

Setting Up RT Percentages for Each Spec

Random Radiography requirements involve testing a percentage of each welder’s welds on a project. For example, ASME Code B31.3, “Process Piping” requires five percent random radiography as the default inspection requirement. The five percent figure is applied to each “lot” of welds. If a defect is found, additional welds (“tracers” or “progressives”) from the same lot are tested and depending on the results, it may be necessary to test every weld in the lot.

This means that it is in the fabricator’s interest to limit lot sizes. In particular, it is desirable that all welds in any given lot remain in the fab shop until the lot has passed NDE requirements. At the same time, the fabricator does not want an excessive number of lots, because even at 5% RT, every lot must have at least one weld tested, even if the lot consists of a single weld.

As of version 8-683, AcornPipe can help with assigning welding lots. It is assumed that each lot is associated with a specific welder and general weld type. Thus any given lot may contain only branch welds, buttwelds, fillet welds, or socket welds. It may or may not be permissible to mix welds from different pipe specs in the same lot. To accommodate this, AcornPipe uses the “Spec Group” or SGroup parameter, which is entered via the AcornRT editor, see below. AcornRT allows editing and review of NDE requirements for all specs in a project at one time. If the SGroup column is left empty, all welds in the project will belong to the same SGroup, meaning that welds from any spec are allowed to coexist in the same lot. If all SGroups are different (as would be the case if each SGroup were the same as the corresponding spec), each lot will contain only welds from one pipe spec. If it is permissible for certain specs to coexist in a weld lot, those specs can be assigned the same SGroup.

SPEC	SGROUP	RT%				MT%				LPI%			
		BR	BW	FW	SW	BR	BW	FW	SW	BR	BW	FW	SW
A021-06	A021	0	5	0	0	0	0	0	0	0	0	0	0
A021-30	A021	0	5	0	0	0	0	0	0	0	0	0	0
A021-50	A021	0	5	0	0	0	0	0	0	0	0	0	0
A022-50	A021	0	5	0	0	0	0	0	0	0	0	0	0
A165-01	A021	0	5	0	0	0	0	0	0	0	0	0	0
A525-09	A021	0	5	0	0	0	0	0	0	0	0	0	0
B021-01	BSERIES	0	5	0	0	0	0	0	0	0	0	0	0
B165-14	BSERIES	0	5	0	0	0	0	0	0	0	0	0	0
B445-01	BSERIES	0	5	0	0	0	0	0	0	0	0	0	0
D021-06	BSERIES	0	5	0	0	0	0	0	0	0	0	0	0

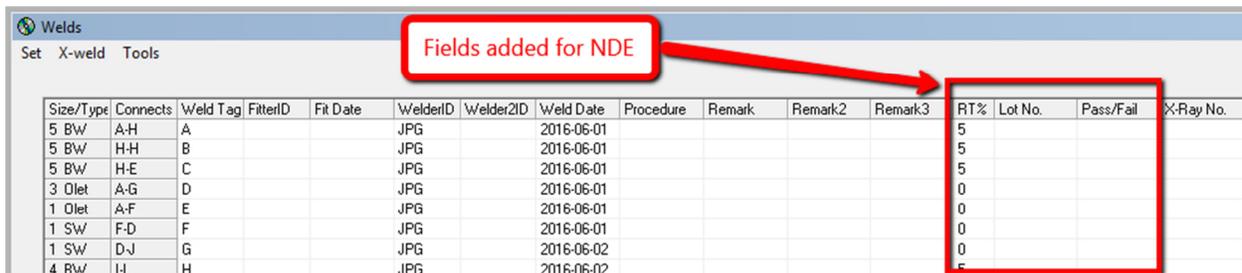
It is important to complete the above table using the AcornRT editor BEFORE assigning any lot numbers.

Preparing the Weld Table to Include Lot Numbers

To support the new welding lot assignment features, several new fields were added to the weld table. Because of this, if you want to try out the new features on a job that was created using an earlier version of AcornPipe than 8-683, you will need to delete and recreate the weld table and its index file. The weld table is in a file named Fab_Welds<JJJ>.dbf, where <JJJ> is the job number. The index file is the corresponding .cdx file. Preferably at a time when no other users are working in the job, delete the two files and then rebuild the table by running a batch resave of all the fabrication drawings in the job.

Assigning Lot Numbers

Display the first fabrication drawing for which lot numbers are to be assigned. In support of the lot assignment feature, three new columns now appear in the weld editing window, reached from a fabrication drawing by pressing Ctrl-T. If one or more of these columns is missing, select Set/Revert to default widths and headers.



The screenshot shows a table with the following columns: Size/Type, Connects, Weld Tag, FilterID, Fit Date, WelderID, Welder2ID, Weld Date, Procedure, Remark, Remark2, Remark3, RT%, Lot No., Pass/Fail, and X-Ray No. The RT%, Lot No., and Pass/Fail columns are highlighted with a red box, and a red arrow points to them from a label 'Fields added for NDE'.

Size/Type	Connects	Weld Tag	FilterID	Fit Date	WelderID	Welder2ID	Weld Date	Procedure	Remark	Remark2	Remark3	RT%	Lot No.	Pass/Fail	X-Ray No.
5 BW	A-H	A			JPG		2016-06-01					5			
5 BW	H-H	B			JPG		2016-06-01					5			
5 BW	H-E	C			JPG		2016-06-01					5			
3 Olet	A-G	D			JPG		2016-06-01					0			
1 Olet	A-F	E			JPG		2016-06-01					0			
1 SW	F-D	F			JPG		2016-06-01					0			
1 SW	D-J	G			JPG		2016-06-02					0			
4 RW	I-I	H			JPG		2016-06-02					0			

The RT% column is just for information and is not editable. It shows the percent RT required for each weld according to the spec. The Lot No. column is normally filled in by the program. The Test/Pass/Fail column is filled in by the user, by entering the letter T, P or F. The existing column INSP1 is used to store the X-Ray number.

Before a welding lot number can be assigned to a weld, it must already have a WelderID and Weld Date. If some welds have not been done yet, you can still assign lot numbers to those welds that have been completed.

Assigning lot numbers is easy; you simply select Tools/Assign Lot Numbers. This will assign lot numbers to any Shop welds in the current fabrication drawing that have been assigned a WelderID and a Weld Date. For example, if no lot numbers exist so far in this project, the program will assign lot numbers as follows:

Size/Type	Connects	Weld Tag	FitterID	Fit Date	WelderID	Welder2ID	Weld Date	Procedure	Remark	Remark2	Remark3	RT%	Lot/No.	Pass/Fail	X-Ray/No.
5 BW	A-H	A			JPG		2016-06-01					5	JPG-001		
5 BW	HH	B			JPG		2016-06-01					5	JPG-001		
5 BW	H-E	C			JPG		2016-06-01					5	JPG-001		
3 Olet	A-G	D			JPG		2016-06-01					0	JPG-002		
1 Olet	A-F	E			JPG		2016-06-01					0	JPG-002		
1 Sw	F-D	F			JPG		2016-06-01					0	JPG-003		
1 Sw	D-J	G			JPG		2016-06-02					0	JPG-003		
4 BW	I-H	H			JPG		2016-06-02					5	JPG-001		

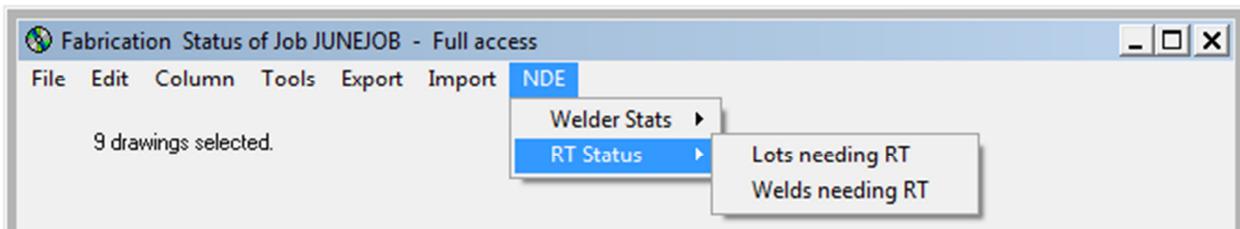
Rules on Assigning Lot Numbers:

Before a weld can be assigned a lot number, it must have at minimum a WelderID and a weld date. If welding procedure is to be considered in assigning lot numbers, then the procedure also needs to be entered before lot numbers are assigned.

AcornPipe assigns a maximum of 20 welds in any lot. If there is an existing partially-filled lot, more welds will be added to it, provided no weld in the lot has an entry under TEST/PASS/FAIL or an X-Ray number. There is no prohibition on entries under TEST/PASS/FAIL or X-Ray No. for a weld in a partially-filled lot, but be aware that this closes out the lot to any additional welds.

Currently, lot numbers can still be edited by the user. This should not be done without some special reason.

There are three reports to help with NDE. They are reached from Fabrication Status via the NDE menu.



The exact form of these reports has not been finalized, but their aims are as follows:

RT Status/Lots needing RT

This report lists lots for which insufficient RT has been scheduled. It is designed to help the user specify which welds are to be X-Rayed. The user designates welds for RT from the drawing by placing TEST in the PASS/FAIL column. TEST is replaced by PASS or FAIL once the result is known. These entries are made by pressing the T, P or F keys.

RT Status/Welds needing RT

This report lists welds which have been designated for RT, but which do not yet have a result.

Welder Stats

This report is organized on the basis of weld genre and percentage RT required. It lists the number of welds done by each welder, along with the number X-Rayed, and the percentage rejected.

Feedback

Feedback and suggestions are invited on all these reports and on any others that may be required. Column widths will be adjusted later. Send your suggestions to AcornPipe@gmail.com.