Caliger Mines

1. Overview

1.1. Introduction

Since the mines opened in 1554, Caliger has established itself as one of the major players in the coal industry. The Caliger mines alone account for nearly 50% of the Llevy province's energy needs. The supply of high-quality coal matched with a decent safety record has made this mine one of the most successful in the world.

2. Mine Operations

2.1 Mine Organization

The exceptional performance of the Caliger mines is by no means an accident. It takes many skilled workers from a verity of disciplines to create a tight running organization, with as many hazards and hardships as there are present in the coal industry. However, the mine's organization and production has not always been as good as it is now. For many years hundreds died in constantly collapsing rock veins caused by explosive gases. This was mainly due to inadequate inspection and the use of poor equipment. Thus skilled workers alone have never been enough to guarantee success.

The current organization of the Caliger mines is far superior to its bumbling predecessor. The new quality of the Caliger Mines has been attributed mostly to the genius civil engineer and current Brozienheil of the Llevy First Knives, ***Park Hawkins***. What follows is the current list of jobs related to the Caliger mines, along with a brief description of each person's responsibility.

2.1.1 Jobs and Responsibilities

Brozienheil- The chief of the energy department and organizer of the coal mines. The Brozienheil maintains high-level energy needs and is responsible for setting safety standards for, and regulating the locating, extraction, and transportation of

coal. The Brozienheil also makes sure that the mining organization has everything it needs in order to do the job properly.

Superior Mine Manager (SMM)- Responsible for the day-to-day activity of the mines. The SMM directly oversees all activities that take place at the mines, and reports to the Brozienheil weekly to deliver updates.

Assistant Superior Manager (ASM)- The assistant to the SMM, the ASM aids the SMM in maintaining operations. The ASM is especially concerned with environmental reports from inspectors, and miners' compensation.

Finance Manager (FM)- The accounting and financial person(s) assigned to track the expenses and income of the mine. The FM also works with the secretary of services to make sure miners get paid.

Secretary of Services (SOS)- The SOS is accountable for tracking workers, filing paperwork related to the finances of the organization, and secondary book keeping of worker's pay.

Mine Inspector- Inspects mines to ensure that they meet the health and safety standards set fourth by the Brozienheil. They report faulty equipment and improper procedures to the ASM, but also report extreme or repeated offences to the Brozienheil.

Fire Boss- A mine inspector who is used specifically to assess the safety of a mining area before it is used. Fire Bosses make sure that there are no toxic or explosive gases near the work area, and that the rock around the cutting area is stable enough to work under.

Insley Foreman- The lead miner in charge of overseeing all excavation teams.

Moles- Senior miners with 30+ years of experience. They help guide the younger miners in their work.

Quill Riders- Specially trained miners who ride large mining birds known as Quills. They use these animals to reach deep subterranean levels quickly and break away at the coal bed with their diamond tipped beaks (an overall less effective, but faster way of starting on a coal bed).

Miners- Miners are the actual workers who perform the digging and blasting operations, using pickaxes, drills, and dynamite to break down the coal and shovel it into carts for the Hurriers.

Hurriers- Move coal from the rock face to the trolley ways (when above ground) or elevators (when underground).

Transporters- Load the carted raw coal into their trolley with a lift, and drive it to the sorting station. Transporters also collect the sorted coal from sorting stations and deliver it to storage areas, transport stations, and barges.

Coal Analyst- Clean, sort, and assess the quality of the coal, discarding useless specimens while classifying the rest.

Mine Mages- Mages sometimes take on mining responsibilities, and are very valuable in many respects. They protect miners from getting dirty and inhaling harmful coal fumes. They can contain potentially explosive gases with spells, allowing areas of the mine that would normally be off-limits to be mined. When new areas of the coal seam are opened, Earthen-Rull mages create glowing vines that act as a quick light source for Quill Riders (as the Quill birds do not like fire or orange bright lights).

Mine mages can also use magic to breakdown coal, making it easier to mine. The main reason many mages are not found in the mining field is because they despise the process of mining and the use of fuels from the planet, as opposed to the use of other, more environmentally friendly forms of energy (*note that 'mages', as it is used here, is really referring to those from the Aspiral culture).

2.1.1 The Mining Process

Finding the Land

Before the mine is even created, teams of surveyors from the *Tearature Branch* find land that is good for mining. Once there has been some initial excavation with the drilling equipment by a team of expert moles, the quality of the mine is assessed by analysts, and the coal is graded based on its moisture content and hardness. Harder coal has less moisture and is better for use as a fuel. The four grades of coal are: *Soft*, *Medium*, *Hard*, and *Perfect.*

- Soft- Coal with lots of moisture. This type of coal breaks apart easily, and most often will be neglected in favor of better quality coal. This type of coal is only mined if it is profitable, as it can still be used to generate electricity.

- Medium- Coal that is not soft, but still has a bit of moisture in it. It is considered useful enough to mine.

- Hard- The most abundant form of coal, which has very little moisture. It has great heat potential, and can also be used in residue form in the process of steel and rull making.

- Perfect- The rarest and most desirable form of coal. Perfect coal has the highest heating value and the greatest carbon content.

Mining the Coal

There are many ways coal can be mined. The Caliger mines use the '**Hole and *Horse Shoe***' method. Once the coal seam has been tracked and the distance of the bed determined, trained Quill birds (mole-like birds) quickly dig holes through the ground, creating a path for the senior moles to follow. The senior moles then widen the area around the bed enough for the Quill riders to begin mining coal. The moles return to the surface and prepare to create mine shafts for the rest of the workers.

Miners with large drills and pick axes then dig and explode their way around two parallel sides of the coal bed. The entire bed is not mined at once, but instead the parallel shafts are connected by a third tunnel and closed off in a 'U' formation. The space inside the 'U' then becomes the segment of coal to be mined.

One of the shafts is used to transport miners from the surface down, and the other parallel shaft is used to transport mined coal up to the surface. At the ends of both these tunnels are hydraulic elevators that transport miners and coal up to the surface (500 feet or more below the earth's surface).

The coal is then worked on by many miners (teams of hundreds at a time). Depending on the area they have been assigned, workers will have better or worse tools. At locations where the coal is hardest and toughest to mine, the senior moles and a few other mining teams will operate basics sphere powered, rotating diamond drills. Other teams must settle for more conventional pickaxes and explosives. Quill riders have their own section of the bed, which is worked on from the moment the birds get underground.

As the coal is broken off, miners drop the coal on conveyers, which are constantly running behind them and around the entire 'U' shaped tunnel. These conveyers transport the coal to teams of hurriers who collect the coal from the conveyers and use a rail cart to deliver the coal to the elevator.

When the elevators reach the top, additional teams of hurriers run the carts to the trolley ways and deliver the coal to transporters who finally take the coal to the sorting stations where it is processed for future use.

Caliger Operation Specifics

- Shift changes occur an hour to half an hour before the previous shift departs. This is so that leaving miners can update the incoming shift about any issues (safety, machinery, problem areas etc.) before they go.

- Miners take meals and lunch breaks inside the mines.
- If an accident should occur, whistles and sirens go off in the town.
- Horses and eauns are also used to pull coal carts to the trolley ways. They are stationed in a stable beside the mine offices.
- There is no experience required to become a miner. Senior mole miners train new miners. Other, specialty positions may require schooling or training in specific areas (e.g. Fire Bosses, Quill Riders, Inspectors etc.).
- Once Quills have dug a tunnel underground, they naturally return to that tunnel. For this reason the birds and holes are numbered, and riders must be sure they know what section of the mine they are assigned to or else they will end up going down the wrong hole.
- Quills are capable of digging back up the holes they created. Since they have limited flight, jumping to higher ground or a hole in the ceiling is not too difficult for them.
- Quill riders must be taught how to ride Quills, as they must keep their head and body down in a certain position since the Quills surf the mud holes at high speeds with the riders on their backs.
- There is a team of specially trained workers that act as a rescue squad in the case that an accident occurs and someone is trapped in the mine. These workers stay above ground in the mine offices 24-hours a day.
- Flooding of the Caliger mines is a constant concern, so there are floodgates built into many areas around the mine entrance. Also there are dummy paths created to spread the flow of water down separate, abandoned shafts should the mind actually begin flooding. These paths are marked with wire and metal stakes so miners don’t enter them.
- While in the mines, miners chew on special seed leaves to keep their mouths moist and help clean out the dust they end up inhaling while working.
- As part of the public sanitation regulation enforced by the Llevy, mine workers must bathe in special water that helps dissolve all the carbonous particles off their skin and clothes, before leaving the mines.

- Caliger mining teams are not just used to mine coal mines, they are some times contracted by the province to mine metal and other valuable minerals.

- When attempting to re-open an abandoned mine, young Quill birds are used to check if the mine is safe or not. If the bird returns when called then it is considered safe. However, if the bird dies, it's not.

3. Lifestyle

3.1 Daily Routine

- Miners wake up early (about 4.A.M.), to meet with other miners and catch the trolley at the ***'Clamp Fan'*** (trolley station located on the west side of town) or '***Dangel Fan***'(trolley station located on the east side of town). Both of these stations take miners directly to the mine terminal where they separate and head to their designated work areas.

- Miners always make sure they pack their lunch for the whole day. Their lunches usually include bottled water, sandwiches, fruits, and candy bars. Sandwiches will most often have heavy meats (these tend to taste better underground, whereas some lighter meats have been known to become unbearable below the surface level for some reason). The miner's lunches are also carried in a well-made tunstil, steel, or rull cylinder case. This is to protect their food from the numerous sub-terrain rodents and insects that are intelligent enough to break into weaker containers.

- When miners return home, their clothes from the previous day will be waiting for them (usually cleaned by their wives or family, as it sometimes takes a whole day of scrubbing just to clean them), and they can leave their current working clothes to be cleaned the next day. It is the responsibility of those in the house who do not work to help out as much as possible for those who do.

3.2 Caliger Mine Facts

- Work conditions in the Caliger mines are hazardous, but are much safer than other mining locations around the world. This is because the Llevy provides high quality tools and have implemented great standards of safety and compensation (this is mainly because of the war, and due to Park Hawkin's restructuring).

- 50%-80% of the coal recovered from Caliger is useful.

- The mines have been active for over forty years (46), and are scheduled to become useless in the next 15 years.

- Most of the coal from Caliger is used to generate electricity or steam. It is also exported to poorer countries in need of fossil fuel energy.

- Miners used to be paid according to the amount of coal they dug, but now, due to the war and massive energy needs, they are paid a salary based on experience.

- Women coal workers were once used to lift, carry, or transfer coal once it had been dug and brought to the surface level. This was prohibited, however, after many of the women workers' health began to deteriorate (e.g. many had miscarriages as a result of working in the coal mines for long periods of time).

- The mine gives the families of every miner free coal and metal ores, which are dropped off in front of their houses. The women and children collect it and store it in a special bunker or outhouse.

- In the average mining family, work in the mines for young boys can begin at the age of 6.

- Loss of sight is a huge problem for the mine working population. Because they work in the dark for so long with little light, their eyes become very weak early in life. Because of this, eyeglass shops are prevalent in town.

4. Tools and Equipment

- Pickaxes, diamond drills, and hammers. Cut timber used to make sturdy roofs that prevent the rock from caving in around them.
- Mole gloves
- A blend of electric and gas lamps and lights.
- Dynamite
- Quills
- Miners wear many layers of clothing to keep them warm, even in the summer time as deep underground temperatures can get near freezing.

5. History

Facts about coal on Seda

Coal accounts for about 20% of the world's energy generating requirements (well under Hydro, and Basics energies).

Production of steel and (tempered rull/tunstil) are the second largest use of coal.

6. Notes

7. Glossary

Credits

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