SAE METHANOL MARATHON GM

MEDIA COVERAGE

METHANOL MARATHON MEDIA COVERAGE

Here is the final report on the publicity activity for the Methanol Marathon. It includes virtually all of the print clips and audio/video transcripts we collected from our promotion efforts.

All told, the Methanol Marathon generated some 220 newspaper and magazine articles, totaling more than 2,250 inches of copy. We totaled more than 4,500 minutes of radio time and 65 minutes of TV coverage.

Also included in this package is a tape of all the television news coverage we were able to collect.

The clips are arranged with the most recent ones first. Followed by a report of some of the radio coverage we received and then a summary of television coverage. Although some radio transcipts are included, we were unable to collect transcripts for the more than 75 radio interviews that team spokesmen gave during the rally.

We are very pleased with the results of the Marathon, and thank you again for the many hours of effort you put forth to make the Methanol Marathon a success.

Sincerely,

Dave Sloan

David E. Sloan
GM Public Relations

PRINT COVERAGE

BUSINESS WEEK June 19, 1989

GIVING A 'CLEAN FUEL' THE OLD COLLEGE TRY

During a lunch stop in Tonawanda, N. Y., grime-covered West Virginia University students raced to replace their Chevy's fried alternator. One fellow's legs trailed out from under the car, while several classmates elbowed for room under the hood. Amid the hubbub and wrenches, a half-eaten piece of pepperoni pizza lay forgotten atop the engine. Welcome to the Methanol Marathon: equal parts collegiate athletic contest, spring-break road trip, and final exams. The rollicking, five-day road rally, sponsored primarily by General Motors Corp., starred 200 engineering students from 15 universities. Their mission? Prove that their modified 1989 Corsicas could run well on methanol, a gasoline alternative that promises less smog.

The contest couldn't be timelier. The first major experiment in cleaner fuels has just been launched in the four-county Los Angeles basin, where 7.6 million vehicles spew 6,000 tons of pollutants daily. In just four years, car-rental businesses, taxi companies, and other fleet operators will have to start buying cars that run on methanol or another "clean fuel." By 2007, individuals will, too. Trucks and buses will also be affected. And the U. S. Environmental Protection Agency is considering mandatory requirements for alternative fuels in the country's 25 most-polluted cities.

Methanol burns cleaner than gasoline. Also called wood alcohol, it's usually derived from natural gas and produces about 20% less pollution in the form of unburned hydrocarbons, oxides of nitrogen, and carbon monoxide. Unburned methanol is also less reactive with sunlight, producing about half as much smog. And it emits less carbon dioxide, a contributor to the greenhouse effect.

To see firsthand whether methanol is a practical answer to the environmentalists' dreams, I hitched a ride with a free-wheeling team from the Florida Institute of Technology for the 1,100-mile trip from Detroit to Washington, D. C. The driver and navigator rode in the rally car. I joined the other team members, who were traveling in a van and a truck. After five days on the road with students, professors, GM engineers, and economists from the Energy Dept. and Argonne National Laboratory, I learned:

- College students still like to drink beer late into the night.
- I can't do that anymore and get up in the morning.
- Methanol-powered cars behave much as their gasoline counterparts, except for problems starting in cold weather.
- Some tall technical hurdles stand in the way of widespread methanol use.

GM donated the cars, offered technical advice, and organized logistical support for the rally. The auto giant's payoff was twofold: as a way to score public-relations points by projecting a concern for environmental issues, and it offered a chance to evaluate some promising young automotive engineers.

Before the rally began on Apr. 29, students presented details of their engine-conversion plans and ran the cars through a battery of tests at the GM Technical Center in Warren, Mich. Ironically, 6 of the 15 Corsicas failed the emissions test—including the FIT entry. To be fair, some schools lacked the test equipment needed to adjust engines for low emissions. But the results hint that methanol may not reduce emissions effectively in real world applications.

One of methanol's worst problems is poor fuel economy. It burns more efficiently than gasoline but has just 60% of the energy by volume. That means more frequent fuel stops, unless carmakers figure out a way to expand gas tanks without radically redesigning autos. Plastic tanks might help, but automotive engineers haven't yet found a plastic that can resist methanol's corrosiveness.

RESPECTABLE. FIT took an unusual approach to boost economy. At cruising speeds, the engine's computer shut off fuel to three of the Corsica's six cylinders. Driving at a steady 45 mph over a 60-mile loop near FIT's campus in Melbourne, the group reported a very respectable 37 miles per gallon. Since economy counted for nearly a quarter of the marathon score, student leader Doug Hahn, a 30-year-old former pro stock-car crew chief, promised a good showing.

But the three-cylinder strategy didn't work as anticipated. The flatlands of Florida are far from the hills of Ontario and upstate New York. Too often, drivers had to kick in all six cylinders for power, gulping fuel in the process.

The fleet of 15 rally cars, running on a blend of 85% methanol and 15% unleaded gas, averaged 17.8 mpg over the trip. The FIT team did a little better, averaging 17.9 mpg. The eventual winner, the University of Tennessee, achieved the best average, 20 mpg, with the help of a modified fifth gear and the type of gingerly, feather-foot driving techniques that I, for one, seldom use.

Since methanol isn't readily available, its poor mileage is doubly troublesome. To untether cars from methanol outlets, the Big Three have prototypes capable of running on methanol, gasoline, or any blend of the two. Chevy showed off two models at the rally's first stop Saturday night near Toronto. To resist corrosion, the modified cars have hardened engine parts as well as stainless-steel gas tanks, fuel pumps, and fuel lines.

WHEELIES. Flexibility costs, though. Chevrolet figures its dual-fuel Luminas, 2,200 of which will be delivered to the California Energy Commission by 1992, will cost $2,000 more to make than gasoline counterparts—even at production levels of 15,000 cars annually.

During the rally, cars fueled up twice daily from 55-gallon drums provided by British Petroleum Co. Hanging around at stops, students had a lot of time to kill, and, predictably, they found ways to amuse themselves. Outside Utica, N. Y., the University of Michigan's team briefly mourned a groundhog its car had hit that morning. Then, like fighter pilots, they placed a groundhog "kill" sticker on the driver's door. Later that day in Newburgh, a crew from Colorado State University tried to coax wheelies out of their support vehicle, a large mobile home. They packed the back with people and hit the accelerator, raising the front wheels a few inches off the ground.

The following morning as I stood behind an idling rally car, my eyes began to water as if I had rubbed them with onion juice. I was reacting to formaldehyde in the exhaust. The noxious gas, which is an eye, skin, and respiratory-tract irritant, may pose the same health hazards as gasoline emissions. Formaldehyde can be broken down into water and carbon dioxide in specially designed catalytic converters. Engelhard Corp., a major supplier of converters, says prototype tests produced formaldehyde emissions of 1 mg per mile, well below the California standard of 15 mg per mile.

Since converters are effective only at normal operating temperatures, however, nearly all the formaldehyde produced during warm-up would spew into the atmosphere. Whether the trade-off of formaldehyde for smog would aid people with respiratory difficulties isn't clear.

The short, final leg of the marathon from College Park, Md., to Capitol Hill wasn't part of the rally or fuel-economy test, so five of us piled into the Corsica for a last ride together. Hahn tried to shrug off his disappointment over FIT's ninth-place finish. But it showed, as he fantasized about turbocharging the engine, welding on a roll cage, and taking the car out on the racetrack.

Hahn's frustration may soon be shared by both bureaucrats and Southern Californians. In struggling to maintain a mobile lifestyle while meeting federal air-quality rules, they'll trip over the same obstacles encountered on the marathon. But the stakes involved in Los Angeles will be a lot higher, and trying to resolve them will be a lot less fun.

BY DAVID WOODRUFF

Correspondent Woodruff covers the auto industry from BW's Detroit bureau.

Washington Times, June 2, 1989

CARING FOR YOUR CAR /
Duncan Haimerl

Heat may mean fuel shift

Warmer temperatures are here and the gasoline you choose may make a difference in your car's performance and in your own boiling point.

Despite constant claims to the contrary there is a difference among gasolines, whether it is from matching tanks of 87 octane or 94 octane, and the proof is in the performance.

If your car develops vapor lock, the situation in which the liquid fuel turns to vapor and locks in the fuel lines, switch to another gasoline. In some cases vapor lock can stop an engine so tightly that you would believe a mechanic who says your engine is a goner.

What was good fuel during the past winter may not be the best gasoline for your car at this time of the year, or especially later when the summer sun begins to bake down on us.

Newer cars with fuel injection, whether multiport or throttle-body injection, should stick to the heavily promoted cleansing fuels. You know the advertising: Try two tanks of their gasoline and your driving will be a treat instead of a treatment.

Those same fuels should generally be avoided if you drive a carbureted car, because the cleaning action may dislodge some varnish or dirt that has taken up space in the tourist lodges along your fuel line.

The advice then is to look first at a fuel solution to your engine's crankiness instead of wasting time and money to take apart the carburetor or examine the fuel injectors.

If you have an early start on a vacation this year, keep in mind that if you run into an engine performance problem along the road it could be directly related to the last fuel stop you made. Bearing that in mind, try the third service station in town to check out your car after it develops the interstate balk. Better still, avoid unusual private brand names when you fill up your fuel tank.

Fuels are a hot topic these days. Last month General Motors Corp., the U.S. Department of Energy and the Canadian Department of Energy, Mines and Resources had their college participants drive the methanol rally from Detroit to Washington. Student teams from 15 colleges, including one from Canada that finished second in the 1,100-mile rally, had modified 1988 Chevrolet Corsicas to run on M85, a mixture of 85 percent methanol and 15 percent gasoline.

Talking to members of some of those teams at a pit stop in New York, I found most were concerned that the fuel-delivery system wouldn't stand up to long-term use of methanol.

Their conversion kits included stainless-steel fuel tanks and other modified fuel rails, fuel injectors and fuel pumps. One of their other big breaks was a computer calibration module to change the engine.

• *Los Angeles Times Syndicate.*

Methanol Marathon

From April 29 to May 3, fifteen methanol-powered Chevrolet Corsicas made an 1100-mile trek from Chevrolet Headquarters in Warren, Michigan to Washington, D.C. Over 200 students from 15 universities were involved in converting the engines to run on methanol.

This first-time-ever event was sponsored by General Motors, the U.S. Department of Energy, and the Canadian Department of Energy, Mines and Resources. It was organized by SAE and the Argonne National Laboratory. Associate sponsors were BP Oil Co. and the Canadian Oxygenated Fuels Association. The Sports Car Club of America, Inc. conducted the rally.

Each university was given a 1988 Chevrolet Corsica LT equipped with a 2.8-liter multi-port fuel-injected V6 engine, 5-speed manual transmission, sports suspension, and air conditioning. The conversion kits contained a fuel tank, high-flow fuel pump and fuel injectors, special fuel lines, and a computer calibration module. The vehicles were to run on 85% methanol and 15% gasoline. On the road the cars were tested for cold-start driveability, fuel economy, and rally times. Before the start of the rally, the cars underwent testing in various areas including acceleration, noise, and emissions.

The students scored points for the design and fabrication of the conversion, an oral presentation of the design, acceleration performance, cold-start driveability, overall rally fuel economy, and points for each rally leg. They were penalized for non-compliance with any rules, less than acceptable emissions, and for excessive pass-by noise.

The winner of the event was the University of Tennessee with 764 points. The other top finishers in order of their finish were Concordia University (653), Rochester Institute of Technology (643), the University of Maryland (608), and Texas Tech University (586 points). The top five schools received trophies and divided $20,000 in cash prizes donated by the U.S. Department of Energy and the Canadian Department of Energy, Mines and Resouces.

Trophies were also awarded to the University of Tennessee for "Best Fuel Economy" which turned out to be 19.9 mpg (equivalent to 36.7 mpg in gasoline) over the 1100 miles of combined city and highway driving. Colorado State University won a trophy for "Best Methanol Conversion."

I think that all the students deserve congratulations for undertaking such a task and I am sure that they all learned a lot during their conversion of the engines. Next month's *Automotive Engineering* will contain the full story with photos taken during the rally.

Daniel J. Holt

Editor-in-Chief

Chevy Thunder, Warren, MI, June 1989

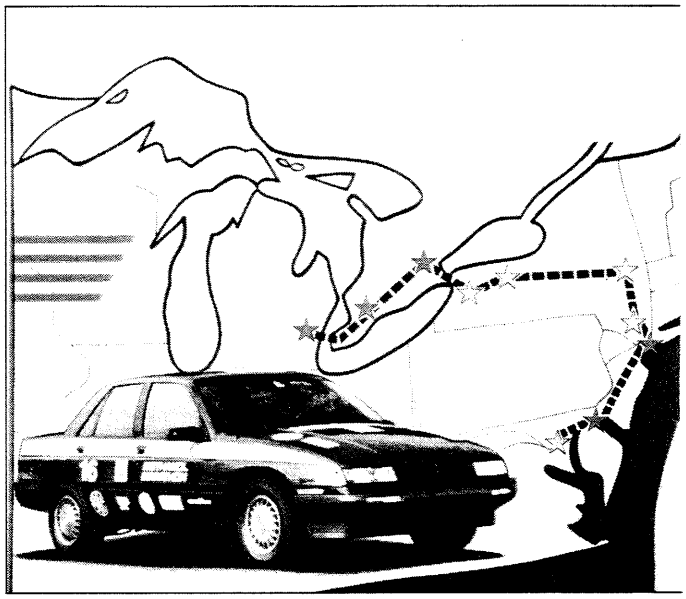
Methanol Marathon

The stars of Indy car racing aren't the only drivers who rely on methanol fuel. Teams of student engineers from 15 U.S. and Canadian colleges and universities are competing in the first Methanol Marathon with alcohol-burning Chevrolet Corsicas. An 1100-mile rally from Michigan to Maryland will conclude five months of intense activity.

"Nearly 200 of the finest engineering students in North America are working to win the Methanol Marathon," said Donald Runkle, vice president in charge of the GM Advanced Engineering Staff. "New technical data should come from each team's experience in executing its individual strategy to convert identical Chevrolet Corsicas to burn methanol. The rally itself will give valuable information on how methanol performs under real-world conditions."

Teams of students from participating schools converted '88 Corsica LTs to burn a mixture of 85 percent methanol and 15 percent gasoline. Entries will be scored on acceleration, emissions, conversion design, driveability, fuel economy, and rally times. Winners will receive a share of $20,000 in prizes.

The Methanol Marathon is sponsored by GM, the U.S. Department of Energy, and the Canadian Department of Energy, Mines, and Resources.



Adweek's Marketing Week, May 29, 1989

Another Alternative to Gasoline Is Methanol

In [redacted] an [redacted] methanol. [redacted] Chevrolet [redacted] miles through Canada and the U.S. [redacted] rally ended earlier this month [redacted] of [redacted]

Although the cars accelerated as well as gasoline-powered Corsicas, they were trouble to start in the frosty morning air. Methanol, unfortunately, does not vaporize as easily as gasoline.

Because methanol tends to corrode standard fuel tanks and lines, the cars also needed specially designed stainless steel equipment. And since methanol provides less energy per gallon than gasoline, the vehicles required about twice as much to go the same distance.

The biggest problem with methanol, however, is that it's not being produced in the same volume as ethanol. Although GM has some methanol-powered cars and buses running in test programs—notably in California, Florida, New York City and Canada—there are not enough facilities in the U.S. now that produce large quantities of the fuel for mass consumer use.

Despite methanol's shortcomings, all three U.S. automakers are optimistic about the fuel's future. Methanol, like ethanol, has a higher octane rating than gasoline, which means there is potential for greater performance.

"From a driver's standpoint, there really is no difference in performance," says William Ribbens, an electrical engineering professor at the University of Michigan, who served as faculty adviser to the recent methanol marathon.

All alternative fuels have unique characteristics regarding cost, supply, environmental impact, the vehicle technology required, safety, health-related effects and customer acceptance. Based on these considerations, no one fuel has yet to emerge as a clear leader in the alternative-fuels race. Instead, each may find its own niche.

—Bruce W. Fraser

St. Louis Post-Dispatch, May 28, 1989

Methanol Touted As Fuel Of Future

Compiled From News Services

DETROIT — A paint thinner and windshield washer as the fuel of tomorrow?

Yes, say automakers who are researching methanol — the alcohol-based liquid that may just be the long-sought clean-burning fuel of the future.

"Methanol has one of the best long-term prospects," said Roberta Nichols, head research engineer for Ford Motor Co.'s alternative fuel program.

Methanol, a cleaner fuel than gasoline, is abundant domestically and it is easy to convert gasoline-powered cars to the new fuel, researchers said. "And it's peppier," added Nichols.

Methanol, or methyl alcohol, is closely related to methane, or natural gas, and to ethyl alcohol, which can be used for fuel or for cocktails.

The Big Three U.S. automakers — Ford, General Motors Corp. and Chrysler Corp. — are researching alternative fuels in part to address air pollution concerns caused by gasoline-powered cars.

Air quality in at least 60 U.S. metropolitan areas currently violates federal pollution standards and a number of cities and states in the next decade are expected to enact legislation requiring alternative-fuel vehicles.

In the Los Angeles area, for example, the South Coast Air Quality Management District is considering requiring 70 percent of trucks and 30 percent of cars to run on alternative fuels by the year 2007.

General Motors began delivering 2,500 methanol-powered cars to the state of California this month. The vehicles are equipped with computer sensors to test fuel entering the gas tank and switch the engine from gasoline to methanol, GM spokesman Don Postma said.

However, there are drawbacks to methanol. The major obstacle is the projected cost of switching to the new fuel, researchers say.

The price tag for getting the fuel distributed and stored nationwide in new non-corrosive fuel tanks would be billions of dollars, said Vito Stagliano, policy director at the U.S. Department of Energy. On the other hand, mass-producing cars powered by methanol would cost only an additional $240 a vehicle, he said.

Methanol's backers say it can be made to burn more cleanly if the engines are specifically designed for methanol.

Finding methanol, however, would not be a problem. It can be obtained from natural gas fields, decomposed agricultural waste and coal, which are all abundant in the United States.

Finally, it would cost about $250 million to build a methanol plant, roughly the same amount of money needed to build an oil refinery, Stagliano said.

Despite the costs, methanol supporters said another oil embargo or an air-pollution crisis likely would trigger the commercial development of the fuel.

As part of the search for viable new fuels, the Energy Department helped sponsor a first-ever auto rally for cars burning alternative fuels. The event, The Society of Automotive Engineers' Methanol Marathon, was an 1,100 mile, five-day road rally that began April 29 in Detroit.

General Motors last November provided engineering students from 15 universities, including Washington University, with Chevrolet Corsicas, which they converted to run on a mixture of methanol and gasoline.

The cars were tested for fuel economy, speed, and on how well they start in cold weather, a problem for methanol engines, rally organizers said.

Other fuel sources such as sun-powered cars, battery-operated vehicles and ethanol fuel mixtures also are under development, but they are less cost-efficent than methanol, researchers said.

"There's no mystery about the technology. It's more an issue of policy. Under what circumstances does the U.S. change from a market completely dominated by petroleum?" said Stagliano.

Many of the experimental methanol

See METHANOL, Page 39

Methanol

From page thirty-seven

vehicles are the result of General Motors' enthusiasm for the idea.

GM Chairman Roger B. Smith believes that the use of alternatives to gasoline and diesel fuel is likely in the next few years because of concern about pollution and energy imports.

In the marathon the engineering students not only converted the cars but also made a variety of other improvements, showing engineers some new ideas for using methanol. But the event also underlined continuing problems.

"The emissions problem on methanol is not better or worse, just different," said Donald L. Runkle, a GM vice president in charge of the advanced engineering staff. Tests disclose that methanol, as it burns, produces formaldehyde, and that the formaldehyde emissions react with sunlight to make smog, Runkle said. Also, the manufacture of methanol as a fuel makes carbon dioxide, a gas believed to contribute to global warming.

Methanol's backers say it can be made to burn more cleanly if the engines are specifically designed for methanol.

At the Environmental Protection Agency, Charles L. Gray, director of the emission control technology division, said methanol could burn more cleanly if mixed with large amounts of air. Gasoline engines cannot run with such a rich air mixture, so engines converted to methanol do not allow optimum combustion conditions.

But even in a converted engine, methanol produces less hydrocarbon and oxides of nitrogen than gasoline

-continued-

St. Louis Post-Dispatch, May 28, 1989

does.

A problem for many urban areas is fumes from unburned gasoline that react with sunlight to form ozone. A major advantage for methanol, Gray said, is that if it evaporates before it burns it does not readily join such reactions. He predicted that methanol cars could bring an ozone reduction of 25 to 40 percent for most cities.

But conversion is complicated. About 200 students from the 15 universities received kits from General Motors to make essential modifications, like replacing the carbon-steel gas tanks with stainless steel.

The students also used imagination. Methanol, like gasoline, is burned as a vapor, but unlike gasoline, does not go from the liquid to the vapor state easily, especially in cold weather.

At the Florida Institute of Technology in Melbourne, students put their Corsica in a giant refrigerator to test for cold-weather problems.

Many teams souped up 2.8-liter engines to run at compression ratios more typical of race cars to take advantage of methanol's high octane of 110.

With a more powerful engine that resulted from the increased octane, some students found they could take apart the transmission and modify it so the engine could run efficiently at lower speeds.

One problem is methanol's lower energy density — the amount of energy per unit volume. A gallon of methanol has only a little more than half the energy of gasoline — 65,000 Btu, compared with 116,000 Btu.

The cars require more frequent refueling or larger fuel tanks. Engineers would like to build a composite tank to make better use of the space in nooks and crannies under the car, but they have not yet developed a material that methanol cannot dissolve.

General Motors

Engineering students and faculty from Washington University around their Chevrolet Corsica in Washington after a recent Methanol Marathon. Teams from 15 universities competed in the marathon, which focused on conversion problems and fuel economy. Clockwise from left front: Professor Theodosios Korakianitis, Steve Kiefer, K.J. Dauer, faculty adviser Chris Marvel, Professor Richard Rabbitt, Ed Nowakowski, and Joann Smith.

Stopwatcher, Bethesda, MD
Vol. 24, No. 42, May 19, 1989

U. of Md. Team 4th, U. of Tennessee Wins Methanol Marathon

The University of Tennessee team placed first in the 1,100-mile Methanol Marathon which ended on May 3 at the University of Maryland, score for the winners 764 points. Runners-up in the competition were from Concordia University of Montreal, Canada with a score of 653 and Rochester, N.Y.'s Institute of Technology followed with 643 points.

Of particular area interest is the fact that the University of Maryland team finished fourth as predicted by Ezio N. Vermiglio, 23, of Bethesda who drove the entry on part of the five-day event which took off from Warren, Michigan on April 29. The strong showing by the U. of Md. team was achieved despite the fact that they were the 14th out of 15 competing teams to cross the finish line. But their score 608 points gave them the up-high ranking nevertheless, a circumstance predicted by Vermiglio.

The U. of Md. crew, one of 15 national university engineering teams that drove the Chevrolet Corsicas modified to run on methanol, was led by Greg Thomas. Members included Bill Bazzarre, Dave Capparelli, Tom Drach, Brian Eckels, Mike Givens, John Hamilton, Philip Harmon, Kirsten Jorgensen, Patty O'Connell, Bill Penges, Bob Piacese, David Reichenthal, Gurpartap Sandhoo, Velasquez Spring, John Tourigny and the aforementioned Ezio Vermiglio. For the record, the fourth-place finishing car was aptly named "Miss Maryland Methanol."

The Marathon was jointly sponsored by GM, the U.S. Dept. of Energy and the Canadian Dept. of Energy, Mines and Resources.

Winners were announced and awarded their share of the $20,000 prize money on May 4 at an SAE Government/Industry meeting after which they met with and were congratulated by members of congress on Capitol Hill.

For the record, the winning Tennessee team averaged 19.9 miles per gallon over the megamile route, the gasoline equivalent of roughly 35 mpg.

More details of the event will be passed along as they are available.

Melbourne, FL, FIT Crimson, May 19, 1989

Methanol marathoners return from Detroit, Mich. with 9th place finish

Finally — Detroit — The General Motors Tech Center — And the start of the GM/SAE Methanol Marathon. After months of testing, designing, engine work, constructing the cold cell and painting, the F.I.T. Methanol Internal Combustion Engine Research (M.I.C.E.R.) Group was on site for the first round of what would prove to be a competition like no other that F.I.T. had been involved with before. No doubt about it, this was big — 15 colleges, over 250 engineering students and a myriad of big-wigs from General Motors, not to mention reporters from TV, radio, newspapers and automotive magazines.

The "Miss Amanda Lynn" stood out from the rest, its design and appearance reflecting thought and definite individuality. They stood out from the rest, shaming other teams as each member could confidently, concisely explain their design, and the theories behind each and every conversion. Even among members of the press, it was rumored that "the team from Florida was the team to beat." No matter how they would place, it was evident that this team established F.I.T. among automotive professionals as a university to keep an eye on.

The M.I.C.E.R. group, consisting of mechanical engineering undergraduates Doug Hunter, Jeff Grillo, Carlo O'Keefe, Frank Foster, Jerry McAlwee, Vince Worbington, Tracey Post, Erik Gordon and Doug Hahn, were ready. They felt confident about every aspect on which they would be judged: fuel economy, design, oral presentation, cost effectiveness, fabrication and rally ability. F.I.T.'s Dr. John Thomas, director of the Bioenergy Laboratory and their faculty advisor, was also certain that the team had the best design.

After the first day of oral presentations, acceleration tests, emissions tests, expert inspections and meetings, the team had an idea of what was in store for them over the next five days. The rally would be hectic — two legs every day, receiving route instructions only 30 minutes prior to departure. Results of several sections of the competition would not be released until the final outcome in Washington D.C. was announced. They, along with six other teams did not pass emissions tests, but they did well in acceleration, better than they expected. Theirs was the fastest non-turbo-charged car, even beating one turbo entry. No real surprises—until Saturday.

The first rally day was the turning point for the M.I.C.E.R. group. Doug Hunter and Jeff Grillo were the first driving team. At lunchtime on Saturday the rest of team, who drove different routes to the destinations in Doug Hunter's Jimmy and a support vehicle loaned to the team by Jim Rathmann Chevrolet, waited anxiously at the London Ontario diesel plant for the car to come in from the first leg of the rally. Most of the cars had made it to the plant, with the F.I.T. car nowhere in sight.

Fears of a break-down were confirmed as other rally teams reported the F.I.T. car on the side of the road. What made it worse was that GM had sealed the hoods of all the cars to prevent teams from making modifications. They could do nothing but wait for rally officials to stop. Jeff, who was the driver reported a drastic drop in fuel before the breakdown. The problem, which turned out to be a fuel leak, was nothing that would prevent them from competing, but had lost them over a half a tank of fuel and most likely first place in the fuel economy section. Fuel economy was the major goal of their design, the major section they were planning to ace.

The team ran a respectable rally through Canada, upstate New York, New York City, Delaware and finally to College Park, Maryland. The Corsica performed well, and drivers and navigators for F.I.T. gradually learned to compensate for the mountainous terrain, something they had not accounted for during fuel economy tests back in Florida.

The team finished ninth in the official standings, first in appearance and placed especially well in fabrication and cost-effectiveness. They frequently stood-out in one-on-one presentations of their designs to officials, assisting other teams with mechanical break-downs and maintaining confidence in their design. Each member of the team was an outstanding representative of the university, never letting fun get in the way of what they were there for, but managing to have a lot of it any way.

THE NEW YORK TIMES, WEDNESDAY, MAY 17, 1989

When Methanol Is in the Tank

By MATTHEW L. WALD

Experimental vehicles that burn methanol instead of gasoline or diesel fuel as a way of reducing automobile air pollution are turning up around the country with increasing frequency. But engineers are finding that the alternative fuel potentially creates as many problems as it solves.

Methanol has important advantages: very high octane, low production of particulate pollution, and a chemical composition that permits it to be made from coal. And cars to use it can be produced with relatively small changes in gasoline engine technology.

But tests also disclose that as it burns, methanol produces formaldehyde and has a tendency to eat through fuel tanks, fuel pumps, and other auto parts not made of stainless steel. Should methanol catch on, the nation would probably have to depend on foreign sources for it, unless the price of oil and natural gas rose high enough to permit the competitive conversion of coal to methanol.

Listing the pollution problems, Eric A. Goldstein, an attorney at the Natural Resources Defense Council, an environmental group, said, "It sounds almost dooming." His group helped bring a group of experimental methanol buses to New York as part of the settlement of a lawsuit with the General Motors Corporation concerning emission controls on gasoline automobiles. "But it would be premature to conclude that the methanol concept won't work," he said.

He said additional research was needed on catalytic converters. Those now in use were designed to control pollution from burning gasoline, not methanol.

Many of the experimental methanol vehicles are the result of General Motors' enthusiasm for the idea.

For example, G.M. supplied Chevy Corsicas to 15 universities for conversion to methanol so that they could compete in an 1,100-mile marathon from Detroit through Toronto and New York to Washington earlier this month. Conversion problems and fuel economy were the focus of the race.

In addition, The Triboro Coach Corporation is running six methanol-powered buses supplied by General Motors on New York City routes. And G.M. has just shipped the first dozen of 2,200 methanol cars to the state government in California.

•

The chairman of G.M., Roger B. Smith, believes that the use of alternatives to gasoline and diesel fuel is likely in the next few years because of concern about pollution and energy imports. "Our role is to learn to use all kinds of fuels, and see what the energy companies want to do," said Mr. Smith when the Corsica marathon stopped in New York.

The marathon, in which teams of engineering students from the universities not only converted the cars but also made a variety of other improvements, showed engineers some new ideas for using methanol. But it also underlined continuing problems.

"The emissions problem on methanol is not better or worse, just different," said Donald L. Runkle, a G.M. vice president in charge of the advanced engineering staff. The formaldehyde emissions react with sunlight to make smog, he said, and the manufacture of methanol as a fuel makes carbon dioxide, a gas believed to contribute to global warming.

But it has been found that the buses being tested by Triboro Coach in New York emit lower levels of particulates and nitrogen oxides than diesel buses do, but a higher level of hydrocarbons, formaldehyde and carbon monoxide.

Methanol's backers say it can be made to burn more cleanly if the engines are specifically designed for methanol.

At the Environmental Protection Agency, Charles L. Gray, director of the emission control technology division, said methanol could burn more cleanly if mixed with large amounts of air. Gasoline engines cannot run with such a rich air mixture, so engines converted to methanol do not allow optimum combustion conditions.

But even in a converted engine, methanol produces less hydrocarbon and oxides of nitrogen than gasoline does. Methanol, or methyl alcohol, is closely related to methane, or natural gas, and to ethyl alcohol, which can be used for fuel or for cocktails.

Another problem in Southern California and many other urban areas is fumes from unburned gasoline that react with sunlight to form ozone. A major advantage for methanol, Mr. Gray said, is that if it evaporates before it burns it does not readily join such reactions. He predicted that methanol cars could bring an ozone reduction of 25 to 40 percent for most cities.

But conversion is complicated. About 200 students from the 15 universities received kits from General Motors to make essential modifications, like replacing the carbon-steel gas tanks with stainless steel.

The students also used imagination. Methanol, like gasoline, is burned as a vapor, but unlike gasoline, does not go from the liquid to the vapor state easily, especially in cold weather. The Rochester Institute of Technology team borrowed parts from an ultrasonic humidifier to help that process. At the Florida Institute of Technology in Melbourne, students put their Corsica in a giant refrigerator to test for cold-weather problems.

Chasing $20,000 in prizes, many teams souped up 2.8-liter engines to run at compression ratios more typical of race cars to take advantage of methanol's high octane of 110.

With a more powerful engine that resulted from the increased octane, some students found they could take apart the transmission and modify it so the engine could run efficiently at lower speeds. Others tried ceramic parts to retain heat in the engine for higher efficiency. Molybdenum coatings on internal engine parts were used to cut friction between internal moving parts.

The Florida Tech team modified the six-cylinder engine so that at highway speeds three cylinders shut down, saving fuel. General Motors tried that approach a few years ago on gasoline cars, but could not make it work.

•

Methanol also poses some safety problems. It is poisonous but odorless, making leaks hard to detect, and burns with invisible flames. So for the marathon, it was mixed in an 85-15 blend of methanol and unleaded gasoline. Other components were added to give extra smell and color.

Another problem is methanol's lower energy density — the amount of energy per unit volume. A gallon of methanol has only a little more than half the energy of gasoline — 65,000 B.T.U.'s, compared with 116,000 B.T.U.'s. The cars require more frequent refueling or larger fuel tanks. Engineers would like to build a composite tank to make better use of the space in nooks and crannies under the car, but they have not yet developed a material that methanol cannot dissolve.

The greatest long-term advantage of methanol is that it can be made from coal, which is more easily found in this country than crude oil.

At present, most methanol is made from natural gas because the cost of manufacture is far less than making it from coal. Coal-derived methanol would not be competitive with gasoline or diesel fuel until the price of a barrel of oil rose to $30 or $40 from the current $20.

While oil prices are low, methanol will be made from natural gas. But natural gas in this country is almost as expensive as oil. If methanol were to be developed as a fuel, the natural gas would probably come from the Middle East, where prices are much lower. But this would make the methanol supply, like much of the present gasoline supply, dependent on foreign sources.

Autoweek May 15, 1989

The race for an alternate fuel

Methanol conversions prove efficient in competition

The GM/SAE Methanol Marathon is over, and the University of Tennessee has emerged victorious.

The five-day, 1100-mile road rally ran from Detroit to Washington, D.C., and was sponsored by the Society of Automotive Engineers, General Motors, the Canadian and U.S. Departments of Energy, BP Oil Company, and others (*AW*, March 13). It pitted students from 15 universities in a competition to build feasible, efficient methanol conversion packages.

U.T.'s winning entry scored 764 points and returned 19.9 mpg over the entire rally route, equivalent to gasoline fuel economy of 36.7 mpg. (The fleet average for the trip was 17.8 mpg, equivalent to 32.7 gasoline mpg.)

Entries were judged on the quality of the conversion, a technical presentation, cold starting, emissions, noise, acceleration and driving performance.

Rounding out the top five finishers, and sharing the $20,000 prize fund, were Montreal's Concordia University, Rochester (N.Y.) Institute of Technology, University of Maryland and Texas Tech University.

General Motors supplied the teams with identical Chevy Corsica LTs and conversion kits to allow the cars to run on M85, a 85/15 percent mix of methanol and gasoline. Everything else was left to the students' imaginations and abilities.

"In appreciation for their enthusiasm, creativity and commitment," said Gary W. Dickinson, head of GM's Technical Staffs Group, "GM is donating the Chevrolet Corsicas used in the Methanol Marathon to the participating schools to help enhance their engineering programs." And if the engineering students involved in the program have their way, the corner station soon may offer a choice of fuels as well as octanes. ■

Minneapolis Star Tribune, May 14, 1989

Ford, GM still look for way to run cars on alternate fuels

Scripps Howard News Service

Both Ford Motor Co. and General Motors Corp. are continuing research into vehicles that will run on fuels other than gasoline.

Ford has recently introduced a Taurus that will run on methanol, ethanol, gasoline or any combination of the three.

The key is a sensor that can detect the percentage of each as it flows down the fuel line toward the engine. The sensor then sends a signal that makes the proper adjustments for maximum power.

Ford also is working with General Electric, a group of battery manufacturers and the federal government on electric vehicles. The latest one, a Ford Aerostar code-named the EXT-II, can reach speeds of up to 65 mph and has a range of 100 miles between battery charges. Ford marketing experts feel this type of vehicle will be best suited to the commercial market.

The biggest advantage of the electric vehicle, especially in large cities, is that its engine doesn't pollute the air. The biggest disadvantages are the limited range between recharging and, because it's powered by a battery, probable limitations for such equipment as air-conditioners and power windows.

GM sponsored a Methanol Marathon that ended May 4 in Washington. Thirteen colleges competed, each receiving a grant from GM and another from the federal government.

Many experts believe methanol, which can be made from coal, natural gas or agricultural waste, is the hope of the future. It is estimated that the United States has enough coal on hand to supply domestic needs for 200 years.

Ethanol, derived mainly from corn, isn't as effective as methanol when used in its pure form, getting about 40 percent fewer miles to the gallon than gasoline. However, as an additive to other fuels, ethanol can enhance engine performance.

Melvin Chiogioji, the director of the Office of Transportation Systems at the Department of Energy, points out that gasoline costs almost $4 per gallon in Japan and nearly $3 in Europe. Chiogioji believes that as U.S. gas prices increase, consumer pressure for such alternatives will grow.

Ford engineers say it would take about five years for them to bring a flexible-fuel car to market in large quantities. Estimates vary on how long it will take to develop production facilities and distribution systems for methanol and other alternative fuels.

Charles Imbrecht, chairman of the California Energy Commission, said he would prefer to see competition among the producers of the various fuels drive the market. This would result in better quality and good supply, he said.

Imbrecht proposes that a fee be assessed on the basis of pollution: The more a fuel dirties the air, the higher the fee.

Each penny added to the price of a gallon of gasoline produces $50 billion in revenue. Two cents would almost equal the gross sales of GM in 1988.

Supporters of a pollution tax say that only a few pennies added to the current price of fuel could produce the revenue necessary to guarantee an ample supply of fuel and clean air.

CHICAGO TRIBUNE, May 14, 1989

Alternative-fuel research is back in the fast lane

Detroit eyes methanol, electric cars

By Paul A. Eisenstein

DETROIT—Under pressure from environmentalists concerned about poisonous air and the awesome "greenhouse effect," Detroit's automakers are taking a fresh look at alternative ways of powering their products.

After nearly a decade of focusing almost exclusively on traditional cars and trucks powered with gasoline, the automakers are dusting off old studies on using alcohol, hydrogen or electric power in vehicles of the future. They also are continuing their efforts on solar-powered cars.

The impetus is coming from Southern California, where, after decades of effort aimed at controlling the region's blanket of smothering smog, officials are rolling out their heavy weaponry in the battle for clean air.

A massive and controversial plan under discussion in California could drastically slash the emission of noxious hydrocarbons, carbon monoxides and nitrous oxides by the early 21st Century.

The plan, if carried out, would carry a heavy price. Even corner hamburger stands would have to install costly devices to reduce the smoke coming off their grills. Certain solvents would be forbidden. Lawnmowers would be tightly controlled. And limits on pollution from cars and trucks would be unprecedented.

As Detroit watches and plans, Southern California officials are proposing to abandon troublesome gasoline in favor of cleaner-burning methanol, one of the simplest forms of alcohol.

Some refiners already add a bit of methanol to their gasolines, particularly in high altitude areas, such as Colorado. Methanol is the fuel of choice for the Indianapolis 500.

And now, says Chrysler executive engineer Gordon Rinschler, "our crystal ball says methanol appears to be the most likely alternative" to gasoline for passenger cars, as well.

As race-car drivers have discovered, methanol has a higher octane than gasoline and burns far more efficiently. The turbocharger on a prototype Dodge Daytona modified to run on methanol had to be tuned down because the engine was generating more horsepower than it was designed to handle.

"That means we could get more horsepower out of smaller engines," notes Gene Zimmerman, a systems engineer with Chrysler's Advanced Engine Systems Development unit.

The biggest advantage of methanol is that it is a relatively clean fuel. Chrysler's test vehicles emit half the hydrocarbons, carbon monoxides and nitrous oxides of equivalent gasoline-powered vehicles.

Proponents say methanol could help shield the nation from another Middle East oil crisis, because a primary source, coal, is in abundant supply,

On a per-gallon basis, methanol's cost is higher, but experts say that would come down with mass production.

As far as service stations are concerned, methanol is pretty much the same as gasoline. But as far as the typical car is concerned, there are some big differences. Motorists who have used the gasoline-methanol blends already on the market have experienced some troubling difficulties.

Alcohols are remarkably good solvents, and they can corrode metal gas tanks and eat away rubber fuel lines. Prototype methanol vehicles use stainless-steel fuel system components.

Methanol also causes hard starting in cold climates; so test vehicles currently require a 15 percent blend of gasoline. A car also uses far more methanol than gasoline. A modified Chrysler LeBaron delivers 21.2 miles per gallon with gasoline but only 12.9 m.p.g. with methanol.

To beat the drum for methanol, General Motors Corp., the Society of Automotive Engineers, the U.S. Department of Energy and the Canadian government recently sponsored a Methanol Marathon.

The road rally pitted college teams from schools across the United States, with each converting an identical 1988 Chevrolet Corsica LT equipped with a 2.8-liter, fuel-injected, V-6 engine to run on methanol.

The modified vehicles then ran a winding, 1,100-mile course through the U.S. and Canada.

Some of the approaches were novel. One team, for example, hooked up what can best be described as a miniature microwave oven to help overcome methanol's cold-weather starting problems.

-continued-

It's no coincidence that the Methanol Marathon wrapped up in Washington, D.C., where lawmakers are studying what to do about a new version of the Clean Air Act.

Sen. Max Baucus (D., Mont.), chairman of the subcommittee on environmental protection of the Committee on Environment and Public Works, says that as part of the new legislation, "there will be some incentive for alternative fuels."

Baucus isn't saying precisely what form such an incentive will take, however.

Despite his company's involvement in methanol research, the word is caution, as far as GM President Robert Stempel is concerned.

"We would not want to switch to methanol only to find out we made a mistake," he said. "Any substitute for gasoline has to be at least as good as gasoline."

While methanol may be a cleaner-burning fuel than gasoline, there are some tradeoffs. Burning methanol creates formaldehyde—though engineers believe they can eventually solve that problem.

And while methanol may burn clean, the process of converting the fuel from coal is environmentally dirty. An alternative source is natural gas, but vast supplies presumably would have to be imported from the Middle East.

Meanwhile, methanol does nothing to solve the pressing long-term problem of the greenhouse effect.

Like gasoline and any other carbon-based fuel, a key byproduct of burning methanol is carbon dioxide. The more carbon dioxide in the atmosphere, scientists believe, the more solar heat gets trapped, and there is preliminary but mounting evidence that rising levels of carbon dioxide are resulting in a global warming.

"If there's another hot summer [like that of 1988]," said Baucus, "I think the public consensus will be for controls on greenhouse gases."

That would force the auto industry to look at perplexingly new or stubbornly old and unsolvable alternatives.

One possibility is liquid hydrogen, but storing a fuel that turns to gas at temperatures near absolute zero isn't easy. And there would be incredible safety problems to overcome.

A hydrogen fuel tank would be extremely difficult to protect in the case of a serious car accident.

And producing the fuel—typically by splitting water into hydrogen and oxygen—requires massive amounts of energy.

"Hydrogen is a great fuel," says Joe Colucci, a department head with General Motors Research. "We just don't know how to get it, store it or distribute it."

The other alternative hovering around for decades is the electric car. In Britain, electric vehicles dubbed "milk floats" are used for short-range urban deliveries. Many golf cars and light-duty vehicles in this country operate for short distances with electric power.

After the last oil crisis, GM actually promised to put an electric car on the market by 1984. The plan foundered, however, when researchers could find no solution to the biggest drawback of such vehicles: the need for heavy, expensive and inefficient batteries, which can typically travel no more than 50 miles without a lengthy recharge.

Ford Motor Co. has demonstrated a new electric car, dubbed the ETX-II Aerostar, which the company claims "brings battery-powered cars and trucks a step closer to reality."

The ETX-II prototype has been under joint development with General Electric Corp. as part of a seven-year program partially funded by the U.S. Department of Energy.

The vehicle is based on a Ford Aerostar mini-van, and features a newly designed, two-speed automatic transmission designed to improve performance.

Even with all the improvements in the system, however, the vehicle still has a maximum speed of only 65 miles an hour, and a 100-mile range. It takes 20 seconds to go from zero to 60 miles an hour and it requires eight hours to recharge.

Mass production is still years away, admits John P. McTague, Ford's vice president of research.

"There still are significant technological challenges, particularly in the area of battery capability, before electric vehicles would be suitable for a large group of potential customers," he said.

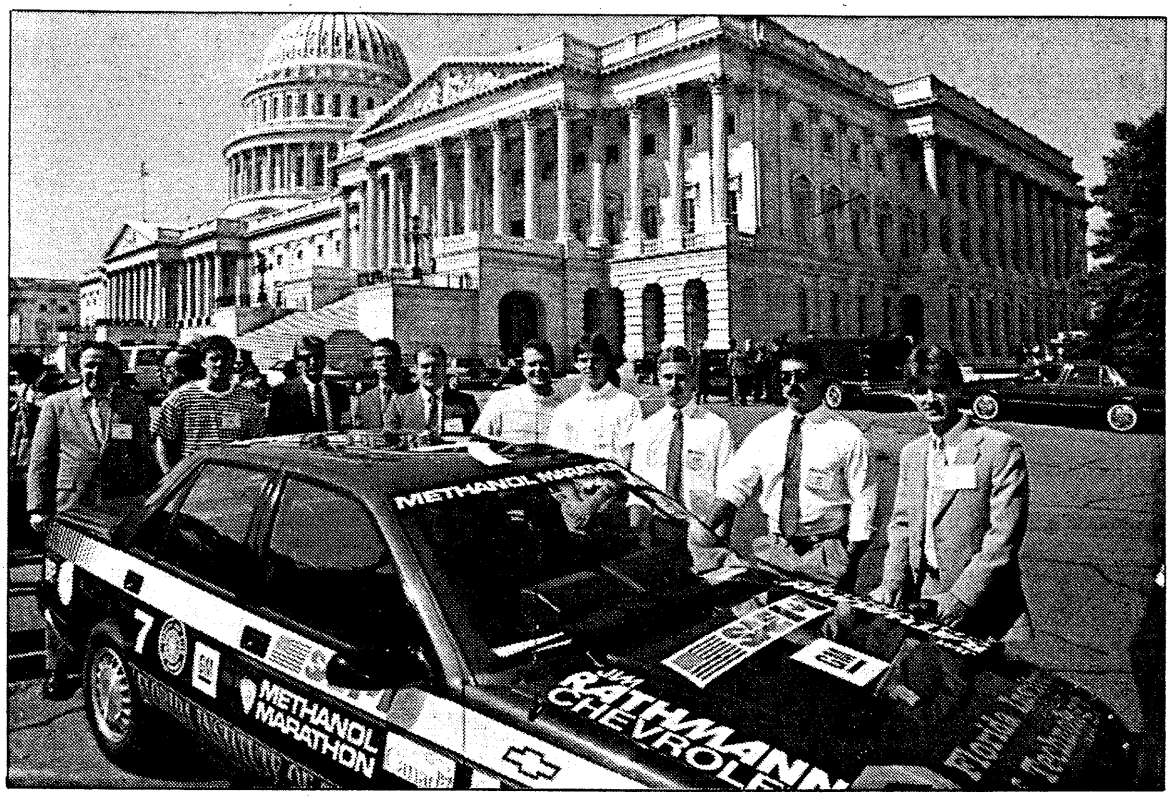
Even if the battery problem is solved, GM President Stempel remains skeptical, warning that electric cars are not the environmental panacea some perceive.

"If the electric car is powered by a coal-fired plant, we've just transferred the source of carbon dioxide from the tailpipe to the smokestack," he said.

To make the best use of electric vehicles, he says, will require a nonpolluting source of energy. That would mean the ultimate solution won't come until scientists learn to harness the wind, the sun or fusion.

-continued-

CHICAGO TRIBUNE, May 14, 1989



Florida Institute of Technology team at the finish of the Methanol Marathon in Washington, D.C. Colleges competed in a road rally established to see how methanol fuel performs.

Herald-Rolling Meadows Ed., Chicago, IL
May 13, 1989

EUTERS REPORT

Methanol touted as auto fuel of the future

Reuters

DETROIT — Will a liquid now d as paint thinner and windshield-vasher fluid become the fuel of to-norrow?

'es, say automakers who are earching methanol — the al-hohol-based liquid that may just be he long-sought clean-burning fuel of future.

Methanol has one of the best g-term prospects," said Roberta Nichols, head research engineer for Ford Motor Co.'s alternative fuel gram.

'ethanol, a cleaner fuel than gas-line, is domestically abundant and is easy to convert gasoline-ered cars to the new fuel, re-chers said. "And it's peppier," aded Nichols.

The Big Three U.S. automakers — l, General Motors Corp. and sler Corp. — are researching al-ative fuels in part to address air ollution concerns caused by gaso-line-powered cars.

Air quality in at least 60 U.S. metropolitan areas currently violate federal pollution standards and a number of cities and states in the next decade are expected to enact legislation requiring alternative-fuel vehicles.

In California, for example, the South Coast Air Quality Management District in the Los Angeles area is considering requiring 70 percent of trucks and 30 percent of cars to run on alternative fuels by the year 2007.

Ford already has supplied 630 methanol-powered cars to California, said Nichols.

General Motors will begin delivering 2,500 methanol-powered cars to California this month. The vehicles will be equipped with computer sensors to test fuel entering the gas tank and switch the engine from gasoline to methanol, GM spokesman Don Postma said.

Ford is negotiating a similar contract with California for 2,200 flexible-fuel vehicles, a company spokesman said.

Chrysler has no such contract but has developed its own flexible-fuel vehicle and a pure methanol-powered car, Chrysler spokesman Ben Dunn said.

However, there are drawbacks to methanol. The major obstacle is the amount of money it would take to switch to the new fuel, researchers say.

The price tag for getting the fuel distributed and stored nationwide in new non-corrosive fuel tanks would be billions of dollars, said Vito Stagliano, policy director at the U.S. Department of Energy.

On the other hand, building mass-produced cars powered by methanol would cost only an additional $240 per vehicle, he said.

Finding methanol, however, would not be a problem. It can be obtained from natural gas fields, decomposed agricultural waste and coal, which are all abundant in the United States.

Finally, it would cost about $250 million to build a methanol plant, roughly the same amount of money needed to build an oil refinery, Stagliano said.

Despite the costs involved, methanol supporters said another oil embargo or an air-pollution crisis likely would trigger the commercial development of the fuel.

As part of the search for viable new fuels, the Energy Department helped sponsor a first-ever auto rally for cars burning alternative fuels. The event, The Society of Automotive Engineers' Methanol Marathon, was an 1,100-mile, five-day road rally that began April 29 in Detroit.

Other fuel sources such as sun-powered cars, battery-operated vehicles and ethanol fuel mixtures also are under development by U.S. automakers, but they are less cost-efficent than methanol.

Red Creek, NY Herald, May 11, 1989

Grad Steers Students To Future Cars

by Carol Countryman

The team of college students whose car won third place in a marathon sponsored by General Motors Corporation and the Society of Automotive Engineers was coached by a Wolcott native.

Alan Nye, a 1964 graduate of Leavenworth Central School, advised the nine engineering students from Rochester Institute of Technology whose car successfully completed the 1,100-mile race.

Nye is the son of Vera H. Nye and the late Carl F. Nye, of Wolcott.

The RIT students competed against teams from 14 other universities in the United States and Canada. Each team converted a 1988 Chevrolet Corsica LT to run on methanol instead of gasoline.

The race began in Detroit and ended in College Park, MD. The cars were evaluated on fuel efficiency, emissions, accelerations, and starts. RIT's third prize included the competition car and $3,000.

"The Methanol Marathon was the latest in student-designed competitions we've entered," Prof. Nye said. "We've had a lot of experience—and done very well—in mini-Baja competitions," which are competitions involving one-person all-terrain vehicles.

Nye is advisor to RIT's chapter of the Society of Automotive Engineers, a group of 40 to 50 students who welcome these competitions as an opportunity to gain experience in an actual project. "It's a complete engineering design," he said. "The students work as a team and get involved in everything including fundraising and budgeting."

Nye noted that the Methanol Marathon was different from the other competitions his students have entered because RIT was invited to participate. "Each school selected to take part in the Marathon received the car, a converter kit, and an on-board computer—about a $30,000 package," he said. "The sponsors were pretty choosy about who they gave all this to."

Following his graduation from Leavenworth, Nye was awarded his bachelor's and master's degree in mechanical engineering from Clarkson University. He received a Ph.D in mechanical and aerospace science from the University of Rochester, then studied for two years at Sacramento Peak Observatory, in Sunspot, NM. He joined the RIT faculty in 1977.

Nashville Tennessean, May 11, 1989

New methanol conversions are proven efficient

The GM/SAE Methanol Marathon is over, and the University of Tennessee has emerged victorious.

The five-day, 1100-mile road rally ran from Detroit to Washington, D.C., and was sponsored by the Society of Automotive Engineers, General Motors, the Canadian and U.S. Departments of Energy, BP Oil Company, and others. It pitted students from 15 universities in a competition to build feasible, efficient methanol conversion packages.

U.T.'s winning entry scored 764 points and returned 19.9 mpg over the entire rally route, equivalent to gasoline fuel economy of 36.7 mpg. (The fleet average for the trip was 17.8 mpg, equivalent to 32.7 gasoline mpg.)

Entries were judged on the quality of the conversion, a technical presentation, cold starting, emissions, noise, acceleration and driving performance.

Rounding out the top five finishers, and sharing the $20,000 prize fund, were Montreal's Concordia University, Rochester (N.Y.) Institute of Technology, University of Maryland and Texas Tech University.

General Motors supplied the teams with identical Chevy Corsica LTs and conversion kits to allow the cars to run on M85, a 85/15 percent mix of methanol and gasoline. Everything else was left to the students' imaginations and abilities.

"In appreciation for their enthusiasm, creativity and commitment," said Gary W. Dickinson, head of GM's Technical Staffs Group, "GM is donating the Chevrolet Corsicas used in the Methanol Marathon to the participating schools to help enhance their engineering programs." And if the engineering students involved in the program have their way, the corner station soon may offer a choice of fuels as well as octanes.

Elkins, WV Inter-Mountain, May 11, 1989

Panel to Discuss Alternative Fuels

WASHINGTON — Sen. Jay Rockefeller said his subcommittee will hold a hearing on the future of alternative fuels on June 6 at 2 p.m.

In a speech to the Society of Automotive Engineers' national convention, Rockefeller, vice chairman of the Senate Energy Subcommittee on Research and Development, said the hearing will explore legislataive and administrative steps that can be taken to enhance the use of alternative motor vehicle fuels.

"We face critical decisions concerning petroleum imports and alternative fuels that affect clean air, jobs and international competitiveness. National policy and the automobile have arrived at a crossroads," he said.

"This hearing will examine possible legislative initiatives to move this nation forward on a national energy policy.

"Much more needs to be done to make alternative fuels a major component in our policy for energy, transportation and the environment. For example, issues such as building the infrastructure to distribute alternative fuels must be addressed.

"Last year we enacted my bill, known as the Alternative Motor Fuels Act of 1988, which establishes incentives in the form of fuel economy credits for automobile companies that produce cars that can run on methanol, ethanol and natural gas.

"This week we will see dramatic evidence of the growing interest in alternative fuels. Student engineers competing in the SAE methanol marathon are nearing Washington and will join me on Capitol Hill on Thursday at 9:30 a.m. to display their cars as I announce the winners.

"This is a unique engineering contest, with 15 student teams from across the U. S. and Canada who have converted cars to run on methanol. I am proud that West Virginia University, located in my home state, was selected as one of the finalists.

"This program gives our engineering students the opportunity to gain valuable hands-on experience with new technologies.

West Covina, CA Express, May 11, 1989

Tennessee team wins methanol race

WASHINGTON (AP) — The University of Tennessee drove to first place in a 1,100-mile marathon for cars than burn methanol, a gasoline alternative, sponsors announced.

Participants in the Methanol Marathon, sponsored by General Motors Corp. and the Society of Automotive Engineers, were scored on technical skill in converting a conventional vehicle into a methanol-burner and on performance, such as cold starts, emissions, noise, acceleration and driving.

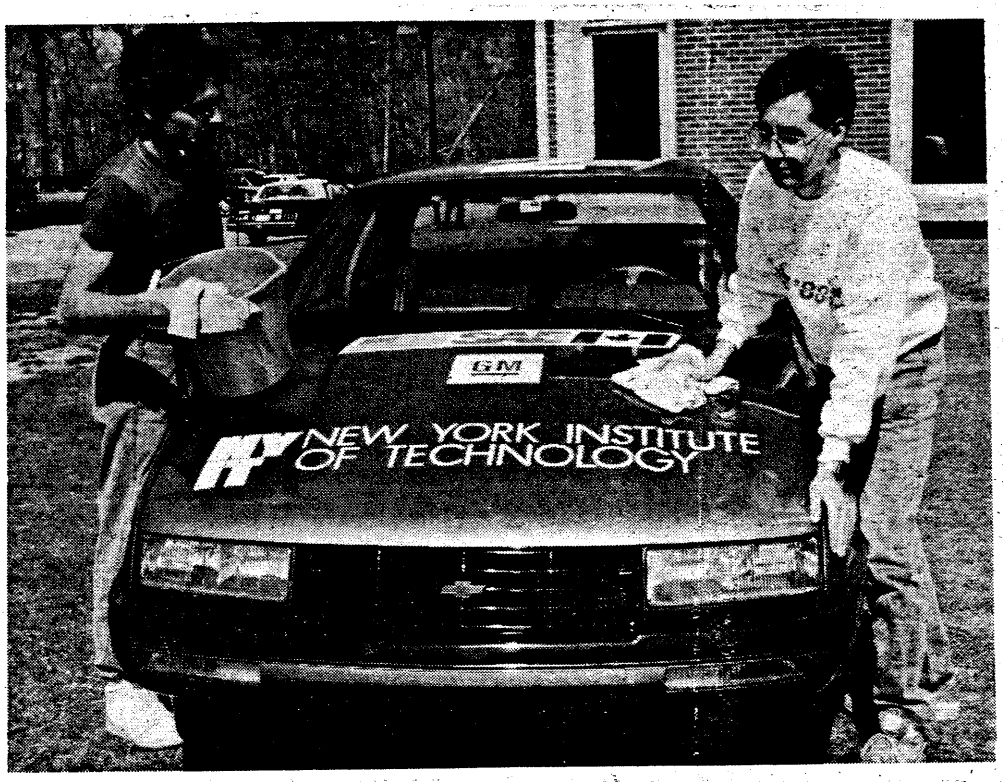
The Tennessee team scored 764 points. They were followed by Concordia University of Montreal, Canada, at 653 points, and the Rochester, N.Y., Institute of Technology at 643 points.

The Tennessee team averaged 19.9 miles per gallon over the route, which began in Warren, Mich., outside of Detroit and ended in College Park, Md.

Other teams and scores:

University of Maryland, 608; Texas Tech University, 586; Wichita State University, 581; West Virginia University, 556.

Riverhead, NY Suffolk Life-Ronkonkoma, May 10, 1989



READY RALLY--Richard Kramer, right, and Alex Echeverry, put the finishing touches on the Chevrolet Corsica they and 10 other engineering students at New York Institute of Technology converted to burn methanol fuel. The NYIT student team competed in the 1,100 mile Methanol Marathon Road Rally sponsored by General Motors, the U.S. Department of Energy, and the Canadian Department of Energy, Mines and Resources. NYIT is one of 15 colleges and universities in the United States and Canada selected as finalists in the competition aimed at learning more about methanol as an alternative to gasoline fuels. The rally route was through Michigan, Ontario, New York, New Jersey, Delaware and Maryland. (EB 2)

GM methanol fuel rally tests students' engineering mettle

By Roger Rowand
AUTOMOTIVE NEWS STAFF REPORTER

COLLEGE PARK, Md. — As 15 Chevrolets — converted by engineering students to burn wood alcohol — ran the 1,100-mile SAE Methanol Marathon rally last week, world attention was focusing on methanol fuel.

In Helsinki, for example, international negotiators were hammering out a final agreement on limiting chloroflurocarbon emissions — like those from mobile air conditioning systems — and expected to soon turn their attention to pushing the use of methanol in hopes of reducing carbon dioxide emissions.

In this country, last week, Chrysler Motors followed Ford Motor Co., showing off its methanol-burning vehicle. Methanol also was center stage during the SAE government/industry meeting in Washington and in hearings a few blocks away on Capitol Hill.

The senior engineering students in the SAE Methanol Marathon, without little doubt, had more fun than anyone else involved in methanol. Earlier this year, student teams were provided conversion parts by General Motors, and then they designed and installed methanol systems. Their cars were judged on such things as cold starting, driveability, acceleration and fuel economy, and the students on their presentations.

At the start of their run at the General Motors Technical Center in Warren, Mich., and at the end here, they showed they were getting a kick out of the project. In conversations they reported having absorbed a major amount of engineering hands-on know-how.

The winning school was the University of Tennessee, Knoxville, Tenn., which averaged 19.9 mpg for the rally. The average was the highest in the competition, and equivalent to 36.7 mpg in a gasoline-fueled vehicle. Second place went to Concordia University, Montreal, Quebec, and third to Rochester Institute of Technology.

GM President Robert C. Stempel listened as teams discussed modifications they made to the 2.8-liter V-6s in the Corsicas. Stempel said the challenges the students and the methanol-powered cars met on the road were an ideal source of information on how methanol performs in real-world conditions.

Stempel said such methanol problems as cold starting, driveability, corrosion, driving range and emissions all may ultimately be solved by participants in the rally.

Bernard F. Ellis, staff engineer, advanced system and component development at AC Rochester division, said, "We were looking for data and we're going to get data.

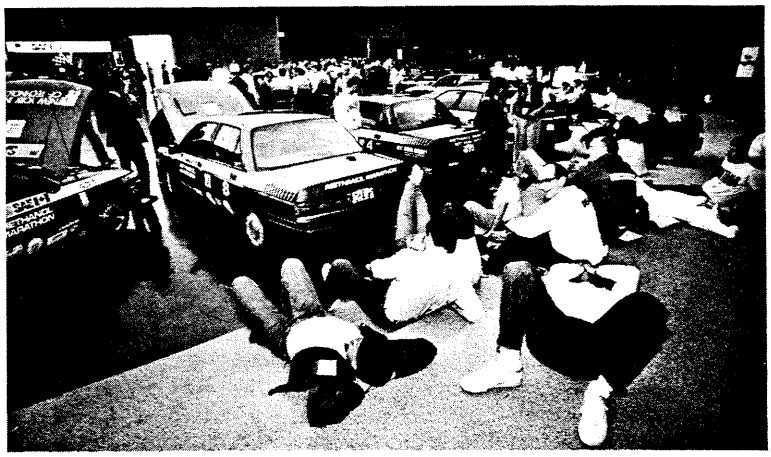
"Some of the concepts, especially for cold starts, were interesting. Many of the ideas including preheating the fuel and changing phase were intriguing. Some put preheaters near the fuel injectors for localized heat while others used early fuel evaporation grids — resistance heating — to warm fuel as it passed the grid," Ellis said.

The Colorado State University team had a phase-change device mounted in its car that attracted a lot of attention, though it was not used in the rally. Containing parts from a microwave oven, it converted methanol into dimethyl ether for easier starting.

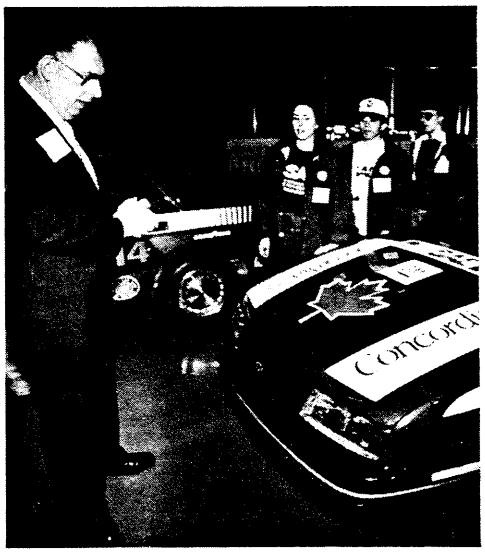
Though they successfully bench-tested the system, the Colorado team decided it might not have been dependable on the rally.

Cold starting and cold drive evaluations played a big part in scoring teams because methanol is a poor performer in the cold.

Ellis said his experience riding in two cars convinced him they were "quite launchable" — or commercially acceptable — as far as low-load city driving is concerned. "The drivers didn't have to rev them up excessively and they ran quite well," he said.

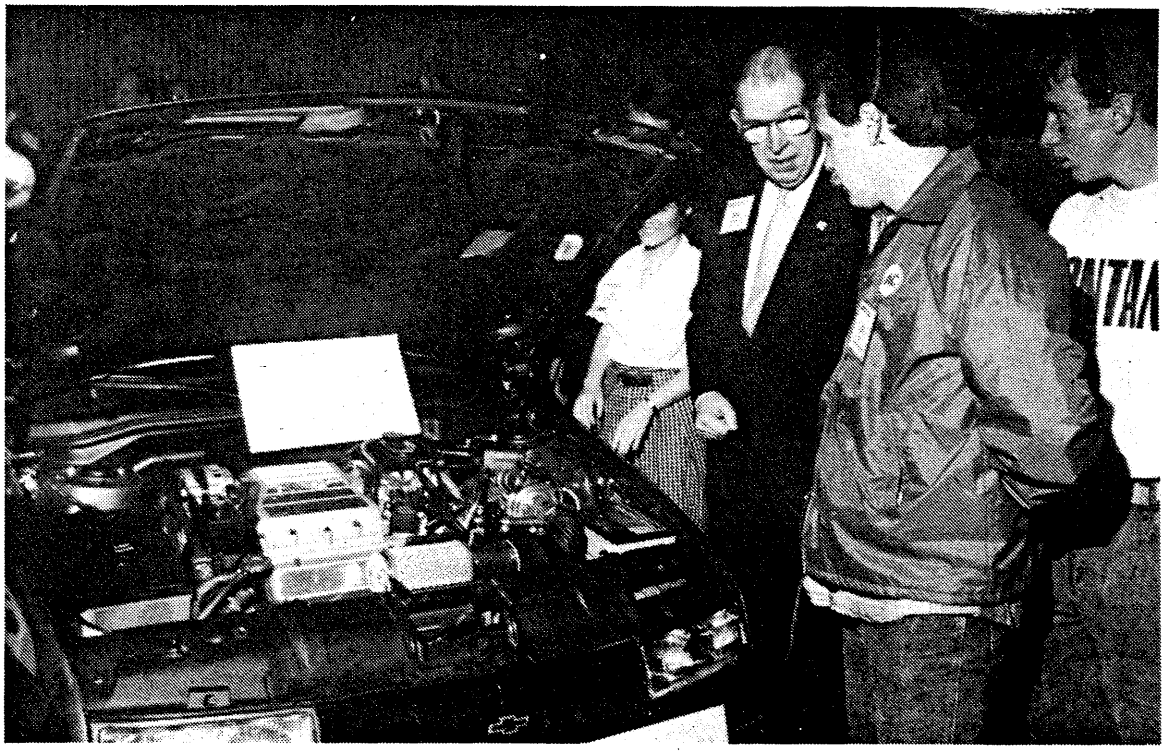


AUTOMOTIVE NEWS/JOE WILSSENS PHOTOS



Members of the University of Tennessee team take a break during the first day of testing for the Methanol Marathon rally. Right, GM President Robert Stempel talks to Canada's Concordia University team.

New Center News, May 8, 1989



GENERAL MOTORS PRESIDENT Robert Stempel discusses the University of Tennessee entry in the Methanol Marathon with one of the students prior to the race. —photo by Joseph Oster

TENNESSEE WINS METHANOL RACE

By Peter A. Salinas
Editor-in-Chief

A Florida Institute of Technology student complained that his college is just one hour from Daytona Beach "Bikini Capital of America," but instead of spending spring break soaking up some rays, he spent his time modifying a Chevrolet Corsica to run on methanol fuel.

The first-ever Methanol Marathon was run last week with the University of Tennessee entry ahead of the pack after the 1,100-mile rally from the Chevrolet Central Office in Warren to College Park, Md.

The five-day adventure, which actually began last November when the 15 teams were issued stock 1989 Chevrolet Corsicas and methanol conversion kits, officially ended May 4, when the winners were announced on Capitol Hill.

"We thought the marathon would be a neat way to show young people how challenging and exciting it can be to work in science and engineering and how much fun it can be to work in the automobile industry," said General Motors Corp. President Robert C.

See TENNESSEE, page 11 ►

A CHILLY SPRING BREEZE greeted the 15 teams preparing for the first-ever Methanol Marathon in front of the Chevrolet Central Office at the GM Tech Center in Warren. —photo by Joseph Oster

Detroit, MI
New Center News, May 8, 1[illegible]

TENNESSEE WINS METHANOL MARATHON

From page 1
Stempel in welcoming the students at a special reception at the GM Design Dome in Warren, April 28.

These students took their jobs very seriously, utilizing ingenious devices to make their conversions unique and practical.

Bruce Baughman, a senior at Colorado State University, explained one of the more complicated devices utilized in the methanol conversion.

One of the problems associated with using methanol as a fuel is cold starts. The fuel does not ignite well when the engine is cold.

The Colorado team utilized a microwave catalytic reaction chamber to solve the problem of cold starts. A 500-watt magnatron from a standard microwave oven was used as the main component of the chamber, which converted the methanol into dimethyl ether, which ignites easily.

"It is not fully operational on the car yet," Baughman said, "but on bench tests we got 20 to 30 percent conversion."

Although Colorado State ranked 10th in final scoring, it won the "best conversion" award because of its innovative theoretical design concept.

The University of Michigan team, which finished 13th, had some problems at the start of the race.

While the team finished the pre-race testing, which included cold-start, emissions, noise and acceleration performance, a problem developed near the final test.

The car was about 14 minutes late for its start and was apparrently suffering from a rod-knock of unknown origin.

It was unknown at presstime, whether the team had completed the rally with the original engine. Some team members were talking about replacing the engine, converting it to run on methanol fuel during the first layover.

"At some point in the future — no one knows when — it may be necessary to begin using other fuels," Stempel told the Design Dome crowd. "We need to be ready in advance for that possibility, and GM is testing several possible alternatives, including electric cars, fuel cells and various fuels, including methanol."

The teams used M-85 methanol fuel. It is a highly corrosive, though renewable form of fuel.

The rally was sponsored by GM, the U.S. Department of Energy; the Canadian Department of Energy, Mines and Resources; the Society of Automotive Engineers; Argonne National Laboratory; BP Oil Company; Chevrolet; AC Rochester and several other companies. The Sports Car Club of America conducted the rally.

The methanol fuel economy for the entire rally fleet averaged 17.8 mpg. This is a gasoline equivalent economy of 32.7 mpg. The 15-car fleet covered a total of 16,882 miles.

The top five schools: University of Tennessee, Concordia University; Rochester Institute of Technology; University of Maryland; and Texas Tech University, respectively, will divide $20,000 in cash prizes donated by the U.S. energy department and Canadian department of energy.

Technical support was provided by GM's Advanced Engineering Staff.

"The importance of the Methanol Marathon is twofold," said Gary W. Dickinson, GM vice president and group executive in charge of of the Technical Staffs Group. "First, it furthers the extensive work GM has been doing in the area of alternative fuels research and development. Secondly, it helps promote student interest in the fields of science and engineerings."

Temple, TX Telegram, May 7, 1989

University Of Tennessee Wins Methanol Marathon

WASHINGTON (AP) — The University of Tennessee drove to first place in a 1,100-mile marathon for cars than burn methanol, an alternative to gasoline, sponsors said Thursday.

Participants in the Methanol Marathon, sponsored by General Motors Corp. and the Society of Automotive Engineers, were scored on technical skill in converting a conventional vehicle into a methanol-burner and on performance, such as cold starts, emissions, noise, acceleration and driving.

The Tennessee team scored 764 points. They were followed by Concordia University of Montreal, Canada, at 653 points, and the Rochester, N.Y., Institute of Technology at 643 points.

The Tennessee team averaged 19.9 miles per gallon over the route, which began in Warren, Mich., outside of Detroit and ended in College Park, Md.

Other teams and their scores were:

University of Maryland, 608; Texas Tech University, 586; Wichita State University, 581; West Virginia University, 556; Pennsylvania State University, 542; Florida Institute of Technology, 538; Colorado State University, 531; California State University at Northridge, 492; Washington University at St. Louis, 454; University of Michigan, 425; New York Institute of Technology, 402, and Michigan Technological University, 115.

Detroit News, May 7, 1989

Big Three give methanol a test run

By David Sedgwick
News Staff Writer

"Fuel of the future," a description that has bounced around before, now is the sales spiel for methanol.

Haven't we heard this before?

A decade ago, gasohol was the fuel of the future, the answer to OPEC's hammerlock on world oil supplies.

Others touted diesel oil as a cheap alternative to gasoline, as cost-conscious motorists plied the highways in diesel-powered econoboxes.

Now it's methanol — the chemical equivalent of wood alcohol, which can be made from natural gas or coal. It burns more cleanly than gasoline, a big plus in smog-ridden cities like Los Angeles or Denver.

OVER THE PAST two weeks, each of the Big Three automakers called press conferences to tout methanol-powered vehicles. Congress encouraged those projects in legislation passed last year, and Ford Motor Co. already has sold hundreds of methanol-fueled test vehicles to local government agencies in California.

But the automakers seem reluctant to rush into mass production. Given the recent history of alternative fuels, that should be no surprise.

Gasohol — a mixture of 90 percent gasoline and 5 percent ethanol or methanol — was supposed to ease U.S. reliance on imported oil. But the market for gasohol weakened after the price rose too high.

MINDFUL OF this — and of the durability problems GM's diesel engines hit the early 1980s — the automakers say it's not yet practical to mass-produce methanol vehicles. But executives at Ford, GM and Chrysler add that methanol is better than such suggested fuels as electricity, natural gas or even hydrogen.

"In our judgment, it is the most promising of the alternative fuels," said John P. McTague, Ford's vice-president for research.

Methanol would require less vehicle redesign than other fuels, he explained. Gasoline engines designed to run on gasoline would require relatively little modification, engineers say.

A METHANOL engine would require sturdier materials to resist corrosion, a fuel sensor to allow the use of gasoline or methanol, equipment to aid cold-weather starting and an upgraded catalytic converter.

All this probably would add hundreds — not thousands — of dollars to a vehicle's price. That's an acceptable cost to the automakers, says one Big Three engineer. As fuels go, methanol is a known quantity. World War II-era airplanes used methanol and the Indianapolis 500 race features methanol cars.

In fact, Ford's chief methanol expert first learned about the fuel on the racing circuit. Two decades ago in California, Roberta Nichols piloted a hydroplane outfitted with a 1,500-horsepower engine.

NOW SHE spends her time in Ford's technical center in Dearborn, a rabbit warren of laboratories where

-continued-

Fuel

Big Three tout methanol as best alternative to gas

From page 21A

Ford has been experimenting with methanol. Nichols' staff of engineers has tinkered with methanol vehicles for nine years, trying to solve assorted technical problems.

For example, methanol-fueled engines don't start well in cold weather. Nichols says Ford solved that problem by testing a fleet of 19 Crown Victorias over the past three winters around Canada. The firm learned that a blended fuel — 85 percent methanol and 15 percent gasoline — performs much better in cold weather than pure methanol.

But the most vexing question involves pollution. Although it's generally a cleaner fuel than gasoline, methanol exhaust contains formaldehyde, a cancer-causing chemical. That means the Big Three must improve their catalytic converters, Nichols said.

ONCE THOSE PROBLEMS are solved, Ford is ready to track the durability of methanol vehicles.

Ford delivered its first test fleet of 40 methanol-fueled Escorts to Los Angeles in 1981 and sent another 500 cars to California two years later. Now Ford is negotiating the delivery of 2,500 methanol vehicles to state and local agencies in California for another round of field tests.

If all goes well — and if the federal government decides to promote the use of methanol fuel — Ford could mass-produce methanol vehicles by 1995, Nichols predicted.

"We want to take a cautious approach," Nichols explained. "The worst thing you could do is bring methanol vehicles too soon to the marketplace. We'd like to try a limited production, and if that were successful it would take us to a higher-volume production."

ALTHOUGH FORD believes it has an edge on the competition, General Motors Corp. is pushing hard. The nation's No. 1 automaker is sending 20 methanol-fueled Corsicas to California this spring and plans to send 2,200 modified Lumina sedans by 1992.

But GM engineers say they're still wrestling with the problems of cold-weather starts, fuel economy and emissions. Perhaps that's why the company sponsored a methanol marathon last week, with 15 engineering schools each converting a Corsica to run on methanol fuel.

Students from the University of Michigan and Michigan Technological University competed in the 1,100-mile trip from Warren to College Park, Md. A team from the University of Tennessee was named the winner Thursday, based on technical skill and performance.

GM PRESIDENT Robert Stempel stopped by his company's Tech Center as the student vehicles got a final check before the marathon. In a van crammed with computer equipment, he watched two engineers monitor each car's emissions.

Stempel's curiosity was no surprise. In a Detroit speech last month, GM's second-in-command endorsed efforts by Los Angeles officials to encourage a gradual reliance on methanol fuel.

The plan "permits new technology to be phased in as it is developed, rather than trying to force invention on a schedule," he said. That's critical for GM, where executives say they are a long way from mass production of methanol vehicles.

CONGRESS STILL must resolve two of the toughest problems: the price and availability of methanol.

Existing refineries can switch easily to methanol, but time and money are needed to add a distribution system, so motorists can find the fuel at most service stations. That's why the Big Three automakers are developing cars that can use methanol, gasoline or any blend of the two.

Methanol also costs more than gasoline and offers only about half the mileage per gallon. To make it competitively priced, Ford and Chrysler suggest a higher federal gasoline tax.

ONE GROUP of motorists — those who prize sporty performance — may not need a special incentive. Methanol can boost horsepower and acceleration, which explains its appeal as a racing fuel.

With an eye on that market, Chrysler unveiled a turbocharged Dodge Daytona that runs on methanol.

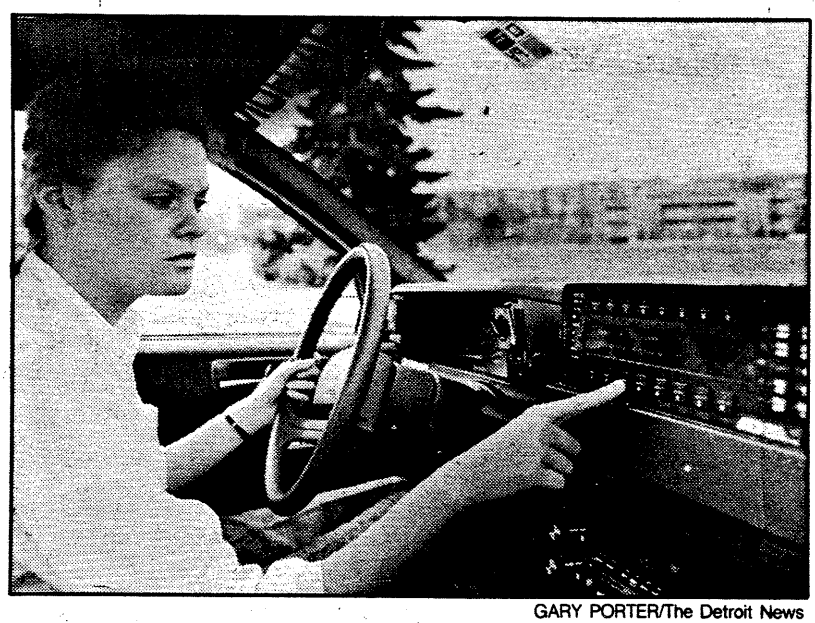
Though the nation's No. 3 automaker has no plans yet to assemble big test fleets like those of GM or Ford, the company does see methanol's promise. "It is relatively easy to convert a gasoline engine to methanol," said Gordon Allardyce, Chrysler's manager of regulatory programs.

"Methanol is the best alternative fuel, without any question."

Detroit News
May 7 1989

-continued-

Detroit News, May 7, 1989



GARY PORTER/The Detroit News

Student Susan Fancy monitors the computer inside a methanol-powered car designed by University of Michigan students for a GM-sponsored marathon.

New York Times, May 7, 1989

About Cars/Marshall Schuon

A Student Rally for Methanol Use

Chris Blyseth is sitting next to me, trying to accommodate his 6-foot-6-inch frame to the Chevy Corsica's average American bucket seat. In back, Jose Musso is talking about the car and what he, Chris and seven other members of their team have done to it.

The Corsica, a metallic gray sedan that usually is bread and butter to General Motors, has been converted. Now it is a race car — but it is a racer with a difference.

The idea was to create an automobile that would run on methanol instead of gasoline, and that would prove to all and sundry that it was as driveable and economical as anything powered by gas.

It is a car that races for practicality instead of excitement.

Chris, the 22-year-old team captain from Northport, N.Y., has a round face that sports the beginning of a beard. And Jose, 29, a mechanical engineering student from Lima, Peru, spills over about the project.

Like the rest of the team, they are anxious to get going, but they are also eager to explain and to offer a test drive. They talk about the fuel, which is 85 percent methanol, 15 percent gasoline, a mix that helps with cold starts. They talk about going to work for an auto maker when they graduate next month. They talk electronics and the difficulty of going to class when they want to be tinkering.

"We started back in November," Jose said. "The engine is a 2.8-liter V6, but we put in new pistons that raised the compression from 8.9 to 1 to 13 to 1. And we did a lot with the ignition. We really think we have a good shot at winning."

•

Jose and Chris are part of the New York Institute of Technology entry in the Methanol Marathon, a weird sort of road rally conceived by General Motors and abetted by the United States and Canadian governments, the Society of Automotive Engineers, and various commercial enterprises.

Fifteen identical 1988 Chevrolet Corsicas were given by General Motors to competing colleges, along with kits to convert them to methanol power, and the key was imagination and diligence at solving the problems of pollution and America's dependence on petroleum.

The rally rules specified that each car had to have two occupants — a driver and a navigator — and fuel efficiency was to be carefully measured. Scheduled tests included acceleration, cold starting and emissions.

"What's going to help us is this computer terminal," Chris said, punching buttons and lighting up red lights on a box on the dash. "This thing was part of G.M.'s kit, and we can program the ignition and the fuel injection to get the engine running right. I just wish we had more time for testing."

Testing costs more than time, of course, but the New York City Department of Environmental Protection helped out, donating use of its facilities for fuel economy and emissions tests and saving the students $1,800 each time they made a major change in the engine and checked out the results.

15 college teams competed in an 1,100-mile race.

The rally, run by the Sports Car Club of America, began in Detroit on April 29 and ended three days ago at the University of Maryland, after 1,100 miles through Canada and down the East Coast. The "trophy" was $20,000, to be shared by the top five colleges, with scoring on the basis of economy, driveability, performance and creativity.

•

But all of that was still to come as we sat talking, the engine ticking over, outside the two-story building on the campus at Old Westbury on Long Island. Students stopped by, excited. And inside, in the basement of Harry Shure Hall, the rest of the team was sorting parts and packing wrenches.

And then it was time to put the car in gear and step on the, uh, methanol.

Surprisingly, the Corsica didn't seem much different than any other modern car. It ran smoothly, although there was a bit of lugging at low revs when you shifted through the 5-speed transmission.

"That's one of the things we've been working on," Chris said. "I think with more time, we can get that worked out."

Acceleration was impressive, and the students' tests showed that the car would go from zero to 60 miles an hour in a quick 8.9 seconds, a tad under the time for a gasoline-powered Corsica. That is a nice benefit, when you consider that the fuel, in commercial production, would only cost about 60 cents a gallon.

Methanol, generally made from natural gas, has a higher octane than gasoline. That allows compression ratios to be raised, providing more power.

•

Unfortunately, the fuel also has its problems.

Methanol burns with a nearly invisible flame, which can be dangerous. It corrodes most materials, and the students' Corsica required a stainless steel fuel tank and stainless fuel lines, as well as a different fuel pump.

Methanol also has less energy per gallon than gasoline, so you need about twice as much of it to go the same distance, and that means more frequent fill-ups or considerably larger fuel tanks.

Running on gas, a Corsica averages 19 miles a gallon, and the New York team posted a methanol average of 19.3 for the rally, which would be the gasoline equivalent of about 35 m.p.g.

For a V6, that's pretty spectacular. But, alas....

After all those miles, the University of Tennessee captured first place with 764 points, and Concordia University of Montreal finished second with 653. The New York entry scored 402 and wound up No. 14 in the field of 15 cars.

The team came home late Friday night, and the excuses were off the record. Chris said they were tired. They had a good time. He said they learned a lot. He said there was more work to do. And he really didn't feel like talking.

Roseburg, OR News-Review, May 7, 1989

University of Tennessee wins Methanol Marathon

WASHINGTON (AP) — The University of Tennessee drove to first place in a 1,100-mile marathon for cars than burn methanol, an alternative to gasoline, sponsors said.

Participants in the Methanol Marathon, sponsored by General Motors Corp. and the Society of Automotive Engineers, were scored on technical skill in converting a conventional vehicle into a methanol-burner and on performance, such as cold starts, emissions, noise, acceleration and driving.

The Tennessee team scored 764 points. They were followed by Concordia University of Montreal, Canada, at 653 points, and the Rochester, N.Y., Institute of Technology at 643 points.

The Tennessee team averaged 19.9 miles per gallon over the route, which began in Warren, Mich., outside of Detroit and ended in College Park, Md.

Greeneville, TN Sun, May 6, 1989

UT Team Wins Methanol Marathon

WASHINGTON (AP) — The University of Tennessee drove to first place in a 1,100-mile marathon for cars than burn methanol, an alternative to gasoline, sponsors said.

Participants in the Methanol Marathon, sponsored by General Motors Corp. and the Society of Automotive Engineers, were scored on technical skill in converting a conventional vehicle into a methanol-burner and on performance, such as cold starts, emissions, noise, acceleration and driving.

The Tennessee team scored 764 points. They were followed by Concordia University of Montreal, Canada, at 653 points, and the Rochester, N.Y., Institute of Technology at 643 points.

The Tennessee team averaged 19.9 miles per gallon over the route, which began in Warren, Mich., outside of Detroit and ended in College Park, Md.

Other teams and their scores were:

University of Maryland, 608; Texas Tech University, 586; Wichita State University, 581; West Virginia University, 556; Pennsylvania State University, 542; Florida Institute of Technology, 538; Colorado State University, 531; California State University at Northridge, 492; Washington University at St. Louis, 454; University of Michigan, 425; New York Institute of Technology, 402, and Michigan Technological University, 115.

Marietta, GA Journal, May 6, 1989

UT wins methanol car design contest

By Richard Powelson
Scripps Howard News Service

WASHINGTON — University of Tennessee engineering students bested 14 other competitors Thursday in improving the design and performance of a methanol-powered car they drove from Michigan to Maryland.

Sponsors of the contest, including the U.S. Department of Energy and General Motors, hope this and other events will spur national interest in moving toward alternative automobile fuels, which cause less pollution.

More than 30 colleges and universities submitted proposals for the contest, dubbed the Methanol Marathon, but only 15 were chosen for the 1,100-mile rally starting in Warren, Mich., April 29 and ending in College Park, Md., May 3.

"There are many benefits to methanol," said Sen. Jay Rockefeller, D-W.Va., a key Senate booster of alternative fuels, "but people just don't know enough about it."

A Rockefeller-promoted bill passed by Congress last year provides incentives for automakers to begin producing cars in 1993 that use alternative fuels such as methanol, which is produced from coal or natural gas and produces much less smog than gasoline-powered engines. However, methanol cars emit formaldehyde, a probable cancer-causer, at certain levels.

The 25 mechanical and electrical engineering students from the Knoxville, Tenn., campus won not only first place for total points in various categories, but also took first place for having the best fuel economy, and second place in the acceleration category. They earned a total of 764 points.

General Motors donated 15 1988 Chevrolet Corsicas used in the rally, and the U.S. and Canadian departments of energy provided $20,000 in cash prizes that were divided among the schools of the top five teams.

Minneapolis Star Tribune
May 6, 1989

Tennessee 'U' car finishes first in methanol marathon

Associated Press

Washington, D.C.
An entry from the University of Tennessee was driven to first place in a 1,100-mile marathon for cars than burn methanol, an alternative to gasoline, sponsors reported Thursday.

Participants in the Methanol Marathon, sponsored by General Motors Corp. and the Society of Automotive Engineers, were scored on technical skill in converting a conventional vehicle into a methanol-burner and on performance, such as cold starts, emissions, noise, acceleration and driving.

The Tennessee team scored 764 points. They were followed by Concordia University of Montreal, Canada, at 653 points, and the Rochester (N.Y.) Institute of Technology at 643 points.

The Tennessee team averaged 19.9 miles per gallon over the route, which began in Warren, Mich., near Detroit, and ended in College Park, Md.

Other teams and their scores were: University of Maryland, 608; Texas Tech University, 586; Wichita State University, 581; West Virginia University, 556; Pennsylvania State University, 542; Florida Institute of Technology, 538; Colorado State University, 531; California State University at Northridge, 492; Washington University at St. Louis, 454; University of Michigan, 425; New York Institute of Technology, 402, and Michigan Technological University, 115.

Methanol Marathon Is Won By University of Tennessee

WASHINGTON (AP) – The University of Tennessee drove to first place in a 1,100-mile marathon for cars that burn methanol, an alternative to gasoline, sponsors said.

Participants in the Methanol Marathon, sponsored by **General Motors** Corp. and the Society of Automotive Engineers, were scored on technical skill in converting a conventional vehicle into a methanol-burner, and on performance, such as cold starts, emissions, noise, acceleration and driving.

The Tennessee team scored 764 points. It was followed by Concordia University of Montreal, with 653 points, and the Rochester, N.Y., Institute of Technology, with 643 points.

The Tennessee team averaged 19.9 miles per gallon over the route, which began in Warren, Mich., outside Detroit, and ended in College Park, Md.

Other teams and their scores:

University of Maryland, 608; Texas Tech University, 586; Wichita State University, 581; West Virginia University, 556; Pennsylvania State University, 542; Florida Institute of Technology, 538; Colorado State University, 531; California State University at Northridge, 492; Washington University at St. Louis, 454; University of Michigan, 425; New York Institute of Technology, 402, and Michigan Technological University, 115.

Friday, May 5, 1989 ★ Investor's Daily

Cross-Country Race Provides New Data On Methanol's Promise, Limits As Fuel

By Paul A. Eisenstein,
Special To Investor's Daily

Their engines revving, the 15 drivers nervously eye their competition, each waiting for the signal that will launch their cross-country dash.

For those who are picturing the Cannonball Run, the free-for-all race that launched a series of Burt Reynolds movies, the Methanol Marathon is an entirely different event.

These 15 teams, in their cars sporting bright decals, are sponsored by the nation's most prestigious colleges, including the University of Michigan and Colorado State University. Each is running an initially identical Chevrolet Corsica, modified by the students to run on methanol fuel.

This week, the teams are racing 1,100 miles, east across Canada, then south to the finish line in Washington, D.C.

New Clean Air Act

That final destination is no accident. Later this year, Congress will debate a new Clean Air Act that will likely require further cuts in the amount of hydrocarbons, nitrous oxides and other pollutants permitted to spew from automotive tailpipes.

Since Congress first restricted automotive emissions in the 1960s, devices such as the catalytic converter have removed all but a fraction of unwanted emissions.

Critics say that is not enough, but industry leaders insist there is a limit to how much more they can do with the gasoline engines found in the vast majority of today's cars and trucks.

Nowhere are those limits more obvious than in Southern California. When air inversions pin a bowl of smog firmly in place over the City of Angels, midday in downtown Los Angeles looks more like a sulfurous twilight.

Regional air quality supervisors recently voted to launch the nation's most aggressive anti-air pollution campaign. But California already has the nation's toughest auto emission regulations.

And even with car-pooling programs and a new subway system planned, no one believes there really is a way to make more than a minor dent in the city's endless bumper-to-bumper traffic jams. Instead, the new regional plan calls for a phase-out of gasoline in favor of methanol.

Some refiners already add a bit of methanol — one of the simplest forms of alcohol — to their gasolines, particularly in high altitude areas, such as Colorado. Methanol is also the fuel of choice for the Indianapolis 500.

But will it work for the nation's 120 million cars?

The Methanol Marathon, partially sponsored by General Motors Corp., will not only provide some publicity for the methanol cause, but it will also give engineers some much-needed field experience.

"We would not want to switch to methanol only to find out we made a mistake," said GM President Robert C. Stempel. "Any substitute for gasoline has to be at least as good as gasoline."

As race-car drivers have discovered, methanol has a higher octane than gasoline and burns far more efficiently. That could actually mean more power from smaller engines, which is why all the Big Three automakers are experimenting with methanol-fueled vehicles.

But the biggest advantage is that methanol is a relatively clean fuel. Chrysler Corp.'s test vehicles emit half the hydrocarbons, carbon monoxides and nitrous oxides of equivalent gasoline-powered vehicles.

Another advantage cited by proponents is that methanol could help shield the nation from another Mideast oil crisis, since a prime source, coal, is in abundant supply. (However, foreign dependence would increase if refiners were to resort to another methanol raw material, natural gas.)

There are some drawbacks.

Methanol makes for hard starts in cold climates, so test vehicles currently require a 15% blend of gasoline. The alcohol fuel is highly corrosive, so fuel lines and tanks must be made of stainless steel. And prototype engines tend to emit too much formaldehyde in their exhaust — a problem engineers believe they'll be able to overcome.

Right now, methanol costs more than gasoline, though that would likely go down with mass production. But even priced at par, gasoline has a much higher energy content, delivering 1.8 more miles per gallon. A modified Chrysler LeBaron delivers 21.2 miles per gallon with gasoline but only 12.9 mpg with methanol.

'Chicken And Egg'

Would motorists be willing to sacrifice fuel economy for lower emissions?

Industry officials admit the answer is likely to be no, and that could lead to what Chrysler executive engineer Gordon Rinschler calls "the chicken and the egg problem."

Without adequate demand, service stations aren't likely to add methanol pumps. Without adequate supplies, motorists would hesitate to switch.

On the positive side, methanol has an advantage over other alternative fuels under study, such as liquid hydrogen or compressed natural gas, since it can be pumped the same way as gasoline.

But until the fuel becomes commonplace, automakers will have to offer multifuel vehicles that can run on either methanol, gasoline or a blend of the two, depending on what's available.

What is likely to get methanol squarely fixed in the market is government intervention. There's the L.A. smog plan, and planners in the Northeast are also taking a hard look.

Meanwhile, Sen. Max Baucus, D-Mont., chairman of the Subcommittee on Environmental Protection, has said that as part of the new Clean Air Act, "There will be some incentive for alternative fuels," notably methanol.

Baucus admits methanol isn't a panacea for auto emission problems.

As with other fossil fuels, the main byproduct of its combustion is carbon dioxide. The more carbon dioxide in the atmosphere, scientists theorize, the more solar heat is retained, and initial studies indicate that is leading to a global warming — the Greenhouse Effect.

But no alternative fuel that avoids producing carbon dioxide seems ready for market.

Inefficient Batteries

Electric cars are a possibility, but they need heavy, expensive, inefficient batteries, which typically provide no more than 50 miles of travel without a recharge.

Liquid hydrogen has its proponents, because it produces only water as a byproduct. "Liquid hydrogen is a great fuel," said Joe Colucci, a department head with General Motors Research. "We just don't know how to get it, store it or distribute it."

So for now, said Rinschler, "Our crystal ball says methanol appears to be the most likely alternative" to gasoline, at least in the immediate future.

Loveland, CO Reporter-Herald, May 5, 1989

CSU car wins at Methanol Marathon

FORT COLLINS (AP) — Colorado State University's methanol car, described as innovative by auto industry experts, won top design honors in the Methanol Marathon for cars that burn methanol, an alternative to gasoline.

The Colorado State team won $1,000 and a trophy for best methanol conversion. The car was selected as the best-engineered vehicle based on its design, fabrication and cost-effectiveness.

The engine was designed to perform like a gasoline engine, but provide more power and lower emissions.

The Colorado State team placed 10th in overall competition. The University of Tennessee won the weeklong competition, which included a 1,100 mile road rally from Detroit to Washington, D.C.

"We may not have won the overall competition, but I think we won the most important section, the conversion strategy," said Michael Weinstein, president of the Colorado State chapter of the Society of Automotive Engineers.

Competitors in the Methanol Marathon, sponsored by General Motors Corp. and the Society of Automotive Engineers, were scored on technical skill in converting a conventional vehicle into a methanol-burner and on performance, such as cold starts.

CITY & STATE

Brain power helps UT students win marathon

Gannett News Service

WASHINGTON — The University of Tennessee used a mixture of wit and intimidation to capture the top prize Thursday in the five-day, 1,100-mile "Methanol Marathon."

The brainy team of 25 engineering students began the Detroit to College Park, Md. race Saturday by hiding their modified 1988 Chevrolet Corsica underneath an oversized drape.

"Nobody could understand why we wouldn't let them see it," said Cameron Sumner, team captain and a senior in mechanical engineering. "They couldn't figure out what we were hiding."

What they hid was a methanol-drinking auto that averaged 19.6 miles per gallon and swept past 14 other university entries to garner the $6,000 top prize.

The 200 students who participated in the grueling rally were serenaded with numerous speeches Thursday from congressmen and senators who sponsored a 1988 law that provides financial incentives for automakers to begin producing methanol cars in 1993.

"This rally . . . is a component to change the way America thinks about the way Americans drive," said Sen. Jay Rockefeller, R-W.Va. "All of us have to be proselytizers on behalf of methanol."

Methanol is produced from coal or wood products and has drawn the attention of the Big Three automakers because its supporters claim it emits fewer pollutants than gasoline.

Each of the 15 universities entered in the competition had to convert their 1988 Chevrolet Corsicas from gasoline to methanol. The cars were donated to the schools by General Motors, the event's sponsor.

For points, each had to minimize fuel use while maximizing speed, start cold, accelerate well and have an engine that students effectively converted from a gasoline- to methanol-user.

"Methanol is obviously in the nation's future," said Sen. Donald Riegle, D-Mich., who visited with teams from the University of Michigan and the Michigan Technological University. "When you see the scenes from the Alaska oil spill, it's obvious we have to look elsewhere."

Throughout the sunshine-filled morning, the 15 racing cars sat parked in front of the Capitol, just 50 yards from two gasoline-swilling limousines that carried Canadian Prime Minister Brian Mulroney and his aides to meetings with congressional leaders.

"We felt like we'd done a good job," said Tennessee team captain Sumner. "All the cars were pretty reliable except for minor problems."

Detroit Free Press, May 5, 1989

University of Tennessee wins methanol race

Free Press Wire Reports

WASHINGTON — The University of Tennessee finished first in a 1,100-mile marathon for cars that burn methanol. The event was sponsored by General Motors Corp. and the Society of Automotive Engineers.

The 15 college teams in the Methanol Marathon were scored on their technical skill in converting a conventional vehicle — a Corsica — into a methanol-burner, and on performance, such as cold starts, emissions, noise, acceleration and driving.

Tennessee scored 764 points, followed by Concordia University of Montreal at 653 points, and the Rochester (N.Y.) Institute of Technology at 643 points.

Tennessee's Corsica averaged 19.9 miles per gallon — equivalent to 36.7 m.p.g. with gasoline — on the route, which began in Warren and ended in College Park, Md.

The University of Michigan finished 13th with 425 points. Michigan Tech University finished last with 115 points.

"The importance of the Methanol Marathon is twofold," said Gary Dickinson, GM vice president and group executive in charge of the Technical Staffs Group. "First, it furthers the extensive work GM has been doing in the area of alternative fuels research and development. Secondly, it helps promote student interest in the fields of science and engineering."

The Detroit News
Friday, May 5, 1989

Tennessee a winner: The University of Tennessee captured first place in the GM/SAE Methanol Marathon with a total score of 764 points. About half of the points were awarded for the team's technical presentation on how it converted its Chevrolet Corsica to use methanol fuel and on the quality of the conversion itself. The other half were awarded for cold starting, emissions, noise, acceleration and driving performance from one checkpoint to another along the 1,100-mile route.

State College, PA Centre Times, May 5, 1989

Tennessee wins methanol marathon

The Associated Press

WASHINGTON — The University of Tennessee drove to first place in a 1,100-mile marathon for cars than burn methanol, an alternative to gasoline, sponsors said Thursday.

Participants in the Methanol Marathon, sponsored by General Motors Corp. and the Society of Automotive Engineers, were scored on technical skill in converting a conventional vehicle into a methanol-burner and on performance, such as cold starts, emissions, noise, acceleration and driving.

The Tennessee team scored 764 points. It was followed by Concordia University of Montreal, Canada, at 653 points, and the Rochester, N.Y., Institute of Technology at 643 points. A Penn State team finished with 542 points.

The Tennessee team averaged 19.9 miles per gallon over the route.

Other teams and their scores were:

University of Maryland, 608; Texas Tech University, 586; Wichita State University, 581; West Virginia University, 556; **PENN STATE UNIVERSITY**, 542; Florida Institute of Technology, 538; Colorado State University, 531; California State University at Northridge, 492; Washington University at St. Louis, 454; University of Michigan, 425; New York Institute of Technology, 402, and Michigan Technological University, 115.

Lebanon, PA News
May 5, 1989

Methanol Marathon

WASHINGTON — The University of Tennessee drove to first place in a 1,100-mile marathon for cars than burn methanol, an alternative to gasoline, sponsors said Thursday.

Participants in the Methanol Marathon, sponsored by General Motors Corp. and the Society of Automotive Engineers, were scored on technical skill in converting a conventional vehicle into a methanol-burner and on performance, such as cold starts, emissions, noise, acceleration and driving.

Bangor, ME News, May 5, 1989

Methanol car marathon completed

WASHINGTON (AP) — The University of Tennessee drove to first place in a 1,100-mile marathon for cars that burn methanol, an alternative to gasoline, sponsors said Thursday.

Participants in the Methanol Marathon, sponsored by General Motors Corp. and the Society of Automotive Engineers, were scored on technical skill in converting a conventional vehicle into a methanol-burner and on performance, such as cold starts, emissions, noise, acceleration and driving.

The Tennessee team scored 764 points. They were followed by Concordia University of Montreal, Canada, at 653 points, and the Rochester, N.Y., Institute of Technology at 643 points.

The Tennessee team averaged 19.9 miles per gallon over the route, which began in Warren, Mich., outside of Detroit and ended in College Park, Md.

Other teams and their scores were:

University of Maryland, 608; Texas Tech University, 586; Wichita State University, 581; West Virginia University, 556; Pennsylvania State University, 542; Florida Institute of Technology, 538; Colorado State University, 531; California State University at Northridge, 492; Washington University at St. Louis, 454; University of Michigan, 425; New York Institute of Technology, 402, and Michigan Technological University, 115.

Augusta, ME Kennebec Journal
May 5, 1989

Tennessee wins auto race

WASHINGTON (AP) — The University of Tennessee drove to first place in a 1,100-mile marathon for cars than burn methanol, an alternative to gasoline, sponsors said Thursday.

Participants in the Methanol Marathon, sponsored by General Motors Corp. and the Society of Automotive Engineers, were scored on technical skill in converting a conventional vehicle into a methanol-burner and on performance, such as cold starts, emissions, noise, acceleration and driving.

The Tennessee team scored 764 points. They were followed by Concordia University of Montreal, Canada, at 653 points, and the Rochester, N.Y., Institute of Technology at 643 points.

Altoona, PA Mirror, May 5, 1989

Vols wins 'marathon'

WASHINGTON (AP) — The University of Tennessee drove to first place in a 1,100-mile marathon for cars than burn methanol, an alternative to gasoline, sponsors said Thursday.

Participants in the Methanol Marathon, sponsored by General Motors Corp. and the Society of Automotive Engineers, were scored on technical skill in converting a conventional vehicle into a methanol-burner and on performance, such as cold starts, emissions, noise, acceleration and driving.

The Tennessee team scored 764 points. They were followed by Concordia University of Montreal, Canada, at 653 points, and the Rochester, N.Y., Institute of Technology at 643 points.

The Vols' team averaged 19.9 miles per gallon over the route, which began in Warren, Mich., outside of Detroit and ended in College Park, Md.

Other teams and their scores were:

University of Maryland, 608; Texas Tech University, 586; Wichita State University, 581; West Virginia University, 556; Pennsylvania State University, 542

BY AL DANEGGER

Mechanical engineering professor David Holloway and members of his team pose with the University of Maryland entry.

COLLEGE PARK

Tennessee car wins race with methanol fuel

The University of Tennessee drove to first place in a 1,100-mile marathon for cars that burn methanol, an alternative to gasoline, sponsors said yesterday.

Participants in the Methanol Marathon, sponsored by General Motors Corp. and the Society of Automotive Engineers, were scored on technical skill in converting a conventional vehicle into a methanol-burner and on aspects of performance such as cold starts, emissions, noise and acceleration.

The Tennessee team scored 764 points. They were followed by Concordia University of Montreal, Canada, at 653 points; the Rochester Institute of Technology at 643 points; and the University of Maryland at 608 points.

The Tennessee team averaged 19.9 miles per gallon over the route, which began in Warren, Mich., outside of Detroit, and ended in College Park.

Other teams and their scores were:

Texas Tech University, 586; Wichita State University, 581; West Virginia University, 556; Pennsylvania State University, 542; Florida Institute of Technology, 538; Colorado State University, 531; California State University at Northridge, 492; Washington University at St. Louis, 454; University of Michigan, 425; New York Institute of Technology, 402; and Michigan Technological University, 115.

From Staff and Wire Reports

Lubbock, TX Avalanche-Journal
May 5, 1989

Tech racers place fifth in auto rally

By KIM DAVIS
Avalanche-Journal

After a five-day road rally from Michigan to Maryland, five Texas Tech University students captured fifth place Thursday in the 1989 Society of Automotive Engineers Methanol Marathon Contest.

The top five schools received trophies and will divide $20,000 in cash prizes donated by the U.S. Department of Energy and the Canadian Department of Energy, Mines and Resources.

The Texas Tech team included seniors Bob Truman, Brenda Smith, David Bretherton and Richard Taeuber, and junior Mike Walser.

The top five schools, in order of finish, were the University of Tennessee, Concordia University, Rochester Institute of Technology, the University of Maryland and Texas Tech. Fifteen teams competed.

The 1,100-mile competition explored the challenges of using methanol as an alternative fuel. The fuel, identified as M85, is a mixture of 85 percent methanol and 15 percent gasoline.

Participants in the marathon, sponsored by General Motors and the Society of Automotive Engineers, were scored on technical skill in converting a conventional vehicle into a methanol-burner and on performance, such as cold starts, emissions, noise, acceleration and driving.

The methanol fuel economy for the entire rally fleet averaged 17.8 miles per gallon.

The winners were announced Thursday morning at a news conference on Capitol Hill.

Denver, CO Rocky Mountain News, May 5, 1989

CSU is 10th of 15 teams in 'methanol marathon'

By KAREN MacPHERSON
News Washington Bureau

WASHINGTON — Colorado State University finished 10th in a 15-team national "methanol marathon" yesterday, and the CSU team won a special award citing their innovative system for converting a vehicle from gasoline to methanol.

Before the students could get it to the awards ceremony outside the U.S. Capitol, however, the CSU vehicle was hit by a motorist who failed to heed the police motorcade escorting it and the other 14 methanol-powered cars during the 20-mile trip from College Park, Md., to downtown Washington.

No one was injured in the accident, but the CSU car — a 1988 Chevy Corsica — was rendered undriveable by damage to the car's oil pan.

Twenty CSU students, accompanied by faculty, participated in the 1,100-mile marathon from Detroit to Washington, which began April 29. A total of 40 CSU students, however, actually worked on the plans for converting the car from gas-powered to methanol-powered as part of a mechanical engineering class.

The 10th-place finish was disappointing to the CSU students, who had worked since November on the conversion. But they were cheered by the innovative design trophy and a $1,000 prize.

"We kinda stuck our necks out and tried the most comprehensive and the most innovative approach," said John Hubert, a CSU senior. "What it boils down to is that we tried to do too much."

The innovations developed by the CSU team included a special system helping the car start on methanol in cold weather, as well as a "lean burn" program, which allowed the car to burn the fuel more efficiently.

But the CSU team got off to a bad start on the first day when an electrical system malfunctioned, forcing their car to burn more fuel than it normally would have and costing the students points.

The marathon, sponsored by General Motors and the Society of Automotive Engineers, was created to see how methanol fuel performs as an alternative to gasoline in regular driving conditions.

Methanol, which can be made from coal or natural gas, burns cleaner than gasoline.

Melbourne, FL Florida Today, May 5, 1989

SPACE COAST NEWSMAKERS

Jeff Thompson, FLORIDA TODAY

TEAM WORK: Florida Institute of Technology's team for the Methanol Marathon poses with their car and team leader Doug Hahn, front. Other members are, from left: Frank Foster, Carlo O'Keefe, Jeff Grillo, Jerry McAlwee, Tracey Post, Doug Hunter, Vince Worbington and Erik Gordon.

F.I.T. race team pleased with car's performance

Despite a ninth-place finish Thursday in the first "Methanol Marathon," a 1,100-mile auto rally winding from Michigan to Maryland, the guys from Florida Institute of Technology in Melbourne are proud of their finish.

"Are we happy? Absolutely," said Team Captain **Doug Hahn**. "We got there with no breakdowns and no problems. Everyone with General Motors was very favorably impressed with our design."

Nine engineering students, **Tracey Post, Carlo O'Keefe, Jerry McAlwee, Vince Worbington, Frank Foster, Erik Gordon, Jeff Grillo, Doug Hunter,** Hahn, and their advisor, **Dr. John Thomas**, the head of F.I.T.'s Bioenergy and Technology Laboratory, modified a 1988 Chevrolet Corsica to run on methanol, a fuel derived from wood and coal products.

Methanol has half the emissions of gasoline, can be produced from materials in landfills and costs less than gasoline, Hahn said.

Competing against teams from 14 other schools in the GM/Society of Automotive Engineers-sponsored marathon, the students were judged in such areas as fuel economy, cold starts, acceleration and how well they converted their engine from gasoline to methanol use.

The F.I.T. car won the "best fabrication" award and placed third in cost effectiveness, Hahn said. It earned a $600 award for "best looking" car. The fastest non-turbocharged vehicle, it managed a fuel economy of 19.7 miles per gallon, just .2 miles per gallon less than the winning entry from the University of Tennessee.

"Methanol is obviously in the nation's future," said **Sen. Donald Riegle,** D-Mich., who visited Michigan teams. "When you see scenes from the Alaska oil spill, it's obvious we have to look elsewhere."

The Tennessee team scored 764 points. They were followed by University of Maryland, 608; Texas Tech University, 586; Wichita State University, 581; West Virginia University, 556; Pennsylvania State University, 542; F.I.T., 538; Colorado State University, 531; California State University at Northridge, 492; Washington University at St. Louis, 454; University of Michigan, 425; New York Institute of Technology, 402, and Michigan Technological University, 115.

Reported by FLORIDA TODAY Staff Writer Mike Bailey.

Boulder, CO Camera, May 5, 1989

Methanol car earns honors for state team

FORT COLLINS — Colorado State University's methanol car, described as innovative by auto industry experts, won top design honors in the Methanol Marathon for cars that burn methanol, an alternative to gasoline.

The Colorado State team, which included three University of Colorado students, won $1,000 and a trophy for best methanol conversion. The car was selected as the best-engineered vehicle based on its design, fabrication and cost-effectiveness.

The engine was designed to perform like a gasoline engine, but provide more power and lower emissions.

The Colorado State team placed 10th in overall competition. The University of Tennessee won the weeklong competition, which included a 1,100 mile road rally from Detroit to Washington, D.C.

"We may not have won the overall competition, but I think we won the most important section, the conversion strategy," said Michael Weinstein, president of the Colorado State chapter of the Society of Automotive Engineers.

Camera wire services

Parkersburg, WV News, May 5, 1989

WVU Team Places Seventh In GM/SAE Methanol Race

DETROIT (UPI) — The University of Tennessee captured first place in the GM/SAE Methanol Marathon Thursday with a total score of 764 points.

A team from West Virginia University finished seventh in the rally, which took involved 15 teams of university students from the United states and Canada.

About half of the points awarded to the Tennessee team were for how it converted its Chevrolet Corsica to use methanol fuel and the quality of the conversion itself.

The other half were awarded for cold starting, emissions, noise, acceleration and driving performance from one checkpoint to another along the 1,100-mile route.

Concordia University of Montreal finished second in the weeklong competition with 653 points. Rounding out the top five finishers were Rochester (N.Y.) Institute of Technology, 643 points; the University of Maryland, 608 points; and Texas Tech University, 586 points.

The rally began April 29 at the General Motors Technical Center in Warren, Mich., and ended Wednesday at the University of Maryland in College Park.

Winners were announced Thursday at a news conference in Washington, D.C., hosted by Sen. Jay Rockfeller, D-W.Va, and U.S. Rep. Philip R. Sharp, Ind. It was attended by the students who followed a procession of their 15 methanol-fueled cars from the University of Maryland to the nation's capital.

The top five schools receive trophies and will divide $20,000 in cash prizes donated by the U.S. Department of Energy and the Canadian Department of Energy, Mines and Resources.

In addition, trophies go to Tennessee for "Best Fuel Economy" and Colorado State University for "Best Methanol Conversion."

Tennessee's Corsica averaged a methanol fuel economy of 19.9 miles per gallon over the entire rally route. This is equivalent to a gasoline fuel economy of 36.7 miles per gallon, rally sponsors said.

Although Colorado State University ranked 10th in final scoring, it won the "best conversion" award because of its innovative, theoretical design contest.

General Motors Corp. and the Society of Automotive Engineers were the principal sponsors of the rally, which was established to see how M-85 methanol fuel performs as an alternative to gasoline under real-life driving conditions.

After the top five, the remaining team standings were: Wichita State University, 581; West Virginia University, 556; Penn State University, 542; Florida Institute of Technology, 538; Colorado State University, 531; California State University, Northridge, 492; Washington University, St. Louis, 454; University of Michigan, 425; New York Institute of Technology, 402; Michigan Technological University, 115.

Glen Falls, NY Post-Star
May 5, 1989

U. of Tenn. wins methanol contest

WASHINGTON (AP) — The University of Tennessee drove to first place in a 1,100-mile marathon for cars than burn methanol, an alternative to gasoline, sponsors said Thursday.

Participants in the Methanol Marathon, sponsored by General Motors Corp. and the Society of Automotive Engineers, were scored on technical skill in converting a conventional vehicle into a methanol-burner and on performance, such as cold starts, emissions, noise, acceleration and driving.

The Tennessee team scored 764 points. They were followed by Concordia University of Montreal, Canada, at 653 points, and the Rochester Institute of Technology at 643 points.

Knoxville, TN News-Sentinel, May 5, 1989

UT team wins car contest

Methanol Marathon salutes engineering

By RICHARD POWELSON
News-Sentinel Washington bureau

WASHINGTON — University of Tennessee engineering students were honored Thursday for outdoing 14 other national and international finalists in improving the design and performance of a methanol-powered car they drove from Michigan to Maryland.

The 25 mechanical and electrical engineering students from the Knoxville campus not only won first place for total points earned in various categories, but took first place for having the best fuel economy, and second place in the acceleration category.

UT won two 3-foot-high gold trophies, $7,000 cash and the students' 1988 Chevrolet Corsica test car, which was donated by General Motors.

More than 30 colleges and universities submitted proposals for the contest, dubbed the Methanol Marathon, but only 15 were chosen for the 1,100-mile rally that started in Michigan April 29 and ending in Maryland on Wednesday.

UT senior Cameron Sumner, the team's captain, said the awards will add more prestige to UT's engineering program.

"The industry people already know we're a good school," the Etowah, N.C., native said, "but the general public doesn't."

The UT team's design changes in their 1988 Chevrolet Corsica included changing the fifth gear to a higher gear ratio to increase gas mileage by about 15 percent, adjusting the camshaft to increase cold start performance and adding a turbocharger to increase acceleration.

The UT car's fuel economy averaged 19.9 miles per gallon — the equivalence of gasoline fuel economy of 36.7 mpg.

Sen. Albert Gore Jr., D-Tenn., a booster of alternative fuels, let out a loud "yeah!" and thrust a fist into the air when the contest winner was announced during an outdoor ceremony in the U.S. Capitol parking lot.

The other schools in the top five and their total scores were: Concordia University, Montreal, Canada, 653; Rochester (N.Y.) Institute of Technology, 643; University of Maryland, College Park, Md., 608; and Texas Tech University, Lubbock, Texas, 586.

Ft. Collins, CO Coloradoan, May 5, 1989

CSU wins $1,000 in 'Methanol Marathon'

Mishap dents car as rally concludes

By DAVE BERNS
Gannett News Service

WASHINGTON — They stuffed 32 people into their motor home and tried to prove an engineering principle by popping a wheelie. Their racing car was damaged but no one was injured as they rode in a motorcade to the Capitol for a Thursday awards ceremony.

Despite the craziness, Colorado State University's entry in the 1,100-mile "Methanol Marathon" won a $1,000 trophy for best engine design.

The 35-member team placed 10th overall in the five-day rally which began Saturday in Detroit and concluded Wednesday amid cheering pom-pon girls at the University of Maryland.

The University of Tennessee won the contest's $6,000 top prize, but CSU team members were pleased — if not a bit disappointed — with their showing.

"We really felt all along we had the best car," said John Hubert, a CSU mechanical engineering senior who served as the team's captain. "I think we just stuck our necks out and did too much."

"We may not have won the overall competition, but I think we won the most important section, the conversion strategy," said Michael Weinstein, president of the Colorado State chapter of the Society of Automotive Engineers.

Each of the 15 universities in the competition had to convert a 1988 Chevrolet Corsica from a gasoline to a methanol engine. The autos were donated by General Motors, the event's sponsor.

For points, each had to minimize fuel use while maximizing speed, start cold and accelerate well.

Methanol is made from coal or wood products and has drawn the attention of the Big Three automakers because methanol supporters say the fuel emits fewer pollutants than gasoline. Congress passed legislation last year providing financial incentives for automakers to begin producing methanol cars in 1993.

The CSU team performed a variety of modifications to its engine to maximize fuel efficiency and auto performance, and the judges were impressed. But team adviser Bryan Wilson, a mechanical engineering professor, said the students may have tried to do too much.

"We set out to design the most advanced car, and it might've hurt us," said Wilson, who noted that the complex design may have hindered the car's overall performance.

In contrast, Jeff Ayers, captain of the third place finisher, Rochester Institute of Technology, said his team operated by a basic rule: "The KISS theory, that's what we went by. All it means is — keep it simple, stupid.'

Although they finished in the bottom tier of competitors, the CSU team was one of the rally's more colorful groups.

At a Monday pit stop in Utica, N.Y., they piled 32 people into the back of their support vehicle, a midsized RV. Most of the pack stood behind the RV's rear axle as the driver pumped the gas. The result was a several-foot-high wheelie that left members of other teams talking.

"It was pretty wild," said Carlo O'Keefe, a student at the Florida Institute of Technology.

For team captain Hubert, the most memorable event occurred as the 15-car motorcade, complete with police escort, approached the Capitol. A non-participating car drove into the middle of the pack, leaving a good-sized dent in the CSU car's right rear panel.

"Today was just like the rest of the rally," Hubert said Thursday. "We had our ups and downs."

The Tennessee team scored 764 points and averaged 19.9 miles per gallon over the route.

Ludington, MI News, May 5, 1989

Volunteers win Methanol Marathon

WASHINGTON (AP) — When the gasoline pumps finally are running on empty, a nation's eyes might turn to the University of Tennessee.

The Volunteers motored to first place in a 1,100-mile marathon for cars that burn methanol, an alternative to gasoline, sponsors said Thursday.

Participants in the Methanol Marathon, sponsored by General Motors Corp. and the Society of Automotive Engineers, were scored on technical skill in converting a conventional vehicle into a methanol-burner and on performance, such as cold starts, emissions, noise, acceleration and driving.

The Tennessee team scored 764 points. It was followed by Concordia University of Montreal, Canada, 653 points, and the Rochester, N.Y., Institute of Technology, 643 points.

The Tennessee team averaged 19.9 miles per gallon over the route, which began in Warren, Mich., outside of Detroit and ended at College Park, Md.

Other teams and their scores were: University of Maryland, 608; Texas Tech University, 586; Wichita State University, 581; West Virginia University, 556; Penn State University, 542; Florida Institute of Technology, 538; Colorado State University, 531; California State University at Northridge, 492; Washington University at St. Louis, 454; University of Michigan, 425; New York Institute of Technology, 402; and Michigan Technological University, 115.

May 5, 1989
Marquette, MI Mining Journal

Tennessee school wins methanol race

WASHINGTON (AP) — When the gasoline pumps finally are running on empty, a nation's eyes might turn to the University of Tennessee.

The Volunteers motored to first place in a 1,100-mile marathon for cars that burn methanol, an alternative to gasoline, sponsors said Thursday.

Participants in the Methanol Marathon, sponsored by General Motors Corp. and the Society of Automotive Engineers, were scored on technical skill in converting a conventional vehicle into a methanol-burner and on performance, such as cold starts, emissions, noise, acceleration and driving.

The Tennessee team averaged 19.9 miles per gallon over the route, which began in Warren, Mich., outside of Detroit and ended at College Park, Md.

Houghton , MI Mining Gazette, May 5, 1989

Tech places in marathon

WASHINGTON (AP) — When the gasoline pumps finally are running on empty, a nation's eyes might turn to the University of Tennessee.

The Volunteers motored to first place in a 1,100-mile marathon for cars that burn methanol, an alternative to gasoline, sponsors said Thursday.

Michigan Tech also participated in the marathon, sponsored by sponsored by General Motors Corp. and the Society of Automotive Engineers.

Contestants were scored on technical skill in converting a conventional vehicle into a methanol-burner and on performance, such as cold starts, emissions, noise, acceleration and driving.

The Tennessee team scored 764 points; Tech scored 115, according wire service reports.

Tennessee was followed by Concordia University of Montreal, Canada, 653 points, and the Rochester, N.Y., Institute of Technology, 643 points.

The Tennessee team averaged 19.9 miles per gallon over the route, which began in Warren, Mich., outside of Detroit and ended at College Park, Md.

Other teams and their scores were: University of Maryland, 608; Texas Tech University, 586; Wichita State University, 581; West Virginia University, 556; Penn State University, 542; Florida Institute of Technology, 538; Colorado State University, 531; California State University at Northridge, 492; Washington University at St. Louis, 454; University of Michigan, 425; New York Institute of Technology, 402.

Pontiac Oakland Press, May 5, 1989

School wins race

The University of Tennessee drove to first place in a 1,100-mile marathon for cars that burn methanol, an alternative to gasoline, sponsors said Thursday. Participants in the Methanol Marathon, sponsored by General Motors Corp. and the Society of Automotive Engineers, were scored on technical skill in converting a conventional vehicle into a methanol-burner and on performance, such as cold starts, emissions, noise, acceleration and driving. The Tennessee team scored 764 points and were followed by the University of Michigan, 425, 13th place; and Michigan Technological University, 115, 15th place.

Memphis, TN Commercial Appeal, May 5, 1989

UT wins methanol-powered car race

WASHINGTON (AP) — The University of Tennessee drove to first place in a 1,100-mile marathon for cars than burn methanol, an alternative to gasoline, sponsors said Thursday.

Participants in the Methanol Marathon, sponsored by General Motors Corp. and the Society of Automotive Engineers, were scored on technical skill in converting a conventional vehicle into a methanol-burner and on performance, such as cold starts, emissions, noise, acceleration and driving.

The Tennessee team scored 764 points. It was followed by Concordia University of Montreal, Canada, at 653 points, and the Rochester (N.Y.) Institute of Technology at 643 points.

The UT team averaged 19.9 miles per gallon over the route, which began in Warren, Mich., and ended in College Park, Md.

Ann Arbor, MI News, May 5, 1989

ROAD TESTED

U-M students take their knocks in methanol contest

By ROY HOWARD BECK
ANN ARBOR NEWS BUREAU

WASHINGTON — A 1,100-mile road rally to test cars burning methanol was supposed to be a great learning laboratory but may have seemed more like a "school of hard knocks" to engineering students of two Michigan universities.

Of 15 teams, the University of Michigan in Ann Arbor placed 13th and Michigan Technological University in Houghton was 15th.

Nonetheless, members wore mostly smiles at the final ceremony Thursday in front of the Capitol extolling the social benefits of the contest.

Methanol potentially can burn much cleaner than gasoline and reduce the greenhouse effect being caused by pollution, said Sen. Al Gore, D-Tenn.

And because the fuel can be made from coal, natural gas and even plants, the United States can produce it long after all oil has run out, said Bill Ribbens, the U-M faculty adviser.

Donald L. Runkle, vice president in charge of the General Motors Corp. advanced engineering staff, said the work of "nearly 200 of the finest engineering students in North America" contributed new technical data while the rally gave "valuable information on how methanol performs under real-world conditions."

The 15 teams were chosen after a national contest of designs for converting a conventional engine to a methanol burner.

General Motors then in November gave each team a 1988 Chevrolet Corsica LT with a 2.8 liter milti-port, fuel-injected V6 engine, 5-speed manual transmission, sport suspension and air conditioning.

The University of Michigan conversion created the loudest car.

"Something happened after the first day when they put a high load on it for the emissions test," said Matthew Smith from Saginaw. "It got this really loud knock. We stayed up until two taking the engine apart and rebuilding it. But the knock was still there."

Part way into the five-day rally from Warren, through Canada, to Rochester, New York City and finally Washington, the nine team members decided the school name might be inappropriate and put a sign across the front that read "School of Hard Knocks."

Bad luck?

"No. Bad luck didn't do it; bad judgment did," said team captain Susan Fancy, refusing to make excuses. As soon as she got back to Ann Arbor, she said, she and a couple others were going to tear down the engine and try to learn what mistakes were made.

The University of Michigan car significantly reduced nitrogen oxides and hydrocarbons over what gasoline-powered cars emit but failed to improve carbon monoxide pollution.

Michigan Tech's car, though, cut carbon monoxide and hydrocarbons below the detectable level while unable to budge the nitrogen oxide emissions.

General Motors and the U.S. and Canadian department of energy sponsored the rally.

The overall winner was the team from the University of Tennessee which also had the best fuel mileage, 19.9 miles per gallon.

Allentown, PA Call, May 5, 1989

Penn State seniors engineered their way through road rally

By LEONARD KUCINSKI
Of The Morning Call

Edmund Luckenbach of Allentown and James Sube of Wescosville ended their senior year at Penn State on an exciting note.

As part of the team of Penn State mechanical engineering students participating in the Methanol Marathon, they helped convert a Chevrolet Corsica to methanol fuel, competed in an 1,100-mile rally, and ended up on Capitol Hill yesterday to hear the winners announced.

And even though their team did not win, nor place in the five top spots and gain a share of the $20,000 in cash prizes, they at least had the satisfaction of ending up right in the middle of the 15-car field. And to console them a little bit, their school ended up with the car.

The Penn State team finished with 542 points. About half the points were awarded for the team's technical presentation on how it converted its Corsica to methanol fuel and on the quality of the conversion itself. The other half were awarded for cold starting, emissions, noise, acceleration and driving performance from one checkpoint to another along the 1,100 mile route.

The winner of the event was the University of Tennessee with a score of 764 points. Tennessee also received a trophy for "Best Fuel Economy." Its car averaged 19.9 miles per gallon over the rally route. This is equivalent to a gasoline fuel economy of 36.7 mpg. (Gasoline has about twice the energy of methanol.) The methanol fuel economy for the entire rally fleet averaged 17.8 mpg; a gasoline equivalent economy of 32.7 mpg.

The Penn State car was slightly above the average with a methanol fuel average of 17.99 mpg, which is an equivalent of a gasoline economy of 33.01 mpg.

Results of the rally were announced at a press conference on Capitol Hill, with hosts Sen. J.D. Rockefeller IV (D-W.Va.) and Congressman Philip R. Sharp (D-Ind.) It was attended by the students who followed a procession of their 15 methanol-fueled cars from the University of Maryland to Washington, D.C.

"The importance of the Methanol Marathon is twofold," said Gary W. Dickinson, General Motors vice president. "First, it furthers the extensive work GM has been doing in the area of alternative fuels research and development. Secondly, it helps promote student interest in the fields of science and engineering."

Dickinson noted the quality work and competitive spirit of the 200 engineering students who spent nearly nine months preparing for and competing in the event. "In appreciation for their enthusiasm. creativity and commitment," he said, "GM is donating the Chevrolet Corsicas used in the Methanol Marathon to the participating schools to help enhance their engineering programs."

Fifteen teams of engineering students from U.S. and Canadian colleges and universities were selected to participate in the rally, which began April 29 at the General Motors Technical Center in Warren, Mich. The rally went through Toronto, Ontario, to Tonawanda, Rochester and New York City in New York, and Wilmington, Del. It finished Wednesday at the University of Maryland in College Park.

General Motors and the Society of Automotive Engineers were principal sponsors of the Methanol Marathon, which was established to see how M-85 methanol fuel performs as an alternative to gasoline under real-life driving conditions.

Bradenton, FL Herald, May 5, 1989

Volunteers win methanol marathon

Associated Press

WASHINGTON — The University of Tennessee drove to first place in a 1,100-mile marathon for cars than burn methanol, an alternative to gasoline, sponsors said Thursday.

Participants in the Methanol Marathon, sponsored by General Motors Corp. and the Society of Automotive Engineers, were scored on technical skill in converting a conventional vehicle into a methanol-burner and on performance, such as cold starts, emissions, noise, acceleration and driving.

The Tennessee team scored 764 points. They were followed by Concordia University of Montreal, Canada, at 653 points, and the Rochester, N.Y., Institute of Technology at 643 points.

The Tennessee team averaged 19.9 miles per gallon over the route, which began in Warren, Mich., outside of Detroit and ended in College Park, Md.

Rochester, NY Democrat & Chronicle
May 5, 1989

RIT team wins third place in 1,100-mile car marathon

A team of nine engineering students from Rochester Institute of Technology won third place in a 1,100-mile marathon for cars that burn methanol instead of gasoline.

The team, which won $3,000 and its competition car as a prize, was among 15 teams that competed during the last few days in the marathon sponsored by General Motors Corp. and the Society of Automotive Engineers.

The teams, which converted cars to run on methanol, traveled from Detroit to College Park, Md. They were evaluated on such criteria as fuel efficiency, emissions, acceleration and starts, said David Hathaway, senior technical associate at RIT's College of Engineering.

RIT received third prize with 643 points, behind Concordia University of Montreal, with 653 points, and the University of Tennessee, 764 points.

Hartford-New Britain Metro
May 5, 1989

Methanol marathon

WASHINGTON — The University of Tennessee drove to first place in a 1,100-mile marathon for cars that burn methanol, an alternative to gasoline, sponsors said Thursday.

Participants in the Methanol Marathon, sponsored by General Motors Corp. and the Society of Automotive Engineers, were scored on technical skill in converting a conventional vehicle into a methanol-burner and on performance, such as cold starts, emissions, noise, acceleration and driving.

The Tennessee team was followed by Concordia University of Montreal, Canada, and the Rochester (N.Y.) Institute of Technology.

The Tennessee team averaged 19.9 miles per gallon over the route, which began in Warren, Mich., outside of Detroit, and ended in College Park, Md.

Portland Oregonian
May 5, 1989

Car marathon a real gas

The University of Tennessee drove to first place in a 1,100-mile marathon for cars than burn methanol, an alternative to gasoline, sponsors said Thursday.

Participants in the Methanol Marathon, sponsored by General Motors Corp. and the Society of Automotive Engineers, were scored on technical skill in converting a conventional vehicle into a methanol-burner and on performance, such as cold starts, emissions, noise, acceleration and driving.

The Tennessee team scored 764 points. They were followed by Concordia University of Montreal, Canada, at 653 points, and the Rochester, N.Y., Institute of Technology at 643 points.

The Tennessee team averaged 19.9 miles per gallon over the route, which began in Warren, Mich., and ended in College Park, Md.

Norwich, CT Bulletin
May 5, 1989

U. of Tenn. captures methanol marathon

WASHINGTON — The University of Tennessee drove to first place in a 1,100-mile marathon for cars than burn methanol, an alternative to gasoline, sponsors said yesterday.

Participants in the Methanol Marathon, sponsored by General Motors Corp. and the Society of Automotive Engineers, were scored on technical skill in converting a conventional vehicle into a methanol-burner and on performance, such as cold starts, emissions, noise, acceleration and driving.

The Tennessee team scored 764 points. They were followed by Concordia University of Montreal, Canada, at 653 points, and the Rochester, N.Y., Institute of Technology at 643 points.

Parkersburg, WV, Sentinel, May 5 1989

WVU 7th in Methanol Marathon

DETROIT (UPI) — The University of Tennessee captured first place in he GM/SAE Methanol Marathon 'hursday with a total score of 764 points.

A team from West Virginia University finished seventh in the rally, which took involved 15 teams of niversity students from the United states and Canada.

About half of the points awarded to "he Tennessee team were for how it onverted its Chevrolet Corsica to se methanol fuel and the quality of the conversion itself.

The other half were awarded for old starting, emissions, noise, acceleration and driving performance om one checkpoint to another along the 1,100-mile route.

Concordia University of Montreal nished second in the weeklong competition with 653 points. Rounding out the top five finishers were Rochester (N.Y.) Institute of Technology, 643 oints; the University of Maryland, 8 points; and Texas Tech University, 586 points.

The rally began April 29 at the General Motors Technical Center in arren, Mich., and ended Wednesay at the University of Maryland in ollege Park.

Winners were announced Thursday at a news conference in Washington, C., hosted by Sen. Jay Rockfeller, W.Va, and U.S. Rep. Philip R. Sharp, Ind. It was attended by the students who followed a procession of "eir 15 methanol-fueled cars from e University of Maryland to the tion's capital.

The top five schools receive trophies and will divide $20,000 in cash izes donated by the U.S. Department of Energy and the Canadian epartment of Energy, Mines and Resources.

In addition, trophies go to Tennes- e for "Best Fuel Economy" and lorado State University for "Best Methanol Conversion."

Tennessee's Corsica averaged a methanol fuel economy of 19.9 miles per gallon over the entire rally route. This is equivalent to a gasoline fuel economy of 36.7 miles per gallon, rally sponsors said.

Although Colorado State University ranked 10th in final scoring, it won the "best conversion" award because of its innovative, theoretical design contest.

General Motors Corp. and the Society of Automotive Engineers were the principal sponsors of the rally, which was established to see how M-85 methanol fuel performs as an alternative to gasoline under real-life driving conditions.

After the top five, the remaining team standings were: Wichita State University, 581; West Virginia University, 556; Penn State University, 542; Florida Institute of Technology, 538; Colorado State University, 531; California State University, Northridge, 492; Washington University, St. Louis, 454; University of Michigan, 425; New York Institute of Technology, 402; Michigan Technological University, 115.

Watertown, WI Times, May 5, 1989

Tennessee wins Methanol Marathon

WASHINGTON (AP) — The University of Tennessee drove to first place in a 1,100-mile marathon for cars than burn methanol, an alternative to gasoline, sponsors said Thursday.

Participants in the Methanol Marathon, sponsored by General Motors Corp. and the Society of Automotive Engineers, were scored on technical skill in converting a conventional vehicle into a methanol-burner and on performance, such as cold starts, emissions, noise, acceleration and driving.

The Tennessee team scored 764 points. They were followed by Concordia University of Montreal, Canada, at 653 points, and the Rochester, N.Y., Institute of Technology at 643 points.

The Tennessee team averaged 19.9 miles per gallon over the route, which began in Warren, Mich., outside of Detroit and ended in College Park, Md.

Bluefield, WV Telegraph, May 5, 1989

UT wins Methanol Marathon

WASHINGTON (AP) — The University of Tennessee drove to first place in a 1,100-mile marathon for cars than burn coal-based methanol, an alternative to gasoline, sponsors said Thursday.

Participants in the Methanol Marathon, sponsored by General Motors Corp. and the Society of Automotive Engineers, were scored on technical skill in converting a conventional vehicle into a methanol-burner and on performance, such as cold starts, emissions, noise, acceleration and driving.

The Tennessee team scored 764 points. They were followed by Concordia University of Montreal, Canada, at 653 points, and the Rochester, N.Y., Institute of Technology at 643 points.

The Tennessee team averaged 19.9 miles per gallon over the route, which began in Warren, Mich., outside of Detroit and ended in College Park, Md.

Other teams and their scores were:

University of Maryland, 608; Texas Tech University, 586; Wichita State University, 581; West Virginia University, 556; Pennsylvania State University, 542; Florida Institute of Technology, 538; Colorado State University, 531; California State University at Northridge, 492; Washington University at St. Louis, 454; University of Michigan, 425; New York Institute of Technology, 402, and Michigan Technological University, 115.

Flint, MI Journal, May 5, 1989

Methanol car rally puts university teams to test

Journal News Service

WASHINGTON — The 1,100-mile road rally to test cars burning methanol was supposed to be a great learning laboratory but may have seemed more like a "school of hard knocks" to engineering students of two Michigan universities Thursday.

Of 15 teams, the University of Michigan in Ann Arbor placed 13th and Michigan Technological University in Houghton was 15th. The University of Tennessee won the 1,100-mile marathon for cars that burn methanol, an alternative to gasoline.

Participants in the Methanol Marathon, sponsored by General Motors Corp. and the Society of Automotive Engineers, were scored on technical skill in converting a conventional vehicle into a methanol-burner and on performance, such as cold starts, emissions, noise, acceleration and driving.

The Tennessee team averaged 19.9 miles per gallon over the route, which began in Warren and ended at College Park, Md.

Methanol potentially can burn much cleaner than gasoline and reduce the greenhouse effect being caused by pollution, said Sen. Al Gore, D-Tenn.

Donald L. Runkle, vice president in charge of the General Motors advanced engineering staff, said the work of "nearly 200 of the finest engineering students in North America" contributed new technical data while the rally gave "valuable information on how methanol performs under real-world conditions."

The 15 teams were chosen after a national contest of designs for converting a conventional engine to a methanol burner.

General Motors in November gave each a 1988 Chevrolet Corsica LT with a 2.8 liter multiport, fuel-injected V6 engine, 5-speed manual transmission, sport suspension and air conditioning.

The University of Michigan conversion created the loudest car.

"Something happened after the first day when they put a high load on it for the emissions test," said Matthew Smith, of Saginaw.

"It got this really loud knock. We stayed up until two taking the engine apart and rebuilding it. But the knock was still there."

The University of Michigan car significantly reduced nitrogen oxides and hydrocarbons over what gasoline-powered cars emit but failed to improve carbon monoxide pollution.

Michigan Tech's car, though, cut carbon monxide and hydrocarbons below the detectable level while unable to budge the nitrogen oxide emissions.

Brett Sparks from Clio, one of five Tech team members, said the first-ever rally had been a wonderful teaching tool for engineering students to learn the value of relating to other engineers, operating as a team and learning to strike compromises because that is what has to happen in the professional world.

The Associated Press contributed to this report.

Chattanooga, TN News-Free Press, May 5, 1989

UT Wins 1st Place In Methanol Test

WASHINGTON (AP) — The University of Tennessee drove to first place in a 1,100-mile marathon for cars than burn methanol, an alternative to gasoline, sponsors said.

Participants in the Methanol Marathon, sponsored by General Motors Corp. and the Society of Automotive Engineers, were scored on technical skill in converting a conventional vehicle into a methanol-burner and on performance, such as cold starts, emissions, noise, acceleration and driving.

The Tennessee team scored 764 points. They were followed by Concordia University of Montreal, Canada, at 653 points, and the Rochester, N.Y., Institute of Technology at 643 points.

The Tennessee team averaged 19.9 miles per gallon over the route, which began in Warren, Mich., outside of Detroit and ended in College Park, Md.

Other teams and their scores were:

University of Maryland, 608; Texas Tech University, 586; Wichita State University, 581; West Virginia University, 556; Pennsylvania State University, 542; Florida Institute of Technology, 538; Colorado State University, 531; California State University at Northridge, 492; Washington University at St. Louis, 454; University of Michigan, 425; New York Institute of Technology, 402, and Michigan Technological University, 115.

York, PA Dispatch, May 5, 1989

University of Tennessee wins

WASHINGTON — The University of Tennessee drove to first place in a 1,100-mile marathon for cars than burn methanol, an alternative to gasoline, sponsors said yesterday.

Participants in the Methanol Marathon, sponsored by General Motors Corp. and the Society of Automotive Engineers, were scored on technical skill in converting a conventional vehicle into a methanol-burner and on performance, such as cold starts, emissions, noise, acceleration and driving.

The Tennessee team scored 764 points. They were followed by Concordia University of Montreal, Canada, at 653 points, and the Rochester, N.Y., Institute of Technology at 643 points.

The Tennessee team averaged 19.9 miles per gallon over the route, which began in Warren, Mich., outside of Detroit and ended in College Park, Md.

Other teams and their scores were:

University of Maryland, 608; Texas Tech University, 586; Wichita State University, 581; West Virginia University, 556; Pennsylvania State University, 542.

Jackson, MI Citizen Patriot, May 5, 1989

State entries fail methanol competition

WASHINGTON — The 1,100-mile road rally to test cars burning methanol was supposed to be a great learning laboratory but may have seemed more like a "school of hard knocks" to engineering students of two Michigan universities Thursday. Of 15 teams, the University of Michigan in Ann Arbor placed 13th and Michigan Technological University in Houghton was 15th.

The Tennessee team scored 764 points. It was followed by Concordia University of Montreal, Canada, 653 points, and the Rochester, N.Y., Institute of Technology, 643 points.

The Tennessee team averaged 19.9 miles per gallon over the route, which began in Warren, Mich., outside of Detroit and ended at College Park, Md.

Compiled from AP and Citizen Patriot News Service reports.

Sioux Falls, SD Argus-Leader, May 5, 1989

Tennessee wins methanol marathon

WASHINGTON — The University of Tennessee drove to first place in a 1,100-mile marathon for cars than burn methanol, an alternative to gasoline, sponsors said Thursday.

Participants in the Methanol Marathon, sponsored by General Motors Corp. and the Society of Automotive Engineers, were scored on technical skill in converting a conventional vehicle into a methanol-burner and on performance, such as cold starts, emissions, noise, acceleration and driving.

The Tennessee team scored 764 points. They were followed by Concordia University of Montreal, Canada, at 653 points, and the Rochester, N.Y., Institute of Technology at 643 points.

— From Argus Leader wire services

Boise, ID Statesman, May 5, 1989

University of Tennessee wins methanol marathon

WASHINGTON — The University of Tennessee drove to first place in a 1,100-mile marathon for cars than burn methanol, an alternative to gasoline, sponsors said Thursday.

Participants in the Methanol Marathon, sponsored by General Motors Corp. and the Society of Automotive Engineers, were scored on technical skill in converting a conventional vehicle into a methanol-burner and on performance, such as cold starts, emissions, noise, acceleration and driving.

The Tennessee team scored 764 points. They were followed by Concordia University of Montreal, Canada, at 653 points, and the Rochester, N.Y., Institute of Technology at 643 points.

Buffalo, NY News, May 5, 1989

Tennessee students win rally

WASHINGTON (AP) — The University of Tennessee drove to first place in a 1,100-mile marathon for cars than burn methanol, an alternative to gasoline, sponsors said Thursday.

Participants in the Methanol Marathon, sponsored by General Motors Corp. and the Society of Automotive Engineers, were scored on technical skill in converting a conventional vehicle into a methanol-burner and on performance, such as cold starts, emissions, noise, acceleration and driving. The cars were in Buffalo Sunday.

The Tennessee team scored 764 points. They were followed by Concordia University of Montreal, Canada, at 653 points, and the Rochester Institute of Technology at 643 points.

The Tennessee team averaged 19.9 miles per gallon over the route, which began in Warren, Mich., outside of Detroit and ended in College Park, Md.

Lansing, MI State Journal, May 5, 1989

■ ELSEWHERE

University of Tennessee wins methanol race

WASHINGTON — The University of Tennessee drove to first place in a 1,100-mile marathon for cars than burn methanol, an alternative to gasoline, sponsors said Thursday.

Participants in the Methanol Marathon, sponsored by General Motors Corp. and the Society of Automotive Engineers, were scored on technical skill in converting a conventional vehicle into a methanol-burner and on performance, such as cold starts, emissions, noise, acceleration and driving.

The Tennessee team scored 764 points. They were followed by Concordia University of Montreal, Canada, at 653 points, and the Rochester, N.Y., Institute of Technology at 643 points.

The University of Michigan scored 425 points.

The Diamondback, May 5, 1989
Univ. of Maryland, College Park

Mechanical snags end team's hope for victory

by IVAN PENN
Diamondback staff writer

The favored campus driving team, hindered by mechanical difficulties, failed to take first place in the 1,100-mile marathon for cars that burn methanol Wednesday.

"We might have been favored at first," said mechanical engineering professor David Holloway, who helped develop the conversion from gasoline to methanol for the car, "[but] nothing is a sure win."

The University of Tennessee took first place with 764 points. They were followed by Concordia University of Montreal, Canada, at 653 points, and the Rochester, N.Y. Institute of Technology at 643 points. The Maryland team had 608 points.

Despite their fourth-place ranking, Holloway said he was satisfied with his team's efforts.

"There's also an element of luck in this," he said. "We had a loose wire. Had we known about it earlier we could have corrected it. I'm proud of our students."

The campus team, headed by chief navigator Greg Thomas, a senior aerospace engineering major, was one of 15 teams selected to participate in the marathon, which took the students from Warren, Michigan to the campus.

Participants in the Methanol Marathon, sponsored by General Motors Corp. and the Society of

See MARATHON, page 3

Team finishes disappointing fourth

MARATHON, from page 1

Automotive Engineers, were scored on technical skill in converting a conventional vehicle into a methanol-burner and on performance, such as cold starts, emissions, noise, acceleration and driving.

Each of the 30 universities that submitted applications to enter the road rally were required to propose plans to convert the gas-powered engine to a methanol-burning one.

Holloway said that regular automobiles operate on a lower percentage of alcohol than the converted engines. But methanol is "more corrosive than gasoline," he added.

He added that because the methanol has less energy, the car runs more efficiently.

Although the amount of methanol in gasoline is increasing, Holloway said, "It will be several years before you see cars fueled on this fuel."

The Associated Press contributed to this story

Allentown, PA Call, May 4, 1989

Methanol marathoners await road rally results

By LEONARD KUCINSKI
Of The Morning Call

The Methanol Marathon ended yesterday at College Park, Md., but two area men and the rest of the team of mechanical engineering students from Pennsylvania State University won't know the results until they are announced today from Capitol Hill, Washington, D.C.

"Everything is still up for grabs," said a spokesman from General Motors, one of the sponsors of the first international road rally with an alternative fuel.

Edmund Luckenbach of Allentown and James Sube of Wescosville, both seniors, and their 10 teammates are hoping for some of the prestige and $20,000 in awards that come in winning or placing high in the event.

As of yesterday, the Penn State team had been in seventh place in the rally part of the Methanol Marathon, in which student teams from 15 colleges and universities in the United States and Canada have converted Chevrolet Corsicas to run on M85 fuel, a blend composed of 85 percent methanol.

The Sports Car Club of America conducted the five-day, 1,100-mile road rally, which began on Saturday from the General Motors Technical Center in Warren, Mich., and ended yesterday at the University of Maryland. Not counting yesterday's leg from Wilmington, Del., to College Park, the Penn State team accumulated 209 points. In first place with 307 points is the University of Tennessee.

Thomas Pyder of GM said the results of yesterday's leg and the results of the technical competition on Friday will be totaled to determine the results.

"There's 500 points from Friday's competition and these results have not been announced," he said, "So everyone is still in the running for first place."

Friday's competition consisted of presentations made by the 15 teams to a panel of automotive engineers and testing of the cars (all sporting school colors and logos and sponsor emblems) for noise, emissions, acceleration, and design and fabrication of the conversion package.

On the first leg of the rally, which requires precise control of speed and time, the Penn State team had been in second place. In a rally, cars must arrive at numerous checkpoints along the route at specific times. Teams are penalized for arriving too early or too late.

Methanol, also known as wood alcohol, is one of the promising alternative energy sources being researched. However, since it produces only half the energy of gasoline and is corrosive (one of its main uses now is as a solvent) there are still areas that need study. Chief among these are cold-start drivability, corrosion, driving rage, emissions and fuel availability.

On the plus side is that methanol has a high octane rating and can use higher compression without knocking. And it is this high compression factor that the Penn State team centered on with its conversion. The team designed special pistons that produced a 14:1 compression ratio. The stock engine in the Corsica is a 2.8-liter (173-cubic-inch) V-6 with a compression ratio of 8.5:1.

GM President Robert C. Stempel, in remarks to the student teams, said, "The challenges that these students and their methanol-powered Corsicas will encounter on the road will be a valuable source of information on how methanol performs in real-world conditions."

In addition to General Motors, other sponsors and administrators include: the U.S. Department of Energy; the Canadian Department of Energy, Mines and Resources; the Society of Automotive Engineers; Argoone National Laboratory; BP Oil Co.; Canadian Oxygenated Fuels Association; Lubrizol Corp.; Goodyear Tire and Rubber Co.; and AC Rochester Division.

THE MORNING CALL 5/4/89

Penn State seniors engineered their way through road rally

By LEONARD KUCINSKI
Of The Morning Call

Edmund Luckenbach of Allentown and James Sube of Wescosville ended their senior year at Penn State on an exciting note.

As part of the team of Penn State mechanical engineering students participating in the Methanol Marathon, they helped convert a Chevrolet Corsica to methanol fuel, competed in an 1,100-mile rally, and ended up on Capitol Hill yesterday to hear the winners announced.

And even though their team did not win, nor place in the five top spots and gain a share of the $20,000 in cash prizes, they at least had the satisfaction of ending up right in the middle of the 15-car field. And to console them a little bit, their school ended up with the car.

The Penn State team finished with 542 points. About half the points were awarded for the team's technical presentation on how it converted its Corsica to methanol fuel and on the quality of the conversion itself. The other half were awarded for cold starting, emissions, noise, acceleration and driving performance from one checkpoint to another along the 1,100 mile route.

The winner of the event was the University of Tennessee with a score of 764 points. Tennessee also received a trophy for "Best Fuel Economy." Its car averaged 19.9 miles per gallon over the rally route. This is equivalent to a gasoline fuel economy of 36.7 mpg. (Gasoline has about twice the energy of methanol.) The methanol fuel economy for the entire rally fleet averaged 17.8 mpg; a gasoline equivalent economy of 32.7 mpg.

The Penn State car was slightly above the average with a methanol fuel average of 17.99 mpg, which is an equivalent of a gasoline economy of 33.01 mpg.

Results of the rally were announced at a press conference on Capitol Hill, with hosts Sen. J.D. Rockefeller IV (D-W.Va.) and Congressman Philip R. Sharp (D-Ind.) It was attended by the students who followed a procession of their 15 methanol-fueled cars from the University of Maryland to Washington, D.C.

"The importance of the Methanol Marathon is twofold," said Gary W. Dickinson, General Motors vice president. "First, it furthers the extensive work GM has been doing in the area of alternative fuels research and development. Secondly, it helps promote student interest in the fields of science and engineering."

Dickinson noted the quality work and competitive spirit of the 200 engineering students who spent nearly nine months preparing for and competing in the event. "In appreciation for their enthusiasm, creativity and commitment," he said, "GM is donating the Chevrolet Corsicas used in the Methanol Marathon to the participating schools to help enhance their engineering programs."

Fifteen teams of engineering students from U.S. and Canadian colleges and universities were selected to participate in the rally, which began April 29 at the General Motors Technical Center in Warren, Mich. The rally went through Toronto, Ontario, to Tonawanda, Rochester and New York City in New York, and Wilmington, Del. It finished Wednesday at the University of Maryland in College Park.

General Motors and the Society of Automotive Engineers were principal sponsors of the Methanol Marathon, which was established to see how M-85 methanol fuel performs as an alternative to gasoline under real-life driving conditions.

The Diamondback, May 4, 1989
Univ. of Maryland, College Park

ERIC KIELEY — the Diamondback

The University of Maryland car crosses the finish line in front of the Engineering Building on Campus Drive yesterday as the Methanol Marathon screeched to a halt.

Trenton, NJ Trentonian, May 4, 1989

Methanol gets a GM test

Methanol — the highly publicized alternate energy source during the gasoline crunch of the late 1970s — has suddenly been making a media comeback this week, thanks to a challenging and exciting experiment undertaken by the Sports Car Club of America and General Motors Corp.

Since last Saturday, a colorful fleet of 15 methanol-powered Chevrolet Corsicas — the car outfitted with a large number of parts made at GM's Inland Fisher Guide plant in Ewing Township — have been participating in a five-day, 1,100-mile road rally.

Jim Fitzsimmons

The rally participants include some 200 college engineering students from 15 colleges and universities in the U.S. and Canada.

Their goal from the start has been to test methanol — an alcohol derived from natural gas — as a fuel that can be used under real-world driving conditions.

The rally, which was due to conclude late yesterday at the University of Maryland at College Park and officially wind up with an awards ceremony today in Washington, D.C., requires the students to "apply precise control of their speed and time," said GM spokesman Pete Peterson. "The cars have to arrive at numerous checkpoints along the route at specific times," he said, and teams are penalized for arriving too early or too late.

On Tuesday — Day 4 of the "Methanol Marathon" — the drivers made a non-scheduled "pit stop" at the Chevrolet-Pontiac-GM Canada assembly plant in Linden, a facility that actually assembled some of the Corsicas used in the rally.

At that point, the University of Tennessee was leading the pack with a car said to be getting 20 miles per gallon of methanol, equivalent to 40 miles per gallon of gasoline.

The winning school will receive $6,000. Cash awards will also go to the second- through fifth-place teams, as well as to the schools with the best overall fuel economy and best overall design.

At the start of the rally last Friday, GM President Robert C. Stempel — a native son of Trenton — greeted the young participants at the General Motors Technical Center in Warren, Mich. "We thought the marathon would be a neat way to show young people how challenging and exciting it can be to work in science and engineering and how much fun it can be to work in the automobile industry.

"The challenges that these students and their methanol-powered Corsicas will encounter on the road will be a valuable source of information on how methanol performs in real-world conditions," he said.

"At some point in the future — no one knows when — it may be necessary to begin using other fuels," the GM president continued. "We need to be ready in advance for that possibility, and GM is testing several possible alternatives, including electric cars, fuel cells and various fuels — including methanol."

Calling the Methanol Marathon "another step in GM's ongoing field test of alternate fuels, Stempel pointed out that GM is also providing 2,200 variable-fuel Chevy Corsicas and Luminas to the California Energy Commission to test performance under "everyday driving conditions."

In addition to methanol-powered car, he said GM has placed methanol-powered buses in test programs across the country. And while methanol remains one of the most promising alternative energy sources, there are still several areas that need further study, the GM president noted. Chief among these are cold-start driveability, corrosion, driving range, emissions and fuel availability.

"Most likely, some of these problems can be solved with good engineering," Stempel reasoned. "In fact, the young people in the Methanol Marathon may ultimately be the ones to solve them."

BIRMINGHAM ECCENTRIC & OBSERVER
Thursday, May 4, 1989

auto talk

Dan McCosh

U.S. pushing different fuel

GM's Methanol Marathon blasted off from the GM tech center last week in a cloud of eye-stinging fumes, a few days before another team of Chrysler engineers took Chrysler's methanol-powered car to Washington.

Both events mark a revival of interest in alternate fuels for the family bus, the kind of research that enjoyed a short-lived popularity during the mid-1970s energy crisis but today raises as much interest as organic gardening.

Methanol is a type of alcohol mainly used to thin shellac and as a fuel for model airplanes. Now it's rapidly gaining notoriety as the first fuel being taken seriously as an alternative to gasoline for passenger cars since interest in diesel fuel dwindled a few years ago.

It's relatively costly and nearly unavailable at the moment. But federal regulators have made the auto industry an offer it can't refuse, and now GM and Ford are expected to have production methanol-fueled cars on the road in approximately three years, with Chrysler only a little further behind.

METHANOL IS a variety of alcohol derived mainly from coal or natural gas — two of the most plentiful supplies of energy short of crude oil. It has been used off and on for racing cars since it has a few properties that work well in high-performance engines.

It also enjoyed a short popularity in World War II with the Germans, who also puttered with charcoal fumes and gas from decaying chickens after Allied troops created a regional energy crisis for that country by cutting off Mideast oil supplies.

Today, methanol is being pitched as a reasonably clean-burning fuel with the potential at least to supplement gasoline in quantity. California is buying a handful of methanol-fueled cars to test in the Los Angeles area, and GM is sponsoring a university design contest for the best-designed car burning the fuel.

NONE OF THIS is fueled by altruism.

The main interest to auto makers is the Alternative Motor Fuels Act of 1988. This includes some tricky arithmetic that allows automakers to average methanol-fueled cars in their corporate average fuel economy (CAFE) as if the cars were running at approximately 100 mpg, when in fact they get only approximately 12 mpg.

Under the act, if enough methanol-fueled cars are sold, a manufacturer can raise its CAFE average by up to 1.2 miles per gallon. This, of course, means that more low-mileage big cars can be sold without pushing the CAFE beyond legal limits.

In today's market, when customers are demanding big cars and big engines, while the corporate fuel averages are bumping against regulated limits, any relief is seen as a big incentive to new car sales.

The result is such a dramatic advantage for automakers selling methanol-fueled cars that both GM and Ford today are rushing to develop methanol-fueled cars by 1992, with Chrysler not far behind.

THE SUDDEN burst of government support for an alternate fuel is something of a mystery. California has been pushing alternate fuels as a hope for the future. But methanol, while it is relatively clean of smog-producing hydrocarbons, is rife with eye-stinging aldehydes. Likewise, the low energy content of the fuel means that it takes approximately twice as much to push a car a mile as gasoline does.

Lastly, the lack of availability means both manufacturing facilities, storage and distribution systems will have to be built.

Despite the drawbacks, it offers the potential of a source of liquid fuel that will last far into the next century, and some freedom from oil imports — although the Mideast is the likely source of methanol as well as gasoline.

Probably of more significance than a handful of research cars is that it's the first sign of a long-range look at the future of energy for transportation in years, and one not driven exclusively by a current crisis — a welcome shift in thinking after muddling through for the past 15 years or so.

Methanol marathon men save fuel during the duel

By JOHN SHERWOOD
Journal staff writer

COLLEGE PARK

Miss Maryland Methanol crossed a symbolic College Park finish line yesterday in the nation's first-ever methanol marathon in 14th place — next to last.

But not to worry, said two members of the University of Maryland College Park's 18-student support crew. The crew was among 15 national university engineering teams driving methanol-powered Chevrolet Corsicas from Detroit.

"Once all the scores are tallied, I say we'll finish in fifth place," said Bill Penzes, 22, of New Carrollton.

"Make that fourth," said Ezio N. Vermiglio, 23, of Bethesda, who was behind the wheel for part of the five-day rally.

(The standings will be released later today.)

But it wasn't the order of finish at the methanol marathon rally that counted as much as the methanol message. And with Exxon's monster oil spill in Alaska and gasoline prices going up again across the land, it seems we've heard this methanol melody before.

"We started working on our modifications last September and finished only a few weeks ago," said Penzes, who drives a 1983 "K" car regularly. "We had to corrosion-proof the fuel system and turbocharge the engine. About the only problem we had was with a loose starter wire."

Asked to relate some exciting experiences on the marathon, Vermiglio (who struggles through life with a 1967 Chevelle) said, "Uh, well . . . we had to abandon our trailer on I-95 going through Baltimore because uh, well, it like fell apart on us. As for the car, it ran fine."

David Holloway, professor of mechanical engineering and adviser to the College Park project, pointed out that methanol is "an energy-efficient alternative fuel. It gets half the amount of miles per gallon as gasoline and it probably wouldn't be any cheaper if it was ever marketed. But it burns much cleaner, has more power and is abundant in this country through natural resources such as coal."

The fleet of new stock 1988 computerized Corsicas donated to each school by General Motors left Detroit on Saturday for the roundabout, 1,100-mile rally that made a stop in Canada. The rally was organized by the Society of Automotive Engineers and the Argonne National Laboratory to explore the practical application of fueling cars with methanol.

The public scorecard posted late yesterday afternoon listed Maryland in 10th place with 194 points and the University of Tennessee in first with 307. The home of General Motors was represented by the University of Michigan with a minus-39.

The only touch of excitement to an otherwise dull finish was added by a spicy outdoor barbecue.

Facts about methanol

- Methanol is produced at the lowest cost from remote natural gas, as well as other raw materials such as coal and bio-mass.
- Its net energy content is about one-half that of gasoline. But its high octane, latent heat of vaporization, high flame speed and wide flammability limits offer intriguing opportunities for increased engine efficiency, performance, and lower emissions.
- It can be used with gasoline, but it has poor starting characteristics in cold weather. It also burns twice as much fuel per mile as gasoline and would require more frequent refueling or larger fuel tanks.
- The Catch-22 is that car makers are reluctant to adapt vehicles to methanol without an established fuel supply. And energy suppliers are reluctant to supply the fuel unless there are vehicles to use it.

Ron Ceasar/Journal

Bill Penzes (left), 22, of New Carrollton and Ezio N. Vermiglio, 23, of Bethesda were part of the Maryland team that helped convert a car to methanol use and race it from Detroit to Maryland.

Melbourne, FL, Florida Today, May 4, 1989

F.I.T. team finishes 'Methanol Marathon'

Winner of souped-up car rally will be announced today

By Dave Berns
Gannett News Service

COLLEGE PARK, Md. — Bring together 200 college engineering students. Pop some coal or wood derivatives in their cars' engines, and drive east.

What do you have?

A five-day, 1,000-mile auto rally from Detroit to the University of Maryland, run almost entirely on methanol, some basic engineering principles and stamina.

Contestants in the "Methanol Marathon" rolled across the finish line here Wednesday to the strains of a university band.

"I'm glad it's over. I can use a good rest," said Doug Hunter, 22, a senior in mechanical engineering at Florida Institute of Technology in Melbourne.

Wednesday morning's rally leader was the University of Tennessee, followed by Concordia University of Montreal and the Rochester Institute of Technology. F.I.T. came in ninth.

"We've learned you don't have to be a big school to succeed," said Doug Hahn of the 7,200-student F.I.T. "We don't have a band, and we just got a school song three weeks ago, but we knew what we were doing."

The winner of the $6,000 top prize will be announced today during a morning ceremony at the Capitol. The F.I.T. team, which dubbed itself "The Methanol Morons," previously won $1,000 for the best-looking car.

Rally competitors were up at 6:30 a.m., on the road by 8 a.m. and finishing by late afternoon; they navigated their 15 modified 1988 Chevrolet Corsicas through Detroit; London, Ontario; New York City; New Jersey and Wilmington, Del.

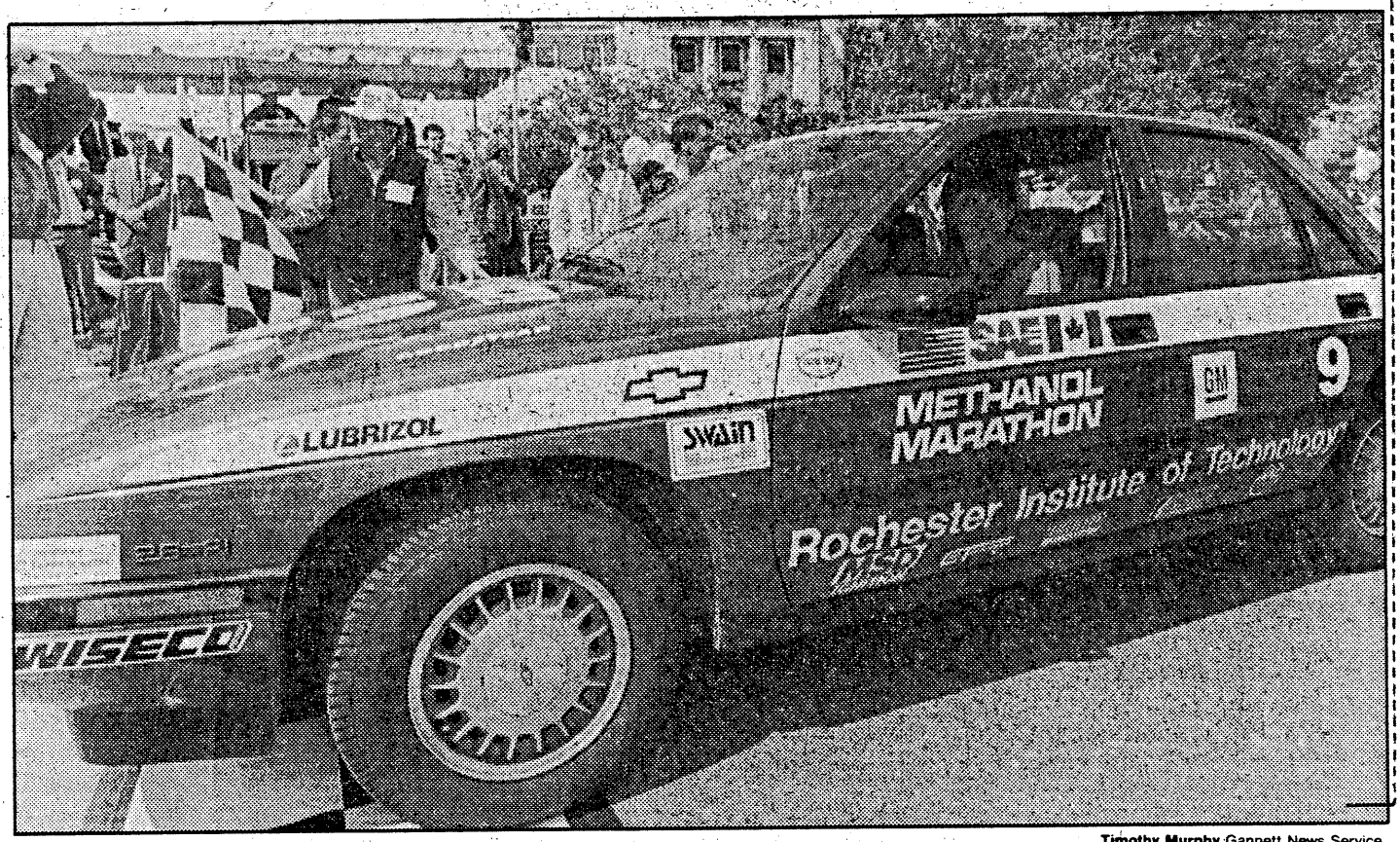
Each car was fueled with a mixture of 85 percent methanol and 15 percent gasoline from BP stations along the route. The cars averaged 20 miles per gallon, and none suffered any major breakdowns, said organizers of the event, sanctioned by the Sports Car Club of America and sponsored by General Motors.

For points, each car had to minimize fuel usage while maximizing speed, start cold, accelerate well and have an engine that students effectively converted from a gas- to a methanol-user.

Timothy Murphy, FLORIDA TODAY

COMPETITORS: Students Erik Gordon, left, and Jeff Grillo pose with the F.I.T. car after crossing the finish line in a GM-sponsored methanol 1,000-mile rally. The rally began in Detroit and ended Wednesday at the University of Maryland in College Park.

Democrat & Chronicle, Rochester NY
May 4, 1989



Timothy Murphy Gannett News Service

Driver Greg Perantoni in the RIT car crosses the Methanol Marathon finish line. As of last night, the car placed third.

MARY McGRORY

Washington Post
May 4, 1989

Step on the Methanol

If there were some substance that could make cars go, something that would reduce the threat of beslimed sea otters and oil-drenched seabirds, that would cut down on the need for expensive and perilous patrolling of the Persian Gulf, that would reduce smog and right the trade balance, people would stampede to get it, right?

Wrong. There is an alternative fuel for America's 181 million cars and trucks. It's called methanol, and it's made from natural gas or coal. Mention it and people's eyes glaze over. There is also ethanol, made from corn, which does not burn quite so cleanly, but still beats gasoline. Last year in Iowa, Democratic candidate Michael Dukakis used to talk about it, and caused snickers in the press corps.

Methanol has a few well-placed friends. One of them is C. Boyden Gray, White House counsel, who has a methanol-powered car. Another is, ironically, the scion of the country's first oil family, Sen. John D. (Jay) Rockefeller IV (D-W.Va.), who, with Rep. Phil Sharp (D-Ind.), passed a bill through Congress called the alternative fuels bill.

President Bush is for methanol, too, although no more than he is for other alternative energy sources like nuclear power. He drove a methanol car around Los Angeles' first methanol gas station during the campaign, and the other day in Texas he spoke of the importance of cleaning up our air.

The arguments against the obvious good of methanol are circular. Detroit has been asking why it should manufacture a car for which no one is producing fuel. The entrepreneurs who might be expected to get methanol into major production say they're not manufacturing a fuel that has no gas tank waiting for it. After the Rockefeller-Sharp bill, giving Detroit certain regulatory breaks if it got off the dime on methanol fuel, passed, the auto companies began producing a few cars with the larger tanks that methanol requires. When Rockefeller appeared before the Society of Automotive Engineers at the L'Enfant Plaza Hotel, a snappy white Chrysler methanol-capable convertible was parked out back, and he went back to the Senate in Ford's new methanol model.

A methanol marathon, run by teams of students from 15 engineering schools around the country is ending here on the Capitol steps. They competed on finding the most efficient fuel system for the methanol-gasoline combination that so few seem to hope will be the fuel of the future in America's cars and trucks.

But the gridlock is easing, methanol fans say. That's because Southern California, where they often see the future despite the smog, has taken the wheel. Air pollution has reached intolerable levels, according to the South Coast Air Quality Management District. It has recommended a series of breathtaking reforms that could make it possible for the inhabitants of Los Angeles to breathe again. Gasoline, it has decreed, has got to go—or, more specifically, it has got to go into the gas tank with methanol, even if it gives off formaldehyde emissions at the moment.

In three years' time, Los Angeles buses will be rumbling along on methanol. Seventy-five stations will have methanol tanks by 1990. California Energy Commission Chairman Charles Imbrecht reports that fleets for large state agencies will be all-methanol as soon as possible.

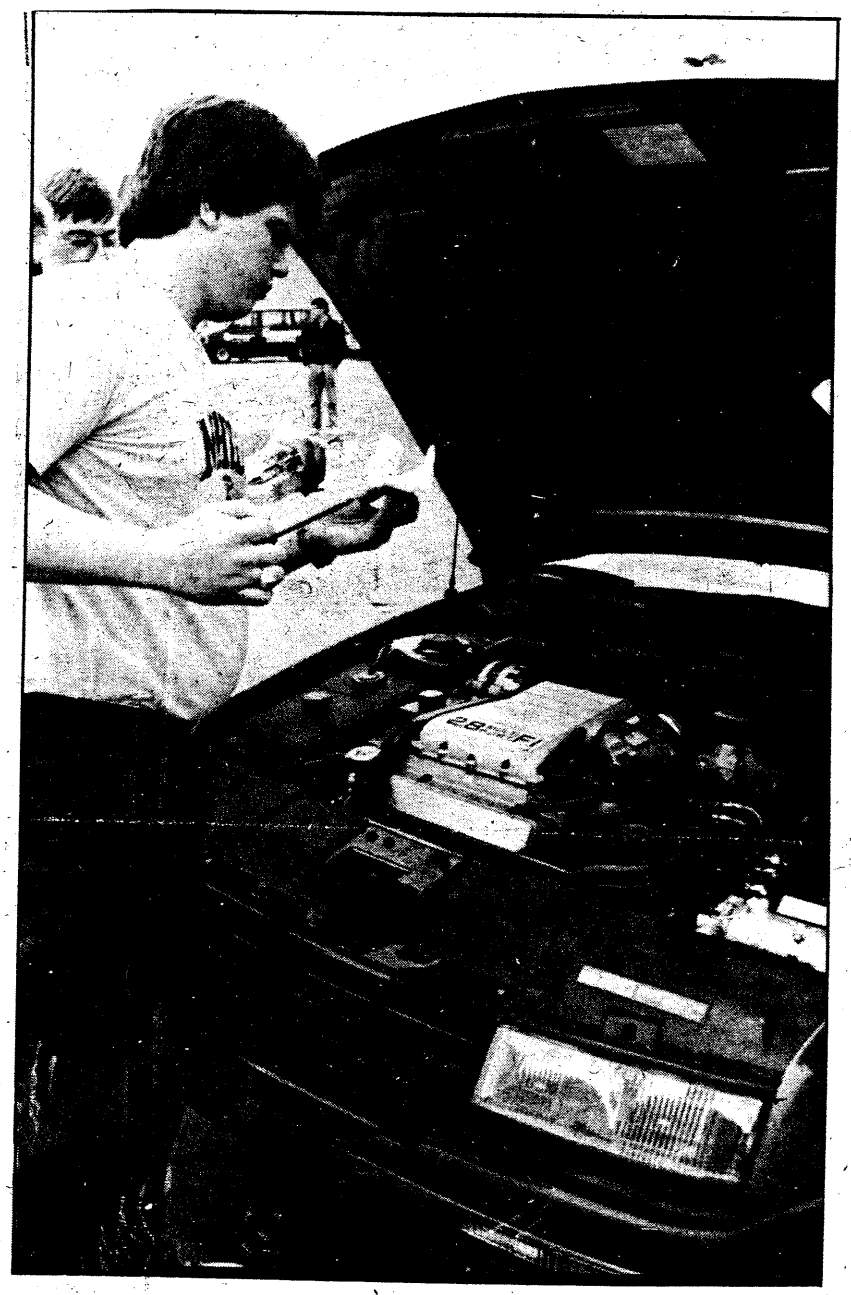
One of the things that frustrates alternative fuel advocates is that they think the public would love methanol if it only knew it: knew, for instance, that it is the fuel of the Indy 500, not just because it doesn't explode on impact, but because it makes the car prance along at a much livelier pace.

Methanol will, initially, cost more than gasoline, but cars with tanks to accommodate it will cost only $200 more than the present models. Most American drivers turn in their cars after seven years, but those who cannot bear to part with a beloved old heap can have it retrofitted for $2,000.

What may decisively end all the hanging back and juice up the lagging entrepreneurs is Japan. Japanese car makers see a potential driving population of 37 million in California, and they are on the move. Although they compete among themselves fiercely, Japanese automakers are not prohibited by antitrust laws, as are their U.S. counterparts, from working together on technology. Imbrecht was shown some 100 methanol vehicles on a recent trip to Japan, ranging from vans to passenger cars. The Japanese have always seen around corners in regard to U.S. car needs. Detroit often does not look down the road.

Otters and U.S. sailors and people who like to breathe hope they step on the gas this time. As Boyden Gray says, "There's never been a natural gas spill."

Oneida, NY Dispatch, May 4, 1989



Dispatch Staff Photo by John Haeger

Pit stop

Peter Litwinchuk of the University of Michigan checks the fluids in his car Monday at the refueling point in New Hartford of the 1,100-mile Methanol Marathon Road Rally. Nearly 200 students from 15 colleges and universities in the U.S. and Canada are participating in the five-day rally, which started in Warren, Mich., April 29 and ends at the University of Maryland in College Park, Md. The purpose of the event is to see how methanol performs as an alternative fuel under normal driving conditions. It is sponsored by General Motors Corp. and the Society of Automotive Engineers.

Parsons, WV Advocate, May 3, 1989

Team to end test Thursday

Richard Stiles, a graduate of Tucker County High School and a senior at West Virginia University is one of five seniors participating in the Methanol Marathon, their senior project in mechanical engineering.

Faculty advisor Nigel Clark, George Utt and Brian McGrath, graduate students, and senior students, Richard Stiles, Christopher Sandors, Randy Byrd, Doug Velegol and Tim Hickey are volunteers who have been working since the beginning of the semester for credit and a chance to do something different than just routine class work.

It was Stiles and Velegol who first applied to General Motors, a co-sponsor of the event. Stiles said he read about the rally last year in an issue of SAE Magazine. Dr. Kenneth Means, professor of aerospace and mechanical engineering, encouraged the two students to organize their team and make applications. Stiles said he thought the idea was "neat" and went for the project. Out of more than 30 applications, approximately 15 were funded by GM.

The team is on the methanol marathon run this week. They have made a complete conversion of a Chevy Corsica car from gasoline to methanol fuel and the 1,100 mile run is a test of their engineering work. Sen. John D. Rockefeller and Gov. Gaston Caperton gave their official blessing on the project earlier in the semester.

While in Detroit, the engine's coolant went to 108 degrees celcius while stuck in traffic. But Stiles, who was driving at the time, said, "That wasn't a big worry. We had it a lot hotter under test conditions in the shop, 116 to 118 degrees."

The Chevy has performed well so far on the test run. A faulty alternator caused them some problems, but was quickly replaced and the team continued on their test run. The first leg of the marathon (172 miles) was covered on 16 miles per gallon, a performance Stiles describes as "so-so."

At the end of each leg, the team met to determine the parings for the coming day's travel and to decide who will drive and who will navigate. Stiles summed up the meeting with, "I have a suggestion for prospective drivers: concentrate on the road; don't look at the scenery; don't whistle at the girls. Concentrate on the road and listen to what the navigator tells you."

The team will journey from the Evansdale Campus to Detroit to Ontario, Canada and on to Washington, DC, where they will be met by the congressional delegation from West Virginia this Thursday, May 4.

Ft. Collins, CO Coloradoan
May 3, 1989

CSU methanol team climbs into eighth place in race

Colorado State University's Methanol Marathon entry climbed from ninth to eighth place as the car rolled into New York City Tuesday.

The CSU team was competing against 14 others in the national race intended to encourage the use and improvement of alternative fuels.

Mike Weinstein, president of CSU's Society of Automotive Engineers, said he thought the team registered its best time ever Tuesday, although official results weren't available until this morning.

Weinstein said CSU still has a shot at first place. Fuel economy, which accounts for 25 percent of the overall rally score, is CSU's strong suit, he said.

"CSU designed more for the average consumer. The others designed for a road rally," he said.

Today the student-designed cars will head for Wilmington, Del., and to the University of Maryland.

Parsons, WV Advocate, May 3, 1989

Stiles is member of WVU Methanol Marathon team

Richard Stiles, son of Mr. and Mrs. James D. Stiles of St. George, and an engineering student at West Virginia University in Morgantown, is a member of a WVU College of Engineering team that is demonstrating the viability of methanol, an alternative fuel for automobiles. The team is competing this month in the Methanol Marathon being sponsored by General Motors, Inc., the US Department of Energy and the Canadian Department of Energy, Mines and Resources.

The five-day marathon, organized by the Society of Automative Engineers (SAE) and the Argonne National Laboratory, will involve a series of performance trials and a 1,100 mile road rally from Detroit through Toronto to Washington, D.C. After careful consideration of over 30 proposals to convert a conventional car to burn methanol, judges selected the WVU team to be among the 15 United States and Canadian teams to compete.

Each team was required to convert the Chevrolet Corsica LT provided by General Motors to burn a mixture of 85 percent methanol and 15 percent gasoline in time for the May competition. The cars will undergo fuel economy, emissions, acceleration, and startability tests as well as the 1,100 mile road rally. Besides the car, each team also received a conversion kit containing a fuel tank, high-flow fuel pump and fuel injectors, special fuel lines and a computer calibration module. Government sponsors then gave $1000 to each team in their country to help defray a part of the technical costs of conversion. At the conclusion of the rally, the government agencies also will provide $20,000 in cash prizes.

In addition to the sponsors previously mentioned, the Methanol Marathon is being sanctioned by the Sports Car Club of America, Inc., and associate sponsors include BP Oil (America), the Lubrizol Corp., the Goodyear Tire & Rubber Co., and the Canadian Oxygenated Fuels Association.

The development of methanol as a fuel is of particular interest to many West Virginians, as it may well provide both reduced emissions and a new market for the state's abundant supply of coal, natural gas, and maybe even wood waste products.

Senator John D. Rockefeller, who recently sponsored a bill to encourage production of alternative fuel vehicles, has expressed his support and enthusiasm for the WVU team's participation, stating, "My support stems not only from the fact that West Virginia University is ideally suited to this engineering research, but also that our state, as a major coal producer, will be a major site for future alternative fuels production."

"The WVU team is particularly well-prepared to compete successfully in the Marathon. WVU College of Engineering students and faculty have earned a long-established record of success in engineering research and automotive design competitions. In particular, their design for the 1988 SAE Formula Car Competition placed first in methanol fuel economy. Also, the climate and geography of the Morgantown area make for an ideal proving ground for the cold-start and driveability tests required in the competition," officials there said.

Dr. Nigel Clark, associate professor of mechanical engineering, and Dr. Thomas Long, Associate Dean of the College of Engineering, advise the team, consisting of students Brian McGrath, Doug A. Velegol, Richard Stiles; and George Utt (senior engineering technician in Mechanical Engineering).

Richard Stiles

-continued-

Ft. Collins, CO, Coloradoan
May 3, 1989

CSU team doing well in methanol road rally

ROCHESTER, N.Y. — A team of Colorado State University students moved up in the ranks Sunday during a methanol road rally.

Mike Weinstein, president of CSU's Society of Engineers, said the team was in fourth place early Sunday and was likely to move into second or third place by the end of the day. Fifteen teams from colleges around the country are competing in the race, designed to test the fuel efficiency of methanol.

"The name of the game is to turn in good rally times while getting good gas mileage," said Weinstein from Rochester after a 250-mile drive from Toronto, Ontario.

"We've been getting about 19.5 miles per gallon, and we were really happy with that," he added.

Sunday was the second day of the competition sponsored by General Motors. The rally ends Thursday.

Utica, NY Observer-Dispatch, May 2, 1989

No fuel like an old fuel? Methanol marathon a test

By WENDY BARRETT
Observer-Dispatch

For Christopher Asselta, a Whitesboro native majoring in mechanical engineering at the Rochester Institute of Technology, the Methanol Marathon was an opportunity to gain some real experience.

For General Motors, the U.S. and Canadian departments of energy and other sponsors and organizers of the 1,100-mile road rally, it was a chance to evaluate how methanol might work as an alternative to gasoline.

Nearly 200 college students, organizers and sponsors pulled into the Eggers, Caryl & Corrigan Goodyear Tire Center in Washington Mills around noon yesterday to refuel the 15 Chevrolet Corsica LTs converted for methanol fuel use in the rally.

The cars were enroute from Rochester, having left Detroit Saturday. The rally ends tomorrow in College Park, Md.

Each car was converted by student teams representing 15 colleges and universities nationwide. Teams were chosen based on the conversion proposals they developed and presented last fall to a team of judges that included automobile engineers.

Methanol is a good potential source of fuel because it is derived from natural resources like gas, coal and wood, said Donald Postma, the marathon's chief coordinator and GM's director of technical media relations.

It is compatible with current engine technology and burns cleaner than gasoline, but about twice as much methanol as gasoline is needed to provide a car with the same amount of energy.

Methanol also can corrode electrical components, so its use in many automobiles would require special engines, other metallic parts and fuel tanks, Postma said.

To ease some difficulties, the rally fuel contained 15 percent gasoline. Asselta said his team also found a way to vaporize the methanol using ultrasonic waves.

"It's a full-design project. First you have to define the problem, then analyze it, test it and follow it up," Asselta said.

As of yesterday, the RIT team was in third place, behind first-place University of Tennessee and second-place Concordia University in Montreal.

Photo by Mike Doherty

Christopher Asselta, a Rochester Institute of Technology student from Whitesboro, gets ready to leave yesterday after refueling the methanol-powered car he's driving in his leg of a cross-country trek.

Hutchinson (KS) News, May 2, 1989

WSU 'methanol' car in 4th

By Ray Hemman
The Hutchinson News

The Wichita State University entry in the Methanol Marathon was in fourth place Monday at the halfway point in the 1,100-mile road rally, said team leader Tony Schwartz of Hutchinson.

The rally began Saturday at Detroit, Mich., and ends Wednesday near Washington, D.C.

At the midway point, the University of Tennessee was the leader while Concordia University from Montreal was second, Rochester Institute of Technology of Rochester, N.Y., was third and Wichita State was fourth. Only 63 points separated the Tennessee entry from Wichita State.

"The top seven teams are close to each other, with the seventh-the first-place team has 312," Schwartz said. "This is a real close race. Concordia moved from seventh to second in one day."

Wichita State's car has been averaging about 18 miles per gallon on the blend of 85 percent methanol and 15 percent gasoline. Methanol is an alcohol-based fuel made from wood, coal and natural gas.

The Kansas car is one of 15 in the race. Wichita State was chosen from 31 schools that submitted entries last year.

General Motors and the Society of Automotive Engineers are the main sponsors for the Methanol Marathon. GM donated the cars for the race, while local dealerships assisted the colleges in modifying the automobiles.

Ft. Collins, CO Coloradoan
May 2, 1989

CSU methanol team ranked 9th after third day of race

A team of Colorado State University engineering students competing in a methanol-testing road rally completed a 400-mile leg of the event Monday.

The team, which is competing against teams from 14 other colleges around the nation, slipped to ninth place in the standings after Monday's drive from Rochester to Newburgh, N.Y.

But Mike Weinstein, president of the CSU Society of Automotive Engineers, said the standings can change quickly and other factors, including fuel efficiency and system design, will heavily influence the final results.

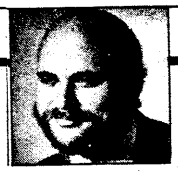
"We designed this car to win on fuel efficiency and not speed," Weinstein said.

Each team is driving a Chevrolet Corsica. The event is sponsored by General Motors.

Weinstein said the final results of the road rally will be tallied Thursday when the six-day event ends in Washington, D.C.

May 2, 1989 St. Louis Post-Dispatch

AUTO SHOP TALK



DAVE FINKELSTEIN

Fuel Test: GM And Washington U. Students Linking Up

AS part of its experiments with alternative fuels, General Motors has linked up with a team of four Washington University engineering students who will test a converted Chevrolet Corsica specially designed to operate on a fuel that is 85 percent methanol and 15 percent gasoline.

The cars were picked up at the GM technical center at Warren, Mich., last November, and since then the four students have been fine tuning the vehicle to function on this experimental fuel.

Teams of engineering students from 14 other universities and colleges also are involved in this program. Each team will contribute important technical data to GM. The participants and vehicles will take part in a road rally to find out how methanol performs under actual driving conditions.

Methanol is an alcohol derived from natural gas and burns more efficiently and produces less pollution than gasoline. Improved air quality and diminished threats of a gasoline shortage may result from the results of this GM/university venture.

Q: I have a 1984 Mercury Marquis wagon with 42,000 miles. Last summer the car wouldn't start, so the distributor was replaced as well as the ignition starter and control module.

A few months later, the car quit and the same components had to be replaced. This was done free under warranty. Is there something that would cause these parts to fail so soon? — B. Charleville,

Newburgh, NY Times Herald Record, May 2, 1989

Record photo by Jeff Goulding

Wendy Clark, left, and John Lawrie fill up Rochester Institute of Technology's car yesterday in Newburgh.

Big Three driven by methanol

The Wall Street Journal

DETROIT — With public concern about dirty air and costly gasoline on the rise again, the Big Three U.S. auto makers are scrambling to reassure lawmakers and consumers that they care, too.

Ford, General Motors and Chrysler have tripped over each other in a public relations blitz aimed at showing off vehicles fueled by methanol and electricity. At the same time, the Big Three are trying to combat proposals at the state and federal levels to start forcing a switch to such clean fuels in the mid-1990s.

Yesterday, Chrysler unveiled an experimental Chrysler LeBaron convertible that burns methanol instead of gasoline. A spokesman for the No. 3 auto maker says the car's engine is 17 percent more powerful than a similar gasoline-powered engine, although it gets five fewer miles to the gallon in city driving.

On Friday, Robert C. Stempel, GM's president, spoke of the long-term potential of methanol cars before 200 college students gathered for the start of a GM-sponsored 1,100-mile methanol-car race.

Cars piloted by students from 15 universities were scheduled to arrive at Barton Chevrolet in Newburgh last night, where they were to be refueled.

"Methanol marathon" contestants, who are competing for $20,000, started the day in Rochester and will head for New York City around 8 a.m. today. The race will end tomorrow at University of Maryland.

On Wednesday, Ford chose Washington as the place to show off an electrically powered Aerostar van and a Ford Taurus that can burn gasoline, methanol or a combination of the two.

At all these show-and-tell events, auto company officials are delivering seemingly contradictory messages about the future of cleaner-burning alternative fuels, particularly methanol.

On the one hand, company officials are demonstrating they can build cars that run on a solution of 85 percent methanol and 15 percent gasoline. GM and Ford say they've have been experimenting with such cars for years, and both companies now have hundreds operating in fleets, mostly in Southern California. Chrysler says it plans to place some methanol-burning cars in California fleets.

"Alcohols are the fuels we believe to be the best long-term, widespread replacements for petroleum," said John McTague, Ford vice president for research, in a speech last week.

On the other hand, auto makers say serious problems remain to be solved, including cold-weather engine performance, poor mileage (only 12-to-18 miles per gallon among GM cars) and the formaldehyde that methanol engines produce. Beyond that, the officials add, methanol won't catch on with consumers or oil refiners as long as it continues to be more expensive than gas.

Federal officials and regulators in California say they're convinced that Detroit can start producing substantial numbers of flexible fuel and methanol-powered vehicles in the next six to seven years.

"They have told us it can be done. The question is, will it be done?" asked James Lents, executive officer of the Southern California air quality agency, which recently declared that 40 percent of all vehicles in the Los Angeles area should burn clean fuels by the end of the century.

Meanwhile, all three companies are working on so-called flexible-fuel cars, such as the Taurus that Ford showed off last week. With the help of computers, these cars can be made to switch automatically from burning pure gasoline to burning methanol-gasoline mixtures. Such vehicles could be used while the oil industry makes the transition from selling gasoline to making methanol.

Economic Development Editor Jeff Storey contributed to this report

The Coloradoan, May 2, 1989

CSU methanol team ranked 9th after third day of race

A team of Colorado State University engineering students competing in a methanol-testing road rally completed a 400-mile leg of the event Monday.

The team, which is competing against teams from 14 other colleges around the nation, slipped to ninth place in the standings after Monday's drive from Rochester to Newburgh, N.Y.

But Mike Weinstein, president of the CSU Society of Automotive Engineers, said the standings can change quickly and other factors, including fuel efficiency and system design, will heavily influence the final results.

"We designed this car to win on fuel efficiency and not speed," Weinstein said.

Each team is driving a Chevrolet Corsica. The event is sponsored by General Motors.

Weinstein said the final results of the road rally will be tallied Thursday when the six-day event ends in Washington, D.C.

The Buffalo, NY News, May 1, 1989

Students show GM trick or two

Methanol rally makes stop here

By JOSEPH P. RITZ
News Labor Reporter

Fifteen engines built in the Chevrolet-Pontiac-Canada Group's Tonawanda Engine Plant came home Sunday as cars driven by students in some the nation's top colleges and universities stopped at the plant the second day of an international road rally to test the use of methanol as an alternate fuel to gasoline.

A car entered from the Rochester Institute of Technology, which includes two Erie County students on the team, was in third place when it left the engine plant Sunday. Teams from 15 colleges and universities in the U.S. and Canada are participating in the event.

The 1,100-mile Methanol Marathon started Saturday morning at the General Motors Technical Center in Warren, Mich. After an overnight stop in Mississauga, south of Toronto, the students left for the CPC plant Sunday morning using a combination of the Queen Elizabeth Expressway and back roads in Ontario to reach Tonawanda in about four hours.

The marathon will end at the University of Maryland on Wednesday.

The students drove Chevrolet Corsicas powered by the Tonawanda-built 2.8-liter V-6 engines which had been altered by the student teams to burn a combination of 85 percent methanol and 15 percent gasoline. The winning team will be determined on a combination of factors, including fuel economy, engine emissions, noise, design, cold starting, and how close the students are to meeting set times during the course.

When the students stopped at the Tonawanda plant's parking lot for refueling and lunch Sunday, the University of Tennessee was in first place on points, followed by Penn State.

Two teams were having trouble with their cars. The West Virginia University car was stalled in Ontario with a malfunctioning alternator for several hours before a replacement could be delivered from the Tonawanda plant. Susan Fancy, captain of the University of Michigan team, reported the engine in its car had developed a rod knock, apparently from having been improperly replaced when the engine was given new pistons by the students. It was also leaking water.

Paul Van Brocklin, a third-year student at RIT from Hamburg, said that navigating with written directions over strange roads was the most difficult part of the trip. Van Brocklin, who is majoring in mechanical engineering, was the navigator from Mississauga to Tonawanda. He said the RIT car was averaging 18.6 miles per gallon.

Terence F. Lerch from East Aurora, who drove the RIT car Saturday from Detroit to London, Ont., said the team became lost briefly in Detroit when it missed an exit on an expressway.

The students said they began preparations for the marathon in August when they were among 40 college teams which submitted engineering proposals for altering the engines. They said about 500 hours was spent on the work.

Donald Postma, director of media relations for the General Motors Corp. and chairman for the marathon, said the main purpose of the competition was to test how successful methanol would be as an alternative to gasoline. The methanol used in the rally was derived from natural gas, but it can also be obtained from coal.

Eventually, he said, American motorists will have to drive cars using new fuels as the world's oil supply is depleted.

Robert Larson from Argonne National Laboratory, one of the marathon sponsors, said methanol is a more efficient fuel than gasoline and burns cleaner. Currently it costs about 50 cents a gallon, but a car will not travel as far on a tank of fuel and engines are harder to cold start using it.

In welcoming the teams, Donald Rust, manager of the engine plant, pointedly told them that they were driving cars made in America by American workers. In the last few years, he said, productivity at the Tonawanda facility, the world's largest engine plant, has increased by 65 percent.

The student teams were given a tour of the plant, which was not operating on Sunday.

From Tonawanda, the college teams traveled to Rochester, where they were to spent the night.

The marathon route is marked by a series of checkpoints that cars must pass at specific times. Teams are penalized for arriving at checkpoints too soon or too late.

While half of the points that can be earned by each team are won on the rally itself, the remainder were awarded at qualifying events held Friday at GM's Technical Center in Warren. There the student teams gave technical presentations to panels of auto industry engineers, explaining how they converted their cars to use the methanol fuel.

MENTHANOL MARATHON

Colorado State's Methanol Marathon Team won second place for best looking car at the start of the Methanol Marathon rally in Warren, Mich., Saturday. It also won sixth place for acceleration out of 15. Currently, the team is in fourth place behind the Rochester Institute of Technology. The University of Tennessee is in first.

The objective of the marathon is to be the most fuel-efficient and to win the most points for best engine and exhaust performance. Methanol can be produced from natural gas, shale oil, coal and waste gases from sewage treatment plants. It also generates less air pollution than gasoline.

In the next five days, the team will travel 1,100 miles from Detroit to Washington, D.C.

The team is made up of 40 mechanical engineering students and is sponsored by a $35,000 gift by Colorado's Best Chevrolet Dealers Association.

Coloradoan, May 1, 1989

CSU team doing well in methanol road rally

ROCHESTER, N.Y. — A team of Colorado State University students moved up in the ranks Sunday during a methanol road rally.

Mike Weinstein, president of CSU's Society of Engineers, said the team was in fourth place early Sunday and was likely to move into second or third place by the end of the day. Fifteen teams from colleges around the country are competing in the race, designed to test the fuel efficiency of methanol.

"The name of the game is to turn in good rally times while getting good gas mileage," said Weinstein from Rochester after a 250-mile drive from Toronto, Ontario.

"We've been getting about 19.5 miles per gallon, and we were really happy with that," he added.

Sunday was the second day of the competition sponsored by General Motors. The rally ends Thursday.

THE WALL STREET JOURNAL MONDAY, MAY 1, 1989

Auto Makers Show Off Methanol Cars But Oppose Switching to Clean Fuels Soon

By JOSEPH B. WHITE
Staff Reporter of THE WALL STREET JOURNAL

DETROIT—With public concern about dirty air and costly gasoline on the rise again, the Big Three U.S. auto makers are scrambling to reassure lawmakers and consumers that they care, too.

Within the past six days, **Ford Motor** Co., **General Motors** Corp. and **Chrysler** Corp. have tripped over each other in a public relations blitz aimed at showing off vehicles fueled by methanol and electricity. At the same time, the Big Three are trying to combat proposals at the state and federal levels to start forcing a switch to such clean fuels in the mid-1990s.

This morning, Chrysler is expected to unveil an experimental Chrysler LeBaron convertible that burns methanol instead of gasoline. A spokesman for the No. 3 auto maker says the car's engine is 17% more powerful than a similar gasoline-powered engine, although it gets five fewer miles to the gallon in city driving.

Last Friday, Robert C. Stempel, GM's president, spoke of the long-term potential of methanol cars before 200 college students gathered for the start of a GM-sponsored 1,000-mile methanol-car race. And last Wednesday, Ford chose Washington as the place to show off an electrically powered Aerostar van and a Ford Taurus that can burn gasoline, methanol or a combination of the two fuels.

At all these show-and-tell events, auto company officials are delivering seemingly contradictory messages about the future of cleaner-burning alternative fuels, particularly methanol.

On the one hand, company officials are demonstrating they can build cars that run on a solution of 85% methanol and 15% gasoline. In fact, GM and Ford say they've have been experimenting with such cars for years, and both companies now have hundreds operating in fleets, mostly in Southern California. Chrysler says it plans to place some methanol-burning cars in California fleets.

"Alcohols are the fuels we believe to be the best long-term, widespread replacements for petroleum," said John McTague, Ford vice president for research, in a speech last week.

On the other hand, auto makers say serious problems remain to be solved, including cold-weather engine performance, poor mileage and the formaldehyde that methanol engines produce. Beyond that, the officials add, methanol won't catch on with consumers or oil refiners as long as it continues to be more expensive than gas.

"The point of the matter is, none of the alternative fuel programs have really proved to be practical," GM President Stempel said.

Federal officials and regulators in California say they're convinced that Detroit can start producing substantial numbers of flexible fuel and methanol-powered vehicles in the next six to seven years.

"They have told us it can be done. The question is, will it be done?" says James Lents, executive officer of the Southern California air quality agency, which recently declared that 40% of all vehicles in the Los Angeles area should burn clean fuels by the end of the century.

Meanwhile, all three companies are working on so-called flexible-fuel cars, such as the Taurus that Ford showed off last week. With the help of computers, these cars can be made to switch automatically from burning pure gasoline to burning methanol-gasoline mixtures. Such vehicles could be used while the oil industry makes the transition from selling gasoline to making methanol.

Methanol-fueled cars rally in Henrietta

By Bennett J. Loudon
Democrat and Chronicle

If not for the decals sporting school colors and sponsors' emblems, the 15 cars rallying outside AC Rochester's Engineering Center in Henrietta yesterday probably wouldn't turn any heads.

But how they got there is worth a second glance.

The 1988 Chevrolet Corsicas that started pulling into the center about 5 p.m. were powered by a blend of 85 percent methanol and 15 percent gasoline.

Their arrival marked the end of the second day of the Methanol Marathon, a five-day, 1,100-mile rally that started Saturday in Warren, Mich., and will end Wednesday in College Park, Md. The teams head for Utica and Newburgh today.

The event, sponsored by General Motors Corp., the U.S. Department of Energy and the Canadian Department of Energy, Mines and Resources, is designed to see how methanol performs as an alternative to gasoline.

Converting the cars so they can run on methanol was done by undergraduate engineering students from schools in Canada and the United States, including a team from Rochester Institute of Technology.

The 15 teams were selected after judges reviewed 31 proposals. GM provided the cars and gasoline-to-methanol conversion kits. Each team also got $1,000 toward the cost of converting a car. But RIT estimated the actual cost at about $10,000 and has sought donations.

Before the start of the rally, the cars were judged for acceleration, emissions, design and construction. During the rally, the cars will be tested for how well they start and perform in cold temperatures, fuel economy and how well drivers and navigators stay on schedule.

"We boo-booed one part of the leg and couldn't make it up to save mileage," said Ray Parker, 25, an RIT senior mechanical engineering student who drove the team's car yesterday. "We've had a good-running car. We're running up with all other designs and are having no problems yet."

RIT was in third place at the end of yesterday's leg. Leading the rally was the University of Tennessee.

If an economical way can be found to run cars on methanol — an alcohol that can be made from natural gas or coal — dependence on oil could be reduced.

Using methanol also could reduce dangerous auto emissions.

In addition to helping solve those problems, the winning team will get $6,000.

BALTIMORE, MD MORNING SUN, 5/1/89

Students hoping to make methanol car a winner

By Luther Young
Sun Staff Correspondent

COLLEGE PARK — The high hopes of 17 local engineering students are riding on a maroon Chevrolet Corsica with "TERPS" taped on its brake lights, now somewhere between Detroit and College Park.

The University of Maryland entry in the Methanol Marathon — modified to run on methanol instead of gasoline — is one of 15 competing for a share of $20,000 in the five-day, 1,100-mile road rally. The run from Detroit to College Park is intended to test and promote the alcohol as a practical alternative motor fuel.

"If even the smallest thing goes wrong on the road, you're cooked," fretted mechanical engineering Professor David Holloway, before the Maryland car left College Park on Thursday.

Dr. Holloway's students annually enter such automotive design competitions for credit as part of his popular course, "Selected Topics in Engineering Design," and last year won top honors in the methanol category of the formula car competition sponsored by the Society of Automotive Engineers.

The Terps engineers won a total of $11,000 in prize money in 1988 competitions, plus the SAE's 1987 national championship in the formula class: powerful, one-person race cars that can accelerate from 0 to 60 miles per hour in four seconds.

But the challenge of the Methanol Marathon — sponsored by the General Motors Corp., the U.S. Department of Energy and its Canadian counterpart — was to take a stock, gasoline-powered vehicle and convert it in five short months to run reliably and economically on methanol for more than 1,000 miles, while keeping air emissions to a minimum.

"Our idea was to develop a car that was practical, nothing exotic," said project leader Greg Thomas, a senior aerospace engineering student from Fallston. "Nothing we did was totally original, but the way we put everything together was."

Maryland received its 1988 Corsica LT in November from General Motors, which provided identical (except for color) cars free to student teams at 15 universities and colleges in the U.S. and Canada, including Penn State University, West Virginia University, Colorado State University and the University of Michigan.

See **METHANOL,** 2D, Col. 2

BALTIMORE, MD. MORNING SUN, 5/1/89

UM brains powering experimental car

METHANOL, from 1D

"We feel it's a technology that young engineering students ought to be familiar with," said Phillip Patterson, coordinator of the marathon for the DOE. "I think we're going to get 15 quite different ways of approaching the problem. Each vehicle is really a testing lab."

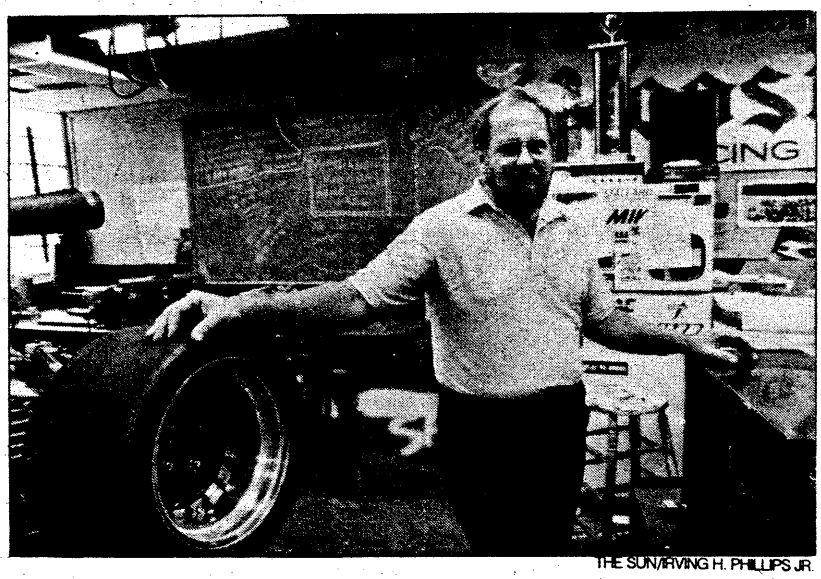
Donald Runkle, General Motors vice president for advanced engineering, said the rally should give "valuable information on how methanol performs under real-world conditions." The automaker is already building experimental methanol-powered vehicles, including 2,200 fleet cars to be tested by the California state government.

Widely touted as an alternative to gasoline or diesel fuels, methanol or methyl alcohol is commonly known as "wood" alcohol, the poisonous scourge of thirsty humans who mistake it for grain-derived ethyl alcohol. It can be made from natural gas, coal or oil shale, fermenting "biomass" in landfills and, yes, wood.

Dr. Holloway points to two major advantages of the fuel over gasoline. "It's a cleaner-burning fuel with the potential to reduce pollutants in our cities," he said, "and it is the most likely alternative to give us energy independence in the future."

But critics of rosy predictions about the methanol alternative doubt its wide-scale availability at reasonable cost, a problem that has limited the expanded use of gasohol, a mixture of 90 percent gasoline and 10 percent ethanol made from surplus corn or grain.

Although the U.S. Environmental Protection Agency says methanol use could cut smog-forming emissions in half, the fuel produces increased quantities of formaldehyde, a suspected carcinogen.



THE SUN/IRVING H. PHILLIPS JR.

Professor David Holloway's engineering design course is the springboard for students in the competition for methanol-powered cars.

In addition, it has only half the energy content of gasoline, meaning half the miles per gallon, and is so corrosive to most metals and destructive to rubber seals that the fuel systems of methanol-powered vehicles have to be specially protected.

The 17 engineering students at College Park took all of this in stride, dismantling the 6-cylinder, fuel-injected Corsica engine and carefully rebuilding it to compensate for methanol's quirks and to capitalize on advantages like a 97 octane rating by running a different compression ratio.

With an added turbocharger and precise computer controls, the engine produces 50 percent more power than the stock model, 180 to 190 horsepower vs. 115 to 120.

The Marathon, organized by the SAE and the Argonne National Laboratory, began on Friday at the GM Technical Center in Warren, Mich., with day-long judging of oral presentations and design reports by the 15 teams, plus vehicle tests on emissions, cold-starting and acceleration from 0 to 60 mph.

The road rally got under way Saturday morning, and judging will focus on fuel economy and rallying skills to reach timed checkpoints in Ontario at London and Mississauga; in New York at Tonawanda, Rochester, Utica, Newburgh and New York City, and in Wilmington, Del.

It ends Wednesday on the College Park campus, when those cars still running after five days are to begin arriving in front of the Engineering Building around 2:30 p.m. Winners on total points are scheduled to be announced in Washington on May 4.

"And," Dr. Holloway said, "we get to keep the car."

N.Y. Times April 30, 1989

LONG ISLAND JOURNAL

By DIANE KETCHAM

Promoting Methanol

On the outside, the dark gray Chevrolet Corsica looks like any other automobile on the Long Island Expressway. Of course there are the decals, promoting New York Institute of Technology, General Motors and the Department of Energy, but turning the outside of your car into a driving billboard is nothing new on Long Island.

It's the inside of this car that sets it apart. Like the television show "Nightrider," the dashboard is strictly high tech. "It looks really fancy with all the computer gadgets," said Prof. **Bernard Gleimer**, the assistant dean of engineering at New York Tech. The computer instruments are necessary because the car now runs on methanol. New York Tech's student chapter of the Society of Automotive Engineers have spent the last five months modifying the car's engine, fuel tank, and fuel injectors so it can run on 85 percent methanol and 15 percent gasoline.

This weekend the students and their methanol car joined a methanol marathon rally. Ten students from New York Tech are traveling through Michigan, Canada and New York City (they'll be in Central Park on Tuesday) and on to Washington, competing against 15 other university teams that also converted Chevrolet Corsicas to run on methanol. The cars will be judged on cold starts, fuel economy and rally times.

"Our car has good manners," said **Christopher Blyseth**, a senior at Tech and president of the automotive club. "It handles well." Winning the marathon, however, is a long shot, he said.

Environmentalists are pushing for methanol cars because "if alcohol is burned properly, it only emits carbon dioxide, none of the hydrocarbons," Professor Gleimer said. "It's a big step toward clean air and you don't have to depend on foreign countries for the fuel product."

He predicts that by the 1990's, 10 percent of the cars in this country will run on methanol. Right now, however, having a methanol-running car is a challenge. "There are no methanol fuel pumps to pull up to, and say, 'Fill 'er up,' Mr. Blyseth said. "We had to use little cans."

Longmont, CO Times-Call, April 30 1989

CSU methanol car wins prize for appearance

Special to the Times-Call

WARREN, Mich. — Student teams from the Florida Institute of Technology, Colorado State University and University of Tennessee shared in prizes totaling $1,000 for their efforts in adding pizazz to the Chevrolet Corsicas they entered in the 1,100-mile 1989 SAE Methanol Marathon.

They were selected from among the 15 student teams who dressed up their methanol-converted Corsicas prior to the rally's start Saturday at the GM Technical Center. The Methanol Marathon ends Tuesday in Washington, D.C.

The three "Best Appearing Car" contest winners accepted checks ($600 first place, $300 second place and $100 third place, respectively) and commemorative plaques from Robert W. Emerick, Chevrolet's manager of special projects.

For the last six months, engineering students from the 15 colleges and universities in the United States and Canada have been preparing identical 1988 Chevrolet Corsica LTs on loan from the division for the marathon organized by the Society of Automotive Engineers (SAE) and the Argonne National Laboratory.

Judging for the event was provided by three design chiefs from GM's design staff.

Each of the Methanol Marathon Corsicas is equippped with a 2.8 liter multi-port fuel-injected V6 engine, five-speed transmission, sport suspension and air conditioning.

General Motors' sponsorship of the all-Corsica Methanol Marathon is the first phase of a major demonstration program designed to study methanol, an alternative fuel under real-world conditions.

The second phase began last January with the announcement that GM and the California Energy Commision would co-fund a comprehensive study of methanol using a 2,200-car fleet of specially modified Chevrolet Corsicas and Luminas donated by GM. It is the largest methanol-fueled fleet in the United States.

Coloradoan, April 30, 1989

Methanol rally starts quietly, cleanly

By DENISE L. SMITH
Gannett News Service

WARREN, Mich. — One by one, the 15 Corsicas started their engines.

Race officials set their clocks and timed each car as it left the crowded parking lot of GM's Technology Center in Warren, Mich.

Instead of generating a cloud of smoke and the screech of tires, the brightly decorated cars pulled away quietly, generating a very light, almost invisible emission.

The rally, dubbed a methanol marathon because the cars were fueled with methanol instead of gasoline, began shortly after 8 a.m. Saturday and will continue through Thursday.

The object is not to be the fastest but to be the most fuel-efficient and to gain the best engine and exhaust performance.

More than 200 students from 15 colleges throughout the country — including Colorado State University — altered the engines of 15 Corsicas donated by General Motors to accommodate the fuel alternative.

The CSU team already impressed the rally judges, winning second-place for the best-looking car. It also won sixth place for acceleration.

Methanol, or wood alcohol, has drawn the attention of the Big Three automakers because it causes less air pollution than gasoline. GM and Ford Motor Co. built fleets of methanol-fueled vehicles for tests in California, and some experts believe methanol could be the fuel of choice in a decade or so.

The road rally allows GM and government engineers to test the cars' durability, fuel economy and performance.

"What you have here are 15 rolling laboratories," said Bob Larson of Argone National Laboratory, a quasi-governmental research facility.

"We'll get lots of good info," Larson said. "Everyone wins in this type of deal."

During the next five days, students will drive the cars more than 1,100 miles from Detroit to Toronto to Washington, D.C. Race speeds will vary below speed limits, according to a strict road plan that denotes required speeds, fuel use and stopping points.

The University of Michigan's start was somewhat inauspicious.

Before the race, the No. 3 car's engine developed a knock, an indication of potential malfunction. Then the car was late completing its preliminary tests in the morning. Finally, the car's navigator — who assists the driver — was late getting back to the car in time for starting.

At stake is the $20,000 in prize money, which will go to the top five finishers on Thursday. Also at stake is thousands of dollars in valuable research about auto emissions and energy sources that each car represents, said Jay Sloan, a spokesman for GM, which is co-sponsoring the rally.

Coloradoan, April 29, 1989

CSU car takes to track, struts for GM engineers

By DAVID SEDGWICK
Gannett News Service

WARREN, Mich. — Jim Bloeman went to engineering school to learn how to design his own racing cars.

Now the 28-year-old Colorado native is involved in a race of a different sort — a race to find a substitute fuel for gasoline.

As a graduate student at Colorado State University, Bloeman is part of a student team that designed a Chevy Corsica which can run on methanol fuel.

Friday, Colorado State's team entered its vehicle in the Methanol Marathon, a competition sponsored by General Motors Corp. Fifteen student teams brought their modified Corsicas to GM's technical center in Warren where the automaker's engineers tested their acceleration, emissions and noise levels.

Today, the teams will begin the marathon, a five-day 1,100 mile trip to Washington, D.C. The road rally will allow GM engineers to test the cars' durability, fuel economy and performance.

For Bloeman, the contest was a "natural." He's been hooked on cars since he was four years old.

"My oldest brother got me started," he recalls. "We'd be down in the basement and I would hand him screwdrivers, sweep up the floor and chase parts."

As an undergraduate, Bloeman raced motorcycles on weekends, and later opened up a shop with his brother, Mike. Jim wanted to design his own vehicles, but he found he lacked knowledge about computer-aided design.

So he went back to CSU to earn a master's degree. Last November, Bloeman joined a group of 40 students who teamed up for the methanol marathon. Led by Bryan D. Willson, an assistant professor of mechanical engineering, the group modified a Corsica donated by GM so that it would run on a mixture of 85 percent methanol and 15 percent gasoline.

Methanol, or wood alcohol, has drawn the attention of the Big Three automakers because it causes less air pollution than gasoline.

Bloeman worked on the Corsica's ignition system, and even designed his own. The team left it out of the car though. Bloeman feared a malfunction during the marathon.

Local car second, sixth in marathon

By JAN KNIGHT-SINNER
The Coloradoan

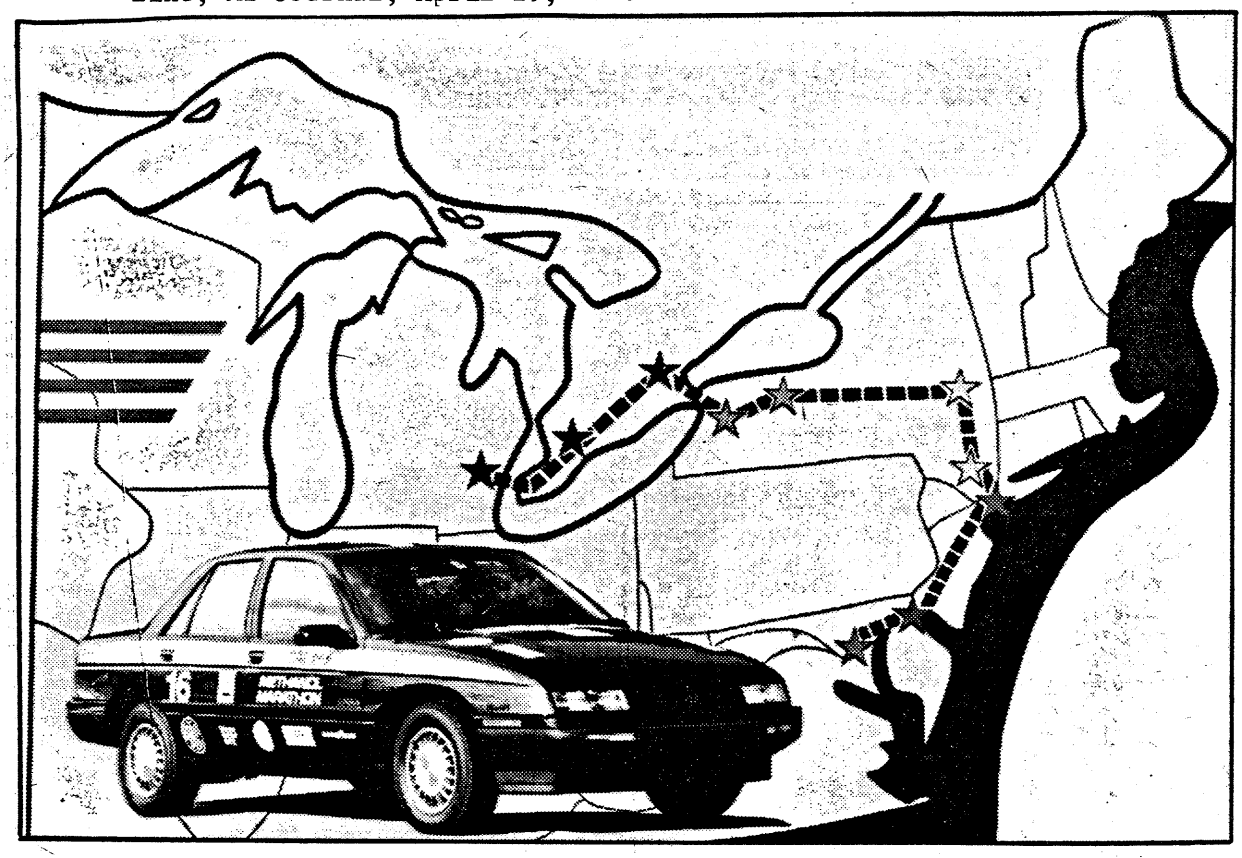
Colorado State University's maroon Methanol Marathon car took second place in Detroit Friday — in the best-looking category.

It also won sixth place out of 15 entrants for acceleration during the first day of competition, which included oral presentations and preliminary tests of all the cars.

Mike Weinstein, a CSU senior majoring in mechanical engineering, said more CSU representatives were at the contest than any other team, with 18 students and two faculty members attending or participating.

"We just had so much interest and promoted it so well," he said from Detroit. He added that Colorado's recent push for using alternative fuels could be another factor in the strong turnout.

Flint, MI Journal, April 29, 1989



Shown is the route of the Methanol Marathon rally, which began Friday.

Methanol Marathon to test university students' mettle

By RICHARD C. NOBLE
Journal automotive writer

WARREN — No matter how ingenious the college students are in squeezing better performance out of alcohol fuel in the 1,100-mile Methanol Marathon rally that began this morning, it will be a long time before it replaces gasoline.

General Motors President Robert C. Stempel Friday viewed the 15 converted Chevrolet Corsicas and talked to the student teams that created them and will drive them.

At a press conference at the GM Technical Center here, Stempel said there are various problems to be worked out in using methanol fuels, including better fuel economy.

A tank of methanol will take a car only about half as far as a tank of gasoline. There also are problems with cold starting, high corrosiveness and different exhaust emissions.

METHANOL PRODUCES fewer hydrocarbon emissions than gasoline but more aldehydes.

If these problems are overcome, there's still the matter of producing methanol at a competitive price and having it become commonly available.

Stempel wouldn't make any prediction about when methanol cars might come to market for consumers. He said GM, the major sponsor of the rally, is developing variable-fuel vehicles that will run on any blend of gasoline and methanol.

GM is supplying 2,200 variable-fuel Chevrolet Corsicas and Luminas to the California Energy Commission, which is seeking ways to combat hydrocarbon emissions. GM also has methanol-fueled buses operating in some cities.

The marathon's Corsicas, which the teams began working on Nov. 21, have been converted to run on M85, a blend of 85 percent methanol and 15 percent gasoline.

GM provided a basic kit for the conversion that contained a variety of methanol-tolerant items — including fuel pump, fuel level sender, fuel injectors and fuel rails — supplied by AC Rochester Division.

TEAMS ALSO could request special items from catalytic converters to spark plugs.

Friday's events including judging on such matters as design and execution of the conversion, acceleration performance, cold-start driveability and an oral presentation on the team's efforts.

Those items account for more than half the points in the contest, with the balance coming from the rally events.

The rally runs from Warren to College Park, Md., via Canada.

There is $20,000 in prize money from the United States and Canadian governments, with $6,000 going to the first-place team.

Sponsors include the U.S. Department of Energy, Canadian Department of Energy, Mines and Resources, Society of Automotive Engineers and the Argonne, Sports Car Club of America, BP Oil, Lubrisol Corporation, Goodyear Tire and Rubber and Chevrolet.

Morgantown, WV Dominion-Post, April 29, 1989

New fuel has to prove itself, GM president says

By Lee Chottiner
Dominion Post Staff Writer

DETROIT — A methanol car is one of the "likeliest" alternatives to gas-guzzling vehicles, but it won't be on the market until the viability of both the fuel and the vehicle are proven, General Motors President Robert Stempel said.

At a Friday press conference at the GM Technical Center in suburban Warren, Stempel sidestepped questions about when GM might have a methanol-powered vehicle in its showrooms.

"If we were to switch to methanol, we would have to know that the fuel is equal to or better than gasoline and that there is a continued market for those vehicles," the executive said.

For the moment, there remain plenty of questions about methanol. Namely, how available is it and what is the impact of the emissions it produces?

While methanol does not emit all the same pollutants as gasoline, Stempel said it emits maldehydes, and he wants to know what kind of effects those substances could have.

"We would not want to switch to methanol only to find we've made another form of pollution worse," he said.

He defended GM's record on methanol research, citing their support of the Methanol Marathon and a study co-funded by the California Energy Commission, using a fleet of 2,200 methanol-fueled Chevrolets, which began in January.

But he failed to say how much money GM has invested in methanol research, saying only that the amount is "fairly substantial."

Stempel added that the cost of gasoline would have to go "quite a bit higher to make methanol viable." The gas prices are already inflated because of the recent tanker oil spill in Prince William Sound, which held up the flow of oil through the Alaska pipeline.

When a reporter suggested that GM's alternative fuel studies have "jaded" the public since no alternative fuel cars appear headed for mass production, Stempel countered that no alternative fuel has ever proved itself a good substitute for gasoline.

"None of the alternative fuels have proven to be viable," he said. "As the economics develop, the other fuels will be developed."

He took swipes at Ford and Chrysler, reminding the press that those automakers were not participating in the Methanol Marathon.

"When SAE (Society of Automotive Engineers) asked for sponsors, there was vacuum," Stempel said.

Ford and Chrysler, who Stempel referred to as "the fellows who begin with F" and "the fellows who begin with C," are now announcing that they are developing methanol cars, he said.

"I'm delighted they came to the party," he said.

Pontiac Oakland Press, April 29, 1989

Students put methanol to test in marathon

By JOSEPH SZCZESNY
Press Automotive Editor

WARREN — Use of methanol as an automotive fuel will get its first test this weekend as 15 teams of student engineers vie for honors in the first Methanol Marathon.

The 1,100-mile marathon, co-sponsored by the Society of Automotive Engineers, General Motors Corp. and the U.S. Department of Energy, got under way today after an official sendoff Friday from GM President Robert C. Stempel.

Stempel said interest in methanol as an automotive fuel has increased in recent months because of renewed concern about damage to the environment caused by burning gasoline and diesel oil.

But Stempel cautioned methanol isn't necessarily the panacea to environmental problems some might think.

April 28, 1989
Allentown, PA Call

Penn State students join road rally with no gas

By LEONARD KUCINSKI
Of The Morning Call

A team of mechanical engineering students from Pennsylvania State University, including two area men, is counting on super high compression to produce victory in an international road rally focusing on the use of alternative fuels.

Edmond Luckenbach of Allentown and James Sube of Wescosville, both seniors, and their 10 teammates will be competing from tomorrow to Monday in what is called the SAE Methanol Marathon, an event that will cover 1,000 miles from Detroit to Washington, D.C.

Student teams from 15 colleges and universities in the United States and Canada have converted Chevrolet Corsicas to run on M85 fuel, which is composed of 85 percent methanol. The Penn State team was selected as a finalist from among more than 30 schools submitting proposals for converting the car to run on methanol.

The team picked up the Corsica during a Methanol Marathon kickoff in November at the General Motors Technical Center in Warren, Mich., and began working on the project.

Dr. Thomas Litzinger, assistant professor of mechanical engineering and faculty member in charge of the project, said the modifications really went fast but there was a long wait for parts.

The biggest modification was changing the configuration of the pistons to raise the compression ratio, Litzinger said.

"Methanol has a high octane number and can use higher compression without knocking," he said. "The octane of the fuel is what really limits compression ratio. So, with this much octane available, we decided to go to a 14:1 compression ratio."

The engine in the Corsica is a 2.8-liter (173 cubic inch) V-8 that has an 8.5:1 compression ratio.

The students took the engine apart in November and after deciding on a design, ordered the pistons from a custom manufacturer. There was a 2½-month wait for the modified pistons, but once they arrived the car was back together in a week.

Another idea from the team was to have a ceramic coating applied to the pistons and cylinder heads. This was to protect the engine from the high temperatures expected from methanol combustion.

"The other modifications were the ones every team did," Litzinger said. "This included new fuel lines and a new gasoline tank that could stand up to the high corrosive effects of methanol, and installing modified fuel injectors."

He explained the modified fuel injectors were needed because methanol has less energy than gasoline and consequently twice as much of it has to be supplied to the combustion process.

The road rally will be held over the weekend, but the competition will actually begin today at Warren, Mich. At the GM facility, the cars will be tested for emissions, acceleration and starting. In addition, the student teams will make presentations on their conversions. In the road rally, teams will be judged on how well they do in the rally and also how well the car does on fuel economy.

"Fuel economy will be the highest value of all criteria," Litzinger said. "And we have a good chance here. Since methanol has half the energy of gasoline, it follows that after the conversion is made, the car should get half the fuel mileage it got on gasoline. We are actually a little above that and this is because of the high compression ratio."

The event is sponsored by General Motors, the U.S. Department of Energy and the Canadian Department of Energy, Mines and Resources. It is organized by the Society of Automotive Engineers (SAE) and the Argonne National Library in Illinois.

Rally highlights include a drive as far north as Toronto; a news conference in New York City; stops at GM plants where the Corsica and its engine are produced, and the announcement of winners on Capitol Hill in Washington. A total of $20,000 in cash prizes will be awarded.

Methanol Marathon organizers say the rally will provide valuable information on the performance of methanol under real-world conditions and technical data concerning the vehicle conversion process.

Morgantown, WV Dominion-Post, April 27 1989

Rally team gets its bearings

(Here's another story about WVU's participation in the Methanol Marathon. A Dominion Post reporter will accompany the Methanol Marathon team during the rally and file daily reports on the team's progress.)

By Lee Chottiner
Dominion Post Staff Writer

Days away from the start of their Detroit-to-Washington road rally April 29, the WVU Methanol Marathon team members scrambled Monday and Tuesday to put the finishing touches on their car.

On Sunday, team members had to take apart the engine headset to find a knock in the motor, and one of the bearings overheated. They had travel to Uniontown, Pa., to get new bearings, but they found a new headset (engine and fuel gaskets) in Morgantown.

And Monday night, the Chevy Corsica again was up on jacks and the engine out of the block while the crew rebuilt the engine. There was no problem, Engineering Professor Nigel Clark said. "They just decided to work it through one last time."

Graduate Assistant Brian McGrath wasn't worried. "Plenty of time," he said. "Plenty of time."

When everything is finally tallied, Clark estimates, $50,000 will have been spent to put the team on the 1,100-mile, five-day rally through the U.S. and Canada.

Meanwhile, as the students prepare to leave for Detroit today, their ranks suffered one casualty. Tord Dennis, a junior from Brighton Boston, Mass., was forced to cancel his travel plans because of other commitments. He had worked on the car for months.

This is the rest of Team Corsica, as the team has come to call itself:

- Clark, faculty advisor, of Morgantown.
- George Utt, faculty advisor, of Morgantown.
- McGrath, graduate student, of Wheeling.
- Christopher Santoro, senior, of Welch.
- Richard Stiles, senior, of St. George.
- Randy Byrd, senior, of Belleville.
- Doug Velegol, senior, of Colliers.
- Tim Hickey, senior, of Bethel Park, Pa.

All of the students are volunteers who have been working since the beginning of the semester for credit and a chance to do something different than just routine class work.

"I've learned more in this class than any class I've ever taken," Byrd said. "We'll get the fun part when we go to the rally, but it's been work up to now."

But none of the students came in with any special skill for converting a V-6 Chevy engine from gasoline to methanol. From the start, it was a learning process.

"We came in blind," Santoro said. "But now I can fix a car for you."

What these newcomers to fuel conversion have devised is an engine that will run on a blend of 85 percent methanol and 15 percent gasoline (called M-85) while producing 170 foot-pounds of torque and 158 horsepower.

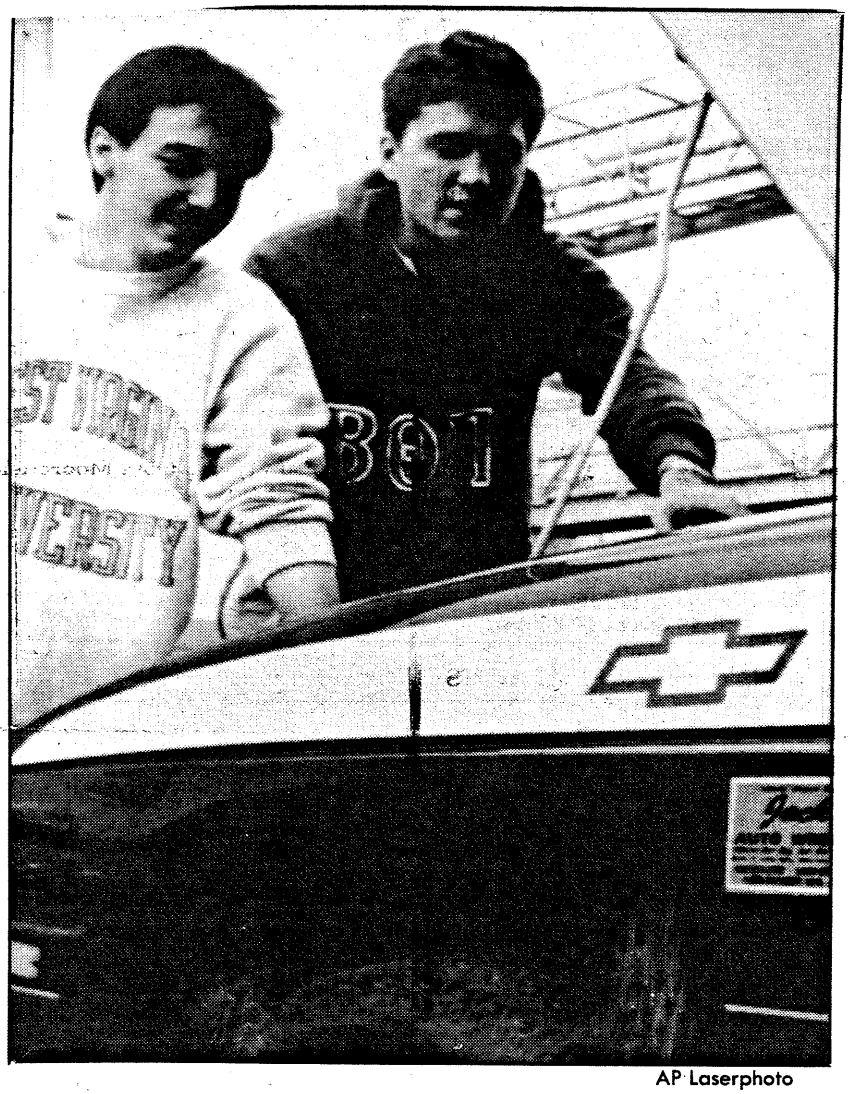
It was Stiles and Velegol who first applied to General Motors, a co-sponsor of the event. Stiles said he read about the rally last year in an issue of *SAE Magazine*.

"I said, 'Wow, this might be neat.' I was going to suggest it, but Dr. Kenneth Means (professor of aerospace and mechanical engineering) brought it up anyway."

Stiles said they applied to GM in mid-October, waited six weeks and were notifed in November that they were part of the field for the rally. "We were one of the lucky ones to get a phone call," he said, noting that more than 30 schools applied but only 15 were accepted.

All the teams are in dark about the route the rally will take. They will find out each morning when

Morgantown, WV Dominion-Post, 4/27/89



AP Laserphoto

Chris Santoro (left) and Doug Velegol, two mechanical engineering students at WVU, peer under the hood of WVU's entry into the upcoming international methanol marathon.

they receive their instructions from rally officals. But Stiles said he hopes the route will take them off the main roads.

"I'm actually hoping they have a lot of back-road driving," he said. "It's hard enough we're driving 10-15 miles below the speed limit, bored out of our minds; this way, we'll see some of the country."

★ ★

RALLY REPORTS: Two chase vehicles will accompany Team Corsica on the five-day route: a Chevrolet Suburban wagon donated by Anthony Chevrolet in Fairmont and a van donated by GM. The team picked up the van Monday in Pittsburgh. ... Winners of the rally will be announced May 4 at an assembly on Capitol Hill in Washington, D.C.

Johnstown, PA Tribune-Democrat, April 27, 1989

Ritchey with PSU road marathon team

Scott Ritchey, son of Regis and Mary Ritchey of Johnstown R. D. 5, will participate with a team from Pennsylvania State University in the Society of Automotive Engineers (SAE) Methanol Marathon Saturday through Monday from Detroit to Washington, D.C.

The marathon is an international road rally focusing on the use of alternative fuels. Student teams from 15 colleges and universities in the United States and Canada have converted Chevrolet Corsicas to run on M85 fuel, which is composed of 85 percent methanol.

The event is sponsored by General Motors Corp., the U.S. Department of Energy and the Canadian Department of Energy, Mines and Resources.

Knoxville News-Sentinel, April 27, 1989

UT team to compete in methanol race

A team of engineering students from the University of Tennessee will compete this weekend in an 1,100-mile race of cars modified to run on methanol, a type of alcohol.

Fifteen teams from colleges in the United States and Canada will compete in the 1989 Society of Automotive Engineers Methanol Marathon, which begins Saturday in Detroit and concludes May 3 in Washington, D.C.

The purpose of the race is to show how methanol can be used as an alternative to gasoline. The primary sponsors are General Motors Corp., the U.S. Department of Energy and the Canadian Department of Energy, Mines and Resources. General Motors gave each team a 1988 Chevrolet to convert to methanol use.

Gloversville, N.Y. Leader Herald, April 26, 1989

ENGINEERING STUDENTS at New York Institute of Technology, Old Westbury, stand with their Methanol-powered Chevrolet Corsica LT, which they will use to compete in the 1,100-mile, 5-day rally across the U.S. and Canada, beginning May 1 in Utica. Teams of engineering students from 14 colleges nationwide and Concordia University, Montreal, will take part in the race. **(AP Laserphoto)**

Gloversville, N.Y. Leader Herald, April 26, 1989

ENGINEERING STUDENTS at New York Institute of Technology, Old Westbury, stand with their Methanol-powered Chevrolet Corsica LT, which they will use to compete in the 1,100-mile, 5-day rally across the U.S. and Canada, beginning May 1 in Utica. Teams of engineering students from 14 colleges nationwide and Concordia University, Montreal, will take part in the race. **(AP Laserphoto)**

Norton (KS) Daily Telegram, April 26, 1989

WSU students compete in road rally

WICHITA, Kan. (AP)–Fifteen Wichita State University engineering students will compete in a 1,100-mile road rally sponsored by General Motors to test the fuel-burning efficiency of Methanol.

The team goes to Detroit Wednesday to begin the five-day rally that winds through Toronto; Rochester, N.Y.; Wilmington, Del.; and ends in Washington, D.C. the winning team gets $20,000.

Wichita State is one of 15 college teams chosen from across the country, and the only one from Kansas, to participate in the race.

General Motors donated a 1988 Chevrolet Corsica LT and a kit that included a tank and fuel injectors. With the kits, the students converted the engines to run on methanol.

Steven Beeny, one of the 10 students who will drive in the rally, said the biggest problem was reaching an agreement.

"The hard part was trying to argue your point over someone else's," said Beeny. "We could change the engine any way we wanted so there was some disagreement."

To win, the students must excel in the driving segment of the rally and must do well in such key areas as fuel economy and accelerations.

Ft. Collins, CO Daily Times-Call, April 26, 1989

Geared up

CSU eyes first in Methanol Marathon

By DANA COFFIELD
Times-Call Staff Writer

By the time most Colorado State University undergrads sit down to take their final examinations, a team of 21 mechanical engineering students will be on the road to Washington, D.C., as competitors in the Methanol Marathon.

Carr

Over six days, CSU drivers will pilot a custom converted, methanol-powered Chevrolet Corsica from Detroit to Toronto, New York City and then on to the nation's capital competing for the best fuel economy over the 1,100-mile course.

CSU's team is one of 15 chosen last fall to take part in the competition that gets under way Friday. Potential competitors were asked to submit a conversion strategy for making an ordinary gasoline-burning automobile perform well on a mixture of 85 percent methanol and 15 percent gasoline.

"We were awarded a 1988 Corcica, $1,000 in cash and a conversion kit that consisted of methanol tolerant gas tank and fuel lines and oversized fuel injectors," said Jim Bloemen, a graduate student who is troubleshooter for the project. "That's what all the universities started with, but we all took different approaches to solving the problems associated with running on 85 percent methanol."

Up until about 12 hours before the CSU team packed up the car and headed off to Detroit Tuesday morning, the engineers were having trouble with the fuel injectors. Fuel injector problems or not, Bloemen said, CSU is going to give all of the other competitors a run for their money.

Colorado's Best Chevrolet Dealers contributed $35,000 in cash to the project, which Bloemen said has enabled CSU's plan to get off of the drawing board and onto the road.

"We could have competed, but not at the level we're going to be at," he said. "We have a good chance of taking first place from Maryland and the University of Michigan. They're the ones we are really going to have to beat."

Longmonter Jeff Carr, a senior mechanical engineering student, explained that the CSU project has taken a comprehensive approach to the problems of conversion.

"We three are the main competition," Carr said. "The other schools don't seem to have as comprehensive a program as we do. The design of our car is more comprehensive. We've covered all the bases: cold start, fuel economy and lean burn strategy."

The race — sponsored in part by the Canadian Department of Energy — takes the competitors into Canada in hopes of encountering some cool weather to see if the engineers have overcome the problem of getting methanol to vaporize at low temperatures.

Carr, who will be one of the drivers during the race, said another hurdle to jump has been learning to drive without merely putting the pedal to the metal.

He said the competitors will be judged according to their fuel economy and arriving at various check points at a precise time.

"You've got to get up to speed as slowly as possible," he said. "You can't just floor it and expect to get good fuel economy."

The racers will be followed by a support van and a motorhome full of their fellow engineers throughout the race.

"But we're not allowed to touch the car unless we have a mechanical failure," Carr said.

Arkansas (KS) City Traveler, April 26, 1989

Students in rally

WICHITA (AP) — Fifteen Wichita State University engineering students will compete in a 1,100-mile road rally sponsored by General Motors to test the fuel-burning efficiency of methanol.

The team goes to Detroit Wednesday to begin the five-day rally that winds through Toronto; Rochester, N.Y.; Wilmington, Del.; and ends in Washington, D.C. The winning team gets $20,000.

Florida Today, Melbourne, FL, April 26, 1989

SPACE COAST NEWSMAKERS

State salutes F.I.T. team

TALLAHASSEE — Both chambers of the Florida Legislature Tuesday approved resolutions honoring Florida Institute of Technology students preparing to participate in a Methanol Marathon this week.

The 10-member F.I.T. team modified the engine of a Chevrolet Corsica so it can operate on a mix of methanol and gasoline and reduce the amount of pollutants it emits.

The team will compete against 14 other colleges in a 1,100-mile driving marathon beginning Friday in Detroit and ending May 4 in Washington, D.C.

Team leader **Doug Hahn** of Melbourne said the car averaged 21 miles per gallon driving to Tallahassee, where it was displayed in the Capitol courtyard Tuesday.

"We're right up front with what other people have reported," he said. "I think we have a real good chance of winning."

The leading teams will split cash prizes of more than $20,000.

Sen. **Tim Deratany**, R-Indialantic, and Rep. **Harry Goode**, D-Melbourne, sponsored the resolutions.

Reported by FLORIDA TODAY Staff Writer Vincent Willmore.

Iola (KS) Register, April 26, 1989

News in brief

WSU students to test methanol in race

WICHITA, Kan. (AP) — Fifteen Wichita State University engineering students will compete in a 1,100-mile road rally sponsored by General Motors to test the fuel-burning efficiency of methanol.

The team goes to Detroit Wednesday to begin the five-day rally that winds through Toronto; Rochester, N.Y.; Wilmington, Del.; and ends in Washington, D.C. The winning team gets $20,000.

Wichita State is one of 15 college teams chosen from across the country, and the only one from Kansas, to participate in the race.

General Motors donated a 1988 Chevrolet Corsica LT and a kit that included a tank and fuel injectors. With the kits, the students converted the engines to run on methanol.

New York Daily News, April 26, 1989

Students' special car is a rally big challenge

By JERRY ROSA
Daily News Staff Writer

Nine college students at the New York Institute of Technology in Old Westbury plan to set off today in a bid to win a 1,150-mile road rally with a car that runs on fuel that is mostly methanol.

"Its a very big challenge, we are only students and not fullscale engineers, this is giving us the experience to learn on real world issues," said Richard Kramer, 22, an engineering technology student who is the project coordinator.

He and eight fellow students are among collegians from 15 schools nationwide taking part in the first-of-a-kind rally from Detroit to Washington, D.C. The Rochester Institute of Technology is the only other New York school to participate.

The rally's top prize is $15,000. The contest, scheduled to end on May 4, is sponsored by four goverment agencies and General Motors.

At Javits Center

All 15 cars will be displayed May 2 at the Jacob Javits Convention Center in Manhattan.

In a road rally, participants must travel a certain distance at a certain speed and pass markers along the way at an exact time. Penalty points are given for those who travel too fast or too slow.

The students have worked for many hours, reworking parts of the engine, reprograming the engine's computer and fine-tuning the 2.8-liter, V-6 engine of the Chevrolet Corsica they were given to make it run on a mixture of methanol and gasoline.

"We are using 85% methanol and 15% gasoline," said Kramer, adding that the gasoline is needed for starting a cold engine and as a indicator in case there is a fire. Methanol burns invisibly, he said.

Sources of methanol

"Its a great alternative to gasoline, and can be recovered from coal and natural gas resources, and, possibly, out of garbage," said Kramer, adding that methanol, when burned, produces extremely low levels of carbon monoxide. He added that methanol is also derived from corn byproducts.

He said GM gave the students the car, a stainless-steel gas tank, a fuel pump, fuel lines and an engine manual and kit for use in converting the car to methanol.

The rest was up to the students' brain power and skill in trying to get the most mileage out of the car.

"Our goal is to get a high fuel economy," said Kramer, adding that he and his colleagues have achieved 13 miles per gallon.

"We've put a lot of hard time and hours into it," he said. "We hope to make the timing exactly on the second."

Columbus (KS) Daily Advocate, April 26, 1989

Wichita State Students Competing in Road Rally

WICHITA, Kan. (AP) — Fifteen Wichita State University engineering students will compete in a 1,100-mile road rally sponsored by General Motors to test the fuel-burning efficiency of methanol.

The team goes to Detroit Wednesday to begin the five-day rally that winds through Toronto; Rochester, N.Y.; Wilmington, Del.; and ends in Washington, D.C. The winning team gets $20,000.

Wichita State is one of 15 college teams chosen from across the country, and the only one from Kansas, to participate in the race.

General Motors donated a 1988 Chevrolet Corsica LT and a kit that included a tank and fuel injectors. With the kits, the students converted the engines to run on methanol.

Steven Beeny, one of the 10 students who will drive in the rally, said the biggest problem was reaching an agreement.

"The hard part was trying to argue your point over someone else's," said Beeny. "We could change the engine any way we wanted so there was some disagreement."

To win, the students must excel in the driving segment of the rally and must do well in such key areas as fuel economy and accelerations.

MONDAY MORNING NEWS, Detroit, MI 4/26/89

U-M'S METHANOL MARATHON entry was on display at the GM Building last week as part of the activities leading up to the GM-sponsored Methanol Marathon, which begins this weekend at the Tech Center.

will lead the teams through Canada, New York, Delaware and Maryland, with the finish scheduled for May 3 at the University of Maryland in College Park.

During the Time Speed Distance (TSD) rally, the methanol-fueled vehicles will be tested for cold start driveability and fuel economy. The combined scores from all stages of the marathon will determine the winner.

The Methanol Marathon is sponsored by General Motors, the U.S. Department of Energy, and the Canadian Department of Energy, Mines and Resources. It is organized by the Society of Automotive Engineers and the Argonne National Laboratory.

Atchison (KS) Daily Globe, April 26, 1989

Students enter rally

WICHITA, Kan. (AP) — Fifteen Wichita State University engineering students will compete in a 1,100-mile road rally sponsored by General Motors to test the fuel-burning efficiency of methanol.

The team goes to Detroit Wednesday to begin the five-day rally that winds through Toronto; Rochester, N.Y.; Wilmington, Del.; and ends in Washington, D.C. The winning team gets $20,000.

Coloradoan, April 26, 1989

Ready for rally

Kent Meireis/The Coloradoan

METHANOL MARATHON: Simon Prakash hops out of the Colorado State University methanol vehicle with the help of fellow student David Dummer. A 20-member team from the CSU mechanical engineering department left Tuesday for Detroit to test the car in a Methanol Marathon. In addition to other factors, the car will be judged for fuel economy during a five-day, 1,100-mile road rally from Detroit to Washington, D.C.

Lawrence (KS) Journal, April 26, 1989

WSU sends team to GM road rally

WICHITA (AP) — Fifteen Wichita State University engineering students will compete in a 1,100-mile road rally sponsored by General Motors to test the fuel-burning efficiency of methanol.

The team goes to Detroit today to begin the five-day rally that winds through Toronto; Rochester, N.Y.; Wilmington, Del.; and ends in Washington, D.C. The winning team gets $20,000.

Wichita State is one of 15 college teams chosen from across the country, and the only one from Kansas, to participate in the race.

General Motors donated a 1988 Chevrolet Corsica LT and a kit that included a tank and fuel injectors. With the kits, the students converted the engines to run on methanol.

Steven Beeny, one of the 10 students who will drive in the rally, said the biggest problem was reaching an agreement.

"The hard part was trying to argue your point over someone else's," said Beeny. "We could change the engine any way we wanted so there was some disagreement."

To win, the students must excel in the driving segment of the rally and must do well in such key areas as fuel economy and accelerations.

Arkansas City (KS) Daily Traveler

WSU team to methanol rally

A team of Wichita State University engineering students will begin a 1,100 mile road rally April 29 starting from the General Motors Technical Center at Warren, Mich. (near Detroit). The team is one of 15 chosen from across the United States and Canada to participate in the Methanol Marathon, a competition sponsored by General Motors Corp., the U.S. Department of Energy and the Canadian Department of Energy, Mines and Resources.

Each team was required to convert a 1988 Chevrolet Corsica LT to burn methanol fuel for the five-day rally through Toronto, Rochester, New York City and Wilmington, Del., to the final destination, Washington, D.C. The students' experience converting the cars and running the rally will yield valuable data on how methanol performs under real world conditions.

The 15 teams chosen for the marathon were selected for having the most innovative and competent proposals among 31 submitted. Each team was presented with a car and a conversion kit, which includes a fuel tank, high-flow fuel pump and fuel injectors, special fuel lines and a computer calibration module.

The vehicles will run on a mixture of 85 percent methanol and 15 percent gasoline. Key elements in the competition will be fuel economy, startability, emissions, acceleraton and rally times. The U.S. Department of Energy and the Canadian Department of Energy, Mines and Resources will provide $20,000 in prizes.

The Methanol Marathon has been organized by the Society of Automotive Engineers and the Argonne National Laboratory. The Sports Car Club of America, Inc., is sanctioning the rally. Associate sponsors include BP Oil, The Lubrizol Corp., Goodyear Tire and Rubber Co. and the Canadian Oxygenated Fuels Association.

Lehighton, PA Times News, April 25, 1989

Lehighton resident on PSU road rally team

UNIVERSITY PARK, Pa. — Scott Geiger of Lehighton, is part of a Penn State University team competing in an April 29-May 1 international road rally focusing on the use of alternative fuels.

Called the SAE Methanol Marathon, the rally will cover 1,100 miles from Detroit, Mich., to Washington, D.C. Student teams from 15 colleges and universities in the United States and Canada have converted Chevrolet Corsicas to run on M85 fuel, which is composed of 85 percent methanol.

The event is sponsored by the General Motors Corp., the U.S. Department of Energy and the Canadian Department of Energy, Mines and Resources. It is organized by the Society of Automotive Engineers (SAE), and the Argonne National Laboratory in Illinois.

The Penn State team of mechanical engineering students was selected as a finalist from among more than 30 schools submitting proposals for converting the car to run on methanol. The team picked up the Corsica during a Methanol Marathon kick-off in November at the GM Technical Center in Warren, Mich., and has been working on the conversion process for several months.

Rally highlights include a drive as far north as Toronto, Ontario; a news conference in New York, N.Y.; stops at GM plants where the Corsica and its engine are produced, and the announcement of the winners on Capitol Hill in Washington, D.C. A total of $20,000 in cash prizes will be awarded.

Methanol Marathon organizers say the rally will provide valuable information on the performance of methanol under real-world conditions and technical data concerning the vehicle conversion process.

NEWSDAY APRIL 25, 1989

Racers, Start Your (Methanol) Engines

By Sid Cassese

For Jose Musso, the five-day Methanol Marathon is a matter of environment and energy, in that order.

For Christopher Blyseth, this first-ever marathon to demonstrate methanol-powered vehicles is a matter of energy and his love of cars.

Musso, 28, of Peru, and Blyseth, 22, of Northport, will lead an eight-person team of New York Institute of Technology students in the 15-car marathon (or rally) sponsored by four governmental agencies and General Motors. It will begin Thursday in Detroit and end in Washington, D.C.

Top prize for the rally will be $15,000. The winner will be determined from a variety of factors, including the vehicle's appearance, finish time and adherence to speed limits set for each leg by race organizers.

"We have to do something with the environment and simultaneously look for alternative fuels," said Musso, last year's president of the institute's chapter of the Society of Automotive Engineers. "There are a lot of ways to do this, and this is one of them — a fun one."

The sponsoring government agencies are the U.S. Departments of Energy and Transportation, the Argonne National Laboratories, outside Chicago, and the Canadian Department of Energy, Mines and Resources.

Blyseth, an electrical engineering student, and Musso, who studies mechanical engineering, were primarily responsible for the 15-page proposal that made the institute one of 15 selected from 31 applicants.

"Basically the proposal dealt with the problems of methanol use and our particular solutions to those problems," said Blyseth, this year's president of the engineering group.

The biggest problem, he said, was the difficulty of methanol ignition at low temperatures. The solution was a stronger ignition system — "more sparks to the plug," he said.

The 14 other schools participating in the 1,150-mile, methanol-fueled marathon include the Rochester Institute of Technology, the event's only other New York school, and Montreal's Concordia University, the only Canadian school involved.

General Motors supplied the 15 1988 Chevrolet Corsica LTs, along with kits for converting the cars to methanol use. The fuel used actually is 85 percent methanol and 15 percent gasoline. GM facilities will be used for refueling the six-cylinder, fuel-injected cars that will travel the marathon's route at regular highway speeds. It was the only automobile manufacturer willing to sponsor the marathon, according to federal and GM officials.

[redacted]

Although only eight student members from the Society of Automotive Engineers actually are participating in the rally — four teams of driver and navigator — twice that many worked on the car, said Bernard Gleimer, assistant dean of engineering at the institute. Musso and Blyseth will share in the driving.

Also, he said, a four-person team from its communications department will officially film the entire rally.

Detroit, MI 4/24/89
MONDAY MORNING NEWS

Methanol Marathon Team Answers Alternative Auto Fuel Questions

By Kim Diehr
Staff Writer

When the sponsors of the Methanol Marathon issues a challenge to the nation's top schools last year, a team of engineering students from the University of Michigan could not resist picking up the gauntlet.

The challenge was to convert a gasoline-powered Chevrolet Corsica into a methanol-powered vehicle capable of performing in today's automotive marketplace.

How successfully the U-M student mechanical, computer and electrical engineers answered this challenge will soon be known, as the 1,100-mile Methanol Marathon gets underway at the General Motors Tech Center, April 29.

As a preview to the inaugural event, New Center Area visitors received an inside look at the U-M students' methanol-converted 1988 Corsica through a display positioned in the GM Building's East Exhibit Showroom.

In conjunction with the display, U-M Methanol Marathon project team captain Susan Fancy and U-M Engineering Department Faculty Advisor William B. Ribbens were on hand, April 17, to explain the Wolverines' competition concepts and strategies.

According to Fancy, a U-M junior in mechanical engineering and economics, the team approached the methanol challenge from a very practical standpoint.

The group worked from the general concept of, what would the average person need to convert a gasoline-powered car?

"We wanted it to be a cost-effective, simple to install technique, that was customer friendly," Fancy said.

The 17-member student team used the methanol conversion kit provided by General Motors, in addition to adding a few innovative features of their own.

To combat one area of concern — cold start driveability — the team changed the car's compression ratio and installed a fuel-fired heater manufactured by Webasto.

The students also reprogrammed the Corsica's electronic engine control computer to handle methanol.

"We're confident that our conversion package will satisfy competition objectives," Fancy said.

"I'm not sure that we will win (the road rally) but I do predict we'll finish the race," she added.

The competition will be tough, as students from 15 universities and colleges in the United States and Canada vie for a share of the $20,000 in prizes.

Last fall, each of the teams were given identical 1988 Chevrolet Corsicas to convert over to methanol-burning vehicles.

The cars arrived equipped with 2.8 liter multi-port fuel-injected V-6 engines, 5-speed manual transmissions, sport suspensions and air conditioning.

The methanol conversion kits contained stainless steel fuel tanks, high-flow fuel pumps and fuel injectors, special fuel lines and computer calibration models.

The event is dubbed as "Challenging Future Engineers to Tackle Tomorrow's Energy Needs."

Through the Methanol Marathon, the auto industry and various organizations and agencies, hope to learn more about methanol as an alternative to gasoline from the student's conversion data, ideas and innovations.

"We think it's very timely and prudent of a company like General Motors to be involved in exploring the alternatives to gasoline," Ribbens commented.

"Methanol is toxic, and very difficult to handle . . . and while it's available today, it doesn't come without a price.

"We'll have to pay that price if we face a time when gas is no longer available unless we explore the alternatives now," he continued.

The student teams will face off at the Tech Center, April 28, when their cars are judged for acceleration, emissions, and conversion design and fabrication.

The 1,100 mile road rally will begin April 29 in Warren. The rally route

UNIVERSITY OF MICHIGAN Methanol Marathon Team Captain Susan Fancy demonstrates the sophisticated computer monitor installed on the university's methanol-converted Chevrolet Corsica. The Wolverines will be one of 15 colleges and universities participating in the Methanol Marathon, which begins April 29 at the GM Tech Center in Warren. —photo by Joseph Oster

Providence, RI Journal, April 23, 1989

Rally to test methanol as alternative car fuel

AUTO WHIRL
By Ken Parker

A rally with a serious purpose will be held next week.

It's the Methanol Marathon, aimed at learning more about methanol as an alternative to gasoline.

Engineering students from 15 colleges and universities in the U.S. and Canada have prepared and will drive 15 Chevrolet Corsica sedans from the General Motors Technical Center in Warren, Mich., 1,100 miles to the University of Maryland in College Park.

Rallyists will leave the GM Tech Center on Saturday, proceed through Toronto, Tonawanda (N.Y.), Rochester, New York City, Wilmington, Del., and finish May 3 at College Park.

Winners will be announced on May 4 and awarded shares of $20,000 in prizes at a government-industry meeting.

Organized by the Society of Automotive Engineers (SAE) and the Argonne National Laboratory, the rally is sponsored by General Motors, the U.S. Department of Energy (DOE) and the Canadian Department of Energy, Mines and Resources.

Associate sponsors are BP Oil Co., The Lubrizol Corp., Goodyear and the Canadian Oxygenated Fuels Association. The Sports Car Club of America (SCCA) is conducting the rally.

Competition began early last year when student engineering teams from colleges and universities in the U.S. and Canada were invited to apply for rally spots by writing proposals on the conversion to methanol.

Proposals were received from more than 30 schools in 18 states and Canada. A panel from business and government chose the 15 rallyists, based on the technical merits of their proposals.

The winning teams were invited to the GM Tech Center early last November to accept the cars and conversion kits provided by GM, and $1,000 from DOE to help with conversion. Students drove the cars home on gasoline, and this week will drive them back to the Tech Center on methanol.

Cars have 2.8-liter multiport fuel-injected V6 engines, five-speed manual transmissions, sport suspension and air conditioning.

On Friday, cars will be judged for acceleration, emissions and conversion design and fabrication. During the rally, they will be tested for cold start driveability, fuel economy and rally times.

Combined scores from all categories will determine the winner of the Methanol Marathon.

Fourteen teams are from the U.S. There are two each from Michigan and New York (state). One each are from California, Colorado, Florida, Kansas, Maryland, Missouri, Pennsylvania, Tennessee, Texas and West Virginia. The Canadian team is from Concordia University in Montreal.

Rally stops include:

- ORTECH, Toronto, and GM's AC Rochester engineering facility, both research centers.
- A news conference in New York City, where six GM methanol-fueled buses are operating.
- C-P-C (Chevrolet-Pontiac-GM of Canada) Group plants in Linden, N.J., and Wilmington, Del., where Corsicas are produced, and the C-P-C Tonawanda, N.Y., engine plant where the Marathon Corsicas' engines were built.
- Capitol Hill, where Congressmen from states where schools are located will congratulate their teams.

Rochester (NY) Democrat and Chronicle

RIT car may steer U.S. to future fuel

Whenever there's a crisis, the greedheads at the oil companies waste no time jacking up prices at the gas pumps.

It's happened over the past 15 years because of turmoil in the Middle East. And it's happening now because of the *Exxon Valdez* disaster in Alaska.

BUT THAT COULD change someday, partly because of work being done at Rochester Institute of Technology and 14 other universities in the United States and Canada.

A dozen RIT engineering students are converting a 1988 Chevrolet Corsica LT to run on methanol instead of gasoline. Students at the other universities are doing the same with identical cars.

Beginning April 28, the cars will compete in a five-day, 1,100-mile international road rally — the Methanol Marathon — that will measure how well the cars perform.

For the students, the stakes are high; $20,000 in prizes go to the winners.

For the nation, the stakes are higher.

Alan Nye

If an economical way can be found to run cars on methanol — an alcohol that can be made from natural gas or coal — we could reduce our dependence on oil.

The switch to methanol also could reduce dangerous auto emissions now being pumped into the atmosphere by gasoline-powered engines — emissions that are contributing to a gradual warm-

"It has gotten to the point where people realize that the environment is a fragile, delicate balance and we can't keep going the way we have been," said Alan H. Nye, an associate professor of engineering at RIT who is advising the students' efforts with the car.

THE HITCH, though, is designing cars that can efficiently burn methanol, while keeping performance and mileage high, then mass-producing them at an affordable cost. The automakers in Detroit have been wrestling with the problem for years; now they're turning to students for a little help.

"They've given 15 cars to 15 teams and said, 'Play with the operating perimeters and try to come up with something we can use to design a car for the general public,'" Nye said.

"Making the switch to alternative fuels is not going to be easy," he said. "But it's going to have to happen and the sooner we get busy, the better."

NYE, AN ENTHUSIASTIC and affable man, has a Ph.D. in solar physics and once applied to be an astronaut. A year after he came to RIT in 1977, he became faculty adviser of the institute's student chapter of the Society of Automotive Engineers.

That led him and his students into competitions such as the Mini-Baja, in which students design and operate all-terrain vehicles.

But now General Motors, the U.S. Department of Energy and Canada's Department of Energy, Mines and Resources have cooked up the Methanol Marathon. Schools chosen to compete, besides RIT, include the University of Michigan, the University of Maryland, Colorado State University, West Virginia University and Texas Tech University.

Each school was given a car and $1,000 to help convert the car to methanol. The money, however, is a drop in the bucket; Nye estimates that RIT's effort will cost $10,000 and says he's looking for donations or services.

The marathon will begin in Detroit and end in Washington, D.C. The competitors will make an overnight stop in Rochester April 30 and May 1.

Along the way, GM technicians will check every car's performance — fuel consumption, acceleration, emissions — under "real-world" conditions.

THE RIT STUDENTS rebuilt the car's 2.8-liter, V-6 engine and put it back into the car last week. There were a few hitches, such as a frantic search for a bushing that — as it turned out — never existed.

But student Paul Van Brocklin, one of the 12 who have worked on the conversion, is confident.

"There's going to be two groups of cars competing," he said. "There'll be the top four or five, then there'll be all the rest."

Which group will RIT be in?

"Near the top. I hope."

Michael Zeigler is the local news columnist for the Democrat and Chronicle.

Los Angeles Daily News, April 22, 1989

CSUN student engineers in 'Methanol Marathon'

By KAREN KINGSBURY
Daily News Staff Writer

NORTHRIDGE — Student engineers from California State University, Northridge are headed for the future.

A team of 16 students left campus Friday for Detroit where they will take turns driving in a 1,100-mile "Methanol Marathon" to Washington D.C.

"Methanol is a crucial element to our clean air plan in the next 20 years," said Tom Eichhorn, a spokesman for the South Coast Air Quality Management District. "We're anxious to prove the feasibility of methanol fuel as an alternative to gasoline."

The students converted a Chevrolet Corsica to run on methanol fuel during the five-day journey, which will begin April 28.

When they reach the nation's capital, the student engineers — along with teams from 14 other universities — will meet with the Society of Automotive Engineers.

The development of alternative fuels to improve the environment and the quality of air is an especially significant and urgent priority, said CSUN President James W. Cleary.

"This is very exciting because Los Angeles County and the San Fernando Valley in particular is so dependent on the automobile," Cleary said at a press conference Friday.

Officials from South Coast Air Quality Management District who donated $5,000 to the Northridge team hope the students will break technological ground in automotive emissions.

The marathon is intended to help evaluate methanol as a future fuel.

The AQMD's recently adopted Air Quality Management Plan calls for 40 percent of the cars and 70 percent of the trucks on the road to run on clean fuels such as methanol by the year 2000.

"We hope to get some data from this to further our current research," Eichhorn said. "But the most important thing to come out of this is public awareness."

Eichhorn said in order to curb increasing air pollution in the Los Angeles basin, it is essential that the public take notice of events such as the Methanol Marathon.

Hutchinson (KS) Daily News, April 22, 1989

Methanol motorin'

Cars in road rally will be powered by unconventional fuel

By Ray Hemman
The Hutchinson News

WICHITA — When Hutchinson's Tony Schwartz hits the road late next week, he won't be able to stop into just any service station to "fill 'er up."

That's because Schwartz and eight other students from Wichita State University are embarking on a road trip in a methanol-powered Chevrolet Corsica LT. The group will be one of 15 teams from schools in the United States and Canada to participate in the Methanol Marathon.

Friday, the mechanical engineering class that set up the car posed for pictures and talked about their alcohol-powered vehicle. The competition is sponsored by General Motors, the U.S. Department of Energy and its Canadian counterpart.

The competition actually began last fall as students submitted applications for the contest, detailing how they would modify a regular unleaded gasoline-burning engine to burn methanol. The 31 schools that entered were pared to 15.

Methanol is a fuel commonly called "wood alcohol" as opposed to ethanol, which is grain alcohol. Methanol, however, can be produced from several sources other than wood, including coal and natural gas, said Richard Graham, professor of mechanical engineering at WSU and faculty adviser for the project.

The alcohol-based fuel generally causes less pollution than typical gasoline vehicles.

Regular fuels blended with methanol have been attacked by major engine manufacturers because of the corrosive nature of methanol. To deal with the corrosive nature of the fuel, GM included a conversion kit with each of the vehicles, which were delivered to the schools last fall.

The conversion kits included a new stainless-steel fuel tank, Teflon fuel lines, new injectors and a new fuel pump. In addition, GM installed an on-board computer to allow students to more easily control air-fuel ratios.

The fuel used by the car is 85 percent methanol and 15 percent gasoline. Most gasohol blends — alcohol and gasoline — contain a maximum of 10 percent alcohol — usually ethanol — and 90 percent gasoline.

The conversion was more difficult than simply swapping out parts. Methanol burns differently than does regular gasoline or gasohol, needing a higher-compression engine. Consequently, pistons were changed on the 173-cubic-inch

See RALLY, Page 2

Hutchinson Daily News (cont.)

Rally

Continued from Page 1

engine to increase the compression ratio.

The pistons were changed out by mechanics at Quality Chevrolet in Wichita, the school's local sponsor.

With the modifications, the car runs nicely when the engine is warm, but students still need to fine tune the air-fuel mixture for cold starts. Easy cold starts will be important if the Wichita State team wants to win.

"GM test drivers will hop in while it is cold," Schwartz said. "They want to see if the car hesitates. They also will do 0 to 60 (mph) performance and fuel economy."

Fuel economy also is different. Typically, a car the size of the Corsica burning regular unleaded gasoline would get between 25 and 30 miles per gallon. But the amount of energy in each pound of methanol is about half what it is for unleaded gasoline, typically cutting the mileage in half.

Yet the students at WSU have been able to squeeze 19.1 mpg out of their Corsica.

The cost of the fuel also is not particularly attractive currently. The fuel sells for about $1.50 a gallon but would drop to 75 cents a gallon once it was more widely produced, Schwartz said. Yet with only half the mileage, it still would be a more expensive fuel to burn.

Schwartz does not see methanol-powered vehicles becoming common until the government requires service stations to handle the fuel. There is a precedent for such a mandate. In the early 1970s, the federal government mandated that stations carry unleaded gasoline in order to allow car makers to use catalytic converters, a pollution-control device.

Since the fuel does not exist widely now, methanol will be available at certain check points along the 1,100-mile, five-day rally course. The rally starts near Detroit on April 29, wanders up through Canada and ends up in Washington, D.C.

Today, the students will ship the car to Detroit via a moving van. Nine of the team's 17 members will begin the drive to Detroit Wednesday.

When the rally is completed, the car will be returned to Wichita State as a gift from GM.

Hutchinson Daily News (cont.)

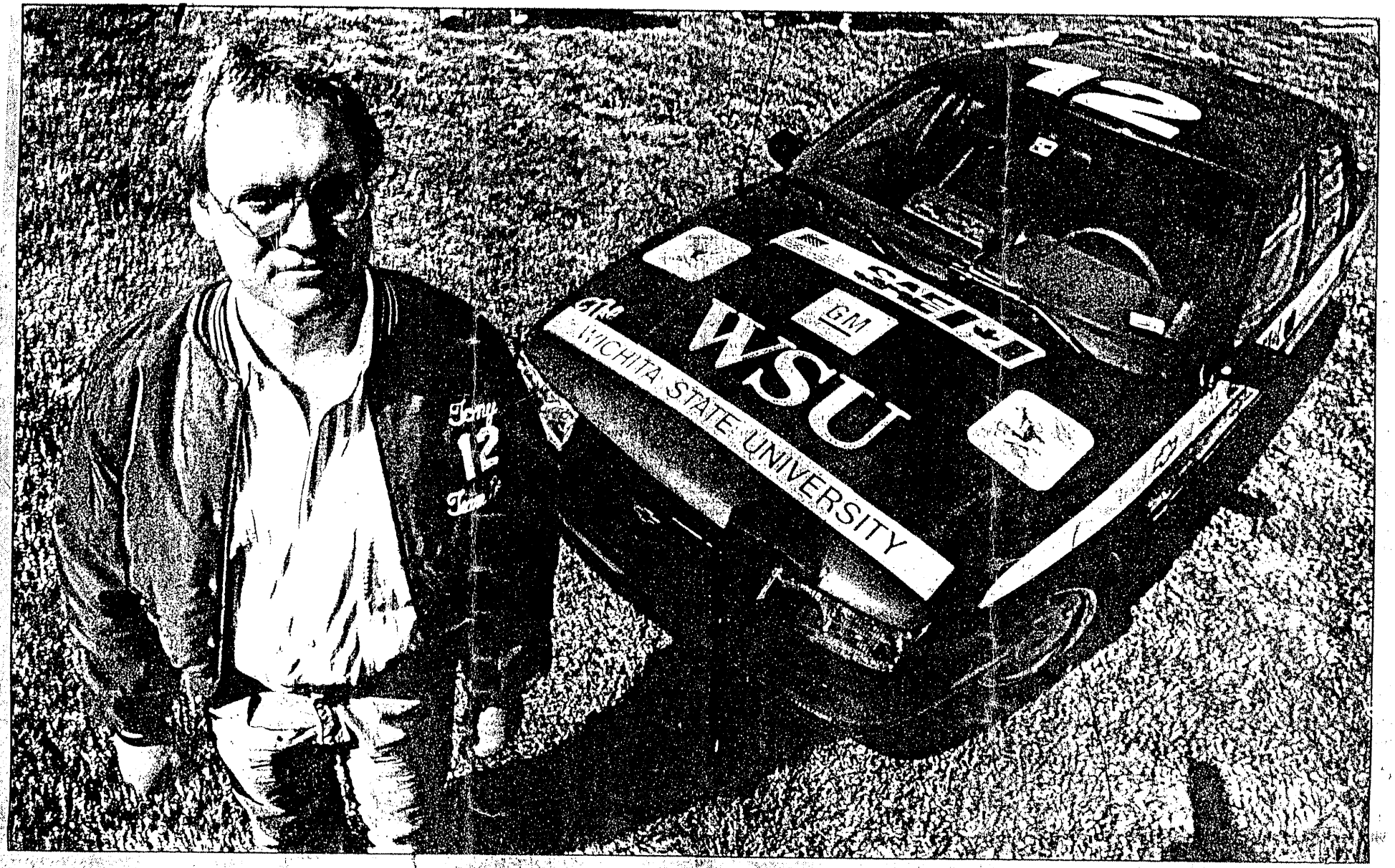


Photo by Monty Davis

Tony Schwartz of Hutchinson, along with eight other students from Wichita State University, will participate in a 1,100-mile road rally in a methanol-powered Chevrolet Corsica LT. The rally will begin near Detroit on April 29 and end in Washington, D.C.

Florida Today, Melbourne, FL, April 22, 1989

F.I.T. engineering team prepares for road rally with fuel of the future

By George White
FLORIDA TODAY

A group of Florida Institute of Technology engineering students is about to hit the road using the fuel of the future.

The F.I.T. team will compete against 14 other colleges in a 1,100-mile alternative fuels road rally beginning Friday. The race from Detroit to Washington, D.C., is scheduled to end May 4.

For the Society of Automotive Engineers Methanol Marathon, sponsored by General Motors, identical Chevrolet Corsicas were modified to operate on a mixture of 85 percent methanol and 15 percent gas.

Talk of using methanol — a type of alcohol distilled from grain or wood — was common during the gas crisis in the 1970s, but interest in the idea declined along with gas prices.

But that doesn't mean it was a bad idea, team members said at a send-off party on campus Friday.

"Using methanol for fuel kind of died for a while but it's coming back because of economy and emissions problems with conventional gas," said team leader Doug Hahn, 29, a junior in mechanical engineering.

After towing the cars to Detroit, the teams will face off Thursday at the GM Tech Center to have their cars judged for acceleration, emissions, and conversion design the day before the rally begins. The teams have modified the cars' exhaust systems, carburetors and electronics.

During the rally, in which each team member will drive about 200 miles, the cars also will be tested to find out how well they start in cold weather, what type of fuel economy they get and how well they stick to the rally timetable. Combined scores from all categories will determine the winner.

"I was looking for a hands-on experience because regular classroom stuff can get to be boring," said Mike Worthington, 19, of Melbourne, the youngest team member and only freshman.

"I've been on road trips before, but nothing like this."

The leading teams will split cash prizes of more than $20,000 at the 1989 SAE Government/Industry Meeting in Washington

Melbourne, FL, Florida Today
April 22, 1989

F.I.T. engineering team prepares for road rally with fuel of the future

By George White
FLORIDA TODAY

A group of Florida Institute of Technology engineering students is about to hit the road using the fuel of the future.

The F.I.T. team will compete against 14 other colleges in a 1,100-mile alternative fuels road rally beginning Friday. The race from Detroit to Washington, D.C., is scheduled to end May 4.

For the Society of Automotive Engineers Methanol Marathon, sponsored by General Motors, identical Chevrolet Corsicas were modified to operate on a mixture of 85 percent methanol and 15 percent gas.

Talk of using methanol — a type of alcohol distilled from grain or wood — was common during the gas crisis in the 1970s, but interest in the idea declined along with gas prices.

But that does not mean it was a bad idea, team members said at a send-off party on campus Friday.

"Using methanol for fuel kind of died for a while but it's coming back because of economy and emissions problems with conventional gas," said team leader Doug Hahn, 29, a junior in mechanical engineering.

After towing the cars to Detroit, the teams will face off Thursday at the GM Tech Center to have their cars judged for acceleration, emissions, and conversion design the day before the rally begins. The teams have modified the cars' exhaust systems, carburetors and electronics.

During the rally, in which each team member will drive about 200 miles, the cars also will be tested to find out how well they start in cold weather, what type of fuel economy they get and how well they stick to the rally timetable. Combined scores from all categories will determine the winner.

"I was looking for a hands-on experience because regular classroom stuff can get to be boring," said Mike Worthington, 19, of Melbourne, the youngest team member and only freshman.

"I've been on road trips before, but nothing like this."

The leading teams will split cash prizes of more than $20,000 at the 1989 SAE Government/Industry Meeting in Washington.

Brockton, MA Enterprise, April 22, 1989

THE ASSOCIATED PRESS

METHANOL MOTORING — Engineering students at New York Institute of Technology in Old Westbury, N.Y., stand with their methanol-powered Chevrolet Corsica LT which they will use to compete in a 1,100 mile, five-day rally across the United States and Canada beginning on May 1 in Utica, N.Y. The alternative-fuel powered car joins a group of other vehicles from 15 colleges nationwide and in Canada.

Jamestown, NY, Post-Journal, April 21, 1989

Ready To Race

Engineering students at the New York Institute of Technology in Old Westbury pose with their methanol-powered Chevrolet Corsica LT, which they will use to compete in the 1,100-mile, five-day race across the United States and Canada, beginning May 1 in Utica. Teams of engineering students from 14 colleges nationwide and Concordia University in Montreal will take part in the race. AP photo

Middletown, NY, Times Herald Record, April 21, 1989

AP photo

Ready to roll

Students at New York Institute of Technology in Old Westbury stand next to their methanol-powered Chevrolet Corsica LT, which they will use to compete in a 1,100-mile, five-day rally across the U.S. and Canada beginning May 1 in Utica. Fifteen colleges, including one from Canada, will compete.

Wellington (KS) Daily News, April 20, 1989

Wichita State engineering students to begin 1,100 mile road rally

A team of Wichita State engineering students will begin a 1,100 mile road rally April 29 starting from the General Motors Technical Center at Warren, Mich.

The team is one of 15 teams chosen from across the United States and Canada to participate in the Methanol Marathon, a competition sponsored by General Motors Corporation, the U.S. Department of Energy and the Canadian Department of Energy, Mines and Resources.

Each team was required to convert a 1988 Chevrolet Corsica LT to burn methanol fuel for the five-day rally through Toronto, Rochester, New York City and Wilmington, Del., to the final destination, Washington, D.C. The students' experience converting the cars and running the rally will yield valuable data on how methanol performs under real world conditions.

The 15 teams chosen for the marathon were selected for having the most innovative and competent proposals among 31 submitted. Each team was presented with a car and a conversion kit, which includes a fuel tank, high-flow fuel pump and fuel injectors, special fuel lines and a computer calibration module.

The vehicles will run on a mixture of 85 percent methanol and 15 percent gasoline. Key elements in the competition will be fuel economy, startability, emissions, acceleration and rally times. The U.S. Department of Energy and the Canadian Department of Energy, Mines and Resources will provide $20,000 in prizes.

The Methanol Marathon has been organized by the Society of Automotive Engineers and the Argonne National Laboratory. The Sports Car Club of America, Inc. is sanctioning the rally. Associate sponsors include BP Oil, The Lubrizol Corp., Goodyear Tire and Rubber Co. and the Canadian Oxygenated Fuels Association.

The following WSU students are involved in the marathon:

Wichita — Ahmed Abdul Al-Qawasmi, Ramle Awang, Michele Hall, Nihad Kassis, Dao Nguyen, Hieu Nguyen, Terry Stratton and Angie Ziesch; Derby — Robert Drummond and Ken Mead; Salina — Daniel Elliott; Clearwater — Timothy Leibold; Augusta — Rainey Rash; Hutchinson — Anthony Schwarts; Norton — Stan Wahlmeier; Andover — Steven Beeny; Kansas City (Kan.) Nadim Shami.

Augusta (KS) Daily Gazette, April 19, 1989

Beeny, Rash on Wichita State marathon team

Wichita State University engineering students Steven Beeny of Andover and Rainey Rash of Augusta are among the members of the WSU Methanol Marathon Team. The team will begin a 1,100 mile road rally April 29 starting from the General Motors Technical Center at Warren, Mich.

Each team was required to convert a 1988 Chevrolet Corsica LT to burn methanol fuel for the five-day rally through Toronto, Rochester, New York City, and Wilmington, Del.

Derby (KS) Daily Reporter, April 18, 1989

WSU Students Compete In Methanol Marathon

Robert Drummond and Ken Mead of Derby are members of a team of Wichita State engineering students who will begin a 1,100 mile road rally April 29. The starting point for the rally is the General Motors Technical Center at Warren, Mich., near Detroit.

The team is one of 15 teams chosen from across the United States and Canada to participate in the Methonal Marathon, a competition sponsored by General Motors Corporation, the U.S. Department of Energy and the Canadian Department of Energy, Mines, and Resources.

Each team was required to convert a 1988 Chevroley Corsica LT to burn methanol fuel for the five-day rally through Toronto, Rochester, New York City and Wilmington, Del., to the final destination, Washington, D.C. The students' experience converting the cars and running the rally will yield valuable data on how methanol performs under real world conditions.

The 15 teams chosen for the marathon were selected for having the most innovative and competent proposals among 31 submitted. Each team was presented with a car and a conversion kit, which includes a fuel tank, high-flow fuel pump and fuel injectors, special fuel lines and a computer calibration module.

The vehicles will run on a mixture of 85 percent methanol and 15 percent gasoline. Key elements in the competition will be fuel economy, startability, emissions, acceleration and rally times. The U.S Department of Energy and the Canadian Department of Energy, Mines and Resources will provide $20,000 in prizes.

The Methanol Marathon has been organized by the Society of Automotive Engineers and the Argonne National Laboratory. The Sports Car Club of America, Inc. is sanctioning the rally. Associate sponsors include BP Oil, The Lubrizol Corp., Goodyear Tire and Rubber Co. and the Canadian Oxygenated Fuels Association.

Avalanche-Journal, Lubbock, TX
April 17, 1989

Tech engineering team to go to marathon

Texas Tech News Services

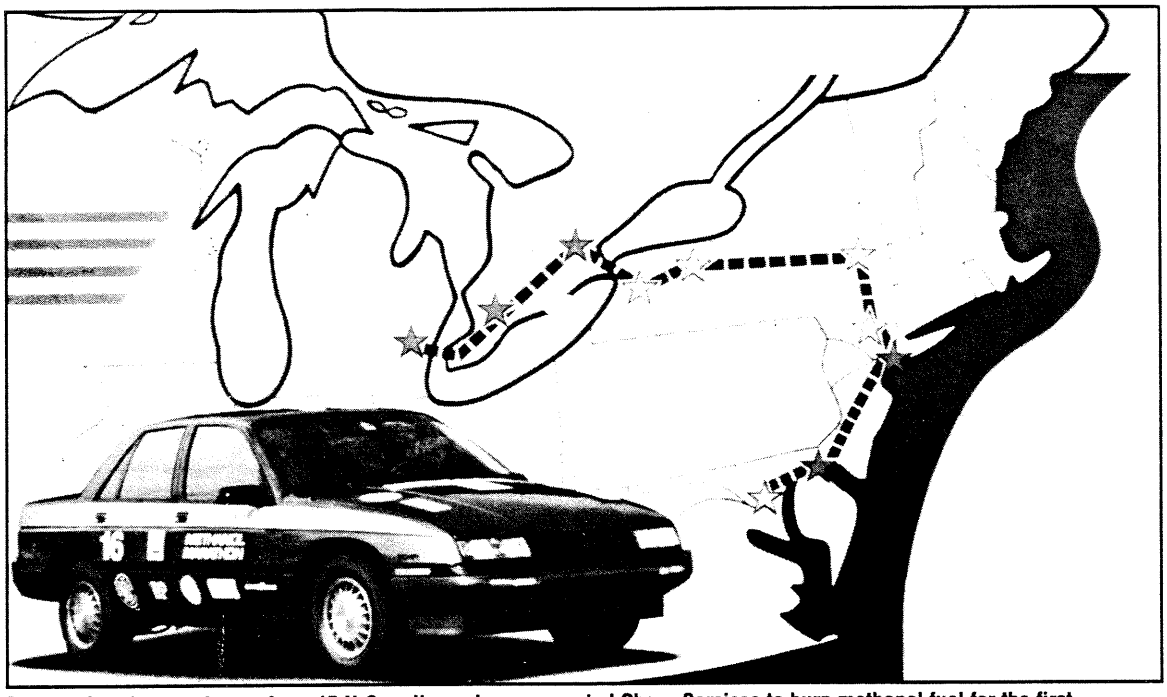
A Texas Tech student engineering team is among 15 teams nationwide to be selected to compete in the 1989 Society of Automotive Engineers Methanol Marathon contest April 29-May 3.

A five-day, 1,100-mile road rally, from Detroit to Washington, D.C., will begin April 29 to explore the advantages and challenges of using methanol as an alternative fuel.

Fuel blends containing methanol and gasoline reduce carbon monoxide emissions from certain vehicles and are being considered for use in cities with air quality problems, such as Denver, Los Angeles and Phoenix, said Jesse Jones, a Tech mechanical engineering lecturer.

Members of the team are seniors Bob Truman, Brenda Smith, David Bretherton, Richard Taeuber and junior Mike Walser.

Automotive News
April 17, 1989



Teams of student engineers from 15 U.S. colleges have converted Chevy Corsicas to burn methanol fuel for the first SAE Methanol Marathon, April 29-May 3. The rally starts in Warren, Mich., and ends at the University of Maryland.

Southeast Missourian, Cape Girardeau, MO, April 16, 1989

Methanol Marathon

Rally is test of fuel, learning

DETROIT--The 1,100 mile route for the Methanol Marathon, automotive road rally was revealed today at the SAE International Congress and Exposition.

The Marathon is a college engineering student event aimed at learning more about methanol as an alternative to gasoline fuels. it is sponsored by General Motors, the U.S. Department of Energy, and the Canadian Department of Energy, Mines and Resources. It is organized by the Society of Automotive Engineers (SAE) and the Argonne National Laboratory.

According to Donald L. Runkle, vice president in charge of the General Motors Advanced Engineering Staff, the rally -- which will culminate five months of effort by teams of engineering students at 15 universities and colleges in the U.S. and Canada -- will begin on April 29 at the General Motors Techical Center in Warren, Mich., and cover the 1,100 miles in five days.

"Nearly 200 of the finest engineering students in North America are working to win the Methanol Marathon," Mr. Runkle stated. "New technical data should come from each team's experience in executing its individual strategy to convert identical Chevrolet Corsicas to burn methanol. The rally itself will give valuable information on how methanol performs under real-world conditions."

Mr. Runkle said the rally will go through Toronto, Ontario; then to Tonawanda, Rochester and New York City, N.Y.; on to Wilmington, Del. and finish on May 3 at the University of Maryland in College Park. Winners will be announced the following day in Washington D.C. and awarded a share of $20,000 in prizes at an SAE Government/Industry meeting.

"The rally will be an exciting finish to an extremely competitive learning experience for these students," said SAE President George Aravosis. "The event has aroused interest in both the engineering and political communities," he added.

Associate sponsors of the rally are BP Oil Co., The Lubrizol Corp., The Goodyear Tire & Rubber Co., and the Canadian Oxygenated Fuels Assocation. The Sports Car Bluc of America, Inc. (SCCA) is conducting the rally.

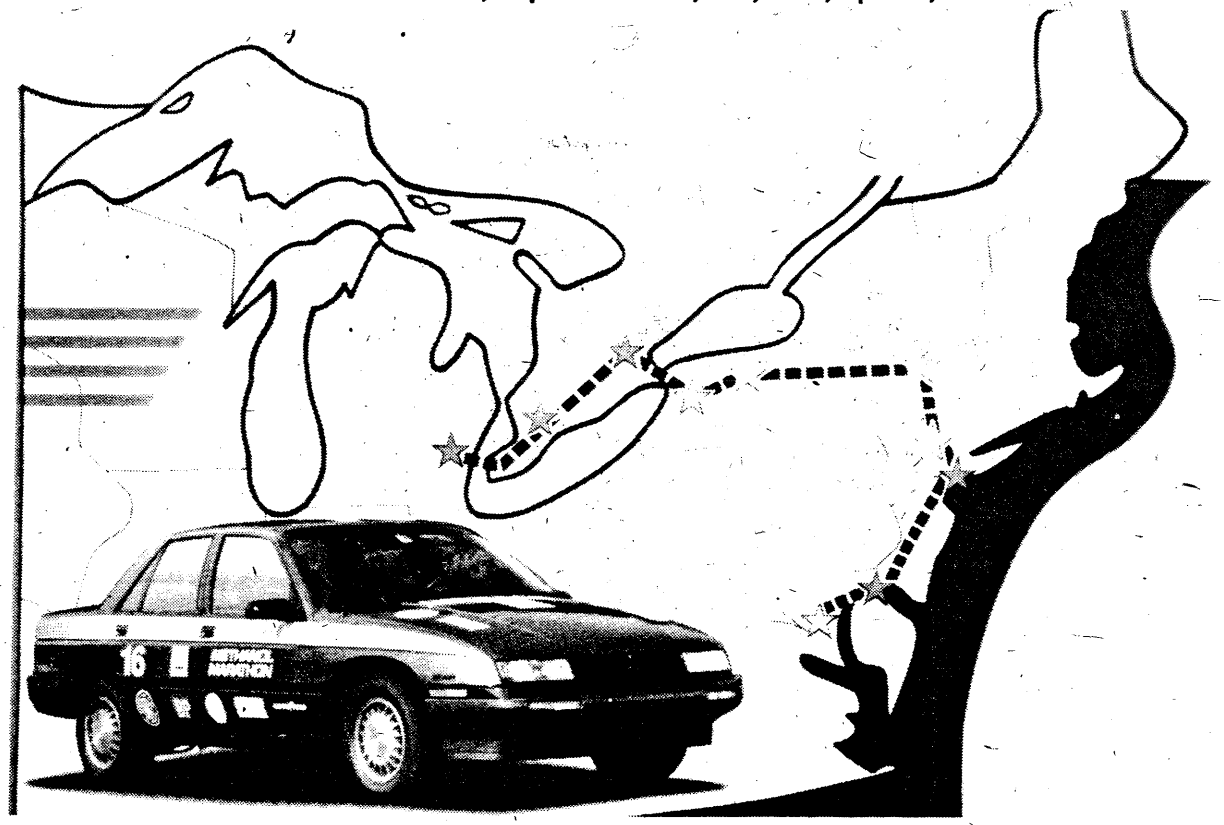
Last November, each student team took delivery of a 1988 Chevrolet Corsica LT and began converting the car to burn methanol fuel. Each car was equipped with a 2.8 liter multi-port fuel-injected V6 engine, 5-speed manual transmission, sport suspension and air conditioning.

Conversion kits given to the teams contained a stainless steel fuel tank, high-flow fuel pump and fuel injectors, special fuel lines and computer calibration module. The vehicles will run on a mixture of 85 percent methanol and 15 percent gasoline.

The teams will face off at the GM Tech Center on April 28 to have their cars judged for acceleration, emissions, and conversion design and fabrication the day before the rally begins.

During the rally, the methanol-fueled Corsicas also will be tested for cold start driveability, fuel economy and rally times. Combined scores from all of the categories will determine the Methanol Marathon winner.

Conversion proposals were received from over 30 colleges and universities in 18 states and Canada. A panel of judges from business and government selected the 15 finalists based on the technical merits of their proposals.



Methanol Marathon Rally Route

Teams of student engineers from 15 U.S. universities and colleges will drive Chevrolet Corsica like the car above in the first-ever Methanol Marathon. The competing teams have converted the cars to burn methanol fuel. They'll leave the General Motors Techical Center at Warren, Mich. (near Detroit) on April 29, 1989, and cover 1,100 miles in five days. The rally route (shown above) will go through Toronto, Ontario; Tonawanda, Rochester and New York City, N.Y.; and Wilmingston, Del. It will finish May 3 at the University of Maryland in College Park.

NEWSDAY, APRIL 16, 1989, SUNDAY

Cleaning Up After Cars

California plan spurs search for new fuels

By Tom Incantalupo
Newsday Automotive Writer

EXCEPT THAT IT IS PLASTERED with stickers, the blue 1988 Chevrolet Corsica parked on the college lawn in Old Westbury looks no different from when it rolled off a General Motors assembly line. Its engine sounds and runs like that of a stock Chevy.

But the car is very different, converted by engineering students at the New York Institute of Technology to run on methanol, a light alcohol that burns cleaner than gasoline.

It is one of thousands of experimental vehicles powered by alternatives to gasoline — natural gas and methane, alcohol-based fuels such as ethanol and gasohol, and electricity, to name a few. But the conversion is noteworthy because it coincides with an ambitious plan by air-quality officials in Southern California that could make vehicles like this one commonplace.

As the Californians envision it, low-pollution vehicles would gradually replace the 5.6-million gasoline-powered cars and trucks now fouling the air in the Los Angeles area.

The California proposal, part of a broad plan announced last month by a regional clean-air agency, is an effort to clean up the atmosphere in the four-county Los Angeles area — which, because of geography, warm weather and congestion, has the nation's worst air pollution despite some of the most stringent emissions standards in the country.

The plan has drawn nationwide attention as a possible model for other urbanized areas; it includes measures as various as controls on petroleum production and bans on gasoline-powered lawn mowers and barbecue starter fluid.

It would require, by 1993, that emissions of hydrocarbons and carbon monoxide from gasoline-powered cars be reduced from current levels and, ideally, a gradual phaseout of gasoline-powered cars in favor of those powered by cleaner means, especially electricity, so that all gasoline-powered cars would be gone by 2007. The plan still must be approved by the state and the U.S. Environmental Protection Agency and, for the provisions to take effect, each would have to be codified into law by appropriate government agencies.

The nation's carmakers view the plan with skepticism. They concede that methanol seems most promising as an alternative fossil fuel. But they contend that methanol-fueled cars represent technology that is not yet ready for prime time. They say electric cars have even further to go.

The carmakers contend that the California timetable for reducing emissions of gasoline-powered cars will be difficult and perhaps impossible to follow.

"The current version of the plan . . . depends for its realization on technology that doesn't exist," General Motors president Robert Stempel told a group of engineers in a speech recently.

Auto-exhaust pollution has been cut as much as 95 percent since the first federal standards took effect in 1970, experts say. "There is some controversy over what we achieve by going after the last 5 percent," said Michael Schwarz, manager of emissions-control analysis and planning for Ford Motor Co.

But environmentalists express confidence that the carmakers will be able to find the technical solutions if they are under pressure to do so. "They said the same thing back in 1970," said Ed Barks, a spokesman for the National Clean Air Coalition, a group based in Washington, D.C., and composed of representatives from more than 30 environmental organizations.

Methods under study to make auto exhaust cleaner include addition of a second catalytic converter located closer to the engine so that it will heat up faster and improve the cleaning of the exhaust when the engine is cold. Improved air- and fuel-mixing systems and changes in combustion-chamber shapes also offer hope for reducing emissions, in both cases by helping reduce the amount of unburned gasoline in exhausts.

For the longer term, methanol and electric power have strong advantages as alternatives to gasoline, experts say. Methanol, which can be produced from natural gas or coal, generally burns cleaner. "The trade-off in emissions is incredible," said Chris Blyseth, the 22-year-old senior who headed the conver-

—Continued from Page 75
sion project at New York Tech. A lab checked the Corsica's emissions as part of the project, which was sponsored by the federal government.

Methanol has a higher octane level than gasoline, so it can produce a bit more power. But it delivers lower fuel mileage than gasoline — about 50 percent lower in the case of the Corsica — and that could reduce its advantages. Also, partially burned methanol produces formaldehyde, an eye irritant that can combine with other ingredients to produce smog.

Even if gasoline and methanol cost the same per mile, methanol's lower mileage means reduced driving range on a full tank. Carmakers also note that, although methanol is used in a variety of industrial applications, facilities do not exist to produce it in the quantities needed to power millions of vehicles.

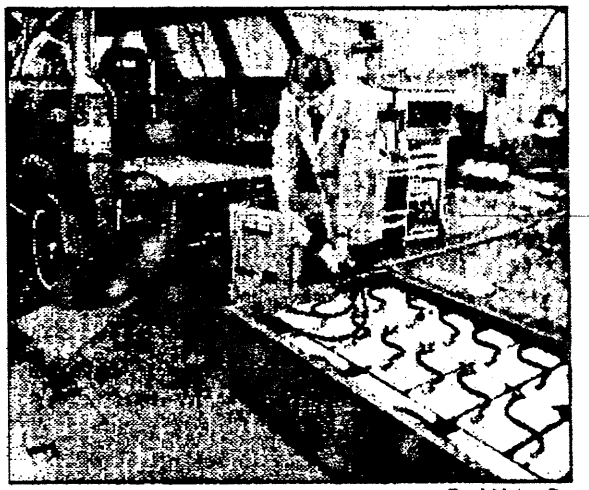
Clean Machines

Alternative-energy engines under development.

	What's Good	What's Bad
Methanol	Generally cleaner-burning. Some added horsepower. Can be produced from abundant natural gas or coal.	Produces more formaldehyde and carbon dioxide than gasoline, delivers fewer miles per gallon, so has range per tankful; difficult cold starting.
Battery	Produces almost no air pollution.	Short range. Long time to recharge.

Newsday

But Bill Kelly, a spokesman for the South Coast Air Quality management district, which wrote the Southern California air-pollution plan, said that the increase in use of such vehicles would be gradual. "We're not talking about millions of vehicles immediately . . . Once you get the ball rolling, the infrastructure to supply the fuel will be developed."



Ford Motor Co.

Ford technician charges 200-volt car battery.

The benefit of battery power is obvious: It produces virtually no air pollution. But, although carmakers have experimented for decades with electric power, they have been unable to develop storage batteries that will deliver, without severely reducing performance, much more than 100 miles of driving between recharges. "People aren't generally satisfied with a 100-mile range," said Ford's Schwarz.

The Ford ETX-II, an experimental electric-powered Aerostar minivan produced jointly by the carmaker and General Electric, shows the limitations of current technology. It can travel 100 miles between recharges and has a top speed of 65 mph, but it takes 20 seconds to accelerate from 0 to 50 mph — at least five seconds longer than even the slowest cars and light trucks now on the road. Its sodium-sulphur battery pack needs to recharge for eight hours in a 110- or 220-volt wall socket similar to that for a household clothes dryer.

The major carmakers have announced no plans to sell electric-powered vehicles. The Californians say their goal of widespread use of electric vehicles is not set in stone, but they believe it can be met.

"We believe the technology is here now," said Kelly. "Of course, it needs to be demonstrated and perfected more but we believe these vehicles could be marketed as we move into the next century."

—Continued from Page 75

sion project at New York Tech. A lab checked the Corsica's emissions as part of the project, which was sponsored by the federal government.

Methanol has a higher octane level than gasoline, so it can produce a bit more power. But it delivers lower fuel mileage than gasoline — about 50 percent lower in the case of the Corsica — and that could reduce its advantages. Also, partially burned methanol produces formaldehyde, an eye irritant that can combine with other ingredients to produce smog.

Even if gasoline and methanol cost the same per mile, methanol's lower mileage means reduced driving range on a full tank. Carmakers also note that, although methanol is used in a variety of industrial applications, facilities do not exist to produce it in the quantities needed to power millions of vehicles.

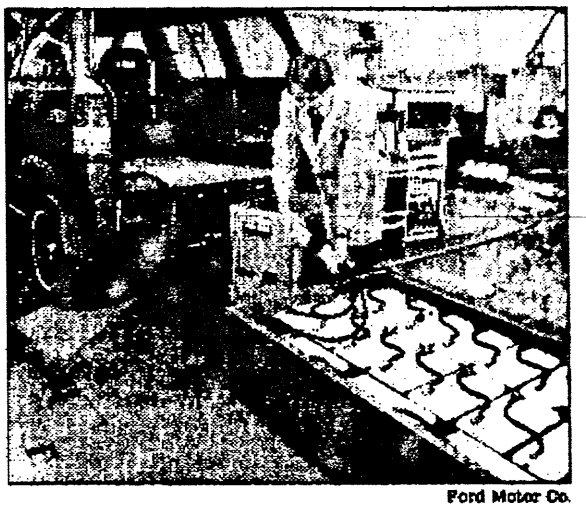
Clean Machines

Alternative-energy engines under development

	What's Good	What's Bad
Methanol	Generally cleaner-burning, some added horsepower. Can be produced from abundant natural gas or coal.	Produces more formaldehyde and carbon dioxide than gasoline; delivers fewer miles per gallon, so less range per tankful; difficult cold starting.
Battery	Produces almost no air pollution.	Short range. Long time to recharge.

Newsday

But Bill Kelly, a spokesman for the South Coast Air Quality management district, which wrote the Southern California air-pollution plan, said that the increase in use of such vehicles would be gradual. "We're not talking about millions of vehicles immediately . . . Once you get the ball rolling, the infrastructure to supply the fuel will be developed."



Ford Motor Co.

Ford technician charges 200-volt car battery.

The benefit of battery power is obvious: It produces virtually no air pollution. But, although carmakers have experimented for decades with electric power, they have been unable to develop storage batteries that will deliver, without severely reducing performance, much more than 100 miles of driving between recharges. "People aren't generally satisfied with a 100-mile range," said Ford's Schwarz.

The Ford ETX-II, an experimental electric-powered Aerostar minivan produced jointly by the carmaker and General Electric, shows the limitations of current technology. It can travel 100 miles between recharges and has a top speed of 65 mph, but it takes 20 seconds to accelerate from 0 to 50 mph — at least five seconds longer than even the slowest cars and light trucks now on the road. Its sodium-sulphur battery pack needs to recharge for eight hours in a 110- or 220-volt wall socket similar to that for a household clothes dryer.

The major carmakers have announced no plans to sell electric-powered vehicles. The Californians say their goal of widespread use of electric vehicles is not set in stone, but they believe it can be met.

"We believe the technology is here now," said Kelly. "Of course, it needs to be demonstrated and perfected more but we believe these vehicles could be marketed as we move into the next century."

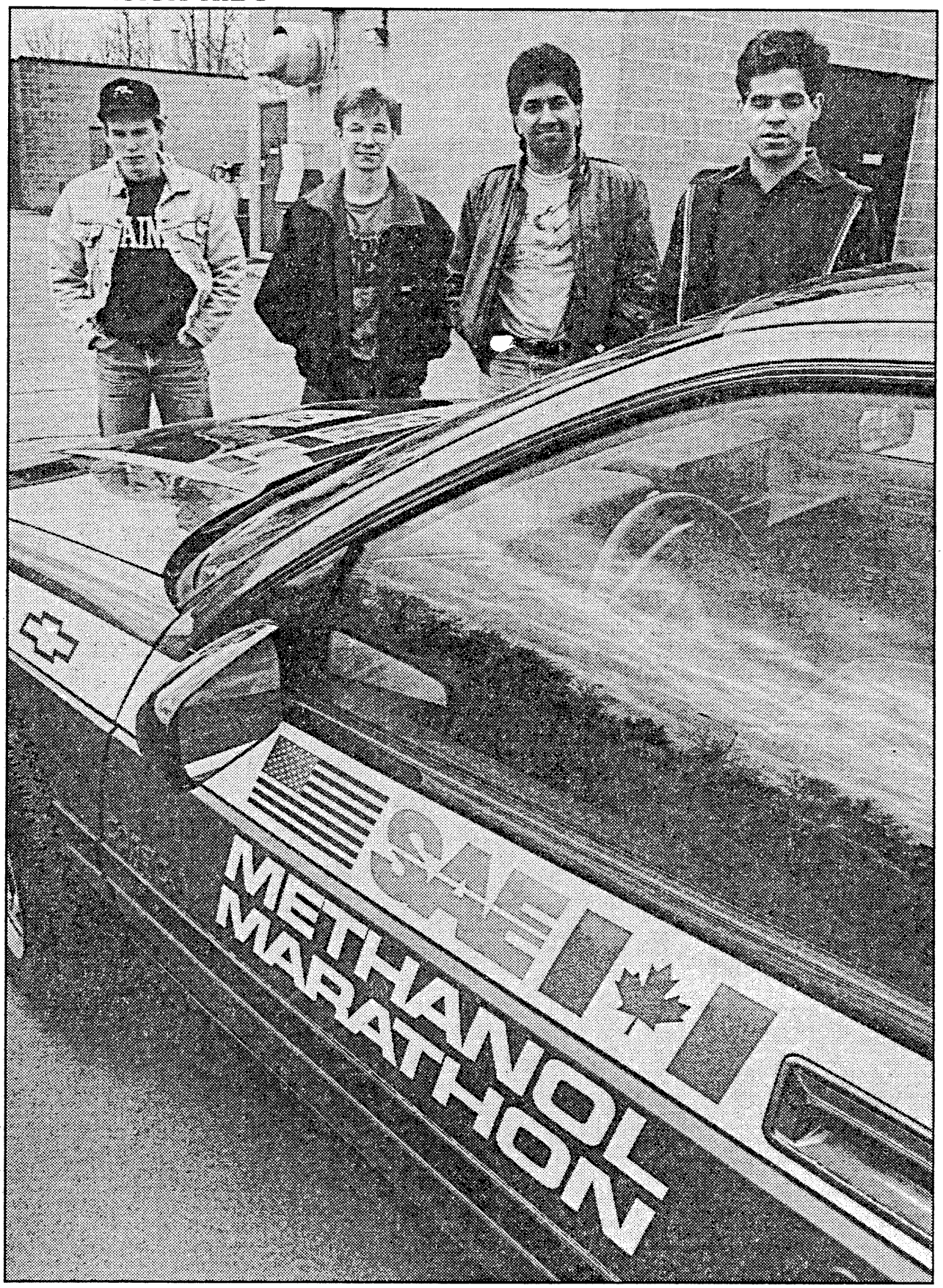
Newsday, April 16, 1989

Photo by Jennifer Jecklin

New York Institute of Technology students work on a methanol-powered Chevrolet Corsica.

CONVERSION KIDS

Times Union, Rochester, NY April 13, 1989



Times-Union

Rochester Institute of Technology students (from left) Bill Acton, Terry Lerch, Sumit Mookerjee and Art Rizzino are converting this 1988 Chevrolet Corsica LT to burn methanol fuel for competition in a 1,100-mile, five-day Methanol Marathon. The rally is to determine how methanol performs under "real-world conditions." The U.S. and Canadian governments and car companies will sponsor cars from 14 other colleges and an overnight stop in Rochester April 30-May 1.

Castle Rock, CO, Douglas Co. Daily News, April 12, 1989

CSU to compete in 'Methanol Marathon'

Colorado State University's Methanol Marathon team is revving with a $35,000 gift from the Colorado Best Chevrolet Dealers Association.

The team of Colorado State students and faculty will use the gift to purchase parts and equipment to convert a 1988 Chevrolet Corsica from a gasoline engine to one that burns methanol fuel, said Robert Dey, assistant vice president for unviersity development.

From April 28 to May 4, the team will compete in the 1,100-mile Methanol Marathon that begins in Detroit, passes through Toronto, Pittsburgh and New York City and ends in Washington, D.C.

The Colorado State team is the only team from Colorado and one of 15 colleges and universities from the United States and Canada that will compete in the marathon. Cars will be judged on fuel economy, emissions, power, cost effectiveness and drivability.

"The Best Chevrolet Dealers' gift will enable the team to convert the car to methanol successfully," Dey said. "Colorado State has the expertise and facilities to compete successfully, but the Best Chevrolet Dealers' gift gives them that extra confidence and equipment to win."

"The Colorado State team proposed quite an innovative conversion procedure that we believe can help solve certain methanol conversion problems and build public confidence in methanol fuel," said A.J. Guanella, president of Colorado's Best Chevrolet Dealers Association, a group of 26 Colorado Chevrolet dealers.

"We're proud to sponsor the team, and we look forward to congratulating them upon their return."

The CSU team received the car in November from General Motors, which is sponsoring the competition with the U.S. Department of Energy; the Department of Energy, Mines and Resources-Canada; and the Society of Automotive Engineers.

The CSU vehicle will run on a fuel of 85 percent methanol and 15 percent gasoline, said Michael Weinstein, president of the Colorado State Society of Automotive Engineers.

"Methanol is an oxygenated fuel, which means it contains part of the oxygen required for combustion," he said. "The result is a fuel that burns more completely to produce less carbon monoxide and pollutants than standard gasoline."

Methanol Marathon

WVU engineering college to enter national competition

In May a team from West Virginia University's College of Engineering will be demonstrating the viability of methanol as an alternative fuel in automobiles by competing in the "Methanol Marathon" being sponsored by General Motors, Inc., the U.S. Department of Energy and the Canadian Department of Energy, Mines, and Resources.

The five-day marathon, organized by the Society of Automotive Engineers (SAE) and the Argonne National Laboratory, will involve a series of performance trials and a 1,100 mile road rally from Detroit through Toronto to Washington, D.C.

After careful consideration of over 30 proposals to convert a conventional car to burn methanol, judges selected the WVU team to be among the 15 U.S. and Canadian teams to compete.

Each team must convert the Chevrolet Cavalier LT provided by General Motors to burn a mixture of 85 percent methanol and 15 percent gasoline in time for the May competition. The cars will undergo fuel economy, emissions, acceleration, and startability tests as well as the 1,100 mile road rally.

Besides the car, each team also received a conversion kit containing a fuel tank, high-flow fuel pump and fuel injectors, special fuel lines and a computer calibration module. Government sponsors then gave $1000 to each team in the country to help defray a part of the technical costs of conversion. At the conclusion of the rally, the government agencies also will provide $20,000 in cash prizes.

In addition to the sponsors previously mentioned, the Methanol Marathon is being sanctioned by the Sports Car Club of America, Inc., and associate sponsors include BP Oil (America), the Lubrizol Corp., the Goodyear Tire & Rubber Co., and the Canadian Oxygenated Fuels Association.

The development of methanol as a fuel is of particular interest to many West Virginians, as it may well provide both reduced emissions and a new market for the state's abundant supply of coal, natural gas, and maybe even wood waste products.

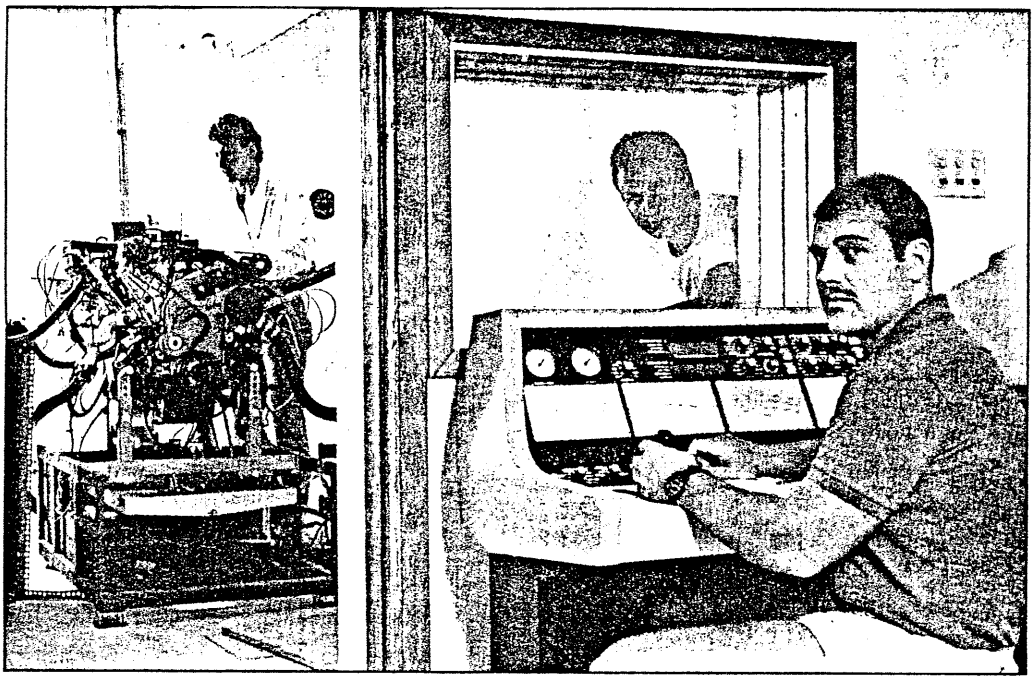
Senator John D. Rockefeller, who recently sponsored a bill to encourage production of alternative fuel vehicles, expressed his support and enthusiasm for the WVU team's participation, stating ."My support stems not only from the fact that West Virginia University is ideally suited to this engineering research, but also that our state, as a major coal producer, will be a major site for future alternative fuels production."

The WVU team is particularly well-prepared to compete successfully in the Marathon. WVU College of Engineering students and faculty have earned a long-established record of success in engineering research and automotive design competitions.

In particular, their design for the 1988 SAE Formula Car Competition placed first in methanol fuel economy. Also, the climate and geography of the Morgantown area make for an ideal proving ground for the cold-start and drive ability test required in the competition.

Dr. Nigel Clark, associate professor of mechanical engineering, and Dr. Thomas Long, associate dean of the College of Engineering, advise the team, consisting of students Brian McGrath, Doug A. Velegol, Richard Stiles, and George Uri (senior engineering technician in Mechanical Engineering).

The Orlando Sentinel, Brevard Weekly, April 9, 1989
Orlando, Florida



STEPHANIE JAMES ELY/SENTINEL

FIT team members (from left) Doug Hahn, Carlo O'Keefe and Tracy Post check out their engine.

FIT to go to the races

College team to test experimental vehicle in road contests

By Debra K. Minor

OF THE SENTINEL STAFF

MELBOURNE — A team of undergraduate engineering students at Florida Institute of Technology is gearing up the maroon research car for the first Methanol Marathon in Michigan.

The team — Doug Hahn, Tracey Post, Frank Foster, Jerry McAlwee, Jeff Grillo, Doug Hunter, Erik Gordon, Vince Worbington, Carlo O'Keefe and Nick Cooper and faculty adviser John Thomas — began work on the car last fall to convert the gasoline-powered Chevrolet engine to run on M85, or 85 percent methanol and 15 percent gasoline.

In two weeks, the team will find out how successful the research has been when members meet head-on with teams from 14 other colleges and universities from the United States and Canada.

The group, which is the only southeastern college selected to participate, will drive the methanol-fueled car to the General Motors Technical Center in Warren, Mich., for judging on the car's acceleration, emissions, and conversion design and fabrication on April 28.

The next day, a five-day, 1,100-mile journey from Warren to the University of Maryland in College Park, Md., begins, taking the 15 teams through Ontario and east to New York. Two team members at a time will ride in the test car. Along the way, the car will be tested for cold-start driveability, fuel economy and rally times. The winner of the contest will be determined by combined scores in all the categories.

Methanol, composed of carbon, hydrogen and oxygen atoms, is most commonly made from natural gas but can also be produced from coal or biomass. It has indirectly found its way into cars from gas pumps in MTBE — methyl tertiary butyl ether — a mixture of methanol and isobutinol that is added to gasoline.

Levels of octane, the anti-knock property found in fuels, can be increased two to four points by adding methanol to gasoline, said Richard Moorer, U.S. Department of Energy program manager for alcohol fuels. The octane number of a methanol blend will depend on the octane number of the gasoline blend.

From an environmental standpoint.

Please see **RACES, 13**

RACES

From 1

methanol is a good alternative fuel because it can reduce cars' emissions up to 45 percent, said Chuck Moulis, a chemical engineer with the Environmental Protection Agency.

Moulis said less carbon monoxide is emitted from burning methanol and virtually no particles are emitted when the fuel is burned in diesel engines.

Just three weeks ago, the South Coast Air Quality Management District and Southern California Association of Governments approved an anti-smog plan to bring Los Angeles air up to federal standards by 2007. One of the ways the proposal cited this could be done was by requiring vehicles to operate on clean-burning fuels including methanol and compressed natural gas. The plan was written in response to pressure from the federal government.

"There really is no ideal fuel. There are other alternative fuels," Moulis said. "Right now, methanol is the best of those alternatives from our perspective at this time."

The project began last summer when research team leader Hahn submitted a proposal to the Society of Automotive Engineers, explaining how the stock engine could be converted to run on methanol fuel. FIT's proposal was one of 15 from colleges and universities in the United States and Canada accepted for participation in the contest.

Last fall, General Motors donated a 1988 Chevrolet Corsica LT with a 2.8-liter multi-port fuel-injected V-6 engine, five-speed manual transmission, sport suspension and air conditioning to each team for research. Except for color, the cars were identical.

The FIT team then began modifying the car's engine. The changes included replacing some stock parts with custom parts, applying ceramic coatings to parts to help retain heat, increasing the car's compression, and other modifications to increase power and fuel mileage.

"Some of the things we did are very, very simple that could be made in a couple days and could make a big difference," said Hahn, who has worked as crew chief for professional race car drivers on two circuits. Both Hahn and faculty adviser John Thomas refused to comment further on modifications made to the car.

The car is in the final stage of testing as the team prepares for the marathon which is sponsored by General Motors, the U.S. Department of Energy and the Canadian Department of Energy, Mines and Resources and organized by the Society of Automotive Engineers and the Argonne National Laboratory.

Cash prizes will be awarded to top-finishing teams and winners in special categories at this year's SAE Government/Industry Meeting in Washington, D.C., the day after the rally.

The car is in the final stage of testing as the team prepares for the marathon, which is sponsored by General Motors, the U.S. Department of Energy and the Canadian Department of Energy, Mines and Resources, and organized by the Society of Automotive Engineers and the Argonne National Laboratory.

METHANOL

College engineers rally for alternative fuel

Ray Formanek Jr.

MORGANTOWN (AP) — A team from West Virginia University has nearly completed timing, tuning and testing its entry in an international "Methanol Marathon" designed to show that the alternative fuel could replace gasoline.

"It was really exciting getting the car," said Nigel Clark, a mechanical engineering professor who has advised five students competing in the five-day, 1,100-mile road rally from Detroit through Toronto to College Park, Md.

"It will be exciting to drive in the rally. But I can't say it was very exciting laying in grease under the car at 2 a.m."

The WVU team is one of 15 student teams competing for a share of $20,000 in prize money provided by the U.S. Department of Energy and Canada's Office of Energy, Mines and Resources.

Each team has received a 1988 Chevrolet Corsica, $1,000 cash, and kits containing stainless steel gas tanks and other equipment necessary to convert the Corsicas' V-6 engines to burn a mixture of 85 percent methanol and 15 percent gasoline.

During the rally, which begins April 29, the teams will be judged on cold starts, driveability, fuel economy and rally times. Scores from all categories will be tallied to determine the winner.

"There are strict limitations on how much we can modify the car," said Clark as he tinkered under the hood of WVU's metallic red sedan. "And the engines are electronically fuel-injected so much of what we can do involves fine-tuning to get the most from the car."

Clark said the West Virginia team may have an advantage.

"I believe we're the only team with two engines," he said. "We were lucky enough to find a spare at a salvage yard and we've tested both a high-compression and low-compression version.

"I think we're going to stick with the high-compression version. We'll probably be hurt more by our lack of rally experience than by our engine set-up."

Methanol, a colorless, extremely volatile form of alcohol, can be extracted from natural gas or coal through chemical and physical processes. Because it burns with no flame, Clark said it is always blended with a small amount of gasoline whenever it is used as a fuel for vehicles.

Some environmental groups have questioned the use of methanol as an automotive fuel, saying it produces pollutants such as formaldehyde not produced by gasoline.

"The exhaust has a somewhat sweeter smell," Clark said. "But it has a higher octane than gasoline and the engine has more pep.

"It also burns very clean inside the engine and there aren't any carbon deposits."

Although the methanol blend being used in the competition is cheaper than gasoline, vehicles using it get only about half the mileage as with premium gasoline.

"It was great getting your hands dirty while using what you learned in the classroom," said Doug Velegol, a mechanical engineering student from Colliers and one of the team's leaders.

Other schools competing in the rally include California State, Colorado State, Concordia University in Montreal, Florida Institute of Technology, Maryland, Michigan Tech, Michigan, New York Institute of Technology, Penn State, Rochester Institute of Technology, Tennessee, Texas Tech, Washington and Wichita State.

General Motors Corp., one of the rally's sponsors, Ford Motor Co. and Chrysler Corp. all have alternative fuels programs and test cars on the road, but none of the automakers is ready to go into production with the converted vehicles.

Interest in fuels other than gasoline has waned during the 1980s after surging during the 1970s, when the U.S. supply of foreign oil was interrupted.

Last week in Detroit, however, U.S. Sen. Jay Rockefeller, D-W.Va., announced the formation of a national task force to study ways to get methanol and other alternative fuels into the nation's gasoline tanks.

And U.S. Rep. Bob Wise, D-W.Va., predicted Thursday that WVU could become the major research center for such fuels and the vehicles that use them, possibly within a year.

Officials from the Big Three automakers, along with representatives of the coal and natural gas industries, will meet in Washington on Wednesday to discuss the center.

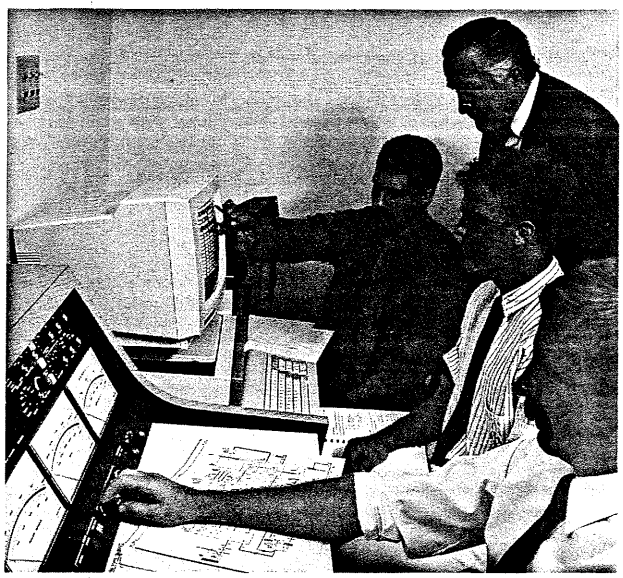
AP wirephoto

Engineering students Chris Santoro (left) and Doug Velegol look under the hood of WVU's entry in the international "Methanol Marathon."

FEATURE

It's a Mad, Mad World — Methanol Powered

On the spring morning of April 29, 15 colorful, mechanically modified automobiles, including one driven by a team from F.I.T., will start their engines for a six-day, 1,100-mile road rally from Detroit to Washington, D.C., via Canada and New York. Although the rally does not promise the riches of "Cannonball Run," it does allow the engineering minds of students from 15 universities to prove whose modifications of a 1988 Chevy most efficiently utilize methanol as a fuel. A review team of methanol experts from the automotive industry and research community selected these elite schools from 31 entries on the basis of technically innovative proposals.



Using a dynamometer, the Marathon team members conduct a series of tests on their modified 2.8-liter multi-port fuel-injected V6 engine.

At a pre-rally kickoff on November 21 at the Technical Center in Warren, Michigan, General Motors, a sponsor of the rally along with Energy Mines and Resources of Canada and the U.S. Department of Energy, presented each team with a new 1988 Chevrolet Corsica LT and a kit to help convert it to operate on a mixture of 85-percent methanol and 15-percent hydrocarbons. Dr. John Thomas and undergraduate mechanical engineering student Doug Hahn accepted the automobile on behalf of the undergraduate mechanical engineering students who comprise the F.I.T. team.

The car is in Melbourne now, undergoing a series of tests in preparation for the April start. Just as the racers did for the Cannonball Run, the F.I.T. team is using creative innovations to make sure their car is the best entry. The engine is attached to F.I.T.'s new dynamometer, which is housed in the student-constructed cold cell and test area. Hahn, who is the team leader, is very excited about the new Superflow SF-901 Dynamometer. "We now have the capability of doing a week's worth of testing in five minutes," he said. "The other schools do not have the computer data acquisition and computer control capabilities that we have," he continued. "It's state-of-the-art test equipment."

The dynamometer allows the students to emulate different routes by varying load conditions on the engine with respect to speed, starts, stops an environment. The test equipment keeps them informed of the engine temperature, power, RPMs, and fuel and air flow, as well as outside temperature, barometric pressure and relative humidity. The outcome of the various tests will provide the team members with the data they need to adjust the engine for maximum performance in the environments and the routes they will be traveling in the rally.

According to John Zwerner, executive director of GM's Advanced Product Engineering–Advanced Engineering Staff, "General Motors is pleased to support this event because it gives us a chance to evaluate energy alternatives while giving future engineers a role in that process. I think this rally will be an education for all of us in the practical uses of methanol as an alternative fuel." Hahn believes that the rally is an excellent way to promote hands-on engineering among undergraduate students. "The whole thing is important, not to win the rally section, but to come out with the best fuel efficiency. It is more

Continued on page twenty.

Methanol Marathon

Continued from page four.

important to win in a scientific category as an engineer than to win the driving ability test," he added.

The rally begins in Detroit where the cars will be inspected and judges will hear student teams report on how they converted the vehicles. During the first leg of the competition, the teams will travel to London, Ontario and then on to near-by Mississauga, Ontario, for dinner and rest at the end of the first day. From there, the ralliers will journey into New York, New Jersey, and Delaware and finish in Maryland. The teams will drive in the order of their finish to Capitol Hill in Washington, D.C., where winners will be announced to the media. Cash prizes totalling more than $20,000 will be awarded to the leading teams at the final destination—the 1989 SAE Government/Industry Meeting in Washington, D.C.

The Methanol Marathon, which has been sanctioned by the Sports Car Club of America, Inc., is being organized by the Society of Automotive Engineers and the Argonne National Laboratory. Associate sponsors include BP Oil (America), the Lubrizol Corp., the Goodyear Tire & Rubber Co. and the Canadian Oxygenated Fuels Association. The U.S. Department of Energy and Canada's Department of Energy, Mines and Resources will fund the prizes and give each team $1,000 to help cover expenses. ■

The Investigator, April 1989, Melbourne, FL
Florida Institute of Technology Research News

F.I.T. ENGINEERS SELECTED FOR METHANOL MARATHON

This spring, 15 colorful, mechanically modified automobiles, including one driven by a team from F.I.T., will start their engines for a six-day, 1,100-mile road rally from Detroit to Washington, D.C., via Canada and New York. The rally will allow engineering students from 15 universities to prove whose modifications of a 1988 Chevy most efficiently utilize methanol as a fuel. A review team of methanol experts from the automotive industry and the research community selected F.I.T. as one of the elite schools from 31 university entries on the basis of its technically innovative proposal.

The students are currently subjecting the engine of the 1988 Chevrolet Corsica, which is one of the 15 donated to the teams by General Motors, to a series of tests in preparation for the rally. The engine is attached to F.I.T.'s new dynamometer in a west-campus cold cell and test area. Doug Hahn, who is the team leader, is very excited about the new Superflow SF-901 Dynamometer. "We now have the capability of doing a week's worth of testing in five minutes," he said. "The other schools do not have the computer data acquisition and control capabilities that we have," he continued. "It's state-of-the-art test equipment."

F.I.T. team members Erik Gordon, Doug Hunter and Doug Hahn display their methanol-powered rally car and a $1,000 check that helped them convert it.

The dynamometer allows the students to emulate different routes by varying load conditions on the engine with respect to speed, starts, stops and environment. The test equipment keeps them informed of the engine temperature, power, RPMs, and fuel and air flow, as well as outside temperature, barometric pressure and relative humidity. The outcome of various tests will provide the team members with the data they need to adjust the engine for maximum performance in the environments and the routes they will be traveling in the rally.

According to John Zwerner, executive director of GM's Advanced Product Engineering–Advanced Engineering Staff, "General Motors is pleased to support this event because it gives us a chance to evaluate energy alternatives while giving future engineers a role in that process. I think this rally will be an education for all of us in the practical uses of methanol as an alternative fuel."

Hahn believes that the rally is an excellent way to promote hands-on engineering among undergraduate students. "The whole thing is important, not to win the rally portion, but to come out with the best fuel efficiency. It is more important to win in a scientific category as an engineer than to win the driving ability test," he added.

The rally begins in Detroit where the cars will be inspected and judges will hear student teams report on how they converted the vehicles. Cash prizes totalling more than $20,000 will be awarded to the leading teams at the final destination—the 1989 SAE Government/Industry Meeting in Washington, D.C.

The Methanol Marathon, which has been sanctioned by the Sports Car Club of America is being organized by the Society of Automotive Engineers and the Argonne National Laboratory. Associate sponsors include BP Oil (America), Lubrizol Corp., Goodyear Tire & Rubber Co. and the Canadian Oxygenated Fuels Association. The U.S. Department of Energy and Canada's Department of Energy, Mines & Resources will fund the prizes and give each team $1,000 to help cover expenses.

Daily Collegian, March 16, 1989
Penn State Univ., University Park, PA

Students to enter car in GM methanol contest

By HARRY PAGAN
Collegian Staff Writer

A group of 15 University engineering students who have been working since October to modify an automobile for efficient methanol fuel operation will see how they fared next month when they enter their car in the General Motors' Methanol Marathon.

The students, members of the Penn State chapter of the Society of Automotive Engineers, will compete against representatives from 15 other universities in the United States and Canada in a five-day 1,100 mile road rally. The marathon begins April 29 in Warren, Mich., site of the GM Technical Center, and finishes at the University of Maryland.

The first place team will receive $6,000 May 4 at a ceremony in Washington, D.C.

Peter Sheedy (senior-mechanical engineering), president of Penn State's SAE chapter said the purpose of the marathon is to research the use of methanol as an alternate fuel source.

"Methanol is being heavily considered as an alternate fuel," Sheedy said. GM has provided each team with a 1988 Chevrolet Corsica, which they must convert to run on methanol, said Thomas A. Litzinger, assistant professor in Mechanical Engineering.

"They're going to learn how to make the engine run on methanol," he said. "They're going to change the compression ratio by changing the pistons. That's the major change they're making."

Frank Ament, a member of the GM Advanced Engineering staff, explained the importance of the marathon and of methanol as an alternate fuel source.

"It's important nationally for the future. It's important that we do find alternatives," he said. "We have lots of engineers working on this problem worldwide. This is a way to tap young, creative minds."

The competition is a valuable experience for students in the automotive field, Ament said. "It gives them a chance to use some of the real world equipment. It broadens their experience," he said. "It gives them a feel for what's going on in the industry and what's going on in the world."

Bill Riggs, a graduate in mechanical engineering and a member of the SAE team, defined the compression ratio as "the degree to which the fuel and the air mixture is compressed." Methanol inherently burns cleaner than gasoline and would meet the U.S. emission laws, he said.

"They have to change the compounds of the fuel system but also they have to interact with the computer which controls the fuel injection," Litzinger said. "The challenge is going to be learning how to use the hardware. It's a matter of time, trial, and error."

Sheedy elaborated on the problems the team must face and the degree of competition from the other schools.

He said, "Some schools like Michigan and Maryland have really dedicated auto research in their schools. They have much better facilities and much more support for projects. We have to fight through things they normally don't have to. I think they're going to be the two big competitors."

"Projects like this will bring more support for SAE. We still have a hard time getting funding for projects," he said.

"We get no money from the University through the HUB because the SAE constitution limits membership to engineering and technical majors," Riggs said.

Litzinger said the students are solely responsible for soliciting funds for their projects. He described the team atmosphere as "excited."

"They have been working very hard and surmounting lots of obstacles," he said. "I'm sure we'll have a car that will get us through the race."

Litzinger and Riggs attributed the team's initial involvement to Sheedy.

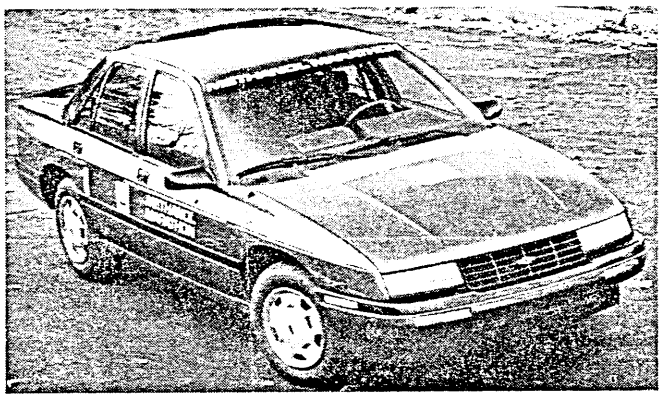
"He's the driving force behind them in terms of pulling the group together," Litzinger said.

Automotive Engineering, Warrendale, PA April 1989

1988 SAE President George Aravosis spoke on the significance of the SAE Methanol Marathon.

Popular Hot Rodding, LA, April 1989

Hey, alcohol motors are just too radical for the street, right? Well, contrary to popular belief, methanol is a very streetable and viable alternative to gasoline produced by crude oils, a diminishing resource. Just to prove that methanol-powered vehicles can become a reality, 15 college student teams from 12 states and Canada converged on the GM Technical Center to pick up their Chevrolet Corsicas, fuel conversion kits, and cash, to compete in the 1989 Society of Automotive Engineers (ASE) Methanol Marathon.



"Your mission," the tape recorded message crackled, "should you decide to accept it, is to convert these cars to methanol operation, and drive them in a five-day, 1,100-mile road rally from Detroit to Washington, D.C., this spring. The winning team will share $20,000 in cash prizes donated by the U.S. and Canadian energy departments. Good luck. This tape will self-destruct in 30 seconds." This unique scientific event is sponsored by GM, the U.S. Department of Energy and the Canadian Department of Energy, Mines and Resources, to explore the practical application of fueling cars with methanol.

Pacific Automotive News, Laguna Niguel, CA, April 1989

TAKING THE CLASSROOM ON THE ROAD.

Fifteen college student teams from 12 states and Canada converged on the GM Technical Center to pick up the cars, fuel conversion kits and cash to compete in the 1989 SAE Methanol Marathon.

The students will convert Chevrolet Corsicas, like the one pictured below, to run on methanol fuel using grants from the U.S. and Canadian energy departments. They will test their results in a five-day, 1,100-mile road rally from Detroit to Washington, D.C., next spring. Winning

teams will share $20,000 in cash prizes donated by the two government agencies.

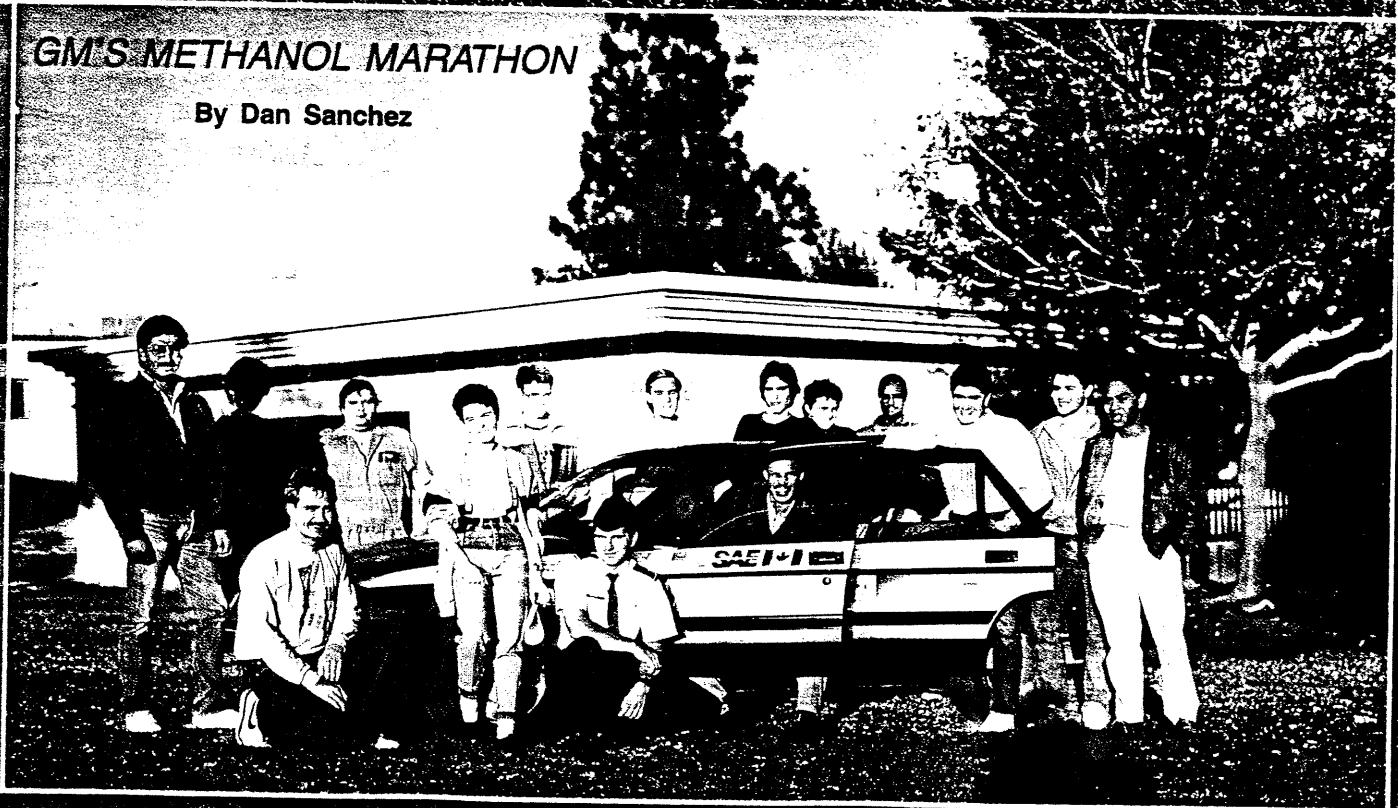
The marathon, organized by the Society of Automotive Engineers (SAE) and Argonne National Laboratory, is being held to explore the practical application of fueling cars with methanol.

Sponsors include General Motors Corp., U.S. Department of Energy and the Canadian Department of Energy, Mines and Resources. The rally is sanctioned by the Sports Car Club of America, Inc. Associate sponsors include BP Oil (America), The Lubrizol Corp., The Goodyear Tire & Rubber Co., and the Canadian Oxygenated Fuels Association (COFA).

IN SEARCH OF ALTERNATIVE FUELS

GM'S METHANOL MARATHON

By Dan Sanchez



Since the energy crisis of the '70s, there has been an increased awareness of the need for alternate fuels for transportation. Methanol has been looked at closely for a while, but problems with its volatility and the scarce supply available to the public have been preventing the overall effectiveness of its use.

General Motors research into the use of methanol has led to new engine designs operated by computer-controlled electronics. The Advanced Engineering Staff at the GM Tech Center in Michigan has been working on computer and engine designs which will enable a vehicle to run on any blend of alcohol or gasoline.

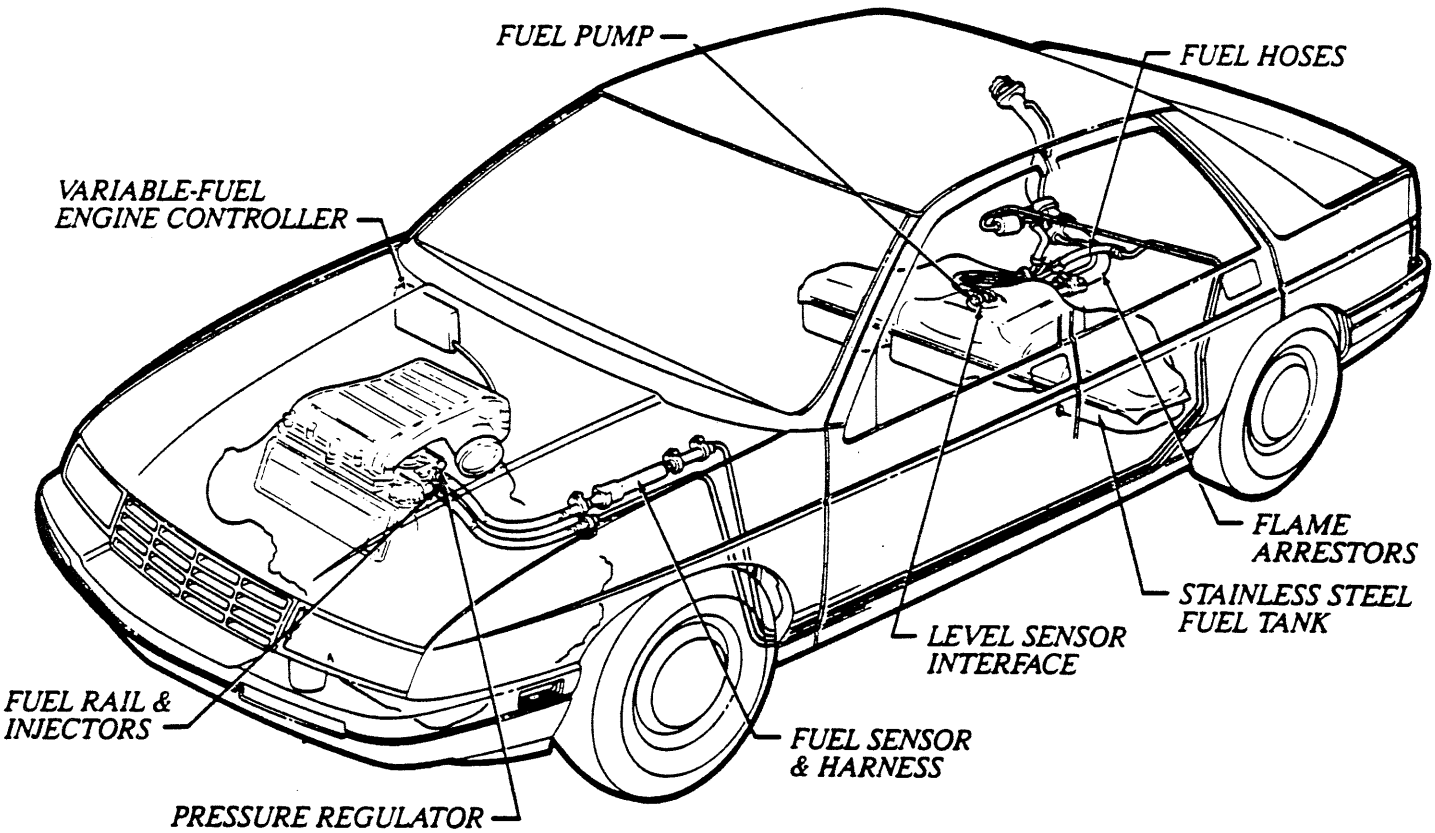
A variable-fuel Chevy Corsica was developed, equipped with a 2.8 liter V-6 engine. A special fuel sensor tells the computer what type of fuel the vehicle is currently using. The computer then compensates for air/fuel mixtures as well as for advance curves and other engine operations.

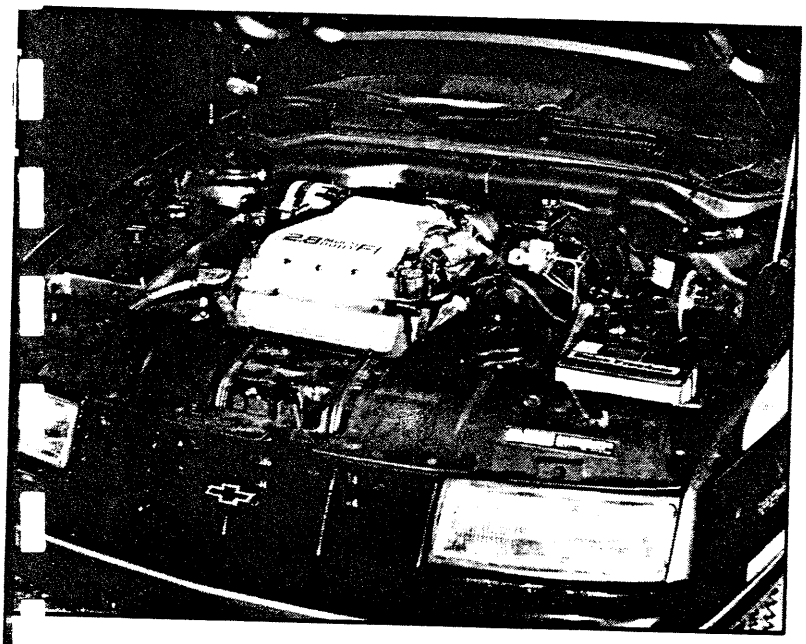
As part of the ongoing program for methanol as an alternative fuel, GM, along with the Energy Mines and Resources of Canada and the U.S. Department of Energy, is sponsoring a Methanol Marathon. Engineering students at 15 universities across the U.S. and Canada were given similar Chevy Corsicas to convert to efficient, methanol-burning vehicles.

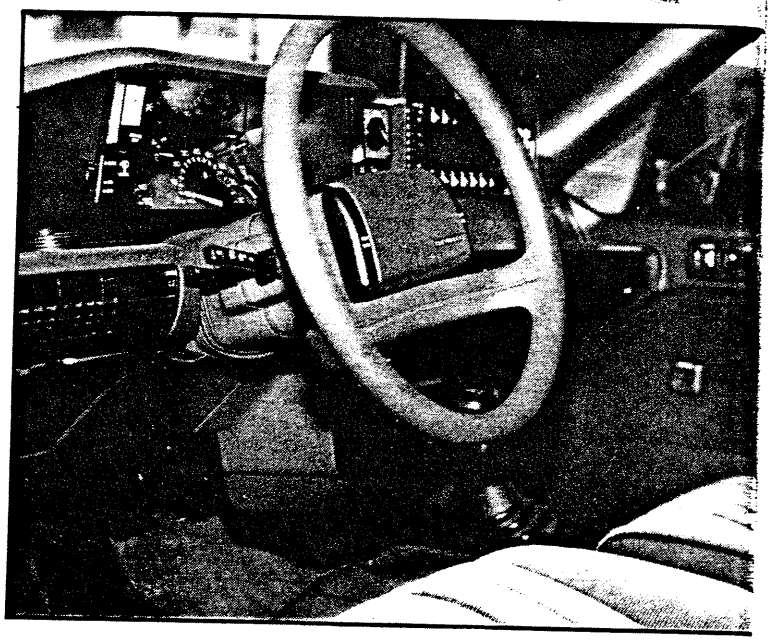
Mechanical engineering students from California State University, Northridge, were one of the 15 groups selected by GM to participate in the marathon. Dr. Timothy Fox, Chairperson of the Mechanical Engineering department at Cal State Northridge and faculty advisor for the methanol project, says the marathon will make more people aware of the need for new engine designs which utilize an alternate fuel.

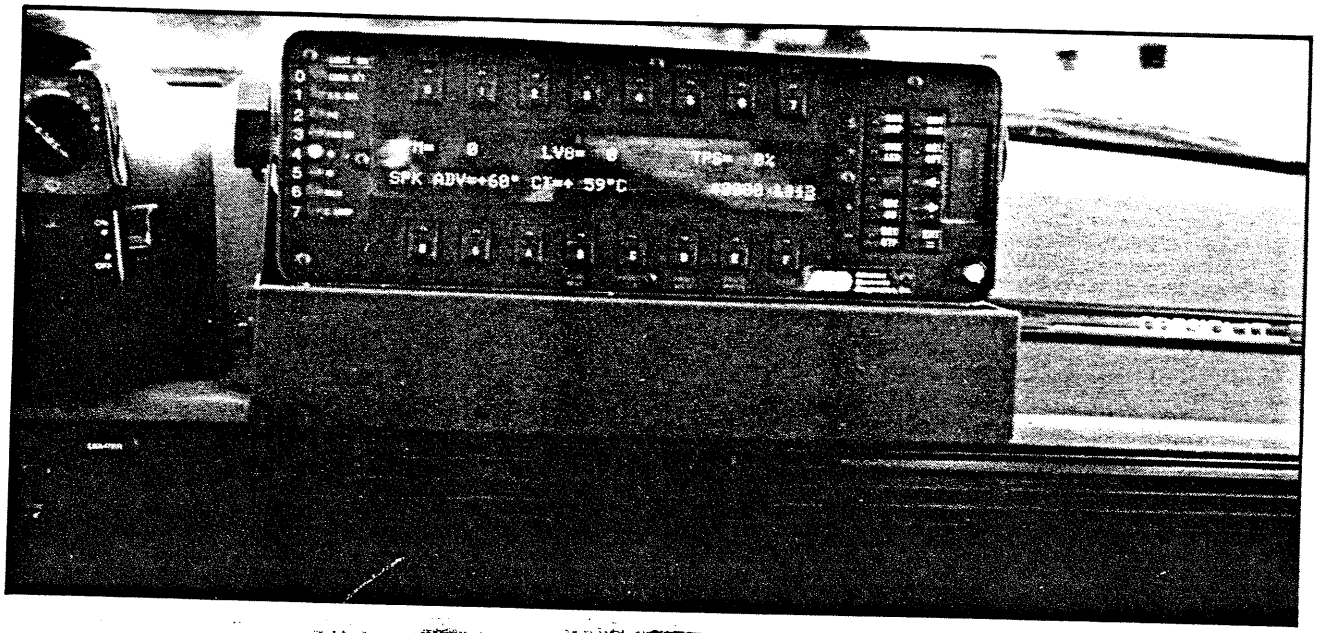
The students were given conversion kits to help with the initial part of the task. Each kit contained a fuel tank, high-flow fuel pump and fuel injectors, special fuel lines and a computer calibration module. Once completed, the Corsicas will run on a mixture of 85 percent methanol and 15 percent gasoline. Students will then drive their cars in a rally sanctioned by the Sports Car Club of America (SCCA). The 1,100-mile marathon is scheduled to begin April 28 from the starting point in Detroit and finish in Washington, D.C. on May 3. The top five teams will

***Variable-fuel Corsica.** This prototype variable-fuel vehicle, which can run on any combination of alcohol and gasoline, is based on a 1988-model 2.8L V-6 Corsica. It was consigned to the California Energy Commission for test and evaluation in December 1987. This port-fuel-injected Corsica has required many modifications in components and materials to make it suitable for variable-fuel operation. It has alcohol-tolerant fuel hoses, injectors, and fuel pump. The stainless-steel corrosion-resistant fuel tank is fitted with flame arrestors to prevent ignition of fuel-tank vapors. The fuel sensor, in combination with the engine controller, makes possible its operation on a spectrum of alcohol-gasoline mixtures.*









share $20,000 in cash prizes donated by U.S. and Canadian government agencies, with other awards also being given for best fuel economy and best conversion.

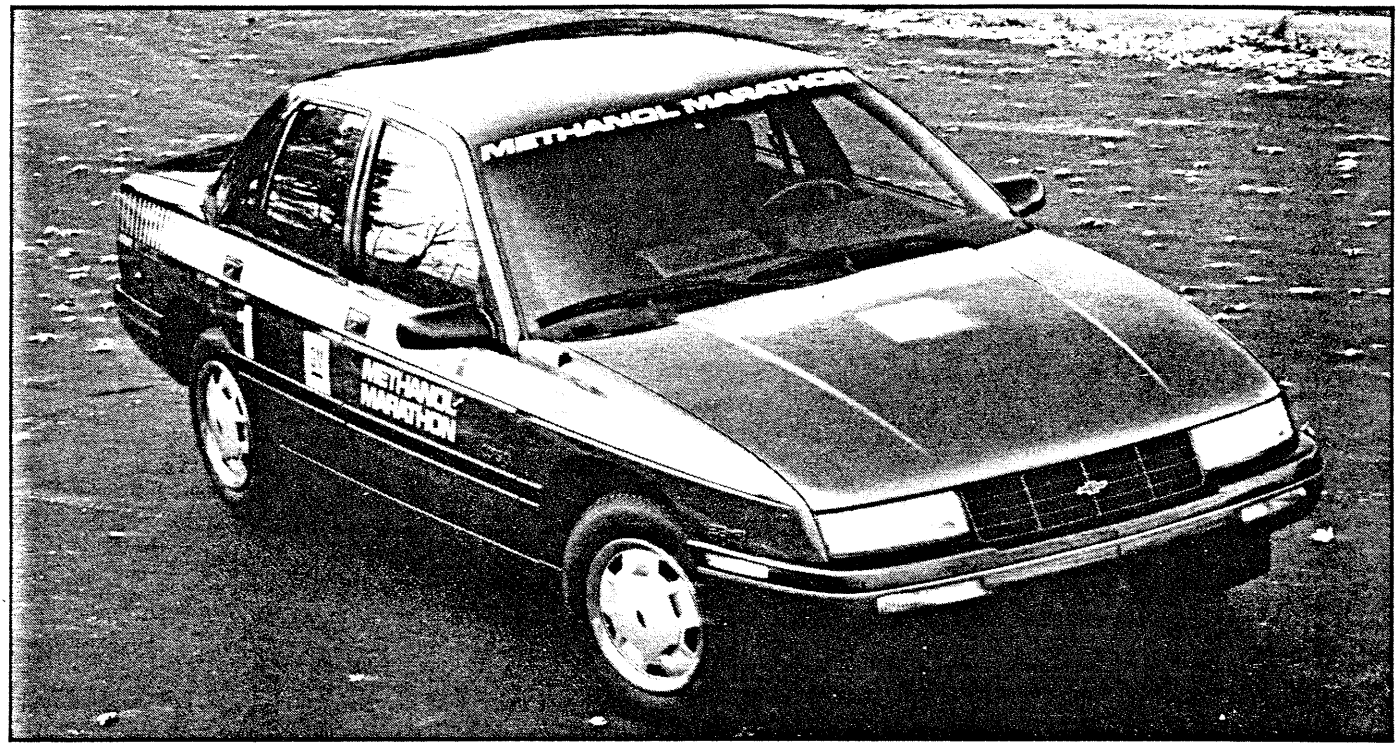
The completed vehicles must also pass tests, with points being earned if the requirements are met. These tests include a start and driveability test, meeting emission standards, driving maneuvers and others.

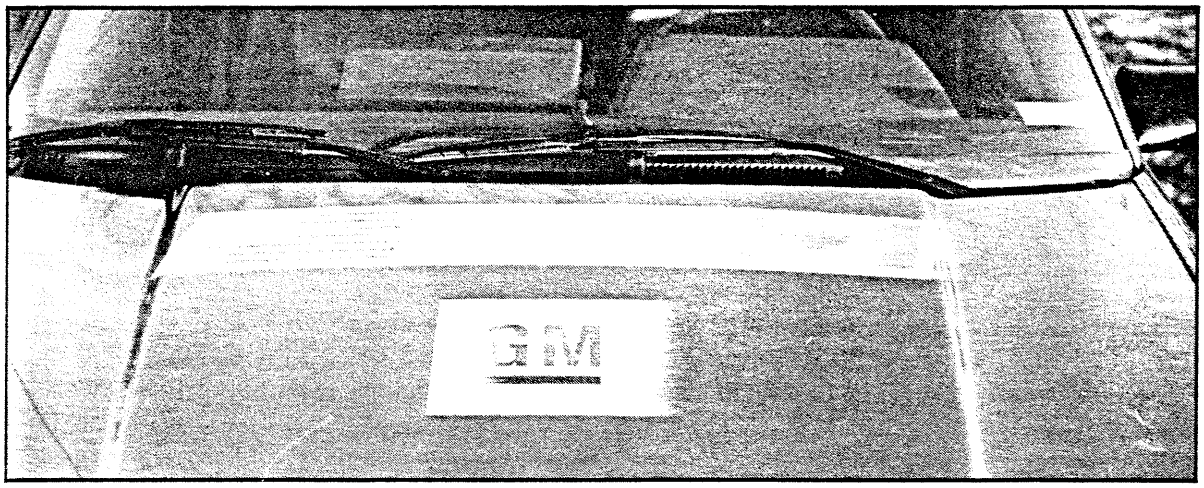
The students, along with GM, are hoping the marathon will demonstrate the challenges of developing methanol vehicles and the advantages of methanol as the more popular, alternative fuel over electricity and propane, among others.

According to a 1988 General Motors Report on Alternative Fuels, engineers in the engine research development laboratories have been able to solve many of the design problems of engines using methanol. Cold starting, fuel economy and emissions are some of the problems investigated by the research staff.

As it stands now, newer engines which successfully burn methanol have not been perfected. Another consideration: auto manufacturers will not build methanol cars without definitely knowing that there will be an established fuel supply for these vehicles.

Some states, however, are taking a closer look at methanol as an alternate fuel for cleaner air. In California, the South Coast Air Quality Management District approved a clean-fuel program which would require fleet vehicles purchased in 1993 to run on electricity or other clean-burning fuels such as methanol. The program will also require gas stations to install methanol by 1990. According to the

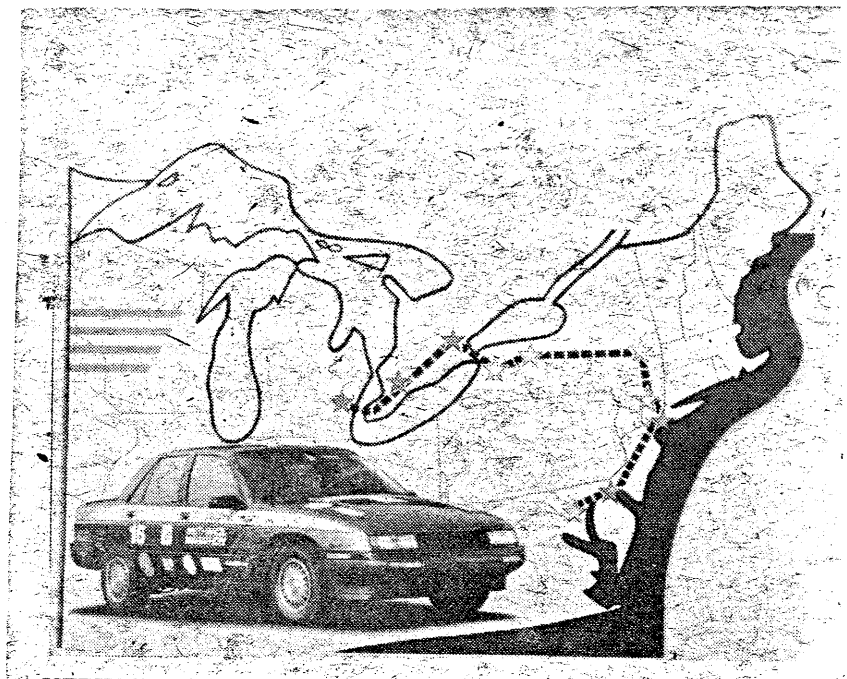




GM report, the Atlantic Richfield Company and Chevron Corporation are committed to installing methanol pumps in 25 locations in California.

With these new engine designs, it's obvious that methanol is becoming the leading choice among alternative fuels. If designs improve and automotive manufacturers take a closer look at the use of methanol, we may be looking at methanol-powered vehicles on the showroom floors by the end of the 1990's.

Automotive Messenger, Hazelwood, MO, March 31, 1989



METHANOL MARATHON RALLY ROUTE — Teams of student engineers from 15 U.S. universities and colleges will drive Chevrolet Corsicas like the car above in the first-ever Methanol Marathon. The competing teams have converted the cars to burn metanol fuel. They'll leave the General Motors Technical Center at Warren, Mich. (near Detroit) on April 29, 1989, and cover 1,100 miles in five days. The rally route (shown above) will go through Toronto, Ontario; Tonawanda, Rochester and New York City, N.Y.; and Wilmington, Del. It will finish May 3 at the University of Maryland in College Park. The students' experience converting the cars and running the rally will yield valuable data on how methanol performs under real world conditions. The Marathon is sponsored by GM, the U.S. Department of Energy and the Canadian Department of Energy, Mines and Resources. It is organized by the Society of Automotive Engineers (SAE) and Argonne National Laboratory. It is conducted by the Sports Car Club of America.

Les étudiants de Concordia participeront à un rallye original

MARIE-CLAUDE SAINT-LAURENT

■ Le département de Génie de l'Université Concordia participera à un rallye automobile nord-américain le 29 avril prochain, avec un véhicule fonctionnant au méthanol.

Quatorze universités américaines et l'université Concordia y prendront part avec leurs véhicules Corsica modifiés. Celui de Concordia fonctionnera avec un mélange de 85 p. cent de méthane et 15 p. cent d'essence.

Commandité par General Motors qui a fourni les automobiles aux universités choisies, Chevrolet, Lubrizol, BP et Goodyear, le rallye est parrainé par le ministère fédéral de l'Énergie, des Mines et des Ressources et le département d'Énergie des États-Unis.

Le circuit, d'une durée de cinq jours, débutera à Warren, au Michigan, et couvrira 1 600 kilomètres en Ontario, dans l'État de New York et celui du Delaware. Il se terminera à Washington le 3 mai. Des prix totalisant $20 000 et des allocations de développement remis à chaque équipe, viendront couronner la fin de l'expérience.

La voiture mue au méthanol est plus économique, moins polluante et plus rapide que l'auto utilisant habituellement de l'essence, selon les chercheurs de l'Université Concordia. GM prévoit que la voiture au méthanol, la Chevrolet Luminol qui sera construite à Oshawa, sera la voiture des années 1990.

Le méthanol est produit à partir de résidus de bois, de charbon, de pétrole et même de déchets des grandes agglomérations urbaines. Le sucre peut également être transformé en alcool carburant. Au Brésil, toute l'essence vendue contient environ 20 p. cent d'éthanol, produit par la fermentation du sucre de canne.

Le rallye est parrainé par le ministère fédéral de l'Énergie, des Mines et des Ressources et le département d'Énergie des États-Unis.

PHOTO ARMAND TROTTIER, *La Presse*

LA PRESSE - MARCH 18, 1989

CONCORDIA STUDENTS TO PARTICIPATE IN UNUSUAL CAR RALLY

by Marie-Claude Saint-Laurent

The Engineering Department at Concordia University will participate in a North American automobile rally next April 29 with a vehicle running on methanol.

Fourteen American colleges and Concordia University will take part in it with their modified Corsica cars. The one from Concordia will be fuelled by a mixture of 85% methane and 15% gasoline.

Sponsored by General Motors (which supplied the cars to selected universities), Chevrolet, Lubrizol, BP and Goodyear, the rally is being supported by the Federal Department of Energy, Mines and Resources and the U.S. Department of Energy.

The rally will last five days and will start at Warren, Michigan covering 1,600 Kilometres through Ontario, New York State and Delaware. It will finish in Washington on May 3. Prizes totalling $20,000 and development grants remitted to each team will put the crowning touch on the experiment.

(...MORE)

Cars burning methanol are more economical, less polluting and faster than cars using conventional gasoline according to the researchers at Concordia University. GM expects that the methanol car, the Chevrolet Lumina which will be built in Oshawa, will be the car of the 1990's.

Methanol is produced from wood wastes, coal, petroleum and even from the garbage in large urban dumps. Sugar can also be converted into alcohol fuel. In Brazil, all gasoline sold contains about 20% ethanol which is produced by fermenting sugar cane.

CAPTION

The rally is sponsored by the Federal Department of Energy, Mines and Resources and the U.S. Department of Energy.

AUTO HI-LITES

Students to drive methanol-equipped Chevy Corsicas in interstate rally

Teams of student engineers from 15 U.S. universities and colleges will drive Chevrolet Corsicas in the first 1,100-mile Methanol Marathon automotive road rally.

Last November, each student team took delivery of a 1988 Chevrolet Corsica LT and began converting the car to burn methanol fuel. Each car was equipped with a 2.8-liter multi-port fuel-injected V-6 engine, five-speed transmission, sport suspension and air conditioning.

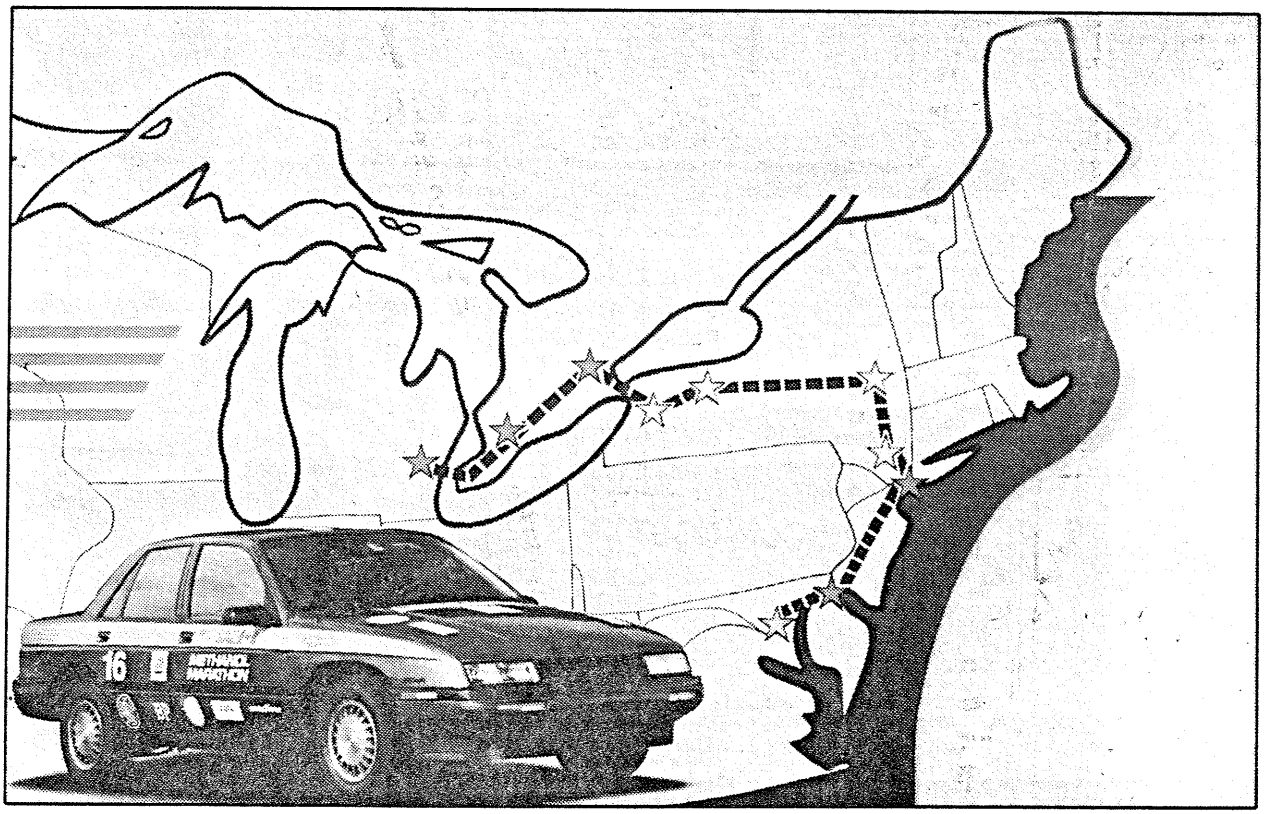
Conversion kits given to the teams contained a stainless steel fuel tank, high-flow fuel pump and fuel injectors, special fuel lines and a computer calibration module. The vehicle will run on a mixture of 85 percent methanol and 15 percent gasoline.

The teams will face off at the GM Tech Center in Warren, Mich., Friday, April 28, to have their cars judged for acceleration, emissions, and conversion design and fabrication the day before the rally begins.

During the rally, the methanol-fueled Corsicas also will be tested for cold start drivability, fuel economy and rally times. Combined scores from all of the categories will determine the Methanol Marathon winner.

The rally route will go through Toronto, Ontario; Tonawanda, Rochester and New York City, N.Y.; and Wilmington, Del. It will finish May 3 at the University of Maryland in College Park.

The marathon is sponsored by General Motors, the U.S. Department of Energy and the Canadian Department of Energy, Mines and Resources. It is organized by the Society of Automotive Engineers and Argonne National Laboratory. It is conducted by the Sports Car Club of America.



Rally route goes from Michigan on through Toronto, New York, Delaware and Maryland.

Denver Post, March 16, 1989

Associated Press

TEST DRIVE: Gov. Roy Romer gets behind the wheel of methane-powered Chevrolet Corsica LT developed by CSU students.

CSU engineers driven to prove methanol-powered car practical

By John Eaton
Denver Post Automotive Writer

A team of Colorado State University students took Gov. Roy Romer for a ride Wednesday in an experimental methanol-powered car they hope will help change automotive history.

The CSU engineering team is one of 15 college teams modifying a stock American car to illustrate the practicality of powering a vehicle with methanol fuel, which so far has posed problems that hinder widespread use.

Methanol vaporizes less readily than gasoline, which gives it poor starting characteristics in cold weather. And it takes about twice as much methanol to provide as much energy as gasoline; it also corrodes certain metals and plastics used in the automotive fuel systems.

But methanol burns much cleaner than gasoline with scant pollution of the atmosphere and it can be made less expensively from many available sources — natural gas, coal, farm products that contain carbon and even sewage and barnyard manure.

Stepping from the car after a test drive Wednesday, Romer praised the students. "The students have done a very good job of converting this engine and I'm impressed by the estimate of 50 percent cut in pollutants."

The car, a 1988 Chevrolet Corsica, will undergo extensive modifications by a team of 40 engineering students at CSU before competing in a 1,100-mile rally from Detroit to Washington, D.C., April 29-May 3.

The rally — sponsored by General Motors, the U.S. Department of Energy, the society of Automotive Engineers and Canada's Department of Energy, Mines and Resources — hopes to show the challenges and advantages of methanol as an alternative fuel.

Bryan Willson, assistant professor of mechanical engineering, said the students have high hopes of winning the rally. The winner will be judged on fuel economy, starting, emissions, acceleration and rally times. There are $20,000 in cash prizes to the top winners.

"It's a very timely project," Willson says. "All the companies are interested in methanol and there are many implications for Colorado because the state has many of the raw products needed for its manufacture."

Interest was so strong that Colorado Best Chevrolet Dealers Association, a group of 26 dealers, donated $35,000 to help finance the project.

The test car given to all college teams is a standard 1988 Chevrolet Corsica LT with a 2.8-liter, multi-port, fuel-injected V-6 engine with a five-speed manual transmission. But this car will be altered so it can perform on a mixture of 85 percent methanol and 15 percent gasoline. The gasoline is used to provide power during cold starts.

So far, the modifications have been limited to replacing the fuel tank, interconnecting fuel lines, fuel pump and injectors with parts resistant to methanol's corrosive properties.

Now, modifications designed by the students will be added. For example, the compression ratio will go from 8.9:1 to 12.5 and 60 percent more air will be mixed with fuel to clean up emissions. Also, a high-energy ignition system will ignite the diluted fuel, ceramic coatings will cut heat loss and increase power, and a special system will alter the chemical makeup of methanol to heighten its volatility during cold starts.

Willson said the initial modifications to the project car have already dramatically cut hydrocarbon and carbon monoxide emissions, but there is still a lot of work to do before the rally.

John Hubbert, the project's chairman, said the test car has been one of the best educational experiences of his life. "We've been exposed to the whole spectrum of an engineering project, including deadlines and budgets — experiences we would have on an engineering job."

Coloradoan, March 16, 1989

Romer tries out CSU methanol car

By JAN KNIGHT-SINNER
The Coloradoan

DENVER — Gov. Roy Romer took a test drive Wednesday in what some alternative fuels advocates hope will be the car of the future.

Romer drove the 1988 maroon and white Chevrolet Corsica around the Capitol grounds at midday, then turned the car back to the Colorado State University students who designed the Methanol Marathon engine.

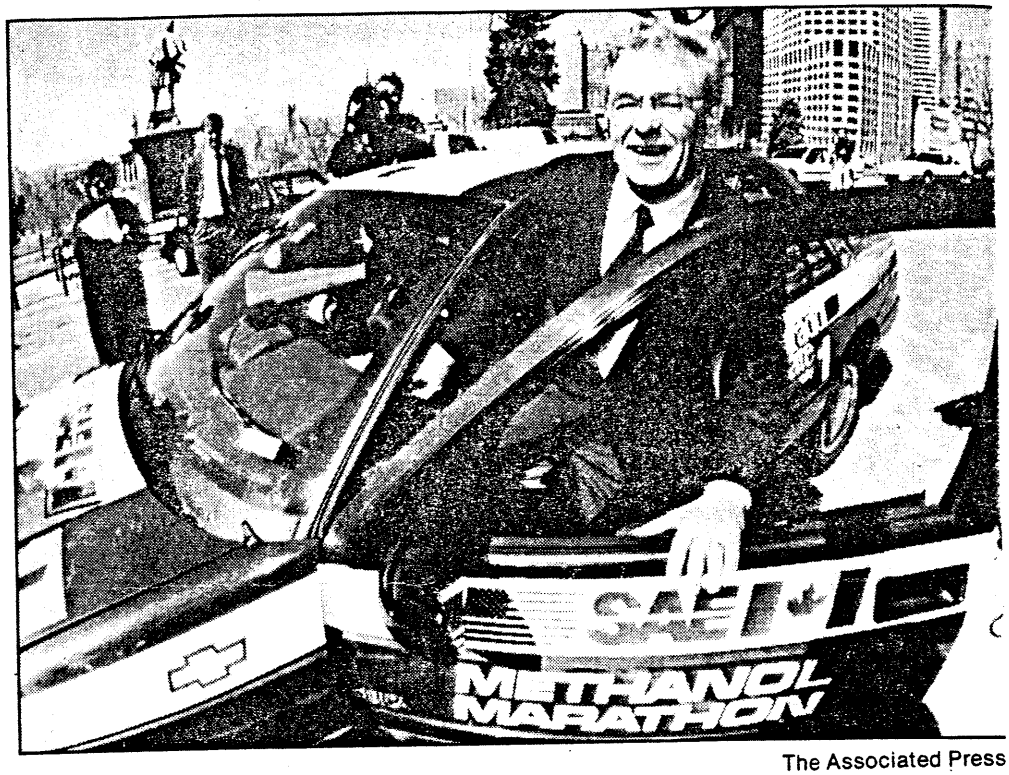
A CSU team plans to drive the car April 28 through May 7 in an 1,100-mile rally from Detroit to Washington, D.C., via Toronto and New York City. Based on the CSU team's plans to convert a gas-burning engine into a methanol-burning engine, the team was one of 15 from the United States and Canada selected by General Motors Corp. to participate in the rally.

Methanol, a fuel that burns more cleanly than gasoline, is considered to be one answer to the brown cloud, the greenhouse effect and other air-pollution problems.

But consumers have been slow to accept methanol, in part because it makes engines slow to start in cold weather.

The engine designed by the CSU team has corrected that problem, according to Bryan Willson of CSU's mechanical engineering department.

See CAR, Page C8



The Associated Press

TEST DRIVE: Gov. Roy Romer gets behind the wheel of a methane-powered car developed by engineering students at Colorado State University. In late April, the car will be entered in an 1,100-mile road rally called the Methane Marathon. Romer drove the Chevrolet around the Capitol grounds Wednesday before turning it back to the students, who make up one of 15 teams from the United States and Canada to compete in the marathon.

Continued from Page C1

"The fortunate thing is that students are ignorant in some ways," Willson said. "They don't really know what can't be done, so they're willing to try things that more established engineers might not try."

CSU's microwave-powered cold-starting system is one of those things. Planned and designed by the 25 mechanical engineering students and 15 volunteers from other departments, the system quickly breaks down methanol into fuel and starting fluid, so the car can start in less than three seconds.

Another strike against methanol is it breaks down rubbers and other metals used in gas-powered engines.

Willson said that the Methanol Marathon may bring American cars closer to eliminating that problem. The 15 teams' work will help automakers learn how to mass-produce methanol-burning engines, making them cheaper to build, he said.

The teams' work also will make it easier and cheaper for consumers to convert their engines to accept methanol. Willson estimates that it will cost consumers about $200 to make the conversion.

During the marathon, the 15 teams will be judged on fuel economy, emissions, power and cost-effectiveness, instead of on speed.

John Hubert, student leader of CSU's team, said he expects his group to do well in the marathon, but there is much to do before the rally.

"We have a pretty general feel for what the others are doing," said Hubert, who will graduate in May. "We hear rumors, and the parts suppliers tell us who's ordered what part.

"I work 25 hours a day on this. I see it in my sleep. But whether or not we make a technological breakthrough really doesn't matter. The important thing is getting the engineering experience."

March 16, 1989

AP LASERPHOTO

Colorado Gov. Roy Romer gets behind the wheel of CSU's methanol-powered car in Denver Wednesday.

CSU students convert engine to burn methanol

DENVER (AP) — Colorado State University students have designed a methanol-burning engine converted from a gas-burning engine that may eliminate the current problem of slow starts in cold weather, according to a CSU mechanical engineering department spokesman.

CSU's microwave-powered cold-starting system was planned and designed by 25 mechanical engineering students and 15 volunteers. The engine quickly breaks down methanol into fuel and starting fluid so the car can start in less than three seconds.

Spokesman Bryan Willson said the Methanol Marathon engine also may bring American cars closer to eliminating the problem of methanol breaking down rubbers and other metals used in gas-powered engines.

The 1988 maroon and white Chevrolet Corsica will be driven by a CSU team April 28-May 7 in an 1,100-mile rally from Detroit to Washington, D.C, via Toronto and New York City.

The team was one of 15 from the United States and Canada selected by General Motors Corp. to participate in the rally. They will be judged on fuel economy, emissions, power and cost-effectiveness.

"The fortunate thing is that students are ignorant in some ways," Willson said. "They don't really know what can't be done, so they're willing to try things that more established engineers might not try."

The team's work will make it easier and cheaper for consumers to convert their engines to accept methanol. Willson estimated it would cost consumers about $200 to make the conversion.

Rocky Mountain, Colorado News, March 16, 1989

Romer gives car green light

CSU race entrant given test drive

By JOHN SANKO
Rocky Mountain News Capitol Bureau

It wasn't exactly an Indy 500 racer, but the methanol-propelled vehicle Gov. Roy Romer drove in a test run around the capitol yesterday had plenty of "juice" for him and polluted only half as much as most cars.

It also offered Romer a chance to catch up on happenings at his alma mater, Colorado State University, as he whipped the converted 1988 Chevrolet Corsica around a circular drive with CSU president Philip Austin and senior mechanical engineering student John Hubbert of Fort Collins as passengers.

Romer gave a thumbs-up signal to photographers as he pulled up in front of the capitol's west steps in the maroon and white car that will compete in the 1,100-mile Methanol Marathon April 28 to May 4.

The competition will determine the university team with the most effective engine that runs on a fuel of 85% methanol and 15% gasoline. Methanol is a clean-burning, oxygenated fuel that can be produced from natural gas, coal, oil shale, agricultural products or waste gases from sewage treatment plants.

Hubbert estimated the car emitted only half the hydrocarbon and carbon monoxide pollutants of a regular vehicle at Denver's mile-high altitude.

When Romer, who has piloted a Navy jet, driven a race car and engineered a steam locomotive since becoming governor, asked how the car was for "dragging," Hubbert said: "It's got improved power over when it was running on gasoline. It was already a gutsy car, but it performs even better now."

The Colorado Best Chevrolet Dealers Association provided CSU with the $35,000 gift necessary for the vehicle and conversation parts.

CSU is one of 15 colleges and universities in the United States and Canada that will compete in the marathon, which begins in Detroit, passes through Toronto, Pittsburgh and New York City before ending in Washington, D.C. Cars will be judged on fuel economy, emissions, power, cost-effectiveness and drivability.

Methanol Marathon has 'U' students racing

[redacted]ily
3/15/89

BY MONICA SMITH

About 30 University engineering students are in a race to end the auto industry's dependence on fossil fuels, and to beat out the competition from 14 schools across the nation and Canada.

The students, all members of the Society of Automotive Engineers' campus chapter, must convert the engine of a Chevrolet Corsica, donated by GM, to run on methanol rather than gasoline. If successful, they will then race the car in a 1,100-mile, five-day road rally from Detroit, through Toronto, to Washington D.C.

The competition, which began Nov. 21, provides a real-life opportunity for experimentation with an alternative fuel. The race will begin April 28 and will end May 3.

The project is "pretty challenging because GM has told us what to do... all modifications have to be made on the engine," said Robert Khami, president of the campus society. Khami also said methanol fuel is very hard to work with because it's highly flammable, and a larger amount is necessary to fuel a car when compared to gasoline. For example, a car requiring 10 gallons of gas needs 20 gallons of methanol, Khami said.

The students work on electrical and mechanical plans for the modifications about three hours a week, during their free time.

Since a proposal had to be submitted by Oct. 15, the students had little time to put together a plan, but still managed to be one of the 15 finalists. The proposals had to include a schedule of events, funding sources, and confirmation of access to the necessary facilities.

Dave Dombrowski, a society member working on the Corsica project, said the project was challenging because, "there are no faculty advisors; it is totally run by students."

According to Khami, students have to be a member of the society in order to compete in the race, but not to participate on the project.

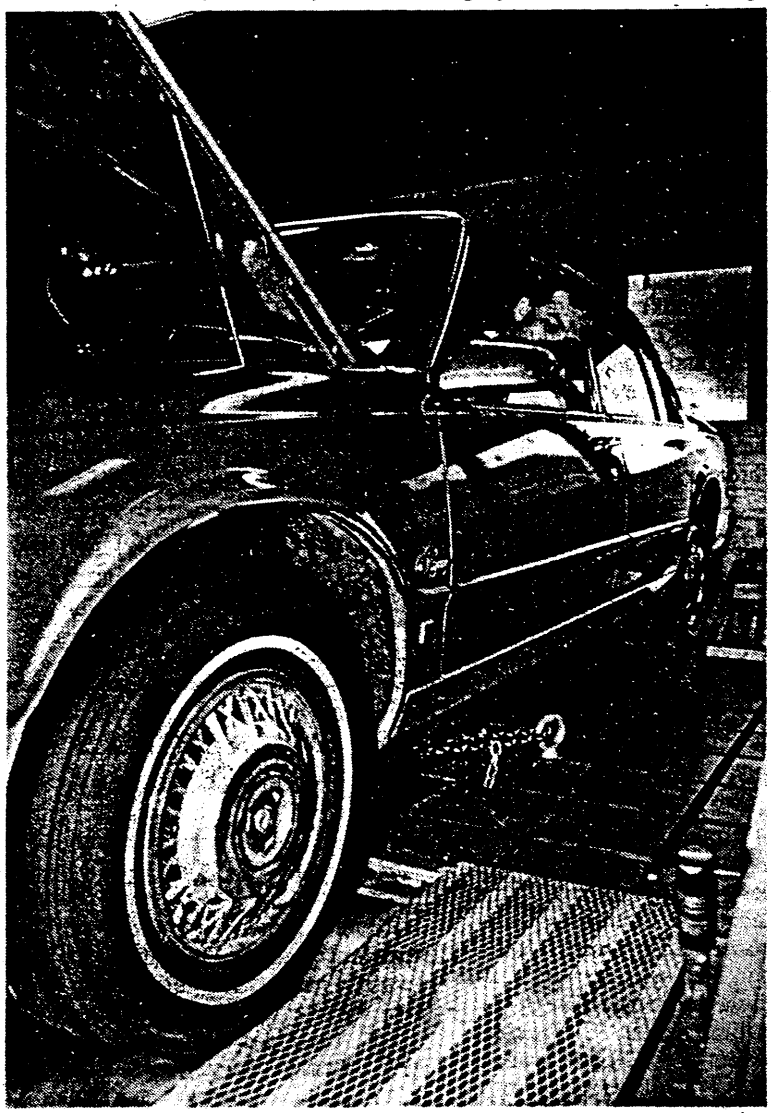
"It is truly a team effort... most of our people are doing it without any course credit for it," said Roger Khami, chair of the Corsica project and Robert's brother. "We have quite a few people with no experience... those of us who know help those of us who don't," he said.

At the end of the rally the U.S. and Canadian Departments of Energy will award $20,000 in prizes. The key elements of the competition will be fuel economy, startability, emissions, acceleration and rally times. In addition, Chevrolet will award $1,000 to the team with the best-appearing car.

Although the race is four months away, Dombrowski thinks the society members stand a good chance of winning. "If we don't win, we will come very, very close," he said.

The Society, a nationwide group, began in the early 1900s to provide quality and safety to the then-new auto industry. Student members of the University chapter gain hands-on experience and are able to team up with engineers in industry for a day and tour auto companies.

"We don't just want paper members," said President Khami. "It (the society) is a lot of satisfaction for people."



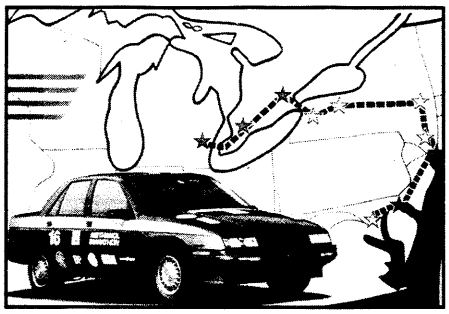
JESSICA GREENE /Daily

Engineering school Senior Dave Dombrowski tests equipment for use in a project to convert a car to run on methanol. The car will be used in a 1,100 mile race to Washington, D.C.

Autoweek
March 13 1989

The ultimate field trip: Five days of fun and credit

Students rally their designs



Corsica conversions test alternate fuel

Engineering students used to be so *dull*. But today, student engineers certainly seem to be having their share of fun if the rally cars displayed at the SAE Congress in Detroit are any indication.

The SAE Methanol Marathon (*AW*, Nov. 28, 1988), a 1100-mile rally for methanol-powered cars, used the SAE Congress to unveil the rally's route and to display the students' handiwork before the event kicks off on April 29 at the GM Technical Center in Warren, Mich.

Last November, student teams from 30 colleges and universities in 18 states and Canada submitted proposals for converting 1988 Chevrolet Corsica LT sedans to burn methanol fuel. A panel of judges from the auto industry and government selected the 15 finalist schools, based on the technical merits of each proposal.

Finalists were given identical 2.8-liter V6 Corsicas with five-speed transmissions and conversion kits which included stainless steel fuel tanks, special fuel lines, high-flow fuel pumps, and computer calibration modules. Refitting the cars to run on a mix of 85 percent methanol and 15 percent gasoline was the primary goal. "With nearly 200 of the finest engineering students in North America working to win the marathon, new technical data should come from ... each team's individual strategies," said Donald Runkle, vice president of GM's Advanced Engineering Staff. "The rally will give valuable information on how methanol performs under real-world conditions."

Each car will be scored on acceleration tests, emissions, conversion design and fabrication. The teams will compete in cold-start and fuel economy tests during the trek. But for the students, winning the rally will validate their efforts and, according to SAE president George Aravosis, "should be an extremely competitive learning experience."

Teams are expected to cover the route—from Michigan through Canada to College Park, Md.—in five days. Winners will be determined on overall scores, including their rally times, and will share $20,000 in prize money. ■

Los Angeles Daily News, March 13, 1989

Students point way to future

Car altered at CSUN to run on methanol

By RENE LYNCH
Daily News Staff Writer

NORTHRIDGE — Be on the watch for a Chevrolet Corsica decorated with logos and flags painted on the top and sides.

It is the latest experiment by mechanical engineering students at California State University, Northridge, who have converted the car into a methanol-burning vehicle that will be entered next month in the 1,100-mile "Methanol Marathon."

"Everyone will see it when we take it out onto the streets," said Steve Florian, 22, of North Hollywood, the project's manager. "We're going to be showing it off. It's the wave of the future."

The car was given to CSUN by General Motors as part of a nation-wide pilot program to teach students about experimenting with alternative fuels, said David Sloan, a GM spokesman.

Fifteen schools in the United States and Canada, including CSUN, have been presented the challenges of altering vehicles to use methanol, and then entering them into the marathon, which begins April 29 in Detroit. From Detroit, the cars are supposed to be driven to Toronto, Ontario and then to College Park, Md.

Grand prizes for the race, which is sponsored by General Motors, the U.S. Department of Energy and the Canadian Department of Energy, Mines and Resources, total $20,000 to be shared by the top four finishers in the marathon.

Competitors will be judged on fuel economy, starting performance, emissions, acceleration and the order in which they finish.

"We're not doing it for the prize money, though," said Florian. "We're really doing it because we want to put CSUN on the map, let them know who we are and how good we are."

The experiment, offered through a design class for senior students, provides experience that students can use after they graduate, said Tim Fox, chairman of the Mechanical Engineering Department.

"It's real-world experience," he said. "They're already learning how to work with government agencies and corporations, and they're given the opportunity to see a problem, recognize it and solve it."

Alberto Rosales, 23, of Northridge, who wants to be a mechanical engineer after he graduates, agreed.

"It's been a great experiment. "We're not doing a paper project, we're trying to simulate the real thing," he said.

The entire project, marathon expenses included, costs about $30,000. The expenses have to paid by the students, who already have raised about $8,000 and are looking into sponsorships for the rest of the money.

Their only instructions were to make the vehicle a methanol-run car and they were given a converter kit. The rest, from drawing up plans to figuring out what would work, was up to the 15-student crew, which is supervised by faculty members.

Many students said they have become fascinated with making the engine work using methanol and put in long hours at the laboratory — even though the class only is worth only two units.

"I don't think anyone knew that much about methanol-run vehicles before this," said Rosales, "but we've learned a lot just through the hands-on experience."

"We've all gotten heavily involved. We all want to make it work," Florian said.

The car must be returned to GM by the end of the year, said Sloan, who added that the plans already submitted have been pretty sophisticated — maybe even enough to teach GM engineers something.

Students also said the experiment would prove highly valuable to their careers in the future, when they expect alternative-fuel engineers to play a big part in the automotive industry.

"We all know that gasoline isn't going to be around forever, so it's time to start looking at alternatives," said Rosales.

Methanol can be made in the United States and can cut down on air pollution.

"With methanol we don't have to depend upon anyone else for fuel, and we're cutting down on pollution," Rosales said.

Some of the drawbacks to methanol are fewer miles to the gallon and problems with ignition in cold weather.

L.A. Daily News, 3/13/89

EVAN YEE/DAILY NEWS

Eight members of a California State University, Northridge engineering team pose with the car they have modified to run on methanol.

GM Reveals the Route For Methanol Marathon

Trentonian
Trenton, NJ
March 11, 1989

DETROIT — The 1,100 mile route for the Methanol Marathon automotive road rally was revealed recently at the SAE International Congress and Exposition.

The Marathon is a college engineering student event aimed at learning more about methanol as an alternative to gasoline fuels. It is sponsored by General Motors, the U.S. Department of Energy, and the Canadian Department of Energy, Mines and Resources. It is organized by the Society of Automotive Engineers (SAE) and the Argonne National Laboratory.

According to Donald L. Runkle, vice president in charge of the General Motors Advanced Engineering Staff, the rally — which will culminate five months of effort by teams of engineering students at 15 universities and colleges in the U.S. and Canada — will begin on April 29 at the General Motor Technical Center in Warren, Mich., and cover the 1,100 miles in five days.

"Nearly 200 of the finest engineering students in North America are working to win the Methanol," Runkle stated. "New technical data should come from each team's experience in executing its individual strategy to convert identical Chevrolet Corsicas to burn methanol. The rally itself will give valuable information on how methanol performs under real-world conditions."

Runkle said the rally will go through Toronto, Ontario; then to Tonawanda, Rochester and New York City, N.Y.; on to Wilmington, Del. and finish on May 3 at the University of Maryland in College Park. Winners will be announced the following day in Washington D.C. and awarded a share of $20,000 in prizes at an SAE Government/Industry meeting.

"The rally will be an exciting finish to an extremely competitive learning experience for these students," said SAE President George Aravosis. "The event has aroused interest in both the engineering and political communities," he added.

Associate sponsors of the rally are BP Oil Co., The Lubrizol Corp., The Goodyear Tire and Rubber Co., and the Canadian Oxygenated Fuels Association. The Sprots Car Club of America, Inc. (SCCA) is conducting the rally.

Last November, each student team took delivery of a 1988 Chevrolet Corsica LT and began converting the car to burn methanol fuel. Each car was equipped with a 2.8 liter multi-port fuel-injected V-6 engine, five-speed manual transmissison, sport suspension and air conditioning.

Conversion kits given to the teams contained a stainless steel fuel tank, high-flow fuel pump and fuel injectors, special fuel lines and a computer calibration module. The vehicles will run on a mixture of 85 percent methanol and 15 percent gasoline.

The teams will face off at the GM Tech Center on April 28 to have their cars judged for acceleration, emission, and conversion design and fabrication the day before the rally begins.

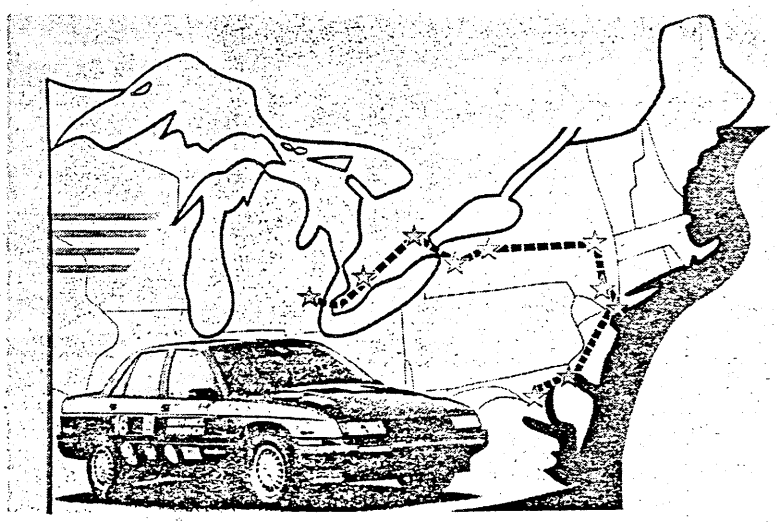
During the rally, the methanol-fueled Corsicas also will be tested for cold start driveability, fuel economy and rally times. Combined scores from all of the categories will determine the Methanol Marathon winner.

Conversion proposals were received from over 30 colleges and universities in 18 states and Canada. A panel of judges from business and government selected the 15 finalists based on the technical merits of their proposals.

Rally highlights of the Methanol Marathon will include:

- Stops at two research facilities (ORTECH in Mississauga (Toronto), Canada, and General Motors AC Rochester Engineering Facility in Rochester, N.Y.) where extensive

(Continued Pg A11)



THE ROUTE FOR THE METHANOL MARATHON

March 6, 1989
New Center News

SAE REVEALS METHANOL MARATHON ROUTE

The 1,100-mile route for the Methanol Marathon automotive road rally was revealed at the SAE International Congress and Exposition.

The marathon is a college engineering student event aimed at learning more about methanol as an alternative to gasoline fuels. It is sponsored by General Motors, the U.S. Department of Energy and the Canadian Department of Energy, Mines and Resources. It is organized by the Society of Automotive Engineers (SAE) and the Argonne National Laboratory.

According to Doanld L. Runkle, vice president in charge of the General Motors Advanced Engineering Staff, the rally — which will culminate five months of effort by teams of engineering students at 15 universities and colleges in the U.S. and Canada — will begin on April 29 at the General Motors Technical Center in Warren and cover the 1,100 miles in five days.

"Nearly 200 of the finest engineering students in North America are working to win the Methanol Marathon," Runkle said. "New technical data should come from each team's experience in executing its individual strategy to convert identical Chevrolet Corsicas to burn methanol. the rally itself will give valuable information on how methanol performs under real-world conditions."

Runkle said the rally will go through Toronto, Ontario; then to Tonawanda, Rochester and New York, N.Y.; on to Wilmington, Del., and finish on May 3 at the University of Maryland in College Park. Winners will be announced the following day in Washington, D.C., and awarded a share of $20,000 in prizes at an SAE Government/Industry meeting.

"The rally will be an exciting finish to an extremely competitive learning experience for these students," said SAE President George Aravosis. "The event has aroused interest in both the engineering and political communities."

Associate sponsors of the rally are BP Oil Co., The Lubrizo Corp., The Goodyear Tire & Rubber Co., and the Canadian Oxygenated Fuels Association, the Sports Car Club of America Inc., (SCCA) is conducting the rally.

Last November, each student team took delivery of a 1988 Chevrolet Corsica LT and began converting the car to burn methanol fuel.

Conversion kits given to the teams contained a stainless steel fuel tank, high-flow fuel pump and fuel injectors, special fuel lines and a computer calibration module. The vehicles will run on a mixture of 85 percent methanol and 14 percent gasoline.

The teams will face off at the GM Tech Center on April 28 to have their cars judged for acceleration, emissions and conversion design and fabrication the day before the rally begins.

During the rally, the methanol-fueled Corsicas also will be tested for cold start driveability, fuel economy and rally times.

Rally highlights of the Methanol Marathon will include:

► Stops at two research facilities (ORTECH in Missisauga (Toronto), Canada and General Motors AC Rochester Engineering Facility in Rochester) where extensive methanol-fueled vehicle research is done.

► A news conference in new York City where six General Motors methanol-fueled buses already are running on city streets.

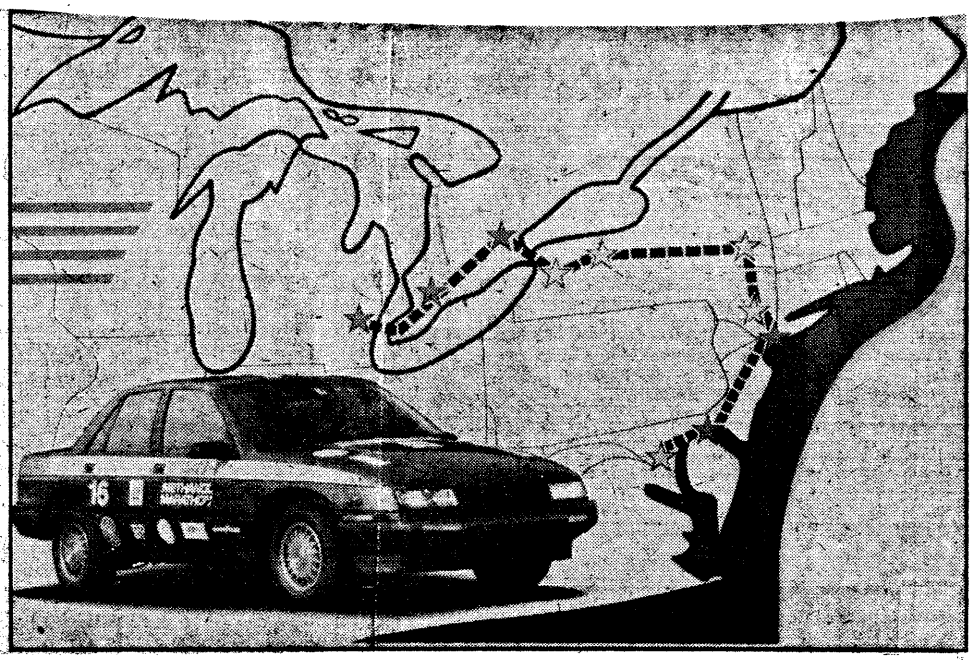
► Stops at GM's Chevrolet-Pontiac-GM of Canada Group (C-P-C) plants in Linden, N.J., and Wilmington, where the Chevrolet Corsica is produced and at the C-P-C Tonawanda engine plant where the engines for the Methanol Marathon Corsicas were produced.

► Winners will be announced on Capitol Hill in Washington, on Thursday, May 4. Congressmen from states where the schools are located will be on hand to congratulate the teams.

March 3, 1989
Detroit Free Press

METHANOL ROAD TRIP

Teams of student engineers from 15 universities will drive methanol-powered Chevrolet Corsicas on this route from Detroit through Toronto to Tonawanda, Rochester and New York City in New York, then to Wilmington, Del., in the 1,100-mile, five-day Methanol Marathon organized by the Society of Automotive Engineers.



ROTC News

Two ROTC Cadets particpate in groundbreaking methanol research

BY: VINCENT RUNCI

Many college students have a distorted image of ROTC; something like a cross between the movies *Animal House* and *Taps*. This image is unfortunate because it is so wrong. ROTC cadets are just like any other typical college students with the exception of some extra training and the likelihood of a stint in the military after graduation. Despite these additional burdens, cadets are some of the most active people at this school. From student affairs to academics to athletics, ROTC cadets are often among the foremost of the students who make things happen here at F.I.T.

Two cadets in particular, Frank Foster and Carlo O'Keefe, are gaining recognition for their participation in Methanol research. Both students will have active duty commissions in the Army after graduation. Until then, both Carlo and Frank will continue to be in F.I.T.'s Mechanical Engineering elite as they advance the cause of Methanol as an alternative source of fuel.

"Methanol," Frank Foster explains,Is not really meant to be primary source of fuel. Instead, it will be a transition fuel to use between the time current petroleum reserves dry up and the time another fuel can be developed. Also, methanol has a lot of advantages over gasoline that have not yet been fully researched. That's why there is a lot of interest in Methanol."

Frank and Carlo are currently involved in two research projects dealing with methanol. One is called the "Methanol Marathon" sponsored by GM, the U.S. Department of Energy, and the Canadian Department of energy. Their other project is funded by the State of Florida and has to do with Jacksonville public transportation buses which already use methanol. What Carlo, Frank, and other MEs want to do here is gain even more energy from the methanol for the buses through the use of fuel additives and other technologies while maintaining the methanol's low rate of pollution emissions.

The Methanol Marathon has the capability to win a large amount of nationwide publicity for F.I.T. This is not only because of possible cash rewards but also because of the first-rate caliber of the competition. In order to be eligible, schools had to send a proposal to GM. Of the 96 schools which entered proposals, F.I.T. was one of the 15 schools which were accepted, beating out such other institutions as Georgia Tech, M.I.T., and the University of Kansas. (In U., The National Campus Magazine, a student from U of Kansas accidentally confused FSU with FIT as one of the schools that won out over her own.)

Each of the 15 schools (12 American, 3 Canadian) that won were issued a 1989 Cheverolet Corsica LT. The Corsicas came with a 2.8L multiport fuel injected V6 engine, five speed manual transmission, sport suspension, and air conditioning. GM also supplied each school with a methanol conversion kit. The Corsicas will run a mixture of 85% methanol and 15% gasoline.

"The main problem with methanol," said Carlo O'Keefe, "is that it has a higher latent heat of vaporization than gasoline. This means that methanol engines have extreme difficulties starting in temperatures less than 47F. This is what is known as the 'cold start problem' and is the main focus of our research. Other than that methanol burns cleaner and more efficiently then gas, adding about 20% more horsepower to the average engine."

The marathon starts on April 28 in Detroit. It's course then goes to Toronto, New York, and finally Washington D.C. Race participants will be scored in several categories including: Fuel economy, startability, emissions, acceleration, rally times, and appearance of automobile. Other team members who will be on the road with Carlo and Frank include: Doug Hahn, Jeff Grillo, Doug Hunter, Tracy "Curly" Post, Steve "Playboy" Mackenzie, Jerry McAlwee, and Eric Gordon. These MEs do their research and preparation down at the Biological Sciences lab (which used to be Medical Research Institute) across 192 from "Bare Assets".

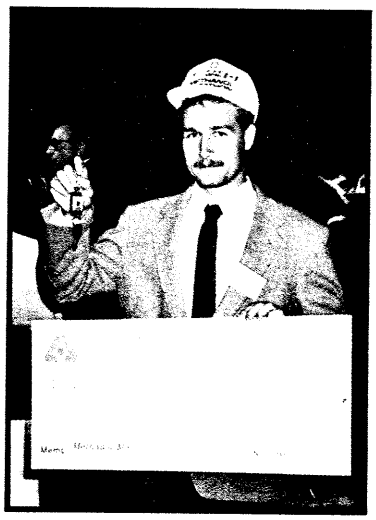
The most amazing thing about FIT's involvement in the Methanol Marathon is that it is 100% a student project. The sending of the winning proposal was done on student initiative, without any prompting done by the faculty. Carlo and Frank say that it was through the leadership and determination of Doug Hahn that the project got off the ground in the first place. Anyway, the gang of MEs over at BSL are pretty much independent of their department and that's the way they like it. Let this whole thing be a lesson to those who cry and whine about this school not being challenging enough. Learn a lesson from this case of student involvement. Don't wait for this school to come around and amuse you, go out and seek challenges for yourself! Good luck in April, guys!

Student Action in Engineering

SAE The Engineering Society For Advancing Mobility Land Sea Air and Space®

Spring 1989

Revving up for Methanol Marathon



Steve Florian, captain of the California State University-Northridge Methanol Marathon team, poses with the keys to a new Chevy Corsica from General Motors and $1,000 seed money from the U.S. Dept. of Energy. Qualifying college teams picked up vehicles for the Apr. 29-May 4 event at GM's Technical Center in Detroit.

A rally route for the Detroit-Washington, D.C. Methanol Marathon is featured on pg. 4.

SAE Methanol Marathon Rally Route

Fifteen college teams from the U.S. and Canada are modifying new Chevrolet Corsicas to run on M-85 methanol for the Apr. 29-May 4 SAE Methanol Marathon, running from Detroit, Mich. to Washington, D.C. Contestants were selected last fall based on their proposals outlining a method for converting a conventional car to use of methanol.

General Motors, Corp. provided each team with a new Corsica, and the U.S. Department of Energy and Canada's Department of Energy, Mines and Resources contributed $1,000 to cover each team's expenses plus $20,000 in cash prizes. Organizing the event are SAE, Argonne National Laboratory and the Sports Car Club of America.

Below is the rally route contestants will follow:

Sat., Apr. 29 - GM Tech Center, Detroit, Mich. to GM Diesel Div. Plant, London, Ont.; London, Ont. to ORTECH, Mississauga, Ont.

Sun., Apr. 30 - Mississauga, Ont. to CPC Plant, Tonowanda, N.Y.; Tonowanda, N.Y to AC Rochester Engrg. Ctr., Rochester, N.Y.

Mon., May 1 - Rochester, N.Y. to Rome, N.Y. ; Rome, N.Y. to Kingston/Newburg, N.Y.

Tues., May 2 - Kingston/Newburg, N.Y. to George Wash. Bridge, New York City ; Central Park, New York City to CPC Plant, Linden, New Jersey ; Linden, N.J. to Wilmington, Del.

Wed., May 3 - Wilmington, Del. to FINISH - Univ. of Maryland

Thurs., May 4 - Univ. of Maryland to Capitol Hill, Washington, D.C.; Capitol Hill to L'Enfant Plaza (SAE Industry/Government Meeting, awards luncheon)

Dollars and Sense, March 1989

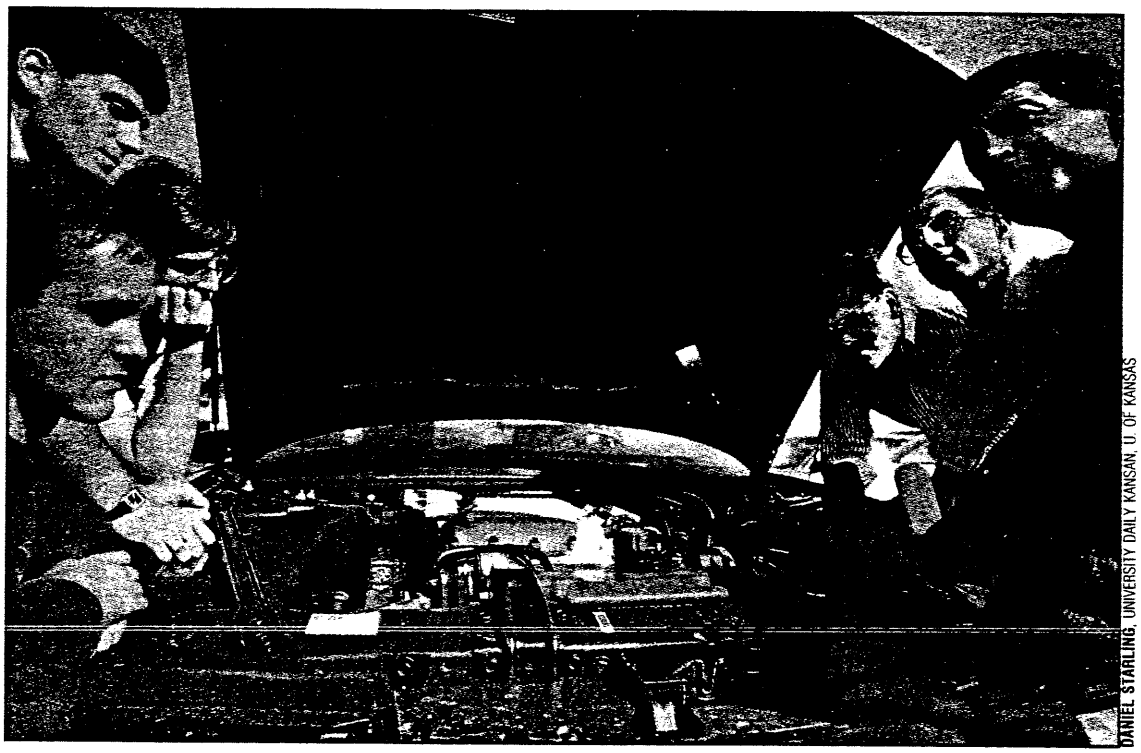
Car contest challenges college students

15 colleges submit winning proposals, will enter road rally

By Janell Good
■ University Daily Kansan
U. of Kansas

While many college students are into buying and driving cars, there are a few who take a different interest.

Last fall, college students participated in The Methanol Marathon fuel competition, sponsored by the Society of Automotive Engineers (SAE) and General Motors (GM). The contest challenged students to redesign a car's engine by creating an alternative fuel system that runs primarily on methanol.



DANIEL STARLING, UNIVERSITY DAILY KANSAN, U. OF KANSAS

Six mechanical engineering students at the U. of Kansas redesigned a car's engine to run on methanol.

Winning proposals were submitted by the following colleges and universities: California State U., Northridge; Colorado State U.; Concordia U., Montreal; Florida State U.; U. of Maryland; U. of Michigan; Michigan Tech U.; New York Institute of Technology; Pennsylvania State U.; U. of Rochester, N.Y.; U. of Tennessee; Texas Tech U.; Washington U., St. Louis; West Virginia and Wichita State U., Kan.

The people submitting winning proposals drove to Detroit to pick up their car in November. They have until April 28 to complete engine modification and to drive the car back to Detroit, where a road rally will take place April 29.

The rally, sponsored by the Sports Car Club of America, will begin in Detroit and, after a series of check points, finish in Washington, D.C. The cars will be tested on a variety of subjects, including how well they start in cold weather.

Six U. of Kansas (KU) mechanical engineering students — Mark Egner, Chris Harper, Doug Queen, Randy Spector, Ron Moody and Jeff Pretz — submitted one of the proposals. And even though his team didn't win, Moody said he benefited from the project by learning how to turn in a proposal that was going to be reviewed by a panel of experts.

"As an engineering student, you have to turn in a lot of proposals, but this proposal (wasn't) just another homework assignment," Moody said. "We (had) a chance to work on a project that will have an impact on the transportation of the future."

Donald A. Gyorog, KU professor of mechanical engineering, supervised the project. He said about "50 or 60" projects were entered.

The biggest problem, Gyorog said, was finding time to organize the project and obtain class credit for the project.

Donald Postman, General Motors Corp. public relations director, said last summer SAE asked GM to help sponsor the fuel competition.

"We were delighted to have the opportunity," Postman said. "The competition fit in with our ongoing test programs to develop methanol as an alternative fuel source.

"Methanol is a replenishable fuel source, a by-product of oil and gas products. Right now, there is little use for methanol, because there is no engine using this fuel," Postman said.

Iron Mountain, MI News, Feb. 28, 1989

Michigan Tech team enters methanol conversion rally

HOUGHTON — Michigan Technological University is among 15 universities and colleges in the United States and Canada that have been selected to participate in the Methanol Marathon, an international methanol conversion competition.

Members of MTU's student chapter of the Society of Automotive Engineers (SAE) received a Chevrolet Corsica, which will be driven in the marathon, a conversion kit, both provided by General Motors Corporation (GM) as part of the program.

The goal of each of the 15 teams is to modify their Corsica to burn methanol fuel instead of gasoline. The efficiency of each team's conversion will be judged on the basis of the car's performance in a 1,100-mile road rally, slated to run April 28 to May 3. On April 27, at the starting point in Detroit, the cars will be inspected by judged who will hear the student teams report on how the vehicles were converted. The rally cars will also be tested for emissions, acceleration, and startability at that time. The finish line for the ralliers is located in Washington, D.C.

The marathon is sponsored by GM, the U.S. Department of Energy and the Canadian Department of Energy. It is being organized by SAE and the Argonne National Laboratory. Several associate sponsors are also helping to make the methanol conversion program possible.

The Methanol Marathon teams were chosen on the basis of proposals detailing each team's conversion plan. "The 15 proposals selected by the judges represented the most innovative and technically competent of 31 fine proposals," said Dr. William Shertz, director of convervation and renewable energy programs for the Argonne National Laboratory.

Allan J. Streb, deputy assistant secretary for conservation in the U.S. Energy Department, said the rally offers a relatively inexpensive opportunity to test-saving technology, develop new "human resources," and demonstrate the practical use of methanol as an automotive fuel.

Frank Ament, a staff project engineer with GM's Advanced Engineering staff, said the sponsors hope the teams can come up with some low-cost innovations that will help boost a methanol-fueled car's economy and its ability to start in cold weather.

Dr. William Shapton, professor of mechanical engineering at Michigan Tech and winner of the 1989 SAE Medal of Honor, is optimistic about the team's chances for success. "All of the team members are members of the MTU chapter of SAE and are well-qualified to undertake this project," he said. "The main thrust of their efforts will be to get the car to start easily. GM has done a good job in providing all the necessary materials in the conversion kit which they distributed to the teams, but we still have to deal with the problems associated with burning methanol fuel."

According to Shapton, one of the main disadvantages with using methanol for fuel is its low volatility — it vaporizes less easily — which affects startability. "Vehicles powered by methanol fuel start harder in cold weather than those powered by conventional fuel," he said. "The team members will have the extra hurdle of having to deal with the area's exceptionally cold weather."

Using methanol as fuel poses several other problems which the Michigan Tech Methanol Marathon team will try to resolve during the conversion process. Unlike gasoline, methanol can form a flammable mixture in fuel tanks at normal temperatures. When it burns, it does so with a nearly invisible flame, making it difficult to detect. Accelerated deterioration of some plastic and metal parts has also been observed in vehicles which burn methanol.

In addition, it takes almost twice the volume of methanol as gasoline to provide the same amount of energy and although emissions of hydrocarbons from methanol are low, the emissions of unburned fuel and aldehydes are higher than those of gasoline. Emissions control, along with startability, fuel economy, acceleration, and rally times, are key issues in determing the winner of the competition, according to SAE.

In an effort to alleviate these problem areas, the MTU team is equipping the car with pneumatic fuel injectors which atomize fuel more efficiently. Research on pneumatic fuel injectors has been underway in the Mechanical Engineering Mechanics Department for several years. Mercury Marine is the primary sponsor for this research which is being supervised by Dr. Lawrence Evers, mechanical engineering professor and adviser to the Methanol Marathon Team. Researchers hope that these fuel injectors will improve fuel economy, acceleration, and startability. These fuel injectors were redesigned by team members specifically for use in the Methanol Marathon vehicle.

Marathon car

Representatives of the Society of Automotive Engineers and Michigan Technological University with the Chevrolet Corsica an MTU student team will drive in the Methanol Marathon this spring. Michigan Tech is among 15 universities and colleges in the United States and Canada that have been selected to participate in the competition.

Florida Today
Feb. 27, 1989

TEAMS COMPETE IN SPECIAL RACE

Theresa DeCapua, FLORIDA TODAY

TESTING: Doug Hahn, left, and Dr. John Thomas of F.I.T. with auto run on methanol mixture.

Students to test methanol

By Dan McNerney
FLORIDA TODAY

A team of [redacted] engineering students will compete against 14 other college teams this spring in a five-day, 1,100-mile road race to test the use of methanol as an alternative fuel.

The students will spend the next several months converting the engine of a new 1988 Chevrolet Corsica LT, to run on a mixture of methanol and gasoline. Identical cars were supplied to the teams, along with a conversion kit, by General Motors Corp. GM also gave each team $1,000 to get the project started.

Dr. John Thomas, a research professor, is the team's advisor and a specialist in methanol. He explained all the cars will run on M85, a mixture of 85 percent methanol and 15 percent gasoline.

"I think you can make a good case for methanol as the liquid fuel of the future," Thomas said. "It's the only one we can make in enough volume to satisfy the needs of the American driver."

Methanol can be made from garbage, coal and natural gas, Thomas said. "It's much better than gasoline and diesel fuel as far as emissions go. It's cleaner and less polluting."

Team leader Doug Hahn, 29, of Charlotte, N.C., has a background in auto racing, Thomas said.

"Considering the experience of the team, if we can get all our ducks in a row, I think we'll win," Thomas said.

> "I think you can make a good case for methanol as the liquid fuel of the future."
>
> Dr. John Thomas, F.I.T. researcher

Hahn, too, was optimistic about his team's chances.

"We have more rally experience than any of the other teams, and we have a cold lab here in Florida," he noted.

The cold lab at the Melbourne campus allows the students to test how the car will start in cold weather, which is part of the competition.

In addition to Hahn, the mechanical engineering students on the F.I.T. team are: Jeff Grillo, 29, of Pittsburgh, Pa.; John Brought, 26, of Melbourne; Tracey Post, 26, of Cheshire, Conn.; Erik Gordon, 21, of Radford, Va.; and Doug Hunter, 21, of Titusville.

The students picked up their new Corsica LT at a pre-rally kickoff Nov. 21 at GM's Technical Center in Warren, Mich. The car is equipped with a 2.8-litre fuel-injected V6 engine, five-speed manual transmission, sport suspension and air conditioning. The conversion kits contain a fuel tank, high-flow fuel pump and fuel injectors, special fuel lines and a computer calibration module.

The grueling rally, in which all team members will participate, begins April 28 in Detroit and ends May 3 in Washington, D.C.

The methanol marathon is sponsored by GM, the U.S. Department of Energy and the Canadian Department of Energy, Mines and Resources. It is being organized by the Society of Automotive Engineers (SAE) and Argonne National Laboratory.

The SAE selected the participating teams on the basis of proposals submitted by 31 schools around the nation and Canada. The proposals were reviewed by a team of methanol experts from the automotive industry and research community.

"The proposals selected by the judges represented the most innovative and technically competent of 31 fine proposals," said William Schertz, director of Conservation and Renewable Energy Programs for Argonne National Laboratory.

Participants will be competing for $20,000 in cash prizes for their schools. Prizes range from $8,000 for first place to $2,000 for fifth place. Additional prizes of $1,000 each will be awarded for best methanol fuel economy and best methanol conversion. In addition, Chevrolet will award $1,000 for the best appearing rally car.

Michigan Tech Students To Take Part In Methanol Marathon

CRYSTAL FALLS, MI
DIAMOND DRILL
W. 3,200

FEB 22 1989

By Teresa Macaulay

Michigan Technological University is among 15 universities and colleges in the United States and Canada that have been selected to participate in the Methanol Marathon, an international methanol conversion competition. Members of MTU's student chapter of the Society of Automotive Engineers (SAE) received a Chevrolet Corsica, which will be driven in the marathon, and a conversion kit, both provided by General Motors Corporation (GM) as part of the program.

The goal of each of the 15 teams is to modify their Corsica to burn methanol fuel instead of gasoline. The efficiency of each team's conversion will be judged on the basis of the car's performance in a 1,100-mile road rally, slated to run April 28 to May 3, 1989. On April 27, at the starting point in Detroit, the cars will be inspected by judges who will hear the student teams report on how the vehicles were converted. The rally cars will also be tested for emissions, acceleration, and startability at that time. The finish line for the ralliers is located in Washington, D.C.

The marathon is sponsored by GM, the U.S. Department of Energy, and the Canadian Department of Energy. It is being organized by SAE and the Argonne National Laboratory. Several associate sponsors are also helping to make the methanol conversion program possible.

The Methanol Marathon teams were chosen on the basis of proposals detailing each team's conversion plan. "The 15 proposals selected by the judges represented the most innovative and technically competent of 31 fine proposals," said Dr. William Shertz, director of conservation and renewable energy programs for the Argonne National Laboratory.

Allan J. Streb, deputy assistant secretary for conservation in the U.S. Energy Department, said the rally offers a relatively inexpensive opportunity to test energy-saving technology, develop new "human resources," and demonstrate the practical use of

Houghton, MI Mining Gazette, Feb. 21, 1989

MTU team picked for

By Teresa Macaulay
Special To The Gazette

HOUGHTON — Michigan Tech is among 15 universities and colleges selected to participate in the Methanol Marathon, an international methanol conversion competition.

Members of MTU's Society of Automotive Engineers (SAE) received a Chevrolet Corsica, which will be driven in the marathon, and a conversion kit, both provided by General Motors Corporation (GM) as part of the program.

The goal of each team is to modify their Corsica to burn methanol fuel instead of gasoline. The efficiency of the conversion will be judged on the basis of the car's performance in a 1,100-mile road rally April 28-May 3 from Detroit to Washington, D.C.

On April 27, the cars will be inspected by judges who will hear the student teams report on how the vehicles were converted. They also will also be tested for emissions, acceleration and startability.

Organizers say the rally offers a relatively inexpensive opportunity to test energy-saving technology, develop new human resources and demonstrate the practical use of methanol as an automotive fuel.

The marathon, sponsored by GM, the U.S. and Canadian energy departments, is organized by SAE and the Argonne National Laboratory. Several associate sponsors are also helping to make the methanol conversion program possible.

The Methanol Marathon teams were chosen on the basis of proposals detailing each team's conversion plan.

Dr. William Shertz, director of conservation and renewal energy programs for the Argonne National Laboratory said the 15 competing teams represented the most innovative and technically competent of the proposals.

Frank Ament, a staff project engineer with GM's Advance Engineering staff, said the sponsors hope the teams can come up with some low-cost innovations that will help boost a methanol-fueled car's economy and its ability to start in cold weather.

Dr. William Shapton, professor of mechanical engineering at Michigan Tech and winner of the 1989 SAE Medal of Honor, is optimistic about the team's chances for success.

"The main thrust of their efforts will be to get the car to start easily. GM has done a good job in providing all the necessary materials in the conversion kit which they distributed to the teams, but we still have to deal with the problems of associated with burning methanol fuel," he said.

According to Shapton, one of the main disadvantages with using methanol fuel is its low volatility — it vaporized less easily — which affects startability.

Vehicles powered by methanol fuel start harder in cold weather than those powered by conventional fuel," he said. "The team members will have the extra hurdle of having to deal with the area's exceptionally cold weather."

Using methanol as fuel poses several other problems which the Michigan Tech Methanol Marathon team will try to resolve during the conversion process.

Unlike gasoline, methanol can form a flammable mixture in fuel tanks at normal temperatures. When it burns, it does so with a nearly invisible flame, making it difficult to detect. Accelerated deterioration of some plastic and metal parts has also been observed in vehicles which burn methanol.

In addition, it takes almost twice the volume of methanol as gasoline to provide the same amount of energy and although emissions of hydrocarbons from methanol are low, the emissions of unburned fuel and aldehydes are higher than those of gasoline.

Emissions control, along with startability, fuel economy, acceleration, and

(continued)

Mining Gazette, Houghton, MI
Feb. 21, 1989

methanol car rally

rally times, are key issues in determining the winner of the competition, according to SAE.

In an effort to alleviate these problem areas, the MTU team is equipping the car with pneumatic fuel injectors which atomize fuel more efficiently.

Research on pneumatic fuel injectors has been underway in the Mechanical Engineering-Engineering Mechanics department for several years. Mercury Marine is the primary sponsor for this research, which is being supervised by Dr. Lawrence Evers, mechanical engineering professor and advisor to the Methanol Marathon Team.

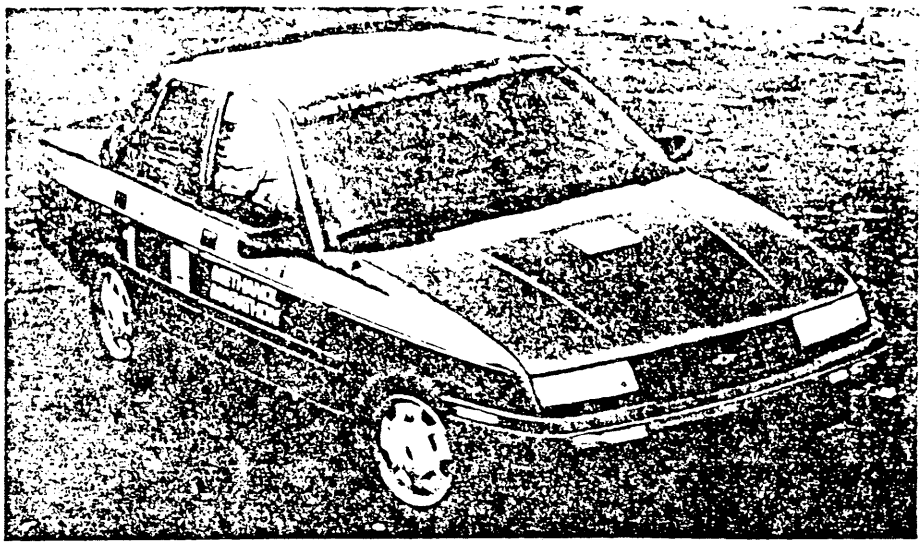
Researchers hope that these fuel injectors will improve fuel economuy, acceleration, and startability. These fuel injectors were redesigned to by team members specifically for use in the Methanol Marathon vehicle.

The marathon cars will be running on a mixture of 85 percent methanol and 15 percent gasoline. One of the reasons for the increased interest in methanol as fuel is that it is a renewable resource, unlike gasoline. Methanol can be made from coal, garbage, or natural gas.

COMPETING — Representatives of the Society of Automotive Engineers and Michigan Tech are shown with the Chevrolet Corsica an MTU student team will drive in the Methanol Marathon later this spring. Students from only 15 colleges and universities were selected to participate in the rally. (Photo courtesy of MTU)

Chevy Corvette Buyer's Guide
February 1989

Rally 'Round Methanol



Taking the classroom on the road: fifteen college student teams from 12 states and Canada converged on the GM Technical Center to pick up the cars, fuel conversion kits and cash to compete in the 1989 SAE Methanol Marathon.

by Jane Mott-Miller
Methanol Marathon

In late November, engineering students from 15 universities and colleges across the United States and Canada began driving back to their campuses in new Chevrolet Corsicas issued to them in Warren, MI, at GM's Technical Center. Back to school, the students are converting the cars to burn methanol fuel for the 1,100-mile road rally they will compete in this spring. The five-day marathon, from Detroit through Toronto to Washington, D.C., will show the challenges and advantages of methanol as an alternative fuel.

The Methanol Marathon is sponsored by General Motors Corp., the U.S. Department of Energy, and the Canadian Department of Energy, Mines and Resources. It is being organized by the Society of Automotive Engineers (SAE) and the Argonne National Laboratory. The Sports Car Club of America, Inc., is sanctioning the rally. Associate sponsors include BP Oil (America), The Lubrizol Corp., The Goodyear Tire & Rubber Co., and the Canadian Oxygenated Fuels Association (COFA).

In presenting the students with the cars and conversion kits, John Zwerner, executive director of GM's Advanced Product Engineering-Advanced Engineering Staff, said: "General Motors is pleased to support this event because it gives us a chance to

continued on page 24

Rally 'Round

continued from page 22

evaluate energy alternatives while giving future engineers a role in that process. I think this rally will be an education for all of us in the practical uses of methanol as an alternative fuel."

Each 1988 Chevrolet Corsica LT came equipped with a 2.8 liter multi-port fuel-injected V6 engine, 5-speed manual transmission, sport suspension and air conditioning. The conversion kits contained a fuel tank, high-flow fuel pump and fuel injectors, special fuel lines and a computer calibration module. The vehicles will run on a mixture of 85 percent methanol and 15 percent gasoline.

On behalf of their respective governments, Allan J. Streb, deputy assistant secretary for conservation at the U.S. Department of Energy, and Marc Lemieux, consul general representing the Canadian Department of Energy, Mines and Resources gave $1,000 checks to student teams from their countries to help defray the technical costs of conversion.

At the conclusion of the rally, the government agencies also will provide $20,000 in cash prizes. Prizes range from $6,000 for first place and $4,500 for second place to $2,000 for fifth place and $1,000 each for best methanol fuel economy and best methanol conversion. Key elements in the competition will be fuel economy, startability, emissions, acceleration, and rally times. In addition, Chevrolet will award $1,000 to the team with the best-appearing rally car.

"The Marathon will begin April 28 . . ."

In acknowledging the finalists, Dr. William Schertz, director of conservation and renewable energy programs for Argonne National Laboratory, said: "The 15 proposals selected by judges represented the most innovative and technically competent of 31 fine proposals. The judges were impressed by the overall quality of submissions and the efforts of all competitors in developing proposals for the rally."

Noting the hard work that lies ahead for the 15 finalists, SAE President George Aravosis said: "We hope that others will follow the progress of these students and recognize by their example the challenges and opportunities offered in science and engineering."

The marathon will begin April 28 in Detroit where the cars will be inspected and judges will hear student teams report on how they converted the vehicles. Emissions, acceleration and startability tests also will be conducted on the rally cars. The actual rally begins the next day and concludes in Washington, D.C., on May 3.

The competing student teams are from: California State University in Northridge, CA; Colorado State University in Fort Collins, CO; Concordia University in Montreal, Quebec, Canada; Florida Institute of Technology in Melbourne, FL; University of Maryland in College Park, MD; Michigan Technological University in Houghton, MI; University of Michigan in Ann Arbor, MI; New York Institute of Technology, in New York, NY; Pennsylvania State University in University Park, PA; Rochester Institute of Technology in Rochester, NY; University of Tennessee in Knoxville, TN; Texas Tech University in Lubbock, TX; Washington University in St. Louis, MO; West Virginia University in Morgantown, WV; and Wichita State University in Wichita, KS.

Marathon students create methanol engine

By PATRICK DONOVAN
Daily Beacon Staff Writer

A group of 19 engineering students will represent UT at a "Methanol Marathon," an alternative fuels competition open to college students in the United States and Canada.

The team, one of 15 involved in the competition, will demonstrate how methanol can be used as an alternative to automobile fuel.

The group began its work in the fall by writing a proposal describing the conversion approach it intended to take. In this proposal, the team discussed its plans for converting a vehicle to operate on an M85 fuel (85 percent methanol and 15 percent hydrocarbons). The finished proposal was submitted to the Society of Automotive Engineers, one of the sponsors of the marathon, and reviewed by a team of judges. UT's proposal was one of at least 30 entered by participating schools.

General Motors, another sponsor, provided the 15 schools submitting the best proposals with a 1988 Chevrolet Corsica for use in the competition. In addition, GM provided conversion kits containing specialized parts to assist the schools with the conversion.

The engineering team representing UT divided into nine groups, each assigned to a specific aspect of the conversion process, team member Sandra Cooke said.

One group is responsible for working with the development of multiple throttles for the car.

"This is unique," Cooke said, "because I doubt if any of the other teams are going to go the route of multiple throttles.

"Other groups include those working with turbo charging, to give the car more power, and the changing of the valve charging, in hopes to reduce any cold starting problems," she said.

"Right now we're in the experimental stages," Cooke said, "We are waiting for some more parts to arrive and for the final testing to be complete before we make the final moderations of the car itself."

To make the testing easier, the team purchased an engine of a damaged Chevrolet Beretta. This way, since both are 2.8 liter, V—6 engines, the team can make any adjustments on the Beretta engine while keeping the Corsica engine intact, Cooke said. When all testing is completed, the team will move its modifications from one engine to the other.

The mechanical engineering department is taking care of the modifications on the engine itself, while the electrical engineering department is responsible for the adjustments that need to be made on the electronic control module.

"This is the first time that the two departments have worked together on a project," Cooke said. "The two departments are excited about being able to work together. This is a good chance to establish some good feelings between the two groups."

The liaison for the electrical engineering department described its task as also being in the developmental stages.

"Right now, we're just turning ideas over in our heads regarding the reprogramming of the electronic control module," said Joe Finucane, a department member. "GM generously donated the module that will aid us in determining the engine speed and temperature. All that we have to do is figure out what adjustments still need to be made."

The conversion to methanol is only one of the many steps that the team must complete while participating in the marathon. Each team must also participate in a road rally held at the end of April. The rally, a 5—day, 1,100—mile marathon, will demonstrate how well the methanol works.

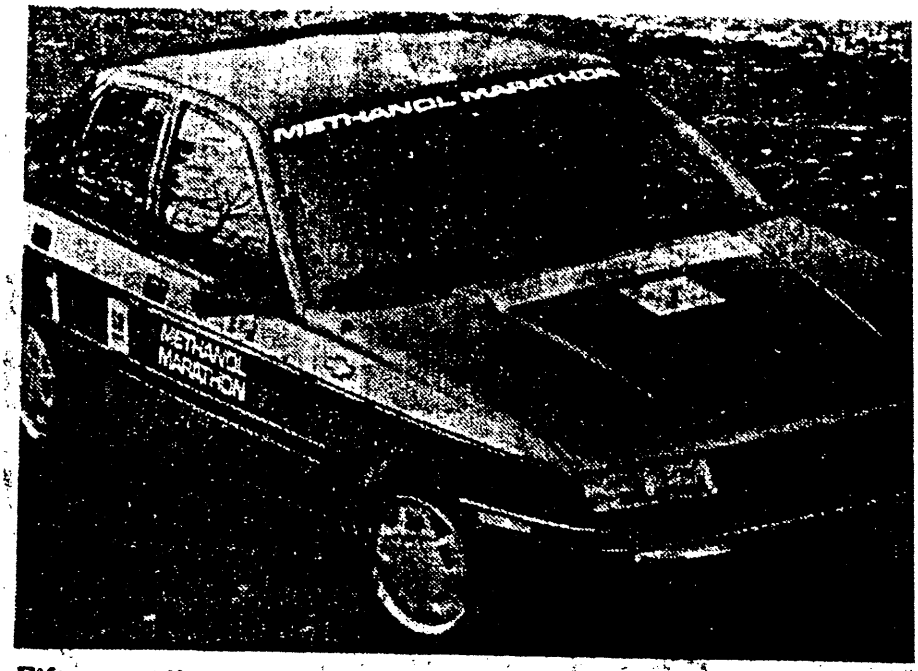
"During the rally, the judges will test the converted Corsica's fuel economy and how practical the conversion has worked," Cooke said. "They will look to see that the team has not made any changes to the body of the car or that any of the rules have been broken.

"The rally must be driven by at least four drivers from each team and will take place from Detroit to Toronto to New York and then back to Washington, where the competition will end," she said. "The UT team will have a support vehicle following the first (car) to make sure that the Corsica does not run in to any trouble during the course of the marathon."

After the road rally the team must submit a paper and give a presentaion to the representatives of GM, in which they must try to persuade the judges that methanol is a good alternative to automobile fuel.

"The real purpose of the presentation will be to try to 'sell' the representatives on the idea of methanol," Cooke said.

The Knoxville News-Sentinel, Monday, January 23, 1989



Fifteen college student teams from 12 states and Canada verged on the GM Technical Center to pick up the cars, fuel version kits and cash to compete in the SAE Methanol Marat

U.T. team competes in '89 Methanol Marathon

Engineering students from 15 universities and colleges, ncluding the University of Tennessee, have recently begun riving new Chevrolet Corsicas they were issued at General Motor's Technical Center.

At school, the students will convert the cars to burn methnol fuel for the 1,100-mile road rally they will compete in next spring. The five-day marathon, from Detroit through Toronto to Washington, D.C., will show the challenges and dvantages of methanol as an alternative fuel.

The Methanol Marathon is sponsored by General Motors Corp., the U.S. Department of Energy and the Canadian epartment of Energy, Mines and Resources. It is being organized by the Society of Automotive Engineers (SAE) and the Argonne National Laboratory. The Sports Car Club of merica, Inc. is sanctioning the rally.

In presenting the students with the cars and conversions kits, John Zwerner, executive director of General Motor's dvanced Product Engineering-Advanced Engineering Staff, id: "General Motors is pleased to support this event because it gives us a chance to evaluate energy alternatives while giving future engineers a role in that process. I think this rally will be an education for all of us in the practical uses of methanol as an alternative fuel."

Each Chevrolet Corsica LT comes equipped with a 2.8-liter multi-port fuel-injected V6 engine, five-speed manual transmission, sport suspension and air conditioning. The conversion kits contain a fuel tank, high-flow fuel pump and fuel injectors, special fuel lines and a computer calibration module. The vehicles will run on a mixture of 85 percent methanol and 15 percent gasoline.

At the conclusion of the rally, the government agencies also will provide $20,000 in cash prizes. Prizes range from $6,000 for first place and $4,500 for second place to $2,000 for fifth place and $1,000 each for best methanol fuel economy and best methanol conversion. Key elements in the competition will be fuel economy, startability, emissions, acceleration and rally times. In addition, Chevrolet will award $1,000 to the team with the best-appearing rally car.

Context, Univ. of Tenn, Knoxville, Jan. 19, 1989

UTK Students to Test Methanol As An Alternative Auto fuel

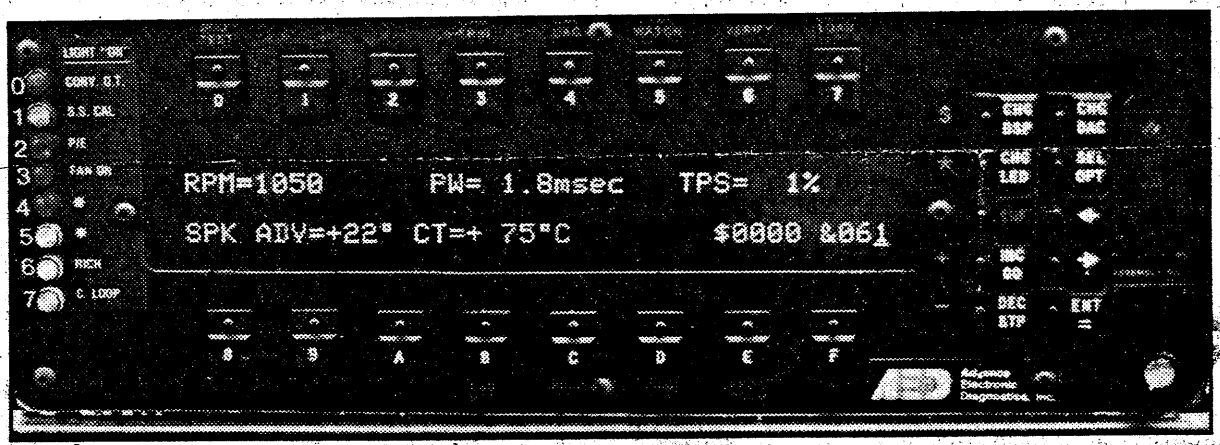
UT Knoxville mechanical engineering students are among 15 college teams nationwide that are participating in a demonstration of methanol as an alternative automobile fuel.

The students are modifying the engine of a 1988 Chevrolet Corsica, donated by General Motors, for a 5-day, 1,100-mile marathon road rally to demonstrate how well methanol will perform. The rally will be held in April from Detroit, to Toronto, to Washington, D.C.

Methanol is produced from coal or natural gas. When it burns it produces fewer hydrocarbon emissions, which are linked to damage of earth's ozone layer. However, methanol has drawbacks, including slow cold starting and low fuel economy. The collegiate teams will be judged on cold starting capabilities and miles per gallon.

Sponsors include GM, the U.S. Department of Energy, and the Canadian Department of Energy, Mines and Resources. The project is being organized by the Society of Automotive Engineers and the Argonne National Laboratory.

THE CHRONICLE
Tuesday, January 3, 1989



Dave Dombrowski, a U-M engineering student, poses with the methanol-powered auto he has at home during Christmas break from school. The computer control panel, right, keeps track of all engine functions and can be used to tune up the car without lifting the hood.

Chronicle/**LON HORWEDEL**

HOT CAR

GH student testing methanol-powered auto

By WILL STEWART
Chronicle staff writer

GRAND HAVEN — A Chevrolet Corsica may not be every college student's idea of a hot car, but the one Dave Dombrowski is driving around these days is drawing plenty of attention.

Decked out in "Methanol Marathon" lettering and a Buck Rogers-type dashboard, Dombrowski's car is no run-of-the-mill today's Chevrolet. It's a high-tech, computerized vehicle that Dombrowski, a mechanical engineering student at the University of Michigan, and several other U-M students hope to turn into a futuristic automobile that will be environmentally safe and be powered by inexpensive methanol.

THE CAR is one of 15 loaned to colleges and universities throughout the U.S. and Canada that are competing in a contest to convert conventional gasoline-powered cars into efficient methanol-powered cars. U-M and Michigan Technological University were the only colleges in the Midwest to be loaned the cars.

The car was furnished by General Motors Corp., which, along with the Society of Automotive Engineers, is sponsoring the project.

Dombrowski, of 17292 Burkshire, Grand Haven Township, said the contest will end April 28 with a road rally from Detroit to Washington D.C. After the rally, tests will be conducted on each of the cars by judges, Dombrowski said.

Among the things teams will be judged on are fuel economy, startability and acceleration. Winning teams will split $20,000 in prizes.

DOMBROWSKI said each of the 35 members in his group has a particular task to perform to make the car as efficient as possible. Also aiding in the quest for maximum efficiency is an on-board computer that monitors nearly every function of the car.

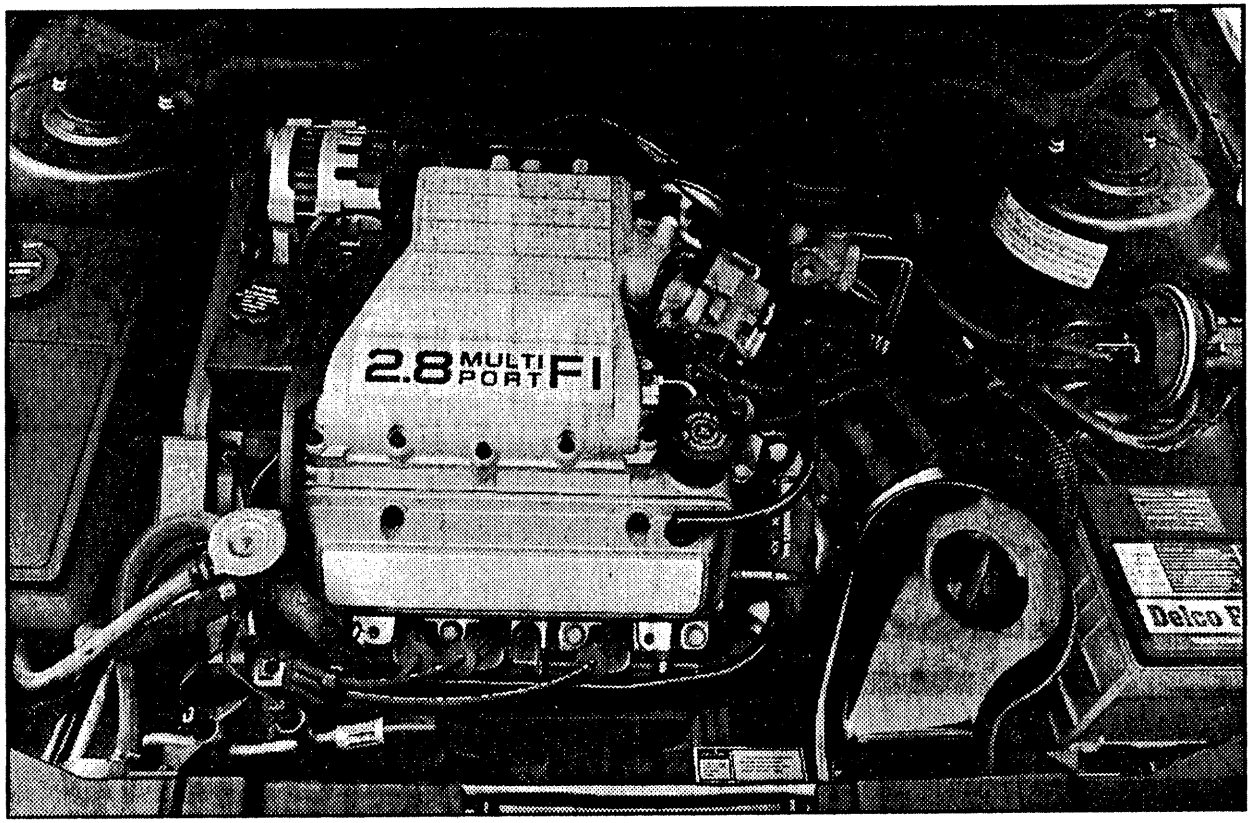
"You can basically give the car a tune-up from right here behind the wheel," he said. "This computer is capable of manipulating everything from spark plugs to the gas pedal."

He said methanol is a good energy source because it is distilled from wood or corn and can be produced by farmers. A car powered by methanol would not be as powerful as a gasoline car, and would require a stainless steel fuel tank because of the corrosive properties of the fuel, he said. Fuel tanks would also need to be larger because methanol provides only about half the mileage of gasoline.

Another roadblock Dombrowski's group will have to pass through is the difficulty in starting methanol-powered cars in cold

Please see CHEVY
Page 2A

Muskegon Chronicle
1/3/89



A look under the hood of the methanol-powered 1988 Chevrolet Corsica.

Chronicle/**LON HORWEDEL**

CHEVY ...

Continued from Page 1A

weather.

"When the motor's cold, it is really hard to start a car that uses methanol," he said. "That's one of the things we will have to spend a lot of time working on because we will be judged on it."

HE SAID methanol is just as safe as gasoline, and is becoming increasingly important.

"We currently import 38 percent of our oil, so we have a pretty big dependency on other countries," he said. "There are great economic and political reasons to use methanol in cars.

"It's pretty expensive right now, but once people start using it as fuel for cars, the price will go down."

Methanol also burns cleaner than gasoline, making it a more efficient fuel, he said.

Some cities, such as Los Angeles, already have started using methanol-powered vehicles in their public transit systems, but the practice is far from widespread, he added.

"LOS ANGELES and maybe a few other larger cities have started to use buses that burn methanol," he said. "But I guarantee that you will be able to buy a methanol-powered car within the next 10 years."

He said although the project will require long hours of extra-curricular work when he returns to Ann Arbor this week, the time and effort will pay off in the long run.

"I'll put in about 30 hours a week on this thing," he said. "But I think it's better to maybe let your grade point average slip just a little in order to get involved in a project like this."

Muskegon Chronicle
1/3/89

UT students to convert car to run in Methanol Marathon

UT one of 15 universities choosen for competition

FROM STAFF REPORTS

KNOXVILLE, Tenn. – Mechanical engineering students at the University of Tennessee in Knoxville are converting a car to run on methanol instead of gasoline to compete in the GM sponsored Methanol Marathon.

Although the energy crunch has abated, both the government and auto manufacturers feel that the need exists to develop transportation fuels derived from resources other than crude oil.

The alternative fuels presently being tested include: methanol from natural gas or coal, ethanol from vegetation, compressed natural gas, liquified petroleum gas and hydrocarbons from coal and oil shale.

Methanol has received much attention by government due to it's ability to greatly reduce carbon monoxide emissions. Automotive manufacturers are highly interested due to the fact that it can be used in near 100% form. Since the CAFE (Corporate Average Fuel Economy) is based on the automobile's consumption of gasoline, if a vehicle can be manufactured to run on an 85% methanol, 15% gasoline blend and to obtaine 20 mpg, then the CAFE rating would be 133 mpg.

With these concerns in mind, GM, the US Department of Energy and the Canadian Department of Energy, Mines and Resources are sponsoring a contest called the Methanol Marathon.

Universities across the United States and Canada were invited to submit proposals as to how they would convert an automobile to run on methanol.

Thirty one universities submitted proposals. Fifteen were chosen, based on the technical merits of their plan, to receive a 1988 Chevrolet Corsica and a $1,000 check. The Corsica was furnished by GM. The $1,000 check is to help defray the technical costs of conversion and was given by the US Department of Energy and Canadian Department of Energy to the student teams from their respective countries.

The proposal submitted by engineering students from the University of Tennessee was one of the fifteen selected . UT students picked up their Corsica on November 21 at the GM Technical center in Detroit.

The students will convert the Corsica to run on a blend of 85% methanol and 15% gasoline. Due to the fact that methanol burns with a nearly invisible flame the gasoline is added to make the flame visible and to aid in cold starting.

The car will be prepared to compete in a 1,100 mile, five day methanol fuel marathon. Competition is set to begin April 28, 1989, in Detroit, where the cars will be inspected and judges will hear student teams report on how they converted the vehicles. The cars will be put through emission, acceleration and startability tests. The actual rally begins the next day and concludes in Washington, D.C., May 3.

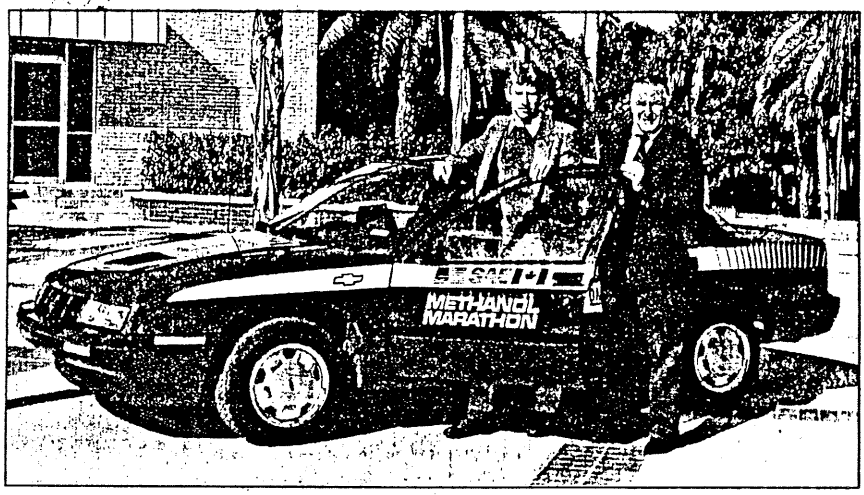
Government agencies will provide $20,000 in cash prizes. Prizes range from $6,000 for first place and $4,500 for second place to $2,000 for fifth place and $1,000 each for best methanol fuel economy and best methanol conversion. Key elements in the competition will be fuel economy, startability, emissions, acceleration and rally times. In addition Chevrolet will award $1,000 to the team with the best appearing rally car.

Russ Robinson, one of the judges and a technical advisor in alternative fuels with the Canadian Department of Energy, Mines and Resources, said, "The schools were selected on technical merits of their conversion proposals. Because so many of the proposals were highly innovative and technically competent, this should be an interesting and competitive rally."

In acknowledging the finalists, Dr. William Schertz, director of Conservation and Renewable Energy programs for Argonne National Laboratory, said, "The 15 proposals selected by the judges represented the most innovative and technically competent of 31 fine proposals."

Florida Today, Melbourne, FL, December 16, 1988

TEAMS COMPETE IN SPECIAL RACE



Theresa DeCapua, FLORIDA TODAY

TESTING: Doug Hahn, left, and Dr. John Thomas of F.I.T. with auto run on methanol mixture.

Students to test methanol

By Dan McNerney
FLORIDA TODAY

A team of Florida Institute of Technology engineering students will compete against 14 other college teams this spring in a five-day, 1,100-mile road race to test the use of methanol as an alternative fuel.

The students will spend the next several months converting the engine of a new 1988 Chevrolet Corsica LT, to run on a mixture of methanol and gasoline. Identical cars were supplied to the teams, along with a conversion kit, by General Motors Corp. GM also gave each team $1,000 to get the project started.

Dr. John Thomas, a research professor, is the team's advisor and a specialist in methanol. He explained all the cars will run on M85, a mixture of 85 percent methanol and 15 percent gasoline.

"I think you can make a good case for methanol as the liquid fuel of the future," Thomas said. "It's the only one we can make in enough volume to satisfy the needs of the American driver."

Methanol can be made from garbage, coal and natural gas, Thomas said. "It's much better than gasoline and diesel fuel as far as emissions go. It's cleaner and less polluting."

Team leader Doug Hahn, 29, of Charlotte, N.C., has a background in auto racing, Thomas said.

"Considering the experience of the team, if we can get all our ducks in a row, I think we'll win," Thomas said.

> "I think you can make a good case for methanol as the liquid fuel of the future."
>
> **Dr. John Thomas, F.I.T. researcher**

Hahn, too, was optimistic about his team's chances.

"We have more rally experience than any of the other teams, and we have a cold lab here in Florida," he noted.

The cold lab at the Melbourne campus allows the students to test how the car will start in cold weather, which is part of the competition.

In addition to Hahn, the mechanical engineering students on the F.I.T. team are: Jeff Grillo, 29, of Pittsburgh, Pa.; John Brought, 26, of Melbourne; Tracey Post, 26, of Cheshire, Conn.; Erik Gordon, 21, of Radford, Va.; and Doug Hunter, 21, of Titusville.

The students picked up their new Corsica LT at a pre-rally kickoff Nov. 21 at GM's Technical Center in Warren, Mich. The car is equipped with a 2.8-litre fuel-injected V6 engine, five-speed manual transmission, sport suspension and air conditioning. The conversion kits contain a fuel tank, high-flow fuel pump and fuel injectors, special fuel lines and a computer calibration module.

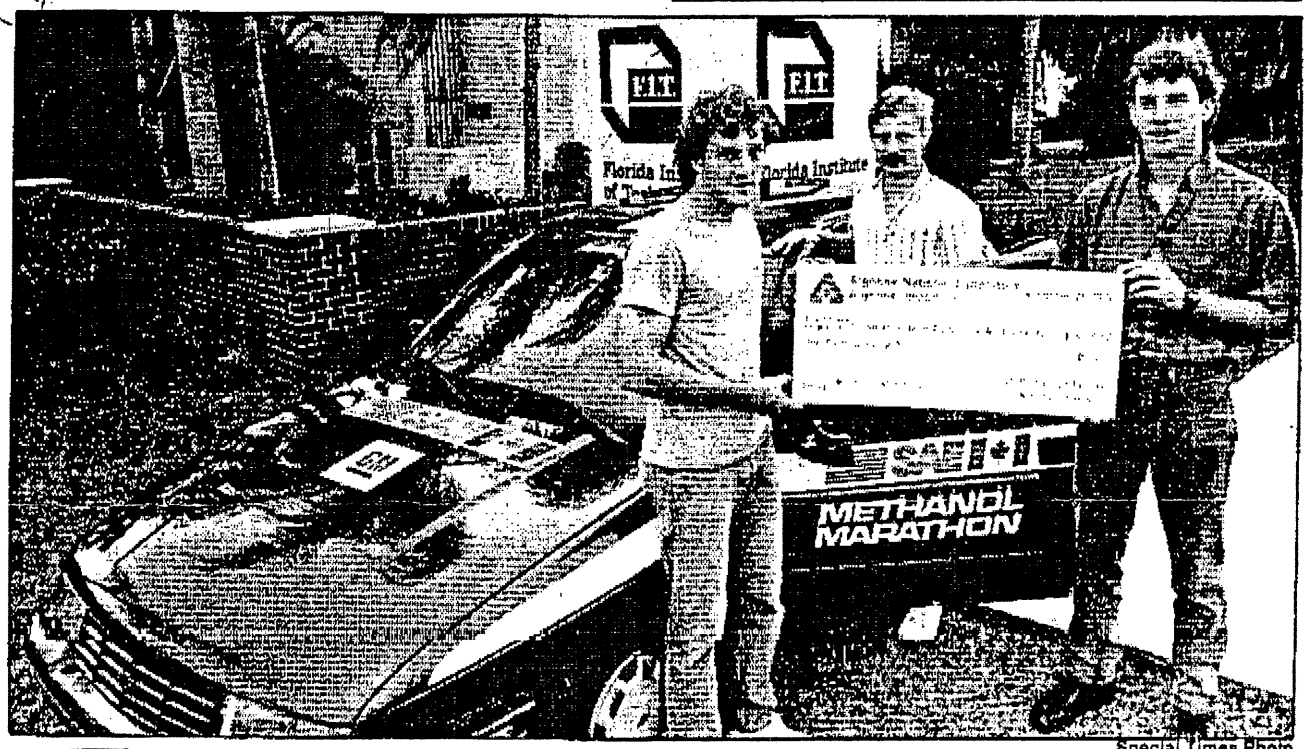
The grueling rally, in which all team members will participate, begins April 28 in Detroit and ends May 3 in Washington, D.C.

The methanol marathon is sponsored by GM, the U.S. Department of Energy and the Canadian Department of Energy, Mines and Resources. It is being organized by the Society of Automotive Engineers (SAE) and Argonne National Laboratory.

The SAE selected the participating teams on the basis of proposals submitted by 31 schools around the nation and Canada. The proposals were reviewed by a team of methanol experts from the automotive industry and research community.

"The proposals selected by the judges represented the most innovative and technically competent of 31 fine proposals," said William Schertz, director of Conservation and Renewable Energy Programs for Argonne National Laboratory.

Participants will be competing for $20,000 in cash prizes for their schools. Prizes range from $6,000 for first place to $2,000 for fifth place. Additional prizes of $1,000 each will be awarded for best methanol fuel economy and best methanol conversion. In addition, Chevrolet will award $1,000 for the best appearing rally car.



Special Times Photo

[redacted]tudents Doug Hahn, Doug Hunter and Erik Gordon, show off their new car and $1,000 check, which they received from GM and the U.S. Department of Energy. After converting the engine to use methanol gas, they will compete against 14 other universities in the national Methanol Marathon in the spring.

GM TODAY, December 1988

Methanol Marathon

When most people get a new car, their first instinct is to drive around town all afternoon enjoying that "new car" smell and showing off their latest set of wheels to friends and neighbors.

Not this group of people. Their first instinct is to tear out the engine, make some alterations and try to piece it back together. They're engineering student teams from 15 colleges with a yen to tinker with technology. GM technology, as a matter of fact.

To encourage their scientific curiosity, GM handed each of the student teams the keys to a Chevrolet Corsica LT. The students will use the cars to explore the use of methanol fuel. It's all part of the Methanol Marathon, a 1,100-mile road rally designed to test the real-world application of this alternative fuel source.

At a pre-rally kickoff last month at the GM Technical Center in Warren, Mich., student engineering teams also received conversion kits from GM. These kits will be used to convert the Corsicas to run on a mixture of 85 percent methanol and 15 percent gasoline in preparation for next spring's road rally.

Fifteen finalists from the U.S. and Canada will participate in the six-day event that will take them from Detroit to Washington, D.C., by way of Toronto. GM is co-sponsoring the event along with Canada's Energy, Mines and Resources agency and the U.S. Department of Energy. GM donated the cars and the conversion kits, while the energy agencies contributed $1,000 to each team to help with the conversion, as well as $20,000 in prizes for the winners. The Society of Automotive Engineers (SAE) and Argonne National Laboratory are organizing the event. The rally is sanctioned by the Sports Car Club of America.

Frank Ament, staff project engineer for GM's Advanced Engineering Staff and technical coordinator of the marathon, said GM became involved in this event for a number of reasons.

"We like getting involved with young engineering students," Ament said. "This gives them a chance to tackle real-world problems and gain experience with the hardware they'll be expected to use when they enter the job market. It also ties in with the concerns about the future of technical education in the U.S. and our ability to compete in the world market. This event is one way to get future engineers fired up."

Ament said just finishing the rally will be a feat for any team.

"It is a marathon, it's not intended to be a race. To take any student-built prototype and make it last 1,100 miles is going to be a true test of their engineering ability, innovation and driving skills."

The rally winner won't necessarily be the first to cross the finish line. Overall scores are based on fuel economy, conversion design and fabrication, cold driveability, performance and emissions. Prizes will also

GM Today
Dec. 1988

Tinker Territory

The engine compartment is fair game for some serious tinkering in the Methanol Marathon. Here, students Randy Watts, Dan Draper and Khalid Zetoung spec out the Corsica's engine—the first step in converting it to run on a mixture of methanol and gasoline.

be awarded in specific classes like fuel economy and best design concept.

Roger Khami, captain of the University of Michigan team, said 25 students representing five engineering disciplines are taking part in that school's effort.

"We've got all the bases covered," said Khami. "There are chemical, electrical, mechanical, computer and even aerospace engineers on our team. We'll be divided into task-oriented subgroups focusing on areas like fuel flow, electronic control and emissions."

Khami said that everyone on the team is a volunteer and a member of SAE's U-M student chapter. The team is not motivated by the prize money, Khami said, but rather the opportunity to tackle a real-world challenge.

"We really want the hands-on experience," said Khami. "We're also gaining experience in technical writing, organizational structure and group development."

The marathon begins in Detroit, April 28, with vehicle inspections and conversion reports. The actual rally begins the next day and concludes in Washington, D.C., May 3.

Charlotte M. Fisher

Students Pick Up Methanol Marathon Cars

By Tim Keenan
Associate Editor

Nearly 60 engineering students from 15 universities in 12 states and Canada gathered at the General Motors Technical Center in Warren Nov. 22 to pick up the Chevrolet Corsicas the students will drive in the upcoming Methanol Marathon.

The students and their faculty advisors were greeted to the GM Design Dome by the sounds of a University of Michigan Marching Band recording of various college fight songs. Lined up along the perimeter of the dome were the vehicles that the students will convert to burn methanol in the Society of Automotive Engineers rally in the spring of next year.

General Motors, the U.S. Department of Energy and the Canadian Department of Energy Mines and Resources are the major sponsors of the marathon designed to give students real-world engineering experience with an alternative fuel.

"When this event was first proposed to us by SAE, we were quick to recognize its benefits," said John Zwerner, executive director of GM Advanced Product Engineering.

"General Motors is pleased to support this event because it gives us a chance to evaluate energy alternatives while giving future engineers a role in that process."

Other key members of the Methanol

See STUDENTS, page 15 ►

STUDENTS TO DRIVE CORSICAS IN RALLY

From page 1

Marathon team include the Sports Car Club of America, SOHIO Oil Company, the Canadian Oxygenated Fuels Association, the Goodyear Tire & Rubber Company and the Argonne National Laboratory.

"The reason we got involved (in the marathon) is simple," said Dr. William Schertz, director of Conservation and Renewable Energy Programs at the Argonne facility. "Transportation fuel at this time is petroleum based, and we currently import 38 percent of our petroleum. This has a drastic affect on the trade balance.

"The Methanol Marathon should bring more public awareness of alternative fuels, which could reduce vulnerability and increase security for the United States," Schertz said.

Speaking to the 15 student teams, which were selected by a panel of judges from a pool of 31 proposals, SAE Manager of Educational Relations Robert Sechler said: "Today's kickoff is the result of months of planning. I congratulate you in being selected to participate in this rally. You should be proud to be here today."

The teams made the most of the experience when they picked up their vehicles by decorating the Corsicas with symbols of their universities.

University of Michigan representatives put a maize and blue felt MICHIGAN banner and two long-stemmed roses on the windshield of their car in recognition of the Wolverines' berth in the Rose Bowl football game.

Colorado State, West Virginia, Texas Tech, Tennessee, Rochester Institute of Technology, Maryland, Penn State, Wichita State, Concordia of Montreal and Cal State-Northridge adorned their Corsicas in a similar fashion.

Other teams selected to participate in the Methanol Marathon include the Florida Institute of Technology, Michigan Tech, New York Institute of Technology and Washington University of St. Louis, Mo.

Following the festivities, the

COLORADO STATE UNIVERSITY'S team puts its colors on the antenna of the Chevrolet Corsica it will drive in this spring's SAE Methanol Marathon from Detroit through Canada to Washington, D.C. —photo by Joseph Oster

students hopped in their cars and began the journey back to college. At school, they will convert the cars to burn methanol for the 1,000-mile, five-day road rally that will start in Detroit on April 28. The marathon route will take the teams through Toronto to Washington, D.C., on May 3.

Along with the cars, the teams also received $1,000 from rally sponsors and a gasoline-to-methanol conversion kit. Each 1988 Corsica LT came with a 2.8-liter V-6 engine, five-speed manual transmission, sport suspension and air conditioning.

The conversion kit contains a fuel tank, high-flow fuel pump and fuel injectors, special fuel lines and a computer calibration module, all designed to make a car run on a mixture of 85 percent methanol and 15 percent gasoline.

Brian McGrath, captain of the team from West Virginia, was among the students getting acquainted with their project vehicles.

"Our school is very active in SAE competitions, and last year we were selected as the best SAE student chapter," McGrath said. "The marathon was just a natural thing for us to get into."

Key elements of the competition will be fuel economy, startability, emissions, acceleration and rally times.

"We've looked into several other things (to help our cause), but you have to stay within the scope of the rules," McGrath said.

At the conclusion of the rally, the government agencies will provide $20,000 in cash prizes. Those prizes range from $6,000 for first place and $4,500 for second to $2,000 for fifth and $1,000 each for best methanol fuel economy and best conversion.

One driver for the U-M team, Dan Draper, said the best part of the competition was the chance for the students to show their skills in an environment similar to that following graduation.

"It gives us the opportunity to get some real-world experience," Draper said.

Autoweek November 28, 1989

Students look at an alternative

College teams build cars for methanol rally run

First there was Formula SAE (*AW*, June 13), the competition among engineering and design students to build and campaign open-wheel single-seaters. Now 15 colleges and universities have been selected to compete in the first SAE Methanol Marathon—a five-day, 1100-mile road rally that will test the possibility of using methanol as an alternative fuel.

The Methanol Marathon will run from Detroit to Washington, D.C., next spring. It is sponsored by General Motors Corp., Chevrolet Division, the U.S. Department of Energy and the Canadian Department of Energy, Mines and Resources.

General Motors, at a pre-rally ceremony on Nov. 21, presented the 15 student teams with identical 1988 Chevrolet Corsica LTs, equipped with 2.8-liter fuel-injected V6s. GM also provided the conversion kits that the teams can use to allow the Corsicas to operate on a mix of 85 percent methanol and 15 percent gasoline.

"The Methanol Marathon offers an exciting opportunity for science and engineering students to contribute to our working knowledge of methanol as an alternative fuel," said John S. Herrington, secretary of the U.S. Department of Energy, speaking at the ceremonies.

Both U.S. and Canadian energy agencies are donating $1,000 to each student team from their respective countries to help defray some of the rally expenses and conversion costs. And the agencies will also provide the $20,000 purse for the marathon. Prizes will be awarded for fuel economy, cold start and emissions competitions in addition to the acceleration and timed rally segments. There will also be awards for the best methanol conversions.

The marathon will begin on April 28 with an inspection of the cars by a panel of judges. Each student team will present a report on their conversion program. Once the classroom portion is completed, the teams will fuel up and head for the finish line in Washington. ■

Car tuning starts for methanol marathon

By Richard C. Noble
Newhouse News Service

Warren, Mich.
The methanol-fuel engines don't fire up for the marathon run until April, but the contest really began this month when "Gentlemen, start your wrenches" would be the appropriate signal.

That's when 15 college teams pick up Chevrolet Corsicas at the General Motors Technical Center in Warren, Mich. From then until the start of the first international SAE (Society of Automotive Engineers) Methanol Marathon they will be working at converting the cars to run on methanol.

The competition aims at more than just challenging engineering students to a contest, said Frank Ament, a staff engineer with the advanced engineering staff's Alternative Fuels Group at the center. GM and Chevrolet are marathon sponsors along with the U.S. Department of Energy (DOE) and the Canadian Department of Energy, Mines and Resources.

It challenges young engineers to take on a tough, realistic problem, he said.

DOE Secretary John Herrington described the event as an "opportunity for science and engineering students to contribute to our working knowledge of methanol as an alternate fuel."

The auto industry is increasingly interested in alternative fuels. The long-range motivation is that gasoline will become more costly.

More immediate impetus comes from potential vehicle sales in such areas as California, where smog could be reduced by using alcohol fuels.

Methanol continued on page 4M

Star Tribune Minneapolis, MN
Saturday
November 26/1988

Methanol Continued from page 1M

Ament said GM is involved in experiments with large fleets of variable-fuel vehicles in California. There are plans for a 5,000-car experiment during the next few years, for which GM will build at least half the vehicles, and other programs that could involve 10,000 to 50,000 light and medium trucks.

Automakers are looking at variable-fuel (also called flex-fuel) vehicles that run on gasoline, alcohol or any blend of the two.

A promising alternative fuel is M-85, a blend of 85 percent methanol and 15 percent gasoline. The gasoline content improves cold-weather starting, and makes the fuel safer by making the flame visible when it burns and reducing in-tank volatility.

Methanol, derived from natural gas, is cheaper to produce than ethanol, an alcohol derived from biomass such as grains. Alcohol-based alternative fuels have the advantage of being distributed like gasoline; they require no special handling, as compressed natural gas does.

The marathon will run on M-85, so the contestants have to deal with only one fuel. It will be supplied by tank trucks at designated stops. The marathon runs 1,100 miles from Detroit through Canada to Washington D.C.

The SAE and the Argonne National Laboratory developed and organized the marathon, and the Sports Car Club of America is sanctioning the rally. Associate sponsors are SOHIO Oil Co., Lubrizol Corp., Goodyear Tire and Rubber Co. and the Canadian Oxygenated Fuels Association.

The marathon begins April 28, when judges will inspect the cars and get reports on the conversions. There are 14 judges, including ones from Ford Motor Co., General Motors Corp., Chrysler Corp. and other businesses and governmental units.

The rally begins April 29 and ends May 3. A rally is not a speed race but one of skill in carefully following route instructions over timed courses.

The rally accounts for 150 of the 1,000-point scoring. Emphasis is on engineering, with 200 points for the design, fabrication and cost-effectiveness of the conversion and other points for such features as fuel economy, acceleration, cold starting and driveability and best oral presentation of the conversion. Each car also must meet federal exhaust emissions and noise standards.

Each team recently got a new 1988 Corsica. Only the V-6 engine and the alcohol-compatible fuel system, with its stainless steel fuel tank to resist the corrosive methanol, have to be used. Each team also gets a kit to help with the conversion, including a special device for programming the engine's electronic control module, and $1,000 to help with conversion costs.

The prizes are $6,000 for first place overall down to $2,000 for fifth place and $1,000 each for best methanol fuel economy and best conversion concept.

Judges selected the 15 teams from among conversion proposals by 31 colleges.

Gasoline or methanol?

Students will participate in alternative fuel project

Engineering students from 15 universities and colleges in the United States and Canada returned to their campuses this week in Chevrolet Corsicas issued at the General Motors Technical Center in Warren as part of a project to show the possibilities of methanol as an alternative fuel.

When they return to their schools, the students will convert the cars to burn methanol for an 1,100-mile road rally in which they will compete next spring. The five-day rally, to begin in Detroit and run through Toronto and on to Washington, D.C., is sponsored by General Motors, the U.S. Department of Energy and the Canadian Department of Energy.

In presenting the students with the cars and conversion kits, John Zwerner, executive director of GM's Advanced Product Engineering-Advanced Engineering Staff, said, "General Motors is pleased to support this event because it gives us a chance to evaluate energy alternatives while giving future engineers a role in that process.

"I think this rally will be an education for all of us in the practical uses of methanol as an alternative fuel."

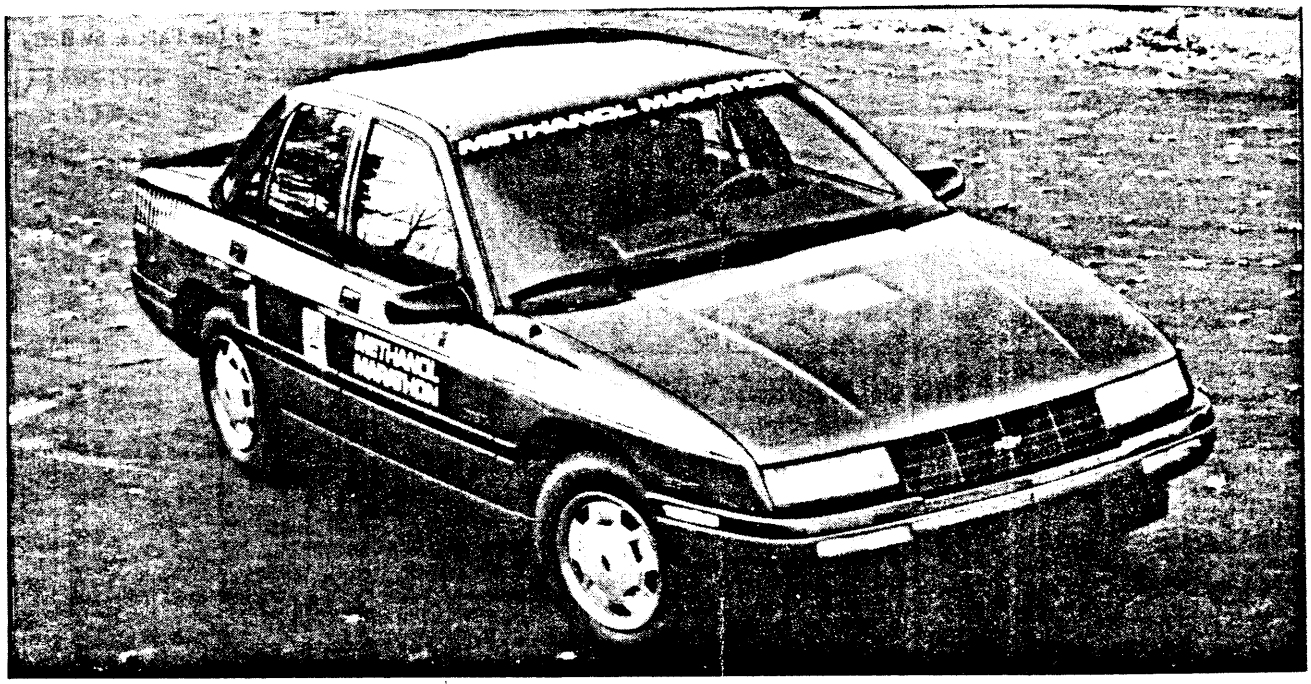
Each 1988 Chevrolet Corsica LT is equipped with a 2.8-liter fuel-injected V6 engine, 5-speed manual transmission, sport suspension and air conditioning. The conversion kits contain a fuel tank, high-flow fuel pump and fuel injectors, special fuel lines and computer calibration modules. The cars will run on a mixture of 85 percent methanol and 15 percent gasoline.

The U.S. Department of Energy and the Canadian Department of Energy, Mines and Resources gave $1,000 checks to checks to students from their countries to help defray the technical costs of conversion.

At the conclusion of the rally, the government agencies also will provide $20,000 in cash prizes. Key elements in the competition will be fuel economy, ability to start, emissions, acceleration and rally times. In addition, Chevrolet will award $1,000 to the team with the best-appearing car rally.

The event begins April 28 in Detroit, where the cars will be inspected and judges will hear student teams report on how they converted the vehicles. The actual rally starts the following day and concludes in the nation's capital May 3.

Among the schools represented are Michigan Tech University and the University of Michigan.



FIFTEEN COLLEGE student teams from 12 states and Canada will convert Chevrolet Corsicas to run on methanol fuel using grants from the U.S. and Canadian energy departments. The students will test their results in a five-day, 1,100-mile road rally beginning in Detroit next April.

Daily Beacon, November 23, 1988

University of Tennessee, Knoxville

Conversion car

JOHN KOTLOWSKI
Daily Beacon Chief Photographer

These members of the Society of Automotive Engineers have won the right to convert this car for the SAE Methanol Marathon. The contest is designed to help discover new methods of using methanol, instead of gasoline, as a fuel. The contest is sponsored by General Motors and the Department of Energy.

(continued)

Daily Beacon, Nov. 23, 1988

UT finalist in marathon

SAE club to help study methanol fuel

By MARY WAID
Daily Beacon Staff Writer

The Society of Automotive Engineers (SAE) at UT has qualified as a finalist in the SAE Methanol Marathon.

The marathon is sponsored by General Motors, Chevrolet Motor Division, the U.S. Department of Energy and the Canadian Department of Energy, Mines and Resources.

The methanol marathon is designed to help study methanol in order to further its possible uses as an alternative fuel to gasoline.

The marathon itself is a five-day, 1,100-mile road rally from Detroit to Washington. Before the rally, however, the engineering teams that are participating must first convert a vehicle to operate on a mixture of 85 percent methanol and 15 percent gasoline.

The vehicle to be used in the conversion was presented to the teams Monday in the General Motors Technical Center in Warren, Mich. GM is donating the vehicles to be used in the marathon. Each team received a 1988 Chevrolet Corsica LT.

The car is equipped with a 2.8 liter multi-port fuel-injected V6 engine, five-speed transmission, sport suspension and air conditioning. In addition, the teams received a kit to aid them with the conversion process.

UT was one of 31 student engineering teams vying for a chance to compete in the rally, and was only one of three southern colleges to be chosen in the final fifteen.

UT's current methanol conversion team consists of ten students who are all mechanical engineering majors. The team hopes to recruit some electrical engineering majors next semester to help with the designing phase of the conversion.

In addition, two faculty members from the department are helping with the conversion. The current team feels as though winning the car is only the first step in the competition.

"Of course, winning the car is just the first step. This first semester the class was bent more on coming up with a concept and forming a proposal. Next semester begins the senior design phase," said Sandra Cooke, proposal coordinator and member of the conversion team.

Cooke said the conversion team was focusing on several aspects of the conversion to try to minimize the negative aspects of using methanol as opposed to gasoline.

Before the actual rally begins, the car will be involved in several different testing phases. One of these tests will be the cold start test, which will be held in Canada. Cold starting is one of the areas being focused on by the UT team.

Bob Whitaker, a member of the team, explained that cold starting was a problem in use of methanol and the team would try to reduce problems involved with the process.

"We want to try to minimize the problems of cold starting, which is starting an engine under dead cold conditions. Another con to the use of methanol is that methanol has lower specific energy per pound than gasoline. What this means is that it takes more methanol to go the same distance as a gasoline fuelled ngine," Whitaker said.

Whitaker said methanol was the most feasible fuel other than gasoline.

The marathon itself begins on April 28, 1989, in Detroit. There the cars will be inspected and the teams will give a presentation on their conversions.

If the UT team wins, they will share $20,000 in cash and prizes with the other winners.

Life-sized models and dioramas illustrate the natural history of the tropical forests and show how humans live with the forests. Photo murals illustrate the consequences of deforestation, ranging from plant and animal extinctions to health-related, economic, and climatic problems. Hope for the future, the current actions under way to preserve the world's tropical rainforests through sustainable agriculture and forestry methods, and multiple-use reserves are discussed in the last section of the exhibition.

The exhibition will travel to Portland, Oreg., Charlotte, N.C., Indianapolis, Ind., Los Angeles, Calif., St. Louis, Mo., Boston, Mass., New York City, N.Y., Denver, Colo., New Orleans, La., Houston, Tex., Atlanta, Ga., Chicago, Ill., St. Paul, Minn., and Toronto, Canada. For a tour schedule, contact The Office of Public Affairs, Smithsonian Institution, Washington, DC 20560.

THE SCIENCE OLYMPIAD TOURNAMENT is held each spring at the Delaware State College in Dover, Delaware. Last spring's Olympiad brought together over one thousand of the brightest and most creative problem-solvers from junior and senior high schools nationwide. The awards for this competition, organized by a nonprofit organization, include trophies for schools, plaques for the team coaches, and student eligibility for scholarships presented by the American Honda Foundation.

Students and teachers begin preparing for the springtime event in September. School districts generally purchase the coaches' manuals during the late summer months. Obvious side benefits from the competition are that students learn to work together, their understanding of science is greater, and they gain a sense of belonging because they have the opportunity to represent their school as a member of the school's Science Olympiad team. The events cover the various science disciplines of biology, earth science, chemistry, computers, physics, and technology and require knowledge of facts, concepts, processes, skills, and applications.

For more information write to Jack Cairns, 864 Schoolhouse Lane in Dover, DE 19901.

THE SAE METHANOL MARATHON, organized by the Society of Automotive Engineers and the Argonne National Laboratory and sponsored by General Motors Corp., the United States Department of Energy and the Canadian Department of Energy, Mines and Resources, is well on its way toward the 28 April 1989 opening date. Engineering students from fifteen universities and colleges across the United States and Canada picked up their new Chevrolet Corsicas 21 November in Warren, Michigan, and began driving back to their campuses. The fifteen finalists were selected from among thirty-one "innovative and technically competent" proposals.

General Motors Corporation

Fifteen college student teams from twelve states and Canada will convert Chevrolet Corsicas to run on methanol fuel in order to compete in the 1989 Society of Automotive Engineers' Methanol Marathon. The five-day road rally from Detroit to Washington, D.C., will take place next spring.

The 1988 Chevrolet Corsica LT comes equipped with a 2.8-liter multi-port fuel-injected V6 engine, 5-speed manual transmission, sport suspension and air conditioning. The conversion kits contain a fuel tank, high-flow fuel pump and fuel injectors, special fuel lines, and a computer calibration module. The vehicles will run on a mixture of 85 percent methanol and 15 percent gasoline. The government departments awarded $1,000 checks to each of the student teams from their countries to help defray the cost of conversion.

The students will convert the cars to run on methanol fuel using their conversion proposals. At the beginning of the marathon, the cars will be inspected and the student teams will explain their conversion methods. Emissions, acceleration and startability tests will be conducted. The five-day rally, covering 1,100 miles from Detroit to Washington, D.C., will then take place. At the conclusion of the rally, the government agencies will provide $20,000 in cash prizes.

THE OAKLAND PRESS Tuesday, November 22, 1988

Students work with methanol as future fuel

By JOSEPH SZCZESNY
Press Automotive Editor

WARREN — Students from 15 engineering schools across the United States took delivery Monday of the Chevrolet Corsicas that they will use in the upcoming Methanol Marathon.

The marathon is sponsored by General Motors Corp., the U.S. and Canadian governments, and the Society of Automotive Engineers.

Allan J. Streb, deputy assistant secretary for conservation in the U.S. Energy Department, said the rally, to be held next spring, offers a relatively inexpensive opportunity to test energy-saving technology, develop new "human resources," and demonstrate the practical use of methanol as an automotive fuel.

Dr. William Schertz of Argonne National Laboratory said there is a definite need to promote more public awareness about alternative automotive fuels such as methanol — a mixture of methane gas and water, which can be made using coal, garbage or natural gas.

The 15 teams competing in the marathon were culled from more than 30 applicants and include teams from Michigan Technological University in Houghton and the University of Michigan in Ann Arbor.

As part of the program each team was given a new Chevrolet Corsica, a kit for fitting the car to run on an 85-percent methanol mixture and $1,000 in seed money.

Teams will compete in a road rally next May that will test how skillfully they met the technical challenges of adapting their vehicle to methanol fuel.

Frank Ament, a staff project engineer with GM's Advanced Engineering staff, said the sponsors hope the teams can come up with some low-cost innovations that will help boost a methanol-fueled car's fuel economy and its ability to start in cold weather.

The proposals turned in by the student engineers included raising the compression ratio to take advantage of methanol's higher octane, recalibrating the spark to make the vehicle more efficient, and adding a turbocharger, Ament added.

RADIO COVERAGE

News/Radio Network - Report Summary

News/Radio Network Coverage of First Methanol Marathon

Total of Broadcast stories produced: 48 Average story time length: 56 seconds

U.S. TOTALS – This is the number of all stations which had access to the story. This figure represents the total possible reach if each station ran each story once.

STATIONS REACHED: 11,425 **AIRDATES:** April 28-May 4

USAGE ESTIMATES – These are estimates of **actual airplay.** Story Usage, Impressions and Air Minutes Produced Totals are based on regular random sample surveys of station airplay.

STORY BROADCASTS - An estimate of the actual number of airplays including multiple usage by individual stations.

BROADCASTS: 3,143

TOTAL IMPRESSIONS - An estimate of impressions based on the number of station broadcasts multiplied by average audience figures.

IMPRESSIONS: 35,865,000

AIR MINUTES PRODUCED - An estimate of actual air minutes based on station broadcasts multiplied by the average story length.

AIR MINUTES: 3,143

COST ANALYSIS DATA

If you purchased the U.S. air time at an average of $2.00 cost per thousand, the dollar value of the air time in the Usage Estimate would be $71,730. This figure does not include any cost for story production.

If you purchased the U.S. air time at an average of $20.00 per minute, the value of the Air Minutes Produced in the Usage Estimate would be $62,860. This figure does not include any cost for story production.

News/Radio Network delivered the Usage Estimate Broadcasts at an approximate cost of 16 cents per 1,000 listeners including story production fees.

News/Radio Network delivered the Usage Estimate Air Minutes Produced at an approximate cost of $1.83 per minute including story production fees.

Some facts about radio . . . There are over 10,050 radio stations in the U.S., over 4,800 commercial AM stations, 3,950 commercial FMs and 1,200 non-commercial FMs. Over 95 percent of all Americans above the age of 12 report listening to the radio during a given week. The average household has 5.5 radios and 95 percent of all automobiles have radios. Americans spend an average of just under three hours per day listening to the radio.

Radio Station lists and other data is contained in the bound copy of our final report.

News/Radio Network - 414-321-6210

CAR REPORT FRI 5/5 METHANOL MARATHON PART II

MAY 17 1989

The Methanol Marathon that ended on Capitol Hill yesterday was a learning e: erience. I'M JOHN LYNKER WITH THE WTOP CAR REPORT. Perhaps most important it showed how well industry, education and politics could work together. Sp_nsors included General Motors, The society of Automotive Engineers, the US ar' Canadian departments of energy, the argonne national laboratory, BP oil co., canadian oxygenated fuels assoc., Lubrizol corp and Goodyear Tire. 15 te ms of engineering students from US and Canadian colleges competed. The Univ. of tennessee won, Concordia Univ. of Montreal Canada wass second, fc_lowed by Rochester inst of technology. Coming in 4th was the University of Me-yland and faculty advisor David Holloway was proud of his students.

R'NS=:12 OUT Q=OUR PERFORMANCE

Holloway explains how the GM supplied Chevrolet Corsicas were converted and so_e of the problems they had to contend with

R NS=:20 OUT Q=LIMITED

Bu there are also advantages to methanol.

R NS=:07 OUT Q=GASOLINE

Jo'n Lynker WTOP newsradio 15.

CAR REPORT THU 5/4 METHANOL MARATHON.

The Methanol marathoners rolled onto capitol hill today. Teams from 15 ur versities competed to see which one could best convert a Chevrolet Corsica to use Methanol for fuel. W.Va. Sen Jay Rockefeller is the author of the alvernative fuel bill.

RUNS=:22 OUT Q=TO WORK

He son Moore, the Deputy Secy of Energy says there are many advantages.

RUNS=:17 IMPORTED OIL

So which college won the methanol marathon?

RUNS=:06 TENNESSEE...CHEERS

Tenn. Sen Albert Gore.

RUNS=:18 OUT Q=SAME TIME

The University of Maryland placed 4th and will share in the cash prize. John Ly ker WTOP newsradio 15.

RADIO TV REPORTS

24300 Meadowbrook Road
Novi, MI 48050

(313) 478-4146

FOR GENERAL MOTORS CORPORATION
Tom Pyden

PROGRAM Automotive Insight **STATION** WWJ

DATE April 28, 1989 6:56 am **CITY** Detroit

METHANOL MARATHON KICKS OFF AT THE TECH CENTER

ROBB MAHR: This is the day the first Methanol Marathon is kicking off at GM's Tech Center, but there's a reminder that methanol fuel isn't the only alternative being studied. I'm Robb Mahr with Automotive Insight.

Well, if university work gets reviewed between now and next Friday the Methanol Marathon's Chevy Corsicas will be judged on how well they perform on the new fuel and how well they handle 1100 miles of real driving, but is that all? Well many of the schools like the University of Michigan turn to another alternative to petroleum fuel, next, Susan Fry, manager of the Wolverine Methanol Project, and she is merging engineering with other skills.

SUSAN FRY: I'm going to have a mechanical engineering and economics degree once I leave the university and I'm interested in, as you can probably tell, alternative powered vehicles and that's where it kind--that's where I'd like to head. If I can't find a job satisfactory in one of those fields, like solar power or methanol or something like that, I guess I'd like to work with occupant safety, which is crash.

MAHR: But you are--this is not the first of two projects all of a sudden that you're going to be involved with an alternative fuel, right?

FRY: Yes it is, I'll also be heading up the fun race solar car project that we'll be doing soon.

MAHR: Now you're going to be what, in essence, take the GM Sunracer and try to make that better, or are you coming up with your own vehicle, your own concept?

FRY: Well, you know, it's really too early to tell, we need to review.

MAHR: The GM Sunracer blew all competition away in the first solar race so they're going to have a lot to improve. With Automotive Insight, I'm Robb Mahr, News Radio 95.

RADIO TV REPORTS

24300 Meadowbrook Road
Novi, MI 48050

(313) 478-4146

FOR GENERAL MOTORS CORPORATION
Tom Pyden

PROGRAM Auto Insight **STATION** WWJ

DATE April 27, 1989 6:55 am **CITY** Detroit

STUDENT ENGINEERS LEARN MECHANICS AT METHANOL MARATHON

ROBB MAHR: At the Methanol Marathon this week, the student engineers learn only mechanics. I'm Robb Mahr with Automotive Insight sponsored by BASF Corporation with the spirit of innovation.

Somewhere between 150 and 200 college and university student engineers put their solutions to methanol power to the rigors of lab and road testing starting this weekend in the first Methanol Marathon, but besides learning to power an engine with weaker and louder fuel, what are the students learning? Susan Fry(?) of Detroit, a student project engineer for the University of Michigan team:

SUSAN FRY: In addition to learning about methanol and what you need to do to get a car to operate successfully on methanol, I think we've learned a lot about running a project, about meeting deadlines, about cost versus performance decisions, you know, basic good engineering skills.

MAHR: So that's another major reason why the ongoing student programs of the Society of Automotive Engineers and Manufacturing Engineers is seen as great by the working community. Susan talks for the student population all over.

FRY: It's just exciting, you know, it's really fun to be an engineer and be part of something that is so relevant, now and when we get out in the field I think most of us hope to continue this kind of work. I mean we'd like to be part of something that we consider socially responsible.

MAHR: And methanol and ethanol or butane, propane aren't all that is being researched. That's in my next report. With Automotive Insight, I'm Robb Mahr, News Radio 95.

RADIO TV REPORTS

24300 Meadowbrook Road
Novi, MI 48050

(313) 478-4146

FOR GENERAL MOTORS CORPORATION
Tom Pyden

PROGRAM Automotive Insight **STATION** WWJ

DATE April 26, 1989 6:57 am **CITY** Detroit

RESEARCH UNDERWAY FOR ALTERNATIVE FUELS

ROBB MAHR: It isn't easy to change a car from petroleum to alternative fuels, but research is underway now, not waiting for the next oil crisis. I'm Robb Mahr with Automotive Insight.

COMMERCIAL

MAHR: This Friday the kickoff for the first Methanol Marathon. Why methanol? Other alternatives such as propane, butane, ethanol, some of the methanol answer comes from University of Michigan professor Bill Ribbons(?).

BILL RIBBONS: Methanol is as you would know, has about half the energy capacity of gasoline so it's necessary to inject more fuel, roughly twice as much as fuel, into the cylinder for each stroke to have the same performance, but at the same time it's necessary to observe the emissions requirements.

MAHR: And there are other possible drawbacks.

RIBBONS: Methanol is toxic and is somewhat difficult to handle. Its primary benefit is that it is going to be available. I think it, the availability of that with the coal reserves we have and natural gas, is virtually not a problem the way petroleum based fuels are formed.

MAHR: And other alternatives offer equal drawbacks.

RIBBONS: Ethanol has been considered as an additive, in fact it has been used in fuel, I think it's widely known, but it's probably not as economically

feasible for the U.S. because it's primarily produced by agricultural products and I'm not sure we have the agricultural production to have a feasible ethanol fuel. But I think everybody has to keep an open mind on this, the energy problems are eventually going to reappear.

MAHR: Which means methanol, weaker than petroleum and others could still allow us to be self sufficient. With Automotive Insight, I'm Robb Mahr, News Radio 95.

RADIO TV REPORTS

24300 Meadowbrook Road
Novi, MI 48050

(313) 478-4146

FOR GENERAL MOTORS CORPORATION
Tom Pyden

PROGRAM Midday **STATION** WWJ

DATE April 26, 1989 11:25 am **CITY** Detroit

METHANOL MARATHON

(PORTION OF PROGRAM)

ROB MAHR: And one other thing Don, I might take--direct your attention and the readers attention, the listeners attention, to page 67 in Newsweek, an article on methanol. GM this week kicks off a Methanol Marathon between college students. That could be the fuel of the future for the United States and this is just the beginning, the tip of the iceberg. We've talked about alternative fuels, that's an article, it's only on one page instead of two, as the world car article is, but that could be a lot of the discussions we're going to have in the future.

DON WATSON: That is if we don't have a fusion engine of one type or another in our cars by that time.

MAHR: Well so far the fuel development is way out ahead of the development of alternative power plants. They've tried that and the development of those is basically down to looking at diesels for the moment.

RADIO TV REPORTS

24300 Meadowbrook Road
Novi, MI 48050

(313) 478-4146

FOR GENERAL MOTORS CORPORATION
Tom Pyden

PROGRAM Automotive Insight **STATION** WWJ

DATE April 25, 1989 6:57 am **CITY** Detroit

METHANOL MARATHON

ROB MAHR: Friday begins the first Methanol Marathon, a look at why and what we may learn. I'm Robb Mahr with Automotive Insight sponsored by BASF Corporation.

The Methanol Marathon, 15 colleges and universities having engineering students convert Chevrolet Corsica cars from petroleum fuel to methanol. The project announced late last year. Shortly thereafter the Southern California Pollution Council announced their plan to have all cars in the L.A. basin run on methanol or better fuels by the year 2000. Well this project then is really by engineers of the future for the technologies they'll have to deal with then, not now. Students working on the project similar to the group effort on the car, readied by the University of Michigan. Susan Fry of Detroit, the student project manager:

SUSAN FRY: Eighteen students representing the mechanical, computer and electrical engineering departments. It's hard to describe, I don't know how familiar everyone is, but we are just concerned with our conversion package. What we've done is we've taken the car and it will operate on methanol quite nicely. In our start-up it will go of course, cold start is always a problem with methanol. It has good fuel economy, it meets emission standards, it's not too loud.

MAHR: So converting engines to run on other fuels is not just a simple project. Methanol, by the way, isn't the only answer, but may be our best for now. More in coming reports. With Automotive Insight, I'm Robb Mahr, News Radio 95.

RADIO TV REPORTS

24300 Meadowbrook Road
Novi, MI 48050

(313) 478-4146

FOR GENERAL MOTORS TECH CENTER

PROGRAM Automotive Insight **STATION** WWJ

DATE April 24, 1989 6:57 am **CITY** Detroit

METHANOL MARATHON KICKS OFF AT THE TECH CENTER

ROBB MAHR: At the end of this week 15 college university teams compete for $25,000 worth of research money and scholarships, and it's more than an esoteric exercise. I'm Robb Mahr with Autmotive Insight sponsored this time by GE Automotive.

The Methanol Marathon kicks off Friday at the **GM TECH CENTER** in Warren. GM, the Society of Automotive Engineers, Goodyear Tires, Sports Car Club of America, the U.S. and Canadian governments and others are sponsors. But the American public doesn't believe another energy crisis is around the corner, the sponsors want to be ready for whenever that occurs. Bill Ribbons, a professor at the University of Michigan, one of the faculty members of the Wolverine Marathon Race Team, he's pretty proud of his crew.

BILL RIBBONS: The conversion process has been completed, the engine has been modified to take advantage of the properties of the methanol fuel which permits high octane rating. They have accounted for a number of variations between the two fuels, and I think have done a very good job. They chose to take a conservative approach which I am proud of.

MAHR: Hm hmm.

RIBBONS: Now other schools may have taken a more aggressive approach and are still trying to get more power, but our students have taken the approach that this is in fact, after all a commuter car.

MAHR: Some of the other competing institutions of higher learning, drawing upon what's selling well now, are turbo charging or super charging their base Chevy

Corsicas to be able to compete with today's performance. A look at that and the students involved in coming reports. With Automotive Insight, I'm Robb Mahr, News Radio 95.

DATE	April 5, 1989
TIME	12:30 PM
STATION	WGN-AM Radio
LOCATION	Chicago
PROGRAM	WGN News

Paul Harvey, commentator:

The car of tomorrow is racing toward us and it's burning alcohol fuel. Engineering students from fifteen universities and colleges are modifying identical Chevrolet Corsicas to run on methanol. Late this month, they will compete in a five-day, thousand mile road rally. The students who create the most efficient cars will share cash prizes. Bob Coskin says alcohol fuel would minimize chances of oil spills at sea. He says we should put the alcohol in the tanker instead of in the skipper.

# # #

STN KNX Radio
TIME 11:36 am
DATE 4/21/89

NEWSCASTER: Have you heard about the International Methanol Marathon? Well, California's entry in it is preparing for the 1,100-mile race. Let's get more in this live report from our Michael Ambrosini. Michael?

MICHAEL AMBROSINI: Well, Jack, senior engineering students at Cal State University Northridge have fielded a car in that competition that includes entries from all across the United States and Canada and involves a cross-country marathon from Detroit to Washington, D.C.

Last fall, CSUN's Mechanical Engineering Department was selected to compete with young scientists from 14 other institutions to convert a 1988 Chevrolet Corsica to run on methanol and to see who could do the best job of it.

Dr. Jerry Barnes works in Environmental Studies at General Motors Corporation.

DR. JERRY BARNES: The 15 teams were given a package of parts and some technical assistance, and each student team has the job of coming up with what they think is the best combination of fuel economy, performance, emissions, driveability, et cetera.

AMBROSINI: This first-ever competition is being sponsored by the U.S. and Canadian Departments of Energy and General Motors, which may incorporate some of the student engineering ideas in their future cars.

Reporting live, Michael Ambrosini, KNX 1070.

BROADCAST TRANSCRIPT (Condensed)

SUBJECT: THE METHANOL MARATHON

CJMS MONTREAL - March 17, 1989 5:17 P.M. - "A L'ORDRE DU JOUR"

Host: Jean-Luc Mongrain

Reporter: Yvon Laporte

H. General Motors is introducing a modified car which uses a different fuel.

R. That's it. That's about right. In fact, Jean-Luc, the company set up a competition and it told engineering students from about 30 universities: give us a plan and we are going to choose the 15 best and the 15 best projects in 15 North American universities will receive a car and starting with this car you can make any changes you want to make it run on 85% methanol and 15% gasoline. And Montreal's Concordia University is the only university in Canada which was chosen and the work has been done. The university...the students received a 1989 Chevrolet Corsica, I think, last fall and the students worked on it for several weeks and the car is ready. It is ready to run on methanol and gasoline.

(.....)

H. The car runs?

R. Certainly it runs. Furthermore, Jean-Luc, next month 15 North American universities are going to send their teams to the Toronto area and are going to have a 1,000 mile rally. Even more than that, in two years - in 1991 - GM is going to supply 2,000 of these kind of vehicles which run on 85% methanol and 15% gasoline to the State of California. Then they'll really see how well they can do under real highway conditions. From the outside, Jean-Luc, the car is identical to a production car - in fact, it is a production car which has been modified.

(.....)

H. O.K. Thank you very much, Yvon. Have you seen the vehicle?

R. Certainly. It is identical to any other except on the inside. This is, nevertheless, still experimental. They have put a small computer on board which cost $6,000 but apart from that it is absolutely identical and, Jean-Luc, would you believe it can go up to 240 kilometres per hour?

H. Ahh yes. It's also faster?

R. Yes.

H. Because methanol is more volatile and the combustion is better, the performance would be better.

R. Better than gasoline, yes.

2430
890228 MONTREAL CFCF 15:00 "NEWS"

SUBJECT: STUDENTS CONVERT CAR TO METHANOL FUEL
*

ANNOUNCER: A GROUP OF CONCORDIA STUDENTS HAS BEEN SELECTED FOR A RALLY THAT WILL INVOLVE THE UNITED STATES. THE STUDENTS ARE ENGINEERING STUDENTS, AS WE HEAR FROM BOB HILL.

HILL: TEAM OF ENGINEERING STUDENTS, FROM MONTREAL'S CONCORDIA UNIVERSITY, WILL BE GOING AFTER 20 000$ IN PRIZES IN LATE APRIL IN THE METHANOL MARATHON BUT THE ULTIMATE WINNERS MAY BE AMERICAN AND CANADIAN DRIVERS. CONCORDIA'S ONE OF 15 UNIVERSITIES WHOSE INITIAL PROPOSALS FOR CONVERTING IDENTICAL CHEVROLET CORSICAS TO BURN METHANOL ONE IT THE RIGHT TO COMPETE IN THE 5 DAY, 1 100 MILE RALLY FROM (START ONTARIO?) TO THE FINISH LINE IN COLLEGE PARK, MARYLAND. THE RALLY ROUTE WAS ANNOUNCED TUESDAY, IN DETROIT. BOB HILL, NEWS RADIO NETWORK. 28

30
89.03.05 20:11 - DCM 2430 273520 16

SUMMARY OF BROADCAST TRANSCRIPTS

SUBJECT: THE METHANOL MARATHON

(Note: since the facts of the Methanol Marathon itself were handled almost identically by all broadcasts, we are condensing some of the transcripts and including only specific quotes of interest.)

CBF RADIO (CBC) - Montreal

Mar. 17/89 - 2:55 p.m. News

Reader: Concordia University will participate next month in a very special rally. The cars will not run on gasoline, but on methanol. Yves Desautels reports.

Reporter: Concordia University is the only Canadian University participating in this competition. Fourteen American universities and colleges are also taking part. The student engineers at these institutions will have to tune up a vehicle to run on methanol. Methanol is an alcohol produced from various refuse. It is, therefore, the fuel of the future. It has several advantages as we

learn from Jean-Louis Bibeau, a spokesman for the Department of Energy, Mines and Resources.

Bibeau: First, it is less polluting, which is an enormous advantage. As well, it delivers better performance than normal gasoline. On the other hand there are evident disadvantages which must be noted. For example, it takes a greater volume to cover the same distance as gasoline.

Reporter: The Canadian and American governments are participating in this event along with General Motors which is supplying the vehicles. The methanol cars will leave Detroit on April 29 and will go through London and Toronto in Ontario, finishing up on May 3 at the University of Maryland.

CBF RADIO (CBC) - Montreal

Mar. 17/89 - News

(This item was essentially the same as the preceding without the comments of the Reporter.)

CKAC RADIO - Montreal

Mar. 17/89 - 2:15 p.m. News

(.....)

Reporter: Martin Smith is captain of the Concordia team which will participate in a Detroit - Washington rally at the end of April to test the performance of a car which has been modified to run on methanol.

Smith: The challenge is to make a car which is not bad in the area of consumption, but which also has the performance necessary for a commercial vehicle.

Reporter: GM will supply the 15 new vehicles to the teams of student engineers which are participating in the rally.

CKVL RADIO - Montreal

Mar. 17/89 - 12:25 News

Reader: A team of engineering students from Concordia in Montreal have been chosen to participate in the very first Methanol Marathon driving a Chevrolet Corsica modified for a rally. (....)

Reporter: The object of this experiment is to prove that methanol can serve as a viable energy alternative. Last November, 15 participating teams chosen from 31 universities and colleges in Canada and the United States took delivery of a new 1988 Chevrolet Corsica donated by GM which also supplied the engineering students with a methanol conversion kit.

(.....)

CJMS RADIO - Montreal

Mar. 17/89 - 12:00 News

(.....)

Reporter: Seen from the outside, the vehicle in question looks just like an ordinary car. It is, in fact, a 1989 Chevrolet Corsica on which some equipment has been replaced so that it can run on methanol - a gas which can be manufactured, which performs better than gasoline, is less polluting and which could permit a country like Canada to be self-sufficient in energy. To really prove that methanol has a future as an alternative energy source, a rally of over 1,000 miles will take place next month with students competing from 15 universities including Concordia. Each team has developed its own methanol system and in two years the

State of California is expecting to buy more than 2,000 GM vehicles which will run on methanol to judge their performance in real driving conditions.

TELEMEDIA TV - Montreal

Mar. 17/89 - 12:15 News

(....)

Reporter: Canada will be represented in this major rally by a team from Concordia University. We should add that General Motors will supply 2,000 Chevrolet Lumina's equipped for methanol to the State of California for the purpose of evaluating the performance of this vehicle in real-life usage. The Lumina is built in Oshawa, Ontario. It is regarded as the car of the '90's. Michel Gamache, Telemedia in Montreal.

News/Radio Network - Report Summary

News/Radio Network Coverage of Methanol Marathon

Total of Broadcast stories produced: 19 Average story time length: 74 seconds

U.S. TOTALS – This is the number of all stations which had access to the story. This figure represents the total possible reach if each station ran each story once.

STATIONS REACHED: 2,495 **AIRDATES:** February 28

USAGE ESTIMATES – These are estimates of **actual airplay.** Story Usage, Impressions and Air Minutes Produced Totals are based on regular random sample surveys of station airplay.

STORY BROADCASTS - An estimate of the actual number of airplays including multiple usage by individual stations.

BROADCASTS: 748

TOTAL IMPRESSIONS - An estimate of impressions based on the number of station broadcasts multiplied by average audience figures.

IMPRESSIONS: 10,086,000

AIR MINUTES PRODUCED - An estimate of actual air minutes based on station broadcasts multiplied by the average story length.

AIR MINUTES: 920

COST ANALYSIS DATA

If you purchased the U.S. air time at an average of $2.00 cost per thousand, the dollar value of the air time in the Usage Estimate would be $20,172 . This figure does not include any cost for story production.

If you purchased the U.S. air time at an average of $20.00 per minute, the value of the Air Minutes Produced in the Usage Estimate would be $18,400 . This figure does not include any cost for story production.

News/Radio Network delivered the Usage Estimate Broadcasts at an approximate cost of 46 cents per 1,000 listeners including story production fees.

News/Radio Network delivered the Usage Estimate Air Minutes Produced at an approximate cost of $5.00 per minute including story production fees.

Some facts about radio . . . There are over 10,050 radio stations in the U.S., over 4,800 commercial AM stations, 3,950 commercial FMs and 1,200 non-commercial FMs. Over 95 percent of all Americans above the age of 12 report listening to the radio during a given week. The average household has 5.5 radios and 95 percent of all automobiles have radios. Americans spend an average of just under three hours per day listening to the radio.

Radio Station lists and other data is contained in the bound copy of our final report.

News/Radio Network - 414-321-6210

DATE	November 25, 1988
TIME	12:00 PM
STATION	WJR-AM Radio
LOCATION	Detroit
PROGRAM	News

Paul Harvey, anchor:

There will be a thousand mile road rally next spring, and this one you and I will want to watch. Fifteen cars will drive from Detroit thru Toronto to Washington DC., all of them without gasoline in the gas tank. Methanol, alcohol fuel, General Motors is providing the cars, Chevy Corsicas, for engineering students at fifteen universities. Between now and next spring these students will modify those cars to run on Menthanol. There will be twenty thousand dollars in prizes for the cars which demonstrate the best performance, including the most economical fuel mileage. The marathon will begin April 28.

# # #

TELEVISION COVERAGE

Potomac Television/ Communications, Inc.

Potomac News
One-On-One Exclusive
Programming Division

Video Services Group
Daily Business Satellite

Affiliate:
In Washington/ANB

ASCERTAINMENT REPORT

GENERAL MOTORS CORPORATION

"WINNERS OF METHANOL MARATHON ANNOUNCED"

REPORT DATE: 5/22/89

500 North Capitol Street, N.W.
8th Floor
Washington, D.C. 20001
202-783-8000 Fax: 202-783-1861

STATION USE SUMMARY

GENERAL MOTORS CORPORATION

"WINNERS OF METHANOL MARATHON ANNOUNCED"

FEED DATE: 5/4/89

REPORT DATE: 5/22/89

==========

ASCERTAINMENT SUMMARY

We surveyed 86 stations in 37 markets. Of these, 19 stations in 15 markets gave a positive response. A positive response denotes either running the story, holding the story for future use, or holding video from the story for file footage.

Based on the above figures, the station acceptance rate for this feed was 22.1% and the market acceptance rate was 40.5%. By the time this survey was completed, 12 of the 86 stations surveyed had run the story, for a play rate of 14.0%.

USAGE SUMMARY OF 86 STATION SURVEY

GENERAL MOTORS CORPORATION

"WINNERS OF METHANOL MARATHON ANNOUNCED"

FEED DATE: 5/4/89

REPORT DATE: 5/22/89

CITY	STATE	STATION	NET	DMA MKT	DATE	TIME	DMA HOUSEHOLDS	NEWSCAST AUDIENCE
Stations that have already run the story:								
Denver	CO	KUSA	ABC	19	5/4	6:00am	1,018,110	56,000
Sterling	CO	KTVS	CBS	19	5/4	5:30pm		45,000**
Baltimore	MD	WMAR	NBC	22	5/4	5:00pm	911,260	131,000
Wichita	KS	KAKE	ABC	61	5/4	6:00pm	425,810	60,000
Knoxville	TN	WATE	ABC	63	5/4	11:00pm	423,880	64,000
					5/5	12:00pm		29,000
Knoxville	TN	WBIR	NBC	63	5/4	6:00pm		201,000
Knoxville	TN	WKXT	CBS	63	5/4	6:00pm		25,000
					5/4	11:00pm		25,000
Chattanooga	TN	WDEF	CBS	82	5/4	6:00pm	298,450	56,000
Kingsport	TN	WKPT	ABC	87	5/4	6:00pm	283,270	10,000
Wheeling	WV	WTRF	CBS	128	5/4	6:00pm	167,650	71,000
Utica	NY	WKTV	NBC	162	5/4	6:00pm	98,780	56,000
Jackson	TN	WBBJ	ABC	185	5/4	6:00pm	57,580	44,000
						subtotals:	3,684,790	873,000
Stations that are holding the story for future use/file footage:*								
Hollywood	CA	KTTV	IND	2	file		4,800,200	205,000
Sarasota	FL	WWSB	ABC	13	file		1,275,400	57,000 A
Charleston	WV	WCHS	CBS	51	file		491,240	118,000
Wichita	KS	KWCH	CBS	61	file			72,000
Colorado Spgs	CO	KRDO	ABC	101	dub/future		239,280	44,000
Lansing	MI	WLNS	CBS	106	file		220,390	63,000
Lubbock	TX	KLBK	CBS	149	future		133,880	26,000
						subtotals:	7,160,390	585,000
						GRAND TOTALS:	10,845,180	1,458,000