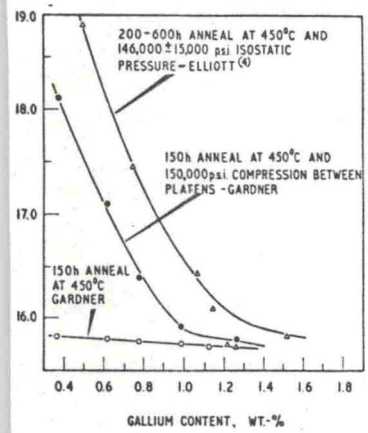
ıe unknown reasons the
:rably higher.



6-E

on Hardness

150,000 lb/in^2 Pressure
loys.

of a pressure of 150,000
ıeir density-composition
-E. As gallium content
density increases at a
a phase formation. Simi-
and Gschneidner[4] gener-
r a substantial vertical
pressures were nearly the
e difference between the
difference between iso-
platens.

ıs as a consequence of
ıan 1.2 wt.-% Ga, raises
ıa-delta phase mixtures
se to annealing tempera-
room temperature. Since
s in cored alloys, its

degree of stability was expected to be lower than homogenized alloys. Therefore the stability of alpha-delta phase mixtures was studied in both alloy conditions.

Anneal Time, h	Density, g/c.c.				
	As-Rolled	150°C	200°C	250°C	300°C
0.167	16.08	16.05	15.92	15.86	15.75
6.0	16.08	16.05	15.91	15.86	15.75
24	16.19	16.12	16.02	15.84	15.75

Table 6-III Effect of Anneal Time and Temperature on Density at Room Temperature in 94% Cold Rolled Plutonium-0.94 wt.-% Gallium Alloy

3.4.3 Cored alloy - Cored Pu-0.94 wt.-% Ga alloy having a density of 15.75 g/c.c., was cold rolled to 94% reduction forming approximately 10% alpha phase. It was then annealed for times up to 24 h at temperatures up to 300°C, Table 6-III. The density changes indicate that a 10 min anneal was sufficient to produce the maximum phase transformation that can occur at any given temperature. In addition, densities after the 150, 200 and 250°C anneals indicate that either beta and gamma phases were being retained to room temperature or the amount of transformation of alpha phase to delta phase was proportional to anneal temperature. To test the hypothesis of retention of beta and gamma, cored 0.37 wt.-% Ga alloy was compressed with 150,000 lb/in^2 at room temperature. A density of 18.20 g/c.c. was obtained indicating that approximately 60% alpha phase was present. During a 10 min anneal at 200°C in the beta phase region, the density decreased to 16.27 g/c.c. which corresponds to the presence of approximately 24% beta phase after the anneal. During phase identification studies using x-ray diffraction, no beta phase could be detected. A similar study after a 250°C anneal to form gamma phase indicated that gamma phase was not being retained to room temperature. Since beta and gamma phases were not retained to room temperature after appropriate anneals of alpha-delta phase mixtures, it was decided to perform additional annealing