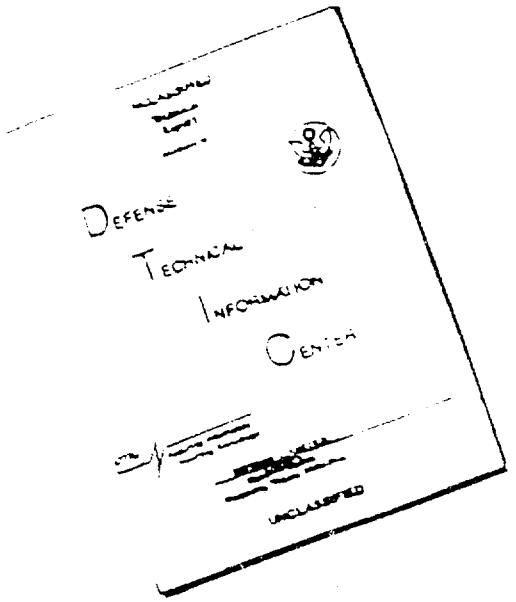
APPENDICES

Student Research Assignments.....Appendix A

Program Forms.....Appendix B

Program Activities.....Appendix C

DISCLAIMER NOTICE



THIS DOCUMENT IS BEST QUALITY AVAILABLE. THE COPY FURNISHED TO DTIC CONTAINED A SIGNIFICANT NUMBER OF PAGES WHICH DO NOT REPRODUCE LEGIBLY.

DoD
SCIENCE AND ENGINEERING
APPRENTICE PROGRAM FOR HIGH SCHOOL STUDENTS
1984 PROGRAM REPORT
University of the District of Columbia

OVERVIEW

The Science and Engineering Apprentice Program for High School Students is sponsored by the Department of Defense and administered by the University of the District of Columbia.

For the period June 25 through August 17, 1984, two hundred and eighty three apprentices were placed at fifteen Army and Navy laboratories in the National Capital area. These students came from 18 different schools in the District of Columbia, 23 from Virginia, and 50 different high schools located in Maryland.

Students worked a full eight-hour day, five days a week during this time, with new students receiving a stipend of $1100, second time students $1150, and those who were participating for the third time, $1200. Over $300,000 was allotted and paid in stipends.

Essentially, the program followed the objectives established for all of the Department of Defense Science and Engineering Apprentice Programs. This program for high school students attracts the academically able students who have shown achievement and potential in mathematics and science. In addition, it is mindful of the mission of trying to attract students who have not necessarily preselected scientific careers, but those who have the ability and potential for such achievement, including previously under-represented segments of the population. As stated in the University's proposal, this experience is designed to encourage students who show promise in science and mathematics to:

* reach a better understanding of research through an apprenticeship under the direction of DoD scientists, engineers and mathematicians;

* become familiar with a wide variety of career choices, challenges and opportunities and the educational requirements;

* gain some understanding of the use of new scientific and engineering equipment and techniques not available in their school environment;

* continue to pursue their scientific interests with a view toward government service;

* serve as positive role models for their peers who have not been aware of the challenges and rewards of scientific careers;

* increase the representation of minorities and women in scientific fields.

PART I: PROGRAM DESCRIPTION

Apprentice activities were supported in the laboratory by the assistance of more than 250 research scientists. Many of the students were able to work with several scientists on more than one type of investigation. The first day of the program, the students attended orientation at the University of the District of Columbia to meet agency representatives, program personnel and fellow participants.

The apprentices were exposed to a wide range of experiences in numerous fields such as those of laser technology and applications, betatron accelerator experiments, basic research in electron structure and kinetics, cancer studies, immunology, environmental, oceanographic and pollution studies. Appended is a list of the 1984 program participants and a brief description of their areas of investigation. The descriptions demonstrate the variety and sophistication of the experiences that were made available to the apprentices.

During the course of their eight-hour day, apprentices were afforded the opportunity to utilize the educational facilities of the laboratory including using the library, taking video-taped courses and attending seminars sponsored by the agency.

"Brown Bag" Seminars were a regular feature which allowed students to interact informally with scientists and other apprentices. Tours to several other research facilities were conducted, including trips to the Naval Surface Weapons Center, David Taylor Research and Development Center and the Chesapeake Bay Detachment of the Naval Research Laboratory.

Cross-agency seminars were held between the Naval Medical Research Institute, the Uniformed Services University of Health Sciences, Walter Reed Army Institute of Research and the Armed Forces Institute of Pathology to permit student interaction and insight into the medical research areas of those agencies.

At a session on August 16th at Bolling Air Force Base, Commodore Richard H. Truly, USN, Commander of the United States Naval Space Command, was guest speaker. His insight on our scientific future through experiences in space were illustrated by many fascinating slides & anecdotes. After, he and fellow astronaut Dianne Prinz, spoke of their careers and academic backgrounds to many students in small groups during the session. Vice Admiral Samuel L. Gravely, Jr. USN (Retired) presented awards, to apprentices on behalf of the AFCEA Educational Fund, as did Capt. Arthur H. Sass, USNR, on behalf of the Washington Academy of Sciences.

The final day of the program, August 17th, apprentices, parents, mentors, teachers, friends, and agency representatives were invited to the Van Ness Campus of the University of the District of Columbia for closing ceremonies. On that day, President Robert Green of the University of the District of Columbia, welcomed the group. Mr. Jack Kolb of the U.S. Army Materiel Command exhorted the apprentices to

take this summer experience as a qualifying event in their own personal olympics and to work for their personal "gold medal". Dean Philip Brach of the College of Physical Science, Engineering and Technology spoke to the group about educational opportunities in the sciences.

The keynote speaker, Commodore Norman Johnson, U.S.N., Director, Undersea and Strategic Warfare Command, detailed the current basic research representing the cutting edge of technology that is being done in the national capital area. He reminded the students that we look to them to carry on and continue this vital endeavor. Captain Arthur H. Sass, USNR, spoke to the group about careers and future opportunities.

Afterwards, the apprentices convened in small group sessions and presented the results of their research efforts to their peers and guests. The event concluded with a working luncheon with agency representatives, mentors, teachers, and staff evaluating the summer's activities and making recommendations for improving the program.

PARTICIPATION BY DISCIPLINE

The distribution of students according to discipline is fairly arbitrary since the work of the majority was multidisciplinary. However, the breakdown does provide some idea of the focus of the placements.

DISTRIBUTION ACCORDING TO DISCIPLINE

Engineering/Physics	98
Biology	52
Computer/Mathematics	86
Psychology	6
Chemistry	41
Total	283

SELECTION OF PARTICIPANTS

Information & applications were mailed to 259 area high schools in November of 1983 and received in-house early in 1984. Two hundred and eighty three students were placed with the various agencies between March and June of 1984. More than three thousand eight hundred students responded to the notice about the program.

Almost all who submitted applications were qualified because of selective screening in the high schools and the few who were ineligible were not U.S. citizens. The criteria used in selection of students were:

1. Courses taken (advanced placement, college preparatory, other).
2. Previous participation in the program. (Approximately 30 percent of the students accepted had participated in the program before.)
3. Grades obtained and ability and achievement on standardized test scores.
4. Teachers' recommendations.
5. Students' interests, achievements, and extra-curricular accomplishments in science related activities.
6. Geographic location and ability to commute to the laboratory.
7. Reasons students gave for wanting to participate.

The two hundred eighty three students were placed with the participating laboratories as follows:

DISTRIBUTION BY LABORATORY

ARMY LABORATORIES	NUMBER OF STUDENTS
Armed Forces Institute of Pathology	26
Army Research Institute	10
Ballistics Research Laboratory	27
Chemical Research & Development Center	38
Engineering Topographic Laboratory	5
Ft. Detrick	3
Harry Diamond Laboratories	9
Belvoir Research & Development Center	14
Night Vision & Electro-Optics Lab	10
Walter Reed Army Institute of Research	16
Subtotal	158
NAVY LABORATORIES	
Navy Medical Reseach Institute	7
Naval Reseach Laboratory	92
Naval Surface Weapons Center	1
Uniformed Services Univ. of Health Sciences	19
U.S. Naval Observatory	6
Subtotal	125
TOTAL	283

Administrators in the laboratories rendered indispensable assistance in recruiting scientists to serve as mentors, developing students' assignments, arranging enrichment activities, and facilitating the visits of the program counselors. These administrators were:

Naval Research Laboratory -- Ms. Diane Farrar

Naval Medical Research Institute -- Dr. Michael Ackerman

Walter Reed Army Institute of Research -- Dr. James McNeil

Night Vision and Electro-Optics Laboratory -- Ms. Patricia Smith

Ballistics Research Laboratory -- Mr. Howard Walter

Belvoir Research & Development Center -- Mr. Ed Watts

Engineering Topographic Laboratory -- Mr. George Simcox

Chemical Research & Development Center -- Mr. Robert Gavlinski

Uniformed Services University of Health Sciences -- Dr. David Forman

Armed Forces Institute of Pathology -- Ms. Deborah Montgomery

Harry Diamond Laboratories -- Ms. Eileen Sneed, Ms. Lee Struglia

Army Research Institute -- Dr. Robert Sasmore, Ms. Janice Watts

Ft. Detrick -- Mr. Joseph Hise, Mr. Edward O'Hearn

U.S. Naval Observatory -- Dr. Gart Westerhout

Naval Surface Weapons Center -- Mr. Michael Williams, Ms. Cindy Gleich

The following list shows the distribution of participants according to high school state:

PARTICIPANTS BY HIGH SCHOOL STATE

District of Columbia	Maryland	Virginia
36	170	77

COMPLIANCE WITH THE CIVIL RIGHTS ACT OF 1964

No applicant was discriminated against because of race, creed, or sex. Participation by race and sex is shown below:

PARTICIPATION BY RACE AND SEX

Race	Males	Females
White	109	84
Black	29	14
Asian	23	16
Hispanic	3	5
	164	119

Student participation by grade level is as follows:

PARTICIPATION BY GRADE LEVEL AND AGE

GRADE	NUMBER OF STUDENTS	AGE	NUMBER OF STUDENTS
Ninth Grade	3	Fourteen	3
Tenth Grade	39	Fifteen	38
Eleventh Grade	117	Sixteen	111
Twelfth Grade	124	Seventeen	107
	----	Eighteen	24
	283		----
			283

A more detailed breakdown of the statistical analysis of this year's program can be found in the appendix.

STAFF

The members of the staff and their responsibilities were as follows:

Professor Marylin Krupsaw, Physics Department, University of the District of Columbia is the Director and was responsible for the coordination of the activities of the program.

Dr. Alice Rier, teaches biology in the District of Columbia at Woodson High School. She served as a counselor to students at U.S. Naval Observatory, Naval Medical Research Institute, Uniformed Services University of Health Sciences, and Walter Reed Army Institute of Research.

Mrs. Gladys Morgan teaches physical science at Woodrow Wilson High School in the District of Columbia public school system. She served as counselor for students at the Naval Research Laboratory.

Dr. Allen Barwick, teaches physics at Woodrow Wilson High school in the District of Columbia public school system. He served as counselor in charge of visiting Belvoir Research & Development Center, Night Vision and Electro-Optics Laboratory, Engineering Topographic Laboratory, and Army Research Institute.

Mr. Charles Spangler, is a biology teacher at Leonardtown High School in Leonardtown, Maryland. He counseled students at the Ballistics Research Laboratory and Chemical Research & Development Center in Aberdeen.

This year the Pilot Teacher Program permitted a closer relationship between apprentices and teachers in the program at some of the laboratories. Students at Ft. Detrick worked with teacher participant Mr. Ernest Williams, at the Armed Forces Institute of Pathology with Mrs. Clemontene Rountree, and at the Harry Diamond Laboratory with Mrs. Rosmond Black.

We want to thank the DoD personnel involved and other dedicated volunteers who helped to make this program possible.

PART II: EVALUATION

BASIS FOR EVALUATION

Evaluation of the program involved both the compilation and the abstraction of the written reports of the students which were reviewed by the mentors, by the counselors, and the director, and acknowledged by mentor signatures, and the statistical analysis of the evaluation forms filled out by both mentors and students, assessing their experience.

Copies of the mentor form and the student evaluation form are attached and a summary of comments made by both with respect to various aspects of the program may be found in the following section.

THE SELECTION PROCESS

Applications were considered on the basis of the criteria mentioned previously. The scientists who agreed to become mentors interviewed several aspirants, and made the final selection. In a few instances the interviews were conducted on the telephone because of the need to expedite placement. Each mentor was provided with the students's application form, transcript, letter of recommendation from a science or mathematics teacher and a paragraph written by the applicant describing interests and activities in science outside of the classroom. Each installation was provided with three to five times the number of applications as there were positions to be filled. If the group of applications submitted did not satisfy the requirements of the laboratory, additional applications were supplied.

ANALYSIS OF MENTOR EVALUATION FORMS

The mentor evaluation form was designed to gather the reactions of the scientists to the program and the way it was conducted. It also requested information on the individual student who worked with the mentor and the mentor's opinions regarding needed changes in any program area.

We were pleased to note that over 88% of the mentors felt that the students were making a contribution to the work of the laboratory and that less than 1% felt that the students they worked with failed to perform as well as they expected. 91% indicated that they would accept the same student in their laboratory another summer.

Mentor and agency representative sugguestions resulted in the shorter application form shown in the appendix. The addition of a commitment form signed by both student and parent to ensure that the total eight week experience be maintained did help prevent last minute drop-out and unauthorized midsummer vacations.

Some mentor comments on the program were:

"My student finished the project I had expected to take eight weeks in about four and spent the rest of the summer learning and doing more than anyone I've ever seen."

"It's refreshing to have to explain current research to the equivalent of an interested layman. We have to stop taking things for granted and look at a problem in a different light."

"My division is getting spoiled. If this program ever stops we'll be at a loss."

"My student actually contributed so much to the research in progress that her name will appear on the forthcoming publication."

"Earlier distribution of the mentor handbook and information about the program mechanics would have made the pre-program events go more smoothly. Now that I know what to expect, I commend the funding powers that be."

"Fantastic opportunity for kids, and of some help to us also. But I wish the program objectives and guidelines were more specific."

All of the mentors comments and suggestions will be taken into consideration in planning the 1985 program.

ANALYSIS OF STUDENT QUESTIONAIRE

The student questionaire was divided into five sections. In the first section, the apprentices were asked to indicate to what extent they were exposed to any or all of sixteen different experiences. Major areas of exposure were:

Q4. Measurement techniques; to which 61% of the students

indicated a lot of exposure and 19% indicated some exposure.

Q8. Data analysis (with or without computer assistance); 89% said they had received a lot or some exposure.

Q9. Computer programming; 39% said they received a lot of exposure and another 45% said some.

Q12. Teamwork in scientific research; 29% they experienced a lot or some of the feeling of teamwork.

Q13. Use of advanced scientific equipment; 97% of the students received a lot or some exposure.

Q14. Other students with similar interests and goals; Although only 11% of the students responded "a lot", another 24% indicated "some" and there were several student comments about the program being the only way to be exposed to such peers. (See student comment extraction.)

Q16. Information on scientific careers; 29% indicated a lot or some of such exposure.

In section II, the students were asked to evaluate the contribution the program had made to their own personal development in the light of ten choices.

Almost all of the students cited a strong contribution in all ten, with working with adults and peers and job responsibility showing the most influence, and getting ideas to be investigated further on their own the least.

When asked to what extent they benefitted from various activities of the program, talks with their mentor was far and away the highlight of the student's summer experience, including formal lectures, informal talks, and explanation of the work.

The response to questions regarding their satisfaction with the summer experience, was overwhelmingly positive. 89% found this to be an academically challenging experience and 91% stated this was personally rewarding in every way.

Some of the comments of the students are shared below to provide some insight into the concerns and aspirations of the apprentices.

When asked, "What did you like most about the program?"

"The opportunity to find out about careers, working in scientific research, and myself."

"The experiments and the equipment are so exciting. Nothing like the boring stuff we do on the simple gadgets in school."

"The feeling of responsibility, without blame. The chance to try to do things myself, but with help there if it was needed. (And many times it sure was!)"

"Being accepted by the scientists in the lab and given the opportunity of expressing my ideas without fear of being put down."

"The challenge of really being able to do something in only eight weeks."

On the other hand, when asked "what did you like least", there were all too many of the following comments.

"I didn't have enough work to do."

"My mentor went on vacation and thought he had left enough work. I finished and felt as though I was being cheated because there was so much more I could have done."

"Not being able to really get to know the other students well enough. We should have had some more social functions. Some of the other students were great."

"Writing the paper may have been an important part of my education as far as skill in communicating, but it was much harder work than the rest."

"Why can't this kind of program continue throughout the school year?"

Student comments will be given consideration during the planning of the 1985 program.

TRACKING

The bottom line to the effectiveness of this program must be how many of these students continue on to college, how many complete degrees in science, how many find employment in the science field, and

how many return to a DOD laboratory in one capacity or another.

A trial tracking system was initiated and will be continued hereafter on a yearly basis to follow participants, as far as possible.

One of the problems in fulfilling this important aspect of the entire program is the fact that the financial support of this project is of questionable origin. Success depends upon the continuity of personnel and that is dependent on a funding process that is not smooth-flowing from year to year.

RECOMMENDATIONS

1. Mailing list should include all teachers who have participated in the DoD teacher program in addition to the head of the science department in each high school, each superintendent of schools, and science supervisors.

2. Completed applications may be distributed at a mentor meeting in February or March. All potential mentors receive mentor handbooks and questions can be answered; program procedures and benefits can be made more explicit at such a meeting and questions answered directly.

3. Agency contact continuity would facilitate early selection, security processing, and student-mentor association.

4. We need a carry-on mechanism whereby students who have participated in this program and proven their value to the laboratory as evidenced by the mentor's request for their return, could be more smoothlr enrolled in a 1040-hour hiring program. The paperwork including time and effort by laboratory personnel divisions results in the loss of many of our best students who have already been so well trained in the laboratory. Perhaps this program could handle such placements also.

APPENDIX A
STUDENT RESEARCH ASSIGNMENTS - 1984

ARMED FORCES INSTITUTE OF PATHOLOGY

AGENCY CONTACT

MS. DEBORAH MONTGOMERY
Armed Forces Institute of Pathology
AFIP-EDZ
Washington, DC 20306
202/576-2939

Student	Assignment
Madelene Amsellem Mentor: Lt. Hudson Yeshiva High School Montgomery County, Md.	Learned to use several difficult Hewlett Packard program and subsystems such as Editor, TDP, and Quiz.
Suzanne Bunte Mentor: Chris Gardiner Academy of Holy Cross Washington, D.C.	Studied anterior end of anthropods using a scanning electron microscope(SEM). Other activities included necropsying animals, processing slides, and participating in a variety of field trips. .
Cornelio Buot Mentor: Tom Nemeth West Springfield High School Fairfax County, Va.	Utilized techniques of transmission and scanning electron microscopy (TEM and SEM).
Scott Cooper Mentor: Major Fitzgerald Robinson High School Fairfax County, Va.	Conducted research on the Army's "Over 40 programs to monitor and evaluate the health of the Army's leadership." Use a HP-3000 computer, the editor and the text and document processor(TDP).
Peter Enzinger Mentor: Mr. Luna Lee Walt-Whitman High School Montgomery County, Md.	Conducted research relating to quantitative histopathological analyses using the Van Hagen technique and staining of mucopolysacharidea and neutrons.
Regina Fay Mentor: Dr. Bahr Stone Ridge Country Day School Montgomery County, Md.	Used photomultiplier microscope and computer to analyze the optical densities of various cancer cells.

MaryAnn Gallivan
Mentor: Captain George Kearney
O'Connell High School
Arlington County, Va.

Extraction and Detection of d-Lysergic Acid in Biological Fluids.

Sharon Gamble
Mentor: Ray Scott
Regina High School
Prince George's County, Md.

Learned to use the Hewlett Packard with 3rd and 4th generation language. Developed a program for the opthalmology department.

Sydney Jones
Mentor: Jon Hudson
Calvin Coolidge High School
Washington, DC

Created a computer data package for Dr. James Luke, a noted Forensic Pathologist and former medical examiner of the District of Columbia. The program systematizes various cases of diseases.

Stephen Klugewicz
Mentor: Dr. Wagner
St. Anselm's Abbey School
Washington, DC

Developed a database for a computer program that will make information more easily accessible to the aerospace pathologists.

Claudia Nenno
Mentors: Chris Gardener
Dr. Wagner
Georgetown Visitation Prep School
Washington, D.C.

Made Scanning Electron Microscope copies of the anterior ends of anthropods.

Dolly Norris
Mentor: Dr. Bahr
John F. Kennedy High School
Montgomery County, Md.

Performed research in the following areas: diagnostic cytology, electron microscopy, and morphometrical measurement systems.

Maureen O'Connor
Mentor: Lee Fischer
Georgetown Visitation Prep School
Washington, D.C.

Developed a computer program which can store information and also produce various reports according to the users instructions.

James Poa Jr.
Mentor: Dr. Lawrence Agodoa
John F. Kennedy High School
Montgomery County, Md.

Did research on the isolation of rabbit antibodies to human serum albumin.

Yogesh Patel
Mentor: Cpt. Kearney
High Point High School
Prince George County, Md.

Developed a computer program for drug detection. The program included Linear Regression, Spectrophotometry and monthly proficiency tests.

Laurie Schmidt
Mentor: L. Templeman
Takoma Academy
Montgomery County, Md.

Conducted research in soft tissue using the transmission electron microscopy.

Elizabeth Sweet
Mentors: Dr. F. Johnson
Mrs. H. Alpaugh
Academy of the Holy Cross
Washington, D.C.

A comparative study of Urinary Calculi Five methods were used to determine chemical components of kidney stones; X-ray diffraction, SEM, Infrared Spectroscopy x-ray(Debye-Sherrer Camera) and chemical analysis.

Philippe Szapary
Mentor: Tom Nemeth
Georgetown Preparatory School
Washington, D.C.

Used techniques of transmission electron microscopy (TEM) and Scanning Electron microscopy(SEM) to study.

Paula Taylor
Mentor: Dr Spencer
H. D. Woodson High School
Washington, D.C.

Used a computer and other techniques to systematize various cases of disease.

Charles Thomas
Mentor: Dr. Frank Johnson
D.C. Gunnery High School
Washington, D.C.

Conducted research related to the plastination of grass tissue.

Karyn Thompson
Mentor: Dr. Malaty
Richard Montgomery High School
Montgomery County, Md.

Did research on Ocular Leprosy; Mycobacterium leprae, to find how and where leprosy effects the ocular changes of the eye resulting in blindness.

James Tuten
Mentor: Dr. Spencer
Lake Braddock High School
Fairfax County, Va.

Worked with firearms and characteristics of firearm injuries critical to the mediological investigations.

Laura Zucker
Mentor: Commander Glen Wagner
Winston Churchill High School
Montgomery County, Md.

Aerospace pathology: ways of improving the safety of aircraft design and, thus, minimize the number of accidents.

Jane Aiken
Mentor: Dr. Robinowitz
Madeira Senior High School
Fairfax County, Va.

Studied the operating research mechanisms in cardiovascular research through the effective use of computers. Also investigated myxoma; cardiac tumors.

Suzanne Burks
Mentor: Dr. Templeman
Takoma Academy
Montgomery County, Md.

Studied the use of electron microscopy identification of disease and a system for future reference in prevention of that disease.

Anne Evans
Mentors: Mrs. H. Alpaugh
Dr. F. Johnson
Robinson Senior High School
Fairfax County, Va.

Performed an analysis of Urinary Calculi by analyzing the chemical contents of kidney and gall stones through X-ray diffraction, Infra red radiation and scanning electron microscopy.

ARMY RESEARCH INSTITUTE

AGENCY CONTACT

Ms. Janice Watts
Army Research Institute
5001 Eisenhower Ave.
Alexandria, Va. 22333
703/274-8722

Student	Assignment
Martin Gallivan Mentor: Joe DuVal D.J. O'Connell High School Arlington County, Va.	Completed a Basic computer programs for a mathematical analysis of a Chi-Square distribution and a graphics simulation of a stinger missle.
Frances Grieco Mentor: Clinton Walker Lake Braddock Secondary School Fairfax County, Va.	Developed a survey to identify the ability of experts on military testing and measurement to detect items that are likely to be falsified on the Military Applicant Profile.
Kevin McNulty Mentor: Joseph Hagman Bishop McNamara High School Prince George's County, Md.	Transferred data on cooperative learning and self-assessment from raw form into a computer; two computer systems were used to analyze the data statistically.
Robert Myers Mentor: Larry Brooks D. J. O'Connel High School Arlington County, Va.	Wrote a CAI program for Fort Knox officers to understand and interpret Army operations plans.
Huy Anh Neuyen Mentor: Joe Duval Woodbridge Senior High School Prince William County, Va.	Wrote several Basic computer programs to analyze stress and learning data for ARI behavioral ad social science researchers.

Karen M. Schwarzkopf
Mentor: Dr. Angelo Mirabella
J.E.B. Stuart High School
Fairfax County, Va.

Did a key-word search on the computer then analyzed and abstracted the empiricial literature found; tests on computer recognition of a voice were also done.

Lisa Sheffield
Mentor: Dr. Henry DeHann
Lake Braddock Secondary School
Fairfax County, Va.

Collected and analyzed data on the computer recognition of key words.

Suzanne Surles
Mentor: Mary Weltin
Fort Hunt High School
Fairfax County, Va.

Did perception analysis to answer questions about the enlistment motivations and demographics of new army recruits.

Marc Tillman
Mentor: Dr. Glenda Nogami
T.C. Williams High School
Alexandria, Va.

Used the computer statistical analysis system to analyze the data received from the reenlistment survey.

Lan Tran
Mentor: Mr. J.P. Severo
J.E.B. Stuart High School
Fairfax County, Va.

Use the VAX and IBM PC-XT computers to create computer programs for investigating voice response and voice synthesis while developing results to feed into the artificial intelligence program.

BALLISTICS RESEARCH LABORATORY

AGENCY CONTACT

Mr. Howard Walter
Ballistics Research Laboratory
DRSMC-BLB(A)
Aberdeen, Md. 21005
301/278-6668

Student	Assignment
Claudia Beck Mentor: Michael Musca C. Milton Wright High School Harford County, Md.	Used the Launch and Flight division's VAX computer to investigate the flow of liquid in a rotating cylinder, with application toward a projectile system.
Ronald Bowers Mentor: Stephen Polyak Aberdeen High School Harford County, Md.	Assisted in the generation, collection and analysis of penetration (vulnerability) data for aircraft turbine engine materials versus small caliber AP bullets.
John Brethauer C. Milton Wright High School Harford County, Md.	Research procurment and verification procedures were studied and programmed.
Jonathan Clough Mentor: Orlando Johnson Bel Air High School Harford County, Md.	Took a Fortran IV and 77 class. Learned how to program graphics using three different techniques HP Basic, Plot 10 and DISSPLA.
Gene Cockerham Mentor: Earl P. Weaver Aberdeen High School Harford County, Md.	Assisted in numerous field tests including B-57 tail structure failure and ballistic testing.
Thomas L. Engram Mentor: Carl Nelson Baltimore Lutheran High School Baltimore, Md.	Translated into Basic a Fortran program involving the solution of a non-linear system of equations and used the plotting capabilities of BASIC to graph the results.

Jon Foster Mentor: R.E. Kinsler Perryville Hight School Cecil County, Md.	Spent last summer producing computer drawings of critical components from computerized target descriptions.
Kellie Gomez Mentor: Phillp M. Howe Havre de Grace High School Harford County, Md.	Conducted an experimental study of propagation of acoustic signals through propellant beds. She was able to show that the systems sound speed was lower than that of free air. Results can be interpreted in terms of properties of fluidized beds.
Richard Haney Mentor: Paul Weinacht C. Milton Wright School Harford County, Md.	Produced a Quick Reference Manual for a new graphics software package.
Bruce Heldman Mentor: Wallrof H. Clay Aberdeen High School Harford County, Md.	Used computer graphically to show combustion of a propellant. Finished course work in Fortran IV and 77.
Catherine Hess Mentor: Jerry Thomas Bel Air High School Harford County, Md.	Learned to use the computer and some basic statistics, which she then used to evaluate some digital data collected from the FDTE.
Susan Hinman Mentor: Lawrence D. Johnson C. Milton Wright High School Harford County, Md.	Was given a problem in determining the probability of hitting irregularly shaped targets. She developed a computer model to do such and reported it in ARBRL-MR-3433, Feb 85.
Patrick Holub Mentor: George Klem Aberdeen High School Harford County, Md.	Finished course work in Fortran IV and 77. Developed several programs using Basic, Fortran, and DISSPLA languages.

Aimee Lester Mentor: May Cahoon C. Milton Wright High School Harford County, Md.	Development of Graphics Protocols and Procedures.
Amy Marderness Mentor: Richard A. Beyer Rising Sun High School Cecil County, Md.	Finished course work in Fortran IV and 77. Used DISSPLA to draw graphs and maps, plot points, and computer equations.
Michele J. McDonald Mentor: Paul Broome C. Milton Wright High School Harford County, Md.	Operator Directed Proofs of Program Properties.
Melissa Monninger Mentor: George Coultor North Harford High School Harford County, Md.	Used the AED 512 and Textronix computers to develop various programs. Finished course work in Fortran IV and 77.
Jay Phillips Mentor: Monk Coleman Havre de Grace High School Harford County, Md.	Applied the language PROLOG and used the Unix system in the development of various programs which may be applicable to various army problems.
Lloyd Pusey Mentor: Jill Smith Fallston High School Harford County, Md.	Designed and developed data analysis programs under the Unix operating system to analyze the message traffic from an Army field test.
Michele Ritondo Mentor: Robert Tifer John Carroll High School Harford County, Md.	Determined how a deck of computer cards can be placed into a computer file for easier access and use. Applied the formatting language for typesetting tables and mathematical expressions.
Christopher Sloop Mentor: Ronald Matalre C. Milton Wright High School Harford County, Md.	Modified and enhanced a UNIX computer program to provide more process information such as open file descriptors.

Brain Soles
Mentor: Edmmud Bawr
C. Milton Wright High School
Harford County, Md.

Participated in the aerodynamic range activity in Bldg 328. He performed the duties of reducing deta retrieved from firings conducted throughout the summer.

Lee Tracy
Mentor: John Suckling
Old Town High School
Penobscot County, Maine

Helped in the vulnerability assessment of a lightly armored vehicle. She calculated weights and mass moments for the computer models of the vehicle.

Sara Wasson
Mentor: Stephen Wolff
John Carroll High School
Harford County, Md.

Performed a structural analysis of the NRL 'Battle' LISP code.

Michael Weaver
Mentor: John R. Anderson
John Carroll High School
Harford County, Md.

Participated in three research projects: the effect of firing on aluminum plates, loading and testing the horizontal stabilizer of a B-27, and measuring the effects produced by firing 1.27mm projectiles against incon material.

BELVOIR RESEARCH & DEVELOPMENT CENTER

AGENCY CONTACT

Joyce Burwell
Belvoir R& D Center
Fort Belvoir, Va. 22060-5606
703/664-4531

Student	Assigment
Vincent T. Lombardi Mentor: Gumersindo Rodriguez Groveton High School Fairfax County Va.	Rubber samples were given the Cross-Link Density by Stress Relaxation test and the Cross-Link Determinations by extension and retraction test; thus, stress-strain measurements and cross-link density determinations could be made.
Delante Stevens Mentor: Mr. Paul Touchet Howard D. Woodson High School Washington, D.C.	Tests were conducted using stress relaxation in conjunction with oven ageing to determine hydrolytic stability of elastomers.
Chris Keehan Mentor: Dr. Shing-Bong Chen Robinson Secondary School Fairfax County, Va.	Compared to the engine knock tests, the Foxboro Laboratory Octane Analyzer was used to obtain good correlations in determining the octane level of high and low octane levels in gasol
Scott Brown Mentor: Donald Keehan Lake Braddock Secondary School Fairfax County, Va.	Developed digital images and worked with electro-hydraulic servo valves.
Paige Doelling Mentor: Gumersindo Rodriguez James W. Robinson High School Fairfax County, Va.	Specific heats for different temperatures for rubber samples were found by using differential scanning calorimetry.
John R. James Mentor: Donald Keehan Lake Braddock Secondary School Fairfax County, Va.	Built heater boards for geophone backbacks, learned Basic programming, and created an inventory data base file.

Nancy Jean Knauf
Mentor: Dr. David Stefanye
St. Mary's High School
Prince George's County, Md.

Learned programming, explored the programming and autonomous capabilities of the Hero 1 robot, and wrote the test report on a field test of US and Soviet engineer support equipment.

Chris McFerren
Mentors: Dario Emeric
Donovan Harris
Basil Zanedis
Lake Braddock Secondary School
Fairfax, Va.

Reconstructed defective computer programs on the corrosion of specific metal alloys and programmed graphs and tables to display data.

Elizabeth Pohedra
Mentors: Dario Emeric
Donovan Harris
J.E.B. Stuart High School
Fairfax, Va.

Learned to operate a Hewlett Packard 86B computer to study data on the screening and testing of possible corrosion inhibitors.

Erick Rozelle
Mentor: Elizabeth Radoski
Hayfield Secondary High School
Fairfax County, Va.

Found good correlations between the results of the standard titration test and the new experimental probe test in determining the salinity of membraned sea water.

Chris Scott
Mentors: Donovan Harris
Dario Emeric
James W. Robinson High School
Fairfax County, Va.

Repaired several computer programs wrote a file management program, and created a program to handle purchase requisitions.

John Zelinka
Mentor: Alan Teets
Mt Vernon High School
Fairfax County, Va.

An elastomer/fuel compatibility study was run; different shapes and thicknesses of rubber were examined for weaknesses due to exposure to different temperatures and fuels.

Brent R. Young
Mentor: Dr. Ashok Patil
Garfield Senior High School
Prince William County, Va.

Camouflage materials were engineered and tested so as to be non-detectable to both infrared and radar.

CHEMICAL RESEARCH & DEVELOPMENT CENTER

AGENCY CONTACT

Mr. Robert Gavlinski
USA Chemical System Lab
Bldg.330
Aberdeen, Md. 21020
301/671-4351

Student	Assignment
Jeffrey Adams Mentor: Anthony Sapanaro Aberdeen High School Harford County, Md.	Performed physical tests on the M17 standard and XM40 experimental models gas masks, including flexibility, tensile strength, tearing and elongation tests. Lenses were evaluated for abrasion, haze light transmission, color and yellowing, as well as for distortion. Environmental conditions, such as salt fog, sand, dust, solar radiation, extreme temperature and and humidity conditions, and vibration effects were artificially applied and the data was collected and analyzed.
John Paul Albert Mentor: William Blewett Edgewood Senior High School Harford County, Md.	Created a computer program to calculate the vapor hazard within a shelter or airlock generated by multiple entries of of liquid contaminated personnel. The toxic vapor concentration is measured and recorded at one minute intervals until a specified maximum is reached. This allows a computer simulation of the effectivensess of various d contaminatier configurations with varying input conditions.
Lisa Balliet Mentor: Warren Eller Perryville High School Cecil County, Md.	Performed physical tests on the M17 standard and XM40 experimental models gas masks, including flexibility tensile tearing and elongation tests. Lenses were evaluated for abrasion, haze, lig transmission color, and yellowing, as well as for distortion. Environmental conditttions, such as salt, fog, sand, dust, solar radiation, extreme temper temperature and humidity condition and vibration affects were artificially applied and the data was collectedd. and analyzed.

Brian Brooks
Mentor: Arthur Carrieri
C. Milton Wright Senior High School
Harford County, Md.

Wrote a Fortran-77 program to create a three-dimensional view of a surface reflectance function, which is a function of the wavelength of a laser detector, and the concentration of the surface coating. This permits evaluation of various coating showing attenuation and peeling with resulting reflectance.

Kristin Call
Mentor: William Fritch
C. Milton Wright High School
Harford County, Md.

Measured the effectiveness of protective devices such as the M17 and M40 gas masks with respect to ease of fit, extended wear comfortability, and danger of improper size and fit to soldier.

Charles Carter
Mentor: Joseph Domonico
Perryville High School
Cecil County, Md.

Created a program, now in daily use, to digitize and analyze video images used to qualitatively analyze the performance of various pyrotechnic formulas by searching each memory location and counting the actual number of individual pixels to determine determine relative image size.

Timothy English
Mentor: Chen Hsu
Fallston High School
Harford County, Md.

Used Fourrier Transform Infrared Spectroscopy to determine pore structures through the use of nitrogen isotherms. Wrote a computer program that is in use now.

Patrick J. Engram
Mentor: Joseph Domonico
Baltimore Lutheran High School
Baltimore, Md.

Investigated the practical application of mathematics and mathematical equations to computer graphics so that these graphic can be applied to other projects, reports, and displays.

Clare Ewald
Mentor: Sally Edler
Bel Air Senior High School
Harford County, Md.

Wrote computer programs including one to permit review of all current major projects by indvidual group leaders either by specific action or by due date; permitting corrections and updating to be done without usual login procedures.

Kerry Foster
Mentor: Leach/Landauer
Perryville High School
Cecil County, Md.

Performed experiments measuring the effects of physiological drugs on rats using a treadmill performance to determine changes in the nervous system due to drug type and dosage.

Lori Foster
Mentor: Robert Armstrong
Rising Sun High School
Cecil County, Md.

Participated in the design and construction of apparatus to monitor locomotor activity and fine motor control. Wrote program to record, store, and compare to base line data to investigate dose-reponse effects of drugs on locomotor frequency and gait.

Kristen Gavlinski
Mentor: Bradford Goodwin
C. Milton Wright High School
Harford County, Md.

Reorganized CRDC Archives Room to permit easy classification and retrieval of data Observed and recorded behavioral changes in rats and ferrets upon chemical exposure.

Denise Hammond
Mentor: Thaddeus Novak
North Harford High School
Harford County, Md.

Developed thin layer chromatograms and infrared spectra of newly synthesized detector reagents to aid in their classification.

Marie Horsey
Mentor: John Carter
North Harford High School
Harford County, Md.

Used commercial program to prepare graphic charts of test data, then wrote program to store and retrieve such data. Also implemented use of program to maintain inventory and order supplies.

Samuel Hsu
Mentor: John James
Community High School South
Du Page County, Il.

Investigated characteristic changes in rats' blood during exposure, by inhalation, of pinacolyl alcohol, and also the rate and mechanisms of elimination of that chemical from their bodies after intravenous exposure.

Chris Jarusek
Mentor: James McKivrigan
Edgewood High School
Harford County, Md.

Tested and evaluated individual protective device and decontaminating systems, checking specifications and creating a data base for further assessment.

John Jordan
Mentor: James Nealson
John Carroll High School
Harford County, Md.

Performed physical tests on the M17 standard and XM40 experimental models gas masks, including flexibility, tensile strength tearing and elongation tests. were evaluated for abrasion, haze, light transmission, color, and yellowing as well as for distortion. Environmental conditions, such as salt, fog, sand, dust, solar radiation, extreme temperature and humidity and vibration effects were artificially applied and collected and analyzed.

Daniel Kaplan
Mentor: Gregg Adams
Baltimore Polytechnic Institute
Baltimore, Md.

Characterized the aerosol size distribution and particle concentration of the Model 260 Aerosol Generator which is used to test individual protective devices.

John Kelley
Mentor: Robert Armstrong
C. Milton Wright High School
Harford County, Md.

Worked on a software program that gives an equation with parameters that are only raw data points or input, to find an expression of better fit and study specific characteristics of the data.

Charles King
Mentor: Jerome Gilman
Edgewood High School
Harford County, Md.

Used gas chromatography in the quantitative analysis of dimethy methylphosphonate to provide accurate detection of very small quatities.

Ingrid Kohnstadt
Mentor: Robert Gavlinsii
Dundalk Senior High School
Baltimore, Md.

Wrote programs in Shell language, using DEC's Supercomp-Twenty software package to expedite engineering office procedures and electronic mail programs.

Victoria Linkour
Mentor: William Kraybill
Harford Christian High School
Harford County, Md.

Assisted in development of a bacteria immunoassay technique for hospitals to use in the rapid detection and identification of disease causing micro-organisms.

William McCullough
Mentor: William Fritch
Edgewood High School
Harrord County, Md.

Measured the effectiveness of protective devices such as the M17 and M40 gas masks with respect to ease to fit, extended wear comfortability, and danger of improper size and fit to soldier.

Michelle Miller
Mentor: William White
C. Milton Wright High School
Harford County, Md.

Studied the mutagencity of liver cells obtained from rats and hamsters after injection with Aroclor 1254 using the Ames Assay technique to detect changes.

Amelia Pare
Mentor: Michael Landauer
Rising Sun High School
Cecil County, Md.

Experimented to investigate the theory that sub-lethal injections of various toxic materials cause varying neuro-muscular dysfunctions that can be used determine the extent of behavioral performance disorder.

Mark Pare
Mentor: Michael Landauer
Rising Sun High School
Cecil County, Md.

Devised and constructed equipment to monitor the behavioral activity of ferrets to facilite future research.

Jack Peters
Mentor: Joseph Birmingham
Fallston High School
Harford County, Md.

Investigated the physical charcteristics of a plasma environment to develop an AC plasma reactor designed to operate efficiently without harmful by-products of the plasma with air.

John Richard
MentoP: George Smith
C. Mirton Wright High School
Harford County, Md.

Developed a low cost procedure to determine the quality of adhesives for the filter paper used in High Efficiency Particulate Air (HEPA) filters.

Roger Richmond
Mentor: William Starke
Baltimore Polytech High School
Baltimore, Md.

Conducted quantitative tetragenic studies of compounds tending to cause signs in biological organisms.

Stephen Saponard
Mentor: Field/Oaure
Perryville High School
Cecil County, Md.

Used the computer aided design facility to modify existing computer stored images, specifications, and blue prints.

Paul Solomon
Mentor: Thomas Marchand
Fallston High School
Harford County, Md.

Work with value engineering group to reduce costs through allocation and competition by computer managed research procurement and verification procedures.

Gregory Tate
Mentor: Henry Theuns
John Carroll High School
Harford County, Md.

Performed physical tests on the M17 standard and XM40 experimental models gas masks, including flexibility, metensile strength, tearing and elongation tests. Lenses were evaluate for abrasion, haze light tranmission color, and yellowing, as well as for distortion. Environment conditions, such as salt, fog, sand, dust, solar radiation, extreme temperature and humidity conditions, and vibration effects were artifically applied and the data was collected and analyzed.

Jenean Tulley
Mentor: Bradford Goodwin
John Carroll High School
Harford County, Md.

Reorganized CRDC Archieves Room to permit easy Classification and retrieval of data. Observed and recorded behavioral changes in rats and ferrets upon chemical exposure.

Jennifer Vervier
Mentor: Robert Anderson
John Carroll High School
Harford County, Md.

Conducted research to characterize the immune factor contained in the coelonic fluid of lumbricus terrestris obtained with regard to try "heat" sensitivity, specificity for certain bacterial species, and dose-dependency may provide a basis for development of an immunotoxicological assay system.

Denese Walker
Mentor: Mark Diglio
Baltimore Polytechnic Institute
Baltimore, Md.

Conducted tests in the M51 shelter utilizing heat and worst scenario conditions to determine the hazards of charcoal dusting.

Vicki Wolff
Mentor: Homer Yeh
Kenwood High School
Baltimore, Md.

Devised a method to obtain purified malate dehydrogenase and obtain a product of sufficient purity in suitable yield.

FORT DETRICK

AGENCY CONTACT

MR. JOSEPH HISE
Civilian Personnel Office
Fort Detrick
Frederick, Md. 21701
301/663-2314

Student	Assignment
Thomas Ghiorzi Mentor: Mr. R. O'Connor St. John's at Prospect Hall Frederick County, Md.	Wrote and analyzed several computer programs using Wordstar and Basic programs.
Elizabeth Paulson Mentor: Dr. W. Burrow Walkerville High School Frederick County, Md.	Completed project related to revising the Apple program in IBM PC basic.
Stephen Richards Mentor: Dr. Steve Hoke Brunswick High School Frederick County, Md.	Completed research related to attempting to understand and document the products that are formed through the photolysis of chlorine.

HARRY DIAMOND LABORATORY
ADELPHI, MD

AGENCY CONTACT

MRS. EILEEN SNEED
Harry Diamond Laboratory
DHDL-CP-RP
2800 Powder Mill Rd.
Adelphi, Md. 20783
301/394-2816

Student	Assignment
Steven Barrett Mentor: Todd L. Schuman St. Anselm's Abby School Washington, D.C.	Designed a computer program for the Apple II Plus which would calculate the effects of three different types of loads on different beam structures and systems when certain variables were entered.
Valerie S. Brown Mentor: James Blackburn Bethesda-Chevy Chase High School Montgomery County, Md.	Measured the diameter of the image produced by a 50 micron diameter optical fiber to insure that the beam would be completely imaged onto a 100 micron PIN diode. The entire beam had to be imaged onto the detector to avoid modal noise.
JoAnne M. Hartman Mentor: Timothy R. Oldham Eleanor Roosevelt High School Prince George's County, Md.	Designed a computer controlled measurement system that would make long-term, stable, repeatable, high-precision measurements involving both MOSFET's and MOS capacitors, including the graphing of current-voltage and capacitance-voltage characteristics, plotting of the threshold voltage.
Lorin M. Hitt Mentor: Harvey A. Eisen Springbrook High School Montgomery County, Md.	Developed a test program that works with support hardware to exercise instruction sets and integrated peripherals of the 80186 during irradiation for total dose radiation testing.

Catherine A. Joyce
Mentor: Robert Reams
Rockville High School
Montgomery County, Md.

Made integrated micro-electronic circuits by creating photographic plates which transferred the pattern to the surface of a silver wafer. The circuits are used as memory in a computer, amplifier, or signal processor.

Paul Kafig
Mentor: Robert Reams
Paint Branch High School
Montgomery County, Md.

Conducted silicon-preparation and growth isolation diffusion, base diffusion, aluminum metalization and photoetching in order tc fabricate an integrated circuit.

Carla Montague
Mentor: Joe Kreck
Osbourn Park Senior High School
Prince William County, Md.

Conducted tests for the characterization of Thermal Protection Devices (TPDs) using a 10,000 volt square wave generator while varing the pulse by rate or rise.

Barry Reich
Mentors: Dr. Clyde A. Morrison
Dr. Mary Tobin
John F. Kennedy High School
Montgomery County, Md.

Wrote a computer Program which utilized the "Sellmeire" equation. Conducted extensive library research in order to correlate certain chemicals with the constants within the equation.

Betsy M. Wong
Mentors: Dr. Clyde A. Morrison
Dr. Mary S. Tobin
NorthWestern High School
Prince George's County, Md.

Wrote a computer program which utilized the "Sellmeire" equation. Conducted extensive library research in order to correlate certain chemical with the constants within the equation.

NAVY MEDICAL RESEARCH INSTITUTE

AGENCY CONTACT

DR. MICHAEL ACKERMAN
Naval Medical Research Institute
Mail Stop 38
Bethesda, Md. 20814
301/295-5899

Student	Assignment
Ahsan Arozullah Mentor: Dr. Ed Montz Paint Branch Senior High School Montgomery County, Md.	Investigated the affects of Organophosphorous insecticides on the production of polymorphic forms of cholinesterase in Musculus and Peronayscus leucopus.
Liesl Bevington Mentors: Drs Lyn Yaffe Lorrita Watson Immaculate Preparatory School Washington, D.C.	Conducted ultrastructural analysis of Lymphocyte Surface Membrane antigens utilizing a monoclonal antibody tagged with colloidal gold particles.
Kevin Chang Mentor: Dr. Andrew Dutka Aberdeen Central High School Harford, Md.	Assisted in performing research to find a treatment for Spinal Cord DCS which is more effective than the treatment used at the present time.
Thu Huy Le Mentor: Dr. Kumeroo Notre Dame Academy Washington, D.C.	Performed experiments to study the inhibition of platelet aggregation with YC-93.
Huong Pham Mentor: Dr. Dasch Woodward Hign School Montgomery County, Md.	Conducted experiments to identify different species of bacteria in the Rickettsia Family.
Elizabeth Schmid Mentor: Dr. Ed Montz John F. Kennedy High School Montgomery County, Md.	Completed experiments related to behavioral and Biochemical Correlates of Parathion-induced effects in Peromyscus Leucopus and Musculus.

Deatrice Williams
Mentor: Dr. Kumeroo
John F. Kennedy Senior High School
Montgomery County, Md.

Conducted experiments to study the modification of synaptosomal Membrane Lipids and Proteins by Potassium Induced Depolarization.

NAVAL RESEARCH LABORATORY

AGENCY CONTACT

MISS. DIANE FARRAR
Naval Research Laboratory
Code 1840
Washington, D.C. 20375
202/767-2956

Student	Assignment
Michelle Adams Mentor: D. Duston Woodrow Wilson High School Washington, D.C.	Constructed an L-shell model of iron. Calculated Electron Impact Excitation rate coefficients. Used several computers and instruments.
Lara Aist Mentor: D. Baker Gwynn Park High School Prince George's County, Md.	Provide a means of storing computer graphic output from a mainframe computer onto the disk file of a microcomputer. Translated the 6809 assembly language into c, a program language known for its versatility and portability. Learned to operate the VAX 11/780 mainframe computer, UNIX, and the 6809 based microcomputer, OS-9 to enable the two computers to transfer files.
Hans Batra Mentor: J. Gibson George C. Marshall High School Fairfax County, Va.	Programmed an eight color multi-pen digital plotter connected to an IBM computer to make presentable displays. Worked program in a three dimensional mapping of electron emission data, and a general plotting program to draw line graphs.
Graydon Barz Mentor: W. Elam Eleanor Roosevelt High School Prince George's County, Md.	Generated an accurate computer simulation of cluster growth formed on the niobium germanium films to justify a given prediction of cluster growth.

Jody Beecher
Mentor: M.C. Lin
Eleanor Roosevelt High School
Prince George's County, Md.

Compared the decomposition rate of Dimethyinitroamine(DMNA) to RDX, a space craft fuel. Determined the kinetic parameters of DMNA decomposition and measured the secondary pyrolysis products.

Wayne Bennett
Mentor: Robert E. Pellenbarg
Potomac High School
Prince George's County, Md.

Conduct experiments utilizing HPLC (high performance Liquid Chromatography) including solubility tests of various metallic salts to study the kinetics of solutions.

David Bernard
Mentor: I. Manning
Woodrow Wilson Senior High School
Washington, D.C.

Worked on routines for an automatic search for an implantation schedule to fit a profile. Major project was machine search of parameters for tailored ion implantations using non-linear regression analysis.

Philip Berg
Mentor: F. Carter
Oakton High School
Fairfax County, Va.

Investigated the monolayer properties of B-carotene as a model compound for Molecular Electronic Device research. Used the Langmuir-Blodgett film balance and became aware of B-caroten's potential applications in the fabrication of Molecular Electronic Devices.

Paul Bintinger
Mentor: L. Choy
Gonzaga College High School
Washington, D.C.

Participated in a study of different methods of range tracking and various sample times in order that the estimation of windspeed is optimized for NRL's Airborne wind/wave Radar.

Adrienne Bolden
Mentor: Charles Gaumond
Gwynn Park High School
Prince George's County, Md.

Used Fortran to process and analyze data particularly echoes from objects submerged in a water tank.

Daril Brown
Mentor: Dr. S.H. Gold
John F. Kennedy High School
Montgomery County, Md.

Constructed a gyrotron which consists of a febetron pulser, an insulator, a cathode, a magnet, foil, a glass window, and an e-beam. The gyrotron is driven by a compact 600 KV, 6KA, 55nsec Febetron pulser which is rep-ratable. The E-beam is emitted from a field emission cathode and is transported through a drift tube to an overmoded cavity. The input end of the cavity is defined by a thin foil and the output end by the change in waveguide taper. The spent e-beam is collected on the output waveguide wall. The e-beam characteristics are controlled by a pair of pulsed solenoids. The program object is to develop a short pulse 100-300 MWKA - Band Gryotron based on a Febetron.

Clinton Bubb, III
Mentor: R. Sheinson
Eleanor Roosevelt High School
Prince George's County, Md.

Conducted research involved in measuring the combined additive effectiveness of physical and chemical fire suppressants. Results helped in determineing some guidelines in the modeling of fire extinguishment using any combination of chemical and physical agents.

Ira Callier
Mentor: Hamburger
Ballou High School
Washington, D.C.

Learned basic Artifical Intelligence techniques. Learned L.I.S.P. Participated in using the restriction language parser.

Norman Chen
Mentor: Hamburger
Ballou Senior High School
Washington, D.C.

Learned basic artificial intelligence techniques. Participated in using the restriction language parser. Learned Lisp.

Kenneth Chern
Mentor: C. Chu
W.T. Woodson High School
Fairfax County, Va.

Designed and wrote several computer programs in fortran on a VAX and a Data General Mainframe computer Worked on the segmentation and feature extraction of radar images.

Nelson Chu
Mentor: G. Keramidas
James W. Robinson High School
Fairfax County, Va.

Developed a computer program that performed various techniques of contour plotting suitable for the computer system.

Chris Colby
Mentor: C. Krowne
W. T. Woodson High School
Fairfax County, Va.

Designed a computer program in Fortran used in a project which involved travelling wave semiconductor amplifiers. Participated in research with semiconductor devices in high frequency range.

Michael Davis
Mentor: Dr. Michael J. Marrone
Fort Hunt High School
Fairfax County, Va.

Investigated the low temperature behaviour of stress-induced birefringence in polarization-holding fibers. Three fibers all indicated no thermal hysteresis with a minimum temperature of -196 degrees centigrade. Also all fibers displayed linear variation of biregringence with decreased temperature; at -90 degrees centigrade as much as 16% improvement of birefringence, over room temperature, was observed.

Darrin Dyson
Mentor: C. Hobbis
Ballou Senior High School
Washington, D.C.

Analyzed data on a proposed system that was taken from the instrumentation used to take data from data tapes. Worked in radio Communications.

Pedro DeJesus
Mentor: G. Cheek
Wilson High School
Washington, D.C.

Project was involved with finding the effects of a charge on a polymer film on benzoquinone electrochemistry. The purpose was to make charged polymer coats and to test them for the effectiveness of the flow of electicity.

David Deaven
Mentor: C. T. White
Eleanor Roosevelt High School
Prince George's County, Md.

Determined the static lattice calculations for the crystal structure of Helical cis-polyacetylene. Used the VAX 1750 for computer simulation of the project.

Bryce Diamant
Mentor: W. Fuller
Montgomery Blair High School
Montgomery County, Md.

Completed one facet of accuracy measurement calibration of a radio telescope receiver. Twenty trials were performed, using several methods, resulting in an average value for noise diode temperature. Was used to generate a graph for receiver frequency vs. noise diode temperature.

Charles Dickson
Mentor: W. Fuller
Duval High School
Prince George's County, Md.

One major project included research to find a new superconducting material with a theoretically predicted high Tc. The second was the development of an idea to measure the thickness of thin films using the attenuation of light in materials.

Anthony Donfor III
Mentor: C. Williams
J.K. Kennedy High School
Montgomery County, Md.

Designed the software system for real Used function Generator Model 3325A, HP-Multi-Frequency LCR Meter Model 4274A, HP-Data Acquisition/Control Unit Model 3497A, IBM-PC, The TECMAR IEEE 488 Interface and the HP-Digital Voltmeter Model 3436A.

Elias Fahel
Mentor: J. Knowles
Brentsville District High School
Prince William County, Va.

Used two methods of measuring the total electron content(TEC) of the ionosphere. The first method was radio interferometry and it relates to the VLA data from New Mexico. The other method was by the Faraday Rotation Principle calculated by polarimeter here at the lab. To measure the TEC by either method gives a base to possibly predict ionospheric irregularities and prevent radiowave misinterpretations in communication systems.

Daniel Fee
Mentor: M. Fraser
Marshall High School
Fairfax County, Va.

Summer project involved finding the products resulting from discharging low concentrations of methane in nitrogen. Studied the effectiveness of the electric discharge on organic pollutants.

Fitzroy Francis
Mentor: B. Holmes
Gonzaga College High School.
Washington, D.C.

Research involved using microdielectrometry to test the B.F. Goodrich Elastolock HP-2 under minimum pressure, under salt water.

Deborah Furey
Mentors: M. Pansyappan/J. Cooper
Geroge C. Marshall High School
Fairfax County, Va.

Performed tests using the Alessi Four Point Probe to find the resistivity of chemical bond agents(CBA).

David Goldsmith
Mentor: D. Bogan
Lake Braddock Secondary School
Fairfax County, Va.

Developed a computer program for the calculation and estimation of unpublished thermodynamic data according to the principals of statistical and quantum mechanics for the purpose of predicting rate constants and other related data.

D'Angela Griffin
Mentor: D. Duston
Oxon Hill Science and Technology
Prince George's County, Md.

Conducted three experiments which were modeled using a local computer program. Two experiments were using laser and the third was a dense plasma z-pinch. The purpose was to generate theoretical spectra.

Matthew Groom
Mentor: T. Wieting
Eleanor Roosevelt
Prince George's County, Md.

Conducted a project which dealt with the preliminary optimization of a CO2 gas discharge laser.

Carol Hammarstrom
Mentor: H. Resing
Springbrook High School
Montgomery County, Md.

Used intercalcation used to determine the orientation of ammonia with respect to the planes of graphite. Results of the experiment showed very unusual characteristics. Examples were high electric conductivity, also the substance becomes a very good insulator.

Kirk Hargreaves
Mentor: K. Dejong
Herndon High School
Fairfax County, Va.

Participated in the Intelligent Automatic Test Equipment project or Inate, a computer program designed to diagnose faults in various types of electronic and non-electronic equipment.

Thomas Heavner
Mentor: D. Weber
Lake Braddock Secondary School
Fairfax County, Va.

Participated in the study of polyacetylene which involved changing the properties of polyacetylene using doping and Implantation techniques. Made observations and worked with the synthesis of a film of (CH); the doping of (CH)x with iodine and recoring the subsequent rise in the conductivity and the implantation of NH radicals onto a (CH)x film using a puled molecular beam.

Johnathan Huberman
Mentor: J. Fleming/J. Bulter
Landon School
Montgomery County, Md.

Project involved translating Fortran code which calculated OH and OD energy distributions based upon Laser Induced Flouorescence data from the syntax of the Hewlett Packard computer to that of the IBM PC.

Richard Johnson
Mentor: R. Ford
John F. Kennedy High School
Montgomery County, Md.

Worked in Plasma Physics. Major task was to test five different types of PTC (Positive Temperature Coefficient).

Matthew Kidd
Mentor: C. Gaumond
Bethesda-Chevy Chase High School
Montgomery County, Md.

Learned about tomography as it applies to underwater acoustics. Worked with a computer program that simulates the scattering of an underwater sound wave off a spherical object.

Jinwoo Kim
Mentor: T. Francavilla
Lake Braddock Secondary High School
Fairfax County, Va.

Researched in the area of superconducting shielding. Designed a shield and measured in shielding properties in the presence of varying magnetic fields and compared results to the predicted outcome.

Michael Kaminsky
Mentor: L. Lavedan
Oakton High School
Fairfax County, Va.

Duties involved learning to operate an IBC personal computer, become literate in various computer languages and software, compile and arrange specific data into a proposed form and formalize information into a framework suitable for the instruction of novice programmers. Duties performed contributed to a project concerning the RF and Optical Branch of the space Systems and Technology Division.

Kuk Kim
Mentor: J. Butler
Eleanor Roosevelt High School
Prince George's County, Md.

Participated in research to determine the dissociation process and the number of photons required for the reaction using laser induced flouresence detection method. Used the laws of thermochemistry to hypothesize the primary reaction and the secondary reaction.

Brian Knowles
Mentor: F. Young
Georgetown Day High School
Washington, D.C.

Conducted two experiments in the High Temperature Lab of Plasma Physics which was concerned with: Attenuation Coefficients and Test-Stand Experiment.

Emily Lai
Mentor: E. Skelton
J.E.B. Stuart High School
Fairfax County, Va.

Worked on several projects during the apprenticeship. Used various instruments, such as the tetrahedral press, the X-ray diffractometer, the VAX LSI-11 computers and film scanner. Participated with a project that included the effects of the lattice parameters of galium arsenide on cadmium telluride; and the effects of varying lead compositions with pressure.

Benjamin Lieber
Mentor: J. Gibson
Woodrow Wilson High School
Washington, D.C.

Worked in Thermionic Emission in the Surface Physics Branch. Learned how to write a program to manipulate double precision numbers, in Assembly Language.

Sharon Livingston
Mentor: J. Cooper
Bowie High School
Prince George's County, Md.

Used a written computer code to optimize chemical solutions using the Super-Modified Simplex. This code was then modified for use in optimizing Chemical Bonding Agents on Rusty-Bolts.

Katherine Lu
Mentor: D. Weber
Lake Braddock High School
Fairfax County, Va.

Research assignment was concerned with the doping of synthesized phthalocyanine metal chlorides and flourides to see its effect on conductivity and what the effects of conductivity would be in phthalocyanine compounds if the surface area was increased in the macrocycle.

George Lucier
Mentor: Eddie Chang
Lake Braddock Secondary School
Fairfax County, Va.

The purpose of the project was to find a system of averaging that would optimally project out the hydrophilic and hydrophobic regions consistent with the primary amino acid sequence.

Richard Macchiaroli
Mentor: J. Fleming
Bishop McNamara High School
Prince George's County, Md.

Worked on computer assisted display and storage of laser spectroscopy data. Created a library of subroutines for the Hewlett Packard 9672A Plotter and a linear least squares program. Learned Fortran and certain aspects about laser spectroscopy and cryogenics.

Timothy Mackey
Mentor: J. Furnaux
Georgetown Preparatory High School
Washington, D.C.

Demonstrated cyclotron resonance. The devices used were GaAs crystals with layers of AlGaAs. The Fortran computer language was learned. In the tested devices example of cyclotron resonance was found.

Karen Manheimer
Mentor: R. Sheinson
Paint Branch High School
Montgomery County, Md.

Performed a test for determining the effectiveness of an AC discharge in removing toxic vapors. Dimethylh methyl prosphonate a simulant of a toxic vapor, was used in the place of a genuine toxic vapor. This experiment was done to find out how effective it could be to purify air aboard navy vessels.

Gregory Marshall
Mentor: G. Frick
St. Albans High School
Washington, D.C.

Participated in six projects in the catagories of computer programming, graphics, equipment maintenance and electronics. Wrote a data storage and retrieval program. Constructed two Synch Rectifier Circuits and wrote a plotting program which graphed wet bulb temperature, dry bulb temperature, relative humidity, and visibility as a function of time. Used the Hewlett Packard 9825 calculator and the Hp 7245 Plotter Printer.

Scott McGuire
Mentor: J. McDonald
W.T. Woodson High School
Fairfax County, Va.

Determined how to measure wave length with a monitor etalory. Worked in the chemistry division.

Howard Miller
Mentor: E. Marsh
Frank W. Ballou High School
Washington, D.C.

Worked in the area of computational linguistics using information formatting approach. Worked on EXTRACT a program used for processing the narrative.

Marcus Mitchell
Mentor: F. Kelly
St. Albans High School
Washington, D.C.

Debugged and performed the execution of COMPHOP, a computer program which computes the propagated electric and magnetic fields due to low-to-very low frequency radio wave transmission.

Leslie Moy
Mentor: R. Burnham
Albert Einstein High School
Montgomery County, Md.

Performed an experiment which concerns atomic resonance filter and its angular acceptance. A cesium atomic resonance filter was studied.

Steven Nossal
Mentor: R. Handler
Walt Whitman High School
Montgomery County, Md.

Developed a computer program to perform conditional sampling and averaging. Used a Hewett-Packard 1000 series minicomputer and programmed in FORTRAN 77.

Vance Pinkney
Mentor: T. Donahue
Ballou High School
Washington, D.C.

Worked in Laser Physics and revised existing programs. Operated the Apple II Plus, the Macintosh, the Dicomed System, the VAX-11/780 and the Advanced Scientific computer.

Darin L. Powers
Mentor: J. Slagle
Thomas Stone High School
Charles County, Md.

Involved with a computer program named Battle. This work involved the redesign of some features of BATTLE so that the interaction between the operator and the program would be more universally applicable to the cultural stereotypes of the intended user.

Amy Prochko
Mentor: I. Anderson
Fort Hunt High School
Fairfax County, Va.

Assisted with the analyzing of crystallographic data that was gathered in Sweden. Prepared and photographed Metallographic samples for mentor's use.

Duane Robinson
Mentor: N. H. Turner
Oxon Hill High School
Prince George's County, Md.

Designed a N(E) schematic diagram with a power circuit which accepts a 120 volt ac current, converts to a 35 volt DC current and regulates it to +/-15 volts. The N(E) unit was built in three main phases: (1) design, (2)electrical connections and (3) physcial connections.

Norma Rodriquez
Mentor: B. Gaber
Oxon Hill High School
Prince George's County, Md.

Participated in an experiment to determine the actual internal volume of a liposome using a spectrophotometric assay of glucose as a trapped marker.

Mark Rouse
Mentor: Dennis Hardy
Robinson High School
Fairfax County, Va.

Conducted accelerated storage stability tests on duplicate samples of commerical diesel fuels. Ran simulated distillations of samples to determine the relative boiling ranges in order to produce data on the quality of the commercial fuels in question.

William Ruotola
Mentor: N. H. Turner
J.E.B. Stuart High School
Fairfax County, Va.

Spectroscopy using computers. Became experienced in using many different computers and terminals, including the Digital VT 131, the Tektronix 4051, the Apple II plus, and the Texas Instruments Silent 700.

Sylvia Rutiser
Mentor: J. Martin
Gwynn Park High School
Prince George's County, Md.

Summer project was writing a metacode translator routine. It was necessary to modify MCtran and MCREAD. The main piece of equipment used in this project was the VAX II-780 A at NRL's Plasma Physics Division.

Christopher B. Ramsey
Mentor: W. Brundage
Saint Stephen's High School
Alexandria, Va.

Participated in Fine Scale Variability Experiment 1984 which consisted of drawing up an isotherm chart aboard the P-3 aircraft as the information became available from the AXBTs. (Aircraft Deployed Expendable Bathythermagraphs)

Scott Rogers
Mentor: R. Meger
Wilson High School
Washington, D.C.

Participated in two projects. The first was concerned with modeling lab experiments on the computer. The second project dealt with plasma Experimentation - to determine how much plasma reflects and its angular deflection then used this data to design more effective switches in the future.

Jae Roh
Mentor: C. Vittoria
Oxon Hill High School
Prince George's County, Md.

Used an IBM PC for editing, printing and plotting the output from programs run on the VAX computer.

Felicia Sallis
Mentor: J. Martin
Ballou High School
Washington, D.C.

Assisted in the area of mapping ship positions, graphing air, sea, and dew point temperature as a function of latitude and longitude. Wrote several programs in Fortran language.

Brian Skop
Mentor: H. Dardy
J.W. Robinson High School
Fairfax County, Va.

Participated in the set up and design of an interferometer known as ultra-sonovision used to image ultrasonic wavefronts.

Elizabeth Smiroldo
Mentor: J. Hoover
LaReine High School
Prince George's County, Md.

Worked in chemistry and fire safety. Focused the summer participation on the hazards of electrostatic charges in jet fuel, a hydrocarbon liquid.

Teresa St. Cin
Mentor: D. Ash
LaReine High School
Prince George's County, Md.

Studied Laser Induced Fluorescence. The IBM PC computer using Fortran programming, was necessary for automatic scanning. UHV Chamber Experiment was conducted. The Reference cell spectrum was compared with the cell in the UHV chamber.

Alan Stern
Mentor: N. Sheely
Montgomery Blair High School
Montgomery County, Md.

Created a method that was easy and quick and that enhanced a photograph, using computer assistance.

Donna L. Stockton
Mentor: Carruthers
Regina High School
Prince George's County, Md.

Participated in the Space Science Division. Made a comparison of the stars and their measured brightnesses, density or volumes. Learned about different parts of the solar system, different wavelengths, measurements, objects in the solar system and various experiments done concerning outer space and the ultraviolet.

Sue Stolovy
Mentor: H. Smith
Rockville High School
Montgomery County, Md.

Studied water vapor 50 to 80km above the earth's surface using round-based microwave techniques. Used spectral line reading of water vapor emission to deduce the abundance of water vapor in this arear.

Dennis Taylor
Mentor: K. Dejong
Ballou Senior High School
Washington, D.C.

Created an editor for the INATE project. Worked on programs for set manipulation, line intersection, and more. Did programs in LISP, C and Fortran 77. Alsoinvolved in testing a parser.

Michele K. Titi
Mentor: G. Joyce
Oxon Hill High School

Used the backup utility to backup files on a magnetic tape. Other experimental equipment used: VAX II/780, DEC Writer

Prince George's County, Md.	III-hard copy terminal, VAX/VMS Version 3.0- magnetic tape drive, Versatec-printer and magnetic tapes.
Christopher Trimble Mentor: C. Chu James W. Robinson Jr. High School Fairfax County, Va.	Wrote computer programs in Fortran. Participated in a project which deals with applying Artificial Intelligence technologies in radar target classification.
Elizabeth A. Twichell Mentor: Rm. Panayappan T.C. Williams High School Alexandria, Va.	Performed test using the rusty-bolt to test the CBA (Chemical Bonding Agents).
Diana C. Ulrich Mentor: J. Cooper Oxon Hill High School Prince George's County, Md.	Experienced working with the ASC computer Assisted mentor with research on the reaction of H+ + F- Which will provide a better understanding of the chemical kinetics of ion-ion reactions in general.
Julie Vaught Mentor: J. C. Cooper Lake Braddock Secondary School Fairfax County, Va.	Assisted with testing of Tertrasodium Ethxiendiaminetctraactic Acid (EDTA) in boiler water samples using the HPLC method(High Performance Liquid Chromatography).
Diane West Mentor: Iver Anderson Oakton High School Fairfax County, Va.	Determined the microstructural behavior of powder samples specifically concerning porosity, as the particle diameter decreased. Used several equipment such as the sonic sifter, metallograph, grinding belts, polishing wheels, and the plotting program. Exposure to scientific machines such as the DTA, STEM, X-ray Spectrometer, and the Oscilloscope.
Marie Wach Mentor: O Baker Georgetown Visitation Washington, D.C.	Took part in a project dealing with computer communications. Created a portable program for transferring files from a main frame computer to a microcomputer.

Bryndyn Weiner
Mentor: R. Nowak
Albert Einstein High School
Montgomery County, Md.

Conducted experiments whcih involved using Polyacetylene a current collector in a Li/SOCl2 cell. Determined battery capacities for various densities. Observed how polyacetylene, (CH)x, works as a current collector in a Li/SOCl2 cell.

Timothy Welsh
Mentor: D. Rolison
Good Counsel High School
Montgomery County, Md.

Project involved the Zeolite coatings being electrogenerated on Pt surfaces in order to study transport of molecules through these structures. Major concern was a method for generating the coatings and the many variables that affect the coating process.

Neicko Williams
Mentor: D. Walker
John F. Kennedy High School
Montgomery County, Md.

Tested solar cells and found that their degradation due to radiation exposure is comparable to the planar silicon cell. Learned to use an annealining oven how to turn on the solar simulator.

JoAnne Wu
Mentor: H. Wang
Walter Johnson High School
Montgomery County, Md.

Created a computer program to be used in conjunction with CHEMEQ in order to study the Na+ + I- reaction. The program can be used in the future as an algorithm for the study of other chemical systems involving ion-ion reactions.

Jennifer Wu
Mentors: J. Mintire/C. White
T.C. Williams High School
Alexandria, Va.

Developed a computer program that would use the method of least squares to analyze a set of experimental data and determine the unknown quantities with minimal error.

Melissa Wu
Mentor: J. Cooper
W.T. Woodson High School
Fairfax County, Va.

Participated in a research project which involved the determination of detection using DC Argon Plasma Atomic Emission Spectrometry. Became aquainted th the method for making standard solutions which could later be diluted to lower concentration to be measured by the instruments.

Eilene Yamamura
Mentor: M. Reilly
Northwood High School
Montgomery County, Md.

Used the Tektronix computer to analyze data accumulated from experiments with radio waves. Changed ionogram to true height profiles.

Stephen Cooper
Mentor: M. Umstead
Jewish Day School
Montgomery County, Md.

Investigated the reaction of CH3 with NO2 in an attempt to model the reaction. Studied the ratios of CH3NO2, CH3ONO, and CH3ONO2 under various temperature and pressure conditions.

NAVAL SURFACE WEAPONS CENTER

AGENCY CONTACT

MS. CINDY GLEICH
NSWC-P60-WHITE OAK
New Hampshire Ave.
Silver Spring, Md. 20910
301/394-2506

Student	Assignment
John Mingus Mentor: Dr. Benjamin Larrick Seneca Vally High School Montgomery County, Md.	Experimented with thermogravimetric analysis (TGA) and gas chromatography, (GA), to characterize the discharging electrode potential of cells at three resistances.

NIGHT VISION ELECTRO OPTICS LABORATORY

AGENCY CONTACT

MS. PATRICIA SMITH
ERADCOM
Night Vision & Electro-optics Lab
(DELNV-TM-PM)
Ft. Belvoir, Va. 22060
(703)664-2870

Student	Assignment
Dong Kim Mentor: Dr. Mylous O'Dell Annandale High School Fairfax County, Va.	Worked in electron microscopy, plasma etching, and designing, fabricating, and evaluating a target for ion beams.
Thomas Moore Mentor: Chris Contanzo James Madison High School Fairfax County, Va.	Designed an original computer program that would plot waveforms and even tutor the data inputer in how to use the program.
Gary Richardson Mentor: Stuart Horn Lake Braddock Seconday School Fairfax County, Va.	An acceptance test was designed for the common module cryogenic coolers and Dewar/Detectors; the testing focused on cooler performance characteristics and detector/Dewar thermal characteristics.
John H. Rogers Mentor: Mylous O'Dell J.E.B. Stuart High School Fairfax County, Va.	Fortran and Basic were learned to developing results to feed into the artificial calculate standard deviations and averages of the data that the scientists in the lab collected.
Julia Rogers Mentor: Dr. Randolph Longshore J.E.B. Stuart High School Fairfax County, Va.	In magnetic fields, the Hall voltages of semi-conductors were measured in order to calculate from them the resistivity, Hall coefficient, mobility, and carrier concentration of the samples at different magnetic field strengths; thus, the usefulness of samples for photoconductive devices can be determined.

Patricia Strecker
Mentor: Phillip Boyd
Lake Braddock Secondary School
Fairfax County, Va.

On wafers of different materials, oxides were grown in vacuum; the oxide thicknesses were calculated by using laser light reflected off the oxides; finally, the sample oxides were examined by a scanning electron microscope in order to techniques to control the growing of these films.

Linda Szabo
Mentor: James Habersat
J.E.B. Stuart High School
Fairfax County, Va.

The Fortran 77 language and the RSX-11M operating system were learned; a laser safety course gave the background to build a laser cavity setup; the finished cavity will be used by the NVEOL team in the future in a two pass laser amplification system.

Kevin Walmsley
Mentor: Dr. Derzko
Chantilly High School
Fairfax County, Va.

An expert computing system was improved and then translated from IBM Basic into IBM Pascal; the program identifies reflector telescope by analyzing the data using a technique called cluster analysis.

Shawn A Barrett
Mentor: Dr. Paul Amirtharaj
Mount Vernon High School
Fairfax County, Va.

Wrote computer programs to calculate resistivity, Van Der Waals interactive forces, and the ideal gas law, plus program conversion from Fortran to Basic, and a graphing subroutine to display the output.

Charles Leonar
Mentor: John Ho
West Springfield High Schol
Fairfax County, Va.

Worked on the assembly of compilation of a thermal image data base through the use of the International Imaging Systems graphics computer.

Sean Anderson
Mentor: Donald Keehan
West Springfield High School
Fairfax County, Va.

Performed sensitivity analysis on a video camera, and set up seismic data gathering tests.

USA ENGINEERING TOPOGRAPHIC LABORATORY
FT. BELVOIR

AGENCY CONTACT

MR. GEORGE SIMCOX
Engineering Topographic Laboratory
(ETL-PR-RM)
FT. Belvoir, Virginia 22060
703/664-4812

Student	Assignment
Michael Bald Mentor: Paul Krause West Springfield High School Springfield, Va.	Apple Pascal, and CP/M Pascal were learned to translate the master BEES program so that the entire package could be used by our soldiers in the field; graphs were not available on the field computer, so graphs had to be replaced with equations by using regression analysis.
Sharon Boyles Mentor: Mr. Bill Veigel J.E.B. Stuart High School Fairfax County, Va.	Two computer languages, LISP and KES, were learned, to develop a computer program which will automatically determine key terrain features, such as critical points and choke points, by using artificial intelligence; a program was written which has the capability of choosing the best route for an army or a robotic vehicle to travel.
Lisa Meyer Mentor: Lazlo Greczy Fort Hunt High School Fairfax County, Va.	Several BEES computer programs dealing with atmospheric pressure were translated from HP Basic to HP Pascal. Height program had to be written along with a maximum and lowest usable frequency in a frequency package program.
Mary Sowell Mentor: Paul Krause Lake Braddock Secondary School Fairfax County, Va.	Two Bees programs had to be translated from HP Basic to HP Pascal; the programs calculated altimeter settings and target acquisition information; later, research was done to acquire climatological data for Africa and South America, and then write the BEES program for the African data.

Tim Traub
Mentor: Richard Marth
J.E.B. Stuart High School
Fairfax County, Va.

Three master programs were written for the army's battlefield soldier; the programs calculate radio wave range under battle conditions, moonrise and moonset, and climatic data for two hundred cities in four geographical areas of the world.

UNITED STATES NAVAL OBSERVATORY

AGENCY CONTACT

Dr. Gart Westerhaut
34th & Massachusetts Ave., N.W.
Washington, D.C. 20390
202/653-1513

Student	Assignment
Thomas Hatcher Mentor: Dr. Harrington Lake Braddock Senior High School Fairfax County, Va.	Used a Semi-Automatic measuring machine to measure the distance a parallax star has moved in relation to reference stars.
Anne Rhoades Mentor: Ms Charron National Cathedral School Washington, D.C.	Created files related to clock trips, plotted data on the Hewlett-Packard 1000, and edited files stored in the Memorex 2078.
Jiea Rutland Mentors: Ms Charron/Arvid Myers LaReine Senior High School Prince George's County, Md.	Used Fortran programming to generate data for time scale development and evaluation.
Jacqueline Baker Mentors: Elson/Dabney Dunbar Senior High School Washington, D.C.	Completed various computer work with languages such as Fortran and Basic Wrote a database progran on the touch screen HP 150 computer.
Kristin Rodenhiser Mentor: Dr. McCarthy Bethesda-Chevy Chase High School Montgomery County, Md.	Wrote programs to analyze satellite data. Constructed a display to explain the Naval Observatory's project in Greenbank, West Virginia.
Shaunte Jefferson Mentor: Dr. Seidel Mann Anacostia High School Washington, D.C.	Wrote several programs using the Fortran, Basic and Cobol languages.

UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES

AGENCY CONTACT

DR. DAVID FORMAN
Dept. of Anatomy
U.S.U.H.S
Bethesda, Maryland 20814
301/295-3219

Student	Assignment
Sidney Austin Mentor: Dr. Alvares Springbrook High School Montgomery County, Md.	Determined how environmentally derived chemicals can affect the ability of the body to metabolize drugs and toxic agents.
Philip Bunte Mentor: Dr. Mary Ruebush Our Lady of God Montgomery County, Md.	Conducted research related to the study of Babesia Microte.
David Fletcher Mentor: Dr. Jack McKenzie Springbrook High School Montgomery County, Md.	Investigated Nalbuphine's reversal of hypovolemic shock in chronic rats.
Sarah Gaffen Mentor: Dr. John Hay Wakefield High School Arlington County, Va.	Investigated the herpes Varicella Zoster virus using the Bambi Restriction Enzyme and the 541.10 plasmid vector.
Gary Goldberg Mentor: Dr. Holmes/Dr. Boyle Magruder High School Montgomery County, Md.	Conducted research related to gaining a better understanding of the mechanism by which corovavirus replicates.
Deborah Gomez Mentor: Dr. Rita Liu Wheaton High School Montgomery County, Md.	Investigated by anatomical techniques the neuronal pathways between the PAG and the medullary reticular magnocellularis(NRMc) in rats.
Mary Homer Mentor: Dr. Lynch Bethesda-Chevy Chase High School Montgomery County, Md.	Conducted research related to comparing neuromuscular junctions in Rana pipiens and Xenopus laevis.

Eric Kaufman
Mentor: Dr. Vogel
Eleanor Roosevelt High School
Prince George's County, Md

Investigated LPS induced tolerance with respect to macrophage precursor proliferation and accumulation in bone marrow.

Edward Koo
Mentor: Dr. D. Patrick
Winston Churchill High School
Montgomery County, Md.

Performed research related to establishing pathogenesis and persistance of murine rotavirus.

Leonard Lee
Mentor: Dr. Maged Abdel-Rahim
Georgetown Preparatory High School
Washington, D.C.

Assisted in performing quantitative analyses to determine the amount of cimetidine in patients' gastric acid or plasma.

Diana Platt
Mentor: Dr. Grunberg
Winston Churchill High School
Montgomery County, Md

Investigated the effects of nicotine on body weight and physical activity in female rats.

Lisa Ramos
Mentor: Dr. Brian Cox
Springbrook High School
Montgomery County, Md

Measured certain opioid peptides endogenous, or naturally occurring in the spinal cords of rabbits.

Maureen Salopek
Mentor: Dr. Juanita Anders
Eleanor Roosevelt High School
Prince George County, Md

Investigated the effects of an anion transport inhibitor, SITS, on the morphology of the Astrocytic Plasma membrane.

Jane Story
Mentor: Dr. John MCGowan
Damasus High School
Montgomery County, Md

Investigated RNA and the six subgenomic MRNAs of Mouse Hepatitis Virus.

Helen Shueh
Mentor: Dr. Maged Abdel-Rahim
Northwood High School
Montgomery County, Md

Assisted in performing quantitative analyses to determine the amount of cimetidine in patients' gastric acid or plasma.

Michael Strange
Mentor: Joan Douling
Paint Branch High School
Montgomery County, Md

Completed several computer programs related to the VAX 11/780 system.

Deborah Weltz
Mentor: Dr. David Forman
Winston Churchill High School
Montgomery County, Md

Investigated enkephalin and neuropeptide-y. In addition, isolated adrenal granules for further study.

Joel Plotkin
Mentor: Daniel Riordan
Walt Whitman High School
Montgomery County, Md.

Assisted in analyzing the Scanton Project involving designing, writing and testing exam and survey program for a medical school.

WALTER REED ARMY INSTITUTE FOR RESEARCH

AGENCY CONTACT

Dr. James McNeil
Room 3074
Walter Reed Army Medical Center
Washington, DC 20012
202/576-3472

Student	Assignment
Jeffrey Bresch Mentor: Dr. Boededer Georgetown Preparatory High School Washington, D.C.	Investigated the Merrifield Solid Phase Synthesis of a Tridecopeptide.
Courtney Fahy Mentor: Dr. Weissman Woodrow Wilson High School Washington, D.C.	Studied high performance liquid chromatography analysis of kidney tubules.
James Gamble Mentor: Dr. Harold Williams Mackin Catholic High School Washington, D.C.	Investigated red cell fragility among primates.
Joshua Gordon Mentor: Dr. Walzak John F. Kennedy High School Montgomery County, Md	Conducted research related to the cause of initial decreases in Hippocampal POZ during bicyclic organophosphate induced seizures in rats.
Christopher Graves Mentor: Dr. Bruton DeMatha High School Prince George's County	Conducted research to determine cortisone concentration in blood by using a solid phase system.
Phung Hoang Mentor: Ed Jenkins Springbrook High School Montgomery County, Md	Performed various laboratory procedures, such as using the blood gas analyzer to analyze the concentration of O2, CO2 and the pH of blood.
Brian Jackson Mentor: Dr. Billy Bass Gaithersburg High School Montgomery County, Md	Investigated several electronics theories and techniques in the instrumentation division.

Sean Jenkins
Mentor: Dr. James McNeil
Archbishop Carroll High School
Washington, D.C.

Conducted research related to the nephrotoxicity of aminoglycosides.

John Kingdon
Mentor: Maurice Swinnen
Sidwell Friends School
Washington, DC

Determined atmospheric temperature by means of a "temperature to frequency" converter used in a payload of a model rocket.

Lisa Owens
Mentors: Drs. Harris/NcNeil
Academy of Holy Cross
Washington, D.C.

Investigated the effect of Indomethacin on kidney functioning in Sprague-Dawley rats.

Jeffrey Ross
Mentor: John Pfalser
John F. Kennedy High School
Montgomery County, Md

Investigated the in vitro survivability of the enzymes LDH and CPK and of their isoenzymes.

Lavencia Sugars
Mentor: Dr. James McNeil
Howard D. Woodson High School
Washington, D.C.

Conducted research related to the Nephrotoxicity of Amino-glycosides.

Gary Schnapp
Mentor: Dr. Fanning
Springbrook High School
Montgomery County, Md.

Studied DNA hybridization in Enteric Bacteria.

Rebecca Triggs
Mentor: Maj. Anderson
Springbrook High School
Montgomery County, Md.

Investigated the survivability of the serum enzymes: ALKP, AST, and ALT.

Linda Pao
Mentor: Dr. Walczak
John F. Kennedy High School
Montgomery County, Md.

Conducted research related to the STS kindling interaction in rats.

James Pao
Mentor: Dr. Lawrence Agodoa
John F. Kennedy High School
Montgomery County, Md.

Completed research to isolate human antibodies.

Adam Wegner
Mentor: Dr. James McNeil
Georgetown Day
Washington, D.C.

Conducted experiments to study the immediate nephrotoxic effects of DFP on Sprague-Dawley rats as measured by the Golmerular Filtration rate.

APPENDIX B
PROGRAM FORMS

NRL Research Apprentice Program

Mentor Application - Summer 1984

Mentor Name: _____ Bldg.: _____ Room Number: _____

Code: _____ Phone Number: _____

Project Title: _____

Project Description: _____

Desired Background/Qualifications of Applicant: _____

Number of Apprentice Positions Available: _____

Request for student who has participated in the program before:

Student's Name: _____

Student's School: _____

Name of Facility of Prior Apprenticeship: _____

Year of Prior Apprenticeship: _____

Signature of Mentor: _____ Date: _____

Signature of Division Head: _____ Date: _____

A completed application consists of:

1. Student Application Form
2. Personal Statement
3. Teacher Recommendation
4. Transcript including standardized test scores wherever possible.

Send To:

M. Krupsaw, Program Director
College of Physical Science, Engineering and Technology
Box No. 0303
University of the District of Columbia
4200 Connecticut Avenue, N.W.
Washington, D.C. 20008

APPLICATION DEADLINE
FEBRUARY 3, 1984

The University of the District of Columbia provides equal opportunity for all persons in its educational programs and activities. The University does not discriminate on the basis of race, creed, color, national origin, age, handicap or sex.

DEPARTMENT OF DEFENSE (DoD)

1984 SUMMER SCIENCE AND ENGINEERING APPRENTICE PROGRAM

For High School Students

June 25 - August 17, 1984

An Army-Navy Initiative in the National Capital Area

UNIVERSITY OF THE DISTRICT OF COLUMBIA
College of Physical Science, Engineering & Technology

APPLICATION DEADLINE:
February 3, 1984

Department of Defense Summer
SCIENCE & ENGINEERING
APPRENTICE PROGRAM

June 25 - August 17, 1984

STUDENT APPLICATION FORM

Last Name First Middle Male Female Date of Birth Age

Home Address: Street City State Zip

Area Code Home Phone Social Security Number Citizenship

Are you: Asian American/Pacific Islander American Indian White Black Hispanic Other

(The information requested on race is not required. Your answer is strictly VOLUNTARY.)

Present Grade Name of High School Principal

Address of School: Street City State Zip County

Were you in the Science Apprentice Program before? Yes No Where? When?

Major academic interests: _____

List the science activities in which you participated (both in and outside of school):

_____

Do you have computer experience? ____ Which languages? _____

List the science, related computer, and mathematics courses you have taken or are presently taking.

Course	Letter Grade	Course	Letter Grade	Course	Letter Grade	Course	Letter Grade
Course	Letter Grade	Course	Letter Grade	Course	Letter Grade	Course	Letter Grade

(OVER)

FOR MENTORS ONLY

Mentor _____ DoD Laboratory _____

Mailing Address _____

Building _____ Room _____ Phone _____

Date Interviewed _____ Date Notified of Acceptance _____

University of the
District of Columbia

Mount Vernon Square Campus
1321 H Street, N.W.
Washington, D.C. 20008

Department of Physics

Department of Defense
SCIENCE & ENGINEERING APPRENTICE PROGRAM

July 1 - August 23, 1985
APPLICATION DEADLINE: February 5, 1985

TEACHERS OF SCIENCE AND MATHEMATICS
National Capital Area High Schools

Dear Teacher,

This summer the Department of Defense is again implementing a program in which meaningful summer research experience will be offered to selected high school students. We are looking for students who have the potential to pursue successful careers in science, engineering and mathematical fields. Selection will be made according to the following criteria:

1. strong interest in science, engineering, mathematics and computer applications;
2. science and mathematics courses taken and the grades achieved;
3. scores on national standardized tests;
4. teacher recommendation;
5. extracurricular interests and activities.

As you can see, teacher recommendation will play an important part. You, as the science or math teacher, can spot the student whose grades may be below the straight A level because he or she is not challenged. If you feel that a student has the potential, we will try to give that student the opportunity.

We are enclosing ten forms. The students should be advised that the form should be carefully written so that each is legible. Each student is responsible for transportation to and from the job site.

Please note that the students selected will receive a stipend as well as invaluable experience and exposure to the world of scientific research. U.S. citizenship is necessary.

Time is of the essence since full security clearance procedures must be instituted by some of the laboratories. We would appreciate having applications, student letter of recommendation and transcripts sent out as quickly as possible, but not later than the deadline, February 5, 1985

Sincerely yours,

M. Krupsaw, Program Director

University of the
District of Columbia

Mount Vernon Square Campus
1321 H Street, N.W.
Washington, D.C. 20008

Department of Physics

Dear Student:

CONGRATULATIONS! You have been selected to participate in the Department of Defense Summer Science and Engineering Program as an apprentice to:

_____

at_____
from June 25, to August 17, 1984.

Please complete and return the enclosed form to us As soon as possible. The apprentice program provides an exciting opportunity for you, and we hope you will take advantage of the work experience to learn more about scientific research, career opportunities in science and engineering, and education necessary to prepare yourself for such careers.

On June 25, 1984, the first day of the program, you are expected to attend an orientation session with other apprentices and mentors. The session will take place from 9:30 a.m. to noon in the main auditorium at the Van Ness Campus (See the Attached Map) of the University of the District of Columbia, 4200 Connecticut Avenue, N.W., Building 46, Washington, D.C. At that time you will be given general guidelines for the summer and a chance to ask questions about any concerns you may have. In addition, feel free to invite your parents, teachers and friends to the orientation if you wish.

We hope you will enjoy your apprenticeship. I will be available throughout the summer should problems arise that cannot be solved by your mentor. I look forward to meeting you on June 25.

Sincerely yours,

Marylin Krupsaw

Marylin Krupsaw

Program Director

STUDENT ACCEPTANCE FORM

I, _____, hereby accept the position
(Name of Student)
of apprentice in the DoD Science Apprentice Program from June 25, 1984 to August 17, 1984 to work with _____ at
(Mentor)
_____
(Laboratory)

I understand that I will receive a stipend of at least $1,100 for the summer apprenticeship for which I must participate during the entire session and abide by all regulations of the host installation.

_____ _____
(Date) (Signature)

PARENTAL CONSENT

As the parent/guardian, I certify that my son/daughter/ward has my permission to participate in this project for secondary school students. It is my understanding that he/she will be subject to the regulations of the host installation and of the project. I understand that should a health emergency arise, I will be notified, but that, in the event I cannot be reached by telephone, such medical treatment as deemed necessary by competent medical personnel is authorized.

_____ _____
(Date) (Signature of Parent)

Daytime Phone_____

FINAL REPORT FORMAT

Most of the Department of Defense Science and Engineering Apprenticeship Programs will require a final report on your work during the apprenticeship. Some of the laboratories also will want a copy of your report. Some programs require a written report and an oral presentation. You will want to find out early in the summer just what your program requires, so that you can be preparing for it as the summer progresses. One program suggests that a final report include a general description of the work in which you participated, including your part in any ongoing research, or data analysis; references you consulted; and learning experiences such as techniques, instrumentation, experimental design, computer languages and applications. The instructions suggest that your report include technical information such as you would use for a science fair presentation. You can see how useful a journal would be for writing such a final report. Don't forget to include acknowledgments and thanks to your mentor and others who helped you in the laboratory. Before you leave the laboratory, you will, of course, want to thank these people personally, but it is nice to put it in writing too.

Your final report should illustrate your experiences encountered during the summer apprenticeship in D.O.D. The quality of your report is of primary concern -- quantity should be minimized. The typewritten report should conform with the following format:

1. Cover sheet
   a. Your name
   b. Mentor's name
   c. Title
   d. Name of your high school
   e. Date

2. Abstract - A brief summary of the research project (50-100 words)

3. Introduction and acknowledgments
   Rationale - Explain the purpose of the research. Give concrete examples of the usefulness of the research.

4. Body (Use sub-headings as appropriate) (five pages minimum, not including the appendices)
   a. List experimental equipment used
   b. Procedure
   c. Results - include new discoveries, data, analyzed data

5. Conclusion(s)

6. Appendices

7. Bibliography

Your final report must have the approval and signature of your mentor on the cover sheet. You should make at least three copies of the report: one copy for your mentor and two copies for your counselor. You should make several copies for yourself and keep the original.

University of the
District of Columbia

Mount Vernon Square Campus
1321 H Street, N.W.
Washington, D.C. 20001

Department of Physics

1984

DEPARTMENT OF DEFENSE
SCIENCE AND ENGINEERING APPRENTICE PROGRAM
MENTOR EVALUATION FORM

N = 221

1. How clearly did you understand the educational intent of the program?

A lot 90% Some 9% Not at all 1%

2. Did you volunteer to be a mentor?

Yes 87% No 13%

3. Did the student application provide sufficient information?

Yes 91% No 9%

4. If no, what additional information would you want to include on the student application form?

Hobbies

5. Did you interview the student who was placed in your laboratory before the program started?

Yes 81% No 19%

6. If no, would an interview have been useful?

Yes 39% No -

7. In your opinion
How much has the student's work in your laboratory contributed to his/her understanding of the nature of scientific research?

A lot 81% Some 17% Not at all 2%

8. How much did the student contribute to the research of your laboratory?

A lot 72% Some 26% Not at all 2%

9. How would you rate the student's performance?

More than I expected 76% About what I expected 23% Less than I expected

11. Would you want the same student in your laboratory next summer?

Yes 91% No 9%

Please include additional suggestions or comments on the program, as we sincerely appreciate your input.

Name of Student

Signature of Mentor

Laboratory

PLEASE RETURN TO YOUR AGENCY REPRESENTATIVE

A.F.I.P.	Ms. Debbie Montgomery
A.R.I.	Dr. Robert Sasmor
B.R.L.	Ms. Debra Jennings
C.S.L.	Mr. Robert Gavlinski
E.T.L.	Mr. George Sincox
Ft. Det.	Mr. Joseph Hise
H.D.L.	Ms. Eileen Snead
Meradcom	Ms. Helen Jordan
M.M.R.I.	Dr. Michael Ackerman
N.R.L.	Ms. Diane Farrar
N.V.E.O.L.	Ms. Patricia Smith
U.S.U.H.S.	Dr. David Forman
W.R.A.I.R.	Ms. Diane Capel

District of Columbia

Mount Vernon Square Campus
1321 H Street, N.W.
Washington, D.C. 20008

Department of Physics

DEPARTMENT OF DEFENSE
SCIENCE AND ENGINEERING APPRENTICE PROGRAM
APPRENTICE QUESTIONNAIRE
1984
N= 274

A LOT	SOME	NOT RELEVANT TO MY PROJECT		
			I.	To which of the following were you exposed during your summer research project? Check those appropriate.
18%	61%	21%	1.	Philosophy of research
29	55	16	2.	Use of the scientific method to solve problems
52	37	11	3.	Use of experimental checks and controls
61	19	20	4.	Measurement techniques
26	31	43	5.	Process of functional design of equipment
37	15	48	6.	Calibration of reagents, standards, and instruments
25	56	19	7.	Process of design of an experiment
68	21	11	8.	Data analysis (with or without computer assistance)
39	45	16	9.	Computer programming
23	68	9	10.	Acquisition and use of scientific literature (books, audio visuals, etc.)
14	59	27	11.	Identification of new questions as a consequence of scientific exploration
22	7	71	12.	Teamwork in scientific research
71	26	3	13.	Use of advanced scientific equipment
11	24	65	14.	Other students with similar interests and goals
40	51	9	15.	Scientist working in different areas of research
24	5	71	16.	Information on scientific careers

Note: Answers given in % do not necessarily add up to 100% because of exclusion of "no response" answers and rounding.

A LOT	SOME	A LITTLE	NONE		
				II.	Has your experience as a participant in this program contributed to your personal development?
44%	37%	13%	6%	1.	Working with peers
62	33	4	1	2.	Working with adults
49	40	8	3	3.	Job responsibility
38	45	15	2	4.	Better understanding of scientific principles
47	49	3	1	5.	Scientific vocabulary
21	39	33	7	6.	Ideas you can investigate further at the end of the program
51	36	8	5	7.	Better understanding of your interests and abilities
39	41	14	6	8.	Educational goal setting
52	34	11	3	9.	Insights into career opportunties in science
40	31	21	8	10.	Career goal setting
				III.	To what extent did you benefit from the following?
42	15	36	7	1.	Planned lectures or seminars
59	29	7	5	2.	Explanations of the work by mentor
28	25	26	21	3.	Tours of the laboratories
64	12	8	16	4.	Informal talks with the mentor
41	39	9	11	5.	Formal sessions with the mentor
22	18	41	19	6.	Advice from the program coordinator
				IV.	Satisfaction with the research apprentice experience?
91	7	2	0	1.	I enjoyed the experience.
89	4	5	2	2.	I like scientific research.
48	23	21	8	3.	I was satisfied with the way the mentor used my time.
59	30	2	9	4.	I would want to return to the same mentor next year.
				4b.	If not, check one of the following reasons:

Personality Conflict ___ Lack of interest ___ Want a different experience 46

Different location 39

V. Please answer these additional questions.

1. What did you like most about the program?

... The scientists themselves

... The chance to use sophisticated equipment and see where our school classwork really counts.

... meeting ither students who like the same things I like

2. What did you like least about the program.

... Down time

... Not having enough work somtimes

DO NOT SIGN

PLEASE RETURN THIS FORM TO YOUR AGENCY CONTACT

A.F.I.P.	Ms. Debbie Montgomery
A.R.I.	Dr. Robert Sasmor
B.R.L.	Ms. Debra Jennings
C.S.L.	Mr. Robert Gavlinski
E.T.L.	Mr. George Simcox
Ft. Detrick	Mr. Joseph Hise
H.D.L.	Ms. Eilsen Snead
Meradcom	Ms. Helen Jordan
N.M.R.I.	Dr. Michael Ackerman
N.R.L.	Ms. Diane Farrar
N.V.E.O.L.	Ms. Patricia Smith
U.S.U.H.S.	Dr. David Forman
W.R.A.I.R.	Ms. Diane Capal

UDC DoD Science & Engineering Apprentice Program 17 August 1984

SEMINAR SESSIONS

Bldg/Room	42 / 406	42 / A07	42 / A09	41 / 301
Convener	Dr. D. Keehan	Mr. J. Kolb	Dr. H. Knauf	Dr. J. Thayer
Participants	1. Gallivan, M. 2. McNulty, K. 3. Huy, N. 4. Sheffield, L. 5. Anderson, S. 6. Doelling, P. 7. Keehan, C. 8. Lombardi, V. 9. Barrett, S. 10. Leonard, C. 11. Richardson, G. 12. Rogers, John 13. Szabo, L.	1. Grieco, F. 2. Myers, R. 3. Schwarzkop, K. 4. Bald, M. 5. Meyer, L. 6. Traub, T. 7. Boyles, S. 8. Sowell, M. 9. Kim, D. 10. Moore, T. 11. Rogers, Julia 12. Strecker, P. 13. Walmsley, K.	1. Surles, S. 2. Tran, L. 3. Tillman, K. 4. Brown, S. 5. James, J. 6. Knauf, N. 7. McFerren, C. 8. Rozell, E. 9. Stevens, D. 10. Zelinka, J. 11. Young, B. 12. Scott, C. 13. Pohedra, E.	1. Beck, C. 2. Brethauer, J. 3. Clough, J. 4. Adams, J. 5. Dubkowski, J. 6. Hsu, S. 7. McCullough, W. 8. Richardson, G. 9. Adams, M. 10. Knowles, B. 11. Moy, L. 12. Rutiser, S. 13. Skop, B.

Bldg/Room	41 / 302	41 / 304	41 / 305	41 / 307
Convener	Mrs. Dolores Walker	Mr. Howard Walter	Mr. R. Gavlinski	Mrs. P. Rourke
Participants	1. Young, B. 2. Brown, D. 3. Diamant, B. 4. Ward, P. 5. Stolovy, S. 6. Mitchell, M. 7. Marshall, G. 8. Lai, E. 9. Ruotola, W. 10. Rodriguez, N. 11. Kaminsky, M. 12. Hartung, S. 13. Chen, K. 14. Reinstein, K.	1. Bowers, R. 2. Brown, K. 3. Cockerham, G. 4. Cooper, S. 5. Engram, T. 6. Foster, J. 7. McDonald, M. 8. Sloop, C. 9. Weaver, M. 10. Albert, J. 11. Balliet, L. 12. Brooks, B. 13. Call, K. 14. Carter, C.	1. Gomez, K. 2. Haney, R. 3. Heldman, B. 4. Hess, C. 5. Hinman, S. 6. Holub, P. 7. English, T. 8. Engram, P. 9. Ewald, C. 10. Foster, Lori 11. Gavlinski, K. 12. Hammond, D. 13. Horsey, M 14. Foster, Laurie	1. Lester, A. 2. Marderness, A. 3. Morgan, D. 4. Monninger, M. 5. Foster, K. 6. Jarusek, C. 7. Jordan, J. 8. Kaplan, D. 9. Aist, L. 10. Batra, H. 11. Berg, P. 12. Beecher, J. 13. Bernard, D. 14. Bintinger, P.

UDC DoD SEAP | SEMINAR SESSIONS | 17 August 1984

Bldg/Room	32 / 207	32 / 208	32/209	32 / 211
Convener	Dr. David Forman	Dr. J. McNeill	Lt. Col. Wm. Hartley	Maj. J. McKown
Participants	1. Fay, R. 2. Norris, D. 3. Enzinger, P. 4. Aiken, J. 5. Ardzullah, A. 6. Schmid, E. 7. Pham, H. 8. Fletcher, D. 9. Goldberg, G. 10. Gomez, D. 11. Homer, M. 12. Salopek, M. 13. Weltz, D.	1. Gamble, J. 2. Graves, C. 3. Pao, L. 4. Gordon, J. 5. Sweet, E. 6. Evans, A. 7. Thomas, C. 8. Williams, D. 9. Le, Thu 10. Chang, K. 11. Fahy, C. 12. Hoang, P. 13. Ross, J.	1. Jenkins, S. 2. Schnapp, G. 3. Sugars, L. 4. Triges, R. 5. Owens, L. 6. Wegner, A. 7. Richards, S. 8. Paulson, E. 9. Chiorzi, T. 10. Shueh, M. 11. Burte, P. 12. Bevington, L. 13. Austin, B.	1. Szapary, P. 2. Buot, C. 3. Patel, Y. 4. Gallivan, M. 5. Burks, S. 6. Schmidt, L. 7. Nenno, C. 8. Bunte, S. 9. Gaffen, S. 10. Kaufman, E. 11. Koo, E. 12. Lee, L. 13. Platt, D.

Bldg/Room	32 / 102	32 / 104	32 / 106	32 / 107
Convener	Mrs. D. Montgomery	Mr. Duane Calloway	Dr. J. Goff	Ms. Lee Struglia
Participants	1. Thompson, K. 2. O"Connor, M. 3. Taylor, P. 4. Tuten, J. 5. Zucker, L. 6. Cooper, Sc. 7. Klugewitz, S. 8. Ramos, L. 9. Story, S.. 10. Stoller, K. 11. Rhoades, A. 12. Weiner, B. 13. Welsh, T. 14. Wu, J.	1. Strange, M. 2. Plotkin, J. 3. Jackson, B. 4. Kingdon, J. 5. Baker, J. 6. Hatcher, T. 7. Jefferson, S. 8. Gamble, S. 9. Jones, S. 10. Amselem, M. 11. Rodenhiser, K. 12. Rutland, J. 13. Wu, J. 14. Yamamura, E.	1. Mingus, J. 2. Barnett, S. 3. Hitt, L. 4. Reich, B. 5. Wong, B. 6. Joyce, K. 7. Kafig, P. 8. St. Cin, T. 9. Mackey, T. 10. Lieber, B. 11. Robinson, D. 12. Colby, C. 13. Barz, Graydon 14. Wu, M.	1. Montague, C. 2. Hartman, J. 3. Brown, V. 4. West, D. 5. Fahel, E. 6. Kidd, Matthew 7. Collier, I. 8. Bolden, A. 9. Chern, K. 10. Sallis, F. 11. Donfor, A. 12. Williams, N. 13. Groom, M.

UDC DoD Science & Engineering Apprentice Program 17 August 1984

SEMINAR SESSIONS

Bldg/Room	41 / 308	41 / 309	41 /320	41 / 322
Convener	Mrs. J. Hughes	Ms. R. Brune	Ms. S. Mullen	Mr. Don Lee
Participants	1. Phillips, J. 2. Pusey, L. 3. Ritondo, M. 4. Soles, S. 5. Kelley, J. 6. King, C. 7. Kohlstadt, I. 8. Linkous, V. 9. Bennett, W. 10. Bubb, C. 11. Chu, N. 12. Cooper, S. 13. DeJesus, P. 14. Davis, M.	1. Tracy, T. 2. Wasson, S. 3. Miller, M. 4. Pare, N. 5. Peters, J. 6. Prichard J. 7. Dyson, D. 8. Deaven, D. 9. Dickson, C. 10. Fee, D. 11. Francis, P. 12. Furey, D. 13. Goldsmith, D. 14. Griffin, D.	1. Pare, A. 2. Richmond, R. 3. Saponaro, S. 4. Silverthorn, K. 5. Solomon, P. 6. Hamarstrom, C. 7. Hargreaves, K. 8. Heavner, T. 9. Huberman, J. 10. Johnson, R. 11. Kim, J. 12. Livingston, S. 13. Lu, K. 14. Lucier, G.	1. Tate, G. 2. Tulley, J. 3. Vervier, J. 4. Walker, D. 5. Wolff, V. 6. Macchiaroli, R. 7. Manheimer, K. 8. McGuire, S. 9. Miller, H. 10. Morse, J. 11. Nossal, S. 12. Pinkney, V. 13. Powers, D. 14. Prochko, A.

Bldg/Room	41 / 323
Convener	Ms. D. Petree
Participants	1. Rouse, F. 2. Ramsey, C. 3. Rogers, S. 4. Roh, J. 5. Smiroldo, E. 6. Stockton, D. 7. Taylor, D. 8. Titi, M. 9. Trimble, C. 10. Twitchell, E. 11. Ulrich, D. 12. Vaught, J. 13. West, D. 14. Wach, M.

From: Dr. B. Richardson <bxrichar@CRDC>
To: ewdraper@CRDC
cc: rrgavlin@crdc
Subject: [F. Prescott War: Summer Students]

I'd like you to send this to Jim Spates at DA. I don't know if you can get to him by ARPANET; if not, mail it. Bob Gavlinski may have address.

Jim - I thought you might enjoy this - I did.

- Bill

----- Forwarded message # 1:

Date: Thu, 16 Aug 84 22:00:44 EDT
From: F. Prescott Ward <fpward@CRDC>
To: ntgibbons@CRDC
cc: bxrichardson@CRDC, ejpoziomek@CRDC, jjvervier@CRDC
Subject: Summer Students

Norma: Please pass copies of this message to Dr. Robert S. Anderson, Dr. William E. White, and Ms. Diane Kotras.

Today was extremely gratifying for me professionally - not because of a scientific breakthrough, or accolades received, or other such things. Today we wrapped up the summer hire program, and I was quite proud of our organization, for I saw in the events of the day the intellectual growth of three promising young adults - growth fostered by everyone in Biotechnology Branch.

Jennifer Vervier presented a colloquium on the immune response of annelid coelomic fluid to bacteria. By copy of this message via her Dad, I want her to know that her material was extremely well prepared, her vugraphs excellent, her delivery polished, and her grasp of the subject matter astonishing. CRDC would do well to claim more scientists of her technical caliber and briefing aplomb. Bob Anderson is to be congratulated for his expert tutelage.

Bill White was mentor for two additional students: Ken Miaduski, soon to be a senior in chemistry at U of MD, and Michelle Miller, a student at C. Milton Wright High School. He too, in his gentle way, provided immense opportunity for the two of them to contribute to our mission. Ken was tasked on his first day to take two weeks to learn then educate the rest of us on how thermophilic (heat-loving) and halophilic (salt-loving) bacteria manage to survive, metabolize, and replicate in their hostile environs. His lunch-time colloquium was so impressive that we decided he should publish the results as a CRDC report (the first such publication from a summer student?) - at any rate, his outstanding contributions have set the stage for our C/BD&A detector support in fielding biodetectors that survive heat or can function aboard ship in salt spray. Michelle Miller completed a project in genetic toxicology that astounds me when I consider the level of scientific sophistication that this delightful high school student brought to bear on the problem - she has the material for a winning Science Fair project, and I have offered the services of this agency in helping her to present it. Again, Bill White deserves plaudits for his expert guidance of these two budding scientists.

All of us were together for Jennifer Vervier's presentation. But the classy good-bye was provided by Diane Kotras who organized a lovely luncheon with covered dishes contributed by the crew. I felt good for the youngsters who had spent part of their summer with us, and and I felt especially proud of everybody in Biotechnology Branch because you welcomed them, educated them, and sent them back to their world with a measure of self-esteem and confidence they could have acquired nowhere else. Well done!

Scott

UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES
F. EDWARD HÉBERT SCHOOL OF MEDICINE
4301 JONES BRIDGE ROAD
BETHESDA, MARYLAND 20814-4799

MICROBIOLOGY

TEACHING HOSPITALS
WALTER ARMY MEDICAL CENTER
NAVAL HOSPITAL BETHESDA
MALCOLM GROW AIR FORCE MEDICAL CENTER
WILFORD HALL AIR FORCE MEDICAL CENTER

April 15, 1985

Dr. Lynn Krupshaw
University of the District of Columbia
Center for Applied Research
4200 Connecticut Ave., N.W.
Washington, D.C. 20008

Dear Dr. Krupshaw:

As you will recall from your files, Eric Kaufman, a talented and gifted student from Eleanor Roosevelt High School, joined my laboratory last summer under the D.O.D. Apprentice Program. Initially, we were concerned about the ability of such a young person to cope in this situation, but our fears were totally allayed within days of Eric's arrival. This young man was mainstreamed into an ongoing project, learned a number of relatively difficult cell culture techniques in a very short period of time, and provided valuable computer programming assistance during his apprenticeship. We are very hopeful that we will be able to support him during the upcoming summer vacation.

If Eric is at all representative of your program, you are to be truly commended.

Very truly yours,

Stefanie N. Vogel, Ph.D.
Associate Professor