



Canadian Certificate No. CDN/E044/-96 (Rev. 19)	Issue Date Oct-14-2011	Expiry Date Oct-31-2016	CNSC File 30-10-2-117
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Certificate
for
Endorsement of Transport Package Design
No. USA/9036/B(U)-96 (Rev. 15)

The transport package design identified below is certified by the Canadian Nuclear Safety Commission pursuant to paragraph 21(1)(h) of the *Nuclear Safety and Control Act* and Section 7 of the *Packaging and Transport of Nuclear Substances Regulations*, and to the 1996 Edition (Revised) of the *IAEA Regulations for the Safe Transport of Radioactive Material*.

REGISTRATION OF USE OF PACKAGES

All users of this authorization shall register their identity in writing with the Canadian Nuclear Safety Commission prior to the first use of this authorization and shall certify that they possess the instructions necessary for preparation of the package for shipment.

PACKAGE IDENTIFICATION

Designer: **Source Production and Equipment Co. Inc.**
Make/Model: **C-1 Source Changer [Nordion F-365]**
Mode of Transport: **Air, Sea, Road, Rail**

IDENTIFICATION MARK

The package shall bear the competent authority identification mark "USA/9036/B(U)-96".

PACKAGE DESCRIPTION

The package as shown on attached Drawing Nos. B322000, (Rev. 3) and B311000, Sheets 2 and 5, (Rev. 2); consists of a rectangular box of 3 mm thick steel with dimensions 190 mm wide by 190 mm deep by 230 mm high and of a polyurethane foam filled drum overpack. The inner receptacle consists of a depleted uranium shield equipped with two closed bottom Zircaloy "J" tubes, each of which may house one special form source assembly.

The configuration of the package is as follows:

Shape: Drum	Shielding: Depleted Uranium
Mass: 45 kg	Outer Casing: Steel
Length: n/a	Height: 521 mm
Width: n/a	Diameter: 368 mm



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AUTHORIZED RADIOACTIVE CONTENTS

This package is authorized to contain not more than two sealed source assemblies with a combined activity of not more than 11.1 TBq (300 Ci) output activity* of Iridium 192, Selenium 75 or Ytterbium 169, contained in the source assembly models listed below:

- i) Nordion Source Model Nos. C-169, C-175, C-192, C-245, C-259, XC-266, C-343B, C-376B and C-337B. The last two source assemblies contain G6 special form sources;
- ii) Amersham Source Model Nos. 93100, 93200;
- iii) QSA Global Source Model No. A424-9 which contains "875 series outer capsule" special form sources;
- iv) AEA Technology Source Model No. 969 which contains 88702 sources; and
- v) SPEC Model Nos. B-16F, B-16T, G-1T, G-1F, G-3F, G-40F, G-40T, G-60, T-5, T-5F.

* Output activity in curies is determined by measuring the source output at 1 meter and expressing its activity in curies derived from the following: 0.48 R/h-Ci Iridium-192 at 1 meter. (Ref: American National Standard N432-1980, "Radiological Safety for the Design and Construction of Apparatus for Gamma Radiography.")

QUALITY ASSURANCE

Quality assurance for the design, manufacture, testing, documentation, use, maintenance and inspection of the package shall be in accordance with:

- Certificate No. USA/9036/B(U)-96, (Rev. 15)
- Packaging and Transport of Nuclear Substances Regulations
- IAEA Regulations

SHIPMENT

The preparation for shipment of the package shall be in accordance with:

- Certificate No. USA/9036/B(U)-96, (Rev. 15)



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- Packaging and Transport of Nuclear Substances Regulations
- IAEA Regulations

The box shall be secured within the foam filled overpack to prevent shifting during normal conditions of transport.

This certificate is valid only in Canada.

S. Faille
Designated Officer pursuant to paragraph 37(2)(a)
of the Nuclear Safety and Control Act



Numéro du certificat canadien CDN/E044/-96 (Rév. 19)	Date d'émission oct.-14-2011	Date d'expiration oct.-31-2016	Dossier de la CNSC 30-10-2-117
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Certificat d'homologation

pour

Acceptation de la conception de colis de transport de l'étranger

n° USA/9036/B(U)-96 (Rév. 15)

La conception du modèle de colis ci-dessous est homologuée par la Commission canadienne de sûreté nucléaire en vertu de l'alinéa 21(1)(h) de la *Loi sur la sûreté et la réglementation nucléaires* et de l'article 7 du *Règlement sur l'emballage et le transport des substances nucléaires* du Canada et du *Règlement de l'AIEA, Édition de 1996, (Révisée), Règlement de transport des matières radioactives*.

INSCRIPTION DE L'USAGE DU COLIS

Toute personne qui utilise cette autorisation pour la première fois doit s'inscrire par écrit auprès de la Commission canadienne de sûreté nucléaire et attester qu'elle possède les instructions nécessaires pour préparer le colis à l'expédition.

IDENTIFICATION DU COLIS

Concepteur : **Source Production and Equipment Co. Inc.**
Marque/Modèle : **Dispositif de changement de source C-1 [Nordion F-365]**
Modes de transport : **Aérien, Maritime, Routier, Ferroviaire**

MARQUE D'IDENTIFICATION

Le colis porte la marque d'identification << USA/9036/B(U)-96 >> de l'autorité compétente.

DESCRIPTION DU COLIS

L'emballage, selon les dessins n^{os} B322000 (Rév. 3) et B311000, feuilles 2 et 5 (Rév. 2); ci-joint, comprend une boîte rectangulaire d'acier de 3 mm d'épaisseur, mesurant 190 mm de largeur sur 190 mm de profondeur sur 230 mm de hauteur et un suremballage d'un baril rempli de mousse de polyuréthane. Le récipient intérieur comprend un blindage d'uranium appauvri muni de deux tubes de Zircaloy en forme de "J" à fond fermé, qui peuvent recevoir chacun un assemblage de source sous forme spéciale.

La configuration du colis est la suivante :

Forme : Fût	Blindage : Uranium Appauvri
Masse : 45 kg	Enveloppe extérieure : Acier
Longueur : n/a	Hauteur : 521 mm
Largeur : n/a	Diamètre : 368 mm



Numéro du certificat canadien CDN/E044/-96 (Rév. 19)	Date d'émission oct.-14-2011	Date d'expiration oct.-31-2016	Dossier de la CNSC 30-10-2-117
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CONTENU RADIOACTIF AUTORISÉ

Le colis peut contenir un maximum de deux sources scellées dont l'activité combinée ne doit pas dépasser 11.1 TBq (300 Ci) d'activité de sortie* d'iridium 192, selenium 75 ou ytterbium 169, contenu dans les assemblages de source scellées suivantes :

- i) modèle de source n^{os} C-169, C-175, C-192, C-245, C-259, XC-266, C-343B, C-376B et C-337B de Nordion. Les deux dernier assemblages de source contenant une source sous forme speciale de modèle G6;
- ii) modèle de source n^{os} 93100, 93200 de Amersham;
- iii) modèle de source n^o A424-9 de QSA Global contenant une capsule externe de la série « 875 » sous forme spéciale;
- iv) modèle de source n^o 969 de AEA Technology contenant une source de modèle 88702; et
- v) modèle de source n^{os} B-16F, B-16T, G-1T, G-1F, G-3F, G-40F, G-40T, G-60, T-5, T-5F de SPEC .

* L'activité de sortie en curie est déterminée en mesurant l'activité (en curie) de la source à un mètre de distance dérivé de la façon suivante : 0.48 R/h-Ci à 1 mètre pour l'iridium 192. (référence : « American National Standard N432-1980, 'Radiological Safety for the Design and Construction of Apparatus for Gamma Radiography.' »)

ASSURANCE DE LA QUALITÉ

L'assurance de la qualité pour la conception, la fabrication, les épreuves, l'établissement des documents, l'utilisation, l'entretien et l'inspection du colis est conforme aux :

- Certificat de l'étranger n^o USA/9036/B(U)-96, (Rév. 15)
- Règlement sur l'emballage et le transport des substances nucléaires
- Règlement de l'AIEA

EXPÉDITION

La préparation du colis pour l'expédition est conforme aux :

- Certificat de l'étranger n^o USA/9036/B(U)-96, (Rév. 15)



Numéro du certificat canadien CDN/E044/-96 (Rév. 19)	Date d'émission oct.-14-2011	Date d'expiration oct.-31-2016	Dossier de la CNSC 30-10-2-117
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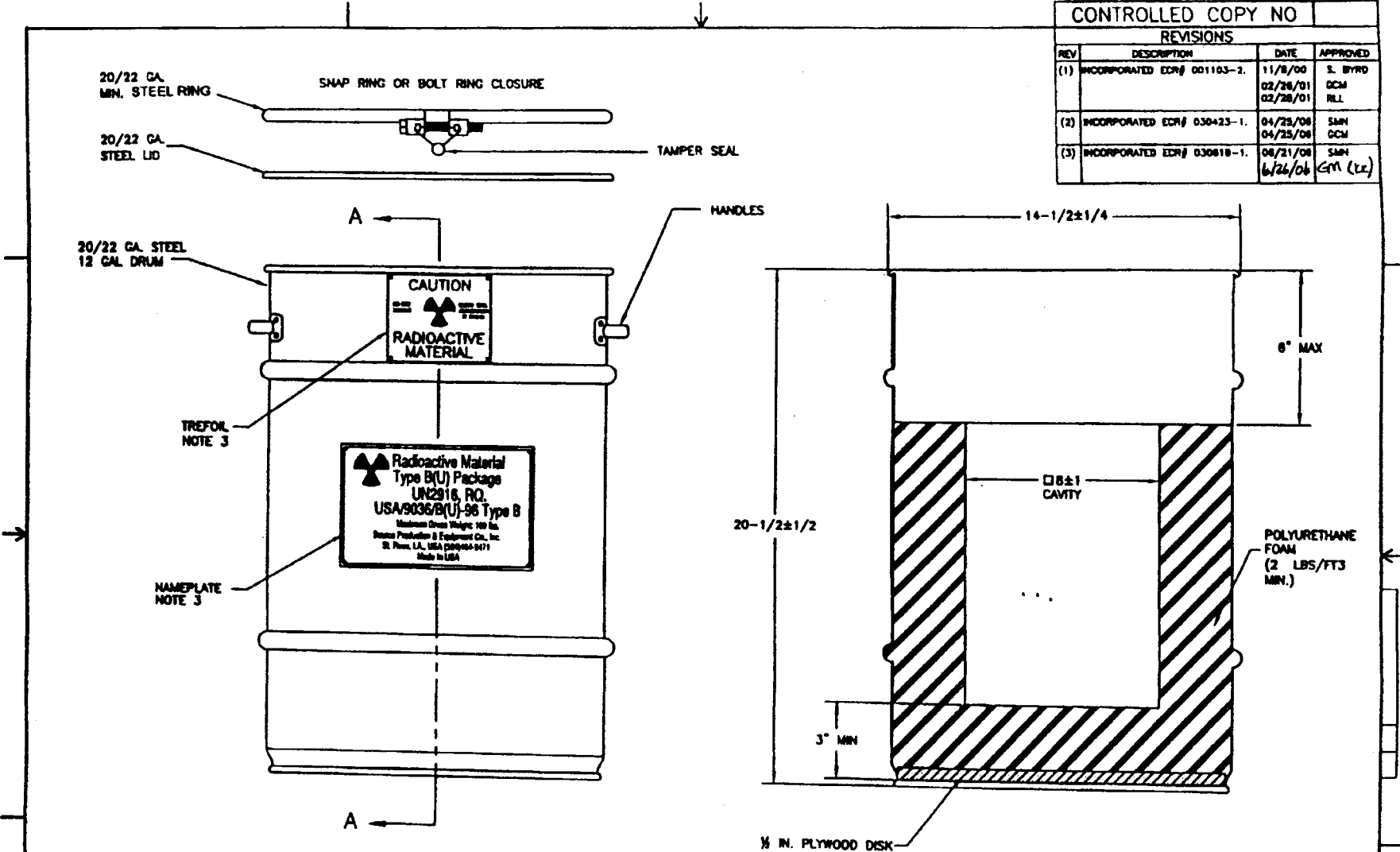
- Règlement sur l'emballage et le transport des substances nucléaires
- Règlement de l'AIEA

La boîte doit être arrimée convenablement à l'intérieur du suremballage rempli de mousse afin de prévenir le mouvement en condition normale de transport.

Ce certificat n'est valide qu'au Canada.

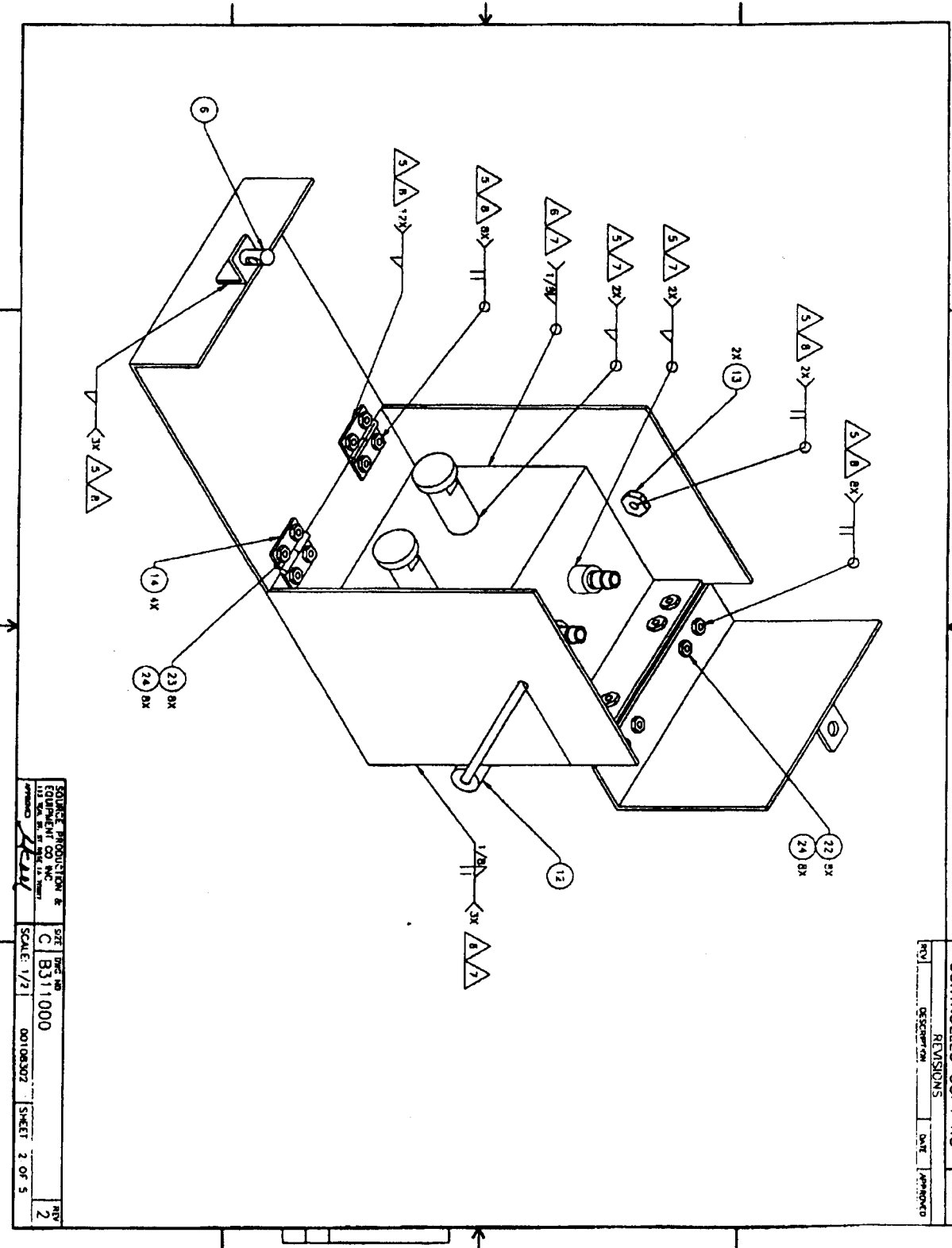
S. Faille
Fonctionnaire désigné en vertu de l'alinéa 37(2)(a)
de la *Loi sur la sûreté et la réglementation nucléaires*

CONTROLLED COPY NO			
REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
(1)	INCORPORATED EDR# 001103-2.	11/8/00 02/28/01 02/28/01	S. BYRD OCM RLI
(2)	INCORPORATED EDR# 030423-1.	04/25/08 04/25/08	SMN OCM
(3)	INCORPORATED EDR# 030810-1.	08/21/08 6/26/06	SMN GM (LC)



- NOTES:
- HIDDEN LINES NOT SHOWN
1. STEEL DRUM OVERPACK MAXIMUM WEIGHT: 22 LBS.
 2. PACKAGING (C-1, OVERPACK, ASSOCIATED HARDWARE AND BRACING) MAXIMUM GROSS WEIGHT: 100 LBS.
 3. THE NAMEPLATE AND TREFOL ARE FABRICATED FROM SS AND AFFIXED TO THE DRUM WITH SS RIVETS. LOCATIONS MAY VARY.

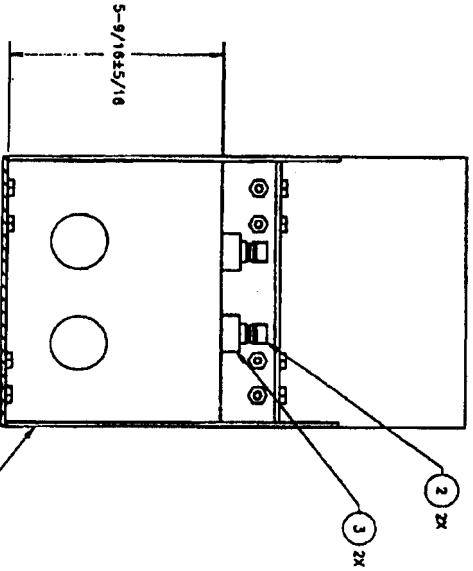
SOURCE PRODUCTION & EQUIPMENT CO., INC. 113 TEAL ST, ST ROSE, LA 70087 STEEL DRUM OVERPACK- C-1, SPEC		C 8322000 3
APPROVED: [Signature] DATE: 8/28/00 CHECKED: [Signature] DATE: 8/30/00 APPROVED: [Signature] DATE: 7/8/00	SCALE: 3/8 00108503 SHEET 1 OF 1	SHEET NO. 3



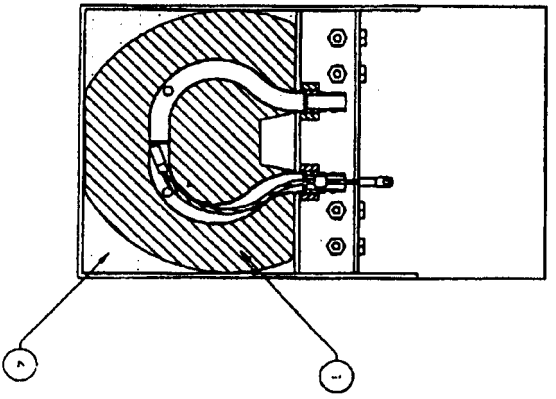
CONTROLLED COPY NO	
REV	DESCRIPTION
REVISIONS	DATE
	APPROVED

SOURCE PRODUCTION & EQUIPMENT CO INC	
111 S.W. 9th St. Ft. Lauderdale, Fla. 33304	
SCALE: 1/2	00108302
SHEET 2 OF 5	2

CONTROLLED COPY NO.			
REV	DESCRIPTION	DATE	APPROVED



SECTION B-B
SEE SHEET J
HANDLE AND HIDDEN
LINES NOT SHOWN



SECTION C-C
SEE SHEET J
HANDLE AND HIDDEN
LINES NOT SHOWN

EQUIPMENT IDENTIFICATION	SIZE	DATE	REV
113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000			



U.S. Department
of Transportation
Pipeline and
Hazardous Materials
Safety Administration

COMPETENT AUTHORITY CERTIFICATION
FOR A TYPE B(U)
RADIOACTIVE MATERIALS PACKAGE DESIGN
CERTIFICATE USA/9036/B(U)-96, REVISION 15

East Building, PHH-23
1200 New Jersey Avenue Southeast
Washington, D.C. 20590

This certifies that the radioactive material package design described has been certified by the Competent Authority of the United States as meeting the regulatory requirements for a Type B(U) packaging for radioactive material as prescribed in the regulations of the International Atomic Energy Agency¹ and the United States of America².

1. Package Identification - C-1.
2. Package Description and Authorized Radioactive Contents - as described in U.S. Nuclear Regulatory Commission Certificate of Compliance No. 9036, Revision 12 (attached).
3. General Conditions -
 - a. Each user of this certificate must have in his possession a copy of this certificate and all documents necessary to properly prepare the package for transportation. The user shall prepare the package for shipment in accordance with the documentation and applicable regulations.
 - b. Each user of this certificate, other than the original petitioner, shall register his identity in writing to the Office of Hazardous Materials Technology, (PHH-23), Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation, Washington D.C. 20590-0001.
 - c. This certificate does not relieve any consignor or carrier from compliance with any requirement of the Government of any country through or into which the package is to be transported.

¹ "Regulations for the Safe Transport of Radioactive Material, 1996 Edition (Revised), No. TS-R-1 (ST-1, Revised)," published by the International Atomic Energy Agency (IAEA), Vienna, Austria.

² Title 49, Code of Federal Regulations, Parts 100-199, United States of America.

CERTIFICATE USA/9036/B(U)-96, REVISION 15

- d. Records of Quality Assurance activities required by Paragraph 310 of the IAEA regulations¹ shall be maintained and made available to the authorized officials for at least three years after the last shipment authorized by this certificate. Consignors in the United States exporting shipments under this certificate shall satisfy the applicable requirements of Subpart H of 10 CFR 71.
4. Marking and Labeling - The package shall bear the marking USA/9036/B(U)-96 in addition to other required markings and labeling.
5. Expiration Date - This certificate expires on October 31, 2016.

This certificate is issued in accordance with paragraph 808 of the IAEA Regulations and Section 173.471 of Title 49 of the Code of Federal Regulations, in response to the July 18, 2011 petition by Source Production and Equipment Company, St. Rose, LA, and in consideration of other information on file in this Office.

Certified By:



Dr. Magdy El-Sibaie
Associate Administrator for Hazardous Materials Safety

Aug 05 2011
(DATE)

Revision 15 - Issued to endorse U.S. Nuclear Regulatory Commission Certificate of Compliance No. 9036, Revision 12.

**CERTIFICATE OF COMPLIANCE
FOR RADIOACTIVE MATERIAL PACKAGES**

a. CERTIFICATE NUMBER	b. REVISION NUMBER	c. DOCKET NUMBER	d. PACKAGE IDENTIFICATION NUMBER	PAGE	PAGES
9036	12	71-9036	USA/9036/B(U)-96	1 OF	3

2. PREAMBLE

- a. This certificate is issued to certify that the package (packaging and contents) described in Item 5 below meets the applicable safety standards set forth in Title 10, Code of Federal Regulations, Part 71, "Packaging and Transportation of Radioactive Material."
- b. This certificate does not relieve the consignor from compliance with any requirement of the regulations of the U.S. Department of Transportation or other applicable regulatory agencies, including the government of any country through or into which the package will be transported.

3. THIS CERTIFICATE IS ISSUED ON THE BASIS OF A SAFETY ANALYSIS REPORT OF THE PACKAGE DESIGN OR APPLICATION

- a. ISSUED TO (Name and Address)
Source Production and Equipment Company, Inc.
113 Teal Street
St. Rose, LA 70087-9691
- b. TITLE AND IDENTIFICATION OF REPORT OR APPLICATION
Source Production and Equipment Company, Inc.
application dated February 28, 2001, as supplemented.

4. CONDITIONS

This certificate is conditional upon fulfilling the requirements of 10 CFR Part 71, as applicable, and the conditions specified below.

5.

(a) Packaging

- (1) Model No.: C-1
- (2) Description

The packaging consists of a steel inner unit inside an outer overpack. The inner unit is a rectangular box approximately 9" high x 7.5" wide x 7.5" deep around a depleted uranium shield. All fittings and source locking components are protected and enclosed within the 1/8" carbon steel outer shell. The inner receptacle consists of a uranium shield equipped with two closed bottom Zircalloy or titanium "J" tubes, each of which may house one "pigtail type" special form source. The overpack is a 12-gallon, 20- or 22-gage steel drum partially filled with foam. The weight of the inner unit is 51 to 70 lbs. The weight of the overpack is 19 to 22 lbs. Up to 8 lbs. of ancillary equipment may be included within the overpack. The maximum gross weight of the package is 100 lbs.

(3) Drawings

The packaging is constructed in accordance with Source Production and Equipment Company, Inc., Drawing Nos. B322000, Rev. (3); B311000, Rev. (2); B311001, Rev. (1); and B311002, Rev. (0).

**CERTIFICATE OF COMPLIANCE
FOR RADIOACTIVE MATERIAL PACKAGES**

1. a. CERTIFICATE NUMBER	b. REVISION NUMBER	c. DOCKET NUMBER	d. PACKAGE IDENTIFICATION NUMBER	PAGE	PAGES
9036	12	71-9036	USA/9036/B(U)-96	2 OF	3

5.(b) Contents

(1) Type and form of material

Iridium-192, Selenium-75, and Ytterbium-169 as sealed sources that meet the requirements of special form radioactive material.

(2) Maximum quantity of material per package

Two sealed sources with a combined activity not to exceed 300 curies (11.1 TBq) (output)

Output curies are determined by measuring the source output at 1 meter and expressing its activity in curies derived from the following: 0.48 R/(h-Ci) Iridium-192.

6. Tungsten shield pads, with dimensions up to approximately 2-inches diameter and ½-inch thick, may be welded to the inside surface of the source changer housing.
7. The nameplate shall be fabricated of materials capable of resisting the fire test of 10 CFR Part 71 and maintaining their legibility.
8. In addition to the requirements of Subpart G of 10 CFR Part 71:
 - (a) The package shall be prepared for shipment and operated in accordance with the Operating Procedures of Section 7.0 of the application, as supplemented; and
 - (b) The package shall meet the Acceptance Tests and be maintained in accordance with the Maintenance Program of Section 8.0 of the application, as supplemented.
9. The packaging authorized by this certificate is hereby approved for use under the general license provisions of 10 CFR 71.17.
10. Revision No. 11 of this certificate may be used until October 31, 2012.
11. Expiration date: October 31, 2016.

**CERTIFICATE OF COMPLIANCE
FOR RADIOACTIVE MATERIAL PACKAGES**

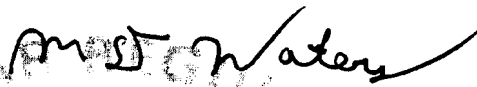
1.	a. CERTIFICATE NUMBER	b. REVISION NUMBER	c. DOCKET NUMBER	d. PACKAGE IDENTIFICATION NUMBER	PAGE	PAGES
	9036	12	71-9036	USA/9036/B(U)-96	3 OF	3

REFERENCES

Source Production and Equipment Company, Inc., applications dated September 27, 2000, and February 28, 2001.

Supplements dated: April 11 and May 11, 2001; May 1, June 14 and June 23, 2006; and May 26, 2011.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION


Michael D. Waters, Chief
Licensing Branch
Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety
and Safeguards

Date: July 13, 2011.

