



# Penn Gold Well Services, Inc.

P.O. Box 485

Bradford, PA 16701

Phone: (814) 368-7119

MS16  
K5

37-23794-01  
030-32460-01

U.S.N.R.C. Region 1  
475 Allendale Rd  
King of Prussia, Pa.  
19406-1415

July 31, 1992

Dear Sir(s)

This is in reference to the letter dated 06/19/92, requesting further information on our license application Control No. 121215.

1. The address of the primary storage area is 776 S. Kendall Ave. Bradford Pa. 16701. This storage area will be used for tool calibration and repair. The sources will be utilized at temporary job sites in States subject to NRC regulatory authority.
2. A. Penn Gold Well Services is a small company comprising of 2 full time persons. R. Hitchcock and F.R. Scott. These two individuals are the owners in the corporation.  
B. With the small size of Penn Gold, there is overlapping of job responsibilities. For legal matters, both R. Hitchcock and F.R. Scott are listed as RPO's since they both share in the legal and financial responsibilities of the corporation. F.R. Scott is the RSO and is responsible for the management of the program. R. Hitchcock duties as the RPO will to help make financial and legal decisions, over see the operations of the RSO to make sure of compliance to the regulations.
3. Provided are copies of the Gearhart training certificates for both the RSO and RPO. Information on the course content and number of hours spent on each subject is not achievable. This is due the fact that GOI went out of business in the late 1970's and there is no known access to the records. However, this training must of been acceptable, since both individuals are on other licenses in Region III and also R. Hitchcock was an acting RSO for the Bradford Pa. station of Gearhart.
4. Both RA Services and Microtec Services Inc. have NRC approved courses that follow the guidelines listed in part. They are formal "24 hour Well Logging Courses" and include all topics listed in 39.61e
5. Enclose in this letter is the Logging Supervisors Test. This is the exam that will be given to previous trained logging supervisors. If they fail the exam (below 75%) they will be required to take the 8 hours training given by the RSO then retested.

ORIGINAL RECORD COPY ML 10

121215

AUG 20 1992



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6. The safety manual has been corrected to further expand on the 3 months of prior experience to 3 months of full-time equivalent or at least 13 weeks or 520 of actual work preforming well logging with sealed sources.
7. Enclosed is a updated version of the logging assistants test.
8. Added to the safety manual under ancillary personnel, is a statement confirming that the records for ancillary personnel will be maintained for at least 3 years.
9. The type of dosimeter that will be used during source retrieval will be ionization chamber type pocket dosimeters. These will be RA Services and been calibrated within the last 3 months. (A note on RA Services and Gulf Nuclear, during the past year RA Services Inc. has purchased Gulf Nuclear. Therefore all references to Gulf Nuclear should be changed to RA Services Inc.)
10. Any film badge or TLD's used by Penn Gold will also provide neutron dosimetry service to our logging personnel. Also included in Section 4 of our Safety Manual is part 9 which states;  
Film Badges, when not in use, will be stored with the control badge. Do not store the badge in the cab of the logging truck or in the loggers compartment. Nor will the film badges be worn home since "going thru the wash" can result in erroneous readings. The control badge will be stored in an area as far from the storage pits or logging vehicle as possible.
11. Included as standard equipment will be an Emergency Kit with additional protective clothing, absorbent materials, secondary containers such as plastic garbage bags.
12. Visual inspection of source holders, handling tools, logging tools and etc will be conducted each time the sources are utilized at each job site. This is more practical then conducting a visual inspection each day since there are many days the sources are not utilized.
13. A NRC approved, calibrated and operating Micro-R survey meter will be available from RA Services Inc. within 24 hours. This meter will be shipped by an overnight service such as Federal Express. Other low level monitors such as a gamma tool can be used to monitor fluids during fishing operation while circulation well fluids from the pit.



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14. The annual inspection of logging engineers will be preformed at the actual well site and if a logging supervisor does not preform well logging operations for a period exceeding 1 year, will be inspected by the RSO the first time that person engages in well logging operation.
15. I confirm that appropriate dosimetry will be worn when maintenance is preformed on sealed sources as described in Section 16 A thru D of the Radiation Safety Manual. Also added to the manual as step 1 in the procedures of Section 16, A thru D is added. "While wearing your film badge,"
16. Section 17, A, 6 thru 8 has been rewritten to read:
  6. Survey the Vehicle Before Leaving the Shop
    - a. Prior to leaving the shop and after the sources are locked in place, survey all 4 sides of the vehicle and the operators cab. The best procedure at doing this is monitor the vehicle at consistent points near the source storage area. These points could be the placards, lettering on the vehicle or just a mental note of where the reading was taken. This allows for consistency in your readings for when a source is not properly stored the reading will be different. (This is most noticeable when the window for the density source is not pointing to the ground and requires adjustment in order to minimize exposure.)
    - b. If transporting from one job site to another, monitor the vehicle prior to leaving the last location and use the measurements as level before leaving the shop.
  7. Survey the Location
    - a. A survey of the work area (catwalk) will be taken prior to loading the tools with the source materials. These readings should be low (at background). Record these readings on the job monitoring form.
    - b. An easy way to monitor the work area is to survey the area while going to the rig to obtain information on the well.
  8. Survey the Location after Completion of Services.
    - a. A survey of the work area (catwalk) will be taken after completion of the job. These readings should be low (at background). Record these reading on the job monitoring form.
    - b. Again, an easy way to monitor the work area is to survey the area while going to the rig to deliver copies of the log. This step assures that a source is not left in the work area by accident and that no sources may of been ruptured. Note any changes from the before operation readings.



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9. Survey the Vehicle Before Leaving the Job Site.
  - a. A survey will be taken of the vehicle as well as the cab of the vehicle prior to leaving the job site. The readings should compare to the readings prior to leaving the shop. If any difference exist, confirm that the sources are in place and stored properly.
  - b. During the survey, confirm that the sources are indeed locked down in place.
10. Survey the Vehicle After Unloading at the Shop
  - a. A survey will be preformed after unloading the vehicle. These readings should be compared to the background reading of the shop area. This confirms that all sources are in the pit.
  - b. This survey will be made even if the sources are left on board in their transport containers as specified in Section 7 Part B. The purpose is to insure the sources have been returned to the shop.

17a-c Section 20 part E has changed to read:

E. While surveying the vehicle including the passenger compartment of the vehicle, confirm that the radiation levels do not exceed 2 mr/hr at any exterior surface and the cab of the vehicle. If levels exceed 2 mr/hr move the source or in the case of the density source confirm the window is pointed toward the ground. If levels still exceed 2 mr/hr additional shielding may be required to lower the levels.

While on location, it is difficult to restrict unauthorized personal from a work area. The best procedure is to keep all unauthorized personal a good distance from the work area while loading the tools with the sources and lowering the tool into the well. Also do not load the tools until it is time to lower it into the hole. A good distance can be defined back at the shop by removing the sources from the transport pigs and determining the distance from the sources where levels are 2 mr/hr or less then add a safety margin. In other words, if it is determined that 20 feet from the sources provides a safe distance, add an extra 10 feet to make it 30 feet to be used in practice. In practice, it is not practical or safe to determine exact distances where the levels are 2 mr/hr or less for this requires the sources out of storage and not in the hole for a longer period of time.

17b. Section 17 part 4-h has been changed to read:

T.I. (Transport Index) - Survey the sources in the transport container at a distance of 1 meter. Confirm that the Label Type for the transport container is the proper identification type.



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- 17d. Section 12 part C has been changed to read:  
C. During the critical fishing operations dosimeters will be supplied to all rig personal involved with the actual fishing operations. A before and after reading will be recorded for each person issued a dosimeter on the job survey form. Surveys of the fluids being circulated will be monitored by using a gamma tool in the flow line to detect any increase in radiation level over background. Understanding that if there is a rupture in the source holder during fishing operation the gamma tool used to monitor the mud flow will then be contaminated and circulation of well fluids will stop at this time also. A Micro-R meter will be obtained to survey for contamination and a map of the area will be made showing the levels of contamination around the well site and the NRC will be notified.
- 18 Section 20 part F has been changed to read:  
When utilizing sources at the job site, the logging tool will be handled by assistant logging supervisor (rigger) only. Also while handling the tools keep the source as far away from your hands and body as possible. In handling any Density tool, keep the window of the source holder pointed away from your body.
19. Included in Section 3 part 2 under "In-house" course will be part (f) Transporting licensed material as to sections 172.519 and 172.556 of 49 CFR of the DOT regulations.
20. There is no official training in proper "fishing" techniques. This is learned over many years of on the job training watching and helping other experienced persons fish for logging equipment. Both the RSO and RPO have had many years in the field, and along with the rig personal, will be able to make sound decisions on different "fishing" procedures.
21. Under Emergency Procedures Section 21 has been added part (f).  
f. Case of source rupture or a source has caused contamination  
1. If any evidence that a sealed source has ruptured or for any reason has caused any device or area to become contaminated. The first step to be taken by the Logging Supervisor is to determine the area contaminated and to secure and restrict access to the area. This will be done with a survey meter on the lowest scale. If practical, while roping off the area add an extra distance just to be sure.  
2. Notify the RSO or RPO and the well owner or operator. During this time, the logging Supervisor may have to leave location. If this is necessary, the Assistant logging Supervisor (rigger) will maintain security over the area. The rigger will not start any cleanup procedures unsupervised.



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3. After notification, follow the decontamination procedures as listed in Section 13 of this manual.
4. In the case of a source rupture, monitor the clothing and body of all personal. If it becomes apparent the clothing is contaminated, discard clothing immediately placing the contaminated clothing in a plastic bag (emergency kit). If the skin has been contaminated, wash with soap and water saving the wash and rinse water in a bucket or drum.
22. The Source inventory form has been modified to include the location of the licensed material as required in 39.37.
23. Enclosed is a new test for Logging Engineer.
24. During the loading and unloading of sources, the logging assistant will verbally notify rig personal to keep back to a safe distance. The logging supervisor will monitor the situation thru the rear window of the logging compartment.
25. Section 9 part A,2 has been rewritten to read:  
A logging supervisor may leave the job site, only to summons help in the case of a lost tool containing licensed material down hole provided the logging assistant is present to keep the well secure from any entry and to watch over any materials still in storage on the vehicle.
26. On page 16 Section 7 part A,2 does contain a typographical error and this has been corrected to say 100 mr\hr.
27. As per our telephone conversation, the NRC will be notified by phone if a source is found to be a leaker. Written results of the 1st and 2nd test of the source will follow as soon as they are received.
28. On page 35 Section 18 part A-3 triangular has been changed to diamond.
29. This line has be rewritten into two parts. The first notes that if any sources are transported, placards will be displayed. The next line states that if NO sources are on board, placards will not be displayed.
30. Section 13 part k has been rewritten to state that if any contamination is found the NRC will be notified.



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31. In section 16 subsection F has been changed to also include the exposure to extremities (hands at 6 inches) of 10.6 mr/hr while performing a normal operation. Increasing the distance to 1 inch will result in an exposure of 40 mr/hr.

I hope that this additional information will clarify the question you have. If there is any additional information required, please contact myself, Ken Covell at 1113 Concord SW, Canton Ohio 44710 (phone # 216-452-0513 or 452-9043) or Randy Scott in Bradford.

Sincerely,

*Ken Covell*  
Ken Covell

Randy Scott

*Randy Scott*



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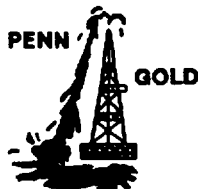
## Logging Assistant Exam

Name \_\_\_\_\_

Date \_\_\_\_\_

- 1.) What is the unit of radiation dose? \_\_\_\_\_ REM \_\_\_\_\_
- 2.) REM stands for? \_\_\_\_\_ Radiation Equiv. Man \_\_\_\_\_
- 3.) What is the unit of Quality of any radioactive substance? \_\_\_\_\_ Curie \_\_\_\_\_
- 4.) What is the byproduct used in the Density Source? \_\_\_\_\_ Cs137 \_\_\_\_\_
- 5.) What is the byproduct used in the Neutron Source? \_\_\_\_\_ Am241be \_\_\_\_\_
- 6.) What is the RBE factor? \_\_\_\_\_ Radiation Biological Effect \_\_\_\_\_
- 7.) What is the RBE factor for the Density Source? \_\_\_\_\_ 1 \_\_\_\_\_
- 8.) What is the RBE factor for the Neutron Source? \_\_\_\_\_ 10 \_\_\_\_\_
- 9.) How often does a survey meter need calibrated? \_\_\_\_\_ every 6 months \_\_\_\_\_
- 10.) How often does a source need to be wipe tested? \_\_\_\_\_ every 6 months \_\_\_\_\_
- 11.) How often does a film badge need to be replaced. \_\_\_\_\_ monthly \_\_\_\_\_
- 12.) How do you calculate a persons life time max. exposure allowed? \_\_\_\_\_ (age-18)\*5 \_\_\_\_\_
- 13.) Where should you store your film badge when not in use. \_\_\_\_\_ will the control badge \_\_\_\_\_
- 14.) What is your permissible whole body for a calendar year? \_\_\_\_\_ 5.0 REMs \_\_\_\_\_
- 15.) What is your permissible whole body for a calendar quarter? \_\_\_\_\_ 1.25 REMs \_\_\_\_\_
- 16.) How often should management report your exposures? \_\_\_\_\_ Monthly \_\_\_\_\_





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- 17.) What is the safe limit of exposure that does not require personnal monitoring? less than 2 mr/hr
- 18.) When is personnal monitoring required? When level are 2 mr/hr or more
- 19.) Time, distance and shielding are methods of controllling radiation exposure. Explain hou you will use each to minimize your exposure?
- Time Do not waste time loading the source in the tool
- Distance Keep to a safe distance where ever possible
- Shielding-Keep the sources in transport containers till needed
- 20.) When should placards NOT be displayed on logging vehicle? When there are no sources on board
- 21.) Where should the "Notice to Employees" be posted and what primary information does it have? In the shop & logging comp.  
Phone Number of the NRC
- 22.) When may the storage pit or the transport containers be unlocked? While loading or unloading
- 23.) As a Rigger, explain your operation for the use of any source?
- Survey handling tools, using the handling tools, unload Storage pig,  
quickly insert into the logging tool and Securely fasten. Move away  
from the tool will ready to place the tool in the hole. Reverse  
process when operations are complete, lock transport containers.
- 24.) In the case of defective equipment, what procedures should you follow?
- Report the defective equipment to your logging supervisor, and do  
not use the equipment till repaired. Confirm that the equipment  
is noted on the job survey form.
- 25.) In the case of vehicle wreck, what procedures should you follow?
- Do not leave the vehicle unattended, notify the investigating  
Officer, assist at surveying area and rope off restricted area.
- 26.) In cleaning the sources, what procedure will you follow?
- See cleaning procedures in manual under Section 16 Part A
- 
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## Logging Supervisor Exam

Name \_\_\_\_\_ Date \_\_\_\_\_

- 1.) Give 5 atomic elements that do not have to be of radioactive nature? Hydrogen, helium, carbon, nitrogen, oxygen
- 2.) Name the fundamental particles of the atomic structure. neutron, proton & electron
- 3.) Give a brief definition of atomic Weight. No. of neutrons and proton  
In the atom
- 4.) Give a brief definition of atomic number. No. of protons in the atom
- 5.) Give a definition of an isotope. Any of two or more type of  
of atoms that are chemical  
the same but have a diff-  
ent number of neutrons.
- 6.) What is the unit of Quantity of any radioactive substance? Curie  
7
- 7.) Describe the answer to question 6  $3.7 \times 10^7$  dps
- 8.) Give a definition for half value layers. Thickness of any material,  
that reduces the radiation  
level to one half.
- 9.) Time, distance and shielding are methods of controlling radiation exposure. Explain how you will use each to minimize your exposure?  
Time Do not waste time loading the source in the tool  
Distance Keep to a safe distance where ever possible  
Shielding-Keep the sources in transport containers till needed
- 10.) Give an example of how the inverse square law relates to radiation exposure. doubling the distance from  
a source decreases the  
radiation by a 1/4
- 11.) Define microcurie, millicurie, and picocurie microcurie- .000001 ci  
millicurie - .001 ci  
picocurie -  $10^{-9}$  ci
- 12.) Define the term half-life Amount of time needed to  
reduce the strength of a  
source by 1/2



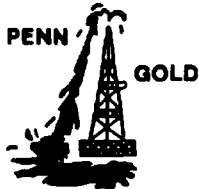
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- 13.) How many half-lives would it require to result in less than 1% original radioactivity. \_\_\_\_\_ 7 half-lives \_\_\_\_\_
- 14.) Calculate the radiation from an isotope emitting 8.4 R/hr at 1 foot for distance 3 feet. \_\_\_\_\_ 933.3 mr/hr \_\_\_\_\_
- 15.) What is a beta particle \_\_\_\_\_ High energy electron \_\_\_\_\_
- 16.) What is a Gamma particle \_\_\_\_\_ High energy photon package \_\_\_\_\_
- 17.) What is an alpha particle \_\_\_\_\_ Helium nucleus \_\_\_\_\_
- 18.) What is the term MeV \_\_\_\_\_ Energy level of a radioactive particle if accelerated by 1 million volts of charge \_\_\_\_\_
- 19.) What is the byproduct used in the Density Source? \_\_\_\_\_ Cs137 \_\_\_\_\_
- 20.) What is the byproduct used in the Neutron Source? \_\_\_\_\_ Am241Be \_\_\_\_\_
- 21.) What is the unit of radiation dose? \_\_\_\_\_ REM \_\_\_\_\_
- 22.) REM stands for? \_\_\_\_\_ Radiation Equiv. Man \_\_\_\_\_
- 23.) What is the RBE factor? \_\_\_\_\_ Radiation Biological Effect \_\_\_\_\_
- 24.) What is the RBE factor for the Density Source? \_\_\_\_\_ 1 \_\_\_\_\_
- 25.) What is the RBE factor for the Neutron Source? \_\_\_\_\_ 10 \_\_\_\_\_
- 26.) Relating to the RBE factor, a 3 ci unmodulated neutron source such as an AM241BE source is equivalent to how many curies of Cs137. \_\_\_\_\_ 30 \_\_\_\_\_
- 27.) How often does a survey meter need calibrated? \_\_\_\_\_ every 6 months \_\_\_\_\_
- 28.) How often does a source need to be wipe tested? \_\_\_\_\_ every 6 months \_\_\_\_\_
- 29.) What constitutes a leaking source. \_\_\_\_\_ reading of .005 micro\ci \_\_\_\_\_
- 30.) When would a wipe test be taken during the 6 month interval. \_\_\_\_\_ If suspect damage during a source recovery operation \_\_\_\_\_



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- 31.) How often does a film badge need to be replaced. monthly
- 32.) How do you calculate a persons life time max. exposure allowed? (age-18)\*5
- 33.) Where should you store your film badge when not in use. with the control badge
- 34.) What is your permissible whole body for a calendar year? 5.0 REMs
- 35.) What is your permissible whole body for a calendar quarter? 1.25 REMs
- 36.) How often should management report your exposures? Monthly
- 37.) What is the safe limit of exposure that does not require personal monitoring? less than 2 mr/hr
- 38.) When is personal monitoring required? When level are 2 mr/hr or more
- 39.) When should placards NOT be displayed on logging vehicle? When there are not sources on board
- 40.) Where should the "Notice to Employees" be posted and what primary information does it have? In the shop & logging comp.  
Phone Number of the NRC
- 41.) When may the storage pit or the transport containers be unlocked? While loading or unloading
- 42.) If the survey meter needle points to a reading of .18 and the range on the meter times 10 what is the level of radiation. 1.8 mr/hr
- 43.) As a Logger, explain your operation for the use of any source?  
Utililizing a Survey Meter, unlock the source pit and move  
the sources, one at a time to the transport containers on  
logging truck. Survey the truck and record readings on the  
job monitoring form, fill out the utilization log, and the  
other information such as job location on the job monitoring  
form. (be sure to check locks on transport containers). On  
location monitor the site and record readings, survey handling  
tools, and load the logging tools with the sources. Be certain  
the sources are securely fasten. Lower tool in hole. After  
operations are complete, survey location, handling tools, and  
vehicle and record readings on job monitoring form. Once back  
to the shop, using a survey meter, unload sources and again  
monitor the vehicle and tools. Finish the job monitoring form.  
Check the time in on the utilization log. Be certain during  
the entire operation, all involved personal are wearing film  
badges.



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- 44.) In the case of defective equipment, what procedures should you follow?  
\_Report the defective equipment to your logging supervisor, and do  
\_not use the equipment till repaired. Confirm that the equipment  
\_is noted on the job survey form. \_\_\_\_\_
- 45.) In the case of vehicle wreck, what procedures should you follow?  
\_Do not leave the vehicle unattended, notify the investigating  
\_Officer, assist at surveying area and rope off restricted area.
- 46.) In the case of a "lost" source in the hole what procedures should  
you follow?  
\_See Section 10 part A3 of safety manual \_\_\_\_\_
- 47.) What procedure will you follow if a source stolen?  
\_See Section 10, part 2 of safety manual \_\_\_\_\_
- 48.) In cleaning the sources, what procedure will you follow?  
\_See cleaning procedures in manual under Section 16 Part A \_\_\_\_\_
- 49.) In replacing O-rings, what procedure will you follow?  
\_See Section 16 Part B of Safety Manual \_\_\_\_\_
- 50.) While Transporting a Sealed Source, what information should be displayed on the  
shipping Certificate. \_\_\_\_\_
- \_\_\_\_\_Radioactive Isotope, \_\_\_\_\_  
\_\_\_\_\_Serial No., Form, Group, \_\_\_\_\_  
\_\_\_\_\_Physical & Chemical Form, \_\_\_\_\_  
\_\_\_\_\_Activity, Label type, T.I., \_\_\_\_\_  
\_\_\_\_\_Type and 6" reading from \_\_\_\_\_  
\_\_\_\_\_transport container.