



# MOTOR TRANSPORT MUSEUM NEWS

Volume X No. 3 31949 Highway 94, Campo, CA, 91906 - Ph. (619) 478-2492

Fall 2008

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The MTM volunteers spent the summer documenting the Museum's collection of trucks. Carl Calvert and Ed Dilginis have written descriptions and histories for 100 of the Museum's trucks that will be printed on signs and attached to the displays.

The driveways around the Mill have been coated with sealer to alleviate the problem with mud when the rains begin. This work was done using a grant from the San Diego County transit occupancy tax. We have also purchased the material to put a roof over the apron to the west roll-up door to shelter it from the weather.

### My Life with "Screamin' Jimmies" By Don Driggs

I was in attendance at the May session of the Motor Transport Museum Board of Directors Meeting when Carl Calvert announced that the museum had been offered two vertical GM diesel engines. This grabbed my attention because I thought I knew every configuration the engines had ever been produced in and here was something totally different.



Carl Calvert appears to be puzzled and amazed by a 16-A184 GM vertical Diesel engine

To adequately explain my lifelong interest in these engines, I will have to take you back to 1944. World War II was raging and by the end of the year, I would be four years old. My father had a contract to supply all of the coffin lumber he could produce for the U.S. Government through a dealer in Sacramento. He had recently completed a newer, bigger, and better sawmill on our little farm near Grass Valley in Northern California. The new mill ran night and day much to the contempt of our neighbors. The main reason for their disdain was the sound of the engine that powered the mill. Dad had installed a brand new 6-71 (I'll

explain the numbering system later) GM diesel and vented the exhaust straight up through the shed roof with a twenty-foot long four-inch pipe. Only people who have heard the bellow of a 6-71 under full load will understand why this had such an intense effect on our neighbors. Actually it wasn't all that loud at the mill or at our nearby house because of the tall stack but our neighbors received the full benefit of the sound that only a GM diesel can produce under load.

These GM diesels were a two-stroke design, that is, they fired on every downward stroke of the pistons. Somehow that feature plus the fact that they were force fed by a noisy Roots type blower set them apart as a noisy engine; a point that is never overlooked by their detractors and has caused them to be called "Screamin' Jimmys".

The GM or "Jimmy Diesel" (They weren't called Detroit Diesels until 1965 when the Detroit Diesel Engine Division of General Motors was formed after 30 years of producing GM Diesels) was the chief source of pride for my father when he showed people his new mill. In our family, "Jimmy Diesels" gained cult status. Talk about the benefits of any other industrial engine was strictly prohibited. As far as my father was concerned, there was no other engine worthy of being connected to a sawmill. In his inimitable way, he was convinced that "Jimmies" were the most economical to operate, they lasted longer than any other engine, were easier to start, and out performed other brands in every conceivable way. I'd like to remind you that people used to say things like, "I'd rather push a Ford than drive a Chevy." Or "Ford just stands for Fix Or Repair Daily." Farm boys grew up knowing for certain that only a John Deere or in other cases a Farmall or a Case were legitimate tractors. All others were held to be inferior imposters. If you combine my father's extreme persuasion with the brand loyalty prevalent in that period, it is understandable how "Jimmy Diesels" came to be so revered in our family. Nothing could possibly compare with my father's beloved "Jimmy Diesels".

There actually was one attribute that made the "Jimmies" outstanding for powering a sawmill. When equipped with a constant speed governor, no other engine was quite as capable of maintaining constant output speed. That is, the "Jimmies" were equipped with a very sensitive governor and their response to a varying load was virtually instantaneous. This is extremely important when powering a large circular saw because the saw will only stay in the form of a rigid disc when it is turning at the correct speed.

Most engines of the day would drop several hundred rpm before the governor would open and they would start to recover from an increased load. If the big circular saw blade drops much below its correct speed it will start to flutter and will fail to cut a straight line through the log. Of all the reasons for Dad's intense loyalty to "Jimmy Diesels" this is the one that stands up best to scrutiny.

Sons don't usually question their father's sentiment very much and I was no exception. I believed that "Jimmies" were superior in every way and developed a lasting interest in them starting at a very young age.

I spent a significant part of my childhood on the west side of Missoula, Montana. Within easy walking distance was an Allis Chalmers dealer who also sold GM Diesels. I made frequent raids on his brochure rack and had coveted material on "Jimmy Diesels" like most boys collected baseball cards. Among other things, I had pictures and diagrams of two and as many as four 6-71s all connected to a common output shaft. These were factory configurations then available.

For this to be meaningful I need to explain the unique GM Diesel numbering system, the first number is always the number of cylinders and the second is always the number of cubic inches per cylinder. For example, a 6-71 has six cylinders, which are nominally seventy-one cubic inches each. If there is a letter between the numbers it denotes the configuration of the engine. An example is 8V-71, which denotes a V8 engine with 71 cubic inches per cylinder.

The engines Carl mentioned in the May meeting bore nameplates indicating they were 16-A184s. The nameplates indicated that they had a 6" bore and a 6.5" stroke. It was obvious that there were four vertical banks of four cylinders each; hence, they were clearly 16 cylinders but to satisfy myself that the standard numbering system was used in this instance I calculated the displacement per cylinder and it turned out to be 183.78. The stated cylinder displacements are always nominal. The 71 series is actually 4.25" bore by 5.0" stroke that computes to 70.93 cu. in. That's close enough for me.

Another interesting item from this nameplate is that it indicates that this is a right hand engine. The nameplate on the other engine wasn't visible without uncovering the engine but I expect that it will be left hand as these were clearly built for a marine propulsion application and it is best to turn twin props in opposite directions.

It's not clear whether these are axial or radial engines. The difference is subtle but definite. A radial engine has one master connecting rod connected to the crankshaft for each ring of cylinders and all other connecting rods attach to the master rod and not to the crankshaft. The axial configuration provides for a wide journal on the crankshaft and each connecting rod in a ring connects directly to that journal. This usually requires that the cylinder banks be offset parallel to the crankshaft as is easily seen on most V8 engines. The cylinder banks on these engines are not offset so they are probably radial engines. Looking at the 16-A184 model number caused me at first to think that the "A" stood for axial but the "A" is in the wrong place. If it were inserted to indicate configuration, it would have been 16A-184.

A letter inserted before the second number indicates a modification.

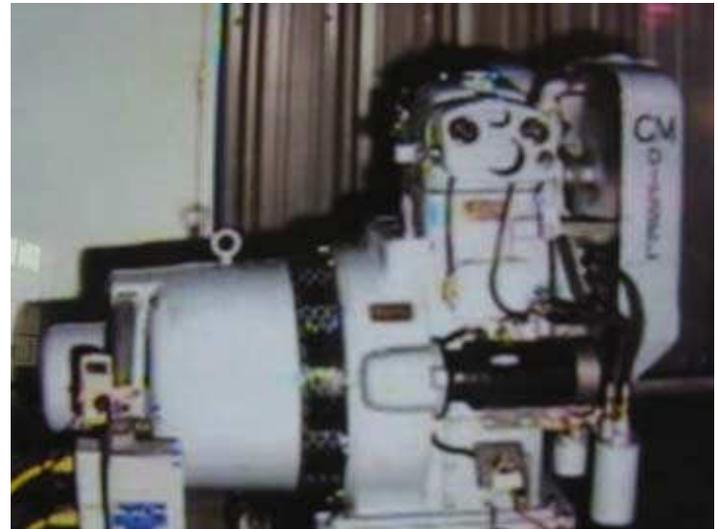
What is clear about these engines is that they are vertical engines with a right angle drive at the bottom for a horizontal output. GM's Electro-Motive Division that has always been responsible for production of GM's larger engines produced these engines

This family of General Motors' 2-cycle diesels is easily the most ubiquitous group of engines ever produced. It was produced in a vast array of sizes and configurations.



The bottom of the 16-A184 showing the horizontal output

Starting with the 53 series, there was the 3-53, 4-53, 6V-53 and 8V-53 with horsepower ranging from 55 to about 155. The 71 series is truly vast including the 2-71, 3-71, 4-71, 6-71, 6V-71, 8V-71, 12V-71, 16V-71 and 24V-71. As if that weren't enough, I've just run into a picture of a very rare 1-71 built in 1935 featured on the website Utube.



A motor-generator set powered by a rare 1-71 GM diesel.

An estimate of the horsepower range for the 71 series is from 15 to 625 and that's without taking into account that some engines were turbo charged and after cooled. For a brief time around 1950, a 6-110 240 horsepower engine was produced. It was available in the Allis Chalmers HD 20 crawler tractor, as a stationary engine and (in some applications) as a truck engine. Next came the 92 series with the 6V-92 and 8V-92 engines mostly used in trucking applications. These engines were frequently equipped with

turbochargers and aftercoolers. A V8 turbocharged aftercooled engine was designated by 8V-92 TA. The 92 series engines were only produced after GM Diesel became Detroit Diesel in 1965. There was also a 149 series produced in 16V-149 and 24V-149 configurations with horse power up to about 1300.

If, as I claim, GM diesels were the most ubiquitous engines ever, none can compete in sheer numbers produced with the basic 6-71. When you see WW II movies with hundreds of landing craft heading for a Pacific island every one of them had two 6-71s powering it. I have seen them powering cranes, trucks, crawler tractors, pumps, generators, winches, boats, loaders, graders, material processing plants, scrapers, and as I mentioned earlier, there was a time when if more power was needed, 6-71s were combined in various configurations of two or four engines.

If you expand the engine list to all of the various engine sizes and configurations then there is virtually no application for which these engines have not been used. Even today if you walk along the waterfront in any major port city, you will see these engines attached to winches, air compressors and generators on barges and workboats. These are only the engines visible from the shore. There are many more still in place as the primary propulsion engines of the boats and barges.

No story about GM Diesels could be complete without mentioning Charles Francis Kettering. Kettering was the force behind the initial design of the two-cycle GM Diesel. He is also credited with designing the first electric engine starter which he sold to Cadillac. (The starter on the 1924 Cadillac Julian stage currently being restored by MTM is the brain-child of "Ket" as he was affectionately called by the people around him.) Among his many other credits is the development of the modern points type distributor, the modern refrigerator, and high-octane gasoline.

As GM's head of research, Kettering became interested in developing diesel engines for motive power sources and soon realized that all of the existing engines that were mainly produced in Europe at that time were much too heavy for motive uses. This caused him to pursue research of two cycle diesels. This led to the development of the unit injector that operated off a camshaft lobe for each cylinder and the blown two-stroke design

General motors acquired the Budd Motor Car Co. that produced small engine powered railroad cars and the Winton Engine Co., which produced engines for Budd's motorized rail cars in the early thirties. From these the Electro-Motive Division was formed. There is a great deal of information available about how this division almost single handedly transformed the nation's railroads from steam to diesel power. For our purposes here, I only want to briefly list the GM diesels, which were developed for locomotives, and show that they were an extension or the engines already discussed.

The Electro-Motive Division first produced a 567 series 1935 in configurations of V6, V8, V12, and V16 with horsepower to about 2500. In 1966 they started producing a 645 series with horsepower to about 3000. In 1984 production of a 710 series started with configurations up to 20 cylinders and horsepower over 5000. The 710 series is still in production.

Just to put this engine into perspective, think about this: a standard Chevrolet V8 has 350 cubic inches of displacement. The 710 series engine has more than twice that amount in one cylinder and it has as many as twenty cylinders.

It wasn't until 1984 that Electro Motive produced a four-stroke diesel.

Most of Electro Motive's big engines have been modified and used as marine propulsion units at one time or another. The USS Slater, a Sub chaser/destroyer escort now on permanent display at Albany New York was powered by no less than eight large Electro Motive Diesels.

All of the engines I have discussed vary only in size and configuration. Functionally they are all just exactly the same. They are all two cycle with unit injectors and have Roots type blowers forcing air into the cylinders.

What makes these engines so incredibly interesting to me is their production time span and their diversity of uses. Production started in the early thirties and some models are still being produced. There are still millions of them in use all over the world in every conceivable application. I wouldn't be surprised if a hundred years from now somewhere someone will hear the sound of a "Screamin' Jimmy" hard at work.

### **The 1924 Cadillac Stage**

The restoration of the 1924 Cadillac stage being performed by the MTM for the Julian Historical Society is proceeding slowly. The stage is one of the early motorized buses that provided transportation between San Diego and Julian, CA, a distance of about 60 miles. The bus is a Graham Bros. wood body mounted on a 1924 Cadillac V-8 chassis that has been stretched to accommodate it.



The 1924 Cadillac Julian stage is beginning to take shape.

We have finally solved a critical problem with the floorboards and driver's seat. We found we had to lower the boards 4 inches to allow for clearance of the pedals and gearshift. The floorboard we had made was apparently for a Cadillac car rather than for the stage. Frank Ball's tenacity has figured out the problem and solved it. We had to have new floorboards made again.

We have also built patterns for the running boards, since they are 3 ft. longer than the Cadillac car because of the stretched frame. We have also built the rear running board patterns as they were missing.

We have also solved a mystery about the radiator. The one we had installed turned out to be located 2 inches too far back leaving a space between it and the cowl that was too short for the hood. We found that one of the spare radiators had the bottom locating pins in a better position. We installed a new core in that radiator for a cost \$1,500. It is now installed on the Stage and working perfectly.

Frank is now making a bracket to hold the rear bumper. This was missing and we located another one at a swap meet that is nearly the same as the front one. We will soon be getting the bumpers nickel plated.

Our next effort is to remove the body hopefully for the last time for painting.

### New Donations

The following items were donated to the museum during the three months since the last newsletter.

- o A 1942 antique Seagraves fire truck by John Adams of La Mesa, CA. This was a La Mesa city fire truck for many years.
- o A 1954 International fire service truck by Fred Swift of Santee, CA
- o A 1944 GI International truck by Teresa Brewer of La Mesa, CA
- o A Hyster model 40 forklift and three boxes of Hyster spare parts by Tom Hurley of Jamul, CA.
- o A 1968 International boom truck by Jerry and Jamie Lester of Lakeside, CA.

We thank these donors for their generosity in helping the museum attain its goals.

### New Members

**Earl Shaffner** of Santa Clarita, CA enrolled as a Life member and **Jeff Sikora** of Santee, CA and **Pat Spencer** of National City, CA have enrolled as General members of the museum, since publication of the last newsletter. We welcome these new members to our museum.

### Attention All Members

**You can donate money towards MTM's cause without spending a dime by simply receiving these quarterly issues of the Motor Transport Museum News by e-mail. This way MTM can save mailing costs and use the savings towards operating expenses. Not only will you get instantaneous delivery of your copy, you will get the photographs in glorious living color, a feat that we have not yet**

**accomplished with the printed copy.** Please Email us at [motortransport@att.net](mailto:motortransport@att.net) and subscribe.

**Also – MTM needs people like you to greet and educate our visitors. Being a Docent is fun and rewarding.**

Anyone interested in helping on any of the Saturdays during 2008 please call John Thomas at (619) 479-4318 or MTM at (619) 478-2492 to volunteer.

### For Sale

The MTM has numerous items for sale at its main facility at the Mill in Campo, CA. To view the items that MTM is currently selling, visit our new web site at [www.motortransportmuseum.org](http://www.motortransportmuseum.org).

### Upcoming events

The **Antique Gas and Steam Engine Museum** in Vista, CA will be holding its fall Harvest Fair on October 18, 19, 25 and 26. There will be weaving demonstrations, blacksmith and wheelwright shops, tractor games, wagon rides, food and live entertainment. For more information and driving directions visit [www.agsem.com](http://www.agsem.com)

The **MTM Board of Directors'** meetings for the fall quarter of 2008 will be held at the Horseless Carriage Foundation library at 8186 Center St. La Mesa, CA at 6:30 PM on the following Thursdays: **Oct. 16, Nov. 20, and Dec 18.** All members are invited to attend.

### Hours of Operation

The Museum facility at 31949 Highway 94 in Campo, CA is open to the public every Saturday from 10 AM to 5 PM. Admission is free, donations are accepted.

### MTM Officers and Directors

The officers and directors of the Motor Transport Museum are as follows:

**Officers:** Greg Long, President

John W. Thomas, Secretary

Carl E. Calvert, Chief Financial Officer

**Directors:** Reid Carroll, Roger Challberg, Jim Jensen  
Steve Sackett, Bill Jellyman



# Motor Transport Museum

## APPLICATION FOR MEMBERSHIP

New  Renewal

Name \_\_\_\_\_ Spouse \_\_\_\_\_  
Street Address \_\_\_\_\_ City \_\_\_\_\_  
State \_\_\_\_\_ Zip \_\_\_\_\_  
Phone \_\_\_\_\_ E-Mail \_\_\_\_\_

General Membership	1Yr \$20 _____	2Yr \$40 _____	3Yr \$60 _____
General - International Membership (Non USA Mailing Address)			1Yr \$25 _____
Corporate Membership			1Yr \$75 _____
Life Membership			\$250 _____
Endowing Life Membership			\$1000 _____
Associate Membership - Non Profit organization			1Yr \$35 _____
Jounior Membership - Children under 18 (non-voting)			1Yr \$1 _____
Student Membership - Full time students, 18 - 25			1Yr \$6 _____

I agree to comply strictly with the By Laws of the Motor Transport Museum; to conduct myself at all times in a manner which will support and promote the best interest of the Motor Transport Museum

Signature of Applicant \_\_\_\_\_ Date \_\_\_\_\_

PLACE  
STAMP  
HERE

MOTOR TRANSPORT MUSEUM  
81949 HIGHWAY 94  
CAMPO, CA 91906