

# A Mudlogging Geologist

James Foradas, MEM-0737

I recently transitioned from a position in archaeological geology in Texas, to a petroleum geology position as a mudlogging geologist in Alaska. I would like to provide some insights about mudlogging to our AIPG student members.

A mudlogger is a professional geologist responsible for operating a computerized logging unit at both onshore and offshore drilling sites. Mudloggers are responsible for evaluating the lithology of all strata penetrated by drilling and reporting any hydrocarbon discoveries by analyzing rock cutting samples from drilling mud, evaluating gas chromatography data used to screen for hydrocarbons in the cuttings, and sometimes analyzing geophysical data (e.g. wireline logs). Mudloggers also monitor aspects of rig operations and downhole conditions on a wellsite, and report suspected unsafe conditions to other rig personnel. Mudloggers provide time-sensitive geological and drilling data to clients in the form of daily reports and logs, often transmitted live via satellite. They also write longer summary reports upon well completion.



Arctic Triple Rig and a rigside camp on a drill pad in Kuparuk Oil field, November 2007.

With the push to explore for domestic sources of oil the demand for mudloggers is growing. Many such jobs are open to a variety of college graduates with just the B.S. degree in geology or a related field, computer literacy, strong communications and people skills, willingness to work 12-hour shifts with minimal supervision at remote onshore and offshore locations, travel, and the ability to adapt quickly to an ever-changing



A satellite camp near an ice pad on the Beaufort Sea, Prudhoe, Alaska, April 2008.

industrial and natural environment. In Alaska that environment is as ever-changing as it gets.

To be a successful mudlogger you have to be a team player and interface on a daily basis with industry clients, as well as many other field personnel in the diverse, dynamic world of the “oil patch.” These skills are necessary when you consider you must work in some of the most remote and unforgiving environments on earth. However, you will be prepared to work in these places by ample safety and other specialized training once you have the job.

Mudlogging is particularly appealing to the recent college graduate with just a B.S. in geology. It is among the most lucrative jobs you can get right out of college, and depending on the company you can often live anywhere you want to between work assignments. In addition, the practical knowledge of the oil and gas industry gained as a mudlogger can often be the stepping stone for transitioning to other positions in the oil industry. Many well-site geologists and geophysicists I have met on the job here in Alaska started off as mudloggers, then went on to positions in well-site geology, MWD, wireline logging, and other related and more lucrative aspects of the industry.

So what should a student becoming a mudlogger be prepared for? Well, I can only speak for mudlogging in Alaska.

One thing to consider is no more weekends. Loggers and many other oil field workers up here work “hitches” not

5-day workweeks. A hitch is a continuous work period that lasts one or more weeks. Some hitches can last from rig-up to rig-down; i.e. the entire well. Hitches are typically followed by a week or more off (I typically work four weeks on and two weeks off). Think of it as an eight month work year, interspersed with 16 week-long vacations. Hitches vary depending on what part of the country you work in and the dynamic nature of the oil industry.

Each workday shift is called a “tour” (pronounced “tower”). Normally a tour is a 12-hour work shift, but tours can sometimes last longer if commuting time is involved, or if a rig-up, or rig down is in progress. The longest I have worked in one day was 24 hours.

Typically each logging unit has two to four personnel assigned to it, two mudloggers and two sample catchers. Sample catchers collect and process cuttings samples obtained from the shakers so that the mudlogger can analyze them under a microscope and UV light. Sample catchers also catalog samples so they can be stored for later analysis in various core repositories. Often a mudlogger will also act as a sample catcher, particularly if the drilling rate is slow. Typically, mudlogger trainees can expect to be sample catchers for a month or more before breaking out to logging.

During drilling, the mudlogger and a sample catcher work together to keep track of the lithology that the drill bit is penetrating. This is where all those hours in mineralogy, petrology and petrography pay off. In the complex delatetic systems of Alaska’s oilfields many of those rocks and minerals you thought you’d never see again after leaving college will come back to haunt you.

Mudloggers need to know the local geology of their work area. Predictive models for the well geology you’re logging are often provided ahead of time by the well-site geologist. These senior geologists help develop and implement the well drilling plan. However they may or may not be present at the drill site. Either way it is up to you to stay in contact with them and the drillers

so they know what rocks are being drilled. Just think of the driller as the driver of the drill string, the well-site geologist as the geologist providing the “road map” on the trip to the pay zone, and yourself as their “Onstar operator” reading the “road map,” telling them what lies ahead, and warning them of danger. This is because gasses and rock cuttings released by drilling travel up the drill string in mud to the surface and provide a glimpse into the lithology being penetrated long before geophysical tools and other analytical instruments reach the position just drilled by the bit. Depending on the lag time, which is the time it takes a freshly cut sample to travel up the drill string to the surface you might know the rock you’re drilling through hours before the other instruments detect it.

There are fundamental differences to the way drilling is done through different strata so your observations are often used by drilling personnel to decide how to drill through a particular interval, where to set casing, when to expect a gas kick, and contribute to myriad other decisions that make drilling challenging and hard work. When the pay zone (e.g. an oil sand) is reached, you’re often the first person to set eyes on it at that well. The information you provide to the client about the hydrocarbon content evident in gas and cuttings samples is used by the client to make production decisions. As an AIPG member you all realize that this information must be accurate, timely, and clearly conveyed to minimize potential problems to the rest of the drilling team. You’re also often bound to confidentiality, since investors don’t necessarily want information about their well made public.

Another very important thing to know is that you will be working in a “safety culture” where all personnel on site have “stop work authority” if they feel something is unsafe. People’s lives and money may depend on your real-time decision in this job. So you’ll have to learn quickly to work with others on-site to get the job done safely.

OK, enough about the work. What is it like off-tour?

Well, one thing the recent graduate should be prepared for is some dormitory life after college. Mudloggers working on the North Slope and at other remote locations in Alaska often live in “camps.” Camps are much like dormitories, but often on wheels, and typically a lot quieter. Some camps may be rather

“Spartan” with respect to amenities, but nearly all of them have an exercise facility, internet access, “morale” telephones, and a lounge with satellite TV. Accommodations on offshore oil platforms can be a bit more crowded, but generally offer some the same amenities as smaller camps.

Mudloggers on the North Slope sometimes stay at larger, better-equipped base camps that may include an airport, movie theater, game room, social activities, medical clinics, fire stations, gymnasiums and larger commissaries. Food in camps is almost always free, plentiful, generally good, and available at four mealtimes a day. Snacks are available 24/7; so watch your waistline. Camp life and/or per diem is also great on your pocketbook because your food and lodging bill on most mudlogging jobs in Alaska is generally nil. But always bring some cash and a charge card for that souvenir, or an emergency.

Pack for a long trip on any mudlogging deployment. But also ask yourself: “Do I really want to carry that bag down three flights of stairs from an icy helicopter landing pad in the dark?” Laundry facilities are available and often there is a housekeeper aboard the platform or in camp that will do laundry for you. Many smaller camps will have some things you might forget (e.g. toothpaste, shaving cream) on hand for sale.



The commute to work. Alpine Oil Field, Alaska, April 2008.

Like the Arctic natives that preceded us and live and work alongside many of us up here, you will live and work in close-knit groups as a mudlogger. Be prepared to have at least one roommate (hopefully your opposite tour mudlogger so you can have a 2-bed room to yourself for 12 hours), and be considerate and respectful to everyone in camp as if it was your own family; which in a sense it is. Learn and abide by each camp and worksite’s rules. Good hygiene is

also essential as infections can spread quickly in close quarters. Contact the ever-present camp nurse/medic if you even suspect you’re ill, and remember you’re often far from rescuers so take your time on and off work and think and act safely.

The downside to this lifestyle is its unpredictability, and I’m not just talking weather. Wells take on a life of their own immediately after spudding. There is a lot of time spent away from friends and family.

Fortunately, communications today make it possible to keep in touch with people worldwide daily; sometimes via a vid-phone or other web cam link. Missing milestones in your loved ones’ lives is made up for by having a huge chunk of time to spend with them between hitches. Depending on the age of your kids, if you have any, you can get away with missing some holidays by telling them what you do: “I’m working at Santa’s workshop drilling oil to make more plastic for more toys!” (That one only works for so long). Overall, you and your significant other should discuss the change in lifestyle that will occur before embarking on a career in mudlogging geology.

OK, if mudlogging in the Arctic and long hitches are not for you, there are also opportunities to work as a mudlogger in other parts of the country that are nearer “civilization.” In such cases you often stay in a hotel and commute to work. It should be noted that some companies elsewhere have people camp out in the unit itself which combines the isolation of remote camp life with the lack of amenities of commuting to work. In such cases you literally sleep at work.

Another great thing about mudlogging is that it is never the same day twice on the job. In addition, the job is often “hurry-up and wait,” much like college. There is often time between tours to study, read, write (including this letter) and work-out, while in a camp. Depending on computer arrangements you may have time to surf the web for online banking, research, e-mail and so on.

The people you meet en route to the job, and on the job, also make the job fun. I have met people from all walks of life while making the long journey to and from the worksite. These include professionals, students, travelers and tourists. Among these was a soldier’s wife traveling with her infant son. Seeing

her in the airplane seat next to me made me realize that a month or two on the North Slope between seeing my loved ones is nothing compared to what her family goes through. Camps are also great places to network with people from around the world. It also helps that the work culture up here is second to none with respect to safety and protecting the natural environment and cultural resources.



A muskox herd grazes peacefully under a pipeline, Kuparuk Field, July 2008.

As with all jobs, mudlogging has its typical office life and logistical issues. These can sometimes get complicated in the Arctic. In addition, there can be a lot of travel involved. Being lowered by crane basket hoist to a waiting ice-breaker in a blizzard, to take a taxi on an icy road to an airport, then fly in three planes in 24-hours to arrive at an 18-hour rig-up after driving over ice roads in another blizzard: BTDT!

But then there are the perks. Like one recent summer hitch spent in Kenai. I spent every morning before work relaxing and socializing while having a per diem-paid breakfast at a nice restaurant. Every night after work was spent at the beach talking with the locals and watching the midnight sunset over the Redoubt Volcano across Cook Inlet. The



The Redoubt Volcano at dusk as seen between beach dunes, Kenaitz Beach, Kenai, Alaska, August 2008.

North Slope also has its beauty - like seeing the Pleistocene meet the Information Age alongside the road.

All that, and a chance to show off your school colors where they have never been before. Being the northernmost working Ohio State Buckeye last year sure made up for any dark parts in the season.



The author supports his claim of being the "northernmost Buckeye" shortly after the Ohio State-Michigan Game, Kuparuk field Alaska, November 2007.

James (Demetrios) Foradas, Ph.D. is a mudlogger employed by the Alaska Division of Canrig Drilling Technology, Ltd, which provides a wide range of oilfield and other products and services to the global energy industry. An interdisciplinary researcher, Dr. Foradas received his B.S. in Geology, and his Ph.D. in Anthropology (Archaeological Geology focus) from The Ohio State University. His dissertation geochemically characterized prehistorically utilized flint deposits in the Pennsylvanian section of the Appalachian Basin in Ohio, and developed a non-destructive geochemical means to determine the origin of raw materials and artifacts derived from these sources. Dr. Foradas also has an A.S. in Marine Technology/Non-Destructive Testing from the College of Ocean Engineering and other specialized training to work in remote and hazardous environments. His professional memberships include AIPG, GSA, the Register of Professional Archaeologists (RPA), Sigma Xi, and other scientific societies.

## AIPG Student Chapters

**Bowling Green University**  
Founded in 2004  
Chapter Sponsor:  
Robert K. Vincent, MEM-0216

**Central Michigan University**  
Founded 2003  
Chapter Sponsor:  
David J. Matty

**Colorado School of Mines**  
Founded 1999  
Chapter Sponsor:  
Graham Closs, CPG-07288

**Eastern Michigan University**  
Founded 2006  
Chapter Sponsor:  
Walter J. Bolt, CPG-10289

**Georgia State University**  
Founded 2005  
Chapter Sponsor:  
Ronald Wallace, CPG-08153

**James Madison University**  
Founded in 1998  
Chapter Sponsor:  
Cullen Sherwood, CPG-02811

**University of Nevada-Reno**  
Founded in 2008  
Chapter Sponsor:  
Jonathan G. Price, CPG-07814

**Ohio State University**  
Founded in 2004  
Chapter Sponsor:  
Thomas Berg, CPG-08208

**Temple University**  
Founded 2006  
Chapter Sponsor:  
Dennis Pennington, CPG-04401

**Wright State University**  
Founded in 1996  
Chapter Sponsor:  
Thomas Berg, CPG-08208