APPENDIX A: REFERENCES

A. “Functional Requirements Document (FRD) for the Development of the NOAA/USMCC”, SAR1.1.3.2, March 1992.

B. “Modification Requirement for Mission Control Center”, Techno-Sciences Inc., August 31, 1992

C. SPC/SPR Log at USMCC

D. "COSPAS-SARSAT Mission Control Centers Standard Interface Description (SID)", C/S - A.002, Issue 4 - October 1996.

E. "COSPAS-SARSAT Data Distribution Plan," C/S A.001 - Issue 4, October 1996.

F. "Specification for COSPAS-SARSAT 406 MHZ Distress Beacons", C/S T.001, Issue 3 - with Errata Sheet of October 1996.

G “Data Transfer Specification”, Techno-Sciences Inc., October 6, 1993.

H. “COSPAS-SARSAT MCC Performance Specifications”, C/S A.005,

I. FTS2000 Mail Service User Guide

J. FTS2000 Packet Switched Service Introductory User Guide

K. MCI Highspeed Asynchronous Interface Global Messaging Services Developer’s Guide

L. MCI SAFE Global Messaging Services User’s Reference Manual

M. “A Match-Merge Technique for 121.5/243-MHZ Beacons in the Cospas-Sarsat System”, IEEE Transactions on Aerospace and Electronic Systems, VOL 29, No. 2, April 1993.

N. Fourth Generation United States Mission Control Center National Rescue Coordination Center (RCC) and SAR Point of Contact (SPOC) Alert and Support Messages 11 September 1997, Version 0.0.

O. Fourth Generation USMCC Operator Interface Screen Display Description Document, July 1997, Revision 0

P. Fourth Generation USMCC Data Structure Document, 1 October 1997, Version 0.1

Q. Sarsat Telemetry and Commanding Procedures, Sarsat TCP Issue 1 - Revision 1,

APPENDIX B: GLOSSARY AND DEFINITIONS

Active Site: A Site in the USMCC into which incoming LUT or MCC data can be routed.

Alert Message: Messages received from MCCs containing information to be acted on by Search and Rescue forces. (MCC SITs 100 - 199)

AOS: Time of acquisition of satellite signal by a LUT.

Archived Site: A Site in the USMCC which does not accept new data, and from which Alerts are not be issued.

Beacon Pass: The passage of a beacon by a satellite. A beacon Pass is identified by the specific beacon, satellite, and TCA.

Beacon ID: Bits 26 - 85 in a coded 406-MHZ distress beacon.

Closed Site: A Site in the USMCC into which incoming LUT or MCC data may be matched, but not merged, and from which Alerts are not be issued.

Composite Site: A Site with the ambiguity resolved and a composite location formed; the result of the Multiple Pass Merge or the Encoded Data Merge.

COTS: Commercial Off-The-Shelf

CTA: Central Angle; the angle measured at the center of the Earth between the beacon and the satellite at TCA.

Default Beacon ID: Bits 26-85 in a coded 406 MHZ distress beacon with all bits that contain location set to default parameters as per Reference F for location protocol beacons.

DTE: Data Terminal Equipment.

DOC: Department of Commerce

ELT: Emergency Locator Transmitter

Encoded location: Location data contained in the National User Protocol, or the Standard or National Location Protocols, in 406-MHZ beacons, as given in Reference F.

EPIRB: Emergency Position Indicating Radio Beacon

FA: First Alert

FG-USMCC: Fourth Generation United States Mission Control Center

FRD: Functional Requirements Document

GEO: Geostationary Earth Orbiter

Geosorting: The process of determining the Search and rescue Region for a given location on the Earth.

GMT: Greenwich Mean Time

ICSAR: Interagency Committee on Search and Rescue

IHDB: Incident History Data Base

Incident Data: Data received from LUTs containing information on signals detected by COSPAS-SARSAT satellites.

LAN: Local Area Network

LEO: Low Earth Orbiter

LMDB: LUT Maintenance Data Base

LOS: Time of Loss of satellite signal by a LUT

LUT: US Local User Terminal, including the OSE and SSE (q.v.); See Figure 2.

Match: The process of determining whether two solutions represent the same signal source.

MCC: A Cospas-Sarsat Mission Control Center as listed in the C/S Data Distribution Plan, Reference E, and contained in the GEOSORT Data Base.

Merge: The process of combining two or more solutions to eliminate the image position, and to improve the accuracy of the real position estimate.

MHZ: Megahertz

MID: Maritime Identification Digits

NESDIS: National Environmental Satellite, Data, and Information Service

New Composite Site: A Site immediately after the ambiguity is resolved.

New Site: A Site number and storage location assigned in the Active Site File to hold data from a beacon for which no other Site match was found.

New Single Site: A New Site at 121.5/243-MHZ holding a New Single Pass Solution for which no Multiple Pass Match was found.

NOAA: National Oceanic and Atmospheric Administration

NOCR: Notification of Country of Registration (SIT 133)

OSE: Operational Support Equipment

PCR: Pass Completion Report

PDS: Pulse Data Stream; Digitally encoded 406-MHZ data transmitted from the C/S spacecraft.

RCC: Rescue Coordination Center

Revised Single Hit Site: A Single Hit Site that has been revised by the to incorporate data from the pass or Pass already in the site, but from a different LUT.

Revised Multiple Hit Site: A Multiple Hit Site that has been revised to incorporate data from a pass or Pass already in the site but from a different LUT.

Rollover Time: The time at which the SARSAT on-board time counter goes to zero.

SA: Service Area

SAMS: Self-test And Monitoring System

SD: Standard Deviation

Single Pass Site: A set of merged Doppler Data Items.

Single Pass Solution: The A- and B- solution data within a Single Pass Site.

Site: A signal source identified by a site number within the FG USMCC.

Single Hit Site: A Single Pass Site.

Solution: Information derived from satellite Doppler data consisting of (1) A and B locations (2) frequency bias, (3) A-side probability, and possibly other data on the signal source, such as sweep rate, location accuracy estimates, curve fit parameters.

SPOC: A SAR Point of Contact, as listed in the C/S Data Distribution Plan, Reference E, and contained in the USMCC GEOSORT Data Base.

SRR: Search and Rescue Region; the SAR Area designation returned by the GEOSORT for the relevant location is usually a SRR;

SSE: System Support Equipment.

TCA: Time of closest approach of satellite to beacon.

TCAL: Time Calibration

TPC: Time of processing complete at a LUT

US SRR: A U. S. Coast Guard or US Air Force Rescue Coordination Center, as specified in the United States National Search and Rescue Plan, and contained in the GEOSORT Data Base.

APPENDIX C: FORMATS FOR ALERT MESSAGES TO SAR DESTINATIONS WITHIN US MCC SERVICE AREA

Please Refer to Reference N for Message Formats

APPENDIX D: LUT PASS SCHEDULE FORMAT

Pass Schedule STATUS generated at: 1996-09-16 00:35:06

LUT	SAT/ORBIT	DY	AOS	LOS	OPT	VER	STATUS	TIME	123	406	OrbTst	
OSE	C6 27636	15	0006	0018	SUPP	V	-------					
OSE	S4 41114	15	0027	0036	FORCE	V	DONE	00:45:30	9	15	29	14
OSE	S2 60632	15	0035	0037	SUPP	V	-------					
OSE	S2 60633	15	0214	0224	FORCE	V	DONE	02:34:38	13	1	1	0
OSE	S2 60634	15	0356	0403	SUPP	V	-------					
OSE	S6 8815	15	0610	0615	SUPP	V	-------					
OSE	C4 36106	15	0721	0728	SUPP	V	-------					
OSE	S6 8816	15	0749	0800	FORCE	V	DONE	08:04:14	5	1	1	0
OSE	C4 36107	15	0902	0915	FORCE	V	DONE	09:27:03	4	12	20	19
OSE	S3 51955	15	0911	0915	SUPP	V	-------					
OSE	S6 8817	15	0934	0936	SUPP	V	-------					
OSE	C6 27642	15	1009	1018	FORCE	V	DONE	10:26:31	5	9	29	19
OSE	S3 51956	15	1048	1059	FORCE	V	DONE	11:03:10	4	0	0	0
OSE	C4 36108	15	1050	1100	SUPP	V	-------					
OSE	S4 41120	15	1109	1114	SUPP	V	-------					
OSE	C6 27643	15	1152	1204	FORCE	V	DONE	12:09:23	3	2	4	3
OSE	S3 51957	15	1230	1234	SUPP	V	-------					
OSE	S4 41121	15	1248	1259	FORCE	V	DONE	13:07:05	14	16	28	21
OSE	C6 27644	15	1342	1348	SUPP	V	-------					
OSE	S4 41122	15	1431	1434	SUPP	V	-------					
OSE	S2 60640	15	1435	1443	SUPP	V	-------					
OSE	S6 8821	15	1600	1603	SUPP	V	-------					
OSE	S2 60641	15	1615	1625	FORCE	V	DONE	16:29:56	8	2	1	0
OSE	S6 8822	15	1738	1746	SUPP	V	-------					
OSE	S2 60642	15	1756	1803	SUPP	V	-------					
OSE	C4 36112	15	1816	1824	SUPP	V	-------					
OSE	S6 8823	15	1917	1927	FORCE	V	DONE	19:39:49	20	1	1	0
OSE	C4 36113	15	2000	2011	FORCE	V	DONE	20:18:50	13	14	20	15
OSE	S3 51962	15	2030	2038	SUPP	V	-------					
OSE	C6 27648	15	2105	2113	FORCE	V	DONE	21:27:25	3	16	25	14
OSE	C4 36114	15	2146	2156	SUPP	V	-------					
OSE	S3 51963	15	2209	2219	FORCE	V	DONE	22:29:50	25	0	0	0
OSE	S4 41127	15	2236	2243	SUPP	V	-------					
OSE	C6 27649	15	2249	2301	FORCE	V	DONE	23:08:38	18	3	4	3
OSE	S3 51964	15	2350	2358	SUPP	V	-------					
OSE	S4 41128	16	0014	0024	FORCE	V	WAITING	00:39:42				
OSE	S2 60646	16	0021	0030	SUPP	V	-------					

APPENDIX E: BEACON VISIBILITY SCHEDULE FORMAT

MUTUAL VISIBILITY FOR: LAT: 33 00.0N LON: 077 00.0W ELEV: 10.00

LUT	SAT	ORBIT	DATE	TAOS	TCA	TLOS	DUR	TEQU	LEQU
PR1	C4	036153	SEP 18	1759	1802	1815	9.7	1813	-51.58
PR1	S6	008865	SEP 18	1835	1847	1850	10.9	1837	-69.40
OSE	C4	036154	SEP 18	1940	1948	1951	11.3	1958	-77.92
OSE	C6	027689	SEP 18	2045	2052	2054	8.5	2103	-57.53
PR1	S3	052005	SEP 18	2048	2100	2102	9.2	2049	-53.14
PR1	S3	052006	SEP 18	2228	2239	2241	9.3	2230	-78.42
OSE	C6	027690	SEP 18	2230	2238	2242	11.8	2248	-83.88
PR1	S4	041170	SEP 18	2327	2340	2343	10.9	2330	-67.28
PR1	S2	060689	SEP 19	0112	0124	0126	8.6	0113	-48.66
TX1	S4	041171	SEP 19	0113	0121	0127	11.6	0112	-92.77
PR1	S2	060690	SEP 19	0253	0305	0307	10.3	0255	-74.14
TX2	S6	008872	SEP 19	0710	0713	0720	10.7	0723	-80.76
PR2	C4	036161	SEP 19	0716	0729	0734	13.3	0719	-69.20
TX1	S6	008873	SEP 19	0849	0854	0903	11.5	0905	-106.28
TX2	C4	036162	SEP 19	0905	0915	0921	14.3	0904	-95.55
PR2	S3	052012	SEP 19	0915	0918	0930	9.3	0927	-62.70
PR2	C6	027697	SEP 19	1007	1020	1024	13.2	1010	-75.25
OSE	S3	052013	SEP 19	1052	1059	1102	10.5	1108	-87.98
TX2	C6	027698	SEP 19	1156	1206	1212	12.9	1155	-101.60
OSE	S4	041177	SEP 19	1158	1205	1208	9.3	1215	-78.42
OSE	S4	041178	SEP 19	1339	1346	1347	8.3	1357	-103.91
OSE	S2	060697	SEP 19	1522	1530	1532	9.9	1539	-85.19
OSE	S6	008879	SEP 19	1833	1836	1844	10.2	1826	-66.63
OSE	C4	036168	SEP 19	2008	2016	2019	10.7	2026	-86.73
OSE	C6	027703	SEP 19	2113	2121	2124	11.0	2132	-66.44

APPENDIX F: MORNING REPORT 406 INFORMATION SHEET FORMAT

```
*** BEACON INFO: ADCD04DF7CC0801 *** REC: 53110  DATE: 18-09-96

1. GENERAL LOCATION         PORT: (Unlocated with Registration - Home Port)

2. MID COUNTRY/SRR(S)       USA / SOUTHJ

3. LAT/LONG LOCATION(S)     13 24.0N 083 30.9W

4. GEO DETECT/RCVD/SRC      G8 17 1416 / 17 1417 / SPMCC
                            G8 17 1416 / 17 1439 / CMCC
                            G9 17 1416 / 17 1435 / CMCC

5. LEO UNLOC DETECT/RCVD    S4-17 1417 / 17 1426

6. FA TCA/RCVD/COMP TCA     S4-17 1416 / 17 1432 / 17 1421

7. PASSES/DURATION/BLOWN    10 PASSES/8.0 HRS/1 BLOWN

8. REG DATE/DATA USED/VSL   15 JUL 1992/(Operator Provided) /GULF KING 9

9. BEACON MAKE/MODEL        ALDEN          / SATFIND M3

10. COMMENTS: (Operator Provided)
```

APPENDIX G: DATA COLLECTION FORMATS FOR OFFLINE DATA BASES AND PROCESSES

TRAILER

The TRAILER record is written at the end of the file each time data are placed in it for downloading. It consists of four fields:

%s	TRAILER	Constant character string 'TRAILER".
%S	file_type	Identifier of downloaded file; must be one of the following: INSTAT, OUTSTAT, PASSACT, PSCHED, ORBGRAPH, ACT123, ACT406, ALRT123, ALRT406.
%1d	last_status_rec	Last Input Status record number written; not used by SAMS.
%s	dnl_timet	Time that TRAILER was written, in the form YYDDHHMM, where DDD is the Julian Day of year E; and HH, MM are the UTC hour and minute. Note that January 1 is Julian Day 1.

INSTAT.SAM

%s	message_name	Character string designating type of incoming message. If message is a solution file, the message_name must be LTSOL121 for 121.5-MHz solution file LTSOL243 for 243-MHz solution file LTSOL24K for 2.4 KB 406 solution file LTSOLINF for 406-MHz interferer solution file
%s	message_source	Character string designating source of incoming message. The US 2nd Generation LUTs are designated as: OSE, SSE, AK1, AK2, CA1, CA2, HI1, HI2, TX1, TX2, GU1, GU2, PR1, PR2.
%s	message_status	I = message incomplete N = narrative message (not fixed format) H = hold F = finished processing U = duplicate solution file X = not yet processed
%1d	IS_rec_num	Input Status record number:
%1d	is_rec_num	Incident status record number. This is a number assigned to be unique to the processing

of all data from a given LUT and pass.

%c in_flag 1 = this is an input from a foreign MCC that is used with more than one incident status record number.

0 = not associated with more than one in_rec_num.

%1d time_received This field is the time the message was received at the MCC, unless the message_name is in the form <....>; in which case it is the time that time_MPC (see below) was recorded in INSTAT.

%1d time_LPC If message_name is LTSOL121, LTSOL243, LTSOL24K or LTSOLINF, this field is the time LUT processing completed; otherwise it is 0 (zero).

%1d time_MPC If message_name is in the form <....>, this field is the time that MCC processing of the inputs with the same value of is_rec_num was completed; otherwise it is 0 (zero).

OUTSTAT.SAM

%s message_name Alerts must start with ALRT, followed by identifying numbers and letters. All message names may be found in the file MCC.COMR0100. MACLIB(CSMTBL).

%s message_dest Alphanumeric message destination;

%d message_length Approximate length of message, in bytes.

%s message_status Three character message status code:

FIRST CHARACTER
- S if sent
- R if error in send
- Q if error in queue on send
- U if duplicate send
- H if held on input (see INSTAT)
- E if experimental (test) message
- N if not sent.

SECOND CHARACTER
- S if via SARNET (NOAA in-house line)
- F if FTSNET
- P if SPRINT

THIRD CHARACTER
- H if X.25 host
- P if X.25 pad
- V if X25 hpvc

C if X.25 ppvc
F if EMAIL FAX
T if EMAIL TELEX
X if EMAIL X.25 Direct Dial Delivery
D if EMAIL Direct Dial to Printer

%1d	message_num	Current message number, assigned by MCC sequentially to destination. 999999 if message was generated but not sent.
%d	num_sends	Number of times message was sent successfully
%1d	OS_rec_num	Output Status record number;
%1d	IS_rec_num	Input Status record number;
%1d	is_rec-num	Incident status record number (see INSTAT); zero if no processing.
%1d	time_sent	Time message was LAST sent by the USMCC; 999999999 (nine nines) if created but not sent.
%1d	time_created	Time message was created by USMCC

ORBGRAPH.SAM

%	rec_type	Record type code, as follows: If from US LUT L if PDS location record M if Bent Pipe location record D if PDS detect-only record E if Bent Pipe detect-only record If from other than US LUT B if PDS location record C if Bent Pipe location record.
%s	beacon_id	Beacon id in form of 15 hex characters.
%d	t_start	Start of the doppler curve; calculated as the time of the first point on the curge minus the TCA, in seconds (negative if first point preceeds TCA); 9999 if rec_type is D or E.
%1d	orbit_num	Orbit number on which LUT received data dump
%d	A_prob	Probability that the A solution is the real solution, percent; 999 if rec_type is D or E.

%d	npts	Number of points on the Doppler curve.
%d	duration	Duration of curve; calculated as time of the last point, minus time of the first point; 999 is rec_type is D or E.
%s	sat_id	Satellite id: S2, S3, S4, S5,...; C4, C5, C6, ...
%s	lut_id	ID for one of the US LUTs or for the USMCC, as follows: SCO, OSE, SSE, AK1, AK2, CA1, CA2, HI1, HI2, TX1, TX2, GU1, GU2, PR1, PR2, USM..

A-Solution

%1d	A_tca	A-solution time of closest approach of satellite to becon, as calculated by LUT; nine 9's if rec_type is D or E.
%f	A_cta	A-solution central angle at TCA, in tenths of a degree, in the range -999 to +999 (no decimal), positive to the left of the track; 999 if rec_type is D or E.
%f	A_lat	A-solution latitude, in degrees, in the form +/-xx.xxx, positive in the northern hemisphere; 0.000 if rec_type is D or E.
%f	A_lon	A-solution longitude, in degrees, in the form +/-xxx.xxx, positive in the eastern hemisphere; 0.000 if rec_type is D or E.
%f	A_lat_dev	A-solution latitude deviation, in thousandths of a degree (no decimal).
%f	A_lon_dev	A-solution longitude, in thousandths of a degree (no decimal)
%	A_corr	A-solution correlation coefficient of latitude and longitude, in the range -99 to +99 (no decimal).
%d	A-noise	A-solution measurement noise, in Hertz, x10.

Note: The above four fields are 999 if rec_type is D or E

%1d	A-bias	A-solution frequency bias, in Hertz; 0 if rec_type is D or E.
%d	A-bias_dev	A-solution frequency bias standard deviation, in Hertz; 999 if rec_type is D or E.
%d	A_drift	A-solution frequency bias drift rate, in Hertz/min, x10; 99 if rec_type is D or E.
%d	A_conv_flag	A-solution convergence flag; number of iterations for convergence, if positive, or minus number of iterations before non-convergence, if negative; 0 if rec_type is D or E..

B-Solution		**The B-Solution variables are the same as the A-Solution variables above, with "B" in place of "A".**
%1d	LUT_calc_time	Time solution was calculated by LUT
%1d	instat_recno	Input Status record number (See INSTAT).

PSCHED.SAM

%s	sat_id	Satellite id (see ORBGRAPH)
%s	lut_id	LUT id (see ORBGRAPH)
%ld	orbit_num	Orbit number of pass
%c	no_conflict	'Y' indicates that this pass is to be taken without conflict; otherwise 'N"
%c	accept	'Y' indicates that this pass is to be taken, and conflicting pass not to be taken; otherwise 'N'.
%c	pcr_next_pass	'Y' indicates PCR predicts that this pass will be taken; otherwise 'N'.
%c	low_pass	'Y' indicates that this pass is not taken because it has less than 8 minutes above the radio horizon, or for operational reasons related to the LUT or to the satellite.
%c	reject	'Y' indicates that this pass is rejected because it conflicts with another pass; otherwise 'N'.
%c	pcr_recvd	'Y' indicates that a PCR has been received for this pass.
%1d	AOS	Time of Acquisition of Signal (See E_HORIZON)
%1d	LOS	Time of Loss of Signal (See E_HORIZON)
%f	AZ1	Azimuth at AOS, in tenths of a degree, with no decimal, in the range 0 - 3599.
%f	AZ2	Azimuth at LOS, in tenths of a degree, with no decimal, in the range 0 - 3599.
%f	max_elangle	Maximum elevation angle, in hundredth of a degree, with no decimal, in the range 0-9000.
%f	AZ3	Azimuth at TCA, in tenths of a degree, with no decimal, in the range 0 - 3599.

%f	subsat_lat1	Latitude of subsatellite point at AOS, in degrees, in the form +/-xx.xxx, positive in northern hemisphere.
%f	subsat_lon1	Longitude of subsatellite point at AOS, in degrees, in the form +/-xxx.xxx, positive in eastern hemisphere.
%f	subsat_lat2	Latitude of subsatellite point at LOS, in degrees, in the form +/xx.xxx, positive in the northern hemisphere.
%f	subsat_lon2	Longitude of subsatellite point at LOS, in degrees, in the form +/- xxx.xxx, positive in the eastern hemisphere.
%c	EW_priority	East-West priority flag; 'Y' indicates high priority.
%1d	pass_priority	Pass resolution priority; equal to pass duration times satellite priority.
%c	mc_priority	Master-Slave priority flag: 'Y' = high priority; 'N' = low priority, dual LUT master has scheduled the pass.
%c	E_HORIZON	Y = AOS and LOS relative to earth horizontal; N = AOS and LOS relative to obstructed horizon.
%c	pass_in_spec	Y indicates pass is in specification: currently: (1) it has at least 4 minutes of pass visibility above 5 deg above radio (obstructed) horizon, and (2) it has at least 8 minutes above the radio horizon; N indicates pass is not in specification. Condition (2), but not condition (1), disqualifies the pass from being scheduled.

PASSACT.SAM

%s	sat_id	Satellite id: (see ORBGRAPH.SAM)
%s	lut_id	LUT id: (see ORBGRAPH.SAM)
%1d	orbit_num	Orbit number; (see ORBGRAPH.SAM)
%1d	act_AOS	Actual time of AOS, as reported by LUT.
%1d	act_LOS	Actual time of LOS, as reported by LUT.

%1d	is_rec_num	Incident Status record number: (see INSTAT.SAM)
%1d	time_received	Time PCR received at MCC.
Note:	%1d	time_LPC will be inserted here.
%c	compl_code	Overall pass completion code: 0 = pass completed. 1 = pass aborted/prepass. 2 = pass aborted/realtime. 3 = pass aborted/postpass.
%d	calc_duration	Duration of pass, as calculted by LUT, in seconds;
%d	act_duration	Duration of pass, as reported by LUT, in seconds.
%d	lock_time	Number of seconds of signal/receiver lock.
%s	pgm_code	Identification code of any program that failed to terminate.
%c	PM_code	Preventative maintenance code indicator; 1 = in PM 0 = not in PM.
`		
%1d	epoch	Epoch of orbit vector data. See SID Annex B, Table B1 MF#34, MF#35, MF#36 for definitions of position and velocity vectors.
%1f	x_pos	Satellite x-position, in form +/-xxxx.xxxx KM.
%1f	y_pos	Satellite y-position, in form +/-xxxx.xxxx KM.
%1f	z_pos	Satellite z_position, in form +/-xxxx.xxxx KM
%1f	x_vel	Satellite x_velocity, in form +/-xx.xxxxxxx KM/sec.
%1d	y_vel	Satellite y_velocity, in form +/- xx.xxxxxxx KM/sec.
%1f	z_vel	Satellite z_velocity, in form +/-xx.xxxxxxx KM/sec.
%1f	pos_diff	Satellite position difference between LUT orbit updates, in KMx10.
%d	mem_status	Pre-pass test status: memory file system;.
%d	disc_status	Pre-pass test status: disk file system;

%d	ant_status	Pre-pass test status: receiver/antenna system;
%d	input_status	Pre-pass test status: input processor;.
%d	status_121	121.5-MHz processing status.
%d	sols_121	Number of 121.5-MHz solutions.
%d	status_243	243.-MHz processing status.
%d	sols_243	Number of 243.-MHz solutions.
%d	status_406i	406-MHz interferer processing status.
%d	sols_406i	Number of 406-MHz interferer solutions.
%d	status_406	406-MHz processing status.
%d	sols_406	Number of 406-MHz solutions.
%d	num_unloc	Number of 406-MHz beacons not lcoated (id only).
%s	next_sat	Satellite id of next scheduled pass (see ORBGRAPH.SAM);
%1d	next_orbit	Orbit number of next scheduled pass;.
%1d	next_AOS	Time of AOS, next scheduled pass;

ACT123.SAM

Master Record

%c	rec_type	M = Master record type.
%s	site_id	Site identifier, as per Alert message.
%1d	as_recnum	Active site master record number.
%c	alert_type	0 = not used 1 = single hit site 2 = two hit site 3 = three or more hits

%d	num_sols	Number of elemental solution records, maximum of 100, minimum of 0.
%c	freq_code	Site frequency code: 0 = not used 1 = 121.5-MHz only 2 = 243.-MHz only 3 = both 121.5- and 243.-MHz. 4 = not used 5 = 406-MHz and 121.5-MHz 6 = 406-MHz and 243.-MHz 7 = 406-MHz, 121.5-MHz and 243-MHz. 8 = not used 9 = 406 interferer
%c	db_code	IHDB code: 1 = in IHDB, 0 = not in IHDB.
%1d	first_tca	First TCA for the site.
%1d	last_tca	Last TCA for in site.
%1d	first_entry	Time of first data entry in site.
%1d	last_entry	Time of last data entry in site.
%1d	time_closed	Time site closed
%s	SRR_rl	Primary SRR code for the real side.
%s	SRR_r2	Secondary SRR code for the real side.
%s	SRR_i1	Primary SRR code for image side.
%s	SRR_12	Secondary SRR code for image side. **Note: XXXX if SRR not applicable.**
%f	C_lat	Composite solution latitude, in degrees, in the form +/-xx.xxx, positive in the northern hemisphere; zero if num_sols < 2.
%f	C_lon	Composite solution longitude, in degrees, in the form +/-xxx.xxx, positive in the eastern hemisphere; zero if num_sols < 2.

%f	C_lat_dev	Composite solution latitude deviation, in thousandths of a degree (no decimal).
%f	C_lon_dev	Composite solution longitude deviation, in thousandths of a degree (no decimal).
%f	C_corr	Composite solution correlation coefficient of latitude and longitude, in the range -99 to +99 (no decimal).
%1d	C-bias	Composite solution frequency bias, in Hertz.

Note: The preceding six fields are zero (0) if num_sols < 2.

Elemental record: i = 0, 1, 2, ... num_sols.

%s	Rec_Type[i]	E = elemental record type
%d	Freq_Code[i]	1 = 121.5-MHz 2 = 243-MHz 3 = both 121.5-MHz and 243-MHz.
%d	T_Start[i]	Start of the doppler curve; calculated as the time of the first point on the curgve minus the TCA, in seconds (negative if first point preceeds TCA).
%1d	Orbit_Num[i]	Orbit number on which LUT received data dump.
%d	A-Prob[i]	Probability that the A solution is the real solution, percent.
%d	Npts[i]	Number of points on the Doppler curve.
%d	Duration[i]	Duration of curve; calculated as time of the last point, minus time of the first point.
%s	Sat_Id[i]	Satellite id: S2, S3, S4, S5,...; C4, C5, C6,... .
%1d	LUT_Id[i]	Sum of code values from the table below for all LUTs in the Single Pass Merge that produced this elemental solution.
%1d	MCC_Id[i]	Sum of code values from the table below for all MCCs in the Single Pass Merge that produced this elemental solution.

LUT

bit	name
0	not used
1	TX1
2	TX2

MCC

bit	number	name
0		not used
1	5031	Alice Springs
2	7101	Sao Paulo

3	CA1
4	CA2
5	OSE
6	USMCC/DPSS
7	SSE
8	any MCC
9	AK1
10	AK2
11	HI1
12	HI2
13	GU1
14	GU2
15	PR1
16	PR2

3	3160	CMCC
4	3161	Churchill
5	3162	Edmonton
6	3163	Goose Bay
7	3164	Santiago
8	2271	Toulouse
9	4771	Hong Kong
10	4190	INMCC
11	4191	Bangalore
12	4192	Lucknow
13	4311	Yokohama
14	5121	Wellington
15	2571	Tromsoe
16	4631	Lahore
17	2730	CMC
18	2731	Arkhangelsk
19	2732	Moscow
20	2733	Nadkhodka
21	2734	Novosibirsk
22	2735	Tilichniki
23	2471	Bari
24	5631	Singapore
25	2241	Mespalomas
26	2321	Lasham
27	7701	King George Is.
28	5251	Indionesia

%1d	Calc_Time[i]	Time this elemental solution was processed by the USMCC.

A-solution

%1d	A_Tca[i]	A-solution time of closest approach of satellite to beacon, as calculated by LUT.
%f	A_Cta[i]	A-solution central angle at TCA, in tenths of a degree, in the range -999 to +999 (no decimal), positive to the left of the track.
%d	A_Stat[i]	Status of Elemental (zero (0) until defined).
%f	A_Lat[i]	A-solution latitude, in degrees, in the form +/-xx.xxx, positive in the northern hemisphere.
%f	A_Lon[i]	A-solution longitude, in degrees, in the form +/-xxx.xxx, positive in the eastern hemisphere.
%	A_Lat_dev[i]	A-solution latitude deviation, in thousandths of a degree (no decimal).

%f	A_Lon_dev[i]	A-solution longitude, in thousands of a degree (no decimal).
%	A_Corr[i]	A-solution correlation coefficient of latitude and longitude, in the range -99 to +99 (no decimal).
%d	A_Noise[i]	A-solution measurement noise in Hertz, x 10.
%1d	A_Bias[i]	A-solution frequency bias, in Hertz.
%d	A_Bias_dev[i]	A-solution frequency bias stand deviation in Hertz, x 10.
%	A_Drift[i}	A-solution frequency bias drift rate in Hertz/min, x 10.
B-solution		**Same as A-solution with "B" in place of "A".**
%d	SNR[i]	Signal to Noise ratio (dB)
%d	Sweep_Period[i]	Sweep period in milliseconds if sweep is present, 0 if not present, 566 if interferer.
%d	Sweep_Conf[i]	Sweep period confidence score if sweep is present, count of interferer points if interferer, 0 otherwise.
%d	Sweep_Shift[i]	Shift of sweep curve, Hz

ACT406.SAM

Master Record

%c	rec_type	M = Master record type
%s	beacon_id	Beacon ID: 15 char hex beacon code
%ld	as_recnum	Active site master record number
%c	alert_type	0 = not used 1 = single hit site

2 = two hit site
3 = three or more hits
4 = detect-only

%d	num_sols	Number of elemental solution records, maximum of 100, minimum of 0. This number includes detect-only records.
%c	freq_code	Site frequency code: 0 = not used 1 = not used 2 = not used 3 = not used 4 = 406 only 5 = 406-MHz and 121.5-MHz. 6 = 406-MHz and 143.-MHz 7 = 406-MHz, 121.5-MHz and 243-MHz 8 = 406 Repeater (Bent Pipe) 9 = 406 interferer
%c	db_code	IHDB code: 1 = in IHDB, 0 + not in IHDB
%1d	first_tca	First TCA for the site
%1d	last_tca	Last TCA for in site
%1d	first_entry	Time of first data entry in site
%1d	last_entry	Time of last data entry in site
%1d	time_closed	Time site closed
%s	SRR_rl	Primary SRR code for the real side
%s	SRR_r2	Secondary SRR code for the real side
%s	SRR_il	Primary SRR code for image side
%s	SRR_i2	Secondary SRR code for image side
		Note: XXXX if SRR not applicable
%f	C_lat	Composite solution latitude, in degrees, in the form +/-xx.xxx, positive in the northern hemisphere.

%f	C_lon	Composite solution longitude, in degrees, in the form +/-xxx.xxx, positive in the eastern hemisphere.
%f	C_lat_dev	Composite solution latitude deviation, in thousandths of a degree (no decimal).
%f	C_lon_dev	Composite solution longitude, in thousandths of a degree (no decimal).
%f	C_corr	Composite solution correlation coefficient of latitude and longitude, in the range -99 to +99 (no decimal).
%1d	C_bias	Composite solution frequency bias, in Hertz.
%d	C_bias_dev	Composite solution frequency bias standard deviation, in Hertz.
%d	num_blown	Number of Blown solutions, 0 if none.
Elemental record:		i = 0, 1, 2,... num_sols
%s	Rec_Type[i]	E = elemental record type D = detect-only
%d	Freq_code[i]	4 = 406-MHz regional 5 = 406-MHz global 6 = 406-MHz bent pipe
%d	T_start[i]	Start of the doppler curve; calculated as the time of the first point on the curve minus the TAC, in seconds (negative if first point preceeds TCA).
%1d	Orbit_Num [i]	Orbit number on which LUT received data dump.
%d	A_Prob[i]	Probability that the A solution is the real solution, percent.
%d	Npts[i]	Number of points on the Doppler curve.
%d	Duration[i]	Duration of curve; calculated as time of the last point, minus time of the first point.
%s	Sat_Id[i]	Satellite id: S2, S3, S4,...; C4, C5, C6,... .
%1d	LUT_Id[i]	Sum of code values from the table below for all LUTs in the Single Pass Merge that produced this elemental solution.
%1d	MCC_Id[i]	Sum of code values from the table below for all MCCs in the Single Pass Merge that produced this elemental solution.

LUT	
bit	name
0	not used
1	TX1
2	TX2
3	CA1
4	CA2
5	OSE
6	USMCC/CEMSCS
7	SSE
8	any MCC
9	AK1
10	AK2
11	HI1
12	HI2
13	GU1
14	GU2
15	PR1
16	PR2

MCC		
bit	number	name
0	not used	
1	5031	Alice Springs
2	7101	Sao Paulo
3	3160	CMCC
4	3161	Churchill
5	3162	Edmonton
6	3163	Goose Bay
7	3164	Santiago
8	2271	Toulouse
9	4771	Hong Kong
10	4190	INMCC
11	4191	Bangalore
12	4192	Lucknow
13	4311	Yokohama
14	5121	Wellington
15	2571	Tromsoe
16	4631	Lahore
17	2730	CMC
18	2731	Arkhangelsk
19	2732	Moscow
20	2733	Nadkhodka
21	2734	Novosibirsk
22	2735	Tilichniki
23	2471	Bari
24	5631	Singapore
25	2241	Mespalomas
26	2321	Lasham
27	7701	King George Is.
28	5251	Indonesia

%1d Calc_Time[i] Time this elemental solution was processed by the USMCC.

A-solution

%1d A_Tcs[i] A-solution time of closest approach of satellite to beacon, as calculated by LUT; time of last point on curve for Rec_Type[i] = D (detect-only).

%f A_Cta[i] A-solution central angle at TCA, in tenths of a degree, in the range -999 to +999 (no

		decimal), positive to the left of the track; zero for Rec_Type[i] = D (detect-only).
%d	A-Stat[i]	Status of Elemental; presently 0 (zero)
%f	A_Lat[i]	A-solution latitude, in degrees, in the form +/-xx.xxx, positive in the northern hemisphere; 0.000 for Rec_Type{i} = D (detect-only).
%f	A_Lon[i]	A-solution longitude, in degrees, in the form +/-xxx.xxx, positive in the eastern hemisphere 0.000 for Rec_Type[i] = D (detect-only).
%f	A_Lat_dev[i]	A-solution latitude deviation, in thousandths of a degree (no decimal).
%f	A_Lon_dev[i]	A-solution longitude, in thousandths of a degree (no decimal).
%f	A_Corr[i]	A-solution correlation coefficient of latitude and longitude, in the range -99 to +99 (no decimal).
%d	A_Noise[i]	A-solution measurement noise in Hertz, x 10.
%1d	A_Bias[i]	A-solution frequency bias, in Hertz.
%d	A_Bias_dev[i]	A-solution frequency bias standard deviation in Hertz, x 10.
%d	A_Drift[i]	A-solution frequency bias drift rate in Hertz/min, x 10.

Note: The above seven fields are 0 (zero) for Rec_Type[i] = D (detect-only)

B-solution **Same as A-solution with “B” in place of “A”.**

APPENDIX H: CHECKS ON BEACON ID AND BEACON MESSAGE

406 MHz Beacon Message Validation

Each MCC should validate all incoming 406 MHz beacon alert messages based on the rules provided in the following tables.

Step 1 of the validation procedure at an MCC should be the performance of a BCH check of all incoming 406 MHz alert messages from MCCs and LUTs. The resultant MCC action is defined by Table H-1.

Number of Uncorrected BCHErrors Detected	Number of Points	
	1	$ 2
0	Process	Process
$ 1	Suppress	Process

Table H-1: MCC Action Based on BCH Error Determination

Step 2 of the validation procedure at an MCC should be a comparison of the beacon message contents against a known protocol specification. Specifically, the following items in the protected field(s) should be validated against C/S T.001:

- country code,
- user protocol,
- Baudot characters,
- Binary coded decimal fields, and
- encoded latitude and longitude.

A 406 MHz beacon alert message fails when the conditions in Table H-2 below are met.

Item to check	Bits	Fail if:
Country Code	27 - 36	Decimal value < 200 or > 780
User Protocol (see note)	37 - 39	bit 26 = 1 and bits 37 - 39 = 101
Serialized User Protocol	40 - 42	bit 26 = 1 and bits 40 - 42 = 101 or 111
Maritime User , Radio Call Sign or Aviation User Protocol	82 - 83	bit 26 = 1 and bits 37 - 39 = 010, 110 or 001 and bits 82 - 83 are non-zero
National Short Location Protocol and National Location Protocol	37 - 40	bit 26 = 0 and bits 37 - 40 = 1001, 1100 or 1101
Modified Baudot Code	Varies	Unassigned Baudot Character
Binary Coded Decimal	Varies	Decimal value for four bit group > 10
Encoded Latitude and Longitude	Varies	encoded latitude > 90 or encoded longitude > 180

Note: For User Protocol, "101" in bits 37-39 indicates Special Use. Special Use is not available for any "new" beacons, however, some beacons will exist for a short period using this bit pattern and, therefore, this validation check should not be performed until those beacons are phased out of service which is expected to be December 1997.

Table H-2: Protocol Validation for 406 MHz Alert Message

The appropriate action by an MCC based on the results of the comparisons of Table H-2 are given in Table H-3 below.

Protocol Check Results	Number of Points	
	1	$ 2
Pass	Process	Process
Fail	Suppress	Process

Table H-3: MCC Action Based on Result of Protocol Validation

APPENDIX I: FORMAT OF TWO LINE ORBITAL ELEMENTS

```
SAT ID = 15427 S2 SARSAT-2 NOAA- 9/F  OR
1 15427U 84123A   97121.17754722  .00000033  00000-0  00000+0 0  1272
2 15427  98.9022 191.6074 0015241 132.5150 227.7863 14.13852347638560
SAT ID = 16969 S3 SARSAT-3 NOAA-10/G
1 16969U 86073A   97121.20340929  .00000057  00000-0  00000+0 0   583
2 16969  98.5420 115.4639 0013317 144.6635 215.5988 14.25027186552000
SAT ID = 19531 S4 SARSAT-4 NOAA-11/H  OR
1 19531U 88089A   97121.21789398 -.00000052  00000-0  00000+0 0  9459
2 19531  99.1553 153.1829 0012040  68.9915 291.3091 14.13128582443378
SAT ID = 23455 S6 SARSAT-6 NOAA-13/J  OR
1 23455U 94089A   97121.25013183  .00000265  00000-0  00000+0 0   267
2 23455  98.9872  72.4450 0009844  65.4740 294.8005 14.11664881120323
SAT ID = 20103 C4 COSPAS-4            OR
1 20103U 89050A   97121.25131198  .00000038  00000-0  00000+0 0  1206
2 20103  82.9596 234.0895 0036741 247.4410 112.3401 13.73877227392363
SAT ID = 20508 C5 COSPAS-5            OR
1 20508U 90017A   97121.10205822  .00000032  00000-0  00000+0 0  1204
2 20508  82.9550   8.6641 0044182 199.9770 160.0202 13.73520796359542
SAT ID = 21152 C6 COSPAS-6            OR
1 21152U 91019A   97120.84096037 -.00000003  00000-0  00000+0 0  8069
2 21152  82.9221 270.4895 0041919 177.7884 182.4008 13.73545492307644
SAT ID = 23179 C7 COSPAS-7
1 23179U 94041A   97121.17016380  .00000022  00000-0  00000+0 0  2769
2 23179  82.9462   0.9287 0035898 316.7369  43.1514 13.75693192240526
SAT ID = 17561 G7 GOES-7
1 17561U 87022A   97119.84825080  .00000000  00000-0  00000+0 0  3479
2 17561   3.6372  67.2380 0003249 323.2572  36.7253  1.00259824 20482
SAT ID = 23051 G8 GOES-8
1 23051U 94022A   97119.33270525  .00000000  00000-0  00000+0 0  6912
2 23051   0.1446 261.2420 0004080 121.1475 238.8951  1.00259782 18546
SAT ID = 23581 G9 GOES-9
1 23581U 95025A   97120.03168613  .00000000  00000-0  00000+0 0  3813
2 23581   0.2211  94.1834 0001342 308.1440  51.8476  1.00264642  7100
SAT ID = 22027 IA INSAT-2A
1 22027U 92041A   97111.67886377  .00000000  00000-0  00000+0 0  6910
2 22027   0.0220 168.0025 0007910  39.3761 320.7008  1.00269683 17347
SAT ID = 22724 IB INSAT-2B
1 22724U 93048B   97115.44649442  .00000000  00000-0  00000+0 0  5336
2 22724   0.0606 107.6786 0004263   2.5586 357.4511  1.00270194 14103
SAT ID = 23426 LE LUCH-M-E
1 23426U 94082A   97120.10691567  .00000020  00000-0  00000+0 0  5229
2 23426   0.8356 259.5122 0016107 128.7287 231.4183  0.99415700  8765
```

```
SAT ID = 23522 G5 GMS-5
1 23522U 95011B   97116.06069890  .00000000  00000-0  00000+0 0  2558
2 23522   0.4139  15.8683 0005698 163.2101 196.8116  1.00267211  7599
```

APPENDIX J: ACTIVE SITE FILE DATA ELEMENTS

See Section 5 of Reference P.

APPENDIX K: RCC PASS SCHEDULE FORMAT

SATELLITE PASSES OVER KOREA FOR 11 APR 97 TO 12 APR 97
LAT 38 18.0N, LONG 127 18.0E
SCHEDULE BUILD 10 2310 APR 97

AZM = AZIMUTH OF SATELLITE PASS AT MAXIMUM ELEVATION OVER KOREA
EL = MAXIMUM ELEVATION OF SATELLITE PASS OVER KOREA
S = WILL BE TRACKED BY LUT
P = POSSIBLY TRACKED BY LUT
TM = MINUTES OF MUTUAL VISIBILITY, MINIMUM TRACKABLE IS 4

SAT/ORBIT	BEGIN DY	BEGIN TIME	END TIME	AZM	EL	GU1 TM	GU2 TM	HONGK TM	JAPAN TM
S4 44051	10	2346	0001	289	59			9_P	
S2 63571	11	0046	0100	092	18	8_S	7_S		14_P
S4 44052	11	0128	0138	305	7				
S2 63572	11	0226	0241	290	53			9_P	13_P
S6 11748	11	0303	0313	054	6	_S	_S		9_P
S2 63573	11	0409	0418	306	6				
S6 11749	11	0440	0455	071	52		8_S		14_P
S3 54916	11	0625	0637	060	11		4_S		11_P
S6 11750	11	0622	0635	267	19			9_P	8_P
S3 54917	11	0802	0818	321	89		7_S	9_P	14_P
S4 44057	11	0930	0945	066	28	7_S	7_S		13_P
S3 54918	11	0945	0956	272	9			7_P	
S4 44058	11	1110	1126	262	36	5_S	5_S	10_P	12_P
S2 63578	11	1210	1225	067	30	7_S	7_S		14_P
S2 63579	11	1351	1406	263	34	5_S	5_S	10_P	12_P

```
S6 11756 11 1704 1718 095 26        9_S        14_P

S6 11757 11 1844 1859 291 39              9_P  12_P
```

APPENDIX L: SHARED FILE PASS SCHEDULE FORMAT

%s	sat_id	Satellite id
%s	lut_id	LUT id
%ld	orbit_num	Orbit number of pass
%c	no_conflict	'Y' indicates that this pass is to be taken without conflict; otherwise 'N"
%c	accept	'Y' indicates that this pass is to be taken, and conflicting pass not to be taken; otherwise 'N'.
%c	pcr_next_pass	'Y' indicates PCR predicts that this pass will be taken; otherwise 'N'.
%c	low_pass	'Y' indicates that this pass is not taken because it has less than 8 minutes above the radio horizon, or for operational reasons related to the LUT or to the satellite.
%c	reject	'Y' indicates that this pass is rejected because it conflicts with another pass; otherwise 'N'.
%c	pcr_recvd	'Y' indicates that a PCR has been received for this pass.
%1d	AOS	Time of Acquisition of Signal (See E_HORIZON)
%1d	LOS	Time of Loss of Signal (See E_HORIZON)
%f	AZ1	Azimuth at AOS, in tenths of a degree, with no decimal, in the range 0 - 3599.
%f	AZ2	Azimuth at LOS, in tenths of a degree, with no decimal, in the range 0 - 3599.
%f	max_elangle	Maximum elevation angle, in hundredth of a degree, with no decimal, in the range 0-9000.
%f	AZ3	Azimuth at TCA, in tenths of a degree, with no decimal, in the range 0 - 3599.
%f	subsat_lat1	Latitude of subsatellite point at AOS, in degrees, in the form +/-xx.xxx, positive in northern hemisphere.

%f	subsat_lon1	Longitude of subsatellite point at AOS, in degrees, in the form +/-xxx.xxx, positive in eastern hemisphere.
%f	subsat_lat2	Latitude of subsatellite point at LOS, in degrees, in the form +/xx.xxx, positive in the northern hemisphere.
%f	subsat_lon2	Longitude of subsatellite point at LOS, in degrees, in the form +/- xxx.xxx, positive in the eastern hemisphere.
%c	EW_priority	East-West priority flag; 'Y' indicates high priority.
%1d	pass_priority	Pass resolution priority; equal to pass duration times satellite priority.
%c	mc_priority	Master-Slave priority flag: 'Y' = high priority; 'N' = low priority, dual LUT master has scheduled the pass.
%c	E_HORIZON	Y = AOS and LOS relative to earth horizontal; N = AOS and LOS relative to obstructed horizon.
%c	pass_in_spec	Y indicates pass is in specification: currently: (1) it has at least 4 minutes of pass visibility above 5 deg above radio (obstructed) horizon, and (2) it has at least 8 minutes above the radio horizon; N indicates pass is not in specification. Condition (2), but not condition (1), disqualifies the pass from being scheduled.

APPENDIX M: INCIDENT HISTORY DATA BASE INCIDENT REPORT FORMAT

DISTRESS INCIDENT REPORT FOR DOCUMENTATION OF SAR EVENTS AND PERSONS RESCUED
PREPARED: 06/20/97 12:31

a) Type of incident: EPIRB 121.5 MHz

b) Date of incident: 03/12/97

c) Location of incident: Florida
28.9785 N. 84.7554 W

d) Identification/type of craft involved: TRGHTRN WP

e) Circumstances of distress situation:

No Public Relations (PR) information for this site
97F1A82453 I-2941
GCD7 RPTD-
GENERAL LOCATION: MIDDLE GROUNDS, FL
REMARKS: VSL HAD ENGINE PROBLEMS AND WAS DISABLED.

CGD8 RPTD-
REMARKS: SIGNAL CEASED BEFORE ANY CGD ASSETS WERE LAUNCHED.

f) Nature of COSPAS-SARSAT alert data:

- only alert [x]
- first alert [x]
- supporting date [x]

g) Number of persons:

- involved 3
- rescued 3

h) Other significant information:

APPENDIX N: FG USMCC CONFIGURATION PARAMETERS

N.1. For System Message Routing for each Communication Site , specify the following configuration parameters:

- Sit 215 (Orbit Vector) flag (Send/Do not Send)

- Sit 415 (Time Calibration) flag (Send/Do not Send)

- Sit 416 (SARP Telemetry) flag (Send/Do not Send)

- Sit 425 (SARP Telemetry Out of Limits) flag (Send/Do not Send)

- Sit 435 (SARP Command Request) flag (Send/Do not Send)

- Sit 445 (SARP Command Verification) flag (Send/Do not Send)

- Sit 515 (SARR Telemetry) flag (Send/Do not Send)

- Sit 525 (SARR Telemetry Out of Limits) flag (Send/Do not Send)

- Sit 535 (SARR Command Request) flag (Send/Do not Send)

- Sit 545 (SARR Command Verification) flag (Send/Do not Send)

- Sit 605 (System Narrative) flag (Send/Do not Send)

- Sit 915 (Narrative) flag (Send/Do not Send)

- Sit 925 (Registration data) flag (Send/Do not Send)

- Sit 953 (LUT Pass Schedule) flag (Send/Do not Send)

N.2. Where Alert messages based on SAR are to be routed or to determine if Alert messages of a certain type (e.g., 121 MHz First Alert) are to be sent at all, for each Search and Rescue (SAR) site, specify the following configuration parameters:

- SAR to which messages to SarCode are to be redirected. If not set or if set = SarCode, the message is not redirected. (If set to Blanks, no message is sent.) Note that echo SARs only apply to the Primary SarCode.

- First SAR to which messages for SarCode are to be echoed. Note that echo SARs may be echoed again in the

next SarCode link.

- Second SAR to which messages for SarCode are to be echoed

- Send 123 First Alert for SarCode (Yes/No)

- Send 123 First Alert Missed Pass Message for SarCode (Yes/No)

- Send 123 Composite Missed Pass Message for SarCode (Yes/No)

- Send 406 First Alert Missed Pass Message for SarCode (Yes/No)

- Send 406 Composite Missed Pass Message for SarCode (Yes/No)

- Send 406 First Alert (Pre-composite) for SarCode (Yes/No)

- Number of 123 Composites to send for SarCode.

- Number of 406 Composites to send for SarCode.

N.3. For Alert Processing, where alert messages are to be routed based on Maritime Identification Digits (MID) or Country Identifier encoded in a 406 MHZ Beacon Id, for each MID, specify the following configuration parameters:

- Country name

- Destination SRR for unlocated alerts with this Mid in Beacon Id

- Destination SRR for NOCR alerts with this Mid in Beacon Id

- Destination SRR for Sit 925 messages with this Mid in Beacon Id

N.4. To describes the route by which one MCC distributes Alert data to another MCC, for each MCC, specify the following configuration parameters:

- Name of destination MCC (matches Com Site Name), the final recipient of the alert

- Name of support MCC (matches Com Site Name).

N.5. To govern the display and alarm settings for the Operator Messages issued by the MCC, for each User ID, specify the following configuration parameters:

- Last message from Operator Message Log displayed to user.

- Action required by MCC controller. First 'Flash' message from Operator Message Log not acknowledged by user.

- Immediate action required by MCC controller. First 'Audible' message from Operator Message Log not acknowledged by user.

- For each User ID and for each Subsystem that wrote message to Operator message Log, specify:

  - Last minimum 'OperPrior' priority set by user for displaying messages in 'Message Scroll' Window.
  - Last minimum 'OperPrior' priority set by user for displaying messages in 'Message Alarm' Window as a 'Flash Message'.

  - Last minimum 'OperPrior' priority set by user for displaying messages in 'Message Alarm' Window as an 'Audible Message'.

  - Maximum 'OperPrior' priority (set by management) that user can set for messages to be displayed.

  - Maximum 'OperPrior' priority (set by management) that user can set for messages to be displayed as a Flash Message.

  - Maximum 'OperPrior' priority (set by management) that user can set for messages to be displayed as an Audible Message.

N.6 For Cospas-Sarsat system data processing, for each satellite, specify the following configuration parameters:

- Cospas-Sarsat numeric satellite identifier as defined in the SID. Stored in a character format. SARSAT satellites IDs range from 001 to 099, COSPAS from 101 to 199, GOES from 201 to 220, INSAT from 241 to 260.

- Common name of the satellite

- NOAA's satellite identifier:
    - NOAA-F NF
    - NOAA-G NG
    - NOAA-H NH
    - NOAA-I NI
    - NOAA-J NJ
    - NOAA-K NK

(contained in the telemetry files from CEMSCS).

- NOAA's pre-launch designator for the satellite, not applicable for non-USA satellites.

- NOAA's post-launch designator for the satellite, not applicable for non-USA satellites.

- NORAD's identifier for the satellite, applicable for all satellites. Normally a numeric but stored as a character field.

- The operational status of the satellite (Not operational/Operational)

- The storage location for the associated SARP telemetry points.

- The storage location for the associated SARR telemetry points.

- The status (Not operational/Operational) of the 121.5 repeater on-board the satellite:

- The status (Not operational/Operational) of the 243 repeater on-board the satellite:

- The status (Not operational/Operational) of the 406 repeater on-board the satellite:

- The status (Not operational/Operational) of the 406 SARP Local Mode on-board the satellite:

- The status (Not operational/Operational) of the 406 SARP Global Mode on-board the satellite:

- The status (Not operational/Operational) of the 406 SARP Pseudo Mode on-board the satellite:

- Nominal inclination of the satellite in degrees [0.0 to ± 180.0].

- Average altitude of the satellite in kilometers [500.0 to 36,000].

- The orbital period of the satellite in seconds [5000.0 to 87,000.0].

- The semi-major axis of the satellite in km.

- Ultra Stable Oscillator Frequency, nominal value in Hz.

- Number of Bits in on-board clock.

- Period between clock rollovers. (Approximate ambiguity of time-tagging).

N.7 For Cospas-Sarsat system data processing for processing telemetry data from the SARP instrument on Sarsat spacecraft, specify the following configuration parameters:

- The identifier for the telemetry point. Valid points for the SARP are:
  - RUBOXTMP
  - USO_TEMP
  - USO_REGV
  - RG_REGUL
  - SPU_TEMP
  - PCU_TEMP
  - CON_TEMP
  - CON_P05V
  - CON_N52V
  - CON_P12V
  - CON_N12V
  - BUS_P28V
  - SAT_TEMP

- Name of the telemetry point (same for each satellite)

- Flag to indicate if the telemetry point is active (Not operational or not used/Operational) for this satellite.

- Flag to indicate if data from this point should generate an out-of-limit message.

- Flag to indicate if data from this point is used to generate a summary message.

- Polynomial equation coefficient a used to convert telemetry volts to engineering units.

- Polynomial equation coefficient b used to convert telemetry volts to engineering units.

- Polynomial equation coefficient c used to convert telemetry volts to engineering units.

- Polynomial equation coefficient d used to convert telemetry volts to engineering units.

- Polynomial equation coefficient e used to convert telemetry volts to engineering units.
- Minimum value for the telemetry point in engineering units.

- Maximum value for the telemetry point in engineering units.

- Minimum change rate for the telemetry point in telemetry volts.

- Maximum change rate for the telemetry point in telemetry volts.

- Nominal value for the telemetry point.

N.8 For Cospas-Sarsat system data processing for processing telemetry data from the SARR instrument on Sarsat spacecraft, specify the following configuration parameters:

- The identifier for the telemetry point. Valid points for the SARR are:

TX_POWER
TX_CURRT
TX_TEMPE
OC121TMP
OC406TMP
PTC_TEMP
PTC_P16V
PTC_P28V
TXBPTEMP
AGC_121
AGC_243
AGC_406

- Name of the telemetry point.

- Flag to indicate if the telemetry point is active for this satellite.

- Flag to indicate if data from this point should generate an out-of-limit message:

- Flag to indicate if data from this point is used to generate a summary message

- Polynomial equation coefficient 1 used to convert telemetry volts to engineering units.

- Polynomial equation coefficient b used to convert telemetry volts to engineering units.

- Polynomial equation coefficient c used to convert telemetry volts to engineering units.

- Polynomial equation coefficient d used to convert telemetry volts to engineering units.

- Polynomial equation coefficient e used to convert telemetry volts to engineering units.

- Minimum value for the A side telemetry point in telemetry volts.

- Maximum value for the A side telemetry point in telemetry volts.

- Minimum value for the B side telemetry point in telemetry volts.

- Maximum value for the B side telemetry point in telemetry volts.

N.9 Communication Configuration - For default or override configuration, specify the following configuration parameters:

- X.25 Accept Done timeout (milliseconds).

- X.25 Flow Control Done timeout (milliseconds).

- X.25 Gateway Call Done timeout (milliseconds).

- X.25 Gateway Listen Done timeout (milliseconds).

- X.25 Link Statistics Done timeout (milliseconds).

- X.25 Packet Statistics Done timeout (milliseconds).

- X.25 PVC Call Done timeout (milliseconds).

- X.25 Receive Done timeout (milliseconds).

- X.25 Register Done timeout (milliseconds).

- X.25 Reset Done timeout (milliseconds).

- X.25 Reset Confirm Done timeout (milliseconds).

- X.25 Send Done timeout (milliseconds).

- X.25 Send Confirm Done timeout (milliseconds).

- X.25 Send Exp Done timeout (milliseconds).

- X.25 Send ExpConfirm Done timeout (milliseconds).

- X.25 Status Done timeout (milliseconds).

- X.25 XCall Done timeout (milliseconds).

- X.25 XHangup Done timeout (milliseconds).

- X.25 XHangupConfirm Done timeout (milliseconds).

- X.25 XListen Done timeout (milliseconds).

N.10 Communication Configuration - For each X.25 Gateway Port Number, specify the following configuration parameters:

- X.25 Gateway Port Priority.

- X.25 Gateway Port State: “Online” “Offline.

- X.25 Call In Allowed on this Port.

- X.25 Call Out Allowed on this Port.

- Get Link Statistics for port Time interval (milliseconds) from midnight (on the hour = 60*60*1000), zero = do not get statistics.

- Reset Link Statistics for port after specified number of Get Link Statistics, zero = do not reset statistics and one = reset statistics every time.

- Get Packet Statistics for port Time interval (milliseconds) from midnight (on the hour = 60*60*1000), zero = do not get statistics.

- Reset Packet Statistics for port after specified number of Get Packet Statistics, zero = do not reset statistics and one = reset statistics every time.

N.11 Communication Configuration - For each communication site, specify the following communication parameters:

- Communication Site Type Identifier: LUT ID, etc.

- Communication Site Type: “LUT”, “MCC”, “RCC”, “SPOC”,”X400".

- State (Online/Offline).

- Hold all Input.

- Hold all Output.

- Send is allowed.

- Receive allowed or expected.

- Communication Site Send Path Table (Type) Name: ComX25Path, ComTelexPath, ComFaxPath, ComX400Path, ComAftnPath, ComPrinterPath, ComBitBucket, ComNonePath.

- Search And Rescue Code (3 Digit MID Code and 1 Alphanumeric country code).

- Type of Alert Message to be sent, RCC, MCCNew, MCCOld, CSEL, SPOC.

- Receive SIT 115 in Old format.

- Receive SIT 125 in Old format.

- Receive SIT 133 in Old format.

- Send Current Message Number.

- Receive Current Message Number.

- Communication Path Name.

- Communication Site Path Number and Priority.

- X.25 Call Out Gateway Name.

- X.25 Call Out Gateway Number.

- X.25 Call Out Remote Network Terminal Number.

- X.25 Call Out Local Network Terminal Number.

- X.25 Call Out Facility Hex Data.

- X.25 Call Out Protocol ID Hex Data.

- X.25 Call Out Call User Data Character, hex Data prefix: “0x”.

- X.25 Call In Verify Local Network Terminal Number Data (Null if no Verification).

- X.25 Call In Remote Network Terminal Number Data (Null if no Verification).

- X.25 Call In Facility Character Data, hex Data prefix: “0x” (Null if no Verification).

- X.25 Call In Protocol ID Hex Data (Null if no Verification).

- X.25 Call In Call User Data (Null if no Verification).

- Maximum Send Data Byte Length.

- Maximum Receive Data Byte Length.

- Send Minimum Message Number.

- Send Maximum Message Number.

- Receive Minimum Message Number.

- Receive Maximum Message Number.

- Send Line Maximum Length, not including carriage control.

- Send End Of Line Carriage Control.

- Send End Of Message Carriage Control, Should include End Of Line Carriage Control for last line in message.

- Relay Received Data Communication Site Name/Path Name (Data received from ComSite is Relayed to the specified ComSite(s) as is).

- Duplicate Send Data Communication Site Name/Path Name (Data sent to ComSite is Duplicated to the specified ComSite(s) as is).

- Call Out Try Maximum count; each subsequent attempt should use the next functioning X.25 Gateway and Port.

- Call Out Try Time between tries (milliseconds).

- Minimum Connect Time for Idle disconnect (milliseconds).

- Connect Interval Time for Idle disconnect (milliseconds). Idle disconnect should only occur after Minimum Connect Time plus zero or more Minimum Connect Time(s).

- Idle Disconnect Time - No Input or Output data (milliseconds).

Appendix O

Interference Alert Message Format
(SIT 1xx)
-DRAFT-

1. COSPAS-SARSAT 406 MHZ INTERFERENCE REPORT

2. MSG NO. nnnnn USMCC REF nnnnn

3. DETECTED AT dd mmm yy hhmm UTC BY SARSAT nn

4. POSITION(S) <AMBIGUITY RESOLVED, AMBIGUITY NOT RESOLVED>

   dd mm.m<N/S> ddd mm.m<E/W> REGION - aaaaa FREQ - nnn.nnnn MHZ
   dd mm.m<N/S> ddd mm.m<E/W> REGION - aaaaa FREQ - nnn.nnnn MHZ

5. PREVIOUS POSITION(S)

   LATITUDE LONGITUDE DETECT TIME FREQ (MHZ) REGION
   dd mm.m<N/S> ddd mm.m<E/W> dd hhmm mmm nnn.nnnn aaaaa

6. PROABLE SEARCH AREA - RADIUS OF nn KM

7. OTHER INFORMATION -

   (Could include things like characteristics, frequency of occurrence, nearest city, etc...)

8. REMARKS - PLEASE CONTACT <POC/TELEPHONE> AT THE USMCC FOR MORE INFORMATION

Appendix P

Output Format for Interference Query

[TBD]

Appendix Q

Formats for Periodic Reports

C.2 ITU INTERFERENCE REPORT FORMS (from Recommendation ITU-R SM.1051-2)

C.2.1 Information report concerning interference

a) Mean latitude and longitude

b) Probable search radius from mean location. Country. Nearest city

c) Frequencies

d) Number of observations (total and number since last report)

e) First and last date of occurrences

f) Modulation characteristics

g) Times and days-of-week of occurrences

h) Other details

C.2.2 Feedback report concerning the interference source

a) Latitude and longitude

b) Fundamental frequency of offending source (this may be outside the band)

c) Type of equipment

d) Cause of interference

e) Action taken

Table C.1: 406 MHz Interference Report Format[1]

Reporting Period (DD Month - DD Month YY)

Part1

Site ID Number[2]	Location				Search Area (probable search radius from mean location) (km)	Mean Latitude (d°, 100th of d°)	Mean Longitude (d°, 100th of d°)	Mean Detected Freq. (MHz)	Modulation Charact.[3]	Impact on System[4]	Monthly Detection Ratio[5]	Dates of Observations		Times and Days of Week of Occurrences				Number of Observations (number since last report and total)		Other Details
	Country	Nearest City	Direction from Nearest City	Distance (km)								First Date	Last Date	Date	Day of Week	Start Time	End Time	Current Period	Total	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
MID123456	Text	Text	NE,W, SW, etc.	nn	nn	±nn.nn	±nn.nn	406.nnn	N/ME/PE	H/M/L	0.nn	YYMMDD	YYMMDD	YYMMDD	Sn,Mo, Tu, etc.	HH:MM	HH:MM	nn	nnnn	Text
MID123457																				
etc.																				
	ITU				ITU	ITU	ITU	ITU	ITU	JC-11	JC-11	JC-13		ITU				ITU		JC-13

Part 2 (see Note 6)

Status (open/closed) 1-opn, 0-clsd	Location (Confirmed)				Narrative, including the identification of the source, as available							
	Country	Nearest City	Latitude (d°, 100th of d°)	Longitude (d°, 100th of d°)	Type of Equipment	Assigned Frequency (MHz)	Assigned Frequency Band (MHz)	Class of Emission	Power Characteristics	Cause of Interference	Action Taken	Other Data
22	23	24	25	26	27	28	29	30	31	32	33	34
1	Text	Text	±nn.nn	±nn.nn								
0												
			ITU	ITU	ITU	ITU				ITU	ITU	

Notes: 1. Reporting should be provided in Excel format on a monthly basis. Minimum data is required for the following columns: 1, 2, 3, 7, 8, 9, 12, 13, 14, 19 and 20. Fields for which data is not available can be left blank.

2. Site ID number consists of two parts: 3 digit country code according to ITU MID code of the country of reporting authority plus 6 digits, assigned by the authority to the site.
3. Type of modulation of main carrier: **N** - emission of unmodulated carrier, **ME**- emission of modulated carrier, **PE**- emission of pulses (data optional for Part 1, supplied in case of availability).
4. **H**igh: Reducing throughput of reference beacon in case of mutual visibility by 50% and more, **M**edium - by 25-50%, **L**ow -less than 25%.
5. Monthly DR = N1/(N1+N2), where: N1 - number of passes over emitter at/above 5 degrees, with at least 1 location; N2 - number of passes over emitter at/over 5 degrees, with no location. Interferers with DR = 0.1 and more should be reported.
6. These items depend on feedback report concerning interference source. This is normally provided after the site has been closed and emissions have been stopped.

- END OF ANNEX C -