

30 Years of Experience in Safe Transportation of Nuclear Materials

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Summary

In April 2003, Nuclear Fuel Transport Co., Ltd. (NFT) marked the 30th anniversary of its founding. NFT was established in 1973 and in 1978, commenced SF transport to the reprocessing plant in Tokai-mura. And then, after making preparations to transport nuclear materials to the various facilities at the Nuclear Fuel Cycle Center in Rokkasho-mura, NFT successfully started transportation of LLW (low level waste) to Rokkasho-mura's LLW disposal center in 1992, domestic land transportation of HLW returned from overseas to the HLW storage center in 1995, domestic land transportation of natural hexafluoride delivered from overseas to the uranium enrichment plant in 1996, and transportation of SF to the reprocessing plant in 2000. NFT has realized an annual SF transportation capacity of 300 MTU and is currently making great company wide efforts to meet the Rokkasho Reprocessing Plant's future SF annual reprocessing capacity of 800MTU. At the end of FY2003, NFT had successfully transported 560 casks (about 1,730 MTU) of SF in more than 200 voyages in total, about 160,000 drums of LLW in around 100 voyages in total.

This paper introduces the record of safe transport and its experience over the past 30 years and prospect for future transport business.

1. Transport Records

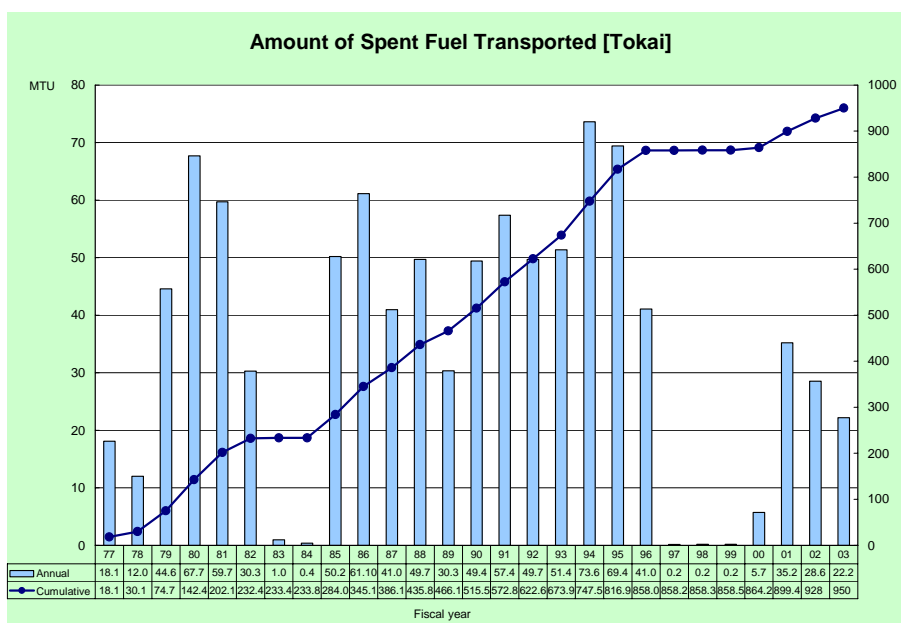
1.1 SF Transport

a. Transport to the JNC Reprocessing Facility

Around a quarter century has passed since NFT started SF transport to the PNC (current JNC) Reprocessing Facility in 1978. The accumulated transport volume is 950MTU of SF (421 casks) at the end of FY2003.

The accumulated number and volume of transports may not seem to be so large, however, the safety performance and technology accumulated through this transport has been put to use in SF transport to Rokkasho Reprocessing Facility, for which commercial transportation commenced in December 2000.

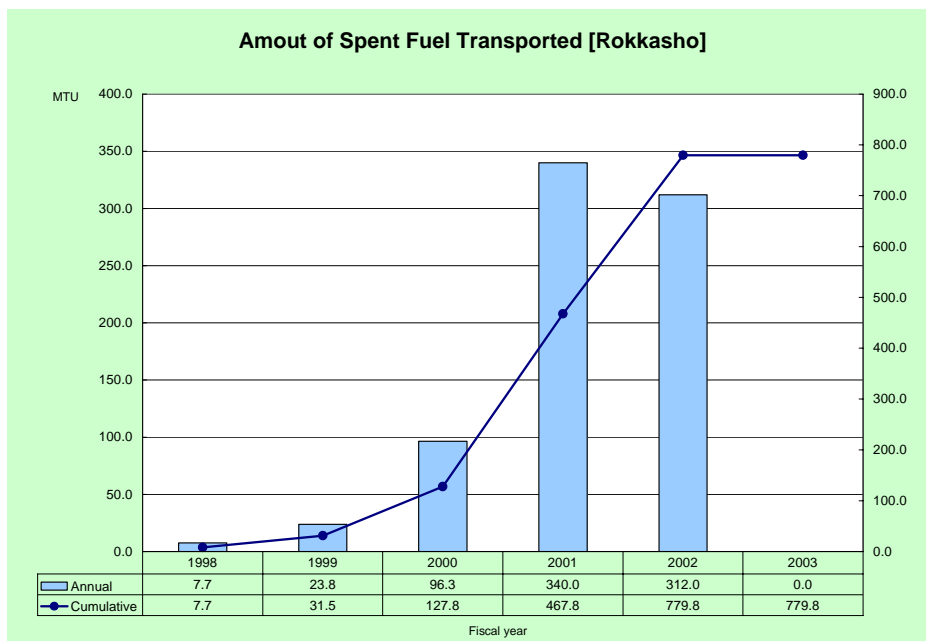
SF transportation to the JNC Facility will be concluded by the end of March 2005. The transportation of SF arising from JNC's Fugen, for which operation was terminated in March 2003, will continue for the time being.



b. Transport to the SF Storage Pool at the JNFL Reprocessing Plant

After a safety agreement was completed in the summer of 1998 between JNFL, Aomori Pref, Rokkasho-mura and adjoining cities and towns, NFT implemented the long-awaited first trial transport (out of three trials in total) to the facility in October 1998. The second and third trials were successfully conducted in September and October, respectively, of the following year. However, commercial transport was delayed until December 2000, two years from the first trial. This was due to various problems that occurred during the period, such as data falsification relating to NFT transport packaging, MOX fuel fabrication data falsification by BNFL and JCO's critical accident.

The accumulated transport volume for the Rokkasho Reprocessing Facility is about 780MTU of SF (139 casks) at the end of FY2003. In April 2001, NFT had attained 1,000MTU of SF transport in total for both the Tokai and Rokkasho Reprocessing Facilities.



1.2 LLW Transport to the JNFL Nuclear Fuel Cycle Center

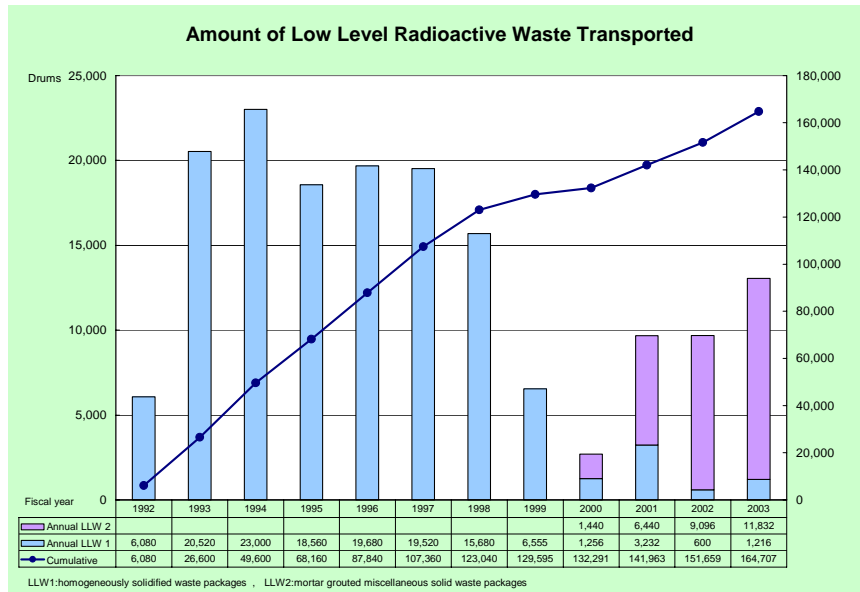
In late November of 1992, NFT conducted an overall transport rehearsal, which included from entry into and leave from the port, loading and unloading operations and land transportation. Confirming all the arrangements for its commercial operation, the first LLW transportation was implemented for two days, 8-9 December of the same year.

When Seiei-maru, the special vessel loading LLW, entered into Mutsu-Ogawara Port, several hundred protesters from opposition groups packed in tumult around Takahoko quay at the port. Despite the circumstances 1,480 drums of LLW from the Japan Atomic Power Company's Tokai No.2 Power Station were transported using 12 vehicles.

Since then, as participation in protesting by opposition groups has been reducing gradually, the transport operation has been smoothly implemented. NFT achieved transport of a total of 50,000 drums of LLW in 1995 and 100,000 drums in 1997.

From October 2000, in addition to the transport of low level homogeneous solid wastes (for the first disposal site), NFT started to transport drums of miscellaneous solid wastes (for the second disposal site), which are filled with mortar-grouted metallic solid wastes.

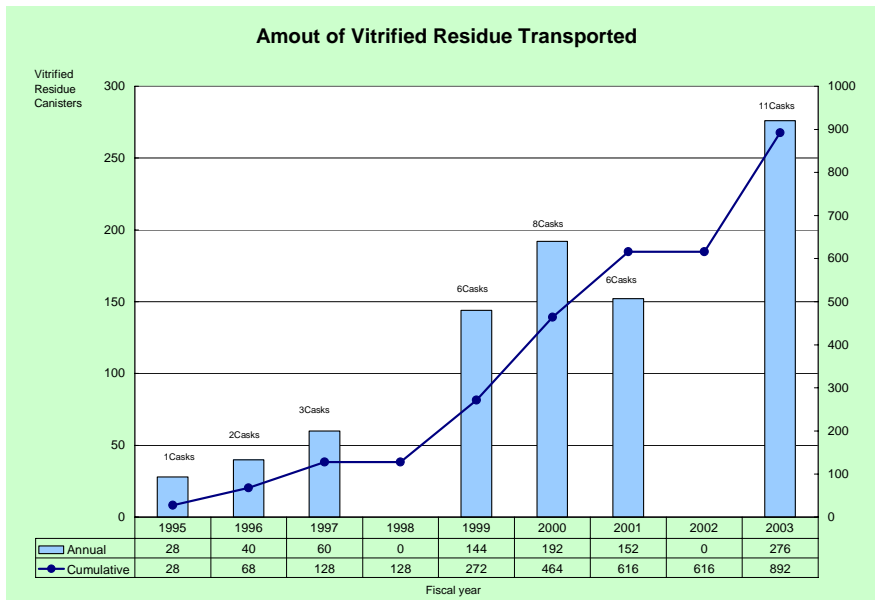
At the end of FY2003, the accumulated transport volume was 164,707 drums, of which 28,808 drums were of the heavier solid wastes.



1.3 Domestic land transportation of HLW returned from overseas to the JNFL HLW storage center

The sea transport of vitrified residues (HLW) returned from France's COGEMA to Japan is implemented using PNTL's vessel. The loading and unloading operations after the vessel entered into Mutsu-ogawara port and the land transport to the HLW storage center at Rokkasho-mura are implemented by NFT.

The first shipment was carried out in April 1995 and subsequently has been conducted another five times to date. At the end of FY 2003, transport of 892 canisters in 37 transport flasks was carried out in total.

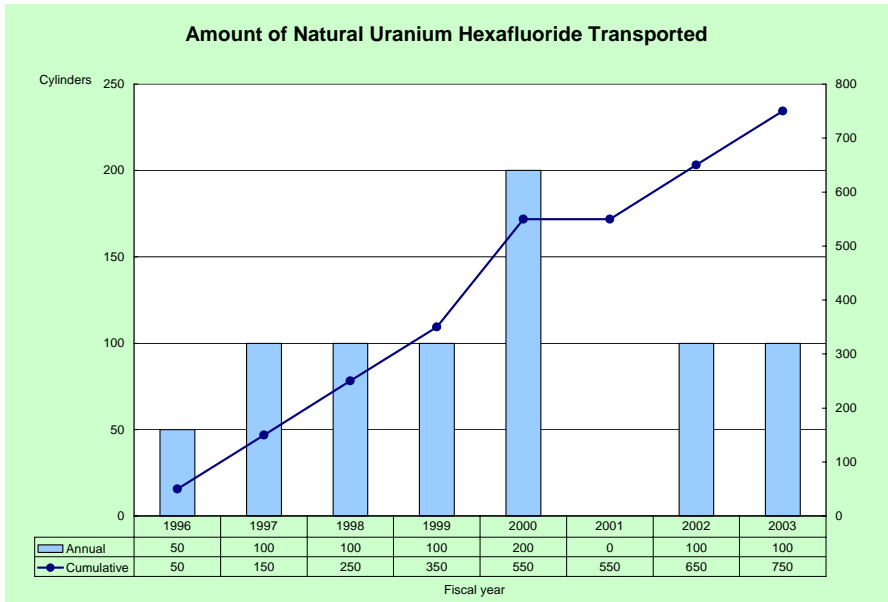


1.4 Domestic land transportation of natural hexafluoride to the JNFL Uranium Enrichment Plant

Since 1991, Japanese utility companies have carried out the transportation of natural hexafluoride (UF6) procured overseas by themselves. This includes both transportation by sea from overseas reconversion plants to the Ohi berth, and transportation by land from the Ohi berth to the Rokkasho Uranium Enrichment Plant.

In September 1996, new sea transportation routes from overseas directly to Mutsu-Ogawara port were added to increase the efficiency of transport operations. This transportation was commissioned to JNFL, as the prime contractor, by the Japanese utility companies. NFT, as a subcontractor of JNFL, was entrusted with the land transportation from the port to the uranium enrichment plant.

In September 1996, the first shipment was conducted. It took three days to complete the operations at Mutsu-Ogawara port. During the operations, 50 cylinders were unloaded from the chartered vessel, Eastern Hero (owned by Toko-Kaiun, Ltd.) and then they were safely transported to the uranium enrichment plant. Opposition groups caused almost no disturbance and the transportation was completed calmly. At the end of FY2003, 750 cylinders were transported in 8 voyages.



2. Aiming to Become a Transportation Expert : Establishment and Reinforcement of a Safety Transport Framework

2.1 Acquisition of Approval as a “Designated Transporter”

In November 1989, NFT was legally recognized as a “Designated Transporter” by the competent authorities. This enabled NFT to file applications by themselves or together with the nuclear power based utility companies, for transport relevant approvals, such as approval of package design and packaging, safety confirmation for transport packages and methods, among others. It also demonstrates that a framework has been established in which NFT can be entrusted with all the transport operations with overall responsibility.

2.2 Acquisition of ISO 9001 Certification

NFT, which specializes in nuclear transport and plays a part in nuclear fuel cycle, conducts business while positioning safe transport as its most important responsibility.

To this end, NFT strived to introduce the ISO9001 Quality Management System for the sake of enhancing and strengthening the quality and safety control of its transport operations and acquired certification from NKKKQA (Nippon Kaiji Kentei Quality Assurance) in September 1999, which demonstrates conformity to the system. At the time of certification renewal, conducted every three years, NFT also undertook an examination to change its certification to the new ISO9001 standard (2000 edition), which expands the scope of certification. In September 2002, NFT acquired the new certification which includes design and manufacture control relating to ship and loading facilities, in addition to the existing certification for transport schedule and service of nuclear fuel transport package, and design and manufacture control of nuclear fuel transport packaging.

2.3 Improvement of Corporate Culture and Enhancement of Moral

In order to prevent a recurrence of the NFT cask production data falsification problem revealed in October 1998, NFT developed various activities to improve its corporate culture and enhance its moral, such as revision of the management concept, establishment of a business behavior charter, promotion of a campaign to ensure proper corporate ethics, reinforcement of in-house communication and participation in NS Net, and enhancing and strengthening the quality management system by acquiring ISO certification.

3. Approach to New Business

It is anticipated that transport operations involving the nuclear fuel cycle business will continue to expand in line with its development. NFT will, therefore, strive to enhance and strengthen its technology, facility and structure in order to appropriately address medium and long-term issues such as transport of MOX fuel, transport of SF to interim storage facilities, transport of nuclear wastes to be generated from dismantling of NNPs and transport of intermediate and low level radioactive wastes to be returned from overseas.

Taking utility companies' wishes into account and cooperating with them, NFT deals with the national and local competent authorities in regards to various transport relevant approvals and regulations.

By acting as a subcontractor for the utility companies, NFT has been playing a central role in investigating and analyzing the trends and movements of expert meetings in international organizations such as IAEA and IMO. Along these lines NFT is also establishing an organizational structure to address international issues more appropriately.

4. Conclusion

Over the 30 years since its establishment — from when it was just a transport agent company called NTS to becoming defined as a “Designated Transporter” by the Nuclear Power Related Regulations in its current capacity as NFT — NFT has been establishing a transportation framework in which it has the main responsibility. The company has grown substantially, and in terms of employees, has increased from about 10 to over 100. As a company specializing in the transport of nuclear fuel materials, NFT is highly regarded both in Japan and all over the world for its safety transport technology and performance.

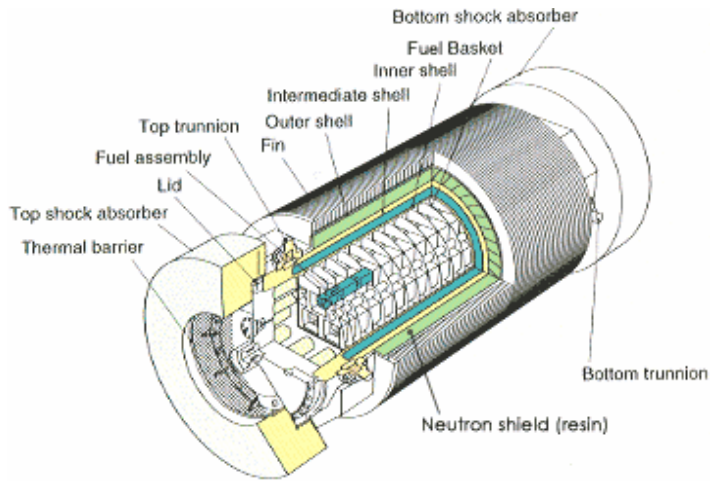
This growth can be attributed to the fact that NFT developed a medium term business plan in December 1986, which later became the company's operating policy and identified its business goal. Under the plan, NFT has been making a corporate-wide effort to reinforce its business base by utilizing its manpower, material and funds effectively.

The medium term business plan has been and will be updated and reviewed every year to cover the coming 5 years. In accordance with these business plans, NFT draws up yearly business plans to identify urgent important issues and ensure effective company operation.

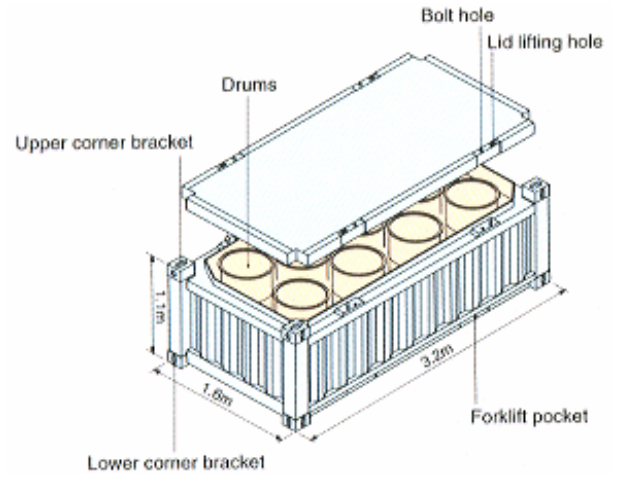
Regarding future objectives, NFT will be engaged in the following transportations in a safe and efficient manner while developing new transportation methods and packagings; 1) transportation of SF to an interim storage facility which is now under preparation, 2) transportation of nuclear wastes to be generated from dismantling of NPPs after 2010s, and 3) transportation of MOX fuel assemblies from the MOX fuel fabrication facility at Rokkasho to nuclear power plants, and MOX powder from the reprocessing plant at Rokkasho to the MOX fuel fabrication plant at Tokai.

Reference

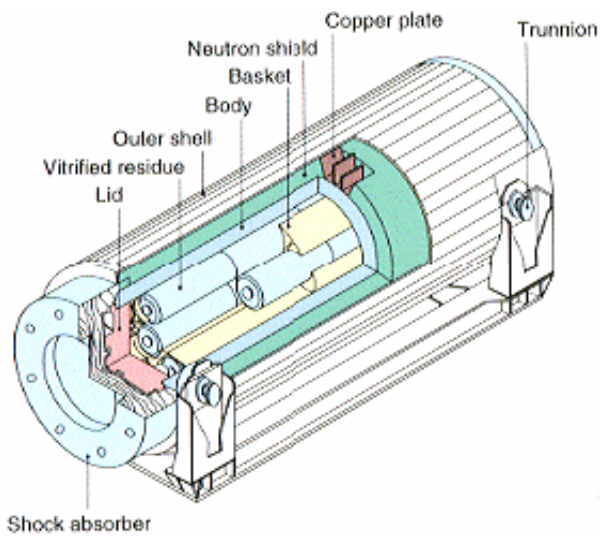
Typical Transport Packages



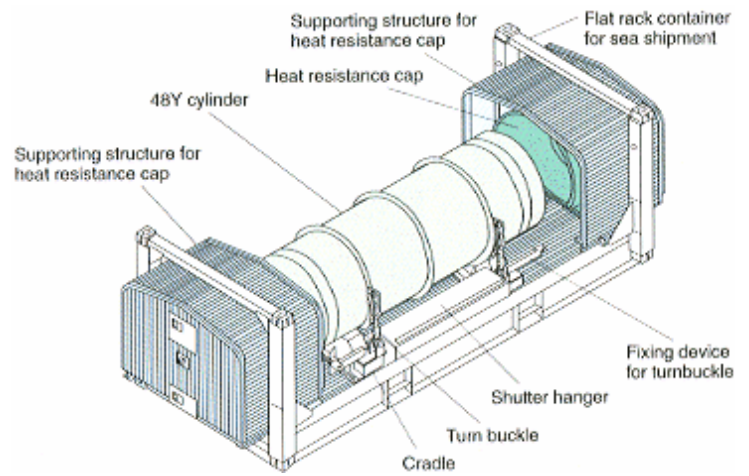
SF



LLW



HLW



UF6