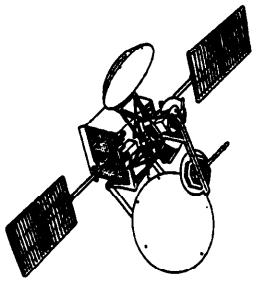
APSW VII

Session I: Overview

ADVANCED COMMUNICATIONS TECHNOLOGY SATELLITE (ACTS) PROGRAM



Robert Bauer

Spacecraft & Program Updates

APSW VII
Ft. Collins, CO
June 15-16, 1995

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SPACECRAFT STATUS

- Hydrazine depletion being re-estimated (~May '98)
- Fourth eclipse season of the mission was completed 4/13/95. Operations were normal
- Autotrack control (as opposed to Earth sensor) continues to be primary attitude reference

SPACECRAFT STATUS

- Transmit reflector biax drive to be routinely used for daily compensation of diurnal MBA distortions beginning 6/12/95
  - Received signal variations reduced by 1.5-3.0 dB
  - Signal varies only +/- 0.5 dB over 14 hour diurnal period
  - SBA movements and biax drive corrections not mutually compatible as expected

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EXPERIMENT OPERATIONS

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ACTS EXPERIMENTS PROGRAM

- EXPERIMENTS APPROVED 80

- PIs, CO-PIs & AFFILIATED ORGANIZATIONS

INDUSTRY	39
UNIVERSITY	28
GOVERNMENT	26
CCDS	2
	95

TYPES	EXPERIMENTS				
	INDUSTRY	UNIVERSITY	CCDS	GOV'T	TOTAL
APPLICATION	20	11	1	18	50
TECHNOLOGY VERIFICATION	4	0	1	12	17
PROPAGATION	5	8	0	0	13
TOTAL	29	19	2	30	80

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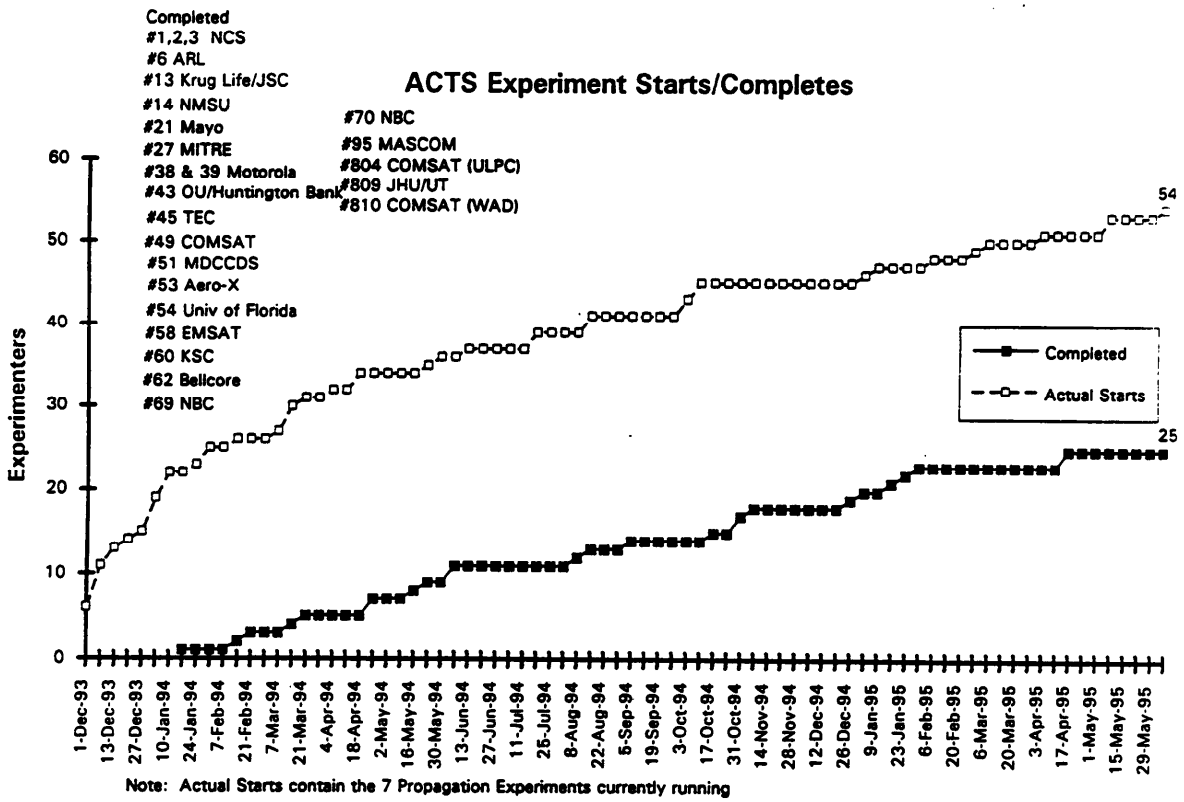

Note: Actual Starts contain the 7 Propagation Experiments currently running

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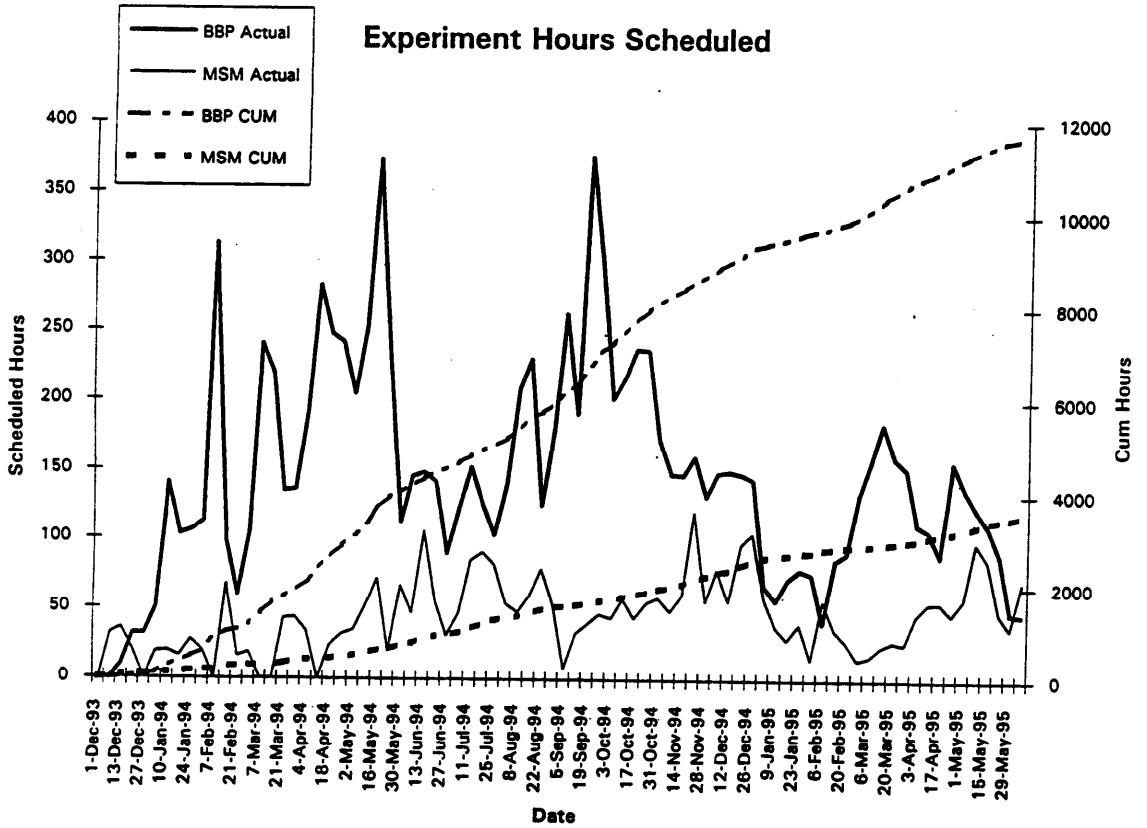
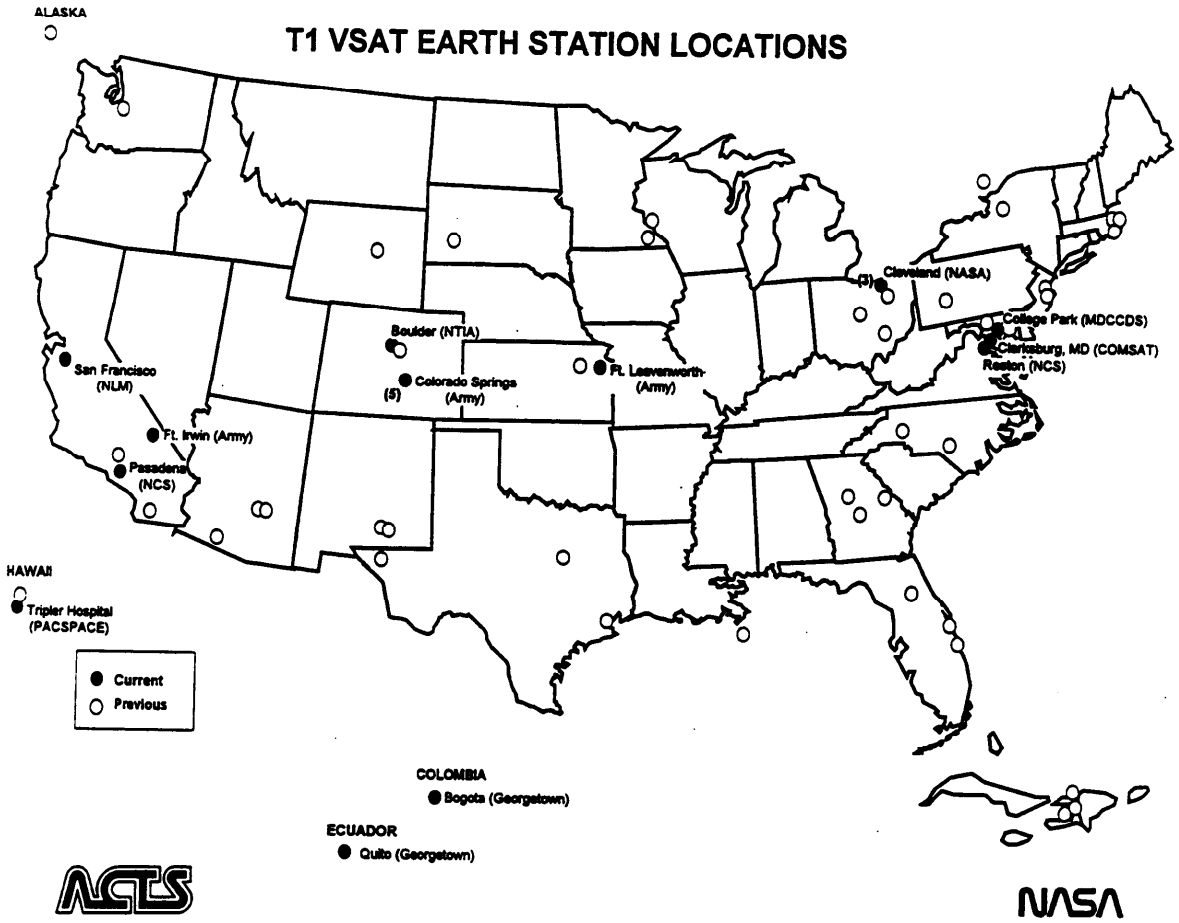
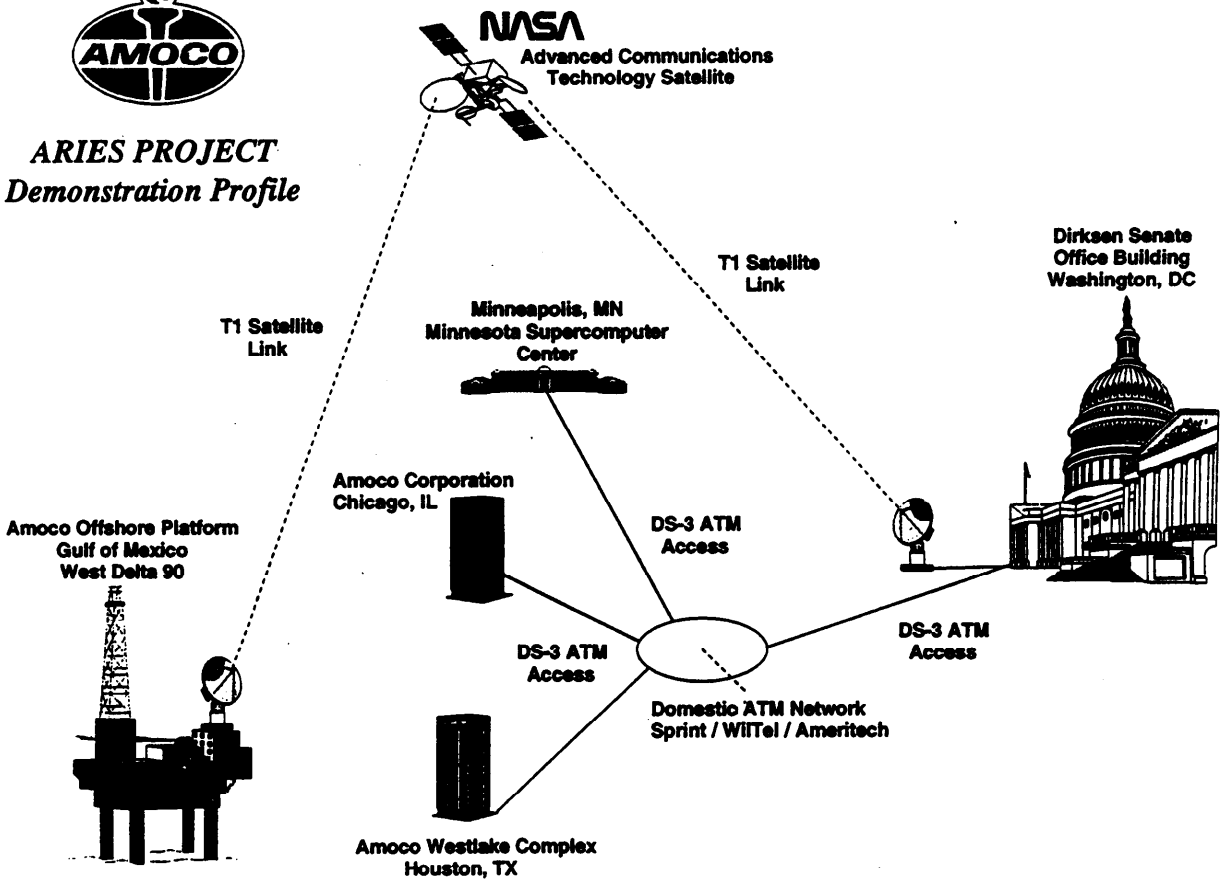
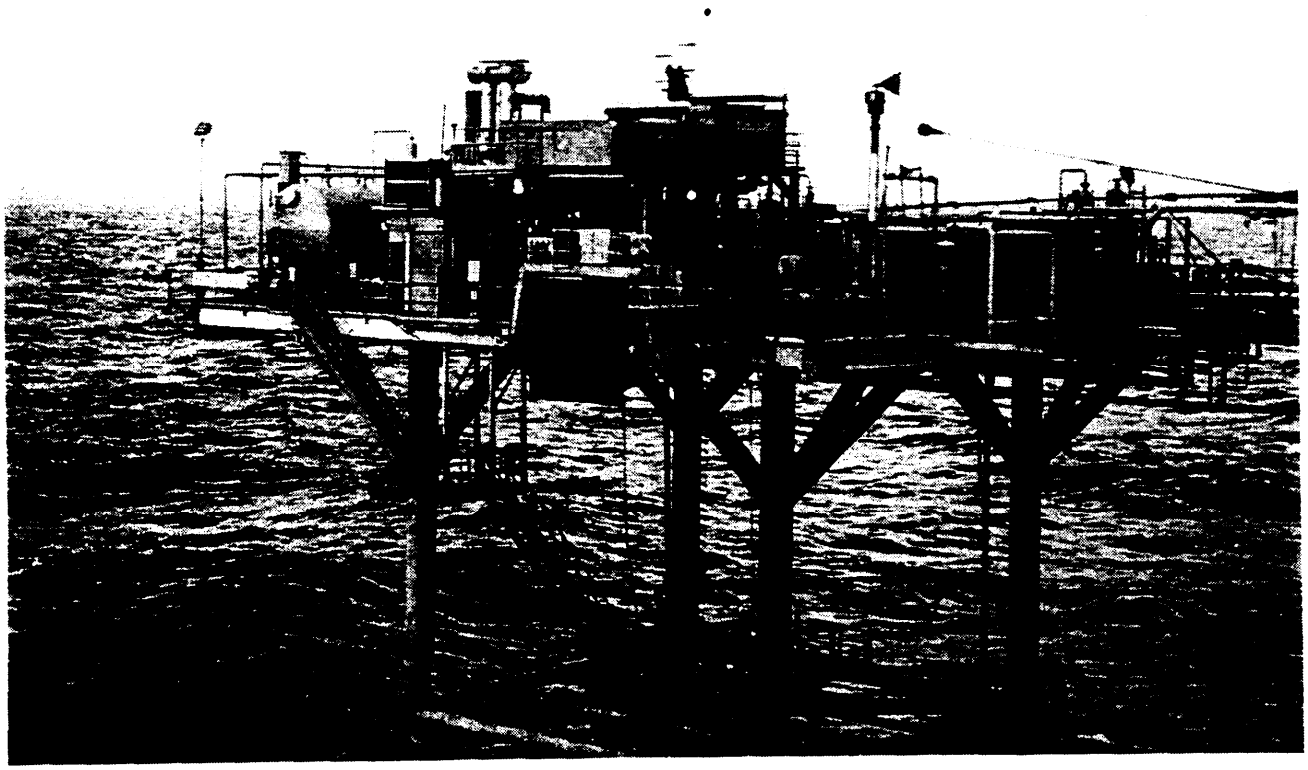

Experiment Hours Scheduled
BBP Actual
MSM Actual
BBP CUM
MSM CUM
Scheduled Hours
Cum Hours
Date
6/6/95


T1 VSAT EARTH STATION LOCATIONS
ALASKA
HAWAII
Tripler Hospital (PACSPACE)
San Francisco (NLM)
Ft. Irwin (Army)
Pasadena (NCS)
Boulder (NTIA)
Colorado Springs (Army)
(5)
Ft. Leavenworth (Army)
(3)
Cleveland (NASA)
College Park (MDCCDS)
Clarksburg, MD (COMSAT)
Reston (NCS)
Current
Previous
COLOMBIA
Bogota (Georgetown)
ECUADOR
Quito (Georgetown)

ARIES PROJECT
Demonstration Profile





AMOCO OFFSHORE PLATFORM - West Delta 90 area of Gulf of Mexico, December, 1994

HDR STATUS

#1 At Boeing	Operational
#2 At BBN going to HI	TWTA sent to OSC
#3 At OSC Check-out	TWTA replaced with 2's.
#4 At NCAR	Operational
#5 At Lewis	Down, TWTA failed in early May

- Spacecraft limits # of hops to 40 per frame. No real impact to program due to small number of users.
- Operational limit of 2 HDR stations per each beam (e.g., 2 in West or East beam)

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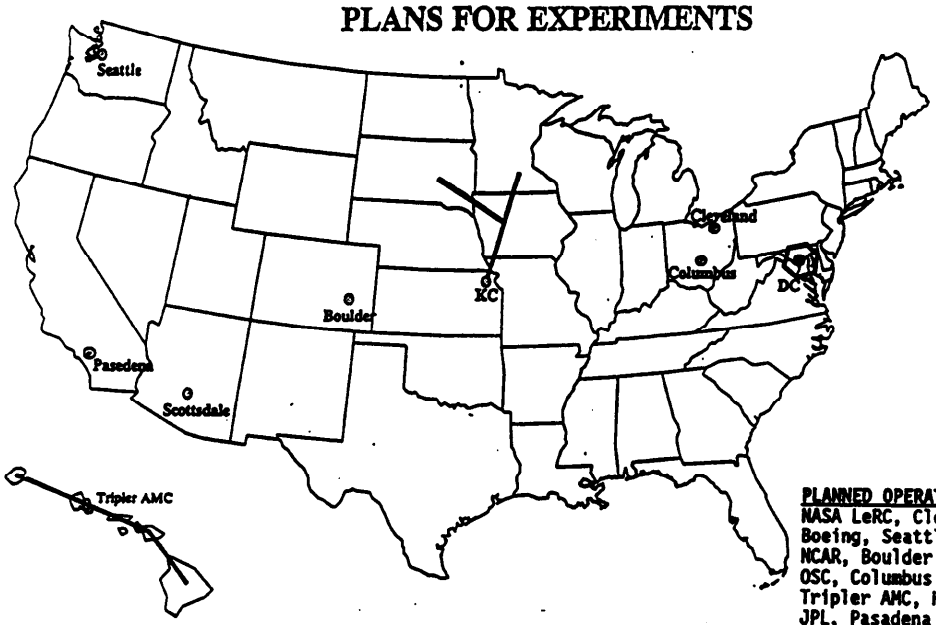
HDR EARTH STATION LOCATIONS

PLANS FOR EXPERIMENTS



PLANNED OPERATIONAL EARTH STATIONS

NASA LeRC, Cleveland	March 95 - June 95
Boeing, Seattle	March 95 - June 95
NCAR, Boulder	April 95 - Sept 95
OSC, Columbus	April 95 - Sept 95
Tripler AMC, Hawaii	June 95 - 2Q FY97
JPL, Pasadena	July 95 - 2Q FY97
NASA GSFC, Wash. DC	July 95 - 2Q FY97
Sprint, Kansas City	Oct 95 - 2Q FY97
Mayo, Scottsdale	Oct 95 - April96
OSC, Columbus	May 96 - 2Q FY97

EXPERIMENT CONSIDERATIONS

5 HDR Earth Stations
Multiple Experiments
9 Geographic Sites
3 Terrestrial Fiber Networks
- ATDnet encircling DC
- MAGIC from KC to Minneapolis
- State of Hawaii

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Experiment Starts and Completes by Week (actuals)

As of: 6/7/9

Line #	Date	Expt. #	Organization	Description	Mode	Static
1	1-Dec-93	803	Univ of Alaska - Fairbanks, AK	Propagation		
2		801	Univ. of British Columbia - Vancouver, BC	Propagation		
3		802	Colorado State Univ. - Ft. Collins, CO	Propagation		
4		807	Univ. of Oklahoma - Norman, OK	Propagation		
5		808	Univ of South Florida - Tampa, FL	Propagation		
6		806	Stanford Telecom Inc. - Las Cruces, NM	Propagation		
7		812	Teleglobe Canada	Propagation		
8	6-Dec-93	8	JPL	Mobile	MSM	AMT/LE
9		905	LeRC	Tech Verif Exp. (TVE) - Rain	BBP	NGS
10		907	LeRC	Tech Verif Exp. (TVE) - ATRK	BBP	NGS
11		908	INTEX	Tech Verif Exp. (TVE)	MSM	LET
12	13-Dec-93	38	Motorola	TVE	BBP	2, 13
13		39	Motorola	TVE	BBP	13
14	20-Dec-93	49	COMSAT	Business Network	BBP	1, 7
15	27-Dec-93	45	TEC	DoD	BBP	19, 20
16	03-Jan-94	1	NCS	PSN	BBP	1, 4, 5
17		13	JSC/Krug	Telemedicine	BBP	9, 12
18		43	OU/Huntington Bank	Business	BBP	10, 11
19		58	EMSAT	Mobile	MSM	AMT/LET
20	10-Jan-94	2	NCS	PSN	BBP	4, 5
21		7	Army	DoD Strat/Tact	BBP	16, 17, 1
22		27	Mitre	ISDN	BBP	5, 7
Completed	17-Jan-94	39	Motorola	TVE	BBP	13
23	24-Jan-94	901	MBA Performance	TVE	BBP	As Require

Experiment Starts and Completes by Week (actuals)

As of: 6/7/9

Line #	Date	Expt. #	Organization	Description	Mode	Statio
24	31-Jan-94	4	NCS	PSN	MSM	AMT/LE
25		701	NASA Demo	Demo	BBP	1, 9
26	14-Feb-94	809	JHU/UT	Mobile Propagation	MSM	LET
Completed		2	NCS	PSN	BBP	4, 5
Completed	21-Feb-94	13	JSC/Krug	Telemedicine	BBP	9,12
27	14-Mar-94	5	NTIA	ISDN	BBP	9
28		6	ARL	ISDN	BBP	2, 7, 8
29		17	COMSAT	ISDN	BBP	5, 7
Completed		38	Motorola	TVE	BBP	2, 13
30	15-Mar-94	805	COMSAT Labs - Clarksburg, MD	Propagation		
31	21-Mar-94	21	MAYO	Telemedicine	BBP	12,13
Completed		58	EMSAT	Mobile/Telemedicine	MSM	AMT/LET
32	04-Apr-94	53	AERO-X	Aero	MSM	LET
33	18-Apr-94	54	University of Florida	ISDN	BBP	3
34	18-Apr-94	3	NCS	PSN	BBP	1, 4, 5
Completed	25-Apr-94	1	NCS	PSN	BBP	1, 4, 5
Completed	25-Apr-94	3	NCS	PSN	BBP	1, 4, 5
Completed	16-May-94	54	University of Florida	ISDN	BBP	3
35	23-May-94	804	COMSAT Uplink Power Control	Propagation	MSM	LET
Completed		43	OU/Huntington Bank	Business	BBP	10, 11
36	30-May-94	903	LET MSM Performance	Propagation	MSM	LET
Completed	6-Jun-94	27	Mitre	ISDN	BBP	5, 7

Experiment Starts and Completes by Week (actuals)

As of: 6/7/9

Line #	Date	Expt. #	Organization	Description	Mode	Static
Completed	6-Jun-94	809	JHU/UT	Mobile Propagation	MSM	LET
37	13-Jun-94	14	NMSU	Tele Science	BBP	10, 11
38	18-Jul-94	51	MDCCDS	Data Network	BBP	8, 9
39	18-Jul-94	56	COMSAT	Data Network	MSM	LET
Completed	08-Aug-94	53	AERO-X	Aero	MSM	LET
40	15-Aug-94	911	USAT Checkout	TVE	MSM	USAT
41	15-Aug-94	62	Bellcore	Mobile	MSM	AMT
Completed	15-Aug-93	45	TEC	DoD	BBP	19, 20
Completed	05-Sep-94	21	MAYO	Telemedicine	BBP	12,13
42	3-Oct-94	60	KSC/Lockheed	Distance Education	BBP	12,13
43	3-Oct-94	810	COMSAT - Wide Area Diversity	Data Network	BBP	5,7
44	10-Oct-94	69	NBC	Mobile	MSM	AMT
45	10-Oct-94	95	MASCOM	Mobile	MSM	LET
Completed (Cancelled)	17-Oct-94	60	KSC/Lockheed	Distance Education	BBP	12,13
Completed	31-Oct-94	14	NMSU	Tele Science	BBP	10, 11
Completed	31-Oct-94	95	MASCOM	Mobile	MSM	LET
Completed	7-Nov-94	804	COMSAT Uplink Power Control	Propagation	MSM	LET
Completed	26-Dec-94	810	COMSAT - Wide Area Diversity	Data Network	BBP	5,7
Completed	29-Dec-94	49	COMSAT	Business Network	BBP	1, 7

Experiment Starts and Completes by Week (actuals)

As of: 6/7/95

Line #	Date	Expt. #	Organization	Description	Mode	Statio
46	02-Jan-95	906	LeRC	Tech Verif Exp. (TVE) - DYNM	BBP	NGS
47	09-Jan-95	70	NBC	Data Network	BBP	2, 4, 21
Completed	15-Jan-95	62	Bellcore	Mobile	MSM	AMT
Completed	20-Jan-95	70	NBC	Data Network	BBP	2, 4, 21
Completed	27-Jan-95	69	NBC	Mobile	MSM	AMT
48	08-Feb-95	111	ARPA (UGV)	Mobile	MSM	AMT
49	02-Mar-95	50	PACSPACE	Data Network	BBP	1, 5, 11
50	06-Mar-95	811	Georgia Tech	Propagation	MSM	Other
51	03-Apr-95	99	LeRC/Boeing Inlet Simulation	HDR	MSM	HDR01, 0
Completed	14-Apr-95	51	MDCCDS	Data Network	BBP	8, 9
Completed	14-Apr-95	6	ARL	ISDN	BBP	2, 7, 8
52	08-May-95	41	Southern Cal Edison	Data Network	MSM	USAT
53	11-May-95	98	NASA Ames (Kuiper)	Aero	MSM	Kuiper Je
54	30-May-95	67	National Library of Medicine	Telemedicine	BBP	1, 8, 10

PROPAGATION PROGRAM STATUS

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INDUSTRY LETTER

- Sent in Jan. '95 from NASA LeRC Center Director requesting industry's value in extending Prop. program:

Comsat World Systems	Orbital Sciences
Motorola	Martin Marietta
GE American	GM Hughes Elect.
Teledesic	Hughes Spaceway
Space Systems/Loral	Hughes S & C
TRW	AT&T Skynet

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INDUSTRY LETTER

- Responses received from:
  - Teledesic
  - Space Systems/Loral
  - Martin Marietta Astro Space
  - Comsat World Systems
- Responses added vital industry/commercial support to continue program

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BUDGET STATUS

- Date for announcing ACTS budget is TBD
- Funds have been requested by Lewis to extend through FY 96
- Actual funding level will be set by HQ. May be less than fully funded if by NASA alone. **Any industry support?!**
- One year at a time is being considered

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PROGRAM'S FUTURE

- Three paths program may take
  - 1) Extend program - **decision made soon** before contracts end
  - 2) Extend program - **decision delayed** until contracts end, or nearly so
  - 3) End program - **decision delayed** until contracts end, or nearly so

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1) EXTEND PROGRAM - DECISION MADE SOON

- Extend contracts
- Continue data collection
- Prepare results/final report as usual

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2) EXTEND PROGRAM - DECISION DELAYED

- No cost extension
- Prepare final report per current contracts
- Continue data collection/analysis once contract funding restored
- Amend report at end of extension

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3) END PROGRAM - DECISION DELAYED

- No cost extension
- Prepare final report per current contracts
- Amend report at end of extension as needed

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NO COST EXTENSIONS

- Will need, most likely, until funding is decided
- Keeps contracts active
  - Prevents re-bid, possible loss of contract
  - Keeps long term data collection at sites currently selected
- No work required during extension period

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PROGRAM COMPLETION

- Assuming 1 year continuation:
  - Collect data through June '96 (or whatever date is sufficient and reasonable to amend report; should be same for all)
  - Program would end Sept. 30, 1996 unless second extension granted
  - Final reports due 30 days later

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ACTS RESULTS CONFERENCE

- September 11 - 13, 1995, in Cleveland
- Focus is on results of all experiments performed so far
- Audience is sat. comm. providers, developers, manufacturers, users, and researchers from govt., univ., and industry
- By invitation only - see me if interested
- Alert to authors - papers due July 01, 1995!

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