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A. Various clutches, primarily for the heavy truck market.
Q. And were these clutches that were incorporated into manual transmissions?
A. Yes.
Q. Did Dana ever manufacture clutches that were incorporated into automatic transmissions?
MR. RADCLIFFE: Object to the form. Go ahead.
A. No. In the late 90's there were some people that were automating a manual transmission and clutch with electronics and hydraulics, but it was not an automatic transmission as an Allison or a passenger car automatic transmission.
Q. Did the clutches that were manufactured by Dana for the use with manual transmissions contain an asbestos disc with a flywheel?
DEFENSE COUNSEL: Object to form.
MR. RADCLIFFE: I'm sorry, we had a siren interfere with that question. Would you mind repeating it, please?
MR. SMITH-GEORGE: Sure.
Q. Did the clutches that Dana manufactured for manual transmissions contain an asbestos disc for the flywheel?

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DEFENSE COUNSEL: Objection, form.
MR. RADCLIFFE: Objection, form. Go ahead.
A. Spicer manufactured clutches that contained a nonasbestos material and an asbestos material depending on which assembly you purchased.
Q. How -- when did they first begin manufacturing a clutch with a nonasbestos-containing disc for the flywheel?
A. I believe they were manufacturing that when Dana purchased the clutch division.
Q. In the 19 -- when?
A. In the late 40's, yeah.
Q. What type of application would permit the use of a nonasbestos-containing disc for the flywheel as opposed to using asbestos-containing?
MR. RADCLIFFE: Object to the form.
A. Any -- any application that you could use an asbestos-faced material in you could use a nonasbestos-faced material, as far as I can picture. There are some cases you could use a nonasbestos material or a ceramic material that you could not use an asbestos-faced material.
Q. If the materials were interchangeable, why did -- why was an asbestos clutch face used?

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MR. RADCLIFFE: Object to the form.
A. The asbestos material was liked in some cases by the customer because of its engagement characteristics. When the driver engaged the clutch, it was somewhat smoother than the ceramic material at that time.
Q. Do you know who supplied the asbestos-containing clutch facing?
A. H.K. Porter and Raybestos were our two main sources.
Q. How long did Dana manufacture clutches for manual transmissions that contained an asbestos-containing flywheel?
MR. RADCLIFFE: Object to the form.
A. Asbestos-containing material was in some of the clutches when the -- when Dana Corporation purchased the clutch division, and it was eliminated from clutches in 1984.
Q. Do you know why they made the decision to no longer use clutch facings that contained asbestos in 1984?
A. There were a number of reasons, but the engagement characteristics of the ceramic material had been improved drastically, the engine characteristics developing higher torques had required a higher

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coefficient of friction than the asbestos material contained, and the general feeling of the public against asbestos had required us to look elsewhere for a facing material.
Q. When you looked elsewhere for a facing material, what steps did you take to replace the asbestos?
A. Again, there were a number of steps. We started in 19 -- well, in the mid 70's, let's say, and requested our suppliers to look at alternative materials that would give us the same characteristics as the asbestos material.
Q. Why didn't you simply use the ceramic materials that you were using in your nonasbestos-containing clutch flywheels?
A. Again, because the general feeling -- or not the general feeling, but the feeling by many customers that there was a smoother engagement with the asbestos material than the ceramic material.
Q. On overall performance, other than the smooth engagement, was there any significant difference between the performance of the asbestos-containing flywheels and the nonasbestos-containing flywheels?
A. Again, if you're referring to nonasbestos as the ceramic, the ceramic material would -- was capable