THE AMADOR SAWMILL & MINING ASSOCIATION, INC.

A non-profit 501 (c) (3) organization dedicated to preserving the sawmill and mining history of the Sierra Foothills in California

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A 501(C)3 TAX EXEMPT NON-PROFIT CALIFORNIA CORPORATION

ASMA NEWSLETTER
Summer, 2016
Volume 15, Issue 2

President's Report - July 2016

The Amador County Fair is almost here and there is lots of work to get ready. The sawdust conveyors seems to be working pretty well and the emergency shutoff for the Corliss is installed and working. The Corliss has been grouted in and hopefully the valve gear will be timed before the fair. We ran the mill at the truck show and it was a great success. The truck people all seem to be our kind of folks, passionate about all things mechanical.

We also ran the mill at the Motherlode Highland games. Not a lot of wood was cut due to the limited time slots we could run and problems with the saw. The saw blade was warped into a "potato chip shape and had to be hammered back into shape. This is a skill that is not well known and many people thought it was a lost art. Thanks to Bill Braun's energetic efforts he was able to find a saw filer, Joel Garcia, who works for Sierra Pacific Industries. Joel agreed to hammer our saw blade flat again for free and Bill has it back in hand. All of this made us realize that we need a backup blade. A saw mill without a saw blade isn't going to cut much. Amazingly, when we asked our volunteers for help in raising the money for a new blade we had enough in just a few days. Our thanks goes out to all those who contributed, and special thanks to Bill for running this all down. Major donors were: *Bill Braun, Ron Edgar, Austin Ford, Jim Hall, Joe Harralson, Dave Linquist, Brian Oneto and his Brothers, Tom Patten, and Matt Wolin.* A new saw blade is on order and will be here in about a month.

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Many of the remaining items donated by Bud Lindau were retrieved from the old Andreason sawmill. These include the Nordberg Corliss, a boiler which may be useable, and the Globe steam engine. This effort involved removing the roof of the saw mill and lifting these very heavy items out with a crane. The boiler weighed 10 tons! There are still a few items remaining which will have to be removed, probably next spring. One surprise was the Globe steam engine. We've called it that because "Globe Iron Works" was cast into the side of the steam chest. However when the engine was lifted out "Goss & Lambard - Sacramento Iron Works-1860" was found cast into the side of the bed. This engine ran a flour mill in Ione before it was moved to the sawmill. There is a similar engine at the El Dorado county museum. Goss & Lambard Sacramento Iron Works was located at the site that is now the California State Railroad Museum. They became the first shop for the Central Pacific Railroad . The Governor Stanford, CPRR's first locomotive, was assembled there in 1862.

We tried our hand at selling stuff at a flea market and raised over $600. The flea market is held at the Willow Creek School on Highway 16 and is a fund raiser for the group trying to restore the school house. This turned out well enough that we'll try to do another flea market in the future.
Progress on the DTSC report for the Central Eureka site is slow but things are happening. The Board of Directors voted to continue working on this project for a year and then re-evaluate where we are.
Work on the LeBlond and Logan lathes is nearly complete. We will be selling the LeBlond and the Logan will be on loan at the High School. Ron and Jim continue to do an outstanding Job and have been joined by a new volunteer, John James. See you all at the Fair.

Joe Harralson—President, ASMA

We Have A New (Old) Boiler, Now What?

By Tom Innes

The recent acquisition of various items from the Andreason sawmill has been a real benefit to the Association. Recently, Bill Braun and a group of stalwart folks brought a number of items for our use. This was some difficult work. For example, the mill roof needed to be removed to allow a crane to pick up some very heavy items. They were loaded on appropriate transport and brought to Jackson.

Now, we have this "new" boiler but what can we do with it? The boiler was built in 1930 by the Lucey Manufacturing Corporation in Chattanooga TN. It has not been certified by the State of California. So we need to start a campaign to get it certified. This will be an interesting project.

As you can imagine, one just can't fill it with water, start a fire and build up pressure and see what happens. So what do we need to do?

The boiler will be cleaned and examined closely for any obvious problems. The real interesting work will then start.

Boiler operating pressure is closely dependent on the thickness of the material used to fabricate the boiler. The material thickness will be mapped over the entire boiler. Then using data and formula developed by the American Society of Mechanical Engineers we can calculate the safe operating pressure to use. The operating pressure typically has a safety factor of 5.

Typical Grid

We did this effort on the sawmill boiler at the fairgrounds. The boiler was divided into a number of regions. Each region was measured with an ultrasonic meter that gave a reading of the material thickness.

Alex and Frank trying to figure out "what went wrong."

As you can see, there are number of regions we measured. We used a 6-inch x 6-inch grid. We measured the shell, top tube sheet, bottom tube sheet and the firebox. We had on the order of 600 points measured just on the shell. The firebox, and the two tube sheets were measured using our experience as a guide since they did not lend themselves to a convenient grid. The thickness was accurate to about 0.001 inch. The ultrasonic probe was continuously checked with a thickness coupon that we measured with a micrometer. The data was averaged over the range and the operating pressure calculated. The top and bottom tube sheets along with the firebox was measured in a similar fashion.

The same process will be used on the Lucey boiler. This will be an interesting project and I strongly recommend this project to those who wish to learn, on an intimate basis, boilers.

Bill Braun will be guiding the Lucy Boiler project. This is a unique opportunity to get involved with association requirements and needs.

Continued on Page 3….

Fire Box

Boiler— Continued from Page 2….

ASMA needs to have members able to take part in the care and feeding of power boilers.

We will discuss the ASME calculations in a later newsletter along with some fascinating details about hydro testing. Try to be patient, I know you can't wait.

Top Tube Sheet

ASMA Helps Move Equipment From Knight's Foundry

By Phil Kreiss

Last year the Knights Foundry Association decided to disband after many years of inactivity and donated whatever equipment they had stored at the Foundry to various groups interested in its history. So on Dec. 30, 2015 ASMA volunteers came to help load up many items, and picked up some things that were given to the Sawmill and Mining Association. Much of the historical equipment was given to the city of Sutter Creek, and will be displayed at the new Miner's Bend Park at the south end of town, and the Sutter Creek fire station at the north end. Some items stored there were owned by local parties, and ASMA helped remove and load them on trucks and trailers. Most of the old equipment at the foundry still remains there, since it is part of the foundry, which is privately owned. The Knight's Foundry Association gave ASMA a massive Fitchburg lathe, which is on permanent loan from the Railroad Museum in Sacramento, a smaller lathe, and an old dynamo generator from the 1920's. ASMA also received a large quantity of utility tables, shelves and rolling storage racks, which had to be disassembled and loaded. Much of this equipment will be used at the ASMA Restoration Shop, but the surplus storage racks were sold to raise funds for further ASMA projects. The many people and groups that worked there that day left happy with the results of their labor.

1. Louis Boitano operates the old hand cranked hoist.
2. The ASMA crew man-handles a large water wheel.
3. Bill loads the old dynamo.
4. The massive Fitchburg Lathe.
5. Removing storage racks from the loft.

Emergency Shut Off for the Corliss

The new emergency shut off valve is installed and working

By Phil Kreiss

Last summer we had an unsettling runaway with the Corliss engine, and the incident alerted us to the danger that a runaway engine presents, let alone the damage it would cause. We therefore agreed that an emergency shutoff valve was a necessary addition to the steam line. A valve was purchased with $1500 donated by Richard Hansen and Barbara Kreiss and ordered by Bill Braun. It has a manual shutoff handle and also an automatic shutoff activated by overspeed on the engine. When the operator sees an unsafe situation, all he has to do is pull down a large red handle, and steam is instantly cut off to the engine, which will stop in a few seconds.

The valve arrived in the fall of 2015 and soon work was started to install it. Adapter plates had to be made to match the bolt holes in the valve flanges to the holes in the steam line flanges: These were machined with high accuracy by Ron Edgar. Also the steam line had to be shortened to make room for the valve—this was done in advance by Bill Braun, Tom Innes and other crew members. On Feb. 13, 2016, a crew consisting of Bill Braun, Joe Harralson, Tom Patten, Matt Wolin and Phil Kreiss installed the valve on top of the existing wheel operated intake valve on the Corliss. The steam line flanges had to be cleaned and prepped, gaskets were fabricated, the large, 350 pound condenser had to be taken down with chains and a come-along—not an easy task! The valve was lifted into place, the water separator-condenser was hoisted and re-installed, and the valve was bolted down on both ends completing the job. Later, the boiler was steamed up, the Corliss was put in motion and the valve was tested---it worked flawlessly! Now and in the future, ASMA has a much safer operation in the engine room.

Upper left: Matt Scraping old gasket

Upper Right: Preparing adaptor plates and gaskets

Lower Left: Matt and Tom install new shutoff valve

Lower right: Tom and Bill hoist the heavy steam-water separator

Amador Sawmill And Mining Association Is Looking For Volunteers

A.S.M.A. is expanding its program in steam sawmill history: Volunteers are needed to learn how to operate historical exhibits. Do you want to learn how to operate a sawmill, a stationary steam engine, a steam powered donkey engine, or wood and oil fired steam boilers? If so, contact Bill Braun at (209) 245-3448, e-mail info@amadorsawmill.org. Or contact Joe Harralson at jbharr@directcon.net.

P.S.—We also need volunteers to help us in Fundraising, Public Relations, Communications, Etc. too!

STEAM FOR THE SAW MILL *or PILEBUTTS TO DONKEY PUNCHERS*

How two San Francisco Bay pile drivers became part of Living History in Amador County.
As Told By Tom Innes and Alan Langmuir

In the previous newsletter, we told how the Benicia Bridge was closed, so we had to spend the night at Port Costa. After an almost sleepless night, we were once again on our way…..

Here we are continuing the story as written in the 2004 Booklet *"Pilebutts to Donkey Punchers:" Installment 6—Along Suisun Bay to Pittsburg.*

The crew: Alan Langmuir, Tom Innes, Richard Hansen, Bill Braun, and tugboat captain Mark LaCroix

By now the Benicia Bridge had been put back into service so we could get on our way. This part was really fun. Having the bridge raise itself for us and coordinating with the other river traffic was interesting. It was a great morning and it was clear it would be a warm morning. We needed something after such a wonderful night of sound sleep and a big dinner!

We progressed along the western shore of Contra Costa County on our way to Pittsburg. We passed by Port Chicago, which is still a military explosive facility. Luck had it they were loading some ordnance and the security level was fairly high. A Coast Guard zodiac came up to us in one heck of a hurry. Following him was a sheriff's skiff with appropriate firepower. Three small boats with 50 caliber machine guns patrolled the approach to the loading docks at Port Chicago and the Coast Guard Mother Ship had twin 50s ready for any action. We were out gunned. When they determined we were harmless (we couldn't move fast enough to do much of anything), they backed down. The zodiac pulled alongside us and the crew wanted to join up with us! We were on the deck, sitting in the sunshine, and thinking it doesn't get much better than this.
An hour or so later, we pulled in and moored outside a marina in Pittsburg. We tied up about a mile from shore and one of the tugs took us in. John was waiting for us. Between cell phone glitches and timing, John had driven back to his home in the foothills to spend the night, and then returned to Pittsburg to pick us up the next morning. As far as I am concerned, this was above and beyond. Seeing John meant we could get food! Thank you John! One advantage of landing in Pittsburgh was that we could go to a restaurant looking like something the cat had dragged in.

All in all, this was a great adventure. Bill needs to be recognized as having the wherewithal to pull this off. I don't know of many people that could have done this. This is the end of Chapter 2. Next time: The salvage job begins—from pile driver to steam donkey.

To be Continued……

ASMA Runs The Sawmill For Two Shows This Spring:

Truck Show—Highland Games

By Phil Kreiss

This spring and summer ASMA put on 2 sawmill shows at the Amador Co. Fairgrounds during special events held there. The restoration crew also displayed their mobile machine shop trailer. Along with the shows for the public we also cut a lot of lumber.

On April 30, 2016 during the annual Truck Show, the sawmill ran all day, cutting 9 small logs and 2 big ones: The show drew a big crowd of spectators interested in the mill. Many loggers were there with their trucks, and several old time machinists and "gearheads" came to talk to us. We did have some problems with sawdust piling up under the conveyor, which caused a few shutdowns, but Jim Head and Dave Bibby graciously crawled underneath to clear it out. Otherwise, the Corliss and the saw ran flawlessly.

The Scottish Highland Games were held at the Fairgrounds on June 18 and 19, and to add to the festivities, ASMA ran the sawmill for two one hour long shows each day. In the field nearby the sawmill, participants in full Scottish costumes were putting on exhibitions, with a royal court and the queen's Black Watch Guards. There was also a Scotch whiskey tasting booth, but the sawmill volunteers didn't try any— it's not safe to drink scotch while running the sawmill. We drew a crowd, but had trouble with a warped saw that shut us down a few times, so we didn't cut much lumber.

ASMA is now looking forward to the big show at the Amador County fair held on July 28-31.

Machine Restoration Update

By Ron Edgar

The first half of 2016 was a banner (1/2) year for the Restoration Team. We have been blessed with a lot of very wonderful donations. New volunteers have joined our ranks, we were able to take the Machine Shop trailer to two events and we participated in our first ever Flea Market.

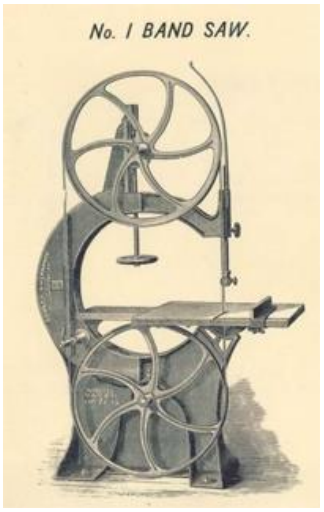
All of the above items, as wonderful as they were, proved to be a major distraction in accomplishing our priority list goals. Although we did make some very good headway on them.

The Logan lathe is almost finished. It is partially re-assembled. Once this is accomplished we will test it under power and if everything measures up, it will join the other lathe at the Amador High School when school starts in the fall.

The LeBlond, dual drive, is receiving its second coat of paint. We had it powered up last week and we discovered the oil pump that oils the gears in the head is not working. Once fixed and painted, this lathe will be used as a fundraiser. We plan to market it on Craigs List.

Restoring the 1928 Fageol truck and rebuilding our heavy duty trailer will be our next two priorities.

I know you are all waiting to hear what wonderful new donations we received. Well, let me tell you about a few of them.



Allan Hiatt donated his 1879 Rowley and Hermance No. 1 band saw. This is a real score. The sheet metal housings were added later to conform to safety requirements. This machine has a 33 ½ inch cutting capacity and weighs 1,500 pounds.

The picture on the left shows Joe Harralson and Jim Hall loading this machine onto a trailer. The picture on the right was taken out of a period sales brochure.

We also received a Millrite vertical milling machine from the Oak Ridge High School in El Dorado Hills. This machine has been cleaned up and painted and it is now on loan to the Amador High School where we will use it to teach the students basic machining skills.

I'll just mention one more, I could go on all day. We were gifted another LeBlond Lathe, Dual Drive. This one came from a high school in Ukiah. It is a 15" lathe and it was made in 1962. This is a very nice machine and will become our big "go to" machine.

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Machine Restoration—Continued from Page 7…..

We have a couple of new volunteers we would like to introduce:

John James *(Photo To Right)* has joined us and lives in Sloughhouse CA. He is now part of our High School program and is a Restoration Team member. John's background is in air conditioning sales.

Chris Allan *(Photo To Left)* just recently moved here from Southern California. He retired from the motion picture industry where he helped make the props. He also has a lot of restoration and steam experience. He has currently relocated to our area.

Brandon is also helping out during the summer vacation. Brandon is 13 years old, a neighbor of Bill Braun's and has shown a lot of interest in what we do.

Flea market! On June 11th we participated in the Willow Springs Flea Market. We had accumulated a lot of items that were either duplicates or just not needed. We thought this would be a good way to bring in some much needed revenue. At the end of the day we sold $657.50 worth of merchandise. We still have more to sell, so we are thinking about doing another one later on this year.

We took our Machine shop display to two different events so far this year: The Truck Show on April 30th and the Highland Games on June 18th and 19th. The display is showing signs of needed maintenance so we shall set aside our priority list (again) and get it ready for the County Fair. Building this display has to be one of the best things we ever did and is a great advertising tool. It gets a lot of attention and allows us to tell people about the saw mill and our high school program.

I could go on ranting for hours about our restoration team, our projects and our equipment. But every story must have and end and I've just reached mine. *Thank you for your attention, come visit us.*

Steam Equipment From An Old Sawmill

By Phil Kreiss

On June 9, 2016 ASMA Volunteers spent the day at the old Andreason Mill removing and loading old steam engines and other equipment. The items, used to power the Mill until it burned in 1953 were donated to ASMA by Bud Lindau, owner of the property. Included were: A Globe Iron Works steam engine, built in Stockton in the 1860's, A Corliss Steam engine similar to the one that powers the ASMA Mill at the Fairgrounds, two large flywheels on a shaft, and a Lucey Co. boiler weighing 20,000 pounds.

During the previous fall and this spring, Bill Braun with several different crews made many trips "up the mountain" to prepare for the move and unbolt as many parts as they could to lighten the final load. On the "big day" Bill hired a crane from Diamond Crane Co. and volunteers brought up four trucks with trailers to carry the equipment out. John Tower came with a Kenworth tractor-trailer rig to haul the big boiler.

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Andreason Mill—Continued from Page 8….

Part of the roof of the mill building was removed, the crane set in place, and one by one the pieces of equipment were strapped and chained up and lifted up out of the mill and set on trucks. It was a delicate operation, but went off without a hitch due to the expertise of the crane operators and Bill's experience in rigging techniques.

As each piece was secured to the trailers, it left and headed down the hill. It was an all-day affair, and late in the afternoon the trucks met at the Kennedy Mine and were unloaded by "Old Blue"—a smaller crane parked at the Mine. The equipment will be stored temporarily at the Kennedy, so anyone who is interested can take a look at the old relics There.

Upper left: Alan Hyatt cuts away pipes on the Globe engine for removal.

Upper Right: The Globe is lifted out, guided by John and Frank Tower and Juan Garcia.

Lower Left: John Tower chains down the flywheels on the trailer.

Lower Right: The big boiler is lifted out of the mill.

ASMA High School Machine Shop Program Update

By Jim Hall

In June ASMA completed its third year working with Ryan Mendosa and his Amador High School Ag Shop students. ASMA members Ron Edgar and Jim Hall work with the students 2 days each week with Bill Braun filling in when Ron or Jim have to be absent. Student crew members who completed this year's program are seniors Rich Bohn, Chris Dayton, Brodie Diaz, Spencer Hettema, and junior Noah Reilly. This year's restoration projects included: Buffalo Forge bench shear, wood cutting band saw, Dayton power hacksaw, mall Craftsman table saw, mini metal lathe, and an antique bench top drill press. Most of these tools have been donated to ASMA for use in this program and we are always looking for donations of used machine tools to support this program.

These restored machines, with a complete presentation documenting the restoration process, will be on display at this year's Amador County fair. The machine restoration, documentation, presentation, and entry into the county fair are all outcomes expected of every student participating in the program. Once the fair is over, students, if they so choose, may keep the machines. *Continued on Page 10….*

High School Machine Shop—Continued from Page 9….

So what's new for this upcoming school year? ASMA will open the year with a fairly complete machine shop with the addition of a second 14 inch Logan lathe, a newly restored Millrite vertical milling machine, a vertical band saw and a couple of bench grinders. All of these have been donated to ASMA and refurbished by the restoration crew before being placed in the school. The expectation is that students will be able exit the program with some fundamental precision machining skills. So, ASMA's little machine shop in the corner of the old high school auto shop continues to grow as does the enthusiasm of the participating students.

ASMA has also been working with the California Industrial and Technology Education Association (CITEA), California Automotive Teachers Association (CATA), and the Small Manufacturers Institute (SMI) to acquire the necessary tools and equipment to develop a small engines program at the high school. So far these relationships have resulted in the donation of storage cabinets, tools, safety supplies and a huge supply of paper from Boeing Corporation as well as 24 new horizontal shaft short blocks from Briggs and Stratton and 20 new complete vertical shaft engines from Kohler. So the resources required to start this program are starting to roll in and ASMA will continue to support its development.

ASMA Restoration Project:

Sand casting a new name plate for the Fageol truck

How it is Done

By Joe Harralson

In our last newsletter we covered pattern making and gave a brief description of sand casting. This time we want to take a closer look at sand casting a new nameplate for the Fageol.

Although it has proceeded slowly, we are restoring our 1928 Fageol truck. The radiator was badly damaged but we were able to get another more complete one from Gordon and Scott Ellery. The Ellery brothers are collectors of vintage vehicles including Fageols. Both radiators were missing their nameplates, but the Ellerys loaned us one to use as a pattern. Unfortunately when we took a closer look at the nameplate we saw that it was a replica cast from an original nameplate. Due to the shrinkage effect explained in the last newsletter, using a casting as a pattern results in the new part being smaller than the original casting. The nameplate is over 12" long and the bolt holes on the replica were ¼" closer together than the original. If we used the replica as a pattern the resulting nameplate would have the bolt holes off by ½", too large an error to fit our radiator. For this reason a pattern was made with the correct shrink allowance. Once the pattern was done, we set about casting several new nameplates. The original was cast in aluminum which made it easy to reproduce.

The pattern is laid inside the bottom of the flask--the drag

To make an aluminum sand casting we start with molding sand and a special box called a flask. The molding sand used for the nameplate is an oil based sand known as petrobond. This sand was selected because it gives a clean surface finish and sharp detail. The flask is a two part open box with pins that align the top and bottom. The pattern is place on a board under the bottom part of the flask known as the drag. Molding sand is then riddled over the pattern. Casting has a lot of odd names for things, a riddle is a large sieve used to insure the sand is free of lumps and debris. The sand is then rammed up to form a hard mold around the pattern, and the bottom struck off to insure a flat surface. A bottom board is place on the mold and the whole thing rolled over or inverted. Now the drag is on the bottom and resting on the bottom board. The board that the pattern was resting on is removed and the top of the flask, called the cope, placed on the drag. Parting dust is then sprinkled over the sand and pattern in the drag to insure that the cope and drag will separate cleanly.

Continued on Page 11….

Casting—Continued from Page 10….

Sand has been riddled over the pattern and then rammed

Two sprue formers are placed in the mold and then sand is riddled into the cope and then rammed up. A sprue is the passage into which the metal is poured to fill the mold.

With the cope rammed up and struck off the cope and drag are separated and the sprue formers removed. The pattern is then drawn from the mold. This is one of the more difficult steps since the mold is easily damaged if the pattern isn't drawn correctly. Gates are cut into the mold. These are the passages that let the molten metal pass from the sprue into the mold cavity. Once the gates are cut and any loose sand blown away, the cope is place back on top of the drag and the mold is complete. It is then moved to the casting area by picking up the bottom board with the mold supported on top.

The aluminum is melted in a small furnace that uses propane and air from a blower. Cold metal scrap and ingots are placed inside a crucible in the furnace. Scrap from other castings is used to insure the aluminum is a good casting alloy, pistons from Chevrolet v8's make a good alloy. A flux is added to clean the metal. When the aluminum is melted and at the right temperature the crucible is lifted out of the furnace with special tongs and placed in a pouring shank, a metal handle that allows the crucible to be lifted and the metal poured into the mold. The mold is allowed to cool and when safe to handle the mold is broken apart to reveal a shiny new casting. The gates and sprues must be cut off with a hacksaw and the casting cleaned up as needed. The final step in this case was painting and drilling the bolt holes.

The mold is rolled over showing the pattern

The mold has been poured and allowed to cool, showing the as cast name plate

When everything was done we were able to return their replica nameplate to the Ellery brothers along with two new castings. We also ended up with two for our own use. In comparing them the pattern is about ¼" longer than the final castings, and they are ¼" longer than the Ellery's replica. The new castings fit our radiator just right. Next up will be a new cast bottom tank for the Fageol radiator. It's too big for the furnace shown here and we will probably have it done at a commercial foundry.

The pattern, an original name plate on left, and two new name plates

ASMA does have a large McEnglevan furnace and everything for a foundry setup which we hope to have in operation in the future. When we do we are thinking of offering classes in foundry practice.

The Nordberg Story

Chapter 2—pouring the foundation and rebuilding the engine
By Bill Braun

In Chapter 1 we discussed how ASMA acquired the Corliss engine, moved it to Bill Braun's Shop and started the rebuilding process.

The engine was slowly coming together with monthly progress. A 2-5/16" dia. line shaft was installed in 2005 on a concrete foundation in line with saw blade mandrel. This shaft was fitted with custom made couplings to incorporate a manual clutch made from the flywheel and clutch plate of a 1928 Caterpillar tractor. A short section of drive shaft and universal joints from a heavy truck drive line was also adapted into the mix so the saw mandrel could be adjusted without affecting the line shaft. This shaft would be the future connection to the Nordberg engine 2 years later.

By the spring of 2005 the crew had laid out the dimensions for the engine foundation next to the sawmill. The forms, rebar, and concrete pours were completed by the fall of 2005. Because this engine was going to be working up to the limits of its torque capacity, the weight of the foundation had to exceed the weight of the engine by a factor of 3 to 1 minimum for the engine to retain correct alignment.

Through the winter of 2005-2006, in Bill's shop, an H Beam sub frame which the engine would be bolted to was being designed. The 10" x 10" steel was cut to the various lengths and fitted together for welding into a one piece support frame work. This in turn would be bolted to poured concrete foundation pedestals. Through the remainder of 2006 the various engine components where trial assembled for fit and correct alignment. Parts where often found needing attention with hand scraping and hand filed to get the proper assembly. One of the long range admission valve cams had to be patterned, cast, & machined. The same process was done for one of the valve bonnets which was broken. Some of the broken parts on the admission valves had previous brazing which had to be redone. The governor was a mess, what there was of it. The vertical shaft was bent at the top. This was straightened in the hydraulic press. The swing links on the governor fly balls had been hammered out by a long forgotten blacksmith in the past. Jerry Virtue took the crude parts to his workplace and machined new parts using the old pieces as examples.

In future months, the engine would slowly come together and then be moved to the foundation at the sawmill, but that's another story.

To Be Continued…..

Photos Courtesy of: Page 2-Tom Innes. Page 3-Tom Innes, Phil Kreiss. Page 4-Phil Kreiss. Page 5-Tom Innes, Alan Langmuir. Page 6-Phil Kreiss. Page 7-Ron Edgar. Page 8-Ron Edgar. Page 9-Phil Kreiss. Page 10-Joe Harralson. Page 11-Joe Harralson. Page 12-Bill Braun. Page 14-Phil Kreiss.

Contributing Editors: Page 1-Joe Harralson. Page 2,3-Tom Innes. Page 3-Phil Kreiss. Page 4-Phil Kreiss. Page 5-Tom Innes, Alan Langmuir. Page 6-Phil Kreiss. Page 7,8-Ron Edgar. Page 8,9-Phil Kreiss. Page 10,11-Joe Harralson. Page 12-Bill Braun.

Production: Phil & Barbara Kreiss

Upcoming Events:

DATE	TIME	EVENT
July 27-30, 2016	11 A.M. and 3 P.M.	Amador County Fair—Sawmill in operation—2 shows daily, plus night shows on Fri. & Sat. at 8 P.M.
Weekly Every Wednesday	Contact Ron Edgar For Times	MACHINE RESTORATION GROUP Workdays—Contact Ron Edgar at: 4edgars@msn.com
First Sat. in Nov. November 5,2016	To be announced	Volunteer Potluck Dinner—Amador Co. Fairgrounds

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