Program Review Self Study

Program Coordinator:	**Gord Bailey**	**School:**	**SENRS**
Program Code:	**RDB**	**Date Completed:**	**December 4, 2012**
Program Name:	**Resources Drilling and Blasting Technician**		

Indicator **1.0 Industry Trends**	**Summary of Key Findings**
1.1 Sectoral Standards and Industry Trends **Review / discuss:** • New or emergent industry / sector themes or issues that may have a potential impact on program positioning • Industry / sector issues identified by the Program Advisory Committee • Recent labour market data or sector reports • Recent or anticipated changes in occupational standards, level of entry and credential and / or standards of accreditation • Program alignment to labour market and sectoral trends • Trends identified by the Program Advisory Committee	The following trends are impacting upon the program: Safety has become a large issue affecting the industry and increased its need for being accountable. Guarding of drills and exemplary safety practices is at the forefront in industry. Students need to learn best safety practices in the program to apply them in the field. Noise suppression of equipment for both the safety of the operators and for the general public. With new equipment, techniques and regulations, continuous professional development is needed by those in the industry. Well maintenance and well rehabilitation is increasing. With more equipment from global areas, there is an increased knowledge exchange across countries. More automation in the industry in the area of removing and installing rods More diversification in industry such as geothermal drilling Rural well-drilling is decreasing as less new rural property is being developed in many areas.
1.2 Industry Liaison **Review / discuss:**	This program has well-developed community and industry partnerships including across the country and internationally: The development and delivery of mandatory training for well

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• Program initiatives to maintain involvement with the industry / sector such as field placement supervisions, clinical, faculty renewal, professional learning, other professional affiliations, or community-based projects	technicians in Ontario Courses delivered to public health inspectors and First Nations Contracts for training blast hole drilling and blasting in Cochrane and Yellowknife Offer contract well drilling in the local community Program faculty have done training in Nova Scotia, Newfoundland, Enid Oklahoma and Haiti Train engineers from the Canadian Army prior to their deployment in Afghanistan. The program belongs to several professional associations including the Ontario and Canadian Ground Water Associations and the Ontario Geothermal Association. Through such training and membership activities, the faculty stay up to date with industry and teach current methods and best practices.
2.0 Curriculum Development and Framework	**Summary of Key Findings**
2.1 Curriculum Framework **Review / discuss:** • Describe how your program demonstrates a learner-centred approach and addresses our core promise to students concerning personalized learning and support.	This program is very learner-centred with its applied programming and smaller student numbers in field labs. There is approx. 2 hrs of field work for every hour in class. For example, one course takes place in a quarry where students learn to do controlled blasts. Students drill wells and get used to working in a variety of settings in challenging conditions.
2.2 Outcomes from Curriculum Renewal **Review / discuss:**	Safety has been improving with more guards on equipment. Students also do tailgate safety sessions where at the beginning of each class, a group of students present safety tips to be used for that class. This is

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• Key outcomes from the Curriculum Renewal processes of the past few years • Progress to date in implementing the recommendations arising from Curriculum Renewal • Success of the changes implemented and the means by which they are being evaluated	helping to keep safety at the forefront for all labs. Continued work is being done on building bridges between courses so that students see the connections. For example, in one course students collect core samples and then analyze them in a different course. The program outcomes are revised to keep up with trends. These standards were based on PAC and industry input.
2.3 Curriculum Sequencing and Alignment with Standards **Review / discuss:** • The Ontario College Credentials Framework and the extent to which the program aligns with the provincial standards. • The program's current admission requirements and their suitability in relation to program rigour and student preparedness • The extent to which course content, levels of learning, and assessment methodology are successfully sequenced and aligned between courses and across semesters	Program outcomes are being updated to reflect industry changes and to include an emphasis on safety. All course outlines were reviewed to ensure accurate mapping to the re-designed standards. Each outline that has the students using equipment has a newly developed learning outcome regarding safety as the first outcome. As a diploma program, it aligns to the credential framework with the level of learning at the technician level. The current admission requirements are also in line with the credential and suitable for the rigour of the program.
2.4 a) Curriculum Map • Review the Program Curriculum Map and discuss the extent to which there is alignment of vocational and course outcomes • Review / discuss the distribution and progression of Vocational Learning Outcomes, Essential Employability Skills, and General Education themes across the curriculum.	The curriculum map will be updated with the new program outcomes after approval from the program advisory committee. The map has been updated to reflect the revision of the standards. The faculty continue to support the common first semester as essential for the development of the Essential Employability Skills. These skills continue to be emphasized in subsequent semesters especially the outcomes around team work, interpersonal skills, and personal accountability.

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2.4 b) Curriculum Map **Submit an updated curriculum map as an attachment to the Program Review Report**	
2.5 Delivery Mode **Review / discuss:** • The *primary* modes used to deliver curriculum such as lecture, seminar, lab, applied project, field camp and web based courses • The rationale for, and appropriateness of, these delivery modes in relation to program learning outcomes • The degree and depth to which the program is providing work integrated learning experiences • The degree and depth to which the learning experiences are enhanced by the use of educational technology.	The primary modes for program delivery are labs and projects. This reflects the applied nature of the program. The students experience many hours in the field with a variety of field camps and contracts. There have been recent changes in the program to reflect more use of technology including using Google docs. There is also a Study Buddy which is a series of YouTube for drilling applications. Students drill water wells for the public under the supervision of program faculty. The payment for the work is put back into the program for supplies and maintenance of equipment. These work experiences provide a sound experience for work after completion of the program.
2.6 Assessment and Evaluation Methods **Review / discuss:** • The program approach to learning assessment • The balance and frequency of assessment types across the curriculum and their appropriateness to course / vocational outcomes • Reflect and comment upon the variety of methods used to demonstrate outcomes. Are learner centered principles part of the assessment approaches?	This program uses several strategies. Students first learn to identify operations in drilling and blasting; they are then tested on them prior to the field. Assessment in the field is done by the faculty as students learn step-by-step the operations of the equipment and how to do a variety of work tasks. Safety is reinforced throughout the program as is problem-solving and practicing due diligence. Final assessments are done when students can complete an entire curriculum sequence such as planning blast holes, drilling them, placing charges, detonating, and assessing blast results.
2.7 Curriculum and Diversity **Review / discuss:**	The industry is becoming much more global and the program is in the process of revision to reflect these global trends. The program promotes both gender and cultural diversity and does attract

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• Program strategies that support student diversity and promote understanding of diversity, including program culture / climate, curriculum content and approaches to teaching and learning	international students. With contracts, students have the opportunity to work with a variety of cultures both nationally and internationally. A discussion around Gen Eds lead to an idea about a mandatory gen ed around Aboriginal and Inuit cultures. Many graduates work up north with very little cultural knowledge. An investigation into a Gen Ed such as Aboriginal History and Culture or the development of a Gen Ed in this area appropriate for these learners should be undertaken.
2.8 Learning Pathways **Review / discuss:** • Recent or anticipated initiatives that promote student pathways including high school articulations, dual credit, program laddering, dual diplomas, and university transfer, articulations, and partnerships	With the development of the Blasting Techniques program, students who graduate from this program can get direct entry into the second semester of RDB. This adds an advanced skill set in well drilling. Graduates from RDB will get some credits in the Blasting Techniques program including their General Education courses and Blast Hole Drilling. The program currently has a dual credit in Geotechnical Drilling.
3.0 Student and Graduate Satisfaction	**Summary of Key Findings**
3.1 Formal Measures of Student and / or Graduate Satisfaction **Review / discuss:** • Key Performance Indicator results for the program with a focus on #s 4, 8, 9, and 11 • Program status and positioning in relation to the KPIs of other programs of a similar type (where applicable) • Feedback and summary report from Learning Support Services (LSS) summary • Themes or issues emerging from a review of course evaluation summaries (Chair/Dean response here)	As a unique program in the province, there are no comparator programs. These statistics are therefore only in relation to Fleming College. In regards to Graduate Satisfaction with Generic and Vocational Learning Outcomes (2010/11), 86% were satisfied as compared to 87% at the college level and 85% at the system level. Students were highly satisfied with their teachers in Winter 2012 (KPI 9) with 83% reporting satisfaction as compared to 76% at Fleming and 75% in the system. For the reporting year 2010/11, 84% of graduates were satisfied with the program as compared to the college at 83% and the system at 82%. A five year analysis included both the Blasting Techniques program and this program and thus is not accurate and the results may not be applicable. This five year analysis indicates that these indicators are below the system average except for KPI9, student satisfaction with

	their teachers. The biggest gap is graduate satisfaction with a five year average of -18%. The latest KPI shows significant gains in this area as well as with Graduate Satisfaction with Generic and Vocational Learning Outcomes. One recommendation is to continue to work on higher KPIs with Graduate Satisfaction within the program so that graduates experience better results once finished the program.
3.2 Other Measures of Student and Graduate Satisfaction **Review / discuss outcomes from:** • Student focus groups (mandatory component) • Student Advisor observations / reports • Formal or informal discussions with students and graduates such as class councils, class representatives, individuals or delegations • Debriefing sessions following a field placement, clinical placement, or practicum	A student focus group will be held in January 2013 with the second and fourth semester students. **Informal Feedback:** Many students do not comprehend the usefulness of the common first semester. They do not feel it is related to the program. In the past, many first semester faculty took the time to relate examples and work to the program, but many courses do not maintain the same faculty and it is hard to work with the continual changes in staffing. A new course, in third semester (COMM181 Career Mapping and Development), appears to be repetitive and several students are complaining about the content.
4.0 Employment Trends	**Summary of Key Findings**
4.1 Employment **Review / discuss:** • Graduate employment statistics over the last few years, including those of students employed in the field, in a related field, outside the field, or unemployed, and any emerging patterns in this data • Student preparedness for entry-level positions	Employment opportunities are good for graduates. This program has a high employment rate as compared to other programs. According to KPI2, overall employment in 2010/11, 92% were employed higher than the college average of 82% and the system average of 83%. For the same reporting year (KPI 3), 85% were in related employment higher than the college average of 51% and the system average of 55%. According to the HRSDC, “The vast majority of job openings will be

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• Emergent employment trends such as new types of positions, changing job market, regional distinctions, changing employer profile, or emerging skill shortages	due to retirements. The retirement rate in this occupation is considerably above average. Workers in this occupation are older than in other occupations, and they generally take their retirement a little earlier. Expansion demand will be responsible for only 12% of job openings. Over the 2011-2020 period, job openings (arising from expansion demand and replacement demand) are expected to total **7,789** and **6,700** job seekers (arising from school leavers (53%), Immigration (4%) and mobility(43%) are expected to be available to fill the job openings."
4.2 Other Graduate Destinations **Review / discuss:** • Alternative graduate destinations such as further education, international opportunities, volunteer service, or other experiences	Upon graduation, students under NAFTA can gain access to many good jobs in the United States.
5.0 Strategic Positioning	**Summary of Key Findings**
5.1 College Alignment **Review / discuss:** • Program alignment with college priorities such as vision, mission, values, strategic plan, academic framework, and the educational mandate, and / or academic priorities of the School • Opportunities for new program initiatives based on Program, School, or community strengths and alliances	This program is aligned with the college priorities, strategic plan, and the new vision for the Frost Campus. The learning is hands-on, has a water theme with well-drilling, and the program is aligned with the community with memberships in the local area and their well-drilling services.

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5.2 Competitor Programs **Review / discuss:** • Key parallels and differences between this program and those of its closest competitors, where applicable • 'Value-added' program distinctions and their attractiveness to prospective students	There are no college programs that compete with this program. It is unique in the country.
6.0 Enrolment Trends	**Summary of Key Findings**
6.1 Demand for the Program **Review / discuss:** • Patterns in the number of program applicants, qualified applicants, and actual registrants over the past 6 years • Changes, if any, in the student demographic profile, including level of maturity, diversity, prior knowledge, technological literacy, work experience, and expectations • Impact, if any, of this changing student profile on program curriculum	The program has high numbers of applicants with an average conversion rate of 3:1. The number of applicants for 2011 was 160 and a total registration of 61, the highest number in the past five years. The Fall of 2012, on day 10 in first semester there were 77 students and in third semester there were 88 students. The target was to have 110 students in both semesters. Currently, there are 165 total in Semester 1 and 3. Demographics (changes since 2008): - Increase in the number of females. 2008 there were 0% females to an increase of 6% in 2012. - Majority of students still under 20 years old in Semester 1 (57%). 4% of students are aged 36-55. - Most students are not from the local area. 65% are from areas outside of the current catchment. There is an increasing concern with the lack of literacy students with new students from high school. Concern with work ethics of new students as well. These students do not seem to understand the meaning of deadlines even though it is continually reviewed. Many seem quite content to coast along. In this

	regard, mature learners are a benefit as they have higher expectations and won't tolerate "slackers" on their teams. The program does attract a few international students- recent graduates from USA, Nigeria, and Iran.
6.2 Student Progression **Review / discuss:** • Patterns of student success and retention on a semester by semester basis over the last six years • The effectiveness of any strategies adopted to improve student success and retention	The overall retention for the program is good averaging 87% retention in first semester, 88% from first to second semester, 84% from second to third, and 91% in the fourth semester. This is the three year average from 2008-2011. The highest first semester retention was in 2009 with 91% retention and no loss of student numbers from first to second semester. This was likely a result of the Second Career Strategy.
7.0 External Relations	**Summary of Key Findings**
7.1 Alumnae **Review / discuss:** • The type and range of alumnae involvement in the program • Current and future strategies to engage alumnae in the program	Several alumnae teach in the program: Steve Wilkinson, Jim Smith, Bill Smith, and Tony Kimmet. Several alumnae also are PAC members and some are past teachers in the program. Several industry members (past graduates) also hire current graduates.
7.2 Community Relations **Review / discuss:** • Significant partnerships, relationships, connections, or offers of support from the community that help to enrich the program and the student experience • Faculty, staff, and student involvement in volunteer projects and events.	The program has been involved in the community and would like to do more of this type of work. This past fall, the students did a fund-raiser for breast cancer with a pink car demolition. Two students went to Haiti to assist in drilling wells. Jim Smith does a community forum on Well Aware for homeowners who have wells on how to keep them "healthy." In the past, the program has also participated in the Children's Water Festival at the Peterborough Zoo.

• Contributions to the not for profit sector such as committee or board service by program-associated faculty and staff • Community recognition in the form of student bursaries, awards and scholarships	
7.3 Program Advisory Committee **Review / discuss:** • The distribution of Committee membership by constituency, sector, and / or region • The vitality of the Committee such as the frequency of meetings, and members' level of participation, engagement, and turnover • The extent to which Committee operations are aligned with the Fleming College Advisory Committee Orientation Manual and Advisory Committee policy.	The program advisory committee is very active in the program and advises both this program and Blasting Techniques. The next meeting will take place in mid-February 2013. This review will be presented at the time and volunteers will be asked to sit on the review panel.
8.0 Program Resources	**Summary of Key Findings**
8.1 Human Resources **Review / discuss:** • The number and distribution of all faculty, technicians, and technologists associated with the program including full-time, part-time, sessional, and cross-appointments • Profile of the Dean, faculty, and staff associated with the program including cumulative credentials, scholarship, work-related and teaching experience, and expertise in education • Significant faculty or staff accomplishments such as professional recognition and awards, achievement of credentials, and	Gord Bailey- FT faculty- coordinator Jim Smith- FT faculty Steve Wilkinson- FT faculty- will be assuming coordinator role in Jan. 2013 Tim Porter- FT Technician Karen Rosborough- PT- Technician Glenn Harris- PT-Technician; PT- Faculty Bill Smith- FT- Faculty; teaches in both RDB and Blasting Techniques Mike Rochetta- PT- Faculty Steve Penny- PT- Faculty Dave Lemke- PT- Faculty Resumes and biographies are included in the program review directory.

appointments • Contributions to the professional community or industry by program-associated faculty and staff including board / committee service, research, and presentations / publications • Current staffing levels for the program in relation to program numbers, curriculum, delivery modes and areas of specialization / generalization • Hiring priorities over the next few years based on the above • Current professional development and renewal plans in relation to program or student needs	Current high numbers of students are presenting some issues: -increased costs for bussing from three groups to five groups -placements are becoming more difficult as more staff are required for supervision -the program needs more faculty/ technician time with the higher numbers.
8.2 Physical Resources **Review / discuss:** • Program costing information • Scope of current program resources such as laboratory equipment, software, library holdings, or tools essential to or which enhance program delivery or student learning • The adequacy of above resources in the context of program outcomes, program currency, and student numbers • Program specific external revenue such as sponsorships, grants, donations or gifts-in-kind • Other externally generated revenues, if applicable	$1 million donation has lead to several upgrades including: -2 tamrock CMHA 700S blast hole drills -1 mobile B37 Multi-purpose drill -Facility upgrades including classrooms and building exterior -$200,000.00 for student bursaries Scheduling quarry time for blasting labs is becoming an issue with larger student numbers. As well, the cost of bussing students to the quarry is steadily increasing. Costing: • Contribution to Overhead: 32.4% • Program Weight: 1.40 • Funding Unit: 2.50 • Subsidizes operations with income from drilling and blasting operations

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Based on an analysis of key findings, identified areas that require attention.

Recommendations and an action plan that reflect the program's priorities and its capacity to achieve them.

Program Review Action Plan	Responsibility	Timeframe
Recommendations:		
The program would like to recycle drilling fluids. The cost of this equipment is $20,000-$40,000. A new vacuum truck used for in-ground utility identification and drilling fluid clean-up and reprocessing would be beneficial as some consumable use would be reduced ($20,000. - $40,000.)	**Coordinator, Chair, Dean**	
Update and revision of program outcomes to reflect current trends global connections, and PAC review.	**Coordinator, Faculty, CLT**	**Completion November 2012/ carried forward with semester course outline rollovers**
Update course outline learning outcomes to reflect program changes and new course material	**Faculty, CLT**	**Ongoing, 2nd and 4th semester outlines, completed Dec 2012**
Revise web page on Fleming web site to reflect changes in the program. The picture also requires updating.	**CLT, Marketing**	**Completed October 2012**
Expand opportunities for program faculty to audit each others' courses to help maintain connections and continuity	**Coordinator, Chair**	**September 2013**
Expand team teaching opportunities within the program	**Chair**	**September 2013**
Embed safety into all courses that involve field preparation and field work. Weekly reviews	**Coordinator/ Faculty**	**Completed Sept 2012**
Review course outlines to ensure that students are receiving assessment prior to week 5 for early intervention and remediation	**Coordinator/ Faculty**	**Ongoing with each semester**
Increased budget for student costs especially bussing and consumables such as fuel, dynamite etc.	**Dean**	**Next budget**
The larger number of students is making it difficult to book quarry time for blasting labs.		

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More technician hours are required to reflect increased student numbers in labs and field settings.	**Chair/ Dean/ Coordinator**	**Next budget**
Some equipment needs updating; trucks are 25 years old and there are issues with their ongoing safety with MTO.	**Chair/ Dean/ Coordinator**	**Next budget**
More repair technician time is required to maintain and repair equipment as the equipment is experiencing more demand with higher student numbers.	**Chair/ Dean/ Coordinator**	**Next budget**
More industry liaison is required for equipment donations	**Coordinator, program faculty**	
Work with First Semester Coordinator to establish better relevance of the first common semester.	**Coordinator, first semester coordinator, faculty, CLT**	**April 30, 2013**
Investigate a possible gen ed that would include the diverse cultures in Northern Canada.	**Gen Ed Coordinator/ Program Coordinator/ Chair**	**April 30, 2013**