U. S. Government RESEARCH REPORTS

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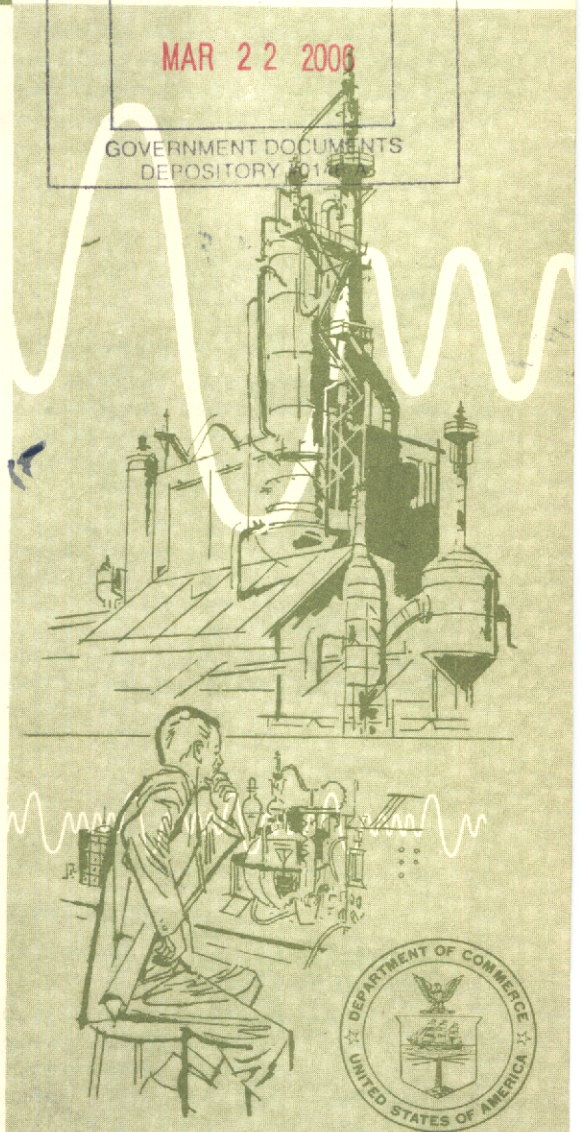
In this issue:



U. S. DEPARTMENT OF COMMERCE

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U. S. DEPARTMENT OF COMMERCE

OFFICE OF TECHNICAL SERVICES

U. S. Government RESEARCH REPORTS

Vol. 28, No. 4 October 18, 1957

Contents

Printed Reports Available from OTS Announced in This Issue

APPAREL

Preliminary investigation of stretch-type nylon military hosiery, by John Zimmerman and Clarence J. Pope. U.S. Army. Quartermaster Research and Development Command. Textile, Clothing and Footwear Division. Quartermaster Research and Development Center, Natick, Mass. Oct 1956. 27p photo, diagr, graphs, tables. Order from LC. Mi $2.70, ph $4.80.

PB 125426

The use of stretch-type nylon yarns in combination with non-stretch cotton and/or wool yarns was investigated to provide a basis for a reduction in the number of sock sizes procured by the Army. It was found that either the plating or plying system of combining stretch nylon with non-stretch yarns was satisfactory for use in military hosiery. The torque type of stretch nylon yarns provided greater elongation than did that non-torque types. Project: 7-79-10-001. To be published in American Dyestuff Reporter. QMC TSR 94.

Protective clothing and decontamination, by Frank M. Steadman and others. U.S. Office of the Quartermaster General. Jun 1951. 29p tables. Order from LC. Mi $2.70, ph $4.80.

PB 123179

Preliminary laundering decontamination methods developed in a test program at Oak Ridge National Laboratories were tested under conditions of field contamination from atomic weapons bursts. Normal clothing materials show little difference in contaminability except that water repellent finishes appear to pick up more contamination and to resist its removal to a greater degree than non-water repellent materials. Contamination picked up by movement in fall out contaminated areas was removed as readily as was contamination by surface materials activated by the detonation. Contaminated clothing was decontaminated satisfactorily by laundering with both alkaline and with acid chelating agents, using commercial type corrosion-resistant metal laundry equipment. Commercial laundries can safely, and on practical basis, decontaminate radio-actively contaminated launderable clothing. Personnel decontamination was satisfactorily accomplished without the use of special detergents, commercial toilet

soap proving as efficient as specially formulated detergents. Project 6.9 (Operation Greenhouse). Parts of this report may not reproduce well.

BIBLIOGRAPHY

Bibliography on motion sickness, by Richard Trumbull and Clinton H. Maag. U.S. Office of Naval Research. Psychological Sciences Division. Physiological Psychology Branch, Washington, D.C. Jan 1956. 31p. Order from LC. Mi $3.00, ph $6.30. PB 127186

Joint services committee for the study of motion sickness, Report no. 2. 1. Motion sickness - Bibliography 2. ONR ACR 3

Bibliography on snow, ice and permafrost, with abstracts, vol. IX. U.S. Army. Corps of Engineers. Snow, Ice and Permafrost Research Establishment. Wilmette, Ill. Jan 1956. 274p. Order from LC. Mi $11.10, ph $42.30. PB 125828

Prepared by the SIPRE Bibliography Project, Library of Congress, Washington, D.C. (Dept. of the Army Project no. 8-66-02-004). For vols. 1-8 and Index see PB 113539-113540, 112250, 112252, 114461, 115969, 117329, 119002 and 119137.
1. Snow - Bibliography 2. Ice - Bibliography 3. Permafrost - Bibliography 4. SIPRE 12, vol IX

Curing of concrete, 1925-1955. Highway Research Board. 1956. 105p. Order as HRB Bib. 18 from National Research Council Publications Office, 2101 Constitution Ave., N.W., Washington 25, D.C. $1.80. PB 124656

1. Concrete - Curing - Bibliography 2. HRB B 18 3. NRC 430 Presents comprehensive coverage of literature from the United States and Canada.

List of translations issued by the library, May 1st to Dec 31st, 1955. Gt. Brit. Atomic Energy Research Establishment. 1956. 8p. Order from British Information Services, 30 Rockefeller Plaza, New York 20, N.Y. 30 cents. PB 118837s

1. AERE Lib/M. 2, Supplement 1. Supplement to PB 118837.

Literature survey on exposure testing of organic protective coating films, by B.G. Brand, E.R. Mueller and E.E. McSweeney. Battelle Memorial Institute, Columbus, O. Feb 1949. 61p. Order from LC. Mi $3.90, ph $10.80. PB 123741

1. Films, Protective - Tests - Bibliography 2. Coatings, Protective - Tests - Bibliography 3. Contract N5 ori-111, T.O. IV. AD 91633.

CHEMICALS AND ALLIED PRODUCTS

Organic Chemicals

Acidity function, H_0, for solutions containing 50% dioxane, by Maurice M. Kreevoy. Pennsylvania State University. College of Chemistry and Physics, University Park, Pa. Sep 1955. 8p graph, table. Order from LC. Mi $1.80, ph $1.80. PB 123726

1. Dioxane - Reactions 2. Perchloric acid - Reactions with dioxane 3. Perchloric acid-dioxane solutions - Acid-base equilibrium 4. Kinetic reactions, Chemical 5. Contract Nonr-656(05), NR 055-328

Addition of p-thiocresol to bicyclic olefins: Quantitative analysis for rearrangement products, by Jerome A. Berson and William M. Jones. University of Southern California. Dept. of Chemistry, Los Angeles, Calif. May 1956. 15p diagrs. Order from LC. Mi $2.40, ph $3.30. PB 122955

The free radical additions of p-thiocresol to exo-cis-3, 6-endomethylene-Δ^4-tetrahydrophthalic anhydride and the corresponding dimethyl ester give, as major products, the unrearranged p-tolylthioethers. The total absence of arrangement in the products from the reaction of p-thiocresol with the ester is demonstrated by isotope dilution analysis. Contract AF 18(600)-1544.

Amines. I: N,N,N',N,-tetramethyl - 1,2-propanediamine, by Ross W. Moshier and Leonard Spialter. U.S. Air Force. Air Research and Development Command. Wright Air Development Center. Aeronautical Research Laboratory, Wright-Patterson Air Force Base, Dayton, O. Jun 1956. 11p. Order from OTS. 50 cents. PB 121684

N,N,N',N -tetramethyl-1,2 propanediamine, a new compound, and of possible use as a liquid fuel, was prepared by the Eschweiler-Clarke procedure in 76% yield. Its properties are: clear colorless liquid, very strong amine odor, completely miscible with water and organic solvents, b.p. 138-139°C, mobile fluid at -100°C., n_D^{25} 1.4230, d_4^{25} 0.7900, dielectric constant 2.4. It was characterized by preparing the following compounds; dihydrochloride, monopicrate, di (methiodide), and the di (methyl-p-toluenesulfonate). AD 97228. Project 7340, Task 70317. AF WADC TN 56-257.

Infrared absorption studies of some halogenated acetic acids, by R. E. Kagarise. U.S. Naval Research Laboratory. Aug 1957. 50p graphs, tables. Order from OTS. $1.25. PB 131035

The infrared absorption of eight halogenated acetic acids has been studied in the 2μ to 15μ spectral region for the liquid and crystalline states. The observed data for the liquids have been interpreted in terms of dimeric molecules, and assignments of the prominent bands made. The influence of increasing electronegative substitution on the frequencies of the carboxyl group has been discussed. The heats of dissociation of all of the acids, except dichloroacetic, have been measured in solutions of carbon tetrachloride. These observed values bear no obvious relationship to other physical properties of the acids. The effects of solvent-solute interactions and the variation of absorptivities with temperature on the apparent heats of dissociation are discussed. NRL R 4955.

Preparation of fluorine containing compounds. Quarterly technical report under Contract Nonr-580(03), NR 356-333 for period 1 Feb 1955 - 30 Apr 1955, by R. D. Dresdner, J. A. Wethington, Jr., H. C. Brown and J. A. Young. Florida. University, Gainesville, Fla. 1955. 17p tables. Order from LC. Mi $2.40, ph $3.30. PB 123174

The objectives of this work have been: (1) the preparation of fluorocarbon derivations, containing no carbon-carbon bonds, which might be of use in making high molecular weight compounds of the same nature; (2) the preparation and examination of small molecules with no hydrogen and no carbon-carbon bonds, to see whether the desired alternating heteroatomic chain is stable in the fluorocarbon domain; (3) the use of known methods, or the development of new ones, to prepare high molecular weight materials with this type of structure. AD 62701. For summary report, Jan 1954 - May 1956 see PB 121818.

Preparation of methyl borate from rasorite, by Dorothy R. Gould. Ethyl Corporation. Chemical Research Laboratory, San Bernardino, Calif. Mar 1944. 4p tables. Order from LC. Mi $1.80, ph $1.80. PB 124988

1. Methyl borates - Preparation 2. Rasorite (Trade name) LTD 44-13

Progress report under Contract N5 ori-07761, by Eugene G. Rochow. Harvard University. Dept. of Chemistry. Mar 1955. 4p. Order from LC. Mi $1.80, ph $1.80. PB 123742

Gives list of personnel and projects involved in current contract. 1. Chemical research 2. Silicon compounds - Organic - Research

Part I: Relative stabilities of some molecular addition compounds of boron. Part II: Addition of borine to carbon-carbon double bonds: the effect of boron hydride on fluorinated ethylenes, by William A. G. Graham and F. G. A. Stone. Harvard University. Dept. of Chemistry. Jul 1956. 36p diagr, tables. Order from OTS. $1.00. PB 131086

Using boron trifluoride as a reference acceptor molecule, the methyl derivatives of oxygen, sulfur and selenium have an order of electron-pair donor power: O>S>Se. With both borine and trimethylborine, however, the order of co-ordination is S> Se, O. Moreover, the adducts $(CH_3)_2S.BH_3$ and $(CH_3)_2Se.BH_3$ are more stable than their boron trifluoride analogues. The weakness of boron trifluoride as an acid was further demonstrated by its quantitative displacement by diborane from the complex $(CH_3)_3P.BF_3$. In Group Vb the order of coordination of methyl derivatives towards BH_3 is apparently P N = AS Sb, compared with the order N>P>As>Sb shown by all other Group IIIb acceptor molecules so far investigated. Possible explanations for these observations are discussed. AD 100539. Thesis - Harvard University: William A. G. Graham. Part II is reprinted from Chemistry and Industry, 1955, pp. 1181-1183. Contract Nonr 1866(13).

Study of equilibria between metal ions and amino acid complexing agents in aqueous solutions, by Arthur E. Martell. Clark University. Dept. of Chemistry, Worcester, Mass. Dec 1955. 24p tables. Order from LC. Mi $2.70, ph $4.80. PB 124663

Thermodynamic functions ΔF^o, ΔH^o, and ΔS^o, and dissociation constants were determinded for seven chelating agents and corresponding metal chelates: The agents were ethylenediaminetetraacetic acid, nitrilotriacetic acid, methylaminediacetic acid, N, N'-dimethylethylenediaminediacetic acid, and dimethylglycine. The metals were Mg(II), Ca(II), Sr(II), Ba(II), and Mn(II). Some thermodynamic stability constants were also obtained for the EDTA chelates of the transition metal ions, Cu(II), Co(II), Ni(II), Zn(II), and Cd(II). Rare earth ions were also included in the studies. Results are interpreted. Contract Nonr-596(00) NR 052-286, Final report.

Thermal decomposition of diol dinitrites. Part III, by Lester P. Kuhn, Robert Wright and Louis DeAngelis. U.S. Aberdeen Proving Ground. Ballistic Research Laboratories, Aberdeen, Md. Mar 1956. 11p tables. Order from LC. Mi $2.40, ph $3.30. PB 122948

The vapor phase decomposition of compounds having the formula $R_2C(ONO(CH_2)_nC(ONO)R_2$, where R is H and methyl, and n is 2 through 4, has been studied. On the basis of the products formed, mechanisms have been proposed which have as their first step the cleavage of one nitrite group to form an alkoxy radical and nitric oxide. For Part II see

PB 116961. Dept. of the Army project no. 5B 0302001. Ordnance research and development project no. TB 3-0110. Tables are numbered I and III. APG BRL M 985.

Use of trimethoxyboroxine for the extinguishment of metal fires. Part I: Magnesium, by R.L. Tuve, R.L. Gipe, H.B. Peterson and R.R. Neill. U.S. Naval Research Laboratory. Jul 1957. 47p photos, diagrs, graphs, tables. Order from OTS. $1.25. PB 121986

Magnesium and its alloys present specialized difficulties in fire extinguishment because, when burning, it reacts with water and foam. Investigation into the above problem has uncovered a new liquid material, trimethoxyboraxine $(CH_3O)_3B \cdot B_2O_3$), which was found effective for the control and extinguishment of metal fires, especially fires on magnesium alloys used in aircraft. Small-scale and large-scale model fires have been used to show the superiority of this material over other liquids for the same purpose. Its efficient "skin" formation on the burning metal, which then allows safe application of cooling water or foam, its lack of serious toxicity, and its stability in storage are attributes of the material which have led to a recommendation to field-test it in crash fire fighting operations. Physical properties of trimethoxyboroxine were studied in order to adapt it more efficiently to fire extinguisher use. Attempts to raise the viscosity index by use of methanol additives and the flash point by use of some halogenated hydrocarbon additives proved fruitless. Hydrolysis and gas solubility studies were also carried out. A portable 2-1/2-gallon stainless-steel stored-pressure extinguisher was developed for initial field fire tests of TMB as a primary extinguishant. This extinguisher has a large neck opening for ease in filling, a removable overfill preventer tube, an easily dismantled valve assembly, a dual-stream lever-operated nozzle, and appropriate gaskets. NRL R 4933.

Plastics and Plasticizers

Bonding of polyethylene, by William H. Schrader and Michael J. Bodnar. U.S. Picatinny Arsenal. Samuel Feltman Ammunition Laboratories, Dover, N.J. Mar 1957. 39p graphs, tables. Order from OTS. $1.00. PB 131099

Evaluates a series of commercial and experimental adhesives for bonding polyethylene, and investigates the effects of treatment with concentrated chromic acid on the adhesive bonding properties of polyethylene. Ordnance Project TB4-621. Dept. of the Army Project 593-02-005. PA TR 2401.

Evaluation of molded polyethylene drums in steel, plywood and wirebound overpacks. Interim report, by Kenneth D. Brunelli. U.S. Chemical Corps. Chemical and Radiological Laboratories, Army Chemical Center, Md. Aug 1956. 16p photos, table. Order from OTS. 50 cents. PB 121907

This report describes the evaluation and investigation made to determine suitability of molded polyethylene drums as a replacement for glass, ceramic, or similar fragile carboy bottles. Complete test and engineering data are presented which establish the suitability of polyethylene drums as regards chemical resistance, vibration, and impact strength. AD 104975. Project 4-91-06-002. CC CRL R 508.

Fluorine-containing elastomers. Second annual report, covering the period 11 Jun 1952 to 11 Jun 1953 under Contract AF 33(038)-20581, by O.R. Pierce and E.T. McBee. Purdue University. Purdue Research Foundation, Lafayette, Ind. Oct 1953. 55p tables. Order from LC. Mi $3.60, ph $9.30. PB 128530

The nature of the work described in this report comprises investigations of the synthesis of three types of fluorine-containing alkylsilanes: I. $(C_3F_7CH_2CH_2)_n SiX_{4-n}$; II. $(C_3F_7CH_2)_n SiX_{4-n}$; III. $(C_3F_7)_nSiX_{4-n}$ (X = Cl or O Et). AD 23169. For 1st report see PB 111284. AF WADC TR 52-191, Part 2.

Low-temperature condensation process for producing more highly cross linked alkyd diisocyanate foams, by H.R. Moore. U.S. Naval Air Development Center. Aeronautical Electronic and Electrical Laboratory, Johnsville, Pa. Jan 1956. 110p photos, diagrs, graphs, tables (1 fold). Order from OTS. $2.75. PB 131123

Processing of rigid isocyanate-based self-fabricating foams consists of all of the steps intervening between the addition of an aromatic diisocyanate to foaming resin and disassembly of the mold to obtain the cured product. This study, however, was limited to a determination of the effect of variations in mixing cycles prior to pouring, since these factors predetermine the quality of a foamed product to a far greater extent than type of mold and baking cycles. Bureau of Aeronautics TED Project no. ADC EL-41026. NADC EL 5556.

Preliminary exploration of silicon-fluoride plastics for high-temperature-resistant interlayers, by Johan Bjorksten, Luther L. Yaeger, Robert P. Cox and Robert J. Roth. Bjorksten Research Laboratories, Inc., Madison, Wis. Dec 1953. 25p tables. Order from LC. Mi $2.70, ph $4.80. PB 125204

The objective of this study was a preliminary exploration of the possibilities of silicon-fluoride plastics for high-temperature-resistant interlayers. The following were explored experimentally and yielded transparent products with good temperature stability and high resistance to di-ester type lubri-

cants and aromatic solvents: 1. Cross-linking a fluoroalkyl acrylate with a polysiloxane. 2. Copolymerizing a fluorinated olefin and an unsaturated silane. A third approach, preparing a fluoro-silicon analogue of a polyester resin, yielded an intermediate of promising appearance. AD 17943. Contract AF 33(600)-23256. AF WADC TR 53-299.

Properties of rigid polyvinyl chloride, by Henry A. Tisch. U.S. Picatinny Arsenal, Samuel Feltman Ammunition Laboratories, Dover, N.J. Jan 1957. 36p photos, drawing, diagr, graphs, tables. Order from OTS. $1.00. PB 131100

To determine, evaluate, and compare the properties, performance, and fabrication characteristics of rigid polyvinly chloride compounds placing special emphasis on properties of importance to ordnance application. Ordnance Project TB4-721. Dept. of the Army Project 593-13-004. PA TR 2382.

Paints, Varnishes and Lacquers

Evaluation of chromate pigments, by Nancye D. Allwine. U.S. Army. Corps of Engineers. Engineer Research and Development Laboratories, Ft. Belvoir, Va. Apr 1956. 170p photos, tables (part fold). Order from LC. Mi $7.80, ph $25.80. PB 128645

Purpose of investigation: to obtain basic information on rust-inhibiting, or metal-passivating, properties of 9 chromate-type pigments. Report covers various exposure tests of experimental primers to compare them with each other and with standard primers currently specified by the Government. Report concludes: (a) C of E corrosion-inhibiting paints could be improved by more discriminating selection of chromate pigments based on results of this investigation; (b) By using a combination of several chromate pigments, it might be possible to develop general-purpose primer suitable for use on steel, aluminum, and magnesium. Project no. 8-93-31-103. ERDL R 1442.

Inorganic Chemicals

New data on alkali halide films containing excess halogen, by K. Teegarden. Rochester. University. Institute of Optics. Jun 1956. 10p graphs. Order from LC. Mi $1.80, ph $1.80. PB 123469

Further work has been done on thin alkali halide films containing excess halogen. This Note presents data on thin films of KCl containing excess I_2, Br_2 and Cl_2 and films of KI and KBr containing Cl_2. As before, the films were formed by simultaneous evaporation of an alkali halide and the halogen onto a fused quartz substrate held at low temperature. See also PB 119560. AD 89486. Contract AF 18(600)-193. Technical note no. 6. AF OSR TN 56-276.

Analytical Chemistry

Detection of small optical density changes, by David G. Kilpatrick. Pennsylvania. University. Johnson Research Foundation. Jun 1956. 11p diagrs, graphs. Order from OTS. 50 cents. PB 131015

Unconventional light sources have shown some interesting possibilities as light sources for spectrophotometry. Contract Nonr-551(10), NR 134-242, final report.

Identification of flavonoid pigments from natural products, by S.H. Wender. Oklahoma. University. Research Institute, Norman, Okla. May 1955. 20p. Order from LC. Mi $2.40, ph $3.30. PB 123991

This research involved studies on the qualitative and quantitative purification and identification of micro amounts of flavonoid compounds by paper chromatography, on the adaptation of ion exchange and adsorption chromatography to the flavonoid compounds, absorption spectra and fluorescence of these compounds, and preparation of enzymes and derivatives for use in identification of these compounds. Report lists and summarizes journal articles. Contract N6-onr-98600, Project NR 055-226, Final report.

Intensities and widths of single lines of the 4.7-micron CO fundamental band, by J.H. Shaw and W.L. France. Ohio State University Research Foundation, Columbus, O. Mar 1956. 19p diagrs, graphs, table. Order from LC. Mi $2.40, ph $3.30. PB 125068

Curves of growth of several lines of CO, pressure broadened with N_2, have been obtained over a wide range of CO concentrations. The results have been compared with the curve of growth of a line having a Lorentz shape and the agreement lies within experimental error. Values for the intensity and half width of the lines have been determined. Contract AF 19(604)-1003, Scientific report no. 4. OSURF Project 587-10. AF CRC TN 56-466.

Zinc analysis of phosphating solutions using the X-ray spectrograph, by James W. McGarvey and Paul G. Chamberlain. U.S. Arsenal, Rock Island, Ill. Sep 1956. 14p photo, diagr, tables. Order from LC. Mi $2.40, ph $3.30. PB 125205

An X-ray spectrographic procedure was developed for the analysis of zinc in zinc phosphating solutions. A working curve was constructed to cover the usual concentration range of zinc. Results were in agreement with wet chemical analysis to within 0.01%

zinc. Ordnance project: TB 4-302D, Report no. 20. Dept. of the Army project: 593-14-006. RIAL R 56-2541.

Miscellaneous Chemicals

Cumulative report for the period 1 Jul 1953 - 30 Sep 1955, under Contract no. N6 ori-02040, Project no. NR 055-319, by M.S. Kharasch. Chicago. University. Dept. of Chemistry, Chicago, Ill. Nov 1955. 14p tables. Order from LC. Mi $2.40, ph $3.30. PB 123737

Summarizes work on the following subjects: I. The generation of free HO_2 radicals; II. The generation and the chemistry of free RO_2 radicals. III. The chemistry of ozonides: Mechanism of the loss of a carbon atom in the decomposition of ozonides. IV. A new method for detecting free radicals in solution. V. Mechanism of action of inhibitors in free radical chain reactions: Free radical trappers. VI. Oxidation of alcohols by organic hydroperoxides in the presence of additives. VII. Additions of some types of free radicals to olefins. VIII. Quaternized pyridinium salts as oxidants.

Solid state properties and catalytic activity. Sixteenth periodic status report for the period 1 Apr 1955 - 30 Jun 1955 under Contract N6 onr-27018, NR 051-265, by Hugh Taylor. Princeton University. Dept. of Chemistry, Princeton, N.J. Jul 1955. 5p. Order from LC. Mi $1.80, ph $1.80. PB 124208

1. Chemisorption 2. Catalysts, Oxidation For reports 9-15 and 17 see PB 114084, 115107, 116327, 117473, 118386, 119034, 120035 and 124885.

Some physical properties of a number of proposed constructions of materials for nonmetallic crash-resistant aircraft fuel tanks, by Richard N. Motsinger, Melvin F. Miller and Robert J. Schroers. U.S. Civil Aeronautics Administration. Technical Development and Evaluation Center, Indianapolis, Ind. Dec 1953. 26p photos, graphs, tables. Order from OTS. 75 cents. PB 131301

Note: Formerly PB 118923 (25:9). CAA TDR 220.

ELECTRICAL MACHINERY

Communication Equipment

Application of maximum-likelihood techniques to several problems in communication theory, by Dante Youla. Polytechnic Institute of Brooklyn. Microwave Research Institute, Brooklyn, N.Y. Oct 1956. 28p diagrs. Order from LC. Mi $2.70, ph $4.80. PB 125110

AD 115063. 1. Communications - Theory 2. Probability - Theory 3. Contract AF 18(600)-1505, T.O. 47501 4. PIBR-524-56 5. PIB-454 6. AF OSR TN 57-28

Instruction book: U.S. Navy inter-communicating unit, type 1A (Executone model NV-14). Executone, Inc., New York, N.Y. n.d. 46p photos (part fold), fold. drawing, fold diagrs, tables (part fold). Order from LC. Mi $3.30, ph $7.80. PB 124994

1. Intercommunication systems - Design 2. Intercommunication systems - Operation 3. NV-14 (Intercommunication system) 4. Contract NXss-31446 5. NAVSHIPS IB 94 B

Problem-solving model for analysis of communication in B-29 crews, by Thornton B. Roby and Donald G. Forgays. U.S. Air Force. Air Research and Development Command. Human Resources Research Center. Combat Crew Training Research Laboratory, Randolph Air Force Base, Tex. Aug 1953. 22p diagrs. Order from LC. Mi $2.70, ph $4.80. PB 125161

An eclectic model dealing with the relationship between communication and group behavior is presented together with some hypotheses on group efficiency. An attempt was made to show how to surmount initial difficulties in the application of this model to the measurement situation for which it was designed, i.e., interphone communication of B-29 crews in training. Finally, a brief discussion was appended relative to the major directions which subsequent work on the model are expected to follow: empirical validation, logical formalization, and generalization of scope. Project no. 511-023-0001. AF HRRC RB 53-30.

Electronics

Algebraic topological methods for the synthesis of switching circuits in variables, by J. Paul Roth. Princeton University. Institute for Advanced Study. Electronic Computer Project, Princeton, N.J. Apr 1956. 48p diagrs, graph, tables. Order from LC. Mi $3.30, ph $7.80. PB 123156

Project TB 3-0538 1. Transformations (Mathematics) 2. Switches, Electronic - Mathematical analysis 3. Circuits, Electronic - Theory 4. Topology 5. Contract DA 36-034-ord-1646 6. PU IAS TR 56-02

Algebraic topology of networks with application to potentiometer analog circuits. Part III: Rational approximation. Parke Mathematical Laboratories, Inc., Concord, Mass. Apr 1956. 72p diagrs, graphs, tables. Order from LC. Mi $4.50, ph $12.30. PB 124234

For Part I see PB 124510. Contents: Chapter V. Rational approximation to the given curves, by Hans G. Haefeli and John A. Riley. - Chapter VI. Realization by networks, by Lorenzo Calabi. 1. Topology 2. Circuits, Electric - Analysis 3. Networks, Electrical - Mathematical analysis 4. Networks, Electrical - Synthesis 5. Approximate solutions 6. Contract AF 19(604)-1399 7. AF CRC TN 56-175

Annual progress report for the period 1 Mar 1952-1 Mar 1953 under Contract N5 ori-07876, NR-025-164, by T.S. Gray and A.B. Van Rennes. Massachusetts Institute of Technology. Servomechanisms Laboratory. Electronic Nuclear Instrumentation Group. Mar 1953. 55p photos, diagrs, graphs. Order from LC. Mi $3.60, ph $9.30. PB 125175

The purpose of the research under Contract N5 ori-07876 is to study the design factors of nuclear instrumentation systems, in particular, instrumentation systems for measurement of neutron flux, and to conduct research toward the evolution of rugged, long-life components for use in such systems. This report discusses development of neutron flux detectors, transistors and dielectric amplifiers, magnetic devices (modulators, magnetic cross valve, transistor-operated magnetic amplifier, application of feedback to magnetic amplifiers), and pulse-type measuring systems. DIC Project 6986.

Application of Kramers' theorem to many atom systems, by A.G. Mencher, M. Sachs and R. Satten. California. University. Dept. of Engineering, Los Angeles, Calif. Apr 1955. 20p. Order from LC. Mi $2.40, ph $3.30. PB 124093

Kramers' theorem is discussed from the matrix point of view. A proof of the theorem is presented for a single atom. The methods of the proof are then applied to many atom systems. It is shown that lifting of Kramers' degeneracy by interatomic multipole interactions in crystals is a consequence of the enlargement of the system to include an even number of particles, rather than a consequence of the nature of the interaction. Report 55-16. Contract N6 onr-27519.

Asymptotic formulas for diffraction by parabolic surfaces, by Harry Hochstadt. New York University. Institute of Mathematical Sciences. Division of Electromagnetic Research. Mar 1956. 34p diagr. Order from LC. Mi $3.00 ph $6.30. PB 125224

A technique is discussed by which asymptotic solutions of reflection problems in paraboloidal and parabolic cylinder coordinates can be found for large wave numbers. This technique applies to reflections from the interior of parabolic and paraboloidal reflectors. Detailed discussions are then given for the cases of reflection of incoming plane waves, waves emitted by sources at the focus, and waves emitted by sources on the axis of the reflector, for both coordinate systems. Contract AF 19 (122)-42. NYU RR EM-89. AF CRC 56-559.

Bounds to the entropy of television signals, by Jack Capon. Massachusetts Institute of Technology. Research Laboratory of Electronics, Cambridge, Mass. May 1955. 54p photos, diagrs, graphs, tables. Order from LC. Mi $3.60, ph $9.30. PB 124210

This research is an application of statistical communication theory to television transmission. An upper bound to the entropy per symbol is obtained by two independent methods. It is shown that this quantity not only provides an insight into the nature of pictures but furnishes a theoretical limit to the efficiency of picture-coding methods. Based on a thesis, Massachusetts Institute of Technology. MIT RLE TR 296.

Crystal controlled S-band exciter. Interim report, by R. Allen, J. Clark and H. Whitney. U.S. Air Force. Air Research and Development Command. Cambridge Research Center. Electronics Research Directorate. Radar Laboratory, Bedford, Mass. Apr 1956. 15p photos, diagrs. Order from LC. Mi $2.40, ph $3.30. PB 125146

This report describes a crystal-controlled exciter which generates a cw rf output in the frequency range 2670-2870 mc. The exciter unit was designed and developed during 1955 in the Radar Laboratory for application in the transmitter of a high performance MTI radar system. AD 98783. AF CRC TN 56-100.

Diffraction by an aperture. I, by Joseph B. Keller. New York University. Institute of Mathematical Sciences. Division of Electromagnetic Research. Jun 1956. 73p diagrs, graphs, table. Order from LC. Mi $4.50, ph $12.30. PB 125232

The diffraction of a wave by an aperture of any sha shape in a thin screen is treated by a new method, called "the geometrical theory of diffraction", because it is an extension of geonmetrical optics which accounts for diffraction. In this method new rays - called diffracted rays - are introduced. They are produced when an incident ray hits the edge of the aperture, and they satisfy the "law of diffraction". A field is associated with each ray in a quantitative way, by means of the optical principles of phas variation and energy conservation. In addition "diffraction coefficients" are introduced to relate the field on a diffracted ray to that on the corresponding incident ray. For Part II see PB 125112. NYU RR EM 92. AF CRC TN 56-562.

Equal-ripple bandpass amplifiers, by Deforest L. Trautman and John A. Aseltine. California.

University. Dept. of Engineering, Los Angeles, Calif. Aug 1951. 74f diagrs, graphs, tables. Order from LC. Mi $4.50, enl pr $13.80. PB 128371

This report pertains specifically to the design of electrical communication bandpass amplifiers. The generalized formulation of the problem on the frequency plane permits, however, application to any linear system, e.g., mechanical. Design charts are given for typical interstage coupling circuit and bandwidth situations. The method of solution via conformal transformation is fully explained. Appendices A-F contain the mathematical details. Report 51-9. ATI 163-944. Contract N6 onr-275, Task 16, NR 075-231.

Evaluation of Arrowhead Universal Ground Anchors for Air Force ground electronics applications, by G.E. Shipley and J.P. Scheiderich. U.S. Air Force. Air Research and Development Command. Rome Air Development Center, Griffiss Air Force Base, Rome, N.Y. Jun 1956. 21p photos, graph, tables. Order from LC. Mi $2.70, ph $4.80. PB 124856

In this report the test program is described and suggestions are made to improve the anchors. The Arrowhead anchor is recommended for general use with equipments requiring a high degree of mobility and having comparatively light guy anchorage requirements. It is also recommended as a substitute for standard anchors when soil conditions make installation of standard anchors extremely difficult. Project: 45287. AF RADC TN 56-197.

Experimental distributed power amplifier, by S.K. Meads. U.S. Naval Research Laboratory. Aug 1957. 19p photos, diagrs, graphs. Order from OTS. 50 cents. PB 131164

As a possible method of attaining a broadband source of rf power at a level suitable for use as a final transmitter stage in the vhf and uhf bands, the use of distributed amplification in a pulsed power amplifier has been investigated. A method for the design of such an amplifier is described. NRL R 4985.

Final report under Contract N6 ori-04414. Yale University. Accelerator Laboratory. n.d. 6p. Order from LC. Mi $1.80, ph $1.80. PB 124001

Date is 1954 or later. 1. Accelerators, Electronic - Performance 2. Gamma rays - Scattering 3. Spectrometers, Gamma ray 4. Contract N6 ori-04414, Final report

Formula to compute the frequency of a toroid resonator, by V.A. Tepliakov and B.K. Shembel'. Translated by Morris D. Friedman. Dec 1956. 8p diagr, graphs. Order from LC. Mi $1.80, ph $1.80. PB 126641

AD 110167. Translated from Radiotekhnika i Elektronika, vol. 1, no. 4, 1956, p. 443-446, under Contract AF 19(122)-458. 1. Resonators, Cavity - Perturbation theory - Russia 2. Contract AF 19 (122)-458

Helical dislocations, by J. Weertman. U.S. Naval Research Laboratory. Aug 1957. 6p diagr, graphs. Order from OTS. 50 cents. PB 131133

The equilibrium form of a dislocation line is shown to be a helix. If the helix is to contain many turns its axis must be practically parallel to the Burgers vector. Pure screw dislocations can spontaneously assume the form of many turns at large chemical stresses. NRL R 4979.

Instruction book: Radar equipment Navy Model SO-2. U.S. Bureau of Ships. Jun 1949. 346p photos, drawings (part fold), diagrs (part fold), graphs, tables. Order from LC. Mi $11.10, ph $52.85. PB 124995

Supersedes SHIPS 212. 1. SO-2 (Radar equipment) 2. Radar equipment - Operation - Theory 3. Radar equipment - Parts 4. Radar equipment - Installation 5. Radar equipment - Maintenance and repair 6. Contract NXsr 38699 7. Contract NXss 26736 8. NAVSHIPS 91193

Investigation of ANA specification no. AN-B-10a "bonding; electrical (for aircraft)" and proposed revision thereto. no. AN-B-10b. U.S. Naval Air Development Center, Johnsville, Pa. Jul 1950. 60p photos, diagrs, graphs, tables. Order from LC. Mi $3.60, ph $9.30. PB 128494

Particular consideration was given to the performance of a complete series of tests in order to obtain a thorough investigation of the effects of all the parameters which are present in a bond and which determine its performance characteristics. Test setups were established to simulate actual installations where the vulnerability of the receivers was affected by the geometric pattern of the objects being bonded together. Recommendations are given for modifying the definitions of bonding nomenclature given in specifications in order to eliminate any confusion in the interpretation of requirements or of illustrations showing the construction of various bonds in actual use. Further recommendations are submitted to incorporate an electrical-performance test in bonding specifications, with the test setup given in detail and the specified minimum r-f impedance requirements determined by actual simulated aircraft conditions. Additional data is presented regarding the necessity of grounding metallic objects which are near unshielded transmitter-antenna leadins. 1. Airplanes - Electrical equipment - Bonding 2. Bonding - Specifications NADC EL 172-50

Jamming of the "type A" presentation with sine wave AM, noise AM, and with DINA, by Donald W. Taylor and D. A. Peterson. Harvard University. Radio Research Laboratory, Cambridge, Mass. Sep 1943. 46p graphs, table. Order from LC. Mi $3.30, ph $7.80. PB 124627

This investigation was concerned only with jamming of the "type A" presentation and only with the effectiveness of such jamming in the absence of the overloading of the receiver. The efficiency of any particular type of jamming signal may be conveniently expressed in terms of the J/S ratio, the ratio of the jamming power to the signal power such that the pip is detectable just 50% of the time. The J/S ratio was determined for each given set of parameters by taking the mean of 5 observations by each of two observers. Sine wave AN jamming was found to be ineffective under these conditions. Noise AM jamming is effective. DINA jamming is effective. The effectiveness of both noise and DINA jamming varies with changes in characteristics of the radar system. Unclassified 17 Dec 1954. Project: K-400. HU RRL 411-55.

Kinetics of the oxygen electrode on active carbon, by Myron Davies, Milton Clark, Ernest Yeager, and Frank Hovorka. Western Reserve University. Dept. of Chemistry, Cleveland, O. n. d. 3p diagr. Order from LC. Mi $1.80, ph $1.80. PB 125200

The processes associated with the oxygen electrode on an active carbon surface have been studied in alkaline solutions in terms of (a) cathodic and anodic polarization measurements; (b) the correlation of polarization data with surface area as determined by gas adsorption measurements; and (c) the use of isotopic oxygen-18 as a means for establishing the electrode processes. AD 74373. References are omitted. Contract Nonr-581(00).

Kohn-Hulthén variational procedure for the scattering operator and the reactance operator. Part II: Procedures independent of the normalization of the trial functions, by H. E. Moses. New York University. Institute of Mathematical Sciences. Division of Electromagnetic Research, New York, N.Y. Jul 1956. 25p. Order from LC. Mi $2.70, ph $4.80. PB 124660

AD 98722. For Part I see PB 124741. 1. Variance - Analysis 2. Particles, Charged - Scattering - Theory 3. Kohn-Hulthèn theory (Particle scattering) 4. Contract AF 19(604)-1705 5. NYU RR CX-27 6. AF CRC TN 56-666

Mathematical analysis of nonlinear feedback amplifiers, by Phillip N. Larsen. U.S. Air Force. Air Research and Development Command. Rome Air Development Center. Griffiss Air Force Base, Rome, N.Y. Nov 1956. 85p diagrs, graphs, tables. Order from LC. Mi $4.80, ph $13.80. PB 124762

A method is presented for determining a steady state power series solution to a problem involving a closed loop system containing more than one nonlinear element, a triode amplifier or oscillator in which the grid and plate currents are nonlinear. A single transcendental equation involving network parameters and plate control voltages results from simultaneous solution of the network equations. An assumed solution for plate control voltage is substituted into the transcendental equation which is rearranged into like powers of voltage. Conditions necessary to produce oscillations, amplitudes of various voltage components and corresponding frequencies are found by equating the coefficients of the powers of voltage to zero. The generalized results are applied to a tuned plate oscillator. Theory is verified by agreement between calculated and measured values. AD 97801. Thesis - University of Illinois. AF RADC TR 56-117.

Microwave transhorizon communication. Cornell University. School of Electrical Engineering, Ithaca, N.Y. Sep 1955. 47p photos, map, diagr, graphs, tables. Order from LC. Mi $3.30, ph $7.80. PB 125027

Microwave signals were transmitted over paths ranging from 60 to 120 statute miles by means of radio scattering. The transmitters and receivers used were adapted from MPN-1 or CPN-4 equipment on S-and X-bands. One-half microsecond pulses were transmitted at a repetition rate of 2040 cycles using transmitter powers of 50 and 10 watts average respectively on S-and X-bands. The receivers amplified and recorded the fundamental repetition rate frequency in a narrow band amplifier to increase sensitivity. Two of the paths and the equipment are described in detail in Final Report Part I. AD 78330. Research Report EE 260. Appendix I. Tables of hourly median signal. - Appendix II. Diversity mixer (for 2 CPN-4 receivers). Contract AF 30(602)-682, Final report, Part II. AF RADC TR 55-104.

Miniaturized pulse connectors, by J. H. Gesell. Federal Telecommunication Laboratories, Inc., Nutley, N.J. Dec 1956. 49p photos, drawings, diagrs, graphs, tables. Order from OTS. $1.25. PB 131048

The development of a miniaturized, silicone rubber insulated, pulse connector is described. Designs for three types of connectors are given. The development of a semiconducting silicone rubber to be used in high-temperature miniaturized pulse connectors is discussed. Tests to determine the performance characteristics of the connector assemblies and their components are reviewed in detail. Except for the effects of immersion in gasoline, connectors were developed which met or exceeded all electrical and mechanical properties of the associated cable. AD 118116. Project 4155, Task 41510. Contract AF 33(600)-26784. AF WADC TR 56-474.

NEL reliability design handbook. Supplement. U.S. Navy Electronics Laboratory, San Diego, Calif. Oct 1957. Order from OTS. 75 cents per single issue, or on annual subscription rate of $2.25 a year in U.S.A., foreign rate $3.00 a year. PB 121839 supplement

This supplement is intended to replace pages in the original loose-leaf edition of Nov 1955, and contains additional pages to be inserted in it.

Noise potentials on copper-carbon sliding contacts (Rauschspannungen am kupfer-kohle-gleit kontakt), by Georg W. Epprecht. Translated and edited by F.A. Raven. May 1955. 90p photos, diagrs, graphs, tables (Table headings in German). Order from LC. Mi $4.80, ph $13.80. PB 123108

Considerable noise potential is produced on a sliding contact, since the current over the contact is composed of a multiplicity of short current pulses, corresponding to the minute continuously changing contact points. The duration of these pulses lies in the order of magnitude of a microsecond or less. The variations of this noise under changing contact conditions were investigated theoretically and practically. If the sliding speed is increased an increase of the noise is observed and, moreover, to a certain boundary it is proportional to the square root of the sliding speed. This increase is determined by a decrease of the number of pulses per second. From a certain boundary velocity on, the noise remains constant. In the first part of the present study are described the methods of measurement and apparatus used, whereas in the second part, theory is developed which explains the relationships found between the contact noise on the one hand and the sliding speed and loading current on the other. In the Appendix appear calculations of various spectral functions for statistical pulse sequences. Reprinted from Technische Mitteilungen PTT, nos. 8 and 9, 1953. Table II not included in report. STS 211. NAVSHIPS T 584.

On resonance in infinite gratings of cylinders, by S.N. Karp and J. Radlow. New York University. Institute of Mathematical Sciences. Division of Electromagnetic Research, New York, N.Y. Apr 1956. 42p. Order from LC. Mi $3.30, ph $7.80. PB 125225

The diffraction by a grating is examined (for spacing large compared to wavelength and dimension of grating element) for wavelengths in the neighborhood of the "Rayleigh" wavelengths. The shape of the elements, and their size in wavelengths is unrestricted. The results, including the effect of interaction, are expressed in terms of quantities relating to single scattering. Some properties of certain determinants formed from single scattered amplitudes are derived. The results are compared with those obtained by other authors, using various restrictions on the parameters. AF CRC TN 56-560. NYU RR EM-90.

Project Vanguard report no. 18: Minitrack report no. 1: Phase measurement, by C.A. Schroeder, C.H. Looney, Jr. and H.E. Carpenter, Jr. U.S. Naval Research Laboratory. Jul 1957. 31p photos, diagrs, tables. Order from OTS. $1.00. PB 131220

The "Minitrack" system for tracking an artificial earth satellite, which has been developed as a part of Project Vanguard, is described briefly, and the phase measurement portion of this system is described in detail. NRL R 4995.

Radio receivers as measuring instruments. Investigation of shielding efficiency. Breeze Corporation, Inc., Newark, N.J. May 1947. 2p. Order from LC. Mi $1.80, ph $1.80. PB 123177

1. Magnetic fields - Measurements 2. Radio receivers - Uses 3. Waves, Electromagnetic - Measurement 4. Contract NObs-34212, Interim report no. 3.

Radiowave propagation, by Ia. L. Alpert and others. Information concerning references for Technical translations 10-18. Apr 1956. 20p. Order from LC. Mi $2.40, ph $3.30. PB 123441

List of references pertaining to Technical translations 10-18 under Contract AF 19(604)-1476: PB 123430 - 123438. Translation of pp. 364-871 from a Russian publication Radiowave propagation issued in 1953. 1. Radio waves - Propagation - Bibliography - Russia 2. Contract AF 19(604)-1476 3. AF CRC TN 56-190

Research in high-power beam tubes. Stanford University. W.W. Hansen Laboratories of Physics. Microwave Laboratory, Stanford, Calif. Contract AF 19(604)-1494. Order separate parts described below from LC, giving PB number of each part ordered.

Scientific report no. 1 for the period 15 Jun - 15 Sep 1955 under Contract AF 19(604)-1494. Sep 1955. 19p photo, diagrs, graphs. Mi $2.40, ph $3.30. PB 123410

Two projects are assigned to this contract. One involves the development of a high-power traveling-wave-tube amplifier using a new type of disk-loaded propagation circuit which allows operation in the fundamental space harmonic. The design and operation of this circuit are described. The second project involves the development of an electron gun, suitable for megawatt klystrons and traveling-wave tubes, which will incorporate a high-mu control grid. A demountable beam tester has been fabricated and tests run on some preliminary grid structures. SU ML R 297. AF CRC TN 56-170.

Scientific report no. 2 for the period 15 Sep - 15 Dec 1955 under Contract AF 19(604)-1494. Dec 1955. 25p photos, drawings, diagrs, graphs. Mi $2.70, ph $4.80. PB 123411

Symmetrical couplers are described which give good impedance matches over the band, and which avoid excitation of higher order modes in the slow-wave structure of the tube. Experiments with various methods of introducing attenuation into the slow-wave structure are discussed. These experiments have led to an attenuator design for the present tube which uses a combination of sprayed Kanthal and lossy ceramics. On the high-power gridded-gun project, changes have been made in the beam tester, which have improved its operation. These changes and some initial runs with the modified device are described. Two new projects have been added to this contract, which are of a relatively more basic nature. The first of these basic projects uses a probe-cavity technique to explore a bunched beam. Experimental apparatus is described which is in an advanced stage of construction and which will allow wide variations of the important parameters. The second basic project will use a velocity spectrograph, and the proposed form of the experimental apparatus for this purpose is discussed. SU ML R 298. AF CRC TN 56-171.

Scientific report no. 3 for the period 15 Dec 1955 - 15 Mar 1956 under Contract AF 19 (604)-1494. Mar 1956. 25p photos, drawings, diagrs, graph. Mi $2.70, ph $4.80. PB 123400

Work done during this period is reported under five projects: 1. Clover-leaf megawatt traveling-wave tube. 2. Grid-controlled high-power gun. 3. Investigation of the properties of connected-ring structures for use in traveling-wave tubes. 4. Experimental studies of space-charge effects on gridless klystrons. 5. Electron-velocity spectrograph project. SU ML R 307. AF CRC TN 56-366.

"Spring-plasma" model for low temperature vibrational spectra of cubic metals, by C.B. Clark. U.S. Naval Research Laboratory. Aug 1957. 17p graphs, table. Order from OTS. 50 cents. PB 131080

The model allows for the inclusion of the electron-lattice interaction at low temperatures. The Debye temperature at absolute zero is found to agree with that obtained from a phenomenological model introduced by de Launay. In addition, the dependence of the electron-lattice interaction on wavelength results in the natural appearance of a "coefficient of following" in the dispersion relation. Calculations of the curvature of the Debye temperature function at absolute zero have been made for the case of elastic constants. These values indicate a contribution to the curvature of about 0.3 percent due to the electron-lattice interaction. The extension to the case of anisotropy is discussed. NRL R 4964.

Study of the oxide cathode in demountable vacuum systems, by G.A. Haas and J.T. Jensen, Jr. U.S. Naval Research Laboratory. Aug 1957. 11p photos, graphs, diagr. Order from OTS. 50 cents. PB 131129

A study has been made of the decay in emission of oxide cathodes as they are repeatedly exposed to air. The results indicate that the decay is largely due to flaking of the oxide coating and can be greatly reduced by keeping the cathode above 100°C during the air exposure. This prevents the formation of the hydrate and allows the oxide to be converted only to the simple hydroxide, thereby decreasing the distortion in the crystal. NRL R 4978.

Study of visual fatigue and efficiency in radar observation, by Susan C. Bartlett, Robert L. Beinert and John R. Graham. Hobart and William Smith College. Dept. of Physics, Geneva, N.Y. n.d. 77p diagr, graphs, tables. Order from LC. Mi $4.50, ph $12.30. PB 125208

Three experiments bearing on the effects of luminance and speed of rotation of the sweep upon visual fatigue and efficiency in prolonged radar observation are described. The observer's efficiency during a simulated watch is charted and compared with visibility and detectability thresholds, and the effect of intermittence of appearance of pips on observer efficiency is studied. AD 75929. Date is Sep 1954 or later. Contract AF 30(602)-667, Final report. AF RADC TR 55-100.

Thermionic and semiconducting properties of (Ag)-Cs_2O, Ag, Cs, by J.E. Davey. U.S. Naval Research Laboratory. Jun 1957. 30p diagrs, graphs, tables. Order from LC. Mi $2.70, ph $4.80. PB 124931

The purpose of this investigation was to describe the emission mechanism, in terms of the energy level diagram, in a state of maximum, or near maximum, thermionic emission; thus the experimental program roughly consisted of two parts. One part was concerned soley with the techniques and/or art involved in improving thermionic emission and the other was concerned with measurements of thermionic and photo-electric work function, the activation energy for electrical conduction, and the donor density in the state of near maximum emission. NRL R 4918.

Thermodynamic properties of the electrical double layer. Impedance of solid metal electrodes. I: Lead and tin, by David C. Grahame, Robert E. Ireland and Raymond C. Petersen. Amherst College. Dept. of Chemistry, Amherst, Mass. Mar 1956. 18p diagr, graph, tables. Order from LC. Mi $2.40, ph $3.30. PB 125575

1. Electrodes, Metal - Polarization 2. Surfaces - Absorptive properties 3. Electrodes - Materials 4. Contract N8 onr-66903, NR 051-150 5. ONR TR 22

Unilateral attenuation in the interdigital circuit, by Laird Kenneth Semmel Haas. California. University, Berkeley, Calif. May 1957. 70p diagrs, graphs, table. Order from OTS. $1.75. PB 131257

This work is concerned with experimental observations of unilateral attenuation in an interdigital type circuit as used in traveling-wave magnetrons. The attenuation is obtained by means of ferrite samples of various geometries placed inside the circuit. These samples are saturated magnetically by means of the magnetic field which in crossed-field tubes is present for the purpose of beam focussing. A condensed theory of the interdigital circuit is given. Using this theory, positions of circularly polarized magnetic fields are found. It is at these positions that the ferrite should be placed for most unilateral effect. Reasons for disagreement between experiment and theory are given and it is pointed out that the theory can be used only qualitatively in the situation which we have in this experiment. The main body of the experiment deals with attenuation due to ferrite spheres. It is found that one of the phenomena which is responsible for the poor agreement between theory and experiment can be put to use to obtain wide band attenuation. Practical application of these results to crossed-field tubes will depend upon the disturbance of the focussing field by the presence of the ferrite. AD 130774. Project 4156, Task 41560. Contract AF 33(616)-3278. AF WADC TR 57-239.

Generators, Motors, Transmission

Effects of temperature on magnetic properties of core materials, by M. Pasnak. U.S. Naval Ordnance Laboratory, White Oak, Md. May 1956. 36p diagr, graphs. Order from OTS. $1.00. PB 131130

An experimental study of the effects of temperature on the magnetic properties of a group of representative ferromagnetic alloys has been made. The following alloys were studied: Orthonol, 5-79 and 4-79 Mo Permalloy, AEM 4750, 1.6%, 3.5% and 6.4% silicon iron, and 11.7 and 16 Alfenol. The cores consisted of ring laminations primarily, but some spiral wound tape cores were also included. Measurements of 60 c.p.s. dynamic loops were made in the temperature range from -60°C to +100°C. In the silicon iron family of alloys tested, 3.5% silicon iron was least affected by temperature changes, while 6.4% silicon iron was most affected. In the nickel iron family, 16 Alfenol was least affected, while 11.7 Alfenol was quite temperature sensitive. NAVORD 4155.

New magnetic flake cores for low frequency application, by William M. Hubbard and Edmond Adams. U.S. Naval Ordnance Laboratory, White Oak, Md. Jul 1956. 13p diagr, graphs, tables. Order from LC. Mi $2.40, ph $3.30. PB 128092

High permeability toroidal cores for low frequency applications have been prepared from flakes made by rolling Alfenol and 2-81 Molybdenum Permalloy powders. These cores exhibited a two-fold increase in permeability over the corresponding powder cores, with approximately the same total loss factors, but only at the expense of some of the stability to varying flux levels and dc shock. The temperature coefficient of permeability for an Alfenol flake core was made quite small in the low temperature region by selection of insulation. No attempts were made to stabilize the Mo-Permalloy flake cores against temperature changes. The techniques used for processing these cores are described along with representative magnetic properties. NAVORD 4336.

Operating instructions for crystal controlled microvolt signal generator, model 191 X. Hickok Electrical Instrument Co., Cleveland, O. n.d. 32p photos, drawings, diagrs, graphs, tables (part fold). Order from Hickok Electrical Instrument Co., 10514 Du Pont Ave., Cleveland 8, Ohio. 50 cents. PB 125831

1. 191 X (Signal generator) 2. Generators, Signal - Operation 3. NA 16-5S-531

Operational suitability test of generator set precise power output, type MD-3, GED. Final report. U.S. Air Force. Air Proving Ground Command. Eglin Air Force Base, Florida. Sep 1955. 42p photos, tables. Order from LC. Mi $3.30, ph $7.80. PB 126142

AD 73717. Project APG/CSC/489-A. 1. MD3, GED (Generator set) 2. Generators, Aircraft - Electrical properties 3. Generators, Aircraft - Tests

Study and development of magnetic amplifier controlled servo systems. Yale University, New Haven, Conn. Project 1385, Task 50353. Order separate parts described below from OTS, giving PB number of each part ordered.

Part I: Theory of control of magnetic amplifiers, by Richard Clark Barker. Jun 1955. 191p diagrs, graphs. $5.00. PB 131208

This study develops the theory of control of the amplifier, and is not concerned principally with predicting the general form of the voltage and current waveforms. The series amplifier

with d-c control is divided into four modes of operation which are defined in terms of the sequences of saturation conditions in two cores. This approach allows the amplifier to be described regardless of the values of load and control resistances. The theory of control that results is based upon the difference between the two reactor voltages. Although the series amplifier only is treated in complete detail, the fundamental nature of the theory of control suggests its application to other amplifiers as well. Extensions of the technique to the parallel amplifier and doubler amplifier are outlined. AF WADC TR 56-199, Part I.

Part II: Superimposed magnetization in materials with rectangular hysteresis loops, by Charles B. Wakeman. Jun 1955. 122p photos, drawings, diagrs, graphs. $3.25. PB 131209

This report covers the results of a study made on the characteristics of some selected nickel-iron and silicon-iron specimens. These materials are characterized by rectangular hysteresis loops. It is found that when a uniform field is applied perpendicular to the normal direction of magnetization, the saturation flux of the specimen seems to be diminished in proportion to the perpendicular field, without any apparent change in the coercive force or the observed rectangularity of the hysteresis loop. The study was undertaken with hope of determining the cause of this phenomenon and adding to the general knowledge of these materials. An application of this phenomenon as a means of controlling the output of a saturable reactor circuit is suggested. AF WADC TR 56-199. Part II.

Part III: Coordinated design of magnetic amplifiers and motors, by Allen R. Perrins. May 1956. 107p diagrs, graphs, tables. $2.75. PB 131235

The co-ordinated design of magnetic amplifiers and motors for positioning servomechanisms is treated in terms of the figures of merit and compatibility of the two components. Based on these two criteria, design recommendations for motors are made. It is established for all machines discussed that the optimum circuit design is achieved with a two terminal control input to the machine. It is also shown that armature control with fixed field excitation results in optimum performance. AF WADC TR 56-199, Part III.

Part IV: Diverse topics: magnetic frequency multipliers, two phase servo, relay servo, input circuits, coupling networks, by R.C. Barker, C.B. Wakeman and A.R. Perrins. Sep 1956. $4.00. PB 131236

This volume contains the results of some studies of nonresonant frequency multipliers. The theory of the general n-phase multiplier is discussed in detail, and the frequency tripler is examined experimentally. The single-phase frequency doubler is also discussed in detail, and some experimental results are shown. The design and performance of two complete servo systems is also reported in this volume. The first of these illustrates the use of a full-wave magnetic amplifier to drive a two-phase servo motor. The second of these illustrates some of the advantages to be gained by using a relay servo. The possible means of coupling a selsyn to the input of a half-wave bridge amplifier are investigated empirically. AF WADC TR 56-199, Part IV.

Part V: Summary and recommendations, by Richard Clark Barker. Dec 1956. 105p photos, drawings, diagrs, graphs, tables. $2.75. PB 131251

In this summary volume, the table of contents, introduction, and conclusion of each of the four technical volumes is reproduced verbatim. A brief summary of the contents is given to indicate the level of research done and to facilitate specific reference to the material contained in the four volumes. AF WADC TR 56-199, Part V.

Miscellaneous

Ten years of progress. Proceedings, tenth annual battery research and development conference, 23-24 May 1956. U.S. Signal Corps. Engineering Laboratories, Fort Monmouth, N.J. 1956. 74p photos, drawings, diagrs, graphs, tables. Order from LC. Mi $4.50, ph $12.30. PB 125427

Types of batteries discussed are: 1. Primary (Leclanche, low temperature, magnesium, alkaline dry, air depolarized); 2. Special purpose primary (zinc-silver oxide, water-activated, chlorine depolarized, thermal cells, organic depolarizers); 3. Secondary batteries (lead-acid, nickel-cadmium, zinc-silver oxide); 4. Foreign developments, English and Canadian; 5. Newer developments (solid electrolyte batteries, fuel cells, nuclear and solar batteries.

FOOD AND KINDRED PRODUCTS

Nutritive value of the wood-rotting fungi and their synthetic products. Summary Technical report no. 5 for period 1 Jan to 31 Dec 1955 under Contract Nonr-669(06), NR 132-099, by M.W. Jennison. Syracuse University, Syracuse, N.Y. Dec 1955. 2p. Order from LC. Mi $1.80, ph $1.80. PB 124550

1. Fungi - Nutritive value 2. Fungi - Culture 3. Mycelium - Growth 4. Contract N-onr-669 (06) NR 132-099

Status report to management on radiation preservation of food, by W.D. Jackson. U.S. Office of the Quartermaster General. Office of Research and Engineering. Jul 1957. 17p diagr. Order from OTS. 50 cents. PB 131171

This report is designed to aid the business manager in analyzing the significance of the use of nuclear rays to preserve food. It covers the principal features of the process, history, and current state and advantages of the process, what this government is doing, and patent processes.

Studies on beef quality. Parts I-III, by A. Howard and R.A. Lawrie. Australia. Commonwealth Scientific and Industrial Research Organization. Division of Food Preservation and Transport. 1956. 77p graphs, tables. Order from LC. Mi $4.50, ph $12.30. PB 124711

Joint investigations by The Commonwealth Scientific and Industrial Research Organization and The British Department of Scientific and Industrial Research. These papers are also published as Food Investigation Special Report no. 63 by Gt. Brit. Department of Scientific and Industrial Research. 1. Beef - Processing - Australia 2. Beef, Frozen - Processing - Australia 3. AUS CSIR FPT TP 2

FOOD AND KINDRED PRODUCTS

Analysis of crude shale oil. Part 2: Some Brazilian and U.S.A. oils, by C.S. Allbright, R.A. Van Meter, G.U. Dinneen and J. S. Ball. U.S. Bureau of Mines. Dec 1956. 31p photo, graphs, tables. Order as Report of Investigations 5286 from U.S. Bureau of Mines, Publications Distributions Section, 4800 Forbes Street, Pittsburgh 13, Pa. PB 125004

For Part 1 see PB 107497. 1. Shale oil - Analysis 2. BM RI 5286

Combustion studies of astrophysical significance. II: A survey of chemical kinetics for premixed hydrocarbon/oxygen flames, by G.V. Marr. University of Western Ontario. Dept. of Physics, London, Ontario, Canada. Jul 1956. 67p diagrs. Order from LC. Mi $3.90, ph $10.80. PB 125187

As an aid to the study of reaction processes occurring in astrophysical sources such as comets and cool stars, certain combustion phenomena may be used as laboratory sources. The general mechanics of premixed hydrocarbon/oxygen flame propagation and the relevant experimental techniques were discussed in Scientific Report No. 23, (PB 124837). It is the purpose of the present report to outline the trend of possible reaction processes thought to be occurring in premixed hydrocarbon/oxygen flames. For Part I see report 23 (PB 124837). AF CRC TN 56-854.

Evaluation of combustion flames and selected solid materials. Second quarterly scientific report under Contract AF 19(604)-1885, by H.D. Rix, G.K. Strother and C.L. Woodbridge. Haller, Raymond and Brown, Inc., State College, Pa. Sep 1956. 17p. Order from LC. Mi $2.40, ph $3.30. PB 125622

During the second quarter of the contract the literature search of published material on flames and a study of the information thus compiled was begun. This report is a brief summary of most of the important topics in the field. AD 110125. Contract AF 19(604)-1885. AF CRC TN 56-786.

Mock-up evaluation of MLO-8200 high temperature hydraulic fluid at 400°F, by Paris C. Paraskos and Frank R. Straus. U.S. Air Force. Air Research and Development Command. Wright Air Development Center. Aircraft Laboratory, Wright-Patterson Air Force Base, Dayton, O. Feb 1955. 41p photos, diagrs, tables (1 fold). Order from OTS. $1.25. PB 121957

The purpose of this test was to evaluate an experimental high temperature hydraulic fluid in a mock-up of a hydraulic system, and thereby determine the operating capabilities of the fluid, its effects on the individual components and the system as a whole, at a fluid temperature of 400°F. AD 66049. Project 1371, Task 73313. Tests cover period from 21 May - 4 Aug 1954. AF WADC TN WCLS 55-6.

Storage and handling of liquid propellents for rockets and guided missiles, by W.P. Henderson. U.S. Chemical Corps. Chemical and Radiological Laboratory, Army Chemical Center, Md. May 1954. 83p photos, fold drawings, diagrs, tables. Order from LC. Mi $4.80, ph $13.80. PB 125082

The object of the work described in this report was to determine the operating characteristics of the B1 nitric acid servicing semitrailer, (referred to herafter as the B1 refueler) as designed and built under contract by Heil Trailer Co. to establish effectiveness of the unit in performing the functions it was designed to perform, and to redesign, modify, or replace those components found unsatisfactory or defective. Unclassified 25 Oct 1954. Project 4-17-06-001. CC CRL R 343.

Synthetic liquid fuels. Annual report for 1955. U.S. Bureau of Mines. Order separate parts described below from U.S. Bureau of Mines, Publications

Distribution Section, 4800 Forbes St., Pittsburgh 13, Pa., giving Report of Investigations number for each part ordered.

Part I: Oil from coal. Jul 1956. 54p photos, drawings, diagrs. Report of Investigations 5236. PB 124964

1. Fuels, Synthetic - Production 2. Coal - Hydrogenation 3. BM RI 5236

Part II: Oil from oil shale. Jul 1956. 96p photos, diagrs, graphs, tables. Report of Investigations 5237. PB 124965

1. Fuels, Synthetic - Production 2. Oil shales - Hydrogenation 3. Oil shales - Plants 4. Shale oil - Production 4. BM RI 5237

Theoretical precision of screen-analysis results, by John B. Gayle. U.S. Bureau of Mines. Nov 1952. 12p graphs, tables. Order as Report of Investigations 4933 from U.S. Bureau of Mines, Publications Office, 4800 Forbes St., Pittsburgh 13, Pa. PB 124291

During studies of the various methods for determining and specifying the factors that indicate whether a particular coke is better or worse than other cokes for metallurgical uses, questions arose as to the precision of screen-analysis tests on coke. Although the usual index of precision, the standard deviation of the test result, gives a measure of the precision of these data, the experimental determination of the standard deviation for a particular set of conditions requires tests on a large number of duplicate samples. Because this procedure necessarily involves a great deal of labor, an equation for predicting standard deviations from theoretical considerations has been developed. Results predicted with this equation agree satisfactorily with the experimental values and are applicable to tests on coal, coke, gravel, and other bulk materials. BM RI 4933.

HIGHWAYS AND BRIDGES

Concrete control and construction; papers presented at the Thirty-fifth annual meeting, Jan 17-20, 1956. Highway Research Board. 1956. 40p photo photos, diagr, graphs, tables. Order as HRB Bul 132 from National Research Council Publications Office, 2101 Constitution Ave., N.W., Washington 25, D.C. 75 cents. PB 124698

Contents: I. Quality concrete for highway construction with central mixing plant, by Glenway Maxon. - 2. Self-propelled machines for uniformed slab construction in Illinois, by Robert H. Tittle. - 3. Use of The Kelly Ball for field measurement of concrete consistency, by William E. Grieb and Robert A. Marr, Jr., - 4. Sawed joints in concrete pavements: Progress and problems, by E.J. Coppage, Jr. HRB Bul 132. NRC 422.

Planning and management of roadside vegetation. Highway Research Board. 1956. 54p drawings, diagrs, graphs, tables. Order as Publication 414 from NAS-NRC, 2101 Constitution Ave., Washington 25, D.C. PB 124998

1. Roads - Roadside development 2. HRB SR 23 3. NRC 414

Utilization of highway engineering manpower. Highway Research Board. Jan 1956. 106p diagrs, graphs, tables. Order as HRB Bul 134 from National Research Council Publications Office, 2101 Constitution Ave., N.W., Washington 25, D.C. $2.20. PB 124653

Presented at the Thirty-fifth annual meeting, 17-20 Jan 1956. 1. Engineers, Highway - Performance 2. Personnel, Engineering 3. Computers - Uses 4. HRB Bul 134 5. NRC 424

INSTRUMENTS

Album of electric models and instruments (Al'bom elektromodeley i priborov). Union of Socialist Soviet Republics. Ministry of Instrument Building and Automation Equipment. Design Bureau. 1956. 19p photos. Order from LC. Mi $2.40, ph $3.30. PB 128887

Translated from the Russian (p. 1-21). 1. Instruments, Electronic - Design - Russia 2. Generators - Design - Russia 3. Meters, Frequency - Design - Russia 4. Recorders, Cathode ray - Design - Russia 5. Simulators, Electronic - Design - Russia

All metal reed seal evaluation for 0-3000 PSIG pressure, hydraulic service, by J.N. Hatfield. Robertshaw-Fulton Controls Co., Greensburg, Pa. Jun 1955. 21p photo, fold drawing, fold diagr, fold graphs. Order from LC. Mi $2.70, ph $4.80. PB 125883

Evaluation tests of all-metal reed seals were performed during the first quarter of the year 1955. Leakage rates and total leakages were accurately measured while the test shaft cycled through the reed seals. Physical wear on the seals was determined by measuring with a machinist's microscope before and after testing. At temperatures of 30°F., test results indicate the feasibility of using an all-metal reed seal in aircraft hydraulic systems at normal operating pressures up to 3000 psig. AD 97637. Project no. 1371. Contract AF 33(600)-28968. AF WADC TR 55-302.

Application of frequency-domain techniques to computers, by R.H. Baker, Torben H. Meisling and Glen Nielsen. Stanford Research Institute, Menlo Park, Calif. Sep 1956. 47p diagrs, fold graphs. Order from LC. Mi $3.30, ph $7.80. PB 124546

A technique for utilizing the high operating frequencies and broad band pass of microwave components to store and arithmetically manipulate numbers represented by radio-frequency pulses of selected frequency is being developed at the General Electric Microwave Laboratory at Stanford, California. This system differs from other proposed systems in that the information content of each pulse is contained in the frequency of the alternating-current energy in the pulse, rather than in its size, shape, or position. The method also offers the ability to directly store information in codes that are based on a radix larger than two. Devices operating in the decimal mode are proposed. This study reviews the salient characteristics of the proposed system and compares the capabilities of the frequency-domain method with those of other high-speed arithmetic-circuit techniques now under development. It is concluded that guided-wave circuit techniques operating according to frequency-domain principles eventually can be expected to perform arithmetic at speeds far higher than those attainable using conventional circuit components and methods. This conclusion is based on the assumptions that X- and K-band circuit elements will become available and that the present research effort will be expanded to provide the developmental effort needed to explore and perfect the frequency-domain technique. It is anticipated that this will take 5-10 years. SRI Proj 1714, Final report.

Auto-synchronisation system for the plasmograph, by Max Hoyaux and Paul Gans. Ateliers de Constructions Electriques de Charleroi, Societe Anonyme, Brussels. 1955. 21p diagrs, graphs. Order from LC. Mi $2.70, ph $4.80. PB 124720

An auto-synchronisation system has been developed for the plasmograph which enables the instrument to be triggered by a pulse derived from oscillations in the discharge itself rather than from A.C. main supply. Essentially, the system consists of a chain of amplifying and differentiating circuits which produces a series of pulses corresponding to the beginning of a cycle of "hash". These are fed to a monostable multivibrator, the time constant of which can be varied. Hence probe characteristics can be obtained corresponding to a given delay from the reference time in the cycle. Calibration circuits have been included in the system which permits the time delay to be measured. AD 88351. Contract AF 61(514)-630-C. EOARDC TN 55-8. AF OSR TN 56-232.

Availability of floating address values following CS conversions, by John M. Frankovich. Massachusetts Institute of Technology. Digital Computer Laboratory. Nov 1955. 2p. Order from LC. Mi $1.80, ph $1.80. PB 123933

AD 71467. 1. Computers, Digital - Coding 2. Readers, Perforated tape - Conversion procedures 3. MIT DCL M 76

Collection of bibliographies and annotations by the Scientific Research Institute for Computer Building. (Sbornik bibliografiy i annotatsiy). Union of Socialist Soviet Republics. Scientific Research Institute for Computer Building. 1956. 5p. Order from LC. Mi $1.80, ph $1.80. PB 128886

Summarizes the following papers on computers: I. Computer techniques abroad. II. High speed universal computers. III. Solution of mathematical and logical problems on high speed electronic computers. IV. Programming of mathematical problems for high-speed computers. V. Specialized digital computers and trends in their development. VI. Simulating installations and trends in their development.

Compact, water-cooled carbon arc source for infrared spectroscopy, by C.S. Rupert. Johns Hopkins University, Baltimore, Md. Jun 1952. 35p photos, drawings, diagr. Order from LC. Mi $3.00, ph $6.30. PB 123590

This report presents working drawings sufficient for their construction, together with a description of operation and particular problems and pitfalls which have been encountered and overcome in their use. Contract Nonr 248(01).

CS2 instruction, STOP, by F.C. Helwig. Massachusetts Institute of Technology. Digital Computers Laboratory, Cambridge, Mass. Nov 1954. 2p. Order from LC. Mi $1.80, ph $1.80. PB 123934

AD 71390. 1. Computers, Digital - Operation 2. Contract N5 ori-06001 3. MIT DCL M 25

Current-pulse testing of magnetic cores for digital computers, by LeRoy F. Silva. U.S. Aberdeen Proving Ground. Ballistic Research Laboratory, Aberdeen, Md. Jul 1956. 40p diagrs, graphs. Order from LC. Mi $3.00, ph $6.30. PB 125193

A discussion of the principles and procedures of testing magnetic cores to be used in digital computer magnetic circuits is presented. Physical quantities to be tested are defined and the necessary pulse patterns to test these physical quantities are given. Resulting typical output waveforms and methods of plotting data are given. A description of the circuits used to generate the test pulse patterns, and descriptions of the current pulse generators, calibrating device, core handling equipment, procedures for processing the cores to avoid damage, and testing

the cores are given with suggestions for the physical handling of the equipment. Switching characteristic data is given for three different metallic core materials along with reproductions of typical core output waveforms. Dept. of the Army project: 5BO3-06-002. ORD project: TB 3-0007. APG BRL M 1026.

Development of a general theory of logical nets. (O postroyenii obshchey teorii logicheskikh setey), by N. Ye Kobrinskiy and B. A. Trakhtenbrot. Jun 1956. 23p diagrs, tables. Order from LC. Mi $2.70, ph $4.80. PB 123999

The authors used the term "logical net" as meaning a certain mathematical scheme that describes the organization and operation of a physical cevice intended for synchronous processing of discrete information. This may include relay-contact circuits, electronic circuits, and other types.

Dial display incorporationg a data reference check and a discrete go-no-go error indicator, by Alan W. Baldwin. U.S. Naval Research Laboratory. Aug 1957. 4p drawing. Order from OTS. 50 cents. PB 131173

The manual setting of information into a machine is frequently subject to human error. An indicator display has been designed using a modified digital counter display and a taped reference source to eliminate such possibility of error. The operator is furnished with a compatible "read-in-read-out" information display as well as a positive check in the form of a "go-no-go" error indicator. NRL R 4987.

Frequency analysis of some closed-cycle sampled-data control systems, by B.H. Stafford. U.S. Naval Research Laboratory. Jan 1952. 28p diagrs, graphs. Order from LC. Mi $2.70, ph $4.80. PB 125857

Closed-cycle control systems which operate on data furnished intermittently, i.e., sampled data, cannot be analyzed easily by means of the conventional methods normally applied to systems which operate on continuous data. A frequency analysis devised by Linvill is utilized to describe the performance of selected control systems commonly used in radar, data-transmission, and other equipments which employ sampling. Mathematical and graphical results for the systems considered are presented to provide information concerning system stability, output distortion due to sideband transmission, and closed-loop gain. The analysis can be extended to systems other than those chosen. Appendix: Derivation of equations for sampled-data system with Type I controller. NRL R 3910.

Inert-atmosphere chamber for chemical operations, by D.L. Herring. U.S. Naval Ordnance Laboratory, Corona, Calif. Jan 1956. 28p photos, diagrs. Order from OTS. 75 cents. PB 131067

An inert-atmosphere chamber ("dry box") was designed and constructed for handling of nonvolatile chemicals sensitive to moisture and/or oxygen, necessary to research in modified inorganic polymers. The NOLC dry box has been successbully used in operations connected with the synthesis of polymers from metal hydrides, halides, organometallic reagents, and so forth. NOLC R 318. NAVORD 4567.

Investigation of techniques applicable to air traffic control simulation equipment, by N.J. Cafarelli, Jr. Stavid Engineering, Inc., Plainfield, N.J. Mar 1956. 40p drawing, diagrs, graphs, table. Order from LC. Mi $3.00, ph $6.30. PB 125219

This report is concerned particularly with target generators and associated equipments that have potential use in connection with the Air Traffic Control Central AN/GSN-3. The report describes field trips to government agencies and commercial organizations to survey these equipments; evaluations of the surveyed equipments; and relevant conclusions and recommendations. Contract AF 19(604)-1508. AF CRC TR 56-160.

Miniature, high altitude, constant cooling capacity blower for electronic equipment, by Leslie Cromwell. Gray and Huleguard, Inc., Los Angeles, Calif. Apr 1957. 45p photos, drawings, diagrs, graphs, tables. Order from OTS. $1.25. PB 131184

The objective of the design study covered by this report was to supply a cooling air stream of changing magnitude to a box of electronic equipment such that the ambient temperature within the compartment was maintained constant, regardless of the change in ambient conditions. The analysis necessary for the design of a suitable impeller was made, and the horsepower of the fan motor obtained. Investigations showed that an alternating current 400 cycle three phase motor was preferable to a direct current motor because of the inherent difficulties of the latter under high altitude conditions. Control of impeller speed to maintain constant temperature was achieved by means of a temperature-sensing thermistor in a bridge circuit in conjunction with a magnetic amplifier. The complete system was tested under various environmental conditions and except for some minor deviations, performance was proved satisfactory. It is concluded that a 400 cycle motor-driven fan, controlled by a temperature sensitive bridge circuit, is an effective means of maintaining constant ambient temperature in a chamber containing electronic equipment. AD 118291. Project 4155, Task 41600. Contract AF 33(600)-20232. AF WADC TR 56-498.

Operating instructions for the Mark II soil truss, by S.J. Weiss and D.V. Magill. U.S. Naval Civil

Engineering Research and Evaluation Laboratory, Port Hueneme, Calif. Feb 1951. 13p photo, drawings, diagrs, graphs. Order from LC. Mi $2.40, ph $3.30. PB 124930

The soil truss is an instrument that has been developed for field determination of two soil and snow characteristics. These characteristics, empirical values of angle of internal friction, and coefficient of cohesion, c, are provided by analysis of a straight-line curve plotted from test data. The results may then be employed in a graphical method for predicting vehicle performance. Project NY-440-007-1.

Remote determination of soil trafficability by the aerial penetrometer, by Carlton E. Molineux. U.S. Air Force. Air Research and Development Command. Cambridge Research Center. Geophysics Research Directorate, Cambridge, Mass. Oct 1955. 50p photos, drawings, graphs, table. Order from OTS. $1.25. PB 121694

Basic soil trafficability concepts and soil properties are described, together with standard engineering methods for determining trafficability, including the manual cone penetrometer. The aerial penetrometer for trafficability determination from aircraft is described in detail, with procedures for use, limitations and safety factors given. Information on soil strength requirements for various combinations of aircraft loads and tire pressures is given, with conversion factors for aerial penetrometer use of standard vehicle mobility engineering data. Other applications of the aerial penetrometer for investigation of trafficability of snow and ice covered surfaces are outlined. AF GRD SG 77. AF CRC TN 55-223.

Special digital mathematical machines (STsM) and ways of developing them (Spetsializirovannyye tsifrovye matematicheskiye mashiny (STsM) i puti ikh pazvitiya), by Yu. Ya. Bazilevskiy. n.d. 21p diagrs. Order from LC. Mi $2.70, ph $4.80. PB 125450

Specialized machines (STsM) are produced for the systematic solution of individual classes of problems, the solution of which by universal machines is unwarranted, either because of the simplicity of the problem or because of the specific difficulties of the problem. Various uses of the machines are discussed.

Tests of Westinghouse sonic pyrometers, by Andrew I. Dahl and Paul D. Freeze. U.S. National Bureau of Standards. Jan 1952. 14p photo, table, diagrs, graphs. Order from LC. Mi $2.40, ph $3.30. PB 128534

ATI 143539. 1. Pyrometers, Sonic - Tests 2. Turbines, Gas - Temperature - Measurement 3. Contract AF 33(038)-51-4063 4. AF WADC TR 52-23

Theory of the oscillating cup viscometer, by G.F. Newell, J. Kestin and D.A. Beckwith. Brown University. Division of Engineering, Providence, R.I. May 1956. 113p diagrs, graphs, table. Order from LC. Mi $6.00, ph $18.30. PB 124968

The report contains the complete theory of the oscillating cup viscometer. The viscometer consists of a cylindrical cup of finite height and filled with fluid whose viscosity is to be measured. The cup is suspended axially by an elastic wire and performs torsional oscillations. The oscillation is assumed to be slow so that the linearized Navier-Stokes equations are used. An exact solution which includes the effect of the sharp corners is given and then modified so that it can be used for the evaluation of experimental results. The report includes a description of the limitations on design which are due to the limitations on easily measurable decrements. AF 891/7. AD 87524. Contract AF 18(600)-1548, Technical report no. 7. AF OSR TN 56-210.

Universal electronic digital computer "Strela"; its logical design and parameters. (Universal'naya elektronnay tsifrovaya vychislitel'naya mashina "Strela." Logicheskaya struktura i parametry), by Yu. Ya. Bazilevskiy. n.d. 17p photo, diagrs, tables. Order from LC. Mi $2.40, ph $3.30. PB 128885

This article gives a description of the design and logical features of the "Strela" computer, developed by KB MPSA in 1953. Several such machines are being operated successfully by research organizations in the USSR. Date is Jul 1956 or later. Photo will not reproduce well.

LUMBER AND WOOD PRODUCTS

Cargo flooring for aircraft, by J.A. Liska. U.S. Forest Products Laboratory, Madison, Wis. May 1956. 31p photos, graph, tables. Order from OTS. $1.00. PB 131101

Part I of this report presents the results of simulated service tests that were made to evaluate the performance of cargo flooring CJ, which is a composite construction with a replaceable plywood wearing surface over an aluminum diaphragm. The investigation was made at the U. S. Forest Products Laboratory, Madison, Wis., in cooperation with the Wright Air Development Center, Wright-Patterson Air Force Base, Ohio. The tests were made in accordance with the testing procedures described in WADC Technical Note 55-329. On the basis of these simulated service tests, cargo flooring CJ is somewhat below the median in overall performance in comparison with the other floorings. It has good impact resistance, however, and exhibits good rolling load properties for limited numbers of load

repetitions. In Part II, the results of an industry survey to study cargo flooring needs and problems are reported. The survey indicates the advisability of correlating service performance with laboratory tests in development work on floorings. Sandwich constructions and extrusions of magnesium and aluminum are shown to be of most interest to the aircraft industry for future floorings. Project 1368. Contract AF 33(616)-52-4. AF WADC TR 56-238.

Properties and uses of tropical woods, V, by Frederick F. Wangaard, William L. Stern and Stanley L. Goodrich. Yale University. School of Forestry, New Haven, Conn. Dec 1955. 145p photos, tables. Order from Yale University $1.00 per copy or subscription (semiannual) of $1.50. PB 124527

For Part IV see PB 116772. Contract Nonr-609(13), formerly Contract N6 ori-44, T.O. XV, NR 330-001. 1. Wood - Properties 2. Wood - Uses 3. Timber, Tropical

Protection against decay and termites in residential construction, by Robert M. Dillon. Building Research Advisory Board. May 1956. 67p maps. Order as NRC 448 from the National Research Council Publications Office, 2101 Constitution Avenue., N.W., Washington 25, D.C. $1.50. PB 124959

The purpose of this study is to provide the Federal Housing Administration with authoritative answers and opinions regarding the need for decay and termite protection in the various geographic areas of the country, and if a need is determined to exist, the type and degree of protection necessary. The conclusions and recommendations of the Special Advisory Committee are to the effect that: 1. Sound construction practices are of primary importance in dacay and termite control. 2. Local experience should govern in determining the relative severity of decay or termite hazards. 3. The application of control measures should be in direct relation to potential damage. Conducted by the Building Research Advisory Board for the Federal Housing Administration under Contract HA-fh-646, Amendment 1. NRC 448.

Tertiärwand in fichtenzellstoff-tracheiden. (Tertiary wall in spruce fiber cells), by Hans Meier and Sven Yllner. Svenska Träforskningsinstitutet. Träkemi och Pappersteknik. 1956. 7p photos, table (Text in German). Order from LC. Mi $1.80, ph $1.80. PB 124750

Sulphite and sulphate pulp of spruce differ clearly from each other by the appearance of the tertiary wall (the innermost layer of the fiber cell wall). This is largely destroyed in sulphite pulp, but in sulphate pulp it seems to be as well preserved as in holocellulose. Prehydrolysed sulphate pulp shows, if any, a very weak tertiary wall. Also in holocellulose and sulphate pulp which have been extracted with 17-5% NaOH, the tertiary wall is mostly destroyed. The diffusion of the cooking liquor through the cell walls during the sulphite and sulphate cook is discussed. Concerning the chemical composition of the tertiary wall, it seems highly probable that it is built up mainly of xylan. Reprinted from Svensk Papperstidning 59 (1956): 11, 395. Summaries in Swedish, German and English. Svenska Träforskningsinstitutet, Träkemi och Pappersteknik. Meddelande 212.

MEDICAL RESEARCH AND PRACTICE

Biochemistry, physiology, and pharmacology of the adrenocorticotropic hormone of the pituitary (ACTH). Final progress report for period 1 Oct 1950 - 30 Sep 1954 under Contract N5 ori-07638, NR 123-044, by Paul L. Munson. Harvard University. School of Dental Medicine, Cambridge, Mass. May 1955. 24p tables. Order from LC. Mi $2.70, ph $4.80. PB 124188

Three principal areas of research on ACTH have been pursued. (1) The nature of the adrenocorticotropic secretory product of the anterior pituitary i.e., "native" ACTH, (2) The mechanism of stimulation of ACTH secretion by stressful stimuli. (3) The urinary androgens of adrenal cortical origin.

Claustrophobic reactions to some stresses of the submarine service, by Jack L. Kinsey and Henry B. Murphree. U.S. Navy. Medical Research Laboratory, Naval Submarine Base, New London, Conn. Apr 1955. 39p photos, drawing, diagr, tables. Order from LC. Mi $3.00, ph $6.30. PB 124556

Clinical evaluation including Rorschach testing was accomplished on a series of seventeen subjects exhibiting phobic responses which were apparently precipitated or aggravated by stresses encountered in the Submarine Service. In most instances, the evaluation was limited to a single psychiatric interview and psychological testing; only occasional cases presented the opportunity for follow-up study. While the individuals comprising the sample were similiar in many respects such as sex, age group, marital status, and education, and although they had been subjected to the same stresses, the findings disclosed marked variation in severity of symptoms, time and nature of onset as well as the specificity of the fear displayed. AD 72945. Report no. 2 under subtask 53. Vol. XIV, no. 2. NAV MRL 262. NMRI Proj NM 003-041.53.03.

Electronic configuration of antibodies, by William C. Boyd. Boston University. School of Medicine, Boston, Mass. Dec 1955. 6p. Order from LC. Mi $1.80, ph $1.80. PB 124617

Extensive studies were made of methods of concentrating and purifying lectins (specific hemagglutinating proteins, especially those from seed), concentrating attention for the most part on the A-specific lectin contained in certain varieties of lima beans. Contract Nonr-492(00)(01), Final report.

Factors influencing the passage of gases between the atmosphere and the blood flowing from the lungs in normal and pathological conditions. Final report for the period 1 Mar 1947 - 28 Feb 1955 under Contract N7 onr-307-3, by Giles F. Filley. Trudeau-Saranac Institute. Dept. of Physiology, Trudeau, N.Y. Jun 1955. 5p. Order from LC. Mi $1.80, ph $1.80. PB 124011

The objective was to study those factors that govern the maintenance of optimum oxygen and carbon dioxide pressure in the lung gases and to investigate the diffusion characteristics of the membrane that separates the blood from the gas phase of the lungs. The manner and degree by which various stresses influence the gas pressures and the diffusion characteristics of the membrane was the primary objective.

Further test of the role of drive reduction in human cardiac condition, by David Zeaman and Norma Wegner. Connecticut. University, Storrs, Conn. Aug 1955. 17p graphs, tables. Order from LC. Mi $2.40, ph $3.30. PB 123446

Technical report 14 under Contract Nonr-631(00). For Technical reports 13 and 15 see PB 123053 and PB 123447. 1. Cardiac contractions 2. Heart - Electrocardiography

Local vascular response to vibrations, by Ernst K. Franke and Kenneth M. Hildreth. U.S. Air Force. Air Research and Development Command. Wright Air Development Center. Aero Medical Laboratory, Wright-Patterson Air Force Base, Dayton, O. Jul 1956. 14p diagr, graphs. Order from OTS. 50 cents. PB 121567

This report describes measurements of the heat flow through the human body surface after stimulation by mechanical vibrations. The heat flow measured indicates a vasodilation. The individual differences of vasodilation in a number of subjects were investigated, and their statistical significance was determined. The relation of these findings to vascular damage produced by long term exposure to vibrations is discussed. Project no. 7210. AD 97106. AF WADC TN 56-297.

Magnitude of wound produced in various tissues by fragments, etc., by E. Newton Harvey, Elmer O. Butler, J. Howard McMillen and William O. Puckett. Princeton University. Dept. of Biology, Princeton, N.J. Sep 1946. 12p. Order from LC. Mi $2.40, ph $3.30. PB 125006

The ultimate purpose of the study of wounding was to obtain data with which to predict the degree of incapacitation (the weeks of hospitalization) which may result from a hit by a missile of given mass, moving with a given velocity. Final report on project OEM-cmr 395. Covers work from Oct 15, 1943 to Feb 28, 1946 under Contract DA 49-007-MD-328. CMR 395.

Mitochrome, a new respiratory enzyme. I: Mediation of activated phosphate transformations in mitochondria, by B. David Polis and H.W. Shmukler. U.S. Naval Air Development Center. Aviation Medical Acceleration Laboratory, Johnsville, Pa. Apr 1956. 50p diagrs, graphs, table. Order from LC. Mi $3.30, ph $7.80. PB 125185

A new chromoprotein, mitochrome, released from mitochondria during ageing or other damaging processes, has been isolated in pure form. Physical-chemical determinations of partial specific volume, diffusion constant, and sedimentation constant permitted the calculation of a molecular weight in the order of 100,000 in agreement with the value calculated from the iron content of 0.055 percent, assuming one atom of iron per molecule of mitochrome. Electrophoretic studies indicated a single component protein both on the acid and alkaline side of the isolectric point at pH 5.1. Spectrophotometric analysis revealed two bands at 278 and 419 m μ. Reduction with dithionite displaced the Soret band to 422 mμ. Electrophoretic and sedimentation experiments furnish evidence for a protein-protein interaction between mitochrome and serum albumin. NMRI Proj. NM 001-100-316, Report no. 1. NADC MA-5605.

New enrichment broth medium for gram-negative organisms of the intestinal group, by A.A. Hajna. U.S. Air Force. School of Aviation Medicine, Randolph Field, Tex. May 1956. 4p tables. Order from LC. Mi $1.80, ph $1.80. PB 125220

A formula for a new enrichment broth for the isolation of enteric pathogens from rectal swabs and other gram-negative organisms from various sources was used in combination with the specimen preservative (SP). A larger number of Salmonella and Shigella were recovered than from either direct plating or enriched specimens alone. Maximum recoveries were obtained by a combination of direct examination followed by enrichment and re-examination. AF SAM R 56-39.

Progress report and plan for future, submitted in support of application for renewal of Contract Nonr-1092 for a period of one year from date of its termination, by Warren Andrew. Wake Forest College. Bowman Gray School of Medicine, Winston-Salem, N.C. 1955. 16p tables. Order from LC. Mi $2.40, ph $3.30. PB 123037

Plates described in this report are not included.

1. Lymphocytes - Research 2. Skin - Physiology 3. Animals, Laboratory - Records 4. Skin - Aging 5. Contract Nonr-1092

State-of-the-art in olfaction, by Shelton MacLeod. U.S. Air Force. Air Research and Development Command. Rome Air Development Center, Griffiss Air Force Base, Rome, N.Y. Jun 1956. 18p. Order from LC. Mi $2.40, ph $3.30. PB 125055

This paper is a general survey of present day state-of-the-art within the area of olfaction. Following the introduction, an orientation is included to supply background information regarding the nature of olfaction and pertinent olfactory phenomena. Existing analytical methods and theories of olfaction are then discussed and appraised. The final section is devoted to a review of current civilian and military olfactory applications leading up to a final prospectus for future research and development. AF RADC TN 56-199.

Strength of cardiac CR's with varying unconditioned stimulus durations, by Norma Wegner and David Zeaman. Connecticut. University, Storrs, Conn. Aug 1955. 10p graph, table. Order from LC. Mi $1.80, ph $1.80. PB 123447

Technical report 15 under Contract Nonr-631(00). For Technical reports 13 and 14 see PB 123053 and PB 123446. 1. Cardiac contractions 2. Heart - Effect of shock 3. Reaction (Psychology) - Measurement

Studies on the prevention of tooth decay. Progress report for period 1 Dec 1952 - 30 Jun 1953 under Contract N5 ori-07658, by James H. Shaw. Harvard University. School of Dental Medicine, Boston, Mass. Jul 1953. 2p. Order from LC. Mi $1.80, ph $1.80. PB 123824

AD 71063. For 2nd - 3rd annual reports see PB 115825 and 119147. 1. Teeth - Caries - Research 2. Dental research

Study of specific antihyduronidases in serum. Final report for the period Jun 30, 1954 to Jan 31, 1955 under Contract no. Nonr 494(07), NR 180-030, by Zareh Hadidian. Tufts College, Medford, Mass. Mar 1955. 1p. Order from LC. Mi $1.80, ph $1.80. PB 129032

To be continued under Contract Nonr 494(11). 1. Bacteria - Inhibiting substances 2. Streptococcus infections - Prevention 3. Contract Nonr 494 (07) NR 180 030, Final report

Successful cross-species bone grafting accomplished by removal of the donor organic matrix, by Fred L. Losee and Lloyd A. Hurley. U.S. Naval Medical Research Institute, Bethesda, Md. Dec 1956. 38p photos, diagr, tables. Order from LC. Mi $3.00, ph $6.30. PB 125524

1. Bones - Transplantation 2. NMRI Proj. NM 004-006.09.01

Susceptibility to oral infection in mice as a function of postirradiation time, by Eugene H. Perkins, David M. Donaldson and Stanley Marcus. U.S. Air Force. School of Aviation Medicine, Randolph Field, Tex. May 1956. 9p tables. Order from LC. Mi $1.80, ph $1.80. PB 125221

Total body x-irradiation (300-350 r) resulted in increased susceptibility of mice to infections induced by the gastric instillation of Str. hemolyticus (group C), paracolon bacilli, S. typhimurium, and Esch. coli on the first, third, fourth, and fifth postirradiation days. No difference in mortality was observed if mice were challenged at later dates (between the sixth and twenty-fifth postirradiation days) or 1, 2, or 3 days prior to x-irradiation. Analysis of the data indicates that increased susceptibility to infection via the oral route following irradiation is dependent upon early damage to the gastrointestinal tract in conjunction with the depression of cellular and humoral defenses which develop at later postirradiation times. AF SAM R 56-51.

Toxicity of vapors in the presence of aerosols carriers (U), by V. Alexander Gordieyeff. U.S. Chemical Corps. Chemical Warfare Laboratories, Army Chemical Center, Md. Aug 1956. 67p diagrs, graphs, tables. Order from LC. Mi $3.90, ph $10.80. PB 125596

This paper is the final part of three studies on the interaction mechanism between vapors and airborne particles. It gives the results of toxicological experiments performed to test the Dautrebande hypothesis that vapor sorption on inert, airborne, carrier aerosols possibly increase the toxicity of a vapor. The experimental setups (involving exposure chambers of the semistatic and the dynamic type) are described. Mortality curves for rats, mice, and hamsters are compared for vapors of acetone, cyanohydrin, mustard gas, Sarin, phosgene, and formaldehyde in the absence and presence of various carriers. The validity of these results is limited to acute inhalation toxicities of volatile substances sorbed on biologically inert aerosols. Subproject: 4-08-02-016-1. CC CWL R 2053.

Wound healing in thermo injury to the skin. Annual progress report for the period 1 Jan 1954 to 31 Dec 1954 under Contract N6 onr-24111, by William H. Strain. Rochester. University, Rochester, N.Y. Dec 1954. 2p. Order from LC. Mi $1.80. ph $1.80. PB 123995

See also PB 123792 and 116404. 1. Wounds - Therapy 2. Burns - Therapy 3. Contract N6 onr-24111

Accelerated oxidation of high temperature alloys as influenced by contamination with sodium compounds and certain fuel oil ash components, by George W. Cunningham and Anton deS. Brasunas. Tennessee. University. Metallurgy Division. Dept. of Chemical Engineering, Knoxville, Tenn. May 1955. 82p photos, diagrs, graphs, tables. Order from LC. Mi $4.80, ph $13.80. PB 128511

High temperature corrosive attack on heat-resistant alloys indicates that the most corrosive mixture is approximately 20 per cent sodium sulfate-- 80 per cent vanadium pentoxide. High oxygen solubility in the molten contaminant containing 20 per cent sodium sulfate may be responsible for its unusually high corrosiveness. Additions of calcium oxide, strontium oxide, and carbon were effective in reducing the intensity of attack. Final and summary report under Contract NObs -65576.

Antigalling coatings and lubricants for titanium, by E.L. White, P.D. Miller and R.S. Peoples. Battelle Memorial Institute. Titanium Metallurgical Laboratory, Columbus, O. Feb 1956. 54p table. Order from OTS. $1.50. PB 121610

A survey of methods of reducing the galling type of wear of titanium and its alloys indicates that bare titanium and its alloys cannot be satisfactorily lubricated. The most acceptable lubricants thus far tested are of the fluorocarbon type. However, satisfactory wear performance, for many operations, can be obtained by the use of coatings of various kinds on titanium surfaces plus suitable lubricants. The wear resistance of the metal can be improved by oxide, mitride, and carbide case hardening and coatings. The poor wear characteristics of titanium can be circumvented by metallic coatings of chromium, aluminum, copper, nickel, and other metals. Also, chemical conversion coatings, such as fluoride-phosphate coatings, phosphate coatings, and anodized coatings, reduce the wear and improve the lubrication of the metal. The wear characteristics of the presently available commercial alloys are quite similar to the metal itself and generally can be improved by the same techniques. BMI TML R 34.

Causes of cracking in high-strength weld metals, by A.L. Lowe, Jr., R.P. Sopher and P.J. Rieppel. Battelle Memorial Institute, Columbus, O. Nov 1955. 39p photos, drawing, diagr, graphs, table. Order from LC. Mi $3.00, ph $6.30. PB 124150

This report summarizes the experimental work conducted at Battelle in a study to determine the causes of cracking in high-strength weld metals. A new hot-tension machine was designed and built to facilitate the testing of SAE 4340 weld metals on cooling from the molten state. The tests were conducted over the temperature range from 2600F to 100 F. Results from the studies showed phosphorus to be detrimental to weld-metal cracking resistance. As the phosphorus was increased the ductility was lowered at temperatures near the solidus. Nitrogen content within the normal range of SAE 4340 steels appeared to have little influence on the cracking resistance of the weld deposits. Rare-earth metal additions improved the hot ductility and hot-cracking resistance of the weld metals. An increase in silicon lowered the hot ductility and hot-cracking resistance slightly. Project 7351, Task 73516. Covers work for period 15 Nov 1954 - 15 Nov 1955 under Contract AF 33(616)-2734. AF WADC TR 52-322, Part 4.

Dynamic magnetostrictive properties of Alfenol, by C.M. Davis, Jr. and S.F. Ferebee. U.S. Naval Ordnance Laboratory, White Oak, Md. Oct 1955. 33p diagrs, graphs, table. Order from OTS. $1.00. PB 131168

The magnetostrictive properties of Alfenol, a cold-rolled Al-Fe alloy, were investigated to determine its suitability for use in electromechanical transducers. The material, in the form of toroids made from ring laminations, was evaluated by the motional impedance method. Measured values of the electromechanical coupling coefficient, the mechanical Q in air, the reversible permeability, the dynamic magnetostrictive constant, and other parameters are given. Effects of various processing techniques are included. Appendix I. Impedance analysis of magnetostrictive materials, by A. T. Jaques. NAVORD 3947.

Effect of hydrogen on the mechanical properties of titanium and titanium alloys. Fourth summary report under Contract DAI-33-019-505-ord-(P)-1, by G.A. Lenning, L.W. Berger and R.I. Jaffe. Battelle Memorial Institute, Columbus, O. Jul 1955. 57p photos, diagrs, graphs, tables. Order from LC. Mi $3.60, ph $9.30. PB 125201

Results obtained on unnotched and notched fatigue tests of commercial A-55 and Ti-8Mn titanium alloy indicated that 400 ppm hydrogen did not significantly alter the fatigue properties. In the investigation of the effect of beta-stabilizing additions on the hydrogen tolerance of alpha titanium alloys, a 2 per cent molybdenum addition showed the most benefit, inasmuch as the hydrogen tolerance for high notch-bend impact properties was increased from about 100 to at least 200 ppm. Continuation of work done under Contracts DA 33-019-ORD-220 and DA 33-019-ORD-938. For 1st - 2nd reports see PB 119544 and PB 111568. WAL R 401/79-32.

Effect of surface preparation and condition on microhardness, by F.H. Vitovec and H.F. Binder. Minnesota. University. Dept. of Mechanics and Materials, Minneapolis, Minn. Oct 1955. 36p graphs, table. Order from LC. Mi $3.00, ph $6.30. PB 128519

Observations on the load dependence of the pyramid microhardness are discussed and various explanations of it are briefly reviewed. Experimental results are presented which indicate the effect of the polishing procedure on the hardness-load relationship. A simplified mathematical analysis is presented which shows the relationship between the hardness-load behavior and the stress-strain curve under uniaxial deformation. The various hardness-load trends are explained in terms of strain hardening, effect of the free surface, and cold working introduced by the polishing procedure. AD 88763. Project no. 7360, Task no. 73604. Covers work from May-Sep 1955 under Contract AF 33(616)-2803. AF WADC TR 55-372.

Effect of the surrounding atmosphere on wear of pure copper, by I-Ming Feng and C.M. Chang. Massachusetts Institute of Technology. Dept. of Mechanical Engineering. Lubrication Laboratory. Feb 1954. 34p photos, graphs, table. Order from LC. Mi $3.00, ph $6.30. PB 123139

The results of the experimental study of the effect of the surrounding atmosphere on wear of electrolytic tough pitch copper are presented here. They bring out the effect of time of exposure to dry air, the effect of oxygen partial pressure, the separate effect of temperature due to the change in oxidation rate, the parallelism between wear and the boiling point of the gas, and the similarity in the shape of the adsorption isotherm and that of the wear vs. water vapor pressure curve. All of them agree with the conclusions reached in previous analysis. Project DIC 5-7021: Fundamental study of the mechanism of metal transfer and wear. Contains portion of a thesis submitted by C.M. Chang. Technical report no. 1 under Contract DA 19-020-ord-1761.

Effects of ineleastic action on the resistance to various types of loads of ductile members made from various classes of metals. Part VI: A digital computer analysis of bending moment-axial load interaction curves, by Y. Maeda, P. Van Lierde, O. M. Sidebottom and M.E. Clark. Illinois. University. Dept. of Theoretical and Applied Mechanics, Urbana, Ill. May 1957. 43p diagrs, table. Order from OTS. $1.25. PB 131182

This paper presents the results of a study undertaken to determine the feasibility of using the digital computer to make the time-consuming calculations necessary to construct moment-load interaction curves. A strip method of numerical integration was set up to solve the equations of equilibrium for the members. This method allowed a generalization of the procedure to all shapes of cross-section. Load- and moment-functions for some 86 different conditions for T-, angle-, and channel-section members were determined using the digital computer. AD 56-330. Project 7360, Task 73605. Covers work from Apr-Nov 1956 under Contract AF 33(616)-2753. For Parts 1, 4 and 5 see PB 131061, 131245 and 131252. AF WADC TR 56-330, Part 6.

Effects of physical variables on delayed failure in steel, by R.D. Johnson, J.G. Morlet and A.R. Troiano. Case Institute of Technology, Cleveland, O. Jun 1956. 44p photos, graphs, table. Order from OTS. $1.25. PB 121456

The effects of three specific variables, hydrogen distribution, test temperature, and prestressing, were determined on the hydrogen-induced brittle fracture of 4340 steel in static fatigue. An electrical resistance method was employed to measure the crack propagation characteristics in hydrogen-charged and aged specimens and in specimens which were prestressed prior to charging. Project 7351, Task 70645. Cover work performed from Mar 31, 1955 to Mar 31, 1956 under Contract AF 33(038)-22371. AF WADC TR 56-220.

Electrical resistivity of the Ni-Pd alloy system between 300°K and 730°K, by A.I. Schindler, R.J. Smith and E.I. Salkovitz. U.S. Naval Research Laboratory. Jul 1957. 7p graphs, table. Order from OTS. 50 cents. PB 131124

Electrical resistivity measurements have been made on alloys of Ni and Pd from room temperature to 730°K. The maximum in the resistivity was found to shift from 70 atomic percent Pd, 30 atomic percent Ni at room temperature, to the 50-50 composition at temperatures where all the specimens are paramagnetic. At these elevated temperatures it was found that Matthiessen's rule is obeyed over the entire range of compositions. NRL R 4974.

Engineering application of the absolute rate theory to the creep of some aluminum alloys, by Mervin B. Hogan. Utah. University. Institute for the Study of Rate Processes, Salt Lake City, Utah. Jun 1956. 61p diagrs, graphs, tables. Order from OTS. $1.75. PB 131139

In the present paper a number of creep data pertaining to several aluminum alloys at different temperatures have been analyzed on the basis of the absolute rate theory. The agreement between the results and the theory is found to be good; leading to the conclusion that the absolute rate theory is a very satisfactory engineering interpretation of the creep properties of those aluminum alloys here analyzed. Contract Nonr-45101. UU ISRP TR 57.

Evaluation of welded joints between AISI 347 stainless steel and 70-30 copper-nickel alloy tubes under thermal shock, specimen no. 3, by W.E. Clautice and R.W. Stevens. U.S. Naval Engineering Experiment Station, Annapolis, Md. May 1955. 49p photos, tables, drawings, diagrs, graphs. Order from OTS. $1.25. PB 121877

This report presents the results of thermal shocking a third mock-up, containing welded bimetallic joints uniting tube components as installed in emergency heat exchangers in newly developed submarine propulsion plants. In this phase of the investigation the specimen installation was modified to permit inspection of the bore at specified intervals. The objective of this inspection was to determine the number of thermal shock applications which initiated crack development in the various portions of the assembly. Research and Development Report 060088E. NSM 200-020. WT 499. NAV EES 060088E.

Fatigue of alloy steels at high-stress levels, by Ture T. Oberg and Edward J. Ward. U.S. Air Force. Air Research and Development Command. Wright Air Development Center. Materials Laboratory, Wright-Patterson Air Force Base, Dayton, O. Oct 1953. 30p photos, drawings, graphs, tables. Order from LC. Mi $2.70, ph $4.80. PB 128532

Several alloy steels used in aircraft have been investigated with the purpose of determining the fatigue strengths at stresses higher than are found in the stress-cycle fatigue diagrams as usually determined. The stress-cycle diagrams have been extended down to about 1000 cycles and the effects of internal heating at high stresses shown. AD 23896. AF WADC TR 53-256.

Fatigue strength of hydraulic tubing, by C.S. Yen and J.L. Waisman. Douglas Aircraft Co., Inc., Santa Monica, Calif. Mar 1953. 131f photos (part fold), drawing, diagrs (1 fold), graphs, tables (1 fold). Order from LC. Mi $6.90, enl pr $22.80. PB 128373

Hydraulic pulsing fatigue test equipment was developed, and tests were conducted to compare the fatigue life of two materials commonly used in high pressure hydraulic systems, to compare the life of formed and straight shapes, and to determine the effects of different dimensions and manufacturing variables on fatigue life. A method of predicting the life of tubing in service is submitted with accompanying data. AD 61261. Report Dev-902. Contract AF 33(038)-19940.

Flakenol I, a non-strategic substitute for powdered high nickel magnetic alloys, by Edmond Adams, John F. Haben and William M. Hubbard. U.S. Naval Ordnance Laboratory, White Oak, Md. May 1956. 19p photos, graphs, tables. Order from LC. Mi $2.40, ph $3.30. PB 127417

A high permeability, low loss core has been prepared by compacting Sendust flakes, which were produced by warm rolling Sendust powder composed of iron, aluminum and silcon. The improved magnetic properties of the new flake cores over the present Sendust powder cores make them the first non-strategic substitute for applications which now require powdered high nickel alloys, such as 2-81 Molybdenum Permalloy. The permeability values as measured on compacts of this new flake core material ranged from 150-230 with electrical losses equivalent or lower than for present 125 permeability powder cores. The low eddy-current loss coefficient value of the Sendust flake cores indicates their usefulness at higher frequencies than now possible for present 125 permeability powder cores. NAVORD 4280.

Flow properties, deformation testures, and slip systems of titanium and titanium alloys, by F.C. Holden, D.N. Williams, W.E. Riley and R.I. Jaffee. Battelle Memorial Laboratory. Titanium Metallurgical Laboratory, Columbus, O. Jan 1956. 102p diagrs, graphs, tables. Order from OTS. $2.75. PB 121608

The methods used to predict formability are described and the flow properties for a number of experimental titanium alloys are tabulated and compared. Most of the data presented are for high-purity experimental alloys; flow properties for the commercial alloys are not available. The effects of strain transformation, tem erature, and hydrogen content on flow properties are also discussed. The deformation mechanisms of alpha titanium at several temperatures are described, and the types of deformation textures developed by titanium are illustrated. BMI TML R 30.

Friedel theory of thermoelectric power applied to dilute magnesium alloys, by E.I. Salkovitz, A.I. Schindler and E.M. Kammer. U.S. Naval Research Laboratory. Jul 1957. 9p graphs, table. Order from OTS. 50 cents. PB 131098

Several theories of the thermoelectric power of alloys have been developed, all based on Mott's original analysis. Of these theories, that of Friedel seems to best fit the data for alloys of monovalent metals. In its application to dilute alloys of magnesium, it is shown that for these alloys, the parameter ΔX takes on values which depend upon the valence of the solute atom. A dependence upon the atomic number of the solute is also indicated. NRL R 4968.

Heterogeneous equilibrium between carbon in iron and in iron alloys, with carbon monoxide and carbon dioxide, and with hydrogen and water vapor between 700°C and 1100°C. Quarterly report no. 5 for the period 29 Nov 1952 - 28 Feb 1953 under Contract DA 04-495-ORD-238, by H. Ed. Flanders. Utah. University. Dept. of Metallurgical Engineering, Salt Lake City, Utah. 1953. 4p. Order from LC. Mi $1.80, ph $1.80. PB 125881

1. Gas - Analysis - Methods 2. Chemical equilibrium, Heterogeneous 3. Carbon - Chemical equilibrium 4. Contract DA 04-495-ORD-238

Induction melting process for titanium scrap, by P.J. Ahearn and C.F. Frey. U.S. Arsenal, Watertown, Mass. Rodman Laboratory. Apr. 1957. 11p diagr, tables. Order from OTS. 50 cents. PB 131241

A number of 20-25 pound titanium ingots were produced from titanium 6 Al-4 V scrap. The heats were melted in a high frequency induction furnace under an inert atmosphere. Contamination of the heat by the graphite crucible was minimized by the use of a titanium skull in the bottom of the crucible and by adjustments in the power input so that a meniscus would be obtained in the molten titanium and thus reduce contact between the metal and the graphite crucible. WAL RPL 10/12.

Investigation of fatigue characteristics of leaded alloy steel, by G.W. Brock and G.M. Sinclair. Illinois. University. Dept. of Theoretical and Applied Mechanics, Urbana, Ill. Sep 1956. 57p photos, drawing, graphs, tables. Order from OTS. $.50. PB 121834

An investigation was made to determine the influence of small amounts of lead on the tensile and fatigue properties of SAE 1018, 1045, 8620, 4140 and 4340 steel. Statistical methods were used to determine the mean fatigue limit and the mean fatigue life. It was found that the lead had little influence on the tensile properties, and the mean fatigue limit of the leaded steel was only significantly reduced at ultimate strengths above 130,000 psi., the notch sensitivity of the steel being little affected. At stresses above the endurance limit, leaded SAE 1018 and 4140 tended to give longer fatigue lives on smooth specimens, but no information is available on the other steels or on notched specimens. Contract NOrd 16417, Final report. ILU TAM 105.

Investigation of the minor phases of heat resistant alloys by electron diffraction and electron microscopy, by L.O. Brockway and W.C. Bigelow. Michigan. University. Engineering Research Institute, Ann Arbor, Mich. May 1955. 79p photos, diagr, graphs, tables. Order from LC. Mi $4.50, ph $12.30. PB 128209

The combined use of electron diffraction and electron microscopy provides a very sensitive method for the study of the minor phases of alloy systems. Various polishing and etching procedures have been used in detailed studies of the development of minor phases in 16-25-6 and Inconel -X alloys during aging at 1200°, 1400°, and 1600°F. Preliminary studies of a similar nature have been made on S816 and low-carbon N-155 alloy. In addition, the oxide phase of a sintered aluminum product has been identified. AD 65526. Project 7351, Task 70646. Contract AF 33(616)-23. AF WADC TR 54-589.

Investigations of ultrasonics applied to spotwelding, by J.B. Jones, C. De Prisco and F.R. Meyer. Aeroprojects Inc., West Chester, Pa. Jun 1953. 81f photos, drawing, diagr, graphs, tables. Order from LC. Mi $4.80, enl pr $15.30. PB 128664

Efficient ultrasonic transducer-couplings were developed and a test program was carried out to determine the effect on spotwelds in .051" 24S-T Alclad aluminum sheet of ultrasonic energy at 15 kc applied during the various phases of the spotwelding cycle. The results indicated some reduction in the coefficient of variation of the tensile-shear strength of the ultrasonic welds. Best welds were produced with ultrasonic application at medium power levels during the forge portion of the spotwelding cycle. Under the spotwelding conditions utilized, there was little evidence that ultrasonic application effects significant changes in the microstructure of the welds. In a supplementary investigation, the application of ultrasonic energy through the spotwelder electrodes at varying clamping loads effectively reduced the electrical resistance of as-received aluminum sheet in gages from .020" to .072" generally to within specification limits. AD 87232. Research report 53-18. Contract NOas 51-612-c.

Investigations on the boundary friction of metals and rubber at higher glide velocities (Untersuchungen über grenzreibung von metallen und gummi bei höheren gleitgeschwindigkeiten), by H.L. Hockel. Translated by F.A. Raven. Nov 1956. 11p graphs. Order from LC. Mi $2.40, ph $3.30. PB 125192

In the case of boundary friction, as occurs in piston-type engines, in laminated clutches or couplings, or in the case of sealing and packing parts, there remains between the sliding (friction) surfaces but a very thin film of lubricant in which the molecules are no longer completely and freely motile. Recent tests on paired friction specimens consisting of steel/cast metal and of steel/rubber, with respect to the effect of the loading, of the thickness of the lubricating film, and of the temperature in the range of boundary friction at higher glide velocities, culminated in an expanded Coulomb Law for the frictional force, which takes into account the transition from small to large load factors. Translated from VDI-Zeitschrift, vol. 98, no. 15, 21 May 1956, pp. 842-843. Original paper appeared in Konstruktion, vol. 7, 1955, pp. 394-403. NAVSHIPS T 621. STS 248.

Joining of molybdenum, by W.N. Platte. Westinghouse Electric Corp., East Pittsburgh, Pa. Aug 1954. 108p photos, tables. Order from LC. Mi $5.70, ph $16.80. PB 128527

Welds in carbon deoxidized arc cast molybdenum are shown to be subject to hot short cracking when the oxygen content in the argon atmosphere around the arc exceeds 0.2%. The ductility of these welds was drastically reduced by the presence of more than 0.05% oxygen in the welding atmosphere. Oxygen in sintered molybdenum is shown to produce

porosity and hot short cracking. However, crack and porosity free welds have been produced by using deoxidizing agents in sintered molybdenum. AD 29379. AF WADC TR 54-17.

Nondestructive testing of metal-to-metal structural adhesive bonds, by B.A. Kulp, M.E. Greenstreet and J.H. Cahn. Battelle Memorial Institute, Columbus, O. Apr 1954. 17p diagr, tables. Order from LC. Mi $2.40, ph $3.30. PB 128430

Three types of experimental tests were conducted on adhesive bonded joints fabricated under close laboratory control These tests were: 1. sonic - employing a "sonizon", a commercial resonance type instrument. 2. capacitance - using an impeddance bridge at 100 kilocycles. 3. d.c. resistance- using a standard ohmmeter. The results indicate that more extensive research on electrical characteristics of adhesive bonded joints must be conducted to establish definite correlation to bond quality. AD 34417. AF WADC TR 54-88.

Notch sensitivity of aircraft structural and engine alloys. Part I: Preliminary studies with A-286 and 17-7 PH (TH 1050) alloys, by Howard R. Voorhees and James W. Freeman. Michigan. University, Ann Arbor, Mich. May 1957. 43p photos, graphs, tables. Order from OTS. $1.25. PB 131213

This program was designed to extend previous analyses of the creep-rupture behavior of notched test specimens held under steady axial load. Experimental studies have also been planned and carried out in an effort to clarify the factors controlling rupture life in the presence of a non-uniform complex stress. Results obtained indicate that reduction of an alloy's inherent strength by prior plastic deformation may be a prominent factor in notch sensitivity. Examination of all available data discloses no case of notch weakening without accompanying loss of life in smooth bars which are prestrained at the test temperature. Conversely, in no known case of marked notch strengthening has the material been found to be weakened by plastic prestrain. Prestrain effects alone may not be able to explain all notch behavior, but response of the material to plastic strains appears to be a necessary part of any complete analysis of notch effects. AD 118289. Project 7360, Task 73605. Covers work from Jan 1956 - Jan 1957 under Contract AF 33(616)-3380. AF WADC TR 57-58, Part 1.

Practical vacuum treating of non-ferrous melts at the U.S. Naval Gun Factory, Washington, D.C., by Vincent DePierre and Shing Inouye. U.S. Naval Gun Factory. Engineering Research and Evaluation Division. May 1956. 26p photos, drawing, tables. Order from OTS. 75 cents. PB 131090

Vacuum treating of non-ferrous melts is a practical method for removing dissolved gases from the following melts: 1. Aluminum and aluminum alloys. 2. Copper. 3. Silicon brozes. 4. Copper-tin bronzes with or without lead, nickel and zinc. 5. Nickel base alloys. The removal of gases from non-ferrous melts results in improvements in the soundness and mechanical properties of sand castings and forging ingots poured from these melts. NGF TR 23-56.

Precipitation hardening and embrittlement of high-strength titanium alloys, by A.J. Griest, J.R. Doig, P.D. Frost and C.M. Schwartz. Battelle Memorial Institute, Columbus, O. Nov 1956. 90p photos, drawing, graphs, table. Order from OTS. $2.25. PB 121890

The age-hardening behavior of a series of alpha-beta titanium alloys was investigated. Hardness, tensile, and X-ray diffraction data were used in following the course of the aging behavior of alloys of the systems, Ti-Mn, Ti-Mn-Al, Ti-V, Ti-V-Al, and Ti-Fe. The data presented show the effects of solution temperature, aging temperature and alloy composition on the aging reaction. Comparison of the data for the nominal alloys Ti-8Mn and Ti8Mn-2Al, as well as other data, indicate that the effect of aluminum is to cause the peak strength and hardness to be maintained over longer aging times and to apparently weaken the tendency for omega phase formation. In a separate phase of the research, a survey was made of possible contributing factors to beta embrittlement. AD 110583. Project 7351, Task 73510. Covers work Mar 1, 1955 - May 31, 1956 under Contract AF 33(616)-445. For Part 2 see PB 111990. AF WADC TR 54-355, Part 3.

Raw materials for aluminum production, by D.D. Blue. U.S. Bureau of Mines. Mar 1954. 13p tables. Order as Information Circular 7675 from U.S. Bureau of Mines, Publications Distribution Section, 4800 Forbes Street, Pittsburgh 13, Pa. PB 125033

The raw materials consumption pattern, the requirements during an expansion period when excess quantities of materials for starting up new facilities are consumed, and the probable requirements for production of 1.7 million tons per year of primary aluminum are discussed. The raw materials that presented the most difficult supply problems were bauxite, electrical power, and fluoride salts, and the supply pattern for these materials probably will undergo changes. BM IC 7675.

Sparking characteristics and safety hazards of metallic materials, by Harold Bernstein and George C. Young. U.S. Naval Gun Factory, Washington, D.C. Apr 1957. 36p photos, diagr, graphs, tables. Order from OTS. $1.00. PB 131131

This report is a survey of the sparking characteristics and safety hazards of metallic materials. The fundamentals of sparking theory and methods of

spark testing are presented. The ignition hazards associated with sparks are discussed. Attention is called to an alternate and possibly more significant source of ignition-impacts. The data indicate that sparks and impacts can result from the use of "non-sparking" materials. The authors conclude that no benefit is gained by employing non-sparking hand tools in place of steel to prevent explosions. NGF TR 1-57. NAVORD 5205.

Spot-welded joints in titanium alloys and their behavior in fatigue, by William H. Kearns, Walter S. Hyler and David C. Martin. Battelle Memorial Institute, Columbus, O. Mar 1955. 31p photos, drawing, diagrs, graphs, tables. Order from LC. Mi $3.00, ph $6.30. PB 128518

Commercially pure titanium sheet, commercial titanium - 7 per cent manganese alloy sheet, experimental unalloyed titanium sheet, and Type 321 stainless steel sheet, all of 0.040-inch thickness, were used. Joints in the stainless steel sheet were slightly better in fatigue than similar joints in the titanium materials under similar loading conditions. Joints in the titanium materials were significantly better than similar joints in clad 24S-T and 75S-T aluminum alloys. (The data on the aluminum alloys were developed in previous work.) Under static tension-shear loading, the joints in titanium materials were stronger than similar joints in the stainless steel and the aluminum alloys. AD 63964. Project no. 7351. Contract AF 33(616)-2005. AF WADC TR 54-609.

Steady-state creep of crystals, by J. Weertman. U.S. Naval Research Laboratory. Aug 1957. 10p diagrs, graph. Order from OTS. 50 cents. PB 131132

An expression for the steady-state creep rate of crystals is derived for the case where dislocation climb is not rate-controlling. Two rate-controlling processes are considered. In the first the dislocations are considered to move in a viscous manner, their velocity of motion being proportional to the force exerted on them. The second mechanism makes use of the Peierls stress. The Peierls stress mechanism can be used to explain the results of Gilman on creep by prismatic glide in high purity zinc. At low stresses the anlysis for both processes leads to a power-law stress dependence for the creep rate. The value of the exponent of the stress is approximately equal to three. NRL R 4970.

Weldability of rare earth treated homogeneous armor steel plate. Interim report no. 1, by William G. Smith. ACF Industries, Inc., Research and Development Dept., New York, N.Y. Feb 1955. 39p photos, diagrs, tables. Order from LC. Mi $3.00, ph $6.30. PB 125860

Evaluation of the relative weldability of rare earth metal treated, rare earth oxide treated and normal production manganese-molybdenum rolled homogeneous armor plate by means of incidence of cracking occuring in 3, 4 and 5 inch diameter circular patch test plates indicates that rare earth metal treated armor is similar to normal production armor in weldability and rare earth oxide treated armor is of superior weldability; however, the results may be influenced by the lower chemistry and hardenability of the rare earth oxide treated heat submitted for test. In the welding of circular patch test plates incidence of cracking was highest on the rare earth metal treated armor. Cruciform tests indicated the rare earth metal treated and normal production armors to be of approximately equal weldability and the rare earth oxide treatment armor to be of superior weldability. Major report no. 207. Contract DA 36-034-ORD-1423RD, Interim technical report no. 1. WAL R 640/218-1.

X-ray and age-hardening studies on certain iron-cobalt-chromium alloys, by Herman F. Kaiser and I.R. Kramer. U.S. Naval Research Laboratory. Nov 1939. 26p photos, graphs, tables. Order from LC. Mi $2.70, ph $4.80. PB 122660

1. Iron-chromium-cobalt alloys - X-ray inspection 2. Iron-chromium-cobalt alloys - Aging 3. Iron-chromium cobalt alloys - Hardness - Measurements 7. NRL M 1577

METEOROLOGY AND CLIMATOLOGY

Atmospheric radioactivity along the 80th meridian, 1956, by L.B. Lockhart, Jr., R.A. Baus and I.H. Blifford, Jr. U.S. Naval Research Laboratory. Jul 1957. 15p photos, graphs, tables. Order from OTS. 50 cents. PB 131081

Measurements of atmospheric radioactivity and fallout at a number of sites along the 80th meridian (west) are reported for the year 1956. These results were obtained through the combined efforts of the U.S. Naval Research Laboratory and the Meteorological Services of Chile, Peru, and Ecuador with the cooperation of the U.S. Weather Bureau and the U.S. Atomic Energy Commission. Radioactivity levels at the various sites during 1956 are reported for three different collecting systems: air filters, cloth screens, and gummed films. Extremely wide variations in the gross radioactivity of fission products in the air have been noted, with highest levels occurring in the Northern Hemisphere. The presence of some of the peaks of activity at various localities has been correlated with known atomic explosions. NRL R 4965.

Barotropic models of the planetary jet stream, by John C. Freeman, Jr. and others. Texas. Agricultural and Mechanical College. Dept. of Oceanography and Meteorology, College Station, Tex. Sep 1956. 103p diagrs, graphs, tables. Order from LC. Mi $5.70, ph $16.80. PB 125618

AD 98782. Reference: 56-28T; Project 57. Contents: Constant vorticity model of the planetary jet stream, by John C. Freeman, Jr. - Three vorticity models of the planetary jet stream with continuous velocity, by John C. Freeman, Jr. - Formulation of the planetary jet stream problem for n bands of constant vorticity on a sphere, by John T. Hurt. - Three bands of constant vorticity on a sphere, by Akira Kasahara and John C. Freeman, Jr. - Numerical prediction in Starr's quasi-Lagrangian coordinates, by John C. Freeman, Jr. Contract AF 19(604)-559, Technical report no. 12. AF CRC TN 56-857.

Calculation of the thermodynamic properties of air at high temperature, by J. G. Logan, Jr. Cornell Aeronautical Laboratory, Buffalo, N.Y. May 1956. 72f graph, tables. Order from LC. Mi $4.50, enl pr $13.80. PB 128375

Procedures for the calculation, for air, of the equilibrium and thermodynamic quantities, energy, enthalpy, entropy, pressure, specific heat, molecular weight, and the speed of sound in the temperature range 1,000°K to 20,000°K are described. AD 95220. CAL AD 1052-A-1. AF OSR TN 56-344.

Cerenkov counter measurement of multiply charged cosmic rays, by John Linsley. Minnesota. University. Dept. of Physics, Minneapolis, Minn. 1956. 36p photos, diagrs, tables. Order from LC. Mi $3.00, ph $6.30. PB 124702

Measurements have been made on the charge spectrum of cosmic rays at geomagnetic latitude 41°. The data were obtained during balloon flights at a level of 16 g/cm^2. Events selected by a Geiger counter telescope were measured with a Cerenkov detector, and a record was kept of the pulse heights. When the pulse was greater than two relativistic protons would produce, a cloud chamber above the Cerenkov detector was triggered. In that way, 394 events were photographed. As often as not the photographs showed the track of a multiply charged particle traversing the telescope unaccompanied. The corresponding pulse height then served to determine the particle's charge. Research conducted by Cosmic ray group. Contract N6onr-246.

Chemistry and vertical distribution of the oxides of nitrogen in the atmosphere, by Lewis Miller. U.S. Air Force. Air Research and Development Command. Geophysics Research Directorate, Bedford, Mass. Nov 1954. 141p photos, diagrs, graphs, tables. Order from LC. Mi $7.20, ph $22.80. PB 127721

Brief summaries of early papers as well as more recent experimental laboratory studies on the photolysis and thermal decomposition of nitrous oxide, nitric oxide, and other oxides of nitrogen have been included in this paper. They have been grouped as (a) nitrous oxide, (b) nitric oxide and (c) nitrogen dioxide and other oxides of nitrogen. AF GRD P 39. AF CRC TR 56-207.

Classification of solar prominences - I - 1950, by Donald H. Menzel and F. Shirley Jones. Harvard University. Harvard College Observatory. Solar Dept. 1956. 54p tables. Order from LC. Mi $3.60, ph $9.30. PB 125620

A tabulation of the behavior classification of prominences observed at High Altitude Observatory, Climax, Colorado, for the year 1950, according to the scheme devised by Menzel and Evans (1953). Contract AF 19(604)-146. HU HCO SR 42. AF CRC TN 56-860.

Cloud physics research. Cloud electricity scientific report no. 1: Theoretical and experimental studies of convective cloud electrification, by Donald R. Fitzgerald. Chicago. University. Dept. of Meteorology, Chicago, Ill. Jun 1956. 133p maps, diagrs, graphs, tables. Order from LC. Mi $6.90, ph $21.30. PB 125209

Theoretical studies and measurements pertaining to convective cloud electrification form the basis of this report. The theoretical material includes a study of the validity of monopole charge solutions and a complete discussion of the properties of a new mathematical model of cloud bipolar charge distributions. Studies of cloud electrical effects as measured with a ground network of field meters, or with aircraft wing-tip field meters, are described in detail. Contract AF 19(604)-1552, Final report. AF CRC TR 56-298.

Daytime influence of irrigation upon desert humidities, by Howard L. Ohman and Richard L. Pratt. U. S. Army. Quartermater Research and Development Command. Environmental Protection Research Division, Quartermaster Research and Development Center, Natick, Mass. May 1956. 34p photos, maps, diagrs, graphs, tables. Order from LC. Mi $3.00, ph $6.30. PB 125047

This report describes a study of daytime dew point distribution within and about the irrigated farmland near Yuma, Arizona. The results of the study indicate that evaporation and transpiration cause an average increase of 6 to 8 degrees (F), in the dew point of the air directly over an irrigated area, but that the lateral extent of this effect is limited to distances of 100 feet or less from the fields. The influence of irrigation agriculture upon humidities in the various testing sites within Yuma Test Station therefore is negligible. Project: 7-83-03-008A. QMC EP TR 35.

Discovery of meteoric dust at the place of fall of the Sikhote-Alin shower of iron meteorites. (Obnaruzhenie meteornoi pyli na meste padeniia Sikhote-Alinskogo sheleznogo meteoritnogo dozhdia), by E.L. Krinov and S.S. Fonton. Translated by David Kraus. Jun 1956. 11p table, photos. Order from LC. Mi $2.40, ph $3.30. PB 125553

Translated for the Geophysics Research Directorate, Air Force Cambridge Research Center, Cambridge, Mass., from Doklady Academii Nauk SSSR, 85(6): 1227-1230, 1952, by the American Meteorological Society under Contract AF 19(604)-1364. 1. Meteorological research - Russia 2. Dust, Meteoric - Analysis - Russia

Electron distribution in a new model of the ionosphere, by H. K. Kallmann. California. University. Institute of Geophysics, Los Angeles, Calif. Jan 1956. 11p graphs. Order from LC. Mi $2.40, ph $3.30. PB 125080

The purpose of this presentation is to give a brief outline of the theoretical analysis which has led to a new model of the ionosphere, to present the results which have been obtained and to compare the theoretical results with the direct observations, in particular with observations obtained by means of research rockets. Paper presented at the American Physical Society meeting in New York City, 31 Jan 1956. Contract AF 19(604)-111, Scientific report no. 4. AF CRC TN 56-464.

Extreme atmospheres and ballistic densities, by Norman Sissenwine and Allen E. Cole. U.S. Air Force. Air Research and Development Command. Cambridge Research Center. Geophysics Research Directorate. Programs and Requirements Branch, Bedford, Mass. Jul 1955. 28p. Order from LC. Mi $2.70, ph $4.80. PB 125040

A description of Arctic air from the surface to 100,000 feet is presented. This atmosphere can be used as a typical sounding by designers of vertically rising vehicles or descending bombs. Variations in atmospheric density between air masses and the effect on bomb trajectories, including an example for a typical design, are discussed. AFGRD SC 81. AF CRC TN 56-201.

Firn tremors in the inland ice of Greenland (Ueber den firnstoss im gronlandischen inlandeis), by Fritz Lowe. Translated by Valda Dreimanis. Jul 1956. 11p. Order from LC. Mi $2.40, ph $3.30. PB 125551

Translated for the Geophysics Research Directorate, Air Force Cambridge Research Center, Cambridge, Mass., from Zeitschrift für gletscherkunde and glazialgeologie 3 (2): 253-255, 1956 by the American Meterological Society under Contract AF 19(604)-1364.

Friction on snow and ice, by R.C. Jordan, C.D. Fritz, G.W. McElrath, W.H. Ito, W.C. Stolov and others. Minnesota. University. Institute of Technology. Jun 1955. 399f photos, drawings, diagrs, graphs, tables. Order from LC. Mi $11.10, enl pr $71.10. PB 128558

Frictional resitance on ice and snow was examined in terms of current frictional theories. It was concluded that a liquidlike film of some type exists or is formed on the ice surface. A "stick-slip" friction measuring apparatus was constructed and its vibratory characteristics analyzed. Experimental measurements were made of the static and kinetic friction under various conditions of load, apparent area, slider material, temperature, humidity, time of stationary contact, and carriage velocity. Oscillographs taken of the intermittent stick-slip motion of sliders on ice provided the basis for certain deductions regarding the influence of time on frictional resistance. Measurements were made of the electrical resistance and capacitance between a slider and an electrode frozen in the ice. This report summarizes work from Aug 1951 to Jun 1955. Contract DA 11-190-ENG-1. Dept. of the Army project 8-66-02-001. SIPRE 17.

Humidity conditions in cirrus clouds and the resulting ice crystal forms (Feuchtigkeitsverhaltnisse in cirruswolken und die daraus resultierenden formen der eiskristalle), by H. J. aufm. Kampe. Translated by Bronislas de L. Jezierski and James Gough, Jr. Jun 1956. 17p photos, graph, table. Order from LC. Mi $2.40, ph $3.30. PB 125552

The growth of ice crystals and the decrease of relative humidity in cirrostratus are calculated, following its formation, on the basis of various plausible particle concentrations. These calculations form the basis for conclusions regarding crystal structure. While the cirrostratus usually form below water saturation, the cluster crystals of the cirrocumulus seem to be formed under conditions of supersaturation. For the creation of regularly formed prisms, apparently a relative humidity of less than about 110 pct (relative to ice) is necessary. Translated for the Geophysics Research Directorate, Air Force Cambridge Research Center, Cambridge, Mass., from Deutsche Wetterdienst in der US-Zone. Berichte, (38): 298-302, 1952, by the American Meteorological Society under Contract AF 19(604)-1364.

Measurement of atmospheric attenuation at 4.3 mm wavelength, by R.J. Coates. U.S. Naval Research Laboratory. Apr 1957. 11p photos, diagr, graph, table. Order from LC. Mi $2.40, ph $3.30. PB 124472

Two types of measurements have been employed since the beginning of the program. In the first type, a 4.3-millimeter radio telescope was used to monitor the radio radiation from the sun as the sun rose. This method of measurement can be used only in clear, stable weather. In the second type, the radio telescope was used to measure the thermal radiation from the atmosphere. This type is more versatile since it can be used under all weather conditions. The measured attenuations at the zenith were between 1.6 and 2.2 db depending on atmospheric conditions. The two methods of

measuring the attenuation were in agreement within the uncertainty of the measurements. Interim report. NRL R 4898.

Observations on altocumulus deck (Beobachtungen an einer altokumulusdecke), by C. Schumacher. Translated by James Gough, Jr. Mar 1956. 11p photos, graphs. Order from LC. Mi $2.40, ph $3.30. PB 122245

This paper concerns rare dissipation phenomena that occurred over Germany during 1939. Translated from Zeitschrift für angewande meteorologie, 57(7): 214-220, 1940 for the Geophysics Research Directorate, Cambridge Air Force Center, by The American Meteorological Society under Contract AF 19(604)-1364.

Operational research into the detailed structure of the jet stream. U.S. Naval Air Station, Norfolk, Va. Sep 1955. 78f diagrs, graphs, tables. Order from LC. Mi $4.50, enl pr $13.80. PB 128372

During the 1953-54 winter season, project AROWA conducted research flights into the polar jet stream for the purpose of obtaining detailed wind, clear air turbulence, and temperature data. This report covers instrumentation, jet stream forecast procedure, flight summaries, data processing techniques, and analyzed results of the flights. The distribution of absolute vorticity and encountered temperature variations are discussed, along with the probability of occurrence of clear air turbulence, its relation to horizontal temperature gradient, and spectral analysis of accelerometer data. Covers period 10 Dec 1953 - 26 Mar 1954. Bureau of Aeronautics Project AROWA (TED-UNL-MA-501) "Applied Research; operational weather analyses", Technical report no. 2.

Radar-synoptic analysis of Hurricane Edna, 1954, by Edwin Kessler, III and David Atlas. U.S. Air Force. Air Research and Development Command. Cambridge Research Center. Geophysics Research Directorate, Bedford, Mass. Jul 1956. 125p photos, maps, diagrs, graphs, tables. Order from LC. Mi $6.30, ph $19.80. PB 125074

The eye of Hurricane Edna crossed Cape Cod during the afternoon of 11 September 1954. Unique photographic records were made at several radar sites and include time lapse range height (RHI) and PPI movies and stills. These, with regular and special ground based weather observations and the data of aircraft reconnaissance, have contributed knowledge of various features of the storm. AF GRD P 50. AF CRC TN 56-209.

Research on the study of the conditions surrounding a body moving at high speeds in the ionosphere. Technical report for the period 1 Mar 1955 - 29 Feb 1956 under Contract AF 61 (514)-818. Laboratoire Méditerranéen de Recherches Thermodynamiques, Nice, France. Feb 1956. 42p photos, drawings, diagrs, tables. Order from LC. Mi $3.30, ph $7.80. PB 125607

The purpose of the research work described in this report has been to study the energy exchange between a moving body and air at pressures corresponding to those of the ionosphere. Experiments were conducted over a range of test pressures from 0.15 to 1 micron of mercury (in this range the mean free path of the air molecules is many times the dimensions of the moving body). This flow regime is that of free-molecule flow. Another object of the research work summarized here has been to measure the stagnation pressure. AD 89497. AF OSR TR 56-24.

Seeding experiments in supercooled stratus clouds, by H.J. aufm Kampe, H.K. Weickmann and J.J. Kelly. U.S. Signal Corps. Engineering Laboratories, Fort Monmouth, N.J. Dec 1953. 64p photos, diagrs, graphs. Order from LC. Mi $3.90, ph $10.80. PB 124114

Signal Corps project: 703A. Dept. of the Army project: 3-36-07-062. Unclassified 14 Aug 1956. 1. Clouds, Stratus - Seeding 2. SCEL TM M-1576

Thermodynamic charts for high temperature air calculations (2,000°K-9,000°K), by J.G. Logan, Jr. Cornell Aeronautical Laboratory, Buffalo, N.Y. Jul 1956. 28f graphs. Order from LC. Mi $2.70, enl pr $6.30. PB 128374

The report presents a compilation of thermodynamic charts useful for shock wave and isentropic flow calculations in the temperature range 2000°K to 9000°K. Each of the charts contains plots of three different thermodynamic variables in order that calculations can be conveniently carried out for constant values of entropy, pressure, density and enthalpy. A chart is also included giving values of the speed of sound. AD 95218. Contract AF 40 (600)-6 and Contract AF 18(603)-10. CAL AD 1052-A-3. AF OSR TN 56-342.

Topoclimatic study, Fort Churchill, Canada, by Fernand de Percin and Sigmund J. Falkowski. U.S. Army. Quartermaster Research and Development Command. Environmental Protection Research Division. Quartermaster Research and Development Center, Natick, Mass. Apr 1956. 32p photos, maps, diagrs, tables, graphs. Order from LC. Mi $3.00, ph $6.30. PB 125046

A topoclimatic study was conducted during a 23-day period from 16 January through 7 February 1955, to obtain information concerning local variation of winter temperatures and wind speeds in the

vicinity of Fort Churchill, Canada. Temperature and wind speed at five field stations and at the Canadian Meteorological Station at the main camp were noted and compared. Results of the study indicate that lowest temperatures may be expected in low, snow-covered areas having little or no vegetation. The warmest areas are those that are heavily wooded; vegetation reduces loss of heat and lowers wind speeds by its frictional effect. Low temperatures occurred more frequently with light to moderate winds than with calm conditions. For the period of study, there was no correlation between hours of sunshine and diurnal temperature range, or between hours of sunshine and diurnal wind variation. Project: 7-38-03-008B. QMC EP TR 38.

Upper atmosphere research report, no. XXIX: Effect of oblique propagation paths upon the NRL rocket studies of the ionosphere, by J. E. Jackson. U.S. Naval Research Laboratory. Jul 1957. 18p diagrs, graphs, tables. Order from LC. Mi $2.40, ph $3.30. PB 127333

The NRL method for measuring electron densities in the ionosphere is based upon the propagation of cw radio signals from a rocket to receiving and recording stations on the ground. By firing the rockets almost vertically, and by optimizing the locations of the two ground stations used, a condition of nearly vertical propagation can in general be obtained at one station or the other. These requirements have been fairly well met in the experiments conducted at White Sands, New Mexico, during the period from 1946 to 1954. Comparatively simple techniques could then be used to analyze the resulting data. The theory of the vertical case has been generalized and correction formulas applicable to the oblique case have been derived. The effect of ray bending was also considered and found to be negligible. NRL R 4960.

Vertical circulation and release of kinetic energy during the development of Hurrican Hazel into an extratropical storm, by E. Palmén. Chicago. University. Dept. of Meteorology, Chicago, Ill. Nov 1956. 50 p diagrs, graphs, tables. Order from LC. Mi $3.30, ph $7.80. PB 125101

The thermal structure of the atmosphere over the eastern and central parts of the U.S. on October 15, 1954, when the tropical hurricane "Hazel" entered the American continent and rapidly was transformed into an extratropical cyclone of great intensity, is analyzed by the aid of upper air charts and vertical cross sections. The field of divergence and vertical velocity is determined from the horizontal wind field at different levels for the synoptic time October 15, 1500 GCT, and the results are used for computing the precipitation in the region of strongest ascent of the warm and moist air of the tropical disturbance and for a determination of the release of kinetic energy in the whole region due to vertical solenoidal circulations associated with the general sinking of the cold polar air masses and the simultaneous ascent of the warm tropical air masses. The production of kinetic energy is also computed directly from the work done by the horizontal pressure forces in the same area. Contract AF 19(604)-1293, Scientific report no. 14. AF CRC TN 57-259.

VHF breakdown of air at low pressures, by Roman A. Paska. U.S. Aberdeen Proving Ground. Ballistic Research Laboratories, Aberdeen, Md. Aug 1955. 63p photos, diagrs, graphs, tables. Order from LC. Mi $3.90, ph $10.80. PB 124755

Experiments were conducted on the breakdown of air between coaxial cylinders at 77 megacycles over a pressure range of 5.0 to 0.010 millimeters of mercury, corresponding to altitudes ranging from about 23 to 50 miles. Results show that very low VHF voltages are sufficient to initiate and maintain breakdown, being substantially below D.C. and microwave values, and that the discharge may be properly classified as a glow phenomena. The experimental data and explanations proposed of the breakdown phenomena observed fit the current gap in available information between the low-frequency region and the microwave region. An interesting condition was observed, whereby the application of a sufficiently high voltage would not initiate breakdown, even though a lower voltage would. This has not been found to be reported heretofore. The preventive effect of a D.C. bias voltage on breakdown was found to be appreciable when the pressure was low and the electrodes were such as to cause a non-uniform field distribution across the gap. Dept. of the Army project: 5B0306011. ORD project: TB 3-0538. APG BRL R 944.

MINERALS AND MINERAL PRODUCTS

Devitrification of high temperature resistant ceramic coating glasses, by Karl E. Nelson and Dwight G. Bennett. Illinois. University. Dept. of Ceramic Engineering, Urbana, Ill. Jun 1956. 19p diagrs, graphs, tables. Order from LC. Mi $2.40, ph $3.30. PB 125069

It is the purpose of this research project to study and propose chemical and physical mechanisms which are responsible for the instability of many metal protective high temperature resistant ceramic coating glasses when subjected to elevated temperatures over prolonged periods of time. Three commercial soda-lime-silica glasses of known composition, very clear and crystal free, devitrified almost completely when heated for 17 hours at 871°C on platinum foil. AD 95206. Contract AF 18(604)-28, T.O. 77520. ILU DC E/R 76. AF OSR TN 56-330.

Effect of temperature and pressure on the screening demands of cations, an interpretation of the thermal expansion of the alkali halides and of the structural changes occuring in glasses under high pressure, by W. A Weyl. Pennsylvania State University. College of Mineral Industries, University Park, Pa. Jun 1955. 75p diagrs, graphs, tables. Order from LC. Mi $4.80, ph $12.30. PB 122160

It is the object of this report to interpret the effects of temperature and pressure changes on the volume of some crystals and glasses. In spite of the paramount importance of thermal expansion, this property is not yet understood even for the simplest solids such as MgO and the alkali halides. Recently the behavior of matter under pressure has become of technical importance. This paper offers an explanation for the effect of pressure on glass formation and the properties of glasses formed under pressure. First in a series of three reports (no. 64-66) on the Role of polarization in determining some thermal and mechanical properties of non-metallic solids. For reports 65 and 66 see PB 123542 and 123543. Project 60112-G. Contract N6 onr-269, T.O. 8, NR 032-264. ONR TR 64

Preparation of a reproducible barium titanate, by E.J. Brajer. Clevite Research Center, Cleveland, O. Jul 1956. 31p graphs, tables. Order from OTS. $1.00. PB 131089

A method for the preparation of a reproducible barium titanate on a pilot plant scale is described. The method was developed after extensive laboratory study of variables in a calcination procedure. These variables are: raw materials, barium oxide to titanium oxide molarratio, calcination temperature, and the particle size distribution. Project 60112-G. Contract Nonr 1055(00), Technical report 12.

Radiation sensitive glasses. Final report covering the period from Jun 1952 to Aug 1953, by R.F. Humphreys and L. Reiffel. Armour Research Foundation, Chicago, Ill. Nov 1953. 162p diagrs, graphs, tables. Order from LC. Mi $7.80, ph $25.80. PB 128535

The best glasses developed on this program will permit the visual detection of approximately 500R under optimum conditions. Heat treatment techniques on high temperature compositions may well extend this range downward. The fading and dose-rate dependence of all glasses is, and will continue to be, a considerable problem. ARF Proj A031-4, Final report.

ORDNANCE AND ACCESSORIES

General specifications for the safety margins required for guided missile components, by Robert Lusser. U.S. Naval Air Missile Test Center, Point Mugu, Calif. Jul 1951. 70p graphs, tables. Order from LC. Mi $3.90, ph $10.80. PB 125090

The commonly used specification of uniformly assigned safety factors between stresses and strengths of components is entirely inadequate in the field of guided missiles. This is caused by the fact that the components must be developed to a very high degree if a reasonable over-all reliability of the missile is to be achieved. This report outlines the principles of a comprehensive, flexible method for specifying safety margins between the "strengths" of the components and the most probable "stresses" or conditions to which guided missiles will be subjected. GSR no. 23. NAMTC TR 84.

Ordnance inspection handbook on radiography. U.S. Ordnance Dept. May 1949. 112p photos, diagrs, graphs, tables. Order from LC. Mi $6.00, ph $18.30. PB 125025

1. Ordnance - X-ray inspection 2. Radiography 3. ORD M 608-3

Planning and conducting reliability test programs for guided missiles, by Robert Lusser. U.S. Naval Air Missile Test Center, Point Mugu, Calif. Jun 1952. 50p diagr, graphs, tables. Order from LC. Mi $3.30, ph $7.80. PB 125088

The desirability of conducting reliability test programs is, in principle, generally accepted. However, many people question whether such test programs can be performed economically and within the time limits set for the development of a guided missile. In this study it is shown (1) that achieving and maintaining a satisfactory over-all reliability program is largely a problem of planning and organization, (2) that the reliability test program should be started when the missile is in its preliminary design stages and should be conducted, at high priority, throughout the missile development and continued as long as the missile remains in production, and (3) that, to accelerate the growth of the over-all reliability, appropriate test priorities should be established within the test program. A variety of organizational concepts and tools are suggested that may help to solve the guided missile reliability problem economically and within a reasonable time. GSR no. 30. NAMTC TM 70.

Study of methods for achieving reliability of guided missiles, by Robert Lusser. U.S. Naval Air Missile Test Center, Point Mugu, Calif. Jul 1950. 83p diagr, graphs, table. Order from LC. Mi $4.80, ph $13.80. PB 125089

A general perspective of the theoretical, technical, psychological and organizational factors is presented by means of a case history of the German V-1 relative to its development, production and field use. It is shown what factors are responsible for either retarding or accelerating the development of guided missiles to the required status of reliability. New, practicable methods and means for attaining and maintaining the required over-all reliability of guided missiles are developed and presented herein. GSR no. 18. NAMTC TR 75.

PERSONNEL APTITUDE TESTING

Analysis of trouble-shooting behavior of radio mechanic trainees, by Joseph L. Saupe. U.S. Air Force. Air Research and Development Command. Air Force Personnel and Training Research Center. Personnel Research Laboratory, Lackland Air Force Base, Tex. Nov 1955. 38p photo, diagr, tables. Order from LC. Mi $3.00, ph $6.30. PB 125202

The approach followed in this investigation involved the analysis of observational records of trouble-shooting performance of persons trained in radio maintenance. In addition, tests were included of the knowledge of basic electronics which the student brings to the trouble-shooting situation. Thus, success in locating malfunctions could be compared in this study against both the trouble-shooting procedures employed by students and their scores on tests of electronic knowledge. Data were gathered by administering a written test of basic knowledge and a trouble-shooting performance test to a sample of 40 Air Force radio mechanic trainees. AF PTRC TN 55-47.

Procedure for estimating distribution and reliability characteristics of total scores on a newly assembled test from earlier item statistics, by Richard W. Highland. U.S. Air Force. Air Research and Development Command. Air Force Personnel and Training Research Center. Training Aids Research Laboratory, Chanute Air Force Base, Ill. Sep 1955. 25p tables (1 fold). Order from LC. Mi $2.70, ph $4.80. PB 125129

The present report points out that test items are generally drawn from a pool of items that have been tried out previously on similar classes, perhaps in several different tests. When this is true, one can use the past experience with these items to predict the average score and the spread of scores in any new test made up of such items. Predictions grow less accurate as conditions of training and testing grow more different between the first and the final uses of items. The method is not readily applicable to new courses, since it requires the items to have been previously administered to a group with a similar training background. One virtue of the technique as here developed, is that the computational processes are reduced to a minimum by a table and a step-by-step outline of procedures, so that verification in the field should be an easy process. Appendix B is included as a separate fold. table. Project no. 7714. AF PTRC TN 55-24.

Procedure for evaluating graduate research on the basis of the thesis, by Marion F. Shaycoft and James W. Altman. American Institute for Research, Inc., Pittsburgh, Pa. Oct 1955. 42p tables. Mi $3.30, ph $7.80. PB 124940

This report is concerned with the tryout of the Record Form and Rating Scale for Evaluation of Graduate Research on the Basis of the Research Report. The Record Form is a checklist of 46 effective research behaviors, Scores are obtained on the basis of the number of behaviors checked as having occurred, and the evaluator's judgment of the behavior's importance. In addition two separate ratings are required on each of four areas of research performance and on overall performance. The procedure was intended to free evaluation of research from contamination by such factors as local reputation of the person evaluated, halo, etc., and enable someone who has had no direct contact with the research to evaluate it. Each of the 60 theses was evaluated by the chairman of the thesis committee (Evaluator A), and by another evaluator (Evaluator B) who had no prior familiarity either with research or with the student. Project: NR 153-146. Seventh in a series of reports dealing with the evaluation and measurement of research performance. For reports 2-6 and 8 see PB 104943, 104944, 115818, 124867 and 124941.

Relation of format and administration to the characteristics of graphic rating scales, by Erwin K. Taylor and Roy Hastman. Personnel Research and Development Corporation and Western Reserve University. Psychological Research Services, Cleveland, O. Final report under Contract Nonr-1439(03). Order separate parts described below from LC, giving PB number of each part ordered.

Part I: Mar 1956. 76p graphs, tables. Mi $4.50, ph $12.30. PB 125565

One of the purposes of this study is to determine empirically in a controlled situation the relative values of graphic rating scales and the Stevens-Wonderlic format. It is the second purpose of this study to determine whether or not the claims made for supervised ratings are justified.

Part II: Mar 1956. 129p tables. Mi $6.30, ph $19.80. PB 125578

The objective of this research is the differential influence of rater characteristics on halo error in four kinds of graphic rating scale administration and comprises the following phases: 1. To obtain a sample of graphic rating scale evaluations under four different methods of scale administration. 2. To measure the degree of halo error which is present in these ratings. 3. To secure measures of rater characteristic predictors of the raters who have completed these ratings. 4. To relate these characteristic predictors to the halo demonstrated in the evaluations.

Standardization and validation of a test for selecting research personnel, by Marion F. Shaycoft and James W. Altman. American Institute for Research, Inc., Pittsburgh, Pa. Oct 1955. 86p tables. Order from LC. Mi $4.80, ph $13.80. PB 124941

The Test for Selecting Research Personnel consists of 150 multiple-choice items, each aimed at one of the critical requirements for scientific research personnel. The test was administered to about 1700 individuals (undergraduates, graduate students, and junior research personnel in government and industry). Most of the examinees were in the fields of chemistry, physics, and engineering. Various kinds of criterion data were obtained in a follow-up about a year later. Precautions were taken to insure against criterion contamination. Norms were established for eleven groups. Reliability and validity coefficients were determined. Revisions were made in the tests on the basis of item analysis data. Some small-scale supplementary studies were also carried out. Project: NR 153-146. Eighth in a series of reports dealing with the evaluation and measurement of research performance. For reports 2-7 see PB 104943, 104944, 104939, 115818, 124867 and 124940.

Technical school validity of the Airman Acitivity Inventory, by Leland D. Brokaw. U.S. Air Force. Air Research and Development Command. Air Force Personnel and Training Research Center. Personnel Research Laboratory, Lackland Air Force Base, Texas. Aug 1956. 12p tables. Order from LC. Mi $2.40, ph $3.30. PB 124789

Interest inventories have been widely used in civilian vocational counseling programs. The Airman Classification Battery hss no direct measure of job interests. An inventory is needed that will link the airman's job interests with the appropriate Air Force assignment. This study was performed to determine if a specially constructed Airman Activity Inventory could make this unique contribution to the Airman Classification Battery, in terms of prediction of technical school success. Samples from 13 technical schools deemed representative of six of the aptitude clusters were selected, and scores on experimental measures and the Airman Battery alike were correlated against final school grades. AD 098884. Project no. 7700, Task no. 77012. AF PTRC TN 56-109.

PHOTOGRAPHIC AND OPTICAL GOODS

Effectiveness of photoflash lamps for destroying dark adaptation, by R. Tousey. U.S. Naval Research Laboratory. Mar 1943. 10p photo, graphs, table. Order from LC. Mi $1.80, ph $1.80. PB 120601

Unclassified 9 Feb 1950. 1. Vision - Dark adaptation - Effect of light illumination 2. Night vision - Acuity - Effect of light flashes 3. NRL H 2034

Evaluation of contact lenses for general use in the Air Force, by Jerome A. Hirsch. U.S. Air Force. Air Research and Development Command. Wright Air Development Center. Aero Medical Laboratory, Wright-Patterson Air Force Base, Dayton, O. May 1956. 28p diagrs, table, graphs. Order from LC. Mi $2.70, ph $4.80. PB 128520

To determine the feasibility of contact lenses for aircrew members, a survey of the literature and existing data has been made. The history of contact lenses, contact lens composition, fitting techniques, optical principles, and indications for use are discussed. A comparison of the functions and relative merits of contact lenses and spectacle lenses are presented. It was found that contact lenses are superior to spectacle lenses in their ability to correct a greater variety of visual and ocular conditions. Because contact lenses usually cannot be tolerated more than four to six hours, they are not suitable for general use in their present state of development. Spectacle lenses are easier to fit, relatively low in cost, and adequately cover the majority of the eye conditions encountered in the Air Force. AD 107258. Project no. 7157, Task no. 71808. AF WADC TR 56-283.

Night visibility. Highway Research Board. 1955. 72p photos, drawings, diagrs, graphs, tables. Order as HRB Bul 127 from Highway Research Board, 2101 Constitution Ave., N.W., Washington 25, D.C. $1.20. PB 123943

Presented at the Thirty-fourth annual meeting, Jan 11-14, 1955. For earlier reports see PB 108433 and 115403. Contents: 1. Sign brightness and legibility, by Terrance M. Allen and Arthur L. Straub. - 2. Candle power of rear lights on trucks, by Edmund H. Ricker. - 3. Specifications and performance of new sealed-beam head lamp, by W.F. Sherman. - 4. Cooperative road tests of night

visibility through heat-absorbing glass, by Harry C. Doane and Gerald M. Rassweiler. - 5. Safety hazard of tinted automobile windshields at night, by Heinz Haber. - 6. Visual efficiency in monocular driving, by Thornton Shipley. - 7. Stray light in the eye, by Robert M. Boynton. HRB BUL 127. NRC 415.

Photography from the V-2 rocket at altitudes ranging up to 160 kilometers, by T. A. Bergstrath. U.S. Naval Research Laboratory. Apr 1947. 31p photos, map. Order from LC. Mi $3.00, ph $6.30. PB 122829

1. V-2 (Rocket) 2. Rockets - Photography 3. Photography, Aerial 4. NRL R 3083

Preparation of duplicate X-ray radiographs using calcium tungstate intensifying screens, by Herman F. Kaiser and Robert H. Hafner. U.S. Naval Research Laboratory. Jul 1941. 13p tables. Mi $2.40, ph $3.30. PB 122686

1. Radiography - Apparatus 2. Screens, Radiographic - Materials 3. Calcium-tungstate - Uses 4. Photography, X-ray 5. NRL M 1763

Studies of contrails from jet powered aircraft, by T.B. Smith and R.J. Diamond. Meteorology Research, Inc., Pasadena, Calif. Oct 1956. 48p photos, graphs. Order from LC. Mi $3.30, ph $7.80. PB 125103

A program was established at Edwards AFB to photograph condensation trails from a ground-based camera with 48 in. focal length lens. 45 flights consisting of 149 separate runs over the camera were made during the interval of February 1956 to 19 June 1956. Flights were made on a total of 33 days with a variety of aircraft including F-86, F-89, F-100, F-101, F-102, B-47 and B-66 types. Photographs were measured with a 20 power microscope, using the image size of the aircraft to convert the photographic dimensions to feet. Measurements were made on all photographs at 100 feet intervals behind the engine to 2500 ft. and at 200 feet intervals from 2500 ft. to the edge of the film. AD 110278. Contract AF 19(604)-1495, Final report. AF CRC TR 57-254.

Studies of semiconduction films, by L. Bartle and A.F. Turner. Bausch and Lomb Optical Co., Rochester, N.Y. May 1956. 19f diagr, table. Order from LC. Mi $2.40, ph $4.80. PB 128370

This final report is in two parts, the second being a summary of all research and development carried out during the two years of the contract. The first part deals with work conducted in the eighth and final period on the preparation and testing of radiation thermocouples employing vacuum evaporated films of simiconductors. With suitable preparation, these films yielded the high thermal emfs characteristic of the crystalline form of this class of materials. AD 102317. Plates are black and white negatives. Covers work from 23 Jan -22 Apr 1956 under Contract DA 44-009-ENG-2117.

PHYSICS

General

Approximation method with rational functions, by Nick De Claris. Massachusetts Institute of Technology. Research Laboratory of Electronics, Cambridge, Mass. Dec 1954. 29p diagrs. Order from LC. Mi $2.70, ph $4.80. PB 122850

1. Networks, Electrical - Synthesis 2. Mathematical functions 3. Mathematical equations and solutions 4. MIT RLE TR 287

Breathing vibrations of planarly isotropic square plates, by H.G. Baerwald and C. Libove. Brush Laboratories Company, Cleveland, O. Dec 1955. 80p diagrs (part fold), graphs (part fold), tables. Order from LC. Mi $4.50, ph $12.30. PB 124217

A thin flat planarly isotropic square plate vibrating in its own plane is studied theoretically. Natural frequency as function of Poisson's ratio, Young's modulus, density, and plate dimensions is computed for the two lowest "breathing" modes - i.e., modes that are symmetrical about the plate centerlines and diagonals. Possible extension of the methods of analysis to other modes is briefly indicated and preliminary results are given for one of these modes. A Rayleigh-type correction for finite thickness is given. Contract Nonr-1055(00), Technical report no. 8.

Combinational analysis. Part I: MacMahon's theory of distributions and symmetric functions. Section I: Algebraic theory of symmetric functions, by Jack Levine. North Carolina State College, Dept. of Engineering Research, Raleigh, N.C. Apr 1956. 289p tables. Order from LC. Mi $11.10, ph $44.10. PB 125630

Part I presents in a clear and detailed way, MacMahon's work on distributions and symetric functions. Two thirds of this section contains material new to the theory. Contract Nonr-870(00).

Compressibility and heat transfer of helium II, by Harold Forstat and Charles A. Reynolds. Connecticut. University, Storrs, Conn. Nov 1955. Nov 1955. 25p diagr, graphs, tables. Order from LC. Mi $2.40, ph $3.30. PB 122940

The thermomechanical effect operating in a closed system of helium II has been used to measure the compressibility of helium II. The results agree relatively well with those of other investigators who used other methods. The heat transfer of helium II in a packed column of rouge was measured and found to be similar to that found for a slit between two optically polished surfaces. Contract Nonr-127700, NR 016-418, Technical report no. 2.

Data smoothing, by F.P. Coffin, P.D. Crout and F.E. Bothwell. Massachusetts Institute of Technology. Radiation Laboratory, Cambridge, Mass. Jan 1945. 30p fold drawing, diagrs, graphs. Order from LC. Mi $2.70, ph $4.80. PB 124624

The behavior of two systems for smoothing data is discussed mathematically, and smoothing curves for two sets of radar azimuth data are calculated. A servo system, which duplicates physically the behavior of the better smoothing system, was constructed; smoothing curves for this system when operating on the same radar azimuth data were obtained experimentally and are shown. The "experimental" and "calculated" curves agree within engineering tolerances. Although this servo system was designed for smoothing radar azimuth data, it may be used on any type of data. Unclassified Dec 17, 1954. Contract OEMsr-262. NDRC Div 14. MIT Rad Lab 673.

Eigenfunction expansions associated with a non-self-adjoint differential equation, by Bernard Friedman and Luna Isaac Mishoe. New York. University. Institute of Mathematical Sciences. Division of Electromagnetic Research. 1954. 31p. Order from LC. Mi $3.00, ph $6.30. PB 123176

1. Equations, Differential 2. Mathematical equations and solutions 3. Asymptotic expansions 4. Contract AF 18(600)-367 5. NYU RR BR-4

Equivalent comparisons of experiments, by David Blackwell. Stanford University. Dept. of Statistics, Stanford, Calif. Aug 1952. 17p. Order from LC. Mi $2.40, ph $3.30. PB 124721

Sherman and Stein have shown that a method given by the author for comparing two experiments is equivalent, for experiments with a finite number of outcomes, to the original method introduced by Bohnenblust, Shapley, and Sherman. A new proof of this result is given, and the restriction to experiments with a finite number of outcomes is removed. A class of weaker comparisons--comparison in k-decision problems--is introduced, in three equivalent forms. For dichotomies, all methods are equivalent, and can be described in terms of errors of the first and second kinds. AD 201312. Technical report no. 13. Contract N6onr 251, T.O. III, NR-042993.

Gaseous-type cavitation in liquids, by Murray D. Rosenberg. Harvard University. Acoustic Research Laboratory, Cambridge, Mass. Aug 1953. 91f photos, drawing, diagrs, graphs, tables. Order from LC. Mi $5.40, enl pr $16.80. PB 128665

Experimental data are presented regarding the production and growth of gasesous-type (air-filled) bubbles by means of ultrasonic waves in liquids of different physical properties. Evidence is shown that the most logical sources of cavitation nuclei are foreign surfaces within the liquid, either colloidal (dust) particles or parts of the physical apparatus. Experimental apparatus is described for the focusing of sound waves, and the insertion and agitation of pure liquids in thin-walled flasks at the focus. The threshold for gaseous -type cavitation is measured as a function of viscosity, pulse length and ambient hydrostatic pressure. Finally a comparison between theoretical calculations and experimental results is presented. AD 34119. Contract N5 ori-76, T.O. X, NR 384-903. HU ARL TM 26.

Interpretation of the development of a perceptual set in s - r terms, by Delos D. Wickens. Ohio State University Research Foundation, Columbus, O. Sep 1952. 22p graphs, tables. Order from LC. Mi $2.70, ph $4.80. PB 128531

This report is an effort to interpret the development of certain types of perceptual biases in terms of modern stimulus-response theory, and thus to integrate this class of behavior with concepts that have been found to be widely useful in handling other kinds of behavior. The specific type of situation with which this theoretical formulation is concerned is that in which certain classes of stimuli are seen as being relevant to problem solution and others as irrelevant. The paper is concerned primarily with predicting what will happen when the subject is transferred to a new situation where opportunity for the operation of these relevancies and irrelevancies occur. Contract AF 18(600)-78. AF WADC TR 52-305.

Mass transfer cooling in a laminar boundary layer with constant fluid properties, by J.P. Hartnett and E.R.G. Eckert. Minnesota. University. Dept. of Mechanical Engineering. Oct 1955. 53p graphs. Order from LC. Mi $3.60, ph $9.30. PB 125105

Mass transfer or transpiration cooling offers great possibilities for maintaining tolerable surface temperatures on high-speed aircraft or on turbine blades. The present study is concerned with the prediction of heat transfer, skin friction, and required coolant flows for such transpiration-cooled surfaces. The solutions presented were collected in so far as possible from the literature, and were supplemented by new calculations where required for the case of the flat plate and plane stagnation flows. AD 77048. Technical report no. 4. Contract AF 18(600)-1226. AF OSR TN 55-375.

Natural convection heat transfer, two and three dimensional effects from flat plates, by Joseph Rutkowski. Wayne University, Dept. of Aeronautical Engineering, Detroit, Mich. May 1955. 20p graphs. Order from LC. Mi $2.40, ph $3.30. PB 124177

Natural convection heat transfer from heated flat plates was studied using a Mach-Zehnder interferometer. The edge effect was found to be almost independent of plate temperature, geometry, or inclination, and suitable corrections can be readily made from the reported data. Contract DA-20-018-ord-13356, Technical report 1.

On the torsional oscillations of a solid sphere in a viscous fluid, by G.F. Carrier and R.C. Di Prima. Harvard University, Cambridge, Mass. Contract N5 ori-07666. Order separate parts described below from LC, giving PB number of each part ordered.

Part I. Aug 1955. 14p tables. Mi $2.40, ph $3.30. PB 124287

Attention is centered on the torsional oscillations of a solid sphere in a viscous fluid which extends to infinity in all directions. AD 70620.

Part II. Jan 1956. 8p. Mi $1.80, ph $1.80. PB 124707

Briefly the problem is to compute the viscous torque acting on a solid sphere performing torsional oscillations of amplitude ϵ in a viscous fluid. The velocity field is given in terms of a circumferential velocity, v, plus a flow (described by a stream function ψ) in planes containing the axis of oscillation.

Stress analysis in visco-elastic bodies, by E.H. Lee. Brown University. Graduate Division of Applied Mathematics, Providence, R.I. Jun 1954. 17p diagrs. Order from LC. Mi $2.40, ph $3.30. PB 125199

The analysis of stress and strain in linear visco-elastic bodies is considered when the loading is quasi-static so that inertia forces are negligible. It is shown that removal of the time variable by applying the Laplace transform enables the solution to be obtained in terms of an associated elastic problem. Thus, the extensive literature in the theory of elasticity can be utilized in visco-elastic analysis. A convenient method of treating a common case of non-proportional loading, moving surface tractions, is demonstrated. This work is compared with related approaches to this problem in the literature of visco-elastic stress analysis. Contract Nord-11496. PA TR/8.

Tables of spherical Bessel functions and ordinary Bessel functions of order half an odd integer of the first and second kinds. (U), by Harold K. Crowder and George C. Francis. U.S. Aberdeen Proving Ground. Ballistic Research Laboratories, Aberdeen, Md. Aug 1956. 79p tables. Order from LC. Mi $4.50, ph $12.30. PB 125194

Spherical Bessel functions and ordinary Bessel functions of orders half an odd integer of the first and second kinds are tabulated for argument $x = 1(1)50$ and order $n = 1(1)f(x)$, where $f(x)$ is such that the table includes all values of the spherical Bessel function of the second kind with absolute values less than 10^{10}. Dept. of the Army project: 5B0306002. ORD project: TB 3-0007. APG BRL M 1027.

Theoretical strength of brittle solids as affected by the polarization of constituent ions, by W.A. Weyl. Pennsylvania State University. College of Mineral Industries, University Park, Pa. Jun 1955. 12p diagrs. Order from LC. Mi $2.40, ph $3.30. PB 123543

It is the object of this report to point out in qualitative fashion the change of the binding forces of solids under stress, a factor which weakens the attractive forces between ions more than would be expected from the increased distance on the basis of of Coulombs' law. Pages are numbered 88-97. Third report in a series of three reports (no. 64-66) on the Role of polarization in determining some thermal and mechanical properties of non-metallic solids. Contract N6 onr-269, T.O. 8, NR 032-264. ONR TR 66.

Ultrasonic propagation in solid materials. Scientific report no. 3 for the period 1 Jan 1956 - 31 Jan 1956 under Contract AF 19(604)-1423. Andersen Laboratories, Inc., West Hartford, Conn. Mar 1956. 9p diagrs. Order from LC. Mi $1.50, ph $1.50. PB 125052

During the third contractural period, research in connection with the subject contract was channeled into three directions. The first field of investigation was an attempt at evaluation of quartz blanks before fabriction. The expense of fabricating an ultrasonic delay line is centered largely in the precision required for grinding facets with precise angles and radii. It was attempted to correlate optical and ultrasonic inspection procedures with characteristics of completed delay lines. The third section of the report results from inability to obtain "fine structure" information on delay-line band width. In order to obtain the high-precision bandwidth measurements required, an improvement in the method for calibrating the 75 ohm step attenuators which are currently in standard use in the delay line field was developed. For reports 1 and 2 see PB 122349 and 122222. Contract AF 19(604)-1423, Scientific report 3. AF CRC TN 56-351.

Annual report, 5th, under Contract N6ori-144, T.O.I., NR 026-021 for period 1 Oct, 1954 to 30 Sep 1955, by C.E. Mandeville and others. Franklin Institute. Bartol Research Foundation, Swarthmore, Pa. Sep 1955. 231p diagrs, graphs, tables (part fold). Order from LC. Mi $10.20, ph 36.30. PB 124883

For 3rd - 4th reports see PB 114253 and PB 118392. Includes articles reprinted from various journals, prepared in connection with this contract. Contents: I. Nuclear physics: - A. Radioactivity. - (1) Resonance fluorescence studies, by F.R. Metzger. - (2). Radiations from four isotopes of platinum, by C.E. Mandeville, V.R. Potnis and John S. Burlew. - B. Polarization phenomena in nuclear collisions, by Leonard Eisenbud. - C. Large Van de Graaff generator, by C.P. Swann. - II. Cosmic rays: - A. Experimental investigations, by M.A. Pomerantz. - B. Theoretical investigations in cosmic rays, by W.F.G. Swann. - C. Emulsion exposures, by D.W. Kent, Jr.

Atomistic interpretation of the hardness of simple compounds, by A. Weyl. Pennsylvania State University. College of Mineral Industries, University Park, Pa. Jun 1955. 19p tables. Order from LC. Mi $2.40, ph $3.30. PB 123542

It has become obvious that the hardness of a crystal must depend upon a number of parameters and that it can not be expressed as a function of one factor, such as "degree of covalency", lattice energy, packing index, etc. The author assumes that the energy necessary to scratch the surface of a crystal increases with the screening demand of the strongest cations which have to be unscreened temporarily during this process. Pages are numbered 69-87. Second in a series of three reports (no. 64-66) on the Role of polarization in determining some thermal and mechanical properties of nonmetallic solids. For reports 64 and 66 see PB 122160 and 123543. Contract N6 onr-269, T.O. 8, NR 032-264. ONR TR 65.

Design of a high-intensity gamma irradiation facility, by Marvin C. Atkins. U.S. Air Force. Air Research and Development Command. Wright Air Development Center. Materials Laboratory, Wright-Patterson Air Force Base, Dayton, O. Dec 1956. 54p photo, fold. drawings, diagr. Order from OTS. $1.50. PB 131160

Construction plans have been prepared for a gamma irradiation facility capable of handling 100,000 curies of cobalt-60. In a facility built according to these plans, the radioactive source would be stored in a water well located in a 12 x 12 foot irradiation room. The source would rest on a platform in the well and be lifted up into the irradiation room for all experiments. The facility would be built underground with almost all shielding being provided by the natural earth. Normal laboratory utilities are provided in the plans, with valves and switches located on a control panel in an adjacent building. A closed circuit television system would be installed for viewing of experiments with the source in the operating position. Experimental apparatus would be equipped with suitable instruments so that general purpose manipulators would not be required. Six construction drawings are included in this report. AD 110542. Project 7360, Task 73607. Covers work from Dec 1954 - Mar 1956. AF WADC TR 56-45-2.

New tables of Mie scattering functions for spherical particles. Part 3: Values of amplitude functions a_m and b_m for refractive index n = 1.44 and for size parameters α - 0(0.1)30, by Rudolph Penndorf and Bernice Goldberg. U.S. Air Force. Air Research and Development Command. Cambridge Research Center. Geophysics Research Directorate, Cambridge, Mass. Mar 1956. 254p. Order from OTS. $6.00. PB 131282

Tables are given for the real and imaginary parts of the complex amplitude functions a_m and b_m. They are the basic values for the computation of Mie scattering coefficients. The computations have been carried out with the IBM 701 electronic data processing machine. AD 98769. For Parts 5-6 see PB 114180 and PB 121905. AF GRD P 45. AF CRC TR 56-204(3).

Quarterly progress report no. 17 under Contract N5 ori-07856 for period Apr-Jun 1955. Massachusetts Institute of Technology. Solid-state and Molecular Theory Group, Cambridge, Mass. Jul 1955. 43p table. Order from LC. Mi $3.30, ph $7.80. PB 124677

Contents: Behavior of energy bands near points of degeneracy, by G.F. Koster. - Energy bands in graphite, by F.J. Corbató. - Augmented plane wave method as applied to sodium, by M.M. Saffren. - Augmented plane wave method as applied to chromium, by M.M. Saffren. - Augmented plane wave method for iron, by J.H. Wood. - Electronic structure of the V-center in KCl, by L.P. Howland. - Lithium hydride molecule, by A.M. Karo and A.R. Olson. - Doubly excited states of the hydrogen molecule, by H.A. Aghajanian. - Electronic energy of the OH molecule, by A.J. Freeman. - Polarization effects in the fluorine ion, by L.C. Allen. - Atomic wave functions, by R.K. Nesbet. - One-center method for molecular problems, by L.C. Allen and R.K. Nesbet. - Configuration interaction and paired-electron bonds, by R.K. Nesbet. - Electron-lattice interactions, by T.D. Schultz.

Review of the theory of deuteron stripping at low and intermediate energies, by W. Tobocman. Princeton University. Institute for Advanced Study, Princeton, N.J. Jul 1955. 93p graphs. Order from LC. Mi $5.40, ph $15.30. PB 124252

One of the most useful approximations for dealing with nuclear interactions is to assume that any two nuclei have well defined radius of interaction R such that when the separation of the two nuclei exceeds R they do not interact and when their separation is smaller then R they interact very strongly. This assumption reduces the situation to a two body problem in which the boundary conditions at the radius of interaction remain to be specified. The use of such a theory to analyze nuclear reactions can give us information about average or total properties of nuclear states like total energies, spins, and parities. Since the wave function of a nucleus has a tail, a small part of the time the nucleus is split into two parts which are relatively far from each other. As a consequence, it is possible for a second nucleus to interact directly with only a portion of the first nucleus. In particular if the two nuclei meet at an instant when the first nucleus is separated into two portions, the second nucleus may capture one portion of the first, causing the other portion to be liberated. This type of interaction we will call a stripping reaction. The discussion is limited to the dp stripping reaction, but the application of our results to other kinds of stripping reactions is quite simple. Appendix A: Some perturbation expressions for the theory of nuclear reactions. - Appendix B: The Butler expression for the dp cross section.

Separation of isotopic mixtures by means of ultrasonic radiation, by Charles A. Boyd, Joseph O. Hirschfelder and Charles F. Curtiss. Wisconsin. University. Naval Research Laboratory, Madison, Wis. Jan 1951. 37p photos, diagrs, tables. Order from LC. Mi $3.00, ph $6.30.
PB 123587

The report is in three sections. Section 1 summarizes a literature survey and presents all of the known treatments of the effect of sound on mixtures. Section 2 presents the theoretical treatment of isotope separations by ultrasonic radiation. Section 3 presents the verification of experiments which have been discussed in the literature and have been described as producing separation. In the case of separation in liquid solutions it was found that the effects were due to thermal diffusion rather than ultrasonic separation and this is also apparently true in the case of gas diffusion. Task WIS-2. Contract Nord 9938, Summary report.

Two problems in the theory of the slowing down of neutrons by collisions with atomic nuclei, by Nils Svartholm. Chalmers University of Technology, Gothenburg, Sweden. 1955. 17p. Order from LC. Mi $2.40, ph $3.30. PB 122884

The moderating properties for neutrons of materials containing light atomic nuclei are usually described in terms of neutron distribution functions with time, energy, velocity direction and space coordinates as independent variables. The distribution functions are governed by transport equations which are essentially continuity equations including certain assumptions concerning the elementary processes occurring to the neutrons, such as scattering and capture. Though the transport theory of neutrons is in some respects simpler than the transport theory of gases, only very few problems permit rigorous treatment. Two such problems, previously dealt with in R. Marshak's well known article in Rev. Mod. Phys. (1947), will be investigated anew in the present paper. Avd. allmänna vetenskaper 10. Chalmers University of Technology, Gothenberg, Sweden. Transactions no. 164.

PHYSIOLOGY

Heat stresses and strains of summer training at the Marine Corps Recruit Depot, Parris Island, S.C., by Harwood S. Belding, David Minardi, Jacob E. Wiebers and Donald M. Ross. Pittsburgh. University. Graduate School of Public Health. Dept. of Occupational Health, Pittsburgh, Pa. Jan 1956. 54p photos, diagr, graphs, tables. Order from LC. Mi $3.60, ph $9.30.
PB 125177

In consideration of problems resulting from conduct of military training in hot weather, a Heat Study Team staffed by the University of Pittsburgh and the Naval Medical Research Institute spent four weeks at the Marine Recruit Training Depot, Parris Island, South Carolina during the summer of 1955. Observations were focused on a squad of eight recruits from a newly formed recruit platoon. Physiological responses of these men were observed and their exposure to heat was measured while they engaged in normal training activities and in standardized marches. Data are reported on heat production of the men at various activities. These were used in connection with "Time Studies" to obtain estimates that daily heat production of recruits is about 4000 kilocalories. Elevations of heart rate and rectal temperature and measures of sweating indicated that the heat strain was "moderate" for fit, acclimatized, young men. Contract Nonr-115-406.

Physiological and pathological study of experimental immersion foot (prolonged exposure of a limb to cold short of freezing), by Hugh Montgomery. Pennsylvania. University. Philadelphia, Pa. Nov 1955. 4p. Order from LC. Mi $1.80, ph $1.80. PB 123996

Summary technical report for the period 1 Jul 1952-30 Jun 1956 under Contract Nonr-551(03). 1. Cold - Physiological effects 2. Cold - Exposure - Vasometer response 3. Cold - Exposure - Therapy

Supplement. Annual progress report for period 1 Jan - 30 Nov 1955 under Contract Nonr-551(03), NR 102-018, by Hugh Montgomery. Dec 1955. 4p diagr. Order from LC. Mi $1.80, ph $1.80. PB 123996s

Physiology of load carrying. X: Pack carrying in the desert, by Fred R. Winsmann and Farrington Daniels, Jr. U.S. Army. Quartermaster Research and Development Command. Environmental Protection Research Division. Quartermaster Research and Development Center, Natick, Mass. May 1956. 33p photo, diagr, graphs, tables. Order from LC. Mi $3.00, ph $6.30. PB 124962

The energy cost of walking, climbing, and carrying loads over three different types of desert terrain has been studied. The surfaces studied included level hard surface, level sandy surface, and sand dune slopes. Pulse rates and rectal temperatures were measured, along with oxygen consumption, as indicators of stress. It is expected that the quantitative measurements of heat production contained herein will be useful in the calculation of total heat load on a man under desert conditions. Project: 7-64-12-004. For parts 1, 8-9 and 11 see PB 113460, 112896, 122899 and 124865. QMC EP TR 28.

PSYCHOLOGY

Application of Heider's theory to the effect of perceived cooperation or competition on the transfer of hostility, by Joseph B. Margolin. New York University. New York, N.Y. Dec 1955. 9p. Order from LC. Mi $1.80, ph $1.80. PB 124620

Two aspects of social perception are discussed: 1. The effect of cooperative and competitive situations on the perception of social relationships with others. 2. The effects of perceived cooperative and competitive situations on the transfer of hostility. For other reports under this contract see PB 116346, 119157 and 119924, 126915, 124621. Contract Nonr 285(10).

Assimilation of sequentially-encoded information, by Irwin Pollack. U.S. Air Force. Air Research and Development Command. Human Factors Operations Research Laboratories, Bolling Air Force Base, Washington, D.C. Order separate parts described below from LC, giving PB number of each part ordered.

Part I: Methodology and an illustrative experiment. Sep 1952. 29p graphs, table. Mi $2.70, ph $4.80. PB 128521

This paper presents a methodology for verbal learning based on the theory of information. The approach allows an objective quantification, in units not specified to the particular experimental operations considered, of: (1) the learning materials employed (the informational input); (2) the information lost (the error output); and (3) the information gained (the difference between the informational input and information lost). AF HRRL MR 25, Part 1.

Part II: Effect of rate of information presentation. Sep 1952. 18p graphs, table. Mi $2.40, ph $3.30. PB 128522

The effect of three experimental variables upon immediate recall performance is considered. The three variables, which are suggested by the methodology of the theory of information, are: the rate of presentation of the recall materials; the length of the materials; and the number of possible alternatives per unit of the materials. The recall materials employed were spoken messages with each unit of a given message selected independently from a defined class of possible alternatives. Two aspects of recall performance were selected for analysis: average proficiency of performance and the variability in performance among subjects. The findings are interpreted to indicate a defined informational limit for recall performance which is a function of the encoding procedures employed. For Parts 3-5 see PB 117049, 113164, 114841. AF HRRL MR 25, Part 2.

Changes in visual performance after visual work, by James Deese. Johns Hopkins University, Baltimore, Md. Apr 1957. 29p. Order from OTS. 75 cents. PB 131258

This report critically reviews some of the experimental and field studies on the effects of prolonged visual work. It is pointed out in the report that there are two basically different kinds of visual work, one primarily involving search for infrequently occurring signals (vigilance tasks) and the other involving active continuous use of the oculomotor system and requiring more or less continuous mental operation (active tasks). The effects of work at these two types of tasks on the capacity for further visual work are studied. AD 118266. AF WADC TR 57-285.

Effect of induced aggressiveness on opinion change, by Walter Weiss and Bernard J. Fine. Boston University, Boston, Mass. Jun 1955. 18p tables. Order from LC. Mi $2.40, ph $3.30. PB 124932

1. Psychological tests 2. Group behavior - Tests 3. Public opinion - Influence factors 4. Contract Nonr-492(04), Technical report no. 2

Final report under Contract N5 ori-07635, NR 144-055, for period 15 Jun 1952 - 14 Jun 1955, by B.F. Skinner. Harvard University. Psychological Laboratories. Jun 1955. 2p. Order from LC. Mi $1.80, ph $1.80. PB 124010

Pigeon project. Continuation of work performed under Contract N5 ori-07631 (See PB 107724). 1. Reaction (Psychology) 2. Contract N5 ori-07635, NR 144-055, Final report

Legibility of type as function of stroke width, letter width, and letter spacing under low illumination, by Mason N. Crook, John A. Hanson and Alexander Weisz. Tufts College. Institute for Applied Experimental Psychology, Medford, Mass. Mar 1954. 40p tables. Order from LC. Mi $3.00, ph $6.30. PB 128525

The legibility of small type as a function of letter width, stroke width, and letter spacing was measured for capitals and lower case under low and high illumination. Experimental type approximating a 6-point Gothic style was designed for the purpose. Speed and accuracy scores were obtained on a letter crossout task in part of the experimentation, and on an oral reading task in the remainder. AD 56537. Second report. For 1st and 3rd reports see PB 107505 and 119251. Contract W33-038-ac-14559. Contract AF 33(616)-2018. AF WADC TR 53-440.

Masculinity - feminity in the free recall of a categorized stimulus word list, by W. A. Bousfield and B. H. Cohen. Connecticut. University, Storrs, Conn. Aug 1955. 9p tables. Order from LC. Mi $1.80, ph $1.80. PB 123448

1. Psychological tests 2. Words - Association - Effect of sex 3. Reaction (Psychology) - Effect of sex 4. Contract Nonr-631(00), Technical report 17.

Methods of reduction of psychological stress due to radiation, by Robert G. Smith, Jr. and John A. Cox, Jr. U.S. Air Force. Air Research and Development Command. Air Force Personnel and Training Research Center. Personnel Research Laboratory, Lackland Air Force Base, San Antonio, Tex. Feb 1957. 15p. Order from LC. Mi $2.40, ph $3.30. PB 127983

Recent extensive reviews of the scientific literature on stress are summarized in order to describe the state-of-the-art in this field. A survey of nuclear industries and laboratories was also conducted. AD 098922. Project 7734, Task 17103. AF PTRC TN 57-19.

Problems of rational group assembly exemplified in the medium bomber crew, by Thornton B. Roby. U.S. Air Force. Air Research and Development Command. Human Resources Research Center. Combat Crew Training Research Laboratory, Randolph Air Force Base, Tex. Jul 1953. 12p. Order from LC. Mi $2.40, ph $3.30. PB 125162

The report is intended to map out the formal problems relating to group assembly and to provide a notational network. Specific variables of skill or personality are treated as hypothetical examples. Project no. 511-023-003. AF HRRC RB 53-18.

Psychological aspects of cockpit design, a symposium report, by Malcolm L. Ritchie, Charles A. Baker and others. U.S. Air Force. Air Research and Development Command. Aero Medical Laboratory, Wright-Patterson Air Force Base, Dayton, O. Apr 1957. 144p photos, diagrs, graphs. Order from OTS. $3.75. PB 131189

Symposium: Problems and methods in cockpit research; problems and methods of whole-panel flight evaluation; whole-panel design objectives to be met in future aircraft. Contents: I. Introduction. - II. Development of integrated instrument panels at WADC, by John H. Kearns. - III. Development of integrated display panels in the Navy fixed-wing program, by Jesse Orlansky. - IV. Development of integrated display panels in the Navy rotary-wing program, by Paul Douglas Courtney. - V. Development of integrated display panels at Hughes Aircraft Company, by Stanley N. Roscoe. - VI. Research in the WADC instrument evaluation facility, by Malcolm L. Ritchie and Harold E. Bamford, Jr. VII. Cockpit research at Bell Helicopter Company, by William Guy Matheny. - VIII. Cockpit research at the Glenn L. Martin Company, by James R Skeen. AD 118079. Project 6190, Task 71573, 71556. AF WADC TR 57-117.

Studies of problem solving. Final report for the period 1 Sep 1951 - 30 Sep 1954, under Contract Nonr 225-02 (NR 150-104), by Donald W. Taylor. Stanford University. Dept. of Psychology, Stanford, Calif. Jan 1956. 6p. Order from LC. Mi $1.80, ph $1.80. PB 124703

The research consisted of a series of experimental studies concerned with problem solving and thinking and designed to supplement one another. The general purpose was to increase understanding of the fundamental factors and relations involved in the higher mental processes, and hence to make possible the more effective training of individuals in such processes. Technical reports and articles are listed. Research continued under Contract N6 onr-25125.

Studies on dark adaptation. Experiment IV: Effects of adaptation wavelength on wavelength sensitivity, by Joseph W. Wulfeck, Dorothea J. Crook and Patricia I. McBride. Tufts College. Institute for Applied Experimental Psychology, Medford, Mass. Dec 1954. 28p diagr, graphs, tables. Order from LC. Mi $2.70, ph $4.80. PB 125223

A modified Crozier-Holway discriminometer was used to take dark-adapted thresholds to monochromatic light at wavelengths 4000, 5100, 5900, and

6800 Å. 0.01 second thresholds to the same four wavelengths were taken after adaptation to 4.0 ft-L of each of the same wavelengths with narrower band-widths. Data are presented as ratios of wavelength adapted to dark-adapted thresholds. No clearcut evidence that adaptation to a given wavelength depresses sensitivity to that wavelength more than to any other was found. The most striking and practically significant result of the study was that adaptation to the longest wavelength (deep red light) appears to depress subsequent sensitivity across the spectrum. AD 71754. For Experiments I-III, see PB 125305. Final report for period 1 Sep 1953-30 Sep 1954 under Contract AF 30(602)-199. AF RADC TR 55-79.

RUBBER AND RUBBER PRODUCTS

Antiozidant properties of Tenamene II, by Seth Adams. U.S. Arsenal, Rock Island, Ill. Jan 1952. 33p photos, tables, graphs. Order from LC. Mi $3.00, ph $6.30. PB 123580

The antiozidant properties of Tenamene II, n, n'-di-sec-butyl-p-phenylenediamine, in various polymers, at low concentrations, under varying stresses, both static and dynamic, and under accelerated and outdoor test conditions, were determined by noting the time required for first cracks to appear under twenty magnifications. Project no. TB4-521A, Report no. 4. RIAL R51-5542.

Antiozidants for GR-S rubber, by W.J. Touhey. U.S. Arsenal, Rock Island, Ill. Jul 1953. 36p photos, tables. Order from LC. Mi $3.00, ph $6.30. PB 123581

The objective was to determine the ozone resistance imparted to GR-S rubber by various chemicals, waxes, and combinations of chemicals and waxes, A comparison between accelerated and outdoor ozone aging was made. The effect of rate of migration of the antiozidants to the surface of the vulcanizate was determined. A study of the effect of conventional rubber antioxidants on the antiozidant properties of Tenamene II (n, n'-di-sec-butyl-p-phenylenediamine) was made. Project no. TB 4-521A, Report no. 6. Dept. of the Army project: 593-15-008. Pages 3a, 3b and 3c omitted. RIAL R53-2824.

Government reports on rubber, by P.S. Greer and James Kanegis. Sep 1956. 27p. Order from OTS. 75 cents. PB 131096

For presentation at Joint Symposion of ACS Division of Chemical Literature and Rubber Chemistry, Atlantic City, Sep 19, 1956. 1. Rubber - Bibliography 2. Rubber - Research 3. Rubber, Synthetic - Research

Irradiation of polyvinyl methyl ether with electrons and gamma rays to form elastomers, by Dick Duffy. U.S. Naval Research Laboratory. Aug 1957. 35p diagr, graphs, tables. Order from OTS. $1.00. PB 131003

Polyvinyl methyl ether and mixtures of this ether with a variety of powdered fillers were irradiated with electrons from a Van de Graaff and gamma rays from cobalt-60. The fillers included carbon black, magnesia, silica, iron oxide, calcium phosphate, calcium carbonate, clay, zinc oxide, rutile, chromium sesquioxide, litharge, antimony trisulfide, zinc sulfide, barytes, zircon, calcium fluoride, antimony trioxide, zinc borate. The products swelled in the solvents of the crude ether. In particular, cold water swelled the products, which could be a serious limitation to many uses. Some liquids, such as straight chain hydrocarbon and caustic solution, did not effect the product appreciably. NRL R 4938.

STRUCTURAL ENGINEERING

Application of a new structural index to compare titanium alloys with other materials in airframe structures, by L.R. Jackson and S.A. Gordon. Battelle Memorial Institute. Titanium Metallurgical Laboratory, Columbus, O. Dec 1955. 33p diagrs, graphs (part col.), tables. Order from OTS. $1.00. PB 121605

The evaluation of structural materials for airframes is based on the ultimate strength/density ratio, the compressive yield strength/density ratio, and the structural indices for plates and columns. Structural indices developed for plate elements have been based on a formula which has predicted only the stress at which the first buckle occurs in each respective element. A new method of predicting the failing load of a section in compression was suggested in 1954 by R.A. Needham. His method has been used to develop a new structural index for the evaluation of the strength/density ratio of materials in compression. In this report this new structural index is compared with the results of compression tests on aluminum sections at room temperature. and similar tests on titanium-alloy angles and channels at room and elevated temperatures. Excellent agreement is obtained in all cases. Color is graphs will not reproduce. BMI TML R 24.

Influence of aerodynamic heating on the structural design of high-speed aircraft. Part III: Appraisal of three factors which affect thermal stresses, by L.A. Schmit and C.E. Stalzer. Massachusetts Institute of Technology. Aeroelastic and Structures Research Laboratory. Nov 1955. 111f diagrs, graphs, tables. Order from LC. Mi $6.00, enl pr $19.80. PB 128666

This report utilizes the methods and ideas described in Parts I and II to appraise the effects of three factors on the thermal stresses. One of these concerns the accuracy with which the temperature distribution must be determined. Another deals with the influence of the thermal properties of structural materials on the transient temperatures and hence on the thermal stresses. The third factor concerns the influence of the acceleration on the airplane. Numerical results have been obtained and the trends are indicated. Unclassified Aug 1, 1956. Contract NOas 54-831c. MIT ASRL TR 55-3, Part 3.

Investigation of methods for the retention of air frame control bearings in structural housings, by Abraham B. Asch. Asch Equipment Co., Dayton, O. Jan 1957. 274p photos, drawings, diagrs, graphs, tables (1 fold). Order from OTS. $4.75. PB 131068

The use and variety of special low weight retentions for air frame control bearings in aircraft structural housings has increased to an extent where standardization has become of concern to the Air Force. This report contains the results of the research by which such a standard may be arrived at. The report also describes the program to obtain the data needed for the selection of a standard retention for air frame control bearings in structural housings. At the start of the program a survey was made of twenty-six aircraft companies to determine existing practices. A compilation was made of the different types of retentions to be tested, and the different materials to be used. From among these, one retention and four materials were chosen to be used for the initial study of the methods for testing a retention. AD 97333. Project 1315, Task 13422. Covers work from Jun 1952 - Oct 1956 under Contract AF 33(616)-156. AF WADC TR 56-502.

Review for engineering registration. 2: Civil engineering, by Leslie A. Clayton and Marvin A. Ring. Oregon State College. Engineering Experiment Station, Corvallis, Ore. Jul 1956. 124p diagrs, graphs, tables. Order from Oregon State Engineering Experiment Station, Corvallis, Oregon. $1.25. PB 124300

This publication is the second in a series of circulars designed to assist the graduate engineer in reviewing engineering subject matter in order to prepare for registration examinations. As in the first publication of the series, most of the illustrative problems are taken from recent examination of the Oregon State Board of Engineering Examiners. A list of textbook references is included at the end. O EES C 21.

Survey and analysis of the vapor transmission properties of building materials, by H.M. Whippo and B.T. Arnberg. Colorado. Engineering Experiment Station, Boulder, Colo. Jan 1955. 126p graphs, tables. Order from OTS. $3.25. PB 131219

To provide useful information for engineers concerned with the control of humidity in buildings, this investigation was undertaken to determine the basic criteria which govern the transmission of water vapor through building materials and to correlate currently available data related to the permeability of such materials to the passage of water vapor in a manner most useful to the engineer. Contract NOy-73224, Final report no. 1.

TRANSPORTATION EQUIPMENT

Aeronautics

Aircraft

U.S. Navy aircraft fire fighting and rescue manual, a manual on operational practices in rescue and extinguishment for U.S. Naval and Marine air stations and facilities. U.S. Bureau of Aeronautics. Jan 1956. 241p photos, drawings, diagrs (part col.), tables. Order from OTS. $6.25. PB 121332

Color will not reproduce. 1. Fire fighting equipment 2. Fire fighting equipment - Airplanes 3. Fire extinction 4. Rescue equipment, Crash 5. NAVAER 00-80R-14.

Engines and Propellers

Aerodynamic theory of a supersonic propeller, by Donald Earl Ordway. Cornell University. Graduate School of Aeronautical Engineering, Ithaca, N.Y. Jun 1956. 178f diagrs, graphs, tables. Order from LC. Mi $8.10, enl pr $28.80. PB 128376

A supersonic propeller with blades attached to an infinite cylinder as a hub is studied. The forward speed is subsonic but the relative speed at each section is supersonic. The lightly-loaded blades are presented by a surface distribution of appropriate "modified" sources in a fashion similar to ordinary supersonic thin-wing theory. These sources are found by approximating the exact potential for a constant-strength compressible source traveling along a helical path. By properly dividing up the area of integration over the sources in the "forward Mach cone", the usual relationship between the source strength and boundary condition is found directly without recourse to Green's theorem. AD 89498. Contract AF 18(600)-1523. AF OSR TN 56-287.

Application of the closed cycle principle to aircraft auxiliary power plants. Vol. V: Cooling problems, by W. Spillmann. Escher Wyss Engineering Works, Ltd., Zurich, Switzerland. Jul 1956.

27p diagrs, graphs,(part fold). Order from LC. Mi $2.70, ph $4.80. PB 125206

The closed-cycle power plant which can work at any altitude and supply full sea level power independent from the ambient pressure necessarily has to transfer heat to the surrounding atmosphere. For very high altitudes and extreme flight speeds the cooling problem is studied in this report, using fundamental calculations for a number of cooling methods. A constant power output plant has been envisaged as an energy source to drive aircraft accessories (electric generator) in a plane or missile travelling at 100,000 ft. with M. 4. AD 97351. Contains technical note 4 as an integral part of the main "Technical Report", Vol. I and II. EW report no. Sp.-Ak-56-025. Contract AF 61(514)-854. AF OSR TR 56-49.

Theoretical investigation of the flutter characteristics of compressor and turbine blade systems, by Frank Lane and Chi Teh Wang. New York University. College of Engineering, New York, N.Y. Apr 1954. 250p diagrs, graphs, tables. Order from LC. Mi $11.10, ph $37.80. PB 125213

The problem of blade-row flutter is attacked in four phases. In Part I, the equations of motion are formulated for a single rotating blade at the flutter condition with provision for centrifugal effects, blade twist, rotary inertia due to flexure, and radially varying section properties. In Part II, a simple relation is proved to exist between the motions of all the blades of a blade row at flutter under any conditions of flow as well as any form of interblade coupling, with the sole restriction that the phenomenon be satisfactorily represented by a linear analysis. This analysis is restricted at first to the condition of infinite rotor inertia and is then extended to allow for the possibility of oscillation of the entire rotor in the rotational direction. In accordance with the "equivalent blade" concept, the aerodynamics problem of determining the oscillatory lift and moment is formulated in Part III for low-incidence flutter of a blade-row in incompressible flow. Actual aerodynamic coefficients are determined numerically for a two-dimensional blade row configuation having unit gap-chord ratio and -45° stagger. These air forces as well as some found by previous investigators for the unstaggered condition are applied in Part IV to the flutter analysis of simplified blade row with results which support fully the analysis of Part II, and which exhibit certain characteristics of physical significance as well. AD 76425. Project 3066, Task 70150. Contract AF 33(616)-25. AF WADC TR 54-449.

Instruments

Comparative evaluation of three approaches to helicopter instrumentation for hovering flight, by J.S. Sweeney, A.W. Bailey and J.F. Dowd. U.S. Naval Research Laboratory. Jun 1957. 34p photos, diagrs, graphs, tables. Order from OTS. $1.00. PB 121979

An investigation was carried out to examine the relative effect on hovering precision of three methods of processing and displaying helicopter flight information. The helicopter dynamics were simulated on an analog computer. The display systems studied were (a) Conventional--helicopter attitude and groundspeed displayed on separate indicators, (b) Integrated--attitude and groundspeed information combined into a single display, and (c) Quickened--attitude and other derivatives summed to a single indication of groundspeed through appropriate feedback circuitry. NRL R 4954.

Devices for measurement of rotor hot-spot temperatures of aircraft generators by means of thermocouples, by J.R. Barnum, O.E. Buxton, J.M. Nau and W. Robinson. Ohio State University Research Foundation, Columbus, O. Nov 1953. 23p drawings (1 fold). Order from LC. Mi $2.70, ph $4.80. PB 128526

A method has been developed for transmitting the e.m.f. of iron-constantan thermocouples installed in a machine member, rotating at speeds from 1200 to 10,000 rpm, to a stationary high speed potentiometer recorder. Temperature measurements so obtained are accurate within 2°F. Mercury is used as a fluid conductor between rotating and stationary elements of thermocuple circuits. The construction and dimensional limitations of the basic coupling element are described. The design details of a device, 3-1/4 in. in diameter and 5-1/4 in. long, for six thermocouples, and of a device with integral circuit selector, 3-1/4 in. in diameter and 9-3/8 in. long, for 24 thermocouples are given. AD 29975. Covers work performed from Jun 1951 to Jun 1953 under Contract AF 33(038)-19842. AF WADC TR 53-485.

Investigation of materials for electrical thermal cyclic de-icing pads, by Paul R. Ginnings, Arthur L. Stube and Frank A. Jeffries. Goodyear Tire and Rubber Co., Akron, O. Apr 1957. 81p photos, drawing, diagrs, graphs, tables. Order from OTS. $2.25. PB 131070

A survey of available and suitable materials for use in leading edge electrical thermal cyclic de-icing pads has been made. Materials for use as electrical insulation, thermal insulation, and conducting circuits were investigated as to properties relevant to their end use and to their compatibility with other materials. A metal-faced de-icing pad was fabricated on the basis of the materials survey and has been tested at the NACA Lewis Flight Propulsion Laboratory with very satisfactory results. AD 118216. Project no. 6152, Task no. 61394. Contract AF 33(616)-257. AF WADC TR 57-41.

Aerodynamics

Papers presented at the joint session of the flight test techniques and wind tunnel and model testing panels. Advisory Group for Aeronautical Research and Development. Jun 1955. 186p drawing, photos, diagrs, graphs (Text in French and English). Order as Agard AG 18/P8 from National Advisory Committee for Aeronautics, 1512 "H" Street, N.W., Washington, D.C. PB 123185

Contents: 1. Modern trands in dynamic stability analysis and experiment, by H. Guy Stever and others. - 2. Investigation of some longitudinal stability and control troubles at high subsonic speeds, by E. Billion. - 3. Interpretation of wind-tunnel data in terms of dynamic behavior of aircraft at high angles of attack, by Ralph W. Stone, Jr. - 4. On-line automatic data reduction at the Arnold Development Center, by David F. Taylor. - 5. Comparaison de mesures en vol et en souffleries portant sur les charactèristiques d'un avion dans le subsonique éléve, by F. Vinsonneau. - 6. Some comparisons between wind tunnel model and flight test results on aircraft at high angles of attack, by R.R. Duddy. - 7. Icing experiments in flight and comparisons with wind tunnel testing, by D. Fraser. AG 18/P8.

Theoretical investigation of some boundary layer and heat transfer problems connected with hypersonic wind tunnel nozzles, by Paul A. Libby and Luigi Napolitano. Polytechnic Institute of Brooklyn. Dept. of Aeronautical Engineering and Applied Mechanics. Jul 1955. 69p graphs. Order from LC. Mi $3.90, ph $10.80. PB 124646

Several problems associated with hypersonic wind tunnel nozzles are studied theoretically. The numerical results are applied to arbitrary, but typical stagnation conditions and to the pressure distributions corresponding to the two possible subsonic effusors of the E-2 nozzle of the Gas Dynamics Facility of the Arnold Engineering Development Center. The turbulent and laminar heat transfer have been computed. Contract AF 18(600)-1007. AF AEDC TR 55-51.

Rockets and Jet Propulsion

Contributions to jet pump theory, by H.B. Helmbold. Wichita. University. School of Engineering, Wichita, Kans. Contract Nonr 201 (01). Order separate parts described below from LC, giving PB number of each part ordered.

Part II: Integral relations on mixing processes. Jun 1953. 11p diagr. Mi $2.40, ph $3.30. PB 124626

Engineering study 106. 1. Pumps, Jet - Theory

Part III: Simplified theory of mixing-zone spreading, Jul 1953. 20p diagrs, graphs (1 fold), tables. Mi $2.40, ph $3.30. PB 124625

Engineering study 107. Part of this report may not reproduce well. 1. Pumps, Jet - Theory

Experimental investigation of the effect of inlet ducts on the performance characteristics of a pulse jet, by John G. Wilder, Jr. Cornell Aeronautical Laboratory, Inc., Buffalo, N.Y. Jul 1949. 32p photos, drawing, graphs, table. Order from OTS. $1.00. PB 131166

In an effort to understand the effect of an inlet duct on the performance of a pulse jet engine and if possible find a means of rectifying any detrimental effects, a theoretical and experimental research program was undertaken by the Cornell Aeronautical Laboratory, Inc. for the Office of Naval Research under Project Squid, Task Order 1. This report covers the first phase of the experimental work using an 8" McDonnel pulse jet engine with various lengths of inlet ducts as a test vehicle and essentially presents the test results with a few pertinent comments. Contract N6 ori-119, T.O. 1. CAL 29-M.

Nose cone antenna for the aerobee rocket, by Howard J. Jackson and Harold D. Smith. New Mexico. College of Agriculture and Mechanic Arts. Physical Science Laboratory, State College, N. Mex. May 1956. 18p photos, drawings, diagrs, graph. Order from LC. Mi $2.40, ph $3.30. PB 125078

For 2nd-3rd reports under this contract see PB 122373 and 123163. 1. Antennas, Rocket - Performance 2. Antennas, Rocket - Design 3. Antennas, Rocket - Radiation patterns 4. Contract AF 19(604)-409, Scientific report no. 4 5. AF CRC TN 56-677

Rocket motor flame light intensity versus time, by R.G. Cumings, N.W. Guinard and F.E. Boyd. U.S. Naval Research Laboratory. Jul 1957. 12p photos, diagrs, graphs, table. Order from OTS. 50 cents. PB 131037

Rocket motor flame intensity versus time varies for different combinations of fuels and oxidizers. Consistent variance of the intensity modulation for different fuel-to-oxidizer ratios is noted in liquid oxygen mixtures. Experiments to correlate sound modulation with light intensity modulation show no detectable correlation. NRL R 4959.

Land Transportation

Application of pneumatic dunnage. U.S. Quarter-

master Research and Development Command. Utah General Depot. Quartermaster Storage Operations Research Team, Ogden, Utah. Mar 1956. 66p photos, tables. Order from OTS. $1.75. PB 121550

The purpose of the program was: 1. To conduct a demonstration encompassing the operational application of pneumatic dunnage units to various and many of the more difficult dunnaging problems; 2. To indicate to representatives of the Transportation Corps and the Association of American Railroads that pneumatic dunnage is a potentially safe, efficient, and economical method for shoring supplies, thereby gaining concurrence from the Transportation Corps in the Quartermaster Corps objective of standardization of the pneumatic dunnage units; 3. To obtain concurrence from the transportation Corps and Association of American Railroads to conduct additional testing involving "long distance" shipping of supplies wherein pneumatic dunnage is employed as a method of load staying. Project 8-54 -MHE-U.

Parking and buying habits of a store's customers, by Lawrence C. Pendley. Highway Research Board. 1956. 25p graphs, tables, map. Order as HRB SR-11-C from National Research Council Publications Office, 2101 Constitution Ave., N.W., Washington 25, D.C. 60 cents. PB 124657

Supplement to Special report 11, Parking as a factor in business. (PB 113730). Presented at the Thirty-fifth annual meeting, Jan 17-20, 1956. 1. Automobiles - Parking 2. Transportation - Economics 3. Business centers - Decentralization 4. HRB SR-11-C 5. NRC 273C

WATER SUPPLY, SANITATION AND PUBLIC HEALTH

Investigation of freezing as a means of obtaining fresh water from salt water. Final report, by Emory N. Kemler, Millard H. LaJoy and others. Minnesota. University. Dept. of Mechanical Engineering. Institute of Technology, Minneapolis, Minn. Jan 1955. 55p graphs, tables. Order from OTS. $1.50. PB 121959

This report summarizes the experimental results of tests made on methods of desalting ice made of brine having an initial salinity of 35,000 ppm. Of the many mechanical methods for separation of pure ice crystals from the saline solution, it appears that compression is the only one which has possibilities of reducing the salinity to the range desired in a single step. The experimental work included studies of the use of compression, blowing with air, vacuum, washing, draining and selective freezing. Desalting by freezing, utilizing pressure to force out the brine trapped or present between ice crystals, appears to be competitive with vapor compression systems insofar as energy requirements under certain conditions are concerned. The equipment should be somewhat simpler and not subject to the scaling problems of vapor compression equipment. AD 78695. Cooperative research program: University of Minnesota Department of Mechanical Engineering and U.S. Naval Civil Engineering Research and Evaluation Laboratory. Contract NOy 73248, Final Report.

MISCELLANEOUS

Annual report, 6th, for the calendar year 1955, by Dorill B. Wright. U.S. Inter-Laboratory Committee on Facilities, U.S. Naval Research, Development, and Test Stations in California. May 1956. 18p graph, table. Order from LC. Mi $2.40, ph $3.30. PB 122211

A list of meetings held, and of projects undertaken and completed. Members of the Committee represent U.S. Naval Air Missile Test Center, Point Mugu, U.S. Naval Civil Engineering Research and Evaluation Laboratory, Port Hueneme; U.S. Navy Electronics Laboratory, San Diego; U.S. Naval Ordnance Laboratory, Corona; U.S. Naval Ordnance Test Station, China Lake; U.S. Naval Radiological Defense Laboratory, San Francisco.

Report of NRL progress. U.S. Naval Research Laboratory. Sep 1957. 47p. Order from OTS. $1.25. Also available on annual subscription rate of $10 a year in the U.S.A., foreign rate $13 a year. PB 131326

Contents: Altitude facility of the Flame Laboratory, by William W. Balwanz. - Automatic digital curve plotter, by M.P. Young, P.P. Bey and G.F. Walls. - Synchronization of a high-speed camera by frame-counting technique, by D.A. Hall and S.O. Bailey. - Scientific program: Problem notes: Applications research: Effects of stressing the human element in a man-machine target tracking system... Utility of quickening techniques in improving performance with a binary display. - Astronomy and astrophysics: Radiation from Mars and Jupiter at 3.15 cm. - Chemistry: Effect of the cation on micelle formation by sulfonates in benzene... Heat transfer studies on a forced convection loop with biphenyl and biphenyl-polymers ... Weak intermolecular interactions and the infrared spectra of binary solutions. - Mechanics: New disposable breech helium gun fires 6-gram projectiles up to 26,500 fps... Conditions for crack arrest in two cases with riveted stiffeners... Analysis of pressure data from pulsejet combustor system. - Metallurgy and ceramics: Effect of atmosphere on creep rupture ... Development of laboratory scale test methods for mass transfer ... Notch ductility of normalized HTS steel. - Nuclear and atomic physics: Radiation protection afforded by barracks and underground shelters. - Optics: Comparison of conventional dot-dash visual telegraphy

with a two-color system. - Solid-state physics: Superconductivity of thorium ... Refrigeration by the suppression of superconductivity. - Sound: Feasibility of using wholly external ultrasonics to measure fluid flow within thick-walled metal pipes. Supporting techniques: Optical method for transforming Cartesian to polar coordinates. - Published reports. Papers by NRL staff members. - Patents.

Rural settlement patterns in the United States as illustrated on one hundred topographic quadrangle maps, selected and arranged by the Committee to Select Topographic Quadrangles Illustrating Cultural Geography, Division of earth sciences. National Research Council. 1956. 58p colored map. Order as NRC 380 from National Research Council Publication Office, 2101 Constitution Ave., N.W., Washington 25, D.C. $1.50. PB 124014

Color in map will not reproduce. 1. Sociology, Rural 2. Population, Agricultural - Analysis 3. Maps, Topographic - Uses 4. NRC 380

Special conference on industry planning for the continuity of production in the event of enemy attack, a report of the proceedings. U.S. Dept. of Commerce. Business and Defense Services Administration. 1957. 36p photos, map. Order from OTS. 50 cents. PB 131300

Contents: Welcome, by Frederick H. Mueller. - BDSA's mission, by H.B. McCoy. - The problem, by William E. Haines. - Symposium on company plans. - A case history. - Defense through deterrents, by Arthur S. Flemming. - Panel discussion: Further measures to facilitate continuity of production, by Edwin B. George, Shaw Livermore, Richard F. Sentner.

ATOMIC ENERGY COMMISSION REPORTS

Reports may be purchased in accordance with instructions on the inside front cover of the U. S. GOVERNMENT RESEARCH REPORTS. As PB numbers are not indicated, order by series and number. These reports may also be consulted at any AEC Depository Library. A list of these libraries may be obtained from the U. S. Department of Commerce, Office of Technical Services, Washington 25, D. C.

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Biology and Medicine

Second All-Union conference on photosynthesis, (January 21-26, 1957). Summaries of papers, by Division of Biological Sciences, Academy of Sciences USSR and Faculty of Soil Biology of the M. V. Lomonosov State University, Moscow. Translated by: Consultants Bureau, Inc. 107p. Order from OTS. 60 cents. AEC-tr-2872

Radiation effects on a pneumococcal infection produced by subcutaneous injections into white mice, by William E. Clapper and Grace H. Meade. Lovelace Foundation for Medical Education and Research, Albuquerque, N. Mex. Oct. 1953. Contract AT(29-1)-1242, Report No. 1. 44p. Order from LC. Mi $3.30, ph $7.80. AECU-3267

Biology Research Annual Report - 1956, by The Staff of the Biology Operation. Hanford Atomic Products Operation, Richland, Wash. Jan. 4, 1957. Contract W-31-109-Eng-52. 234p. Order from OTS. $1.25. HW-47500

Quarterly Progress Report for period ending Dec. 31, 1953. California. Univ., Los Angeles. Jan. 10, 1954. Decl. Mar. 6, 1957. Contract AT-04-1-Gen-12. 129p. Order from LC. Mi $6.30, ph $19.80. UCLA-276

Summary of certain trends in soil-plant relationship studies of the biological availability of fallout debris, by H. Nishita, and K. H. Larson. California. Univ., Los Angeles. School of Medicine. July 28, 1957. Contract AT (04-1)-Gen-12. 65p. Order from OTS. 40 cents. UCLA-401

Estimated radiation dosage in man from administered morphine-N-methyl-C^{14}, by B. M. Tolbert. Univ. of California. Radiation Lab. Berkeley, Calif. June 1957. Contract W-7405-Eng-48. 7p. Order from OTS. 15 cents. UCRL-3806

Metabolism of thorium^{230} (ionium) administered by intratracheal injection to the rat, by Robert G. Thomas. Rochester, N. Y. Univ. Dec. 1956. Contract W-7401-Eng-49. 26p. Order from LC. Mi $2.70, ph $4.80. UR-480

Effects of noise in blast-resistant shelters, by F. G. Hirsch and others. Sandia Corp. Albuquerque, New Mex. June 25, 1957. 41p. Order from OTS. 30 cents. WT-1180

Chemistry—General

Analysis of boron trichloride, by Charles M. Judson. Columbia Univ., New York. Div. of War Research. May 1944. Decl. Feb. 14, 1957. Contract W-7405-Eng-50. 10p. Order from LC. Mi $1.80, ph $ 1.80. A-1267

Conversion of $(CH_3)_2O.BF_3$ to BF_3, by Abraham D. Kirshenbaum and Clyde A. Hutchison. Columbia Univ., N. Y. Div. of War Research. Nov. 1944. Decl. Feb. 12, 1957. Contract W-7405-Eng-50. 148p. Order from LC. Mi $7.50, ph $24.30. A-2121

Tentative dye works processes for the production of uranium trioxide and uranium dioxide, by C. W. Maynard. Du Pont de Nemours (E. I.) and Co., Jackson Lab., Wilmington, Del. Feb. 1943. Decl. Feb. 13, 1957. 7p. Order from LC. Mi $1.80, ph $ 1.80. A-2920

Zirconium-precipitation pilot plant, by G. T. Parish and others. Mass. Inst. of Tech., Oak Ridge, Tenn. Engineering Practice School. Sept. 1950. Changed from Official Use Only June 28, 1956. 16p. Order from LC. Mi $2.40, ph $3.30. AECD-3742

Aluminum nitrate process for the conversion of tuballoy tetrafluoride (UF_4) to tuballoy peroxide (UO_4), by E. J. Lord and others. Tennessee Eastman Corp., Oak Ridge, Tenn. Aug. 1945.

Decl. Dec. 21, 1955. Contract W-7401-Eng-23. 2p. Order from LC. Mi $ 1.80, ph $1.80. AECD-3855

Measuring the moisture content of air, by Milton W. Davis. Sandia Corp., Albuquerque, N. Mex. May 1954. 8p. Order from LC. Mi $1.80, ph $1.80. AECU-3308

Detonation pressures of stoichiometric hydrogen-oxygen mixtures saturated with water at high initial temperatures and pressures, by Paul Lewis McGill and James A. Luker. Final report. Syracuse Univ., N. Y. Research Inst. Dec. 1956. Contract W-7405-Eng-26, Subcontract No. 548. 105p. Order from LC. Mi $5.70, ph $16.80. AECU-3429

Anodic overpotential for oxide-free zirconium, by Mario Maraghini and others. University of Oregon. Eugene, Oregon. May 1, 1957. Contract AT (45-1)-535. 12p. Order from OTS. 15 cents. AECU-3467

Minutes of conference on the chemistry of ruthenium, December 13 and 14, 1948, by H. Baxman, E. Turk, and L. Deutsch, comps. Decl. Feb. 14, 1957. Contract W-31-109-Eng-38. 53p. Order from LC. Mi $3.60, ph $9.30. ANL-4265

Mass transfer in a continuous-flow mixing vessel, by Virgil G. Trice, Jr. Argonne National Lab., Lemont, Ill. July 1957. Contract W-31-109-Eng-38. 43p. Order from OTS. 30 cents. ANL-5741

Reaction of steam with uranium and with various uranium-niobium-zirconium alloys at high temperatures, by Alexis W. Lemmon, Jr. Battelle Memorial Institute. Columbus 1, Ohio. June 1957. Contract W-7405-Eng-92. 76p. Order from OTS. 45 cents. BMI-1192

Primary shield materials study, prepared by G. P. Lewis. Combustion Engineering, Inc. Windsor, Connecticut. Sept. 1956. Decl. July 26, 1957. Contract AT (30- 3)-198. 30p. Order from OTS. 35 cents. CERD-S1C-106

Dry processing. 1. Chlorination. 11. Hydrofluorination. Quarterly report for period May 10 to August 10, 1951, by B. L. Baker. Oak Ridge National Lab., Tenn. Aug. 1951. Decl. Feb. 13, 1957. Contract W-7405-Eng-26. 9p. Order from LC. Mi $1.80, ph $1.80. CF-51-8-120

Absorption of waste hydrogen fluoride, by V. J. Reilly. Oak Ridge National Lab., Tenn. Dec.1951. Decl. Feb. 15, 1957. Contract W-7405-Eng-26. 10p. Order from LC. Mi $1.80, ph $1.80. CF-51-12-50

Dibutyl and monbutyl phosphate studies: The determination of micro-quantities of dibutyl phosphate in tributyl phosphate-amsco solutions, by C. E. Pietri. Oak Ridge National Lab., Tenn. June 1953. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 16p. Order from LC. Mi $2.40, ph $3.30. CF-53-6-166

Thorex process: Demonstration of feasibility of use of steam jets in internal decontamination of vessels, by W. T. McDuffee. Oak Ridge National Lab., Tenn. Feb. 1954. Changed from Official Use Only Dec. 21, 1956. Contract W-7405-Eng-26. 8p. Order from LC. Mi $1.80, ph $1.80. CF-54-2-101

HRP-CP: D_2O decomposition in chemical plant from beta and gamma radiation, by W. L. Carter. Oak Ridge National Lab., Tenn. Feb. 1955. Changed from Official Use Only Dec. 21, 1956. Contract W-7405-Eng-26. 9p. Order from LC. Mi $1.80, ph $1.80. CF-55-2-119

Flotation of fission product particles in the underflow retention tank, by H. O. Weeren. Oak Ridge National Lab., Tenn. Apr. 1955. Changed from Official Use Only Dec. 21, 1956. Contract W-7405-Eng-26. 5p. Order from LC. Mi $1.80, ph $1.80. CF-55-4-193

Operation of cooling system for underflow retention tank, by H. O. Weeren. Oak Ridge National Lab., Tenn. June 1955. Changed from Official Use Only Dec. 21, 1956. Contract W-7405-Eng-26. 10p. Order from LC. Mi $ 1.80, ph $1.80. CF-55-6-93

Preparation of thorium tetrachloride by chlorination of thorium oxide or thorium oxalate, by J. M. Chandler. Oak Ridge National Lab., Tenn. Aug. 1955. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 32p. Order from LC. Mi $3.00, ph $6.30. CF-55-8-130

Ore processing: resin test loop study-mechanical attrition tests; termination report, by J. C. Bresee and C. W. Hancher. Oak Ridge National Lab., Tenn. Sept. 1955. Changed from Official Use Only Dec. 20, 1956. Contract W-7405-Eng-26. 15p. Order from LC. Mi $2.40, ph $3.30. CF-55-9-10

Infrared absorption measurements indicating intermolecular association of water and hexone, by R. H. Moore. Hanford Works, Richland, Wash. Mar. 1950. Decl. Feb. 7, 1957. Contract W-31-109-Eng-52. 8p. Order from LC. Mi $1.80, ph $1.80. HW-17136

Determination of uranyl nitrate in pretreated hexone by infrared absorption measurements, by R. H. Moore. Hanford Works, Richland, Wash. Apr. 1950. Decl. Feb. 20, 1957. Contract W-31-109-Eng-52. 9p. Order from LC. Mi $1.80, ph $1.80. HW-17543

Physical properties of tributylphosphate-diluent solutions, by W. F. Johnson and R. L. Dillon. Hanford Atomic Products Operation, Richland, Wash. Sept. 1953. Decl. Feb. 7, 1957. Contract W-31-109-Eng-52. 24p. Order from LC. Mi $2.70, ph $4.80. HW-29086

Treatment procedures for high temperature reactor coolants, by R. H. Purcell. Hanford Atomic Products Operation, Richland, Wash. Gen. Elec. Co. Nov. 1955. Decl. Apr. 6, 1957. Contract W-31-109-Eng-52. 25p. Order from OTS. 35 cents. HW-37216 (Rev.)

Kinetic study of the fluoride catalyzed nitric acid dissolution of thorium metal, by C. A. Goodall and others. Hanford Atomic Products Operation, Richland, Wash. Nov. 1955. Decl. July 27, 1957. Contract W-31-109-Eng-52. 35p. Order from OTS. 35 cents. HW-40250

An extraction method for the determination of radioruthenium in organic samples, by D. W. Shannon. Hanford Atomic Products Operation, Richland, Wash. May 1957. Contract W-31-109-Eng-52. 16p. Order from OTS. 20 cents. HW-48736

Conversion chemistry of plutonium nitrate, by K. M. Harmon and W. H. Reas. Hanford Atomic Products Operation, Richland, Wash. Apr. 1957. Contract W-31-109-Eng-52. 25p. Order from OTS. 25 cents. HW-49597 A

Determination of radiocesium by complex cobalticyanide precipitation, by J. C. Langford. Hanford Atomic Products Operation, Richland, Wash. May 1957. Contract W-31-109-Eng-52. 35p. Order from OTS. 30 cents. HW-49668

Determination of uranium in irradiated thorium, by Bernice E. Paige, Parl Goris, and James E. Rein. Phillips Petroleum Co., Idaho Falls, Idaho. June 1957. Contract AT (10-1)-205. 8p. Order from OTS. 15 cents. IDO-14411

Kinetics of the reaction between calcium and water vapor, by Charles T. Apel and Harry J. Svec. Ames Lab., Iowa State College, Ames, Iowa. Mar. 1956. Contract W-7405-Eng-82. 66p. Order from OTS. 40 cents. ISC-777

Caustic fusion of columbite-tantalite concentrates with subsequent separation of niobium and tantalum, by James A. Pierret and Harley A. Wilhelm. Ames Lab., Iowa State College, Ames, Iowa. Aug. 1956. Contract W-7405-Eng-82. 27p. Order from OTS. 25 cents. ISC-796

Determination of lithium 6 by fission counting, by C. A. Kienberger, R. E. Greene, and F. S. Voss. Carbide and Carbon Chemicals Co., Union Carbide and Carbon Corp., K-25 Plant, Oak Ridge, Tenn. Aug. 1953. Decl. Aug. 12, 1957. Contract W-7405-Eng-26. 8p. Order from OTS. 25 cents. K-1042

Preparation of thorium oxalate and thorium ammonium oxalate powders of uniform particle size, by A. T. Grefig. Union Carbide Nuclear Co., Div. of Union Carbide Corp. Aug. 1957. Contract W-7405-Eng-26. 20p. Order from OTS. 20 cents. K-1314

An improved miniature mixer-settler, by B. L. Zebroski, and others. Knolls Atomic Power Lab., Schenectady, N. Y. Sept. 1951. Decl. Feb. 7, 1957. Contract W-31-109-Eng-52. 25p. Order from LC. Mi $2.70, ph $4.80. KAPL-609

Gamma beam attenuation applied to slurry fuel investigations, by J. R. Gould. Knolls Atomic Power Lab., Schenectady, N. Y. July 1956. Decl. May 14, 1957. Contract W-31-109-Eng-52. 16p. Order from OTS. 30 cents. KAPL-1601

Ultraviolet absorption spectra of diphenyl, monoisopropyl diphenyl, and irradiated mono-isopropyl diphenyl, by D. Dutina and J. T. Porter, II. Knolls Atomic Power Lab., Schenectady, N. Y. Mar. 1957. Contract W-31-109-Eng-52. 17p. Order from OTS. 20 cents. KAPL-1768

Belgian symposium on chemical processing I session: Engineering of radiochemical plants contactors and auxiliaries, by J. K. Davidson. Knolls Atomic Power Lab., Schenectady, N. Y. June 1957. Contract W-31-109-Eng-52. 47p. Order from OTS. 35 cents. KAPL-1808

Extraction of americium nitrate with tributyl phosphate, by K. A. Walsh. Los Alamos Scientific Lab. of the Univ. of Calif., Los Alamos, N. Mex. Jan. 1955. Decl. Aug. 6, 1957. Contract W-7405-Eng-36. 30p. Order from OTS. 35 cents. LA-1861

Preparation of high-purity calcium oxide, by Robert N. Roberts. Los Alamos Scientific Lab. of the Univ. of Calif., Los Alamos, N. Mex. Aug. 1957. Contract W-7405-Eng-36. 39p. Order from OTS. 30 cents. LA-1936

Determination of small amounts of thorium in the presence of uranium, titanium, and tungsten, by Hobart H. Willard, Arthur W. Mosen and Ross D. Gardner. Los Alamos Scientific Lab. of the Univ. of Calif. Los Alamos, N. Mex. June 1955. Decl. Aug. 12, 1957. Contract W-7405-Eng-36. 13p. Order from OTS. 30 cents. LA-1948

Activation of low-reactivity uranium dioxide particles, by R. J. Bard and others. Los Alamos Scientific Lab. of the Univ. of Calif. Los Alamos, N. Mex. Oct.1955. Decl. Aug. 15, 1957. Contract W-7405-Eng-36. 35p. Order from OTS. 40 cents. LA-1952

Determination of vanadium and chromium in alloys with uranium, by Hobart H. Willard and Owen H. Kriege. Los Alamos Scientific Lab. of the Univ. of Calif. Los Alamos, N. Mex. June 1956. Decl. July 30, 1957. Contract W-7405-Eng-36. 19p. Order from OTS. 35 cents. LA-1957

Basic chemistry of high temperature inorganic systems - semiannual progress report - July-December 1956, by S. J. Yosim and T. A. Milne. Atomics International. A Division of North American Aviation, Inc. Canoga Park, Calif. July 1957. Contract AT (11-1)-Gen-8. 52p. Order from OTS. 45 cents. NAA-SR-1925

Low-hafnium zirconium project progress report for January 16, 1950 to Mar. 16, 1950, by S. C. Ogburn, Jr. and H. M. Fisher. Appendix: Pilot plant operating manual; low-hafnium zirconium oxide by distillation process, by H. M. Fisher. Foote Mineral Co., Philadelphia, Pa. Mar. 1950. Decl. Feb. 7, 1957. Contract AT (30-1)-543. 27p. Order from LC. Mi $2.70, ph $4.80. NYO-1082

Effect of fluoride on the corrosion of stainless steel in the presence of excess Al^{+3} ion, by Arnold R. Olsen. Oak Ridge National Lab., Tenn. Mar. 1951. Decl. Feb. 7, 1957. Contract W-7405-Eng-26. 8p. Order from LC. Mi $1.80, ph $1.80. ORNL-947

Analytical chemistry division - semiannual progress report for period ending April 20, 1954. Oak Ridge National Lab., Tenn. July 1, 1954. Decl. Mar. 2, 1957. Contract W-7405-Eng-26. 53p. Order from LC. Mi $3.60, ph $9.30. ORNL-1717 (Rev.)

Extraction of chromium with trioctylphosphine oxide, by J. C. White and W. J. Ross. Oak Ridge National Lab. Oak Ridge, Tenn. n. d. Contract W-7405-Eng-26. 40p. Order from OTS. 30 cents. ORNL- 2326

An investigation of the relative migratory tendencies of the phenyl and p-tolyl groups in the pinacol rearrangement of the 1, 1, 2-triarylethylene glycol system, by Lawrence W. Kendrick, Jr. Oak Ridge National Lab. Oak Ridge, Tenn. n. d. Contract W-7405-Eng-26. 93p. Order from OTS. 50 cents. ORNL-2327

The heat, free energy, and entropy of the ferrate (VI) and selenide ions (thesis), by Robert H. Wood. California. Univ., Berkeley. Radiation Lab. Apr. 1957. Contract W-7405-Eng-48. 56p. Order from LC. Mi $3.60, ph $9.30. UCRL-3751

Nuclear-structure dependence of conversion coefficients in electric multipole transitions, by Sven Gosta Nilsson. California. Univ. Berkeley. Radiation Lab. June 1957. Contract W-7405-Eng-48. 33p. Order from OTS. 25 cents. UCRL-3803

Pilot scale tests of the preparation of uranium tetrafluoride from uranyl ammonium phosphate, by Don Phillips, H. M. McLeod, Jr., and J. S. Reece. Carbide and Carbon Chemicals Corp. Y-12 Plant, Oak Ridge, Tenn. Mar. 1949. Decl. Feb. 7, 1957.. Contract W-7405-Eng-26.18p. Order from LC. Mi $2.40, ph $3.30. Y-350

Use of boron as a complexing agent for fluoride in the recovery of uranium and the separation of boron from uranium, by J. M. Googin and T. P. Sprague. Carbide and Carbon Chemicals Corp. Y-12 Plant, Oak Ridge, Tenn. Aug. 1949. Decl. Feb. 11, 1957. Contract W-7405-Eng-26. 7p. Order from LC. Mi $1.80, ph $1.80. Y-479

Chlorination of purified zirconium oxide, by L. P. Twichell. Oak Ridge National Lab., Y-12 Area, Oak Ridge, Tenn. Mar. 1950. Decl. Feb. 7, 1957. Contract W-7405-Eng-26. 17p. Order from LC. Mi $2.40, ph $3.30. Y-574

Chemistry—Radiation and Radiochemistry

Chemistry division, Section C-1 summary report for July, August, and September 1951, by D. W. Osborne, ed. Argonne National Lab., Lemont, Ill. Nov. 1, 1951. Decl. Mar. 6, 1957. Contract W-31-109-Eng-38. 35p. Order from LC. Mi $3.00, ph $6.30. ANL-4740 (Rev.)

Chemistry division, Section C-1 summary report for October, November and December 1951, by D. W. Osborne, ed. Argonne National Lab., Lemont, Ill. Feb. 1, 1952. Decl. Mar. 6, 1957. Contract W-31-109-Eng-38. 44p. Order from LC. Mi $3.30, ph $7.80. ANL-4861 (Rev.)

Ratio of the (n, γ) to (n, 2n) cross section for thorium-232 bombarded with fission neutrons, by R. A. Hasse and P. Kafalas. Argonne National Lab., Lemont, Ill. July 1957. Contract W-31-109-Eng-38. 28p. Order from OTS. 75 cents. ANL-5762

Gamma irradiation of oils and plastics, by R. N. Lyon. Oak Ridge National Lab., Tenn. Apr. 13, 1949. Decl. Feb. 7, 1957. 7p. Order from LC. Mi $1.80, ph $1.80. CF-49-4-141

Determination of americium, by H. R. Schmidt. Hanford Works, Richland, Wash. Oct. 15, 1952. Decl. Feb. 28, 1957. Contract W-31-109-Eng-52. 3p. Order from LC. Mi $ 1.80, ph $ 1.80. HW-25927

Industrial application of gross fission products. Progress report, January 1 -- July 31, 1953. Job 24. Vitro Corp. of America, New York. Aug. 1953. Decl. with deletions Feb. 27, 1957. Contract AT (30-1)-850. 44p. Order from LC. Mi $3.30, ph $7.80. KLX-1394 (Del.)

Laboratory development of an ion exchange RaLa process, by R. E. Blanco. Oak Ridge National Lab., Tenn. June 1950. Decl. Feb. 28, 1957. Contract W-7405-Eng-26. 55p. Order from LC. Mi $3.60, ph $9.30. ORNL-620

Laboratory development of the MTR-RaLa process for the production of barium 140, by R. E. Blanco. Oak Ridge National Lab., Tenn. Aug. 1952. Decl. Mar. 2, 1957. Contract W-7405-Eng-26. 69p. Order from LC. Mi $3.90, ph $10.80. ORNL-1148

Radioisotope production and process development annual report for 1956, by H. E. Seagren. Oak Ridge National Lab., Oak Ridge, Tenn. n. d. Contract W-7405-Eng-26. 18p. Order from OTS. 20 cents. ORNL-2303

Bibliography of syntheses with carbon isotopes, 1953-54, compiled by Judd C. Nevenzel and others. California. Univ. West Los Angeles, School of Medicine. July 1957. Contract AT (04-1)-Gen-12. 172p. Order from OTS. $1.00 UCLA-395

Chemistry—Separation Processes for Plutonium and Uranium

Spectrographic method for the determination of molybdenum in UF_6, by E. H. Leslie and S. J. Kiehl, Jr. Carbide and Carbon Chemicals Corp. K-25 Plant, Oak Ridge, Tenn. Mar. 1946. Decl. with deletions Nov. 29, 1955. Contract W-7405-Eng-26. 13p. Order from LC. Mi $2.40, ph $3.30. A-3648 (Del.)

Clinton Laboratories Process Manual. Section 5. Metal solution, by W. E. Kirst. du Pont de Nemours (E. I.) & Co. TNX Div., Wilmington, Del. (1943). Decl. Feb. 12, 1957. 33p. Order from LC. Mi $3.00, ph $6.30. A-3789 (Sect. 5)

Oxidized fractional precipitation process on "unreduced" uravan acid leach "A" liquor. Tests 1-2-3 performed at Army Laboratory, May and June 1944 - L. K. Norton. Changed from Official Use Only Sept. 28, 1956. 14p. Order from LC. Mi $2.40, ph $3.30. AECD-3760

Preparation and some properties of a uranium hexafluoride-sodium fluoride complex, by Charles A. Horton and others. Carbide and Carbon Chemicals Div. K-25 Plant, Oak Ridge, Tenn. Nov. 1950. Decl. Feb. 9, 1956. Contract W-7405-Eng-26. 6p. Order from LC. Mi $1.80, ph $1.80. AECD-4236

Extraction of ionium by organic solvents, by Earl K. Hyde and Jean Tolmach. Argonne National Lab., Lemont, Ill. Aug. 1947. Decl. Feb. 12, 1957. Contract W-31-109-Eng-38. 19p. Order from LC. Mi $2.40, ph $3.30. ANL-4019

Recovery of neptunium-237 from special Hanford wastes, by H. B. Evans, W. B. Seefeldt, and H. H. Hyman. Argonne National Lab., Lemont, Ill. Mar. 1950. Decl. Feb. 12, 1957. Contract W-31-109-Eng-38. 26p. Order from LC. Mi $2.70, ph $4.80. ANL-4442

Effects of gamma irradiation on nitro alkane formation in the Purex and Redox systems, by P. Colombo. Brookhaven National Lab., Upton, N. Y. Apr. 1954. Decl. Feb. 14, 1957. Contract AT-30-2-Gen-16. 5p. Order from LC. Mi $1.80, ph $1.80. BNL-1811

Technical division-pilot plant section report for month ending January 15, 1949, by D. G. Reid. Oak Ridge National Lab., Tenn. Jan. 1949. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 31p. Order from LC. Mi $3.00, ph $6.30. CF-49-1-239

ORNL 25 recovery process development; fission burnup of enriched uranium used in process verification, by R. B. Briggs and A. M. Romm. Oak Ridge National Lab., Tenn. Apr. 1950. Decl. Feb. 15, 1957. Contract W-7405-Eng-26. 15p. Order from LC. Mi $2.40, ph $3.30. CF-50-4-1

Literature survey of dry fluoride methods for separating uranium, plutonium, and fission products, by R. E. Leuze. Oak Ridge National Lab., Oak Ridge, Tenn. May 1950. Decl. Aug. 21, 1957. 27p. Order from OTS. 35 cents.
CF-50-5-113

Concentration of TBP process raffinate and recovery of HNO_3 content, by T. A. Arehart. Oak Ridge National Lab., Tenn. July 1951. Decl. with deletions Feb. 14, 1957. Contract W-7405-Eng-26. 24p. Order from LC. Mi $2.70, ph $4.80.
CF-51-7-192 (Del.)

Pressure drop calculations for the off-gas system, by H. O. Weeren. Oak Ridge National Lab., Tenn. Sept. 1951. Decl. Feb. 20, 1957. Contract W-7405-Eng-26. 5p. Order from LC. Mi $1.80, ph $1.80.
CF-51-9-115

Special process equipment, by E. R. Edmondson. American Cyanamid Co., New York. Oct. 1951. Decl. Feb. 13, 1957. 52p. Order from LC. Mi $3.60, ph $9.30.
CF-51-10-71

Purex process flowsheet No. 3 in terms of pilot plant flows, by D. O. Darby. Oak Ridge National Lab., Tenn. Dec. 1951. Decl. Feb. 15, 1957. 4p. Order from LC. Mi $1.80, ph $1.80.
CF-51-12-158

Multi-stage evaporation of Purex acid wastes, by V. J. Reilly. Oak Ridge National Lab., Tenn. Jan. 1952. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 13p. Order from LC. Mi $2.40, ph $3.30.
CF-52-1-22

Primary extraction mechanisms of nitric acid and thorium nitrate extraction by TBP. Quarterly report, period Nov. 10, 1951-February 10, 1952, by J. E. Savolainen. Oak Ridge National Lab., Tenn. Feb. 1952. Decl. Feb. 16, 1957. Contract W-7405-Eng-26. 18p. Order from LC. Mi $2.40, ph $3.30.
CF-52-2-113

Solvent extraction: Interim "23" process-- quarterly report for period November 10, 1951 to February 10, 1952, by J. E. Conaway and A. C. Jealous. Oak Ridge National Lab., Tenn. Feb. 1952. Decl. Feb. 15, 1957. Contract W-7405-Eng-26. 12p. Order from LC. Mi $2.40, ph $3.30.
CF-52-2-149

Purex 1A column studies, by J. R. Flanary. Oak Ridge National Lab., Tenn. Apr. 1952. Decl. Feb. 20, 1957. Contract W-7405-Eng-26. 13p. Order from LC. Mi $2.40, ph $3.30.
CF-52-4-13

Plutonium extraction from K-25 pot residue. Quarterly report, period Feb. 10, 1952 - May 10, 1952, by J. R. Flanary. Oak Ridge National Lab., Tenn. May 14, 1952. Decl. Feb. 13, 1957. Contract W-7405-Eng-26. 6p. Order from LC. Mi $1.80, ph $1.80.
CF-52-5-113

Pulse generator development. Quarterly report, period February 10, 1952 to May 10, 1952, by J. E. Conaway and A. C. Jealous. Oak Ridge National Lab., Tenn. May 1952. Decl. Feb. 13, 1957. Contract W-7405-Eng-26. 14p. Order from LC. Mi $2.40, ph $3.30.
CF-52-5-202

Experimental comparison of the Higgins continuous ion exchanger with a conventional fixed-bed ion exchange column, by J. T. Roberts. Oak Ridge National Lab., Tenn. June 1952. Decl. Feb. 14, 1957. 18p. Order from LC. Mi $2.40, ph $3.30.
CF-52-6-107

Testing of a scale model $Ca(OH)_2$ contactor for Thorex solvent recovery. Quarterly report for August 1, 1952 to November 1, 1952, by P. A. Haas. Oak Ridge National Lab., Tenn. Nov. 6, 1952. Decl. Feb. 16, 1957. Contract W-7405-Eng-26. 11p. Order from LC. Mi $2.40, ph $3.30.
CF-52-11-3

Corrosion of stainless steels by HNO_3-HF-$Al(NO_3)_3$ mixtures during evaporation of plutonium product streams, by T. A. Arehart and T. C. Runion. Oak Ridge National Lab., Tenn. Nov. 1952. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 6p. Order from LC. Mi $1.80, ph $1.80.
CF-52-11-76

Monthly progress report for metal recovery plant, by R. E. Brooksbank, J. L. Matherne, and W. H. Lewis. Oak Ridge National Lab., Tenn. Feb. 16, 1953. Decl. Feb. 15, 1957. Contract W-7405-Eng-26. 9p. Order from LC. Mi $1.80, ph $1.80.
CF-53-2-135

Corrosion studies for the Thorex Process, by J. L. English. Oak Ridge National Lab., Tenn. Mar. 1953. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 22p. Order from LC. Mi $2.70, ph $4.80.
CF-53-3-246

Some instrumentation development for Thorex pulse columns, by Tom M. Gayle. Oak Ridge National Lab., Tenn. June 1953. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 14p. Order from LC. Mi $2.40, ph $3.30.
CF-53-6-105

Excer process: Preliminary investigation of electrolytic reduction and precipitation of uranium from

a nitrate system, by E. D. Arnold and E. O. Nurmi. Oak Ridge National Lab., Tenn. Nov. 1953. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 17p. Order from LC. Mi $2.40, ph $3.30. CF-53-11-191

Criteria for use in the estimation of the cost of shipping contaminated reactor fuels, by F. T. Binford. Oak Ridge National Lab., Tenn. May 1954. Decl. Aug. 15, 1957. Contract W-7405-Eng-26. 25p. Order from OTS. 35 cents. CF-54-5-229

Second cycle considerations for the Thorex process, by A. T. Gresky and R. P. Wischow. Oak Ridge National Lab., Tenn. Sept. 1954. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 12p. Order from LC. Mi $2.40, ph $3.30. CF-54-9-157

25 process assistance for period of January 21, 1955 to February 4, 1955, by Floyd L. Culler. Oak Ridge National Lab., Tenn. Feb. 15, 1955. Decl. with deletions Feb. 14, 1957. Contract W-7405-Eng-26. 8p. Order from LC. Mi $1.80, ph $1.80. CF-55-2-92 (Del.)

25 process assistance. Period of April 4, 1955 to April 15, 1955, by F. L. Culler. Oak Ridge National Lab., Tenn. Apr. 26, 1955. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 7p. Order from LC. Mi $1.80, ph $1.80. CF-55-4-149

25 process assistance. Period of May 2, 1955 to May 13, 1955, by F. L. Culler. Oak Ridge National Lab., Tenn. May 1955. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 9p. Order from LC. Mi $1.80, ph $1.80. CF-55-5-137

HR UO_2SO_4 blanket processing, unit operations development studies -- program statement, by P. A. Haas. Oak Ridge National Lab., Tenn. Aug. 1955. Decl. Feb. 16, 1957. Contract W-7405-Eng-26. 6p. Order from LC. Mi $1.80, ph $1.80. CF-55-8-54

Thorex pilot plant run HD-8 summary, by W. T. McDuffee, C. V. Ellison, and W. R. Whitson. Oak Ridge National Lab., Tenn. Aug. 1955. Decl. with deletions Feb. 14, 1957. Contract W-7405-Eng-26. 58p. Order from LC. Mi $3.60, ph $9.30. CF-55-8-180 (Del.)

Chemical Technology Division, unit operations section - monthly progress report for September 1955, by W. K. Eister. Oak Ridge National Lab., Tenn. Decl. August 15, 1957. Contract W-7405-Eng-26. 47p. Order from OTS. 45 cents. CF-55-9-150

Packaging of radioactive waste in ceramic bodies, by Lane Mitchell. Oak Ridge National Lab., Tenn. Jan. 1956. Contract W-7405-Eng-26. 24p. Order from LC. Mi $2.70, ph $4.80. CF-56-1-131

Component study for a 36-in. Higgins contactor: Problem statement, by C. W. Hancher. Oak Ridge National Lab., Tenn. Feb. 10, 1956. Decl. Mar. 16, 1957. Contract W-7405-Eng-26. 6p. Order from LC. Mi $1.80, ph $ 1.80. CF-56-2-48

Chemical Technology Division, Unit Operations Section -- Monthly progress report for February 1956, by W. K. Eister. Oak Ridge National Lab., Tenn. July 1956. Decl. July 27, 1957. Contract W-7405-Eng-26. 84p. Order from OTS. 60 cents. CF-56-2-154

Thorex process summary, February 1956, by A. T. Gresky. Oak Ridge National Lab., Tenn. Apr. 25, 1956. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 198p. Order from LC. Mi $9.30, ph $ 31.80. CF-56-2-157

UNOP "B" loop design modification for HRT-CP component and mock-up studies, by P. E. Novak. Oak Ridge National Lab., Tenn. Mar. 14, 1956. Contract W-7405-Eng-26. 13p. Order from LC. Mi $2.40, ph $3.30. CF-56-3-93

Chemical processing of two-region thermal breeder reactors, by F. R. Bruce. Oak Ridge National Lab., Tenn. Mar. 1956. Decl. July 27, 1957. Contract W-7405-Eng-26. 29p. Order from OTS. 35 cents. CF-56-3-129

Semimonthly report and manpower distribution for period, December 1 to 15, 1944, by S. G. English. Clinton Labs., Oak Ridge, Tenn. Dec. 1944. Decl. Feb. 16, 1957. Contract W-7405-Eng-39. 43p. Order from LC. Mi $3.30, ph $7.80. CL-P-368

Chemical research--production and extraction of plutonium; report for period ending November 11, 1943. Chicago Univ., Metallurgical Lab. Decl. Feb. 14, 1957. Contract W-7401-Eng-37. 28p. Order from LC. Mi $2.70, ph $4.80. CN-1071

Engineering studies of dry fluoride process, by D. S. Webster. Clinton Labs., Oak Ridge, Tenn. Jan. 1944. Decl. Feb. 14, 1957. Contract W-7405-Eng-39. 17p. Order from LC. Mi $2.40, ph $3.30. CN-1206

Solvent extraction process for concentration and isolation of product. Progress Report, by S. Lawroski, L. R. Dawson, and J. B. Tepe. Chicago Univ., Metallurgical Lab. Dec. 30, 1944. Decl. Feb. 16, 1957. Contract W-7401-Eng-37. 40p. Order from LC. Mi $3.00, ph $6.30. CN-2511

Determination of organic acids in process solutions, by R. J. Brouns and C. W. Pollick. Hanford Works, Richland, Wash. June 1949. Decl. Feb. 27, 1957. 11p. Order from LC. Mi $2.40, ph $3.30. HW-13280

Corrosion rates of mild and stainless steels exposed in Redox Stream IAW (ANL, June 1, 1948 flowsheet), by W. W. Koenig. Hanford Works, Richland, Wash. Nov. 1949. Decl. Feb. 20, 1957. Contract W-31-109-Eng-52. 15p. Order from LC. Mi $2.40, ph $3.30. HW-14923

Corrosion of stellite in MJ-1 streams, by W. W. Koenig. Hanford Works, Richland, Wash. Mar. 1950. Decl. Feb. 19, 1957. Contract W-31-109-Eng-52. 15p. Order from LC. Mi $2.40, ph $3.30. HW-17159

Solubility relationships of acidified stored metal wastes, by M. H. Curtis. Hanford Works, Richland, Wash. Mar. 1950. Decl. Feb. 20, 1957. Contract W-31-109-Eng-52. 19p. Order from LC . Mi $2.40, ph $3.30. HW-17226

Corrosion of austenitic stainless steel in mixed acids, by W. W. Koenig. Hanford Works, Richland, Wash. June 1950. Decl. Feb. 19, 1957. Contract W-31-109-Eng-52. 7p. Order from LC. Mi $1.80, ph $1.80. HW-17981

Sludge acidification, by M. K. Harmon. Hanford Works, Richland, Wash. June 1950. Decl. Feb. 19, 1957. Contract W-31-109-Eng-52. 12p. Order from LC. Mi $2.40, ph $3.30. HW-18149

Settling and dissolution characteristics and composition of Hanford waste metal sludge, by H. L. Brandt and N. A. Burns. Hanford Works, Richland, Wash. June 1950. Decl. Feb. 20, 1957. Contract W-31-109-Eng-52. 14p. Order from LC. Mi $2.40, ph $3.30. HW-18492

Scouting studies in a 5.05-inch diameter Redox pulse column, by W. S. Figg and J. G. Bradley. Hanford Works, Richland, Wash. Jan. 1951. Decl. Feb. 19, 1957. Contract W-31-109-Eng-52. 21p. Order from LC. Mi $3.00, ph $6.30. HW-19023

Decontamination of Redox feed solutions by super filtrol scavenging, by W. E. Roake and H. G. Hicks. Hanford Works, Richland, Wash. Sept. 1950. Decl. Mar. 4, 1957. Contract W-31-109-Eng-52. 18p. Order from LC. Mi $2.40, ph $3.30. HW-20287

Factors affecting the concentration of TBP plant wastes, by D. F. Shepard. Hanford Atomic Products Operation, Richland, Wash. Mar. 1953. Decl. Feb. 19, 1957. Contract W-31-109-Eng-52. 12p. Order from LC. Mi $2.40, ph $3.30. HW-27489

Resistance of various bearing materials to chemical attack by nitric acid and uranyl nitrate hexahydrate, by Norman D. Groves. General Electric Co. Hanford Atomic Products Operation, Richland, Wash. Mar. 1954. Decl. Feb. 19, 1957. Contract W-31-109-Eng-52. 20p. Order from LC. Mi $2.40, ph $3.30. HW-30500

Study of certain properties of ruthenium compounds found in the Redox process, by W. E. Gill and D. E. Wisehart. Hanford Atomic Products Operation, Richland, Wash. June 1954. Decl. Mar. 13, 1957. Contract W-31-109-Eng-52. 9p. Order from LC. Mi $1.80, ph $1.80. HW-32175

Performance of a plutonium reflux solvent extraction system, by B. F. Judson. Hanford Atomic Products Operation, Richland, Wash. Mar. 1957. Contract W-31-109-Eng-52. 13p. Order from OTS. 20 cents. HW-49441 A

Flow generation, measurement, and control, by J. Dunn and H. M. Jones. Hanford Atomic Products Operation, Richland, Wash. Apr. 1957. Contract W -31-109-Eng-52. 30p. Order from OTS. 25 cents. HW-49545 A

Sulfamic acid in the Redox process, by E. Zebroski and R. C. Feber. Knolls Atomic Power Lab., Schenectady, N. Y. July 1948. Decl. Feb. 26, 1957. Contract W-31-109-Eng-52. 20p. Order from LC. Mi $2.40, ph $3.30. KAPL-89

Redox Group monthly report for October 1948. Knolls Atomic Power Lab., Schenectady, N. Y. Oct. 26, 1948. Decl. Feb. 28, 1957. Contract W-31-109-Eng-52. 29p. Order from LC. Mi $2.70, ph $4.80. KAPL-M-R edox-2

Determination of ruthenium in plutonium, by Karl S. Bergstresser. Los Alamos Scientific Lab. of the Univ. of Calif. Los Alamos, N. Mex. Oct. 1956. Decl. Aug. 12, 1957. Contract W-7405-Eng-36. 24p. Order from OTS. 35 cents. LA-2025

Decontamination of uranium from fission products by the use of the uranyl oxalate precipitation reaction, B. L. Kelchner. Los Alamos Scientific Lab. of the Univ. of Calif. Los Alamos, N. Mex. May 1951. Decl. August 8, 1957. Contract W-7405-Eng-36. 26p. Order from OTS. 35 cents. LAMS-1245

Separation of U^{233} from thorium. Progress report for period July 1, 1945 to June 1, 1946, by F. L. Steahly. Clinton Labs., Oak Ridge, Tenn. July 26, 1946. Decl. Feb. 28, 1957. Contract W-7405-Eng-39. 66p. Order from LC. Mi $3.90, ph $ 10.80. MonN-125

Separations chemistry progress report for period April, May, June 1953, by E. E. Motta, D. W. Bareis, and D. D. Cubicciotti. North American Aviation, Inc., Downey, Calif. Sept. 1953. Decl. Mar. 2, 1957. Contract AT-11-1-Gen-8. 33p. Order from LC. Mi $3.00, ph $6.30. NAA-SR-273

PRE quarterly progress report, January-March, 1957, by D. I. Sinizer and others. Atomics International, A division of North American Aviation, Canoga Park, Calif. June 30, 1957. Contract AT 11-1-Gen-8. 44p. Order from OTS. 30 cents. NAA-SR-1922

Technical division intra-divisional memo-chemical development laboratory and semi-works for month ending June 30, 1949, by F. L. Steahly. Oak Ridge National Lab., Tenn. Aug. 18, 1949. Decl. Mar. 2, 1957. Contract W-7405-Eng-26. 47p. Order from LC. Mi $3.30, ph $7.80. ORNL-287

Orientation manual for 23 Pilot Plant, by D. E. Ferguson and R. J. Klotzbach. Oak Ridge National Lab., Tenn. Feb. 15, 1950. Decl. with deletions Mar. 7, 1957. Contract W-7405-Eng-26. 37p. Order from LC. Mi $3.00, ph $6.30. ORNL-564 (Del.)

Chemistry division quarterly progress report for period ending June 30, 1950. Oak Ridge National Lab., Tenn. Oct. 3, 1950. Decl. Mar. 4, 1957. Contract W-7405-Eng-26. 157p. Order from LC. Mi $ 7.50, ph $24.30. ORNL-795

Continuous solvent recovery process using pulse contacting column, by C. V. Ellison. Oak Ridge National Lab., Tenn. Apr. 1952. Decl. Mar. 5, 1957. Contract W-7405-Eng-26. 56p. Order from LC. Mi $3.60, ph $9.30. ORNL-1224

Laboratory development of the Thorex Process: Progress report, Oct. 1, 1952 to Jan. 31,1953, by A. T. Gresky and others. Oak Ridge National Lab., Tenn. Aug. 4, 1953. Decl. Mar. 12, 1957. Contract W-7405-Eng-26. 90p. Order from LC. Mi $4.80, ph $13.80. ORNL-1518

An analysis of power reactor fuel reprocessing, by F. L. Culler, Jr. and others. Oak Ridge National Lab., Tenn. March 1957. Decl. May 2, 1957. Contract W-7405-Eng-26. 129p. Order from OTS. 70 cents. ORNL-2265 (Del.)

Uranium recovery from wet process phosphoric acid, by Emil M. Stoltz, Jr. Blockson Chemical Co., Joliet, Ill. Feb. 23, 1953. Decl. May 3, 1956. Contract AT (49-1)-606. 45p. Order from LC. Mi $3.30, ph $7.80. RMO-2850

Recovery of uranium from Chattanooga shale. Part A. - Chlorination studies. Part B. - Leaching studies. Columbia Univ., New York. Mineral Beneficiation Lab. Status report for Sept. 1955. Changed from Official Use Only Jan. 28, 1957. Contract AT (49-1)-621. Part A -116p. Order from LC. Mi $6.00, ph $18.30. Part B - 195p. Mi $8.70, ph $30.30. RMO-4005(Pts. A and B.)

Distribution of Pu (VI) and Pu(III) in thenoyltrifluoroacetone-benzene-nitric acid mixtures, by D. L. Heisig and T. E. Hicks. California. Univ., Berkeley. Radiation Lab. Feb. 1952. Decl. Feb. 8, 1956. Contract W-7405-Eng-48. 16p. Order from LC. Mi $2.40, ph $3.30. UCRL-1664

Solubility of uranous p- toluenesulfinate and related compounds, by W. F. Arendale and C. F. Coleman. Oak Ridge National Lab. Y-12 Area, Tenn. Oct. 1950. Decl. May 29, 1956. Contract W-7405-Eng-26. 32p. Order from LC. Mi $3.00, ph $6.30. Y-664

Controlled Thermonuclear Processes

Nuclear safety tests on a proposed ball mill, by L. W. Gilley and Dixon Callihan. Oak Ridge National Lab., Tenn. Sept. 14, 1954. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 6p. Order from LC. Mi $1.80, ph $1.80. CF-54-9-89

Criticality Studies

Critical mass studies, Part I, by Clifford K. Beck, Dixon Callihan, and Raymond L. Murray. Carbide and Carbon Chemicals Corp., Clinton, Tenn. June 10, 1947. Decl. Aug. 13, 1957. 44p. Order from OTS. 35 cents. A-4716

Critical studies with G. E. type fuel elements, by F. H. Martens and G. F. Helfrich. Argonne National Lab., Lemont, Ill. Aug. 1953. Decl. Feb. 16, 1957. Contract W-31-109-Eng-38. 38p. Order from LC. Mi $3.00, ph $6.30. ANL-5108

Report on critical dimensions of cylinders, by Richard C. Keen. Oak Ridge National Lab., Tenn. Aug. 1954. Decl. July 27, 1957. 18p. Order from OTS. 30 cents. CF-54-8-221

Radiation and explosion hazards in the critical experiments, by W. J. Ozeroff. Hanford Works, Richland, Wash. Dec. 1949. Decl. Feb. 7, 1957. Contract W-31-109-Eng-52. 9p. Order from LC. Mi $ 1.80, ph $1.80. HW-15279

Metal-water reactions, by H. M. Saltsburg. General Electric Co. Knolls Atomic Power Lab., Schenectady, N. Y. April 1956. Decl. July 30, 1957. Contract W -31-109-Eng-52. 23p. Order from OTS. 25 cents. KAPL-1495

Water boiler calculations - 1, by E. F. Weisner. North American Aviation, Inc., Downey, Calif. July 1951. Decl. Feb. 27, 1957. 6p. Order from LC. Mi $1.80, ph $1.80. NAA-SR-Memo-48

Geology and Mineralogy

Reconnaissance of the Cameron area, Coconino County, Arizona, by David N. Hinckley. Grand Junction Operations Office. Grand Junction, Colorado. June 1955. 20p. Order from OTS. 25 cents. RME-81 (Rev.)

Airborne radiometric survey in the Lemitar-Ladron area, New Mexico, by Glendon E. Collins and Burton C. Smith. Denver Area Office, Denver, Colorado. June 1956. 9p. Order from OTS. 15 cents. RME-1073 (Rev.)

Health and Safety

Environmental radioactivity at Argonne National Laboratory. Report for the year 1953, by J. Sedlet and A. F. Stehney. Argonne National Lab., Lemont, Ill. Decl. Feb. 14, 1957. Contract W-31-109-Eng-38. 35p. Order from LC. Mi $3.00, ph $6.30. ANL-5289

Radiochemical analysis of Bravo shot soil samples, C. W. Thomas. Hanford Atomic Products Operation. Richland, Wash. Jan. 1957. Contract W-31-109-Eng-52. 20p. Order from OTS. 20 cents. HW-38987

Radiological development activities in the Health and Safety unit. Semiannual Progress Report for July-December 1952. Knolls Atomic Power Lab., Schenectady, N. Y. Jan. 1953. Decl. Feb. 7, 1957. Contract W-31-109-Eng-52. 58p. Order from LC. Mi $3.60, ph $9.30. KAPL-863

KAPL air cleaning program, by L. J. Cherubin and J. J. Fitzgerald. Knolls Atomic Power Lab., Schenectady, N. Y. Jan. 1954. Decl. Jun 23, 1957. Contract W-31-109-Eng-52. 30p. Order from OTS. 30 cents. KAPL-1014

Radiological development activities in the Health Physics unit. Semiannual progress report for July-December 1954. Knolls Atomic Power Lab. Schenectady, N. Y. Changed from Official Use Only June 3, 1957. Contract W-31-109-Eng-52. 26p. Order from LC. Mi $2.70, ph $4.80. KAPL-1313

Semiannual progress report of radiological development activities in the Health Physics unit, by L. J. Cherubin and J. J. Fitzgerald. General Electric Co. Knolls Atomic Power Lab., Schenectady, N. Y. July-December 1955. Decl. July 18, 1957. Contract W-31-109-Eng-52. 39p. Order from OTS. 45 cents. KAPL-1572

Measurement of the scatter component from a kilocurie Cobalt-60 source, by Leonard R. Solon, Keran O'Brien, and Hugo Di Giovanni. Health and Safety Lab., New York Operations Office, New York, N. Y. June 1957. 13p. Order from OTS. 20 cents. NYO-2065

Effect of air space on sub-fabric burns in swine, by K. M. Berkley. Rochester Univ. New York. June 1957. Contract W-7401-Eng-49. 30p. Order from OTS. 35 cents. UR-490

A method for concentrating leukocytes, by A. Mc Kane and M. Ingram. Rochester Univ. New York. June 1957. Contract W-7401-Eng-49. 21p. Order from OTS. 25 cents. UR-498

Metabolism of indium ^{114m} administered to the rat by intratracheal intubation, by Geneva A. Smith and others. Rochester Univ. New York. July 1957. Contract W-7401-Eng-49. 45p. Order from OTS. 35 cents. UR-500

Radiobiological resurvey of Rongelap and Ailinginae Atolls - Marshall Islands - October - November 1955, by the Staff of the Applied Fisheries Lab., Univ. of Washington, Seattle, Wash. Dec. 1955. Contract AT (45-1) 540. 90p. Order from OTS. 50 cents. UWFL-43

Effects of a nuclear explosion on typical liquefied petroleum gas (LP gas) installations and facilities, by Paul W. Tucker and George R. Webster. Liquefied Petroleum Gas Assoc., Chicago, Ill. and Federal Civil Defense Administration, Battle Creek, Mich. June 1957. 41p. Order from OTS. 35 cents. WT-1175

Instruments

A Kapitza type nickel cadmium battery. Report No. 1 for July 1955 to October 1955, by E. Willihnganz. Gould-National Batteries, Inc., St. Paul, Minn. Contract AT (30-1)-1831. 16p. Order from LC. Mi $2.40, ph $3.30. AECU-3407

A Kapitza type nickel cadmium battery. Quarterly report No. 2 for October 1955 to January 1956, by E. Willihnganz. Gould-National Batteries, Inc. St. Paul, Minn. Contract AT (30-1)-1831. 5p. Order from LC. Mi $1.80, ph $1.80. AECU-3408

A Kapitza type nickel cadmium battery. Quarterly report No. 3 for January 1956 to April 1956, by E. Willihnganz. Gould-National Batteries, Inc. St. Paul, Minn. Contract AT (30-1)-1831. 21p. Order from LC. Mi $2.40, ph $3.30. AECU-3409

A Kapitza type nickel cadmium battery. Quarterly report No. 4 for April 1956 to July 1956, by E. Willihnganz. Gould-National Batteries, Inc. St. Paul, Minn. Contract AT (30-1)-1831. 6p. Order from LC. Mi $1.80, ph $1.80. AECU-3410

Neutron-sensitive thermopile for reactor applications. Progress report No. 1, period ending December 1, 1956, by D. Robertson. Leeds and Northrup Co., Philadelphia, Pa. For Knolls Atomic Power Lab. Contract W-31-109-Eng-52, Sub contract K-302. 18p. Order from LC. Mi $2.40, ph $3.30. AECU-3416

Applicability of Lumicon and of X-ray fluoroscope technique to the study of ThO_2 slurry properties in stainless steel systems, by V. D. Allred and N. A. Krohn. Oak Ridge National Lab., Tenn. Feb. 1956. Contract W-7405-Eng-26. 5p. Order from LC. Mi $1.80, ph $1.80. CF-56-2-135

Simplified electronic circuit for ultrasonic inspection, by J. D. Ross and R. W. Leep. E. I. du Pont de Nemours & Co., Savannah River Lab., Augusta, Ga. Jan. 1956. Contract AT (07-2)-1. 16p. Order from OTS. 50 cents. DP-120

Slug manipulator, by M. T. Slind. Hanford Atomic Products Operation, Richland, Wash. Apr. 1953. Changed from Official Use Only Nov. 26, 1956. Contract W-31-109-Eng-52. 5p. Order from LC. Mi $1.80, ph $1.80. HW-27784

Development of a coincidence spectrometer and a method for analysis of cobalt-60, by H. R. Helmholz. Hanford Atomic Products Operation. Richland, Wash. Apr. 1957. Contract W-31-109-Eng-52. 67p. Order from OTS. 40 cents. HW-49718

The magnetic densitometer, by Robert H. Jones. Knolls Atomic Power Lab., Schenectady, N. Y. Dec. 1956. Decl. Feb. 28, 1957. Contract W-31-109-Eng-52. 16p. Order from LC. Mi $2.40, ph $3.30. KAPL-M-AME-3

Reactor safety progress report - August-December, 1956. Edited by: Norman C. Miller. Atomics International, a division of North American Aviation, Inc. Canoga Park, Calif. Aug. 15, 1957. Contract AT (11-1)-Gen-8. 21p. Order from OTS. 25 cents. NAA-SR-1954

Temporary and permanent effects produced by radiation on solids. Electron spin resonance apparatus for detecting radiation damage, by Ricardo C. Pastor, John Weil, and John Turkevich. Princeton Univ., New Jersey. Aug. 1956. Contract AT (30-1)-1158. 26p., 6 illus. Order from LC. Mi $3.90, ph $10.80. NYO-8006

A coaxial static-electromagnetic velocity spectrometer for high-energy particles, by Joseph J. Murray. California Univ., Radiation Lab., Berkeley, Calif. May 1957. Contract W-7405-Eng-48. 15p. Order from OTS. 20 cents. UCRL-3492

Large model test pump--history and test data, by J. D. Walls. Westinghouse Electric Corp. Atomic Power Div. Pittsburgh, Pa. Mar. 1952. Changed from Official Use Only Oct. 1, 1956. Contract AT-11-1-Gen-15. 40p. Order from LC. Mi $3.00, ph $6.30. WAPD-EM-169

Metallurgy and Ceramics

Feasibility of roll cladding titanium on steel. Summary report - November 1, 1955 to December 31, 1956, by R. F. Domagala and David W. Levinson. Illinois Inst. of Tech., Chicago. Armour Research Foundation. Dec. 31, 1956. Contract W-7405-Eng-26. Sub-contract No. 862. 71p. Order from LC. Mi $4.50, ph $12.30. AECU-3431

Plaster of Paris replicas of reactor fuel slugs, by George J. Deily. Argonne National Lab., Lemont, Ill. June 1953. Decl. Feb. 5, 1957. Contract W-31-109-Eng-38. 16p. Order from LC. Mi $2.40, ph $3.30. ANL-5055

Preferred orientation in 300°C rolled and in recrystallized uranium sheet, by Melvin H. Mueller, Harold W. Knott, and Paul A. Beck. Argonne National Lab., Lemont, Ill. Sept. 1953. Decl. Feb. 7, 1957. Contract W-31-109-Eng-38. 44p. Order from LC. Mi $3.30, ph $7.80. ANL-5117

Comparative analysis of ANL high purity uranium, by B. Blumenthal and H. H. Chiswik. Argonne National Lab., Lemont, Ill. Sept. 1953. Decl. Feb. 11, 1957. Contract W-31-109-Eng-38. 6p. Order from LC. Mi $1.80, ph $1.80. ANL-5124

Metallurgy division quarterly report - October, November, and December 1953. Argonne National Lab., Lemont, Ill. Dec. 31, 1953. Decl. Feb. 12, 1957. Contract W-31-109-Eng-38. 77p. Order from LC. Mi $4.50, ph $12.30. ANL-5234

High temperature strength zirconium and titanium base alloys for fuel element jacketing, by K. F. Smith and H. H. Chiswik. Argonne National Lab., Lemont, Ill. Feb. 1956. Decl. July 25, 1957. Contract W-31-109-Eng-38. 15p. Order from OTS. 30 CENTS. ANL-5339

Preliminary report on corrosion of uranium-base alloys containing niobium and zirconium, by Austin E. Dwight and A. H. Roebuck. Argonne National Lab., Lemont, Ill. Dec. 1954. Decl. August 20, 1957. Contract W-31-109-Eng-38. 20p. Order from OTS. 35 cents. ANL-5376

Irradiation of cast uranium-plutonium base alloys, by K. F. Smith and L. R. Kelman. Argonne National Lab., Lemont, Ill. May 1957. Contract W-31-109-Eng-38. 16p. Order from OTS. 20 cents. ANL-5677

Recovery of thorium and uranium from monazite sand. Vol. II. Final report by G. D. Calkins and others. Battelle Memorial Institute. Columbus, Ohio. Nov. 1950. Decl. August 16, 1957. Contract AT-30-1-Gen-228. 172p. Order from OTS. $1.10. BMI-243 A

Tungsten-arc welding of Ames thorium and thorium alloys, by R. E. Monroe, D. C. Martin, and C. B Voldrich. Battelle Memorial Inst. Columbus, Ohio. Jan. 1952. Decl. July 26, 1957. Contract W-7405-Eng-92. 30p. Order from OTS. 35 cents. BMI-721

Alloys of uranium with zirconium, chromium, columbium vanadium, and molybdenum, by H. A. Saller and F. A. Rough. Battelle Memorial Inst. Columbus, Ohio. Jun 1952. Decl. August 13, 1957. Contract W-7405-Eng-92. 35p. Order from OTS. 40 cents. BMI-752

Electroplating on thorium, by J. G. Beach and others. Battelle Memorial Inst., Columbus, Ohio. Jan. 1953. Decl. August 13, 1957. Contract W-7405-Eng-92. 16p. Order from OTS. 30 cents. BMI-802

Fabrication of thorium tubes, by H. A. Saller and J. R. Keeler. Battelle Memorial Inst., Columbus, Ohio. Jan. 1953. Decl. August 13, 1957. Contract W-7405-Eng-92. 7p. Order from OTS. 25 cents. BMI-805

Characteristics of the bond interface formed between Zircaloy 2 and uranium-12 w/o molybdenum, by Henry A. Saller, Stan J. Paprocki, and Edwin S. Hodge. Battelle Memorial Inst., Columbus, Ohio. Oct. 1955. Decl. Feb. 26, 1957. Contract W-7405-Eng-92. 45p. Order from LC. Mi $3.30, ph $7.80. BMI-1048

Resistance-welding methods for end capping PWR uranium oxide fuel rods, by David C. Martin, William H. Kearns, and Harry E. Pattee. Battelle Memorial Inst., Columbus, Ohio. Oct. 1955. Decl. July 27, 1957. Contract W-7405-Eng-92. 20p. Order from OTS. 30 cents. BMI-1049

Memo on work at Battelle during March, 1947. Battelle Memorial Inst., Columbus, Ohio. Mar. 1947. Decl. Feb. 18, 1957. Contract W-7405-Eng-92. 13p. Order from LC. Mi $2.40, ph $3.30. BMI-HRN-6

Electroplating of metals on thorium, by J. G. Beach, G. R. Shaer and C. L. Faust. Battelle Memorial Inst., Columbus, Ohio. Feb. 1949. Decl. July 27, 1957. Contract W-7405-Eng-92. 16p. Order from OTS. 30 cents. BMI-T-7

Jacketing of uranium for high-temperature service. I. High-temperature fuel rods, by H. A. Saller, and J. T. Stacy. Battelle Memorial Inst., Columbus, Ohio. Sept. 1950. Decl.Aug. 6,1957. Contract W-7405-Eng-92. 28p. Order from OTS. 30 cents. BMI-T-40

Chemical research: General for the period September 10, 1944 to October 10, 1944, by F. H. Spedding and H. A. Wilhelm. Iowa State College, Ames. Nov. 1944. Decl. Feb. 16, 1957. 20p. Order from LC. Mi $2.40, ph $3.30. CC-1980

Corrosion Newsletter No. 4, by J. L. English. Oak Ridge National Lab., Tenn. Aug. 18, 1951. Decl. Feb. 14, 1957. 25p. Order from LC. Mi $2.70, ph $4.80. CF-51-8-230

Extrusion cladding of zirconium to uranium, by R. J. Beaver. Oak Ridge National Lab., Tenn. Dec. 4, 1951. Decl. Feb. 15, 1957. Contract W-7405-Eng-26. 8p. Order from LC. Mi $1.80, ph $ 1.80. CF-51-12-48

Spot welding of stainless clad fuel elements, by G. M. Slaughter. Oak Ridge National Lab., Tenn. Dec. 1952. Decl. Feb. 14, 1957. 7p. Order from LC. Mi $1.80, ph $1.80. CF-52-12-109

Corrosion of types 347 and 309 SCb stainless steels by simulated "25" process waste solutions at various temperatures, by Arnold R. Olsen. Oak Ridge National Lab., Tenn. June 1954. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 40p. Order from LC. Mi $3.00, ph $6.30. CF-54-6-7

Solution corrosion group quarterly report for period ending January 31, 1956, by J. C. Griess and others. Oak Ridge National Lab., Oak Ridge, Tenn. Jan. 1956. Contract W-7405-Eng-26. 51p. Order from OTS. 35 cents. CF-56-1-167

Summary of toroid run No. 81: Type 347 stainless steel, titanium 75A and Zircaloy-2 in Fernald and D-17 thorium oxide slurries at 300°C and 26 fps. Effect of fluoride, by G. E. Moore and E. L. Compere. Oak Ridge National Lab., Tenn. Feb. 1956. Contract W-7405-Eng-26. 12p. Order from LC. Mi $2.40, ph $3.30. CF-56-2-72

Application of low-enrichment uranium dioxide to aluminum plate-type fuel elements, by R. C. Waugh and J. E. Cunningham. Oak Ridge National Lab., Tenn. August 1956. Decl. July 27, 1957. Contract W-7405-Eng-26. 18p. Order from OTS. 30 cents. CF-56-8-128

Progress report on metallurgy of tuballoy to University of Chicago. Battelle Memorial Inst., Columbus, Ohio. May 1943. Decl. Feb. 19, 1957. 35p. Order from LC. Mi $3.00, ph $6.30. CT-688

Corrosion and aluminum activity in pile water. Progress report -- problem assignment 124-X1E and 124-X11E, by W. P. Jesse and others. Clinton Labs., Oak Ridge, Tenn. May 1944. Decl. Feb. 18, 1957. Contract W-7405-Eng-39. 32p. Order from LC. Mi $3.00, ph $6.30. CT-1440

Final report on the results of exposure of tuballoy (uranium) at elevated temperature in air, nitrogen, and neutral atmospheres, by W. E. Lindlief and V. C. F. Holm. National Bureau of Standards, Washington, D. C. Feb. 1945. Decl. Feb. 20, 1957. Contract W-7401-Eng-37. 35p. Order from LC. Mi $3.00, ph $6.30. CT-2733

Production of thorium metal by the metallothermic reduction of thorium fluoride, by F. H. Spedding and others. Ames Lab., Ames, Iowa. Sept. 1945. Decl. Feb. 16, 1957. Contract W-7405-Eng-82. 22p. Order from LC. Mi $2.70, ph $4.80. CT-2950

Casting of thorium metal and some properties of the cast metal, by W. H. Keller and others. Iowa State College, Ames. Oct. 1945. Decl. Feb. 18, 1957. Contract W-7405-Eng-82. 20p. Order from LC. Mi $2.40, ph $3.30. CT-2951

Evaluation of grinding coolants; corrosive effects on uranium metal, by Fred. H. Meyer. National Lead Company of Ohio, Cincinnati, Ohio. Feb. 1953. Decl. July 30, 1957. Contract AT (30-1)-1156. 9p. Order from OTS. 25 cents. FMPC-192

Corrosive effects of heavy metal ions on aluminum, by G. S. Fujioka. General Electric Co., Hanford Atomic Products Operation, Richland, Wash. Mar. 1953. Decl. Feb. 20, 1957. 13p. Order from LC. Mi $2.40, ph $3.30. HW-27434

Centrifugal casting for plutonium and plutonium-uranium plates, by F. B. Quinlan and J. C. Tverberg. Hanford Atomic Products Operation, Richland, Wash. Nov. 1956. Decl. Mar. 13, 1957. Contract W-31-109-Eng-52. 6p. Order from LC. Mi $1.80, ph $1.80. HW-47015

General method of analysis of primary creep data, (including analysis of uranium creep data), by K. R. Merckx. Hanford Atomic Products Operation. Richland, Wash. May 1957. Contract W-31-109-Eng-52. 21p. Order from OTS. 20 cents. HW-50363

Reaction of metals with water and oxidizing gases at high temperatures, by H. M. Higgins, and R. D. Schultz. Aerojet General Corp., Azusa, Calif. Apr. 1957. Contract AT (04-3)-44. Sections 1 and 3. 116p. Order from OTS. 60 cents. IDO-28000

Semi-annual progress report in metallurgy. Period April 1, 1951-September 30, 1951, by H. A. Wilhelm. Ames Lab., Ames, Iowa. Mar. 1952. Decl. Feb. 27, 1957. Contract W-7405-Eng-82. 87p. Order from LC. Mi $4.80, ph $13.80. ISC-203

Quarterly report of an investigation of the properties of thorium and some of its alloys, by G. C. Danielson, and others. Ames Lab., Ames, Iowa. July 1952. Decl. Feb. 26, 1957. Contract W-7405-Eng-82. 49p. Order from LC. Mi $3.30, ph $7.80. ISC-251

Nuclear Engineering Course 1948-1949-the metallurgy section, by Dr. J. P. Howe. Knolls Atomic Power Lab., Schenectady, N. Y. March 1949. Decl. July 27, 1957. 6p. Order from OTS. 25 cents. KAPL-541

X-ray measurement of radiation damage in graphite, by B. E. Warren and D. R. Chipman. Knolls Atomic Power Lab., Schenectady, N. Y. July 1953. Decl. July 29, 1957. Contract W-31-109-Eng-52. 21p. Order from OTS. 25 cents. KAPL-938

Fabrication of uranium-rich uranium-magnesium dispersion fuels by powder hot pressing, by R. N. Honeyman. General Electric Co., Knolls Atomic Power Lab., Schenectady, N. Y. Apr 1956. Decl. July 30, 1957. Contract W-31-109-Eng-52. 17p. Order from OTS. 30 cents. KAPL-1525

Development of dispersion-type reactor poison components composed of neutron absorbing glass particles as the dispersed phase, by G. L. Ploetz and W. E. Ray. General Electric Co., Knolls Atomic Power Lab., Schenectady, N. Y. Nov. 1956. Decl. July 31, 1957. Contract W-31-109-Eng-52. 27p. Order from OTS. 35 cents. KAPL-1617

Corrosion of aluminum in high-temperature water III. Inhibition of corrosion by sodium silicate, by R. M. Haag, and F. C. Zyzes. General Elec. Co., Knolls Atomic Power Lab., Schenectady, N. Y. Feb. 1957. Contract W-31-109-Eng-52. 15p. Order from OTS. 20 cents. KAPL-1741

Effect of welding atmosphere and pickling on the corrosion resistance of welded Zircaloy-2 and -3, by K. H. Koopman and others. General Electric Co. Knolls Atomic Power Lab., Schenectady, N. Y. Aug. 1957. Contract W-31-109-Eng-52. 27p. Order from OTS. 25 cents. KAPL-1811

S3G instrumentation brazing, by Donald R. Hauprich. Knolls Atomic Power Lab., Schenectady, N. Y. March 1957. Contract W-31-109-Eng-52. 11p. Order from LC. Mi $1.80, ph $1.80. KAPL-M-AME-7

Thermal expansion of four rare earth oxides, by G. L. Ploetz, C. W. Krystyniak, and H. E. Dumes. Knolls Atomic Power Lab., Schenectady, N. Y. March 1957. Contract W-31-109-Eng-52. 7p. Order from LC. Mi $1.80, ph $1.80. KAPL-M-GLP-1

Preparation and physical properties of uranium binary alloys containing aluminum and columbium, by D. W. Grobecker and others. Los Alamos Scientific Lab. of the Univ. of Calif. Sept. 1950. Decl. August 1, 1957. Contract W-7405-Eng-36. 39p. Order from OTS. 40 cents. LA-1177

Forming of uranium in the gamma phase temperature range, by W. C. Gribble . Los Alamos Scientific Lab. of the Univ. of Calif. May 1951. Decl. August 20, 1957. Contract W-7405-Eng-36. 32p. Order from OTS. 35 cents. LA-1244

Effect of annealing media on the mechanical properties of uranium, by G. S. Hanks and others. Los Alamos Scientific Lab. of the Univ. of Calif. August 1953. Decl. Aug. 1, 1957. Contract W-7405-Eng-36. 83p. Order from OTS. 50 cents. LA-1619

Predicted structure and density of beryllium hydride, by J. F. Lemons and W. B. Lewis. Los Alamos Scientific Lab. of the Univ. of Calif. Dec. 1953. Decl. August 13, 1957. Contract W-7405-Eng-36. 29p. Order from OTS. 35 cents. LA-1659

Influence of a precipitation hardening heat treatment on the hardness of several uranium-molybdenum alloys, by T. I. Jones and others. Los Alamos Scientific Lab. of the Univ. of Calif. August 1954. Decl. Aug. 6, 1957. Contract W-7405-Eng-36. 83p. Order from OTS. 60 cents. LA-1715

Effects of certain variables upon the reactions for preparation, by the dry method, of UF_4 from U_3O_8, by R. W. Kewish and O. E. Fry. Los Alamos Scientific Lab. of the Univ. of Calif. Nov. 1954. Decl. August 19, 1957. Contract W-7405-Eng-36. 21p. Order from OTS. 30 cents. LA-1860

Method for rolling uranium foil, by George L. Barnard, Jr. Los Alamos Scientific Lab., Los Alamos, N. Mex. October 1947. Decl. Aug. 13, 1957. 9p. Order from OTS. 25 cents. LAMS-626

Technical progress report for the period July through September 1953, by A. R. Kaufmann. Mass. Inst. of Technology, Cambridge, Mass.

November 1953. Decl. July 26, 1957. Contract AT (30-1)-981. 131p. Order from OTS. 75 cents. MIT-1114

Preliminary report on vacuum casting of uranium into heated molds, by W. H. Keller. Mallinckrodt Chemical Works, St. Louis. Dec. 1951. Decl. Mar. 2, 1957. 9p. Order from LC. Mi $1.80, ph $1.80. NYO-1327

Supplement to preliminary report on vacuum casting of uranium into heated molds, by W. H. Keller. Mallinckrodt Chemical Works, St. Louis. (Supplement to NYO-1327). Dec. 1951. Decl. Mar. 2, 1957. 7p. Order from LC. Mi $1.80, ph $1.80. NYO-1328

Study of preferred orientation in rolled uranium bars by means of sonic and ultrasonic vibrations, by S. D. Hart, E. W. Kammer and I. Vigness. Naval Research Laboratory, Washington, D. C. n. d. Decl. Aug. 23, 1957. Contract AT (30-1)-1344. 13p. Order from OTS. 25 cents. NYO-3788

Applications of ultrasonic energy. Progress report No. 2 covering period from December 16, 1956 to February 15, 1957. Aeroprojects, Inc. West Chester, Penna. Apr. 1957. Contract AT (30-1)-1836. 24p. Order from LC. Mi $2.70, ph $4.80. NYO-7916

Corrosion of stainless steels in aluminum nitrate-sodium dichromate-uranyl nitrate solution, by A. R. Olsen. Oak Ridge National Lab., Tenn. Nov. 1949. Decl. Mar. 19, 1957. Contract W-7405-Eng-26. 7p. Order from LC. Mi $1.80, ph $1.80. ORNL-195

Corrosion of 356 aluminum in simulated cooling water for the proposed materials testing reactor, by James L. English. Oak Ridge National Lab., Tenn. July 1950. Decl. Dec. 27, 1956. Contract W-7405-Eng-26. 107p. Order from LC. Mi $5.70, ph $16.80. ORNL-681

Metallurgy division semiannual progress report, period ending Oct. 10, 1955. Oak Ridge National Lab., Oak Ridge, Tenn. June 1956. Decl. July 31, 1957. Contract W-7405-Eng-26. 95p. Order from OTS. 65 cents. ORNL-2078 (Del.)

Minutes of the uranium dioxide Conference, Chalk River, Ontario, January 5 and 6, 1956. Edited by J. F. White. Aircraft Nuclear Propulsion Dept. General Electric Company, Cincinnati, Ohio. July 1956. Decl. Apr. 9, 1957. 92p. Order from OTS. 60 cents. TID-7514

Mechanical properties of Zircaloy 2, by G. T. Muehlenkamp and A. D. Schwope. Battelle Memorial Inst., Columbus, Ohio. October 1953. Decl. July 30, 1957. Contract W-7405-Eng-92. 10p. Order from OTS. 25 cents. TID-10016

Effect of particle size on fission-fragment damage for particles of fissionable material dispersed in a matrix, by Ralph J. Harrison. Battelle Memorial Inst., Columbus, Ohio. June 1953. Decl. August 7, 1957. Contract W-7405-Eng-92. 41p. Order from OTS. 35 cents. TID-10017

Silicon carbide as the basis material for plate-type fuel elements, by L. J. Balint and others. Battelle Memorial Inst., Columbus, Ohio. Sept. 1953. Decl. August 8, 1957. Contract W-7405-Eng-92. 36p. Order from OTS. 35 cents. TID-10044

Mechanical properties of alloys of the uranium-zirconium system, by G. T. Muehlenkamp, W. Chubb, and A. D. Schwope. Battelle Memorial Inst., Columbus, Ohio. Oct. 1953. Decl. August 8, 1957. Contract W-7405-Eng-92. 11p. Order from OTS. 25 cents. TID-10047

Thermal conductivity data for some nuclear fuels, by L. R. McCreight. General Electric Co., Knolls Atomic Power Lab., Schenectady, N. Y. Oct. 1952. Decl. July 30, 1957. Contract W-31-109-Eng-52. 17p. Order from OTS. 25 cents. TID-10062

Tensile properties of zirconium alloys at fabrication temperatures and strain rates, by C. R. Simcoe and D. E. Thomas. Westinghouse Atomic Power Div., Pittsburgh, Penna. March 1952. Decl. August 5, 1957. Contract AT-11-1-Gen-14. 30p. Order from OTS. 35 cents. WAPD-51 (Rev.)

High temperature oxidation of Zircaloy in water, by W. A. Bostrom. Westinghouse Atomic Power Div., Pittsburgh, Penna. March 1954. Decl. April 6, 1957. Contract AT-11-1-Gen-14. 18p. Order from OTS. 25 cents. WAPD-104

Zircaloy-2 hot bend tests performed by the Youngstown Welding and Engineering Company, by W. L. Frankhouser. Westinghouse Atomic Power Div., Pittsburgh, Penna. August 1955. Changed from Official Use Only Oct. 3, 1956. 27p. Order from LC. Mi $2.70, ph $4.80. WAPD-FE-954

Tensile properties of Hafnium-Zircaloy-2 welds, by H. R. Hoge. Westinghouse Atomic Power Div. Pittsburgh, Penna. April 1954. Changed from

Official Use Only Oct. 3, 1956. Contract AT -11-1-Gen-14. 14p. Order from LC. Mi $2.40, ph $3.30. WAPD-MDM-5

Report of October 1954 meeting of the zirconium alloy corrosion committee, by S. Kass. Westinghouse Atomic Power Div., Pittsburgh, Penna. Nov. 1954. Changed from Official Use Only July 18, 1956. Contract AT-11-1-Gen-14. 136p. Order from LC. Mi $6.90, ph $21.30. WAPD-MM-713

Resumé of uranium oxide data - II, by Z. M. Shapiro. Westinghouse Atomic Power Div., Pittsburgh, Penna. June 1955. Decl. August 6, 1957. 92p. Order from OTS. 60 cents. WAPD-PMM-167

Recovery of iodine from crystal bar unit wash water, by H. R. Hoge and Z. M. Shapiro. Westinghouse Atomic Power Div., Pittsburgh, Penna. June 1951. Changed from Official Use Only Oct. 3, 1956. 7p. Order from LC. Mi $1.80, ph $1.80. WAPD-RM-35

Corrosion resistance and tensile properties of zirconium-tantalum alloys, by C. R. Simcoe, E. S. Wright and D. E. Thomas. Westinghouse Atomic Power Div. Pittsburgh, Penna. Feb. 1951. Decl. August 12, 1957. Contract AT-11-1-Gen-14. 15p. Order from OTS. 30 cents. WAPD-RM-40

Particle Accelerators and High-Voltage Machines

Electric field investigations with the 1/10 scale RF model of Mark I, by J. F. Steinhaus. California Research and Development Co. Livermore Research Lab., Livermore, Calif. May 1954. Decl. Feb. 26, 1957. Contract AT-(11-1)-74. 28p. Order from LC. Mi $2.70, ph $4.80. LRL-132

MTA project accelerator terminal report for January through June 1954. California Research and Development Co. Livermore Research Lab., Livermore, Calif. June 1954. Decl. Feb. 26, 1957. Contract AT (11-1)-74. 7p. Order from LC. Mi $ 1.80, ph $1.80. LRL-159

Fission and capture events in 12 inch x 12 inch cross section uranium and thorium targets bombarded with 190 Mev deuterons and 340 Mev protons, by H. G. Hicks. California Research and Development Co. Livermore Research Lab., Livermore, Calif. Jan. 1953. Decl. Feb. 27, 1957. Contract AT(11-1)-74. 34p. Order from LC. Mi $3.00, ph $6.30. MTA-6

Modes of acceleration of ions in a 3-dee cyclotron, by M. Jakobson, M. Heusinkveld, and L. Ruby. California. Univ., Berkeley. Radiation Lab. Feb. 1952. Decl. Mar. 5, 1957. Contract W-7405-Eng-48. 16p. Order from LC. Mi $2.40, ph $3.30. UCRL-1686

Production of 320 Mev deuterons by HE^3 stripping, by John Ise, Jr., and others. California. Univ., Berkeley. Radiation Lab. Aug. 1953. Decl. Mar. 6, 1957. Contract W-7405-Eng-48. 18p. Order from LC. Mi $2.40, ph $3.30. UCRL-2319

Physics and Mathematics

Vapor traps for handling liquid sodium, by A. J. Erickson, C. L. Gregory, and P. M. Lang. Mass. Inst. of Tech., Oak Ridge, Tenn. Engineering Practice School. August 1951. (For Carbide and Carbon Chemicals Div). Contract W-7405-Eng-26. 11p. Order from LC. Mi $2.40, ph $3.30. AECU-3200

A statistical data plotter (Nulli IV), by C. E. Maki. Sandia Corp., Albuquerque, N. Mex. Sept. 1954. 12p. Order from LC. Mi $2.40, ph $3.30. AECU-3235

Some basic properties of barium titanate, by Travis P. Stuart. Sandia Corp., Albuquerque, N. Mex. Feb. 1953. 14p. Order from LC. Mi $2.40, ph $3.30. AECU-3236

Servo-stabilization of drift in wide-band D-C amplifiers, by J. M. Simmons, Jr. Sandia Corp., Albuquerque, N. Mex. April 1954. 22p. Order from LC. Mi $2.70, ph $4.80. AECU-3248

Spectra of waves with periodic frequency modulation, by L. V. Skinner. Sandia Corp., Albuquerque, N. Mex. April 1953. 22p. Order from LC. Mi $2.70, ph $4.80. AECU-3303

The square law detector and noise, by B. L. Basore. Sandia Corp., Albuquerque, N. Mex. May 1953. 10p. Order from LC. Mi $1.80, ph $1.80. AECU-3304

Approximations to the circular normal distribution. Sandia Corp., Albuquerque, N. Mex. Nov. 1953. 33p. Order from LC. Mi $ 2.70, ph $4.80. AECU-3305

Reliability studies of systems in which component reliabilities vary with environment, by C. R. Clark. Sandia Corp., Albuquerque, N. Mex. June 1955. 22p. Order from LC. Mi $2.70,ph $4.80. AECU-3312

Pseudo-random numbers, by G. Y. Pelsor. Sandia Corp., Albuquerque, N. Mex. August 1955. 10p. Order from LC. Mi $1.80, ph $1.80. AECU-3314

Theoretical nuclear Physics division. Report for period ending March 28, 1949. Argonne National Lab., Lemont, Ill. May 2, 1949. Decl. Feb. 11, 1957. Contract W-31-109-Eng-38. 61p. Order from LC. Mi $3.90, ph $10.80. ANL-4284

Physics Division Quarterly Report for December 1951, January and February 1952. Argonne National Lab., Lemont, Ill. Mar. 15, 1952. Decl. with deletions Feb. 12, 1957. Contract W-31-109-Eng-38. 80p. Order from LC. Mi $4.50, ph $12.30. ANL-4798 (Del.)

Physics Division supplement to quarterly report, September, October, and November 1953. Argonne National Lab., Lemont, Ill. Feb. 1954. Changed from SECRET Nov. 29, 1955. Decl. Feb. 12, 1957. Contract W-31-109-Eng-38. 27p. Order from LC. Mi $2.70, ph $4.80. ANL-5175

Two-group diffusion theory for a ring of cylindrical rods, by R. Avery. Argonne National Lab., Lemont, Ill. June 1957. Contract W-31-109-Eng-38. 21p. Order from OTS. 20 cents. ANL-5729

Tables of charged particle penetrabilities, by J. P. Schiffer. Argonne National Lab., Lemont, Ill. June 1957. Contract W-31-109-Eng-38. 60p. Order from OTS. 40 cents. ANL-5739

Nuclear fuse element transient heating, by J. T. Weills. Argonne National Lab., Lemont, Ill. May 1954. Decl. Feb. 12, 1957. Contract W-31-109-Eng-38. 8p. Order from LC. Mi $1.80, ph $1.80. ANL-JTW-6

Thermal conductivity of steel wool and some granular solids, by D. F. Salmon and J. F. Bailey. Oak Ridge National Lab., Y-12 Area, Tenn. Oct. 1951. Decl. with deletions Feb. 19, 1957. Contract W-7405-Eng-26. 15p. Order from LC. Mi $2.40, ph $3.30. ANP-71 (Del.)

Time and space temperature distribution in a sphere with an intermittent constant heat source, by J. F. Heyda. General Electric Atomic Products Div. Cincinnati, Ohio. August 1957. Contract AF 33 (038)-21102 and AT (11-1)-171. 15p. Order from OTS. 20 cents. APEX-321

Calculation of transport cross-sections of uranium, by S. Oleksa. Brookhaven National Lab., Upton, N. Y. Jan. 1953. Decl. Feb. 14, 1957. 9p. Order from LC. Mi $1.80, ph $1.80. BNL-1573

Neutron spectrum emerging from an iron-water shield, by S. Podgor. Oak Ridge National Lab., Tenn. March 1950. Decl. Feb. 18, 1957. Contract W-7405-Eng-26. 8p. Order from LC. Mi $1.80, ph $1.80. CF-50-3-108

Analysis of lid tank neutron data for boron carbide (B_4C), by R. Zirkind. Oak Ridge National Lab., Tenn. August 1951. Decl. Feb. 14, 1957. 17p. Order from LC. Mi $2.40, ph $3.30. CF-51-8-102

HRE power and temperature after stopping pump, by Sidney Visner. Oak Ridge National Lab., Tenn. May 1953. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 11p. Order from LC. Mi $2.40, ph $3.30. CF-53-5-208

Activities of fission products from core solution of K-23 reactor, by E. D. Arnold. Oak Ridge National Lab., Tenn. April 1954. Decl. Feb. 8, 1956. Contract W-7405-Eng-26. 33p. Order from LC. Mi $3.00, ph $6.30. CF-54-4-62

HR processing program: Study of liquid-solid cyclones--problem statement, by Marvin E. Whatley. Oak Ridge National Lab., Tenn. June 1954. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 8p. Order from LC. Mi $1.80, ph $1.80. CF-54-6-71

Attenuation of beta energy along a straight line path through various absorbing media, by T. W. Leland. Oak Ridge National Lab., Tenn. Sept. 1954. Changed from Official Use Only Dec. 7, 1956. Contract W-7405-Eng-26. 20p. Order from LC. Mi $2.40, ph $3.30. CF-54-9-133

A possible characterization number for thorium oxide slurries, by P. R. Crowley. Oak Ridge National Lab., Tenn. May 1955. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 6p. Order from LC. Mi $1.80, ph $1.80. CF-55-5-33

On the depth of the nuclear potential well, by Lawrence Dresner. Oak Ridge National Lab., Tenn. May 1955. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 19p. Order from LC. Mi $2.40, ph $3.30. CF-55-5-44

Cross section program at Oak Ridge National Laboratory (Report to members of NCSAG for meeting at Berkeley, May 24 and 25, 1955), by J. L. Fowler and H. S. Pomerance. Oak Ridge National Lab., Tenn. May 1955. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 12p. Order from LC. Mi $2.40, ph $3.30. CF-55-5-69

Heat generation and temperature distribution in control room shield wall, by F. N. Haubenreich. Oak Ridge National Lab., Tenn. July 1955. Changed from Official Use Only Dec. 7, 1956. Contract W-7405-Eng-26. 10p. Order from LC. Mi $1.80, ph $1.80. CF-55-7-115

Multiple gamma-ray scattering in water, by T. A. Welton. Oak Ridge National Lab., Tenn. Jan. 1956. Contract W-7405-Eng-26. 16p. Order from LC. Mi $2.40, ph $3.30. CF-56-1-9

Neutron activation of iodine near 25 kev, by R. L. Macklin. Oak Ridge National Lab., Tenn. Jan. 1956. Contract W-7405-Eng-26. 5p. Order from LC. Mi $1.80, ph $1.80. CF-56-1-40

Problems of neutron population in localized absorbers, by D. K. Holmes. Oak Ridge National Lab., Tenn. Jan. 1956. Contract W-7405-Eng-26. 31p. Order from LC. Mi $3.00, ph $6.30. CF-56-1-141

A new approach to computer design, by A. C. Downing, Jr. Oak Ridge National Lab., Tenn. March 1956. Contract W-7405-Eng-26. 10p. Order from LC. Mi $1.80, ph $1.80. CF-56-3-61

Notes on an azimuthally varying field (AVF) cyclotron, by F. T. Howard, ed. Oak Ridge National Lab., Tenn. March 1956. Contract W-7405-Eng-26. 38p. Order from LC. Mi $3.00, ph $6.30. CF-56-3-112

Isotopes produced in the reactor and absorber of a thermal U^{233} breeder and their effects on breeding efficiency and purity of product, by H. G. Ott. Clinton Labs., Oak Ridge, Tenn. January 1947. Decl. Feb. 16, 1957. Contract W-7405-Eng-39. 22p. Order from LC. Mi $2.70, ph $ 4.80. CL-RWS-31

Warping instability in long rods, by Gale Young. Chicago. Univ. Metallurgical Lab. August 1944. Decl. Feb. 15, 1957. 10p. Order from LC. Mi $1.80, ph $1.80. CP-2065

Effect of thermal cycling on the thermal transfer from a sand blasted slug to an unbonded jacket, by Robert R. Bentley. Chicago. Univ. Metallurgical Lab. April 1945. Decl. Feb. 14, 1957. Contract W-7401-Eng-37. 11p. Order from LC. Mi $2.40, ph $3.30. CP-2882

Thermal shock: Stresses in prismatic target elements subjected to rapid heating, by J. P. Frankel. Calif. Research and Development Co. Livermore, Calif. Aug. 1951. Decl. Feb. 14, 1957. 9p. Order from LC. Mi $1.80, ph $1.80. CRD-T2B-45

Temperature distribution in the concrete shield, by John R. Triplett. Hanford Works, Richland, Wash. April 1952. Decl. Feb. 27, 1957. Contract W-31-109-Eng-52. 12p. Order from LC. Mi $2.40, ph $3.30. HW-24258

Steady state temperature distributions in hollow slugs, by P. M. Anselone, D. O. Banks, and R. Y. Dean. Hanford Atomic Products Operation, Richland, Wash. December 1953. Decl. Feb. 20, 1957. Contract W-31-109-Eng-52. 3p. Order from LC. Mi $1.80, ph $1.80. HW-30266

Problem of Knudsen Flow. Part III. Solutions for one-dimensional systems, by W. C. DeMarcus. Oak Ridge Gaseous Diffusion Plant, Tenn. March 1957. Contract W-7405-Eng-26. 51p. Order from LC. Mi $ 3.30, ph $7.80. K-1302-(Pt. III)

Structures of the interhalogen compounds-II. Iodine heptafluoride at -145°C. and -110°C, by R. L. Burbank and F. N. Bensey, Jr. Oak Ridge Gaseous Diffusion Plant, Oak Ridge, Tenn. August 1957. Contract W-7405-Eng-26. 24p. Order from OTS. 75 cents. K-1340

Some properties of porous solids deduced from apparent volume measurements, by H. B. Jenkins, Jr. Oak Ridge Gaseous Diffusion Plant, Tenn. August 1957. Contract W-7405-Eng-26. 25p. Order from OTS. 75 cents. K-1342

Further developments of multi-group method for intermediate piles, by H. Hurwitz, Jr., and R. Ehrlich. Knolls Atomic Power Lab., Schenectady, N. Y. March 1948. Decl. Feb. 27, 1957. Contract W-31-109-Eng-52. 29p. Order from LC. Mi $2.70, ph $4.80. KAPL-39

Xenon transient characteristics, by William G. Gibbard. Knolls Atomic Power Lab., Schenectady, N. Y. April 1948. Decl. Feb. 7, 1957. Contract W-31-109-Eng-52. 31p. Order from LC. Mi $3.00, ph $6.30. KAPL-44

An automatic neutron flux scanner, by R. T. Frost. Knolls Atomic Power Lab., Schenectady, N. Y. March 1954. Changed from Official Use Only June 26, 1956. Contract W-31-109-Eng-52. 13p. Order from LC. Mi $2.40, ph $3.30. KAPL-1117

Report of the nuclear physics section for March, April, May 1954. Knolls Atomic Power Lab., Schenectady, N. Y. Decl. July 30, 1957. Contract W-31-109-Eng-52. 20p. Order from OTS.30 cents. KAPL-1155 (Vol. 2)

Report of the physics section for December, 1955, January, February 1956. Knolls Atomic Power Lab., Schenectady, N. Y. March 1956. Decl. July 30, 1957. Contract W-31-109-Eng-52. 23p. Order from OTS. 40 cents. KAPL-1515

Two-space-dimension multigroup analysis of a moving-fuel reactor (Second Edition), by E. L. Wachspress. Knolls Atomic Power Lab., Schenectady, N. Y. April 1955. Contract W-31-109-Eng-52. 57p. Order from OTS. 45 cents. KAPL-1642

A two-hundred-channel time analyzer for neutron spectrometry, by W. A. Bryant and M. L. Yeater. Knolls Atomic Power Lab., Schenectady, N. Y. March 1957. Contract W-31-109-Eng-52. 21p. Order from OTS. 25 cents. KAPL-1657

An α_{49} (E) curve consistent with EBR-1 measurements and also with most former measurements, by J. B. Sampson and D. F. Molino. Knolls Atomic Power Lab., Schenectady, N. Y. May 1957. Contract W-31-109-Eng-52. 15p. Order from OTS. 20 cents. KAPL-1793

Heat transfer in MTR irradiation capsules, by Herbert E. Barrie. Knolls Atomic Power Lab., Schenectady, N. Y. Sept. 1955. Changed from Official Use Only Oct. 18, 1956. Contract W-31-109-Eng-52. 9p. Order from LC. Mi $1.80, ph $1.80. KAPL-M-DD-1

Effects of neutron angular anisotropy at the boundary of a black region, by R. W. Deutsch. Knolls Atomic Power Lab., Schenectady, N. Y. August 1955. Contract W-31-109-Eng-52. 11p. Order from LC. Mi $2.40, ph $3.30. KAPL-M-RWD-6

Calculations of the critical mass of UF_6 as a gaseous core, with reflectors of D_2O, Be and C, by George I. Bell. Numerical computations by Max Goldstein and Group T-1. Los Alamos Scientific Lab. of the Univ. of Calif. Los Alamos, N. Mex. February 1955. Decl. August 6, 1957. Contract W-7405-Eng-36. 42p. Order from OTS. 40 cents. LA-1874

Pressure-temperature relation for constant-area compressible flow of a gas, considering heat transfer and friction with constant wall temperatures, by Franklin P. Durham. Los Alamos Scientific Lab. of the Univ. of Calif. Los Alamos, N. Mex. Jul 25, 1957. Contract W-7405-Eng-36. 78p. Order from OTS. 50 cents. LA-2129

Some aspects of the production of uranium-233 by the irradiation of thorium-232 with thermal neutrons, by T. E. Hicks and W. H. McVey. California Research and Development Co. Livermore, Calif. March 1954. Decl. Aug. 15, 1957. Contract AT (11-1)-74. 21p. Order from OTS. 25 cents. LRL-109

Neutron productions from finite targets, by C. C. Old. California Research and Development Co., Livermore, Calif. April 1954. Decl. Feb. 26, 1957. Contract AT (11-1)-74. 19p. Order from LC. Mi $2.40, ph $3.30. LRL-110

Fast reactor poisoning by fission products, by C. C. Old. California Research and Development Co., Livermore, Calif. October 1952. Decl. Feb. 26, 1957. 11p. Order from LC. Mi $2.40, ph $3.30. LWS-24612

Reactor physics quarterly progress report for February, March, and April 1953, by R. A. Laubenstein, ed. North American Aviation, Inc. Downey, Calif. July 1953. Decl. Feb. 11, 1957. Contract AT-11-1-Gen-8. 30p. Order from LC. Mi $2.70, ph $4.80. NAA-SR-259

Reactor physics quarterly progress report for August-October 1953. North American Aviation, Inc., Downey, Calif. April 1954. Decl. Feb. 7, 1957. Contract AT-11-1-Gen-8. 35p. Order from LC. Mi $3.00, ph $6.30. NAA-SR-854

Transfer function of a water boiler reactor, by R. E. Skinner and D. L. Hetrick. Atomics International, a division of North American Aviation, Inc. Canoga Park, Calif. August 1957. Contract AT-11-1-Gen-8. 40p. Order from OTS. 30 cents. NAA-SR-1948

Determination of reactor transfer functions from measurements at steady operation, by M. N. Moore. Atomics International. A division of North American Aviation, Inc. Canoga Park, Calif. August 1957. Contract AT-11-1-Gen-8. 16p. Order from OTS. 20 cents. NAA-SR-1972

Neutron flux distributions in a lattice cell, Part II, by E. R. Cohen. North American Aviation, Inc., Downey, Calif. August 1951. Decl. Aug. 27, 1956. 3p. Order from LC. Mi $1.80, ph $1.80. NAA-SR-Memo-51

PuP parameter survey calculations, by E. R. Cohen. North American Aviation, Inc., Downey, Calif. Dec. 1951. Decl. Feb. 27, 1957. 7p. Order from LC. Mi $1.80, ph $1.80. NAA-SR-Memo-155

Study of the hazards associated with the North American Aviation water boiler neutron source, by M. E. Remley. North American Aviation, Inc. Downey, Calif. August 1952. Decl. with deletions Dec. 5, 1955. 50p. Order from LC. Mi $3.60, ph $9.30. NAA-SR-Memo-408 (Del.)

Tables for the transformation of angular distribution data from the laboratory system to the center of mass system, by Jerry B. Marion and Arthur S. Ginzbarg. Shell Development Company. Houston, Texas. (Exportation of this document is subject to license under the Export Control Act of 1949). 1954. 54p. Order from OTS. 40 cents. NP-5241

Non-linear deflections of shallow spherical shells, by Edward L. Reiss, Herbert J. Greenberg, and Herbert B. Keller. New York Univ., N. Y. Dec. 1956. Contract AT (30-1)-1480. 58p. Order from LC. Mi $3.60, ph $9.30. NYO-7695

The iterative solution of elliptic difference equations, by Bernard Friedman. Institute of Mathematical Sciences. New York University. June 1957. Contract AT (30-1-1480). 37p. Order from OTS. $1.00. NYO-7698

Approximate analysis of the penetration of neutrons through a thick shield composed of non-hydrogenous materials, by F. H. Murray. Oak Ridge National Lab., Tenn. Dec. 1949. Decl. Mar. 2, 1957. Contract W-7405-Eng-26. 29p. Order from LC. Mi $2.70, ph $4.80. ORNL-424

Physics Division quarterly progress report for period ending December 15, 1949. Oak Ridge National Lab., Tenn. Feb. 1950. Decl. Mar. 8, 1957. Contract W-7405-Eng-26. 19p. Order from LC. Mi $2.40, ph $3.30. ORNL-576

Some effects of transmutation products on U^{233} breeder pile operation, by J. Halperin and R. W. Stoughton. Oak Ridge National Lab., Tenn. Sept. 1952. Decl. with deletions Feb. 23, 1956. Contract W-7405-Eng-26. 38p. Order from LC. Mi $3.00, ph $6.30. ORNL-1368 (Del.)

Heavy isotope build-up in core of U^{233} breeder, by J. Halperin and R. W. Stoughton. Oak Ridge National Lab., Tenn. October 1953. Decl. with deletions Feb. 1, 1956. Contract W-7405-Eng-26. 24p. Order from LC. Mi $2.70, ph $4.80. ORNL-1567 (Del.)

Mathematics panel semiannual progress report for period ending June 30, 1954, by W. C. Sangren, ed. Oak Ridge National Lab., Tenn. Sept. 1954. Decl. Mar. 5, 1957. Contract W-7405-Eng-26. 37p. Order from LC. Mi $3.00, ph $6.30. ORNL-1751

Solid sample mass spectrometer analyses of enriched stable isotopes, by J. R. Walton. Oak Ridge National Lab., Tenn. n. d. Contract W-7405-Eng-26. 13p. Order from OTS. 20 cents. ORNL-2315

A remark on the overlap of two circles. Sandia Corp., Albuquerque, N. Mex. Aug. 1953. 6p. Order from LC. Mi $1.80, ph $1.80. SC-2991 (TR)

An introduction to aerodynamic stability, by Paul W. Rowe. Sandia Corp., Albuquerque, N. Mex. Feb. 18, 1957 (second printing). Contract AT-29-1-789. 143p. Order from OTS. 70 cents. SCTM-220-56 (51)

Production and separation of U^{233}. Collected papers. In two parts. Edited by Leonard I. Katzin. Argonne National Lab., Lemont, Ill. 1952. Decl. January 11, 1957. Part I, 419p. Part II, 321p. Order from OTS. Total price $3.25 for both parts. TID-5223 (Pts. 1 and 2)

Full scale 48 MC cavity for sparking tests of gaps corresponding to 0.45 to 4.5 MEV beam energy, by Craig S. Numan. Calif. Univ. Berkeley, Radiation Lab. May 1953. Decl. June 11, 1956. Contract W-7405-Eng-48. 10p. Order from LC. Mi $2.40, ph $3.30. UCRL-2229

Bevatron operation and development. XI. August, September, October 1956, by Walter Hartsough. Calif. Univ., Berkeley. Radiation Lab. Dec. 13, 1956. Contract W-7405-Eng-48. 20p. Order from LC. Mi $2.40, ph $3.30. UCRL-3614

Coulomb excitation, by John O. Newton. Univ. of California. Radiation Lab., Berkeley, Calif. May 1957. Contract W-7405-Eng-48. 35p. Order from OTS. 35 cents. UCRL-3797

A high-velocity point on the range-energy curve for emulsion, by Renee B. Feldman. Univ. of California. Radiation Lab., Berkeley, Calif. June 1957. Contract W-7405-Eng-48. 7p. Order from OTS. 15 cents. UCRL-3802

High energy fission and spallation of uranium, by Roger E. Batzel. California. Univ., Livermore, Calif. Radiation Lab. Feb. 1954. Decl. with deletions Jan. 29, 1957. Contract W-7405-Eng-48. 19p. Order from LC. Mi $2.40, ph $3.30. UCRL-4303 (Del.)

Effect of the Doppler broadening on the resonance absorption in homogeneous mixtures, by R. L. Hellens. Westinghouse Electric Corp. Atomic Power Div., Pittsburgh, Penna. May 1954. Changed from Official Use Only Oct. 3, 1956. Contract AT-11-1-Gen-14. 11p. Order from LC. Mi $2.40, ph $3.30. WAPD-P-439

Coding manual for the circle computer, by R. Goodman. Westinghouse Electric Corp. Atomic Power Div. Pittsburgh, Penna. August 1954. Changed from Official Use Only Oct. 1, 1956. Contract AT-11-1-Gen-14. 182p. Order from LC. Mi $8.40, ph $28.80. WAPD-PM-3

A proposed method for testing reactor period safety circuits, by F. J. Jankowski. Westinghouse Electric Corp. Atomic Power Div., Pittsburgh, Penna. Sept. 1953. Changed from Official Use Only Oct. 1, 1956. Contract AT-11-1-Gen-14. 12p. Order from LC. Mi $2.40, ph $3.30. WAPD-RM-198

Diffusion of collimated gamma rays in water, by Felix W. Marasco and Paul E. F. Thurlow. Westinghouse Electric Corp. Atomic Power Div. Pittsburgh, Penna. Jan. 1954. Changed from Official Use Only Oct. 1, 1956. 28p. Order from LC. Mi $2.70, ph $4.80. WAPD-RM-219

Simple methods of setting up field problems for use on passive analog computers, by William H. Meyer, Jr. Westinghouse Electric Corp. Atomic Power Div., Pittsburgh, Penna. June 1955. Changed from Official Use Only Oct. 3, 1956. 10p. Order from LC. Mi $2.40, ph $3.30. WAPD-STR-L-583

Polyphemus - a Monte Carlo study of neutron penetrations through finite water slabs, BY F. Obenshain, A. Eddy, and H. Kuehn. Westinghouse Electric Corp., Bettis Plant, Pittsburgh, Penna. Jan. 1957. Contract AT-11-1-Gen-14. 76p. Order from OTS. 50 cents. WAPD-TM-54

Progress Reports

Quarterly progress report January 1 - March 31, 1957. Brookhaven National Lab., Associated Universities, Inc. Upton, N. Y. 58p. Order from OTS. 40 cents. BNL-439 (S-35)

Quarterly report to the Atomic Energy Commission, for period April 1, 1957 to June 30, 1957. Midwestern Universities Research Association. Madison, Wisconsin. 12p. Order from OTS. 50 cents. MUPA-321

Radiation Effects on Materials

Chemistry Division, Section C-11 summary report for October, November and December 1950, by J. R. Gilbreath and O. C. Simpson, Comps. Argonne National Lab., Lemont, Ill. May 11, 1951. Decl. Feb. 12, 1957. Contract W-31-109-Eng-38. 125p. Order from LC. Mi $ 6.30, ph $19.80. ANL-4564

Chemistry Division, Section C-II summary report for April, May, and June 1952, by J. R. Gilbreath and O. C. Simpson, Comps. Argonne National Lab., Lemont, Ill. Jan. 1953. Decl. Feb. 12, 1957. Contract W-31-109-Eng-38. 72p. Order from LC. Mi $4.50, ph $12.30. ANL-4888

Effects of irradiation on powder compacts of uranium and some uranium-base alloys, by J. H. Kittel and S. H. Paine. Argonne National Lab., Lemont, Ill. June 1957. Contract W-31-109-Eng-38. 41p. Order from OTS. $1.25. ANL-5664

Interstitial compounds of irradiated graphite, by G. R. Hennig and G. L. Montet. Argonne National Lab., Lemont, Ill. March 1957. Contract W-31-109-Eng-38. 31p. Order from OTS. 25 cents. ANL-5693

Effect of gamma heating on the APPR-1 pressure vessel--new design, by H. R. Kroeger. Advanced Scientific Techniques. Research Associates, Milford, Connecticut. July 1956. Contract AT (11-1)-318. 30p. Order from OTS. 25 cents. APAE-Memo-86

Boiling burnout newsletter No. 3. (Classified Section), by Corwin L. Rickard. Brookhaven National Lab., Upton, N. Y. Feb. 1955. Decl. Feb. 16, 1957. 3p. Order from LC. Mi $1.80, ph $1.80. BNL-2221

Surface studies of irradiated graphite, by C. N. Spalaris. Hanford Atomic Products Operation, Richland, Wash. July 1953. Decl. Feb. 7, 1957. Contract W-31-109-Eng-52. 25p. Order from LC. Mi $2.70, ph $4.80. HW-29082

Examination of radiation exposed KEL-F plastic coupons, by C. L. Boyd. General Electric Co. Hanford Atomic Products Operation, Richland, Wash. Sept. 1954. Decl. with deletions Feb. 26, 1957. Contract W-31-109-Eng-52. 5p. Order from LC. Mi $1.80, ph $1.80. HW-33029 (Del.)

Surface structure of pile irradiated 2S aluminum, by R. Borasky and B. Mastel. Hanford Atomic Products Operation, Richland, Wash. August 1955. Decl. Feb. 7, 1957. Contract W-31-109-Eng-52. 22p. Order from LC. Mi $2.70, ph $4.80. HW-37049

Radiation damage studies program - ETR loop materials progress report, by M. S. Robinson. Phillips Petroleum Co. Idaho Operations Office. Idaho Falls, Idaho. April 1957. Contract AT - (10-1)-205. 20p. Order from OTS. 20 cents. IDO-16337

Failure of WAPD-30 high pressure loop, by M. S. Robinson. Phillips Petroleum Co., Idaho Operations Office, Idaho Falls, Idaho. April 1957. Contract AT (10-1)-205. 10p. Order from OTS. 15 cents. IDO-16338

Stability of boron carbide after 15 atomic per cent burnup, by Peter Senio and Charles W. Tucker, Jr. General Electric Co. Knolls Atomic Power Lab. Schenectady, N. Y. April 1954. Decl. July 30, 1957. Contract W-31-109-Eng-52. 10p. Order from OTS. 25 cents. KAPL-1091

High intensity gamma irradiation facilities at the Knolls Atomic Power Lab, by Samuel S. Jones. General Electric Co. Knolls Atomic Power Lab. Schenectady, N. Y. Apr. 1957. Contract W-31-109-Eng-52. 35p. Order from OTS. 30 cents. KAPL-1773

Stability of UF_6 in a pile, by D. E. Hull. Clinton Labs. Oak Ridge, Tenn. March 1947. Decl. Feb. 28, 1957. Contract W-7405-Eng-39. 12p. Order from LC. Mi $2.40, ph $3.30. MonN-268

On the mechanism of thermal annealing of irradiated graphite, by Dwain Bowen. North American Aviation, Inc., Downey, Calif. August 1950. Decl. Feb. 7, 1957. Contract AT-11-1-Gen-8. 37p. Order from LC. Mi $3.00, ph $6.30. NAA-SR-41

Diffusion of fission fragments from uranium impregnated graphite, by C. A. Smith and C. T. Young. North American Aviation, Inc., Downey, Calif. May 1951. Decl. Feb. 7, 1957. Contract AT-11-1-Gen-8. 38p. Order from LC. Mi $3.00, ph $6.30. NAA-SR-72

Application of X-ray line-shape theory to the study of radiation damage, by E. P. Cooper. North American Aviation, Inc. Downey, Calif. July 1951. Decl. Aug. 19, 1957. Contract AT 11-1-Gen-8. 39p. Order from OTS. 40 cents. NAA-SR-135

Theoretical treatment of electronic phenomena in a two-dimensional graphite lattice, by W. P. Eatherly. North American Aviation, Inc. Downey, Calif. July 1951. Decl. July 25, 1957. Contract AT 11-1-Gen-8. 27p. Order from OTS. 35 cents. NAA-SR-146

Solid state and irradiation physics quarterly progress report - January - March 1953, by E. C. Crittenden, Jr. and F. E. Faris, eds. North American Aviation, Inc., Downey, Calif. Oct. 1953. Decl. Feb. 7, 1957. Contract AT-11-1-Gen-8. 62p. Order from LC. Mi $3.90, ph $10.80. NAA-SR-251

Slug ruptures in the Oak Ridge National Laboratory pile, by C. D. Cagle and L. B. Emlet. Oak Ridge National Lab., Tenn. Oct. 1948. Decl. Feb. 11, 1957. Contract W-7405-Eng-26. 37p. Order from LC. Mi $3.00, ph $6.30. ORNL-170

Neutron damage in graphite, by Hubert M. James. Oak Ridge National Lab., Tenn. March 1949. Decl. Mar. 12, 1957. Contract W-7405-Eng-26. 23p. Order from LC. Mi $2.70, ph $4.80. ORNL-307

Effects of radiation on non-metallic materials, by E. L. Mincher. General Electric Co., General Engineering and Consulting Laboratory Library, Schenectady, N. Y. Mar. 1950. Decl. April 9, 1957. 40p. Order from OTS. 35 cents. R49GL175

Compilation of organic moderator and coolant technology, Part 2. Compiled by Harry P. Smith. Division of Reactor Development, Washington, D. C. January 1957. Decl. March 15, 1957. 424p. Order from OTS. $1.75. TID-7007 (Pt. 2 (Del.))

Radioactive Waste

Progress report on waste processing development project: Development of a waste calciner, by B. Manowitz and S. Zwickler. Brookhaven National Lab., Upton, N. Y. April 1957. 11p. Order from OTS. 15 cents. BNL-447 (T-95)

Resolution of the sodium diuranate precipitate in the W-7 metal waste tank, by J. E. Savolainen. Oak Ridge National Lab., Tenn. June 1952. Decl. Feb. 13, 1957. 3p. Order from LC. Mi $1.80, ph $1.80. CF-52-6-162

Preconcentration of high activity acid waste for the Oak Ridge Chemical Processing Plant, by J. L. Dodson. Oak Ridge National Lab., Tenn. May -

1954. Changed from Official Use Only Dec. 21, 1956. Contract W-7405-Eng-26. 6p. Order from LC. Mi $1.80, ph $1.80. CF-54-5-89

Recomputation and extension of parameters involved in Sutton's diffusion hypothesis, by M. L. Barad and G. R. Hilst. Hanford Works, Richland, Wash. June 1951. Changed from Official Use Only July 6, 1956. Supplement, Nov. 16, 1953. Contract W-31-109-Eng-52. 35p. Order from LC. Mi $3.00, ph $6.30. HW-21415 and Suppl.

Retention of high level radioactive wastes, by A. M. Platt. Hanford Atomic Products Operation, Richland, Wash. April 1957. Contract W-31-109-Eng-52. 27p. Order from OTS. 25 cents. HW-49543A

Liquid waste disposal, by J. A. Ayres, G. E. McCullough, and E. C. Pitzer. Knolls Atomic Power Lab., Schenectady, N. Y. Jan. 1949. Decl. Mar. 12, 1957. Contract W-31-1-9-Eng-52. 78p. Order from LC. Mi $4.50, ph $12.30. KAPL-117

Meeting of the AEC waste processing committee, June 26-28, 1950. Part I. of 3 parts. Edited by J. A. Ayres. General Electric Co. Knolls Atomic Power Lab., Schenectady, N. Y. Dec. 1950. Decl. July 31, 1957. Contract W-31-109-Eng-52. 33p. Order from OTS. 40 cents. KAPL-364

Waste disposal progress report - September, October, November 1951. Knolls Atomic Power Lab. Schenectady, N. Y. Decl. Feb. 26, 1957. Contract W-31-109-Eng-52. 20p. Order from LC. Mi $2.40, ph $3.30. KAPL-649

Effluent concentration. Report for period July 18, 1949 - March 7, 1950. Kellex Corp., New York. March 1950. Decl. Feb. 25, 1957. 7p. Order from LC. Mi $1.80, ph $1.80. KLX-1067

Incinerator for radioactive residue, by W. D. Mc Neese and W. J. Maraman. Los Alamos Scientific Laboratory of the Univ. of Calif. Mar. 1954. Decl. Aug. 16, 1957. 21p. Order from OTS. 25 cents. LA-1691

Report for liquid waste disposal research-September 3, 1951 to December 3, 1951. Mound Lab., Miamisburg, Ohio. Jan. 1952. Decl. Feb. 7, 1957. Contract AT-33-1-Gen-53. 18p. Order from LC. Mi $2.40, ph $3.30. MLM-652

Pilot model evaporator for concentration of radioactive chemical wastes, by S. E. Beall. Oak Ridge National Lab., Tenn. Feb. 1949. Decl. July 26, 1957. Contract W-7405-Eng-26. 33p. Order from OTS. 40 cents. ORNL-224

Electrodecontamination of stainless steel, by M. R. Bennett. Oak Ridge National Lab., Tenn. Nov. 1954. Decl. Apr. 6, 1957. Contract W-7405-Eng-26. 24p. Order from OTS. 35 cents. ORNL-1608

United States' sea disposal operations - a summary to December 1956, by Arnold B. Joseph. Engineering Development Branch, Division of Reactor Development, Washington, D. C. Aug. 1957. 16p. Order from OTS. 20 cents. WASH-734

Reaction of anhydrous hydrogen fluoride with various phosphates of uranium, by D. W. Kuhn. Carbide and Carbon Chemicals Corp. Y-12 Plant, Oak Ridge, Tenn. Nov. 17, 1949. Decl. Mar. 9, 1957. Contract W-7405-Eng-26. 17p. Order from LC. Mi $2.40, ph $3.30, Y-522

Reactors—General

Preliminary investigations for an advanced engineering test reactor, by C. F. Leyse and B. H. Leonard, Jr. Internuclear Company, Clayton, Missouri. April 1957. Addendum to INTERNUC-9. Contract AT (11-1)-500. 16p. Order from OTS. 50 cents. AECU-3427 (Add.)

Materials testing reactor project. Quarterly report for period ending June 1, 1949, by J. R. Huffman. Argonne National Lab., Lemont, Ill. Decl. Feb. 4, 1957. Contract W-31-109-Eng-38. 62p. Order from LC. Mi $3.90, ph $10.80. ANL-4304

Neutron producer (CP-6) program technical progress letter; January 1952, by Stuart McLain, comp. Argonne National Lab., Lemont, Ill. Feb. 1952. Decl. Feb. 12, 1957. Contract W-31-109-Eng-38. 35p. Order from LC. Mi $3.00, ph $6.30. ANL-4757

Estimation of fission product spectra in discharged fuel from fast reactors, by Leslie Burris, Jr., and Ira G. Dillon. Argonne National Lab., Lemont, Ill. July 1957. Contract W-31-109-Eng-38. 57p. Order from OTS. 40 cents. ANL-5742

Accurate weighing with the microchemical balance, by D. S. Flikkema. Argonne National Lab., Lemont, Ill. Aug. 1957. Contract W-31-109-Eng-38. 19p. Order from OTS. 75 cents. ANL-5767

Nuclear reactor progress report. Brookhaven National Lab., Upton, N. Y. Oct. 1948. Decl. Feb. 7, 1957. 134p. Order from LC. Mi $6.90, ph $21.30. BNL-21

Classified progress report of the reactor-Science and Engineering Department, April 1 - June 30, 1950. Brookhaven National Lab., Upton, N. Y. Decl. Feb. 14, 1957. 35p. Order from LC. Mi $3.00, ph $6.30. BNL-67

The Chalk River transient of June 30, 1948 and U^{239} fission, by M. Clark. Brookhaven National Lab., Upton, N. Y. July 1952. Decl. August 20, 1957. 12p. Order from OTS. 25 cents. BNL-194

Proceedings of the Brookhaven Conference on resonance absorption of neutrons in nuclear reactors, September 24 to 25, 1956. Nuclear Engineering Dept. Brookhaven National Lab., Upton, N. Y. 133p. Order from OTS. 65 cents. BNL-433 (C-24)

Boiling burnout newsletter No. 1, by Corwin L. Rickard. Brookhaven National Lab., Upton, N. Y. Dec. 1954. Decl. Feb. 14, 1957. 8p. Order from LC. Mi $1.80, ph $1.80. BNL-2097

Pressure drop in ribbed annuli, by S. G. Bankoff and H. B. Sanford. Chicago. Univ., Metallurgical Lab. Sept. 1943. Decl. Feb. 16, 1957. Contract W-7401-Eng-37. 19p. Order from LC. Mi $2.40, ph $3.30. CE-952

Radiation vs. film formation. Final report, by S. Kuniansky and R. B. Briggs. Chicago. Univ., Metallurgical Lab. May 1945. Decl. Feb. 19, 1957. Contract W-7405-Eng-39. 31p. Order from LC. Mi $ 3.00, ph $6.30. CE-2816

Expected formation of heavy isotopes in the proposed Clinton heterogeneous pile, by H. C. Ott and S. B. English. Oak Ridge National Lab., Tenn. Mar. 1947. Decl. Feb. 13, 1957. Contract W-7405-Eng-26. 16p. Order from LC. Mi $2.40, ph $3.30. CF-47-3-8

MTR shield survey--report No. 2, by G. Thornton. Oak Ridge National Lab., Tenn. Oct. 1949. Decl. Feb. 14, 1957. 15p. Order from LC. Mi $2.40, ph $3.30. CF-49-10-184

Activity in process water from exposure of core material, by J. A. Lane. Oak Ridge National Lab., Tenn. Oct. 1949. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 5p. Order from LC. Mi $1.80, ph $1.80. CF-49-10-186

Feasibility report on production of fuel rods for MTR critical experiment, by C. D. Smith, J. T. Howe, and F. W. Drosten. Oak Ridge National Lab., Tenn. Oct. 1949. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 5p. Order from LC. Mi $1.80, ph $1.80. CF-49-10-209

Comparison of design neutron fluxes and heat production, by R. B. Briggs. Oak Ridge National Lab., Tenn. July 1950. Decl. Feb. 13, 1957. Contract W-7405-Eng-26. 20p. Order from LC. Mi $2.40, ph $3.30. CF-50-7-86

Decrease in pile reactivity due to build-up of fission products, by D. T. Bray. Oak Ridge National Lab., Tenn. July 1951. Decl. Mar. 11, 1957. Contract W-7405-Eng-26. 11p. Order from LC. Mi $2.40, ph $3.30. CF-51-7-132

An estimate of the photoneutron flux in the water surrounding the Bulk Shielding Facility reactor, by J. M. LaRue, and others. Oak Ridge National Lab., Tenn. Aug. 1951. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 20p. Order from LC. Mi $2.40, ph $3.30. CF-51-8-290

Enrichment, plutonium production rate and slurry costs for D_2O-UO_3 and H_2O-UO_3 slurry reactors at 250°C, by Clayton D. Zerby. Oak Ridge National Lab., Tenn. Aug. 1952. Decl. with deletions Feb. 14, 1957. Contract W-7405-Eng-26. 13p. Order from LC. Mi $2.40, ph $3.30. CF-52-8-161 (Del.)

MTS fuel and control rod element meeting, by J. E. Cunningham. Oak Ridge National Lab., Tenn. Jan. 1953. Decl. Feb. 7, 1957. Contract W-7405-Eng-26. 11p. Order from LC. Mi $2.40, ph $3.30. CF-53-1-150

Status of thorium blanket development, by H. F. McDuffie. Oak Ridge National Lab., Tenn. Aug. 1953. Decl. with deletions Feb. 14, 1957. Contract W-7405-Eng-26. 27p. Order from LC. Mi $2.70, ph $4.80. CF-53-8-95 (Del.)

Information paper on MTR fuel elements, by J. E. Cunningham. Oak Ridge National Lab., Tenn. Dec. 1953. Decl. Feb. 7, 1957. Contract W-7405-Eng-26. 12p. Order from LC. Mi $2.40, ph $3.30. CF-53-12-119

Removal of liquid from circulating slurry by filtration, by L. G. Alexander. Oak Ridge National Lab., Tenn. Dec. 1953. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 15p. Order from LC. Mi $2.40, ph $3.30. CF-53-12-187

HR processing development: Applicability of the Bulk Shielding Facility Reactor for the radiation studies required, by Paul A. Haas. Oak Ridge National Lab., Tenn. Dec. 1954. Decl. Feb. 15, 1957. Contract W-7405-Eng-26. 8p. Order from LC. Mi $1.80, ph $1.80. CF-54-12-34

Feasibility study: Use of odorous warning agents in radio-clouds, by E. D. Arnold and A. T. Gresky. Oak Ridge National Lab., Tenn. Feb. 1955. Changed from Official Use Only Dec. 21, 1956. Contract W-7405-Eng-26. 8p. Order from LC. Mi $1.80, ph $1.80. CF-55-2-4

Effect of slurry settling on reactivity in a one-region thorium breeder reactor, by H. C. Claiborne and T. B. Fowler. Oak Ridge National Lab., Tenn. May 1955. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 7p. Order from LC. Mi $1.80, ph $1.80. CF-55-5-115

Restricting flow of solution from reactor to chemical processing cell in the event of a major break in process piping, by H. O. Weeren. Oak Ridge National Lab., Tenn. June 1955. Changed from Official Use Only Dec. 21, 1956. Contract W-7405-Eng-26. 8p. Order from LC. Mi $1.80, ph $ 1.80. CF-55-6-69

Breeding reactors, by M. Tobias. Oak Ridge National Lab., Tenn. June 1955. Decl. July 30, 1957. Contract W-7405-Eng-26. 22p. Order from OTS. 35 cents. CF-55-6-157

HRT and TBR core tank temperatures, by P. N. Haubenreich. Oak Ridge National Lab., Tenn. July 1955. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 14p. Order from LC. Mi $2.40, ph $3.30. CF-55-7-78

HRT chemical facility carrier shielding calculations, by H. E. Williamson. Oak Ridge National Lab., Tenn. Aug. 1955. Changed from Official Use Only Dec. 21, 1956. Contract W-7405-Eng-26. 15p. Order from LC. Mi $2.40, ph $3.30. CF-55-8-174

A food sterilization reactor, by E. O. Guernsey and others. Oak Ridge School of Reactor Technology. Oak Ridge, Tenn. Aug. 1955. Decl. Feb. 25, 1957. 151p. Order from OTS. 80 cents. CF-55-8-190

Irradiation experiment on ETR boron containing fuel elements, by R. J. Beaver. Oak Ridge National Lab., Tenn. Sept. 1955. Decl. Feb. 7, 1957. Contract W-7405-Eng-26. 5p. Order from LC. Mi $1.80, ph $1.80. CF-55-9-112

HRT-CP: Evaluation of thermal insulation and high pressure flanges for HRT chemical processing, by W. L. Carter and A. M. Rom. Oak Ridge National Lab., Tenn. Sept. 1955. Changed from Official Use Only Dec. 21, 1956. Contract W-7405-Eng-26. 6p. Order from LC. Mi $1.80, ph $1.80. CF-55-9-113

Heat removal from ionization chamber shield, by N. F. Lansing. Oak Ridge National Lab., Tenn. Jan. 1956. Contract W-7405-Eng-26. 23p. Order from LC. Mi $2.70, ph $4.80. CF-56-1-10

ORR project monthly progress report No. 17, by J. P. Gill and T. E. Cole. Oak Ridge National Lab., Tenn. Feb. 1956. Contract W-7405-Eng-26. 14p. Order from LC. Mi $2.40, ph $3.30. CF-56-2-158

Five lectures on nuclear reactors presented at Cal Tech, by Alvin M. Weinberg. Oak Ridge National Lab., Tenn. Feb. 1956. Contract W-7405-Eng-26. 38p. Order from LC. Mi $3.00, ph $6.30. CF-56-2-166

Surface temperatures in the ORR tank near the poolside facility, by E. S. Bettis and F. T. Binford. Oak Ridge National Lab., Tenn. Mar. 1956. Contract W-7405-Eng-26. 5p. Order from LC. Mi $1.80, ph $1.80. CF-56-3-31

Increasing pile power. Selection of optimum loading for Clinton pile. Progress report on problem assignment 107-X6E, by J. A. Lane and D. S. Webster. Clinton Labs., Oak Ridge, Tenn. Apr. 1944. Decl. Feb. 23, 1957. 45p. Order from LC. Mi $3.30, ph $7.80. CS-1407

Stress analysis of the SRP reactor tank, by J. W. Walker. Du Pont de Nemours (E. I.) & Co. Savannah River Lab., Augusta, Ga. Oct. 1955. Decl. with deletions Feb. 18, 1957. Contract AT (07-2)-1. 24p. Order from LC. Mi $2.70, ph $4.80. DP-133 (Del.)

Technical quarterly report for third quarter - 1953, by J. R. Huffman. Phillips Petroleum Co. Idaho Falls, Idaho. Nov. 1953. Decl. Feb. 7, 1957. Contract AT (10-1)-205. 27p. Order from LC. Mi $2.70, ph $4.80. IDO-16134

The fast neutron flux spectrum of the MTR, by M. W. Holm. Phillips Petroleum Co. Idaho Falls, Idaho. Mar. 1954. Decl. Feb. 26, 1957. Contract AT (10-1)-205. 17p. Order from LC. Mi $2.40, ph $3.30. IDO-16156

An engineering description of the SPERT-I reactor facility, by T. R. Wilson. Phillips Petroleum Co. Idaho Operations Office, Idaho Falls, Idaho. June 1957. Contract AT (10-1)-205. 40p. Order from OTS. 30 cents. IDO-16318

Calculated surface temperatures for nuclear systems and analysis of their uncertainties. The first report of the Heat Transfer Subcommittee of the Phillips Reactor Safeguard Committee. Edited by R. J. Nertney. Phillips Petroleum Co. Idaho Operations Office, Idaho Falls, Idaho. Contract AT (10-1)-205. 61p. Order from OTS. 45 cents. IDO-16343

Evaluation of transient temperatures and stresses, by R. J. Fritz. General Electric Co. Knolls Atomic Power Lab., Schenectady, N. Y. July 1957. Contract W-31-109-Eng-52. 32p. Order from OTS. 30 cents. KAPL-951, Rev. 1

Initial loading of ACME I, by A. L. MacKinney and J. S. Franke. Knolls Atomic Power Lab., Schenectady, N. Y. Jan. 1957. Contract W-31-109-Eng-52. 17p. Order from LC. Mi $2.40, ph $3.30. KAPL-M-ALM-3

Preliminary survey of uranium metal exponential columns, by J. J. Neuer, and C. B. Stewart. Los Alamos Scientific Lab. of the Univ. of Calif. Los Alamos, N. M. Oct. 1956. Decl. Aug. 12, 1957. Contract W-7405-Eng-36. 41p. Order from OTS. 40 cents. LA-2023

Time behavior of Godiva through prompt critical, by T. F. Wimett. Los Alamos Scientific Lab. of the Univ. of California. Los Alamos, N. M. May 1956. Decl. August 15, 1957. Contract W-7405-Eng-36. 35p. Order from OTS. 40 cents. LA-2029

Nonweapons activities at Los Alamos Scientific Laboratory. Part III. Power Reactor Experiments, by Samuel Glasstone. Los Alamos Scientific Laboratory of the Univ. of California, Los Alamos, N. M. Nov. 1956. Decl. August 19, 1957. Contract W-7405-Eng-36. 43p. Order from OTS. 45 cents. LA-2052

Distribution of feed material in production reactors, prepared by, S. H. Browne and W. J. Houghton. North American Aviation, Inc. Downey, Calif. Aug. 1954. Decl. July 29, 1957. Contract AT-11-1-Gen-8. 38p. Order from OTS. 35 cents. NAA-SR-91

Uranium production reactor (UPR) quarterly progress report for May-July 1953, by R. A. Laubenstein, W. J. Houghton, and D. H. Martin. North American Aviation, Inc. Downey, Calif. Mar. 1954. Decl. Mar. 4, 1957. Contract AT-11-1-Gen-8. 14p. Order from LC. Mi $2.40, ph $3.30. NAA-SR-289

Reactor safety quarterly progress report, February -April 1954. North American Aviation, Inc. Downey, Calif. Oct. 1954. Decl. Feb. 27, 1957. Contract AT-11-1-Gen-8. 27p. Order from LC. Mi $2.70, ph $4.80. NAA-SR-1062

Sodium graphite reactor, quarterly progress report July-September, 1955. Section A - Editor: A. B. Martin. Section B - Editor: J. C. Cochran. Atomics International, a division of North American Aviation, Inc. Canoga Park, Calif. Mar. 1956. Decl. Aug. 15, 1957. Contract AT (04-3)-49. 141p. Order from OTS. 80 cents. NAA-SR-1513

Sodium graphite reactor quarterly progress report October-December, 1955. Section A - Editor: A. B. Martin. Section B - Editor: J. C. Cochran. Atomics International, a division of North American Aviation, Inc. Canoga Park Calif. Apr. 1956. Decl. Aug. 16, 1957. Contract AT (04-3)-49. 100p. Order from OTS. 60 cents. NAA-SR-1582

Conversion of irradiation units for thermal, natural uranium reactors, by R. Loftness. North American Aviation, Inc., Downey, Calif. Oct. 1950. Decl. Mar. 11, 1957. Contract AT 11-1-Gen-8. 7p. Order from LC. Mi $1.80, ph $1.80. NAA-SR-Memo-20

Secular changes in Pu production in a homogeneous reactor, by E. R. Cohen. North American Aviation, Inc. Downey, Calif. July 1951. Decl. Feb. 27, 1957. 4p. Order from LC. Mi $1.80, ph $1.80. NAA-SR-Memo-49

Water boiler calculations III, by E. Weisner. North American Aviation, Inc., Downey, Calif. Aug. 1951. Decl. Feb. 27, 1957. 4p. Order from LC. Mi $1.80, ph $1.80. NAA-SR-Memo-72

Progress report for July 1951. North American Aviation, Inc., Downey, Calif. Sept. 1951. Decl. Feb. 28, 1957. Contract AT-11-1-Gen-8. 27p. Order from LC. Mi $2.70, ph $4.80. NAA-SR-Memo-93

Progress report for October 1951. North American Aviation, Inc., Downey, Calif. Nov. 1951. Decl. Feb. 27, 1957. Contract AT-11-1-Gen-8. 20p. Order from LC. Mi $2.40, ph $3.30. NAA-SR-Memo-145

Feasibility of substituting stainless steel for zirconium as a cladding material for the H_2O moderated PuP, by E. F. Weisner. North American Aviation, Inc., Downey, Calif. Jan. 1952. Decl. Feb. 27, 1957. Contract AT-11-1-Gen-8. 16p. Order from LC. Mi $2.40, ph $3.30.
NAA-SR-Memo-191

Buckling of flat fuel plates caused by thermal expansion, with application to the converter reactor, by W. C. Cooley. North American Aviation, Inc. Downey, Calif. Feb. 1952. Decl. Feb. 27, 1957. Contract AT-11-1-Gen-8. 5p. Order from LC. Mi $1.80, ph $1.80.
NAA-SR-Memo-225

Geometry of the converter reactor, by Ralph Balent. North American Aviation, Inc. Downey, Calif. Mar. 1952. Decl. Feb. 28, 1957. 17p. Order from LC. Mi $2.40, ph $3.30.
NAA-SR-Memo-277

Basis for criticality calculations for slightly enriched uranium, plate-type plutonium converter reactor, by Ralph Balent. North American Aviation, Inc. Downey, Calif. Dec. 1952. Decl. Feb. 27, 1957. Contract AT-11-1-Gen-8. 16p. Order from LC. Mi $2.40, ph $3.30.
NAA-SR-Memo-507

Flux distribution-converter reactor, by E. Cohen. North American Aviation, Inc. Downey, Calif. Apr. 1953. Decl. Feb. 27, 1957. Contract AT-11-1-Gen-8. 22p. Order from LC. Mi $2.70, ph $4.80. NAA-SR-Memo-669

Shim rod design revision for UPR, by H. L. Sletten. (Ref: NAA-SR-207, fig. III-9). North American Aviation, Inc. Downey, Calif. Apr. 1953. Decl. Feb. 28, 1957. Contract AT-11-1-Gen-8. 9p. Order from LC. Mi $1.80, ph $1.80.
NAA-SR-Memo-672

High flux reactor fuel assemblies vibration and water flow, by W. K. Stromquist and Oscar Sisman. Oak Ridge National Lab., Tenn. May 1948. Decl. Feb. 11, 1957. Contract W-7405-Eng-26. 53p. Order from LC. Mi $3.60, ph $9.30. ORNL-50

Reactor technology progress report for quarter ending May 31, 1949, by E. C. Miller, ed. Oak Ridge National Lab., Tenn. July 1949. Decl. Mar. 6, 1957. Contract W-7405-Eng-26. 117p. Order from LC. Mi $6.00, ph $18.30.
ORNL-267

Corrosion of beryllium in simulated cooling water for the proposed development reactor. Interim report - period September 1946 to December, 1948, by James L. English. Oak Ridge National Lab., Tenn. Mar. 17, 1949. Decl. Feb. 7, 1957. Contract W-7405-Eng-26. 129p. Mi $6.30, ph $19.80. Order from LC. ORNL-298

PWR blanket subassembly tube, by N. J. Palladino. Westinghouse Electric Corp. Pittsburgh, Pa. July 1955. Contract AT-11-1-Gen-14. 2p. Order from LC. Mi $1.80, ph $1.80.
WAPD-RD-66

An analysis of the geometry of the ball nut and screw, by John T. Hunt. Westinghouse Electric Corp. Pittsburgh, Pa. Nov. 1952. Changed from Official Use Only Oct. 3, 1956. 14p. Order from LC. Mi $2.40, ph $3.30. WAPD-ReM-10

Transient measurements of coolant pump characteristics, by Joseph P. Franz. Westinghouse Electric Corp. Pittsburgh, Pa. July 1951. Changed from Official Use Only Sept. 12, 1956. Contract AT-11-1-Gen-14. 17p. Order from LC. Mi $2.40, ph $3.30. WAPD-RM-54

Pressure drop through parallel rod subassemblies having a 1.12 equilateral triangular pitch, by B. W. LeTourneau and R. E. Grimble. Westinghouse Electric Corp. Pittsburgh, Pa. Aug. 1955. Changed from Official Use Only Oct. 3, 1956. 10p. Order from LC. Mi $1.80, ph $1.80.
WAPD-TH-118

Reactors—Power

Project of a 420 MW atomic electric station. Committee for Participation of USSR in International Power Associations. Technical Information Service Extension, Oak Ridge, Tenn. July 1957. 21p. Order from OTS. 25 cents.
AEC-tr-2941

Reactor Engineering Division Quarterly Report - Section II. April 1, 1955 through June 30, 1955. Compiled by members of the Reactor Engineering Division. Argonne National Lab., Lemont, Ill. Sept. 1955. Decl. Apr. 6, 1957. Contract W-31-109-Eng-38. 175p. Order from OTS. $1.10. ANL-5471

Reactor Engineering Division Quarterly Report - Section II. July, August, September, 1955. Compiled by Members of the Reactor Engineering Division. Jan. 1956. Decl. Apr. 9, 1957. Contract W-31-109-Eng-38. 197p. Order from OTS. $1.10. ANL-5511

Reactor Engineering Division Quarterly Report - Section I. - October, November, December, 1955. Compiled by members of the Reactor Engineering Division. Argonne National Lab., Lemont, Ill. April 1956. Decl. Mar. 4, 1957. Contract W-31-109-Eng-38. 172p. Order from OTS. $1.10. ANL-5561

EBWR physics experiments, by J. A. Thie. Argonne National Lab., Lemont, Ill. July 1957. Contract W-31-109-Eng-38. 31p. Order from OTS. 25 cents. ANL-5711

Liquid metal fuel reactor, technical feasibility report. Babcock and Wilcox Co., Akron, Ohio. June 1955. Decl. February 21, 1957. Contract AT-30-2-Gen-16. 461p. Order from OTS. $2.30. BAW-2 (Del.)

Liquid metal fuel reactor experiment. Preliminary hazards evaluation, by G. R. Thomas and others. The Babcock & Wilcox Co., Akron, Ohio. July 1957. Contract AT 30-1-1940. 146p. Order from OTS. $1.80. BAW-1017

Model studies of flow in the thermal-shield passages of the PWR reactor, by Lawrence J. Flanigan and Herbert R. Hazard. Battelle Memorial Inst., Columbus, Ohio. June 1957. Contract W-7405-Eng-92. 41p. Order from OTS. 30 cents. BMI-1198

Classified progress report of the reactor Science and Engineering Department for 1949. Brookhaven National Lab., Upton, N. Y. Apr. 1950. Decl. Feb. 15, 1957. 105p. Order from LC. Mi $5.70, ph $16.80. BNL-48

Quarterly progress report for October 1 - December 31, 1952. Brookhaven National Lab., Upton, N. Y. Decl. Feb. 13, 1957. 31p. Order from LC. Mi $3.00, ph $6.30 BNL-225

Quarterly progress report for January 1 - March 31, 1953. Brookhaven National Lab., Upton, N. Y. Decl. Feb. 13, 1957. 35p. Order from LC. Mi $3.00, ph $6.30. BNL-236

Quarterly progress report - November 16, 1953 - February 15, 1954. Classified Section. Brookhaven National Lab., Upton, N. Y. Decl. August 15, 1957. Contract AT-30-2-Gen-16. 41p. Order from OTS. 40 cents. BNL-235

Quarterly progress report - May 16 - August 15, 1954. Classified Section. Brookhaven National Lab., Upton, N. Y. Decl. July 26, 1957. 44p. Order from OTS. 45 cents. BNL-309

Quarterly progress report - November 16, 1954 - February 15, 1955. Classified Section. Brookhaven National Lab., Upton, N. Y. Decl. August 15, 1957. 53p. Order from OTS. 40 cents. BNL-333

Progress report - May 16 - November 15, 1955. Classified Section. Brookhaven National Lab., Upton, N. Y. Decl. Aug. 15, 1957. 72p. Order from OTS. 55 cents. BNL-380

Critical assemblies of light water moderated, slightly enriched uranium rod lattices at Brookhaven, - Hazards report, by Herbert Kouts. Brookhaven National Lab., Upton, N. Y. Feb. 1956. 24p. Order from OTS. 25 cents. BNL-3145

Third report on the feasibility of power generation using nuclear energy. CEPS Group. Commonwealth Edison Co. Chicago, Ill. June 1953. Decl. Feb. 7, 1957. 110p. Order from OTS. $1.05. CEPS-1121 (Del.)

Pile technology lecture notes. Vol. III., by Gale Young - R. C. Mason, comp. Oak Ridge National Lab., Tenn. Apr. 1950. Decl. with deletions Feb. 14, 1957. Contract W-7405-Eng-26. 212p. Order from LC. Mi $9.60, ph $33.30. CF-50-4-124 (Vol.III.)(Del.)

Restarting of HRE soup pump-safety considerations, by W. L. Ross. Oak Ridge National Lab., Tenn. Sept. 1950. Decl. Feb. 16, 1957. 3p. Order from LC. Mi $1.80, ph $1.80. CF-50-9-38

Gas generation in the HRE pressurizer system, by J. O. Bradfute. Oak Ridge National Lab., Tenn. Oct. 1950. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 6p. Order from LC. Mi $1.80, ph $1.80. CF-50-10-133

Gas generation and radiation damage in the HRE soup circulating pump, by J. O. Bradfute. Oak Ridge National Lab., Tenn. Oct. 1950. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 4p. Order from LC. Mi $1.80, ph $1.80. CF-50-10-145

Effects of possible chemical explosion in the core tank of the HRE, by P. C. Zmola and T. A. Welton. Oak Ridge National Lab., Tenn. July 1951. Decl. Feb. 20, 1957. Contract W-7405-Eng-26. 4p. Order from LC. Mi $1.80, ph $1.80. CF-51-7-3

Gas evolution in homogeneous reactors above 1000 PSI, by I. Spiewak and J. O. Bradfute. Oak Ridge National Lab., Tenn. July 1951. Decl. Feb.

14, 1957. Contract W-7405-Eng-26. 7p. Order from LC. Mi $1.80, ph $1.80. CF-51-7-103

Effects of a possible chemical explosion in the reflector tank of the HRE., by R. E. Aven and P. C. Zmola. Oak Ridge National Lab., Tenn. July 1951. Decl. Feb. 16, 1957. Contract W-7405-Eng-26. 5p. Order from LC. Mi $1.80, ph $1.80. CF-51-7-105

Use of baffles in the HRE core tank, by I. Spiewak and J. O. Bradfute. Oak Ridge National Lab., Tenn. Aug. 1951. Decl. Feb. 11, 1957. Contract W-7405-Eng-26. 7p. Order from LC. Mi $1.80, ph $1.80. CF-51-8-232

Nuclear calculations for homogeneous reactors producing U-233, by S. Visner. Oak Ridge National Lab., Tenn. Oct. 1951. Decl. August 21, 1957. 53p. Order from OTS. 50 cents. CF-51-10-110

Heat transfer in nuclear reactors, by R. N. Lyon and W. B. Harrison. Oak Ridge National Lab., Tenn. Jan. 1952. Decl. with deletions Feb. 14, 1957. Contract W-7405-Eng-26. 59p. Order from LC. Mi $3.60, ph $9.30. CF-52-1-76 (Del.)

Required copper concentration for steady-state reactor operation as a function of temperature, flux, and pressure, by C. H. Secoy. Oak Ridge National Lab., Tenn. Jan. 1952. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 7p. Order from LC. Mi $1.80, ph $1.80. CF-52-1-137

Estimated copper concentrations required for operation of homogeneous reactors, by H. F. McDuffie. Oak Ridge National Lab., Tenn. Feb. 1952. Decl. July 27, 1957. Contract W-7405-Eng-26. 5p. Order from OTS. 25 cents. CF-52-2-76

Maximum HRE power output and required core pressure for operation with 100°C soup, by R. Van Winkle and F. C. Zapp. Oak Ridge National Lab., Tenn. May 1952. Decl. Feb. 13, 1957. Contract W-7405-Eng-26. 32p. Order from LC. Mi $3.00, ph $6.30. CF-52-5-229

Reactor physics of Teapot, by P. R. Kasten. Oak Ridge National Lab., Tenn. June 1952. Decl. July 27, 1957. 16p. Order from OTS. 30 cents. CF-52-6-78

Feed pump survey for homogeneous reactor project, by J. M. Welch and C. W. Angel. Oak Ridge National Lab., Tenn. June 1952. Decl. Feb. 13, 1957. Contract W-7405-Eng-26. 8p. Order from LC. Mi $1.80, ph $1.80. CF-52-6-139

Boiling and slurry progress, by R. N. Lyon. Oak Ridge National Lab., Tenn. Oct. 1952. Decl. Feb. 16, 1957. Contract W-7405-Eng-26. 31p. Order from LC. Mi $3.00, ph $6.30. CF-52-10-194

Design data for ISHR (second edition), by F. C. Zapp and P. N. Haubenreich. Oak Ridge National Lab., Tenn. Nov. 1952. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 13p. Order from LC. Mi $2.40, ph $3.30. CF-52-11-161

Photoneutrons in the ISHR, by R. E. Aven. Oak Ridge National Lab., Tenn. Dec. 1952. Decl. Feb. 16, 1957. Contract W-7405-Eng-26. 8p. Order from LC. Mi $1.80, ph $1.80. CF-52-12-117

Case for the "steady state" homogeneous reactor, by C. H. Secoy and H. F. McDuffie. Oak Ridge National Lab., Tenn. Dec. 1952. Decl. Feb. 16, 1957. Contract W-7405-Eng-26. 6p. Order from LC. Mi $1.80, ph $1.80. CF-52-12-177

HRE operations manual, by T. H. Tomas, ed. Oak Ridge National Lab., Tenn. Oct. 1952. Decl. Feb. 16, 1957. Contract W-7405-Eng-26. 56p. Order from LC. Mi $3.60, ph $9.30. CF-53-1-94

Gas production in the ISHR, by J. P. Sanders. Oak Ridge National Lab., Tenn. Jan. 1953. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 10p. Order from LC. Mi $1.80, ph $1.80. CF-53-1-110

Use of core solution as heat transfer agent in the blanket of the ISHR breeder, by C. H. Barkelew. Oak Ridge National Lab., Tenn. Feb. 1953. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 4p. Order from LC. Mi $1.80, ph $1.80. CF-53-2-136

Xenon poisoning in the ISHR, by P. N. Haubenreich. Oak Ridge National Lab., Tenn. May 1953. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 10p. Order from LC. Mi $1.80, ph $1.80. CF-53-5-202

Estimated response of HRE to reactivity increases at low initial power, by V. K. Pare. Oak Ridge National Lab., Tenn. June 1953. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 21p. Order from LC. Mi $2.70, ph $4.80. CF-53-6-147

Pressure drop in high pressure gas system for ISHR, by R. E. Aven. Oak Ridge National Lab., Tenn. June 1953. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 13p. Order from LC. Mi $2.40, ph $3.30. CF-53-6-203

Effect of run duration, sampling frequency, and nickel pickup on the uncertainty in observed HRE corrosion rates, by E. L. Compere. Oak Ridge National Lab., Tenn. July 1953. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 7p. Order from LC. Mi $1.80, ph $1.80. CF-53-7-100

Length of gas separator for ISHR, by R. E. Aven. Oak Ridge National Lab., Tenn. July 1953. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 8p. Order from LC. Mi $1.80, ph $1.80. CF-53-7-136

A homogeneous, non-boiling, natural convection power reactor. Reactor design and feasibility problem, by William E. Kinney and others. Oak Ridge School of Reactor Technology, Oak Ridge, Tenn. Aug. 1953. Decl. March 16, 1957. 171p. Order from OTS. $1.00. CF-53-8-225

Power removal from a boiling slurry blanket, by P. C. Zmola. Oak Ridge National Lab., Tenn. Sept. 1953. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 11p. Order from LC. Mi $2.40, ph $3.30. CF-53-9-111

Physical properties of gas mixture in ISHR high pressure gas system, by R. E. Aven. Oak Ridge National Lab., Tenn. Sept. 1953. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 33p. Order from LC. Mi $3.00, ph $6.30. CF-53-9-150

10-megawatt aqueous homogeneous circulating solution reactor for producing electrical power in remote locations, by D. W. Montgomery and others. Oak Ridge School of Reactor Technology, Oak Ridge, Tenn. Aug. 1953. Decl. Feb. 23, 1957. 167p. Order from OTS. $1.00. CF-53-10-22

Preliminary design study of a 10 MW homogeneous boiling reactor power package for use in remote locations, by R. J. Rickert and others. Oak Ridge School of Reactor Technology. Oak Ridge, Tenn. Aug. 1953. Decl. Feb. 22, 1957. 152p. Order from OTS. 75 cents. CF-53-10-23

Observation of uranium peroxide precipitation in the homogeneous reactor, by E. L. Compere. Oak Ridge National Lab., Tenn. Oct. 1953. Decl. Aug. 13, 1957. 8p. Order from OTS. 25 cents. CF-53-10-39

Preliminary report on the 1953 Los Alamos boiling reactor experiments, by R. N. Lyon. Oak Ridge National Lab., Tenn. Nov. 1953. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 28p. Order from LC. Mi $2.70, ph $4.80. CF-53-11-210

Calculations for thorium- and uranium-fueled reactors, by P. N. Haubenreich. Oak Ridge National Lab., Tenn. Feb. 1954. Decl. July 27, 1957. Contract W-7405-Eng-26. 76p. Order from OTS. 55 cents. CF-53-12-1

U-233 power-breeder reactor. Reactor design and feasibility problem, by R. R. Halik and others. Oak Ridge School of Reactor Technology, Oak Ridge, Tenn. Jan. 1954. Decl. Mar. 15, 1957. 260p. Order from OTS. $1.60. CF-54-1-81

ISHR high pressure gas system at 300°C. and 2000 psia, by R. E. Aven. Oak Ridge National Lab., Tenn. Feb. 1954. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 14p. Order from LC. Mi $2.40, ph $3.30. CF-54-2-126

HRT design data, by F. C. Zapp and R. E. Aven. Oak Ridge National Lab., Tenn. Feb. 1954. Decl. Feb. 15, 1957. Contract W-7405-Eng-26. 12p. Order from LC. Mi $2.40, ph $3.30. CF-54-2-158

Flux distribution in the HRT with 300 g/liter natural uranium blanket, by Phillip M. Wood. Oak Ridge National Lab., Tenn. Mar. 1954. Decl. Feb. 15, 1957. Contract W-7405-Eng-26. 5p. Order from LC. Mi $1.80, ph $1.80. CF-54-3-142

Dump tanks for HRT blanket, by S. Visner. Oak Ridge National Lab., Tenn. June 1954. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 5p. Order from LC. Mi $1.80, ph $1.80. CF-54-6-16

Delayed neutron intensities in HRT and K-49 core solutions, by E. D. Arnold. Oak Ridge National Lab., Tenn. July 1954. Decl. Feb. 15, 1957. Contract W-7405-Eng-26. 8p. Order from LC. Mi $1.80, ph $1.80. CF-54-7-125

HRT design data, issue No. 2, by F. C. Zapp and R. E. Aven. Oak Ridge National Lab., Tenn. Aug. 1954. Decl. Feb. 15, 1957. Contract W-7405-Eng-26. 19p. Order from LC. Mi $2.40, ph $3.30 CF-54-8-53

Preliminary nuclear calculations for the thorium breeder reactor, by P. N. Haubenreich. Oak Ridge National Lab., Tenn. Aug. 1954. Decl. Feb. 15, 1957. Contract W-7405-Eng-26. 19p. Order from LC. Mi $2.40, ph $3.30. CF-54-8-61

Ultimate homogeneous reactor. Reactor design and feasibility problem, by R. A. Thomas and others. Oak Ridge School of Reactor Technology. Oak Ridge, Tenn. Aug. 1954. Decl. Apr. 9, 1957. 222p. Order from OTS. $1.25. CF-54-8-239

Straight-through HRT core model tests, by P. H. Harley. Oak Ridge National Lab., Tenn. Sept. 1954. Decl. Feb. 15, 1957. Contract W-7405-Eng-26. 8p. Order from LC. Mi $1.80, ph $1.80. CF-54-9-129

HRT control circuit proposal, by R. L. Moore. Oak Ridge National Lab., Tenn. Sept. 1954. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 45p. Order from LC. Mi $3.30, ph $7.80. CF-54-9-175

Two-region thorium breeder-power reactor. Progress report No. 1, by H. C. Claiborne, M. Tobias, and T. B. Fowler. Oak Ridge National Lab., Tenn. Oct. 1954. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 12p. Order from LC. Mi $2.40, ph $3.30. CF-54-10-16

Homogeneous reactor fuel and blanket studies: production of ThO_2, by G. C. Williams. Oak Ridge National Lab., Tenn. Oct. 1954. Decl. July 27, 1957. 24p. Order from OTS. 35 cents. CF-54-10-152

HRT recombiner condenser design, by R. E. Aven. Oak Ridge National Lab., Tenn. Nov. 1954. Decl. July 27, 1957. 44p. Order from OTS. 40 cents. CF-54-11-1

HRT CP experimental evaporator studies--problem statement, by J. C. Bresee. Oak Ridge National Lab., Tenn. Feb. 1955. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 12p. Order from LC. Mi $2.40, ph $3.30. CF-55-2-82

Homogeneous reactor test chemical processing project--applicability of freeze plugs, problem statement, by P. E. Novak. Oak Ridge National Lab., Tenn. Mar. 1955. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 7p. Order from LC. Mi $1.80, ph $1.80. CF-55-3-69

Design review committee report on the homogeneous reactor test (HRT), by C. J. Borkowski. Oak Ridge National Lab., Tenn. June 1955. Decl. Feb. 16, 1957. Contract W-7405-Eng-26. 32p. Order from LC. Mi $3.00, ph $6.30. CF-55-6-53

Minutes of HRP group leaders meeting, by M. G. McDuffie. Oak Ridge National Lab., Tenn. June 1955. Decl. Feb. 15, 1957. Contract W-7405-Eng-26. 8p. Order from LC. Mi $1.80, ph $1.80. CF-55-6-57

Contribution of beta particles to heating of HRT core tank, by P. N. Haubenreich. Oak Ridge National Lab., Tenn. July 1955. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 6p. Order from LC. Mi $1.80, ph $1.80. CF-55-7-54

Study of design criteria for a proposed HRT heat exchanger blast shield, by C. L. Segaser. Oak Ridge National Lab., Tenn. July 1955. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 22p. Order from LC. Mi $2.70, ph $4.80. CF-55-7-84

Temperature coefficient and reactor safety, by Paul R. Kasten and M. W. Rosenthal. Oak Ridge National Lab., Tenn. Aug. 1955. Decl. Feb. 14, 1957. Contract W-7405-Eng-26. 10p. Order from LC. Mi $1.80, ph $1.80. CF-55-8-108

Thorium rod blanket study for thermal breeder reactor, by H. C. McCurdy and others. Oak Ridge School of Reactor Technology, Oak Ridge, Tenn. Aug. 1955. Decl. Feb. 15, 1957. 184p. Order from OTS. $1.00 CF-55-8-194 (Del.)

Comments on boiling slurry blankets for homogeneous reactors, by P. C. Zmola. Oak Ridge National Lab., Tenn. Sept. 1955. Decl. Feb. 19, 1957. Contract W-7405-Eng-26. 7p. Order from LC. Mi $1.80, ph $1.80. CF-55-9-125

Review of the HRT-CP hydroclone system, by H. E. Williamson. Oak Ridge National Lab., Tenn. Sept. 1955. Decl. Feb. 19, 1957. Contract W-7405-Eng-26. 13p. Order from LC. Mi $2.40, ph $3.30. CF-55-9-162

Status and objectives -homogeneous reactor project. Summaries of presentations to the reactor subcommittee of the General Advisory Committee, by S. E. Beall and others. Oak Ridge National Lab., Tenn. Jan. 1956. Decl. with deletions Feb. 15, 1957. Contract W-7405-Eng-26. 18p. Order from LC. Mi $2.40, ph $3.30. CF-56-1-26 (Del.)

Fuel cost of power reactors fueled by UO_2SO_4 - Li_2SO_4 - D_2O solutions, by H. C. Claiborne and T. B. Fowler. Oak Ridge National Lab. Tenn. Jan. 1956. Decl. July 27, 1957. Contract W-7405-Eng-26. 26p. Order from OTS. 35 cents. CF-56-1-145

Power reactor studies - quarterly progress report-February, March, and April 1957, by D. F. Babcock, E. I. du Pont de Nemours & Co.

Technical Division, Wilmington, Dela. July 1957. Contract AT (07-2)-1. 32p. Order from OTS. 25 cents. DP-232

Water treatment system for intermediate capacity dual purpose reactor plant --RDS-10 and RDS-11, by W. L. Pearl. Hanford Atomic Products Operation. Richland, Wash. Nov. 1954. Decl. Aug. 19, 1957. Contract W-31-109-Eng-52. 12p. Order from OTS. 30 cents. HW-33655

Nuclear constants for the MTR with 168-gram fuel elements and 131-gram fuel-bearing shim rods, by M. W. Holm, J. W. Webster and H. L. McMurry. Phillips Petroleum Co. Idaho Falls, Idaho. May 1955. Decl. July 30, 1957. Contract AT (10-1)-205. 40p. Order from OTS. 30 cents. IDO-16082

Feasibility report for the KAPL thermal test reactor, supplement No. 1, by H. B. Stewart and others. General Electric Co. Knolls Atomic Power Lab., Schenectady, N. Y. Apr. 1951. Decl. July 29, 1957. Contract W-31-109-Eng-52. 17p. Order from OTS. 25 cents. KAPL-436 (Suppl. 1)

Control and endurance evaluation of a power reactor by means of a critical experiment, by L. Tonks. General Elect. Co. Knolls Atomic Power Lab., Schenectady, N. Y. Sept. 1953. Decl. July 29, 1957. Contract W-31-109-Eng-52. 16p. Order from OTS. 50 cents. KAPL-988

Simple method of calculating critical masses of proton moderated assemblies, by George I. Bell. Los Alamos Scientific Lab. of the Univ. of Calif. Los Alamos, N. Mex. May 1953. Decl. Aug. 6, 1957. Contract W-7405-Eng-36. 30p. Order from OTS. 35 cents. LA-1548

Disassembly of the Los Alamos fast reactor, by E. T. Jurney. Los Alamos Scientific Lab., of the Univ. of Calif. Los Alamos, N. M. July 1953. Decl. Aug. 16, 1957. 27p. Order from OTS. 30 cents. LA-1575

Hydrogen slowing-down method for criticality calculations, Philip J. Bendt. Los Alamos Scientific Lab. of the Univ. of Calif. Los Alamos, N. M. Sept. 1953. Decl. Aug. 7, 1957. Contract W-7405-Eng-36. 17p. Order from OTS. 25 cents. LA-1581

A hazards summary for the proposed Los Alamos Omega West Reactor, by E. T. Jurney. Los Alamos Scientific Lab. of the Univ. of Calif. Los Alamos, N. M. Feb. 1954. Decl. Aug. 20, 1957. Contract W-7405-Eng-36. 41p. Order from OTS. 35 cents. LA-1648

Power plants with thermal reactors. An engineering and economic analysis. Massachusetts Inst. of Technology. Cambridge, Mass. Sept. 1953. Decl. Mar. 5, 1957. Contract AT(30-1)-1359. 517p. Order from OTS. $2.20. MIT-5003 (Del.)

Effective one energy group fission cross section of uranium-238 in fast reactor cores, by K. Bernstein. California Research & Development Co., Livermore, Calif. May 1953. Decl. July 30, 1957. Contract AT(11-1)-74. 9p. Order from OTS. 25 cents. MTA-44

Measurement of the neutron temperature effect using europium oxide foils, by A. T. Biehl, E. R. Cohen and D. Woods. North American Aviation, Inc. Downey, Calif. Sept. 1951. Decl. July 27, 1957. Contract AT11-1-Gen-8. 18p. Order from OTS. 25 cents. NAA-SR-148

Preliminary experiments on fission product diffusion from uranium-impregnated graphite in the range 1800° - 2200°C, by C. T. Young and C. A. Smith. North American Aviation, Inc. Downey, Calif. June 1953. Decl. Aug. 16, 1957. Contract AT 11-1-Gen-8. 26p. Order from OTS. 30 cents. NAA-SR-232

Preparation of fuel elements for the NAA homogeneous graphite research reactor, by D. J. Zigrang and G. A. Bennett. North American Aviation, Inc. Downey, Calif. Aug. 1953. Decl. Aug. 23, 1957. Contract AT 11-1-Gen-8. 39p. Order from OTS. 35 cents. NAA-SR-240

Sodium graphite reactor quarterly progress report-January - March, 1957, by R. W. Dickinson, Ed. and V. R. DeMaria, Asst. Ed. Atomics International. A division of North American Aviation, Inc. Canoga Park, Calif. July 1957. Contract AT (04-3)-49. 52p. Order from OTS. 40 cents. NAA-SR-1941

ORNL research reactor project (ORR). Compiled by Joseph P. Gill. Oak Ridge National Lab., Tenn. Jan. 1953. Decl. Apr. 6, 1957. Contract W-7405-Eng-26. 49p. Order from OTS. 40 cents. ORNL-1475

A conceptual design of a pressurized-water package power reactor, by A. L. Boch and others. Oak Ridge National Lab., Tenn. June 1955. Decl. Jan. 24, 1957. Contract W-7405-Eng-26. 380p. Order from OTS. $1.75. ORNL-1613 (Rev. (Del.))

Aqueous homogeneous reactors for producing central station power, by R. B. Briggs. Oak Ridge

National Lab., Tenn. May 1951. Decl. Feb. 25, 1957. Contract W-7405-Eng-26. 101p. Order from OTS. 50 cents. ORNL-1642 (Del.)

Homogeneous reactor project - quarterly progress report for period ending October 31, 1955. Compiled by H. F. McDuffie and V. K. Hill. Oak Ridge National Lab., Tenn. Jan. 1956. Decl. Feb. 25, 1957. Contract W-7405-Eng-26. 216p. Order from OTS. $1.25. ORNL-2004 (Del.)

Homogeneous reactor project - quarterly progress report for the period ending January 31, 1956, compiled by H. F. McDuffie and V. K. Hill. Oak Ridge National Lab., Tenn. Feb. 15, 1956. Decl. Feb. 25, 1957. Contract W-7405-Eng-26. 144p. Order from OTS. 75 cents. ORNL-2057 (Del.)

Homogeneous reactor project - quarterly progress report for period ending July 31, 1956. Oak Ridge National Lab., Tenn. Oct. 1956. Decl. Feb. 25, 1957. Contract W-7405-Eng-26. 146p. Order from OTS. 75 cents. ORNL-2148 (Del.)

HRP civilian power reactor Conference held at Oak Ridge National Laboratory, May 1-2, 1957. Tech. papers by members of the homogeneous reactor project. Oak Ridge National Lab., Tenn. July 1957. Contract W-7405-Eng-26. 303p. Order from OTS. $1.60. TID-7540

Technical progress report pressurized water reactor program - October 7, 1954 to November 18, 1954. Westinghouse Electric Corp. Pittsburgh, Pa. Decl. Aug. 12, 1957. Contract AT-11-1-Gen-14. 89p. Order from OTS. 50 cents. TID-10028

Facilities for irradiations within the MTR reactor tank. Phillips Petroleum Co. Idaho Falls, Idaho. Decl. Aug. 8, 1957. Contract AT-10-1-205. 82p. Order from OTS. 45 cents. TID-10030

Temperature distributions in a reactor fuel plate, by J. W. Chastain and others. Battelle Memorial Inst., Columbus, Ohio. Sept. 1953. Decl. Aug. 7, 1957. Contract W-7405-Eng-92. 54p. Order from OTS. 40 cents. TID-10032

Parallel flow heat transfer to water in open lattice of cylindrical rods. Walter Kidde Nuclear Laboratories, Inc. Garden City, N. Y. Feb. 1954. Decl. Aug. 8, 1957. Contract AT-30-1-1374, Task 1. 72p. Order from OTS. 45 cents. TID-10079

Fuel rod cooling in natural uranium reactors, by C. A. Trilling. North American Aviation, Inc. Downey, Calif. Jan. 1952. Decl. Aug. 7, 1957. Contract AT 11-1-Gen-8. 61p. Order from OTS. 40 cents. TID-10086

Shielding requirements for NAA NPR recycled cooling water system, by M. H. Feldman and R. L. Loftness. North American Aviation, Inc. Downey, Calif. Dec. 1950. Decl. Aug. 8, 1957. Contract AT 11-1-Gen-8. 33p. Order from OTS. 30 cents. TID-10091

Standardization of industrial nuclear power plant components and of low power reactor systems report for 1954. Prepared by: Nuclear projects section staff. Decl. March 5, 1957. 193p. Order from OTS. $1.10. TID-10094 (Del.)

Technical progress report pressurized water reactor (PWR) project - April 24, 1957 to June 23, 1957. Westinghouse Electric Corp. Bettis Plant. Pittsburgh, Pa. Contract AT-11-1-Gen-14. 84p. Order from OTS. 55 cents. WAPD-MRP-68

Summary report on reactor hazards associated with the pressurized water reactor -- flexible assembly, by H. A. Morewitz, E. R. Sanford, and J. J. Taylor. Westinghouse Electric Corp. Pittsburgh, Pa. Oct. 1954. Decl. Jan. 31, 1957. Contract AT-11-1-Gen-14. 137p. Order from OTS. 70 cents. WAPD-SC-530

Stable Isotope Separation

Design of thermal diffusion cascades from experimental data, by Karl Cohen. Columbia Univ. New York. Div. of War Research. Feb. 1943. Decl. Feb. 12, 1957. 15p. Order from LC. Mi $2.40, ph $3.30. A-530

Final report on work under O. S. R. D. Contract OEMsr-911, by William W. Watson. Yale Univ., New Haven. Sloane Physics Lab. Aug. 1943. Decl. Feb. 12, 1957. 4p. Order from LC. Mi $1.80, ph $1.80. A-779

Comparison of refractories as bomb lining materials in production of metal, by W. H. Keller. Iowa State College, Ames, Iowa. June 1944. Decl. Feb. 7, 1957. 107p. Order from LC. Mi $5.70, ph $16.80. A-1036

Retention of electromagnetically separated inert-gas isotopes, by H. B. Greene. Oak Ridge National Lab., Tenn. n. d. Contract W-7405-Eng-26. 20p. Order from OTS. 25 cents. ORNL-2275

Technology—Feed Materials

Mineralogical examination of pitchblende concentrates and nitric acid digest residues, by D. W. Scott, O. F. Tangel, and A. C. Richardson. Battelle Memorial Inst. Columbus, Ohio. Feb. 1951. Decl. Aug. 5, 1957. Contract AT-30-1-Gen-228. 25p. Order from OTS. 35 cents. BMI-252

Degradation products of tributyl phosphate, by Robert A. Ewing, Samuel J. Kiehl, Jr. and Arthur E. Bearse. Battelle Memorial Inst., Columbus, Ohio. Feb. 1956. Decl. July 30, 1957. Contract W-7405-Eng-92. 48p. Order from OTS. 45 cents. BMI-1073

Denitration of uranyl nitrate quarterly report for August 10, through November 10, 1951, by V. J. Reilly and E. M. Sampson. Oak Ridge National Lab., Tenn. Decl. July 30, 1957. 4p. Order from OTS. 20 cents. CF-51-11-66

A high-temperature metallex study, by R. C. Reid. Oak Ridge National Lab., Tenn. Sept. 1955. Decl. July 27, 1957. Contract W-7405-Eng-26. 41p. Order from OTS. 40 cents. CF-55-9-173

Thorium oxide for REED requirement, by V. D. Allred, L. J. King, and E. M. Shank. Oak Ridge National Lab., Tenn. Feb. 1956. Contract W-7405-Eng-26. 15p. Order from LC. Mi $2.40, ph $3.30. CF-56-2-54

Solvent extraction of thorium from Brazilian sludges, by C. W. Taylor, A. M. Ross, and J. O. Davis. National Lead Company of Ohio. Cincinnati, Ohio. June 1954. Decl. Aug. 20, 1957. Contract AT-30-1-1156. 8p. Order from OTS. 25 cents. FMPC-435

Compendium of Mallinckrodt reports on slag processing. Edited by N. E. Berry. Mallinckrodt Chemical Works. St. Louis, Missouri. Feb. 1956. Decl. July 26, 1957. Contract W-14-108-Eng-8. 306p. Order from OTS. $1.60. MCW-1387

A thermobalance investigation of starch as a reducing agent in the conversion of uranium trioxide to uranium tetrafluoride, by G. G. Briggs. National Lead Company of Ohio. Cincinnati, Ohio. Aug. 1956. Contract AT-30-1-1156. 24p. Order from OTS. $1.00. NLCO-682

Feed materials. A bibliography of unclassified report literature. Compiled by Gifford A. Young. Technical Information Service Extension. Oak Ridge, Tenn. July 1957. 114p. Order from OTS. 60 cents. TID-3084

Quarterly progress report for period ending September 30, 1954, by C. J. Rodden. New Brunswick Lab. New Brunswick, N. Jersey. Dec. 1954. Decl. Aug. 8, 1957. 50p. Order from OTS. 45 cents. TID-10145

Quarterly progress report for period ending March 31, 1955, by C. J. Rodden. New Brunswick Laboratory. New Brunswick, N. Jersey. June 1955. Decl. Aug. 8, 1957. 56p. Order from OTS. 50 cents. TID-10146

Notes on a method of determining the uranium content of uranium tetrafluoride, by L. J. Brady. Oak Ridge National Lab., Y-12 Area, Tenn. Aug 1952. Decl. Mar. 7, 1957. Contract W-7405-Eng-26. 6p. Order from LC. Mi $1.80, ph $1.80. Y-B31-84

Technology—Raw Materials

Review of underwater burnouts of 2S aluminum electrically overheated, by A. J. Bendler. Columbia University--Dept. of Chemical Engineering. New York, N. Y. May 15, 1953. Decl. Aug. 20, 1957. Contract AT-07-2-1. du Pont subcontract AX 294. 14p. Order from OTS. 30 cents. CU-11-53-At-dP-Ch.E. (Rev.)

Flurex process. Interim report by W. N. Carson, Jr. and W. P. Van Meter. Hanford Atomics Products Operation. Richland, Wash. Oct. 1955. Decl. Aug. 15, 1957. Contract W-31-109-Eng-52. 8p. Order from OTS. 25 cents. HW-39457

Progress report on raw materials for March, 1957, by K. B. Brown and others. Oak Ridge National Lab. Tenn. n. d. Contract W-7405-Eng-26. 30p. Order from OTS. 25 cents. ORNL-2306

Progress report on raw materials for April, 1957, by K. B. Brown and others. Oak Ridge National Lab., Tenn. n. d. Contract W-7405-Eng-26. 26p. Order from OTS. 25 cents. ORNL-2346

Acid Leach-Resin-In-Pulp Pilot Plant testing of Rio de Oro Dysart Shaft Ore, by A. W. Griffith and others. National Lead Co., Inc. Raw Materials Development Lab., Winchester, Mass. Jan. 7, 1957. Contract AT-49-6-924. 49p. Order from LC. Mi $3.30, ph $7.80. WIN-60

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