

How One Engineer Operates Several Diesels?

In the steam days when more than one locomotive was needed to pull a train, each locomotive had to have a crew on board. In the rugged mountainous areas of the country, doubleheaders and even the occasional triple-header was often needed to move a train over the road. That used up a lot of engineers and firemen! When diesels came on the scene, one of their strong selling points was that a railroad could connect locomotives together to reach whatever horsepower they needed, but no matter how many locomotives were on the line, only one engineer was needed to operate all the locomotives.

When more than one diesel locomotive is used in a locomotive consist (CON-sist, with the emphasis on the first syllable) they are said to be MU'd. The "MU" comes from the term "Multiple Unit" which is how a consist of locomotives is described. Multiple Units form a "Consist" and they are "MU'd" together. In real railroading they are not called a "lashup." The only place I have seen the term "lashup" used is in the Lionel TMCC and MTH DCS control systems. I don't know where they got the term, but it has become an oft-used word in the hobby. Use it in the 12-inch-to-the-foot scale world however, and you'll instantly be branded as an ill-informed rookie.

So how does one man control multiple units in a locomotive consist? He does so through the use of a heavy-duty 27-conductor electrical cable called an "MU cable." If a locomotive is equipped with MU capability, on each end you will see a large, round connector with a spring loaded cover plate on it (Figure 1). Under that cover plate is a 27-pin connector that mates up with the big 27-pin connector on the MU cable (Figure 2). When locomotives are MU'd, the MU cable is connected between units to these connectors. When connected, the control circuits of the lead locomotive are able to control those same circuits in all the trailing units. Reverser, throttle, generator field, dynamic brake, sand, alarm bell, headlight control and a few other functions are all routed through this connector and cable. Figure 3 shows the MU cable plus all the other air connections between two MU'd units.

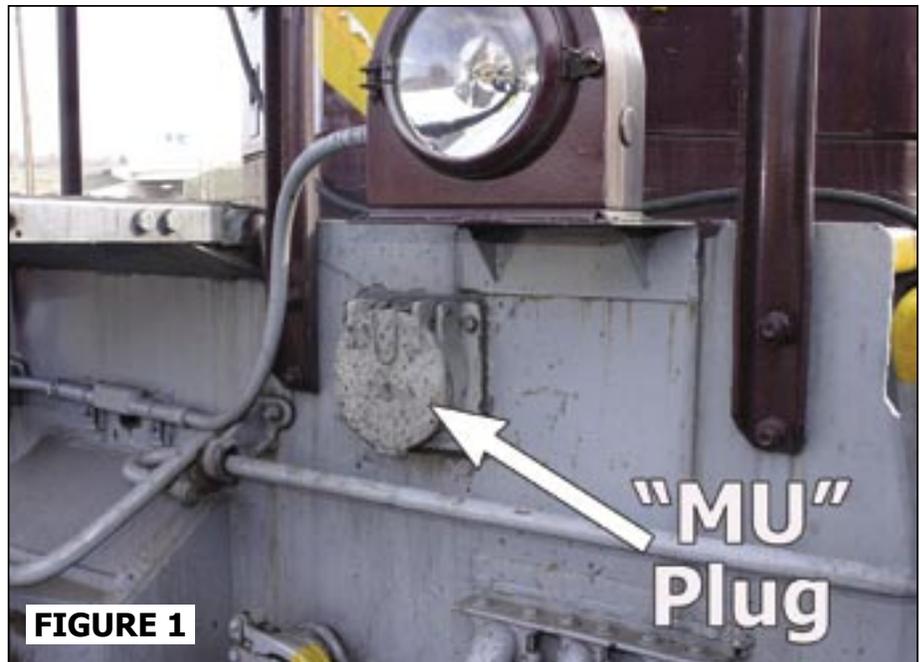


FIGURE 1

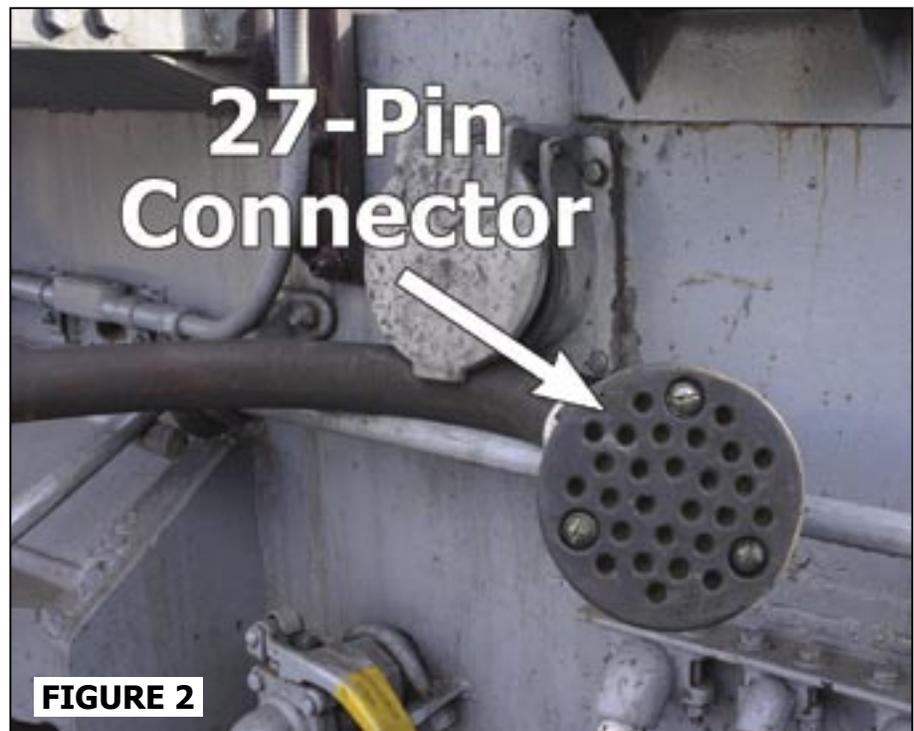


FIGURE 2

The electrical connections will make the engines go, but what about stopping them? There are four air hoses on freight units that allow the locomotive's air brake system to be MU'd, too. In figure 3, from the outside in, the four hoses are the Independent Brake (engine brake) Application and Release Hose, the Independent Brake Actuating Hose, the Main Reservoir Equalizing Hose and the Brake Pipe. When the three outer hoses are connected between multiple units, the air compressors and main air reservoirs on all the units are connected together to form one large reservoir. All the air compressors pump into this single large reservoir, which allows the consist to more easily pump up the air on a long train. The Independent Brake (the brakes on the engines) are also connected together via these hoses. If the engineer applies the Independent Brake on the lead unit, the brakes on all the trailing units apply, too. The Brake Pipe is the air line that runs the entire length of the train, supplying air to the air brakes on all the cars.

In the cab of the lead unit, the engineer sets up the control stand, headlight control and air brake valves for "lead." All the trailing units are set up in "trail" mode. A locomotive set up for trail responds to the controls in the lead unit, just as if an engineer were in the unit operating its controls directly.

The next time you see a train go by pulled by a multiple unit consist, look between the locomotives and you will see the MU cable and hoses connected between the units.

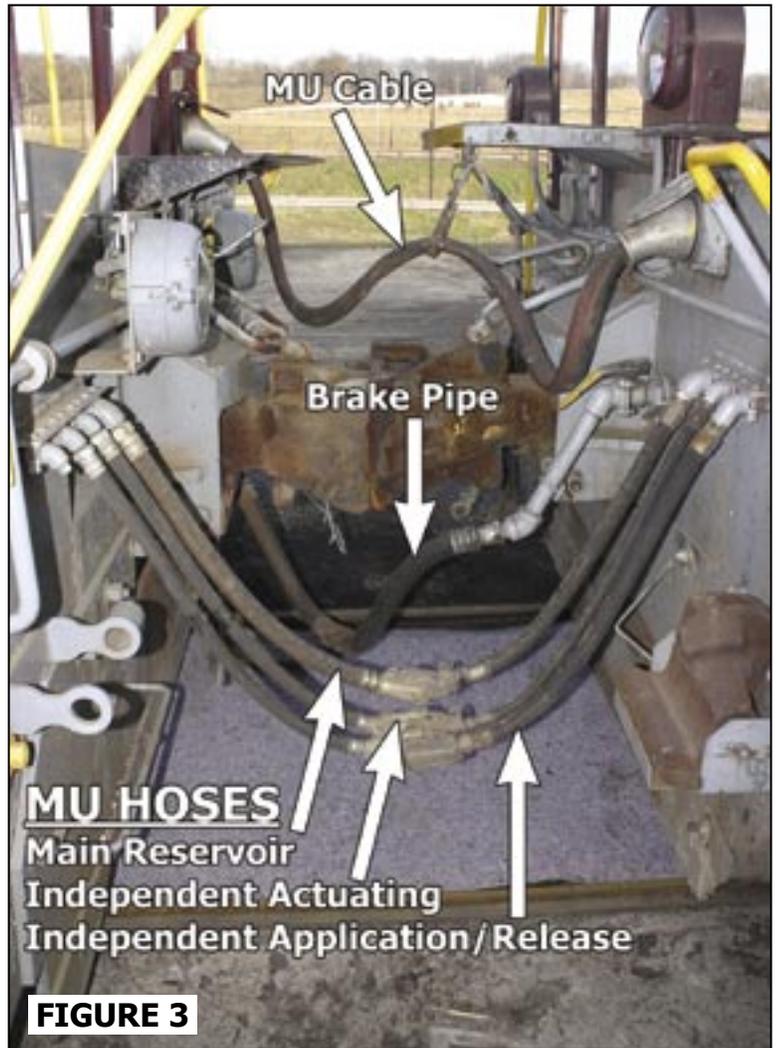


FIGURE 3



OGR Publisher Rich Melvin is at the throttle of Ohio Central Railroad System locomotive No. 7574 as the train passes the absolute signals at CP61 on Norfolk Southern's Youngstown Line. Rich is controlling all the locomotives in this four-unit consist from the cab of the 7574, via the MU cable and hoses. Photo by Dave Baer.