

David Dobrich
December 1, 2004

Application for Professional Leave

Description of the Project

A. 1. Abstract Overview

I have taught Aviation Maintenance at South Seattle Community College for 23 years. I have dedicated my professional career to the study, design and maintenance of flying machines.

I have an opportunity to return to the aerospace industry as a technician working for a local aerospace company named Blue Origin. Blue Origin is an aerospace company, owned by Jeff Bezos, C.E.O. Amazon .com. Blue Origin is currently involved in "developing vehicles and technologies that, over time, will help enable an enduring human presence in space. Our initial research efforts are focused on reusable liquid propulsion systems, low cost operations, life support, abort systems and human factors. We are currently working to develop a crewed, suborbital launch system that emphasizes safety and low cost of operations."

Additionally, Blue Origin is currently involved in capital improvements to South Seattle Community College's Aviation department reciprocating and jet engine test cell. S.S.C.C.'s test cell is a specially designed and constructed building used to run the Aviation department's reciprocating and jet engines. The instructors and students are stationed inside the test cell for safety purposes. The **inside of the test cell** has special video cameras and instrumentation for the monitoring of **the engine test** runs. S.S.C.C.'s test cell was built in the early 1970's. Blue Origin is willing to finance substantial capital improvements to update S.S.C.C.'s test cell, which will bring the test cell technology into the 21'st century. Blue Origin would then use S.S.C.C.'s test cell for their jet and rocket engine research and development program. When Blue Origin has completed its testing program, they will leave all capital improvements to S.S.C.C. **Blue Origin** will need a test cell technician from S.S.C.C.'s Aviation department. **I have an opportunity** to be part of the technical team working with Blue Origin at S.S.C.C. **during its research** and development project. As a part of the test cell team, my **duties could include:**

- Duties:
- 1 Installation of test cell instrumentation.
 - 2 Install and remove jet and rocket engines in test cell.
 - 3 Install and remove instrumentation on jet and rocket engines.
 - 4 Test run both jet and rocket engines.
 - 5 Aide in analyzing data from both jet and rocket engine testing.
 - 6 Perform major and/or minor adjustments to both jet and rocket engines.
 - 7 Perform major and/or minor modifications to both jet and rocket engines.
 - 8 Be the on site go-between for Blue Origin and S.S.C.C., locating materials and resources on campus as needed, scheduling shared usage of space and equipment/supplies.
 - 9 Other projects as they arise.

A. 2. Objectives:

1. *Gain hands on experience working with aerospace propulsion systems.* Optimize my knowledge of “top of the industry” technology and practices. Work with state of the art instrumentation systems.

2. *Observe current industry hiring practices* to identify what are the entry level skills and occupation preparedness desired and/ required in the entry level employee, since this is usually the position of graduates of the Aviation Maintenance Technology program. Identify the level of skills and occupation preparedness of the employee promoted beyond the entry level position.

3. *Develop student enrichment projects* for possible inclusion in the AMT courses and revision such as: 1) installation and testing of jet and rocket engines, 2) installing of jet and rocket engine instruments. Students would be allowed to visit the test cell at certain times to view a working research and development project. I will be developing more student projects as my time with Blue Origin increases. Such projects could enable the students to broaden their knowledge of aerospace propulsion systems.

4. *Support the S.S.C.C. Aviation Maintenance program's desire to remain up to date* on the technology of the future by fostering **effective communication** strategies with Blue Origin and S.S.C.C. Also, the updating **of the test cell** will have a very positive impact of the currency of technology at S.S.C.C.

Plan:

I plan to meet my objectives by working in the various departments of Blue Origin such as propulsion, instrumentation, systems and components, engine testing, and data analyzation.

Timeline:

I will accomplish objectives during the academic year of 2005. Start date would be September 2005 and ending June 2006.

A. 3. Demonstration of objectives:

The additional skills learned by working in this exciting, “top of the industry” environment will be evident as my direct experience will give further insights and authority to my teaching.

When the curriculum considers the requirements of local industry, it always does a better job of preparing students for the world they will face after graduation. Hearing directly from this employer (who is representative of others) will provide valuable insights. I will be better able to share this experience with students as they prepare for employment.

The Aviation Maintenance program is full of practical projects required of the students. This sabbatical will provide new ideas from which to develop new and/or improve present shop projects to augment the classroom lecture.

A. 4. Additional Financial support: Not applicable.

A. 5. Return-to-Industry:

Firm: Blue Origin
13 South Nevada St., Seattle, WA 98134-1121
Contact Person: William Kruse
Amount paid per month: \$3,100
Number of months: 9

B. 1. Benefit to Students, Instructional Program, College, and Community

Benefit to Students:

It is my belief and experience that the best and most effective vocational educational comes from those who have actually "done" rather than merely read about the subject at hand.

Students will receive the most current industry information available on jet and rocket engine technology. They will be better prepared to **meet entry** employment. Productivity and problem solving in industry will be stressed. This **will help to make** students more attractive/employable to major airlines or other **aerospace related companies**, for example: Boeing Airplane Company. This should **command higher starting** wages due to specialized skills.

Benefit to Instructional Program:

This should enhance/update instruction relative to jet **and rocket engine technology**. Shop projects will improve the Aviation program. Capital improvements to the Aviation Departments test cell will greatly add to instructional aides **and materials**. Possible donations of aerospace power plants and/or parts may also be an outgrowth of this sabbatical. This will meet F.A.A. requirements for the entire AMT power plant program classes: AMT 133, 234, 235. Curriculum will be well above F.A.A. standard and requirements. Students will have a better understanding of the 21st century aerospace propulsion vehicles. A possible long range benefit: The University of Washington's Aerospace technology division has looked at S.S.C.C.'s test cell and may be interested in a partnership involving S.S.C.C. test cell after the capital improvements take place.

Industry contacts such as Blue Origin provide an instant source of information and improvements as needed on an on-going basis. Up to date programs make the S.S.C.C. Aviation program stand out more and become attractive to prospective students, who are looking for specialized training or for retraining of A&P Mechanics who wish to upgrade their skills. This would benefit F.T.E.s for the college.

Benefit College and Community: Building new business contacts and soliciting input on current and future training needs of the aviation industry will help the Aviation Maintenance Technology program better define its content. It will create a more highly visibility program and will aid in the successful placement of our graduates. The promotion of vocational education should bring a more positive image of well trained vocational students and employees. In the case of Aviation, our students are employed nationally and world wide thus increasing S.S.C.C.'s positive reputation.

The University of Washington has visited the current test cell and indicated an interest in possibly using the facilities for practical demonstration for their students in the Aeronautics and Astronautics programs. Once the test cell has been updated and I have gained more experience in jet and rocket research programs, I would be a resource for this possible direction of further program development as well.

B. 2. Benefit Professional/Personal Development Potential for Instructor:

I expect to obtain additional knowledge about jet and rocket engine technology, specifically as it relates to large commercial aircraft and aerospace vehicles. This **increased** knowledge will make my position within the Aviation Department more **valuable**. I expect to obtain significant, practical experience in the operation and **management** of the jet and rocket engine test cell which I can then use to expand the **curriculum** and possibly generate new revenue sources such as leasing of the test cell to **other industry** contacts such as University of Washington and private firms. **Working with the employees** at Blue Origin will provide a **broader perspective on industry needs** and methods. Contact with leaders and business men in **industry will establish** industry contacts and enhance professional development and **communication**. This will be a valuable contribution to the department upon my return and **likely will improve** relationships with fellow staff, faculty and administration.

C. Additional bonus points: My last sabbatical was taken: 9-86-----3-87