Meeting the Challenge

The Trucks and Trailer
Of
Challenger Manufacturing Ltd.

By
Cam Rizzie

EXCEEDING THE CHALLENGE

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Canada has had many truck manufacturers over the years including, in Nova Scotia (Scot), in Quebec (Sicard) and in Ontario (Dynatel, Flextruck and Peninsula). In Western Canada, there have been four manufacturers of trucks, all based in the Province of British Columbia, including Hayes, Pacific, Grizzly and Challenger.

Hayes Trucks started operating in 1922 and between then and 1975 it was Canada's largest truck manufacturer. After a period of ownership by Mack, it was sold to Paccar and shut down in 1975. Even after 35 years of closure, there is still, amongst many, bitterness over this decision.

Pacific trucks were manufactured between 1947 and 1991, but the company is now back in business and is Canadian owned. In the 1950's, 60's and 70's two brands of logging truck, the Hayes HDX and the Pacific P16, were the mainstay of most logging companies in the Province of British Columbia in off-highway applications. Both logging trucks were manufactured in their respective Vancouver manufacturing plants, as well as Grizzly trucks (heavy-duty pick-ups) between 1986 and 1991.

The history of Challenger Manufacturing began in Port Alberni on Vancouver Island in 1971. Two loggers, Cliff Coulson and John Casanave, who were partners in Lois Lake Logging, decided to set up a separate company to repair and rebuild many makes of off-highway logging trucks.

Their first two rebuilds were the building of two Hayes WHDX trucks using all new Hayes frames, cabs, hoods and fenders (completing one in 1971 and one in 1972). These two trucks were used in their Lois Lake logging operations and John still has one of these original trucks.

Health issues forced John to sell out his logging interests to Cliff Coulson, and he then became a sales representative for Hayes Trucks for a period of time. When John's health improved an opportunity arose for John to re-enter logging and take on a new partner, Eric Netzer. Challenger Manufacturing was still rebuilding trucks and eventually John and Eric purchased Cliff's interest in the company.

In 1985 tragedy struck the Casanave family when their son, John Jr., was killed in a logging accident. From this, John lost all interest in logging; however, after a period of mourning he realized he needed a focus. Knowing the weaknesses and strengths of the other brands, John's dream was to build his own off-highway truck. After a period of about four months he had a full set of drawings done for the truck that he wanted to build – this from a man who had neither finished high school nor had any previous drafting experience.

These drawings were taken to Frank Dean, former Chief Engineer of Hayes Trucks. He reviewed them, drew in the drive lines, and his only comment was that a truck made from these drawings would be "heavy." Frank's comment was true; it was heavy, averaging about 4,000 pounds more than a comparable Hayes HDX, Pacific P16 or Kenworth 850.

John's intention was to build up all the weak points found in other trucks. Also, as he said: "A heavy truck rides better empty and does not shake itself apart." As Challenger trucks would be driven on private roads (mostly gravel logging roads), toughness was what was needed and weight was not as much of a consideration. As a truck is only as good as its frame, John designed a massive but flexible frame for his truck.

At first, Challenger frames were built by several different steel companies in British Columbia, but wanting closer tolerances in quality later ones were built at the Challenger plant in Port Alberni. The initial I-beam frames for Challenger trucks were top and bottom flanges that were 1" thick, 7" wide with the web (frame depth), 21" deep made out of ⅝" material of 55,000-pound yield steel. Later, Challenger truck frames were made from Weldox 100 steel with 110,000-pound yield with the same dimensions as the first trucks. (Weldox 100 steel is made in Sweden, is free of impurities and has good welding characteristics.)

The first frame was completed in the Vancouver area and then shipped back to Port Alberni. After adding the hood, cab, Mack E9 400-HP engine, 12-speed transmission and Clark 91,000 planetaries, the truck was ready by May 1987. The hoods, cabs, fenders and engine side plates for the engine for Challenger trucks were built by a sheet metal shop in Port Alberni. This truck, as well as a second one (completed in January 1988), were used in Eric and John's own logging operations in the Alberni Valley.

Having these two trucks in operation in real-world conditions, Eric and John both knew they had a winner. As loggers who still had many connections in the industry, they decided to put these two trucks out as demonstrators. Therefore, for a period of six weeks John drove one Challenger the length of Vancouver Island (400 miles) to show the truck to different logging operations. The other truck remained in the Alberni Valley and was used as a demonstrator only for local logging companies. Being members of the TLA (Truck Loggers Association) with their annual convention in Vancouver, Challenger trucks were featured there too. All this exposure resulted in orders for Challenger trucks from both large and small forest companies.

In drafting his truck John set out to build a truck with a 30% overbuild factor, but after review by an engineer they were found to have a 50% overbuild factor compared to a comparable size truck from a different manufacturer.

The toughness of a Challenger was put to the test at a logging operation in Gold River on Vancouver Island. Fully loaded with 150 tons of logs, the truck went over a bank and plunged 250 feet down the bank over rocks, stump and trees. Thankfully, the Challenger's tough design allowed the driver to receive only minor injuries.

Stopping the truck from going further was a very large stump that caught one rear 121,000-pound planetary pulling it, the other axle and the rear springs out of alignment. In addition, the 30,000-pound front axle, wheels and springs were torn off the truck. Most components on the top of the frame, however, were not damaged, and the frame remained intact and true. The headache rack and cab, mounted in several spots using Lord rubber mounts for cushioning, caused the headache rack to only slightly touch the back of the cab. These rubber mounts were 1" thick and had either a 1" bolt or a ⅞" bolt holding them together, depending on the component being fastened. The Lord rubber mounts (two sandwiched together between a mount on the component and the frame) allowed less vibration and therefore caused less overall damage to the truck. The flexibility of the Challenger frame is what caused it to suffer no damage from the accident. A short time after being returned to Port Alberni and Challenger for repair, the truck was once again back in service with a repair bill of about $30,000.

Even though each Challenger truck looked the same, John insisted that each one was an improvement over the previous one. Being a small manufacturer, improvements could be made, as needed, quickly and relatively easily. Although John personally drafted the first four trucks to be built, he subsequently hired a draftsman who did the later trucks. In addition to addressing the issue of building a tougher truck, he also wanted a truck that would be easy to service and repair.

The following are some innovative features included in the design of a Challenger truck:

- fenders, grill guard and front bumper could be removed as one unit in five minutes;
- engine with radiator slid out on its own frame (like a drawer). All Challenger trucks had this feature, except the last one built as the motor mounts were easily accessible;
- hood went straight up and side panels were removable for easy engine access;
- all wiring in the cab came into a single harness and plug that fitted into a receptacle through the firewall. The dash was also hinged for easy access to all gauges;
- water tank and headache rack were hinged to allow easy access to transmission.

In 1994 Challenger received an order for two trucks for coal hauling. These trucks were 50% larger than the standard Challenger. Built side by side in the Challenger plant, these trucks were 12.5 feet wide, 40 feet long, but used the same I-beam frame as a standard Challenger (the former had the capacity to handle a bigger payload). In addition, these trucks featured radiators that were 76" wide, Detroit 8V 149-T1 engines rated at 900 horsepower and Allison 8000 Series automatic transmissions. The axles for these giants were equally as large, featuring Rockwell SPRC 4806 planetaries rated at 180,000 pound capacity and 55,000 pound capacity front axles; all axles had 106" track. In June 1994, these two trucks were shipped to Line Creek Resources in Sparwood, British Columbia, where their 75 cu.yd. Aspen coal bodies were added.

Challenger Logging Trailers

Halfway through truck production, John decided to build a better logging trailer. Most off-highway logging trailers have a turntable for the bunks that is 8 feet wide. For stability, Challenger's turntables were 9 feet wide. Challenger logging trailers were available in 60- and 70-ton tandem and 85-ton tridem capacity. The reaches for the trailers were made out of 12¾" OD pipe as well. Challenger pre-load logging trailers had a larger hydraulic cylinder for lifting the fifth wheel and the load, as well as better geometry for the preload trailer legs – adding up to be an excellent trailer. One exclusive feature Challenger offered was to have the rear cross-member of the frame on the truck be an oil tank to lubricate the Teflon bushings in the trailer receiver. The stinger that the logging trailer hooked up to slid through a hole in the rear cross-member.

In 1995 the provincial government implemented the *BC Forest Practices Code* that caused logging roads to become narrower and with smaller patches of timber to log. The effects of this legislation caused many forest companies to go to highway trucks rather than using as many off-highway trucks. Challenger Manufacturing also had a request from a major Canadian forest products company to build 15 heavy highway logging trucks, but this was not feasible.

Seeing the market for a truck as big as a Challenger diminishing, the two partners sold their last truck, as well as drawings, parts and inventory to an Australian businessman, who built two additional trucks in Australia. The last truck built in Port Alberni left the factory on September 23, 1999. It was trucked to Vancouver, BC, before being loaded on to a ship and sent to a mine at Mount Isa in Australia.

Of the 15 trucks that Challenger built, 14 are still in service. (One was wrecked in an accident and scrapped, but it could have been rebuilt.) As a testament as well to the toughness of a Challenger, it is nearly 23 years from when the first Challenger went into service. John has never heard of a cracked frame or structural failure on any one of his trucks.

In interviewing John Casanave for this article, he credited his employees as well as the many friends he has in the forest industry for many of the ideas he incorporated into the Challenger truck. Last but not least, someone who must be mentioned is John's wife Pat, who has supported him in his logging interests, as well as in the creation and building of Challenger trucks.

Though there is sadness that Challenger trucks are no longer in production, the ones that are still working stand as a testament to a man with a vision to build what he wanted and what heavy industry needed. John Casanave set out to fulfill his dream to create a truck that would challenge all other makes – and that he did, even exceeding it.

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Cam Rizzie, who lives in Saanichton, BC, is a member of the ATHS as well as the Vancouver Island Chapter of ATHS.