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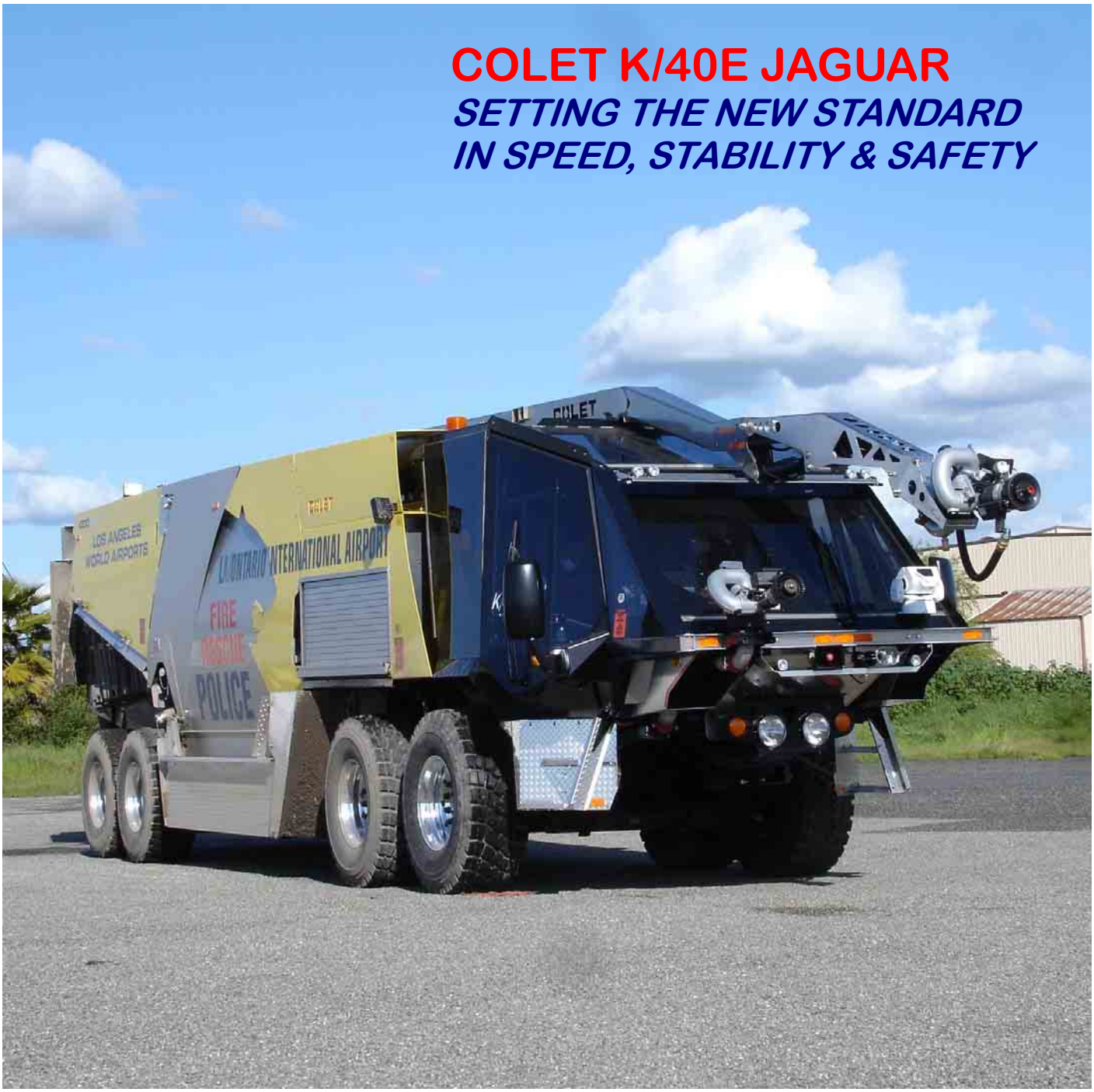
SETTING THE NEW STANDARD IN SPEED, STABILITY & SAFETY



THE COLET K/40E JAGUAR

SETTING THE NEW STANDARD IN SPEED, STABILITY & SAFETY

By
William Mulcahey
Editor / Executive Publisher, *AFJ*

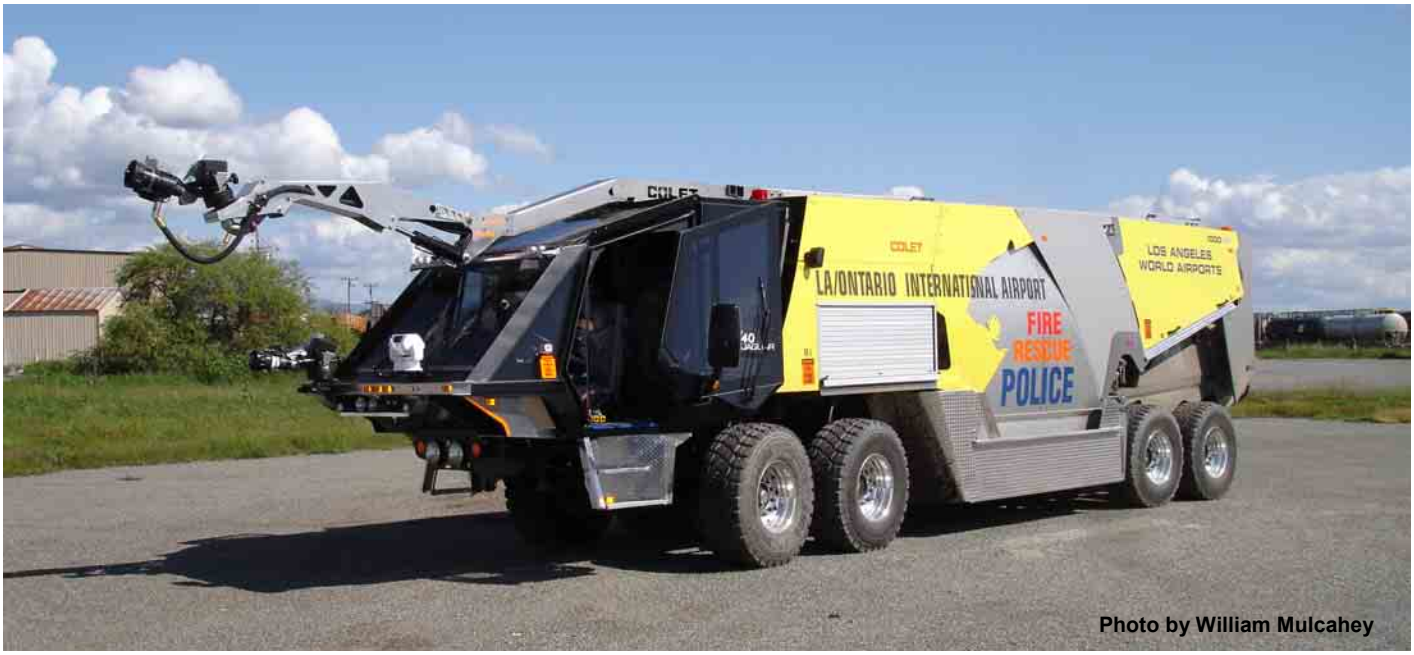


Photo by William Mulcahey

The evolution of aircraft rescue fire fighting (ARFF) trucks has come a very long way over the past 50 years. Larger and faster vehicles that carry greater quantities of extinguishing agents are now serving at airports across the world. However, if we look closer at some of the inherent problems in airport fire vehicle designs, we still face the problem of vehicle rollover which can compromise the safety of firefighters and the flying public that depends on these vehicles to get to the scene of an aircraft accident rapidly to save lives.

There is no doubt that getting to the scene of an aircraft accident faster has the benefit of containing or extinguishing a fuel–fed fire faster, allowing aircraft passengers to escape from an aircraft in a safer environment. Putting foam on a fire faster saves lives, but getting there **FASTER** is the key. With the introduction of the Airbus A-380, the risk to lives from a post-accident fire becomes even greater.

Before I go any further, I wish to state that *Aviation Fire Journal* does not endorse or shill for any ARFF vehicle manufacturer out there today. Whatever ARFF vehicle an airport fire chief or airport manager decides to purchase is his or her own decision.

There are many ARFF vehicle manufacturers out there today that claim that their vehicles are "faster and safer." This is certainly true when compared to airport fire vehicles of yesteryear, however when we examine past and recent ARFF vehicle rollover accidents, are their claims a fact or just clever marketing 'spin.' In my research, I've found that many of these same ARFF vehicle manufacturers who make these claims are the same manufactures whose airport fire vehicles continue to rollover, even at very low non-emergency response speeds. It should be remembered that *any* ARFF vehicle manufactured today can rollover if circumstances are right, however my research has concluded that there are only two ARFF vehicle manufacturers out there today that have not had any ARFF vehicle rollovers while on level surfaces to date— Rosenbauer and Colet.

One can argue, imply or conclude that ARFF vehicle rollovers are caused by poor ARFF vehicle operators, however, if we look more closely, is this really the case? Or does it come down to the ARFF vehicle design or engineering? Are ARFF vehicle manufacturers using all of today's engineering technologies to prevent rollovers from occurring, or do

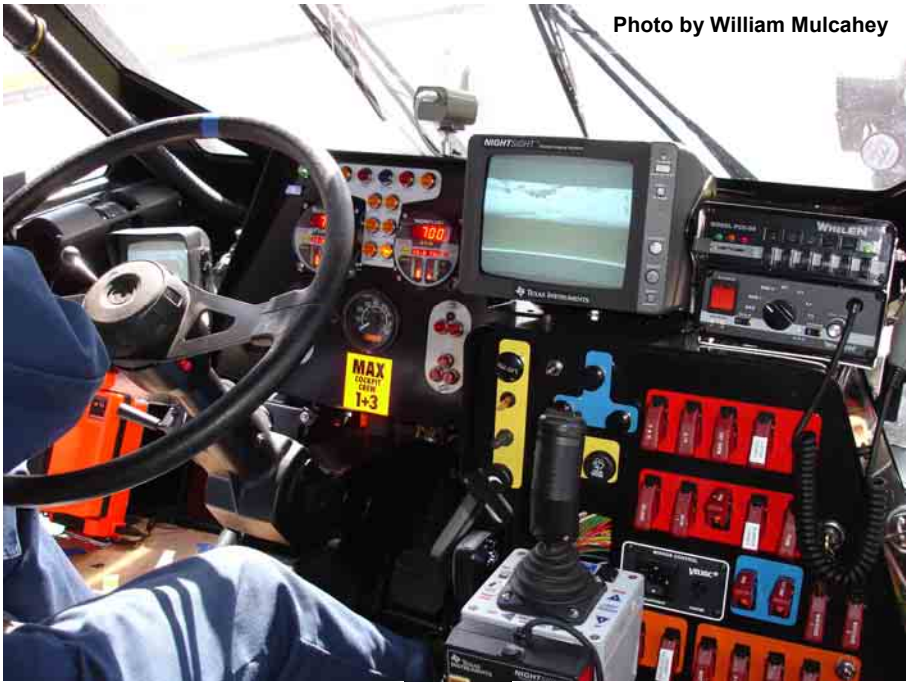


Photo by William Mulcahey

they just choose to meet the minimum standards required?

If you look further in the pages of this issue of *AFJ*, you will notice that one prominent ARFF vehicle manufacturer has just announced a "new" ARFF vehicle. But if we look a bit closer, is it really "new" or just a snappier looking fiberglass vehicle body placed on an old chassis? They claim that the vehicle is *lighter and faster* than other ARFF vehicles out there. Is this a fact, or just more marketing hype? These claims may be true when compared to vehicles of the more prominent ARFF vehicle manufacturers we all recognize today, but there is only one ARFF vehicle builder out there today — COLET SVD — that can actually claim as a ***FACT*** that their vehicles are ***FASTER*** and ***SAFER*** than any other ARFF vehicle today.

COLET SVD, located in Newark, California, has been engineering and building custom designed airport fire and other specialized vehicles for airports and others across the United States and the world. The major difference between the often overlooked COLET SVD and other major ARFF vehicle manufacturing "players" is that COLET chooses not to participate in the normal vehicle bidding process when an airport is looking to purchase a new fire truck. A potential purchaser *comes* to COLET, not the other way around. Why is this the case you ask? It's because the COLET airport fire vehicles are specially designed to meet a purchasers individual engineering specifications, and are not '*cookie cutter'* mass-produced vehicles. That being said, let's look a bit closer at some of the touted *claims* made by the major ARFF vehicle manufacturers and compare them to reality.

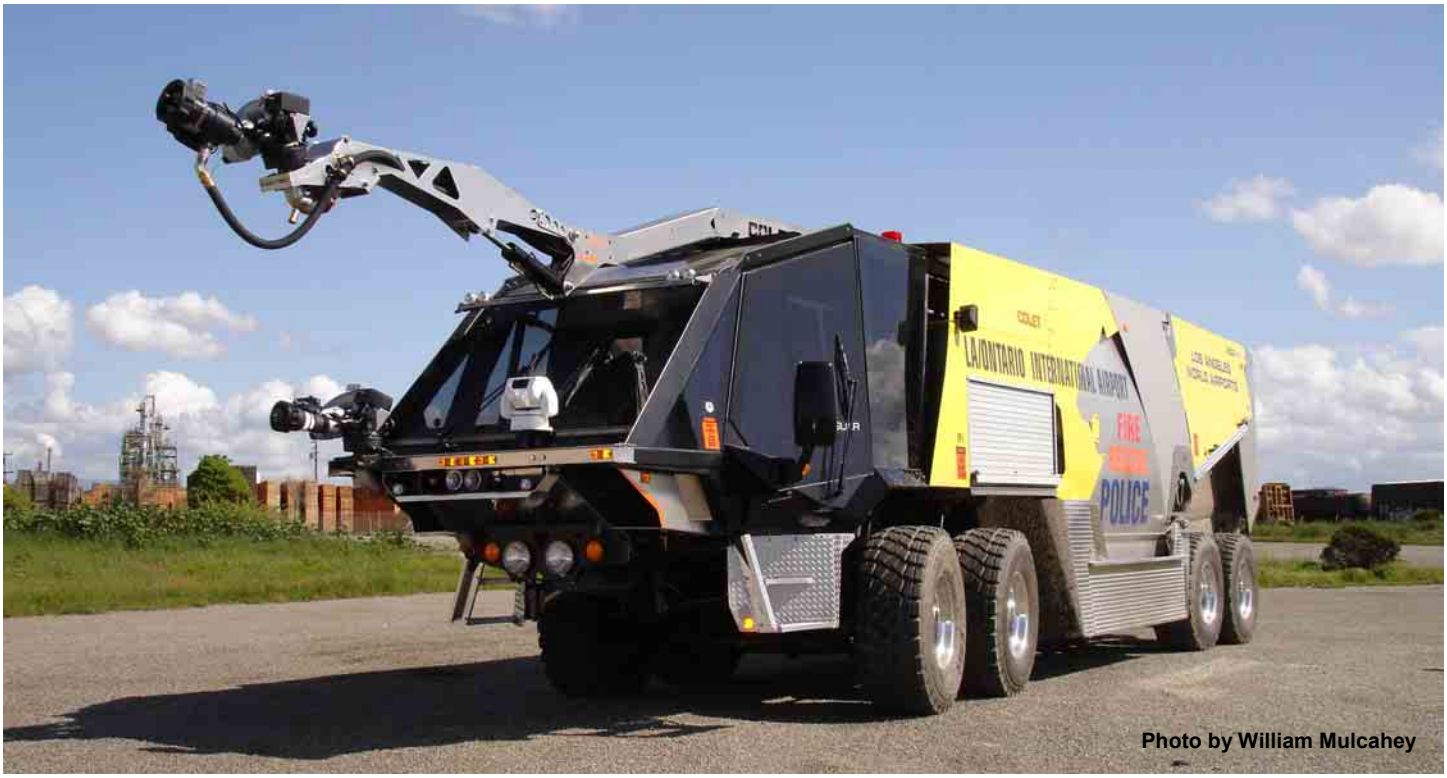


Photo by William Mulcahey

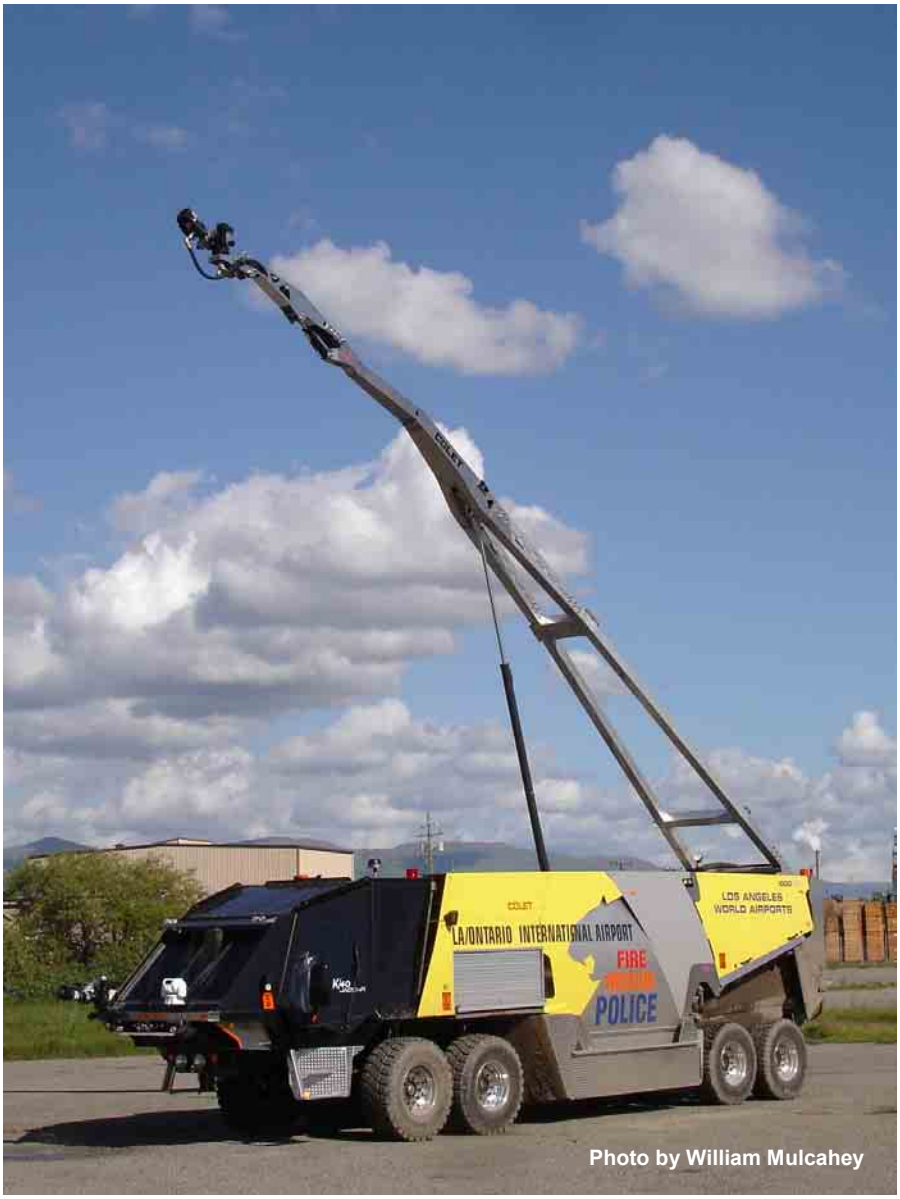


Photo by William Mulcahey

I recently visited the COLET SVD manufacturing plant to look at and operate their new K/40E 'JAGUAR' 8X8 ARFF vehicle that is the first model of several scheduled for delivery to Los Angeles World Airport's (LAWA) Ontario International Airport (ONT) and Los Angeles International Airport (LAX). The new K/40E JAGUAR ARFF RIV vehicle is like nothing that has ever been engineered or built to date. All of the performance claims of this vehicle have been experienced by myself.

SIZE AND WEIGHT

The Colet K/40E JAGUAR 8X6/6 ARFF RIV (Rapid Intervention Vehicle) vehicle represents a marked advancement in ARFF vehicle size and weight when compared to any other ARFF vehicle out there. This K/40E 4000 gallon vehicle, fully loaded with all extinguishing agents weighs 71,400 pounds (32,386 kg). Other ARFF vehicles that carry the same agent capacity weigh in excess of 135,000 pounds (61, 234 kg). Weight is the main factor causing loss of forward motion when traversing over soft ground. Since the K/40E JAGUAR vehicle is much lighter, there is much less of a chance of it becoming bogged down in off-hard surface response situations. Although one manufacturer now touts that there new truck is 2000 pounds lighter than others, the K/40E JAGUAR is HALF that weight!

An ARFF vehicle's size is also a very important consideration. Airport fire station door width and apparatus floor lengths as well as fitting through airport access gates are factors to consider when purchasing a new ARFF truck. During off-airport response to aircraft accidents, vehicles must be able to fit through highway toll plazas, navigate under and over highway overpasses, across bridges with specific weight restrictions and be easily and safely drivable through city streets. The K/40E JAGUAR is "street legal" as per Federal and California regulations. The overall length of the K/40 is 39 feet 6 inches (12.1m) long from bumper to bumper and is 102 inches wide (2.5m) — both shorter and narrower (by up to 2.5 feet) than even ARFF 3000 gallon capacity vehicles.

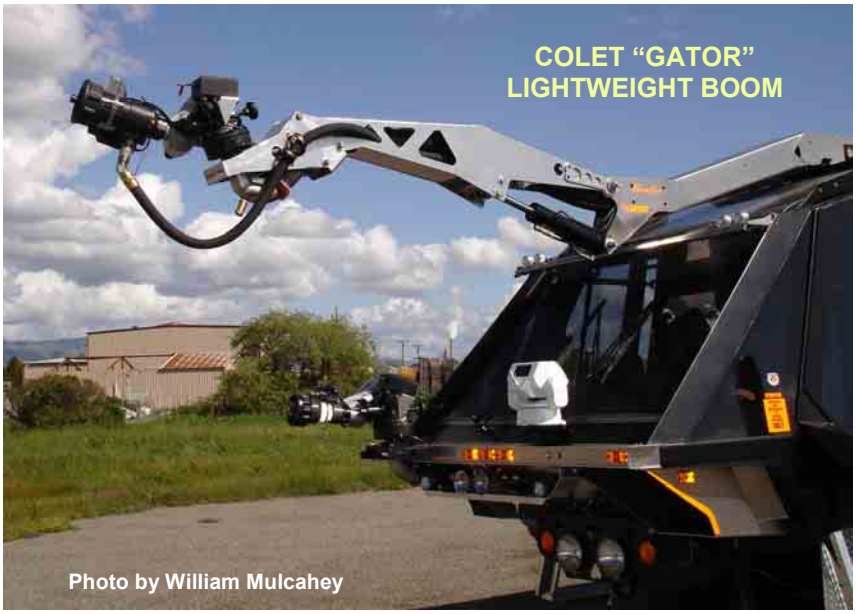
ENGINE AND SUSPENSION SYSTEM

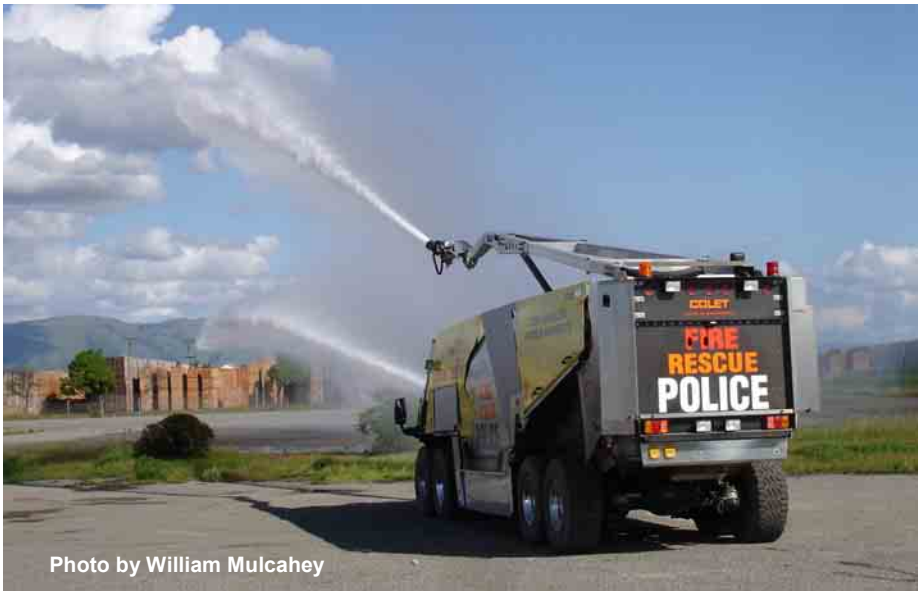
The "E" in K/40E stands for *"Energy Saving, Environment, and Electronics."* The K/40E is powered by two-500 horsepower (1000HP/735kW) diesel engines (one in the front and one in the rear) that has an *Environmental Ultra Low Emission Vehicle (ULEV)* emission. The vehicle also has two Allison electronic transmissions with two power dividers. Each engine and transmission can power the vehicle drive train and/or pump(s), and can operate singly or in tandem to drive the vehicle or operate the pump. In addition, two automatic 'Jake Brakes"', one on each engine, provides superior vehicle slowing power and less stress and wear to the vehicle brakes. I've driven other ARFF vehicles where I literally

had to stand on the brake pedal to get it to slow down and stop at high speed. This is not the case with the K/40E JAGUAR RIV. It has smooth, controlled and a much shorter barking distance.

The K/40E JAGUAR RIV 4000 gallon (15,141 L) truck accelerates from 0-50 mph (0-80 kph) in only 15 seconds! I personally timed it several times with a stop watch. Acceleration is faster than all 1500 gallon trucks (except the COLET K/15 4X4) by at least 10 seconds, and 20 seconds less than the FAA required 35 seconds.

Unlike other ARFF vehicle builders that use steel coiled springs in their vehicle suspension systems, the COLET K/40E JAGUAR employs eight hydraulic oil cylinders similar to an aircraft landing gear which are built for high landing impacts over and over. The vehicles low center of gravity of offers a much more safety when turning at high speeds. The active control suspension system allows the vehicle operator to raise the entire vehicle an additional 12 inches (304 mm) if needed when traversing across open ground. Each one of the eight hydraulic oil cylinders can sense loss of wheel traction and can compensate this continually by optimizing the tire and suspension loads to maximize safety during cornering or turning.. The K/40E JAGUAR RIV suspension also compensates on curves by auto-leveling the vehicle through its active suspension system thereby further preventing rollover thereby providing a SAFER vehicle for a firefighter to drive. The turning radius standard of an ARFF vehicle requires it to be three-times (3X) its length. The K/40E JAGUAR, at 40 feet long, exceeds this standard, turning in only two-times it's at about 81.5 feet (24.8 m), which is shorter than even 1500 gallon ARFF vehicles. This provides far superior vehicle handling, maneuverability and safety for the operator. After driving it myself, I can empirically state that the K/40E JAGUAR RIV drives and handles just like a car, not like a huge monster out of control.

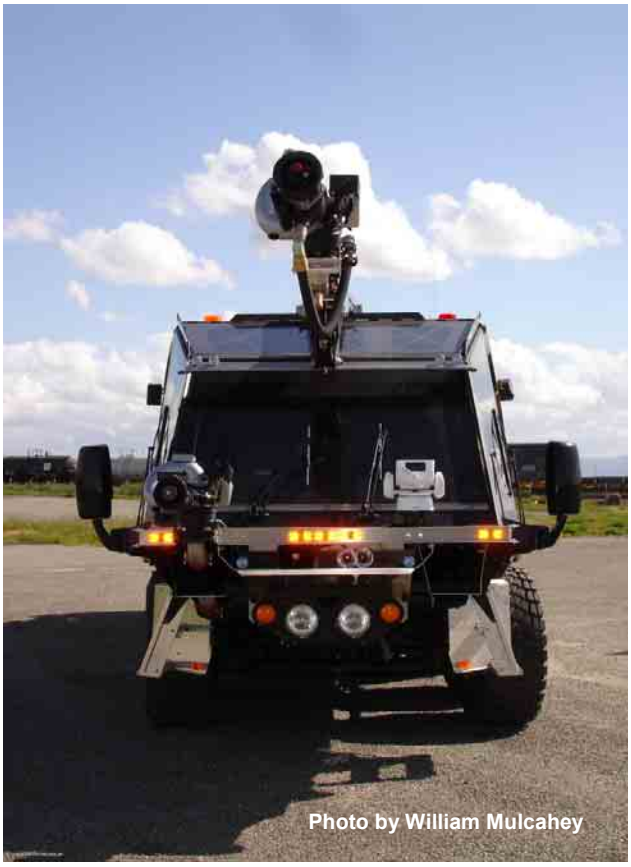




BODY AND CHASSIS

The COLET monocoque chassis is at least 8 times stronger in bending / twisting strength than any ARFF vehicle chassis produced. The 'GEN 4' vehicle "cockpit" is constructed of stainless steel and medium / high carbon steel alloy with seven (7) roll structures incorporated in it for maximum occupant safety. It has an all stainless steel reinforced TARGA glass top cockpit that provides maximum visibility. The K/40E has a 3+1 (with the "1" as an occasional) crew cockpit, which is also equipped with electric operated sliding doors.

The vehicle itself is constructed of 99% stainless steel construction, making it stronger (compared to fiberglass) and lighter than any other ARFF vehicle. Unlike other ARFF vehicles, especially those with molded fiberglass body construction, the vehicle body 'Aero-panels,' compartment walls and structure are made of aircraft aluminum and can be removed or replaced easily using hand tools in



quarters. This provides easy access for repairs or inspection of all internal components. Similar to a high-performance race vehicle, the cockpit and body have been aerodynamically designed for speed. The aero-panels (which have been used on COLET ARFF vehicles since 1994) enhance the engine cooling when the vehicle is in motion. This copied design feature is now being flaunted as something "new" by other manufacturers, as well as the high-visibility all-glass cab design that COLET also first introduced in the early 1990's. Also now copied by others, COLET was the first to introduce over 16 years ago many other improvements to ARFF vehicles, such as electronic foam proportioning, a shorter suspension system, new style turret nozzles and hydrostatically driven water pumps.

THE FIREFIGHTING SYSTEM

The K/40E JAGUAR ARFF RIV truck has a water capacity of 4000 gallons (15,141L) and the required two-load 3% foam capacity of 260 gallons (984 liters). In addition, a 500-pound (225 kg) dry chemical system is included in the firefighting package. The vehicle is equipped with two (2) 1000 gpm (3785 lpm) bronze pumps with stainless steel shafts.

The COLET "GATOR"® boom has been used on many of their other ARFF vehicles, including their K/15 1500 gallon 4X4 model and K/R 30 3000 gallon 6X6 model. The lightweight GATOR is constructed of stainless steel. Intended for use on A-380 size aircraft, the new COLET elevating boom is revolutionary in its design, and unlike others, is not an add-on unit built by others. The boom raises to over 44 feet (13.4 m) and is based on a 3-point tripod design that offers superior stability, especially during pump-and-roll operations. The boom is actually structurally more steadier when it is deployed. It has three struts and no protruding "elbows." The boom is constructed out of extremely lightweight polished stainless steel and weighs under 1000 pounds (453.4 kg), and is 4 to 5 times lighter than any other elevated boom. Unlike other elevating booms, when this boom is bedded, it does not affect the top-heaviness of the vehicle, thereby enhancing overall vehicle stability. The boom nozzle consists of a 1000 gpm (3785L) variable flow nozzle with dry chemical capability built in. The vehicle also has a similar 1000 gpm (3785L) bumper turret. The boom is capable of being lowered in front of the vehicle to a height of 3.5 feet (1.1m) above ground level. Two exterior mounted low-profile hose trays are provided that each hold 300 feet (91m) of 1.75 inch (44.4 mm) hose. There low center of gravity positioning also enhances vehicle stability during turns. The vehicle is also equipped with a FLIR system and a user-specified video camera recorder system.

In my opinion, even considering the many so-called 'new" design improvements now being touted by other manufacturers, the new COLET K/40E JAGUAR 8X8 ARFF RIV vehicle is ten times more technologically advanced and engineered than any other ARFF vehicle built today. Speed, safety, greater mobility and performance are the hallmarks of all COLET ARFF vehicles.

COLET has once again proven that what others say can't be done, can be done. Considering this fact, it then begs the next questions. Why don't other ARFF vehicle manufacturers choose to similarly improve their ARFF vehicles speed, performance or safety? Is it because they don't' have the technical engineering knowledge, or ability, to do so? I will leave the answer to those questions for you to decide.