**Transcript:**

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Mike Schmidt: Hello, and welcome. Fleet Maintenance is excited to present today's webinar, "Shell ROTELLA and API FA-4: What You Need to Know". I'm Mike Schmidt, managing editor of Fleet Maintenance, the only publication that is all maintenance, all management, all vehicle classes, all the time.

 The first licensing of the new API FA-4 performance standards brings with it confusion from many heavy-duty engine oil customers. That's why we're lucky to have a trio of experts on hand today to explain the benefits of this new FA-4 category, including the new Shell Rotella T5 Ultra 10W30, as well as what else needs to be known and understood about this particular category.

 Those experts are Dan Arcy, Global OEM Technical Manager, Shell Technology Center, Houston; Matt Urbanak, Shell Product Leader and HDDEO Lead Formulator; and Chris Guerrero, Global HDDEO Brand Marketing Manager for Shell. Dan, Chris, Matt, we appreciate you being with us here today.

 Now, I just wanted to cover a few things before we get underway. Attendees can actively participate in today's webinar by submitting questions directly to Dan, Matt, and Chris at any time. Just type your question into the question window box on the left-hand side of the screen, then hit "submit." Our speakers will answer as many questions as they can during a Q&A session that will take place following their presentations. If at any time your slide show does not seem to advance, just press F5 to refresh your browser.

 In addition, after today's live event, the webinar will be archived and available to viewers at vehicleservicepros.com, the official website of Fleet Maintenance. It will also be available on the Shell Rotella website.

 Now that we've covered all of those details, let's get things going. I'll turn things over to our first speaker, Chris Guerrero.

Chris Guerrero: Hey, Mike, thank you very much, and thanks to the 80-plus participants that we have on the call. I know it's a busy time of year, with everyone winding things down as the year comes to a close, and appreciate you making time to learn a little bit more about the latest developments in the newest API categories of CK-4, and in this one in particularly, FA-4.

 Now, I think Mike perhaps oversold it a bit. It would be better described as two very smart people, two experts, and one marketing guy. So, I'm the marketing guy. But, fear not, we have with us today Dan Arcy and Matt Urbanak, who really are the brains behind a lot of the operations that we have here on the heavy-duty diesel engine oil side for Shell Rotella.

 We have a lot to cover. A brief look at the agenda will tell you that we're going to cover the API FA-4 performance standards, a review of where the industry stands, a review on where 2017 OEM approvals are headed, what the recommendations are as far as they've been made public so far. We're going to take a little bit of time to talk to you about the newest member of the hard-working Shell Rotella family, and that's our Shell Rotella T5 Ultra 10W30 synthetic blend product, focused to deliver performance and fuel economy for FA-4 applications. And with that, we'll talk you through some of the technical benefits, the proof of performance that we have from the field trials that have been run for that product, and that's where Matt's going to jump in and really shine a light on how this product performs.

 And then, we're going to go briefly through what your business needs to know, moving forward. Lot of questions out there. As Mike mentioned earlier, please make it interactive. Ask questions. We'll answer what we can answer, and if we can't find the answer, then we'll figure it out and get it back to you. So, with that said, I'd like to hand over to the real stars of this show, our technical guys, and starting off with Dan Arcy. Mr. Arcy?

Dan Arcy: Hey, thanks, Chris, and welcome, everybody. Thank you for joining us today. I'd like to kind of rewind and step back a little bit and talk about what this new category is and why we have a new category. And it really goes back to June of 2011, when the engine manufacturers came to API and said we needed new performance categories for heavy-duty engine oils to meet the requirements of our next-generation engines. And they asked for some specific improvements in oils compared to what we have today.

 The drivers for these new oils were really improvements in fuel economy over what we have with engine oils today, reduction in greenhouse emissions, which really kind of goes hand-in-hand. You burn less fuels, you generate less CO2 and other greenhouse gas emissions. Changes in engine technologies, as the CJ-4 category that previously was the highest performance category has been around for over 10 years now, and then looking at the changes in hardware that are in engines that have taken place over the last decade.

 So, with all those changes, and the fact that we haven't upgraded performance standards in over 10 years now, it was time for a new category to be developed. Now, we've done webinars already on API CK-4, which API CK-4 really was a direct replacement for the API CJ-4 for on-highway and off-highway vehicles with some improvements, but we really haven't talked much about FA-4. And FA-4 was the performance standard. These (ph) manufacturers requested to provide some fuel economy benefits over existing viscosity grades of engine oils that we have today.

But, there's a couple key things that came along with this request, and that was that the engine manufacturers wanted oils that would be lighter in viscosity, or thinner, that could provide a fuel economy benefit, but there could be no compromise in engine durability or engine life by going to these lower viscosity oils. So, that was the challenge that we were given, and that's what we've done, putting together our next-generation oils.

Now, I've said that these are fuel economy oils. One thing to note is there is no fuel economy test in this category. By going lower in viscosity, it's known that there will be a fuel economy benefit, so there was no need to actually put a test in place that would go ahead and qualify that. And then, one other thing that we've said that we'll talk about in a little more detail with the FA-4 oils, is it will not necessarily be backwards-compatible, meaning used in older model year, or older emission year engines, across the board as CK-4 is. So, we're going to have specific engines and specific model years that these FA-4 oils will be acceptable for. And then, finally, as you already heard, as of December 1 of this year, it was first licensed (ph), meaning that's the first time we can put the API FA-4 symbol on the bottle, or on our labels.

So, with that, let me take you into some of the changes that have taken place. As far as engine tests that we have to run in order to qualify our products, there's seven engine tests that we utilized for API CK-4 and for the previous category, API CJ-4, that we carry forward and use with FA-4, as well. These oils have the same -- or these tests have the same pass-fail limits for CK-4 and for FA-4 as they did for the API CJ-4. However, we added two new tests, and the two new tests were a new test for improvement in oxidation stability. So, that's the oil's ability to handle higher temperatures, and secondly, improvements in the area of aeration control, so a new test was put in place for there. And that looks at the oil's ability to release oil -- air that gets entrained (ph) within the oil to get it out of the oil.

Going forward here, one of the key differences between CK-4 oils, FA-4 oils, and the CJ-4 oils that you've been using for the last 10 years is going to come down to viscosity. And so, what I've done here is tried to put together a slide that kind of demonstrates what we're looking at when we're looking at these changes in viscosity and what it really means.

Now, I think all of us are pretty familiar with the SAE viscosity classification system. 15W40 is the majority of the engine oils that are sold in the market, a majority of the most predominant viscosity grade that is sold in the market these days. However, we have seen a large change moving towards lighter viscosity grades, such as 10W30. Well, that 10W30, 15W40, those numbers were defined by SAE, and it really -- it's measuring the thickness or viscosity, or viscosity meaning resistance to flow, of the oil.

So, if you're looking on the screen now, you'll see on the left-hand side in the center of that graph there, you'll see a yellow range that says CJ-4. So, for CJ-4, all CJ-4 oils, whether they were 10-30, 15W40, 5W40, all had to fall within that range. As you can see, comparing it to the SAE scale on the side, well, what's important to note is if it was a 5-30 or 10-30 oil, it was -- really had to be towards the upper end of that SAE 30 viscosity range.

Now, going forward, we will see CK-4 oils will have to meet those same requirements. CK-4 will be the upper end of the 30 range and 40 range for oils. They will be measured and determined by what we call a high-temperature, high-shear viscosity as well, which is not something that's kind of consumer language out there, but really it's defining viscosity at a higher temperature range under some unique conditions, so it's really -- it's measured at 150 degrees Celsius versus 100 degrees Celsius. But, the key to remember here is CK-4 oils are going to have the same viscosities that we carry forward with from CJ-4.

Now, if you'll recall, you can get a fuel economy benefit by moving from a 15-40 to a 10-30, and that's what we've talked about in the past. So, a CK-4, 15-40 to a CK-4 10W30, there's a fuel economy benefit to be realized. And from Shell, we're using the number's about 1.6% fuel economy benefit from moving from a 15-40 to a CK-4 10W30.

Now, if you went from a CK-4 10-30 -- or a CK-4 15-40 to an FA-4 10-30, which you can see on that chart, it's towards the lower end of the SAE viscosity grade. We see even greater fuel economy benefits. And what we're seeing here is FA-4 is really defined as a viscosity range that's towards that lower end of the SAE scale. So, we will still have products like 10-30, both 15-40 CK-4, but we'll also have this 10-30 that'll be an FA-4 product, providing the best fuel economy.

Kind of to sum it up a little bit, these oils that are CK-4 that are higher at high temperature-high shear, they'll be fully backwards-compatible for the same viscosity grade of oil that you're using today. So, if you're using a 10W30 CJ-4 product today, you can go to a 10-30 CK-4 without having to do anything. They're going to be recommended for both on- and off-highway applications, and we will see a fuel economy benefit by going from a 15-40 CK-4 to a 10-30 CK-4.

Now, the lower HCHS, or FA-4 oils that have been introduced on December 1 will provide an additional fuel economy benefit versus the CK-4 products. These products will have limited backwards compatibility. We'll go through that in a minute, what engine manufacturers are allowing FA-4 products at this time. It's going to be dependent on the OEM and on the application, as such, but they will provide the best fuel economy of any of these oils.

So, let's talk about what OEMs are going to be recommending, FA-4 oils, for 2017. And when you look at it, OEMs, some of them have their own specification that goes beyond what the FA-4 specifications were. So, let's kind of go through some of these OEM specifications and what they're recommending. Cummins will be recommending their own specifications. Their equivalent to CK-4 is going to be their Cummins CES 20086 specification, and their equivalent to an FA-4 is going to be their CES 20087. Now, Cummins is going to allow the use of an FA-4, or a 20087, in their new 2017 model year X15 engines. Something to note about this is Cummins also is going to have some changes in their oil drain intervals for their newer engines.

Detroit Diesel has also come out with their own specifications. Their DFS 93K222 is going to be their equivalent to API CK-4. That is going to be recommended in all Detroit Diesel engines. They also allow an FA-4 oil, which under their spec is 93K223. And with both of these oils, they're going to allow for longer drain interval, but from the Detroit side, they've made announcements that they will be factory filling with an FA-4 oil. They will allow FA-4 oils for service fill, and they will allow this going back all the way to 2010 model year.

Volvo's come out with its own specification, their VDS 4.5, or Mack EOS 4.5 for Volvo. Volvo has announced that they will be modifying their drain intervals and extending those, as well, under certain conditions. And at this point in time, we are still waiting to hear from Navistar and Paccar on exactly what their primary recommendations, both for factory fill and service fill, are going to be and what their drain intervals are going to be.

Now, in the diesel pickup space, the three main diesel engine manufacturers, or diesel pickup marketers out there, are Ford, Dodge with the Cummins diesel, and GM. None of the diesel engine manufacturers, or none of the diesel pickup manufacturers are going to be recommending FA-4 products at this time. They're only going to be allowing these, or recommending the use of CK-4 products, or CK-4, and in the case of Ford, also meeting a new Ford specification which came out in late October.

And then, for off-highway, off-highway is pretty simple. Off-highway, all the off-highway manufacturers are going to be recommending CK-4 products for both current and heritage equipment that they have out there. And at this time, none of them are supporting the use of FA-4 products.

So, that kind of gives you an overview, but what I'd like to do is introduce my colleague here, Matt Urbanak, who's going to take you through our Rotella products, the benefits of it.

Matt Urbanak: Well, thank you, Dan. Yes, I wanted to talk about the Rotella TE -- T5 Ultra 10-30 specification. So, this is a semi-synthetic, or synthetic blend 10W30, again designed to provide maximum fuel economy compared to a 15W40 product. It's going to meet the new API specification, the FA-4 spec. it's also meeting JASO DH2, and then some OEM specifications. There's a new Daimler specification out, the Mercedes-Benz 228.61, which this product will meet, the Cummins 20087 specification, and the new Detroit Diesel DFS 93K223 specification.

 What I'm going to talk about next is some of the data supporting the FA-4 specification, as well as some of the OEM specifications. And what's important to show here is that there's a lot of technology that we've put into this product, and as such we're going to show data that's very robust in terms of its performance versus the specifications. And we're not -- this product wasn't developed as a borderline, just barely meeting the specification-type product.

We put a lot of chemistry into this product. We put a lot of technology into this product. And the data supports the fact that it is a very robust product and will provide protection on par with CK-4, 15W40 and CK-4 10W30 products. And we recognize that that's one of the challenges with these lighter viscosity FA-4 type products, is that customers may be hesitant to use them because the feeling is that the wear protection, or the durability for their engine, isn't going to be the same as what they would see with a CK-4. And we hope some of this data that we're going to show helps to speak otherwise and disprove that theory.

The first slide here is around oxidation protection. And oxidation protection is really one of the key properties of these new FA-4 and CK-4 type products. So, what I'm showing here is data from our Volvo T-13 engine test, and this is one of the new engine tests that we've developed both for CK-4 and FA-4 technology, or for the specification.

And you could see two charts there. The one on the left is around the viscosity increase, and you can see the API FA-4 limit, and you see where the Rotella T5 Ultra 10W30 is well below the allowable FA-4 limit. And on the right-hand side is the oxidation peak height, and again you see the trend of the oxidation throughout the test. It's a 360-hour engine test. It's designed to severely stress the oil to try and promote oxidation, and basically break the oil.

And if this were a poorer oil, you would see the oxidation -- you would see a spike in oxidation at some point during the test. And what you see here is a very slow rise in oxidation, well below the limits, extremely good result, and no spike in oxidation for this product.

Another oxidation test, this is on the bench test oxidation. This is PDSC. This is a test that's part of the ACEA specifications. The limit is set at 65. It's a minimum, so the higher is better in this case, and it's basically measuring the time that it takes before your oil starts to exhibit oxidation, or signs of oxidation in this case. So, you can see that we easily exceed the ACEA limit. We're more than double what the ACEA limit is. So, on an engine test, on the previous slide and now on a bench test, we've seen examples of very good oxidation protection for this product.

Another bench engine test. This is a new bench test, the CEC-L109 test. This is part of the Daimler specification that I talked about earlier. This test is also run in the presence of biodiesel. There's a 7% biodiesel component to this test. So, again, we're able to show, even in the presence of biodiesel, 7% biodiesel, that this oil does a very good job in terms of preventing oxidation and performing in the more severe conditions of your engine.

So, let's talk about wear protection. Again, we feel that wear protection is a key attribute for this product, with the feeling that there's going to be a lot of hesitancy to look at FA-4 usage because of the belief that these oils just aren't as durable or as strong as CK-4 products. So, what I've shown here is, on the bottom chart, you can see these are the wear test parameters across all the engine tests that we've run, and these would be like the Cummins ISM or the Cummins ISB, the Mack T-12, several Daimler tests, anything that has a wear parameter in it we've captured here. And in total, out of all the engine tests that we run, there was a total of 41 separate wear parameters.

And when we looked at the average results across all those 41 different results, the average result came out about (inaudible) -- okay. So, in terms of an average result of 32%, 32% is extremely good. That's roughly a third of what the limit is. So, if the limit is 100 microns, our average result came out at about 33 microns. And you can apply that to any of the limits that were in these tests.

What's nice about this data is that, when we also did the same exercise looking at the T4 15W40 and the T5 10W30 products, both of which are CK-4 -- meet CK-4 specifications, you see that the average results for those products was about 28% and 29% respectively. So, very close in terms of wear protection across the entire spectrum of engine tests that we ran for this product, and again, trying to show that durability is as good or comparable to what we would see with CK-4 15-40 and 10W30-type products.

Here's some field test data that's designed to show, again, the Rotella T5 Ultra 10W30, the FA-4 product in comparison in a number of different engine platforms. So, we've got Paccar, we've got Detroit Diesel, we've got Cummins engines, and showing our data, the new FA-4 data versus either CK-4 or FA-4 products. And they could be 15-40 or 10W30, it doesn't matter, because what we're seeing is that the FA-4 product, the Rotella T5 Ultra 10W30, is doing just as good a job in terms of iron wear protection in these field tests as the CK-4 formulations regardless of the engine type that we're testing in.

The Rotella -- the Detroit Diesel scuffing test, the DD13 scuffing test, is a test that has been developed -- it wasn't developed in time for inclusion into the FA-4 category, but it is part of the new Detroit Diesel specification, as well as the Daimler specification. And we've run that test on our T5 Ultra 10W30, and as you can see on the bottom right-hand side, the test is -- well, the test runs -- a normal test runs for 200 hours, and we ran a test out to about 300 hours. And Detroit Diesel has assigned a passing limit in this test at 31 hours. So, your oil needs to go 31 hours to be considered a passing oil in this test.

Well, we ran our test out to 200 hours, and actually ran it out to almost 300 hours before we saw any evidence of scuffing. So, with a limit of about 31 hours to scuffing, we were able to go to roughly 290-plus hours before we saw a scuffing event. So, again, extremely good performance in this new wear test that's part of these key OEM specifications, easily exceeding the limits and, again, showing -- demonstrating very strong performance in the FA-4 category.

So, why are we able to do, or why are we able to perform so well on these wear tests? This just gives a little bit of background into some of the chemistry that we've used, or the technology that was used to develop this product. So, what I've shown here is the tribofilm, and this is the film thickness that's measured by the -- we call it an MTM, a Mini-Traction Machine test, and it measures the film that's laid on the surface of a moving part. And what I've shown here is the T5 Ultra in yellow in comparison to several CK-4 viscosity products, so 15-40, 10-30, 5-40.

And you can see that in most cases, or in every case, the T5 Ultra 10W30, again an FA-4 product, forms a film, or protective film, on the surface of the moving parts as strong, or as durable, as what we see with the CK-4 -- various CK-4 products. So, again, a little bit of the background into why our product is performing so well in terms of wear protection relative to the CK-4 products.

Talk about deposits, so the Caterpillar C-13 engine test is one of the requirements for FA-4. And what I've shown here is the FA-4 limits. (Technical difficulty)

Mike Schmidt: Hello, this is Mike Schmidt with Fleet Maintenance. Looks like we're experiencing some technical issues. We lost Matt on the line. We're going to look to get them reconnected, so just sit tight for a moment, and we'll get the presentations back up and running. Thank you so much for your patience. Looks like the folks from Shell are currently trying to get back connected again. Looks like they're hanging up, and they're going to re-call in to the presenter chat, and should be up and running in just a moment. So, again, thank you so much for your patience.

Unidentified Participant: Hi, we're back in now.

Unidentified Participant: Can you guys hear us?

Mike Schmidt: Yes, we can.

Unidentified Participant: I think maybe it was the Russians, so, yes. So, we're going back a couple of slides, and we'll get caught back up. Mike, if you can give us (inaudible) as to where you guys lost us, was it right after the agenda?

Mike Schmidt: No. I would say, if you go back maybe one or two slides from where you're at right now, you should probably be good.

Unidentified Participant: Brilliant, all right. And Matt was on a roll. He'll get going again. All right.

Mike Schmidt: Okay, thanks.

Matt Urbanak: Okay, all right. We'll go back to our field test data slide here. And what I'm showing here is field test data that we've generated over the past several years looking at the Rotella T5 Ultra 10W30 in a number of different engine technologies. And what's important to show here is that the T5 Ultra, from a used oil analysis, the iron wear from the used oil analysis, is basically showing that we're not seeing any difference in terms of wear protection between the FA-4 10W30 product and several different CK-4 products, be it 15-40 or 10W30.

So, real-time field test data, which helps to support our engine test data that's showing extremely good performance, and we're able to show -- we're able to provide demonstration data to potential customers that you're not going to see a compromise in durability or wear protection by going to a 10W30 FA-4 type product compared to if you would have stayed with a 15-40 or 10W30 CK-4 type product.

 Next test is around looking -- or the next slide is looking at scuffing tests, scuffing performance. The DD13 scuffing test is a new test that was introduced too late for inclusion into the FA-4 specification, but it is part of the Detroit Diesel and Daimler specifications. Scuffing is a measure of adhesive wear between two moving parts. It's a concern for some of our OEM partners, which is why they've developed this new test. The normal test duration is 200 hours, and Detroit Diesel has designated a passing oil as being one that exceeds 31 hours in this test.

 So, we ran Rotella T5 Ultra out to 200 hours, and didn't see any evidence of scuffing, so we decided to keep running it out to about 300 hours. And we were able to run out past 290 hours before we saw any evidence of scuffing. So, for an engine test that has a pass-fail limit at 31 hours, we were able to take this product, again FA-4 technology, low viscosity technology, out to over 290 hours before we saw any evidence of scuffing in this test.

 So, why are we seeing such good performance? This slide talks a little bit to the technology that's in the -- that's used in the product. So, what we're looking at here is what we call tribofilm thickness. This is the measure of the film, the protective film that's laid down on the surface of the parts, the moving parts. It's highly dependent on the technology that you're using. And what we wanted to show here was basically the film thickness and the film durability of the T5 Ultra in comparison to some various CK-4 viscosity products, so CK-4 15-40, 10-30, and 5-40.

 And what you see when you look at the -- in the tribofilm area and the tribofilm height is that the T5 Ultra is performing as well or better than the CK-4 15-40, 10-30, 5-40 type products. And again, it gives us a little bit of understanding as to why our wear protection is so good with this product relative to the CK-4 products. And again, what we're trying to do is provide comfort for potential customers that they can use this product with confidence, and that they're not going to see compromises in durability and engine protection.

 Next slide, we're looking at the wear control, or excuse me, deposit control of the T5 Ultra 10-30. And this is a C-13 engine test. This is one of the requirements for API FA-4. And you can see that it measures deposits in a number of different places, top groove carbon, top land carbon, second ring, and oil consumption. You can see the limits there, and you can see the performance of the T5 Ultra. So, again, very good performance in terms of controlling deposits on the piston in the C-13 engines.

 If we look at the sludge and varnish deposits, what I'm showing here is a collection of the engine tests that were run looking at sludge and varnish deposits. So, we've got a Cummins ISM, a Mercedes 501LA, Mercedes 646LA, and a Mercedes 646BIO test. And that does contain about 10% biofuel in that test, as well. And what we measured here is on a merit rating system, so 10 is as high as you can get. 10 is clean. 10 would be a new part. And what you see is a range from 9.2 up to 9.6. The average of these 11 different tests that we run was about 9.5. So, exceptionally strong in terms of controlling varnish and sludge deposits in these parts. You can see, for reference, two pictures (technical difficulty).

Mike Schmidt: Hello, it's Mike Schmidt again with Fleet Maintenance. It looks like we're dealing with a few more technical issues. Again, appreciate your patience. We'll have the folks from Shell call back in, and hopefully they'll be able to get back up and running shortly. Again, any time you deal with live events, the potential for this is to happen. So, hopefully again we'll get the Shell folks back up and running shortly. Appreciate your patience.

Unidentified Participant: All right, we're back again. (Multiple speakers)

Mike Schmidt: All right, thanks, guys.

Matt Urbanak: Okay, so I'll try and finish up here. I've got two slides left, and then we'll turn it back over to Chris. But, in this slide, we're looking at low-temperature pump -- low temperature properties of the T5 Ultra 10-30 in comparison to a 15W40, in this case a Rotella T4 15W40. And again, it's a bit intuitive in that, as you go to a 10W30, you're going to get better low temperature properties, and this just proves it. The cold cranking simulator is considerably better for the 10W30. That's the measure of the oil's ability to crank inside your engine, or the engine to crank with that oil. And then, the MRV is the measure of the pump ability, so the ability of the engine to pump your oil. And again, you see at comparable temperatures a considerable improvement in terms of low temperature performance.

 If we go to the next slide, here we're looking at -- this is test that we ran where we took an engine, a Cummins ISM engine. We put it in a cold box, and we chilled it down to minus 30 F, and we measured the time that it took -- and we motored that engine, so we didn't fire it. It wasn't fired. It was motored by a dynamometer, and we tested, or we measured how long it took for the oil to flow from the oil sump up to various parts of the engine. And in this case, we're looking at the front gallery.

 So, what you can see here is that the Rotella T5 Ultra 10W30 took considerably less time at minus 30 to flow from the oil sump up to the front gallery area. In fact, the T4 15W40, we had to run that at minus 25, so that was run even at five degrees warmer, and we still saw a significant improvement, or a significantly better result with the T5 Ultra at the five degrees colder temperature.

 So, that's a little bit of the technical background behind the product, why we're getting such good results with this product. And I'll turn it over to Chris, and he'll talk to you about how your -- what your business needs to know.

Chris Guerrero: Quite simple. We got it down to one slide, everything that you need to know, so you may ask yourself why did it take the first 40 minutes, because we had a lot of information to share. But, in summary, it's very simple, guys. Right now, we're in the midst of transitioning from API CJ-4 to the new category, CK-4 and FA-4. Some folks are buying new trucks out there. A lot of folks are keeping the same trucks they've had for a long time. Those that are getting new trucks would have the option, and depending on the OEM, to use FA-4 products. In fact, some folks with older equipment may have the opportunity to use FA-4, as well.

What's important to note is that FA-4 is not going to be mandated by any OEM for new trucks. However, for a couple of the OEMs out there, it will be an option for them. Case in point, for Detroit Diesel, they've already announced backwards compatibility for FA-4 to 2010 and newer engines, which means, if you have Detroit Diesel trucks, engines, that FA-4 could be a viable option for you if you're looking to maximize fuel economy for your fleet.

 And that gets us to the next point, which is really, if you're looking to maximize the fuel economy that you can achieve, then FA-4 is going to give you just that added bit of fuel economy relative to existing viscosities in the marketplace today. So, it's something that you might want to take a look at. We have both CK-4 and FA-4 products available in the marketplace in bulk, drum, and package sizes, and they're fully compatible with each other. If you mix the two, you don't have to worry about any adverse effects between the two oils. In essence, if you mix a CK-4 and an FA-4 product, you're just thickening up the FA-4 product, and it ceases to deliver some of the fuel economy benefits that you're trying to purchase when you purchase an FA-4 product.

 So, that's a very quick, high-level summary. It looks like we've had, in the course of the last 45 minutes or so, a lot of questions come through, so I believe that we're going to go ahead and start getting through some of those. And I'm not sure of the process procedure. Is Dan just going to jump in and read the question? Yes?

Dan Arcy: All right. Yes, we had a question come in here about, with this oil, our T5 Ultra, can it be used in automotive-type applications. And we designed our T5 Ultra synthetic blend 10-30 FA-4 product, we did this based on the fact that it was really designed for on-highway diesel applications only. We do have, though, a product, if you are looking for a single product, for use in both on-highway and automotive, or passenger car-type applications. We have our Rotella T6, which is full synthetic, 5W30 multi-vehicle oil. This meets the requirements of API CK-4 and the requirements of API SN for passenger car.

 Okay, one of the other questions we had was around backwards compatibility of FA-4 oils, or any oils, I guess, in particular in regards to Ford diesel pickup trucks. Now, some of you may be -- may have seen, Ford has come out with their own specification in late October. And what they want for both 2017 model year, as well as anything prior, is oils that meet that new specification. Shell Rotella does have several products that meet that new Ford specification. Our Rotella T3 Fleet can be used in those applications, as well as several other products that we have in our portfolio. That specification, though, is for everything for prior years as well, so you'll want to use an oil that meets that Ford specification for 2017 and everything before that.

Chris Guerrero: Any more questions, Dan?

Dan Arcy: Yes, we've got a couple more coming in here. One of them was, or is, why would I want to use an FA-4 oil? I'm happy with my 15-40. Well, good question there. The real benefit to the FA-4, and I'm assuming your 15-40 that you're using today is what this question's referring to. And FA-4 oils have improvements over the current CJ-4 oils as far as performance-wise in the areas of improved oxidation stability. I mean, they can handle higher temperatures. Depending on what engine you're running out there and what model year it is, you may have an opportunity to modify your drain interval on that and go with a longer drain interval because of the improvements in oxidation stability.

 The other big key, though, and this is really the big difference, is by going from a 15-40 to an FA-4 10-30 like our Rotella T5 Ultra 10W30, is the improvements in fuel economy. And even a couple percent improvement in fuel economy can really add up to some big numbers at the end of the year, especially for a large fleet. So, the fuel economy benefits, by going from a 15-40 to a FA-4 10-30, could be significant in affecting the bottom line.

Chris Guerrero: And it looks like the questions are still coming in, Dan, which is fantastic. It means people are curious and want to learn a little bit more. So, what else you got?

Dan Arcy: We got one here, the Dodge EcoDiesel, 3.0 liter, what is the recommended product for that application? And that's great -- the EcoDiesel obviously is a diesel pickup truck by Dodge. And what they're recommending for that engine is a product, Rotella T6 5W40 full synthetic, and that is a CK-4 product. So, if you own a Dodge EcoDiesel, a 3.0 liter, you'll want to go with the T6 5W40 full synthetic.

 Oh, here's one on -- can I use an FA-4 if I have a 2011 Detroit Diesel engine? And if I wanted to, could I switch back and forth from CK-4 to FA-4? So, two questions here. Let's take the -- if you have a 2011 Detroit Diesel engine, DD15 engine, let's say, yes, you could use an FA-4 product in those. In fact, Detroit Diesel is allowing the use of FA-4 10W30 for 2010 model year and newer. And by going to an FA-4 product from the CK-4 or from CJ-4, you will get better fuel economy than what you get with your CJ-4 product that you're using today. In addition to that, you may be able, depending on what kind of fuel economy you are getting, you may be able to extend your drain interval.

 The other part of this question was can I switch back and forth from a CK-4 to an FA-4 product. Yes, the products are totally compatible, so if you were to have to top off with one product while you're on the road, or if you wanted to switch, say, from season to season, and you wanted to use FA-4 and then switch to a CK-4, and then go back to the FA-4, there's going to be no problems with going back and forth between these two products. Say your CK-4 10W30 synthetic blend or a FA-4 10W30 Ultra synthetic blend, products are totally compatible with each other. You can switch from one product back to the other one without any issues with your engine.

Chris Guerrero: Yes, I think we had another question come in around oil analysis, and Matt was eager to give an answer. So, Matt, why don't you go ahead and read the question?

Matt Urbanak: The question was around will I see oil analysis changes with an FA-4 product. It's a difficult question to answer because I'm not sure what the potential change would be from. It may be that the composition of the current product has a calcium-magnesium-zinc level that's different than where our T5 Ultra 10W30 is, so it's a difficult question to answer without knowing what specifically product is being changed from.

Chris Guerrero: Yes, so the best thing you can do is probably ask your current supplier for Shell Rotella products. I mean, you'd see a difference in viscosity that I mentioned, but chemical composition. Like I said, check with your current provider and get the answers.

Matt Urbanak: Yes, you would see a difference in viscosity, obviously. Your viscosity's going to be at the low end of the SAE30 range, so probably pretty close to about a 10 (inaudible) oil, whereas current 10W30 products are probably around a 12, and 15W40 products are up around a 14 to 15 viscosity range. But, for the metals and the metals profile on the chemical signature, again, that's dependent on what the current product that you're using is.

Chris Guerrero: Okay. One of the other questions that came through was will there be a Shell Rotella T5 Ultra 5W30? I can actually answer this one, guys. The answer is no, but that's only because there's going to be a Shell Rotella T6 Ultra 5W30. It's available now. If you're interested in finding that product, give us a call. We'd be happy to sell you some. It is going to be our FA-4 5W30 product, so ultra-low viscosity full synthetic, whiz-bang chemistry according to -- I think that's a technical term you used to describe it, Matt, when you were talking to me, so there you go.

 And the questions are still coming in. Dan, looks like you just got one.

Dan Arcy: Yes, a question here asking about have engines been introduced that use FA-4 engine oil, and the answer to that is yes. Detroit Diesel has their 2017 model year in the marketplace now, but you also have anything from 2010 for Detroit Diesel in that market. Cummins is introducing some vehicles will have their 2017 engine in it, that X15 in it, and those engines also will allow the use of FA-4 oils.

Chris Guerrero: I think that wraps up the questions. Unless there are last-minute questions coming in under the wire, then from the Shell Rotella team side, I would just like to thank Mike and the team in Fleet Maintenance for having helped us reach out to the community over the course of the last four webcasts. It has been a tremendously amazing opportunity to connect with all of you guys on the phone, to share what we know about this category. And I would encourage you, if you have any questions that come up after this, reach out to your local Shell representatives. They can track one of us down if they don't know the answer, but I'm willing to bet most of our guys out there, and gals out there, know the answer. So, do reach out. There's also a little bit of information shown on-screen here in terms of how to reach out to us, Facebook, Twitter, YouTube, Instagram, and of course for us older folks, the actual website itself, rotella.com is a place that you can go to connect with us and find out some more information

That said, Mike, I'll hand it over to you for any last closing words.

Mike Schmidt: Great. Thank you so much to our attendees for listening in today, and thank you as well to Dan, Matt, and Chris for imparting some great information today as well, and also for all the work that went into all of the webinar presentations you guys have done over the course of the past few months. As I previously stated, this webinar will be archived and available to watch at vehicleservicepros.com, the official website of Fleet Maintenance, as well as on Shell's website, as well. So, thank you again to everyone for today, and have a great rest of your day.

Unidentified Participant: Merry Christmas, guys.

Unidentified Participant: Thanks.