



National Association of State Boards of Geology

TASK ANALYSIS 2010:
A Study of the Practice of Geology
in the United States and Canada

Prepared by

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The Task Analysis 2010 Subcommittee members spent much time and energy over the course of this project to ensure the product is useful and of the highest quality:

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ASBOG[®] Task Analysis 2010

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INTRODUCTION

The content or subject matter tested on licensing examinations is often determined through task analysis research studies. A major objective of these studies is to identify the tasks/activities performed by a profession and the knowledge necessary to perform these tasks. The task analysis results are used to create test blueprints (test specifications, content outlines) that describe those professional activities that impact public protection. The test blueprints establish the content of the examinations until there is a need to update the research to keep abreast of advances or changes in the practice of the profession.

ASBOG[®] conducted the present Task Analysis Survey (TAS) to update the content and scope of the Fundamentals of Geology (FG) and Practice of Geology (PG) Examinations. The present TAS builds on earlier task analysis studies completed in 1995, 2000, and 2005.

The TAS 2010 results will be implemented with FG and PG Examinations in March 2011 (Forms 1103). The FG Examination will be structured around academic knowledge, will contain 140 items, and be administered in four hours. The PG Examination will concentrate on the practical application of geological principles. It will consist of 110 items and be administered over four hours.

PROCEDURES

The TAS 2010 Subcommittee held three meetings during 2009 and 2010:

Nashville, Tennessee - January 16 & 17, 2009
Seattle, Washington - April 4, 2009
Raleigh, North Carolina – April 10, 2010

TAS 2010 members, serving as Subject Matter Experts (SMEs), accomplished several major objectives during these meetings. The members:

- reviewed the task statements from the TAS completed in 2005,
- updated and refined TAS 2010 task statements to reflect evolution within the geological profession,
- developed the TAS 2010 Survey, and
- reviewed and evaluated the TAS 2010 Survey results to define the content of the FG and PG Examinations.

The TAS 2010 Survey (pages 10 - 13) was organized into three sections that relate to different aspects of the geological profession:

- **Geological Tasks**

The initial section included 43 tasks that are performed by professional geologists.

- **Ethics**

This section addressed 13 ethical issues that geologists encounter in the practice of the profession.

- **Respondent Background Demographic Data**

The final segment of the TAS 2010 included questions about respondents' background characteristics and practice demographics.

The TAS 2010 Survey contained one rating scale to assess the importance of each task in protecting the general public. The rating scale was constructed using a 4-point rating scale ranging from zero to three (0 – Not important, 1 – Somewhat important, 2 – Very Important, 3 – Extremely important).

The second section of the TAS 2010 Survey addressed ethical issues faced by practicing geologists. The ethics issues were rated in terms of frequency of occurrence within the profession and seriousness of the ethical issues in terms of influencing the geological/geoscience profession.

The TAS 2010 Survey was distributed to geologists using two different survey methods. In the United States, the survey was mailed to geologists and academicians using the United States Postal Service. The packet contained a cover letter explaining the rationale of the study, the survey and a self-addressed stamped envelope (pages 14 & 15). Approximately two weeks after the initial mailing, all recipients received a follow-up postcard that stressed the importance of the study (page 16).

The Canadian Council of Professional Geoscientists (CCPG) administered the TAS 2010 on the Internet using SurveyMonkey. All respondents received an e-mail which described the importance of the study (page 17) and a link to the website for completion of the survey. Several weeks after the initial e-mail, geoscientists received a follow-up e-mail that reminded them of the importance of the study.

The following twenty-nine states, one territory, and ten provinces participated in the present study:

Arizona	Indiana
South Carolina	Nebraska
Wyoming	Puerto Rico
Kentucky	Kansas
North Carolina	New Hampshire
Georgia	Idaho
Oregon	Tennessee
Wisconsin	Texas
Missouri	Utah
Pennsylvania	Washington
Arkansas	Alberta
Alabama	British Columbia
Virginia	Manitoba
Illinois	New Brunswick
Minnesota	Newfoundland
Florida	NW Territories
Maine	Nova Scotia
Delaware	Ontario
California	Quebec
Mississippi	Saskatchewan

ASBOG[®] and CCPG sent the TAS 2010 Survey to geologists and geoscientists from October through December of 2009. The survey was sent to random samples of 200 licensed/registered geologists/geoscientists in each participating jurisdiction if the total number of registrants in the jurisdiction was greater than 200 (see State of Licensure for TAS 2010, page 25). The survey was sent to all registrants in jurisdictions if the total number was less than 200. A total of 7,829 surveys were sent (USA total = 5,994; Canada = 1,835). Two thousand academicians were also randomly selected from the American Geological Institute Directory to receive the survey.

A total of 2,604 were completed and returned in the USA ($2,604 / 5,994 = 43\%$ return rate). This response rate increases to 45% if the 221 undeliverable surveys are excluded from the analysis ($2,604 / 5,773$). Five hundred and fifteen surveys were completed in Canada ($515 / 1,835 = 28\%$ return rate). The high return rates increase the likelihood that the respondents represent professional geologists and geoscientists across the USA and Canada. A total of

239 surveys were completed and returned by academicians ($239 / 2,000 = 12\%$).

RESPONDENT BACKGROUND DEMOGRAPHIC DATA

The TAS 2010 Survey included the following background demographic data:

- age,
- highest degree in the geological sciences,
- number of years practicing as a geologist/geoscientist,
- primary employment,
- number of hours per week performing geological/geoscience activities,
- primary area of practice,
- number of years licensed/registered as a geologist/geoscientist,
- and primary jurisdiction of geological/geoscience practice

Summary data for these background demographic data are contained on the following pages:

- Practicing Geologists (USA) - Pages 18 - 25
- Academia (USA) - Pages 26 - 32
- Practicing Geoscientists (Canada) - Pages 33 – 40

Most respondents were between 51 and 60 years old (USA = 37.0%, page 18; Academia = 40.4%, page 26; Canada = 35.4%, page 33). A substantial percentage of practicing geologists within the USA indicated they held a graduate degree (BA or BS = 43.3%; BA or BSc = 1.8%; MA or MS = 45.3%; PhD or DSc = 9.1%) while 97.4% of academicians held the PhD or DSc. In Canada, geoscientists held the following degrees: BA or BS = 17.2%; BA or BSc = 28.9%; MA or MS = 36.3%; PhD or DSc = 15.7%. The MA or MS was more common in the USA (USA = 45% vs. Canada = 36%) while the PhD or DSc was less frequent in the USA (USA = 9% vs. Canada = 16%).

Most geologists in the USA had been practicing over 20 years (USA = 68.1%) while 76.7% of academicians had been teaching more than 20 years. In Canada, 60.7% had been practicing more than 20 years.

In the USA, 55.3% of the respondents performed most of their geological activities as consultants (page 19) compared to only 37.4% in Canada (page 34). Industry was a significant employment setting in Canada (45.4%) compared to only 9.3% in the USA.

Geologists in the USA spent fewer hours per week performing geological activities relative to Canadian respondents. Thirty-six percent of the geologists in the USA spent 20 hours or less (page 19) performing geological activities compared to 19% percent in Canada (page 34).

Most respondents in the USA indicated their primary area of practice was in Environmental Geology (39%) and Hydrogeology (26%) (page 19). By contrast, only 12% of Canadian geoscientists indicated that Environmental Geology was their primary area of practice (page 35) and only 9% designated Hydrogeology as their primary area. Twenty-eight percent of the Canadian geoscientists indicated their primary area of practice was in Economic Geology and Energy Resources compared to only 4% of practicing geologists in the USA.

Geologists and geoscientists indicated they were practicing throughout the USA and Canada. All 50 states (including the District of Columbia and Puerto Rico) and 12 provinces were designated as primary jurisdictions for geological/geoscience activities (pages 23 - 24). The 239 academicians were teaching in colleges and universities located in 47 states, Puerto Rico, Nova Scotia, and Mexico (pages 31 & 32). Twelve academicians were teaching outside of North America. Geoscientists were practicing across all provinces in Canada (page 39). Within the USA, respondents practiced in an average of 3.7 states over the past five years and were licensed/registered as a geologist in 1.8 states.

TASK STATEMENTS - RESULTS (USA & Canada)

The 43 task statements in the TAS 2010 Survey (pages 10 - 13) were rated using the following rating scale:

JUDGEMENT OF IMPORTANCE

Based on your knowledge and experience as a professional geologist/geoscientist, how important is this task to the practice of geology as it is applied to the protection of public health, safety, and well-being?

0 – Not important 1 – Somewhat important 2 – Very important 3 – Extremely important

Mean values were calculated for all 43 tasks for the USA (Table 1, pages 41). Table 1 displays the task means and standard deviations for geologists practicing within the USA. There is substantial variation in the mean values across the 43 task statements. Table 2 (page 42) shows the task statements sorted in descending order of importance. Task 3 (Interpret and analyze available geological and geophysical data, maps, sections, and reports) received the highest average rating (mean = 2.69) while Task 15 (Identify and interpret fossils and fossil assemblages for age or paleoenvironmental interpretations) received the lowest average rating (0.98).

Table 3 (page 43) shows the task means and standard deviations for academia based on the

239 surveys that were completed and returned. The mean values for the different task statements also reveal variation and are sorted in descending order of importance in Table 4 (page 44). Consistent with practicing geologists in the USA, Task 3 received the highest average (2.83) and Task 15 received the lowest average rating (1.56).

The 239 surveys from academia came from the sample of 2,000 surveys that were sent exclusively to academia. There were an additional 98 surveys from the sample of 5,994 licensed geologists where respondents indicated “academia” as their primary place of employment. Table 5 (pages 45 – 46) displays summary data from both samples. The table also displays summary data for individual subgroups (i.e., original sample, licensed academia, not licensed academia, & all academia). The correlations between subgroups (page 46) indicate an extremely high degree of similarity in responses regardless of licensure status.

The present study clearly demonstrates that practicing geologists and academia view the practice of the profession similarly. The correlation between practicing geologists and academia is extremely high ($r = .88$, Table 6, pages 47 – 48). Figure 1 (page 49) illustrates the high degree of consistency by plotting the mean values for both groups across the 43 tasks. In general, the ratings made by academicians were higher than ratings made by practicing geologists.

Table 7 (page 50) displays the task means and standard deviations for the geoscientists practicing within Canada. Table 8 (page 51) shows the task statements sorted in descending order of importance. Consistent with practicing geologists in the USA and Academia, Task 3 (Interpret and analyze available geological and geophysical data, maps, sections, and reports) received the highest average rating (2.57) while Task 15 (Identify and interpret fossils and fossil assemblages for age or paleoenvironmental interpretations) received the lowest average rating (1.05).

There is a moderate degree of similarity in the practice of geology in the USA and Canada ($r = .43$; Table 9, pages 52 – 53). The right column shows mean differences between the USA and Canada (positive values indicate higher ratings in the USA compared to Canada whereas negative numbers reveal lower ratings in the USA relative to Canada). Figure 2 (page 54) displays the mean values for the USA and Canada across the 43 task statements. There is a high degree of consistency ($r = .81$) in the ratings made by these groups for Tasks 1 through 25 (Domains A – E):

- A. General and Field Geology
- B. Mineralogy, Petrology, and Geochemistry
- C. Sedimentology, Stratigraphy, and Paleontology
- D. Geomorphology, Surficial Processes, and Quaternary Geology
- E. Structure, Tectonics, and Seismology

The last three applied domains were rated somewhat differently in the USA and Canada. Hydrogeology and Engineering Geology received higher ratings in the USA whereas Economic Geology and Energy Resources were rated higher in Canada.

ETHICS - RESULTS

Geologists rated the frequency and seriousness of 13 ethical issues encountered in the practice of the profession. Table 10 (page 55) displays summary data for practicing geologists in the USA. These data are graphically displayed in Figure 3 (page 56). The most frequent ethical offense was “Insufficient scope of work” whereas the least frequent ethical issue was “Retaliation against whistle blowers”. The most serious ethical issue was “Misrepresentation of professional qualifications” while the least serious was “Gifts – getting and giving”.

Tables 11 and 12 display ethics summary data for academia (page 57) and geoscientists in Canada (page 58). The correlations indicate a high degree of similarity in the frequency and seriousness of these issues between groups (USA vs. Academia – Frequency $r = .71$, Seriousness $r = .77$; USA vs. Canada – Frequency $r = .85$, Seriousness $r = .97$). Data for all three groups are shown in Figure 4 (page 59).

RELIABILITY ANALYSES

The consistency in the practice of the profession in the USA was evaluated by performing reliability analyses using ratings made by geologists that practice in one of the 30 jurisdictions that participated in the present study. Table 13 (page 60) shows the mean values for the 43 task statements for each jurisdiction that participated in the study. These data, graphically depicted in Figure 5 (page 61), reveal an extremely high degree of consistency in ratings made across the 30 jurisdictions.

The correlations between jurisdictions are very high and are shown in Table 14 (pages 62 - 63). The estimated reliability (Coefficient Alpha) was 0.996, where 0 indicates no consistency and 1.00 reveals perfect agreement (Table 15, page 64). The item-total correlations are very high and demonstrate a high degree of similarity between each jurisdiction and the total sample. These findings are extremely important because they demonstrate that national exams can be fair to candidates from all regions of the country.

In Canada, the reliability analyses also indicated that geoscientists viewed the tasks very similarly across the ten provinces. Table 16 (page 65) shows the mean values for the 43 task statements for each province where there is a high degree of consistency in ratings made across the provinces. These data are illustrated in Figure 6 (page 66). The correlations between jurisdictions are shown in Table 17 (page 67). The estimated reliability was 0.97 (Table 18, page 68).

The ratings made by geologists practicing in one of the ASBOG® states (n = 30) were compared to those made by geologists in non-ASBOG® states. A remarkably high degree of consistency was observed (r = .99). This finding is very powerful because it demonstrates that the practice of the profession is virtually identical across the USA regardless of whether or not states are currently members of ASBOG®.

One objective of the present study was to evaluate whether geologists with different levels of experience and education viewed the profession in a similar manner. The mean values between respondents with 10 or fewer years of experience were virtually identical to those respondents with 11 or more years of experience (r = .99). This high degree of consistency was also observed between respondents with different educational backgrounds (Bachelor's Degree or lower vs. Master's Degree or higher) (r = .99).

FG AND PG TEST BLUEPRINTS

The TAS 2010 Subcommittee reviewed and discussed the survey results during a workshop that was held in Raleigh, North Carolina during April 2010. The primary goal of the workshop was to develop the Fundamentals of Geology (FG) and Practice of Geology (PG) Test Blueprints. The content and scope of the FG and PG Exams will be based exclusively on the ratings made by respondents practicing in the USA. The task means for all 43 task statements were sufficiently high to justify testing all tasks in either the FG or PG Exams.

SMEs assigned each of the task statements to the FG and/or PG Exam based on their expertise (Table 19, pages 69 - 71). The FG Examination will test 31 tasks while the PG Examination will focus on 32 tasks. Twenty of the 43 tasks (47%) will be included in both the FG and PG Test Blueprints.

To determine the relative weight and, therefore, the number of questions necessary for each task in the examinations, the following formula was used:

$$\text{Task Weight} = \text{Importance Mean}$$

This formula places more emphasis on those tasks that are most important to public health, safety, and well-being. On the FG Exam, task weights were determined using the ratings made by practicing geologists and academia, giving equal weight to both groups. By contrast, the PG task weights were calculated using only those ratings made by practicing geologists. The relative percent of items devoted to each task was determined by dividing each task weight by the sum of all task weights and then multiplying by 100:

$$\text{Task Percent} = \text{Task Weight} / \text{Sum of Task Weights} \times 100$$

Effective with the March 2011 administration of the exams, the FG Test Blueprint will be based on 140 questions (Table 20, page 72; Figure 7, page 73) while the PG Test Blueprint

will contain 110 questions (Table 21, page 74; Figure 8, page 75).

ASBOG[®] conducted the TAS 2010 study to update the content and scope of the FG and PG Examinations. This study builds on the earlier TAS studies completed in 1995, 2000, and 2005. All four studies have demonstrated a high degree of consistency in the practice of the geological profession throughout the USA. The tasks performed by geologists in different states were rated remarkably similar in terms of importance to public protection. The TAS 2010 results provide a sound basis for developing examinations that are fair to candidates from all regions of the country.

ASBOG® PROFESSIONAL GEOLOGIST TASK ANALYSIS SURVEY 2010

PURPOSE AND DIRECTIONS

The purpose of this survey is to determine the importance of specific tasks that licensed/registered geologists and geoscientists do in their professional activities to protect the public. We suggest that you read through all the tasks in each section before you make any ratings. This will give you information about the content of the tasks and how they are organized.

Please respond to the statements in this survey according to your knowledge and experience as a professional geologist/geoscientist. The results will be used to update the ASBOG® national licensure examinations. For each task in this survey, make one judgment, using the rating scale presented below.

JUDGEMENT OF IMPORTANCE

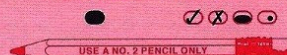
Based on your knowledge and experience as a professional geologist/geoscientist, how important is this task to the practice of geology as it is applied to the protection of public health, safety, and well-being?

0 – Not important 1 – Somewhat important 2 – Very important 3 – Extremely important

- Use a NO. 2 PENCIL only.
- Do not use ink or ballpoint pen.
- Darken the ovals completely.
- Erase cleanly any marks you wish to change.

- Do not make any stray marks on this form.
- Do not fold or mutilate this form.
- Do not identify yourself by name on this survey.

RIGHT MARK WRONG MARKS



EXAMPLE

In this example, the geologist has indicated by a rating of "3" that the task is considered "extremely important" to the practice of geology as it is applied to the protection of public health, safety, and well-being.

TASK

IMPORTANCE RATING

1 Identify minerals and rocks and their characteristics 0 1 2 3

A. General and Field Geology		IMPORTANCE
1 Plan and conduct geological investigations considering human health, safety, the environment, regulations, and Quality Assurance/Quality Control (QA/QC).		0 1 2 3
2 Collect, compile, and interpret historic information to plan geological investigations.		0 1 2 3
3 Interpret and analyze available geological and geophysical data, maps, sections, and reports.		0 1 2 3
4 Determine scales, distances, and elevations from imagery, surveys, maps, and GIS.		0 1 2 3
5 Prepare, analyze, and interpret logs, cross-sections, maps, and other graphics derived from field investigations and GIS applications.		0 1 2 3
B. Mineralogy, Petrology, and Geochemistry		IMPORTANCE
6 Plan and conduct mineralogic, petrologic, and geochemical investigations, including the use of modeling and geophysics.		0 1 2 3
7 Identify minerals and rocks and their characteristics.		0 1 2 3
8 Identify and interpret rock and mineral sequences, associations, and genesis.		0 1 2 3
9 Evaluate geochemical and isotopic data, and construct geochemical models related to rocks and minerals.		0 1 2 3
10 Determine type, degree, and effects of rock and mineral alteration.		0 1 2 3
C. Sedimentology, Stratigraphy, and Paleontology		IMPORTANCE
11 Plan and conduct sedimentologic, stratigraphic, or paleontologic investigations, including the use of modeling and geophysics.		0 1 2 3
12 Select and apply appropriate stratigraphic nomenclature and establish correlations.		0 1 2 3
13 Identify and interpret sedimentary processes and structures, depositional environments, and sediment provenance.		0 1 2 3
14 Identify and interpret sediment or rock sequences, positions, and ages.		0 1 2 3
15 Identify and interpret fossils and fossil assemblages for age or paleoenvironmental interpretations.		0 1 2 3

PLEASE DO NOT WRITE IN THIS AREA



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JUDGEMENT OF IMPORTANCE

Based on your knowledge and experience as a professional geologist/geoscientist, how important is this task to the practice of geology as it is applied to the protection of public health, safety, and well-being?

0 – Not important 1 – Somewhat important 2 – Very important 3 – Extremely important

D. Geomorphology, Surficial Processes, and Quaternary Geology		IMPORTANCE
16	Plan and conduct geomorphic investigations, including the use of modeling and geophysics.	0 1 2 3
17	Identify, classify, and interpret landforms, surficial materials, and processes.	0 1 2 3
18	Determine absolute or relative age relationships of landforms, sediments, and soils.	0 1 2 3
19	Evaluate geomorphic processes and development of landforms, sediments, and soils, including watershed functions.	0 1 2 3
20	Interpret geomorphic conditions and processes based on remote sensing and GIS.	0 1 2 3
E. Structure, Tectonics, and Seismology		IMPORTANCE
21	Plan and conduct structural, tectonic, or seismologic investigations, including the use of modeling and geophysics.	0 1 2 3
22	Identify and define structural features and relations, including constructing and interpreting structural projections and statistical analyses.	0 1 2 3
23	Interpret deformational history through structural and tectonic analyses.	0 1 2 3
24	Develop and apply tectonic models to identify geologic processes and history.	0 1 2 3
25	Evaluate earthquake mechanisms, paleoseismic history, and hazards.	0 1 2 3
F. Hydrogeology		IMPORTANCE
26	Plan and conduct hydrogeological, geochemical, and environmental investigations, including the use of modeling, geophysics, and isotopic and tracer studies.	0 1 2 3
27	Define and characterize hydraulic properties of saturated and vadose zone flow systems.	0 1 2 3
28	Design groundwater monitoring, observation, extraction, production, or injection wells.	0 1 2 3
29	Evaluate water resources, assess aquifer yield and sustainability.	0 1 2 3
30	Characterize water quality and assess chemical fate and transport.	0 1 2 3
31	Manage, develop, protect, or remediate, surface water or groundwater resources.	0 1 2 3
G. Engineering Geology		IMPORTANCE
32	Plan and conduct environmental and engineering geological investigations, including the use of modeling and geophysics.	0 1 2 3
33	Identify and evaluate engineering and physical properties of earth materials.	0 1 2 3
34	Provide recommendations for engineering design, land use decisions, and watershed management.	0 1 2 3
35	Identify, map, and evaluate geologic, geomorphic, and seismic hazards.	0 1 2 3
36	Interpret land use and landforms using imagery, maps, records, GIS, and geological site characteristics.	0 1 2 3
37	Develop programs for hazard mitigation, and land and watershed restoration.	0 1 2 3
H. Economic Geology and Energy Resources		IMPORTANCE
38	Plan and conduct mineral or energy resource exploration, evaluation, and environmental programs, including the use of modeling, geophysics, and geochemistry.	0 1 2 3
39	Compile, assess, and evaluate the data necessary to explore for mineral and energy resources.	0 1 2 3
40	Estimate the distribution of resources based on surface and subsurface data, including imagery and GIS applications.	0 1 2 3
41	Interpret data for economic evaluations, resource assessments, and probability of success.	0 1 2 3
42	Determine quantity and quality of resources and reserves from laboratory, surface, and subsurface data.	0 1 2 3
43	Perform geological evaluations for design, abandonment, closure, and reclamation and restoration of energy development or mineral extraction operations.	0 1 2 3

ETHICS

Please rate the 13 ethics issues listed below in terms of the **frequency** of occurrence within the profession and the **seriousness** of the ethical issues using the following two rating scales.

FREQUENCY

How frequently have you encountered breaches of ethical behavior in these areas of the geological/geoscience profession?

- 0 – Never
- 1 – Seldom
- 2 – Occasionally
- 3 – Often

SERIOUSNESS

How serious do you believe a breach of ethical behavior is in terms of influencing the geological/geoscience profession?

- 0 – Not serious
- 1 – Somewhat serious
- 2 – Very serious
- 3 – Extremely serious

Ethics Issues

	FREQUENCY	SERIOUSNESS
1 Conflict of interest	0 1 2 3	0 1 2 3
2 Failure to disclose regulatory violations	0 1 2 3	0 1 2 3
3 Failure to maintain confidentiality	0 1 2 3	0 1 2 3
4 Gifts – getting and giving	0 1 2 3	0 1 2 3
5 Inappropriate advocate for client	0 1 2 3	0 1 2 3
6 Insufficient “scope of work”	0 1 2 3	0 1 2 3
7 Invoicing	0 1 2 3	0 1 2 3
8 Misrepresentation of professional qualifications	0 1 2 3	0 1 2 3
9 Plagiarism	0 1 2 3	0 1 2 3
10 Practicing outside area of competence	0 1 2 3	0 1 2 3
11 Practicing without license	0 1 2 3	0 1 2 3
12 Selective data acquisition, analysis, or disclosure	0 1 2 3	0 1 2 3
13 Retaliation against “whistle blowers”	0 1 2 3	0 1 2 3

MARK ONLY ONE RESPONSE FOR EACH OF THE FOLLOWING QUESTIONS!

Your responses to the following questions will enable us to determine if different geologists/geoscientists working in various settings and with varied educational backgrounds are represented in this survey. **This information is confidential and will be used for statistical and reporting purposes only.**

1. What is your age?

- ☒ 21–30
- ☐ 31–40
- ☐ 41–50
- ☐ 51–60
- ☐ 61–70
- ☐ More than 70

2. What is your highest degree in the geological sciences?

- ☐ No Degree
- ☐ AA or AS
- ☐ BA or BS
- ☐ BA or BSc (w/Honors--Canada)
- ☐ MA or MS or MSc
- ☐ PhD or DSc

3. How many years have you practiced geology?

- ☐ Less than 1 year
- ☐ 1–5 years
- ☐ 6–10 years
- ☐ 11–20 years
- ☐ 21–30 years
- ☐ 31–40 years
- ☐ More than 40 years

4. What is your primary employment?

- ☐ Academic
- ☐ Consulting
- ☐ Government
- ☐ Industry
- ☐ Retired
- ☐ Other

5. How many hours per week, on average, do you spend performing geological/geoscience activities?

- ☐ Less than 10 hours
- ☐ 10–20 hours
- ☐ 21–30 hours
- ☐ 31–40 hours
- ☐ More than 40 hours

6. What is your primary area of practice? (MARK ONLY ONE)

- ☐ Recent Graduate with no primary area of practice
- ☐ Economic Geology
- ☐ Engineering Geology
- ☐ Environmental Geology
- ☐ Field Geology
- ☐ Forensic Geology
- ☐ General Geology
- ☐ Geochemistry
- ☐ Geomorphology
- ☐ Geophysics
- ☐ Hydrogeology
- ☐ Mineralogy/Petrology
- ☐ Mining Geology
- ☐ Paleontology
- ☐ Petroleum Geology
- ☐ Sedimentology/Stratigraphy
- ☐ Structural Geology
- ☐ Other

7. How long have you been licensed/registered as a geologist/geoscientist, by any government entity?

- ☐ Not licensed/registered
- ☐ Less than 1 year
- ☐ 1–5 years
- ☐ 6–10 years
- ☐ 11–20 years
- ☐ 21–30 years
- ☐ 31–40 years
- ☐ More than 40 years

8. If licensed/registered as a geologist/geoscientist, were you licensed by examination by any government entity?

- ☐ Yes
- ☐ No

9. Which of the following additional licenses/registrations or certifications granted by a government entity do you hold? (MARK AS MANY AS APPLY)

- ☐ Engineering Geologist
- ☐ Hydrogeologist
- ☐ Hydrologist
- ☐ Geophysicist
- ☐ Soil Scientist
- ☐ Euro Geologist
- ☐ Professional Engineer
- ☐ Other

10. From which of the following professional organizations have you received certification? (MARK AS MANY AS APPLY)

- ☐ AAPG
- ☐ AIH
- ☐ AIPG
- ☐ AGWSE
- ☐ SIPES
- ☐ Other

11. In which ONE jurisdiction do you conduct most of your geological/geoscience activities? (MARK ONLY ONE)

- | | | | | |
|-----------------------------------|-------------------------------------|--------------------------------------|---------------------------------------|---|
| ☐ Alabama | ☐ Iowa | ☐ New Hampshire | ☐ Tennessee | ☐ Alberta |
| ☐ Alaska | ☐ Kansas | ☐ New Jersey | ☐ Texas | ☐ British Columbia |
| ☐ Arizona | ☐ Kentucky | ☐ New Mexico | ☐ Utah | ☐ Manitoba |
| ☐ Arkansas | ☐ Louisiana | ☐ New York | ☐ Vermont | ☐ New Brunswick |
| ☐ California | ☐ Maine | ☐ North Carolina | ☐ Virginia | ☐ Newfoundland |
| ☐ Colorado | ☐ Maryland | ☐ North Dakota | ☐ Virgin Islands | ☐ Northwest Territories |
| ☐ Connecticut | ☐ Massachusetts | ☐ Ohio | ☐ Washington | ☐ Nova Scotia |
| ☐ Delaware | ☐ Michigan | ☐ Oklahoma | ☐ West Virginia | ☐ Nunavut |
| ☐ Florida | ☐ Minnesota | ☐ Oregon | ☐ Wisconsin | ☐ Ontario |
| ☐ Georgia | ☐ Mississippi | ☐ Pennsylvania | ☐ Wyoming | ☐ Prince Edward Island |
| ☐ Hawaii | ☐ Missouri | ☐ Puerto Rico | ☐ Dist. of Col. | ☐ Quebec |
| ☐ Idaho | ☐ Montana | ☐ Rhode Island | ☐ Guam | ☐ Saskatchewan |
| ☐ Illinois | ☐ Nebraska | ☐ South Carolina | ☐ N. Mariana Isl. | ☐ Yukon |
| ☐ Indiana | ☐ Nevada | ☐ South Dakota | ☐ Tribal Lands | ☐ Mexico |
| | | | | ☐ Outside North America |

12. In which jurisdiction(s) do you perform, or have you performed over the past five years, geological/geoscience activities?
(MARK AS MANY AS APPLY)

- | | | | | | |
|-----------------------------------|-------------------------------------|--------------------------------------|---------------------------------------|---|---------------------------------------|
| ☐ Alabama | ☐ Iowa | ☐ New Hampshire | ☐ Tennessee | ☐ Alberta | ☐ Africa |
| ☐ Alaska | ☐ Kansas | ☐ New Jersey | ☐ Texas | ☐ British Columbia | ☐ Asia |
| ☐ Arizona | ☐ Kentucky | ☐ New Mexico | ☐ Utah | ☐ Manitoba | ☐ Australia |
| ☐ Arkansas | ☐ Louisiana | ☐ New York | ☐ Vermont | ☐ New Brunswick | ☐ Central America |
| ☐ California | ☐ Maine | ☐ North Carolina | ☐ Virginia | ☐ Newfoundland | ☐ Europe |
| ☐ Colorado | ☐ Maryland | ☐ North Dakota | ☐ Virgin Islands | ☐ Northwest Territories | ☐ Malaysia |
| ☐ Connecticut | ☐ Massachusetts | ☐ Ohio | ☐ Washington | ☐ Nova Scotia | ☐ Middle East |
| ☐ Delaware | ☐ Michigan | ☐ Oklahoma | ☐ West Virginia | ☐ Nunavut | ☐ South America |
| ☐ Florida | ☐ Minnesota | ☐ Oregon | ☐ Wisconsin | ☐ Ontario | |
| ☐ Georgia | ☐ Mississippi | ☐ Pennsylvania | ☐ Wyoming | ☐ Prince Edward Island | |
| ☐ Hawaii | ☐ Missouri | ☐ Puerto Rico | ☐ Dist. of Col. | ☐ Quebec | |
| ☐ Idaho | ☐ Montana | ☐ Rhode Island | ☐ Guam | ☐ Saskatchewan | |
| ☐ Illinois | ☐ Nebraska | ☐ South Carolina | ☐ N. Mariana Isl. | ☐ Yukon | |
| ☐ Indiana | ☐ Nevada | ☐ South Dakota | ☐ Tribal Lands | ☐ Mexico | |

13. In which jurisdictions are you licensed/registered as a geologist/geoscientist? (MARK AS MANY AS APPLY)

- | | | | |
|----------------------------------|--------------------------------------|---|---------------------------------------|
| ☐ Alabama | ☐ Minnesota | ☐ Washington | ☐ Mexico |
| ☐ Alaska | ☐ Mississippi | ☐ Wisconsin | ☐ Africa |
| ☐ Arizona | ☐ Missouri | ☐ Wyoming | ☐ Asia |
| ☐ Arkansas | ☐ Nebraska | | ☐ Australia |
| ☐ California | ☐ New Hampshire | ☐ Alberta | ☐ Central America |
| ☐ Delaware | ☐ North Carolina | ☐ British Columbia | ☐ Europe |
| ☐ Florida | ☐ Oregon | ☐ Manitoba | ☐ Malaysia |
| ☐ Georgia | ☐ Pennsylvania | ☐ New Brunswick | ☐ Middle East |
| ☐ Idaho | ☐ Puerto Rico | ☐ Newfoundland | ☐ South America |
| ☐ Illinois | ☐ South Carolina | ☐ Northwest Territories | |
| ☐ Indiana | ☐ Tennessee | ☐ Nova Scotia | |
| ☐ Kansas | ☐ Texas | ☐ Nunavut | |
| ☐ Kentucky | ☐ Utah | ☐ Ontario | |
| ☐ Maine | ☐ Virginia | ☐ Quebec | |
| | | ☐ Saskatchewan | |

14. Approximately how long did you take to complete this survey?

- ☐ Less than 15 minutes
- ☐ 16–30 minutes
- ☐ 31–45 minutes
- ☐ 46–60 minutes
- ☐ More than 60 minutes

THANK YOU FOR YOUR TIME AND EFFORT!

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ASBOG® TAS 2010 – Letter to Practicing Geologists

October 15, 2009

(Name and Address)

RE: National Geological Task Analysis Survey

Dear Fellow Geologist:

You have been selected by your State Board of Licensure or Registration to assist the National Association of State Boards of Geology (ASBOG®) in an important nationwide study of the geology profession. Your participation in this study will ensure that the questions on the national licensing examinations accurately reflect the importance of the tasks performed by professional geologists. Because you are one of a select group of professionals chosen to receive this survey, your response will enhance the validity of this study.

Your response is confidential -- there is no link between your survey and your name. The serial number on the survey is used solely for monitoring returns.

Directions for completing the survey are on the first page of the survey booklet. If you have additional comments or remarks, you may use the enclosed comment sheet.

Please return your completed survey **no later than November 1, 2009** in the postage-paid envelope provided.

The results of this study will be provided to the ASBOG® state Member Boards and will be made available to academic institutions for assessment of their programs.

Thank you for your assistance in making this important task analysis possible.

Sincerely,

Lisa E. Hosey

LISA E. HOSEY
President

Enclosures

ASBOG[®] TAS 2010 – Letter to Academia

October 15, 2009

(Name and Address)

RE: National Geological Task Analysis Survey

Dear Professor:

The National Association of State Boards of Geology (ASBOG[®]) is conducting a national survey of university faculty and licensed geologists to update the ASBOG[®] national licensure examinations. To improve the validity of the survey results, ASBOG[®] needs your opinion on the relative importance of the tasks that geologists perform in the public practice of geology. The results of this study will be provided to the ASBOG[®] state Member Boards and will be made available to academic institutions for assessment of their programs.

Your response to this study is confidential -- there is no link between your survey and your name or academic institution. The serial number on the survey is used solely for monitoring returns.

Directions for completing the survey are given on the first page of the survey booklet. If you have additional comments or remarks, you may use the enclosed comment sheet.

Please return your completed survey **no later than November 1, 2009** in the enclosed postage-paid envelope.

Thank you for your assistance in making this survey meaningful.

Sincerely,

Lisa E. Hosey

LISA E. HOSEY
President

Enclosures

ASBOG® TAS 2010 – Follow-up Postcard

Dear Fellow Geologist:

A nationwide Geological Task Analysis Survey was mailed to you approximately two weeks ago. If you have already completed the survey and returned it, thank you. If you have not yet responded, please do as quickly as possible.

Your response will make it possible to update the national licensure examinations that are representative of the public practice of geology. Thanks for your help; it is of critical importance!

Sincerely,

Lisa E. Hosey

Lisa E. Hosey

ASBOG® President

ASBOG® Office: 803-739-5676

NATIONAL ASSOCIATION OF STATE BOARDS OF GEOLOGY (ASBOG®)

POST OFFICE BOX 11591

COLUMBIA, SOUTH CAROLINA 29211-1591

ASBOG® TAS 2010 – E-mail to Practicing Geoscientists (Canada)

Dear P.Geo, P.Geol, P.Geoph.

2010 Professional Geoscience – Task Analysis Survey

The Canadian Council of Professional Geoscientists (CCPG) and your Provincial/Territorial Professional Association are asking for your assistance in an important international survey and analysis of tasks performed by geoscientists in the practice of their profession. This survey is being done through CCPG participation as part of a larger survey being undertaken by the National Association of State Board of Geology (“ASBOG®”) in the United States. This is the third time Canada has participated as part of the ASBOG® survey; previous surveys were 5 and 10 years ago.

CCPG uses the survey results to assist the Canadian Geoscience Standards Board in its advisory work on geoscience knowledge and experience requirement for registration and to determine differences in the nature of geoscience practice across the country. ASBOG® uses it to ensure that the questions in its national licensing exam are representative of the tasks performed by geoscientists practicing in the United States.

Your response is very important because you are part of a limited group of individuals chosen to participate. A high rate of return will ensure validity of the task analysis. You are asked to respond to the survey by December 31, 2009. The final deadline for accepting responses is January 15, 2010.

If you are registered with two or more associations, you may be contacted to complete the survey by more than one association. Under the security system on the survey, you will not be able to complete this survey more than once. If you are the recipient of additional requests to complete the survey, please send a brief reply to the sender of the request email explaining that you have already responded.

Thank you for your assistance with this important survey to better understand the practice of professional geoscience in Canada and the United States.

Sincerely,

Oliver Bonham, P.Geo.
CEO
CCPG
www.ccpge.ca

Once you start the survey, it must be completed in one sitting. Approximate completion time is about 30 minutes. To proceed to the survey go to:

http://www.surveymonkey.com/s.aspx?sm=zxzSAx057rmyHCl_2f_2fidogg_3d_3d

Practicing Geologists (USA)

What is your age?

Practicing Geologists (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	21-30 years	11	.4	.4	.4
	31-40 years	370	14.2	14.4	14.8
	41-50 years	799	30.7	31.1	45.9
	51-60 years	950	36.5	37.0	82.9
	61-70 years	296	11.4	11.5	94.4
	More than 70 years	143	5.5	5.6	100.0
	Total	2569	98.7	100.0	
Missing	System	35	1.3		
Total		2604	100.0		

What is your highest degree in the geological sciences?

Practicing Geologists (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No Degree	10	.4	.4	.4
	AA or AS	1	.0	.0	.4
	BA or BS	1111	42.7	43.3	43.7
	BA or BSc	47	1.8	1.8	45.5
	MA or MS	1164	44.7	45.3	90.9
	PhD or DSc	234	9.0	9.1	100.0
	Total	2567	98.6	100.0	
Missing	System	37	1.4		
Total		2604	100.0		

How many years have you practiced geology?

Practicing Geologists (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 - 5 years	28	1.1	1.1	1.1
	6 - 10 years	175	6.7	6.8	7.9
	11 - 20 years	618	23.7	24.0	31.9
	21 - 30 years	1072	41.2	41.7	73.6
	31 - 40 years	483	18.5	18.8	92.3
	More than 40 years	197	7.6	7.7	100.0
	Total	2573	98.8	100.0	
Missing	System	31	1.2		
Total		2604	100.0		

What is your primary employment?

Practicing Geologists (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Academia	98	3.8	3.9	3.9
	Consulting	1407	54.0	55.3	59.2
	Government	632	24.3	24.8	84.0
	Industry	237	9.1	9.3	93.3
	Retired	122	4.7	4.8	98.1
	Other	48	1.8	1.9	100.0
	Total	2544	97.7	100.0	
Missing	System	60	2.3		
Total		2604	100.0		

How many hours per week, on the average, do you spend performing geological/geoscience activities?

Practicing Geologists (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 10 hours	451	17.3	17.6	17.6
	10 - 20 hours	477	18.3	18.6	36.3
	21 - 30 hours	405	15.6	15.8	52.1
	31 - 40 hours	729	28.0	28.5	80.6
	More than 40 hours	496	19.0	19.4	100.0
	Total	2558	98.2	100.0	
Missing	System	46	1.8		
Total		2604	100.0		

What is your primary area of practice?

Practicing Geologists (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Economic Geology	88	3.4	3.5	3.5
	Engineering Geology	274	10.5	10.8	14.3
	Environmental Geology	983	37.7	38.7	53.0
	Field Geology	36	1.4	1.4	54.4
	Forensic Geology	2	.1	.1	54.4
	General Geology	41	1.6	1.6	56.1
	Geochemistry	12	.5	.5	56.5
	Geomorphology	27	1.0	1.1	57.6
	Geophysics	21	.8	.8	58.4
	Hydrogeology	652	25.0	25.7	84.1
	Mineralogy/Petrology	8	.3	.3	84.4
	Mining Geology	86	3.3	3.4	87.8
	Paleontology	6	.2	.2	88.0
	Petroleum Geology	189	7.3	7.4	95.5
	Sedimentology/Stratigraphy	26	1.0	1.0	96.5
	Structural Geology	11	.4	.4	96.9
	Other	78	3.0	3.1	100.0
	Total	2540	97.5	100.0	
Missing	System	64	2.5		
Total		2604	100.0		

How long have you been licensed/registered as a geologist/geoscientist by any government entity?

Practicing Geologists (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Licensed/Registered	4	.2	.2	.2
	Less than 1 year	26	1.0	1.0	1.2
	1 - 5 years	311	11.9	12.1	13.3
	6 - 10 years	615	23.6	24.0	37.2
	11 - 20 years	1128	43.3	43.9	81.2
	21 - 30 years	388	14.9	15.1	96.3
	31 - 40 years	75	2.9	2.9	99.2
	More than 40 years	20	.8	.8	100.0
	Total	2567	98.6	100.0	
Missing	System	37	1.4		
Total		2604	100.0		

If licensed/registered as a geologist/geoscientist, were you licensed by examination by any government entity?

Practicing Geologists (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	1210	46.5	47.6	47.6
	No	1330	51.1	52.4	100.0
	Total	2540	97.5	100.0	
Missing	System	64	2.5		
Total		2604	100.0		

Which of the following additional licenses/registrations or certifications granted by any government entity do you hold?

Engineering Geologist

Practicing Geologists (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	141	5.4	100.0	100.0
Missing	System	2463	94.6		
Total		2604	100.0		

Hydrogeologist

Practicing Geologists (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	205	7.9	100.0	100.0
Missing	System	2399	92.1		
Total		2604	100.0		

Hydrologist

Practicing Geologists (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	29	1.1	100.0	100.0
Missing	System	2575	98.9		
Total		2604	100.0		

Geophysicist

Practicing Geologists (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	22	.8	100.0	100.0
Missing	System	2582	99.2		
Total		2604	100.0		

Soil Scientist

Practicing Geologists (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	29	1.1	100.0	100.0
Missing	System	2575	98.9		
Total		2604	100.0		

Euro Geologist

Practicing Geologists (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	5	.2	100.0	100.0
Missing	System	2599	99.8		
Total		2604	100.0		

Professional Engineer

Practicing Geologists (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	139	5.3	100.0	100.0
Missing	System	2465	94.7		
Total		2604	100.0		

OTHER

Practicing Geologists (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	369	14.2	100.0	100.0
Missing	System	2235	85.8		
Total		2604	100.0		

From which of the following professional organizations have you received certification?

AAPG

Practicing Geologists (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	205	7.9	100.0	100.0
Missing	System	2399	92.1		
Total		2604	100.0		

AIH

Practicing Geologists (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	38	1.5	100.0	100.0
Missing	System	2566	98.5		
Total		2604	100.0		

AIPG

Practicing Geologists (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	413	15.9	100.0	100.0
Missing	System	2191	84.1		
Total		2604	100.0		

AGWSE

Practicing Geologists (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	59	2.3	100.0	100.0
Missing	System	2545	97.7		
Total		2604	100.0		

SIPES

Practicing Geologists (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	20	.8	100.0	100.0
Missing	System	2584	99.2		
Total		2604	100.0		

OTHER

Practicing Geologists (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	419	16.1	100.0	100.0
Missing	System	2185	83.9		
Total		2604	100.0		

In which ONE jurisdiction do you conduct most of your geological/geoscience activities?

Practicing Geologists (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Alabama	95	3.6	3.7	3.7
	Alaska	3	.1	.1	3.8
	Arizona	73	2.8	2.9	6.7
	Arkansas	73	2.8	2.9	9.6
	California	99	3.8	3.9	13.4
	Colorado	13	.5	.5	14.0
	Connecticut	3	.1	.1	14.1
	Delaware	11	.4	.4	14.5
	Florida	77	3.0	3.0	17.5
	Georgia	73	2.8	2.9	20.4
	Hawaii	1	.0	.0	20.4
	Idaho	84	3.2	3.3	23.7
	Illinois	89	3.4	3.5	27.2
	Indiana	88	3.4	3.4	30.7
	Iowa	13	.5	.5	31.2
	Kansas	116	4.5	4.5	35.7
	Kentucky	67	2.6	2.6	38.3
	Louisiana	12	.5	.5	38.8
	Maine	69	2.6	2.7	41.5
	Maryland	6	.2	.2	41.7
	Massachusetts	26	1.0	1.0	42.8
	Michigan	4	.2	.2	42.9
	Minnesota	105	4.0	4.1	47.0
	Mississippi	67	2.6	2.6	49.7
	Missouri	84	3.2	3.3	53.0
	Montana	6	.2	.2	53.2
	Nebraska	70	2.7	2.7	55.9
	Nevada	11	.4	.4	56.4
	New Hampshire	74	2.8	2.9	59.3
	New Jersey	20	.8	.8	60.1
	New Mexico	1	.0	.0	60.1
	New York	11	.4	.4	60.5
	North Carolina	105	4.0	4.1	64.6
	North Dakota	3	.1	.1	64.8
	Ohio	7	.3	.3	65.0
	Oklahoma	22	.8	.9	65.9
	Oregon	85	3.3	3.3	69.2
	Pennsylvania	119	4.6	4.7	73.9
	Puerto Rico	21	.8	.8	74.7
	Rhode Island	2	.1	.1	74.8
	South Carolina	87	3.3	3.4	78.2
	South Dakota	6	.2	.2	78.4
	Tennessee	48	1.8	1.9	80.3
	Texas	61	2.3	2.4	82.7

	Utah	69	2.6	2.7	85.4
	Vermont	3	.1	.1	85.5
	Virginia	83	3.2	3.3	88.8
	Washington	80	3.1	3.1	91.9
	West Virginia	8	.3	.3	92.2
	Wisconsin	63	2.4	2.5	94.7
	Wyoming	104	4.0	4.1	98.8
	Dist of Columbia	2	.1	.1	98.9
	Alberta	1	.0	.0	98.9
	Ontario	2	.1	.1	99.0
	Yukon	1	.0	.0	99.0
	Mexico	7	.3	.3	99.3
	Outside North America	18	.7	.7	100.0
	Total	2551	98.0	100.0	
Missing	System	53	2.0		
Total		2604	100.0		

Serial Number - State of Licensure for TAS 2010

Practicing Geologists (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Arizona	80	3.1	3.1	3.1
	South Carolina	97	3.7	3.7	6.8
	Wyoming	105	4.0	4.0	10.8
	Kentucky	69	2.6	2.6	13.5
	North Carolina	106	4.1	4.1	17.5
	Georgia	79	3.0	3.0	20.6
	Oregon	97	3.7	3.7	24.3
	Wisconsin	94	3.6	3.6	27.9
	Missouri	100	3.8	3.8	31.8
	Pennsylvania	135	5.2	5.2	36.9
	Arkansas	96	3.7	3.7	40.6
	Alabama	102	3.9	3.9	44.5
	Virginia	94	3.6	3.6	48.2
	Illinois	82	3.1	3.1	51.3
	Minnesota	109	4.2	4.2	55.5
	Florida	74	2.8	2.8	58.3
	Maine	105	4.0	4.0	62.4
	Delaware	13	.5	.5	62.9
	California	83	3.2	3.2	66.1
	Mississippi	83	3.2	3.2	69.2
	Indiana	93	3.6	3.6	72.8
	Nebraska	109	4.2	4.2	77.0
	Puerto Rico	29	1.1	1.1	78.1
	Kansas	108	4.1	4.1	82.3
	New Hampshire	88	3.4	3.4	85.6
	Idaho	101	3.9	3.9	89.5
	Tennessee	52	2.0	2.0	91.5
	Texas	55	2.1	2.1	93.6
	Utah	79	3.0	3.0	96.7
	Washington	85	3.3	3.3	100.0
	Total	2602	100.0	100.0	

Approximately how long did you take to complete this survey?

Practicing Geologists (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 15 minutes	843	32.4	32.7	32.7
	16 - 30 minutes	1409	54.1	54.7	87.5
	31 - 45 minutes	263	10.1	10.2	97.7
	46 - 60 minutes	51	2.0	2.0	99.7
	More than 60 minutes	9	.3	.3	100.0
	Total	2575	98.9	100.0	
Missing	System	29	1.1		
Total		2604	100.0		

Academia (USA)

What is your age?

Academia (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	31-40 years	16	6.7	6.8	6.8
	41-50 years	54	22.6	23.0	29.8
	51-60 years	95	39.7	40.4	70.2
	61-70 years	58	24.3	24.7	94.9
	More than 70 years	12	5.0	5.1	100.0
	Total	235	98.3	100.0	
Missing	System	4	1.7		
Total		239	100.0		

What is your highest degree in the geological sciences?

Academia (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	BA or BS	1	.4	.4	.4
	MA or MS	5	2.1	2.1	2.6
	PhD or DSc	228	95.4	97.4	100.0
	Total	234	97.9	100.0	
Missing	System	5	2.1		
Total		239	100.0		

How many years have you practiced geology?

Academia (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 1 year	2	.8	.8	.8
	1 - 5 years	5	2.1	2.1	3.0
	6 - 10 years	10	4.2	4.2	7.2
	11 - 20 years	38	15.9	16.1	23.3
	21 - 30 years	77	32.2	32.6	55.9
	31 - 40 years	79	33.1	33.5	89.4
	More than 40 years	25	10.5	10.6	100.0
	Total	236	98.7	100.0	
Missing	System	3	1.3		
Total		239	100.0		

What is your primary employment?

Academia (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Academia	229	95.8	97.9	97.9
	Consulting	1	.4	.4	98.3
	Retired	3	1.3	1.3	99.6
	Other	1	.4	.4	100.0
	Total	234	97.9	100.0	
Missing	System	5	2.1		
Total		239	100.0		

How many hours per week, on the average, do you spend performing geological/geoscience activities?

Academia (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 10 hours	21	8.8	9.0	9.0
	10 - 20 hours	14	5.9	6.0	15.0
	21 - 30 hours	20	8.4	8.5	23.5
	31 - 40 hours	41	17.2	17.5	41.0
	More than 40 hours	138	57.7	59.0	100.0
	Total	234	97.9	100.0	
Missing	System	5	2.1		
Total		239	100.0		

What is your primary area of practice?

Academia (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Economic Geology	4	1.7	1.7	1.7
	Engineering Geology	2	.8	.9	2.6
	Environmental Geology	18	7.5	7.8	10.3
	Field Geology	5	2.1	2.2	12.5
	General Geology	10	4.2	4.3	16.8
	Geochemistry	20	8.4	8.6	25.4
	Geomorphology	17	7.1	7.3	32.8
	Geophysics	15	6.3	6.5	39.2
	Hydrogeology	26	10.9	11.2	50.4
	Mineralogy/Petrology	31	13.0	13.4	63.8
	Paleontology	18	7.5	7.8	71.6
	Petroleum Geology	1	.4	.4	72.0
	Sedimentology/Stratigraphy	35	14.6	15.1	87.1
	Structural Geology	16	6.7	6.9	94.0
	Other	14	5.9	6.0	100.0
	Total	232	97.1	100.0	
Missing	System	7	2.9		
Total		239	100.0		

How long have you been licensed/registered as a geologist/geoscientist by any government entity?

Academia (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Licensed/Registered	170	71.1	72.3	72.3
	Less than 1 year	1	.4	.4	72.8
	1 - 5 years	5	2.1	2.1	74.9
	6 - 10 years	12	5.0	5.1	80.0
	11 - 20 years	24	10.0	10.2	90.2
	21 - 30 years	17	7.1	7.2	97.4
	31 - 40 years	6	2.5	2.6	100.0
	Total	235	98.3	100.0	
Missing	System	4	1.7		
Total		239	100.0		

If licensed/registered as a geologist/geoscientist, were you licensed by examination by any government entity?

Academia (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	18	7.5	27.3	27.3
	No	48	20.1	72.7	100.0
	Total	66	27.6	100.0	
Missing	System	173	72.4		
Total		239	100.0		

Which of the following additional licenses/registrations or certifications granted by any government entity do you hold?

Engineering Geologist

Academia (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	5	2.1	100.0	100.0
Missing	System	234	97.9		
Total		239	100.0		

Hydrogeologist

Academia (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	3	1.3	100.0	100.0
Missing	System	236	98.7		
Total		239	100.0		

Hydrologist

Academia (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	4	1.7	100.0	100.0
Missing	System	235	98.3		
Total		239	100.0		

Geophysicist

Academia (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	1	.4	100.0	100.0
Missing	System	238	99.6		
Total		239	100.0		

Soil Scientist

Academia (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	4	1.7	100.0	100.0
Missing	System	235	98.3		
Total		239	100.0		

Euro Geologist

Academia (USA)		Frequency	Percent
Missing	System	239	100.0

Professional Engineer

Academia (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	4	1.7	100.0	100.0
Missing	System	235	98.3		
Total		239	100.0		

OTHER

Academia (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	11	4.6	100.0	100.0
Missing	System	228	95.4		
Total		239	100.0		

From which of the following professional organizations have you received certification?

AAPG

Academia (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	10	4.2	100.0	100.0
Missing	System	229	95.8		
Total		239	100.0		

AIH

Academia (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	2	.8	100.0	100.0
Missing	System	237	99.2		
Total		239	100.0		

AIPG

Academia (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	14	5.9	100.0	100.0
Missing	System	225	94.1		
Total		239	100.0		

AGWSE

Academia (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	1	.4	100.0	100.0
Missing	System	238	99.6		
Total		239	100.0		

SIPES

Academia (USA)		Frequency	Percent
Missing	System	239	100.0

OTHER

Academia (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	29	12.1	100.0	100.0
Missing	System	210	87.9		
Total		239	100.0		

In which ONE jurisdiction do you conduct most of your geological/geoscience activities?

Academia (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Alabama	4	1.7	1.7	1.7
	Alaska	4	1.7	1.7	3.4
	Arizona	4	1.7	1.7	5.2
	Arkansas	1	.4	.4	5.6
	California	16	6.7	6.9	12.5
	Colorado	7	2.9	3.0	15.5
	Connecticut	2	.8	.9	16.4
	Delaware	2	.8	.9	17.2
	Florida	8	3.3	3.4	20.7
	Georgia	4	1.7	1.7	22.4
	Idaho	4	1.7	1.7	24.1
	Illinois	5	2.1	2.2	26.3
	Indiana	7	2.9	3.0	29.3
	Iowa	1	.4	.4	29.7
	Kansas	4	1.7	1.7	31.5
	Louisiana	4	1.7	1.7	33.2
	Maine	4	1.7	1.7	34.9
	Maryland	1	.4	.4	35.3
	Massachusetts	4	1.7	1.7	37.1
	Michigan	6	2.5	2.6	39.7
	Minnesota	3	1.3	1.3	40.9
	Missouri	1	.4	.4	41.4
	Montana	5	2.1	2.2	43.5
	Nebraska	3	1.3	1.3	44.8
	Nevada	1	.4	.4	45.3
	New Hampshire	1	.4	.4	45.7
	New Jersey	1	.4	.4	46.1
	New Mexico	3	1.3	1.3	47.4
	New York	11	4.6	4.7	52.2
	North Carolina	8	3.3	3.4	55.6
	North Dakota	1	.4	.4	56.0
	Ohio	11	4.6	4.7	60.8
	Oklahoma	2	.8	.9	61.6
	Oregon	4	1.7	1.7	63.4
	Pennsylvania	11	4.6	4.7	68.1
	Puerto Rico	2	.8	.9	69.0
	Rhode Island	1	.4	.4	69.4
	South Carolina	5	2.1	2.2	71.6
	South Dakota	3	1.3	1.3	72.8
	Tennessee	4	1.7	1.7	74.6
	Texas	9	3.8	3.9	78.4
	Utah	2	.8	.9	79.3
	Vermont	1	.4	.4	79.7
	Virginia	9	3.8	3.9	83.6

	Washington	8	3.3	3.4	87.1
	West Virginia	3	1.3	1.3	88.4
	Wisconsin	12	5.0	5.2	93.5
	Wyoming	1	.4	.4	94.0
	Nova Scotia	1	.4	.4	94.4
	Mexico	1	.4	.4	94.8
	Outside North America	12	5.0	5.2	100.0
	Total	232	97.1	100.0	
Missing	System	7	2.9		
Total		239	100.0		

Approximately how long did you take to complete this survey?

Academia (USA)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 15 minutes	107	44.8	45.9	45.9
	16 - 30 minutes	114	47.7	48.9	94.8
	31 - 45 minutes	9	3.8	3.9	98.7
	46 - 60 minutes	3	1.3	1.3	100.0
	Total	233	97.5	100.0	
Missing	System	6	2.5		
Total		239	100.0		

Practicing Geoscientists (Canada)

Is English your primary language?

Practicing Geoscientists (Canada)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	410	79.6	86.3	86.3
	No	65	12.6	13.7	100.0
	Total	475	92.2	100.0	
Missing	System	40	7.8		
Total		515	100.0		

What is your age?

Practicing Geoscientists (Canada)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	21-30 years	25	4.9	5.2	5.2
	31-40 years	86	16.7	18.0	23.3
	41-50 years	139	27.0	29.1	52.4
	51-60 years	169	32.8	35.4	87.8
	61-70 years	51	9.9	10.7	98.5
	More than 70 years	7	1.4	1.5	100.0
	Total	477	92.6	100.0	
Missing	System	38	7.4		
Total		515	100.0		

What is your highest degree in the geological sciences?

Practicing Geoscientists (Canada)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No Degree	8	1.6	1.7	1.7
	AA or AS	1	.2	.2	1.9
	BA or BS	82	15.9	17.2	19.1
	BA or BSc	138	26.8	28.9	48.0
	MA or MS	173	33.6	36.3	84.3
	PhD or DSc	75	14.6	15.7	100.0
	Total	477	92.6	100.0	
Missing	System	38	7.4		
Total		515	100.0		

How many years have you practiced geology?

Practicing Geoscientists (Canada)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 1 year	3	.6	.6	.6
	1 - 5 years	22	4.3	4.6	5.3
	6 - 10 years	56	10.9	11.8	17.0
	11 - 20 years	106	20.6	22.3	39.3
	21 - 30 years	155	30.1	32.6	71.8
	31 - 40 years	111	21.6	23.3	95.2
	More than 40 years	23	4.5	4.8	100.0
	Total	476	92.4	100.0	
Missing	System	39	7.6		
Total		515	100.0		

What is your primary employment?

Practicing Geoscientists (Canada)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Academia	13	2.5	2.8	2.8
	Consulting	173	33.6	37.4	40.2
	Government	61	11.8	13.2	53.3
	Industry	210	40.8	45.4	98.7
	Retired	6	1.2	1.3	100.0
	Total	463	89.9	100.0	
Missing	System	52	10.1		
Total		515	100.0		

How many hours per week, on the average, do you spend performing geological/geoscience activities?

Practicing Geoscientists (Canada)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 10 hours	35	6.8	7.4	7.4
	10 - 20 hours	55	10.7	11.6	18.9
	21 - 30 hours	65	12.6	13.7	32.6
	31 - 40 hours	153	29.7	32.2	64.8
	More than 40 hours	167	32.4	35.2	100.0
	Total	475	92.2	100.0	
Missing	System	40	7.8		
Total		515	100.0		

What is your primary area of practice?

Practicing Geoscientists (Canada)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Recent Graduate with no primary area of practice	1	.2	.2	.2
	Economic Geology	127	24.7	28.0	28.2
	Engineering Geology	13	2.5	2.9	31.1
	Environmental Geology	55	10.7	12.1	43.2
	Field Geology	30	5.8	6.6	49.8
	General Geology	18	3.5	4.0	53.7
	Geochemistry	13	2.5	2.9	56.6
	Geomorphology	6	1.2	1.3	57.9
	Geophysics	37	7.2	8.1	66.1
	Hydrogeology	39	7.6	8.6	74.7
	Mineralogy/Petrology	4	.8	.9	75.6
	Mining Geology	45	8.7	9.9	85.5
	Paleontology	1	.2	.2	85.7
	Petroleum Geology	56	10.9	12.3	98.0
	Sedimentology/Stratigraphy	3	.6	.7	98.7
	Structural Geology	6	1.2	1.3	100.0
	Total	454	88.2	100.0	
Missing	System	61	11.8		
Total		515	100.0		

How long have you been licensed/registered as a geologist/geoscientist by any government entity?

Practicing Geoscientists (Canada)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Licensed/Registered	2	.4	.4	.4
	Less than 1 year	28	5.4	5.9	6.3
	1 - 5 years	84	16.3	17.6	23.9
	6 - 10 years	145	28.2	30.5	54.4
	11 - 20 years	143	27.8	30.0	84.5
	21 - 30 years	49	9.5	10.3	94.7
	31 - 40 years	20	3.9	4.2	98.9
	More than 40 years	5	1.0	1.1	100.0
	Total	476	92.4	100.0	
Missing	System	39	7.6		
Total		515	100.0		

If licensed/registered as a geologist/geoscientist, were you licensed by examination by any government entity?

Practicing Geoscientists (Canada)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	321	62.3	69.2	69.2
	No	143	27.8	30.8	100.0
	Total	464	90.1	100.0	
Missing	System	51	9.9		
Total		515	100.0		

Which of the following additional licenses/registrations or certifications granted by any government entity do you hold?

Engineering Geologist

Practicing Geoscientists (Canada)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	6	1.2	100.0	100.0
Missing	System	509	98.8		
Total		515	100.0		

Hydrogeologist

Practicing Geoscientists (Canada)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	8	1.6	100.0	100.0
Missing	System	507	98.4		
Total		515	100.0		

Geophysicist

Practicing Geoscientists (Canada)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	29	5.6	100.0	100.0
Missing	System	486	94.4		
Total		515	100.0		

Soil Scientist

Practicing Geoscientists (Canada)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	1	.2	100.0	100.0
Missing	System	514	99.8		
Total		515	100.0		

Euro Geologist

Practicing Geoscientists (Canada)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	1	.2	100.0	100.0
Missing	System	514	99.8		
Total		515	100.0		

Professional Engineer

Practicing Geoscientists (Canada)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	25	4.9	100.0	100.0
Missing	System	490	95.1		
Total		515	100.0		

From which of the following professional organizations have you received certification?

AAPG

Practicing Geoscientists (Canada)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	17	3.3	100.0	100.0
Missing	System	498	96.7		
Total		515	100.0		

AIH

Practicing Geoscientists (Canada)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	2	.4	100.0	100.0
Missing	System	513	99.6		
Total		515	100.0		

AIPG

Practicing Geoscientists (Canada)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	3	.6	100.0	100.0
Missing	System	512	99.4		
Total		515	100.0		

AGWSE

Practicing Geoscientists (Canada)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	1	.2	100.0	100.0
Missing	System	514	99.8		
Total		515	100.0		

SIPES

Practicing Geoscientists (Canada)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	1	.2	100.0	100.0
Missing	System	514	99.8		
Total		515	100.0		

In which ONE jurisdiction do you conduct most of your geological/geoscience activities?

Practicing Geoscientists (Canada)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Alaska	2	.4	.5	.5
	California	2	.4	.5	.9
	Colorado	1	.2	.2	1.2
	Indiana	1	.2	.2	1.4
	Nevada	1	.2	.2	1.6
	Wyoming	1	.2	.2	1.9
	Alberta	64	12.4	14.8	16.7
	British Columbia	27	5.2	6.3	23.0
	Manitoba	19	3.7	4.4	27.4
	New Brunswick	30	5.8	7.0	34.3
	Newfoundland	56	10.9	13.0	47.3
	NW Territories	30	5.8	7.0	54.3
	Nova Scotia	17	3.3	3.9	58.2
	Ontario	70	13.6	16.2	74.5
	Prince Edward Island	1	.2	.2	74.7
	Quebec	47	9.1	10.9	85.6
	Saskatchewan	38	7.4	8.8	94.4
	Yukon	3	.6	.7	95.1
	Mexico	2	.4	.5	95.6
	Outside North America	19	3.7	4.4	100.0
	Total	431	83.7	100.0	
Missing	System	84	16.3		
Total		515	100.0		

Approximately how long did you take to complete this survey?

Practicing Geoscientists (Canada)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 15 minutes	141	27.4	29.6	29.6
	16 - 30 minutes	288	55.9	60.5	90.1
	31 - 45 minutes	42	8.2	8.8	98.9
	46 - 60 minutes	5	1.0	1.1	100.0
	Total	476	92.4	100.0	
Missing	System	39	7.6		
Total		515	100.0		

Are you a geophysicist?

Practicing Geoscientists (Canada)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	48	9.3	10.0	10.0
	No	432	83.9	90.0	100.0
	Total	480	93.2	100.0	
Missing	System	35	6.8		
Total		515	100.0		

In which sector do you work as a geophysicist? MINING

Practicing Geoscientists (Canada)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	17	3.3	100.0	100.0
Missing	System	498	96.7		
Total		515	100.0		

In which sector do you work as a geophysicist? PETROLEUM

Practicing Geoscientists (Canada)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	26	5.0	100.0	100.0
Missing	System	489	95.0		
Total		515	100.0		

In which sector do you work as a geophysicist? ENVIRONMENT

Practicing Geoscientists (Canada)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	10	1.9	100.0	100.0
Missing	System	505	98.1		
Total		515	100.0		

Table 1 - ASBOG® Task Analysis 2010 - Task Statements
Descriptive Statistics for Importance Rating Scale
(USA Practicing Geologists)

No.	Task Statements	Importance Rating Scale		
		N	Mean	Std. Dev.
1	Plan and conduct geological investigations considering human health, safety, the environment, regulations, and Quality Assurance/Quality Control (QA/QC).	2517	2.67	0.64
2	Collect, compile, and interpret historic information to plan geological investigations.	2512	2.41	0.72
3	Interpret and analyze available geological and geophysical data, maps, sections, and reports.	2516	2.69	0.54
4	Determine scales, distances, and elevations from imagery, surveys, maps, and GIS.	2507	2.32	0.79
5	Prepare, analyze, and interpret logs, cross-sections, maps, and other graphics derived from field investigations and GIS applications.	2507	2.68	0.55
6	Plan and conduct mineralogic, petrologic, and geochemical investigations, including the use of modeling and geophysics.	2506	1.55	0.88
7	Identify minerals and rocks and their characteristics.	2506	1.83	0.90
8	Identify and interpret rock and mineral sequences, associations, and genesis.	2502	1.50	0.94
9	Evaluate geochemical and isotopic data, and construct geochemical models related to rocks and minerals.	2502	1.20	0.87
10	Determine type, degree, and effects of rock and mineral alteration.	2504	1.26	0.90
11	Plan and conduct sedimentologic, stratigraphic, or paleontologic investigations, including the use of modeling and geophysics.	2510	1.64	0.90
12	Select and apply appropriate stratigraphic nomenclature and establish correlations.	2511	1.72	0.92
13	Identify and interpret sedimentary processes and structures, depositional environments, and sediment provenance.	2514	1.82	0.89
14	Identify and interpret sediment or rock sequences, positions, and ages.	2510	1.73	0.93
15	Identify and interpret fossils and fossil assemblages for age or paleoenvironmental interpretations.	2510	0.98	0.88
16	Plan and conduct geomorphic investigations, including the use of modeling and geophysics.	2492	1.53	0.92
17	Identify, classify, and interpret landforms, surficial materials, and processes.	2492	1.93	0.88
18	Determine absolute or relative age relationships of landforms, sediments, and soils.	2489	1.40	0.92
19	Evaluate geomorphic processes and development of landforms, sediments, and soils, including watershed functions.	2486	1.89	0.88
20	Interpret geomorphic conditions and processes based on remote sensing and GIS.	2490	1.47	0.90
21	Plan and conduct structural, tectonic, or seismologic investigations, including the use of modeling and geophysics.	2494	1.58	1.03
22	Identify and define structural features and relations, including constructing and interpreting structural projections and statistical analyses.	2492	1.54	0.98
23	Interpret deformational history through structural and tectonic analyses.	2493	1.28	0.98
24	Develop and apply tectonic models to identify geologic processes and history.	2491	1.15	0.95
25	Evaluate earthquake mechanisms, paleoseismic history, and hazards.	2490	1.58	1.11
26	Plan and conduct hydrogeological, geochemical, and environmental investigations, including the use of modeling, geophysics, and isotopic and tracer studies.	2497	2.48	0.78
27	Define and characterize hydraulic properties of saturated and vadose zone flow systems.	2498	2.38	0.81
28	Design groundwater monitoring, observation, extraction, production, or injection wells.	2496	2.53	0.75
29	Evaluate water resources, assess aquifer yield, and determine sustainability.	2496	2.33	0.83
30	Characterize water quality and assess chemical fate and transport.	2495	2.45	0.80
31	Manage, develop, protect, or remediate, surface water or groundwater resources.	2494	2.58	0.75
32	Plan and conduct environmental and engineering geological investigations, including the use of modeling and geophysics.	2487	2.19	0.87
33	Identify and evaluate engineering and physical properties of earth materials.	2490	2.08	0.88
34	Provide recommendations for engineering design, land use decisions, and watershed management.	2485	2.13	0.91
35	Identify, map, and evaluate geologic, geomorphic, and seismic hazards.	2488	2.09	0.97
36	Interpret land use and landforms using imagery, maps, records, GIS, and geological site characteristics.	2488	2.02	0.86
37	Develop programs for hazard mitigation, and land and watershed restoration.	2488	1.98	0.96
38	Plan and conduct mineral or energy resource exploration, evaluation, and environmental programs, including the use of modeling, geophysics, and geochemistry.	2491	1.72	1.03
39	Compile, assess, and evaluate the data necessary to explore for mineral and energy resources.	2491	1.62	1.08
40	Estimate the distribution of resources based on surface and subsurface data including imagery and GIS applications.	2490	1.55	1.04
41	Interpret data for economic evaluations, resource assessments, and probability of success.	2491	1.49	1.06
42	Determine quantity and quality of resources and reserves from laboratory, surface, and subsurface data.	2488	1.59	1.07
43	Perform geological evaluations for design, abandonment, closure, and reclamation and restoration of energy development or mineral extraction operations.	2483	1.86	1.05

Table 2 - ASBOG® Task Analysis 2010 - Task Statements
Descriptive Statistics for Importance Rating Scale
Sorted in Descending Order
(USA Practicing Geologists)

No.	Task Statements	Importance Rating Scale		
		N	Mean	Std. Dev.
3	Interpret and analyze available geological and geophysical data, maps, sections, and reports.	2516	2.69	0.54
5	Prepare, analyze, and interpret logs, cross-sections, maps, and other graphics derived from field investigations and GIS applications.	2507	2.68	0.55
1	Plan and conduct geological investigations considering human health, safety, the environment, regulations, and Quality Assurance/Quality Control (QA/QC).	2517	2.67	0.64
31	Manage, develop, protect, or remediate, surface water or groundwater resources.	2494	2.58	0.75
28	Design groundwater monitoring, observation, extraction, production, or injection wells.	2496	2.53	0.75
26	Plan and conduct hydrogeological, geochemical, and environmental investigations, including the use of modeling, geophysics, and isotopic and tracer studies.	2497	2.48	0.78
30	Characterize water quality and assess chemical fate and transport.	2495	2.45	0.80
2	Collect, compile, and interpret historic information to plan geological investigations.	2512	2.41	0.72
27	Define and characterize hydraulic properties of saturated and vadose zone flow systems.	2498	2.38	0.81
29	Evaluate water resources, assess aquifer yield, and determine sustainability.	2496	2.33	0.83
4	Determine scales, distances, and elevations from imagery, surveys, maps, and GIS.	2507	2.32	0.79
32	Plan and conduct environmental and engineering geological investigations, including the use of modeling and geophysics.	2487	2.19	0.87
34	Provide recommendations for engineering design, land use decisions, and watershed management.	2485	2.13	0.91
35	Identify, map, and evaluate geologic, geomorphic, and seismic hazards.	2488	2.09	0.97
33	Identify and evaluate engineering and physical properties of earth materials.	2490	2.08	0.88
36	Interpret land use and landforms using imagery, maps, records, GIS, and geological site characteristics.	2488	2.02	0.86
37	Develop programs for hazard mitigation, and land and watershed restoration.	2488	1.98	0.96
17	Identify, classify, and interpret landforms, surficial materials, and processes.	2492	1.93	0.88
19	Evaluate geomorphic processes and development of landforms, sediments, and soils, including watershed functions.	2486	1.89	0.88
43	Perform geological evaluations for design, abandonment, closure, and reclamation and restoration of energy development or mineral extraction operations.	2483	1.86	1.05
7	Identify minerals and rocks and their characteristics.	2506	1.83	0.90
13	Identify and interpret sedimentary processes and structures, depositional environments, and sediment provenance.	2514	1.82	0.89
14	Identify and interpret sediment or rock sequences, positions, and ages.	2510	1.73	0.93
38	Plan and conduct mineral or energy resource exploration, evaluation, and environmental programs, including the use of modeling, geophysics, and geochemistry.	2491	1.72	1.03
12	Select and apply appropriate stratigraphic nomenclature and establish correlations.	2511	1.72	0.92
11	Plan and conduct sedimentologic, stratigraphic, or paleontologic investigations, including the use of modeling and geophysics.	2510	1.64	0.90
39	Compile, assess, and evaluate the data necessary to explore for mineral and energy resources.	2491	1.62	1.08
42	Determine quantity and quality of resources and reserves from laboratory, surface, and subsurface data.	2488	1.59	1.07
21	Plan and conduct structural, tectonic, or seismologic investigations, including the use of modeling and geophysics.	2494	1.58	1.03
25	Evaluate earthquake mechanisms, paleoseismic history, and hazards.	2490	1.58	1.11
40	Estimate the distribution of resources based on surface and subsurface data including imagery and GIS applications.	2490	1.55	1.04
6	Plan and conduct mineralogic, petrologic, and geochemical investigations, including the use of modeling and geophysics.	2506	1.55	0.88
22	Identify and define structural features and relations, including constructing and interpreting structural projections and statistical analyses.	2492	1.54	0.98
16	Plan and conduct geomorphic investigations, including the use of modeling and geophysics.	2492	1.53	0.92
8	Identify and interpret rock and mineral sequences, associations, and genesis.	2502	1.50	0.94
41	Interpret data for economic evaluations, resource assessments, and probability of success.	2491	1.49	1.06
20	Interpret geomorphic conditions and processes based on remote sensing and GIS.	2490	1.47	0.90
18	Determine absolute or relative age relationships of landforms, sediments, and soils.	2489	1.40	0.92
23	Interpret deformational history through structural and tectonic analyses.	2493	1.28	0.98
10	Determine type, degree, and effects of rock and mineral alteration.	2504	1.26	0.90
9	Evaluate geochemical and isotopic data, and construct geochemical models related to rocks and minerals.	2502	1.20	0.87
24	Develop and apply tectonic models to identify geologic processes and history.	2491	1.15	0.95
15	Identify and interpret fossils and fossil assemblages for age or paleoenvironmental interpretations.	2510	0.98	0.88

Table 3 - ASBOG® Task Analysis 2010 - Task Statements
Descriptive Statistics for Importance Rating Scale
(Academia)

No.	Task Statements	Importance Rating Scale		
		N	Mean	Std. Dev.
1	Plan and conduct geological investigations considering human health, safety, the environment, regulations, and Quality Assurance/Quality Control (QA/QC).	216	2.52	0.74
2	Collect, compile, and interpret historic information to plan geological investigations.	217	2.29	0.78
3	Interpret and analyze available geological and geophysical data, maps, sections, and reports.	217	2.83	0.42
4	Determine scales, distances, and elevations from imagery, surveys, maps, and GIS.	217	2.48	0.69
5	Prepare, analyze, and interpret logs, cross-sections, maps, and other graphics derived from field investigations and GIS applications.	215	2.64	0.59
6	Plan and conduct mineralogic, petrologic, and geochemical investigations, including the use of modeling and geophysics.	216	2.08	0.74
7	Identify minerals and rocks and their characteristics.	217	2.46	0.73
8	Identify and interpret rock and mineral sequences, associations, and genesis.	217	2.25	0.75
9	Evaluate geochemical and isotopic data, and construct geochemical models related to rocks and minerals.	217	1.83	0.81
10	Determine type, degree, and effects of rock and mineral alteration.	217	1.89	0.76
11	Plan and conduct sedimentologic, stratigraphic, or paleontologic investigations, including the use of modeling and geophysics.	217	2.22	0.73
12	Select and apply appropriate stratigraphic nomenclature and establish correlations.	217	2.01	0.87
13	Identify and interpret sedimentary processes and structures, depositional environments, and sediment provenance.	217	2.19	0.79
14	Identify and interpret sediment or rock sequences, positions, and ages.	217	2.33	0.77
15	Identify and interpret fossils and fossil assemblages for age or paleoenvironmental interpretations.	217	1.56	0.90
16	Plan and conduct geomorphic investigations, including the use of modeling and geophysics.	215	2.18	0.72
17	Identify, classify, and interpret landforms, surficial materials, and processes.	216	2.36	0.71
18	Determine absolute or relative age relationships of landforms, sediments, and soils.	216	2.01	0.82
19	Evaluate geomorphic processes and development of landforms, sediments, and soils, including watershed functions.	216	2.40	0.73
20	Interpret geomorphic conditions and processes based on remote sensing and GIS.	216	2.04	0.76
21	Plan and conduct structural, tectonic, or seismologic investigations, including the use of modeling and geophysics.	216	2.14	0.79
22	Identify and define structural features and relations, including constructing and interpreting structural projections and statistical analyses.	216	2.19	0.79
23	Interpret deformational history through structural and tectonic analyses.	216	1.95	0.86
24	Develop and apply tectonic models to identify geologic processes and history.	215	1.75	0.88
25	Evaluate earthquake mechanisms, paleoseismic history, and hazards.	216	2.22	0.89
26	Plan and conduct hydrogeological, geochemical, and environmental investigations, including the use of modeling, geophysics, and isotopic and tracer studies.	216	2.47	0.74
27	Define and characterize hydraulic properties of saturated and vadose zone flow systems.	216	2.27	0.79
28	Design groundwater monitoring, observation, extraction, production, or injection wells.	215	2.27	0.81
29	Evaluate water resources, assess aquifer yield, and determine sustainability.	216	2.47	0.72
30	Characterize water quality and assess chemical fate and transport.	216	2.41	0.76
31	Manage, develop, protect, or remediate, surface water or groundwater resources.	215	2.41	0.76
32	Plan and conduct environmental and engineering geological investigations, including the use of modeling and geophysics.	214	2.21	0.78
33	Identify and evaluate engineering and physical properties of earth materials.	214	2.22	0.80
34	Provide recommendations for engineering design, land use decisions, and watershed management.	214	2.23	0.83
35	Identify, map, and evaluate geologic, geomorphic, and seismic hazards.	214	2.54	0.63
36	Interpret land use and landforms using imagery, maps, records, GIS, and geological site characteristics.	214	2.33	0.71
37	Develop programs for hazard mitigation, and land and watershed restoration.	213	2.18	0.85
38	Plan and conduct mineral or energy resource exploration, evaluation, and environmental programs, including the use of modeling, geophysics, and geochemistry.	215	2.09	0.79
39	Compile, assess, and evaluate the data necessary to explore for mineral and energy resources.	214	2.06	0.83
40	Estimate the distribution of resources based on surface and subsurface data including imagery and GIS applications.	215	1.96	0.84
41	Interpret data for economic evaluations, resource assessments, and probability of success.	215	1.83	0.83
42	Determine quantity and quality of resources and reserves from laboratory, surface, and subsurface data.	215	1.87	0.82
43	Perform geological evaluations for design, abandonment, closure, and reclamation and restoration of energy development or mineral extraction operations.	213	2.07	0.88

Table 4 - ASBOG® Task Analysis 2010 - Task Statements
Descriptive Statistics for Importance Rating Scale
Sorted in Descending Order
(Academia)

No.	Task Statements	Importance Rating Scale		
		N	Mean	Std. Dev.
3	Interpret and analyze available geological and geophysical data, maps, sections, and reports.	217	2.83	0.42
5	Prepare, analyze, and interpret logs, cross-sections, maps, and other graphics derived from field investigations and GIS applications.	215	2.64	0.59
35	Identify, map, and evaluate geologic, geomorphic, and seismic hazards.	214	2.54	0.63
1	Plan and conduct geological investigations considering human health, safety, the environment, regulations, and Quality Assurance/Quality Control (QA/QC).	216	2.52	0.74
4	Determine scales, distances, and elevations from imagery, surveys, maps, and GIS.	217	2.48	0.69
29	Evaluate water resources, assess aquifer yield, and determine sustainability.	216	2.47	0.72
26	Plan and conduct hydrogeological, geochemical, and environmental investigations, including the use of modeling, geophysics, and isotopic and tracer studies.	216	2.47	0.74
7	Identify minerals and rocks and their characteristics.	217	2.46	0.73
30	Characterize water quality and assess chemical fate and transport.	216	2.41	0.76
31	Manage, develop, protect, or remediate, surface water or groundwater resources.	215	2.41	0.76
19	Evaluate geomorphic processes and development of landforms, sediments, and soils, including watershed functions.	216	2.40	0.73
17	Identify, classify, and interpret landforms, surficial materials, and processes.	216	2.36	0.71
14	Identify and interpret sediment or rock sequences, positions, and ages.	217	2.33	0.77
36	Interpret land use and landforms using imagery, maps, records, GIS, and geological site characteristics.	214	2.33	0.71
2	Collect, compile, and interpret historic information to plan geological investigations.	217	2.29	0.78
28	Design groundwater monitoring, observation, extraction, production, or injection wells.	215	2.27	0.81
27	Define and characterize hydraulic properties of saturated and vadose zone flow systems.	216	2.27	0.79
8	Identify and interpret rock and mineral sequences, associations, and genesis.	217	2.25	0.75
34	Provide recommendations for engineering design, land use decisions, and watershed management.	214	2.23	0.83
33	Identify and evaluate engineering and physical properties of earth materials.	214	2.22	0.80
25	Evaluate earthquake mechanisms, paleoseismic history, and hazards.	216	2.22	0.89
11	Plan and conduct sedimentologic, stratigraphic, or paleontologic investigations, including the use of modeling and geophysics.	217	2.22	0.73
32	Plan and conduct environmental and engineering geological investigations, including the use of modeling and geophysics.	214	2.21	0.78
13	Identify and interpret sedimentary processes and structures, depositional environments, and sediment provenance.	217	2.19	0.79
22	Identify and define structural features and relations, including constructing and interpreting structural projections and statistical analyses.	216	2.19	0.79
37	Develop programs for hazard mitigation, and land and watershed restoration.	213	2.18	0.85
16	Plan and conduct geomorphic investigations, including the use of modeling and geophysics.	215	2.18	0.72
21	Plan and conduct structural, tectonic, or seismologic investigations, including the use of modeling and geophysics.	216	2.14	0.79
38	Plan and conduct mineral or energy resource exploration, evaluation, and environmental programs, including the use of modeling, geophysics, and geochemistry.	215	2.09	0.79
6	Plan and conduct mineralogic, petrologic, and geochemical investigations, including the use of modeling and geophysics.	216	2.08	0.74
43	Perform geological evaluations for design, abandonment, closure, and reclamation and restoration of energy development or mineral extraction operations.	213	2.07	0.88
39	Compile, assess, and evaluate the data necessary to explore for mineral and energy resources.	214	2.06	0.83
20	Interpret geomorphic conditions and processes based on remote sensing and GIS.	216	2.04	0.76
12	Select and apply appropriate stratigraphic nomenclature and establish correlations.	217	2.01	0.87
18	Determine absolute or relative age relationships of landforms, sediments, and soils.	216	2.01	0.82
40	Estimate the distribution of resources based on surface and subsurface data including imagery and GIS applications.	215	1.96	0.84
23	Interpret deformational history through structural and tectonic analyses.	216	1.95	0.86
10	Determine type, degree, and effects of rock and mineral alteration.	217	1.89	0.76
42	Determine quantity and quality of resources and reserves from laboratory, surface, and subsurface data.	215	1.87	0.82
41	Interpret data for economic evaluations, resource assessments, and probability of success.	215	1.83	0.83
9	Evaluate geochemical and isotopic data, and construct geochemical models related to rocks and minerals.	217	1.83	0.81
24	Develop and apply tectonic models to identify geologic processes and history.	215	1.75	0.88
15	Identify and interpret fossils and fossil assemblages for age or paleoenvironmental interpretations.	217	1.56	0.90

Table 5 - ASBOG® Task Analysis 2010 - Task Statements
Descriptive Statistics for Importance Rating Scale
(Academia - Licensure Status Analyses)

No.	Task Statements	Original Sample - Academia			Licensed - Academia			Not Licensed - Academia			All Academia		
		N	Mean	Std. Dev.	N	Mean	Std. Dev.	N	Mean	Std. Dev.	N	Mean	Std. Dev.
1	Plan and conduct geological investigations considering human health, safety, the environment, regulations, and Quality Assurance/Quality Control (QA/QC).	216	2.52	0.74	154	2.53	0.76	153	2.52	0.72	310	2.52	0.74
2	Collect, compile, and interpret historic information to plan geological	217	2.29	0.78	154	2.37	0.76	154	2.26	0.77	311	2.32	0.76
3	Interpret and analyze available geological and geophysical data, maps, sections, and reports.	217	2.83	0.42	154	2.86	0.39	154	2.80	0.45	311	2.83	0.42
4	Determine scales, distances, and elevations from imagery, surveys, maps, and GIS.	217	2.48	0.69	154	2.54	0.65	154	2.45	0.71	311	2.50	0.68
5	Prepare, analyze, and interpret logs, cross-sections, maps, and other graphics derived from field investigations and GIS applications.	215	2.64	0.59	152	2.74	0.50	154	2.62	0.59	309	2.68	0.54
6	Plan and conduct mineralogic, petrologic, and geochemical investigations, including the use of modeling and geophysics.	216	2.08	0.74	152	1.89	0.77	154	2.10	0.75	309	2.00	0.76
7	Identify minerals and rocks and their characteristics.	217	2.46	0.73	154	2.37	0.70	154	2.44	0.76	311	2.41	0.73
8	Identify and interpret rock and mineral sequences, associations, and genesis.	217	2.25	0.75	154	2.10	0.89	154	2.25	0.76	311	2.17	0.83
9	Evaluate geochemical and isotopic data, and construct geochemical models related to rocks and minerals.	217	1.83	0.81	154	1.65	0.80	154	1.88	0.77	311	1.76	0.79
10	Determine type, degree, and effects of rock and mineral alteration.	217	1.89	0.76	154	1.73	0.80	154	1.92	0.77	311	1.82	0.79
11	Plan and conduct sedimentologic, stratigraphic, or paleontologic investigations, including the use of modeling and geophysics.	217	2.22	0.73	154	2.05	0.78	154	2.26	0.69	311	2.15	0.74
12	Select and apply appropriate stratigraphic nomenclature and establish correlations.	217	2.01	0.87	154	2.03	0.83	154	2.01	0.86	311	2.02	0.85
13	Identify and interpret sedimentary processes and structures, depositional environments, and sediment provenance.	217	2.19	0.79	154	2.18	0.78	154	2.20	0.79	311	2.18	0.78
14	Identify and interpret sediment or rock sequences, positions, and ages.	217	2.33	0.77	154	2.26	0.79	154	2.34	0.76	311	2.29	0.78
15	Identify and interpret fossils and fossil assemblages for age or paleoenvironmental interpretations.	217	1.56	0.90	154	1.37	0.80	154	1.66	0.91	311	1.50	0.87
16	Plan and conduct geomorphic investigations, including the use of modeling and geophysics.	215	2.18	0.72	154	2.04	0.81	153	2.17	0.71	309	2.10	0.76
17	Identify, classify, and interpret landforms, surficial materials, and processes.	216	2.36	0.71	154	2.36	0.76	154	2.34	0.68	310	2.35	0.72
18	Determine absolute or relative age relationships of landforms, sediments, and soils.	216	2.01	0.82	154	1.97	0.78	154	1.97	0.82	310	1.97	0.80
19	Evaluate geomorphic processes and development of landforms, sediments, and soils, including watershed functions.	216	2.40	0.73	154	2.36	0.76	154	2.40	0.70	310	2.37	0.74
20	Interpret geomorphic conditions and processes based on remote sensing and GIS.	216	2.04	0.76	154	1.97	0.80	154	2.03	0.74	310	2.00	0.77
21	Plan and conduct structural, tectonic, or seismologic investigations, including the use of modeling and geophysics.	216	2.14	0.79	154	1.99	0.82	154	2.18	0.78	310	2.07	0.81
22	Identify and define structural features and relations, including constructing and interpreting structural projections and statistical analyses.	216	2.19	0.79	154	1.95	0.89	154	2.21	0.73	310	2.08	0.82
23	Interpret deformational history through structural and tectonic analyses.	216	1.95	0.86	153	1.78	0.92	154	2.01	0.82	309	1.89	0.88
24	Develop and apply tectonic models to identify geologic processes and history.	215	1.75	0.88	154	1.68	0.87	153	1.79	0.88	309	1.73	0.88
25	Evaluate earthquake mechanisms, paleoseismic history, and hazards.	216	2.22	0.89	154	2.08	0.99	154	2.23	0.87	310	2.15	0.93
26	Plan and conduct hydrogeological, geochemical, and environmental investigations, including the use of modeling, geophysics, and isotopic and tracer studies.	216	2.47	0.74	154	2.38	0.80	154	2.49	0.70	310	2.44	0.75
27	Define and characterize hydraulic properties of saturated and vadose zone flow systems.	216	2.27	0.79	154	2.29	0.85	154	2.24	0.76	310	2.27	0.81
28	Design groundwater monitoring, observation, extraction, production, or injection wells.	215	2.27	0.81	154	2.35	0.90	153	2.24	0.79	309	2.29	0.85
29	Evaluate water resources, assess aquifer yield, and determine sustainability.	216	2.47	0.72	154	2.36	0.88	154	2.46	0.71	310	2.41	0.79

Table 5 - ASBOG® Task Analysis 2010 - Task Statements
Descriptive Statistics for Importance Rating Scale
(Academia - Licensure Status Analyses)

No.	Task Statements	Original Sample - Academia			Licensed - Academia			Not Licensed - Academia			All Academia		
		N	Mean	Std. Dev.	N	Mean	Std. Dev.	N	Mean	Std. Dev.	N	Mean	Std. Dev.
30	Characterize water quality and assess chemical fate and transport.	216	2.41	0.76	154	2.31	0.86	154	2.44	0.73	310	2.38	0.80
31	Manage, develop, protect, or remediate, surface water or groundwater resources.	215	2.41	0.76	153	2.40	0.87	154	2.42	0.75	309	2.41	0.81
32	Plan and conduct environmental and engineering geological investigations, including the use of modeling and geophysics.	214	2.21	0.78	152	2.14	0.85	153	2.22	0.75	307	2.18	0.80
33	Identify and evaluate engineering and physical properties of earth materials.	214	2.22	0.80	153	2.24	0.83	153	2.14	0.81	308	2.19	0.81
34	Provide recommendations for engineering design, land use decisions, and watershed management.	214	2.23	0.83	153	2.22	0.90	153	2.22	0.84	308	2.22	0.87
35	Identify, map, and evaluate geologic, geomorphic, and seismic hazards.	214	2.54	0.63	153	2.48	0.71	153	2.52	0.61	308	2.51	0.66
36	Interpret land use and landforms using imagery, maps, records, GIS, and geological site characteristics.	214	2.33	0.71	153	2.28	0.76	153	2.33	0.71	308	2.30	0.73
37	Develop programs for hazard mitigation, and land and watershed restoration.	213	2.18	0.85	153	2.18	0.88	152	2.18	0.83	307	2.19	0.85
38	Plan and conduct mineral or energy resource exploration, evaluation, and environmental programs, including the use of modeling, geophysics, and geochemistry.	215	2.09	0.79	154	1.95	0.85	153	2.13	0.77	309	2.04	0.82
39	Compile, assess, and evaluate the data necessary to explore for mineral and energy resources.	214	2.06	0.83	154	1.93	0.88	152	2.11	0.79	308	2.01	0.85
40	Estimate the distribution of resources based on surface and subsurface data including imagery and GIS applications.	215	1.96	0.84	154	1.83	0.92	153	1.99	0.81	309	1.91	0.87
41	Interpret data for economic evaluations, resource assessments, and probability of success.	215	1.83	0.83	154	1.77	0.90	153	1.84	0.78	309	1.80	0.85
42	Determine quantity and quality of resources and reserves from laboratory, surface, and subsurface data.	215	1.87	0.82	154	1.79	0.92	153	1.91	0.77	309	1.84	0.85
43	Perform geological evaluations for design, abandonment, closure, and reclamation and restoration of energy development or mineral extraction operations.	213	2.07	0.88	153	2.00	0.87	152	2.11	0.87	307	2.05	0.87
Correlations													
Original Sample - Academia vs. Licensed - Academia			0.97										
Original Sample - Academia vs. Not Licensed - Academia			0.99										
Original Sample - Academia vs. All Academia			0.99										
Licensed - Academia vs. Not Licensed - Academia			0.95										
Licensed - Academia vs. All Academia			0.99										
Not Licensed - Academia vs. All Academia			0.98										
Practicing Geologists (USA) vs. All Academia			0.88										

Table 6 - ASBOG® Task Analysis 2010 - Task Statements
Descriptive Statistics for Importance Rating Scale
(USA Practicing Geologists vs. Academia)

No.	Task Statements	Practicing Geologists - USA			All Academia			Mean Difference (USA - Academia)
		N	Mean	Std. Dev.	N	Mean	Std. Dev.	
1	Plan and conduct geological investigations considering human health, safety, the environment, regulations, and Quality Assurance/Quality Control (QA/QC).	2517	2.67	0.64	310	2.52	0.74	0.14
2	Collect, compile, and interpret historic information to plan geological investigations.	2512	2.41	0.72	311	2.32	0.76	0.09
3	Interpret and analyze available geological and geophysical data, maps, sections, and reports.	2516	2.69	0.54	311	2.83	0.42	-0.14
4	Determine scales, distances, and elevations from imagery, surveys, maps, and GIS.	2507	2.32	0.79	311	2.50	0.68	-0.17
5	Prepare, analyze, and interpret logs, cross-sections, maps, and other graphics derived from field investigations and GIS applications.	2507	2.68	0.55	309	2.68	0.54	0.00
6	Plan and conduct mineralogic, petrologic, and geochemical investigations, including the use of modeling and geophysics.	2506	1.55	0.88	309	2.00	0.76	-0.45
7	Identify minerals and rocks and their characteristics.	2506	1.83	0.90	311	2.41	0.73	-0.58
8	Identify and interpret rock and mineral sequences, associations, and genesis.	2502	1.50	0.94	311	2.17	0.83	-0.68
9	Evaluate geochemical and isotopic data, and construct geochemical models related to rocks and minerals.	2502	1.20	0.87	311	1.76	0.79	-0.56
10	Determine type, degree, and effects of rock and mineral alteration.	2504	1.26	0.90	311	1.82	0.79	-0.56
11	Plan and conduct sedimentologic, stratigraphic, or paleontologic investigations, including the use of modeling and geophysics.	2510	1.64	0.90	311	2.15	0.74	-0.52
12	Select and apply appropriate stratigraphic nomenclature and establish correlations.	2511	1.72	0.92	311	2.02	0.85	-0.30
13	Identify and interpret sedimentary processes and structures, depositional environments, and sediment provenance.	2514	1.82	0.89	311	2.18	0.78	-0.36
14	Identify and interpret sediment or rock sequences, positions, and ages.	2510	1.73	0.93	311	2.29	0.78	-0.56
15	Identify and interpret fossils and fossil assemblages for age or paleoenvironmental interpretations.	2510	0.98	0.88	311	1.50	0.87	-0.53
16	Plan and conduct geomorphic investigations, including the use of modeling and geophysics.	2492	1.53	0.92	309	2.10	0.76	-0.58
17	Identify, classify, and interpret landforms, surficial materials, and processes.	2492	1.93	0.88	310	2.35	0.72	-0.42
18	Determine absolute or relative age relationships of landforms, sediments, and soils.	2489	1.40	0.92	310	1.97	0.80	-0.57
19	Evaluate geomorphic processes and development of landforms, sediments, and soils, including watershed functions.	2486	1.89	0.88	310	2.37	0.74	-0.48
20	Interpret geomorphic conditions and processes based on remote sensing and GIS.	2490	1.47	0.90	310	2.00	0.77	-0.53
21	Plan and conduct structural, tectonic, or seismologic investigations, including the use of modeling and geophysics.	2494	1.58	1.03	310	2.07	0.81	-0.49
22	Identify and define structural features and relations, including constructing and interpreting structural projections and statistical analyses.	2492	1.54	0.98	310	2.08	0.82	-0.53
23	Interpret deformational history through structural and tectonic analyses.	2493	1.28	0.98	309	1.89	0.88	-0.61
24	Develop and apply tectonic models to identify geologic processes and history.	2491	1.15	0.95	309	1.73	0.88	-0.58
25	Evaluate earthquake mechanisms, paleoseismic history, and hazards.	2490	1.58	1.11	310	2.15	0.93	-0.57
26	Plan and conduct hydrogeological, geochemical, and environmental investigations, including the use of modeling, geophysics, and isotopic and tracer studies.	2497	2.48	0.78	310	2.44	0.75	0.04
27	Define and characterize hydraulic properties of saturated and vadose zone flow systems.	2498	2.38	0.81	310	2.27	0.81	0.11
28	Design groundwater monitoring, observation, extraction, production, or injection wells.	2496	2.53	0.75	309	2.29	0.85	0.24
29	Evaluate water resources, assess aquifer yield, and determine sustainability.	2496	2.33	0.83	310	2.41	0.79	-0.08

Table 6 - ASBOG® Task Analysis 2010 - Task Statements
Descriptive Statistics for Importance Rating Scale
(USA Practicing Geologists vs. Academia)

No.	Task Statements	Practicing Geologists - USA			All Academia			Mean Difference (USA - Academia)
		N	Mean	Std. Dev.	N	Mean	Std. Dev.	
30	Characterize water quality and assess chemical fate and transport.	2495	2.45	0.80	310	2.38	0.80	0.08
31	Manage, develop, protect, or remediate, surface water or groundwater resources.	2494	2.58	0.75	309	2.41	0.81	0.17
32	Plan and conduct environmental and engineering geological investigations, including the use of modeling and geophysics.	2487	2.19	0.87	307	2.18	0.80	0.01
33	Identify and evaluate engineering and physical properties of earth materials.	2490	2.08	0.88	308	2.19	0.81	-0.12
34	Provide recommendations for engineering design, land use decisions, and watershed management.	2485	2.13	0.91	308	2.22	0.87	-0.09
35	Identify, map, and evaluate geologic, geomorphic, and seismic hazards.	2488	2.09	0.97	308	2.51	0.66	-0.41
36	Interpret land use and landforms using imagery, maps, records, GIS, and geological site characteristics.	2488	2.02	0.86	308	2.30	0.73	-0.28
37	Develop programs for hazard mitigation, and land and watershed restoration.	2488	1.98	0.96	307	2.19	0.85	-0.21
38	Plan and conduct mineral or energy resource exploration, evaluation, and environmental programs, including the use of modeling, geophysics, and geochemistry.	2491	1.72	1.03	309	2.04	0.82	-0.32
39	Compile, assess, and evaluate the data necessary to explore for mineral and energy resources.	2491	1.62	1.08	308	2.01	0.85	-0.39
40	Estimate the distribution of resources based on surface and subsurface data including imagery and GIS applications.	2490	1.55	1.04	309	1.91	0.87	-0.36
41	Interpret data for economic evaluations, resource assessments, and probability of success.	2491	1.49	1.06	309	1.80	0.85	-0.31
42	Determine quantity and quality of resources and reserves from laboratory, surface, and subsurface data.	2488	1.59	1.07	309	1.84	0.85	-0.25
43	Perform geological evaluations for design, abandonment, closure, and reclamation and restoration of energy development or mineral extraction operations.	2483	1.86	1.05	307	2.05	0.87	-0.19
	Practicing Geologists (USA) vs. All Academia	0.88						

Figure 1 - ASBOG[®] Task Analysis 2010
Mean Values for All Task Statements
USA Practicing Geologists vs. Academia

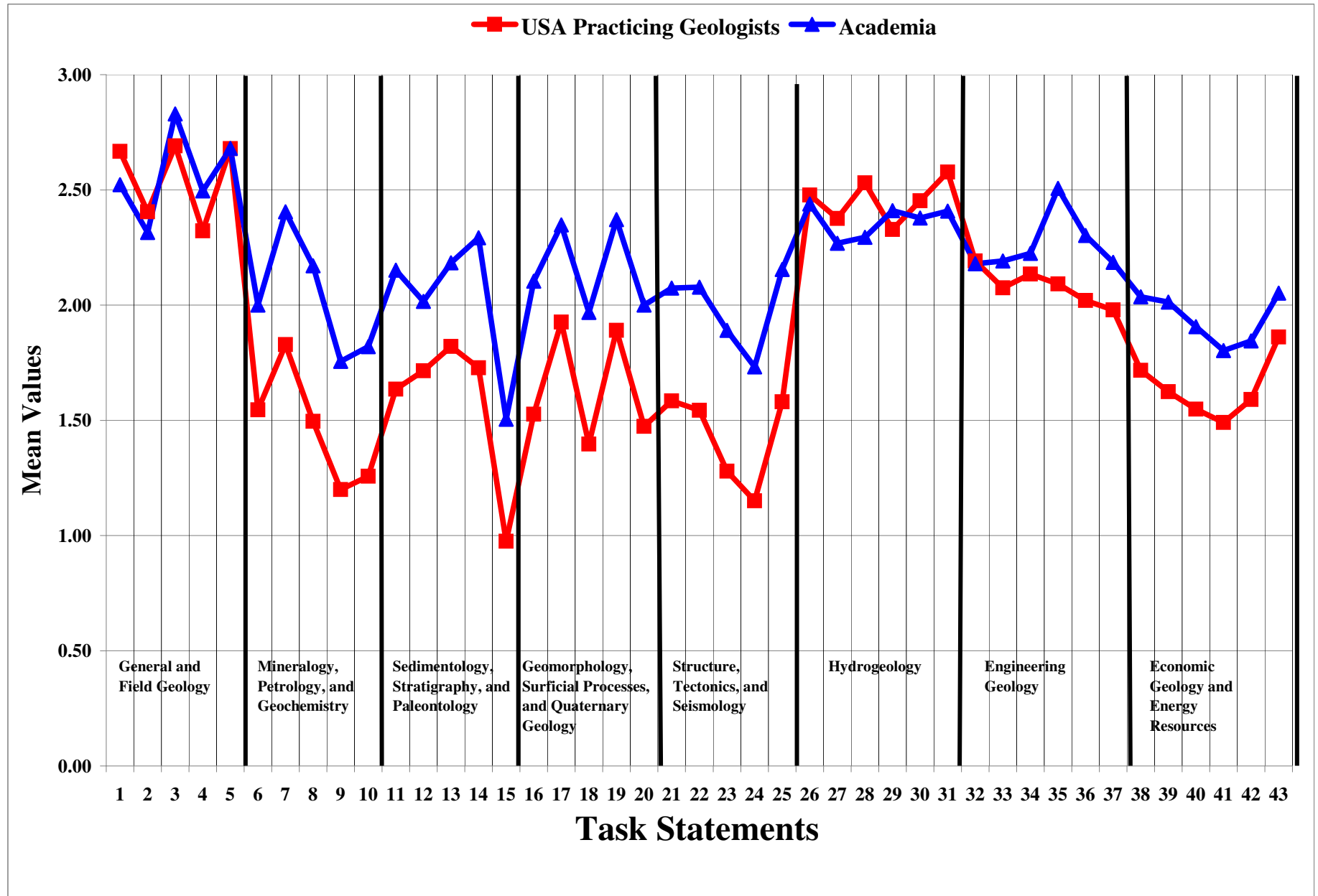


Table 7 - ASBOG® Task Analysis 2010 - Task Statements
Descriptive Statistics for Importance Rating Scale
(Practicing Geoscientists in Canada)

No.	Task Statements	Importance Rating Scale		
		N	Mean	Std. Dev.
1	Plan and conduct geological investigations considering human health, safety, the environment, regulations, and Quality Assurance/Quality Control (QA/QC).	402	2.57	0.67
2	Collect, compile, and interpret historic information to plan geological investigations.	400	2.32	0.66
3	Interpret and analyze available geological and geophysical data, maps, sections, and reports.	402	2.57	0.60
4	Determine scales, distances, and elevations from imagery, surveys, maps, and GIS.	402	1.96	0.82
5	Prepare, analyze, and interpret logs, cross-sections, maps, and other graphics derived from field investigations and GIS applications.	401	2.44	0.65
6	Plan and conduct mineralogic, petrologic, and geochemical investigations, including the use of modeling and geophysics.	402	1.97	0.82
7	Identify minerals and rocks and their characteristics.	402	2.16	0.80
8	Identify and interpret rock and mineral sequences, associations, and genesis.	401	1.87	0.90
9	Evaluate geochemical and isotopic data, and construct geochemical models related to rocks and minerals.	402	1.41	0.82
10	Determine type, degree, and effects of rock and mineral alteration.	401	1.81	0.87
11	Plan and conduct sedimentologic, stratigraphic, or paleontologic investigations, including the use of modeling and geophysics.	399	1.63	0.87
12	Select and apply appropriate stratigraphic nomenclature and establish correlations.	399	1.64	0.90
13	Identify and interpret sedimentary processes and structures, depositional environments, and sediment provenance.	399	1.72	0.88
14	Identify and interpret sediment or rock sequences, positions, and ages.	398	1.68	0.86
15	Identify and interpret fossils and fossil assemblages for age or paleoenvironmental interpretations.	399	1.05	0.85
16	Plan and conduct geomorphic investigations, including the use of modeling and geophysics.	397	1.35	0.86
17	Identify, classify, and interpret landforms, surficial materials, and processes.	400	1.52	0.89
18	Determine absolute or relative age relationships of landforms, sediments, and soils.	400	1.14	0.78
19	Evaluate geomorphic processes and development of landforms, sediments, and soils, including watershed functions.	398	1.48	0.91
20	Interpret geomorphic conditions and processes based on remote sensing and GIS.	399	1.17	0.79
21	Plan and conduct structural, tectonic, or seismologic investigations, including the use of modeling and geophysics.	401	1.67	0.93
22	Identify and define structural features and relations, including constructing and interpreting structural projections and statistical analyses.	400	1.74	0.88
23	Interpret deformational history through structural and tectonic analyses.	400	1.59	0.91
24	Develop and apply tectonic models to identify geologic processes and history.	399	1.48	0.86
25	Evaluate earthquake mechanisms, paleoseismic history, and hazards.	400	1.20	1.09
26	Plan and conduct hydrogeological, geochemical, and environmental investigations, including the use of modeling, geophysics, and isotopic and tracer studies.	398	1.74	1.00
27	Define and characterize hydraulic properties of saturated and vadose zone flow systems.	398	1.31	1.07
28	Design groundwater monitoring, observation, extraction, production, or injection wells.	397	1.50	1.14
29	Evaluate water resources, assess aquifer yield, and determine sustainability.	399	1.55	1.15
30	Characterize water quality and assess chemical fate and transport.	398	1.59	1.17
31	Manage, develop, protect, or remediate, surface water or groundwater resources.	398	1.77	1.11
32	Plan and conduct environmental and engineering geological investigations, including the use of modeling and geophysics.	399	1.66	0.98
33	Identify and evaluate engineering and physical properties of earth materials.	398	1.54	0.99
34	Provide recommendations for engineering design, land use decisions, and watershed management.	400	1.57	1.06
35	Identify, map, and evaluate geologic, geomorphic, and seismic hazards.	399	1.63	1.02
36	Interpret land use and landforms using imagery, maps, records, GIS, and geological site characteristics.	398	1.40	0.88
37	Develop programs for hazard mitigation, and land and watershed restoration.	398	1.47	1.08
38	Plan and conduct mineral or energy resource exploration, evaluation, and environmental programs, including the use of modeling, geophysics, and geochemistry.	399	2.16	0.88
39	Compile, assess, and evaluate the data necessary to explore for mineral and energy resources.	400	2.13	0.93
40	Estimate the distribution of resources based on surface and subsurface data including imagery and GIS applications.	400	1.88	0.92
41	Interpret data for economic evaluations, resource assessments, and probability of success.	398	1.96	0.97
42	Determine quantity and quality of resources and reserves from laboratory, surface, and subsurface data.	396	1.95	0.98
43	Perform geological evaluations for design, abandonment, closure, and reclamation and restoration of energy development or mineral extraction operations.	399	1.81	1.00

Table 8 - ASBOG® Task Analysis 2010 - Task Statements
Descriptive Statistics for Importance Rating Scale
Sorted in Descending Order
(Practicing Geoscientists in Canada)

No.	Task Statements	Importance Rating Scale		
		N	Mean	Std. Dev.
3	Interpret and analyze available geological and geophysical data, maps, sections, and reports.	402	2.57	0.60
1	Plan and conduct geological investigations considering human health, safety, the environment, regulations, and Quality Assurance/Quality Control (QA/QC).	402	2.57	0.67
5	Prepare, analyze, and interpret logs, cross-sections, maps, and other graphics derived from field investigations and GIS applications.	401	2.44	0.65
2	Collect, compile, and interpret historic information to plan geological investigations.	400	2.32	0.66
7	Identify minerals and rocks and their characteristics.	402	2.16	0.80
38	Plan and conduct mineral or energy resource exploration, evaluation, and environmental programs, including the use of modeling, geophysics, and geochemistry.	399	2.16	0.88
39	Compile, assess, and evaluate the data necessary to explore for mineral and energy resources.	400	2.13	0.93
6	Plan and conduct mineralogic, petrologic, and geochemical investigations, including the use of modeling and geophysics.	402	1.97	0.82
4	Determine scales, distances, and elevations from imagery, surveys, maps, and GIS.	402	1.96	0.82
41	Interpret data for economic evaluations, resource assessments, and probability of success.	398	1.96	0.97
42	Determine quantity and quality of resources and reserves from laboratory, surface, and subsurface data.	396	1.95	0.98
40	Estimate the distribution of resources based on surface and subsurface data including imagery and GIS applications.	400	1.88	0.92
8	Identify and interpret rock and mineral sequences, associations, and genesis.	401	1.87	0.90
10	Determine type, degree, and effects of rock and mineral alteration.	401	1.81	0.87
43	Perform geological evaluations for design, abandonment, closure, and reclamation and restoration of energy development or mineral extraction operations.	399	1.81	1.00
31	Manage, develop, protect, or remediate, surface water or groundwater resources.	398	1.77	1.11
22	Identify and define structural features and relations, including constructing and interpreting structural projections and statistical analyses.	400	1.74	0.88
26	Plan and conduct hydrogeological, geochemical, and environmental investigations, including the use of modeling, geophysics, and isotopic and tracer studies.	398	1.74	1.00
13	Identify and interpret sedimentary processes and structures, depositional environments, and sediment provenance.	399	1.72	0.88
14	Identify and interpret sediment or rock sequences, positions, and ages.	398	1.68	0.86
21	Plan and conduct structural, tectonic, or seismologic investigations, including the use of modeling and geophysics.	401	1.67	0.93
32	Plan and conduct environmental and engineering geological investigations, including the use of modeling and geophysics.	399	1.66	0.98
12	Select and apply appropriate stratigraphic nomenclature and establish correlations.	399	1.64	0.90
11	Plan and conduct sedimentologic, stratigraphic, or paleontologic investigations, including the use of modeling and geophysics.	399	1.63	0.87
35	Identify, map, and evaluate geologic, geomorphic, and seismic hazards.	399	1.63	1.02
23	Interpret deformational history through structural and tectonic analyses.	400	1.59	0.91
30	Characterize water quality and assess chemical fate and transport.	398	1.59	1.17
34	Provide recommendations for engineering design, land use decisions, and watershed management.	400	1.57	1.06
29	Evaluate water resources, assess aquifer yield, and determine sustainability.	399	1.55	1.15
33	Identify and evaluate engineering and physical properties of earth materials.	398	1.54	0.99
17	Identify, classify, and interpret landforms, surficial materials, and processes.	400	1.52	0.89
28	Design groundwater monitoring, observation, extraction, production, or injection wells.	397	1.50	1.14
24	Develop and apply tectonic models to identify geologic processes and history.	399	1.48	0.86
19	Evaluate geomorphic processes and development of landforms, sediments, and soils, including watershed functions.	398	1.48	0.91
37	Develop programs for hazard mitigation, and land and watershed restoration.	398	1.47	1.08
9	Evaluate geochemical and isotopic data, and construct geochemical models related to rocks and minerals.	402	1.41	0.82
36	Interpret land use and landforms using imagery, maps, records, GIS, and geological site characteristics.	398	1.40	0.88
16	Plan and conduct geomorphic investigations, including the use of modeling and geophysics.	397	1.35	0.86
27	Define and characterize hydraulic properties of saturated and vadose zone flow systems.	398	1.31	1.07
25	Evaluate earthquake mechanisms, paleoseismic history, and hazards.	400	1.20	1.09
20	Interpret geomorphic conditions and processes based on remote sensing and GIS.	399	1.17	0.79
18	Determine absolute or relative age relationships of landforms, sediments, and soils.	400	1.14	0.78
15	Identify and interpret fossils and fossil assemblages for age or paleoenvironmental interpretations.	399	1.05	0.85

Table 9 - ASBOG® Task Analysis 2010 - Task Statements
Descriptive Statistics for Importance Rating Scale
(USA vs. Canada)

No.	Task Statements	Practicing Geologists - USA			Geoscientists - Canada			Mean Difference (USA - Canada)
		N	Mean	Std. Dev.	N	Mean	Std. Dev.	
1	Plan and conduct geological investigations considering human health, safety, the environment, regulations, and Quality Assurance/Quality Control (QA/QC).	2517	2.67	0.64	402	2.57	0.67	0.10
2	Collect, compile, and interpret historic information to plan geological investigations.	2512	2.41	0.72	400	2.32	0.66	0.09
3	Interpret and analyze available geological and geophysical data, maps, sections, and reports.	2516	2.69	0.54	402	2.57	0.60	0.12
4	Determine scales, distances, and elevations from imagery, surveys, maps, and GIS.	2507	2.32	0.79	402	1.96	0.82	0.36
5	Prepare, analyze, and interpret logs, cross-sections, maps, and other graphics derived from field investigations and GIS applications.	2507	2.68	0.55	401	2.44	0.65	0.24
6	Plan and conduct mineralogic, petrologic, and geochemical investigations, including the use of modeling and geophysics.	2506	1.55	0.88	402	1.97	0.82	-0.43
7	Identify minerals and rocks and their characteristics.	2506	1.83	0.90	402	2.16	0.80	-0.33
8	Identify and interpret rock and mineral sequences, associations, and genesis.	2502	1.50	0.94	401	1.87	0.90	-0.37
9	Evaluate geochemical and isotopic data, and construct geochemical models related to rocks and minerals.	2502	1.20	0.87	402	1.41	0.82	-0.21
10	Determine type, degree, and effects of rock and mineral alteration.	2504	1.26	0.90	401	1.81	0.87	-0.56
11	Plan and conduct sedimentologic, stratigraphic, or paleontologic investigations, including the use of modeling and geophysics.	2510	1.64	0.90	399	1.63	0.87	0.01
12	Select and apply appropriate stratigraphic nomenclature and establish correlations.	2511	1.72	0.92	399	1.64	0.90	0.07
13	Identify and interpret sedimentary processes and structures, depositional environments, and sediment provenance.	2514	1.82	0.89	399	1.72	0.88	0.10
14	Identify and interpret sediment or rock sequences, positions, and ages.	2510	1.73	0.93	398	1.68	0.86	0.05
15	Identify and interpret fossils and fossil assemblages for age or paleoenvironmental interpretations.	2510	0.98	0.88	399	1.05	0.85	-0.07
16	Plan and conduct geomorphic investigations, including the use of modeling and geophysics.	2492	1.53	0.92	397	1.35	0.86	0.17
17	Identify, classify, and interpret landforms, surficial materials, and processes.	2492	1.93	0.88	400	1.52	0.89	0.40
18	Determine absolute or relative age relationships of landforms, sediments, and soils.	2489	1.40	0.92	400	1.14	0.78	0.26
19	Evaluate geomorphic processes and development of landforms, sediments, and soils, including watershed functions.	2486	1.89	0.88	398	1.48	0.91	0.41
20	Interpret geomorphic conditions and processes based on remote sensing and GIS.	2490	1.47	0.90	399	1.17	0.79	0.30
21	Plan and conduct structural, tectonic, or seismologic investigations, including the use of modeling and geophysics.	2494	1.58	1.03	401	1.67	0.93	-0.09
22	Identify and define structural features and relations, including constructing and interpreting structural projections and statistical analyses.	2492	1.54	0.98	400	1.74	0.88	-0.20
23	Interpret deformational history through structural and tectonic analyses.	2493	1.28	0.98	400	1.59	0.91	-0.31
24	Develop and apply tectonic models to identify geologic processes and history.	2491	1.15	0.95	399	1.48	0.86	-0.33
25	Evaluate earthquake mechanisms, paleoseismic history, and hazards.	2490	1.58	1.11	400	1.20	1.09	0.38
26	Plan and conduct hydrogeological, geochemical, and environmental investigations, including the use of modeling, geophysics, and isotopic and tracer studies.	2497	2.48	0.78	398	1.74	1.00	0.74
27	Define and characterize hydraulic properties of saturated and vadose zone flow systems.	2498	2.38	0.81	398	1.31	1.07	1.06
28	Design groundwater monitoring, observation, extraction, production, or injection wells.	2496	2.53	0.75	397	1.50	1.14	1.03

Table 9 - ASBOG® Task Analysis 2010 - Task Statements
Descriptive Statistics for Importance Rating Scale
(USA vs. Canada)

No.	Task Statements	Practicing Geologists - USA			Geoscientists - Canada			Mean Difference (USA - Canada)
		N	Mean	Std. Dev.	N	Mean	Std. Dev.	
29	Evaluate water resources, assess aquifer yield, and determine sustainability.	2496	2.33	0.83	399	1.55	1.15	0.77
30	Characterize water quality and assess chemical fate and transport.	2495	2.45	0.80	398	1.59	1.17	0.86
31	Manage, develop, protect, or remediate, surface water or groundwater resources.	2494	2.58	0.75	398	1.77	1.11	0.81
32	Plan and conduct environmental and engineering geological investigations, including the use of modeling and geophysics.	2487	2.19	0.87	399	1.66	0.98	0.53
33	Identify and evaluate engineering and physical properties of earth materials.	2490	2.08	0.88	398	1.54	0.99	0.54
34	Provide recommendations for engineering design, land use decisions, and watershed management.	2485	2.13	0.91	400	1.57	1.06	0.57
35	Identify, map, and evaluate geologic, geomorphic, and seismic hazards.	2488	2.09	0.97	399	1.63	1.02	0.47
36	Interpret land use and landforms using imagery, maps, records, GIS, and geological site characteristics.	2488	2.02	0.86	398	1.40	0.88	0.62
37	Develop programs for hazard mitigation, and land and watershed restoration.	2488	1.98	0.96	398	1.47	1.08	0.51
38	Plan and conduct mineral or energy resource exploration, evaluation, and environmental programs, including the use of modeling, geophysics, and geochemistry.	2491	1.72	1.03	399	2.16	0.88	-0.44
39	Compile, assess, and evaluate the data necessary to explore for mineral and energy resources.	2491	1.62	1.08	400	2.13	0.93	-0.50
40	Estimate the distribution of resources based on surface and subsurface data including imagery and GIS applications.	2490	1.55	1.04	400	1.88	0.92	-0.33
41	Interpret data for economic evaluations, resource assessments, and probability of success.	2491	1.49	1.06	398	1.96	0.97	-0.47
42	Determine quantity and quality of resources and reserves from laboratory, surface, and subsurface data.	2488	1.59	1.07	396	1.95	0.98	-0.36
43	Perform geological evaluations for design, abandonment, closure, and reclamation and restoration of energy development or mineral extraction operations.	2483	1.86	1.05	399	1.81	1.00	0.05
Practicing Geologists (USA) vs. Geoscientists (Canada)		0.43						

Figure 2 - ASBOG[®] Task Analysis 2010
Mean Values for All Task Statements
USA vs. Canada

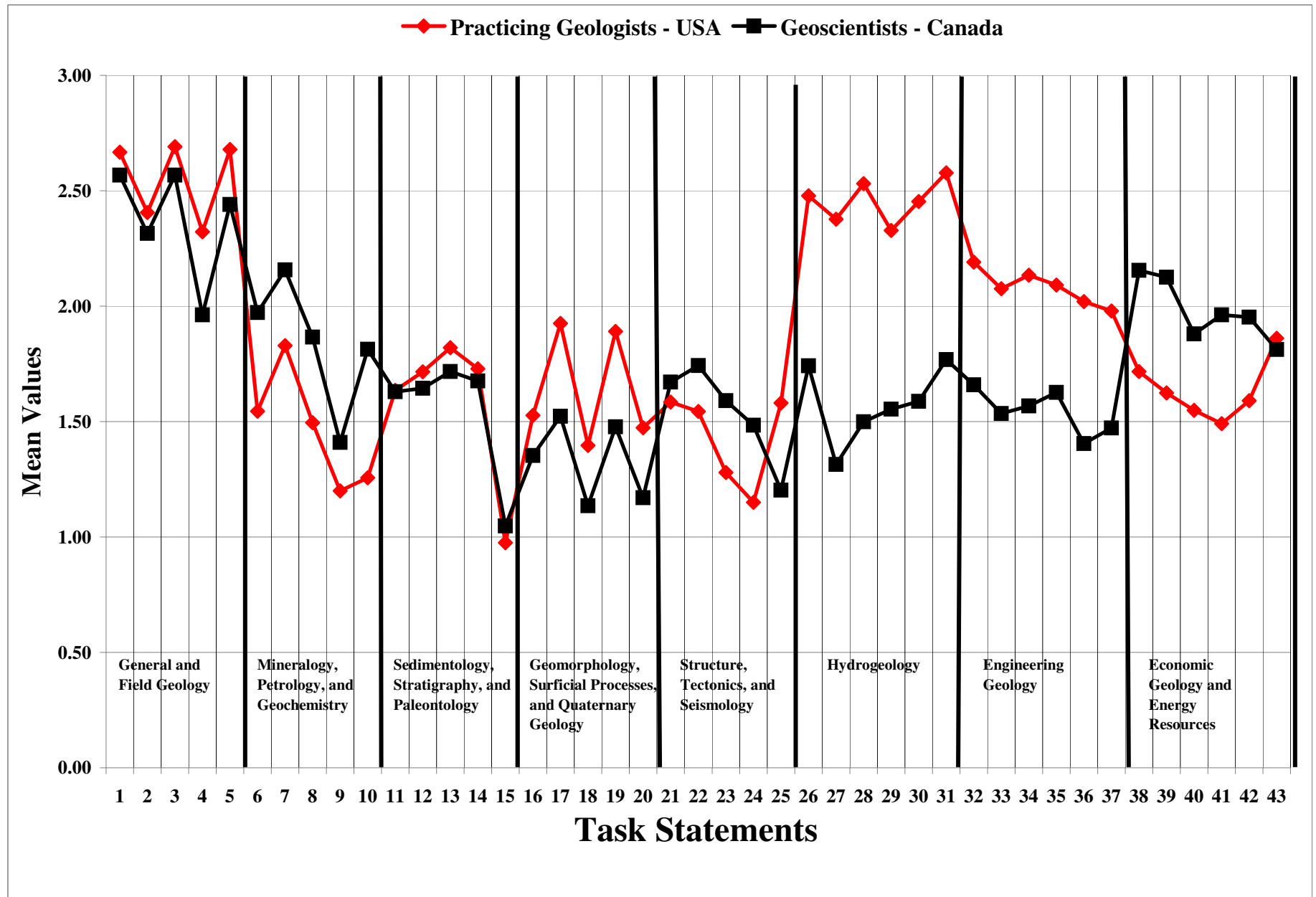


Table 10 - ASBOG[®] Task Analysis 2010
Descriptive Statistics for Ethics
Frequency and Seriousness Rating Scales
(USA Practicing Geologists)

Ethical Issues	Frequency Ratings				Seriousness Ratings		
	N	Mean	Std. Dev.		N	Mean	Std. Dev.
1. Conflict of interest	2478	1.26	0.79		2428	1.91	0.92
2. Failure to disclose regulatory violations	2470	0.96	0.84		2409	2.10	0.95
3. Failure to maintain confidentiality	2467	0.92	0.80		2404	1.91	0.95
4. Gifts - getting and giving	2479	0.85	0.86		2416	1.18	0.98
5. Inappropriate advocate for client	2451	0.91	0.89		2386	1.70	0.93
6. Insufficient "scope of work"	2462	1.71	0.94		2414	1.72	0.84
7. Invoicing	2445	0.86	0.86		2382	1.67	1.00
8. Misrepresentation of professional qualifications	2473	0.96	0.83		2416	2.26	0.92
9. Plagiarism	2474	0.92	0.84		2413	1.82	0.98
10. Practicing outside area of competence	2471	1.30	0.89		2426	2.17	0.87
11. Practicing without license	2464	0.78	0.89		2405	2.05	1.04
12. Selective data acquisition, analysis, or disclosure	2465	1.26	0.91		2422	2.18	0.87
13. Retaliation against "whistle blowers"	2468	0.32	0.61		2400	2.06	1.05
Correlation Between Scales (USA)	0.03						

Table 11 - ASBOG[®] Task Analysis 2010
Descriptive Statistics for Ethics
Frequency and Seriousness Rating Scales
(Academia)

Ethical Issues	Frequency Ratings			Seriousness Ratings		
	N	Mean	Std. Dev.	N	Mean	Std. Dev.
1. Conflict of interest	200	1.29	0.82	200	2.04	0.90
2. Failure to disclose regulatory violations	193	0.76	0.81	194	2.29	0.91
3. Failure to maintain confidentiality	197	1.05	0.87	197	2.01	0.88
4. Gifts - getting and giving	195	0.53	0.71	194	1.51	1.02
5. Inappropriate advocate for client	194	0.79	0.89	192	1.78	0.95
6. Insufficient "scope of work"	193	1.13	0.93	190	1.68	0.83
7. Invoicing	188	0.59	0.78	186	1.61	0.96
8. Misrepresentation of professional qualifications	197	0.92	0.83	196	2.26	0.94
9. Plagiarism	201	1.28	0.92	201	2.29	0.90
10. Practicing outside area of competence	195	1.27	0.90	193	2.15	0.78
11. Practicing without license	191	0.73	0.90	190	1.74	1.10
12. Selective data acquisition, analysis, or disclosure	197	1.27	0.92	196	2.28	0.84
13. Retaliation against "whistle blowers"	194	0.52	0.79	191	2.36	0.98
Correlation Between Scales	0.38					
	Frequency			Seriousness		
USA vs. Academia	0.71			0.77		

Table 12 - ASBOG[®] Task Analysis 2010
Descriptive Statistics for Ethics
Frequency and Seriousness Rating Scales
(Geoscientists in Canada)

Ethical Issues	Frequency Ratings			Seriousness Ratings		
	N	Mean	Std. Dev.	N	Mean	Std. Dev.
1. Conflict of interest	401	1.32	0.77	401	1.72	0.99
2. Failure to disclose regulatory violations	401	0.79	0.76	394	1.91	1.01
3. Failure to maintain confidentiality	400	1.09	0.81	397	1.87	0.97
4. Gifts - getting and giving	400	1.06	0.84	399	0.90	0.89
5. Inappropriate advocate for client	397	0.70	0.77	394	1.56	0.96
6. Insufficient "scope of work"	393	1.34	0.90	392	1.50	0.86
7. Invoicing	387	0.90	0.90	385	1.46	1.00
8. Misrepresentation of professional qualifications	400	0.77	0.80	397	2.13	1.02
9. Plagiarism	400	0.87	0.79	398	1.61	0.99
10. Practicing outside area of competence	399	1.10	0.80	399	1.97	1.00
11. Practicing without license	401	0.88	0.98	397	1.72	1.10
12. Selective data acquisition, analysis, or disclosure	397	1.10	0.87	395	1.87	0.97
13. Retaliation against "whistle blowers"	400	0.33	0.61	390	1.92	1.05
Correlation Between Scales	-0.26					
	Frequency			Seriousness		
USA vs. Canada	0.85			0.97		

Figure 4 - ASBOG® Task Analysis 2010
Ethics Issues - Mean Values for Frequency and Seriousness Rating Scales
Practicing Geologists (USA), Academia, & Geoscientists (Canada)

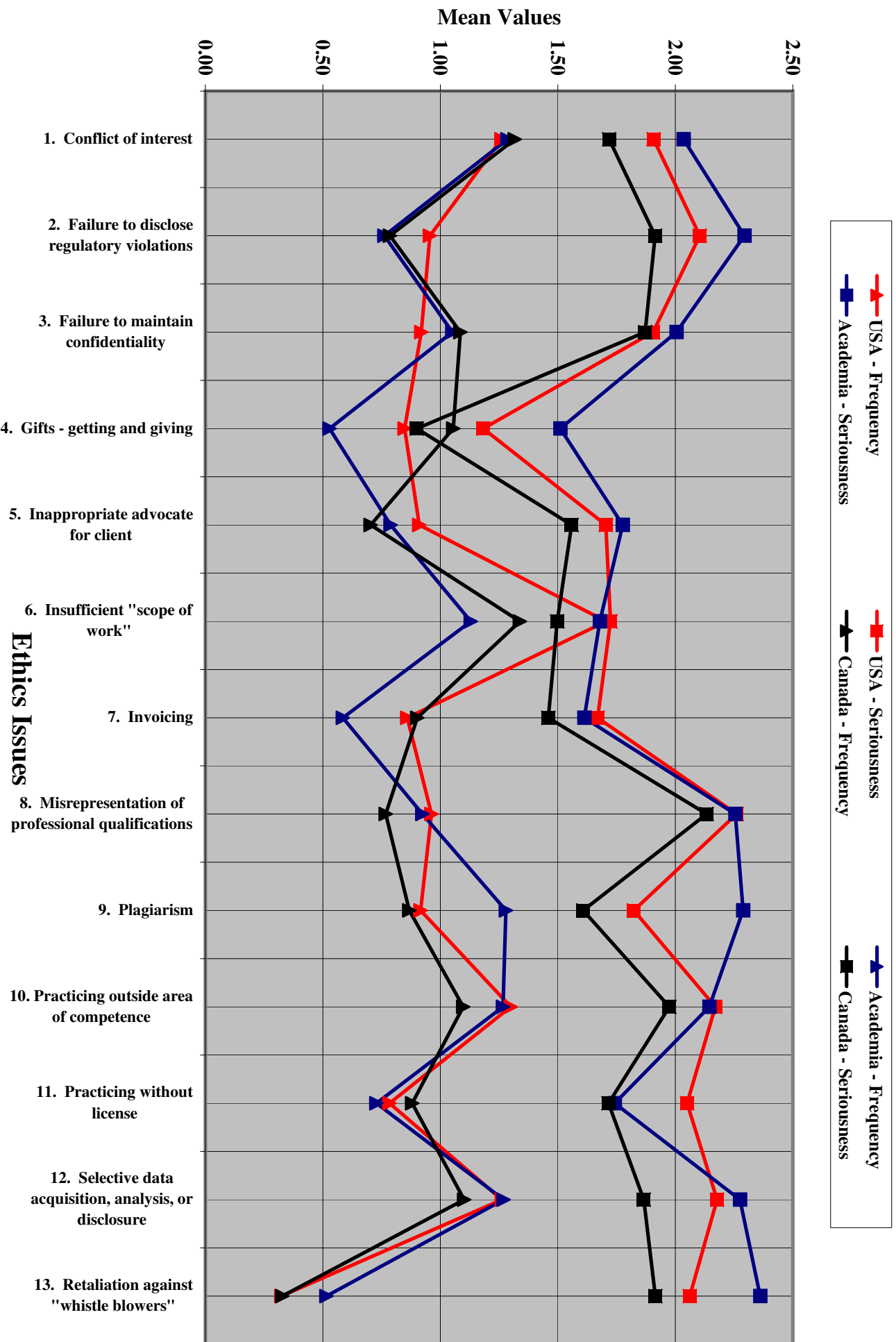


Table 13 - ASBOG® Task Analysis 2010
Importance Mean Values for ASBOG® States

Task No.	AL	AZ	AR	CA	DE	FL	GA	ID	IL	IN	KS	KY	ME	MN	MS	MO	NE	NH	NC	OR	PA	PR	SC	TN	TX	UT	VA	WA	WI	WY
1	2.66	2.66	2.56	2.67	3	2.75	2.73	2.61	2.65	2.67	2.64	2.55	2.68	2.66	2.52	2.82	2.69	2.74	2.78	2.7	2.72	2.95	2.76	2.65	2.41	2.62	2.8	2.69	2.81	2.34
2	2.44	2.36	2.31	2.46	2.55	2.48	2.33	2.38	2.49	2.46	2.6	2.27	2.45	2.37	2.33	2.42	2.29	2.47	2.5	2.28	2.41	2.76	2.33	2.38	2.57	2.28	2.4	2.26	2.54	2.18
3	2.67	2.63	2.65	2.79	2.91	2.79	2.67	2.63	2.69	2.7	2.86	2.6	2.71	2.67	2.73	2.56	2.5	2.61	2.8	2.61	2.74	2.86	2.55	2.67	2.85	2.78	2.78	2.59	2.63	2.66
4	2.46	2.1	2.24	2.28	2.73	2.55	2.38	2.29	2.29	2.34	2.49	2.18	2.42	2.35	2.33	2.18	2.23	2.35	2.38	2.24	2.39	2.19	2.21	2.35	2.43	2.44	2.48	2.27	2.5	2.1
5	2.63	2.57	2.63	2.83	2.82	2.66	2.74	2.48	2.73	2.68	2.81	2.45	2.77	2.64	2.72	2.64	2.6	2.68	2.71	2.68	2.7	2.71	2.61	2.67	2.73	2.72	2.74	2.61	2.75	2.7
6	1.63	1.53	1.72	1.5	1.45	1.73	1.61	1.57	1.52	1.51	1.76	1.49	1.47	1.28	1.84	1.43	1.23	1.35	1.57	1.35	1.57	1.95	1.59	1.23	1.9	1.77	1.7	1.33	1.42	1.6
7	2.07	1.63	2.08	1.8	1.91	1.99	1.89	1.83	1.69	1.65	1.93	1.88	1.75	1.7	2.06	1.77	1.54	1.55	1.98	1.69	2.09	2.29	1.59	1.85	1.95	2.13	2.08	1.66	1.52	1.81
8	1.7	1.4	1.79	1.5	1.09	1.48	1.38	1.52	1.42	1.38	1.69	1.42	1.29	1.38	1.78	1.44	1.31	1.11	1.5	1.31	1.6	2.1	1.4	1.4	1.87	1.91	1.6	1.44	1.21	1.64
9	1.22	1.4	1.46	1.2	0.91	1.35	1.11	1.21	1.24	1.12	1.3	1.1	1.18	1.02	1.25	1.12	0.94	1.08	1.23	0.94	1.22	1.57	1.19	0.98	1.48	1.55	1.23	1.08	1.07	1.35
10	1.32	1.27	1.43	1.43	1.09	1.28	1.13	1.3	1.04	1.09	1.41	1.24	1.16	1.14	1.43	1.15	1.04	1.05	1.37	1.31	1.28	1.95	1.01	1.1	1.57	1.62	1.45	1.26	1.02	1.29
11	1.77	1.55	1.79	1.77	1.91	1.74	1.55	1.58	1.54	1.71	1.95	1.57	1.51	1.3	2.05	1.57	1.52	1.42	1.41	1.36	1.59	1.9	1.64	1.42	2.18	1.88	1.75	1.56	1.38	1.81
12	1.84	1.62	1.92	1.73	2	1.81	1.49	1.5	1.76	1.85	2.17	1.75	1.3	1.62	2.19	1.65	1.61	1.41	1.58	1.35	1.8	2.05	1.49	1.63	2.11	2.04	1.83	1.56	1.44	1.92
13	1.84	1.71	2	1.89	1.73	1.78	1.51	1.75	1.64	1.92	2.08	1.85	1.68	1.7	2.3	1.56	1.81	1.69	1.71	1.57	1.72	2.48	1.66	1.69	2.31	2.17	1.84	1.85	1.81	2.01
14	1.81	1.7	2.04	1.85	1.91	1.65	1.48	1.7	1.56	1.62	1.94	1.79	1.47	1.7	2.1	1.76	1.61	1.38	1.67	1.58	1.75	2.14	1.49	1.69	2.07	2.1	1.8	1.75	1.57	1.91
15	1.12	0.79	1.35	1	1.27	1.25	0.93	0.88	0.81	0.95	1.23	1.13	0.75	0.77	1.31	0.99	0.89	0.68	1.02	0.64	0.9	1.43	0.9	0.87	1.33	1.29	1.12	0.75	0.78	1.07
16	1.62	1.53	1.61	1.63	1.64	1.38	1.28	1.48	1.41	1.49	1.64	1.37	1.71	1.38	1.71	1.4	1.36	1.46	1.39	1.59	1.59	2.19	1.44	1.36	1.67	1.69	1.66	1.78	1.46	1.61
17	1.99	1.71	1.96	1.96	2	1.81	1.59	1.99	1.77	1.92	1.85	1.99	2.2	1.93	2	1.82	1.83	2	1.85	2.01	1.94	2.62	1.72	1.81	1.75	2.16	2.14	2.23	1.95	1.98
18	1.36	1.29	1.52	1.57	1.73	1.35	1.18	1.5	1.15	1.44	1.55	1.4	1.36	1.35	1.55	1.29	1.41	1.21	1.33	1.31	1.31	2.05	1.22	1.17	1.45	1.87	1.53	1.68	1.5	1.41
19	1.97	1.75	1.87	2.01	2.18	1.9	1.65	1.92	1.73	2.03	1.84	1.85	2.09	1.79	1.89	1.76	1.81	1.86	1.86	2	1.96	2.48	1.62	1.77	1.8	2.06	1.94	2.15	1.97	1.87
20	1.49	1.42	1.66	1.54	2.18	1.46	1.15	1.49	1.36	1.36	1.49	1.39	1.81	1.36	1.66	1.3	1.38	1.57	1.51	1.48	1.47	2.1	1.37	1.37	1.53	1.62	1.61	1.7	1.37	1.45
21	1.59	1.68	1.82	1.98	1.27	1.62	1.39	1.58	1.11	1.33	1.88	1.57	1.39	1.13	1.89	1.62	1.42	1.24	1.6	1.53	1.56	2.19	1.54	1.44	1.88	1.96	1.81	1.71	1.16	1.88
22	1.69	1.66	1.8	1.85	1.64	1.4	1.26	1.6	1.2	1.37	1.74	1.45	1.36	1.25	1.71	1.39	1.28	1.29	1.52	1.52	1.75	1.95	1.45	1.56	1.85	1.87	1.7	1.59	1.1	1.84
23	1.27	1.25	1.69	1.59	1.18	1.25	0.92	1.27	0.93	1.08	1.38	1.18	0.9	1	1.5	1.24	1	0.9	1.33	1.27	1.3	2.19	1.24	1.23	1.68	1.84	1.47	1.45	0.92	1.59
24	1.16	1.05	1.46	1.37	1.09	1.19	0.93	1.1	0.86	1.03	1.33	1.09	0.8	0.88	1.44	1.12	0.91	0.75	1.12	1.21	1.13	2.1	1.15	1.19	1.52	1.51	1.19	1.23	0.86	1.34
25	1.6	1.68	1.79	2.02	1.36	1.66	1.34	1.7	1.2	1.52	1.55	1.72	1.43	1.15	1.74	1.72	1.35	1.31	1.48	1.93	1.5	2.48	1.67	1.7	1.48	2.09	1.71	1.83	1.21	1.71
26	2.51	2.64	2.37	2.29	2.64	2.71	2.63	2.42	2.58	2.52	2.37	2.18	2.74	2.41	2.39	2.55	2.64	2.64	2.44	2.2	2.58	2.71	2.74	2.42	2.07	2.15	2.63	2.29	2.78	2.26
27	2.41	2.42	2.2	2.24	2.55	2.61	2.47	2.26	2.52	2.45	2.28	2.03	2.58	2.39	2.15	2.51	2.58	2.67	2.35	2.12	2.48	2.71	2.59	2.25	2.02	2.19	2.48	2.19	2.6	2.05
28	2.55	2.55	2.44	2.4	2.64	2.75	2.58	2.52	2.65	2.57	2.52	2.51	2.64	2.46	2.32	2.66	2.65	2.78	2.42	2.33	2.63	2.76	2.64	2.46	2.08	2.41	2.71	2.39	2.75	2.26
29	2.48	2.55	2.31	2.18	2.45	2.57	2.27	2.31	2.26	2.39	2.37	2.03	2.58	2.36	2.27	2.29	2.41	2.56	2.17	2.01	2.45	2.71	2.44	2.21	2.2	2.18	2.49	2.15	2.3	2.22
30	2.47	2.58	2.32	2.22	2.36	2.68	2.48	2.39	2.57	2.64	2.43	2.24	2.83	2.4	2.14	2.54	2.59	2.72	2.35	2.14	2.55	2.76	2.61	2.27	2.05	2.4	2.58	2.25	2.73	2.19
31	2.62	2.55	2.41	2.39	2.64	2.77	2.58	2.5	2.65	2.71	2.56	2.54	2.88	2.54	2.42	2.69	2.71	2.74	2.5	2.4	2.67	2.86	2.75	2.54	2.2	2.4	2.78	2.49	2.81	2.26
32	2.14	2.22	2.07	2.46	2.09	2.19	2.28	2.12	2.26	1.98	2.23	2.15	2.16	2.06	2.35	2.36	2.04	2.22	2.33	2.15	2.21	2.62	2.19	2.28	2	2.13	2.45	2.19	2.1	2.04
33	2.07	1.95	2.07	2.22	2.36	2.09	2.03	2.05	2.08	1.9	2.12	2.12	2.19	1.93	2.17	2.24	2	1.93	2.25	2.15	2.08	2.67	2.1	2.08	2.02	2.13	2.35	2.14	1.95	1.88
34	2.17	2.1	2.06	2.28	2.27	2.23	2.14	2.16	2.13	1.95	2.05	2.16	2.26	1.98	2.14	2.18	2.07	2.07	2.2	2.14	2.16	2.76	2.13	2.32	1.97	2.21	2.41	2.24	2.18	1.99
35	2.14	2.12	2.04	2.46	2.18	2.1	1.86	2.19	1.86	1.94	2.12	2.13	2.07	1.88	2.2	2.16	1.9	1.83	2.01	2.25	2.17	2.67	2.02	2.21	2.07	2.46	2.29	2.4	1.81	2.11
36	2.09	1.92	1.93	2.26	2.27	2.08	1.87	2.02	2.05	1.92	2.06	2.04	2.12	1.94	2.08	2	1.88	1.88	2.05	1.99	2.08	2.48	1.9	2.13	1.88	2.13	2.24	2.13	2.1	1.88
37	2.06	1.92	1.92	2.18	2.18	2.14	1.75	1.96	1.83	2.02	1.96	1.96	2.14	1.86	1.95	1.94	1.78	1.99	1.95	1.95	2.03	2.62	1.99	2.11	1.76	2.07	2.1	2.15	1.92	1.84
38	1.95	1.84	2	1.55	1.73	1.82	1.58	1.81	1.59	1.78	1.86	1.64	1.62	1.55	2.11	1.64	1.33	1.32	1.49	1.49	1.79	1.81	1.71	1.53	2.12	1.81	1.99	1.49	1.54	2.14
39	1.83	1.68	1.99	1.55	1.82	1.6	1.54	1.75	1.4	1.67	1.77	1.71	1.51	1.39	2.03	1.55	1.22	1.11	1.4	1.32	1.75	1.9	1.51	1.4	2.2	1.72	1.86	1.55	1.35	2.03
40	1.72	1.58	1.83	1.41	1.82	1.64	1.45	1.65	1.36	1.62	1.71	1.59	1.45	1.34	1.85	1.45	1.06	1.14	1.37	1.24	1.66	1.86	1.44	1.32	2.08	1.62	1.78	1.47	1.44	1.94
41	1.67	1.42	1.78	1.34	1.55	1.55	1.41	1.52	1.26	1.56	1.68	1.48	1.51	1.35	1.73	1.35	0.94	1.13	1.3	1.2	1.58	1.67	1.41	1.19	2.07	1.51	1.73	1.46	1.25	1.96
42	1.81	1.51	1.82	1.39	1.91	1.63	1.62	1.66	1.44	1.79	1.8	1.67	1.51	1.37	1.83	1.49	1.12	1.13	1.4	1.33	1.74	1.86	1.4	1.45	2.17	1.71	1.77	1.44	1.4	1.99
43	1.94	2.07	1.99	1.81	1.82	1.88	1.64	1.88	1.69	1.92	2.02	2.06	2.01	1.64	2	1.83	1.52	1.47	1.67	1.6	1.97	2.1	1.89	1.83	1.88	1.97	2.2	1.87	1.75	2.05

Figure 5 - ASBOG[®] Task Analysis 2010
Means Values for All Task Statements
All ASBOG[®] States

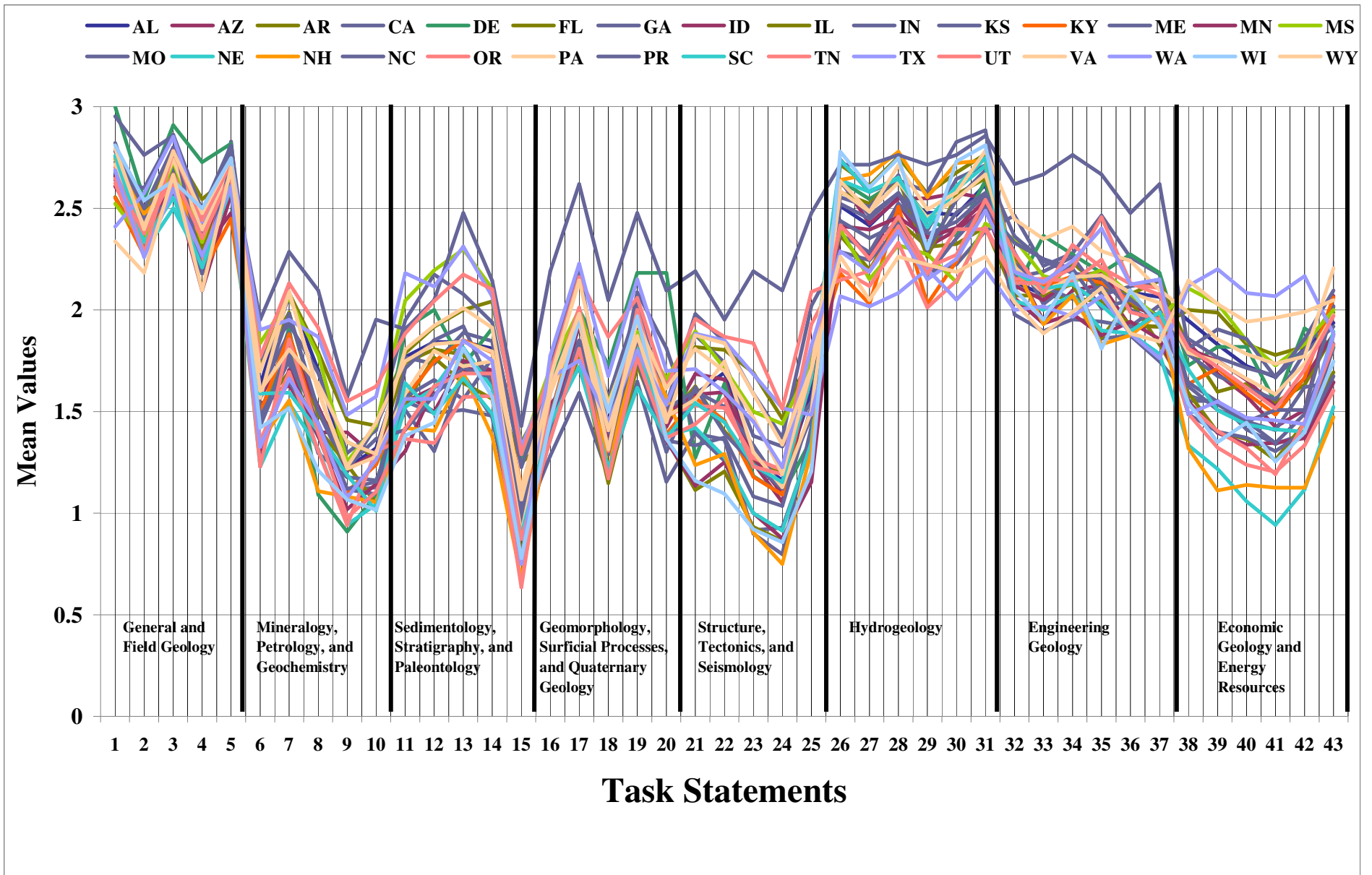


Table 14 - ASBOG® Task Analysis 2010
Importance Scale Correlations between ASBOG® States

	Alabama	Arizona	Arkansas	California	Delaware	Florida	Georgia	Idaho	Illinois	Indiana	Kansas	Kentucky	Maine	Minnesota	Mississippi	Missouri
Alabama	1.00	0.96	0.97	0.88	0.92	0.97	0.97	0.98	0.97	0.97	0.96	0.96	0.95	0.97	0.93	0.96
Arizona	0.96	1.00	0.94	0.89	0.86	0.96	0.95	0.97	0.95	0.95	0.93	0.93	0.95	0.94	0.87	0.97
Arkansas	0.97	0.94	1.00	0.87	0.88	0.94	0.94	0.95	0.93	0.94	0.96	0.94	0.89	0.94	0.95	0.94
California	0.88	0.89	0.87	1.00	0.84	0.87	0.87	0.92	0.87	0.85	0.89	0.91	0.86	0.89	0.86	0.93
Delaware	0.92	0.86	0.88	0.84	1.00	0.90	0.90	0.91	0.91	0.92	0.89	0.90	0.91	0.93	0.86	0.89
Florida	0.97	0.96	0.94	0.87	0.90	1.00	0.98	0.96	0.98	0.97	0.94	0.94	0.95	0.97	0.88	0.97
Georgia	0.97	0.95	0.94	0.87	0.90	0.98	1.00	0.96	0.98	0.96	0.95	0.94	0.94	0.96	0.89	0.97
Idaho	0.98	0.97	0.95	0.92	0.91	0.96	0.96	1.00	0.96	0.96	0.93	0.97	0.96	0.97	0.90	0.97
Illinois	0.97	0.95	0.93	0.87	0.91	0.98	0.98	0.96	1.00	0.97	0.95	0.94	0.96	0.98	0.89	0.97
Indiana	0.97	0.95	0.94	0.85	0.92	0.97	0.96	0.96	0.97	1.00	0.95	0.94	0.95	0.97	0.90	0.95
Kansas	0.96	0.93	0.96	0.89	0.89	0.94	0.95	0.93	0.95	0.95	1.00	0.94	0.89	0.95	0.96	0.93
Kentucky	0.96	0.93	0.94	0.91	0.90	0.94	0.94	0.97	0.94	0.94	0.94	1.00	0.92	0.94	0.92	0.96
Maine	0.95	0.95	0.89	0.86	0.91	0.95	0.94	0.96	0.96	0.95	0.89	0.92	1.00	0.96	0.83	0.94
Minnesota	0.97	0.94	0.94	0.89	0.93	0.97	0.96	0.97	0.98	0.97	0.95	0.94	0.96	1.00	0.89	0.96
Mississippi	0.93	0.87	0.95	0.86	0.86	0.88	0.89	0.90	0.89	0.90	0.96	0.92	0.83	0.89	1.00	0.88
Missouri	0.96	0.97	0.94	0.93	0.89	0.97	0.97	0.97	0.97	0.95	0.93	0.96	0.94	0.96	0.88	1.00
Nebraska	0.94	0.94	0.90	0.90	0.90	0.96	0.94	0.94	0.96	0.94	0.92	0.92	0.95	0.97	0.86	0.96
New Hampshire	0.94	0.95	0.89	0.89	0.90	0.96	0.95	0.95	0.97	0.95	0.90	0.91	0.97	0.97	0.83	0.95
North Carolina	0.94	0.93	0.92	0.94	0.90	0.95	0.96	0.96	0.96	0.92	0.93	0.94	0.93	0.97	0.88	0.97
Oregon	0.90	0.90	0.88	0.97	0.87	0.89	0.89	0.95	0.90	0.88	0.87	0.93	0.91	0.92	0.84	0.94
Pennsylvania	0.99	0.97	0.96	0.89	0.92	0.97	0.97	0.98	0.97	0.97	0.95	0.96	0.96	0.98	0.91	0.97
Puerto Rico	0.80	0.83	0.78	0.91	0.75	0.81	0.79	0.86	0.82	0.79	0.77	0.84	0.84	0.84	0.74	0.87
South Carolina	0.95	0.98	0.93	0.89	0.88	0.98	0.97	0.96	0.96	0.95	0.92	0.93	0.95	0.95	0.86	0.98
Tennessee	0.95	0.94	0.93	0.96	0.90	0.95	0.94	0.96	0.95	0.93	0.93	0.96	0.93	0.95	0.90	0.97
Texas	0.78	0.70	0.84	0.65	0.71	0.71	0.74	0.73	0.72	0.76	0.86	0.73	0.63	0.73	0.87	0.68
Utah	0.88	0.86	0.89	0.94	0.80	0.86	0.85	0.90	0.86	0.86	0.90	0.91	0.83	0.89	0.88	0.89
Virginia	0.98	0.97	0.95	0.91	0.91	0.97	0.97	0.98	0.96	0.95	0.94	0.97	0.96	0.96	0.91	0.98
Washington	0.90	0.90	0.87	0.96	0.88	0.87	0.86	0.94	0.88	0.89	0.87	0.93	0.93	0.92	0.84	0.92
Wisconsin	0.95	0.94	0.90	0.86	0.92	0.97	0.96	0.96	0.98	0.97	0.92	0.93	0.97	0.98	0.85	0.95
Wyoming	0.90	0.88	0.94	0.80	0.80	0.84	0.85	0.89	0.83	0.89	0.91	0.88	0.81	0.85	0.93	0.84

Table 14 - ASBOG® Task Analysis 2010
Importance Scale Correlations between ASBOG® States

	Nebraska	New Hampshire	North Carolina	Oregon	Pennsylvania	Puerto Rico	South Carolina	Tennessee	Texas	Utah	Virginia	Washington	Wisconsin	Wyoming
Alabama	0.94	0.94	0.94	0.90	0.99	0.80	0.95	0.95	0.78	0.88	0.98	0.90	0.95	0.90
Arizona	0.94	0.95	0.93	0.90	0.97	0.83	0.98	0.94	0.70	0.86	0.97	0.90	0.94	0.88
Arkansas	0.90	0.89	0.92	0.88	0.96	0.78	0.93	0.93	0.84	0.89	0.95	0.87	0.90	0.94
California	0.90	0.89	0.94	0.97	0.89	0.91	0.89	0.96	0.65	0.94	0.91	0.96	0.86	0.80
Delaware	0.90	0.90	0.90	0.87	0.92	0.75	0.88	0.90	0.71	0.80	0.91	0.88	0.92	0.80
Florida	0.96	0.96	0.95	0.89	0.97	0.81	0.98	0.95	0.71	0.86	0.97	0.87	0.97	0.84
Georgia	0.94	0.95	0.96	0.89	0.97	0.79	0.97	0.94	0.74	0.85	0.97	0.86	0.96	0.85
Idaho	0.94	0.95	0.96	0.95	0.98	0.86	0.96	0.96	0.73	0.90	0.98	0.94	0.96	0.89
Illinois	0.96	0.97	0.96	0.90	0.97	0.82	0.96	0.95	0.72	0.86	0.96	0.88	0.98	0.83
Indiana	0.94	0.95	0.92	0.88	0.97	0.79	0.95	0.93	0.76	0.86	0.95	0.89	0.97	0.89
Kansas	0.92	0.90	0.93	0.87	0.95	0.77	0.92	0.93	0.86	0.90	0.94	0.87	0.92	0.91
Kentucky	0.92	0.91	0.94	0.93	0.96	0.84	0.93	0.96	0.73	0.91	0.97	0.93	0.93	0.88
Maine	0.95	0.97	0.93	0.91	0.96	0.84	0.95	0.93	0.63	0.83	0.96	0.93	0.97	0.81
Minnesota	0.97	0.97	0.97	0.92	0.98	0.84	0.95	0.95	0.73	0.89	0.96	0.92	0.98	0.85
Mississippi	0.86	0.83	0.88	0.84	0.91	0.74	0.86	0.90	0.87	0.88	0.91	0.84	0.85	0.93
Missouri	0.96	0.95	0.97	0.94	0.97	0.87	0.98	0.97	0.68	0.89	0.98	0.92	0.95	0.84
Nebraska	1.00	0.98	0.95	0.91	0.94	0.88	0.96	0.95	0.63	0.89	0.94	0.92	0.97	0.78
New Hampshire	0.98	1.00	0.96	0.92	0.95	0.87	0.96	0.94	0.62	0.85	0.94	0.92	0.98	0.78
North Carolina	0.95	0.96	1.00	0.95	0.96	0.88	0.94	0.97	0.70	0.91	0.96	0.92	0.95	0.81
Oregon	0.91	0.92	0.95	1.00	0.92	0.92	0.91	0.96	0.62	0.93	0.93	0.98	0.90	0.80
Pennsylvania	0.94	0.95	0.96	0.92	1.00	0.83	0.96	0.96	0.75	0.88	0.98	0.91	0.95	0.89
Puerto Rico	0.88	0.87	0.88	0.92	0.83	1.00	0.85	0.90	0.46	0.86	0.84	0.92	0.83	0.66
South Carolina	0.96	0.96	0.94	0.91	0.96	0.85	1.00	0.95	0.67	0.85	0.97	0.90	0.96	0.84
Tennessee	0.95	0.94	0.97	0.96	0.96	0.90	0.95	1.00	0.68	0.92	0.97	0.95	0.93	0.84
Texas	0.63	0.62	0.70	0.62	0.75	0.46	0.67	0.68	1.00	0.70	0.72	0.61	0.67	0.88
Utah	0.89	0.85	0.91	0.93	0.88	0.86	0.85	0.92	0.70	1.00	0.88	0.92	0.85	0.82
Virginia	0.94	0.94	0.96	0.93	0.98	0.84	0.97	0.97	0.72	0.88	1.00	0.93	0.95	0.89
Washington	0.92	0.92	0.92	0.98	0.91	0.92	0.90	0.95	0.61	0.92	0.93	1.00	0.91	0.81
Wisconsin	0.97	0.98	0.95	0.90	0.95	0.83	0.96	0.93	0.67	0.85	0.95	0.91	1.00	0.81
Wyoming	0.78	0.78	0.81	0.80	0.89	0.66	0.84	0.84	0.88	0.82	0.89	0.81	0.81	1.00

Table 15 - ASBOG[®] Task Analysis 2010
Importance Scale Reliability Analyses for ASBOG[®] States

Importance Scale		
State	Item-total Correlations	Alpha if State Deleted
Alabama	0.98	0.995
Arizona	0.97	0.995
Arkansas	0.96	0.996
California	0.93	0.996
Delaware	0.92	0.996
Florida	0.98	0.995
Georgia	0.97	0.995
Idaho	0.99	0.995
Illinois	0.98	0.995
Indiana	0.97	0.995
Kansas	0.96	0.995
Kentucky	0.97	0.995
Maine	0.96	0.995
Minnesota	0.98	0.995
Mississippi	0.92	0.996
Missouri	0.98	0.995
Nebraska	0.97	0.995
New Hampshire	0.97	0.996
North Carolina	0.97	0.995
Oregon	0.94	0.995
Pennsylvania	0.99	0.995
Puerto Rico	0.86	0.996
South Carolina	0.97	0.995
Tennessee	0.98	0.995
Texas	0.73	0.996
Utah	0.91	0.996
Virginia	0.98	0.995
Washington	0.94	0.996
Wisconsin	0.97	0.995
Wyoming	0.87	0.996
Alpha Coefficient	0.996	

Table 16 - ASBOG® Task Analysis 2010
Importance Mean Values for Provinces in Canada

Task No.	Alberta	British Columbia	Manitoba	New Brunswick	Newfoundland	Northwest Territories	Nova Scotia	Ontario	Quebec	Saskatchewan
1	2.36	2.63	2.53	2.63	2.64	2.43	2.65	2.76	2.64	2.34
2	2.41	2.41	2.37	2.27	2.20	2.33	2.35	2.40	2.36	2.11
3	2.63	2.70	2.58	2.60	2.55	2.57	2.47	2.61	2.49	2.50
4	1.88	2.07	2.16	1.77	2.00	1.97	1.94	2.07	2.04	1.84
5	2.58	2.52	2.16	2.57	2.38	2.40	2.24	2.59	2.45	2.24
6	2.02	1.96	2.16	2.13	1.80	1.77	1.59	2.07	2.06	1.95
7	1.98	2.44	2.21	2.20	2.14	2.33	1.82	2.14	2.15	2.26
8	1.94	1.78	1.89	2.03	1.79	2.00	1.53	1.91	1.72	1.95
9	1.42	1.26	1.58	1.53	1.34	1.50	1.35	1.44	1.34	1.45
10	1.64	1.78	2.00	1.73	1.69	2.10	1.59	1.80	2.02	1.89
11	2.13	1.40	1.84	1.90	1.55	1.53	1.41	1.41	1.41	1.58
12	2.16	1.40	1.74	1.83	1.63	1.37	1.18	1.47	1.49	1.74
13	2.28	1.72	1.72	1.87	1.61	1.53	1.59	1.53	1.45	1.68
14	2.05	1.64	1.63	1.80	1.63	1.67	1.38	1.46	1.53	1.79
15	1.43	0.68	1.05	1.27	1.09	1.10	1.18	0.89	0.81	0.92
16	1.48	1.48	1.68	1.40	1.18	1.37	1.31	1.26	1.22	1.39
17	1.55	1.70	1.63	1.63	1.34	1.53	1.94	1.49	1.39	1.55
18	1.14	1.07	1.11	1.13	1.23	1.13	1.13	1.16	1.11	1.08
19	1.63	1.63	1.63	1.63	1.27	1.37	1.56	1.43	1.41	1.39
20	1.22	1.30	1.37	1.30	1.15	1.10	1.25	1.09	1.07	1.16
21	1.84	1.70	2.11	1.60	1.84	1.50	1.31	1.33	1.70	1.76
22	1.70	1.74	2.11	1.47	1.78	1.80	1.38	1.67	1.83	1.92
23	1.52	1.67	1.89	1.60	1.63	1.67	1.13	1.54	1.77	1.47
24	1.44	1.44	1.68	1.60	1.50	1.63	1.13	1.29	1.65	1.53
25	1.36	1.19	1.37	1.47	1.18	0.93	1.13	1.14	1.21	1.03
26	1.86	1.69	1.79	1.97	1.52	1.37	2.40	1.80	1.66	1.76
27	1.52	1.30	1.58	1.57	1.05	0.80	2.13	1.40	1.20	1.22
28	1.83	1.44	1.58	1.67	1.33	0.73	2.27	1.57	1.40	1.45
29	1.94	1.56	1.74	1.93	1.43	0.80	2.13	1.44	1.43	1.45
30	1.81	1.74	1.63	1.83	1.39	0.73	2.33	1.70	1.63	1.37
31	1.97	1.85	1.84	2.03	1.63	1.07	2.33	1.90	1.76	1.47
32	1.86	1.74	1.84	1.67	1.70	1.23	2.13	1.64	1.60	1.37
33	1.56	1.70	1.58	1.57	1.64	1.27	1.60	1.56	1.49	1.41
34	1.66	1.52	1.68	1.77	1.50	1.20	1.93	1.60	1.62	1.32
35	1.89	1.67	1.74	1.80	1.57	1.30	1.40	1.53	1.68	1.53
36	1.38	1.67	1.47	1.57	1.45	1.23	1.53	1.33	1.41	1.29
37	1.54	1.56	1.47	1.73	1.55	1.00	1.87	1.50	1.47	1.16
38	2.00	1.96	2.32	2.07	2.32	2.37	1.93	2.17	2.15	2.13
39	2.03	2.00	2.21	1.97	2.05	2.50	1.53	2.21	2.23	2.21
40	1.97	1.85	2.00	1.77	2.00	1.93	1.60	1.87	1.83	1.76
41	2.08	2.04	2.16	1.52	1.89	2.03	1.47	2.03	2.09	1.95
42	1.92	2.07	2.16	1.60	1.89	1.97	1.47	2.04	2.09	2.00
43	2.02	1.74	1.74	1.83	1.77	1.43	1.40	1.88	1.85	1.92

Figure 6 - ASBOG[®] Task Analysis 2010
Means Values for All Task Statements
All Provinces in Canada

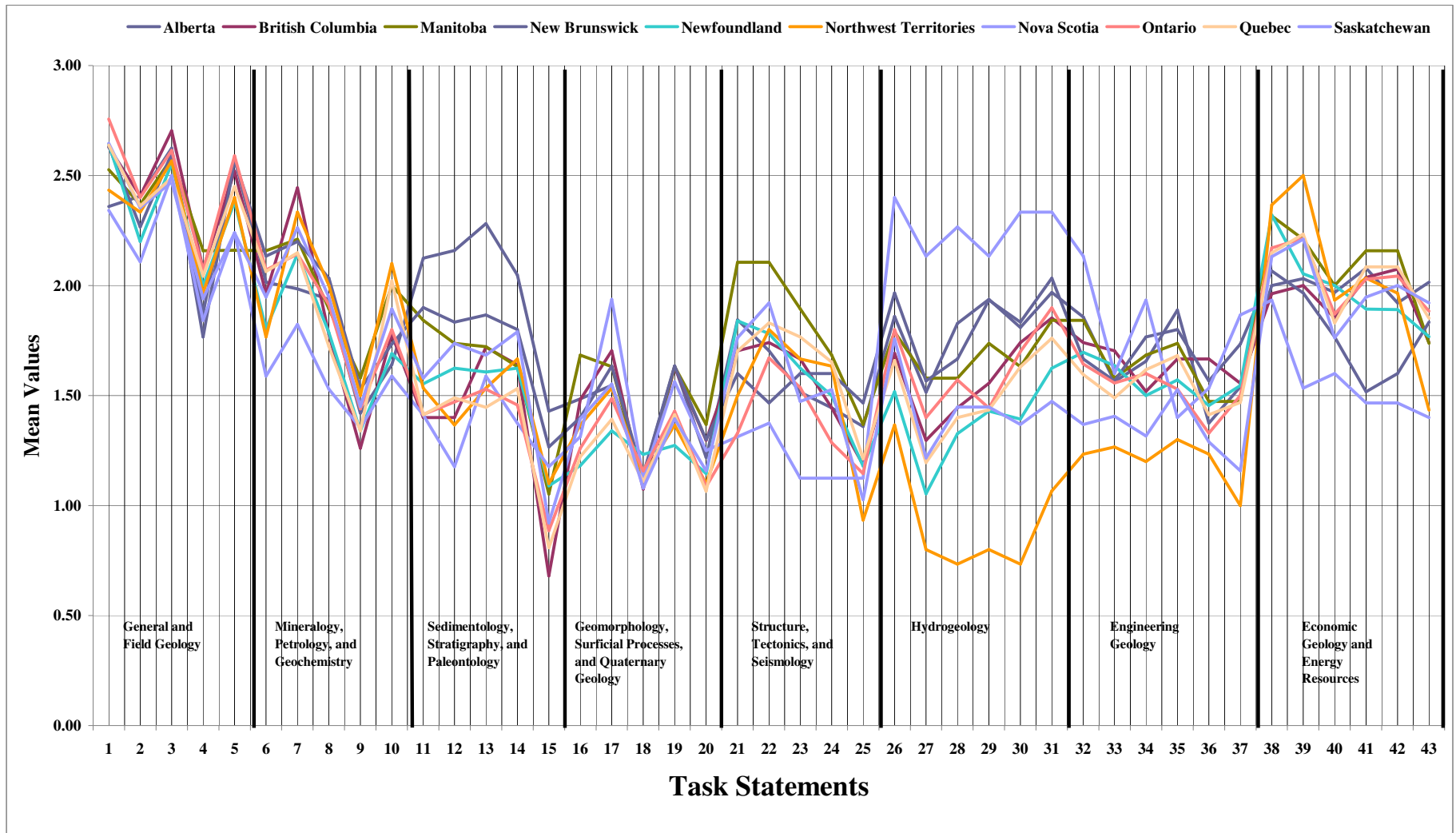


Table 17 - ASBOG[®] Task Analysis 2010
Importance Scale Correlations between Provinces in Canada

	Alberta	British Columbia	Manitoba	New Brunswick	Newfoundland	Northwest Territories	Nova Scotia	Ontario	Quebec	Saskatchewan
Alberta	1.00	0.76	0.76	0.86	0.79	0.60	0.52	0.79	0.75	0.80
British Columbia	0.76	1.00	0.89	0.82	0.90	0.77	0.58	0.93	0.94	0.87
Manitoba	0.76	0.89	1.00	0.74	0.90	0.83	0.43	0.88	0.93	0.92
New Brunswick	0.86	0.82	0.74	1.00	0.80	0.61	0.67	0.85	0.79	0.77
Newfoundland	0.79	0.90	0.90	0.80	1.00	0.86	0.42	0.91	0.94	0.90
Northwest Territories	0.60	0.77	0.83	0.61	0.86	1.00	0.13	0.78	0.84	0.89
Nova Scotia	0.52	0.58	0.43	0.67	0.42	0.13	1.00	0.62	0.47	0.35
Ontario	0.79	0.93	0.88	0.85	0.91	0.78	0.62	1.00	0.95	0.88
Quebec	0.75	0.94	0.93	0.79	0.94	0.84	0.47	0.95	1.00	0.91
Saskatchewan	0.80	0.87	0.92	0.77	0.90	0.89	0.35	0.88	0.91	1.00

Table 18 - ASBOG[®] Task Analysis 2010
Importance Scale Reliability Analyses for Provinces in Canada

Importance Scale		
Province	Item-total Correlations	Alpha if Province Deleted
Alberta	0.82	0.96
British Columbia	0.94	0.96
Manitoba	0.92	0.96
New Brunswick	0.86	0.96
Newfoundland	0.94	0.96
Northwest Territories	0.78	0.97
Nova Scotia	0.49	0.98
Ontario	0.97	0.96
Quebec	0.95	0.96
Saskatchewan	0.92	0.96
Alpha Coefficient	0.97	

Table 19 - ASBOG[®] Task Analysis 2010
Assignment of Tasks to FG and PG Exams

No.	Task Statements	FG	PG
	A. General and Field Geology		
1	Plan and conduct geological investigations considering human health, safety, the environment, regulations, and Quality Assurance/Quality Control (QA/QC).	X	X
2	Collect, compile, and interpret historic information to plan geological investigations.	X	X
3	Interpret and analyze available geological and geophysical data, maps, sections, and reports.	X	X
4	Determine scales, distances, and elevations from imagery, surveys, maps, and GIS.	X	X
5	Prepare, analyze, and interpret logs, cross-sections, maps, and other graphics derived from field investigations and GIS applications.	X	X
	B. Mineralogy, Petrology, and Geochemistry		
6	Plan and conduct mineralogic, petrologic, and geochemical investigations, including the use of modeling and geophysics.		X
7	Identify minerals and rocks and their characteristics.	X	
8	Identify and interpret rock and mineral sequences, associations, and genesis.	X	
9	Evaluate geochemical and isotopic data, and construct geochemical models related to rocks and minerals.	X	X
10	Determine type, degree, and effects of rock and mineral alteration.	X	
	C. Sedimentology, Stratigraphy, and Paleontology		
11	Plan and conduct sedimentologic, stratigraphic, or paleontologic investigations, including the use of modeling and geophysics.		X
12	Select and apply appropriate stratigraphic nomenclature and establish correlations.	X	
13	Identify and interpret sedimentary processes and structures, depositional environments, and sediment provenance.	X	X
14	Identify and interpret sediment or rock sequences, positions, and ages.	X	
15	Identify and interpret fossils and fossil assemblages for age or paleoenvironmental interpretations.	X	
	D. Geomorphology, Surficial Processes, and Quaternary Geology		
16	Plan and conduct geomorphic investigations, including the use of modeling and geophysics.		X
17	Identify, classify, and interpret landforms, surficial materials, and processes.	X	
18	Determine absolute or relative age relationships of landforms, sediments, and soils.	X	
19	Evaluate geomorphic processes and development of landforms, sediments, and soils, including watershed functions.	X	X

Table 19 - ASBOG[®] Task Analysis 2010
Assignment of Tasks to FG and PG Exams

No.	Task Statements	FG	PG
20	Interpret geomorphic conditions and processes based on remote sensing and GIS.	X	X
	E. Structure, Tectonics, and Siesmology		
21	Plan and conduct structural, tectonic, or seismologic investigations, including the use of modeling and geophysics.		X
22	Identify and define structural features and relations, including constructing and interpreting structural projections and statistical analyses.	X	
23	Interpret deformational history through structural and tectonic analyses.	X	X
24	Develop and apply tectonic models to identify geologic processes and history.	X	X
25	Evaluate earthquake mechanisms, paleoseismic history, and hazards.	X	X
	F. Hydrogeology		
26	Plan and conduct hydrogeological, geochemical, and environmental investigations, including the use of modeling, geophysics, and isotopic and tracer studies.		X
27	Define and characterize hydraulic properties of saturated and vadose zone flow systems.	X	
28	Design groundwater monitoring, observation, extraction, production, or injection wells.		X
29	Evaluate water resources, assess aquifer yield, and determine sustainability.	X	X
30	Characterize water quality and assess chemical fate and transport.	X	X
31	Manage, develop, protect, or remediate, surface water or groundwater resources.		X
	G. Engineering Geology		
32	Plan and conduct environmental and engineering geological investigations, including the use of modeling and geophysics.		X
33	Identify and evaluate engineering and physical properties of earth materials.	X	
34	Provide recommendations for engineering design, land use decisions, and watershed management.		X
35	Identify, map, and evaluate geologic, geomorphic, and seismic hazards.	X	X
36	Interpret land use and landforms using imagery, maps, records, GIS, and geological site characteristics.	X	X
37	Develop programs for hazard mitigation, and land and watershed restoration.		X
	H. Economic Geology and Energy Resources		
38	Plan and conduct mineral or energy resource exploration, evaluation, and environmental programs, including the use of modeling, geophysics, and geochemistry.		X

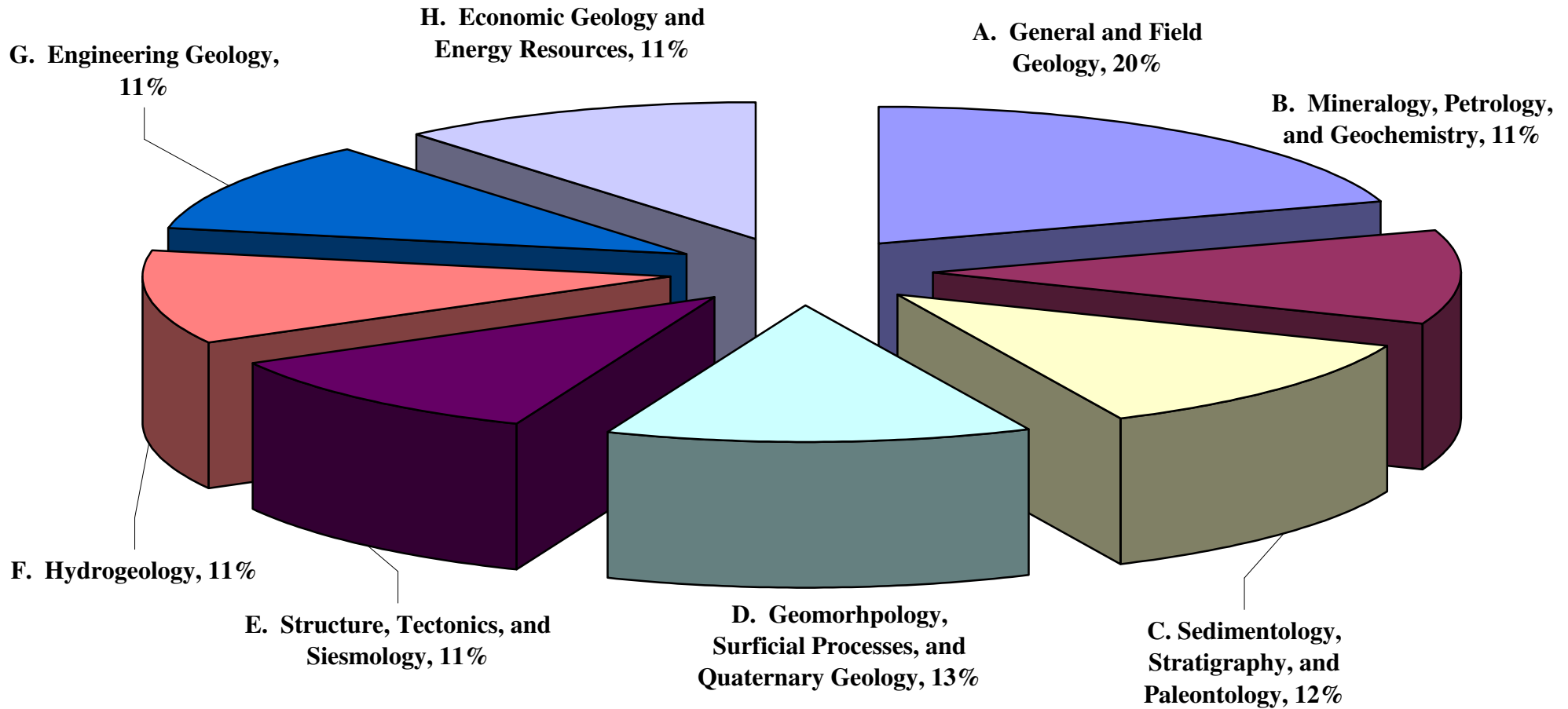
Table 19 - ASBOG[®] Task Analysis 2010
Assignment of Tasks to FG and PG Exams

No.	Task Statements	FG	PG
39	Compile, assess, and evaluate the data necessary to explore for mineral and energy resources.	X	X
40	Estimate the distribution of resources based on surface and subsurface data including imagery and GIS applications.	X	X
41	Interpret data for economic evaluations, resource assessments, and probability of success.	X	X
42	Determine quantity and quality of resources and reserves from laboratory, surface, and subsurface data.	X	X
43	Perform geological evaluations for design, abandonment, closure, and reclamation and restoration of energy development or mineral extraction operations.		X

**Table 20 - ASBOG® Task Analysis 2010
FG Test Blueprint**

No.	Task Statements	FG Test Blueprint
	A. General and Field Geology - 20 %	
1	Plan and conduct geological investigations considering human health, safety, the environment, regulations, and Quality Assurance/Quality Control (QA/QC).	6
2	Collect, compile, and interpret historic information to plan geological investigations.	5
3	Interpret and analyze available geological and geophysical data, maps, sections, and reports.	6
4	Determine scales, distances, and elevations from imagery, surveys, maps, and GIS.	5
5	Prepare, analyze, and interpret logs, cross-sections, maps, and other graphics derived from field investigations and GIS applications.	6
	B. Mineralogy, Petrology, and Geochemistry - 11 %	
7	Identify minerals and rocks and their characteristics.	5
8	Identify and interpret rock and mineral sequences, associations, and genesis.	4
9	Evaluate geochemical and isotopic data, and construct geochemical models related to rocks and minerals.	3
10	Determine type, degree, and effects of rock and mineral alteration.	4
	C. Sedimentology, Stratigraphy, and Paleontology - 12 %	
12	Select and apply appropriate stratigraphic nomenclature and establish correlations.	4
13	Identify and interpret sedimentary processes and structures, depositional environments, and sediment provenance.	5
14	Identify and interpret sediment or rock sequences, positions, and ages.	5
15	Identify and interpret fossils and fossil assemblages for age or paleoenvironmental interpretations.	3
	D. Geomorphology, Surficial Processes, and Quaternary Geology - 13 %	
17	Identify, classify, and interpret landforms, surficial materials, and processes.	5
18	Determine absolute or relative age relationships of landforms, sediments, and soils.	4
19	Evaluate geomorphic processes and development of landforms, sediments, and soils, including watershed functions.	5
20	Interpret geomorphic conditions and processes based on remote sensing and GIS.	4
	E. Structure, Tectonics, and Siesmology - 11 %	
22	Identify and define structural features and relations, including constructing and interpreting structural projections and statistical analyses.	4
23	Interpret deformational history through structural and tectonic analyses.	4
24	Develop and apply tectonic models to identify geologic processes and history.	3
25	Evaluate earthquake mechanisms, paleoseismic history, and hazards.	4
	F. Hydrogeology - 11 %	
27	Define and characterize hydraulic properties of saturated and vadose zone flow systems.	5
29	Evaluate water resources, assess aquifer yield, and determine sustainability.	5
30	Characterize water quality and assess chemical fate and transport.	5
	G. Engineering Geology - 11 %	
33	Identify and evaluate engineering and physical properties of earth materials.	5
35	Identify, map, and evaluate geologic, geomorphic, and seismic hazards.	5
36	Interpret land use and landforms using imagery, maps, records, GIS, and geological site characteristics.	5
	H. Economic Geology and Energy Resources - 11 %	
39	Compile, assess, and evaluate the data necessary to explore for mineral and energy resources.	4
40	Estimate the distribution of resources based on surface and subsurface data including imagery and GIS applications.	4
41	Interpret data for economic evaluations, resource assessments, and probability of success.	4
42	Determine quantity and quality of resources and reserves from laboratory, surface, and subsurface data.	4
	Total Number of Items	140

**Figure 7 - ASBOG[®] Task Analysis 2010
FG Test Blueprint - Domain Percentages**



**Table 21 - ASBOG® Task Analysis 2010
PG Test Blueprint**

No. Task Statements	PG Test Blueprint
A. General and Field Geology - 21 %	
1 Plan and conduct geological investigations considering human health, safety, the environment, regulations, and Quality Assurance/Quality Control (QA/QC).	5
2 Collect, compile, and interpret historic information to plan geological investigations.	4
3 Interpret and analyze available geological and geophysical data, maps, sections, and reports.	5
4 Determine scales, distances, and elevations from imagery, surveys, maps, and GIS.	4
5 Prepare, analyze, and interpret logs, cross-sections, maps, and other graphics derived from field investigations and GIS applications.	5
B. Mineralogy, Petrology, and Geochemistry - 5 %	
6 Plan and conduct mineralogic, petrologic, and geochemical investigations, including the use of modeling and geophysics.	3
9 Evaluate geochemical and isotopic data, and construct geochemical models related to rocks and minerals.	2
C. Sedimentology, Stratigraphy, and Paleontology - 5 %	
11 Plan and conduct sedimentologic, stratigraphic, or paleontologic investigations, including the use of modeling and geophysics.	3
13 Identify and interpret sedimentary processes and structures, depositional environments, and sediment provenance.	3
D. Geomorphology, Surficial Processes, and Quaternary Geology - 8 %	
16 Plan and conduct geomorphic investigations, including the use of modeling and geophysics.	3
19 Evaluate geomorphic processes and development of landforms, sediments, and soils, including watershed functions.	3
20 Interpret geomorphic conditions and processes based on remote sensing and GIS.	3
E. Structure, Tectonics, and Siesmology - 9 %	
21 Plan and conduct structural, tectonic, or seismologic investigations, including the use of modeling and geophysics.	3
23 Interpret deformational history through structural and tectonic analyses.	2
24 Develop and apply tectonic models to identify geologic processes and history.	2
25 Evaluate earthquake mechanisms, paleoseismic history, and hazards.	3
F. Hydrogeology - 19 %	
26 Plan and conduct hydrogeological, geochemical, and environmental investigations, including the use of modeling, geophysics, and isotopic and tracer studies.	4
28 Design groundwater monitoring, observation, extraction, production, or injection wells.	4
29 Evaluate water resources, assess aquifer yield, and determine sustainability.	4
30 Characterize water quality and assess chemical fate and transport.	4
31 Manage, develop, protect, or remediate, surface water or groundwater resources.	4
G. Engineering Geology - 17 %	
32 Plan and conduct environmental and engineering geological investigations, including the use of modeling and geophysics.	4
34 Provide recommendations for engineering design, land use decisions, and watershed management.	4
35 Identify, map, and evaluate geologic, geomorphic, and seismic hazards.	4
36 Interpret land use and landforms using imagery, maps, records, GIS, and geological site characteristics.	4
37 Develop programs for hazard mitigation, and land and watershed restoration.	3
H. Economic Geology and Energy Resources - 16 %	
38 Plan and conduct mineral or energy resource exploration, evaluation, and environmental programs, including the use of modeling, geophysics, and geochemistry.	3
39 Compile, assess, and evaluate the data necessary to explore for mineral and energy resources.	3
40 Estimate the distribution of resources based on surface and subsurface data including imagery and GIS applications.	3
41 Interpret data for economic evaluations, resource assessments, and probability of success.	3
42 Determine quantity and quality of resources and reserves from laboratory, surface, and subsurface data.	3
43 Perform geological evaluations for design, abandonment, closure, and reclamation and restoration of energy development or mineral extraction operations.	3
Total Number of Items	110

**Figure 8 - ASBOG® Task Analysis 2010
PG Test Blueprint - Domain Percentages**

