Conference Call on NCSX Fiducials – 29 March 05

Participants: K. Bowling; N. Horton; B. Nelson; P. Djorjievich; L. Sutton; N. Horton; P. Heitzenroeder; D. Williamson

- MTM will reference the machining to the (4) tooling balls located on the casting legs shown on the drawings submitted last week.
  - MTM will most likely use only 3 of the 4 tooling balls since 3 describes a plane; the 4th may be discarded, or a plane will be fit through all four targets.
  - NCSX will only be able to see 2 at a time in most situations, so NCSX still needs the fiducials around the flange edges.
  - 18-20 Fiducials for NCSX use will be located on the flange edges and will be machined in as a final operation.
    - Flats will be machined that are perpendicular to the flange face.
    - ¼" precision holes will be provided at each location.
- Scanco data is used primarily to indicate adequacy of the padding for machining.
- MTM performs initial machining alignment from cast-in datums; after that point the Scanco data taken at MTK is legacy info.
- MTM needs a point grid to verify that both the cast and machined surfaces are within spec.
- Scanco's measurement tolerances (in the range of .002-.003 inches) are not as fine as MTM's (0.0002 inches) but Scanco's process may be more efficient. It may be difficult to get hole position verification, though, so MTM is not sure if it's worthwhile to use Scanco.
  - Spec calls for 2" grid on machined surfaces and 4" grid on as cast surfaces, so Scanco's process, which measures on a fine grid, is more than MTM needs to meet spec requirements.
  - NCSX can benefit from an as-built Pro E model that could be made using data taken at MTM if they decide to use Scanco.
  - If MTM decides to use Scanco, we will coordinate our Scanco activities. If the NCSX activities require work beyond their needs, NCSX will have to fund that portion.
  - We will have a follow up discussion after both MTM and NCSX discusse options further with Scanco.

- ***NCSX Concurs*** –
  - MTM can locate lifting and tooling holes on the ends of the legs as shown in their concept drawing.
  - Fiducial concept as described is acceptable.

Signature Not Verified Brad Nelson Digitally signed by Brad Nelson DN: cn=Brad Nelson, o=ORNL, ou=Fusion Energy Division, c=US Date: 2005.03.29 13:18:47 -05'00' Brad Nelson Date: 3/29/05

Phil Heitzenroeder 2005.03.30 15:04:04 -05'00' Phil Heitzenroeder Date: 3/29/05

David Williamson 2005.03.29 11:08:16 -05'00' David Williamson Date: 3/29/05