Guide to the
Roger D. Arno Papers
PP14.01

NASA Ames History Office
NASA Ames Research Center

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Descriptive Summary

Title:
Roger D. Arno Papers

Collection Number:
PP14.01

Creator:
Arno, Roger D.

Dates:
Inclusive: 1966-2009

Extent:
Volume: .75 cubic feet, 1.49 GB (214 files)

Repository:
NASA Ames History Office
Moffett Field, California 94035

Abstract:
This collection contains personal papers of Roger D. Arno, a retired NASA Ames Research Center engineer and artist, including portfolios, sketches, drawings, posters, artifacts, and optical media. The bulk of the collection comprises digital and paper copies of Arno's artwork, in the form of technical and astronomical illustrations representing engineering concepts, as well as editorial cartoons about NASA people and projects. Also present are Arno's memoirs about his career with NASA.

Administrative Information

Access:
Collection is open for research.

Languages and Scripts:
All records are in English.

Publication Rights:
Copyright does not apply to United States government records. For non-governmental material, researcher must contact the original creator.

Preferred Citation:
Expanded:
NASA Ames History Office, NASA Ames Research Center. Moffett Field, California. PP14.01, Roger D. Arno Papers, [Container number] : [Folder number]. [Identification of item]. [Date, if available].

Abbreviated:
NASA ARC. Roger D. Arno Papers, [Container number] : [Folder number]. [Identification of item]. [Date, if available].

Acquisition Information:
Donated by Roger D. Arno on January 30, February 13, and April 8, 2014.

Biographical History

Roger Arno's civil service career at NASA Ames Research Center spanned from 1966 to his retirement in 2000, after which he continued to work as a consultant for another decade. Unusually, Arno worked as both engineer and artist, dual roles that proved to be complementary. As an engineer, Arno supported many research and design projects (proposed and actual) that were related to manned, unmanned, and biological research missions. As an artist, he illustrated numerous engineering and design concepts and created outreach materials. His artwork ranged from precise computer-aided designs and detailed illustrations of elaborate scenes, to logo art and animations. In the 1960s and 1970s, Arno's designs were rendered by hand, mainly in the form of pencil or pen and ink drawings. Later, the majority were executed by computer, with increasing sophistication as design software matured. Ever the commentator, Arno combined his artistic ability with a healthy sense of humor to provide amusing sketches of colleagues and projects, as well as frank, sometimes acerbic, editorial commentary about NASA.

In January 1966, Clarence "Sy" Syvertson hired Arno to join NASA's Mission Analysis Division (MAD) created by Alfred Eggers. In this role, Arno's efforts included advanced mission planning and researching space power systems. He used his skill as an artist to illustrate aspects of his research and poke some fun at what he saw as misguided activities or questionable decisions. He also was tasked with putting together special occasion cartoons and roasts. In this first year with the MAD, Arno also pursued advanced coursework at Santa Clara University, earning a Master of Science in Mechanical Engineering by 1967. He worked in the MAD until it was dissolved in the 1970s (circa 1975).

In the next decade, his work focused on Earth resource research and applications, mainly remote sensing land resource surveys in which data were collected by aircraft and satellite, and analyzed with computers, rather than the traditional process of reviewing photographs by hand. He also created outreach materials, such as an unofficial comic-book-type booklet to educate forestry service units about remote sensing and a sketch of an earth resources (ER-2) aircraft. By mid decade in 1976, Arno was honored with an assignment to visually document the Apollo Soyuz Recovery Mission for NASA's art program.

Arno spent the 1980s supporting NASA's Space Station Biological Research Program (SSBRP) development activities, by planning out how to design and implement an animal research facility on an international space station. Guiding the development of specifications, hardware, and systems for this ambitious effort proved both rewarding and challenging, but ended in disappointment when the program was ultimately cancelled. Arno produced a great

deal of artwork at this time presenting, among other things, various life sciences accommodation hardware scenarios. He used traditional and electronic media to create visual representations ranging from painterly colored pencil drawings to precise schematics. Throughout the process, Arno provided a running commentary with editorial cartoons. He used these to vent his frustrations over complicated reporting structures, reorganizations, and astronaut objections to perceived smells and vibration of onboard animal research facilities. He also produced comical sketches, such as personifications of research animals as suburbanites going about their daily routines, sometimes complaining about the astronauts.

In the 1990s, Arno supported mission concept development and associated proposals for a wide variety of subjects, from planetary landers and micro satellites to sample handling facilities. Notably, Arno supported the proposal effort for Lunar Prospector, which won the honor of being the first of NASA's Discovery Missions. Arno's computer graphic designs evolved and matured during this decade, as he continued to master a procession of increasingly sophisticated design and animation software tools.

Arno retired in 2000 but was soon asked to return and assist with various efforts as a consultant, most recently contributing to the successful proposal for another mission to the Moon, the Lunar Crater Observation and Sensing Satellite (LCROSS). After the mission was selected, Arno remained on the LCROSS team and supported the mission's outreach efforts by producing logos, posters, illustrations, and computer animations.

Sources Consulted

NASA Ames History Office, NASA Ames Research Center. Moffett Field, California. PP14.01, Roger D. Arno Papers, 1 : 1. Arno, Roger, n.d., ca. 2014. *NASA -- Ames Research Center: Excellence in Pursuit of Identity, A Personal Perspective*.

Scope and Content

The bulk of this collection comprises nearly forty years of Roger Arno's artwork, primarily in the form of computer graphic designs and copies of hand drawn editorial cartoons. Optical media in the collection contain an assemblage of his born digital graphic designs including mission concept and astronomical illustrations of scenes involving manned planetary exploration, space vehicles, satellites, hardware systems, and proposal cover art, as well as animations of a "Free Flyer" heavy spacecraft and LCROSS mission visualizations, showing launch, spacecraft separation, orbit, reentry (FFH), and lunar impact (LCROSS). The disks also contain digital copies of his cartoons, hand drawn illustrations, and a few photographs of Arno and others, such as astronaut Alfred Worden and Hollywood film producer and director James Cameron. The born digital contents show a wide range of works that were created from the 1980s to the 2000s with a progression of design software tools.

Also present are portfolios complied by Arno, containing his memoirs and printed copies of selected artwork and cartoons. Though most were assembled to present his work products and perspectives over the decades, one is as an example of the many retirement booklets Arno gave to friends and colleagues when they left Ames. These portfolios roughly follow the stages of Arno's career, with duplication of some material across them.

In addition to the portfolios are a few sets of original drawings along with photographic reproductions of them. From these, one can see a sequence of methods Arno used to illustrate concepts by hand. For example, there are two drawings of a female astronaut working in a life science module. One is a draft pencil sketch and the other is a brightly-colored version of the composition in watercolor, pen, and ink. Another set includes a pen and ink drawing of a scene, a reproduction of the drawing with printed text labels pasted on it, and a reproduction of the drawing and paste-up, colorized in cool tones.

The collection also includes objects Arno designed, such as mission memorabilia, and three publications, including a children's book entitled "The Story of Space & Rockets," a book about the ER-2 flight and observation capabilities created for pilot Marty Knutson, and a selection of Arno's pencil sketches of non-NASA subjects with a personal introduction.

The main body of Arno's sketches and graphic designs in this collection provides a glimpse into how artwork was produced for NASA Ames for nearly half a century. The works embody a historical progression of techniques from hand illustrations to computer-aided drawings, created using increasingly sophisticated software tools. Arno's memoirs provide a summary of his career as engineer and artist at Ames in his own words. From these and his editorial cartoons, one can see the frankness and frivolity of the man as he reveals perspectives not so easily found in official records.

Formats: Joint Photographic Experts Group (JPEG), Portable Document Format (PDF), QuickTime Movie (MOV).

System of Arrangement

These records are arranged by format, with paper records first, followed by original artwork, optical media, posters, and artifacts. The contents of the optical media are in their original order.

Processing Information

Digital files were retrieved from the "Arno Space Art" and "LCROSS and Free Flyer Highlights..." CD-R disks during processing, and access copies were created. Among these, for accessibility and stability, images were converted to JPEG format, documents and presentations were converted to PDF format, missing file extensions were appended, and nonconforming operating system control characters were removed from filenames. Content on the "LCROSS" DVD was locked, so a disk image could not be created, but this is not a unique disk. Additional information is filed under collection number pp1401.

Other Finding Aids

File structures for the optical media are detailed in a supplemental finding aid filed under collection number pp1401.

Metadata for all digital material is filed under collection number pp1401.

Indexing Terms

The following terms may be used to index this collection.

Corporate Name
Ames Research Center

Personal Name
Arno, Roger D.

Subjects
Ames Research Center--Art collections
Astronomy in art
Space vehicles in art
Outer space in art

Separated Material

None.

Related Collections

PP14.01 Roger D. Arno Papers supplemental finding aid: File directory structure
ART1387: Artifacts Collection, Artwork Series
AFS8000.5-LCROSS: LCROSS Project Collection, 2007-2010

Container List

Box	Folder	Folder Title
1	1	"NASA Ames Research Center: Excellence in Pursuit of Identity, A Personal Perspective." Portfolio of Arno's memoirs and work, with reproductions of his editorial cartoons (subjects include centers competing with each other, project development, NASA management, Daniel S. Goldin, and G. Scott Hubbard), artwork, and graphic designs (e.g., proposal cover art and hardware systems).
	2	"Career Memories." Portfolio with Arno's personal observations about NASA, editorial cartoons (subjects include Mission Analysis Division, Harold "Chuck" Klein, Hans Mark, centrifuge facility, project funding, space station life science program planning, faster/better/cheaper, Biological Facility Research Project, and project development), reproductions of work samples, artwork, and graphic designs (e.g., hardware and sample NASA logos).
	3	"Auxiliary Power." Digital copy of a notebook of Arno's work analyzing characteristics of power systems as applied to space missions when he worked in NASA's Mission Analysis Division. (Reformatted original. Selected pages scanned, not entire notebook.)

4 "Pixel Man Meets the Forest Ranger." Digital copy of a cartoon booklet created by Arno to educate forestry service units about remote sensing. (Reformatted photocopy.)

5 "Space Station Life Sciences (The First Decade), Astrobiology, Apollo-Soyuz." Portfolio that includes originals and reproductions of editorial cartoons (subjects include space station life science program planning, centrifuge facility, Albert A. Gore, Kenneth A. Souza), organizational and functional charts, and draft Astrobiology Laboratory logos.

6 "Retirement Memories for Ethel Bauer." Contains reproductions of Arno's editorial cartoons and commentary mainly revolving around space station life science project planning (subjects include Centrifuge Facility Project, animal research, rats, project requirements/planning/funding, Biological Facility Research Project, and James M. Beggs), news clippings, and space station and hardware artwork.

7 "Mars Mission Proposals, Advanced Mission Proposals." Portfolio with reproductions of Arno's proposal graphic designs (e.g., proposal covers and hardware in Martian landscapes).

8 "Mars Attracts." Handmade booklet, mainly of Arno's graphic designs of Mars mission hardware.

9 "Lunar Base Analysis for Movie Plan by an Industrial Light and Magic Person." Includes a discussion of operational concepts and energy challenges, example staffing levels, space exploration terms, and graphics depicting various lunar mission scenarios.

10 "LCROSS, Lunar Prospector, Polar Night, Management Mish-Mash." Portfolio with material designed by Arno, including reproductions of LCROSS mission posters, graphics, brochure, and designs for hats and t-shirts. Miscellaneous editorial cartoons (subjects include Martin A. "Marty" Knutson, Landsat, ER-2 aircraft, remote sensing, Mission Analysis Division, Mayflower Society).

11 "High Altitude Perspective" NASA SP-427. Booklet about the ER-2 flight and observation capabilities that was primarily designed by Arno.

12 "Roger Arno Draws." Soft cover booklet containing a selection of reproductions of Arno's pencil sketches of non-NASA subjects. Includes a personal introduction.

13 "The Story of Space & Rockets." Softcover children's book by Arno, created circa 1978.

14 Artwork depicting scenes of astronauts working in a space station life science module. Originals and reproductions.

15 "Arno Space Art" CD-R. Contains Arno's graphic designs, animations, and digital copies of his hand drawn cartoons.

16 "LCROSS and Free Flyer Highlights (Life Science) Animations; Mission Illustrations" CD-R. Contains Arno's "Free Flyer" heavy spacecraft and LCROSS mission animations.

17 "Lunar Crater Observation and Sensing Satellite (LCROSS)" DVD. Includes "Water on the Moon" music video by John Marmie and Jeff Petro and "A First Step in the Return to the Moon" by the NASA Ames Video Production Group.

18 Posters. Subjects include the Ames Christmas Party, Interface Region Imaging Spectrograph (IRIS), and LCROSS.

2 LCROSS View-Master Reel and Viewer. The reel contains three-dimensional LCROSS spacecraft graphics designed by Arno.

2 NASA Pins. Includes six NASA project pins and an Ames anniversary pin designed by Arno.

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File Structure, Optical Media

Disk Title: Arno Space Art	pp1401_arno/diskimages/spaceart
Apollo Soyuz	Apollo-Soyuze Camer Pencil.jpg
	Apollo-Soyuz in book.jpg
	Apollo-Soyuz.jpg
	JonesHelmet.jpg
Apollo-Soyuz presentation.pdf	
Arno Retirement cover.jpg	
Arno Space Art Demo.pdf	
Astrobiology	AB_Roadmap_Cover_3.jpg
	Astroworld 4.jpg
	Gloveboxes PICT labeled.jpg
FFH Animation.mov	
Free Flyer Highlights	FFH Assy.jpg
	FFH Unfurl3.jpg
	InvertEntryModule.jpg
	LandingHelo.jpg
	LaunchPrep5.jpg
	PL Wedge1.jpg
	ShroudSep.jpg
GeneSat Images	AssyAnimPict1.jpg
	BlueLight.jpg
	GeneSatSys.jpg
	InstrumLights.jpg
	PL_IngegrPict2_0288.jpg
James Cameron at Ames.jpg	
LCROSS Images	ComboLogoSimp7.jpg
	EarthDeparture.jpg
	Impact 4.jpg
	LCROSS Descent 9HD.mov
	LCROSS Illust.jpg
	LCROSS Patch6Shadows.jpg
	LCROSS Patch7Shadows.jpg
	LCROSS Poster9-Sm.jpg
	LCROSS Stage Style.jpg
	LCROSSNearMoon2.jpg
	LRO Release Page.jpg
	LunarSPole-Impact.jpg
	SCandStageFoam2.jpg
T-shirt art	LCROSS Dwg LogoFinal.jpg
	T-shirt-TriptychResult.jpg
LCROSS_Animation.mov	

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File Structure, Optical Media

Logos	AMES_Logo_Group.jpg
	LCROSS Patch7Shadows.jpg
	Misc_Logos.jpg
	New_NASA_Logos.jpg
Lunar Missions	LCROSS SeparationSm.jpg
	LCROSS.jpg
	LeavingEarthPanelSm.jpg
	LunaChem.jpg
	Lunar Base 3.jpg
	Lunar Polar Base 3.jpg
	Lunar Prospector JPEG.jpg
	LunarBase5.jpg
	LunarOrbitSurv.jpg
	Moon Crater Rim Dwg.jpg
	Moon Pole Orbits.jpg
	Moon Science Base.jpg
	Moonsokhod.jpg
	NLSI Mural9.jpg
	PN Earth Pointing.jpg
	PN SAR Mode 2.jpg
	Polar Night 2.jpg
	Polar_Base_Combo.jpg
	PolarBase1.jpg
Mars Mission	AlienCraftRover.jpg
	Ballons-Pole.jpg
	CrashSite.jpg
	DustyWreck.jpg
	Landed Modules evening.jpg
	Landed Modules night.jpg
	Lander on Mars 1.jpg
	LanderRoverLander.jpg
	LDD Cover 3a.jpg
	Lost Cart.jpg
	MAOS_cover.jpg
	MarGlandRover.jpg
	Mars AI Mag Cover.jpg
	Mars Cover225 dpi.jpg
	Mars Triptych.jpg
	MarsBaseNight.jpg
	Marsokhod on Mars.jpg
	RoverFromCliff.jpg

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File Structure, Optical Media

	SandAngel.jpg
Mars Mobility Chapter.pdf	
Mars Planes JPEGs	AME Plane Over Mars 2.jpg
	AME Plane Over Mars 3.jpg
	Lander w-folded A-C.jpg
	MAGE Deployment JPEG
	MAGE over Mars.jpg
	MAGE_Combo.jpg
	Mars Cruiser Concept.jpg
	Mars Plane JPEG
Misc and Editorial Cartoons	AMZ Career Guide.jpg
	Arno on Houston Post.jpg
	BorisCartoon.jpg
	Carnival Centrifuge.jpg
	Centrifuge Facility Views.jpg
	Centrifuge is Alive.jpg
	Connolly retirement cartoon.jpg
	Eagles and Armadillos.jpg
	Feed Me Centrifuge.jpg
	Fishing for life.jpg
	Forest of Darkness.jpg
	Frank and Ernest on SS.jpg
	Getting Away from in All.jpg
	Goldin Faster Better Cheaper.jpg
	Goldin to the Moon.jpg
	Goldin_Goodbye.jpg
	Hans Mark Certificate.jpg
	Houston Post on Space Station.jpg
	Houston we have a problem.jpg
	Hubbard farewell.jpg
	Knutson retirement.jpg
	Life Sci Dark Ages.jpg
	Life Sciences on Track.jpg
	MAD disolves Cover.jpg
	NASA Center FoodChain.jpg
	Ogg makes centrifuge.jpg
	Slices of Bologna.jpg
	Soza Retirement.jpg
	Syvertson MAD diploma.jpg
	The Alchemist.jpg
	World Views Centrifuge 1.jpg

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File Structure, Optical Media

	World Views Centrifuge 2.jpg
Murbach Missions	Aeolus Mission 4.jpg
	Truss w-2Aoleus.jpg
	Truss w Pascal JPEG.jpg
Pascal	Micro Met at Mars.jpg
	Pascal in Shell .jpg
	Pascal Mission.jpg
	Pascal Missiona.jpg
Proposal Lessons learned.pdf	
Sarver Sample Return	Config8.jpg
	EntryCap3.jpg
	ProgressLabls.jpg
	SampCraftFull-Arm.jpg
	SRC2 Lbls.jpg
	SRC9Full.jpg
	SRV Side views.jpg
Space Mission Hardware	Bio-Explorer high 2.jpg
	Config8.jpg
	ERE LaunchPict1.jpg
	ERE-50cmExpPict2.jpg
	ERE-SatView3.jpg
	HTVandPowerMod.jpg
	IRIS Poster17 sm.jpg
	LaunchPrep5.jpg
	Lunar Prospector flight.jpg
	MAAT Cover.jpg
	Mars Rover with Blasterjpg
	RatTransportLabels.jpg
	Space Colonies copy
	SRC9A.jpg
	SRV Picts.jpg
	TREBLE Flt Pict9.jpg
	TREBLE MorePowerFlt.jpg
Space Station Life Sciences	12-rack_scenario.jpg
	CAM_Concepts.jpg
	Centrifuge_Module.jpg
	Centrifuge_Modules.jpg
	First computer 3D rendering.jpg
	Gloveboxes.jpg
	Modular_Hab_Concept.jpg
Spacecraft Art	Aeolus in Shroud.jpg

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File Structure, Optical Media

	Aeolus Mission 4
	AsrtoBiology_Explorer.jpg
	Beagle_on_Mars_2.jpg
	ERE-50cmExpPict2.jpg
	ERE-SatView3.jpg
	Kepler Spacecraft.jpg
	Kepler_Combo.pct
	Lunar Prospector flight.jpg
	Polar Night 1.jpg
	Polar Night 2.jpg
	Sample Return Concept.jpg
	Sample Return Vehicle.jpg
	Space Colony Torus.jpg
	TREBLE FlightFlare.jpg
SS Life Sciences Cartoons	BFRP Costs.jpg
	Calvin and Armadillos.jpg
	Centrifuge Views.jpg
	CFP Org 2.jpg
	CFP Org.jpg
	CFP Slices.jpg
	Drill Bit.jpg
	Facility 1.jpg
	Facility 2.jpg
	Facility 3.jpg
	Facility 4.jpg
	Facility 5.jpg
	Fortress.jpg
	Go for C D.jpg
	Habitats 1.jpg
	Habitats 2.jpg
	Habitats 3.jpg
	Habitats 4.jpg
	Habitats 5.jpg
	Habitats Final.jpg
	House on Fire.jpg
	Mod Hab Title.jpg
	Quiz 1.jpg
	Quiz 2.jpg
	Quiz 3.jpg
	Quiz 4.jpg
	Quiz 5.jpg

File Structure, Optical Media

Quiz 6.jpg
Quiz 7.jpg
Round Peg.jpg
Twister.jpg
Yellow Brick Road.jpg

Disk Title: LCROSS and Free Flyer Highlights (Life Science) Animations; Mission Illustrations, by Roger Arno

pp1401_arno/diskimages/animations

FFH Animation.mov
LCROSS Descent .mov
LCROSS_Animation.mov

Disk Title: Lunar Crater Observation and Sensing Satellite (LCROSS)

Water on the Moon by John Marmie and Jeff Petro
A First Step in the Return to the Moon by the NASA Ames Video Production Group