

CEOS ANNOTATIONS STRUCTURE FOR ESA ERS-1 SAR PRODUCTS

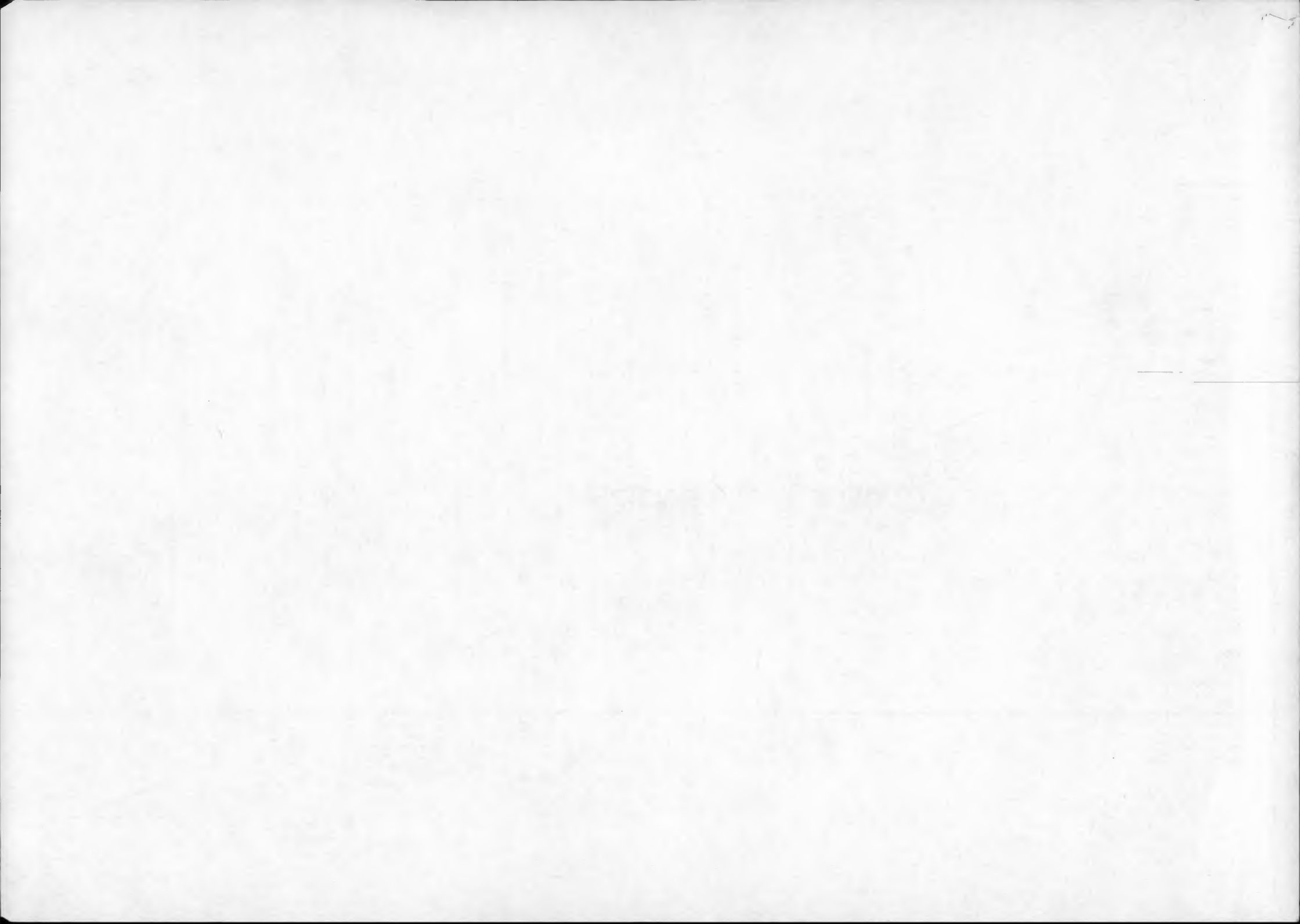
Example with PRI product

Volume Directory File	
volume descriptor record	360 bytes
leader file pointer record	360 bytes
data set file pointer record	360 bytes
text record	360 bytes

Leader File	
file descriptor record	720 bytes
data set summary record	1888 bytes
map projection record	1620 bytes
platform position data record	TBD bytes
radiometric compensation record <i>[optional]</i>	8600 bytes
facility related data record (ESA general type)	12288 bytes
facility related data record (processor type)	12288 bytes

Data Set File	
file descriptor record	16012 bytes
image data record 1	16012 bytes
image data record 2	16012 bytes
image data record 3	16012 bytes
.....

Null Volume File	
volume descriptor record	360 bytes



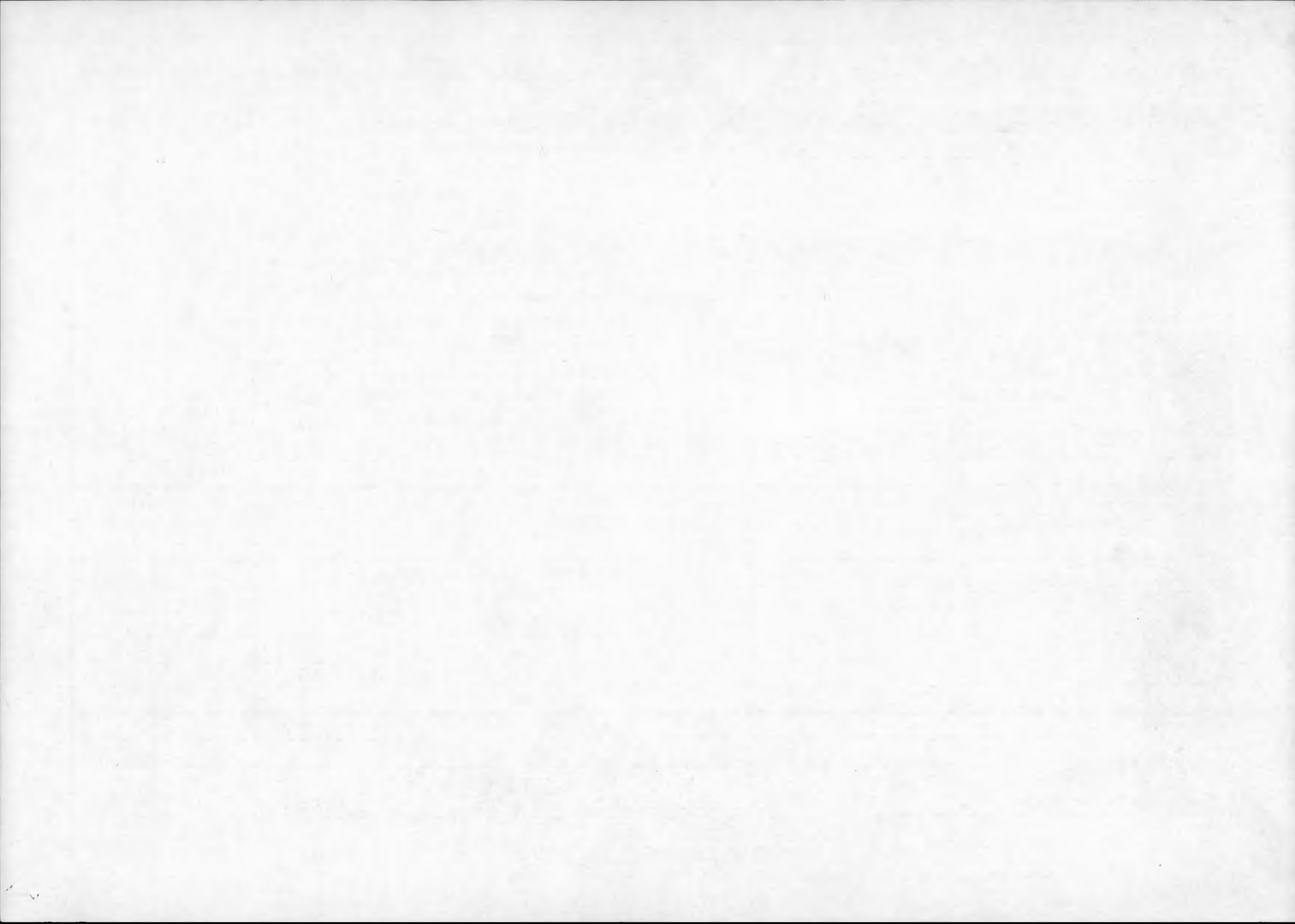
DATA SET SUMMARY RECORD

FIELD	BYTES	FORMAT	DESCRIPTION	EXAMPLE with PRI product	UNITS
1	1 - 4	B4	Record sequence number	2	
2	5	B1	1-st record sub-type code	A	
3	6	B1	Record-type code	A	
4	7	B1	2 nd record sub-type code	1F	
5	8	B1	3 rd record sub-type code	14	
6	9-12	B4	Length of this record	1888	
7	13-16	I4	Data Set Summary Record sequence number (starts at 1)	1	

SCENE PARAMETERS

8	17-20	I4	SAR channel indicator	1	
9	21-36	A16	Scene identifier		
10	37-68	A32	Scene reference number (e.g. frame number)		
11	69-100	A32	Input scene centre time (UTC) < dd-MMM-yyyy hh:mm:ss.ttt > [left justified]	13-OCT-1991 21:40:36.800	
12	101-116	A16	spare		
13	117-132	F16.7	Processed scene centre geodetic latitude (positive for north latitude, negative for south latitude)	52.648	degrees
14	133-148	F16.7	Processed scene centre longitude (from 0 to 360 degrees)	5.535	degrees
15	149-164	F16.7	Processed scene centre true heading		degrees
16	165-180	A16	Ellipsoid designator	GEM6	
17	181-196	F16.7	Ellipsoid semimajor axis	6378.144	km
18	197-212	F16.7	Ellipsoid semiminor axis	6356.759	km
19	213-228	F16.7	Earth mass times gravitational constant (M . G)	3.9860044	kg.m/s ²
20	229-244	A16	spare		

Shaded fields are not available or not applicable in Bangkok SAR products

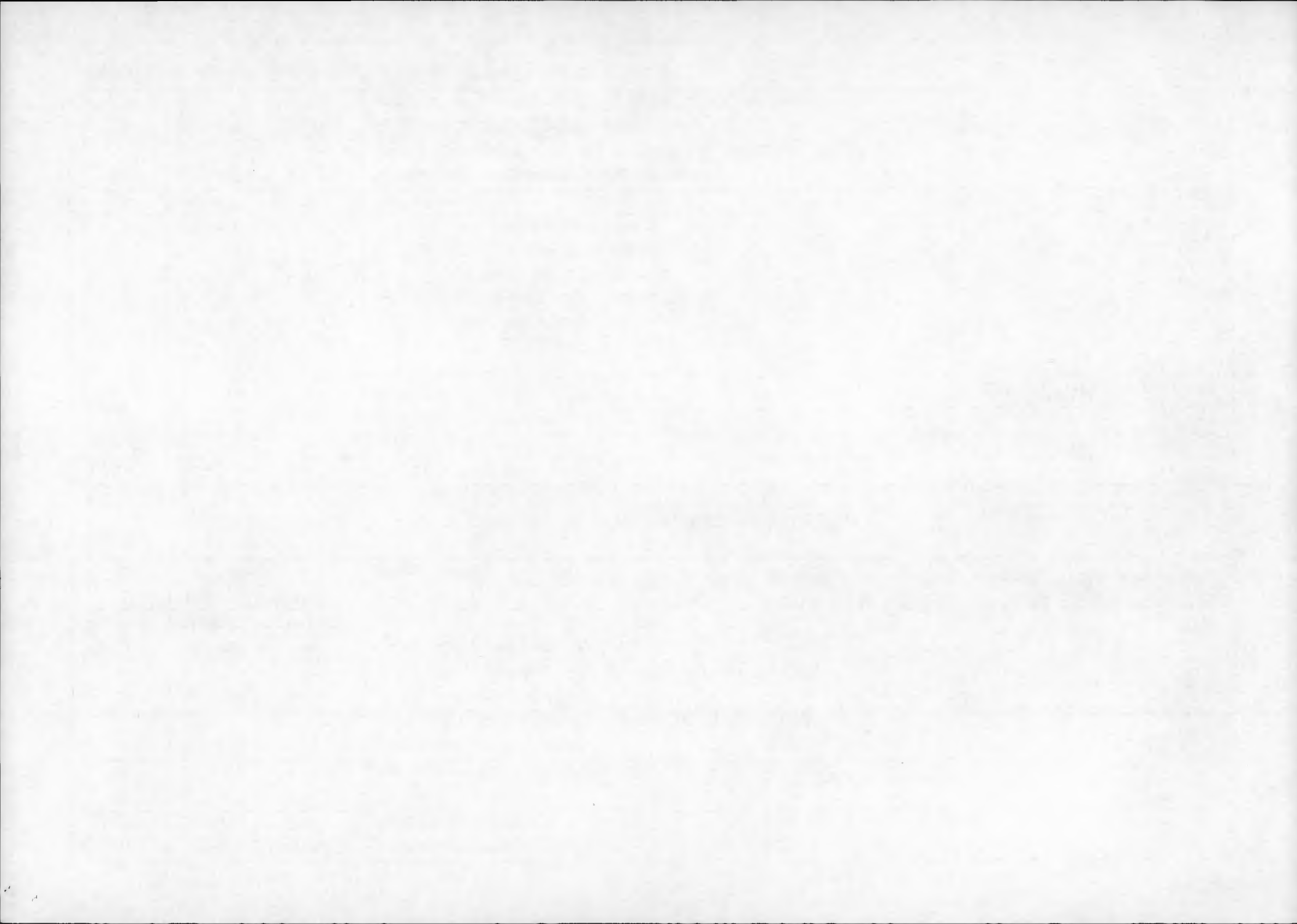


21	245-260	F16.7	Ellipsoid J2 parameter	1082.28	??
22	261-276	F16.7	Ellipsoid J3 parameter	-2.30	??
23	277-292	F16.7	Ellipsoid J4 parameter	-0.20	??
24	293-308	F16.7	Average terrain height above ellipsoid at scene centre		m
25	309-324	F16.7	Scene centre line number (the line number at the scene centre including zero fill)	4200	
26	325-340	F16.7	Scene centre pixel number (the pixel number at the scene centre including zero fill)	4000	
27	341-356	F16.7	Processed scene length including zero fill	102.375	km
28	357-372	F16.7	Processed scene width including zero fill	100	km
29	373-380	A8	spare		
30	381-388	A8	spare		

GENERAL MISSION / SENSOR PARAMETERS

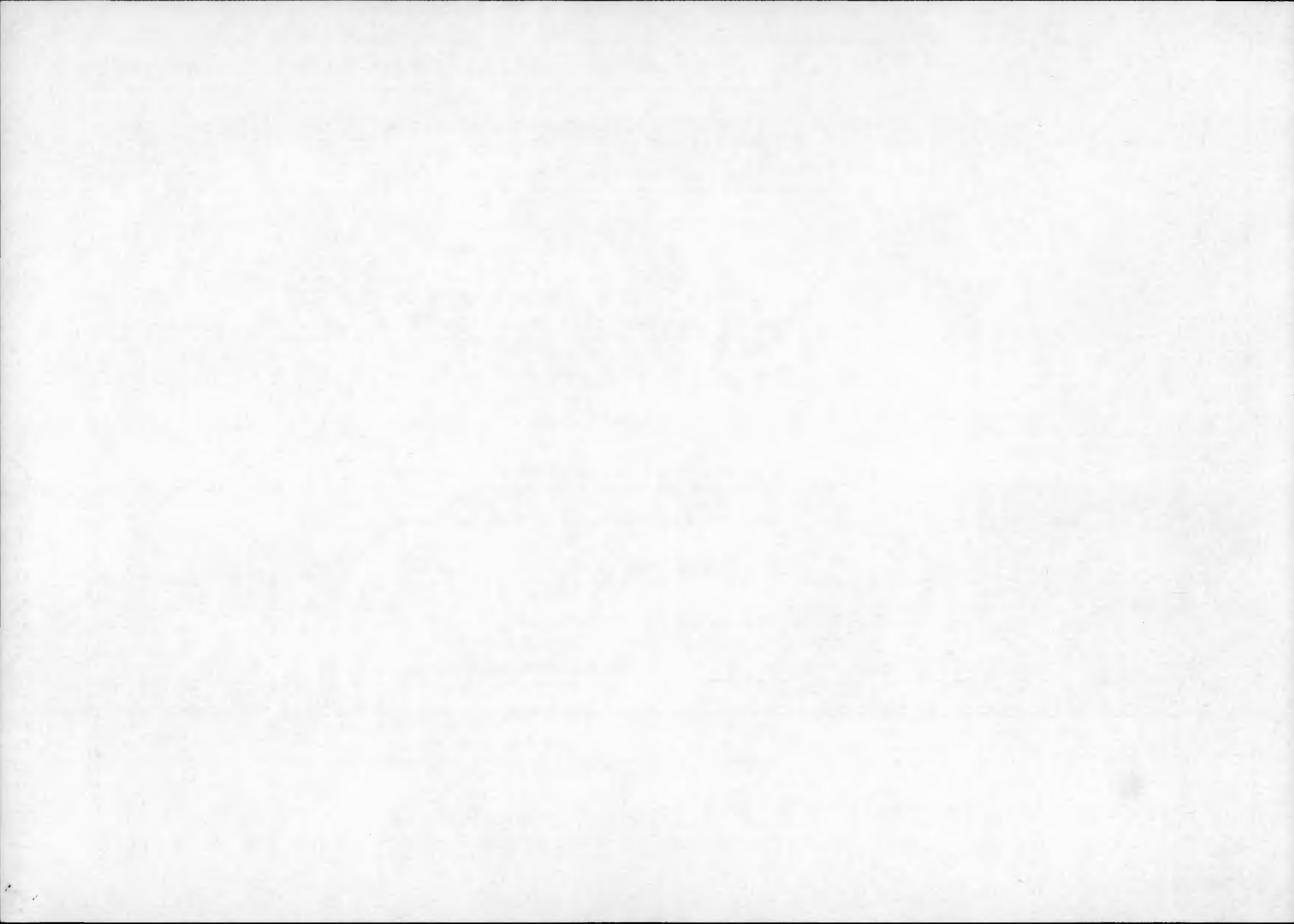
31	389-392	I4	Number of SAR channels	1	
32	393-396	A4	spare		
33	397-412	A16	Sensor platform mission identifier	ERS1	
34	413-444	A32	Sensor ID and mode of operation for this channel <AAAAAA-BB-CC-DD-EF> where : AAAAAA = sensor identifier BB = SAR band CC = resolution mode code DD = imaging mode code E = transmit polarisation F = receiver polarisation	SAR- C-HR-FM-VV	
35	445-452	A8	Orbit number	1273	
36	453-460	F8.3	Sensor platform geodetic latitude at nadir corresponding to scene centre (positive for North latitude)	??	degrees
37	461-468	F8.3	Sensor platform longitude at nadir corresponding to scene centre (East 0 to 360 degrees)	??	degrees

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38	469-476	F8.3	Sensor platform heading at nadir corresponding to scene centre (clockwise positive from North)	343.759	degrees
39	477-484	F8.3	Sensor clock angle as measured relative to sensor platform flight direction	90	degrees
40	485-492	F8.3	Incidence angle at scene centre	23.119	degrees
41	493-500	F8.3	Radar frequency	5.3	GHz
42	501-516	F16.7	Radar wavelength	0.0566	metres
43	517-518	A2	Motion compensation indicator "00" = no compensation, "01" = on board compensation, "10" = in processor compensaticn, "11" = both on board and in processor	00	
44	519-534	A16	Range pulse code specifier	Linear FM chirp	
45	535-550	E16.7	Nominal range pulse (chirp) amplitude coefficient Constant term	1	
46	551-566	E16.7	Nominal range pulse (chirp) amplitude coefficient Linear term	0	sec ⁻¹
47	567-582	E16.7	Nominal range pulse (chirp) amplitude coefficient Quadratic term	0	sec ⁻²
48	583-598	E16.7	Nominal range pulse (chirp) amplitude coefficient Cubic term	0	sec ⁻³
49	599-614	E16.7	Nominal range pulse (chirp) amplitude coefficient Quartic term	0	sec ⁻⁴
50	615-630	E16.7	Nominal range pulse (chirp) phase coefficient Constant term	0	cycles
51	631-646	E16.7	Nominal range pulse (chirp) phase coefficient Linear term	0	Hz
52	647-662	E16.7	Nominal range pulse (chirp) phase coefficient Quadratic term	2.0889E + 11	Hz/sec
53	663-678	E16.7	Nominal range pulse (chirp) phase coefficient Cubic term	0	Hz/sec ²
54	679-694	E16.7	Nominal range pulse (chirp) phase coefficient Quartic term	0	Hz/sec ³

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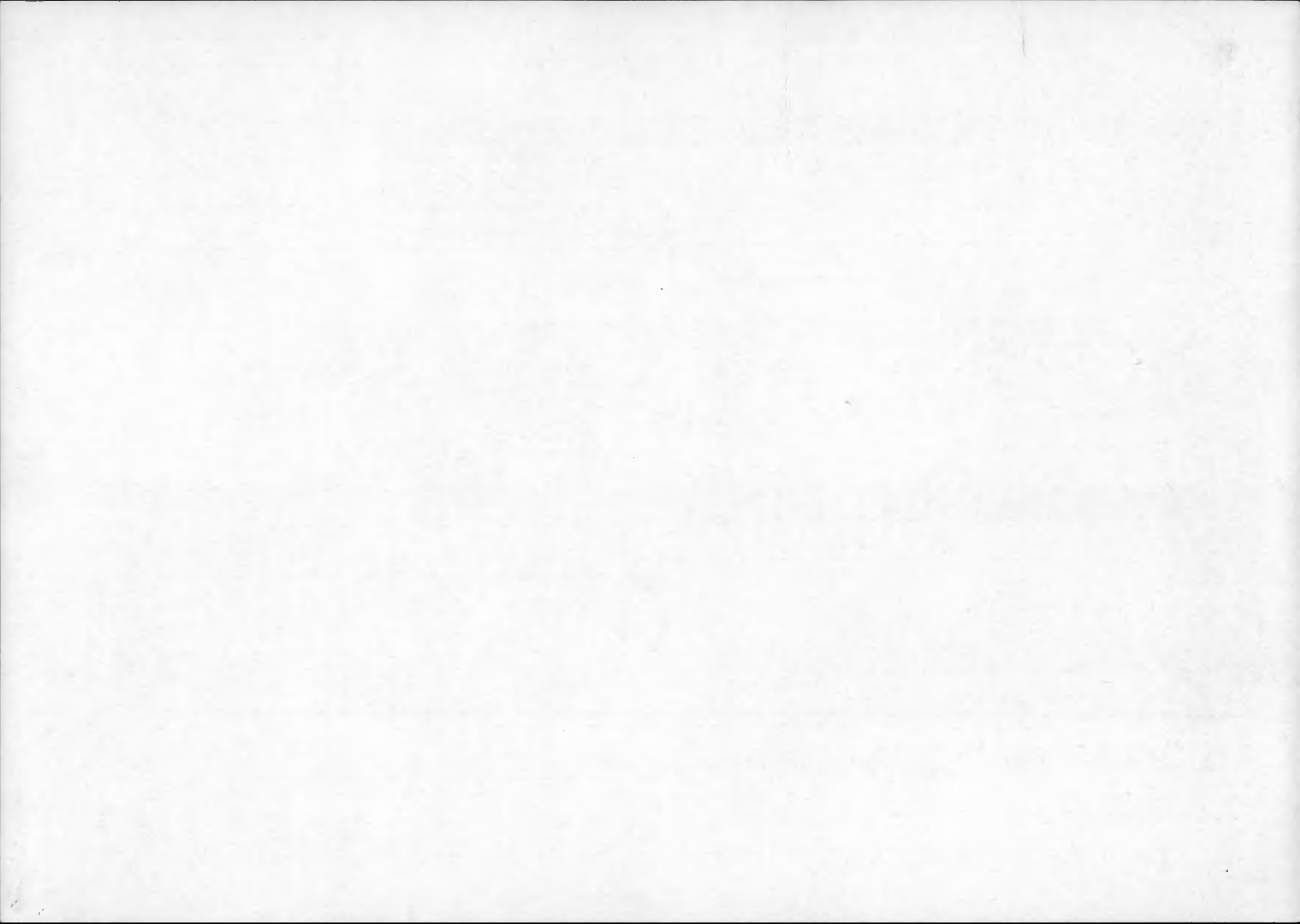


55	695-702	I8	Down linked chirp extraction index	29	samples
56	703-710	A8	<i>spare</i>		
57	711-726	F16.7	Range sampling rate	18.96	MHz
58	727-742	F16.7	Range gate at early edge (in time) at the start of the image		μ sec
59	743-758	F16.7	Range pulse length	37.12	μ sec
60	759-762	A4	Base band conversion flag		
61	763-766	A4	Range compressed flag (1 = range compressed data)	1	
62-63	767-798	2 F16.7	<i>reserved</i>		
64	799-806	I8	Quantization per channel I & Q	5	bits
65	807-818	A12	Quantizer descriptor	Uniform I Q	
66	819-834	F16.7	DC Bias for I-component (nominal)	15.5	
67	835-850	F16.7	DC Bias for Q-component (nominal)	15.5	
68	851-866	F16.7	Gain imbalance for I & Q (nominal)		
69	867-882	F16.7	<i>spare</i>		
70	883-898	F16.7	<i>spare</i>		
71	899-914	F16.7	<i>reserved</i>		
72	915-930	F16.7	Antenna mechanical boresight angle relative to platform vertical axis	20.355	degrees
73	931-934	A4	Echo track on/off designator		
74	935-950	F16.7	Pulse Repetition Frequency (PRF)	1678.712	Hz
75	951-966	F16.7	<i>reserved</i>		
76	967-982	F16.7	<i>reserved</i>		

SENSOR SPECIFIC PARAMETERS

77	983-998	I16	Satellite encoded binary time code	1971655215	
78	999-1030	A32	Satellite clock time (UTC) <dd- <i>MMM</i> - <i>yyyy</i> hh:mm:ss.ttt> [left justified]	13-OCT-1991 21:39:27.120	
79	1031-1038	I8	Satellite clock step length	3906249	nanosec
80	1039-1046	A8	<i>spare</i>		

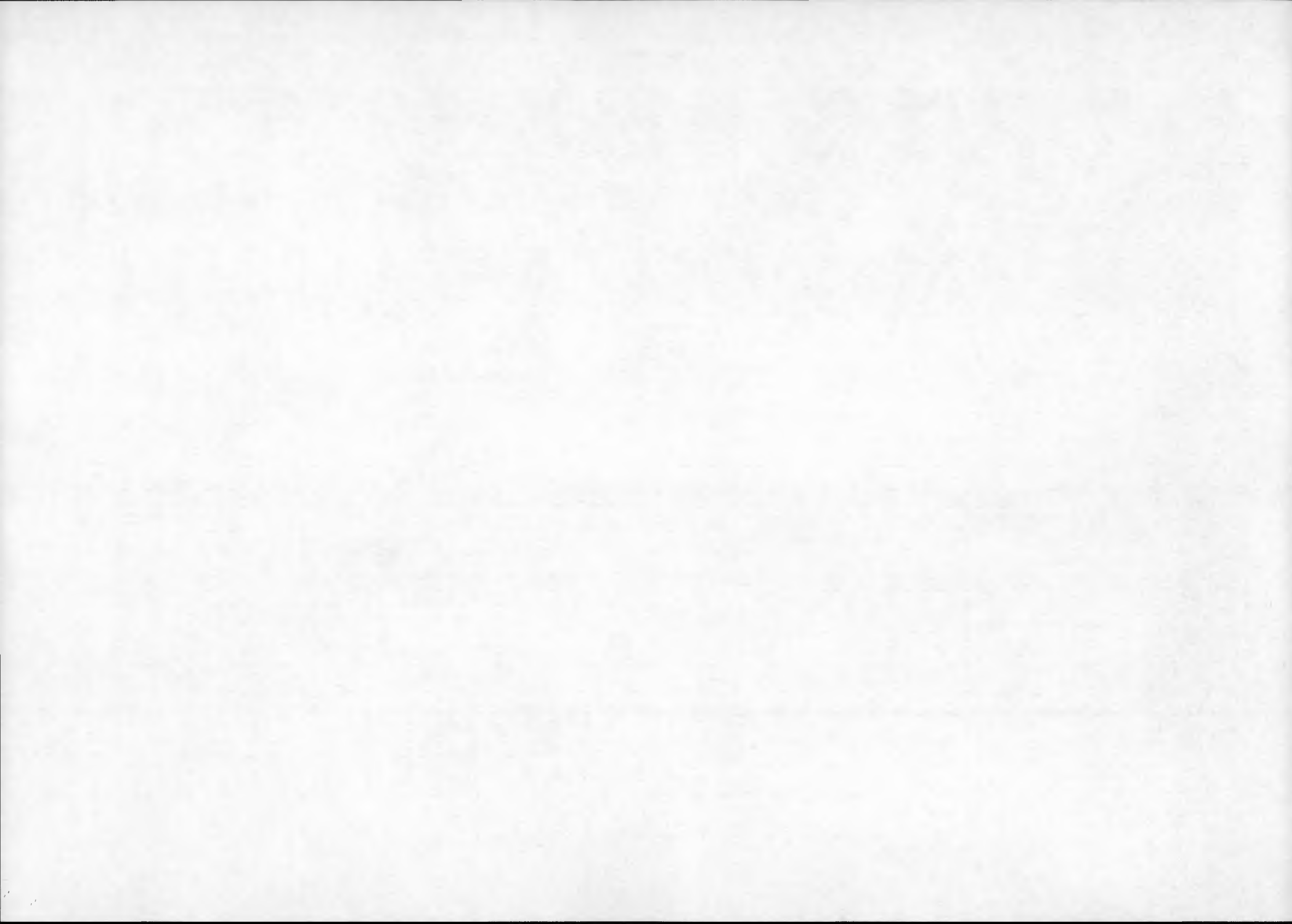
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GENERAL PROCESSING PARAMETERS

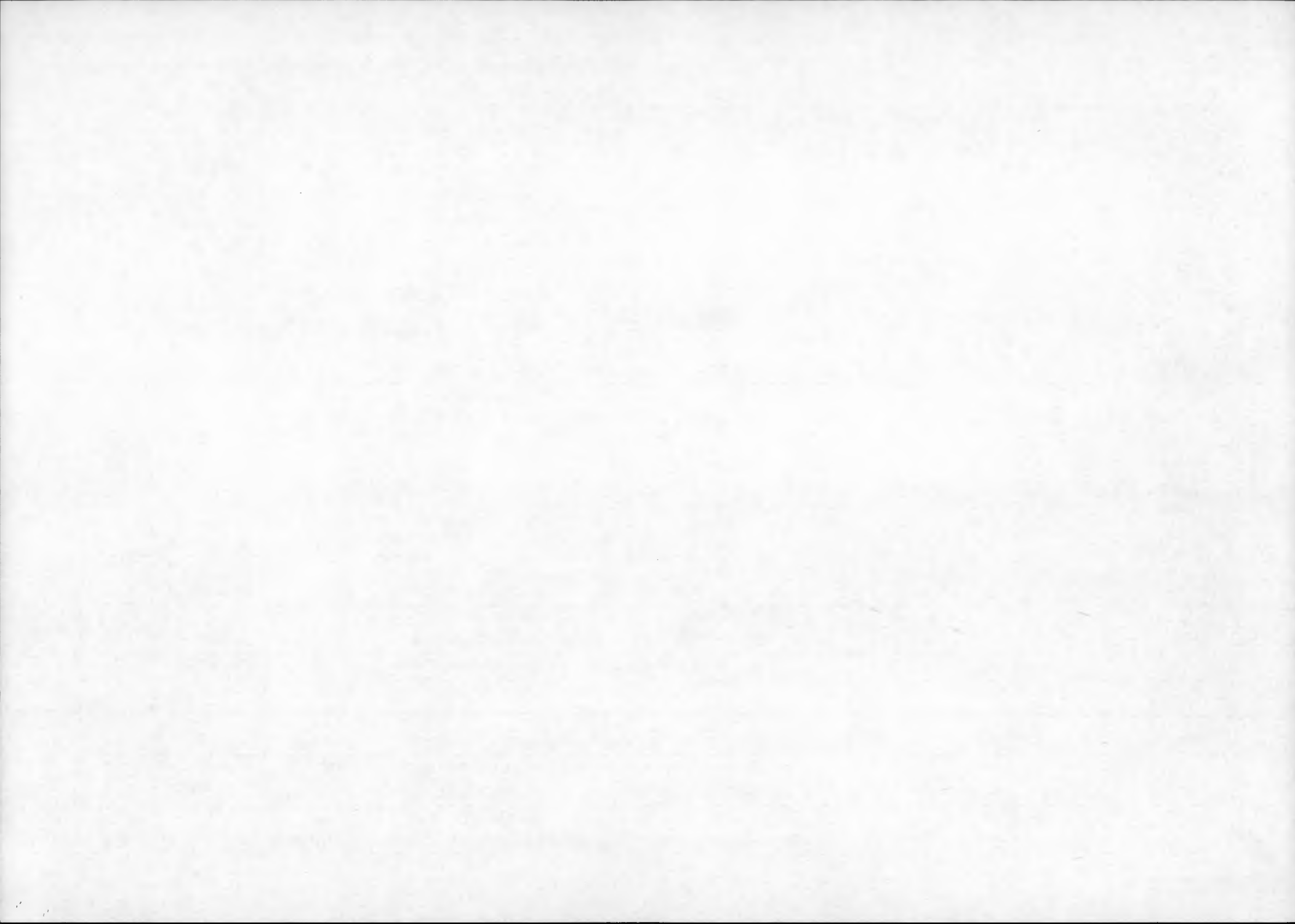
81	1047-1062	A16	Processing facility identifier	NRCT Bangkok	
82	1063-1070	A8	Processing system identifier	MCS/ACS	
83	1071-1078	A8	Processing version identifier	Version 1	
84	1079-1094	A16	Processing facility process code		
85	1095-1110	A16	Product level code		
86	1111-1142	A32	Product type specifier	Precision Image (ERS1.SAR.PRI)	
87	1143-1174	A32	Processing algorithm identifier	Range-Doppler	
88	1175-1190	F16.7	Nominal number of looks processed in azimuth	3	looks
89	1191-1206	F16.7	Nominal number of looks processed in range	1	looks
90	1207-1222	F16.7	Bandwidth per look in azimuth (null-to-null)	320	Hz
91	1223-1238	F16.7	Bandwidth per look in range	15.55	MHz
92	1239-1254	F16.7	Total processor bandwidth in azimuth	960	Hz
93	1255-1270	F16.7	Total processor bandwidth in range	15.55	MHz
94	1271-1302	A32	Weighting function designator in azimuth	Hamming	
95	1303-1334	A32	Weighting function designator in range	Hamming	
96	1335-1350	A16	Data input source	HDDT	
97	1351-1366	F16.7	Nominal resolution in range (3-dB width)	25	m
98	1367-1382	F16.7	Nominal resolution in azimuth (3-dB width)	22	m
99	1383-1398	F16.7	Constant radiometric stretch parameter		
100	1399-1414	F16.7	Linear radiometric stretch parameter		
101	1415-1430	F16.7	Along track Doppler frequency centroid at early edge of image - constant term		Hz
102	1431-1446	F16.7	Along track Doppler frequency centroid at early edge of image - linear term		Hz/sec
103	1447-1462	F16.7	Along track Doppler frequency centroid at early edge of image - quadratic term		Hz/sec ²
104	1463-1478	A16	spare		

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105	1479-1494	F16.7	Cross track Doppler frequency centroid at early edge of image constant term	-417.947	Hz
106	1495-1510	F16.7	Cross track Doppler frequency centroid at early edge of image linear term	275487	Hz/sec
107	1511-1526	F16.7	Cross track Doppler frequency centroid at early edge of image quadratic term	-8.6080E+09	Hz/sec ²
108	1527-1534	A8	Time direction indicator along pixel direction	Increase	
109	1535-1542	A8	Time direction indicator along line direction	Increase	
110	1543-1558	F16.7	Along track Doppler frequency rate at early edge of image constant term		Hz/sec
111	1559-1574	F16.7	Along track Doppler frequency rate at early edge of image linear term		Hz/sec ²
112	1575-1590	F16.7	Along track Doppler frequency rate at early edge of image quadratic term		Hz/sec ³
113	1591-1606	A16	spare		
114	1607-1622	F16.7	Cross track Doppler frequency rate at early edge of image constant term	-2156.498	Hz/sec
115	1623-1638	F16.7	Cross track Doppler frequency rate at early edge of image linear term	391931.99	Hz/sec ²
116	1639-1654	F16.7	Cross track Doppler frequency rate at early edge of image quadratic term		Hz/sec ³
117	1655-1670	A16	spare		
118	1671-1678	A8	Line content indicator	Range	
119	1679-1682	A4	Clutterlock applied flag	No	
120	1683-1686	A4	Autofocussing applied flag	No	
121	1687-1702	F16.7	Line spacing	12.5	m
122	1703-1718	F16.7	Pixel spacing	12.5	m
123	1719-1734	A16	Processor range compression designator	Extracted chirp	
124	1735-1750	A16	spare		
125	1751-1766	A16	spare		

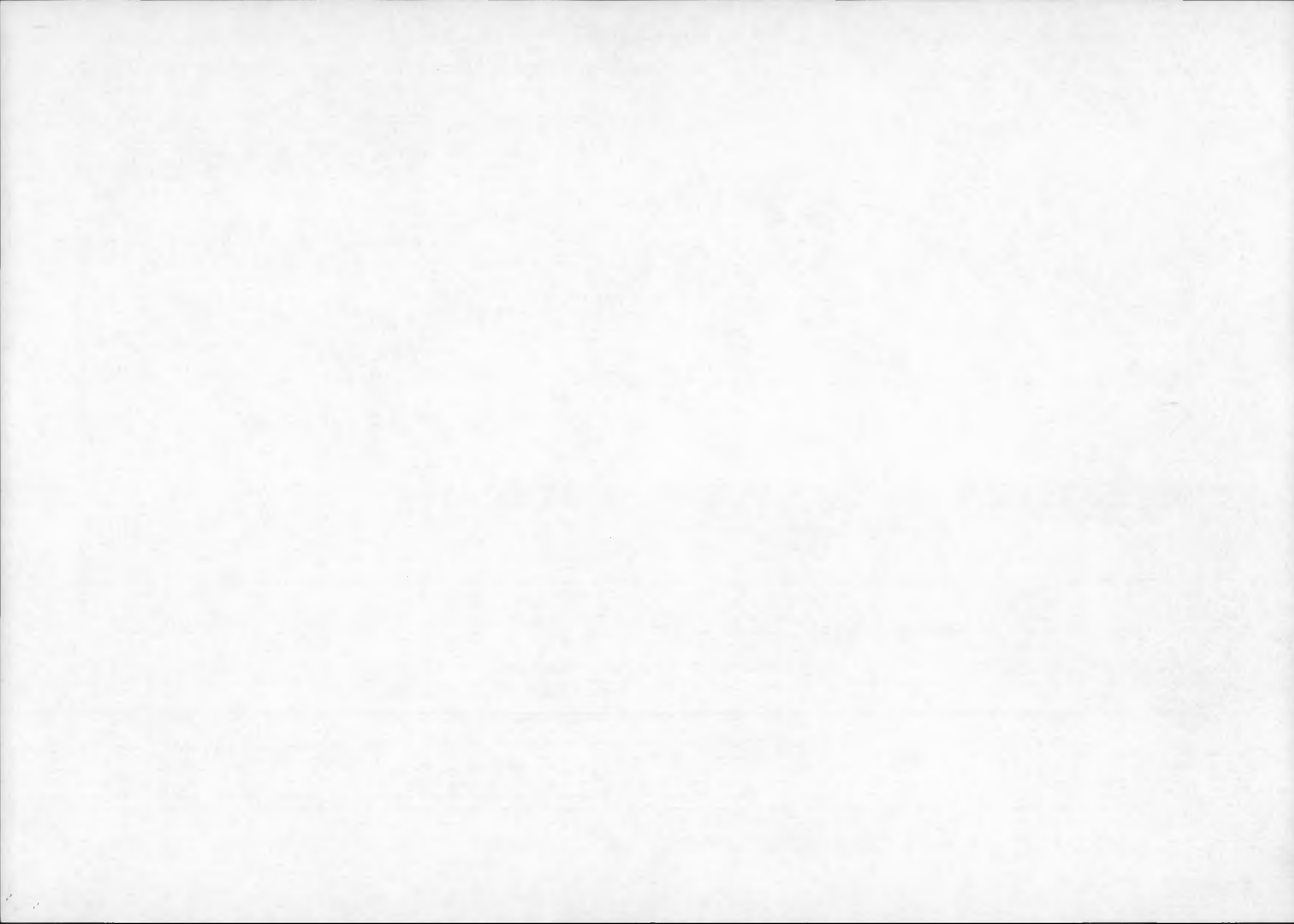
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SENSOR SPECIFIC LOCAL USE SEGMENT

126	1767-1782	E16.7	Zero-doppler range time (two-way) of first range pixel	5.523685E-03	sec
127	1783-1798	E16.7	Zero-doppler range time (two-way) of centre range pixel	5.645097E-03	sec
128	1799-1814	E16.7	Zero-doppler range time (two-way) of last range pixel	5.785592E-03	sec
129	1815-1838	A24	Zero-doppler azimuth time of first azimuth pixel (UTC) <dd-MMM-yyyy hh:mm:ss.ttt >	13-OCT-1991 21:40:36.885	
130	1839-1862	A24	Zero-doppler azimuth time of centre azimuth pixel (UTC) <dd-MMM-yyyy hh:mm:ss.ttt >	13-OCT-1991 21:40:44.547	
131	1863-1886	A24	Zero-doppler azimuth time of last azimuth pixel (UTC) <dd-MMM-yyyy hh:mm:ss.ttt >	13-OCT-1991 21:40:52.209	

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MAP PROJECTION DATA RECORD

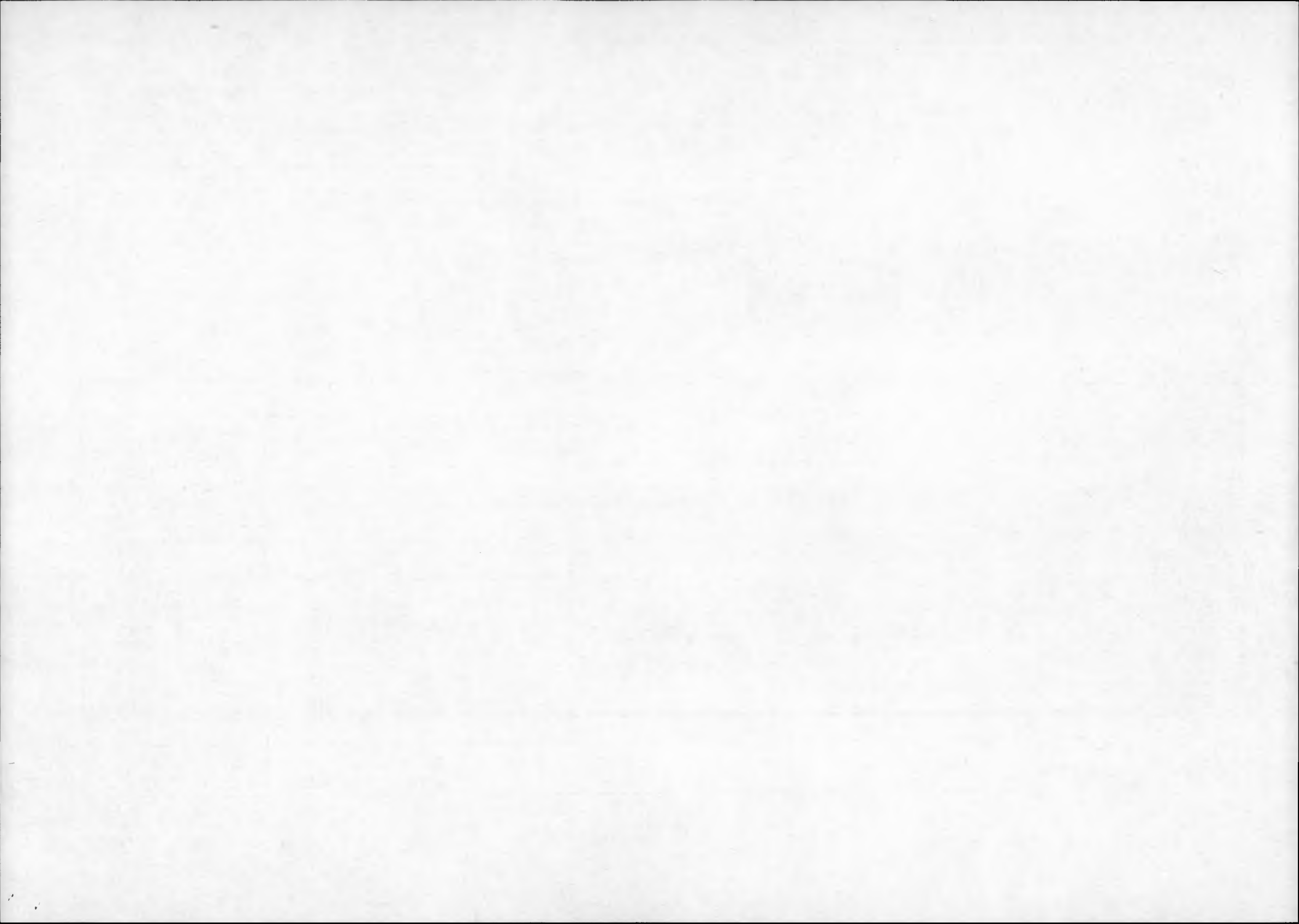
FIELD	BYTES	FORMAT	DESCRIPTION	EXAMPLE with PRI product	UNITS
1	1 - 4	B4	Record sequence number	3	
2	5	B1	1-st record sub-type code	12	
3	6	B1	Record-type code	14	
4	7	B1	2 nd record sub-type code	12	
5	8	B1	3 rd record sub-type code	14	
6	9-12	B4	Length of this record	1620	
7	13-28	A16	<i>spare</i>		

MAP PROJECTION GENERAL INFORMATION

8	29-60	A32	Map projection descriptor	Ground range	
9	61-76	I16	Number of pixels per line of image	8000 (PRS = 7760)	pixels
10	77-92	I16	Number of lines	8188	lines
11	93-108	F16.7	Nominal inter-pixel distance in output scene	12.5	m
12	109-124	F16.7	Nominal inter-line distance in output scene	12.5	m
13	125-140	F16.7	Orientation at output scene centre [for geocoded products this is simply the convergence of the meridians, ie the angle between geographic north and map grid north (Angle of projection axis from true North)]		degrees
14	141-156	F16.7	Actual platform orbital inclination	98.516	degrees
15	157-172	F16.7	Actual ascending node (longitude at Equator)	??	degrees
16	173-188	F16.7	Geocentre to platform distance at input scene centre	??	m
17	189-204	F16.7	Platform geodetic altitude over the ellipsoid	??	m
18	205-220	F16.7	Ground speed at nadir at input scene centre time	??	m/sec

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MAP 1

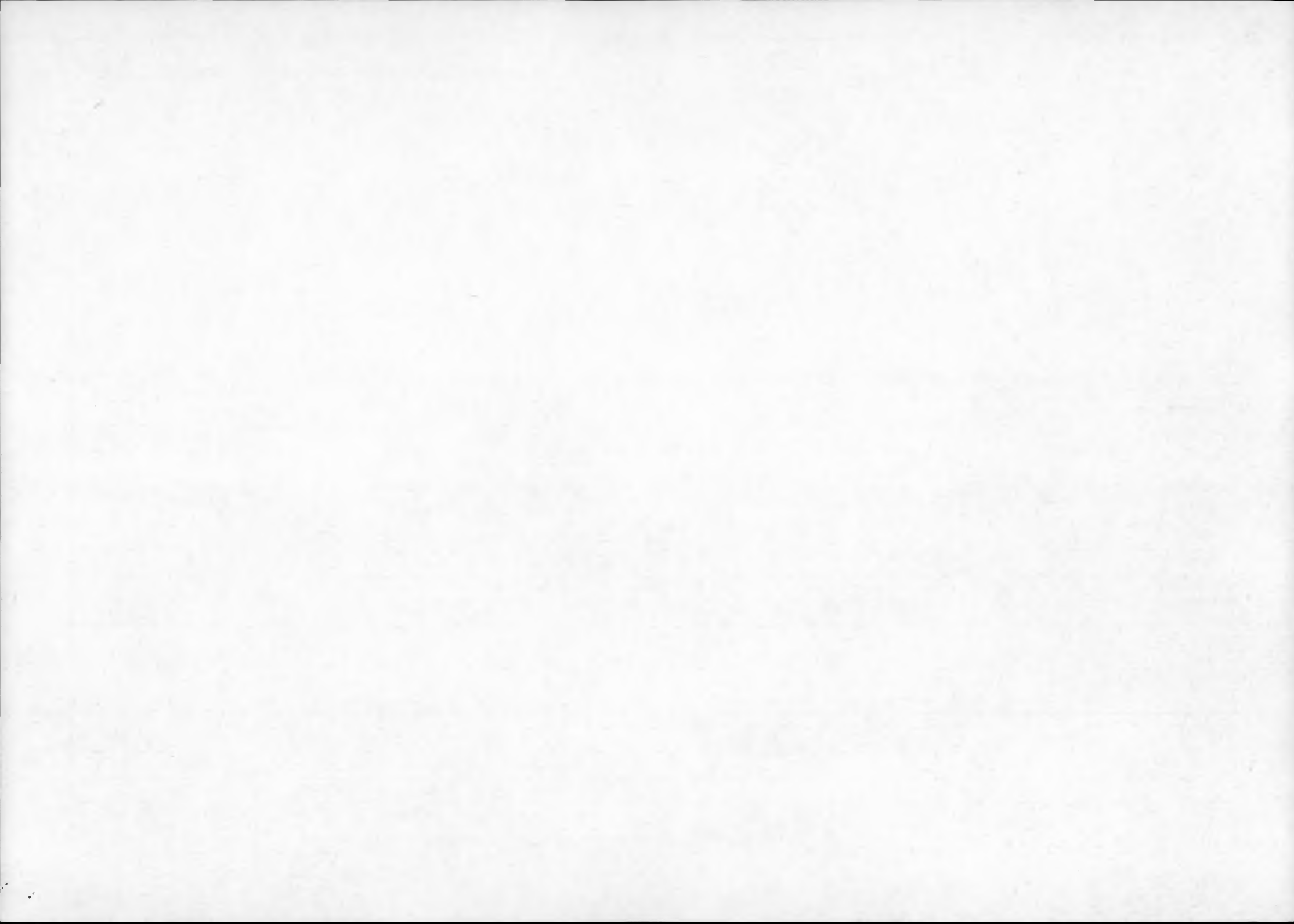


19	221-236	F16.7	Platform heading at nadir corresponding to scene centre	343.759	degrees
20	237-268	A32	Name of reference ellipsoid	GEM6	
21	269-284	F16.7	Semimajor axis of ref.ellipsoid	6378.144	km
22	285-300	F16.7	Semiminor axis of ref.ellipsoid	6356.759	km
23 to 55	301-880	A580	<i>reserved</i>		
56 to 59	881-944	4 A16	<i>spares</i>		

COORDINATES OF FOUR CORNER POINTS

60 to 67	945-1072	8 F16.7	<i>reserved</i>		
68	1073-1088	F16.7	1st line 1st pixel geodetic latitude (positive for north latitude)	52.098	degrees
69	1089-1104	F16.7	1st line 1st pixel longitude (0 to 360 deg.)	4.996	degrees
70	1105-1120	F16.7	1st line last pixel geodetic latitude	52.298	degrees
71	1121-1136	F16.7	1st line last pixel longitude	6.420	degrees
72	1137-1152	F16.7	last line last pixel geodetic latitude	53.194	degrees
73	1153-1168	F16.7	last line last pixel longitude	6.091	degrees
74	1169-1184	F16.7	last line 1st pixel geodetic latitude	52.992	degrees
75	1185-1200	F16.7	last line 1st pixel longitude	4.636	degrees
76 to 96	1201-1620		<i>reserved & spares</i>		

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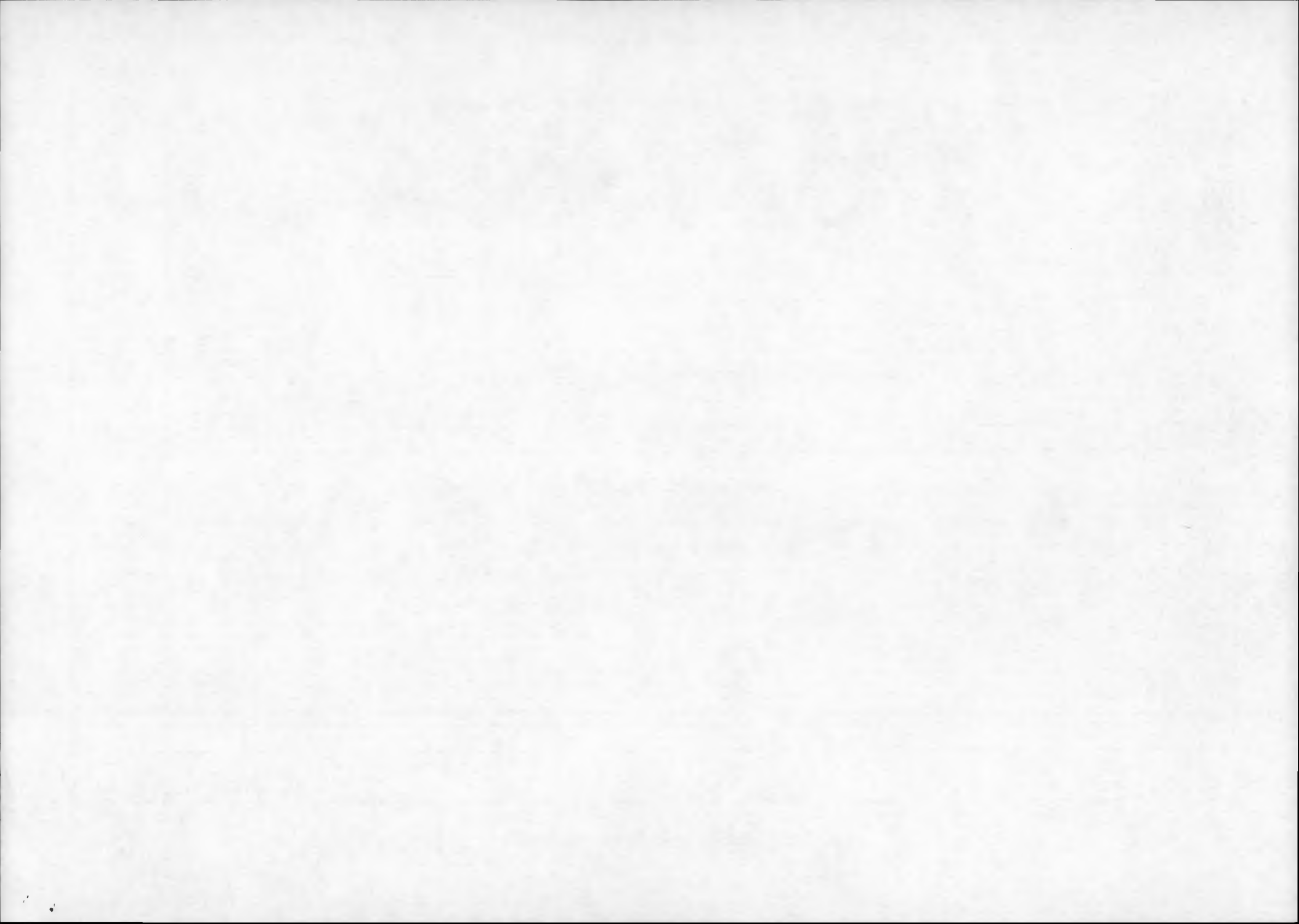
PLATFORM POSITION DATA RECORD

FIELD	BYTES	FORMAT	DESCRIPTION	EXAMPLE with a PRI product	UNITS
1	1 - 4	B4	Record sequence number	4	
2	5	B1	1-st record sub-type code	12	
3	6	B1	Record-type code	1E	
4	7	B1	2 nd record sub-type code	12	
5	8	B1	3 rd record sub-type code	14	
6	9-12	B4	Length of this record	1046	
7	13-44	A32	<i>reserved</i>		
8 to 13	45-140	6 F16.7	<i>reserved</i>		

POSITIONAL DATA POINTS

14	141-144	I4	Number of data points (up to 64)	6	
15	145-148	I4	Year of data point <YYYY>	1991	
16	149-152	I4	Month of data point <\$\$MM>	10	
17	153-156	I4	Day of data point <\$\$DD>	13	
18	157-160	I4	Day in the year <GMT>	??	
19	161-182	E22.15	Seconds of day of data	78057.320	sec
20	183-204	E22.15	Time interval between data points	4.018	sec
21	205-268	A64	Reference coordinate system	Earth Centred Rotating	
22	269-290	E22.15	Greenwich mean hour angle		degrees
23	291-306	F16.7	Along track position error		metres
24	307-322	F16.7	Across track position error		metres
25	323-338	F16.7	Radial position error		metres
26	339-354	F16.7	Along track velocity error		m/sec

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27	355-370	F16.7	Across track velocity error		m/sec
28	371-386	F16.7	Radial velocity error		deg/sec

FIRST POSITIONAL DATA POINT

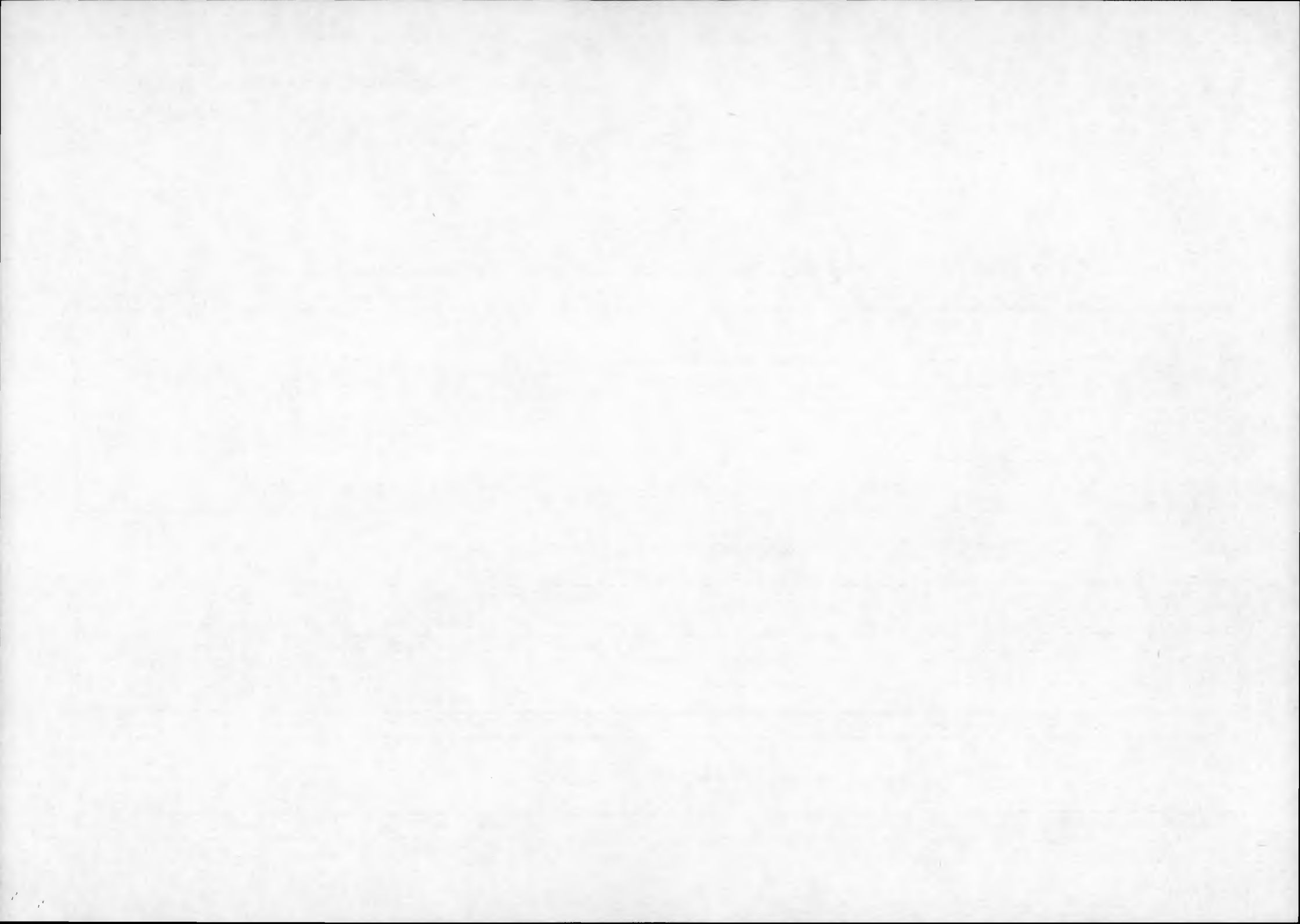
29	387-408	E22.15	1st data point - Position vector X	4459962.60	m
	409-430	E22.15	1st data point - Position vector Y	109368.50	m
	431-452	E22.15	1st data point - Position vector Z	5596269.63	m
30	453-474	E22.15	1st data point - Velocity vector X'	-5618.94961	m/s
	475-496	E22.15	1st data point - Velocity vector Y'	-2245.12220	m/s
	497-518	E22.15	1st data point - Velocity vector Z'	4510.98560	m/s

SECOND POSITIONAL DATA POINT

31	519-540	E22.15	2nd data point - Position vector X	4437344.55	m
	541-562	E22.15	2nd data point - Position vector Y	100353.42	m
	563-584	E22.15	2nd data point - Position vector Z	5614345.29	m
32	585-606	E22.15	2nd data point - Velocity vector X'	-5639.55300	m/s
	607-628	E22.15	2nd data point - Velocity vector Y'	-2242.27818	m/s
	629-650	E22.15	2nd data point - Velocity vector Z'	4486.49896	m/s

33				
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Repetition of fields 29-30 as specified by the number of points in field 14 (usually 5 or 6 data points)



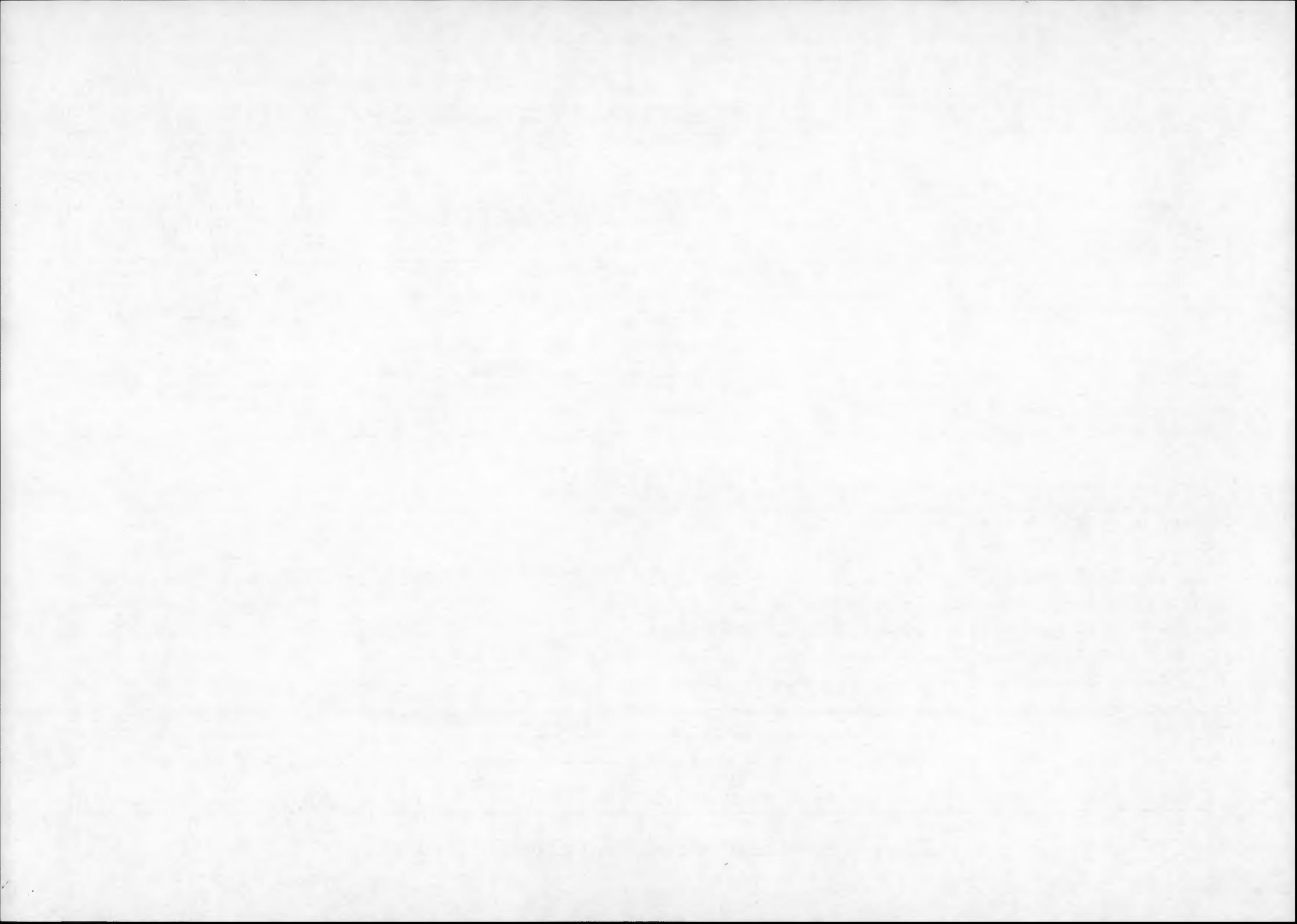
FACILITY RELATED DATA RECORD [ESA GENERAL TYPE]

FIELD	BYTES	FORMAT	DESCRIPTION	EXAMPLE with PRI product	UNITS
1	1 - 4	B4	Record sequence number	5	
2	5	B1	1-st record sub-type code	A	
3	6	B1	Record-type code	D8	
4	7	B1	2 nd record sub-type code	1F	
5	8	B1	3 rd record sub-type code	32	
6	9-12	B4	Length of this record	12288	
7	13-76	A64	Name of this facility related data record	FACILITY RELATED DATA RECORD ESA GENERAL TYPE	

SIGNAL DATA QUALITY

8	77-82	A6	<i>reserved</i>		
9	83-84	A2	<i>spare</i>		
10	85-90	A6	Date of the last calibration update <YYMMDD>	920905	
11	91-94	I4	Overall QA summary Flag (0 = Equipment OK)	0	
12	95-98	I4	PRF code change Flag (0 = PRF constant in scene)	0	
13	99-102	I4	Sampling window start time change Flag (0 = SWST constant)	0	
14	103-106	I4	Cal. system & receiver gain change Flag (0 = Cal/Rx gain constant)	0	
15	107-110	I4	Chirp replica quality Flag (0 = Replica XCF in limits)	0	
16	111-114	I4	Input data statistics Flag (0 = Raw data mean & sd in limits)	0	
17	115-118	I4	Doppler centroid confidence measure Flag (0 = in limits)	0	
18	119-122	I4	Doppler centroid value (0 = Dopp-centroid less than PRF/2)	0	
19	123-126	I4	Doppler ambiguity confidence measure Flag (0 = in limits)	0	
20	127-130	I4	Output data Mean Flag (0 = Image mean or sd in limits)	0	

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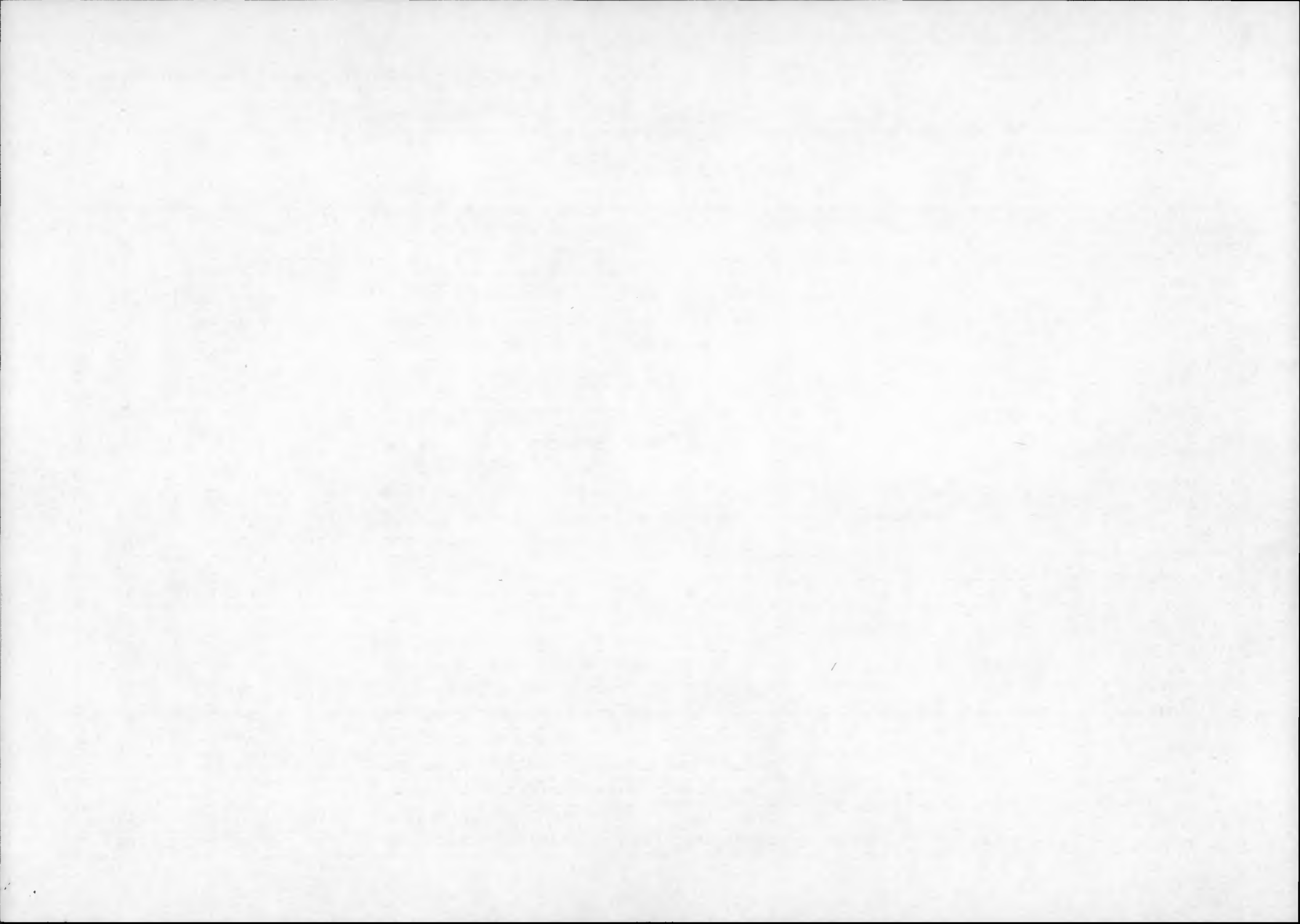


21	131-134	I4	On Ground / On Board Range Compressed Flag (0 = OGRC)	0	
22	135-138	I4	Number of PRF code changes	0	
23	139-142	I4	Number of sampling window time changes	0	
24	143-146	I4	Number of calibration subsystems gain changes	0	
25	147-150	I4	Number of missing lines (i.e. raw data input lines)	172	
26	151-154	I4	Number of receiver gain changes	0	
27	155-170	F16.7	3-dB width of Cross Correlation Function (CCF) between first extracted chirp and nominal chirp [for Bangkok processor this is the CCF between best extracted chirp and nominal chirp]	1.109	samples
28	171-186	F16.7	First side lobe level of chirp CCF	-10.413	dB
29	187-202	F16.7	ISLR of chirp CCF	-7.154	dB
30	203-218	F16.7	Doppler centroid confidence measure (value normalized such that it takes a value of zero for the best case and a value of one for the worst case)	0.019	
31	219-234	F16.7	Doppler ambiguity confidence measure (value normalized such that it takes a value of one for the best case and a value of zero for the worst case)	0.954	
32	235-250	F16.7	Estimated mean of I input data	-0.151	
33	251-266	F16.7	Estimated mean of Q input data	-0.117	
34	267-282	F16.7	Estimated standard deviation of I input data	6.506	
35	283-298	F16.7	Estimated standard deviation of Q input data	6.473	
36	299-314	F16.7	Calibration system gain of first processed line (telemetry value)	11	
37	315-330	F16.7	Receiver gain of first processed line (telemetry value)	15	
38	331-346	F16.7	Doppler ambiguity number	0	
39	347-362	A16	spare		

CALIBRATION INFORMATION

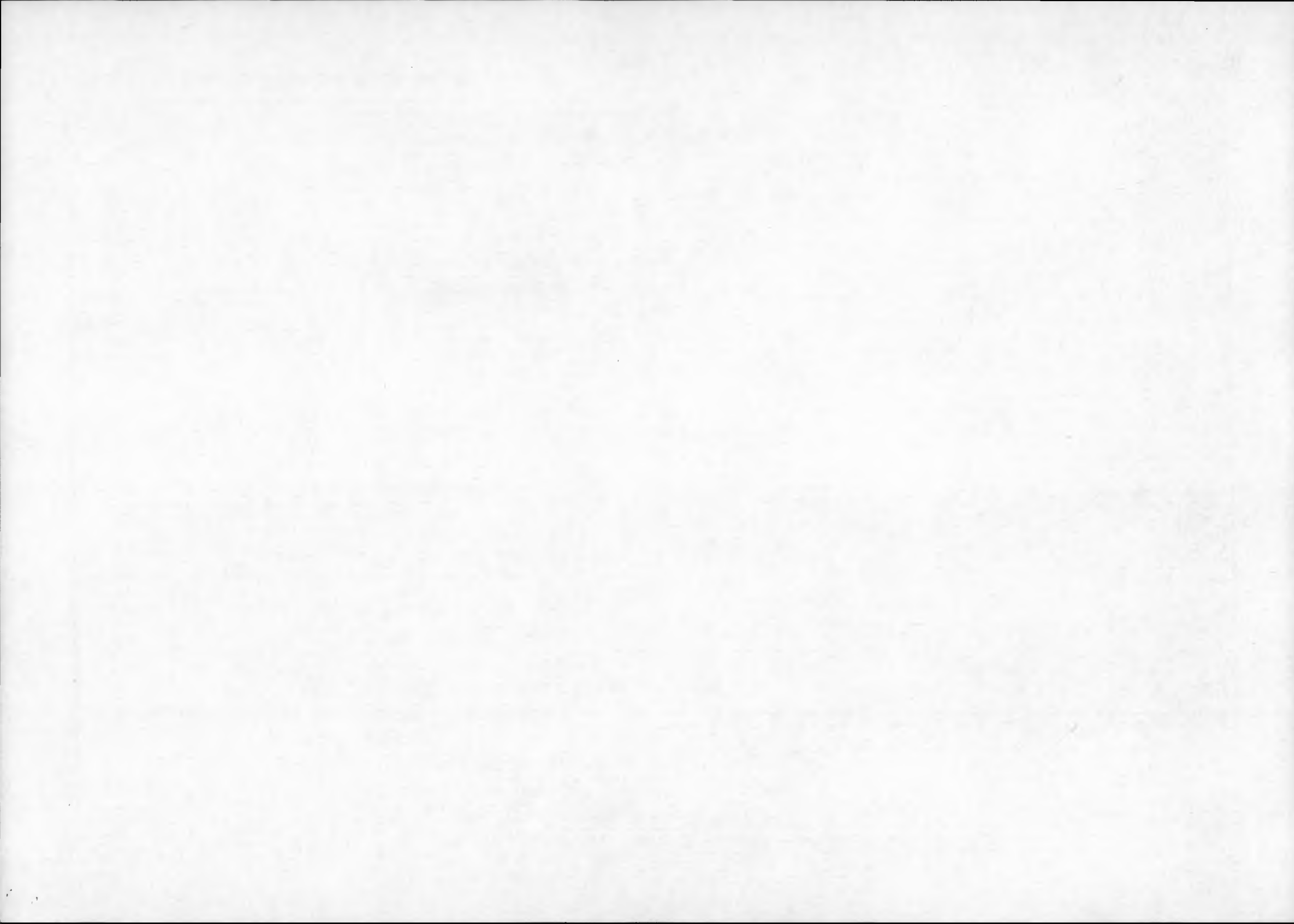
40	363-378	F16.7	Bias correction applied to I channel (to be applied with nominal bias)	-0.151	
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41	379-394	F16.7	Bias correction applied to Q channel (to be applied with nominal bias)	-0.117	
42	395-410	F16.7	I/Q gain imbalance correction (applied to I channel)		
43	411-426	F16.7	I/Q gain imbalance correction (applied to Q channel)	1.005	
44	427-442	F16.7	I/Q non-orthogonality correction (applied to Q channel)	??	
45	443-458	A16	<i>spare</i>		
46	459-474	F16.7	Estimated noise power	??	
47	475-490	I16	Calibration pulse time delay	??	??
48	491-494	I4	Number of valid calibration pulses	4	pulses
49	495-498	I4	Number of valid noise pulses	6	pulses
50	499-502	I4	Number of valid replica pulses	10	pulses
51	503-518	F16.7	First sample in replica (Chirp extraction index)	29	samples
52	519-534	F16.7	Mean calibration pulse power	??	
53	535-550	F16.7	Mean noise pulse power	??	
54	551-566	F16.7	Range compression normalisation factor	821938.0	
55	567-582	F16.7	Replica pulse power	??	
56	583-598	F16.7	Incidence angle at first range pixel (at mid-azimuth)	19.505	degrees
57	599-614	F16.7	Incidence angle at centre range pixel (at mid-azimuth)	23.119	degrees
58	615-630	F16.7	Incidence angle at last range pixel (at mid-azimuth)	26.618	degrees
59	631-646	F16.7	Slant range reference (for range spreading loss compensation)	847.0	km
60	647-658	A12	<i>spare</i>		
61	659-662	I4	Antenna pattern correction flag (0 = no correction)	1	
62	663-678	F16.7	Absolute calibration constant K (scalar)	666610	
63	679-694	F16.7	Upper bound calibration constant K (+ 0.75 dB)	791673	
64	695-710	F16.7	Lower bound calibration constant K (- 0.75 dB)	560461	
65	711-726	F16.7	Processor noise scaling factor	??	
66	727-732	A6	Date on which K was generated as YYMMDD	920905	
67	733-736	A4	K version number as XXYY, where XX refers to a K update implemented across the ground segment and YY refers to an upgrade only at the source facility (as may arise in case of local software updates)	0100	

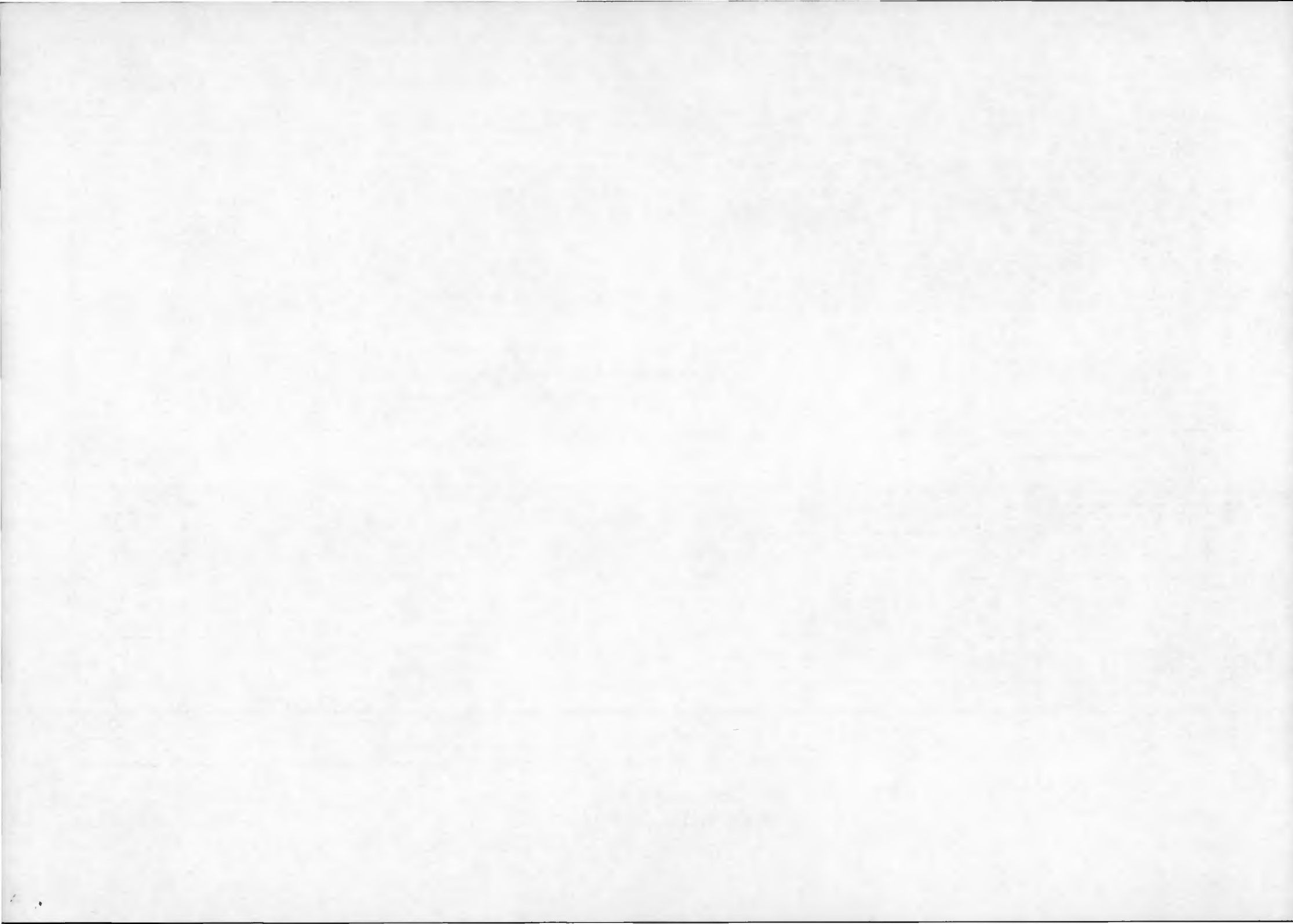
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VARIOUS PARAMETERS
(new added fields)

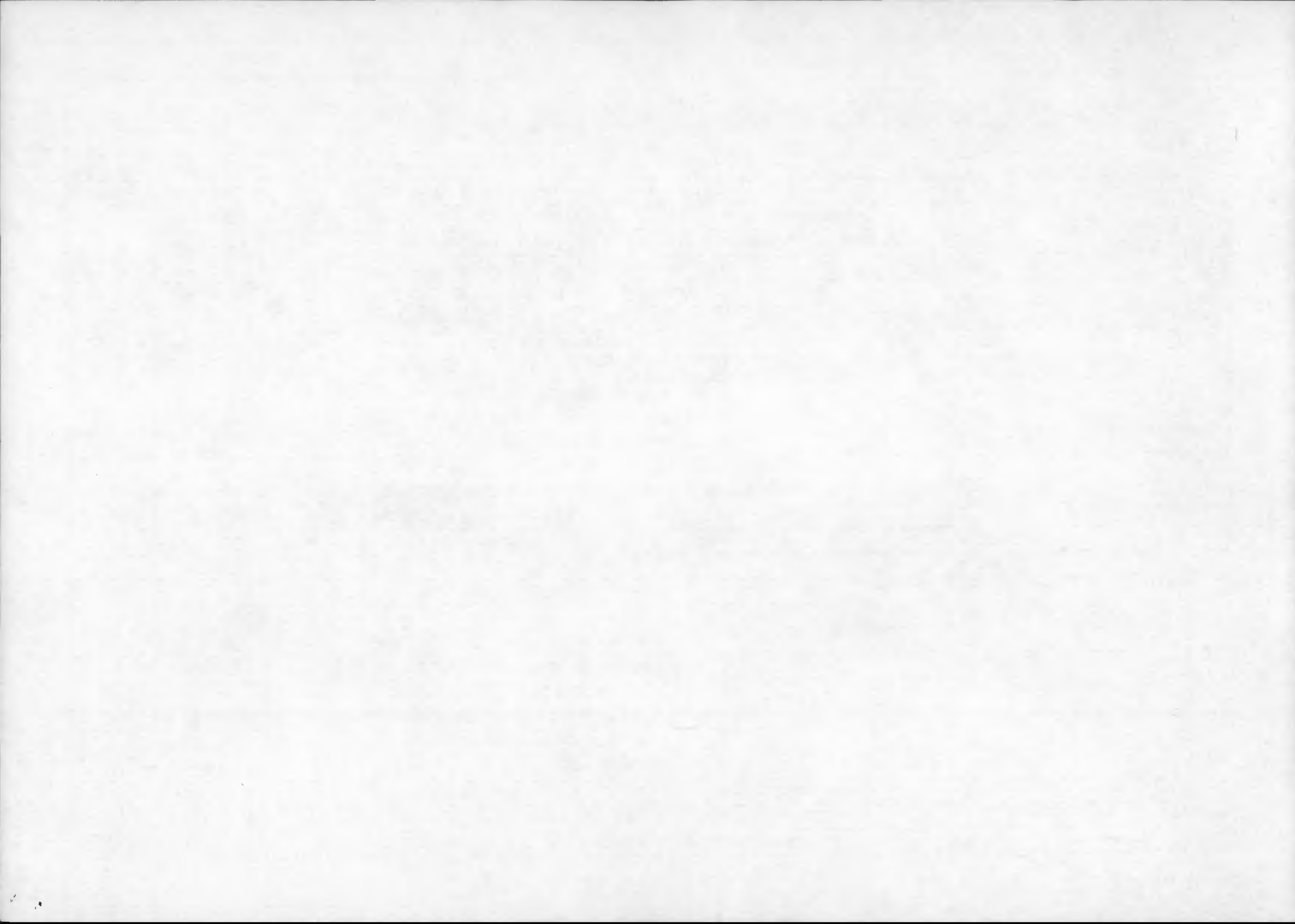
68	737-740	I4	Number of duplicated input lines	0	
69	741-756	F16.7	Estimated bit error rate		
70	757-768	A12	spare		
71	769-784	F16.7	Output image mean	305.568	
72	785-800	F16.7	Output image standard deviation	155.078	
73	801-816	F16.7	Output image maximum value	??	
74	817-840	A24	Time of first processed range line (UTC) <dd-MMM-yyyy hh:mm:ss.ttt>	13-OCT-1991 21:40:36.800	
75	841-864	A24	Time of ascending node state vector (UTC)		
76 to 81	865-996	6 E22.15	Ascending node state vectors (X,Y,Z,X',Y',Z')		m & m/s
82	997-1000	I4	Output pixel bit length	16	bits
83	1001-1016	F16.7	Processor gain #1	1.175	
84	1017-1032	F16.7	Processor gain #2	0.020	
85	1033-1048	F16.7	Processor gain #3	32.0	
86	1049-1052	I4	Peak location of Cross Correlation Function (CCF) between first extracted chirp and nominal chirp [for Bangkok processor, CCF between best extracted chirp and nominal chirp]	30	samples
87	1053-1068	F16.7	3-dB width of Cross Correlation Function (CCF) between last extracted chirp and nominal chirp	1.109	samples
88	1069-1084	F16.7	First side lobe level of chirp CCF	-10.323	dB
89	1085-1100	F16.7	ISLR of chirp CCF	-7.118	dB
90	1101-1104	I4	Peak location of Cross Correlation Function (CCF) between last extracted chirp and nominal chirp	20	samples
91	1105-1108	I4	Roll tilt mode flag (0 = not in roll tilt mode)	0	
92	1109-1112	I4	Raw data correction flag (0 = correction with defaults parameters)	1	

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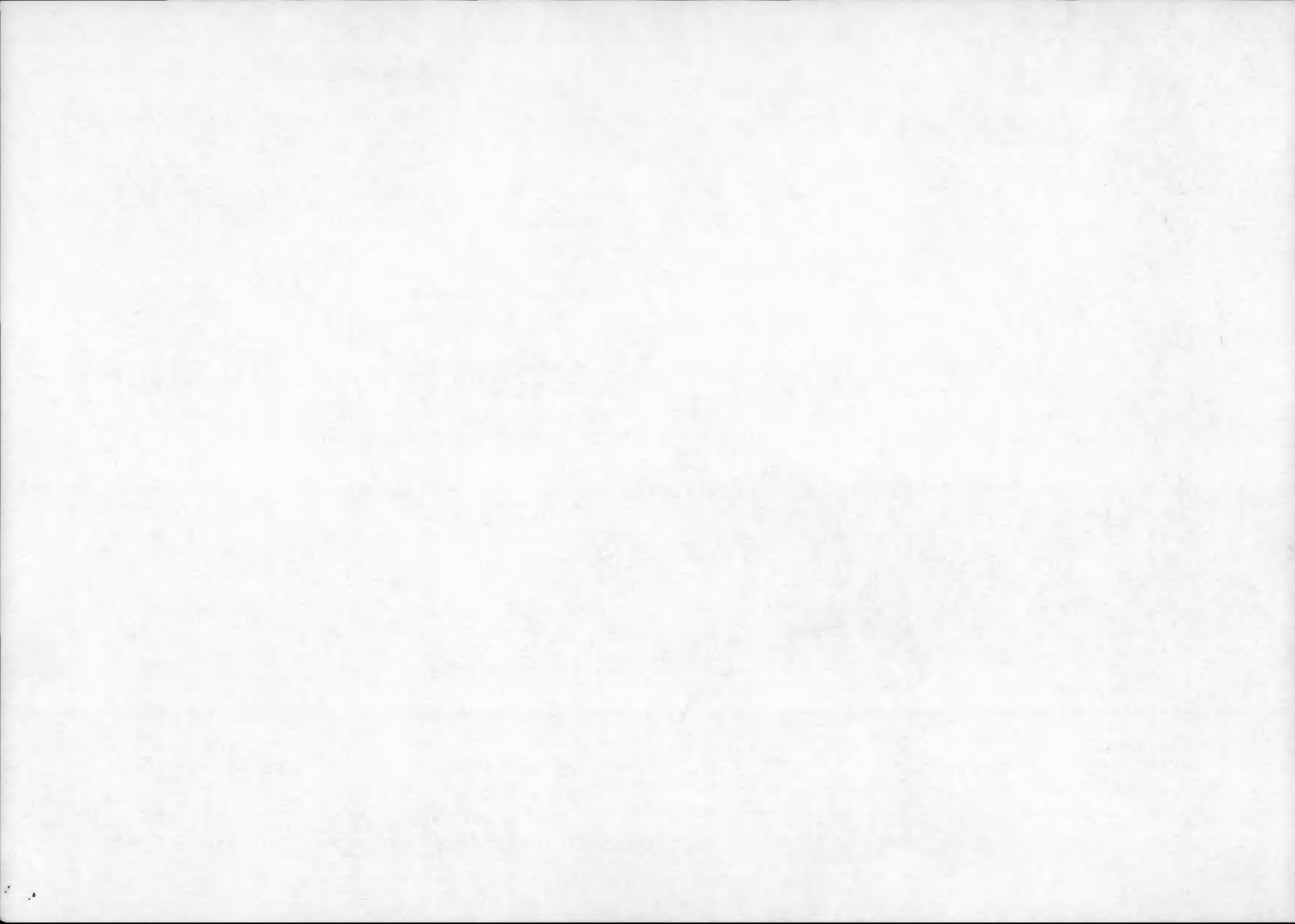
93	1113-1116	I4	Look detection flag (1 = power detected and summed)	1	
94	1117-1120	I4	Doppler ambiguity estimation flag (0 = no estimation done)	1	
95	1121-1124	I4	Azimuth baseband conversion flag (0 = no conversion done)	1	
96	1125-1128	I4	Samples per line used for the raw data analysis	1200	samples
97	1129-1132	I4	Range lines skip factor for raw data analysis	10	lines
98	1133-1156	A24	Time of input state vector (UTC) <dd-MMM-yyyy hh:mm:ss:ttt>	13-OCT-1991 21:41:00.000	
99	1157-1178	E22.15	Input state vector - Position vector X	4332915.11	m
100	1179-1200	E22.15	Input state vector - Position vector Y	68324.40	m
101	1201-1222	E22.15	Input state vector - Position vector Z	5687762.13	m
102	1223-1244	E22.15	Input state vector - Velocity vector X'	-5729.38895	m/s
103	1245-1266	E22.15	Input state vector - Velocity vector Y'	-2231.33119	m/s
104	1267-1288	E22.15	Input state vector - Velocity vector Z'	4380.98297	m/s
105	1289-1292	I4	Input state vector type flag (0 = ascending node state vectors, i.e predicted orbit, 1 = near scene state vectors, i.e. restituted orbit)	1	
106	1293-1308	F16.7	Window coefficient for range-matched filter	0.75	
107	1309-1324	F16.7	Window coefficient for azimuth-matched filter	0.75	
108	1325-1328	I4	Update period of range-matched filter	2000	chirps
109	1329-1456	8 F16.7	Look scalar gains (up to 8 looks)	1,1,1,0,0,0,0,0	
110	1457-1460	I4	Sampling window start time bias	6265	nanosec
111	1461-1482	E22.15	Doppler centroid cubic coefficient	-5.0 E+12	Hz/sec ³
112	1483-1486	I4	PRF code of first range line (telemetry value)	2822	
113	1487-1490	I4	PRF code of last range line (telemetry value)	2822	
114	1491-1494	I4	Sampl. wind. start time code of first range line (telemetry value)	799	
115	1495-1498	I4	Sampl. wind. start time code of last range line (telemetry value)	799	
116	1499-1502	I4	Calibration system gain of last processed line (telemetry value)	11	
117	1503-1506	I4	Receiver gain of last processed line (telemetry value)	15	
118	1507-1510	I4	First processed range sample	1	
119	1511-1514	I4	Azimuth FFT/IFFT ratio		

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120	1515-1518	I4	Number of azimuth blocks processed	15	
121	1519-1526	I8	Number of input raw data lines	26632	lines
122	1527-1530	I4	Initial Doppler ambiguity number	0	
123	1531-1706	11 F16.7	Thresholds for flags (fields 12 to 20)		
124	1707-1722	I16	Satellite binary time of first range line (telemetry value)		
125	1723-1726	I4	Number of valid pixels per range line (the remaining pixels are zero padded)	7662	pixels
126	1727-1730	I4	Number of range samples discarded during processing interpolations	9	samples
127	1731-1746	F16.7	I/Q gain imbalance - Lower bound	0.997	
127	1747-1762	F16.7	I/Q gain imbalance - Upper bound	1.002	
127	1763-1778	F16.7	I/Q quadrature departure - Lower bound	0.972	degrees
127	1779-1794	F16.7	I/Q quadrature departure - Upper bound	0.972	degrees
127	1795-1810	F16.7	3-dB look bandwidth	177.5	Hz
127	1811-1826	F16.7	3-dB processed Doppler bandwidth	817.5	Hz
133	1827-1830	I4	Range spreading loss compensation flag (0 = no compensation)	1	
134	1831-1834	I4	Datation flag (1 = azimuth timing improved based on timing information of range line specified in field 136)	1	
135	1835-1838	I4	Maximum error of range line timing	332082	nanosec
136	1839-1842	I4	Format number of range line used to synchronize the azimuth timing	342264	
137	1843-1846	I4	Automatic look scalar gain flag (1 = automatically calculated)	0	
138	1847-1850	I4	Maximum value of look scalar gain before the look scalar gains are normalised		
139	1851-1854	I4	Replica normalisation method flag (0 = normalised by replica power, i.e. $Z' = Z \cdot c/A_r$ where A_r is the replica power and c is specified in field 54, 1 = normalised by the square root of replica power, i.e. $Z' = Z / A_r$)	1	
140	1855-1918	4 E16.7	4 coefficients of the ground range to slant range conversion polynomial	??	
141	1919-1998	5 E16.7	5 coefficients of the antenna elevation pattern polynomial	??	
142	1999-2014	E16.7	Range time of origin of antenna pattern polynomial	??	sec

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143	2015-2???	A	VMP SPH 208		
144	2???-2???	A	VMP SPH 209		
145	2???- 12288	A	VMP SPH		

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