Question 1: Do the figures shown in Section 4-8 need to be strictly followed or are manufacturers allowed to make adaptations?
Answer 1: Fig. 4-8 does not represent details of a welded ASME throat tap nozzle flow section assembly. The figure is diagrammatic as noted. The shape of the ellipse, location & size of the throat pressure tap are all important for a throat tap nozzle, this is shown in Fig. 4-4. For nozzle assemblies built with a diffuser cone, the throat of the nozzle should be extended by d/2 as shown in Fig. 4-7(a). Note that Fig. 4-7 (a) has a mechanically assembled diffuser cone so the recommendation is to make the diffuser cone throat a slightly larger diameter to avoid having the cone protrude in the flow path because of machining/alignment tolerances. When the nozzle and the throat section of the diffuser cone are machined as one assembly, the diameter of the throat extension should be the same as the throat diameter.

Question 2: Using figure 4-4, as an example, can the position of the pressure tap boreholes be modified, as long as the position of the throat tapping is kept?
Answer 2: Yes, the location of the throat tap in the flow path, the throat tap size, and the throat tap bore extension are all important to get the expected flow coefficient. However, the routing of the throat tap sensing hole to the external pipe wall is dependent on the nozzle assembly design and can be different from what is shown in Fig.4-4.

Question 3: Are the adapted designs of primary flow sections and throat tap nozzles allowed to be used in guarantee tests?
Answer 3: Yes, manufacturers have different welded mechanical designs of throat tap nozzle assemblies that successfully meet the calibration criteria in para. 4-8.15.