EXECUTIVE SUMMARY

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INTRODUCTION

The following report summarizes work undertaken between Consortium members and the CBM Laboratory since the December 2006 meeting on the project *Condition-Based Maintenance Optimization: Models and Software*.

RESEARCH PROPOSALS

A very large amount of time has been devoted to finalizing two research proposals for funding, one to OCE/MMO titled "MORE (Maintenance Optimization and Reliability Engineering): CBM (Condition-Based Maintenance) and Beyond," and the second to NSERC, titled "Critical Spare Parts Provisioning: Models and their Application."

The support of all Consortium members in enabling us to finalize these submissions is greatly appreciated.

OCE/MMO required that we first submit a two-page "proposal"; we were delighted when OCE's Research Committee approved the submission just before Christmas and allowed us to submit a full-blown 68-page proposal. The final submission was made on April 18, once all signatures had been obtained from Consortium members, and we have been informed (May 25, 2007) that the proposal has been approved subject to a few small changes!

The NSERC proposal is presently being reviewed by the University before submission.

Due to the new structure of OCE/MMO, we have the support of both the University and OCE/MMO to put in place a new consortium agreement, and also to have the consortium member funds paid directly to the University, rather than to OCE/MMO as has been done in the past. This new arrangement will be more efficient for both consortium members and the lab.

Furthermore, we have broadened the name of our research group to the MORE Lab: Maintenance Optimization and Reliability Engineering, to reflect the number and variety of ideas generated by the interactions between our research staff and consortium members.

CBM LAB STAFF AND STUDENTS

It was a pleasure to welcome our new Research Assistant Sue Erickson in January 2007, while both Walter Ni (programmer) and Dr. Yimin Zang (PDF), who was working on the NSERC-funded I2I, left during the past six months. It is a great pleasure to report that both Ali Zuashkiani and Darko Louit will be receiving their doctoral degrees at convocation on June 21.

Graduate student Diederik Lugtigheid (PhD candidate) has submitted a draft of his doctoral thesis titled "Systems Subject to Repair and Maintenance Actions: Modeling and Optimization"; Andrey Pak (MASc candidate) has also submitted a draft of his thesis, titled "Maintenance and Repair Contracts: Modeling and Optimization."

Three new graduate students joined us in September—Tanya Tang (PhD candidate), Sharareh Taghipour (MASc candidate, PhD stream), and Kelly Kinahan (MASc candidate)—they have now completed their coursework. We have one NSERC summer student with us for May–August 2007, Tom Pickles, who is doing collaborative work with Barrick.

Our research associate, Dr. Daming Lin, continues work on the I2I project in collaboration with OMDEC.

We look forward to a new graduate student, Peter Lewis, joining us in September.

MORE LAB ACTIVITIES

The CBM Lab has been busy during the period December 2006–June 2007. Ali Zuashkiani finished his doctoral dissertation and defense, and is now a postdoctoral fellow in the lab. The Lab is currently involved in the following projects with our industry partners:

- Hydro One: Optimization of maintenance crew sizes
- Syncrude: Use of on-line sensor data for CBM optimization
- Dofasco Steel: Optimization of maintenance crew sizes
- Barrick Gold: Maintenance & Repair Contracts and Maintenance resources (truck shop bays)
- Ministry of Defense: Optimizing CBM decisions for diesel engines (oil analysis) on frigates, gearboxes (vibration monitoring), and diesel engines on armoured fighting vehicles (oil analysis and weather data).

COLLABORATIONS WITH CONSORTIUM MEMBERS

As always, it is a pleasure to see the presentations about the CBM Laboratory's collaborations with Consortium members at today's meeting.

In May 2007 our collaboration with Irving Pulp and Paper on embedding EXAKT into their operations was presented at the International Conference of Maintenance Societies in Australia, and in June our work on sensors with Syncrude will be presented at the World Congress on Engineering Asset Management in England.

I am pleased to report that both XEROX (USA) and Aramco (Saudi Arabia) have indicated that they plan join the Consortium.

THE INTERNATIONAL MAINTENANCE EXCELLENCE CONFERENCE IMEC 2007 :: OCTOBER 31–NOVEMBER 2, 2007

As part of the Physical Asset Management Initiative at the University of Toronto the University is organizing IMEC 2007. Steve Allen has again agreed to serve as a member of the Advisory Committee and will brief Consortium members on the current development of the conference plans.

THE FUTURE

We continue to have an excellent team of MORE Lab staff and students. All are excited about the future development of our research activities. As is always stressed, to continue such activities requires continuing close collaboration and contact with CBM consortium members. We value what has been achieved and are confident that we can maintain the support of members through the excellent staff and students committed to the research program funded by members, OCE (MMO) and NSERC.