

IMPLEMENTATION OF A LEAN NAFEMS QSS001 COMPLIANT QA SYSTEM

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ABSTRACT

AWE is contracted to deliver a safe, secure and effective weapon stockpile for the UK's nuclear deterrent requirements. Numerical simulation is an essential tool in certifying the safety of weapons and it is therefore paramount that the highest quality assurance (QA) standards are applied to finite element simulations at AWE. AWE's engineering analysis group have been registered against NAFEMS QSS:001 for >12 years, however, the QA system was overly bureaucratic and was not designed to be used in a modern team working environment. A new, lean, QA system has been implemented that is controlled via a custom automated workflow using Siemens TeamCenter Engineering software. All reviews are undertaken electronically and compliance with our internal standards is maintained via an automated checklist system. The checklist is based upon the experience of analysts and includes: mesh convergence tests, structural and thermal contacts tests, explicit no-load tests, etc. A method has been designed for giving customers a quantitative assessment of confidence in analysis results. All material models and FE models designed for re-use in future analyses are fully configuration controlled and documented. Bespoke functional and regression tests are undertaken on analysis software and a codes database is used to manage the testing and release of codes on different platforms and operating systems.