MASTER

☆☆☆☆☆ UNITED STATES ATOMIC ENERGY COMMISSION ☆☆☆☆☆

PHYSICS

Distributed according to
TID-4500(17th Ed.)

TID-3561(Rev. 1)

DIRECT ENERGY CONVERSION DEVICES

A Literature Search

Compiled by
Henry D. Raleigh

December 1961

☆☆☆☆☆ Division of Technical Information ☆☆☆☆☆

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency Thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

DISCLAIMER

Portions of this document may be illegible in electronic image products. Images are produced from the best available original document.

DIRECT ENERGY CONVERSION DEVICES

Introduction

Included are 344 unclassified references on devices utilizing nuclear energy in the production of auxiliary power. The coverage includes nuclear batteries, thermoelectric cells, thermionic cells, and all phases of the SNAP program, although not all SNAP devices employ direct conversion. References from Nuclear Science Abstracts (NSA) through December 15, 1961, are included.

The report references are arranged alpha-numerically by report number behind the name of the issuing agency. The journal references are arranged alphabetically by journal title and the conferences are arranged generally by date.

The AEC sponsored reports may be examined at the depository libraries listed in each issue of NSA. They may also be purchased from the Office of Technical Services, U. S. Department of Commerce, Washington, D. C., in full-size printed copy, photostat, facsimile, or microfilm form as indicated.

The availability of non-AEC reports is given when known. If availability is not shown, inquiries should be directed to the Office of Technical Services or the issuing agency.

Symbols and Abbreviations

Dep.	Full-size copy is on deposit in the depository libraries. The AEC reports are also for sale by Microcard Editions, Inc., Accounting and Shipping Department, West Salem, Wisconsin.
Dep.(mc)	Same as Dep., except copy is in microcard form.
JCL	For sale by the John Crerar Library, 86 E. Randolph Street, Chicago 1, Illinois. ATTN: SLA Translation Center.
LC	For sale by the Library of Congress, Photoduplication Service, Washington 25, D. C.
OTS	For sale by the Office of Technical Services, Department of Commerce, Washington 25, D. C.

The symbols "ph", "mf", and "fs" are used to designate that copy is available only in photostat, microfilm, or facsimile (Xerox) form.

LEGAL NOTICE

The AEC reports listed in this document are accounts of Government sponsored work. Neither the United States, nor the Commission, nor any person acting on behalf of the Commission

A. Makes any warranty or representation, expressed or implied, with respect to the accuracy, completeness, or usefulness of the information contained in these reports, or that the use of any information, apparatus, method, or process disclosed in these reports may not infringe privately owned rights; or

B. Assumes any liabilities with respect to the use of, or for damages resulting from the use of any information, apparatus, method or process disclosed in these reports

As used in the above, "person acting on behalf of the Commission" includes any employee or contractor of the Commission, or employee of such contractor, to the extent that such employee or contractor of the Commission, or employee of such contractor prepares, disseminates, or provides access to, any information pursuant to his employment or contract with the Commission, or his employment with such contractor

Printed in USA. Price \$0.75. Available from the Office of Technical Services, Department of Commerce, Washington 25, D. C.

REFERENCES

**Allis-Chalmers Manufacturing Company,
Milwaukee, Wisconsin**

1

LOW POWER MOBILE NUCLEAR POWER PLANT WITH RADIOACTIVE HEAT SOURCE. PART B. 1 KW POWER PLANT FOR GROUND INSTALLATION. (Report No. 43-102). Final Report. F. B. Daniels and Eric R. Weber. June 15, 1952. Revised Oct. 10, 1952. Decl. with deletions Sept. 29, 1959. 112p. (TID-5544(Pt. B)(Del.)) \$18.30(ph), \$6.00(mf) OTS. NSA 13-22654

2

LOW POWER MOBILE NUCLEAR POWER PLANT WITH RADIOACTIVE HEAT SOURCE. PART C. 500 KW POWER PLANT FOR GROUND PRIME MOVER. (Report No. 43-103). Final Report. F. B. Daniels and Eric R. Weber. June 15, 1952. Revised Oct. 10, 1952. Decl. with deletions Sept. 29, 1959. 34p. (TID-5544(Pt. C)(Del.)) \$6.30(ph), \$3.00(mf) OTS. NSA-13-23116

**Army Signal Engineering Laboratories,
Fort Monmouth, New Jersey**

3

THE EIGHTH ANNUAL BATTERY RESEARCH AND DEVELOPMENT CONFERENCE MAY 25-26, 1954. 45p. (AD-69654) NSA 13-21072

**Army Signal Research and
Development Laboratory,
Fort Monmouth, New Jersey**

4

NUCLEAR-ENERGY POWER SOURCES. George H. Ogburn, Jr. Feb. 1961. 15p. (TID-6612) Dep.; \$0.50(OTS) NSA 15-13996.

**Atomics International Division,
North American Aviation, Inc.,
Canoga Park, California**

5

THE SNAP 2 RADIATIVE CONDENSER ANALYSIS. M. G. Coombs, R. A. Stone, and T. Kapus. 1960. 63p. (NAA-SR-5317) \$10.80(ph), \$3.90(mf) OTS. NSA 15-4759

6

AN ENRICHED UO_2 -ZrH CRITICAL ASSEMBLY. M. V. Davis, A. W. Thiele, and L. I. Moss. Nov. 1, 1960. 34p. (NAA-SR-5610) \$1.00(OTS) NSA 15-4715

7

PHYSICS MEASUREMENTS ON THE SNAP EXPERIMENTAL REACTOR (SER). F. H. Clark, S. G. Wogulis, and M. V. Davis. Jan. 30, 1961. 37p. (NAA-SR-5619) \$0.75(OTS).

8

PRELIMINARY RESULTS OF THE SNAP 2 EXPERIMENTAL REACTOR. M. W. Hulin and J. Beall, eds. Apr. 1, 1961. (NAA-SR-5991) Dep.(mc); \$9.30(ph), \$3.60(mf) OTS NSA 15-16712.

9

THERMAL EXPANSION OF SNAP MATERIALS. J. D. Watrous. July 30, 1961. 19p. (NAA-SR-6047) Dep.; \$0.50(OTS) NSA 15-25220.

10

THERMAL CONDUCTIVITY OF SNAP MATERIALS. R. A. Barney. Oct. 15, 1959. 15p. (NAA-SR-Memo-4508) \$3.30(ph), \$2.40(mf) OTS. NSA 14-6401

11

THERMIONIC NUCLEAR FUELS FOR DIRECT CONVERSION REACTORS. S. M. Toy. Nov. 25, 1959. 8p. (NAA-SR-Memo-4692) \$1.80(ph), \$1.80(mf) OTS. NSA 14-6757

12

SNAP-2 HG-PIPE AND HG WEIGHT AND PRESSURE DROP TO AND FROM THE CONDENSER RADIATOR. R. D. Welsh. Dec. 18, 1959. 7p. (NAA-SR-Memo-4778).

13

OPTIMIZATION OF CONICAL RADIATOR FOR SNAP 2. R. A. Stone. Dec. 28, 1959. 11p. (NAA-SR-Memo-4796) Dep.(mc); \$1.60(fs), \$0.80(mf) OTS NSA 15-21724.

14

STRUCTURAL PROBLEMS ASSOCIATED WITH DESIGN AND ANALYSIS OF THE SNAP II RADIATOR-CONDENSER. H. L. Sujata. Jan. 29, 1960. 5p. (NAA-SR-Memo-4910) Dep.(mc); \$1.10(fs), \$0.80(mf) OTS NSA 15-21725.

15

NaK PUMP EVALUATION. R. S. Baker and W. J. Fraser. Feb. 18, 1960. 30p. (NAA-SR-Memo-5004) \$4.80(ph), \$2.70(mf) OTS. NSA 15-4084

16

EXPERIMENTAL SHIELDING EVALUATION OF THE SETF USING SDR-I AND SNAP 10 AS RADIATION SOURCES. R. L. Tomlinson. Mar. 29, 1960. 26p. (NAA-SR-Memo-5103) \$4.80(ph), \$2.70(mf) OTS. NSA 14-16456

17

SNAP II REACTOR CORE MATERIALS. J. V. Facha. Apr. 11, 1960. 12p. (NAA-SR-Memo-5166) \$3.30(ph), \$2.40(mf) OTS. NSA 14-22607

18

ESTIMATE OF XENON REACTIVITY WITH APPLICATION TO THE SER. H. H. Baucom. May 19, 1960. 47p. (NAA-SR-Memo-5302) \$7.80(ph), \$3.30(mf) OTS. NSA 15-4765

19

PREPOISONING OF THE S2DS. Richard Brehm. June 20, 1960. 7p. (NAA-SR-Memo-5423) \$1.80(ph), \$1.80(mf) OTS. NSA 14-4766

20

WOUND-ROTOR ELECTROMAGNETIC PUMP FOR NaK. R. S. Baker and W. J. Fraser. June 22, 1960. 15p. (NAA-SR-Memo-5433) \$3.30(ph), \$2.40(mf) OTS. NSA 15-4085

21

PARSE - A FIRST ORDER APPROXIMATION OF REACTOR SHIELDS FOR SNAP SYSTEMS. PART I. NON-SCATTERED DOSE. K. L. Rooney and M. A. Boling. Oct. 11, 1960. 34p. (NAA-SR-Memo-5772) \$6.30(ph), \$3.00(mf) OTS. NSA 15-8348

22

SNAP 10A ESTIMATED ELECTRICAL CHARACTERISTICS. J. C. Cooper. June 9, 1961. 8p. (NAA-SR-Memo-6515) Dep.;(mc); \$1.10(fs); \$0.80(mf)OTS. NSA 15-30217

23

LIQUID-METAL CORROSION RESEARCH IN THE SNAP DEVELOPMENT PROGRAM. M. A. Perlow and J. R. Crosby. 11p. p.33-44 of NASA-AEC Liquid-Metals Corrosion Meeting, December 7-8, 1960, Washington, D. C. Feb. 1961. 109p. (NASA-TN-D-769) Dep.(mc); \$2.50(OTS) NSA 15-13274.

24

THE PRACTICAL APPLICATION OF SPACE NUCLEAR POWER IN THE 1960's. J. R. Wetch, H. M. Dieckamp, and G. M. Anderson. Feb. 1961. 50p. (TID-6312) Dep.; \$1.25(OTS) NSA 15-8406.

**Autonetics Division, North American
Aviation Incorporated, Downey, California**

25

ANNOTATED BIBLIOGRAPHY ON THERMOELECTRICITY MATERIALS AND DEVICES. B. H. Nagel. Jan. 28, 1960. 233p. (AD-242768; EM-5987) NSA 15-11748.

26

AN EVALUATION OF THE COMPATIBILITY OF SOME OF THE SNAP 2 CORE MATERIALS. L. B. Lundberg. Dec. 9, 1960. 15p. (NAA-SR-Memo-5952) Dep.(mc); \$1.60(fs), \$0.80(mf) OTS NSA 15-19837.

27

DESCRIPTION OF "SHAFT-1" CODE FOR CALCULATION OF RADIATION SHAPE FACTORS IN FINNED SYSTEMS. R. D. Elliott. Dec. 15, 1960. 18p. (NAA-SR-Memo-5974) Dep.(mc); \$1.60(fs), \$0.80(mf) OTS NSA 15-19512.

28

SHAPE OF A MINIMUM WEIGHT REFLECTOR. C. M. Podeweltz. Dec. 20, 1960. 12p. (NAA-SR-Memo-5982) Dep.(mc); \$1.60(fs), \$0.80(mf) OTS NSA 15-20329.

**Brookhaven National Laboratory,
Upton, New York**

29

STATUS OF DIRECT CONVERSION PROGRAMS IN THE UNITED STATES WITH SPECIAL EMPHASIS ON CIVILIAN NUCLEAR POWER. William A. Robba. May 1960. 13p. (BNL-628) Dep.; \$0.50(OTS) NSA 15-5469.

**California Institute of Technology.
Pasadena, California**

30

PROCEEDINGS OF A SEMINAR ON ADVANCED ENERGY SOURCES AND CONVERSION TECHNIQUES HELD AT PASADENA, CALIFORNIA, NOVEMBER 3-7, 1958. (In cooperation with California. Univ., Los Angeles). 269p. (AD-209301; PB-151461) \$4.00(OTS). NSA 13-21294.

**California Institute of Technology.
Jet Propulsion Laboratory,
Pasadena, California**

31

THERMIONICS AND THERMOELECTRICITY. ASTRONAUTICS INFORMATION LITERATURE SEARCH NO. 294. Edda Barber, comp. Dec. 1960. 185p. (JPLAI-LS-294) NSA 15-18575.

32

RESEARCH SUMMARY NO. 36-7, VOLUME II, FOR THE PERIOD DECEMBER 1, 1960 TO FEBRUARY 1, 1961. Mar. 1, 1961. 41p. (NP-10015) NSA 15-16185.

**University of California,
Ernest O. Lawrence Radiation
Laboratory, Livermore, California**

33

STUDY OF ELECTRIC PROPULSION SYSTEMS FOR SPACE TRAVEL. Interim Progress Report for July 1 to December 31, 1958. Robert H. Fox. Feb. 6, 1959. 91p. (UCRL-5478) \$15.30(ph), \$5.40(mf) OTS. NSA 13-18247

34

SOME IMPORTANT PARAMETERS OF THE PLASMA DIODE. Raymond Fox. Nov. 1959. 30p. (UCRL-5683) \$4.80(ph), \$2.70(mf) OTS. NSA 14-6782

**David Sarnoff Research Center,
Princeton, New Jersey**

35

A STUDY PROGRAM ON POSSIBLE USES OF RADIOACTIVE MATERIALS IN ELECTRONIC DEVICES. FINAL REPORT FOR JULY 1, 1951 TO NOVEMBER 30, 1953. P. Rappaport, J. J. Loferski, and E. G. Linder. Nov. 1953. 144p. (AD-30732). NSA 9-3208

**Division of Technical Information Extension,
Atomic Energy Commission,
Oak Ridge, Tennessee**

36

UTILIZATION OF FISSION PRODUCTS. A BIBLIOGRAPHY OF SELECTED UNCLASSIFIED LITERATURE. Gifford A. Young and Robert E. Allen. June 1955. 55p. (TID-3046(Suppl. 1)) \$0.40(OTS). NSA 9-7028

**Douglas Aircraft Company, Incorporated,
Santa Monica, California**

37

SOME NOTES ON THERMOELECTRIC EFFECTS. MODEL - GENERAL. L. L. Schilb.
July 1, 1960. 40p. (SM-37637). NSA 15-3218

**Electro-Optical Systems, Incorporated,
Pasadena, California**

38

ENERGY CONVERSION SYSTEMS REFERENCE HANDBOOK. VOLUME IV. STATIC THERMAL CONVERTERS. J. Blair and J. D. Burns. Sept. 1960. 209p. (WADD-TR-60-699 (Vol. IV); EOS-390-Final (Vol. IV)) OTS. NSA 15-24103.

39

ENERGY CONVERSION SYSTEMS REFERENCE HANDBOOK. VOLUME V. DIRECT SOLAR CONVERSION. W. Evans and W. R. Menetrey. Sept. 1960. 206p. (WADD-TR-60-699(Vol. V)) OTS. NSA 15-22824.

40

ENERGY CONVERSION SYSTEMS REFERENCE HANDBOOK. VOLUME IX. SOLAR SYSTEM DESIGN. W. R. Menetrey. Sept. 1960. 95p. (WADD-TR-60-699(Vol. IX); EOS-390-Final (Vol. IX)) OTS. NSA 15-24106.

**Evans Signal Laboratory,
Belmar, New Jersey**

41

RADIOACTIVE BATTERY. Richard R. Annis. Aug. 6, 1952. 39p. (SCEL-M-1456; ATI-168672; R-7081). NSA 8-3779

**General Atomic Division,
General Dynamics Corporation,
San Diego, California**

42

CONVERSION OF HEAT TO ELECTRICITY IN SOLIDS AND PLASMAS. Werner B. Teutsch. Aug. 8, 1960. 13p. (GA-1476). NSA 15-744

43

DIRECT CONVERSION OF NUCLEAR HEAT TO ELECTRICITY. R. C. Howard. Sept. 1, 1960. 19p. (GA-1641) NSA 15-1938

**General Electric Company,
Electronics Laboratory,
Syracuse, New York**

44

A STUDY OF THERMOELECTRIC GENERATOR MATERIALS. Interim Report No. 1 for May 13, 1958 to March 1, 1959. N. Schwartz and W. J. van der Grinten. 48p. (AD-217234). NSA 14-9710

**General Electric Company,
Schenectady, New York**

45

THERMOELECTRIC CONVERSION OF ENERGY. Final Report for period: October 1, 1958 through September 30, 1959. Oct. 23, 1959. 188p. (AD-234537)
NSA 15-3184

**General Electric Company,
Vallecitos Atomic Laboratory,
Pleasanton, California**

46

CALCULATION OF THE MAXIMUM EFFICIENCY OF THE THERMIONIC CONVERTER. John H. Ingold. Dec. 1959. 15p. (GEAP-3283; R59APE38) NSA 15-17387.

**General Motors Corporation,
Research Laboratories,
Detroit, Michigan**

47

INVESTIGATIONS ON THE DIRECT CONVERSION OF NUCLEAR FISSION ENERGY TO ELECTRICAL ENERGY IN PLASMA DIODE. Final Report. Dec. 31, 1960. 149p. (AD-250673) NSA 15-24404.

**Knolls Atomic Power Laboratory,
Schenectady, New York**

48

APPLICATION OF SOLID-STATE DEVICES TO NUCLEAR PLANT TECHNOLOGY. R. F. Shea. Apr. 8, 1960. 10p. (KAPL-M-RFS-1) \$1.80(ph), \$1.80(mf) OTS.
NSA 14-14855

**Little (Arthur D.) Incorporated,
Cambridge, Massachusetts**

49

RADIATION: A TOOL FOR INDUSTRY. A SURVEY OF CURRENT TECHNOLOGY. Jan. 1959. 411p. For Emerson Radio and Phonograph Corp. and General Electric Co. Hanford Atomic Products Operation. (ALI-52) \$5.50(OTS). NSA 13-17578

**Lockheed Aircraft Corporation,
Missiles and Space Division,
Sunnyvale, California**

50

PHOTOVOLTAIC CELLS. Maureen Percy, comp. Aug. 11, 1960. 45p. OTS. (NP-9610; SB-60-28) NSA 15-5478.

51

PHOTOVOLTAIC CELLS. PART II. AN ANNOTATED BIBLIOGRAPHY. Maureen A. Percy, comp. Dec. 1960. 41p. (NP-9610(Pt. II); SB-60-28(Pt. II)) OTS. NSA 15-13077.

**Los Alamos Scientific Laboratory,
Los Alamos, New Mexico**

52

THERMOELECTRIC PROPERTIES OF THE PLASMA DIODE. H. W. Lewis and J. R. Reitz. July 25, 1958. 24p. (AECU-3998) J. Appl. Phys. 30: 1439-45(1959) NSA 13-7844

53

A NUCLEAR-ELECTRIC PROPULSION SYSTEM. R. W. Bussard. 1956. 11p. (AECU-4250) \$3.30(ph), \$2.40(mf) OTS. NSA 13-17046

54

QUARTERLY STATUS REPORT OF THE LASL PLASMA THERMOCOUPLE DEVELOPMENT PROGRAM FOR PERIOD ENDING JUNE 20, 1959. Samuel Glasstone, comp. and ed. July 1959. 15p. (LAMS-2333) \$0.50(OTS). NSA 13-17963

55

QUARTERLY STATUS REPORT OF THE LASL PLASMA THERMOCOUPLE DEVELOPMENT PROGRAM FOR PERIOD ENDING SEPTEMBER 20, 1959. Samuel Glasstone, comp. and ed. Oct. 1959. 16p. (LAMS-2364) \$0.50(OTS). NSA 14-1636

56

DESIGN CONSIDERATIONS FOR A PLASMA THERMOCOUPLE REACTOR. Bob. E. Watt. Jan. 15, 1960. 24p. (LAMS-2386) \$1.00(OTS). NSA 14-16447

57

QUARTERLY STATUS REPORT OF THE LASL PLASMA THERMOCOUPLE DEVELOPMENT PROGRAM FOR PERIOD ENDING DECEMBER 20, 1959. Samuel Glasstone, comp. and ed. Jan. 1960. 21p. (LAMS-2396) \$0.75(OTS). NSA 14-8666

58

QUARTERLY STATUS REPORT OF THE LASL PLASMA THERMOCOUPLE DEVELOPMENT PROGRAM FOR PERIOD ENDING MARCH 20, 1960. Samuel Glasstone, comp. and ed. Apr. 1960. 18p. (LAMS-2423) \$0.75(OTS). NSA 14-16448

59

QUARTERLY STATUS REPORT OF THE LASL PLASMA THERMOCOUPLE DEVELOPMENT PROGRAM FOR PERIOD ENDING JUNE 20, 1960. Samuel Glasstone, comp. and ed. July 1960. 11p. (LAMS-2447) \$0.50(OTS). NSA 14-20708

60

QUARTERLY STATUS REPORT OF THE LASL PLASMA THERMOCOUPLE DEVELOPMENT PROGRAM FOR PERIOD ENDING SEPTEMBER 20, 1960. October 1960. 17p. (LAMS-2473) \$0.50(OTS). NSA 15-4672

61

HYPERSONIC PLASMA THERMOCOUPLE. Theodore Cotter. Nov. 1960. 12p. (LAMS-2481) \$0.50(OTS). NSA 15-10204

62

QUARTERLY STATUS REPORT OF THE LASL PLASMA THERMOCOUPLE DEVELOPMENT PROGRAM FOR PERIOD ENDING DECEMBER 20, 1960. Dec. 1960. 18p. (LAMS-2504) \$0.50(OTS). NSA 15-11759

63

QUARTERLY STATUS REPORT OF THE LASL PLASMA THERMOCOUPLE DEVELOPMENT PROGRAM FOR PERIOD ENDING MARCH 20, 1961. Apr. 1961. 15p. (LAMS-2544) Dep.; \$0.50(OTS). NSA 15-18897.

64

OPERATING CHARACTERISTICS OF A CESIUM DIODE UTILIZING FISSILE HEATING OF THE EMITTER. Walter Reichelt, E. Salmi, G. Grover, and W. Schafer. June 1961. (LANS-2598) Dep.; \$0.50(OTS). NSA 15-29312

**Martin Company, Nuclear Division,
Baltimore, Maryland**

65

POWER FROM RADIOISOTOPES. Kenneth P. Johnson. 14p. (A/CONF.15/P/833) \$0.50(OTS). NSA 12-14473

66

POWER FROM RADIOISOTOPES. K. P. Johnson. 1958. 18p. (AECU-4373) \$3.30(ph), \$2.40(mf) OTS. NSA 14-692

67

DIRECT CONVERSION APPLIED TO NUCLEAR HEAT SOURCES. Melvin Barmat. June 19, 1959. 58p. (AECU-4483) \$9.30(ph), \$3.60(mf) OTS. NSA 14-3840

68

THE FEASIBILITY OF PRODUCING POWER FROM RADIOISOTOPES. F. Hittman. 1957. 12p. (MND-1031) \$3.30(ph), \$2.40(mf) OTS. NSA 12-3478

69

A PRELIMINARY EVALUATION OF NUCLEAR THERMOELECTRIC AND THERMIONIC (SECONDARY) POWER PLANTS FOR SPACE USE. Robert J. Harvey, Fred N. Huffman, and C. Eicheldinger. 1958. 151p. (MND-1666). NSA 13-14496

70

THERMOELECTRIC POWER SOURCES: AN ANNOTATED LITERATURE SEARCH. PART I. George E. Halpern and Elizabeth G. Sanford. Dec. 5, 1958. 24p. (MND-Lib-1631) NSA 13-9101

71

HAZARDS SUMMARY REPORT FOR A THREE WATT POLONIUM-210 FUELED THERMOELECTRIC GENERATOR. June 1959. Dec1. Sept. 19, 1960. 36p. (MND-P-2047) Dep.(mc); \$6.30(ph), \$3.00(mf) OTS. NSA 15-14571.

72

HAZARDS SUMMARY REPORT FOR A TWO WATT STRONTIUM-90 FUELED THERMOELECTRIC GENERATOR. June 1959. Dec1. Sept. 19, 1960. 34p. (MND-P-2048) Dep.(mc); \$6.30(ph), \$3.00(mf) OTS. NSA 15-14572.

73

HAZARDS SUMMARY REPORT FOR A TWO WATT PROMETHIUM-147 FUELED THERMOELECTRIC GENERATOR. June 1959. Dec1. Sept. 19, 1960. 35p. Dep.(mc); \$6.30(ph), \$3.00(mf) OTS. (MND-P-2049) NSA 15-14049.

74

SNAP-III - THERMOELECTRIC GENERATOR ENVIRONMENTAL TEST. Louis W. Gross. Aug. 1959. 68p. (MND-P-2101) \$10.80(ph), \$3.90(mf) OTS. NSA 13-22631

75

SNAP-III - THERMOELECTRIC GENERATOR ENVIRONMENTAL TEST. VOLUME III. Louis W. Gross and Eugene J. Schramm. Jan. 1960. 73p. (MND-P-2101-III) \$10.80(ph), \$3.90(mf) OTS. NSA 14-9563

76

SNAP-I - DYNAMIC MERCURY LOOP TESTS OF SELECTED MATERIALS. Period Covered: January 1957 - June 1959. John McGrew. March 1960. 45p. (MND-P-2128) \$7.80(ph), \$3.30(mf) OTS. NSA 15-564

77

PRELIMINARY OPERATIONAL HAZARDS SUMMARY REPORT FOR THE TASK 2 THERMO-ELECTRIC GENERATOR. George P. Dix, Jr. Dec. 1959. Dec. 1. Oct. 20, 1960. 161p. (MND-P-2184) Dep.(mc); \$25.80(ph), \$7.80(mf) OTS. NSA 15-14830.

78

SNAP I MERCURY BOILER DEVELOPMENT, JANUARY 1957 TO JUNE 1959. John Jicha and James J. Keenan. June 1960. 102p. (MND-P-2309) Dep.; \$2.25(OTS). NSA 15-13463.

79

TESTING PROCEDURES FOR TASK 2 ISOTOPIC POWERED THERMOELECTRIC GENERATOR. Preliminary Technical Manual. M. J. Reilly. Mar. 24, 1960. 44p. (MND-P-2316) \$1.00(OTS). NSA 15-4364

80

INTERIM REPORT ON SAFETY PROCEDURES FOR THE TASK 2 THERMOELECTRIC GENERATOR. L. T. Klein. March 15, 1960. 62p. (MND-P-2335) \$1.50(OTS). NSA 15-5471

81

100-WATT CURIUM-242 FUELED THERMOELECTRIC GENERATOR-CONCEPTUAL DESIGN. SNAP subtask 5.7 Final Report. J. B. Weddell and Justin Bloom. May 1960. 66p. (MND-I-2342) Dep.; \$2.00(OTS). NSA 15-14050.

82

SNAP-1A FUEL CORE MATERIALS DEVELOPMENT SUMMARY. Period Covered: July 1959 through June 1960. 87p. (MND-P-2349) \$15.30(ph), \$5.40(mf) OTS. NSA 14-21889

83

SNAP-I RADIOISOTOPE-FUELED TURBOELECTRIC POWER CONVERSION SYSTEM SUMMARY, JANUARY 1957 TO JUNE 1959. Paul J. Dick. June 1960. 60p. (MND-P-2350) \$1.50(OTS). NSA 15-10595

84

FINAL SAFETY ANALYSIS REPORT - SNAP 1A RADIOISOTOPE FUELED THERMOELECTRIC GENERATOR. George P. Dix. June 30, 1960. 200p. (MND-P-2352) \$33.30(ph), \$9.60(mf) OTS. NSA 15-3201

85

NUCLEAR 1.0-WATT POWER SUPPLY FOR SPACE APPLICATION. Final Report for Period Covered: October 19, 1959 - June 30, 1960. D. J. Knighton. June 1960. 54p. (MND-P-2354) \$1.25(OTS). NSA 15-1941

86

ADVANCED THERMOELECTRIC POWER SYSTEM. Final Report. Robert J. Harvey. 1960. 20p. (MND-P-2355) \$3.30(ph), \$2.40(mf) OTS. NSA 15-747

87

PRELIMINARY OPERATIONAL SAFETY REPORT FOR THE TASK 5.6 THERMOELECTRIC GENERATOR. Daniel Knighton. May 1960. 54p. (MND-P-2356) \$1.50(OTS). NSA 15-8400

88

PRELIMINARY SAFETY ANALYSIS LOW POWER CERIUM-144 GENERATOR. June 1960. 33p. (MND-P-2363) \$6.30(ph), \$3.00(mf) OTS. NSA 15-748

89

FINAL SAFETY ANALYSIS REPORT. SNAP III THERMOELECTRIC GENERATOR. W. Hagis and George P. Dix. June 1960. 67p. (MND-P-2364) \$1.75(OTS).
NSA 15-8401

90

CURIUM FUELED GENERATORS FOR LUNAR AND SPACE MISSIONS. Preliminary Safety Analysis Report. Cecil O. Riggs. June 1960. 55p. (MND-P-2366) \$1.50(OTS).
NSA 15-4365

91

CONCEPTUAL DESIGN OF A SNAP III TYPE GENERATOR FUELED WITH CERIUM-144. Robert J. Wilson. June 1960. 48p. (MND-P-2369) \$1.25(OTS). NSA 15-9539

92

DEVELOPMENT OF A THERMOELECTRIC OPTIMIZATION CODE FOR THE IBM-709. T. S. Bustard and W. C. Lyon. July 1960. 142p. (MND-P-2372) \$22.80(ph), \$7.20(mf) OTS. NSA 15-1942

93

13-WATT CURIUM FUELED THERMOELECTRIC GENERATOR FOR A SIX-MONTH SPACE MISSION. Final Report. Justin L. Bloom. July 1960. 46p. (MND-P-2373) \$1.25(OTS). NSA 15-3202

94

13-WATT CURIUM-FUELED THERMOELECTRIC GENERATOR FOR HARD LUNAR IMPACT MISSION. Final Report - Subtask 5.8. Justin L. Bloom. Aug. 1960. 57p. (MND-P-2374) \$1.50(OTS). NSA 15-1943

95

SNAP III FINAL PERFORMANCE TEST SUMMARY. James D. Long. Aug. 1960. 57p. (MND-P-2398) \$9.30(ph), \$3.60(mf) OTS. NSA 15-749

96

SNAP III. FINAL PERFORMANCE TEST SUMMARY. Mar. 1961. 13p. (MND-P-2398 (Add. 1)) Dep.(mc); \$3.30(ph), \$2.40(mf) OTS. NSA 15-18577.

97

SUMMARY REPORT OF THERMIONIC ISOTOPIC POWER SYSTEM. Through June 30, 1960. Robert J. Harvey. 535p. (MND-P-2399) \$91.80(ph), \$11.10(mf) OTS. NSA 15-1671

98

BIBLIOGRAPHY OF SNAP REPORTS. Aug. 1960. 9p. (MND-P-2413) \$1.80(ph), \$1.80(mf) OTS. NSA 15-1944

99

TASK 8 - STRONTIUM-90 FUELED THERMOELECTRIC GENERATOR DEVELOPMENT. SNAP PROGRAMS QUARTERLY PROGRESS REPORT NO. 1, NOVEMBER 1, 1960 through JANUARY 31, 1961. W. S. West. 78p. (MND-P-2483-1) Dep.; \$2.00(OTS). NSA 15-24083.

100

SNAP-III - THERMOELECTRIC GENERATOR RADIOLOGICAL SAFETY ANALYSIS. George P. Dix. Thaddeus J. Dobry, Jr., and Paul Guinn. Feb. 1959. 27p. (MND-P-2513) \$4.80(ph), \$2.70(mf) OTS. NSA 13-9792

101

SNAP-III - THERMOELECTRIC GENERATOR SAFE HANDLING PROCEDURES. Thaddeus J. Dobry, Jr. and Paul Guinn. Apr. 1959. 18p. (MND-P-2514) \$3.30(ph), \$2.40(mf) OTS. NSA 13-22632

102

SNAP PROGRAMS. Quarterly Progress Report No. 1 for October 22 - December 31, 1959. Nov. 1960. 287p. (MND-P-3009-1) \$3.50(OTS). NSA 15-12652

103

SNAP PROGRAMS. Quarterly Progress Report No. 2. Tasks 2, 3, 5, and 6. January to March 31, 1960. December 1960. 316p. (MND-P-3010) \$4.00(OTS). NSA 15-15215

104

SNAP PROGRAMS. Quarterly Progress Report No. 3 for April 1 through June 30, 1960. 162p. (MND-P-3011) \$27.30(ph), \$8.10(mf) OTS. NSA 15-1945

105

SNAP PROGRAMS. Quarterly Progress Report No. 4 for July 1 through September 30, 1960. Tasks 2 and 3. P. J. Dick, comp. and ed. 53p. (MND-P-3012-I) \$7.80(ph), \$3.30(mf) OTS. NSA 15-4366

106

SNAP PROGRAMS. Quarterly Progress Report No. 4 (for) July 1 through September 30, 1960. Subtask 5.3 and Task 6. R. Harvey and W. M. Bowes, eds. 170p. (MND-P-3012-II) Dep.(mc); \$27.30(ph), \$8.10(mf) OTS. NSA 15-5472.

107

SNAP RADIOISOTOPE SPACE PROGRAMS, TASK 2, 3, and 7, QUARTERLY PROGRESS REPORT NO. 5, OCTOBER 1 THROUGH DECEMBER 31, 1960. 46p. (MND-P-3013-1) Dep.(mc); \$7.80(ph), \$3.30(mf) OTS. NSA 15-12653.

108

SNAP PROGRAMS. QUARTERLY PROGRESS REPORT NO. 5, OCTOBER 1 - DECEMBER 31, 1960. 138p. (MND-P-3013-II) Dep.(mc); \$21.30(ph), \$6.90(mf) OTS. NSA 15-16711.

109

SNAP PROGRAMS. THERMIONIC ISOTOPIIC POWER SYSTEMS. Quarterly Progress Report No. 6, January 1 through March 31, 1961. 101p. (MND-P-3014-II) Dep.(mc); \$9.10(fs), \$3.23(mf) OTS. NSA 15-21723.

110

THERMIONIC ISOTOPIIC POWER SYSTEMS; SNAP PROGRAMS. Quarterly Progress Report No. 7, Covering Period April 1 through June 30, 1961. 76p. (MND-P-3015-II) Dep.(mc); \$7.60(fs), \$2.48(mf) OTS. NSA 15-28121.

111

STRONTIUM-90 POWER PROJECT QUARTERLY PROGRESS REPORT I. Jan. 1959. 62p. (MND-SR-1672) \$9.30(ph), \$3.60(mf) OTS. NSA 14-1638

112

STRONTIUM 90 POWER PROJECT. Quarterly Progress Report for January 15, 1959 through April 15, 1959. Apr. 1959. 90p. (MND-SR-1673) \$15.30(ph), \$5.40(mf) OTS. NSA 13-16300

113

STRONTIUM 90 POWER PROJECT. THIRD QUARTERLY PROGRESS REPORT. July 1959. 72p. (MND-SR-1674) \$12.30(ph), \$4.50(mf) OTS. NSA 14-1182

114

STRONTIUM 90 POWER PROJECT. Quarterly Progress Report No. IV Covering Period July 15, 1959 through October 15, 1959. Oct. 1959. 123p. (MND-SR-1675) \$19.80(ph), \$6.30(mf) OTS. NSA 14-7167

115

STRONTIUM 90 POWER PROJECT. Final Summary Report for October 15, 1958 through February 29, 1960. Mar. 1960. 142p. (MND-SR-1676) \$2.50(OTS).
NSA 14-24413

116

5-WATT RADIOSTRONTIUM GENERATOR FOR AN UNATTENDED METEOROLOGICAL STATION. HAZARDS SUMMARY REPORT. C. O. Riggs. Feb. 1960. 53p. (MND-SR-2259) Dep.(mc); \$9.30(ph), \$3.60(mf) OTS. NSA 15-17152.

117

100-WATT RADIOSTRONTIUM GENERATOR FOR LAND- AND SEA-BASED APPLICATIONS. HAZARDS SUMMARY REPORT. C. O. Riggs. Mar. 1960. 34p. (MND-SR-2308) Dep.(mc); \$6.30(ph), \$3.00(mf) OTS. NSA 15-17153.

118

RADIOISOTOPES AS SOURCES OF ELECTRICAL POWER. Jerome G. Morse. p.27-38 of MIDWESTERN CONFERENCE ON THE INDUSTRIAL USES OF ISOTOPES, HELD AT MANHATTAN, KANSAS, FEBRUARY 25-26, 1959. 270p. (TID-7571) \$2.75(OTS).
NSA 14-10890

Martin Company, Baltimore, Maryland

119

ENERGY CONVERSION SYSTEMS REFERENCE HANDBOOK. VOLUME XI. RADIO-ISOTOPE SYSTEM DESIGN. Sept. 1960. (In cooperation with Electro-Optical Systems, Inc., Pasadena, Calif.). 315p. (WADD-TR-60-699 (Vol. XI); EOS-390-Final (Vol. XI)) OTS. NSA 15-24108.

**Massachusetts Institute of Technology,
Research Laboratory of Electronics,
Cambridge, Massachusetts**

120

THE THERMIONIC ENERGY CONVERTER. Technical Report 373. W. B. Nottingham. Sept. 9, 1960. 48p. (NP-9329) NSA 15-3208

**Massachusetts Institute of Technology,
Servomechanisms Laboratory,
Cambridge, Massachusetts**

121

THE EFFICIENCY OF THERMOELECTRIC GENERATORS. Jose M. Borrego, Henry A. Lyden, and John Blair. Nov. 5, 1958. 83p. (WADC-TN-58-200; AD-206383)
NSA 13-22662

Mound Laboratory, Miamisburg, Ohio

122

A METHOD OF PRODUCING AN ELECTRIC CURRENT FROM RADIOACTIVITY. P. E. Ohmart. Sept. 11, 1950. 6p. (MLM-495) J. Appl. Phys. 22, 1504-5(1951)
NSA 5-4931

123

THERMAL BATTERIES USING POLONIUM-210. (INFORMATION REPORT). K. C. Jordan and J. H. Birden. June 2, 1954. 17p. (MIM-984) Dep. NSA 8-7074

124

THE MOUND LABORATORY THERMAL BATTERY: SOME PRACTICAL CONSIDERATIONS. J. W. Heyd and K. C. Jordan. Dec. 1, 1954. 8p. (MIM-1060) \$1.80(ph), \$1.80(mf) OTS. NSA 10-1839

125

NUCLEAR BATTERY - THERMOCOUPLE TYPE. Quarterly Report No. 1 for January 1, 1957 - March 31, 1957. Bertram C. Blanke. Mar. 31, 1957. 18p. (MIM-CF-57-4-34) NSA 12-6696

126

NUCLEAR BATTERY - THERMOCOUPLE TYPE. Quarterly Report No. 2 for April 1, 1957 to June 30, 1957. Bertram C. Blanke. June 30, 1957. 9p. (MIM-CF-57-8-27) NSA 12-7868

127

NUCLEAR BATTERY - THERMOCOUPLE TYPE THIRD QUARTERLY REPORT FOR JULY 1, 1957 TO SEPTEMBER 30, 1957. Bertram C. Blanke. Sept. 30, 1957. 16p. (MIM-CF-57-10-31) NSA 12-2963

128

NUCLEAR BATTERY - THERMOCOUPLE TYPE. Quarterly Report No. 4 for October 1, 1957 to December 31, 1957. Bertram C. Blanke. Dec. 31, 1957. 41p. (MIM-CF-58-1-40) NSA 12-7869

129

NUCLEAR BATTERY - THERMOCOUPLE TYPE. Quarterly Progress Report No. 5 for January 1, 1958 to March 31, 1958. Bertram C. Blanke. Mar. 31, 1958. 29p. (MIM-CF-58-4-49) NSA 12-10681

130

NUCLEAR BATTERY - THERMOCOUPLE TYPE. Quarterly Progress Report No. 6 for April 1, 1958 to June 30, 1958. B. C. Blanke. June 30, 1958. 11p. (MIM-CF-58-7-19) \$3.30(ph), \$2.40(mf) OTS. NSA 12-15587

131

NUCLEAR BATTERY - THERMOCOUPLE TYPE. Quarterly Progress Report No. 7 for July 1, 1958 to September 30, 1958. B. C. Blanke. Jan. 6, 1959. 21p. (MIM-CF-58-10-61) \$4.80(ph), \$2.70(mf) OTS. NSA 13-4625

132

NUCLEAR BATTERY - THERMOCOUPLE TYPE. Quarterly Progress Report No. 8 for October 1, 1958 to December 31, 1958. B. C. Blanke. 30p. (MIM-CF-59-1-54) \$4.80(ph), \$2.70(mf) OTS. NSA 13-11099

133

NUCLEAR BATTERY - THERMOCOUPLE TYPE. NINTH QUARTERLY PROGRESS REPORT, JANUARY 1, 1959 TO MARCH 31, 1959. B. C. Blanke. Mar. 31, 1959. 17p. (MIM-CF-59-6-33) NSA 14-1637

**Naval Research Laboratory,
Washington, D. C.**

134

DIRECT ENERGY CONVERSION LITERATURE ABSTRACTS. Mar. 1961. 120p. (AD-255294) NSA 15-31289

135

STATUS REPORT ON THERMOELECTRICITY. H. E. Stauss. June 1959. 56p.
(NRL-Memo-940) NSA 13-19455

136

STATUS REPORT ON THERMOELECTRICITY. Quarterly Review No. 3. H. E. Stauss. Dec. 1959. 78p. (NRL-Memo-969) NSA 14-12091

137

STATUS REPORT ON THERMOELECTRICITY. J.W. Davisson and Joseph Pasternak. July 1961. 166p. (NRL-Memo-1177) NSA 15-26709.

138

THE LITERATURE OF SPACE SCIENCE AND EXPLORATION. Bibliography No. 13. Mildred Benton, comp. Sept. 1958. 278p. (PB-131755) \$4.00(OTS).
NSA 13-3993

139

THERMOELECTRICITY ABSTRACTS. Compiled in the Library Branch, Technical Information Division. Aug. 1960. 87p. (PB-161301) OTS. NSA 15-6580.

**Nuclear Development Corporation
of America, White Plains, New York**

140

FAST REACTOR SAFETY. QUARTERLY PROGRESS REPORT FOR THE PERIOD ENDING MARCH 31, 1961. J. Agresta and F. Beers. Apr. 30, 1961. 16p. (NDA-2147-6) Dep.(mc); \$3.30(ph), \$2.40(mf) OTS. NSA 15-21726.

**Office of Technical Services,
Washington, D. C.**

141

BATTERIES. (INCLUDES BATTERIES: STORAGE, ALKALINE, NUCLEAR, GENERAL, AND BATTERY CHARGERS), 1933-58. June 1959. 10p. (CTR-372) \$0.10(OTS).
NSA 15-7922.

142

THERMOELECTRICITY. Sept. 1960. 10p. (SB-432) \$0.10(OTS). NSA 15-7924.

Ohmart Corporation, Cincinnati Ohio

143

STUDY AND DEVELOPMENT OF NUCLEAR BATTERIES. INTERIM ENGINEERING REPORT NO. 4. nd. 69p. (AD-29337) NSA 9-348

144

STUDY AND DEVELOPMENT OF NUCLEAR BATTERIES. Philip E. Ohmart. 1954. 17p. (AD-30491). NSA 9-4226

145

STUDY AND DEVELOPMENT OF NUCLEAR BATTERIES. QUARTERLY SCIENTIFIC REPORT NO. 6 COVERING THE PERIOD JANUARY 15 THROUGH MARCH 31, 1954. 43p. (AD-47919). NSA 9-3548

146

STUDY AND DEVELOPMENT OF NUCLEAR BATTERIES. QUARTERLY SCIENTIFIC REPORT NO. 7 COVERING THE PERIOD APRIL 1 TO JUNE 30, 1954. 48p. (AD-48095) NSA 9-3549

147

STUDY AND DEVELOPMENT OF NUCLEAR BATTERIES. QUARTERLY SCIENTIFIC REPORT NO. 8. 1954. 51p. (AD-51362). NSA 9-3550

148

STUDY AND DEVELOPMENT OF NUCLEAR BATTERIES. Philip E. Ohmart. Dec. 1954. 122p. Project title: IMPROVED ELECTRONIC COMPONENTS. (WADC-TR-55-35; AD-84555) \$19.80(ph), \$6.30(mf) OTS. NSA 10-10260

**Phillips Petroleum Company,
Atomic Energy Division,
Idaho Falls, Idaho and
Division of Reactor Development, AEC**

149

STRONTIUM TITANATE PREPARATION AND SOLUBILITY CHARACTERISTICS. J. G. Morse. 11p. Pages 641-52 of Report of the Second Working Meeting on Fixation of Radioactivity in Stable, Solid Media, (Held) at Idaho Falls, Idaho, September 27-29, 1960. James M. Morgan, Jr., Donald K. Jamison, and John D. Stevenson, comps. and eds. Feb. 1961. 782p. (TID-7613) Dep.; \$8.00(OTS). NSA 15-24881.

**Picatinny Arsenal,
Samuel Feltman Ammunition Laboratory,
Dover, New Jersey**

150

DEVELOPMENT OF A NUCLEAR THER FOR SATELLITE APPLICATION. Martin Lazarus and Chester L. Smith. Sept. 1958. 17p. (PA-TR-2564) NSA 13-19132

**Plasmadyne Corporation,
Santa Ana, California**

151

FUNDAMENTAL INVESTIGATION OF ELECTRICAL POWER SOURCES FOR ELECTRIC THRUST DEVICES - BIBLIOGRAPHY. Technical Note No. E-2TN098-332. Helen Fife. Sept. 3, 1958. 47p. (AFOSR-TN-58-791; AD-202224) \$1.25(OTS) as PB-151430. NSA 13-11265

152

FUNDAMENTAL INVESTIGATIONS OF ELECTRICAL POWER SOURCES. VOLUME III. DIRECT ELECTRICAL CONVERTERS. Emil J. Hellund. Apr. 24, 1959. 72p. (AFOSR-TN-59-429; E-3FRO49-332(Vol. III); AD-214779). NSA 14-14149

153

FUNDAMENTAL INVESTIGATIONS OF ELECTRICAL POWER SOURCES. VOLUME II. BATTERIES. Emil J. Hellund. Apr. 24, 1959. 98p. (AFOSR-TN-59-430; E-2FRO49-332(Vol.II); AD-214780). NSA 14-14150

154

A PRELIMINARY ENGINEERING EVALUATION OF ADVANCED SPACE PROPULSION SYSTEMS. VOLUME I. GENERALIZED PROPULSION SYSTEM ANALYSIS AND MISSION REQUIREMENTS. Paul S. Masser, Russell J. Page, and Willis Stoner. Mar. 25, 1959. 64p. (WADC-TR-59-189(I); P-1FRO39-5709). NSA 13-19472

**Radiation Research Corporation,
New York, New York**

155

NUCLEAR BATTERIES. Quarterly Progress Report No. 2 for February 15, 1957 - May 15, 1957. John H. Coleman. 33p. (AD-138426). NSA 12-17275

156

VACUUM TRITIUM NUCLEAR BATTERY. Final Report for June 15, 1958 - December 14, 1958. Joseph Thomas-Hazell, Bernard Caras, Robert C. Schmertz, Jr., and Stanley Grand. 64p. (AD-218856). NSA 14-7532

157

NUCLEAR BATTERIES. Final Progress Report for August 15, 1957 - November 15, 1957. John H. Coleman and Arthur P. Pinkerton. 32p. (NP-6629) NSA 12-7350

158

NUCLEAR BATTERIES. Quarterly Progress Report No. 3 for May 15, 1957 - August 15, 1957. John H. Coleman. 25p. (NP-6828). NSA 12-12514

**Radiation Research Corporation,
West Palm Beach, Florida**

159

NUCLEAR BATTERIES. QUARTERLY PROGRESS REPORT NO. 2 FOR OCTOBER 15, 1952 - JANUARY 15, 1953. J. H. Coleman. 37p. (AD-5680). NSA 8-3775

160

NUCLEAR BATTERIES. QUARTERLY PROGRESS REPORT NO. 3 FOR JANUARY 15, 1953 - APRIL 15, 1953. J. H. Coleman. 39p. (AD-11130). NSA 8-4305

161

NUCLEAR BATTERIES. QUARTERLY PROGRESS REPORT NO. 4 FOR APRIL 15, 1953 - JULY 15, 1953. J. H. Coleman. 79p. (AD-16261). NSA 8-4306

162

DOSIMETER CHARGER (RADIOACTIVE). QUARTERLY REPORT FOR APRIL 2, 1953 TO JUNE 30, 1953. M. J. Cohen. July 2, 1953. 26p. (AD-22410). NSA 9-2825

163

NUCLEAR BATTERIES. Quarterly Progress Report No. 6 for October 15, 1953 - January 15, 1954. 24p. (AD-41807). NSA 10-318

164

NUCLEAR BATTERIES. Final Progress Report for July 15, 1955 - July 15, 1956. John H. Coleman and Jerome Goodman. 32p. (AD-112969; PB-135277) \$6.30(ph), \$3.00(mf) OTS. NSA 13-15254

165

NUCLEAR BATTERIES. QUARTERLY PROGRESS REPORT NO. 1 FOR JULY 15, 1952 - OCTOBER 15, 1952. J. H. Coleman. Decl. Mar. 1, 1954. 36p. (ATI-171145; R-7250).

Rand Corporation, Santa Monica, California**166**

POWER FOR SATELLITES. J. H. Huth. Oct. 8, 1958. 11p. (P-1511(RAND))
NSA 13-14610

167

SPACE VEHICLE POWER PLANTS. J. H. Huth. Dec. 22, 1959. 74p.
(P-1861(RAND)) NSA 15-25295.

**Republic Aviation Corporation,
Plasma Propulsion Laboratory,
Framingdale, New York****168**

EFFECT OF MAGNETIC FIELDS ON THERMIONIC POWER GENERATION. Alfred Schook.
Jan. 1960. 70p. (PPL-TR-60-1) NSA 15-15127.

**Rocketdyne Division, North American
Aviation, Inc., Canoga Park, California****169**

ELECTRICAL SPACE PROPULSION. R. H. Boden. 1960. 98p. (NP-8598)
NSA 14-15151

**Royal Research Corporation,
Hayward, California****170**

THE CESIUM-137 POWER PROGRAM. QUARTERLY PROGRESS REPORT NO. I.
Apr. 1961. 80p. (TID-12579; RRC-CS-0100) Dep.(mc); \$12.30(ph),
\$4.50(mf) OTS. NSA 15-17396.

**Sandia Corporation,
Albuquerque, New Mexico****171**

NUCLEAR BATTERY POWERED TIMERS. R. L. DesJardin. Sept. 19, 1958. 19p.
(SCTM-330-58(14)) \$3.30(ph), \$2.40(mf) OTS. NSA 13-2910

172

A METHOD FOR DETERMINING THE CURIE LOADING OF Kr⁸⁵ IN NUCLEAR BATTERIES.
Alex Thom. Jan. 8, 1960. 16p. (SCTM-381-59(16)) \$3.30(ph), \$2.40(mf)
OTS. NSA 14-10605

**Thompson-Ramo Wooldridge, Inc.,
New Devices Laboratory,
Cleveland, Ohio**

173

THE SNAP-II POWER CONVERSION SYSTEM. DYNAMIC ANALYSIS. TOPICAL REPORT NO. 3. David L. Deibel, Gene L. Mrava, and Kurt Seldner. Jan. 15, 1960. 96p. (AECU-4685; ER-391) \$15.30(ph), \$5.40(mf) OTS. NSA 14-8812

174

THE SNAP-II POWER CONVERSION SYSTEM. TOPICAL REPORT NO. 4. TURBINE DESIGN AND TESTING. Earnest N. Poulos and Edward R. Furman. Jan. 18, 1960. 73p. (AECU-4686; ER-3896) \$12.30(ph), \$4.50(mf) OTS. NSA 14-8813

175

SNAP-I POWER CONVERSION SYSTEM DEVELOPMENT. PERIOD COVERED: FEBRUARY 1, 1957 TO JUNE 30, 1959. R. C. Biering, D. D. Correll, P. E. Grenstad, N. P. Otto, J. W. Picking, G. M. Thur, and R. F. Wulf. June 20, 1960. 68p. (MND-P-2375) \$10.80(ph), \$3.90(mf) OTS. NSA 14-26034

176

SNAP-I POWER CONVERSION SYSTEM, TURBINE DEVELOPMENT. PERIOD COVERED: FEBRUARY 1, 1957 TO JUNE 30, 1959. D. C. Reemsnyder and E. M. Szanca. June 20, 1960. 54p. (MND-P-2376; ER-4051) \$9.30(ph), \$3.60(mf) OTS. NSA 14-26035

177

SNAP-I POWER CONVERSION SYSTEM, ALTERNATOR DEVELOPMENT. Period Covered: February 1, 1957 to June 30, 1959. H. J. Morgan. June 20, 1960. 43p. (MND-P-2377; ER-4052) \$7.80(ph), \$3.30(mf) OTS. NSA 14-26036

178

SNAP-I POWER CONVERSION SYSTEM, PUMP DEVELOPMENT. Period Covered: February 1, 1957 to June 30, 1959. E. S. Kovalcik and D. C. Reemsnyder. June 20, 1960. 59p. (MND-P-2378; ER-4053) \$9.30(ph), \$3.60(mf) OTS. NSA 14-26037

179

SNAP-I POWER CONVERSION SYSTEM, BEARINGS DEVELOPMENT. Period Covered: February 1, 1957 to June 30, 1959. R. Meredith, G. Y. Ono, and D. C. Reemsnyder. June 20, 1960. 68p. (MND-P-2379; ER-4054). \$10.80(ph), \$3.90(mf) OTS. NSA 14-26038

180

SNAP-I POWER CONVERSION SYSTEM, CONTROL DEVELOPMENT. Period Covered: February 1, 1957 to June 30, 1959. W. E. Dauterman, M. W. Mueller, and E. J. Viton. June 20, 1960. 50p. (MND-P-2380; ER-4055) \$7.80(ph), \$3.30(mf) OTS. NSA 14-26039

181

SNAP-I POWER CONVERSION SYSTEM, CONDENSER-RADIATOR DEVELOPMENT. Period Covered: February 1, 1957 to April 15, 1959. R. J. Kiraly and D. C. Reemsnyder. June 20, 1960. 47p. (MND-P-2381; ER-4056) \$7.80(ph), \$3.30(mf) OTS. NSA 14-26040

182

SNAP-I POWER CONVERSION SYSTEM, MATERIAL DEVELOPMENT. Period Covered: February 1, 1957 to June 20, 1959. V. F. Hambor and J. J. Owens. June 20, 1960. 38p. (MND-P-2382; ER-4057) \$6.30(ph), \$3.00(mf) OTS. NSA 14-26041

183

MERCURY PUMP DESIGN. THE SNAP II POWER CONVERSION SYSTEM TOPICAL REPORT NO. 5. M. A. Keresman. June 10, 1960. 79p. (TID-6814; ER-4101) Dep.(mc); \$7.60(fs), \$2.57(mf) OTS. NSA 15-24923.

184

THE SNAP II POWER CONVERSION SYSTEM. Topical Report No. 6, Bearing Design and Development. Warren D. Waldron. June 22, 1960. 69p. (TID-6815; ER-4102) Dep.(mc); \$10.80(ph), \$3.90(mf) OTS. NSA 15-13997.

185

THE SNAP II POWER CONVERSION SYSTEM TOPICAL REPORT NO. 7. MERCURY MATERIALS EVALUATION AND SELECTION. James J. Owens, James F. Nejedlik, and J. William Vogt. Oct. 26, 1960. 143p. (TID-11307; ER-4103) Dep.(mc); \$11.00(fs), \$4.49(mf) OTS. NSA 15-21096.

**Tracerlab, Incorporated,
Boston, Massachusetts**

186

INVESTIGATIONS ON UTILIZATION OF RADIOACTIVE ENERGY AS A SOURCE OF BATTERY POWER. SECOND QUARTERLY PROGRESS REPORT FOR NOVEMBER 1, 1952 TO JANUARY 31, 1953. 49p. (AD-5048). NSA 8-6199

187

INVESTIGATIONS ON UTILIZATION OF RADIOACTIVE ENERGY AS A SOURCE OF BATTERY POWER. THIRD QUARTERLY PROGRESS REPORT FOR FEBRUARY 1, 1953 TO APRIL 30, 1953. Alexander Thomas and Victor Ragosine. 36p. (AD-14239) NSA 8-3937

188

INVESTIGATIONS ON UTILIZATION OF RADIOACTIVE ENERGY AS A SOURCE OF BATTERY POWER. FOURTH QUARTERLY PROGRESS REPORT FOR MAY 1, 1953 TO JULY 31, 1953. Alexander Thomas. 50p. (AD-19099). NSA 8-6201

189

INVESTIGATIONS ON UTILIZATION OF RADIOACTIVE ENERGY AS A SOURCE OF BATTERY POWER. QUARTERLY REPORT NO. 5 FOR AUGUST 1, 1953 TO OCTOBER 31, 1953. Alexander Thomas and Jane Petrocchi. 47p. (AD-22922) NSA 9-266

190

INVESTIGATIONS ON UTILIZATION OF RADIOACTIVE ENERGY AS A SOURCE OF BATTERY POWER. QUARTERLY REPORT NO. 6 FOR NOVEMBER 1, 1953 TO JANUARY 31, 1954. Alexander Thomas and Jane Petrocchi. 68p. (AD-26498) NSA 9-267

191

INVESTIGATIONS ON UTILIZATION OF RADIOACTIVE ENERGY AS A SOURCE OF BATTERY POWER. QUARTERLY REPORT NO. 7 FOR FEBRUARY 1, 1954 TO APRIL 30, 1954. Alexander Thomas and Jane Petrocchi. 63p. (AD-31146) NSA 9-268

192

INVESTIGATIONS ON UTILIZATION OF RADIOACTIVE ENERGY AS A SOURCE OF BATTERY POWER. QUARTERLY REPORT NO. 2 (No. 10 in the Series) FOR NOVEMBER 1, 1954 TO JANUARY 31, 1955. Alexander Thomas. 48p. (AD-63661) NSA 11-448

193

INVESTIGATIONS ON UTILIZATION OF RADIOACTIVE ENERGY AS A SOURCE OF BATTERY POWER. QUARTERLY REPORT NO. 1 (No. 9 in the Series) FOR AUGUST 1, 1954 TO OCTOBER 31, 1954. Alexander Thomas. 40p. (AD-63670).
NSA 11-449

194

INVESTIGATIONS ON UTILIZATION OF RADIOACTIVE ENERGY AS A SOURCE OF BATTERY POWER. QUARTERLY REPORT NO. 3 (No. 11 in the Series) FOR FEBRUARY 1, 1955 TO APRIL 30, 1955. Alexander Thomas and Imogene DiBello. 54p. (AD-69290). NSA 11-450

195

INVESTIGATIONS ON UTILIZATION OF RADIOACTIVE ENERGY AS A SOURCE OF BATTERY POWER. Final Report (No. 12 in the Series) for August 1, 1954 to October 31, 1955. Alexander Thomas and Imogene DiBello. 66p. (AD-79731; PB-139279) \$10.80(ph), \$3.90(mf) OTS. NSA 11-2

196

INVESTIGATIONS ON UTILIZATION OF RADIOACTIVE ENERGY AS A SOURCE OF BATTERY POWER. QUARTERLY REPORT NO. 1 FOR AUGUST 1, 1952 TO OCTOBER 31, 1952. Alexander Thomas. Decl. Mar. 1, 1954. 50p. (ATI-186595).

**United Kingdom Atomic Energy Authority.
Research Group.
Atomic Energy Research Establishment,
Harwell, Berks, England**

197

THE POSSIBILITIES OF USING SEPARATED FISSION-PRODUCTS FOR PRODUCTION OF ELECTRICAL POWER. C. B. Amphlett. Mar. 17, 1954. 7p. (AERE-C/R-1388) J. Nuclear Energy 1: 173-80(1955). NSA 9-3716

198

THE DIRECT CONVERSION OF BETA-IRRADIATION ENERGY INTO LOW-VOLTAGE ELECTRICAL ENERGY. W. Loner. Apr. 1954. 16p. (AERE-T/M-108). NSA 8-6863

**Vitro Corporation of America,
Vitro Engineering Division,
New York, New York**

199

REVIEW OF FISSION PRODUCT HEAT SOURCES FOR POWER GENERATION IN THE 1-5 KW RANGE. Job 1129. Nov. 5, 1954. 30p. (KLX-1735) \$0.25(OTS)
NSA 10-6983

**Westinghouse Electric Corporation,
Astronuclear Laboratory,
Pittsburgh, Pennsylvania**

200

3MW(e) NUCLEAR THERMOELECTRIC POWER PLANT PROGRESS REPORT, MAY-AUGUST 1960. R. A. Clark, Jr., R. A. Doncals, and R. R. Holman. Decl. Jan. 13, 1961. 73p. (WANL-PR(A)001) NSA 15-14000.

201

FEASIBILITY STUDY FOR 3MW(e) NUCLEAR THERMOELECTRIC POWER PLANT. Final Report. R. A. Clark, Jr., R. A. Doncais, W. J. Havener, R. R. Hollman, A. W. Hoppe, and G. R. Taylor. Dec. 31, 1961. 276p. (WANL-PR(A)-002; AD-253750) NSA 15-25652.

Westinghouse Electric Corporation.

**Atomic Power Department,
Pittsburgh, Pennsylvania**

202

THERMOELECTRIC NUCLEAR FUEL ELEMENT PROGRESS REPORT NO. 22. Gerald R. Kilp, W. P. Blankenship, P. V. Mitchell, and S. W. Sandberg. May 10, 1960. 21p. (WCAP-1565) \$4.80(ph), \$2.70(mf) OTS. NSA 14-16952

203

THERMOELECTRIC NUCLEAR FUEL ELEMENT QUARTERLY PROGRESS REPORT - JULY - SEPTEMBER, 1960. G. R. Kilp, W. P. Blankenship, R. C. Goodspeed, R. A. Markley, and P. V. Mitchell. Oct. 10, 1960. 55p. (WCAP-1647) Dep.; \$1.25(OTS). NSA 15-11469.

204

THERMOELECTRIC NUCLEAR FUEL ELEMENT, QUARTERLY PROGRESS REPORT FOR OCTOBER-DECEMBER 1960. G. R. Kilp, W. P. Blankenship, K. J. Gill, R. C. Goodspeed, P. V. Mitchell, and E. G. Schwartz. Jan. 10, 1961. 63p. (WCAP-1695) Dep.(mc); \$10.80(ph), \$3.90(mf) OTS. NSA 15-10393.

Westinghouse Electric Corporation,

**Research Laboratories,
Pittsburgh, Pennsylvania**

205

THERMOELECTRICITY PROGRESS REPORT NO. 7. Aug. 31, 1958. 52p. (AD-217227) NSA 14-8723

206

FIVE KILOWATT THERMOELECTRIC GENERATOR. Bimonthly Progress Letter No. 1. May 12, 1959. 52p. (AD-225605). NSA 14-8539

207

SOME ASPECTS OF THERMIONIC ENERGY CONVERSION. Scientific Paper 6-40602-3-P3. E. I. Blount. Mar. 20, 1959. 56p. (NP-8641) NSA 14-15155

208

RAPID MEASUREMENT OF THERMOELECTRIC MATERIALS UNDER SIMULATED GENERATOR CONDITIONS. S. J. Angello and C. S. Duncan. Research Report 431FD406-R1. Jan. 15, 1959. 17p. (NP-9749) NSA 15-6122.

Translations

209

DIRECT PRODUCTION OF ELECTRICITY BY NUCLEAR FISSION PROCESSES FOR ELECTRIC-ARC HEATING IN RAM-JET ENGINES. H. J. Kaeppler. p.48-78 of PLASMA PHYSICS. ELECTRIC-ARC HEATING IN RAM-JET ENGINES BY NUCLEAR FISSION PROCESSES. NUCLEAR FISSION AND EXTREME POWER ROCKETS. PHOTON ROCKETS. (Various articles by various authors). Translated from Reports From the Research Inst. for Physics of Jet Propulsion, Inc. — International Session held in Fraudenstadt, from Feb. 6-8, 1956. 122p. \$19.80(ph) \$6.30(mf) John Crerer Library, Chicago, Illinois. (AEC-tr-3191) NSA 13-22669

210

THERMIONIC CONVERSION OF THERMAL ENERGY TO ELECTRICAL ENERGY BY THE USE OF THORIUM CARBIDE. N. D. Morgulis and Yu. P. Korchevoi. Translated from At. Energ. (U.S.S.R.) 9, 49-51(1960) 5p. (AEC-tr-4621) Dep.(mc); \$1.10(fs); \$0.80(mf) JCL or LC NSA 15-19986

211

INVESTIGATING SEMICONDUCTOR THERMOELEMENTS. Yu. N. Malevskii (Malevskiy) and A. S. Okhotin. Translated from Teploenergetika, No. 2, 78-87(1960). 17p. (NP-tr-685) OTS. NSA 15-24112

212

DIRECT CONVERSION OF NUCLEAR ENERGY INTO ELECTRICAL ENERGY. Nguyen Van Dong. Translated by E. Towndrow for U.K.A.E.A. Atomic Energy Research Establishment from Bull. inform. sci. et tech. (Paris) No. 41, 14-27(1960). 42p. (Handwritten MS.) (NP-tr-712) Dep.(mc); \$4.60(fs); \$1.49(mf) JCL NSA 15-26715

Journal References

213

COSMIC RAYS, NUCLEAR REACTORS, AND MANNED SPACE SYSTEMS. David Reitz (Martin Co., Denver). Aero-Space Eng., 20, No. 4, 28-9, 77-94, 96(1961) Apr. NSA 15-16593

214

AEROSPACE NUCLEAR POWER SAFETY CONSIDERATIONS. Joseph A. Connor, Jr. (U.S.A.F. (MC)). Aero/Space Eng. 20, No. 5, 26-7, 58-61(1961) May. NSA 15-17890

215

POWER SUPPLIES FOR SPACE VEHICLES. Nathan W. Snyder. Astronaut. Acta. 6, 271-310(1960) (In English) NSA 15-17891

216

SNAP 2. NUCLEAR SPACE POWER SYSTEM. J. R. Wetch, H. M. Dieckamp, and D. J. Cockeram (Atomics International, Canoga Park, Calif.). Astronautics 5, No. 12, 24-5(1960) Dec. NSA 15-5501

217

MEGAWATT ELECTRICAL POWER IN SPACE. D. P. Ross, E. Ray, E. G. Rapp, and J. E. Taylor (Thompson Ramo Wooldridge Inc., Cleveland). Astronautics 5, No. 12, 26-7; 72; 74; 76(1960) Dec. NSA 15-5502

218

A NUCLEAR HIGH-VOLTAGE SOURCE. P. V. Timofeev and Yu. A. Simchenko. Atomnaya Energ. 6, 470-2(1959) Apr. (In Russian). NSA 13-13474

219

TRANSFORMATION OF THE ENERGY OF SHORT-LIVED ISOTOPES. M. G. Mitel'man, R. S. Erofeev, and N. D. Rozenblyum. Atomnaya Energ. 10, 72-3(1961) Jan. (In Russian) NSA 15-9282

220

THERMIONIC ENERGY CONVERTERS. B. A. Ushakov. Atomnaya Energ. 10, 343-6(1961) Apr. (In Russian) NSA 15-28167

221

POWER PLANTS FOR OUTER SPACE. John M. Allen (Battelle Memorial Inst., Columbus, Ohio). Battelle Tech. Rev. 10, No. 2, 3-8(1961) Feb. NSA 15-11803

222

THERMIONIC GENERATION OF ELECTRICITY. M. A. Cayless (Associated Electrical Industries (Rugby) Ltd., Rugby, Warwickshire, Eng.). Brit. J. Appl. Phys., 12, 433-42(1961) Sept. NSA 15-31368

223

DIRECT TRANSFORMATION OF THERMAL ENERGY INTO ELECTRIC ENERGY BY MEANS OF THERMAL EMISSION. E. Tomkova (Charles Univ., Prague). Českoslov. časopis pro fysiku No. 5, 430(1960) NSA 15-16208

224

SOME PROPERTIES OF THE CESIUM PLASMA OF A THERMOELECTRON ENERGY CONVERTER. N. D. Morgulis and Yu. P. Korchevoi (Kiev State Univ.). Doklady Akad. Nauk S.S.S.R. 136, 336-8(1961) Jan. 11. (In Russian) NSA 15-13493

225

AN ELEMENTARY DESIGN DISCUSSION OF THERMOELECTRIC GENERATION. E. W. Bollmeier (Minnesota Mining and Mfg. Co., St. Paul). Elec. Eng. 995-1002(1959) Oct. NSA 15-7886

226

NEW POWER SOURCES FOR SPACE-AGE ELECTRONICS. David Linden and Arthur F. Daniel (Army Research and Development Lab., Fort Monmouth, N. J.). Electronics 32, No. 12, 43-7(1959) Mar. 20. NSA 13-14626

227

THERMOELECTRIC CONVERSION WITH EMPHASIS FOR APPLICATIONS TO NUCLEAR REACTOR HEAT. Kurt Katz (Westinghouse Electric Corp., Pittsburgh). IRE Intern. Conv. Record 8, Pt. 9, 47-53(1960) NSA 15-10405

228

THERMIONIC CONVERTERS, NUCLEAR HEAT, AND POWER GENERATION. Walter Grattidge (General Electric Research Lab., Schenectady, N. Y.). IRE Intern. Conv. Record 8, Pt. 9, 54-65(1960) NSA 15-10406

229

NOBLE GAS PLASMA DIODE THERMIONIC CONVERTER. Frank E. Jamerson (General Motors Research Labs., Warren, Mich.). IRE Intern. Conv. Record 8, Pt. 9, 66-71(1960) NSA 15-10407

230

STAINLESS LANDS NUCLEAR JOB. PROVIDES PROTECTIVE SHELL FOR NONTOXIC BATTERY. Iron Age 184, No. 16, 109(1959) Oct. 15. NSA 14-355

231

ATOMIC BATTERIES. V. S. Merkulov. Izmeritelnaya Tekh. No. 2, 94-7(1958). (In Russian) NSA 12-15694

232

THE USE OF RADIOACTIVE MATERIAL FOR THE GENERATION OF HIGH VOLTAGE. E. G. Linder and S. M. Christian. J. Applied Phys. 23, 1213-16(1952) Nov. NSA 7-853

233

RADIOACTIVE CHARGING EFFECTS WITH A DIELECTRIC MEDIUM. P. Rappaport and E. G. Linder. J. Appl. Phys. 24, 1110-14(1953) Sept. NSA 7-6661

234

RADIOACTIVE AND PHOTOELECTRIC p-n JUNCTION POWER SOURCES. W. G. Pfann and W. van Roosbroeck (Bell Telephone Labs., Murray Hill, N. J.). J. Appl. Phys. 25, 1422-34(1954) Nov. NSA 9-251

235

PROPERTIES OF A THERMOELECTRIC CELL. G. M. Grover, D. J. Roehling, and E. W. Salmi (Los Alamos Scientific Lab., N. Mex.) and R. W. Pidd (Univ. of Michigan, Ann Arbor). J. Appl. Phys. 29, 1611-12(1958) Nov. NSA 13-2139

236

CONVERSION OF HEAT TO ELECTRICITY BY THERMIONIC EMISSION. Volney C. Wilson (General Electric Research Lab., Schenectady, N. Y.). J. Appl. Phys. 30, 475-81(1959) Apr. NSA 13, 13767

237

THEORETICAL EFFICIENCY OF THE THERMIONIC ENERGY CONVERTER. J. M. Houston (General Electric Research Lab., Schenectady, N. Y.). J. Appl. Phys. 30, 481-7(1959) Apr. NSA 13-13768

238

CALCULATION OF THE PERFORMANCE OF A HIGH-VACUUM THERMIONIC ENERGY CONVERTER. H. F. Webster (General Electric Research Lab., Schenectady, N. Y.). J. Appl. Phys. 30, 488-92(1959) Apr. NSA 13-13769

239

SPACE CHARGE NEUTRALIZATION BY FISSION FRAGMENTS IN THE DIRECT CONVERSION PLASMA DIODE. F. E. Jablonski, C. B. Leffert, R. Silver, R. F. Hill, and D. H. Loughridge (General Motors Research Labs., Warren, Mich.). J. Appl. Phys. 30, 2017-18(1959) Dec. NSA 14-5716

240

CALCULATION OF EFFICIENCY OF THERMOELECTRIC DEVICES. B. Sherman, R. R. Heikes, and R. W. Ure, Jr. (Westinghouse Research Labs., Pittsburgh). J. Appl. Phys. 31, 1-16(1960) Jan. NSA 14-5717

241

FIGURE OF MERIT FOR THERMIONIC ENERGY CONVERSION. N. S. Razor (North American Aviation, Inc., Canoga Park, Calif.) J. Appl. Phys. 31, 163-7 (1960) Jan. NSA 14-5722

242

EFFECT OF INTERELECTRODE SPACING ON CESIUM THERMIONIC CONVERTER PERFORMANCE. R. L. Hirsch (Atomics International, Canoga Park, Calif.). J. Appl. Phys. 31, 2064-5(1960) Nov. NSA 15-5517

243

EXPERIMENTAL INVESTIGATIONS OF THE CESIUM PLASMA CELL. W. A. Ranken, G. M. Grover, and E. W. Salmi (Los Alamos Scientific Lab., N. Mex.). J. Appl. Phys., 31, 2140-53(1960) Dec. NSA 15-9580

244

INTERPRETATION OF EXPERIMENTAL CHARACTERISTICS OF CESIUM THERMIONIC CONVERTERS. E. N. Carabateas, S. D. Pezaris, and G. N. Hatsopoulos (Massachusetts Inst. of Tech., Cambridge). J. Appl. Phys. 32, 352-8 (1961) Mar. NSA 15-14473

245

PLASMA THERMIONIC CONVERTERS. E. W. Salmi (Los Alamos Scientific Lab., N. Mex.). J. Electrochem. Soc. 107, 1013-15(1960) Dec. NSA 15-5741

246

THERMIONIC DIODES AS ENERGY CONVERTERS. H. Moss. J. Electronics 2, 305(Jan. 1957).

247

OPTIMIZATION OF A SANDWICHED THERMOELECTRIC DEVICE. B. W. Swanson, E. V. Somers, and R. R. Heikes (Westinghouse Research Labs., Pittsburgh). J. Heat Transfer 83, 77-82(1961) Feb. NSA 15-11825

248

THE PRODUCTION OF ELECTRICAL POWER FROM SEPARATED FISSION-PRODUCTS. C. B. Amphlett (Atomic Energy Research Establishment, Harwell, Berks, England). J. Nuclear Energy 1, 173-80(1955) Feb. NSA 9-3716

249

ATOMIC MICROBATTERIES. B. P. Sukhov. Nauka i Zhizn No. 7, 71(1958). NSA 13-11316

250

A THERMO-ELECTRONIC GENERATOR. V. A. Parfenov. Nauka i Zhizn 26, No. 7, 69(1959). NSA 14-1660

251

METHOD OF AND MEANS FOR CONVERTING THE ENERGY OF NUCLEAR RADIATIONS INTO USEFUL ELECTRICAL ENERGY. (to Radio Corporation of America, U. S. A.). British Patent 761,404. Nuclear Eng. 2, 44(1957) Jan. NSA 11, 3638

252

APPARATUS FOR GENERATING ELECTRICITY BY THERMIONIC EMISSION. H. Hurst. British Patent 797,872. Nuclear Eng. 4, 92(1959) Feb. NSA 13-8468

253

THE SNAP PROGRAMME. U. S. AEC'S SPACE-ELECTRIC POWER PROGRAMME. Guveren M. Anderson and Frank H. Featherston. Nuclear Eng. 5, 460-3(1960) Oct. NSA 15-1123

254

THERMOELECTRIC DIRECT CONVERSION IN NUCLEAR REACTORS. W. E. Schoupp (Westinghouse Electric Corp., Pittsburgh). Nuclear Energy, 458-61(1960) Oct. NSA 15-3691

255

DEVELOPMENT OF MATERIALS FOR THERMIONIC GENERATORS. John Coltman (Westinghouse Electric Corp.). Nuclear Energy 530-2(1960) Nov. NSA 15-7688

256

ELECTRIC POWER FROM NUCLEAR HEAT-DIRECT. J. W. Gardner (English Electric Co., Ltd., Whetstone, Leicester, Eng.). Nuclear Energy 237-42(1961) June. NSA 15-24601

257

THE DIRECT GENERATION OF ELECTRICITY. PART I. B. C. Lindley (C. A. Parsons and Co., Newcastle-upon-Tyne, Eng.). Nuclear Power 5, No. 50, 100-3(1960) June. NSA 14-17620

258

ELECTRICAL GENERATION BY DIRECT CONVERSION USING ISOTOPES. E. R. Ningard and H. O. Banks (Martin Co., Baltimore). Nuclear Sci. and Eng. 2, No. 1, Suppl., 151-2(1959) June. NSA 13-17442

259

THERMIONIC REACTOR SYSTEMS. R. C. Howard (General Atomic Div., General Dynamics Corp., San Diego, Calif.). Nuclear Sci. and Eng. 10, 173-82(1961) June. NSA 15-23141

260

NUCLEAR BATTERIES: TYPES AND POSSIBLE USES. Alexander Thomas (Tracerlab, Inc., Boston). Nucleonics 13, No. 11, 129-33(1955) Nov. NSA 10-931

261

SNAP III — ELECTRICITY FROM RADIONUCLIDES AND THERMOELECTRIC CONVERSION. Melvin Barmat (Martin Co., Baltimore); G. M. Anderson (U. S. Atomic Energy Commission, Germantown, Md.); and E. Wayne Bollmeier (Minnesota Mining and Mfg. Co., St. Paul). Nucleonics 17, No. 5, 166-8; 171-2; 174(1959) May. NSA 13-13803

262

THERMIONIC CONVERTERS. Karl G. Herqvist (RCA, Princeton, N. J.) Nucleonics 17, No. 7, 49-53(1959) July. NSA 13-16357

263

LOS ALAMOS PLASMA THERMOCOUPLE. G. M. Grover (Los Alamos Scientific Lab., N. Mex.). Nucleonics 17, No. 7, 54-5(1959) July. NSA 13-16180

264

CURRENTS FROM GAMMAS MAKE DETECTORS AND BATTERIES. Bernhard Gross and Preston Vincent Murphy (Instituto Nacional de Tecnologia, Rio de Janeiro). Nucleonics 19, No. 3, 86, 88-9(1961) Mar. NSA 15-11833

265

NUCLEAR ENERGY IN SPACE. Nucleonics 19, No. 4, 53-100(1961) Apr. NSA 15-15337

266

SEMI-CONDUCTOR NUCLEAR ELECTRIC BATTERIES. Nguyen Van Dong (Centre d'Etudes Nucleaires, Saclay, France). Onde elec. 38, 654-7(1958) Aug.-Sept. (In French). NSA 14-1676

267

RADIOACTIVE CHARGING THROUGH A DIELECTRIC MEDIUM. E. G. Linder and P. Rappaport. Phys. Rev. 91, 202(1953) July 1. NSA 7-4963

268

SATELLITE AUXILIARY POWER SYSTEMS. Nels B. Palmquist, Jr. (Lockheed Aircraft Corp., Sunnyvale, Calif.). Planetary Space Sci. 4, 202-24(1961) NSA 15-25345

269

PERFORMANCE DATA AND ENVIRONMENTAL TEST RESULTS OF SNAP III. Fred N. Huffman and Louis W. Gross. Planetary Space Sci. 4, 226-41(1961) NSA 15-25346

270

THERMIONIC ENERGY CONVERTER. K. G. Herqvist, M. Kanefsky, and F. H. Norman. RCA Review 19, 244(1958) June.

271

PLASMA SYNTHESIS AND ITS APPLICATION TO THERMIONIC POWER CONVERSION. Karl G. Hernqvist (RCA Labs., Princeton, N. J.). RCA Rev. 22, 7-20 (1961) Mar. NSA 15-28237

272

DIRECT CONVERSION OF HEAT TO ELECTROMAGNETIC ENERGY. Fred M. Johnson. (RCA Labs., Princeton, N. J.). RCA Rev. 22, 21-8(1961) Mar. NSA 15-28238

273

SEMICONDUCTING MATERIALS FOR THERMOELECTRIC POWER GENERATION. F. D. Rosi, E. F. Hockings, and N. E. Lindenbald (RCA Labs., Princeton, N. J.). RCA Rev. 22, 82-121(1961) Mar. NSA 15-28239

274

THE PROBLEM OF OPERATION OF "ATOMIC" CURRENT SOURCES WITH DOUBLE ENERGY CONVERSION. V. S. Vavilov, B. M. Vul, G. V. Galkin, and S. A. Fridman (Lebedev Inst. of Physics, Moscow). Soviet Phys.-Solid State 1, 748-9 (1959) Nov. NSA 14-3906

275

FUNDAMENTAL STUDY OF THE ATOMIC BATTERY. Chiyoe Yamanaka, Hiroshi Wada, and Yutaka Yamamura. Technol. Repts. Osaka Univ. 8, 233-41(1958) Oct. (In English) NSA 14-14216

276

A METHOD OF PRODUCING POWER FROM BETA-ACTIVE ISOTOPES. G. I. Rukman, V. P. Tychinskii, Ya. A. Yukhvidin. Trudy Nauch. Issledovatel'. Inst. Ministerstva Radiotekh. Prom. S.S.S.R., No. 6, 3-8(1956). (Translated from Referat. Zhur. Elektrotekh., No. 2, 1958, p.118). NSA 14-781

277

THERMOELECTRIC CONVERTERS OF HEAT AND ENERGY. L. N. Dobretsov (Inst. of Physics and Tech., Academy of Sciences, Leningrad). Zhur. Tekh. Fiz. 30, 365-94(1960) Apr. (In Russian) NSA 14-19651

Conferences and Books

278

THE DIRECT CONVERSION OF RADIATION INTO ELECTRICAL ENERGY. E. G. Linder, P. Rappaport, and J. J. Lofeski. A/CONF.8/15/P/169, p.283-90 in Vol. 15, Proceedings of the International Conference on the Peaceful Uses of Atomic Energy, Geneva, 1955. United Nations, New York.

279

NUCLEAR BATTERIES - A SURVEY. W. Shorr. A/CONF.8/15/171, p.310-16 in Vol. 15, Proceedings of the International Conference on the Peaceful Uses of Atomic Energy, Geneva, 1955. United Nations, New York.

280

RADIATION GALVANIC CELL, BASED ON THE OXIDATION-REDUCED REACTION OF $\text{Fe}^{2+}/\text{Fe}^{3+}$. P. I. Dolin and V. I. Duzhenkov (Inst. of Physical Chemistry, Academy of Sciences, U. S. S. R.). 3p. p.123-6 of "Radiation Electrochemical Processes. Part III of Proceedings of the First All-Union Conference on Radiation Chemistry, Moscow, 1957." (In English Translation). New York, Consultants Bureau, Inc. 1959. 53p. \$15.00. NSA 13-22105

281

THE BETA CELL. M. F. Lantratov, V. E. Manoilov, and O. A. Miazdrikov. (V. I. Ul'ianov (Lenin) Electrotechnical Inst. of (Leningrad). 2p. p.127-9 of "Radiation Electrochemical Processes. Part III of Proceedings of the First All-Union Conference on Radiation Chemistry, Moscow, 1957." (In English Translation). New York, Consultants Bureau, Inc. 1959. 53p. \$15.00 NSA 13-22106

282

DIRECT POWER CONVERSION: PART I, GENERAL COMMENTS. J. H. Huth (Rand Corp., Santa Monica, Calif.). 4p. p.145-9 of "Advanced Propulsion Systems. Proceedings of a Symposium held in Los Angeles, California, December 11-13, 1957." Morton Alperin and George P. Sutton, eds. International Series on Aeronautical Sciences and Space Flight. Division IX. Symposia. Volume 2. New York, Pergamon Press, 1959. 246p. \$6.00. NSA 15-27279

283

DIRECT CONVERSION OF HEAT TO ELECTRIC POWER; ITS PRESENT STATUS AND FUTURE PROSPECTS. John C. R. Kelly, Jr. (Westinghouse Electric Corp., Pittsburgh). p.45-50 of "Proceedings of the American Power Conference, 21st Annual Meeting, Chicago, Illinois, March 31, April 1 and 2, 1959. Volume 21." Chicago, Illinois Institute of Technology, 1959. 807p. \$8.00. NSA 14-16133

284

ISOTOPIC HEAT AND POWER. Douglas Harvey (The Martin Co., Baltimore). 9p. p.68-77 of "Proceedings of the American Power Conference, March 29, 30, 31, 1960, Chicago, Illinois. Volume XXII." Chicago, Illinois Institute of Technology. 1960. 902p. \$10.00 NSA 15-7932

285

DESIGN AND PERFORMANCE CHARACTERISTICS OF SNAP-III-B. Presented at Nuclear Engineering and Science Conference, April 6-9, 1959, Public Auditorium, Cleveland, Ohio. Preprint V-132. Melvin Barbat (Martin Co., Baltimore). New York, Engineers Joint Council, 1959. 24p. \$0.50. NSA 13-19776

286

THERMOELECTRIC POWER. Clinton M. Kelley (Stanford Research Inst., Menlo Park, Calif.). p.212-18 of "Proceedings of an International Symposium on High Temperature Technology, Asilomar Conference Grounds, California, October 6-9, 1959." New York, McGraw-Hill Book Company, Inc., 1960. NSA 14-16132

287

PROCEEDINGS, THERMOELECTRIC SYMPOSIUM, WHIRLPOOL CORPORATION, WASHINGTON, D. C. OCTOBER 21, 1959. St. Joseph, Mich., Whirlpool Corporation, 1959. 199p. NSA 15-16267

288

ELECTRIC ENERGY SOURCES AND CONVERSION TECHNIQUES FOR SPACE VEHICLES. Volney C. Wilson (General Electric Research Lab., Schenectady, N. Y.) IAS Paper No. 60-31. Presented at the IAS Annual Meeting, January 25-27, 1960, New York, New York. New York, Institute of the Aeronautical Sciences, 1960. 18p. \$1.00. NSA 14-15190

289

EXPERIMENTAL RESEARCH ON THE CESIUM THERMIONIC CONVERTER. N. S. Rasor (Atomics International, Canoga Park, Calif.). Presented at the IAS 29th Annual Meeting, New York, New York, January 23-25, 1961. IAS Paper No. 61-72. New York, Institute of The Aerospace Sciences, 1961. 16p. \$1.00. NSA 15-28267

290

NUCLEAR ENERGY POWER SOURCES. George H. Ogburn, Jr. (U.S. Atomic Energy Commission, Washington, D. C.). 6p. p.12-18 of "Proceedings (of) 14th Annual Power Sources Conference, 17-18-19 May 1960." Red Bank, N. J., PSC Publications Committee. 1960. NSA 15-11863

291

COMPARISON OF ENERGY CONVERSION SYSTEMS. J. H. Fisher and W. R. Menetrey (Electro-Optical Systems, Inc., Pasadena, Calif.). 2p. p.94-6 of "Proceedings of 14th Annual Power Sources Conference, 17-18-19 May 1960." Red Bank, N. J., PSC Publications Committee. 1960. NSA 15-11865

292

BALLISTIC MISSILE AND SPACE TECHNOLOGY. VOL. II. PROPULSION AND AUXILIARY POWER SYSTEMS. Proceedings of the Fifth Symposium on Ballistic Missile and Space Technology, Los Angeles, California, August 1960. Donald P. Legalley, ed. New York, Academic Press, 1960. 451p. \$9.00. NSA 15-7927

293

ISOTOPIC FUELED THERMIONIC GENERATORS. Robert J. Harvey (The Martin Co., Baltimore, Md.). and G. N. Hatsopoulos. 32p. p.409-41 of "Ballistic Missile and Space Technology. Vol. II." NSA 15-7928

294

NUCLEAR SPACE POWER-SNAP II. F. D. Anderson, D. J. Cockeram, H. M. Dieckamp, and J. R. Wetch (Atomics International, Canoga Park, Calif.). 25p. p.347-72 of "Ballistic Missile and Space Technology. Vol. II." NSA 15-8367

295

ENERGY CONVERSION FOR SPACE POWER. Nathan W. Snyder, ed. A Selection of Technical Papers based mainly on A Symposium of the American Rocket Society held at Santa Monica, California September 27-30, 1960. Progress in Astronautics and Rocketry. Volume 3. New York, Academic Press, 1961. 792p. NSA 15-21367

296

PHYSICS OF THERMOELECTRICITY. A. C. Beer (Battelle Memorial Inst., Columbus, Ohio). 22p. p.3-25 of "Energy Conversion for Space Power." NSA 15-21354

297

THE USE OF HIGH TEMPERATURE THERMOELECTRIC MATERIALS (SILICIDES) FOR POWER GENERATION IN SPACE. S. E. Mayer and I. M. Ritchie (Transitron Electronic Corp., Wakefield, Mass.). 9p. p.63-72 of "Energy Conversion for Space Power." NSA 15-21368

298

THERMOELECTRIC ELEMENTS IN SPACE POWER SYSTEMS. Douglas L. Kerr (General Electric Co., Philadelphia). 24p. p.85-109 of "Energy Conversion For Space Power." NSA 15-21369

299

THERMOELECTRIC MATERIALS FOR SPACE COOLING. Edward E. Gardner and Edwin L. Woisard (Whirlpool Research Labs., St. Joseph, Mich.). 10p. p.111-21 of "Energy Conversion For Space Power." NSA 15-21370

300

REVIEW OF THE PHYSICS OF THERMIONICS. Wayne B. Nottingham (Massachusetts Inst. of Tech., Cambridge). 6p. p.125-31 of "Energy Conversion for Space Power." NSA 15-21355

301

PLASMA THERMIONICS. H. W. Lewis (Univ. of Wisconsin, Madison). 3p. p.133-6 of "Energy Conversion for Space Power." NSA 15-21674

302

CESIUM CONVERTER STUDIES. V. C. Wilson (General Electric Research Lab., Schenectady, N. Y.). 17p. p.137-54 of "Energy Conversion for Space Power." NSA 15-21356

303

EXPERIMENTAL RESEARCH ON PLASMA THERMIONIC ENERGY CONVERTERS. Karl G. Hernqvist (RCA Labs., Princeton, N. J.). 8p. p.167-75 of "Energy Conversion for Space Power." NSA 15-21675

304

THEORY OF THE CESIUM PLASMA ENERGY CONVERTER WITH A TUNGSTEN CATHODE. Howard L. Steele (Boeing Scientific Research Labs., Seattle). 22p. p.177-99 of "Energy Conversion for Space Power." NSA 15-21676

305

SPACE POWER SYSTEMS. Nathan W. Snyder, ed. A Selection of Technical Papers based mainly on A Symposium of the American Rocket Society held at Santa Monica, California September 27-30, 1960. Progress in Astronautics and Rocketry. Volume 4. New York, Academic Press, 1961. 647p. NSA 15-21377

306

STATUS OF THE SNAP 2 REACTOR. R. D. Keen and R. R. Eggleston (Atomics International, Canoga Park, Calif.). 9p. p.281-90 of "Space Power Systems." NSA 15-21875

307

SNAP II POWER CONVERSION STATUS. D. L. Southam (Thompson Ramo Wooldridge, Inc., Cleveland). 9p. p.291-300 of "Space Power Systems." NSA 15-21876

308

DYNAMIC VERSUS DIRECT CONVERSION. Kenneth P. Johnson (Aerojet-General Nucleonics, San Ramon, Calif.). 23p. p.409-32 of "Space Power Systems." NSA 15-21378

309

OPTIMIZED SNAP III POWER GENERATOR DESIGN FOR SPACECRAFT. H. H. Greenfield (Lockheed Aircraft Corp., Sunnyvale, Calif.). Paper No. 1278-60. Presented at the ARS Space Power Systems Conference, Santa Monica, Calif. September 27-30, 1960. New York, American Rocket Society, 1960. 35p. NSA 15-2017

310

CLOSED-CYCLE MONOPROPELLANT FUEL CELL SYSTEM EMPLOYING RADIATION-GENERATED OR PHOTOCHEMICALLY GENERATED OZONE. Jozef Willem Eerkens and Martin C. Reder (Aerojet-General Nucleonics, San Ramon, Calif.). Paper No. 1306-60. Presented at the ARS Space Power Systems Conference, Santa Monica, Calif., September 27-30, 1960. NSA 15-2384

311

THE SNAP 2 CONCEPT. H. M. Dieckamp (Atomics International, Canoga Park, Calif.). Paper No. 1324-60. Presented at the ARS Space Power Systems Conference, Santa Monica, California, September 27-30, 1960. New York, American Rocket Society, 1960. 11p. NSA 15-3700

312

SNAP 2 RADIATIVE-CONDENSER DESIGN. M. G. Coombs and R. A. Stone. (Atomics International, Canoga Park, Calif.). Presented at the ARS Space Power Systems Conference, Santa Monica, California, September 27-30, 1960. New York American Rocket Society, 1960. 12p. NSA 15-7102. (Paper No. 1328-60).

313

SNAP 2 SYSTEM AND VEHICLE INTEGRATION. D. J. Cockeram and R. L. Wallerstedt. (Atomics International, Canoga Park, Calif.). Paper No. 1329-60. Presented at the ARS Space Power Systems Conference, Santa Monica, California, September 27-30, 1960. New York, American Rocket Society, 1960. 9p. \$1.00. NSA 15-7103.

314

SNAP THERMOELECTRIC SYSTEMS. A. W. Thiele and M. G. Coombs. (Atomics International, Canoga Park, Calif.). Paper No. 1330-60. Presented at the ARS Space Power Systems Conference, Santa Monica, California, September 27-30, 1960. New York, American Rocket Society, 1960. 8p. NSA 15-7104.

315

13-WATT ISOTOPE-POWERED THERMOELECTRIC GENERATORS FOR SPACE AND LUNAR IMPACT MISSIONS. Justin L. Bloom and James B. Weddell (Martin Co., Baltimore). Paper No. 1332-60. Presented at the ARS Space Power Systems Conference, Santa Monica, Calif., September 27-30, 1960. New York, American Rocket Society, 1960. 28p. NSA 15-2385

316

SHIELD DESIGN FOR SNAP REACTORS. V. Keshishian. (Atomics International, Canoga Park, Calif.). Paper No. 1334-60. Presented at the ARS Space Power Systems Conference, Santa Monica, California, September 27-30, 1960. New York, American Rocket Society, 1960. 14p. NSA 15-5804.

317

EVALUATION OF SNAP SAFETY FOR SPACE REACTOR APPLICATION. F. D. Anderson and J. G. Lundholm, Jr. (Atomics International, Canoga Park, Calif.). Paper No. 1335-60. Presented at the ARS Space Power Systems Conference, Santa Monica, California, September 27-30, 1960. New York, American Rocket Society, 1960. 15p. \$1.00. NSA 15-7105.

318

THE EXPERIMENTAL AND ANALYTICAL PROGRAMS FOR RE-ENTRY BURNUP OF SNAP REACTORS. P. D. Cohn. (Atomics International Div., North American Aviation, Inc., Canoga Park, Calif.). Paper No. 1336-60. Presented at the ARS Space Power Systems Conference, Santa Monica, California, September 27-30, 1960. New York, American Rocket Society, 1960. 17p. NSA 15-7106.

319

THE APPLICATION OF SNAP UNITS IN CURRENT SPACE VEHICLES. J. R. Wetch and J. G. Lundholm, Jr. (Atomics International, Canoga Park, Calif.). Paper No. 1337-60. Presented at the ARS Space Power Systems Conference, Santa Monica, California, September 27-30, 1960. New York, American Rocket Society, 1960. 8p. \$1.00. NSA 15-7107.

320

PROBLEMS ASSOCIATED WITH THE DEVELOPMENT OF A THERMIONIC CONVERSION REACTOR. R. L. Hirsch and J. W. Holland (Atomics International, Canoga Park, Calif.). Paper No. 1338-60. Presented at the ARS Space Power Systems Conference, Santa Monica, California, September 27-30, 1960. New York, American Rocket Society, 1960. 12p. NSA 15-3701

321

NUCLEAR REACTOR-THERMIONIC SPACE POWER SYSTEMS. L. W. Perry (General Atomic, Div. of General Dynamics Corp., San Diego, Calif.). Paper No. 1339-60. Presented at the ARS Space Power Systems Conference, Santa Monica, California, September 27-30, 1960. New York, American Rocket Society, 1960. 8p. NSA 15-3702

322

SAFETY ANALYSES AND TESTS OF A RADIOISOTOPE POWERED THERMOELECTRIC GENERATOR. Paul J. Dick (Martin Co., Baltimore). Paper No. 1341-60. Presented at the ARS Space Power Systems Conference, Santa Monica, California, September 27-30, 1960. New York, American Rocket Society, 1960. 14p. NSA 15-2386

323

NUCLEAR FRONTIERS - 1960. A FORUM REPORT (NO. 32) Proceedings of the Annual Conference for Members and Guests, San Francisco, California, December 14-16, 1960. Edwin A. Wiggin, ed. (New York, Atomic Industrial Forum, Inc.). 336p. \$10.00. NSA 15-16779.

324

PROCEEDINGS OF NUCLEONICS IN FLIGHT SYMPOSIUM, MARCH 28-29, 1961, DALLAS, TEXAS. (American Nuclear Society. North Texas Section, Dallas). 197p. (NP-10096) \$5.00. NSA 15-17835.

325

TRANSACTIONS OF THE AMERICAN NUCLEAR SOCIETY, 1961 ANNUAL MEETING, PITTSBURGH, PENNSYLVANIA, JUNE 4-8, 1961. Joseph H. Bach, ed. Trans. Am. Nuclear Soc., 4, No. 1, 177p. (June 1961). (Suppl. to Nuclear Sci. and Eng.). \$5.00. NSA 15-21312.

326

RAY TRACING SHIELDING SURVEY CODES FOR SNAP SHIELDS. C. A. Goetz, K. L. Rooney, and M. A. Boling. (Atomics International, Canoga Park, Calif.). Trans. Am. Nuclear Soc., 4, No. 1, 32-3(1961) June. NSA 15-21699.

327

USE OF "ON SITE" ANALOG COMPUTER TO DETERMINE DYNAMIC CHARACTERISTICS OF THE SNAP-2 EXPERIMENTAL REACTOR (SER). J. Reichman and E. B. Ash. (Atomics International, Canoga Park, Calif.). Trans. Am. Nuclear Soc., 4, No. 1, 86-7(1961) June. NSA 15-21781.

328

MEASUREMENT OF SNAP EXPERIMENTAL REACTOR TEMPERATURE COEFFICIENTS. J. P. Beall. (Atomics International, Canoga Park, Calif.). Trans. Am. Nuclear Soc., 4, No. 1, 111-12(1961) June. NSA 15-21789.

329

SNAP-2 EXPERIMENTAL REACTOR OPERATION HISTORY. M. W. Hulin. (Atomics International, Canoga Park, Calif.). Trans. Am. Nuclear Soc., 4, No. 1, 145(1961) June. NSA 15-21801.

330

SPACEPROBE RADIOISOTOPE THERMOELECTRIC GENERATOR POWER SYSTEM DESIGN CONSIDERATIONS. H. H. Greenfield and R. E. Kittleson. (Lockheed Aircraft Corp., Sunnyvale, Calif.). Trans. Am. Nuclear Soc., 4, No. 1, 161-2(1961) June. NSA 15-21319.

331

HEARINGS BEFORE THE SUBCOMMITTEE ON RESEARCH AND DEVELOPMENT OF THE JOINT COMMITTEE ON ATOMIC ENERGY, CONGRESS OF THE UNITED STATES, EIGHTY-SIXTH CONGRESS, SECOND SESSION ON FRONTIERS IN ATOMIC ENERGY RESEARCH MARCH 22, 23, 24, AND 25, 1960. (United States. Congress. Joint Committee on Atomic Energy). 386p. NSA 15-16778.

332

DIRECT CONVERSION OF HEAT TO ELECTRICITY. Joseph Kaye and John A. Welsh, eds. New York, John Wiley & Sons, Inc., 1960. 369p. \$8.75.
NSA 14-23445

333

NUCLEAR FLIGHT. The United States Air Force Programs for Atomic Jets, Missiles, and Rockets. Kenneth F. Gantz, ed. New York, Duell, Sloan and Pearce, 1960. 220p. \$4.00. NSA 14-17623

334

THERMOELECTRIC MATERIALS AND DEVICES. Irving B. Cadoff and Edward Miller, eds. Materials Technology Series. New York, Reinhold Publishing Corporation, 1960. 356p. NSA 15-14923.

Patents**335**

RADIO ELECTRIC GENERATOR. P. E. Ohmart (to U. S. Atomic Energy Commission). U. S. Patent 2,696,564, Dec. 7, 1954. NSA 9-1440

336

THERMO-ELECTRIC GENERATOR. K. C. Jordan (to U. S. Atomic Energy Commission). U. S. Patent 2,844,639. July 22, 1958. NSA 13-994

337

RADIOACTIVE BATTERY. J. H. Birden and K. C. Jordan (to U. S. Atomic Energy Commission). U. S. Patent 2,913,510. Nov. 17, 1959. NSA 14-7973

338

IMPROVEMENTS IN METHOD AND APPARATUS FOR THE DIRECT CONVERSION OF THERMAL TO ELECTRICAL ENERGY. (General Electric Co.). Nov. 16, 1960. British Patent 854,036. NSA 15-6581.

339

DEVICE FOR TRANSFORMING THE ENERGY RADIATED BY RADIOACTIVE MATERIAL INTO ELECTRICAL ENERGY. (to Laboratoires d'Electronique et de Physique Appliquees.) French Patent 1, 193,049. Apr. 27, 1959. NSA 15-9631.

340

DEVICES GENERATING ELECTRICITY. (Westinghouse Electric Corp.). French Patent 1,211,016. Oct. 5, 1959. NSA 15-10462.

341

RADIOACTIVE PILE. (to Universal Winding Co.). French Patent 1,211,189.
Oct. 5, 1959. NSA 15-9632.

342

ATOMIC PILE. (to Société Telefunken-France). French Patent 1,233,604.
May 9, 1960. NSA 15-26160.

343

ATOMIC BATTERY GIVING A HIGH TENSION. (to Société Telefunken-France).
French Patent 1,233,663. May 9, 1960. NSA 15-26161.

344

ELECTRONIC CAPACITOR. (to Electro-Union S. A.). French Patent 1,236,016.
June 7, 1960. NSA 15-26162.