8. Since 31 cadwelds out of a total of 169 test samples failed at a stress lower than the rebar ultimate strength and there was apparently a construction problem concerning staggering of these welds, provide justification for not using a reduced ultimate strength for the rebar.

Response: The relatively few cadwelds which have lower capacities than the reinforcing steel are only slightly weaker than the reinforcing steel (less than a 10% reduction compared to the mean reinforcing steel strength). This slight reduction has no effect unless the low capacity cadweld happens to occur at the location of peak stress in the rebar (i.e. across a major crack). Away from the crack, the stress in the rebar decreases rapidly to less than the minimum cadweld test value. Since most of the cadwelds develop higher strengths than the rebars, the effect of these cadwelds across a crack would be to increase the median capacity if the overall structure capacity were based on the strength of the cadwelds. This is considered incorrect, however, since the cadwelds are staggered and are not necessarily expected to occur at locations of peak stress in the cracked containment. The effect of a few randomly distributed cadwelds with slightly less than mean rebar strength is considered negligible and is accounted for in the variabilities associated with the various structural failure modes.

Action: None