

## **Field Length Issue**

The current NMMSS is based on the old IBM card layout and has a fixed length for each field. It is being proposed by NAC International that the new NMMSS will use a variable length field. This gives greater flexibility. It is a feature of XML. Changing to XML format (i.e., flexible length) fields instead of fixed length fields could cause licensees to need to modify MC&A software that they use in communicating electronically with NMMSS. This would be a cost burden. Some changes to licensee MC&A software may be required by the changes in tracking of foreign obligations on nuclear materials. NRC could ask DOE to retain fixed length fields for NRC licensees. However, this could make it difficult for NRC licensees to communicate transaction data electronically with DOE facilities that have switched to XML format. NAC International has provided the following explanation of XML.

## **What is XML and why is it being considered for use in the NMMSS Upgrade?**

The objectives of the NMMSS Upgrade include designing the system to be flexible and moving to a vendor-supported platform. The use of XML is consistent with these objectives and will place NMMSS in a position to continue to meet the needs of the U.S. Government in the future. In addition to the addition of this mode of information exchange, the NMMSS Upgrade will also include a modified text file formats like those currently available for data submission.

XML (eXtensible Markup Language) is a method for organizing structured data in a text file. XML is becoming popular due in large part to its flexibility. Transaction, Inventory and Material Balance data that is submitted to NMMSS is structured data. The data is formatted to meet a specification that NMMSS and other recipients can interpret. XML is a set of rules, guidelines or conventions for designing text formats for data in a way that makes the generation and interpretation of files (by a computer) easy, that are unambiguous, and that avoid common pitfalls (such as lack of extensibility, lack of support for internationalization/localization, and platform-dependency). In other words, XML is a more flexible format than a standard text format.

XML makes use of *tags* (words bracketed by '<' and '>') and *attributes* (of the form name = "value"). XML uses the tags only to delimit pieces of data, and leaves the interpretation of the data completely to the application that reads it. In the Upgrade, a format and tag definition applicable to nuclear materials accounting will be published and available to facilities like the electronic data submission formats are currently published.

XML is text and XML files are text files, but the files are not meant to be read by humans. Since they are text files experts (such as Software Engineers) can more easily *debug* applications, and in emergencies, they can use a simple text editor to fix a broken XML file.

XML is license-free, platform-independent and well-supported. In fact, XML is being touted by industry experts as being the upcoming standard for data exchange on the Internet. By choosing XML as the basis for a project, you buy into a large and growing community of tools (one of which may already do what you need!) and engineers experienced in the technology. Opting for XML is a bit like choosing SQL for databases; you still have to build your own database and programs to manipulate it, but there are many tools available and many people that can help you. And since XML - a W3C technology (W3C is a World Wide Web standards body that oversees Web standards) - is license-free, meaning that you can build your own software around it without paying any fees to anyone. Additionally, the large and growing support means that you are also not tied to a single vendor to supply and support your XML tools. XML tools and utilities are available from a variety of sources to enable the user to take advantage of the capabilities of XML.