

**Testimony of Dr. Pam Shockley-Zalabak  
Chancellor, University of Colorado, Colorado Springs  
Before the House Armed Services Committee,  
Strategic Forces Subcommittee  
July 22, 2004**

Good afternoon Chairman Everett, Ranking Member Reyes, and members of the Committee. I am Dr. Pam Shockley-Zalabak, chancellor of the CU-Colorado Springs campus. Leadership for the University of Colorado System is provided by President Elizabeth Hoffman.

I appreciate the opportunity to present to you how we have helped to address and continue to contribute to the important development of space professionals in the all aspects of space systems design, implementation, and operation.

The University of Colorado at Colorado Springs is one of three campuses in the University of Colorado system, a national leader in teaching, research and service.

CU-Colorado Springs emphasizes a broad range of degree programs in the liberal arts and sciences and professional programs in business, engineering, nursing, education and public affairs. The university is ranked as a top Western regional university and enrolls about 8,000 students annually.

Because of its close engagement with the community of Colorado Springs including the United States Air Force Academy, Peterson Air Force Base, Schriever Air Force Base, Fort Carson, NORAD and Air Force Space Command, CU-Colorado Springs is uniquely positioned to assist in the development of space professionals.

We have long recognized the challenges faced by the military and others in developing a professional space cadre. CU-Colorado Springs began its support of the education of space professionals in the mid-1980's after the establishment of the U.S. Space Command in Colorado Springs. Hundreds of Air Force officers are graduates of campus-based programs and have had distinguished careers in space career fields. The Department of Mechanical and Aerospace Engineering focuses on space systems design and offers a Master's of Engineering Degree in Space Operations to military officers, NASA employees, and private industry employees through the use of Internet-based offerings.

The CU System, through its Colorado Springs and Boulder campuses, currently provides numerous programs that demonstrate ability to work cooperatively with various branches of the military, industry and other academic institutions.

Central among these efforts is the Colorado Springs-based Network Information and Space Security Center (NISSC) led by Dr. Bill Ayen. A concept originally developed in partnership with U.S. Space Command and its leadership, General Ed Eberhart and Major

General Dale Meyerrose, the center's mission shifted following the events of Sept. 11, 2001 to directly support key military commands such as U.S Northern Command, Air Force Space Command and the Air Force Research Laboratory.

NISSC provides innovative education and research programs across broad areas of homeland security, homeland defense, information assurance, and space systems engineering and management. In cooperation with university departments, the center offers three graduate-level certificate programs. They are: Certificate in Homeland Security, Certificate in Information Assurance, and Certificate in Secure Software.

NISSC worked with U.S. Northern Command to create graduate-level courses for civilian and military staff. This fall, 20 individuals will complete the Certificate in Homeland Security program at Peterson Air Force Base and a new cohort group will begin. Campus-based students also have access to courses, preparing regional homeland defense and homeland security workforces for critical tasks. In cooperation with U.S. Northern Command, the university plans to make this educational program available by Internet delivery.

Through NISSC, CU-Colorado Springs is a founding member of the Homeland Security / Defense Education Consortium. This consortium was formed by U.S. Northern Command as a network of teaching and research institutions focused on promoting education, research, and cooperation related to and supporting the homeland security / defense mission. Since its inception, more than 30 institutions nationwide have joined in this important endeavor.

Joint research efforts are conducted by CU-Colorado Springs and U.S. Air Force Academy faculty, including the design and construction of satellites. A Cooperative Research and Development Agreement specifies the relationship between the institutions. A similar agreement was recently executed with Sandia National Labs.

Other CU-Colorado Springs departments that support space-related research, include Electrical and Computer Engineering, Physics, Mathematics, and the College of Business and Administration.

Specific CU-Colorado Springs academic and research programs include:

### **Academic Programs**

- **Mechanical and aerospace engineering graduate degrees.** The department offers two master's degree options in the space field, a Master's of Engineering in Space Operations and a Master's of Science in Mechanical Engineering with a space systems track. Internet-based course offerings allow service members to begin a degree in advance of deployment to the Colorado Springs area. These students can also complete a degree if they are re-deployed. To date, over 170 students have graduated from these programs. A Ph.D. in Engineering is also available.

- **Certificate programs serving the needs of the military.** Through a College of Engineering and Applied Science and NISSC partnership, an Information Assurance Certificate and a Secure Software Certificate is offered to officers from all service branches at Peterson Air Force Base.
- **Other graduate degrees.** The College of Engineering and Applied Science offers a Master's of Engineering in Information Assurance to support the training and education needs of military personnel. The college is developing a Master's of Engineering Telecommunication degree to support the training of personnel at NORAD.
- **Undergraduate support.** Through Internet-based distance learning, military personnel have completed undergraduate degrees while stationed throughout the globe.
- **Research Programs.** CU-Colorado Springs academic departments are actively engaged in interdisciplinary applied and theoretical research to support space cadre development. These efforts are particularly active in the College of Engineering and Applied Science, NISSC, and are conducted in coordination with faculty at the U.S. Air Force Academy and with private industry.

Specific CU-Boulder academic and research programs that support professional space education include the Laboratory for Atmospheric and Space Physics (LASP) which has contributed to NASA space science missions for more than 50 years, the Center for Astrophysics and Space Astronomy (CASA) which has carried out numerous space hardware programs, and the Department of Astrophysical and Planetary Sciences (APS) which is devoted to teaching and research in astrophysics, planetary sciences, and space physics. The Center for Science and Technology Policy Research focuses on science and technology policy, including space policy, and recently initiated a certificate program in science and technology policy focused on training scientists and engineers for careers that span science, technology, and policy.

The CU System's strong space education and research programs allow it to work cooperatively with the Air Force Space Command and with major universities across the country to collaborate on academic programs that will improve the accessibility and quality of space-related programs for the many military personnel, industry employees, and others who do not have the opportunity to complete in-residence programs.

With an eye toward the future, and in cooperation with the Colorado Springs-based Space Foundation, CU-Colorado Springs entered into a cooperative agreement to provide specialized K-12 curriculum in space education. The goal of this interdisciplinary, broad-based approach is to invigorate American innovation and increase the workforce in science and engineering. The Space Foundation is a national non-profit organization that advances and supports civil, commercial and national security space endeavors and educational excellence.

At CU-Colorado Springs, our most significant initiative in support of the development of space professionals will be to serve as the designated higher education representative for Air Force Space Command for the purpose of establishing and managing a consortium of

premier research institutions and other appropriate organizations to serve the broad educational needs of the military space community.

The goal of the Space Education Consortium is to be recognized as a national and international organization of excellence for space education to achieve national security objectives.

CU-Colorado Springs will develop and coordinate Space Education Consortium functions relating to Air Force Space Command educational initiatives and foster broader space-related education and research activities through member institutions. The consortium will focus on promoting education, research and cooperation supporting the development of the space cadre to advance space systems design, development, operation and application.

The consortium's interests will include a broad spectrum of space operations in all environments. Underpinning the consortium will be a series of agreements that allow students to take courses from consortium members, plan educational programs, receive degrees and transfer credits among member institutions.

Five tenets of the consortium mission are:

- Ensure the military space role and perspective is adequately and accurately reflected in educational initiatives.
- Promote and facilitate space-related education program development.
- Focus and facilitate space-related research and development.
- Encourage cooperation between consortium institutions.
- Facilitate the ability to obtain appropriate degrees and other educational programs for space professional development.

The university's approach to consortium membership will be inclusive and will include higher education institutions, military schools and educational institutions and other organizations that foster the advancement of space education.

An advisory board of consortium members and Air Force Space Command representatives will manage membership activities. In fulfillment of its lead university role, CU-Colorado Springs is targeting October 1, 2004 as the date for formation of the initial consortium including articulation agreements, membership of steering and advisory committees and launch of a consortium web site.

Thank you for allowing me to address this committee.