**Nuclear Data Section**

**International Atomic Energy Agency**

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**Memo 4C-3/408 (Rev.)**

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**To:** Distribution

**From:** N. Otsuka

**Subject:** **Duplication of OKTAVIAN DDX in EXFOR (NRDC2016 A61)**

It has been known that there are several versions of double differential cross sections measured at the Intense 14 MeV Neutron Source Facility of Osaka University (OKTAVIAN). I extracted all EXFOR entries reporting differential cross sections from OKTAVIAN (see **Table 1**), and analysed the situation (excluding superseded data sets).

**Observations** (including some communications with Prof. Murata in 2009)**:**

* There are four independent series of experimental works (Ring I [1], Ring II [2], Cylindrical [3-9], Watanabe [10]). Prof. Murata explained that it was thought that the data sets from cylindrical samples are better than those from ring samples.
* Two data sets (before and after multiple scattering corrections) are often compiled in the pointer 1 and 2 of the subentry for double and energy differential cross sections. Prof. Murata suggested adoption of *uncorrected* ones because the nuclear data libraries used for the correction are too old. However the NEA Data Bank compiler proposed to compile both data sets. Finally Prof. Murata agreed to keep both data sets and leave the EXFOR users their usages.
* Two data sets (in laboratory and centre-of-mass systems) are often compiled for energy differential cross sections. We should keep only one of them according to our rule.
* Some data sets for “Cylindrical” measured under the Research Agreement with JAERI or IAEA are published twice in an INDC report and OKTAVIAN report. Prof. Murata recommended me to consider those published in the OKTAVIAN report as final. Therefore data sets compiled from INDC reports must be superseded by those from OKTAVIAN reports (except for Ge and As data sets).

Almost all duplications are understood by considering these situations. There are two versions for 14N double differential cross sections at 13.74 MeV and 120 deg, and there relation is not clear for me.

**Table 2** proposes the following three types of corrections based on this assessment:

1. Addition of SPSDD to the data sets published in INDC reports except for Ge and As data sets, because their final ones are always published in OKTAVIAN reports.
2. Deletion of data sets in the centre-of-mass system (for which the corresponding data set in the laboratory system is always available in the EXFOR entry).
3. Correction of REACTION SF3 for partial scattering data sets (SCT instead of INL).

Prof. Murata (the successor of Prof. Takahashi) submitted his data files in 2009 to improve these EXFOR entries systematically, and also answered to various questions with patience. I would like to express my special thanks to him in this opportunity.

Table 1: EXFOR entries reporting differential cross sections from OKTAVIAN

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Ring I** | **Ring II** | **Cylinder** | **Watanabe** |
| 2H | 21875 [1] |  |  |  |
| Li | 21875 [1] | 22076 [2] |  |  |
| 6Li |  |  | 22773 [4] |  |
| 7Li |  |  | 22773 [4] |  |
| 9Be | 21875 [1] | 22076 [2] | 22075 [3] |  |
| B |  | 22076 [2] |  |  |
| 10B |  |  | 22106 [4,5] |  |
| 11B |  |  | 22106 [4,5] |  |
| 12C | 21875 [1] |  | 22075 [3] |  |
| 14N |  | 22076 [2] |  |  |
| 16O | 21875 [1] |  | 22766 [4] |  |
| 19F | 21875 [1] |  | 22075 [3] |  |
| 23Na |  | 22076 [2] |  |  |
| Mg |  |  | 22075 [3] |  |
| 27Al | 21875 [1] |  | 22075 [3] |  |
| Si | 21875 [1] |  | 22075 [3] |  |
| S |  | 22076 [2] |  |  |
| Cl |  | 22076 [2] |  |  |
| Ca |  |  | 22155 [4,7] |  |
| Ti |  | 22076 [2] | 22186 [4,8] |  |
| 51V |  |  | 22075 [3] |  |
| Cr | 21875 [1] |  | 22075 [3] |  |
| 55Mn |  | 22076 [2] | 22155 [4,7] |  |
| Fe | 21875 [1] | 22076 [2] | 22766 [4] |  |
| 59Co |  |  | 22155 [4,7] |  |
| Ni | 21875 [1] |  | 22766 [4] |  |
| Cu | 21875 [1] |  | 22075 [3] |  |
| Ge |  |  | 22278 [9] |  |
| 75As |  |  | 22278 [9] |  |
| Zr |  | 22076 [2] | 22753 [4] |  |
| 93Nb | 21875 [1] |  | 22136 [4,6] |  |
| Mo | 21875 [1] |  | 22186 [4,8] |  |
| Ag |  |  |  | 22110 [10] |
| Cd |  |  |  | 22110 [10] |
| In |  |  |  | 22110 [10] |
| Sn |  |  | 22186 [4,8] | 22110 [10] |
| Sb |  |  | 22186 [4] | 22110 [10] |
| Te |  |  |  | 22110 [10] |
| 181Ta |  |  | 22136 [4,6] |  |
| W |  | 22076 [2] | 22155 [4,7] |  |
| Pb | 21875 [1] | 22076 [2] | 22075 [3] |  |
| 209Bi |  | 22076 [2] | 22106 [4,5] |  |

Table 2: Proposed corrections

|  |
| --- |
| **(1) Addition of SPSDD to data sets compiled form INDC reports** |
| 21875.008 STATUS Add (SPSDD,22076002) |
| 22106.010 STATUS Add (SPSDD,22106017) |
| 22106.011 STATUS Add (SPSDD,22106018) |
| 22106.012 STATUS Add (SPSDD,22106019) |
| 22106.014 STATUS Add (SPSDD,22106021) |
| 22106.006 STATUS Add (SPSDD,22106033) |
| 22106.008 STATUS Add (SPSDD,22106034) |
| 22106.007 STATUS Add (SPSDD,22106035) |
| 22106.009 STATUS Add (SPSDD,22106036) |
| 22106.037 STATUS Add (SPSDD,22106038) |
| 22136.004 STATUS Add (SPSDD,22136016) |
| 22136.005 STATUS Add (SPSDD,22136017) |
| 22136.008 STATUS Add (SPSDD,22136020) |
| 22155.002 STATUS Add (SPSDD,22155003) |
| 22155.020 STATUS Add (SPSDD,22155021) |
| 22155.038 STATUS Add (SPSDD,22155038) |
| 22155.056 STATUS Add (SPSDD,22155057) |
| 22155.018 STATUS Add (SPSDD,22155074) |
| 22155.036 STATUS Add (SPSDD,22155080) |
| 22155.054 STATUS Add (SPSDD,22155084) |
| 22155.072 STATUS Add (SPSDD,22155090) |
| 22186.020 STATUS Add (SPSDD,22186057) |
| 22186.035 STATUS Add (SPSDD,22186058) |
| 22186.037 STATUS Add (SPSDD,22186072) |
| 22186.053 STATUS Add (SPSDD,22186073) |
| 22186.002 STATUS Add (SPSDD,22186078) |
| 22186.018 STATUS Add (SPSDD,22186079) |
|  |
| **(2) Deletion of data sets in the centre-of-mass system** |
| 22075.003 Data Delete |
| 22075.005 Data Delete |
| 22075.007 Data Delete |
| 22075.009 Data Delete |
| 22075.011 Data Delete |
| 22075.013 Data Delete |
| 22075.015 Data Delete |
| 22075.017 Data Delete |
| 22075.019 Data Delete |
| 22075.021 Data Delete |
| 22106.016 Data Delete |
| 22106.025 Data Delete |
| 22106.032 Data Delete |
| 22136.003 Data Delete |
| 22136.007 Data Delete |
| 22155.019 Data Delete |
| 22155.037 Data Delete |
| 22155.055 Data Delete |
| 22155.073 Data Delete |
| 22155.075 Data Delete |
| 22155.081 Data Delete |
| 22155.085 Data Delete |
| 22155.091 Data Delete |
| 22186.019 Data Delete |
| 22186.036 Data Delete |
| 22186.056 Data Delete |
| 22186.059 Data Delete |
| 22186.074 Data Delete |
| 22186.080 Data Delete |
| 22278.005 Data Delete |
| 22278.007 Data Delete |
| 22753.004 Data Delete |
| 22766.008 Data Delete |
| 22766.025 Data Delete |
| 22766.031 Data Delete |
| 22773.008 Data Delete |
| 22773.015 Data Delete |
|  |
| **(3) Correction of REACTION SF3 for partial scattering data sets** |
| 22075.226 REACTION SF3:INL->SCT |
| 22075.228 REACTION SF3:INL->SCT |

**References**

[1] A. Takahashi et al., OKTAVIAN Report A-83-01 (June 1983).

[2] A. Takahashi et al., OKTAVIAN Report A-87-01 (Jan. 1987).

[3] A. Takahashi et al., OKTAVIAN Report A-87-03 (Nov. 1987).

[4] A. Takahashi et al., OKTAVIAN Report A-92-01 (Aug. 1992).

[5] A. Takahashi et al., INDC(JPN)-115 (June 1988).

[6] A. Takahashi et al., INDC(JPN)-118 (Jan. 1989).

[7] A. Takahashi et al., INDC(JPN)-131 (Dec. 1989).

[8] A. Takahashi et al., INDC(JPN)-146 (Dec. 1990).

[9] M. Gotoh et al., INDC(JPN)-157, p301 (Mar. 1992).

[10] Y. Watanabe et al., Phys. Rev. C 37 (1988) 963.

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**Table 3.Summary of the assessed data sets**

Uncor: before multiple scattering correction

Cor after multiple scattering correction

Prel. Preliminary; cm: in centre-of-mass system

TA83: data received from A. Takahashi in 1983

NA90: data received from T. Nakagawa in 1990

NA91: data received from T. Nakagawa in 1991

MU09: data received from I. Murata in 2009

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **REACTION** | **Emin (eV)** | **Emax (eV)** | **Points** | **Reference** | **Year** | **Authors** | **AN** | **SAN** | **Pt** | **Geometry** | **Corr.** | **Com.** | **Source** | **Action** |
| 1-H-2(N,X)0-NN-1,,DA/DE | 1.4+07 | 1.5+07 | 252 | R,OKTAV-A-83-01 | 1983 | A.Takahashi+ | 21875 | 2 |  | Ring |  |  | TA83 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3-LI-0(N,X)0-NN-1,,DA/DE | 1.3+07 | 1.5+07 | 328 | R,OKTAV-A-83-01 | 1983 | A.Takahashi+ | 21875 | 8 |  | Ring |  | prel. | TA83 | (SPSDD,22076002) |
| 3-LI-0(N,X)0-NN-1,,DA/DE | 1.3+07 | 1.5+07 | 386 | R,OKTAV-A-87-01 | 1987 | A.Takahashi+ | 22076 | 2 | 1 | Ring | Uncor |  | MU09 |  |
| 3-LI-0(N,X)0-NN-1,,DA/DE | 1.3+07 | 1.5+07 | 386 | R,OKTAV-A-87-01 | 1987 | A.Takahashi+ | 22076 | 2 | 2 | Ring | Cor |  | MU09 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3-LI-6(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 585 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22773 | 2 | 1 | Cylinder | Uncor |  | MU09 |  |
| 3-LI-6(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 585 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22773 | 2 | 2 | Cylinder | Cor |  | MU09 |  |
| 3-LI-6(N,X)0-NN-1,,DE | 1.4+07 |  | 76 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22773 | 7 | 1 | Cylinder | Uncor |  | MU09 |  |
| 3-LI-6(N,X)0-NN-1,,DE | 1.4+07 |  | 76 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22773 | 7 | 2 | Cylinder | Cor |  | MU09 |  |
| 3-LI-6(N,X)0-NN-1,,DE | 1.4+07 |  | 62 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22773 | 8 | 1 | Cylinder | Uncor | cm | MU09 | Delete |
| 3-LI-6(N,X)0-NN-1,,DE | 1.4+07 |  | 62 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22773 | 8 | 2 | Cylinder | Cor | cm | MU09 | Delete |
| 3-LI-6(N,EL)3-LI-6,,DA | 1.4+07 |  | 10 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22773 | 3 |  | Cylinder | |  |  |  |
| 3-LI-6(N,EL)3-LI-6,PAR,DA | 1.4+07 |  | 9 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22773 | 4 |  | Cylinder | |  |  |  |
| 3-LI-6(N,EL)3-LI-6,,SIG | 1.4+07 |  | 1 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22773 | 5 |  | Cylinder | |  |  |  |
| 3-LI-6(N,INL)3-LI-6,PAR,SIG | 1.4+07 |  | 1 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22773 | 6 |  | Cylinder | |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3-LI-7(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 590 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22773 | 9 | 1 | Cylinder | Uncor |  | MU09 |  |
| 3-LI-7(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 590 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22773 | 9 | 2 | Cylinder | Cor |  | MU09 |  |
| 3-LI-7(N,X)0-NN-1,,DE | 1.4+07 |  | 76 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22773 | 14 | 1 | Cylinder | Uncor |  | MU09 |  |
| 3-LI-7(N,X)0-NN-1,,DE | 1.4+07 |  | 76 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22773 | 14 | 2 | Cylinder | Cor |  | MU09 |  |
| 3-LI-7(N,X)0-NN-1,,DE | 1.4+07 |  | 64 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22773 | 15 | 1 | Cylinder | Uncor | cm | MU09 | Delete |
| 3-LI-7(N,X)0-NN-1,,DE | 1.4+07 |  | 64 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22773 | 15 | 2 | Cylinder | Cor | cm | MU09 | Delete |
| 3-LI-7(N,EL)3-LI-7,,DA | 1.4+07 |  | 10 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22773 | 10 |  | Cylinder | |  |  |  |
| 3-LI-7(N,INL)3-LI-7,PAR,DA | 1.4+07 |  | 10 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22773 | 11 |  | Cylinder | |  |  |  |
| 3-LI-7(N,EL)3-LI-7,,SIG | 1.4+07 |  | 1 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22773 | 12 |  | Cylinder | |  |  |  |
| 3-LI-7(N,INL)3-LI-7,PAR,SIG | 1.4+07 |  | 1 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22773 | 13 |  | Cylinder | |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4-BE-9(N,X)0-NN-1,,DA/DE | 1.3+07 | 1.5+07 | 746 | R,OKTAV-A-83-01 | 1983 | A.Takahashi+ | 21875 | 13 |  | Ring |  |  | TA83 |  |
| 4-BE-9(N,X)0-NN-1,,DA/DE | 1.4+07 | 1.5+07 | 110 | R,OKTAV-A-87-01 | 1987 | A.Takahashi+ | 22076 | 10 | 1 | Ring | Uncor |  | MU09 |  |
| 4-BE-9(N,X)0-NN-1,,DA/DE | 1.4+07 | 1.5+07 | 110 | R,OKTAV-A-87-01 | 1987 | A.Takahashi+ | 22076 | 10 | 2 | Ring | Cor |  | MU09 |  |
| 4-BE-9(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 994 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 145 | 1 | Cylinder | Uncor |  | MU09 |  |
| 4-BE-9(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 994 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 145 | 2 | Cylinder | Cor |  | MU09 |  |
| 4-BE-9(N,X)0-NN-1,,DE | 1.4+07 |  | 74 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 18 | 1 | Cylinder | Uncor |  | MU09 |  |
| 4-BE-9(N,X)0-NN-1,,DE | 1.4+07 |  | 74 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 18 | 2 | Cylinder | Cor |  | MU09 |  |
| 4-BE-9(N,X)0-NN-1,,DE | 1.4+07 |  | 64 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 19 | 1 | Cylinder | Uncor | cm | MU09 | Delete |
| 4-BE-9(N,X)0-NN-1,,DE | 1.4+07 |  | 64 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 19 | 2 | Cylinder | Cor | cm | MU09 | Delete |
| 4-BE-9(N,EL)4-BE-9,,DA | 1.4+07 |  | 16 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 210 |  | Cylinder | |  |  |  |
| 4-BE-9(N,INL)4-BE-9,PAR,DA | 1.4+07 |  | 29 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 211 |  | Cylinder | |  |  |  |
| 4-BE-9(N,2N)4-BE-8,,DA | 1.4+07 |  | 16 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 212 |  | Cylinder | |  |  |  |
| 4-BE-9(N,EL)4-BE-9,,SIG | 1.4+07 |  | 1 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 213 |  | Cylinder | |  |  |  |
| 4-BE-9(N,INL)4-BE-9,PAR,SIG | 1.4+07 |  | 1 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 214 |  | Cylinder | |  |  |  |
| 4-BE-9(N,2N)4-BE-8,,SIG | 1.4+07 |  | 1 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 220 |  | Cylinder | |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5-B-0(N,X)0-NN-1,,DA/DE | 1.4+07 | 1.5+07 | 472 | R,OKTAV-A-87-01 | 1987 | A.Takahashi+ | 22076 | 12 | 1 | Ring | Uncor |  | MU09 |  |
| 5-B-0(N,X)0-NN-1,,DA/DE | 1.4+07 | 1.5+07 | 472 | R,OKTAV-A-87-01 | 1987 | A.Takahashi+ | 22076 | 12 | 2 | Ring | Cor |  | MU09 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5-B-10(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 935 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22106 | 23 | 1 | Cylinder | Uncor |  | MU09 |  |
| 5-B-10(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 935 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22106 | 23 | 2 | Cylinder | Cor |  | MU09 |  |
| 5-B-10(N,X)0-NN-1,,DE | 1.4+07 |  | 69 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22106 | 24 | 1 | Cylinder | Uncor |  | MU09 |  |
| 5-B-10(N,X)0-NN-1,,DE | 1.4+07 |  | 69 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22106 | 24 | 2 | Cylinder | Cor |  | MU09 |  |
| 5-B-10(N,X)0-NN-1,,DE | 1.4+07 |  | 62 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22106 | 25 | 1 | Cylinder | Uncor | cm | MU09 | Delete |
| 5-B-10(N,X)0-NN-1,,DE | 1.4+07 |  | 62 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22106 | 25 | 2 | Cylinder | Cor | cm | MU09 | Delete |
| 5-B-10(N,EL)5-B-10,,DA | 1.4+07 |  | 16 | R,INDC(JPN)-115 | 1988 | A.Takahashi+ | 22106 | 3 |  | Cylinder | |  |  | (SPSDD,22106028) |
| 5-B-10(N,EL)5-B-10,,DA | 1.4+07 |  | 16 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22106 | 28 |  | Cylinder | Cor |  |  |  |
| 5-B-10(N,INL)5-B-10,PAR,DA | 1.4+07 |  | 16 | R,INDC(JPN)-115 | 1988 | A.Takahashi+ | 22106 | 5 |  | Cylinder | |  |  | (SPSDD,22106029) |
| 5-B-10(N,INL)5-B-10,PAR,DA | 1.4+07 |  | 16 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22106 | 29 |  | Cylinder | Cor |  |  |  |
| 5-B-10(N,EL)5-B-10,,SIG | 1.4+07 |  | 1 | R,INDC(JPN)-115 | 1988 | A.Takahashi+ | 22106 | 2 |  | Cylinder | |  |  | (SPSDD,22106026) |
| 5-B-10(N,EL)5-B-10,,SIG | 1.4+07 |  | 1 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22106 | 26 |  | Cylinder | Cor |  |  |  |
| 5-B-10(N,INL)5-B-10,PAR,SIG | 1.4+07 |  | 1 | R,INDC(JPN)-115 | 1992 | A.Takahashi+ | 22106 | 4 |  | Cylinder | |  |  | (SPSDD,22106027) |
| 5-B-10(N,INL)5-B-10,PAR,SIG | 1.4+07 |  | 1 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22106 | 27 |  | Cylinder | Cor |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5-B-11(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 987 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22106 | 30 | 1 | Cylinder | Uncor |  | MU09 |  |
| 5-B-11(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 987 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22106 | 30 | 2 | Cylinder | Cor |  | MU09 |  |
| 5-B-11(N,X)0-NN-1,,DE | 1.4+07 |  | 74 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22106 | 31 | 1 | Cylinder | Uncor |  | MU09 |  |
| 5-B-11(N,X)0-NN-1,,DE | 1.4+07 |  | 74 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22106 | 31 | 2 | Cylinder | Cor |  | MU09 |  |
| 5-B-11(N,X)0-NN-1,,DE | 1.4+07 |  | 68 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22106 | 32 | 1 | Cylinder | Uncor | cm | MU09 | Delete |
| 5-B-11(N,X)0-NN-1,,DE | 1.4+07 |  | 68 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22106 | 32 | 2 | Cylinder | Cor | cm | MU09 | Delete |
| 5-B-11(N,EL)5-B-11,,DA | 1.4+07 |  | 16 | S,INDC(JPN)-115 | 1988 | A.Takahashi+ | 22106 | 7 |  | Cylinder | |  |  | (SPSDD,22106035) |
| 5-B-11(N,EL)5-B-11,,DA | 1.4+07 |  | 16 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22106 | 35 |  | Cylinder | |  |  |  |
| 5-B-11(N,INL)5-B-11,PAR,DA | 1.4+07 |  | 80 | S,INDC(JPN)-115 | 1988 | A.Takahashi+ | 22106 | 9 |  | Cylinder | |  |  | (SPSDD,22106036) |
| 5-B-11(N,INL)5-B-11,PAR,DA | 1.4+07 |  | 96 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22106 | 36 |  | Cylinder | |  |  |  |
| 5-B-11(N,EL)5-B-11,,SIG | 1.4+07 |  | 1 | S,INDC(JPN)-115 | 1988 | A.Takahashi+ | 22106 | 6 |  | Cylinder | |  |  | (SPSDD,22106033) |
| 5-B-11(N,EL)5-B-11,,SIG | 1.4+07 |  | 1 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22106 | 33 |  | Cylinder | |  |  |  |
| 5-B-11(N,INL)5-B-11,PAR,SIG | 1.4+07 |  | 5 | S,INDC(JPN)-115 | 1988 | A.Takahashi+ | 22106 | 8 |  | Cylinder | |  |  | (SPSDD,22106034) |
| 5-B-11(N,INL)5-B-11,PAR,SIG | 1.4+07 |  | 6 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22106 | 34 |  | Cylinder | |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6-C-12(N,X)0-NN-1,,DA/DE | 1.3+07 | 1.5+07 | 665 | R,OKTAV-A-83-01 | 1983 | A.Takahashi+ | 21875 | 25 |  | Ring |  |  | TA83 |  |
| 6-C-12(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 984 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 22 | 1 | Cylinder | Uncor |  | MU09 |  |
| 6-C-12(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 984 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 22 | 2 | Cylinder | Cor |  | MU09 |  |
| 6-C-12(N,X)0-NN-1,,DE | 1.4+07 |  | 71 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 2 | 1 | Cylinder | Uncor |  | MU09 |  |
| 6-C-12(N,X)0-NN-1,,DE | 1.4+07 |  | 71 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 2 | 2 | Cylinder | Cor |  | MU09 |  |
| 6-C-12(N,X)0-NN-1,,DE | 1.4+07 |  | 64 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 3 | 1 | Cylinder | Uncor | cm | MU09 | Delete |
| 6-C-12(N,X)0-NN-1,,DE | 1.4+07 |  | 64 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 3 | 2 | Cylinder | Cor | cm | MU09 | Delete |
| 6-C-12(N,EL)6-C-12,,DA | 1.4+07 |  | 16 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 177 |  | Cylinder | |  |  |  |
| 6-C-12(N,INL)6-C-12,PAR,DA | 1.4+07 |  | 47 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 178 |  | Cylinder | | disc. |  |  |
| 6-C-12(N,INL)6-C-12,PAR,DA | 1.4+07 |  | 16 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 179 |  | Cylinder | | cont. |  |  |
| 6-C-12(N,N+2A)2-HE-4,,DA,N | 1.4+07 |  | 16 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 180 |  | Cylinder | |  |  |  |
| 6-C-12(N,EL)6-C-12,,SIG | 1.4+07 |  | 1 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 181 |  | Cylinder | |  |  |  |
| 6-C-12(N,INL)6-C-12,PAR,SIG | 1.4+07 |  | 3 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 182 |  | Cylinder | | disc. |  |  |
| 6-C-12(N,INL)6-C-12,PAR,SIG | 1.4+07 |  | 1 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 183 |  | Cylinder | | cont. |  |  |
| 6-C-12(N,N+2A)2-HE-4,,SIG | 1.4+07 |  | 1 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 184 |  | Cylinder | |  |  |  |
| 6-C-12(N,TOT),,SIG | 1.4+07 |  | 1 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 221 |  | Cylinder | |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7-N-14(N,X)0-NN-1,,DA/DE | 1.4+07 | 1.5+07 | 393 | R,OKTAV-A-87-01 | 1987 | A.Takahashi+ | 22076 | 20 | 1 | Ring | Uncor |  | MU09 |  |
| 7-N-14(N,X)0-NN-1,,DA/DE | 1.4+07 | 1.5+07 | 393 | R,OKTAV-A-87-01 | 1987 | A.Takahashi+ | 22076 | 20 | 2 | Ring | Cor |  | MU09 |  |
| 7-N-14(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 62 | R,OKTAV-A-87-01 | 1987 | A.Takahashi+ | 22076 | 92 | 1 | Ring | Uncor | ?? | MU09 |  |
| 7-N-14(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 62 | R,OKTAV-A-87-01 | 1987 | A.Takahashi+ | 22076 | 92 | 2 | Ring | Cor | ?? | MU09 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8-O-16(N,X)0-NN-1,,DA/DE | 1.4+07 | 1.5+07 | 403 | R,OKTAV-A-83-01 | 1983 | A.Takahashi+ | 21875 | 36 |  | Ring |  |  | TA83 |  |
| 8-O-16(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 996 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22766 | 10 | 1 | Cylinder | Uncor |  | ? |  |
| 8-O-16(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 996 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22766 | 10 | 2 | Cylinder | Cor |  | ? |  |
| 8-O-16(N,X)0-NN-1,,DE | 1.4+07 |  | 69 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22766 | 9 | 1 | Cylinder | Uncor |  | ? |  |
| 8-O-16(N,X)0-NN-1,,DE | 1.4+07 |  | 69 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22766 | 9 | 2 | Cylinder | Cor |  | ? |  |
| 8-O-16(N,X)0-NN-1,,DE | 1.4+07 |  | 67 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22766 | 8 | 1 | Cylinder | Uncor | cm | ? | Delete |
| 8-O-16(N,X)0-NN-1,,DE | 1.4+07 |  | 67 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22766 | 8 | 2 | Cylinder | Cor | cm | ? | Delete |
| 8-O-16(N,EL)8-O-16,,DA | 1.4+07 |  | 16 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22766 | 11 |  | Cylinder | |  |  |  |
| 8-O-16(N,INL)8-O-16,PAR,DA | 1.4+07 |  | 48 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22766 | 12 |  | Cylinder | |  |  |  |
| 8-O-16(N,EL)8-O-16,,SIG | 1.4+07 |  | 1 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22766 | 13 |  | Cylinder | |  |  |  |
| 8-O-16(N,INL)8-O-16,PAR,SIG | 1.4+07 |  | 3 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22766 | 14 |  | Cylinder | |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9-F-19(N,X)0-NN-1,,DA/DE | 1.3+07 | 1.5+07 | 518 | R,OKTAV-A-83-01 | 1983 | A.Takahashi+ | 21875 | 42 |  | Ring |  |  | TA83 |  |
| 9-F-19(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1048 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 113 | 1 | Cylinder | Uncor |  | MU09 |  |
| 9-F-19(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1048 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 113 | 2 | Cylinder | Cor |  | MU09 |  |
| 9-F-19(N,X)0-NN-1,,DE | 1.4+07 |  | 74 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 14 | 1 | Cylinder | Uncor |  | MU09 |  |
| 9-F-19(N,X)0-NN-1,,DE | 1.4+07 |  | 74 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 14 | 2 | Cylinder | Cor |  | MU09 |  |
| 9-F-19(N,X)0-NN-1,,DE | 1.4+07 |  | 71 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 15 | 1 | Cylinder | Uncor | cm | MU09 | Delete |
| 9-F-19(N,X)0-NN-1,,DE | 1.4+07 |  | 71 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 15 | 2 | Cylinder | Cor | cm | MU09 | Delete |
| 9-F-19(N,INL)9-F-19,PAR,DA | 1.4+07 |  | 43 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 206 |  | Cylinder | |  |  |  |
| 9-F-19(N,SCT)9-F-19,PAR,DA | 1.4+07 |  | 16 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 225 |  | Cylinder | |  |  |  |
| 9-F-19(N,INL)9-F-19,PAR,SIG | 1.4+07 |  | 3 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 207 |  | Cylinder | |  |  |  |
| 9-F-19(N,INL)9-F-19,PAR,SIG | 1.4+07 |  | 1 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 226 |  | Cylinder | |  |  | SF3:INL->SCT |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11-NA-23(N,X)0-NN-1,,DA/DE | 1.4+07 | 1.5+07 | 285 | R,OKTAV-A-87-01 | 1987 | A.Takahashi+ | 22076 | 26 | 1 | Ring | Uncor |  | MU09 |  |
| 11-NA-23(N,X)0-NN-1,,DA/DE | 1.4+07 | 1.5+07 | 285 | R,OKTAV-A-87-01 | 1987 | A.Takahashi+ | 22076 | 26 | 2 | Ring | Cor |  | MU09 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12-MG-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 974 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 83 | 1 | Cylinder | Uncor |  | MU09 |  |
| 12-MG-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 974 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 83 | 2 | Cylinder | Cor |  | MU09 |  |
| 12-MG-0(N,X)0-NN-1,,DE | 1.4+07 |  | 71 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 10 | 1 | Cylinder | Uncor |  | MU09 |  |
| 12-MG-0(N,X)0-NN-1,,DE | 1.4+07 |  | 71 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 10 | 2 | Cylinder | Cor |  | MU09 |  |
| 12-MG-0(N,X)0-NN-1,,DE | 1.4+07 |  | 68 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 11 | 1 | Cylinder | Uncor | cm | MU09 | Delete |
| 12-MG-0(N,X)0-NN-1,,DE | 1.4+07 |  | 68 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 11 | 2 | Cylinder | Cor | cm | MU09 | Delete |
| 12-MG-0(N,EL)12-MG-0,,DA | 1.4+07 |  | 15 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 198 |  | Cylinder | |  |  |  |
| 12-MG-0(N,INL)12-MG-0,PAR,DA | 1.4+07 |  | 75 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 199 | 1 | Cylinder | | w.cont. | |  |
| 12-MG-0(N,INL)12-MG-0,PAR,DA | 1.4+07 |  | 75 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 199 | 2 | Cylinder | | wo.cont. | |  |
| 12-MG-0(N,EL)12-MG-0,,SIG | 1.4+07 |  | 1 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 200 |  | Cylinder | |  |  |  |
| 12-MG-0(N,INL)12-MG-0,PAR,SIG | 1.4+07 |  | 5 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 201 | 1 | Cylinder | | w.cont. | |  |
| 12-MG-0(N,INL)12-MG-0,PAR,SIG | 1.4+07 |  | 5 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 201 | 2 | Cylinder | | wo.cont. | |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 13-AL-27(N,X)0-NN-1,,DA/DE | 1.4+07 | 1.5+07 | 427 | R,OKTAV-A-83-01 | 1983 | A.Takahashi+ | 21875 | 51 |  | Ring |  |  | ? |  |
| 13-AL-27(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 987 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 53 | 1 | Cylinder | Uncor |  | MU09 |  |
| 13-AL-27(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 987 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 53 | 2 | Cylinder | Cor |  | MU09 |  |
| 13-AL-27(N,X)0-NN-1,,DE | 1.4+07 |  | 73 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 6 | 1 | Cylinder | Uncor |  | MU09 |  |
| 13-AL-27(N,X)0-NN-1,,DE | 1.4+07 |  | 73 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 6 | 2 | Cylinder | Cor |  | MU09 |  |
| 13-AL-27(N,X)0-NN-1,,DE | 1.4+07 |  | 69 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 7 | 1 | Cylinder | Uncor | cm | MU09 | Delete |
| 13-AL-27(N,X)0-NN-1,,DE | 1.4+07 |  | 69 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 7 | 2 | Cylinder | Cor | cm | MU09 | Delete |
| 13-AL-27(N,EL)13-AL-27,,DA | 1.4+07 |  | 9 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 191 |  | Cylinder | |  |  |  |
| 13-AL-27(N,INL)13-AL-27,PAR,DA | 1.4+07 |  | 45 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 192 |  | Cylinder | |  |  |  |
| 13-AL-27(N,SCT)13-AL-27,PAR,DA | 1.4+07 |  | 25 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 222 |  | Cylinder | |  |  |  |
| 13-AL-27(N,EL)13-AL-27,,SIG | 1.4+07 |  | 1 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 193 |  | Cylinder | |  |  |  |
| 13-AL-27(N,INL)13-AL-27,PAR,SIG | 1.4+07 |  | 5 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 194 |  | Cylinder | |  |  |  |
| 13-AL-27(N,SCT)13-AL-27,PAR,SIG | 1.4+07 |  | 2 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 223 |  | Cylinder | |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 14-SI-0(N,X)0-NN-1,,DA/DE | 1.4+07 | 1.5+07 | 460 | R,OKTAV-A-83-01 | 1983 | A.Takahashi+ | 21875 | 56 |  | Ring |  |  | TA83 |  |
| 14-SI-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 977 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 98 | 1 | Cylinder | Uncor |  | MU09 |  |
| 14-SI-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 977 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 98 | 2 | Cylinder | Cor |  | MU09 |  |
| 14-SI-0(N,X)0-NN-1,,DE | 1.4+07 |  | 72 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 12 | 1 | Cylinder | Uncor |  | MU09 |  |
| 14-SI-0(N,X)0-NN-1,,DE | 1.4+07 |  | 72 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 12 | 2 | Cylinder | Cor |  | MU09 |  |
| 14-SI-0(N,X)0-NN-1,,DE | 1.4+07 |  | 69 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 13 | 1 | Cylinder | Uncor | cm | MU09 | Delete |
| 14-SI-0(N,X)0-NN-1,,DE | 1.4+07 |  | 69 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 13 | 2 | Cylinder | Cor | cm | MU09 | Delete |
| 14-SI-0(N,EL)14-SI-0,,DA | 1.4+07 |  | 16 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 202 |  | Cylinder | |  |  |  |
| 14-SI-0(N,INL)14-SI-0,PAR,DA | 1.4+07 |  | 43 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 203 |  | Cylinder | |  |  |  |
| 14-SI-0(N,EL)14-SI-0,,SIG | 1.4+07 |  | 1 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 204 |  | Cylinder | |  |  |  |
| 14-SI-0(N,INL)14-SI-0,PAR,SIG | 1.4+07 |  | 3 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 205 |  | Cylinder | |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 16-S-0(N,X)0-NN-1,,DA/DE | 1.4+07 | 1.5+07 | 295 | R,OKTAV-A-87-01 | 1987 | A.Takahashi+ | 22076 | 31 |  | Ring |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 17-CL-0(N,X)0-NN-1,,DA/DE | 1.4+07 | 1.5+07 | 300 | R,OKTAV-A-87-01 | 1987 | A.Takahashi+ | 22076 | 36 | 1 | Ring | Uncor |  | MU09 |  |
| 17-CL-0(N,X)0-NN-1,,DA/DE | 1.4+07 | 1.5+07 | 300 | R,OKTAV-A-87-01 | 1987 | A.Takahashi+ | 22076 | 36 | 2 | Ring | Cor |  | MU09 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 20-CA-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1077 | R,INDC(JPN)-131 | 1989 | A.Takahashi+ | 22155 | 38 | 1 | Cylinder | Uncor |  | NA90 | (SPSDD,22155038) |
| 20-CA-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1077 | R,INDC(JPN)-131 | 1989 | A.Takahashi+ | 22155 | 38 | 2 | Cylinder | Cor |  | NA90 | (SPSDD,22155038) |
| 20-CA-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1077 | R,OKTAV-A-92-01 | 2009 | A.Takahashi+ | 22155 | 39 | 1 | Cylinder | Uncor |  | MU09 |  |
| 20-CA-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1077 | R,OKTAV-A-92-01 | 2009 | A.Takahashi+ | 22155 | 39 | 2 | Cylinder | Cor |  | MU09 |  |
| 20-CA-0(N,X)0-NN-1,,DE | 1.4+07 |  | 80 | R,INDC(JPN)-131 | 1989 | A.Takahashi+ | 22155 | 54 |  | Cylinder | Cor |  | NA90 | (SPSDD,22155084) |
| 20-CA-0(N,X)0-NN-1,,DE | 1.4+07 |  | 72 | R,INDC(JPN)-131 | 1989 | A.Takahashi+ | 22155 | 55 |  | Cylinder | Cor cm | | NA90 | Delete |
| 20-CA-0(N,X)0-NN-1,,DE | 1.4+07 |  | 69 | R,OKTAV-A-92-01 | 2009 | A.Takahashi+ | 22155 | 84 | 1 | Cylinder | Uncor |  | MU09 |  |
| 20-CA-0(N,X)0-NN-1,,DE | 1.4+07 |  | 69 | R,OKTAV-A-92-01 | 2009 | A.Takahashi+ | 22155 | 84 | 2 | Cylinder | Cor |  | MU09 |  |
| 20-CA-0(N,X)0-NN-1,,DE | 1.4+07 |  | 66 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22155 | 85 | 1 | Cylinder | Uncor | cm | MU09 | Delete |
| 20-CA-0(N,X)0-NN-1,,DE | 1.4+07 |  | 66 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22155 | 85 | 2 | Cylinder | Cor | cm | MU09 | Delete |
| 20-CA-0(N,EL)20-CA-0,,DA | 1.4+07 |  | 15 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22155 | 86 |  | Cylinder | |  |  |  |
| 20-CA-0(N,INL)20-CA-0,PAR,DA | 1.4+07 |  | 90 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22155 | 87 |  | Cylinder | |  |  |  |
| 20-CA-0(N,EL)20-CA-0,,SIG | 1.4+07 |  | 1 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22155 | 88 |  | Cylinder | |  |  |  |
| 20-CA-0(N,INL)20-CA-0,PAR,SIG | 1.4+07 |  | 6 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22155 | 89 |  | Cylinder | |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 22-TI-0(N,X)0-NN-1,,DA/DE | 1.3+07 | 1.5+07 | 610 | R,OKTAV-A-87-01 | 1987 | A.Takahashi+ | 22076 | 41 | 1 | Ring | Uncor |  | MU09 |  |
| 22-TI-0(N,X)0-NN-1,,DA/DE | 1.3+07 | 1.5+07 | 610 | R,OKTAV-A-87-01 | 1987 | A.Takahashi+ | 22076 | 41 | 2 | Ring | Cor |  | MU09 |  |
| 22-TI-0(N,X)0-NN-1,,DE | 1.4+07 |  | 70 | R,OKTAV-A-87-01 | 1987 | A.Takahashi+ | 22076 | 91 |  | Ring |  |  | NA02? |  |
| 22-TI-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1062 | R,INDC(JPN)-146 | 1990 | A.Takahashi+ | 22186 | 2 |  | Cylinder | Cor |  | NA91 | (SPSDD,22186078) |
| 22-TI-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1007 | R,OKTAV-A-92-01 | 2009 | A.Takahashi+ | 22186 | 78 | 1 | Cylinder | Uncor |  | MU09 |  |
| 22-TI-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1007 | R,OKTAV-A-92-01 | 2009 | A.Takahashi+ | 22186 | 78 | 2 | Cylinder | Cor |  | MU09 |  |
| 22-TI-0(N,X)0-NN-1,,DE | 1.4+07 |  | 70 | R,INDC(JPN)-146 | 1990 | A.Takahashi+ | 22186 | 18 |  | Cylinder | Cor |  | NA91 | (SPSDD,22186079) |
| 22-TI-0(N,X)0-NN-1,,DE | 1.4+07 |  | 68 | R,INDC(JPN)-146 | 1990 | A.Takahashi+ | 22186 | 19 | 1 | Cylinder | Uncor | cm | NA91 | Delete |
| 22-TI-0(N,X)0-NN-1,,DE | 1.4+07 |  | 68 | R,INDC(JPN)-146 | 1992 | A.Takahashi+ | 22186 | 19 | 2 | Cylinder | Cor | cm | NA91 | Delete |
| 22-TI-0(N,X)0-NN-1,,DE | 1.4+07 |  | 71 | R,OKTAV-A-92-01 | 2009 | A.Takahashi+ | 22186 | 79 | 1 | Cylinder | Uncor |  | MU09 |  |
| 22-TI-0(N,X)0-NN-1,,DE | 1.4+07 |  | 71 | R,OKTAV-A-92-01 | 2009 | A.Takahashi+ | 22186 | 79 | 2 | Cylinder | Cor |  | MU09 |  |
| 22-TI-0(N,X)0-NN-1,,DE | 1.4+07 |  | 69 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 80 | 1 | Cylinder | Uncor | cm | MU09 | Delete |
| 22-TI-0(N,X)0-NN-1,,DE | 1.4+07 |  | 69 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 80 | 2 | Cylinder | Cor | cm | MU09 | Delete |
| 22-TI-0(N,EL)22-TI-0,,DA | 1.4+07 |  | 15 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 81 |  | Cylinder | |  |  |  |
| 22-TI-0(N,INL)22-TI-0,PAR,DA | 1.4+07 |  | 39 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 82 |  | Cylinder | |  |  |  |
| 22-TI-0(N,EL)22-TI-0,,SIG | 1.4+07 |  | 1 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 83 |  | Cylinder | |  |  |  |
| 22-TI-0(N,INL)22-TI-0,PAR,SIG | 1.4+07 |  | 3 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 84 |  | Cylinder | |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 23-V-51(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1098 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 129 | 1 | Cylinder | Uncor |  | MU09 |  |
| 23-V-51(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1098 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 129 | 2 | Cylinder | Cor |  | MU09 |  |
| 23-V-51(N,X)0-NN-1,,DE | 1.4+07 |  | 72 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 16 | 1 | Cylinder | Uncor |  | MU09 |  |
| 23-V-51(N,X)0-NN-1,,DE | 1.4+07 |  | 72 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 16 | 2 | Cylinder | Cor |  | MU09 |  |
| 23-V-51(N,X)0-NN-1,,DE | 1.4+07 |  | 72 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 17 | 1 | Cylinder | Uncor | cm | MU09 | Delete |
| 23-V-51(N,X)0-NN-1,,DE | 1.4+07 |  | 72 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 17 | 2 | Cylinder | Cor | cm | MU09 | Delete |
| 23-V-51(N,INL)23-V-51,PAR,DA | 1.4+07 |  | 24 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 208 |  | Cylinder | |  |  |  |
| 23-V-51(N,SCT)23-V-51,PAR,DA | 1.4+07 |  | 16 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 227 |  | Cylinder | |  |  |  |
| 23-V-51(N,INL)23-V-51,PAR,SIG | 1.4+07 |  | 2 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 209 |  | Cylinder | |  |  |  |
| 23-V-51(N,INL)23-V-51,PAR,SIG | 1.4+07 |  | 1 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 228 |  | Cylinder | |  |  | SF3:INL->SCT |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 24-CR-0(N,X)0-NN-1,,DA/DE | 1.3+07 | 1.5+07 | 677 | R,OKTAV-A-83-01 | 1983 | A.Takahashi+ | 21875 | 63 |  | Ring |  |  | ? |  |
| 24-CR-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1094 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 161 | 1 | Cylinder | Uncor |  | MU09 |  |
| 24-CR-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1094 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 161 | 2 | Cylinder | Cor |  | MU09 |  |
| 24-CR-0(N,X)0-NN-1,,DE | 1.4+07 |  | 72 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 20 | 1 | Cylinder | Uncor |  | MU09 |  |
| 24-CR-0(N,X)0-NN-1,,DE | 1.4+07 |  | 72 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 20 | 2 | Cylinder | Cor |  | MU09 |  |
| 24-CR-0(N,X)0-NN-1,,DE | 1.4+07 |  | 71 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 21 | 1 | Cylinder | Uncor | cm | MU09 | Delete |
| 24-CR-0(N,X)0-NN-1,,DE | 1.4+07 |  | 71 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 21 | 2 | Cylinder | Cor | cm | MU09 | Delete |
| 24-CR-0(N,EL)24-CR-0,,DA | 1.4+07 |  | 16 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 216 |  | Cylinder | |  |  |  |
| 24-CR-0(N,INL)24-CR-0,PAR,DA | 1.4+07 |  | 32 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 217 |  | Cylinder | |  |  |  |
| 24-CR-0(N,EL)24-CR-0,,SIG | 1.4+07 |  | 1 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 218 |  | Cylinder | |  |  |  |
| 24-CR-0(N,INL)24-CR-0,PAR,SIG | 1.4+07 |  | 2 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 219 |  | Cylinder | |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 25-MN-55(N,X)0-NN-1,,DA/DE | 1.4+07 | 1.5+07 | 507 | R,OKTAV-A-87-01 | 1987 | A.Takahashi+ | 22076 | 50 | 1 | Ring | Uncor |  | MU09 |  |
| 25-MN-55(N,X)0-NN-1,,DA/DE | 1.4+07 | 1.5+07 | 507 | R,OKTAV-A-87-01 | 1987 | A.Takahashi+ | 22076 | 50 | 2 | Ring | Cor |  | MU09 |  |
| 25-MN-55(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1082 | R,INDC(JPN)-131 | 1989 | A.Takahashi+ | 22155 | 20 | 1 | Cylinder | Uncor |  | NA90 | (SPSDD,22155021) |
| 25-MN-55(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1082 | R,INDC(JPN)-131 | 1989 | A.Takahashi+ | 22155 | 20 | 2 | Cylinder | Cor |  | NA90 | (SPSDD,22155021) |
| 25-MN-55(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1077 | R,OKTAV-A-92-01 | 2009 | A.Takahashi+ | 22155 | 21 | 1 | Cylinder | Uncor |  | MU09 |  |
| 25-MN-55(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1077 | R,OKTAV-A-92-01 | 2009 | A.Takahashi+ | 22155 | 21 | 2 | Cylinder | Cor |  | MU09 |  |
| 25-MN-55(N,X)0-NN-1,,DE | 1.4+07 |  | 73 | R,INDC(JPN)-131 | 1989 | A.Takahashi+ | 22155 | 36 |  | Cylinder | Cor |  | NA90 | (SPSDD,22155080) |
| 25-MN-55(N,X)0-NN-1,,DE | 1.4+07 |  | 70 | R,INDC(JPN)-131 | 1989 | A.Takahashi+ | 22155 | 37 |  | Cylinder | Cor | cm | NA90 | Delete |
| 25-MN-55(N,X)0-NN-1,,DE | 1.4+07 |  | 71 | R,OKTAV-A-92-01 | 2009 | A.Takahashi+ | 22155 | 80 | 1 | Cylinder | Uncor |  | MU09 |  |
| 25-MN-55(N,X)0-NN-1,,DE | 1.4+07 |  | 71 | R,OKTAV-A-92-01 | 2009 | A.Takahashi+ | 22155 | 80 | 2 | Cylinder | Cor |  | MU09 |  |
| 25-MN-55(N,X)0-NN-1,,DE | 1.4+07 |  | 68 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22155 | 81 | 1 | Cylinder | Uncor | cm | MU09 | Delete |
| 25-MN-55(N,X)0-NN-1,,DE | 1.4+07 |  | 68 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22155 | 81 | 2 | Cylinder | Cor | cm | MU09 | Delete |
| 25-MN-55(N,EL)25-MN-55,,DA | 1.4+07 |  | 16 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22155 | 82 |  | Cylinder | |  |  |  |
| 25-MN-55(N,INL)25-MN-55,PAR,DA | 1.4+07 |  | 34 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22155 | 83 |  | Cylinder | |  |  |  |
| 25-MN-55(N,EL)25-MN-55,,SIG | 1.4+07 |  | 1 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22155 | 99 |  | Cylinder | |  |  |  |
| 25-MN-55(N,INL)25-MN-55,PAR,SIG | 1.4+07 |  | 3 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22155 | 100 |  | Cylinder | |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 26-FE-0(N,X)0-NN-1,,DA/DE | 1.3+07 | 1.5+07 | 591 | R,OKTAV-A-83-01 | 1983 | A.Takahashi+ | 21875 | 74 |  | Ring |  |  | ? |  |
| 26-FE-0(N,X)0-NN-1,,DA/DE | 1.4+07 | 1.5+07 | 269 | R,OKTAV-A-87-01 | 1987 | A.Takahashi+ | 22076 | 59 | 1 | Ring | Uncor |  | MU09 |  |
| 26-FE-0(N,X)0-NN-1,,DA/DE | 1.4+07 | 1.5+07 | 269 | R,OKTAV-A-87-01 | 1987 | A.Takahashi+ | 22076 | 59 | 2 | Ring | Cor |  | MU09 |  |
| 26-FE-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1101 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22766 | 26 | 1 | Cylinder | Uncor |  | MU09 |  |
| 26-FE-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1101 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22766 | 26 | 2 | Cylinder | Cor |  | MU09 |  |
| 26-FE-0(N,X)0-NN-1,,DE | 1.4+07 |  | 71 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22766 | 2 | 1 | Cylinder | Uncor |  | ? |  |
| 26-FE-0(N,X)0-NN-1,,DE | 1.4+07 |  | 71 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22766 | 2 | 2 | Cylinder | Cor |  | ? |  |
| 26-FE-0(N,X)0-NN-1,,DE | 1.4+07 |  | 72 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22766 | 25 | 1 | Cylinder | Uncor | cm | MU09 | Delete |
| 26-FE-0(N,X)0-NN-1,,DE | 1.4+07 |  | 72 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22766 | 25 | 2 | Cylinder | Cor | cm | MU09 | Delete |
| 26-FE-0(N,EL)26-FE-0,,DA | 1.4+07 |  | 16 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22766 | 27 |  | Cylinder | |  |  |  |
| 26-FE-0(N,INL)26-FE-0,PAR,DA | 1.4+07 |  | 51 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22766 | 28 |  | Cylinder | |  |  |  |
| 26-FE-0(N,EL)26-FE-0,,SIG | 1.4+07 |  | 1 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22766 | 29 |  | Cylinder | |  |  |  |
| 26-FE-0(N,INL)26-FE-0,PAR,SIG | 1.4+07 |  | 4 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22766 | 30 |  | Cylinder | |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 27-CO-59(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1095 | R,INDC(JPN)-131 | 1989 | A.Takahashi+ | 22155 | 2 | 1 | Cylinder | Uncor |  | NA90 | (SPSDD,22155003) |
| 27-CO-59(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1095 | R,INDC(JPN)-131 | 1989 | A.Takahashi+ | 22155 | 2 | 2 | Cylinder | Cor |  | NA90 | (SPSDD,22155003) |
| 27-CO-59(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1081 | R,OKTAV-A-92-01 | 2009 | A.Takahashi+ | 22155 | 3 | 1 | Cylinder | Uncor |  | MU09 |  |
| 27-CO-59(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1081 | R,OKTAV-A-92-01 | 2009 | A.Takahashi+ | 22155 | 3 | 2 | Cylinder | Cor |  | MU09 |  |
| 27-CO-59(N,X)0-NN-1,,DE | 1.4+07 |  | 80 | R,INDC(JPN)-131 | 1989 | A.Takahashi+ | 22155 | 18 |  | Cylinder | Cor |  | NA90 | (SPSDD,22155074) |
| 27-CO-59(N,X)0-NN-1,,DE | 1.4+07 |  | 80 | R,INDC(JPN)-131 | 1989 | A.Takahashi+ | 22155 | 19 |  | Cylinder | Cor | cm | NA90 | Delete |
| 27-CO-59(N,X)0-NN-1,,DE | 1.4+07 |  | 70 | R,OKTAV-A-92-01 | 2009 | A.Takahashi+ | 22155 | 74 | 1 | Cylinder | Uncor |  | MU09 |  |
| 27-CO-59(N,X)0-NN-1,,DE | 1.4+07 |  | 70 | R,OKTAV-A-92-01 | 2009 | A.Takahashi+ | 22155 | 74 | 2 | Cylinder | Cor |  | MU09 |  |
| 27-CO-59(N,X)0-NN-1,,DE | 1.4+07 |  | 69 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22155 | 75 | 1 | Cylinder | Uncor | cm | MU09 | Delete |
| 27-CO-59(N,X)0-NN-1,,DE | 1.4+07 |  | 69 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22155 | 75 | 2 | Cylinder | Cor | cm | MU09 | Delete |
| 27-CO-59(N,EL)27-CO-59,,DA | 1.4+07 |  | 16 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22155 | 76 |  | Cylinder | |  |  |  |
| 27-CO-59(N,INL)27-CO-59,PAR,DA | 1.4+07 |  | 27 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22155 | 77 |  | Cylinder | |  |  |  |
| 27-CO-59(N,EL)27-CO-59,,SIG | 1.4+07 |  | 1 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22155 | 78 |  | Cylinder | |  |  |  |
| 27-CO-59(N,INL)27-CO-59,PAR,SIG | 1.4+07 |  | 2 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22155 | 79 |  | Cylinder | |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 28-NI-0(N,X)0-NN-1,,DA/DE | 1.3+07 | 1.5+07 | 670 | R,OKTAV-A-83-01 | 1983 | A.Takahashi+ | 21875 | 84 |  | Ring |  |  | ? |  |
| 28-NI-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1091 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22766 | 32 | 1 | Cylinder | Uncor |  | MU09 |  |
| 28-NI-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1091 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22766 | 32 | 2 | Cylinder | Cor |  | MU09 |  |
| 28-NI-0(N,X)0-NN-1,,DE | 1.4+07 |  | 72 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22766 | 3 | 1 | Cylinder | Uncor |  | ? |  |
| 28-NI-0(N,X)0-NN-1,,DE | 1.4+07 |  | 72 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22766 | 3 | 2 | Cylinder | Cor |  | ? |  |
| 28-NI-0(N,X)0-NN-1,,DE | 1.4+07 |  | 72 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22766 | 31 | 1 | Cylinder | Uncor | cm | MU09 | Delete |
| 28-NI-0(N,X)0-NN-1,,DE | 1.4+07 |  | 72 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22766 | 31 | 2 | Cylinder | Cor | cm | MU09 | Delete |
| 28-NI-0(N,EL)28-NI-0,,DA | 1.4+07 |  | 16 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22766 | 33 |  | Cylinder | |  |  |  |
| 28-NI-0(N,INL)28-NI-0,PAR,DA | 1.4+07 |  | 52 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22766 | 34 |  | Cylinder | |  |  |  |
| 28-NI-0(N,EL)28-NI-0,,SIG | 1.4+07 |  | 1 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22766 | 35 |  | Cylinder | |  |  |  |
| 28-NI-0(N,INL)28-NI-0,PAR,SIG | 1.4+07 |  | 4 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22766 | 36 |  | Cylinder | |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 29-CU-0(N,X)0-NN-1,,DA/DE | 1.3+07 | 1.5+07 | 619 | R,OKTAV-A-83-01 | 1983 | A.Takahashi+ | 21875 | 95 |  | Ring |  |  | ? |  |
| 29-CU-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1027 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 68 | 1 | Cylinder | Uncor |  | MU09 |  |
| 29-CU-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1027 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 68 | 2 | Cylinder | Cor |  | MU09 |  |
| 29-CU-0(N,X)0-NN-1,,DE | 1.4+07 |  | 77 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 8 | 1 | Cylinder | Uncor |  | MU09 |  |
| 29-CU-0(N,X)0-NN-1,,DE | 1.4+07 |  | 77 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 8 | 2 | Cylinder | Cor |  | MU09 |  |
| 29-CU-0(N,X)0-NN-1,,DE | 1.4+07 |  | 72 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 9 | 1 | Cylinder | Uncor | cm | MU09 | Delete |
| 29-CU-0(N,X)0-NN-1,,DE | 1.4+07 |  | 72 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 9 | 2 | Cylinder | Cor | cm | MU09 | Delete |
| 29-CU-0(N,EL)29-CU-0,,DA | 1.4+07 |  | 13 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 195 |  | Cylinder | |  |  |  |
| 29-CU-0(N,INL)29-CU-0,PAR,DA | 1.4+07 |  | 13 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 196 |  | Cylinder | |  |  |  |
| 29-CU-0(N,SCT)29-CU-0,PAR,DA | 1.4+07 |  | 15 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 224 |  | Cylinder | |  |  |  |
| 29-CU-0(N,INL)29-CU-0,PAR,SIG | 1.4+07 |  | 1 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 197 |  | Cylinder | |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 32-GE-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1112 | S,INDC(JPN)-157,301 | 1992 | M.Gotoh+ | 22278 | 2 | 1 | Cylinder | Uncor |  | MU09 |  |
| 32-GE-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1112 | S,INDC(JPN)-157,301 | 1992 | M.Gotoh+ | 22278 | 2 | 2 | Cylinder | Cor |  | MU09 |  |
| 32-GE-0(N,X)0-NN-1,,DE | 1.4+07 |  | 78 | S,INDC(JPN)-157,301 | 1992 | M.Gotoh+ | 22278 | 4 | 1 | Cylinder | Uncor |  | MU09 |  |
| 32-GE-0(N,X)0-NN-1,,DE | 1.4+07 |  | 78 | S,INDC(JPN)-157,301 | 1992 | M.Gotoh+ | 22278 | 4 | 2 | Cylinder | Cor |  | MU09 |  |
| 32-GE-0(N,X)0-NN-1,,DE | 1.4+07 |  | 79 | S,INDC(JPN)-157,301 | 1992 | M.Gotoh+ | 22278 | 5 | 1 | Cylinder | Uncor | cm | MU09 | Delete |
| 32-GE-0(N,X)0-NN-1,,DE | 1.4+07 |  | 79 | S,INDC(JPN)-157,301 | 1992 | M.Gotoh+ | 22278 | 5 | 2 | Cylinder | Cor | cm | MU09 | Delete |
| 32-GE-0(N,EL)32-GE-0,,DA | 1.4+07 |  | 16 | S,INDC(JPN)-157,301 | 1992 | M.Gotoh+ | 22278 | 8 |  | Cylinder | |  |  |  |
| 32-GE-0(N,INL)32-GE-0,PAR,DA | 1.4+07 |  | 28 | S,INDC(JPN)-157,301 | 1992 | M.Gotoh+ | 22278 | 9 |  | Cylinder | |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 33-AS-75(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1024 | S,INDC(JPN)-157,301 | 1992 | M.Gotoh+ | 22278 | 3 | 1 | Cylinder | Uncor |  | MU09 |  |
| 33-AS-75(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1024 | S,INDC(JPN)-157,301 | 1992 | M.Gotoh+ | 22278 | 3 | 2 | Cylinder | Cor |  | MU09 |  |
| 33-AS-75(N,X)0-NN-1,,DE | 1.4+07 |  | 74 | S,INDC(JPN)-157,301 | 1992 | M.Gotoh+ | 22278 | 6 | 1 | Cylinder | Uncor |  | MU09 |  |
| 33-AS-75(N,X)0-NN-1,,DE | 1.4+07 |  | 74 | S,INDC(JPN)-157,301 | 1992 | M.Gotoh+ | 22278 | 6 | 2 | Cylinder | Cor |  | MU09 |  |
| 33-AS-75(N,X)0-NN-1,,DE | 1.4+07 |  | 74 | S,INDC(JPN)-157,301 | 1992 | M.Gotoh+ | 22278 | 7 | 1 | Cylinder | Uncor | cm | MU09 | Delete |
| 33-AS-75(N,X)0-NN-1,,DE | 1.4+07 |  | 74 | S,INDC(JPN)-157,301 | 1992 | M.Gotoh+ | 22278 | 7 | 2 | Cylinder | Cor | cm | MU09 | Delete |
| 33-AS-75(N,EL)33-AS-75,,DA | 1.4+07 |  | 15 | S,INDC(JPN)-157,301 | 1992 | M.Gotoh+ | 22278 | 10 |  | Cylinder | |  | MU09 |  |
| 33-AS-75(N,INL)33-AS-75,PAR,DA | 1.4+07 |  | 25 | S,INDC(JPN)-157,301 | 1992 | M.Gotoh+ | 22278 | 11 |  | Cylinder | |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 40-ZR-0(N,X)0-NN-1,,DA/DE | 1.4+07 | 1.5+07 | 393 | R,OKTAV-A-87-01 | 1987 | A.Takahashi+ | 22076 | 65 | 1 | Ring | Uncor |  | MU09 |  |
| 40-ZR-0(N,X)0-NN-1,,DA/DE | 1.4+07 | 1.5+07 | 393 | R,OKTAV-A-87-01 | 1987 | A.Takahashi+ | 22076 | 65 | 2 | Ring | Cor |  | MU09 |  |
| 40-ZR-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1104 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22753 | 2 | 1 | Cylinder | Uncor |  | MU09 |  |
| 40-ZR-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1104 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22753 | 2 | 2 | Cylinder | Cor |  | MU09 |  |
| 40-ZR-0(N,X)0-NN-1,,DE | 1.4+07 |  | 72 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22753 | 3 | 1 | Cylinder | Uncor |  | MU09 |  |
| 40-ZR-0(N,X)0-NN-1,,DE | 1.4+07 |  | 72 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22753 | 3 | 2 | Cylinder | Cor |  | MU09 |  |
| 40-ZR-0(N,X)0-NN-1,,DE | 1.4+07 |  | 72 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22753 | 4 | 1 | Cylinder | Uncor | cm | MU09 | Delete |
| 40-ZR-0(N,X)0-NN-1,,DE | 1.4+07 |  | 72 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22753 | 4 | 2 | Cylinder | Cor | cm | MU09 | Delete |
| 40-ZR-0(N,EL)40-ZR-0,,DA | 1.4+07 |  | 16 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22753 | 5 |  | Cylinder | |  |  |  |
| 40-ZR-0(N,INL)40-ZR-0,PAR,DA | 1.4+07 |  | 26 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22753 | 6 |  | Cylinder | |  |  |  |
| 40-ZR-0(N,EL)40-ZR-0,,SIG | 1.4+07 |  | 1 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22753 | 7 |  | Cylinder | |  |  |  |
| 40-ZR-0(N,INL)40-ZR-0,PAR,SIG | 1.4+07 |  | 2 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22753 | 8 |  | Cylinder | |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 41-NB-93(N,X)0-NN-1,,DA/DE | 1.3+07 | 1.5+07 | 793 | R,OKTAV-A-83-01 | 1983 | A.Takahashi+ | 21875 | 105 |  | Ring |  |  | ? |  |
| 41-NB-93(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1098 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22136 | 12 | 1 | Cylinder | Uncor |  | MU09 |  |
| 41-NB-93(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1098 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22136 | 12 | 2 | Cylinder | Cor |  | MU09 |  |
| 41-NB-93(N,X)0-NN-1,,DE | 1.4+07 |  | 71 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22136 | 14 | 1 | Cylinder | Uncor |  | ? |  |
| 41-NB-93(N,X)0-NN-1,,DE | 1.4+07 |  | 71 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22136 | 14 | 2 | Cylinder | Cor |  | ? |  |
| 41-NB-93(N,X)0-NN-1,,DE | 1.4+07 |  | 69 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22136 | 3 | 1 | Cylinder | Uncor | cm | MU09 | Delete |
| 41-NB-93(N,X)0-NN-1,,DE | 1.4+07 |  | 69 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22136 | 3 | 2 | Cylinder | Cor | cm | MU09 | Delete |
| 41-NB-93(N,EL)41-NB-93,,DA | 1.4+07 |  | 16 | R,INDC(JPN)-118 | 1989 | A.Takahashi+ | 22136 | 4 |  | Cylinder | |  |  | (SPSDD,22136016) |
| 41-NB-93(N,EL)41-NB-93,,DA | 1.4+07 |  | 16 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22136 | 16 |  | Cylinder | |  |  |  |
| 41-NB-93(N,INL)41-NB-93,PAR,DA | 1.4+07 |  | 27 | R,INDC(JPN)-118 | 1989 | A.Takahashi+ | 22136 | 5 |  | Cylinder | |  |  | (SPSDD,22136017) |
| 41-NB-93(N,INL)41-NB-93,PAR,DA | 1.4+07 |  | 26 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22136 | 17 |  | Cylinder | |  |  |  |
| 41-NB-93(N,X)0-NN-1,PAR,DA | 1.4+07 |  | 80 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22136 | 2 |  | Cylinder | |  |  |  |
| 41-NB-93(N,EL)41-NB-93,,SIG | 1.4+07 |  | 1 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22136 | 18 |  | Cylinder | |  |  |  |
| 41-NB-93(N,INL)41-NB-93,PAR,SIG | 1.4+07 |  | 2 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22136 | 19 |  | Cylinder | |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 42-MO-0(N,X)0-NN-1,,DA/DE | 1.3+07 | 1.5+07 | 520 | R,OKTAV-A-83-01 | 1983 | A.Takahashi+ | 21875 | 116 |  | Ring |  |  | ? |  |
| 42-MO-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1007 | R,INDC(JPN)-146 | 1991 | A.Takahashi+ | 22186 | 20 |  | Cylinder | Cor |  | NA91 | (SPSDD,22186057) |
| 42-MO-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1062 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 57 | 1 | Cylinder | Uncor |  | MU09 |  |
| 42-MO-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1062 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 57 | 2 | Cylinder | Cor |  | MU09 |  |
| 42-MO-0(N,X)0-NN-1,,DE | 1.4+07 |  | 71 | R,INDC(JPN)-146 | 1991 | A.Takahashi+ | 22186 | 35 |  | Cylinder | Cor |  | NA91 | (SPSDD,22186058) |
| 42-MO-0(N,X)0-NN-1,,DE | 1.4+07 |  | 69 | R,INDC(JPN)-146 | 1992 | A.Takahashi+ | 22186 | 36 | 1 | Cylinder | Uncor | cm | NA91 | Delete |
| 42-MO-0(N,X)0-NN-1,,DE | 1.4+07 |  | 69 | R,INDC(JPN)-146 | 1992 | A.Takahashi+ | 22186 | 36 | 2 | Cylinder | Cor | cm | NA91 | Delete |
| 42-MO-0(N,X)0-NN-1,,DE | 1.4+07 |  | 70 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 58 | 1 | Cylinder | Uncor |  | MU09 |  |
| 42-MO-0(N,X)0-NN-1,,DE | 1.4+07 |  | 70 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 58 | 2 | Cylinder | Cor |  | MU09 |  |
| 42-MO-0(N,X)0-NN-1,,DE | 1.4+07 |  | 68 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 59 | 1 | Cylinder | Uncor | cm | MU09 | Delete |
| 42-MO-0(N,X)0-NN-1,,DE | 1.4+07 |  | 68 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 59 | 2 | Cylinder | Cor | cm | MU09 | Delete |
| 42-MO-0(N,EL)42-MO-0,,DA | 1.4+07 |  | 16 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 60 |  | Cylinder | |  |  |  |
| 42-MO-0(N,INL)42-MO-0,PAR,DA | 1.4+07 |  | 13 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 61 |  | Cylinder | |  |  |  |
| 42-MO-0(N,2N),,DA | 1.4+07 |  | 16 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 62 |  | Cylinder | |  |  |  |
| 42-MO-0(N,EL)42-MO-0,,SIG | 1.4+07 |  | 1 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 63 |  | Cylinder | |  |  |  |
| 42-MO-0(N,INL)42-MO-0,PAR,SIG | 1.4+07 |  | 1 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 64 |  | Cylinder | |  |  |  |
| 42-MO-0(N,2N),,SIG | 1.4+07 |  | 1 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 85 |  | Cylinder | |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 47-AG-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 72 | J,PR/C,37,963 | 1988 | Y.Watanabe+ | 22110 | 2 |  | Cylinder | |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 48-CD-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 70 | J,PR/C,37,963 | 1988 | Y.Watanabe+ | 22110 | 3 |  | Cylinder | |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 49-IN-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 634 | J,PR/C,37,963 | 1988 | Y.Watanabe+ | 22110 | 4 |  | Cylinder | |  |  |  |
| 49-IN-0(N,X)0-NN-1,,DE | 1.4+07 |  | 70 | J,PR/C,37,963 | 1988 | Y.Watanabe+ | 22110 | 13 |  | Cylinder | |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 50-SN-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 70 | J,PR/C,37,963 | 1988 | Y.Watanabe+ | 22110 | 14 |  | Cylinder | |  | ? |  |
| 50-SN-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1095 | R,INDC(JPN)-146 | 1991 | A.Takahashi+ | 22186 | 37 |  | Cylinder | Cor |  | NA91 | (SPSDD,22186072) |
| 50-SN-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1095 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 72 | 1 | Cylinder | Uncor |  | MU09 |  |
| 50-SN-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1095 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 72 | 2 | Cylinder | Cor |  | MU09 |  |
| 50-SN-0(N,X)0-NN-1,,DE | 1.4+07 |  | 70 | R,INDC(JPN)-146 | 1991 | A.Takahashi+ | 22186 | 53 |  | Cylinder | Cor |  | NA91 | (SPSDD,22186073) |
| 50-SN-0(N,X)0-NN-1,,DE | 1.4+07 |  | 70 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 73 | 1 | Cylinder | Uncor |  | MU09 |  |
| 50-SN-0(N,X)0-NN-1,,DE | 1.4+07 |  | 70 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 73 | 2 | Cylinder | Cor |  | MU09 |  |
| 50-SN-0(N,X)0-NN-1,,DE | 1.4+07 |  | 70 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 74 | 1 | Cylinder | Uncor | cm | MU09 | Delete |
| 50-SN-0(N,X)0-NN-1,,DE | 1.4+07 |  | 70 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 74 | 2 | Cylinder | Cor | cm | MU09 | Delete |
| 50-SN-0(N,EL)50-SN-0,,DA | 1.4+07 |  | 16 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 75 |  | Cylinder | |  |  |  |
| 50-SN-0(N,INL)50-SN-0,PAR,DA | 1.4+07 |  | 14 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 76 |  | Cylinder | |  |  |  |
| 50-SN-0(N,INL)50-SN-0,PAR,SIG | 1.4+07 |  | 1 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 77 |  | Cylinder | |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 51-SB-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 70 | J,PR/C,37,963 | 1988 | Y.Watanabe+ | 22110 | 15 |  | Cylinder | |  | ? |  |
| 51-SB-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1103 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 54 | 1 | Cylinder | Uncor |  | MU09 |  |
| 51-SB-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1103 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 54 | 2 | Cylinder | Cor |  | MU09 |  |
| 51-SB-0(N,X)0-NN-1,,DE | 1.4+07 |  | 71 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 55 | 1 | Cylinder | Uncor |  | ? |  |
| 51-SB-0(N,X)0-NN-1,,DE | 1.4+07 |  | 71 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 55 | 2 | Cylinder | Cor |  | ? |  |
| 51-SB-0(N,X)0-NN-1,,DE | 1.4+07 |  | 71 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 56 | 1 | Cylinder | Uncor | cm | MU09 | Delete |
| 51-SB-0(N,X)0-NN-1,,DE | 1.4+07 |  | 71 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 56 | 2 | Cylinder | Cor | cm | MU09 | Delete |
| 51-SB-0(N,EL)51-SB-0,,DA | 1.4+07 |  | 16 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 66 |  | Cylinder | |  |  |  |
| 51-SB-0(N,INL)51-SB-0,PAR,DA | 1.4+07 |  | 13 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 67 |  | Cylinder | |  |  |  |
| 51-SB-0(N,2N),,DA | 1.4+07 |  | 16 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 68 |  | Cylinder | |  |  |  |
| 51-SB-0(N,EL)51-SB-0,,SIG | 1.4+07 |  | 1 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 69 |  | Cylinder | |  |  |  |
| 51-SB-0(N,INL)51-SB-0,PAR,SIG | 1.4+07 |  | 1 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 70 |  | Cylinder | |  |  |  |
| 51-SB-0(N,2N),,SIG | 1.4+07 |  | 1 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22186 | 86 |  | Cylinder | |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 52-TE-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 70 | J,PR/C,37,963 | 1988 | Y.Watanabe+ | 22110 | 16 |  | Cylinder | |  | ? |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 73-TA-181(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1127 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22136 | 13 | 1 | Cylinder | Uncor |  | MU09 |  |
| 73-TA-181(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1127 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22136 | 13 | 2 | Cylinder | Cor |  | MU09 |  |
| 73-TA-181(N,X)0-NN-1,,DE | 1.4+07 |  | 72 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22136 | 15 | 1 | Cylinder | Uncor |  | ? |  |
| 73-TA-181(N,X)0-NN-1,,DE | 1.4+07 |  | 72 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22136 | 15 | 2 | Cylinder | Cor |  | ? |  |
| 73-TA-181(N,X)0-NN-1,,DE | 1.4+07 |  | 72 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22136 | 7 | 1 | Cylinder | Uncor | cm | ? | Delete |
| 73-TA-181(N,X)0-NN-1,,DE | 1.4+07 |  | 72 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22136 | 7 | 2 | Cylinder | Cor | cm | ? | Delete |
| 73-TA-181(N,EL)73-TA-181,,DA | 1.4+07 |  | 16 | R,INDC(JPN)-118 | 1989 | A.Takahashi+ | 22136 | 8 |  | Cylinder | |  |  | (SPSDD,22136020) |
| 73-TA-181(N,EL)73-TA-181,,DA | 1.4+07 |  | 16 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22136 | 20 |  | Cylinder | |  |  |  |
| 73-TA-181(N,INL)73-TA-181,,DA | 1.4+07 |  | 16 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22136 | 21 |  | Cylinder | |  |  |  |
| 73-TA-181(N,2N)73-TA-180,,DA | 1.4+07 |  | 16 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22136 | 22 |  | Cylinder | |  |  |  |
| 73-TA-181(N,2N)73-TA-180,PAR,DA | 1.4+07 |  | 16 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22136 | 11 |  | Cylinder | |  |  |  |
| 73-TA-181(N,X)0-NN-1,PAR,DA | 1.4+07 |  | 96 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22136 | 6 |  | Cylinder | |  |  |  |
| 73-TA-181(N,X)0-NN-1,PAR,DA | 1.4+07 |  | 16 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22136 | 9 |  | Cylinder | | cont. |  |  |
| 73-TA-181(N,EL)73-TA-181,,SIG | 1.4+07 |  | 1 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22136 | 23 |  | Cylinder | |  |  |  |
| 73-TA-181(N,INL)73-TA-181,,SIG | 1.4+07 |  | 1 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22136 | 24 |  | Cylinder | |  |  |  |
| 73-TA-181(N,2N)73-TA-180,,SIG | 1.4+07 |  | 1 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22136 | 26 |  | Cylinder | |  |  |  |
| 73-TA-181(N,2N)73-TA-180,PAR,SIG | 1.4+07 |  | 1 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22136 | 10 |  | Cylinder | |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 74-W-0(N,X)0-NN-1,,DA/DE | 1.4+07 | 1.5+07 | 910 | R,OKTAV-A-87-01 | 1987 | A.Takahashi+ | 22076 | 71 | 1 | Ring | Uncor |  | MU09 |  |
| 74-W-0(N,X)0-NN-1,,DA/DE | 1.4+07 | 1.5+07 | 910 | R,OKTAV-A-87-01 | 1987 | A.Takahashi+ | 22076 | 71 | 2 | Ring | Cor |  | MU09 |  |
| 74-W-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1108 | R,INDC(JPN)-131 | 1989 | A.Takahashi+ | 22155 | 56 | 1 | Cylinder | Uncor |  | NA90 | (SPSDD,22155057) |
| 74-W-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1108 | R,INDC(JPN)-131 | 1989 | A.Takahashi+ | 22155 | 56 | 2 | Cylinder | Cor |  | NA90 | (SPSDD,22155057) |
| 74-W-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1108 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22155 | 57 | 1 | Cylinder | Uncor |  | MU09 |  |
| 74-W-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1108 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22155 | 57 | 2 | Cylinder | Cor |  | MU09 |  |
| 74-W-0(N,X)0-NN-1,,DE | 1.4+07 |  | 72 | R,INDC(JPN)-131 | 1989 | A.Takahashi+ | 22155 | 72 |  | Cylinder | Uncor |  | NA90 | (SPSDD,22155090) |
| 74-W-0(N,X)0-NN-1,,DE | 1.4+07 |  | 72 | R,INDC(JPN)-131 | 1989 | A.Takahashi+ | 22155 | 73 |  | Cylinder | Uncor | cm | NA90 | Delete |
| 74-W-0(N,X)0-NN-1,,DE | 1.4+07 |  | 72 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22155 | 90 | 1 | Cylinder | Uncor |  | MU09 |  |
| 74-W-0(N,X)0-NN-1,,DE | 1.4+07 |  | 72 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22155 | 90 | 2 | Cylinder | Cor |  | MU09 |  |
| 74-W-0(N,X)0-NN-1,,DE | 1.4+07 |  | 72 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22155 | 91 | 1 | Cylinder | Uncor | cm | MU09 | Delete |
| 74-W-0(N,X)0-NN-1,,DE | 1.4+07 |  | 72 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22155 | 91 | 2 | Cylinder | Cor | cm | MU09 | Delete |
| 74-W-0(N,EL)74-W-0,,DA | 1.4+07 |  | 16 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22155 | 92 |  | Cylinder | |  |  |  |
| 74-W-0(N,INL)74-W-0,PAR,DA | 1.4+07 |  | 16 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22155 | 93 |  | Cylinder | |  |  |  |
| 74-W-0(N,2N),,DA | 1.4+07 |  | 16 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22155 | 94 |  | Cylinder | |  |  |  |
| 74-W-0(N,EL)74-W-0,,SIG | 1.4+07 |  | 1 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22155 | 95 |  | Cylinder | |  |  |  |
| 74-W-0(N,INL)74-W-0,PAR,SIG | 1.4+07 |  | 1 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22155 | 96 |  | Cylinder | |  |  |  |
| 74-W-0(N,2N),,SIG | 1.4+07 |  | 1 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22155 | 98 |  | Cylinder | |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 82-PB-0(N,X)0-NN-1,,DA/DE | 1.3+07 | 1.5+07 | 1024 | R,OKTAV-A-83-01 | 1983 | A.Takahashi+ | 21875 | 124 |  | Ring |  |  | TA83 |  |
| 82-PB-0(N,X)0-NN-1,,DA/DE | 1.4+07 | 1.5+07 | 111 | R,OKTAV-A-87-01 | 1987 | A.Takahashi+ | 22076 | 79 | 1 | Ring | Uncor |  | MU09 |  |
| 82-PB-0(N,X)0-NN-1,,DA/DE | 1.4+07 | 1.5+07 | 111 | R,OKTAV-A-87-01 | 1987 | A.Takahashi+ | 22076 | 79 | 2 | Ring | Cor |  | MU09 |  |
| 82-PB-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1079 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 38 | 1 | Cylinder | Uncor |  | MU09 |  |
| 82-PB-0(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1079 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 38 | 2 | Cylinder | Cor |  | MU09 |  |
| 82-PB-0(N,X)0-NN-1,,DE | 1.4+07 |  | 76 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 4 | 1 | Cylinder | Uncor |  | MU09 |  |
| 82-PB-0(N,X)0-NN-1,,DE | 1.4+07 |  | 76 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 4 | 2 | Cylinder | Cor |  | MU09 |  |
| 82-PB-0(N,X)0-NN-1,,DE | 1.4+07 |  | 80 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 5 | 1 | Cylinder | Uncor | cm | MU09 | Delete |
| 82-PB-0(N,X)0-NN-1,,DE | 1.4+07 |  | 80 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 5 | 2 | Cylinder | Cor | cm | MU09 | Delete |
| 82-PB-0(N,EL)82-PB-0,,DA | 1.4+07 |  | 15 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 185 |  | Cylinder | |  |  |  |
| 82-PB-0(N,INL)82-PB-0,PAR,DA | 1.4+07 |  | 44 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 186 |  | Cylinder | |  |  |  |
| 82-PB-0(N,2N),PAR,DA | 1.4+07 |  | 15 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 187 |  | Cylinder | |  |  |  |
| 82-PB-0(N,EL)82-PB-0,,SIG | 1.4+07 |  | 1 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 188 |  | Cylinder | |  |  |  |
| 82-PB-0(N,INL)82-PB-0,PAR,SIG | 1.4+07 |  | 3 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 189 |  | Cylinder | |  |  |  |
| 82-PB-0(N,2N),PAR,SIG | 1.4+07 |  | 1 | R,OKTAV-A-87-03 | 1987 | A.Takahashi+ | 22075 | 190 |  | Cylinder | |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 83-BI-209(N,X)0-NN-1,,DA/DE | 1.3+07 | 1.5+07 | 412 | R,OKTAV-A-87-01 | 1987 | A.Takahashi+ | 22076 | 81 |  | Ring | ? |  | MU09 |  |
| 83-BI-209(N,X)0-NN-1,,DA/DE | 1.4+07 | 1.5+07 | 105 | R,OKTAV-A-87-01 | 1987 | A.Takahashi+ | 22076 | 90 |  | Ring | ? |  | MU09 |  |
| 83-BI-209(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1093 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22106 | 22 | 1 | Cylinder | Uncor |  | MU09 |  |
| 83-BI-209(N,X)0-NN-1,,DA/DE | 1.4+07 |  | 1093 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22106 | 22 | 2 | Cylinder | Cor |  | MU09 |  |
| 83-BI-209(N,X)0-NN-1,,DE | 1.4+07 |  | 75 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22106 | 15 | 1 | Cylinder | Uncor |  | ? |  |
| 83-BI-209(N,X)0-NN-1,,DE | 1.4+07 |  | 75 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22106 | 15 | 2 | Cylinder | Cor |  | ? |  |
| 83-BI-209(N,X)0-NN-1,,DE | 1.4+07 |  | 76 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22106 | 16 | 1 | Cylinder | Uncor | cm | MU09 | Delete |
| 83-BI-209(N,X)0-NN-1,,DE | 1.4+07 |  | 76 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22106 | 16 | 2 | Cylinder | Cor | cm | MU09 | Delete |
| 83-BI-209(N,EL)83-BI-209,,DA | 1.4+07 |  | 15 | S,INDC(JPN)-115 | 1988 | A.Takahashi+ | 22106 | 10 |  | Cylinder | |  |  | (SPSDD,22106017) |
| 83-BI-209(N,EL)83-BI-209,,DA | 1.4+07 |  | 15 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22106 | 17 |  | Cylinder | |  |  |  |
| 83-BI-209(N,INL)83-BI-209,PAR,DA | 1.4+07 |  | 28 | S,INDC(JPN)-115 | 1988 | A.Takahashi+ | 22106 | 12 |  | Cylinder | |  |  | (SPSDD,22106019) |
| 83-BI-209(N,INL)83-BI-209,PAR,DA | 1.4+07 |  | 30 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22106 | 19 |  | Cylinder | |  |  |  |
| 83-BI-209(N,2N)83-BI-208,,DA | 1.4+07 |  | 15 | S,INDC(JPN)-115 | 1988 | A.Takahashi+ | 22106 | 14 |  | Cylinder | |  |  | (SPSDD,22106021) |
| 83-BI-209(N,2N)83-BI-208,,DA | 1.4+07 |  | 15 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22106 | 21 |  | Cylinder | |  |  |  |
| 83-BI-209(N,INL)83-BI-209,PAR,SIG | 1.4+07 |  | 2 | S,INDC(JPN)-115 | 1988 | A.Takahashi+ | 22106 | 11 |  | Cylinder | |  |  | (SPSDD,22106018) |
| 83-BI-209(N,INL)83-BI-209,PAR,SIG | 1.4+07 |  | 2 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22106 | 18 |  | Cylinder | |  |  |  |
| 83-BI-209(N,2N)83-BI-208,,SIG | 1.4+07 |  | 1 | S,INDC(JPN)-115 | 1988 | A.Takahashi+ | 22106 | 37 |  | Cylinder | |  |  | (SPSDD,22106038) |
| 83-BI-209(N,2N)83-BI-208,,SIG | 1.4+07 |  | 1 | R,OKTAV-A-92-01 | 1992 | A.Takahashi+ | 22106 | 38 |  | Cylinder | |  |  |  |