PPPL ENGINEERING CHANGE NOTICE (ECN) ECN # 4965R1

COGNIZANT INDIVIDUAL: D. Williamson

ECN TITLE: MCWF Revisions Prior to Start of Type-C Machining

ASSOCIATED ECP: 026

CC/WP/Job: 1403 **AREA OR PROJECT: NCSX**

LIMITATION OF SCOPE - NOTE: A Work Planning Form is NOT required if the total change to be accomplished (ENG-032):

- Is not large or complex or does not represent a new installation into a usable space
- Does not have a significant ES&H impact
- Does not involve tritium or other radioactive contaminated or activated equipment
- Does not impact multiple projects, systems, or groups

OR does not change the scope or intent of the original design.

Responsible Line Manager CONCURRENCE: Signature Not Verified Brad Nelson Digitally signed by Brad Nelson DN: cn=Brad Nelson, o=ORNL, ou=Fusion Energy Division, c=US Date: 2005.05.02 08:59:58 -04'00'

(Signature indicates that no Work Planning form is required.)

If non-concurrence or associated with a work planning form, enter the WP Number:

DRAWING(S) AFFECTED NUMBER:	NEW Revision	TITLE
SE141-114	3	Modular coil winding form, Type-A
SE141-115	3	Modular coil winding form, Type-B
SE141-116	4	Modular coil winding form, Type-C

Continued on Back

DESCRIPTION OF CHANGE: (State Drawing No., Zone/Group, or List Attachments)

General revision to incorporate comments and deviation requests prior to start of machining. See attachment, mtm_questions_0503_r3x.xls, for detailed description.

Rev 1 replaced mtm_questions_0503_r2x.xls with mtm_questions_0503_r3x.xls.

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REASON FOR CHANGE:

Thirteen change items, identified in the attachment, provide clarification, consistency between model and drawing, or machining efficiency with cost savings.

Three change items (#3, 11, 16) were identified through recent design and fabrication experience and may be perceived as adding costs to the machining operations.

ENGINEERING CHANGE PROPOSAL: None **DATE: 3/9/05**

COGNIZANT INDIVIDUAL MAKING THE CHANGE: D. Williamson

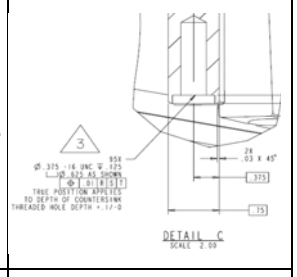
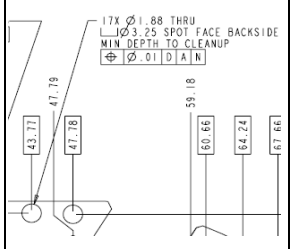
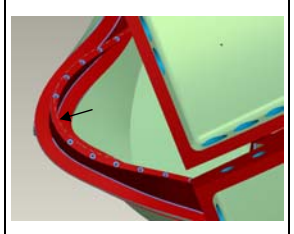
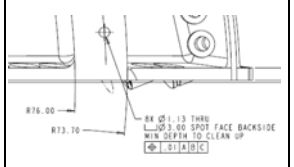
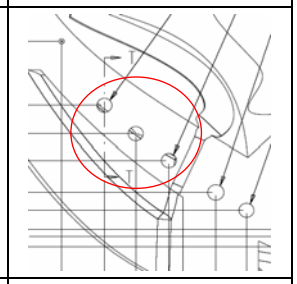
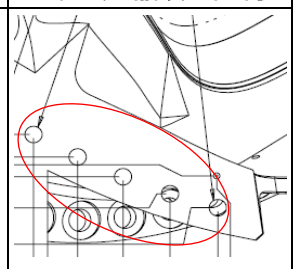
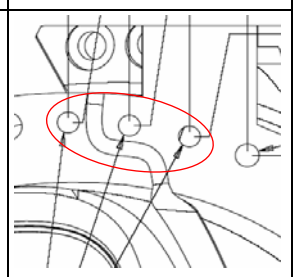
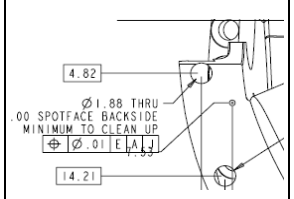
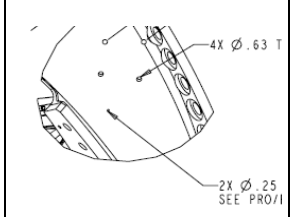
David Williamson 2005.04.28 08:18:20 -04'00'

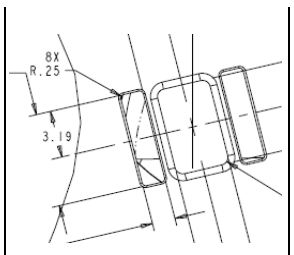
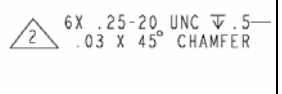
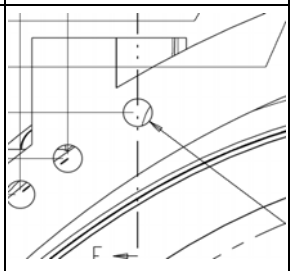
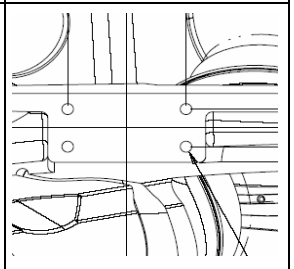
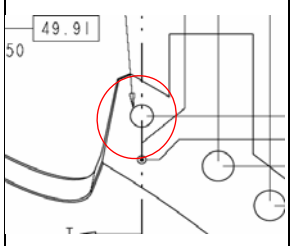
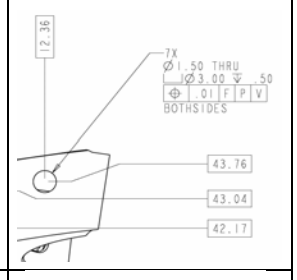
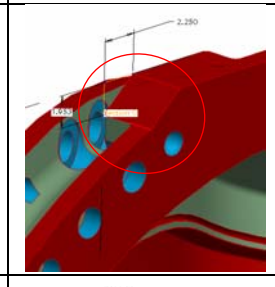
RESONSIBLE LINE MANAGER: B. Nelson

? Signature Not Verified Brad Nelson

Digitally signed by Brad Nelson
DN: cn=Brad Nelson, o=ORNL, ou=Fusion Energy Division, c=US
Date: 2005.05.02 08:59:35 -04'00'

MCWF Type-ABC Model / Drawing Changes

Item	Drawing	Sheet	Quad	Issue	Resolution	Justification of change	Sketch
1	SE141-114R2, SE141-115R2, SE141-116R3	2	B5	Depth of tapped hole is 1.125, >2x dia.	Change to 0.75-in thread depth. Increase depth of cbore to .1875-in.	This still provides 2D of thread engagement which is standard practice. The c'bore depth will assure proper engagement of the new coil clamps.	
2	SE141-114R2, SE141-115R2, SE141-116R3	4	G6	17X 1.88 THRU W/ 3.25 BACK SPOTFACE is not standard cutter.	Change all 1.88 DIA THRU to 3 DIA BACK SPOTFACE.	This allows a standard cutter to be used and will expedite manufacture.	
3	SE141-116R3	2	C7	Tapped hole like that shown in Item #1 was not usable when design included spherical seats. Now, seats are not part of design and TRC experience indicates a need to add an additional hole in the "winding valley".	Add hole to pattern at s=.515625.	(Described in Issue column)	
4	SE141-116R3	3	F4	8X 1.13 DIA W/ 3 BACK SPOTFACE is not standard cutter.	Change all 1.13 DIA THRU to 2.38 DIA BACK SPOTFACE.	This allows a standard cutter to be used and will expedite manufacture.	
5	SE141-116R3	4	C5	3X 1.13 DIA W/ 2.38 DIA BACK SPOTFACE was 3.38 DIA in previous revision of drawing.	Already corrected in Rev-3.	(Not required - see Resolution column)	
6	SE141-116R3	4	E6	3X 1.375-6UNC THRU callout on drawing vs 1.375-dia thru hole in the CAD model.	Drawing callout is correct.	(Not required - see Resolution column)	
7	SE141-116R3	4	E6	5X 1.38-6UNC THRU is not correct. See flange b-c figure.	Change to 5X 1.88 DIA THRU W/ 3 BACK SPOTFACE	Corrected error on original drawing and added a back spotface to assure flat surface.	
8	SE141-116R3	5	F6	3X 1.375-6UNC THRU callout on drawing vs 1.375-dia thru hole in the CAD model.	Drawing callout is correct.	(Not required - see Resolution column)	
9	SE141-116R3	5	E8	Drawing calls out 1.88 DIA THRU W/ 3 BACK SPOTFACE, CAD model has 3.25 DIA spotface.	Drawing callout is correct. Change CAD model to match.	CAD model has to be changed to match pdf drawing.	
10	SE141-116R3	9	C7	CAD model of .25 DIA T/C hole has flat bottom. Drill end is OK.	Change CAD model to show drill end.	Being changed to show drill end so a flat bottomed hole, which is more difficult to make, is not implied.	

11	SE141-114R2, SE141-115R2, SE141-116R3	7,8	C8	6X tapped holes in leads base are suppressed in CAD model, not shown on drawing.	Add holes callout to drawing.	TRC experience identified need to have holes instead of studs for precise alignment of terminal and jumpers.	
12	SE141-114R2	4	B4	6X .25-20UNC callout on drawing was 6X .20 in previous revision of drawing.	Already corrected in Rev-2.	(Not required - see Resolution column)	
13	SE141-114R2	5	F6	1.88 DIA THRU W/ 3 BACK SPOTFACE callout on drawing, CAD model does not have back spotface.	Drawing callout is correct. Back spotface will be indicated in CAD model.	Need to correct CAD model to agree with drawing.	
14	SE141-115R2	3	G7	Inboard mounting surface is flat and perpendicular to datum-f, not cylindrical as may be implied by 17-in radius dimension.	Add drawing note.	Needed to clarify drawing.	
15	SE141-115R2	4	H6	Drawing calls out 1.38-6UNC THRU vs CAD model w/ 3-dia back spotface.	Drawing callout is correct.	Need to correct CAD model to agree with drawing.	
16	SE141-115R2	6	E6	7X 1.50 THRU HOLES at poloidal break does not match other winding forms.	Change to 7X 1.625 DIA THRU.	To correct drawing error.	
17	SE141-115R2	6	G3	TF interference check indicates need to chamfer edge of inboard support.	Add chamfer to model and drawing as shown.	Adding chamfer to MCWF is the easiest way to eliminate TF coil interference.	
18	SE141-114R2, SE141-115R2, SE141-116R3	7, 8	B6	Mounting holes for lead blocks were omitted pending completion of TRC.	Add 4X 3/8-16UNC x .75 DP tapped hole with 1.5-DIA x .13 MIN counterbore to each part.	Necessary for mounting / alignment of lead blocks. Same machining setup as rectangular openings for the leads; not possible to do at PPPL shops.