

## Ortega, Rene

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**From:** Ortega, Rene  
**Sent:** Tuesday, April 24, 2001 5:14 PM  
**To:** Caraccioli, Paul  
**Cc:** Crane, Charlie; Ray, Dawn; Aggarwal, Pravin; Worlund, Len; Frady, Greg  
**Subject:** RE: G6 stretch values

Paul,

RKDN has advertised a variability on the preload of the joint. In fact they have been adamant about their variability numbers. The single sample of stretch values we have (pre and post hot fire) indicates that this variability as quoted is questionable. And, they have yet to explain the difference in the measurements. This is a crit 1 joint and margin of separation and stud yielding are very dependant on the preload of the studs. This makes this joint a safety item, and understanding its behavior is a contributor to the safety of the joint. We have made no conclusion and yet not questioned the safety of the joint, but believe that there is a need to collect data to insure that we understand the variability of the assembly/measurement process to assure the joint meets our safety requirements (margins of safety and life).

Recording of the stretch values over time will eventually provide an indication of the variability of the measurement. RKDN has indicated their resistance of redetermining empirically this variability and even dig up the old paperwork that shows the original laboratory data.

Collecting the data and recording it is not a big deal and I have yet to understand the reluctance to it. The increased coining is a manifestation of higher loads, so we know we are doing something different for sure, but have yet to understand to depth of it. And that concerns me.

Rene.

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**From:** Caraccioli, Paul  
**Sent:** Tuesday, April 24, 2001 3:31 PM  
**To:** Ortega, Rene  
**Cc:** Crane, Charlie; Ray, Dawn; Aggarwal, Pravin; Worlund, Len; Frady, Greg  
**Subject:** RE: G6 stretch values

Rene,

I have concern regarding the G6 preload being characterized in your note as a safety item. Especially since a block II engine installation is underway and block II E2050 was cleared for installation today. Our rationale for closing the UCR is that the coining and raised metal (manifestation of the increased preload) do not affect sealing function and I do not know of any new information that would conflict with that disposition. I have had discussions with Rocketdyne regarding the recording of stretch values and have agreement that the values will be recorded for the installation of fuel pump 8015. The coining and raised metal UCR is on the combustion devices telecon agenda this Thursday and I think we need to know the specifics of the safety item at or before this meeting. In addition, Rocketdyne has requested that the justification for continued stretch value recording (specifically how will the data be used) be provided to support a decision of what to record and for what duration.

Thanks,  
Paul Caraccioli  
Combustion Devices  
SSME Project Office

-----Original Message-----

**From:** Ortega, Rene  
**Sent:** Tuesday, April 24, 2001 12:23 PM  
**To:** Frady, Greg; Caraccioli, Paul  
**Cc:** Crane, Charlie; Ray, Dawn; Aggarwal, Pravin  
**Subject:** RE: G6 stretch values

Paul,

I thought we had an agreement that stretch values at assembly & disassembly for development pumps and at assembly for flight units would be recorded. The purpose is to track the stretch values measurements at this joint and to be able to assess the variability of the measurement. I thought we had discussed this over and over in the

last few meetings and had an agreement. I consider the preload on this joint to be a safety item and it is imperative that we understand what the joint is doing and the consequence of the variability during the assembly process. If we don't look we won't be able to tell and will have to live with the consequences if there are any. When we talked about closing the UCR RKDN told us that the measurement would be taken through ARs. Now you tell us there is no need. But, we have one instance that shows the before and after measurements are not consistent and indicate a lack of understanding of the variability of the process.

Let's not be complacent. The greater our understanding of this joint the more safety added to the program.

Rene.

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**From:** Caraccioli, Paul  
**Sent:** Tuesday, April 24, 2001 10:21 AM  
**To:** Ortega, Rene; Frady, Greg  
**Cc:** Crane, Charlie; Ray, Dawn  
**Subject:** G6 stretch values

There is currently no requirement for recording G6 stretch values for development pump installations. The close out of actions pertaining to the G6 coining and raised metal UCR will be reviewed this Thursday at the 1:00 combustion devices telecon. When we requested actions needed to support this closure a couple of weeks ago, there was no action or justification offered relative to stretch value recording. Please advise if there is a need to record these values and for what purpose they are required. Paper to record these values should be generated today to ensure the 8015 pump installation stretch values are recorded.