AN EXAMINATION OF THE BRITISH COLUMBIA ASSAYERS CERTIFICATION PROGRAM

EXECUTIVE SUMMARY

The British Columbia Assayers Certification Program ("ACP", "the Program") is the only one of its kind in Canada. Over 600 assayers have been certified in the province since the initiation of the Program in 1895. Administration is by a Board of Examiners consisting of three experienced certified assayers drawn from government, academia and industry. The Ministry of Energy, Mines and Petroleum Resources ("MEMPR") finances administration and delivery costs of approximately $8500 per year.

Through standards established over the past 97 years, the Program has attained an enviable domestic and international reputation within the mining, mineral exploration, analytical chemistry and securities industries. Certified assayers are highly regarded in all Canadian provinces and in other countries for the knowledge and capability.

The basic principles embodied in the legislation and regulations governing the certification program are sound and have proven to be effective. In order to maintain the relevance of the Program, it is essential that the syllabus and the examination continuously reflect the most recent advances in analytical practice and technological developments in exploration mining and metallurgy. At the same time, the program should continue to emphasize practical laboratory experience and the basic fundamentals of assaying and analytical chemistry which, collectively, contribute technical depth and competence.

No changes are recommended to the Ministry of Energy, Mines and Petroleum Resources Act, RS Chap. 270, 1979 containing the ACP legislation.

A series of recommendations are proposed which will collectively update the syllabus, revise the examination procedure and marking system, facilitate administration and delivery and enhance the effectiveness and the relevance of the Program. These recommendations are classified under the following headings:

(a) ACP syllabus and examination

(b) Program administration and delivery

(c) Additional recommendations.

(a) ACP SYLLABUS AND EXAMINATION

Implicit in the recommendations set out below is the over-riding recommendation that the ACP syllabus be carefully revised and redrafted. In recent years, the Board of Examiners has recognized several of the advances detailed in these recommendations by broadening the scope of the ACP examination. However, it is very important that the syllabus and the examination remain current and wholly compatible.

R1

Candidates for certification should be made aware that samples containing parts per billion levels of gold and possibly silver may have to be analyzed in the practical examination and that the advice in the syllabus to report results in 'grams per metric ton' be expanded to read 'grams or milligrams per metric ton'.

R2

The reference in the syllabus to the sample materials that candidates should be prepared to analyze should be expanded from the '.....several samples of concentrates, ores and furnace products.....' in current versions to '.....several samples of suitably prepared concentrates, ores, mineral processing products, waste products and/or other media containing from trace to high percentage concentrations.....' in future, revised versions of the syllabus.

R3

The scope of the qualitative analysis examination should also be expanded by changing the description of the sample material sources referred to in the syllabus from '.....ores and furnace products.' to include '.....ores and mineral processing products.'

R4

The syllabus should place more emphasis on the speciation of gold and the other precious metals and the importance and significance of the chemical and physical attributes of ores or samples in metallurgical and exploration applications. It would also be appropriate for the words 'fire assaying' to be replaced by 'precious-metal assaying' in general references in the syllabus to precious-metal analysis.

R5

Because of the critical relationship between sampling, knowledge of sampling theory and accurate, reliable analysis and also the growing importance of instrumental methods in the modern laboratory, it is recommended that these topics be

separately identified in the syllabus and the examination marking allocations be restructured.

R6

It is recommended that the following be added to the listing of instrumental methods with which examination candidates should be familiar:

GF-AAS - Graphite Furnace Atomic Absorption Spectrometry

CV-AAS - Cold Vapour Atomic Absorption Spectrometry

HY-AAS - Hydride Generation Atomic Absorption Spectrometry

ICP-AFS - Inductively Coupled Plasma - Atomic Fluorescence Spectrometry

ICP-MS - Inductively Coupled Plasma - Mass Spectrometry

INAA - Instrumental Neutron Activation Analysis

R7

Sample decomposition and dissolution must receive more emphasis in the ACP syllabus in recognition of the growing importance of leach kinetics, solvent extraction, partial extraction and bioleaching in modern exploration and mining operations.

R8

The inclusion of QA/QC training in future versions of the ACP syllabus is a fundamental necessity which will serve to enhance the existing high standards and reputation earned by the Program.

R9

The MEMPR proposal to include questions on the WHMIS program in the written section of the Assayers Certification examination is strongly endorsed.

R10

In concert with the recommendations for updating and redirecting emphasis in the syllabus, a revised marking system allocation for the examination is proposed and recommended.

R11

In future, it is recommended that the theory and practical parts of the ACP examinations should be separated in time by a minimum period of 6 weeks. Candidates should be required to take the Analytical Theory papers first and those who achieve grades of not less than 50% will qualify to take the Practical Laboratory examination.

R12

The qualifying grade for the entire ACP examination should remain unchanged at 67%. In addition to the passing grade of 50% on Analytical Theory, successful candidates should also meet existing requirements of not less than 50% on each of the practical Precious Metal Assaying and Wet Assaying examinations.

R13

A revised fee structure for the ACP examination is recommended whereby an entrance fee of $25.00 would be required in advance of the Analytical Theory examination followed by an additional fee of $75.00 for those qualifying for and entering the Practical Laboratory examination.

(b) PROGRAM ADMINISTRATION AND DELIVERY

R14

It is recommended that the Ministry of Energy, Mines and Petroleum Resources continue to delivery and administer the Assayers Certification Program.

R15

No changes are recommended in policies established by previous Boards of Examiners with respect to the granting of certificates without examination.

R16

It is concluded that the Ministry of Energy, Mines and Petroleum Resources should introduce a supporting grant program and initiate discussions with interested educational institutions prepared to develop acceptable short courses on specific topics covered by the ACP syllabus and provide suitable and adequate laboratory space for certification examinations. The establishment of short courses or new developments in analytical chemistry and laboratory practice will benefit not only prospective candidates for certification but also certified assayers wishing to keep on top of their profession. This would serve to keep the provincial assaying industry

current and relevant.

R17

It is recommended that the Ministry allocate funds on a continuing basis to build up, maintain and certify an adequate library of prepared sample materials for use in the Assayers Certification Program.

(c) ADDITIONAL RECOMMENDATIONS

R18

It is proposed that the ACP Board of Examiners initiate a proactive certified assayers' group or 'society' to foster communication and activity in the best interests of the profession and its clientele.

R19

The future leadership of the proposed assayers' group, whether through the direction of a board, executive or council, should be determined following inaugural meetings, but it is recommended that one or more members of the Board of Examiners be members of this leadership group in order to guarantee close ties between the 'society' and the active ACP program. Through this connection, the 'society' could make recommendations to MEMPR with respect to (i) the ACP syllabus; (ii) the ACP examinations; (iii) the content of and/or need for short courses organized in support of ACP and, (iv) prepare nominations for delivery to the Minister of qualified certified assayers to fill vacancies on the ACP Board of Examiners.