NEWS

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FOR RELEASE: February 13, 1970

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MOON ROCK DISTRIBUTION

Distribution of 28 pounds of Apollo 12 lunar material to scientists in the United States and 16 foreign countries has begun at the National Aeronautics and Space Administration's Manned Spacecraft Center, Houston.

The material, in the form of rocks, chips and fine material and thin sections, is scheduled to be distributed over the next several months to 139 U.S. and 54 foreign scientists.

The 28.6 pounds (13 kilograms) of material represents about 40 percent of the material collected from the Moon's Ocean of Storms by Apollo 12 astronauts Charles Conrad Jr. and Alan L. Bean in November 1969. The bulk of the samples will be distributed to scientists by registered mail and by diplomatic courier. Some scientists will travel to MSC for personal receipt of their samples.

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There are 51 more scientists receiving Apollo 12 samples than the number of principal investigators who received samples from the first lunar landing. Eighteen pounds of Apollo 11 samples were distributed last September to 106 U.S. scientists and 36 scientists representing eight foreign nations.

The domestic scientific analysis will be performed in 139 university, industrial and government laboratories in 25 states and the District of Columbia. The 54 foreign investigators represent Australia, Belgium, Canada, Czechoslovakia, Finland, West Germany, Japan, Korea, Spain, Switzerland, United Kingdom, South Africa, Italy, France, Norway and India.

A total of 1,620 separate samples, rocks, fines (dust), chips, and thin sections, will be distributed. The scientists will perform analysis in mineralogy-petrology, chemical-isotope, physical properties, and bioscience and organic investigations.

Preliminary examination at the Lunar Receiving Laboratory (LRL) has revealed the Apollo 12 material has characteristics similar to the samples returned on Apollo 11. Mineralogically, the Apollo 12 samples contain the same major minerals, pyroxene, plagioclase, olivene, and ilmenite as found in the samples returned by the Apollo 11 crew.

Most of the Apollo 12 rocks are a coarse-grained crystalline variety with abundant pits and glass splashes throughout.

Potassium-Argon age dating, conducted during the preliminary examinations at the LRL shows the Apollo 12 samples to be about 1 billion years younger than the age of the Apollo 11 samples determined by the same method. Other tests revealed the Apollo 12 samples to have organic content somewhat less than that found on Apollo 11 samples.

The principal investigators will be asked to make a report of their findings at the Lunar Science Conference scheduled to be held in Houston in January 1971.

Of the 28 pounds of material distributed to scientists, approximately four pounds will be destroyed in the course of the planned experiments. The remaining 23.7 pounds of sample material will be returned to NASA.

The parts of the Surveyor III spacecraft which were returned by the Apollo 12 crew were released from the LRL Jan. 10. Scientists and engineers at the Jet Propulsion Laboratory, Pasadena, Calif. and Hughes Aircraft Company, Culver City, Calif. are currently examining parts of the Surveyor TV camera, TV cable and scoop.

In addition to the Apollo 12 samples NASA will distribute an additional 112 grams of Apollo 11 material to 13 scientists in the U.S. and Japan for second generation experiments.

APOLLO 12 LUNAR SAMPLE DISTRIBUTION
A GROUP: MINERALOGY - PETROLOGY

INVESTIGATOR and INSTITUTION	INVESTIGATION	No. of Different Rock Specimens	APPROXIMATE SAMPLE ALLOCATION Rocks(grams)	Fines(grams)	Core(grams)
ADLER, I. NASA Goddard Space Flight Center	Electron Microprobe Analyses	3 (plus 3 thin sections)	9	5	0
AGRELL, S. O. Univ. Cambridge, England	Mineralogical Composition	4 (+5 TS*)	12	5	0
ARRHENIUS, G. O. Univ. of Calif., San Diego	Determine Microstructure and Composition	10 (+6 TS*)	15.5	16	1.55
BELL, P. M. Carnegie Inst. of Washington	Determine Crystallographic Parameter of Minerals	3 (+3 TS*)	9	2.5	0
BOWIE, S.H.U. Inst. of Geological Sciences, England	Determine Abundance/Distribution of Radioactive Minerals	(See B Group)			
BRETT, P. R. NASA Manned Spacecraft Center	Identify Opaque Mineralogy and Determine Genesis by Lab Experiments	4 (+4 TS*)	12	0	0
BROWN, G. M. Univ. of Durham, England	Petrologic, Mineralogic, Compositional Examination	6 (+6 TS*)	12	8.5	0

* Thin Section

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A GROUP (cont'd)

INVESTIGATOR and INSTITUTION	INVESTIGATION	No. of Different Rock Specimens	APPROXIMATE SAMPLE ALLOCATION Rocks(grams)	Fines(grams)	Core(grams)
CAMERON, E. N. Univ. of Wisconsin	Determine Structure, Composition, Phases of Opaque Minerals	3	9	3	0
CARTER, N. L. Yale University New Haven, Conn.	Determine Effects of Shock	5	15	6	0
CHAO, E.C.T. U. S. Geological Survey	Determine the Shock Metamorphism Parameters	6	15	9	0
DOUGLAS, J.A.V. Geological Survey, Canada	Petrologic and Mineralogic Examination	6 (+6 TS*)	12	6	0
DUKE, M. B. U.S. Geological Survey	Determine Physical/Chemical Properties of Fine Grained Materials	2 (+2 TS*)	6	6.5	0.95
EVANS, H. T. U.S. Geological Survey	Determine Crystal Structure of Sulfide and Associated Minerals	0	0.1	0	0
FISHER, R. V. Univ. of Calif., Santa Barbara	Determine Morphology and Rounding Properties of Siderometer and Palagonite Grains	2	6	1.5	0
FREDRIKSSON, K. Smithsonian Institution Washington, D.C.	Electron Microprobe Analyses	2 (+2 TS*)	6	0	0

* Thin Section

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A GROUP (cont'd)

INVESTIGATOR and INSTITUTION	INVESTIGATION	No. of Different Rock Specimens	APPROXIMATE SAMPLE ALLOCATION Rocks(grams)	Fines(grams)	Core(grams)
FRONDEL, C. Harvard University Cambridge, Mass.	Mineralogic and Petrologic Examination	4 (+4 TS*)	12	61.5	0
FUNICIELLO, R. Inst. di Geologic e Paleontologia Italy	Determine Morphology and Composition of Spherules	0	0	1.5	0
GAY, PETER Univ. Cambridge, England	Determine Mineralogic Composition	5 (+5 TS*)	12.5	2	0
GLASS, B. P. NASA Goddard Space Flight Center	Investigate Physical-Chemical Properties of Small Glassy Particles	0	0	4.5	0
GOLDSTEIN, J. K. Lehigh University Bethlehem, Pa.	Determine Chemical and Minerologic Composition of Opaque Fe-Ni Materials	0	0	5.5	0
GREENE, C. H. State Univ. of N.Y. at Alfred	Determine Origin of Glassy Fragments	0	0	2	0
HAGGERTY, S. E. Carnegie Inst. of Washington	Determine Crystallization Temperature and Oxygen Fugacity for Fe-Ti Oxide Minerals	3 (+3 TS*)	9	0	0
HARGRAVES, R. Princeton Univ. Princeton, N.J.	Study Pyroxene Minerals	4 (+4 TS*)	9	3	0

* Thin Section

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A GROUP (cont'd)

INVESTIGATOR and INSTITUTION	INVESTIGATION	No. of Different Rock Specimens	APPROXIMATE SAMPLE ALLOCATION Rocks(grams)	Fines(grams)	Core(grams)
HEYWOOD, H. Univ. of Tech. Loughborough, England	Determine Weight and Size Distribution of Fine Particles and Some of their Bulk Properties	0	0	3	0
HORZ, F. Lunar Science Inst. Houston, Tex.	Determine Origin of Micro-craters	2 (+3 TS*)	6	6	0
ISARD, J. O. Univ. Sheffield, England	Determine Chemical/Physical Properties	0	0	3.5	0
JEDWAB, J. Univ. Libre de Bruxelles, Belgium	Determine Composition and Nature of Magnetite	2 (+2 TS*)	6	2.5	0
KARR, C. U.S. Bureau of Mines Morgantown, W. Va.	Determine Mineralogy	3	9	6	0
KEIL, KLAUS Univ. of New Mexico	Determine Elemental Composition by Electron Microprobe	4 (+4 TS*)	9	2	0
KING, E. A. Univ. of Houston	Mineralogy/Petrography of Fine Size Material	4 (+4 TS*)	9	9	0
KULLERUD, G. Carnegie Inst. of Washington	Determine Chemical and Physical Condition for Formation of Lunar Sulfide Minerals	3 (+2 TS*)	9	0	0

* Thin Section

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A GROUP (cont'd)

INVESTIGATOR and INSTITUTION	INVESTIGATION	No. of Different Rock Specimens	APPROXIMATE SAMPLE ALLOCATION Rocks(grams)	Fines(grams)	Core(grams)
KUSHIRO, I. Univ. of Tokyo	Petrologic Study	9 (+4 TS*)	21	0	0
LOFGREN, G. NASA Manned Spacecraft Center	Establish Formation Mechanism for Lunar Glass by Comparison with Terrestrial Glasses	0	0	1	0
LOVERING, J. F. Australian Natl. Univ.	Determine Elemental Composition, Concentration of Several Elements: Fission Track Dating	(See B. Group)			
MAC GREGOR, I. D. Univ. Calif., Davis	Determine the Mineralogy	3 (+4 TS*)	9	12	0
MASON, B. Smithsonian Inst. Washington, D.C.	Mineralogical Investigations/ Microprobe Analysis	4 (+4 TS*)	9	11.5	0
MASSON, C. R. Nat. Research Council Nova Scotia	Determine the Concentration of Anionic Species	0	0	1	0
MC KAY, D. NASA Manned Spacecraft Center	Composition of Fine Particulate Matter	1	3	8.5	0.55
MUAN, A. Pennsylvania State Univ.	Determine Origin of Lunar Materials through Phase Equilibrium Studies	9 (+4 TS*)	18	0	0

* Thin Sections

A GROUP (cont'd)

INVESTIGATOR and INSTITUTION	INVESTIGATION	No. of Different Rock Specimens	APPROXIMATE SAMPLE ALLOCATION Rocks(grams)	Fines(grams)	Core(grams)
O'HARA, M. J. Edinburgh Univ., Scotland	Phase Equilibria Studies	9 (+4 TS*)	21	0	0
PAPIKE, J. State Univ. of N.Y. at Stonybrook	Determine Crystal-Chemical Relationships	4	9	2	0
QUAIDE, W. L. NASA Ames	Petrography of Lunar Studies	(See B Group)			
RAMDOHR, P. Max Planck Inst. Heidelberg, Germany	Opaque Mineralogy	3 (+ 1 TS*)	9	0	0
ROY, R. Pennsylvania State Univ.	Determine Micro-Luminescence Properties	0	0	6.5	0
RINGWOOD, W. E. Australian Natl. Univ.	Mineralogy	10 (+5 TS*)	21	1	0
ROEDDER, E. U.S. Geological Survey	Fluid Inclusions	1 (+2 TS*)	3	3	0
ROSS, M. U.S. Geological Survey	Mineralogy	2	0.1	0	0
SCLAR, C. B. Lehigh Univ. Bethlehem, Pa.	Shock Damage Studies	3 (+4 TS*)	9	7.5	0

*Thin Sections

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A GROUP (cont'd)

INVESTIGATOR and INSTITUTION	INVESTIGATION	No. of Different Rock Specimens	APPROXIMATE SAMPLE ALLOCATION Rocks(grams)	Fines(grams)	Core(grams)
SHORT, N. Kent State Univ. Kent, O.	Shock Damage Studies	5 (+6 TS*)	12	11	0.1
SIPPEL, R. F. Mobil-Research Corp. Dallas, Tex.	Cathode Luminescence Studies	3 (+3 TS*)	9	1.5	0
SKINNER, B. F. Yale Univ. New Haven, Conn.	Mineralogy of Sublimates	1 (+1 TS*)	3	1.5	0
SMITH, J. V. Univ. of Chicago	Mineralogy	4 (+5 TS*)	9	8.5	0
STEWART, D. U.S. Geological Survey	Structure and Stability of Feldspars	2 (+1 TS*)	6	3	0
TOLANSKY, S. Univ. of London	Diamonds and Surface Features of Glass	0	0	1.5	0
VON ENGELHARDT, W. Tubingen Univ. Germany	Shock Mineralogy and Metamorphism	3 (+2 TS*)	9	5	0
WALTER, L. S. NASA Goddard Space Flight Center	Determine Mineralogic Composition	3 (+2 TS*)	9	2.5	0
WEILL, D. F. Univ. of Oregon	Plagioclase Mineralogy	10 (+5 TS*)	21	0	0

* Thin Sections

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A GROUP (cont'd)

INVESTIGATOR and INSTITUTION	INVESTIGATION	No. of Different Rock Specimens	APPROXIMATE SAMPLE ALLOCATION Rocks(grams)	Fines(grams)	Core(grams)
WOOD, J. Smithsonian Obser. Cambridge, Mass.	Microprobe Studies and Mineralogy	4 (+5 TS*)	9	9.5	0
ZUSSMAN, J. Univ. of Manchester England	Mineralogy and Petrology	5 (+5 TS*)	12	4.5	0
RADCLIFFE, V. Case Western Reserve Univ., Cleveland, O.	Determine Substructure of Lunar Minerals by High Voltage Transmission Electron Microscopy	4	5	0	0

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*Thin Sections

B GROUP: CHEMICAL AND ISOTOPIC ANALYSIS

INVESTIGATOR and INSTITUTION	INVESTIGATION	No. of Different Rock Specimens	APPROXIMATE SAMPLE ALLOCATION Rocks(grams)	Fines(grams)	Core(grams)
AHRENS, L. A. Univ. of Cape Town South Africa	Determine Abundance of Major and Trace Elements by Several Techniques	5	16	4	0
	Apollo 11 Sample	1	6	0	0
ANDERS, E. Univ. of Chicago	Selected Elements and Cosmic Ray Al^{26} Na^{22}	15	12	2	0.5
	Determine AL^{26} and Na^{22} content by Nondestructive Methods (Non-destructive Analyses)		318	20	
ARNOLD, J. Univ. Calif. San Diego	Determine the Bombardment History of Samples	1	200	0	0
BISCHOFF, J. L. Univ. Calif. Los Angeles	Neutron Activation for Yttrium and Elements of Lanthanide Series	2	2	1	0
BOWIE, S.H.U. Inst. Geol. Sciences London	Determine U Th, Pb Abundances	3 (+3 TS*)	9	0	0
CLAYTON, R. N. Univ. Chicago	Determine Oxygen Isotope Ratios	8	13.5	3	0
COMPSTON, W. Aust. Natl. Univ.	Determine Major, Trace Elements and Rb/Sr Ages	9	17	2	0

* Thin Sections

B GROUP (cont'd)

INVESTIGATOR and INSTITUTION	INVESTIGATION	No. of Different Rock Specimens	APPROXIMATE SAMPLE ALLOCATION Rocks (grams)	Fines (grams)	Core (grams)
DAVIS, R. Brookhaven Natl. Lab. Long Island, N.Y.	Determine Radioistopic Content of Argon and Hydrogen	0	0	10	0.3
DE MARIA, G. Univ. of Rome, Italy	Determine Thermodynamic Parameters for Vaporizing Lunar Samples and Activity of Fe, Ca and Mn by Mass Spectrometry	4	7	0	
	Apollo 11 Sample	1	40	0	0
EHMANN, W.D. Univ. of Kentucky	Al, Si, O and Ir, Ni, Co, Sc (Complements Other Studies; Nondestructive)	7	7.5	3	0
ENGEL, A.E. Univ. Calif. San Diego	Determine Abundance of Major Rock Forming Elements	3	18	0	0
EPSTEIN, S. Calif. Inst of Tech.	Determine Isotope Ratios for C, O, Si, H	10	13.7	6	0
FIELDS, P. Argonne Natl. Lab. Chicago	Search for Transuranic Elements	1	5	5	0
FIREMAN, E. L. Smithsonian Obs. Cambridge, Mass.	Measure Ar^{37}, Ar^{39} and Tritium Content	1	20	5	0
FRIEDMAN, I. U.S. Geological Survey	Determine H_2O, and Isotopic Composition of C, O, and H	5	8.5	3	0

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B GROUP (cont'd)

INVESTIGATOR and INSTITUTION	INVESTIGATION	No. of Different Rock Specimens	APPROXIMATE SAMPLE ALLOCATION Rocks(grams)	Fines(grams)	Core(grams)
GAST, P. W. Lamont Geol. Obs. New York, N.Y.	Determine Alkali Metals, Alkaline Earths, Rare Earths and Strontion Isotope Composition	10	16	1.5	0
GEISS, J. Univ. of Berne Switzerland	Determine Noble Gas and Tritium Content	7	34	16	0.9
GOLES, G. G. Univ. of Oregon	Trace Elements (Complements Other Studies Nondestructive)	8	9.7	1.5	0
GRADSZTAJN, ELI Centre Natl. de la Recherche Scientifique France	Effects of Solar Wind and Cosmic Rays and Abundance of Ll and B by Ion Source Mass Spectrometry	3	3	1	0
GUPTA, Y. P. Northrop Corporate Lab. Hawthorne, Calif.	Determine the Elemental Composition of Lunar Materials by Auger Electron Spectroscopy	2	2	0	0
HASKIN, L. A. Univ. of Wisconsin	Rare Earth Elements	9	10	2	0
HEIER, K. S. Mineralogisk-Geologisk Museum Norway	Determine Elemental Concentration in Lunar Materials by Neutron Activation Analysis	4	5	1	0
HELZ, A. U.S. Geological Survey	Emission Spectrographic Determination of Major and Minor Elements	6	2.9	1	0

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B GROUP (cont'd)

INVESTIGATOR and INSTITUTION	INVESTIGATION	No. of Different Rock Specimens	APPROXIMATE SAMPLE ALLOCATION Rocks(grams)	Fines(grams)	Core(grams)
HERR, W. Univ. of Cologne Germany	Determine Abundance of Mn^{53}	3	10	1	0
HEYMAN, D. Rice Univ. Houston, Tex.	Determine Abundance of Noble Gases	2	1.5	3.5	0.5
HINTENBERGER, H. Max Planck Inst., Mainz, Germany	Determine Abundance of Rare Gases He and N	3	3	2.5	0
HURLEY, P. M. Mass. Inst. Tech. Cambridge, Mass.	Determine Rb/Sr Ages	2	2	0	0
KAPLAN, G. Lab D'Analyses Physiques Serres-Castet, France	Spark Source Mass Spectrometry of Dust and Age Determination by Os/Re and K/Ca	4	4	2	0
KELLER, W. D. Univ. of Missouri	Determine Amount and Concentration of Elements Removed from Lunar Materials When Dissolved in Water and Acids Under Ambient Temperature	1	1	2	0
KNOX, B. Penn State Univ.	Chemical Analysis by Use of a Laser Mass Spectrometer	1	1	1	0

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B GROUP (cont'd)

INVESTIGATOR and INSTITUTION	INVESTIGATION	No. of Different Rock Specimens	APPROXIMATE SAMPLE ALLOCATION Rocks(grams)	Fines(grams)	Core(grams)
KOHMAN, T. Carnegie-Mellon Inst. Pittsburgh, Pa.	Determine Isotopic Abundance of Pb, Sr, Os, Ti, Nd and Ag	0	0	5	0
LIPSCHULTZ, M. E. Purdue Univ. Indiana	Determine the Vanadium and Vanadium Isotope Content	3	6	1	0
LOVERING, J. F. Australian Natl. Univ.	U, Th, K, Re, Os, Ru	10 (+5 TS*)	15.5	8.5	0
MAXWELL, J. A. Geol. Survey of Canada	Determine Abundance of Major Elements	2	10	5	0
MEGRUE, G. H. Smithsonian Astro. Obsv. Cambridge, Mass.	Determine the Isotopic Abundance of He, Ne, Ar, Kr, and Xe, the Concentration and Distribution of Water, CO_2, N_2, SO_2 by Laser Microprobe-Mass Spectrometry	2	3	1	0
MORRISON, G. Cornell Univ. Ithaca, N.Y.	Trace Elements by Spark Source	4	7	2	0
MURTHY, R. Univ. of Minn.	Isotopic Composition of Rare Earth Elements and Other Selected Elements	5	11	2	0
NAUGHTON, J. J. Univ. of Hawaii	Search for Evidence of Alkali Metals Erosion by Mass Spectrometry	3	3	0	0

*Thin Sections

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B GROUP (cont'd)

INVESTIGATOR and INSTITUTION	INVESTIGATION	No. of Different Rock Specimens	APPROXIMATE SAMPLE ALLOCATION Rocks (grams)	Fines (grams)	Core (grams)
O'KELLEY, G. D. Oak Ridge Nat. Lab. Tennessee	Determine Content of Cosmic Ray Induced Nuclides and K, U, and Th	5	2597	500	**
PECK, L. U.S. Geological Survey	Determine Abundance of Major Elements	1	5	0	0
PEPIN, R. Univ. of Minn.	Determine Noble Gas Content	9	9.5	2.5	0.15
PERKINS, R. W. Battelle Mem. Inst. Ruhland, Wash.	Irradiation History of Lunar Materials (Nondestructive Analyses)	8	6010	600	**
PHILPOTTS, J. A. NASA Goddard Space Flight Center	Rare Earth Element and BA, K, Rb and Sr Content	8	15	5	0.5
QUAIDE, W. L. NASA Ames Res. Center	Determine Cosmic Ray Induced, Al^{26}, Na^{22} and Mn^{54}	13 (+2 TS*)	9+ (950)	7.5	2
REED, G. W. Argonne Natl. Lab. Chicago	Selected Elements Including F, Cl, Br, I	8	12.5	2.5	0
REYNOLDS, J. Univ. Calif. Berkeley	Determine Rare Gas Content Alkali Metal and U Content	6	9.5	2.5	0

*Thin Sections
** O'Kelley and Perkins to count nondestructive (ND) remainder of two core samples

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B GROUP (cont'd)

INVESTIGATOR and INSTITUTION	INVESTIGATION	No. of Different Rock Specimens	APPROXIMATE SAMPLE ALLOCATION Rocks(grams)	Fines(grams)	Core(grams)
RICHARDSON, K. NASA Manned Space-craft Center	Autoradiography	(3 TS*)			
ROSE, H. U.S. Geological Survey	Determine Abundance of Major Elements	2	4	2	0
SATO, M. U.S. Geological Survey	Oxygen Fugacity of Rock Melts and Indivicual Minerals with a Fugacity Probe	3	3	0	0
SCHAEFFER, O. State Univ. of N.Y. at Stonybrook	Determine Rare Gas Content	4	4	1.5	0
SCHMITT, R. A. Oregon State Univ.	Rare Earth and Bulk Elemental Content	8	7	3.5	0
SCOON, J. H. Cambridge Univ. England	Determine Abundance of Major Elements	1	5	5	0
SIEVERS, R. E. Aerospace Research Lab. U.S. Air Force	Determine Concentration of Be, Cr, Fe, Co, and Ni by Gas Chrom-atography and Mass Spectrometry of Metal Chelates	4	4	1	0

*Thin Sections

B GROUP (cont'd)

INVESTIGATOR and INSTITUTION	INVESTIGATION	No. of Different Rock Specimens	APPROXIMATE SAMPLE ALLOCATION Rocks (grams)	Fines (grams)	Core (grams)
SILVER, L. T. Calif. Inst. of Tech.	U, Th, and Pb Concentration and Isotopic Composition	17	30	10	0
SMALES, A. A. Atomic Energy Research Est., England	Elemental Composition	2	30	2	0
TATSAMOTO, M. U.S. Geological Survey	U, Th, and Pb Concentration and Isotopic Composition	9	61	10	0
TAYLOR, S. R. Australian Natl. Univ.	Determine Trace Elements Concentration by Spark Source Mass Spectrometry	5	5	4	0
THODE, H. G. McMaster Univ. Canada	Determine Abundance of Stable Isotopes of S and Mg	5	16	1	0
TRAVESI, A. Comision Nacional Investigacion del Espacio Spain	Determine Abundance of 42 Elements in Lunar Materials by Neutron Activation	1	1	1	0
TUREKIAN, K. K. Yale University New Haven, Conn.	Selected Elements	5	4.5	2.5	0
TURKEVICH, A. Univ. of Chicago	Heavy Elements Content	3	3	2.5	0
TURNER, G. Sheffield Univ., England	Determine Age by Argon Dating	5	8	1	0

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B GROUP (cont'd)

INVESTIGATOR and INSTITUTION	INVESTIGATION	No. of Different Rock Specimens	APPROXIMATE SAMPLE ALLOCATION Rocks(grams)	Fines(grams)	Core(grams)
UREY, H. C. Univ. Calif. San Diego	Determine Isotopic Composition and Concentration of Rare Gases	6	13	1.5	0.3
VOBECKY, M. Nuclear Research Inst. of Czechoslovakian Acad. of Sciences	Determine Abundance of Elements by Neutron Activation	1	1	1	0
WANKE, H. Max Planck Inst., Mainz, Germany	Minor and Major Elements (Allocation is for Cosmic Ray Work and Also Used for This Purpose Determine Cosmic Ray Induced Nuclides	7	200	102	0
WANLESS, R. K. Canada Geol. Survey	Determine Concentration and Isotopic Compoistion of Pb, U. Sr, and Ar	1	1	5	0
WASSERBURG, G. J. Calif. Inst. of Tech.	Isotopic Composition of Rare Gases: K, Rb, Sr, Ba, Gd and V	14	4.3	11	0.9
WASSON, J. T. Univ. Calif., Los Angeles	Ga, Ge, In, Ir and B	7	13	1.5	0
WESOLOWSKI, J. J. Lawrence Radiation Lab. Berkeley, Calif.	Search for Fissionable Transuranic Elements Using Thermal Neutron-induced Fission Technique	0	0	4	0
WETHERILL, G. S. Univ. Calif., Los Angeles	Determine Conc. of K, Rb, Sr, Pb, Th, and U.	3	30	10	0

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B GROUP (cont'd)

INVESTIGATOR and INSTITUTION	INVESTIGATION	No. of Different Rock Specimens	APPROXIMATE SAMPLE ALLOCATION Rocks(grams)	Fines(grams)	Core(grams)
WIIK, H. B. Geol. Survey of Finland	Determine Abundance of Major Elements	2	18	0	0
YOUNG, Atomic Energy Res. Korea	Determine Chemical and Physical Properties by Several Methods	1	1	2	0
ZAHRINGER, J. Max Planck Inst. Heidelberg, Germany	Determine Mineralogy and Solar Wind Effects	5	8.5	1.2	0

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APOLLO 12 LUNAR SAMPLE DISTRIBUTION
C GROUP: PHYSICAL PROPERTIES PROPOSED ALLOCATION PLAN

INVESTIGATOR and INSTITUTION	INVESTIGATION	No. of Different Rock Specimens	APPROXIMATE SAMPLE ALLOCATION Rocks(grams)	Fines(grams)	Core(grams)
ADAMS, J.B. Caribbean Research Institute, Virgin Islands	Determine Spectral Reflectance	2	6	2	0.3
ALVAREZ, L.W. Univ. of Calif., Berkeley	Search for Dirac Monopoles	Analyses to be completed at NASA Lunar Receiving Lab after Apollo 13			
ANDERSON, O.L. Lamont Geological Observatory, New York, N.Y.	Measure Physical Properties	3	27	1	0
BASTIN, J. Queen Mary College Univ. London	Determine Thermal Conductivity	1	14	0	0
	Apollo 11 Sample	0	0	20	0
BECKER, K. Oak Ridge Nat'l. Lab Tennessee	Determine by Thermally Stimulated Exo-electron Emissions Thermal and Radiation History of Lunar Rocks	1	3	0.5	0.15
BIRKEBAK, R.C. Univ. Kentucky Research Foundation	Determine Reflectance and Thermal Conductivity	2	4	13	0
COOPER, A.R. Case Western Reserve Univ., Cleveland, O.	Characterize Glass Portions	0	0	0.5	0
	Apollo 11 Sample	0	0	5	0

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C GROUP (Con't.)

INVESTIGATOR and INSTITUTION	INVESTIGATION	APPROXIMATE SAMPLE ALLOCATION			
		No. of Different Rock Specimens	Rocks(grams)	Fines(grams)	Core(grams)
COLLETT, L.S. Geological Survey, Canada	Electrical Properties	1	13	2.5	0
DALRYMPLE, G.B. U.S. Geological Survey	Determine Thermoluminescent Properties	1	0.1	2.5	1.6
DOELL, R.R. U.S. Geological Survey	Magnetic Properties (General Survey to be Completed at LRL)	2	21	1	0
DUCHENSE, J. Univ. of Leige, Belgium	Determine Distribution of Free Radicals in Carbonaceous Materials and Iron	2	2	2	0
	Apollo 11 Sample	0	0	1	0
EDGINGTON, J. A. Queen Mary College England	Measure Luminescent and Thermo-luminescent Properties under Proton Bombardment	2	4	1	0.3
FLEISCHER, R.L. General Electric Co., Schenectady, N.Y.	Measure Radiation History	4	12	2	1.35
GEAKE, J.E. Univ. of Manchester England	Determine Luminescence Properties	2	5	2	0
GOLD, T. Cornell Univ. Ithaca, N.Y.	Measure Size Distribution, Photo-metric Junction, Composition and Surface Effects Solid Wind Effects and Dielectric Constant	6	8.6	9	0.3

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C GROUP (Cont.)

INVESTIGATOR and INSTITUTION	INVESTIGATION	APPROXIMATE SAMPLE ALLOCATION			
		No. of Different Rock Specimens	Rocks (grams)	Fines (grams)	Core (grams)
GREENMAN, N.N. Douglas Aircraft Co. Santa Monica, Calif.	Determine Origin and Nature of Luminescence	2	5	1	0
GROSSMAN, J.J. Douglas Aircraft Co. Santa Monica, Calif.	Determine Adhesive Microphysical and Microchemical Properties	1	2	5	0
HAFNER, S. University of Chicago	Conduct Mossbauer Studies	3	6	0.5	0.4
HANEMAN, D. Univ. of New South Wales, Australia	Determine Surface Properties of Lunar Materials by Electron Paramagnetic Resonance	1	0.5	1	0
	Apollo 11 Samples	0	0	1	0
HAPKE, B. University of Pittsburgh	Determine Solar Wind Damage	2	4	2	0.3
HELSLEY, C.E. Southwest Center for Advanced Studies, Dallas, Texas	Measure Magnetic Properties	4 (+4TS*)	27	1.0	0
HERZENBERG, C.L. IIT Research Institute Chicago	Conduct Mossbauer Studies	3 (+3TS*)	3	1	0
KANAMORI, H. University of Tokyo	Determine Elastic Constants	2	50	0	0

*Thin Section

C GROUP (Con't.)

INVESTIGATOR and INSTITUTION	INVESTIGATION	APPROXIMATE SAMPLE ALLOCATION			
		No. of Different Rock Specimens	Rocks(grams)	Fines(grams)	Core(grams)
LAL, D. Tata Institute, India	Determine Solar and Galactic Radiation History from Study of Lunar Samples	4	12	1	1.25
	Apollo 11 Samples	0	0	2	0
LAROCHELLE, A. Geological Survey, Canada	Determine Magnetic Properties	2	21	1	0
MANATT, S.L. Jet Propulsion Lab. Pasadena, Calif.	Determine Chemical State of Hydrogen and Metallic Elements	1	0.2	0.8	0
	Apollo 11 Samples	0	0	10	0
MAURETTE, M. Centre Natl. de la Recherche Scientifique	Determine Radiation History of Lunar Materials by Several Techniques	4	12	2	1.3
MUIR, A.H. North American Rockwell Thousand Oaks, Calif.	Conduct Mossbauer Studies	3	3	1	0
NAGATA, T. University of Tokyo	Determine Magnetic Properties	1	10.5	1.0	0
	Apollo 11 Samples	1	10	0	0
NASH, D.B. Jet Propulsion Lab. Pasadena, Calif.	Determine Luminescence, Photometric and Chemical Response to UV and Protons	2	5	3	1.25
PICKART, S.J. U.S. Naval Ord. Lab. White Oak, Md.	Determine Structure of Glass, Crystalline Phases, Elements and Magnetite by Neutron Diffractometry	0	0	1	0

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C GROUP (Con't.)

INVESTIGATOR and INSTITUTION	INVESTIGATION	APPROXIMATE SAMPLE ALLOCATION			
		No. of Different Rock Specimens	Rocks(grams)	Fines(grams)	Core(grams)
PIMENTEL, G.C. University of Calif. Berkeley	Determine Infrared Reflection-Absorption Characteristics Using the Mariner 7 Spectrometer (1.9 to 14.3)	Apollo 11 material only			
PRICE, D.B. University of California, Berkeley	Radiation History through Study of Fossil Fission Tracks	4	12	2	1.35
ROBIE, R.A. U.S. Geological Survey	Measure Heat Capacity	2	30	0	0
RUNCORN, S.K. Univ. of Newcastle on Tyne, England	Determine Magnetic Properties	4 (+4 TS*)	21	1	0
SCHIFFER, J.P. Argonne Natl. Lab. Chicago	Search for Quarks by Mass Spectrometric Methods	0	0	1	0
SENFTLE, F.E. U.S. Geological Survey	Determine Magnetic Properties, State of Iron and Water Content of Lunar Glass	1	0.5	0	0
	Apollo 11 Samples	0	0	2	0
SIMMONS, M.G. Mass. Institute of Technology, Cambridge, Mass.	Determine Thermal Diffusivity/ Conductivity Electrical Constants, Thermal Expansion and Velocity of Shear and Compressional Waves	2 (+4 TS*)	50	1	0

*Thin Section

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C GROUP (Con't.)

INVESTIGATOR and INSTITUTION	INVESTIGATION	No. of Different Rock Specimens	APPROXIMATE SAMPLE ALLOCATION		
			Rocks(grams)	Fines(grams)	Core(grams)
STEPHENS, D.R. University of California Livermore	Determine Pressure-Volume Properties	3	20	0	0
STRANGWAY, D.W. University of Toronto Canada	Determine Magnetic Properties	4	21	0	0
WALKER, R.M. Washington University St. Louis, Mo.	Determine Radiation History	5	12.1	3	1.5
WEEKS, R.A. Oak Ridge Nat'l. Lab. Tennessee	Determine Chemical State	1	5	0.8	0
GENTRY, R.V. Oak Ridge Nat'l. Lab. Tennessee	Search for and Characterization of Radioactive Haloes	(2 + TS*)			

*Thin Section

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APOLLO 12 LUNAR SAMPLE DISTRIBUTION

D GROUP: BIOSCIENCE/ORGANIC GROUP
PROPOSED ALLOCATION PLAN

INVESTIGATORS and INSTITUTION	INVESTIGATION	No. of Different Rock Specimens	APPROXIMATE SAMPLE ALLOCATION Rocks(grams)	Fines(grams)	Core(grams)
BARGHOORN, E.S. Harvard Univ. Cambridge, Mass.	Determine Discrete Organized Microstructures (Abundance Microobjects or Microfossils)	1	1	1.25	0
BIEMANN, K. M.I.T. Cambridge, Mass.	Isolate & Characterize Organic Compounds (Identification of Indiv. Organic Compounds)	0	0	8	0.6
	Apollo 11 Sample	1	40	0	0
BURLINGAME, A.L. U. Calif., Berkeley	Complete Prel. Organic Characterization (Levels of Organic Matter Volatile at 500°C)	Analyses completed at NASA Lunar Receiving Lab.			
CALVIN, M. U. Calif., Berkeley	Determine Nature, Distribution and Origin of Organic Matter (Identification of Individual Organic Compounds)	1	5	40	1
CLOUD, P.E. U. Calif., San Diego	Determine Discrete Organized Microstructures (Abundance Microobjects Organic Microfossils)	1 (+ 1 TS*)	1	1.25	0
EGLINTON, G. Univ. Bristol England	Determine Structure & Quantities of Organic Compounds (Identification of Individual Organic Compounds)	2	10	31	1.8
FOX, S. W. Univ. Florida	Search for Bio-organic Compounds and Systems (Specific Class of Compound abundance-micro objects or microfossils)	0	0	20.15	0

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APOLLO 12 LUNAR SAMPLE DISTRIBUTION

D GROUP: BIOSCIENCE/ORGANIC GROUP
PROPOSED ALLOCATION PLAN

INVESTIGATORS and INSTITUTION	INVESTIGATION	No. of Different Rock Specimens	APPROXIMATE SAMPLE ALLOCATION Rocks(grams)	Fines(grams)	Core(grams)
HALPERN, B. Stanford Univ. Palo Alto, Calif.	Determine Association Between Porphyrins and Amino Acids (Specific Class of Compounds)	0	0	15	0
JOHNSON, R.D. NASA/Ames	Determine Organic Carbon Content (Approximate Levels of Organic Matter Pyrolyzable at 900°C)	2	0.5	1.2	0
KAPLAN, I.R. Univ. Calif., L.A.	Determine Abundance and Isotopic Ratios for C, H, O & S	2	10	4	0
LIPSKY, S.R. Yale Univ. New Haven, Conn.	Determine Organic Compounds (Identification of Indiv. Organic Cpds.)	0	0	20	0
MEINSCHEIN, W.G. Univ. Indiana	Determine C_{15}-C_{30} Alkanes (Specific Class of Compound)	0	0	25	0
MOORE, C.B. Arizona State Univ.	Determine Total Carbon and Nitrogen (Total Carbon Content)	2	4	8	1.6
	Apollo 11 sample	1	1	0	0
NAGY, B. Univ. Arizona	Determine Lipids, Amino Acids & Polymer Type Organic Matter (Identification of Indiv. Organic Cpds; Abundance Microobject or Microfossils)	1	2	30	0

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APOLLO 12 LUNAR SAMPLE DISTRIBUTION

D GROUP: BIOSCIENCE/ORGANIC GROUP
PROPOSED ALLOCATION PLAN

INVESTIGATORS and INSTITUTION	INVESTIGATION	APPROXIMATE SAMPLE ALLOCATION			
		No. of Different Rock Specimens	Rocks(grams)	Fines(grams)	Core(grams)
ORO, J. Univ. Houston	Conduct Study of Carbonaceous Organic & Organogenic Matter (Identification of Indiv. Organic Cpds.)	2	7	27	0.4
OYAMA, V.I. NASA/Ames	Determine Native Viable Micro-organisms (Culture of Viable Organism)	0	0	50	2
PONNAMPERUMA, C.A. NASA/Ames	Determine Organic Compounds (Identification of Individual Organic Compounds)	0	0	45	0
RHO, J.H. Jet Propulsion Lab. Pasadena, Calif.	Detect & Identify Metallic and Nonmetallic Porphyrins (Specific Class of Compound)	0	0	15	0
SCHOPF, J.W. Univ. of Calif., L.A.	Search for Non-viable Organisms (Abundance Micro-objects or Microfossils)	1 (+1 TS*)	1	1.25	0

* Thin Sections

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