NASA TECHNICAL MEMORANDUM

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# X-RAY SATELLITE (ROSAT)
# STATUS REPORT, 1ST QUARTER 1986

DFVLR (German Aerospace Research Establishment)

Translation of "Roentgen Satellit Statusbericht, 1. Quartal 1986", DFVLR (German Aerospace Research Establishement", May 5, 1986, pp. 1-60



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16. Abstract

With regard to technical performance, the project is running according to plan. An increase in total cost outlay was required. The new Dornier Systems schedule projects ROSAT launch readiness for April 27, 1988. However, as a result of the Challenger accident, no binding launch date has been received from NASA. The thirteenth status review was conducted at the prime contractor in March, 1986. Assembly of the FM mirror system has been interrupted due to irregularities in the gold damping; in addition, mission operation and simulator development are effected by understaffing. Postponements have been announced in the data transmission and components acquisition subsystems.

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## 1.0 Overview and Outlook /2*

### 1.1 Status of Projects

#### Summary

With regard to technical performance, the project is running according to plan. The ROSAT-total cost to the end the project, status December 1984, required an increase in the total outlay in Title 893 20. The BMFT was informed of this in writing. The new DS-schedule projects ROSAT's readiness to start for April 27, 1988. Because of the shuttle misfiring of January 28, 1986, there is, at this time, no binding starting date from NASA.

#### Documentation

Project Plan:
The project plan has not yet been presented to the DFVLR board because of reservations regarding the data processing concept during the mission.

#### Test and Integration EM/QM/STM - Phase

The execution of the STM systems tests corresponds to the present planning status with partially changed operating sequences. The solar simulation test and the EMC-test were successfully concluded.

#### Test and Integration FM-Phase

Continuation of current projects

#### Reviews /3

The 13th status review at the chief contractor was conducted in March.

#### Problems

The lack of a binding takeoff date from NASA.

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*Numbers in right margin indicate pagination in the foreign text.

## 1.2 Outlook

The following activities of the EM/QM/STM-phase will be carried out during the next quarter

- dismantling of the STM
- transposing of the subsystem components onto the wooden model
- additional test for position control (Delta-IST AMCS)
- orbit simulation test
- suit case test at the GSOC
-structure overhaul
- Design Review No. 2 on May 14, 1986

A conference in the GSOC is scheduled for the purpose of consolidating the cost planning of the GSOC. It is the objective of the project management to keep the cost planning based on the ROSAT-project plan and to postpone additional endeavors until financing is secured.

The absence of a binding takeoff date from NASA necessitates the review of options for various marginal requirements with which the project operation must continue.
The review is made in close cooperation with the NASA project /4
management, the chief contractor, the project scientists, and the BMFT.
It is the objective of the project management to decide on an option to which a definite takeoff date is attached.

## 1.3 Overview of Problems /5

| Area | Type of Problem |
|---|---|
| 1. Management | - At present, no problems at the chief contractor |
| 2. System | - Failure of high vacuum in the HRI-detector on the attached ion pump needs to be clarified and eliminated |
| 3. Mechanical Subsystems | - At present, no problems |
| 4. Electric Subsystems | - Exceeding the temperature limits on the solar generator on the open loading bay in the Shuttle and during direct contact with the sun's radiation need to be prevented by altering Shuttle orientation in the PIP. |

5. Telescope - Assembly of the FM-mirror system has been interrupted due to irregularities in the gold damping.

6. Assembly - At present, no problems

7. Ground Equipment - At present, no problems

8. Mission Safety - At present, no problems

9. Launch Vehicle Interface - Designation of a takeoff time by NASA is open /*/

10. Mission - Mission operation and simulator development suffer from understaffing. /6

- off-line data processing concept remains open.

11. Schedule - Postponements have been announced in the subsystems data transmission and building parts acquisition.

- Due to problems with the gold damping of the FM-mirror system, we must reckon with a postponement of milestone M7. Further consequences for the FM-schedule remain to be clarified. /**/

- The planning for allocations of the PANTER test site shows incompatibilities whose elimination can have consequences with regard to the schedule. /*/

(/*/ for Items 9 and 11c = that these problems have been added to the list;
/**/for Item 11b = that this problem has been resolved.)

## 2.0 System /7

### System Technology

The examination of errors and contacts with NASA have shown that a return of ROSAT from orbit in the event of an error is possible if a few technical and safety-related prerequisites are met. These essentially include the retracting and the locking of the antenna mast and the closing and the locking of the telescope cover. For these requirements the contractor worked out proposals. During the technical discussions it

became evident that it is more cost-efficient to separate the antenna mast prior to a return. The necessary modifications on the satellite were initiated by means of a "change request".

EMC-Activities

During the reporting period, the EMC-tests "Conducted Emission" and "Radiated Emission" were conducted at system level. In preparation for this, the testing procedures were set up and fine-tuned. For the execution of the test in the DS sterile room, measuring equipment and a shielding umbrella were borrowed from the ESA and installed. The EMC test had, on the whole, a positive run which confirmed the given and applied EMC-specifications for the design of the system and for the components.

An extensive first draft for the ROSAT operating manual was created. In order to carry on with the ground operating manual there is a continuous, ongoing agreement process especially with the ground operating system.

In accordance with the presently valid base line, the following NASA interface documents were made available and passed on to NASA-JSC: PIP Annex 1, PIP Annex 2, PIP Annex 4, and PIP Annex 6.

## 3.0 Mechanical Subsystems /8

### 3.1 Structure/Mechanisms

The manufacture of FM parts in preparation for the refurbishment of the structure was continued. The structure is expected back at MBB upon dismantling of the satellite in April 1986.

In the subsystem mechanisms, the completion and installation of the FM-mechanisms was continued. Upon submission and examination of the test specifications for the TDM-FM (construction examination), TDM-hinge (thermal functioning test), and SSM-FM (overall examination), these could be released by TN4.

The necessary modifications for an untrained EVA at the TDM and the ABM with the AN were laid down. The CR No. 10 will be changed accordingly and submitted to DS for the posting of a bid.

### 3.2 Thermal Budget

In February, ROSAT was subjected to the solar simulation test at the IABG. The test could be carried out without major significant difficulties during

the scheduled time span of 14 days. The test results agree largely with the test calculations. Wherever there are deviations, they can be explained.

Upon conclusion of these tests there will be a safe thermal concept of ROSAT which shows no drawbacks anywhere.

## 4.0 Electrical Subsystems /9

### 4.1 and 4.2 Energy Supply, Pyrotechnics

An additional status discussion was held on March 11, 1986, at DS to review production status, FM-component schedule, and the processing status of documentation of both subsystems.

In summary, it can be reported that

- the hardware fabrication of the FM-electronic boxes and the FM-battery housings is on schedule and that the EEE-construction parts still owed have, at this time, no effect on the delivery dates for the integration.

- the FM-solar generator fabrication was halted by DS until the results of the sample-test (re-qualification of the solar generator with respect to adhesion stability of the solar cells on a solar cell structure, based on wrapping technology) become available. This test should have been concluded at the end of February. (Deficient loose ends of the substrate adhesive prevented a test to-date).

  After the sample test, a decision about the continuation of the FM-fabrication of the solar generator will be made based on the results of the CDR ("Critical Design Review).

- there are no open disturbances from the STM/EM-system test that have an effect on the FM-fabrication.

- the time scheduling is being reworked.
  No problems are envisioned in the delivery of FM-components.

- the specifications, aside from current applications for /10
  modifications (additional TR-heater and HRI-heater) reflect an up-to-date status and that the EM-test procedures are now being reworked for the FM-components.

## 4.3 Cabling

An additional status discussion was held on March 11, 1986 at DS to review the production status, the FM-cabling network schedule, and the processing status of the documentation.

In summary, it can be reported that

- all three FM-part cable networks (power/pyro-, signal and STS-heater) have been completed so that, from April 1986 on, acceptance tests for the whole cable network can commence. In the meantime, the test instructions for these test have been released by the PL.

- the documentation for the FM-cable network such as specification, harness-list, is up-to-date.

- there are, at this time, no technical or schedule problems with the delivery of the FM-cabling to System Integration.

## 4.4 Data Processing

The EM of the data processing system, meaning DPS and tape recorder have, without any problems, survived the space simulation test which took place at the beginning of this reporting period. The DHS has thus been successfully tested for its flight fitness. At this time, some modifications at the DHS-EM and at the breadboard are being probed and optimized. These are the result of a few disturbances and three accepted change applications. The objective is to have the modifications, scheduled for the FM, ready in time for the planned EM-"orbit simulation test".

The work on the FM continues uninterrupted and according to plan so that, in spite of a few still missing construction parts, the scheduled delivery date to the S/C does not appear to be in danger. The box is made and wired up, all base plates are there, partly with assemblies already mounted, and the first integration jobs have begun.

## 4.5 Data Transmission / 12

The subsystem data transmission is in an acceptable state of operations and assembly. The one existing lack of clarity dealing with the setting and determination of the degree of modulation for the telemetry data should be cleared up during the upcoming compatibility tests with the GSOC, probably during the month of April.

- Transponder

  Both FM-instruments are qualified after tentative acceptance to the system. As soon as possible, however, they will be sent back to the manufacturer for refurbishment and for the elimination of a few apparent deficiencies. They will again be at the system's disposal around the beginning of July.

- Decoder

  The FM-assembly of the decoder is delayed because of missing construction parts. Nevertheless, plans do call for a July delivery.

- The assembly of the flight models continues without any problems. In accordance with the schedule, the delivery to the system is to be the end of June.

## 4.6 Position Measurement/Position Control / 13

- EM-Program

  The essential activities in the EM-program have reference to the availability and testing of position control software for the pointing mode. Preparations for carrying out the sub-system acceptance tests were continued. The test procedures for the static tests have been received. The procedures for the dynamic test have not yet arrived.

  The EM-components of the AMCS-system worked well in the tests at system level during the reporting period (solar simulation test and EMC-test).

- FM-Program

  The assembly of the FM-components (star sensor, reaction wheels, gyroscope, AMCE, and AMCD) was carried through as much as possible, given the situation with the construction parts. During the last weeks, the assembly activity of electronic components came to a halt in any case, since the sheet bars could not be finished because of missing construction parts.

  If the construction parts come in at the beginning of the second quarter as announced, then the delivery date of December 1986 for the subsystem can be kept as planned.

## 5.0 Payload

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### 5.1 X - Ray Telescope

#### 5.1.1 Telescope QM and FM

The telescope-QM will be used within the framework of the system-AIT-tasks.

The fabrication of the components for the flight model of the telescope will be concluded in time in spite of the belated assembly start, so that the date for the assembly of the FM-telescope is not endangered.

#### 5.1.2 Mirror System

After the problems related to the gold coating for the flight mirrors at C. Zeiss have apparently been solved - the verification that the sources of contamination in the C. Zeiss-sterile room have been eliminated, has not yet been concluded - the new problem of insufficient gold damping was examined during this reporting period at the firm of Balzers.

The findings of the SIMS-analysis that hydrocarbons entered the gold coating during the damping process, was confirmed by the MPE via x - ray reflection measurements on sample mirrors. The influence of hydrocarbons on the reflectivity is so great that, on the one hand, these sample mirrors cannot be used for contamination control measurements and that, on the other hand, mirrors with such gold coatings violate the reflection specification for the ROSAT-telescope.

It was, therefore, necessary to identify the cause of the deficiency and then take measures for correction.

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The likeliest cause is that there are hydrocarbons present in the damping apparatus which are liberated upon heating, free to enter the gold coating. A corrective measure was the improvement of the damping apparatus (additional cyrogenic pumping surfaces, changes in the vacuum system) and also a substantial increase in the degree of cleanliness before damping. The consequential technical measures lead to the conclusion that the assembly of the mirror system can begin only upon a verification of the effectiveness of these measures. This would be in May 1986, at the earliest.

The status of projects in the contract (separate from those for the entire system) for the production of the individual flight model mirrors

at C. Zeiss is as follows:

All projects related to the flight mirrors have been successfully concluded. The adjustments were set back in order to position the mirrors more securely.

5.1.3 Focal Plane Instrumentation

The FI-EM continued to be successfully employed at the system tests.

The assembly of the FI-FM was continued. Structure and mechanisms are mounted. The electronics assembly is pretty much complete, functions- and environmental tests continue at box level.

Unresolved problems were further pursued:

- HRI-Random Vibration Loads

  After agreement was reached over the HRI-random testloads, / 16 GSFC/SAO took additional measures for the mechanical reinforcement of critical points at the HRI, so that the instrument can be tested with the agreed-upon realistic loads. This then solves the problem in a satisfactory manner.

- FI-EM Delays

  During the reporting period, DS presented the restructured FM-AIT schedule with a date adjustment for the FI-EM in harmony with the MPE-schedule. This takes care of the problem.

- Vacuum Test with the HRI-EM

  Measures taken to improve the reliability with which the vacuum in the HRI is maintained, have not yet been conclusively discussed with GSFC/SAO. The discussions are to be held in conjunction with the projects for the care of the the HRI-ion supply pump during transportation and start preparation.

A new problem has been added

- The Availability of the PANTER-Testing Unit

  The x-ray test equipment of the MPE is used for the ROSAT-project in a variety of ways:

(a) for reflection and scatter measurements on flight mirrors and on sample mirrors
(b) for FI-tests
(c) for mirror system tests
(d) for telescope measurements and -calibration
(e) for WFC-tests

Past scheduling permitted a sequential passing of various jobs. Because of the delays in the assembly of the mirror system / 17
and the marked increase in the number of sample mirror measurements, several tests had to be run simultaneously in the PANTER-unit so that the schedule could be maintained. An investigation is under way to see whether or not a tightening of tests and changes in the sequence can help avoid compromising the ROSAT-FM schedule.

## 5.2 Wide Angle Camera (WFC) / 18

- Activities during the reporting period

  - Solar simulation test successfully concluded

  - Routine interface discussions during the status meetings at the DS on January 22-23 and from March 11-13.

  - Agreement on changed dates (FM: October 17, 1986) based on new AIT-schedule.

- Outlook

  Preparations for "orbit simulation tests" in July 1986

## 6.0 Assembly, Integration, and Test / 19

- Solar Simulation Test of the STM

  The test was run according to plan from January 16 to February 27 at the IABG in Ottobrunn. If transportation and substantial ground handling is to be included, then the time needed stretched from January 7 to March 5.

  Thanks to the careful preparation and the smooth team work with the IABG and the experimenters, each particular test phase could be carried through without significant problems.

Calculated temperatures for the thermal model were substantially confirmed by measurements, or the surfaced differences to the mathematical model could be explained.

The experimental tests were also successfully carried out; the calculated temperatures could be verified. The system tests of the S/C under TV-conditions were all successful.

Problems with the electric system test site could be traced to environmental conditions which were sometimes outside of the permissable limits.

All interferences were documented in interference reports. The evaluation of test results and of interference reports will be given in July 1986, in a final test report.

It became evident that for some instruments or functions, the acquisition of redundancies must be thought out so that during tests with the flight model all possible longer test interruptions can be avoided.

- EMC-Test of the EM /20

Preparations for the EMC-test began immediately after the arrival of the S/C from the IABG to Dornier.

In order to save transportation time, an EMC test tent was erected inside the sterile room at DS. Thus tests with directed and radiated interferences could be carried out.

The tests began on March 10, and they are still in progress.

The results, available to the end of the quarter, show that the directed interferences were within permissable values. The radiated interferences, however, exceed these values in the power subsystem and in the focal plane instrumentation. Remedial measures have already been instituted; with the focal plane instrumentation they can only be implemented with the FM.

- Outlook

RF-suitcase test at the GSOC during the time of April 10 to 23. Dismantling of the S/C and refurbishment of structure at MBB.

## 7.0 Ground Equipment /21

### 7.1 EGSE and Checkout Software

The test sequences of the checkout-software for the solar simulation test at the IABG in Ottobrunn were reworked. The preparations and the running of the tests were supported with EGSE. During those tests there were several interferences and breakdowns of the EGSE-computer until the suspected cause of low humidity in the C/O-room was recognized and eliminated.

During the preparations for the solar simulations test at the IABG on February 5, 1986, the acceptance of the data interface (Ethernet) took place between the S/C-EGSE checkout computer (VAX 11/750) and the GSOC communications computer (MIRCO VAX II).

At DS, support was given to the preparations and the running of the EMC-tests with EGSE.

### 7.2 Mechanical Ground Equipment

The hardware activities have been concluded. Support was given to the preparations for the ROSAT-solar simulation test and also at the switching of the S/C from the assembly base to the WSA-adapter in front of the test chamber of the IABG.

### 7.3 Optical Ground Equipment

No projects.

## 8.0 Mission Safety /22

- STS-Safety (Flight and Ground Operation)

  The end of March 1986, project management received from NASA-GSFC the inspection results of the material list, Edition 4 which was part of the data packet for the "Safety II Review. The checking of the commentaries was started.

- The analysis/inspection of the FMECA's was concluded. The result is summarized in the answer of project management to DR1-RfA No.25 "System Reliability".

- Quality Assurance

- There was one additional and last inspection following final controls of double-sided PCB's at the firm of MBB. All the presented PCB's were released for continued use.

- The checking into interferences of level 2 was continued.

- Central Purchasing of Construction Parts

The delivery of the remaining construction parts to the users is in part delayed up to the 27th KW 86. Affected by this are a total of 38 line items. The longest delay with the IC's are the RCA-blocks CMM 5104 and 5114 in HiRel-quality is up to the 20th KW 86, the six microprocessors , one RAM-, and one PROM-data bank of the US-firm Harries for the star sensor electronic construction groups /23 are in delay between the 17th and the 27th KW 86. The hybrid construction block 5212 of the US-firm Micronetworks for the AMCS and DPS is delayed until the 26th KW 86. All effort have been and will be made (working out purchasing alternatives) to reduce the delays in delivery for the remaining construction parts to those who need them.

## 9.0 Launch Vehicle Interface /24

- PIP-Annexes

| | |
|---|---|
| - PIP-Annex 2, Part 2: (flight planning) | On the basis of requests from DS, NASA-JSC has made a draft available which was sent to DS for inspection in Feb. '86. Results are not yet available. |
| - PIP-Annex 5: (Vol II, MCC/R-POCC Interface) | The "baseline"-version, agreed upon between NASA-JSC/-GSFC and GSOC is now available to the project managements for their final check and signature. |
| - PIP-Annex 8: (Launch Site Support Plan - LSSP) | The LSSP is available to the project management in its preliminary version (Feb. '86) and the included PRD, Vol II Annex BD in the version of Feb. 7, '86 signed by NASA-KSC. The results of the discussions with NASA-KSC of Oct. 1985 were incorporated |

into these versions. Plans call for having a signed "basic version" of the LSSP available in the second half of 1986.

## 10.0 Mission Operation / 25

### 10.1 Work Progress

#### Coordination

The thorough analysis of all present demands on the mission operation system led to the definition of necessary increased effort and performance in the preparation and execution of the mission operation.The ROSAT-allocated cost portion in the DV-concept at WT-DV was also determined. On the basis of a new planning date in April 1988, a new full-cost calculation for the ROSAT-bottom segment was worked out and submitted to the appropriate DFVLR-agencies via the RF-RM-management.

#### Flight Operation

Upon thorough analysis of the ROSAT-command system requirements, the initial efforts begin for the layout of the command data bank. Preparatory tasks to command the ROSAT-suitcase model during the compatibility tests, were completed.

By participating in the "solar simulation" test at the IABG, the GSOC was able to gather valuable experience. Preparations are underway for the scheduled "orbit simulation" test. DS delivered a "draft" of the "S/C Users Manual" which is still being revised. Also available is "Operations Instructions for the FI". Projects related to the "Mission Operations Support Plan" were again postponed. (see Problems).

#### Ground Operation / 26

An analysis on the possibility of including the Australian ground station (COSSA) in Alice Springs led to the conclusion not to give the use of this station further consideration. Successful tests were run involving the ground station in Weilheim for the reception of the IMBPS-data stream from the IRAS satellite. Track prediction and -determination within the framework of tests with IRAS gave good results. This part of the ground station system for ROSAT has thus been successfully qualified.

Mission Planning and Analysis.

The activities for the setting of detailed internal specifications as the foundation for the software design, were continued. A first draft was made for an operational system for the site operation. In the area of mission planning, the analysis for the requirements is concluded. Design changes for the "mission planning and scheduling system" (MPSS) resulting from this analysis led to the writing of a first specification.

Data System

In preparation for the datasystem-compatibility test between the ROSAT-FM and the GSOC, a communication test between the GSOC-I/F computer and the EGSE-computer was successfully carried out. A concept for the better handling of "high rate"-data at the ground station in Weilheim is being shaped. The necessary measures for overcoming the DV-requirements, have been cleared up and the required costs have been determined. The ROSAT-allocated cost portion will be shown in the ROSAT-project plan.

AMC Simulator /27

All essential processors of the simulator-EXECUTIVE-software packet are coded and are tested in terms of modules. The RAL supportive software packet for the simulation of the satellite's outer field and of the sensors (DDS package) is completed with the exception of the star sensor and is ready at the GSOC for integration. The simulator AMCD-hardware with the supporting interface system was delivered by DS. The correct functioning of the individual components must still be checked.

DS was authorized beforehand to develop the software on the interface system.

Test & Training

Test procedures for the execution of the ROSAT RF-compatibility tests in Weilheim were specified and brought in tune with industry. Necessary preparations and instrument modifications were carried out for the execution of the tests at the ground station.

Software

A first draft for the ROSAT-telemetry processor was made. The FI and the WFC "data bases" were converted into GSOC (ROMP) compatible tables. A

design of the necessary conversion software was developed for the corresponding transposition of the DS-monitor tables. For this, an accurate analysis of the ESA Basic Checkout System was necessary. An "interface control document" (ICD)for the MDR-generation was set up in tentative form.

10.2 Problems / 28

The procurement of the necessary resources to cover the needed additional efforts for the ROSAT operation preparations and execution, is an unsolved problem.

Another postponement of the AMPTE-mission operation until June 1986 caused the continued shortage of 2 people (as of January 1986) to carry out the tasks in WP 200.

Logistical communication problems between GSOC and industry impede the exchange of information.

10.3 Personnel Status

see Appendix 13.1

10.4 Schedule

Adjustment to a new takeoff date is needed.
Until further notice, the old schedule is in force. (see the last quarterly report).

11.0 Schedule / 29

- Planned Dates

  The planned dates of the contract milestone plan having the takeoff date of October 30, 1987, are no longer in agreement with the actual status. The same holds for the NASA-schedule in the PIP with a takeoff date of September 30, 1987 (reference milestone "ready for launch".

  By reason of the shuttle misfire on January 28, '86, there is, at this time, no binding takeoff date from NASA. The actual status shows, therefore, that the ROSAT management is ready for takeoff independent of NASA assertions.

- Actual EM-Status

  The presently valid schedule for the STM-integration dated February 20, '86, compared to the previous schedule dated November 6, '85, shows the same end date of July 7,1986 for the conclusion of the structure overhaul. Additionally, the following tests were taken up:

  - test for the functioning of the subsystem position measurement/ position control in the integrated state (Delta IST AMCS)
  - orbit simulation pretest
  - orbit simulation test

  None of the additional tests interfere with the schedule for the structure overhaul, since the needed subsystems are integrated into a wooden structure.

- Actual FM-Status

  The presently valid DS-schedule for the FM-integration, dated February 24, '86, shows takeoff readiness for April 27, '88 with two buffer periods totalling 3.5 months.

Key to pages 22 and 23:

A) Release, B) Processing, C) Milestone Plan, D) EM, QM, STM, ENTW., Production, S/S-Tests, AIT, E) Project Directors, F) Level, G) Page 1 of 2, H) from:, I) Last Change, J) Due Date:, K) Milestones and Activities, L) Remarks: DRI Planning Status Planning Status Nov. 6,'85 Actual Status. - 1) Spacecraft Design, 3) Subsystem (SIS) Development, 4) Production EM, QM, 7) EM Delivery MA, (M3) FI, WFC, 10) M4, ROSAT ready for Modal Surv. Test, 17) M6, Disassembling Spacecraft, 19) Structure Overhaul.

DFVLR

Deutsche Forschungs-und Versuchsanstalt für Luft-und Raumfahrt e.V.

- BEREICH FÜR PROJEKTTRAGERSCHAFTEN -

(A) FREIGABE: _____

(B) BEARBEITUNG: _____

(C) MEILENSTEINPLAN

(D) ROSAT EM, QM, STM, ENTW., FERTIGUNG, S/S-TESTS, AIT

(E) PROJEKTLEITER:

(F) STUFE

(G) BLATT 1 VON 2

(H) ORIGINALPLAN VOM: DR I

(I) LETZTE ÄNDERUNG: _____

(J) STICHTAG: 31. 3. 1986

(K)

| | MEILENSTEINE UND AKTIVITÄTEN |
|---|---|
| 1 | RAUMFAHRZEUG ENTWURF |
| 2 | M2 DESIGN REVIEW I |
| 3 | UNTERSYSTEM (SIS) ENTWICKLUNG |
| 4 | FERTIGUNG EM, QM |
| 5 | S/S TESTS EM, QM |
| | |
| 6 | AIT TELESCOPE QM |
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| 8 | AIT BUS EM |
| 9 | ROSAT INTEGRATION |
| 10 | M4, ROSAT FERTIG ZUM MODAL SURV. TEST |
| 11 | MODAL SURVEY TEST |
| 12 | RF SUIT CASE TESTS JSC (J), GSOC (G) |
| 13 | PRE IST, IST |
| 14 | EMC TEST |
| 15 | SOLAR SIM TEST |
| 16 | M5, DESIGN REVIEW 2 |
| 17 | M6, RAUMFAHRZEUG AUSEINANDERBAU |
| 18 | AUSEINANDERBAU STM |
| 19 | STRUKTUR ÜBERHOLUNG |

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·BEREICH FUR PROJEKTTRAGERSCHAFTEN·

(A) FREIGABE: _____

(B) BEARBEITUNG: _____

(C) MEILENSTEINPLAN

(D) ROSAT EM, QM, STM, ENTW., FERTIGUNG, S/S-TESTS, AIT

(E) PROJEKTLEITER:

(F) STUFE

(G) BLATT 2 VON 2

ORIGINALPLAN VOM: _____ (H)

LETZTE ÄNDERUNG: _____ (I)

STICHTAG: 31. 3. 1986 (J)

| (K) | MEILENSTEINE UND AKTIVITÄTEN | 1983 | | | | | | | | | | | | 1984 | | | | | | | | | | | | 1985 | | | | | | | | | | | | 1986 | | | | | | | | | | | | 1987 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | J | F | M | A | M | J | J | A | S | O | N | D | J | F | M | A | M | J | J | A | S | O | N | D | J | F | M | A | M | J | J | A | S | O | N | D | J | F | M | A | M | J | J | A | S | O | N | D | J | F | M | A | M | J | J | A | S | O | N | D |
| 1 | MOUNTING EM BOXES HARNESS AT INT. STRUCT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ◻ | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | DELTA IST AMCS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ◻ | | | | | | | | | | | | | | | | | | | | | | |
| 3 | ORBIT-SIMULATION PRE TEST | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ◻ | | | | | | | | | | | | | | | | | | | | | |
| 4 | ORBIT SIMULATION TEST | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ◻ | | | | | | | | | | | | | | | | | | | | | |

BEMERKUNGEN:

Key to page 25:

A) Remarks: Dri Planning Status Planning Status as of Nov. 12, '85 Actual Status. - 1) Production FM, 3) M7, Delivery MA, 4) Delivery FI, 5) Delivery WFC, 6) AIT Telescope FM, 9) M8 ROSAT FM Ready for Environment Tests 11) Compatibility Test GSOC, 12) Telescope X-Ray Performance Test, 15) Transport to KSC, 16) Launch Preparation.

DFVLR

Deutsche Forschungs-und Versuchsanstalt für Luft-und Raumfahrt e.V.

- BEREICH FÜR PROJEKTTRÄGERSCHAFTEN -

FREIGABE: _____

BEARBEITUNG: _____

# MEILENSTEINPLAN

ROSAT FM FERTIGUNG, S/S TESTS, AIT

PROJEKTLEITER:

STUFE

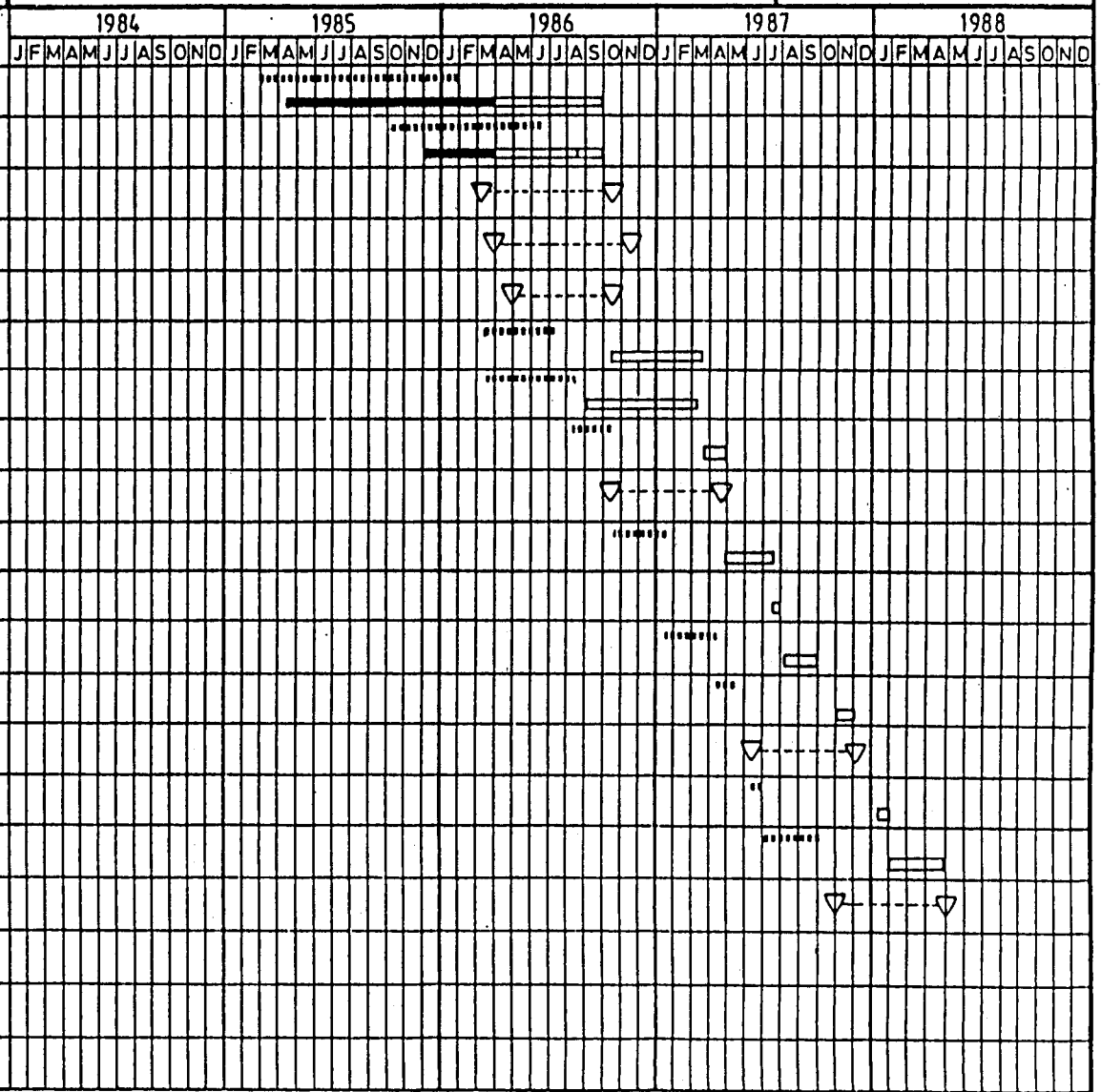
BLATT 1 VON 1

ORIGINALPLAN VOM: DRI

LETZTE ÄNDERUNG: _____

STICHTAG: 31. 3. 1986

| | MEILENSTEINE UND AKTIVITÄTEN | |
|---|---|---|
| 1 | FERTIGUNG | FM |
| 2 | S/S TESTS | FM |
| 3 | M7, BEISTELLUNG | MA |
| 4 | BEISTELLUNG | FI |
| 5 | BEISTELLUNG | WFC |
| 6 | AIT TELESKOP | FM |
| 7 | AIT BUS | FM |
| 8 | ROSAT INTEGRATION | FM |
| 9 | M8 ROSAT FM FERTIG FÜR UMWELT TESTS | |
| 10 | EMC-, TV-, ACOUSTIC NOISE TEST | |
| 11 | KOMPATIBILITÄTSTEST GSOC | |
| 12 | TELESKOP X-RAY PERFORMANCE TEST | |
| 13 | FINAL IST | |
| 14 | M9 PRESHIPPING REVIEW | |
| 15 | TRANSPORT ZUM KSC | |
| 16 | KSC STARTVORBEREITUNG | |
| 17 | M10 START | |




BEMERKUNGEN: DRI-PLANUNGSSTAND — PLANUNGSSTAND 12.11.85 — IST-ZUSTAND

## 13.0 Appendix

13.1 Personnel Inventory

13.2 Key to Abbreviations

Key to page 28:

Personnel Inventory DFVLR-RF-TN4, B) (Man-Months), C) Status: March 31, 1986, D) Period Ideal Actual *(repeat three times across)*, E) Category I Category II Category III Total *(repeat three times down)*.

RÖNTGENSATELLIT

(A) Personaleinsatz DFVLR - RF-TN4

(B) (Mannmonate)

(C) STATUS: 31. März 1986

(D)

| | ZEIT-RAUM | SOLL | IST | ZEIT-RAUM | SOLL | IST | ZEIT-RAUM | SOLL | IST | ZEIT-RAUM | SOLL | IST |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Kat. I | 12/84 | 13.0 | 8.2 | 1/85 | 13.5 | 8.1 | 2/85 | 13.5 | 8.6 | 3/85 | 13.5 | 9.1 |
| Kat. II | ===== | 3.5 | 0.9 | ==== | 3.5 | 1.0 | ==== | 3.5 | 1.0 | ==== | 3.5 | 1.0 |
| Kat. III | | 4.0 | 4.1 | | 4.0 | 3.5 | | 4.0 | 3.1 | | 4.0 | 3.4 |
| Insgesamt | | 20.5 | 13.2 | | 21.0 | 12.2 | | 21.0 | 12.7 | | 21.0 | 13.5 |
| | | | | | | | | | | | | |
| Kat. I | 4/85 | 13.5 | 9.3 | 5/85 | 13.5 | 9.6 | 6/85 | 13.5 | 10.8 | 7/85 | 13.5 | 10.2 |
| Kat. II | ==== | 3.5 | 1.1 | ==== | 3.5 | 1.1 | ==== | 3.5 | 1.1 | ==== | 3.5 | 1.0 |
| Kat. III | | 4.0 | 3.9 | | 4.0 | 3.9 | | 4.0 | 3.7 | | 4.0 | 3.7 |
| Insgesamt | | 21.0 | 14.3 | | 21.0 | 14.6 | | 21.0 | 15.6 | | 21.0 | 15.2 |
| | | | | | | | | | | | | |
| Kat. I | 8/85 | 13.5 | 12.1 | 9/85 | 13.0 | 12.7 | 10/85 | 13.0 | 10.7 | 11/85 | 13.0 | 10.3 |
| Kat. II | ==== | 3.5 | 0.9 | | 3.0 | 1.1 | ===== | 3.0 | 1.1 | ===== | 3.0 | 0.9 |
| Kat. III | | 4.0 | 3.1 | | 4.0 | 3.0 | | 4.0 | 3.2 | | 4.0 | 2.7 |
| Insgesamt | | 21.0 | 16.1 | | 20.0 | 16.8 | | 20.0 | 15.0 | | 20.0 | 13.9 |
| | | | | | | | | | | | | |
| Kat. I | 12/85 | 13.0 | 10.6 | 1/86 | 13.0 | 8.4 | 2/86 | 13.0 | 7.8 | 3/86 | 13.0 | 9.05 |
| Kat. II | ===== | 3.0 | 1.1 | ==== | 3.0 | 2.1 | ===== | 3.0 | 2.0 | ==== | 3.0 | 1.2 |
| Kat. III | | 4.0 | 3.1 | | 4.0 | 3.2 | | 4.0 | 2.6 | | 4.0 | 3.4 |
| Insgesamt | | 20.0 | 14.8 | | 20.0 | 13.7 | | 20.0 | 12.4 | | 20.0 | 13.65 |

(E)

Key to page 30:

A) Personnel Inventory DFVLR-RF-RM, B) Mission Operations Cost Carriers 2885007, C) Status: April 1, 1986, D) Man-Months Period Ideal Actual *(repeat three times across)*, E) Category I Category II Category III Total (MJ), F) Independent Efforts, G) Budgeted for 1986: at a conversion factor 1 MJ=---, H) Project Plan-Ideal 1986, I) results in output:, J) Budget Ideal, K) Project Plan, Ideal, L) Contract Status, Actual, M) Remarks: . Ideal corresponds to Project Plan Status of Feb. 14, '85, N) Budget corresponds to GSOC-Planning actually done, O) Actual corresponds to work actually put out.

ROENTGENSATELLIT

(A) Personaleinsatz DFVLR- RF-RM

(B) Mission Operations Kostenträger 2885007

(C) STATUS: 1.04.1986

(D)

| | Mann-Monate ZEIT-RAUM | SOLL | IST | Mann-Monate ZEIT-RAUM | SOLL | IST | Mann-Monate ZEIT-RAUM | SOLL | IST | Mann-Monate ZEIT-RAUM | SOLL | IST | Budget 1986 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Kat. I | 1-3/86 | 19.5 | 25.7 | 1/86 | 6.5 | 8.5 | 2/86 | 6.5 | 8.3 | 3/86 | 6.5 | 8.9 | 9.0 MJ |
| Kat. II | " | 19.5 | 4.7 | " | 6.5 | 1.5 | " | 6.5 | 1.4 | " | 6.5 | 1.5 | 5.5 MJ |
| Kat. III | " | 4.5 | 1.6 | " | 1.5 | 0.6 | " | 1.5 | 0.4 | " | 1.5 | 0.6 | 1.0 MJ |
| Insgesamt (MJ) | " | 43.5 | 31.7 | " | 14.5 | 10.6 | " | 14.5 | 10.1 | " | 14.5 | 11.0 | 15.5 MJ |
| (F) Fremdleistungen: | | | | | | | | | | | | | |
| (G) . Budgetiert 1986: | 653.000.-- DM | | ≙ 3.25 | MJ | bei Umrechnungsfaktor | | | 1 MJ = | 200.000.-- DM | | | | |
| (H) . Projektplan-Soll 1986: | 780.000.-- DM | | ≙ 3.90 | MJ | " | " | | " | " | | | | |
| (I) . ergibt in Leistung: | 1-3/86 | | | 1/86 | | | 2/86 | | | 3/86 | | | |
| (J) Soll-Budget | " | 9.0 | | " | 3.25 | | " | 3.25 | | " | 3.25 | | |
| (K) Soll-Projektplan | " | 11.7 | | " | 3.9 | | " | 3.9 | | " | 3.9 | | |
| (L) Ist-Vertragsstand | " | | 7.2 | " | | 2.4 | " | | 2.4 | " | | 2.4 | |

(M) Erläuterungen:

(N) . Soll entspricht Projektplan Status 14.2.85

. Budget entspricht aktueller GSOC-Planung

(O) . Ist entspricht aktueller Arbeitsleistung

Key to page 32:

A) Spent Sums since Jan. 1, 1985 Personnel Inventory DFVLR-RF-RM, B) Missions Operations Cost Carrier 2885007, C) Status: April 1, 1986, D) Man-Months Period Ideal Actual, E) Man-Years Period Ideal Actual F) Period Ideal Actual *(repeat once across )*, H) Independent Efforts, I) Project Plan, J) Work Done.

ROENTGEN SATELLIT

(A) Aufgelaufene Summen seit 1.1.1985
Personaleinsatz DFVLR – RF-RM

(B) Mission Operations Kostenträger 2885007

(C) STATUS: 1.4.1986

| | Mann-Monate (D) | | | Mann-Jahre (E) | | | (F) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ZEIT-RAUM | SOLL | IST | ZEIT-RAUM | SOLL | IST | ZEIT-RAUM | SOLL | IST | ZEIT-RAUM | SOLL | IST |
| (G) Kat. I | 1/85-3/86 | 73.5 | 74.8 | 1/85-3/86 | 6.1 | 6.5 | | | | | | |
| Kat. II | " | 91.5 | 29.4 | " | 7.6 | 2.5 | | | | | | |
| Kat. III | " | 16.5 | 4.7 | " | 1.4 | 0.4 | | | | | | |
| Insgesamt (MJ) | " | 181.5 | 112.5 | " | 15.1 | 9.4 | | | | | | |

(H) Fremdleistungen:

(I) Projektplan: 1/85-3/86: 905.000 -- DM ≙ 4.5 MJ

(J) Erbrachte Leistung: " 790.512 -- DM ≙ 3.9 MJ

Key to page 34:

A) Personnel Inventory DFVLR-RF-RM, B) Simulator Cost Carrier 3885406, C) Status April 1, 1986, D) Man-Months Period Ideal Actual *(repeat three times across)*, E) Category I Category II Category III Total (MJ), F) Independent Efforts, G) ● Budgeted 1986, at a conversion factor H) ● results in output:, I) Planned, ideal, J) Contract Status, actual.

RÖNTGEN SATELLIT

(A) Personaleinsatz DFVLR – RF-RM

(B) Simulator Kostenträger 3885406

(C) STATUS: 1.04.1986

| | Mann-Monate (D) ZEIT-RAUM | SOLL | IST | Mann-Monate ZEIT-RAUM | SOLL | IST | Mann-Monate ZEIT-RAUM | SOLL | IST | Mann-Monate ZEIT-RAUM | SOLL | IST |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1-3/86 | 4.5 | 5.1 | 1/86 | 1.5 | 1.8 | 2/86 | 1.5 | 1.8 | 3/86 | 1.5 | 1.5 |
| (E) Kat. I | " | - | - | " | - | - | " | - | - | " | - | - |
| Kat. II | " | - | - | " | - | - | " | - | - | " | - | - |
| Kat. III | " | 4.5 | 5.1 | " | 1.5 | 1.8 | " | 1.5 | 1.8 | " | 1.5 | 1.5 |
| Insgesamt (MJ) | | | | | | | | | | | | |
| (F) Fremdleistungen | | | | | | | | | | | | |
| (G) o Budgetiert 1986 | 1.458.000.-- DM ≙ 7.3 MJ | | | bei Umrechnungsfaktor 1 MJ = 200.000.-- DM | | | | | | | | |
| (H) o ergibt in Leistung: | 1-3/86 | | | 1/86 | | | 2/86 | | | 3/86 | | |
| (I) Soll-geplant | " | 21.9 | | | 7.3 | | | 7.3 | | | 7.3 | |
| (J) Ist-Vertragsstand | " | | 14.4 | | | 4.8 | | | 4.8 | | | 4.8 |

Key to pages 36-43:

| | | |
|---|---|---|
| 1. | AA | Application for Change |
| 2. | AKS | Alignment Control System |
| 3. | AN | Contract Recipient |
| 4. | BMFT | West German Secretary for Research and Technology |
| 5. | CFK | Carbon Fiber Reinforced Plastics |
| 6. | DFVLR | West German Research and Testing Institute for Air- and Space Travel |
| 7. | DFVLR-PL | DFVLR Project Management |
| 8. | DV | Data Processing |
| 9. | IABG | Industrial Sites - Company |
| 10. | INVAR | (Trade name for a special Steel Alloy) |
| 11. | KW | Calender Week |
| 12. | MM | Mass Model |
| 13. | MPE | Max-Planck Institute for Physics and Astrophysics, Institute for Extraterrestial Physics |
| 14. | MPG | Max-Planck Association |
| 15. | ROSAT | X-Ray Satellite |
| 16. | SIMS | Secondary Ion Mass Spectrometry |
| 17. | SKE | Own Cost Rebate Price |
| 18. | SKF | Own Cost Firm Price |
| 19. | TA | Technical Direction |
| 20. | TV | Thermal Vacuum |
| 21. | WSA | Space Simulation Assembly |
| 22. | ZERODUR | (Trade name for the Glass-Ceramic material of the mirror). |

## 13.2 Abkürzungsverzeichnis

| | | |
|---|---|---|
| | ABM | Antenna Boom Mechanism |
| | ADP | Acceptance Data Package |
| (1) | ÄA | Änderungsantrag |
| (2) | AKS | Ausricht-Kontroll-System |
| | AIT | Assembly, Integration and Test |
| | AMCD | Attitude Measurement and Control Data Unit |
| | AMCE | Attitude Measurement and Control Interface Electronics |
| | AMCS | Attitude Measurement and Control Subsystem |
| | AMPTE | Active Magnetospheric Particle Tracer Explorer |
| (3) | AN | Auftragnehmer |
| | BAT | Battery |
| | BCU | Battery Control Unit |
| | Bit. Sync. | Bit Synchronizer (Synchronization) |
| (4) | BMFT | Bundesminister für Forschung und Technologie |
| | CCD | Charge Coupled Device |
| | CCL | Charge Current Limiter |
| | C&DH | Command and Data Handling |
| | CEL | Control Electronics |
| (5) | CFK | kohlefaserverstärkter Kunststoff |
| | CFRP | Carbon Fiber Reinforced Plastics |
| | CITE | Cargo Integration Test Equipment |
| | Cmd | Command |
| | CMOS | Complementary Metaloxyde Silicon |
| | C/O | Checkout |
| | CPP | Central Parts Procurement |
| | CPU | Central Processing Unit |

| | | |
|---|---|---|
| | CR | Change Request |
| | CSA | Charge Solar Array |
| | CSS | Coarse Sun Sensor |
| | CZ | Firma Carl Zeiss |
| | DC | Direct Current |
| | DDS | Dynamic Device Simulations |
| | DEC | Decoder |
| ⑥ | DFVLR | Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt |
| ⑦ | DFVLR-PL | DFVLR-Projektleitung |
| | DHS | Data Handling Subsystem |
| | DMA | Direct Memory Access (Direct Access to Memory) |
| | DMOD | Demodulator |
| | DNEL | Disconnection of Non-Essential Loads |
| | DPS | Data Processing System |
| | DR | Design Review |
| | DS | Dornier System |
| ⑧ | DV | Datenverarbeitung |
| | EAC | Estimate At Completion |
| | ECR | Engineering Change Request |
| | ECS | Environmental Control System |
| | EED | Electro-Explosive Device |
| | EEE | Electric, Electronic, Electromechanical |
| | EEL | Experiment-Electronics |
| | EGSE | Electrical Ground Support Equipment |
| | EM | Engineering Model |
| | EMC | Electromagnetic Compatibility |
| | EOL | End-of-Life |
| | EORD | Experiment Operations Requirements Document |

| | |
|---|---|
| EPD | External Power Dumper |
| ESA | European Space Agency |
| ETOL | ESA Test Operation Language |
| EUV | Extreme Ultraviolet |
| EVA | Extravehicular Activity |
| FEM | Finite Element Model |
| FI | Focal Plane Instrumentation |
| FLS | Fiducial Light System |
| FM | Flight Model |
| FMECA | Failure Mode Criticality Analysis |
| FWHM | Full Width at Half Maximum |
| GF | Grapple Fixture |
| GSE | Ground Support Equipment |
| GSFC | Goddard Space Flight Center |
| GSOC | German Space Operations Center |
| GVS | Gas Supply System |
| GYP | Gyropackage |
| GYPE | Gyropackage Electronics |
| GYPS | Gyropackage Sensor |
| HC | Heater Control |
| HEAO-2 | High Energy Astronomy Observatory ("Einstein") |
| HIREL | High Reliability |
| HK | Housekeeping |
| HP | High Power |
| HRI | High Resolution Imager |
| (9) IABG | Industrieanlagen-Betriebsgesellschaft |
| IC | Integrated Circuit |

| | | |
|---|---|---|
| | ICD | Interface Control Document |
| | IEEE | Institute of Electrical and Electronics Engineers |
| (10) | INVAR | (Handelsname für eine besondere Stahllegierung) |
| | IST | Integrated System Test |
| | JSC | Johnson Space Center |
| | kbps | Kilobit per second (deutsch: kbit/s) |
| | KSC | Kennedy Space Center |
| (11) | KW | Kalenderwoche |
| | LCL | Latching Current Limiter |
| | LED | Light Emitting Diode |
| | LHC | Left-hand Circulation |
| | LI | Line Item |
| | LP | Low Power |
| | LSSP | Launch Site Support Plan |
| | MA | Mirror Assembly |
| | MAC | Mirror Attachment Cone |
| | Mbps | Megabit per second (deutsch: Megabit/s) |
| | MC | Magnetic Coil |
| | MCC | Mission Control Center |
| | MCP | Microchannel Plate |
| | MDM | Multiplexer/Demultiplexer |
| | MDR | Master Data Record |
| | MED | Magnetic Electron Deflector |
| | MES | Mechanisms Subsystem |
| | MGSE | Mechanical Ground Support Equipment |
| | MIP | Mandatory Inspection Point |

| | | |
|---|---|---|
| | MLI | Multilayer Insulation |
| | MM | Magnetometer |
| (12) | MM | Massenmodell |
| | MOM | Mission Operations Meeting |
| | MOU | Memorandum of Understanding |
| (13) | MPE | Max-Planck-Institut für Physik und Astrophysik, Institut für Extraterrestrische Physik |
| (14) | MPG | Max-Planck-Gesellschaft |
| | MPSS | Mission Planning and Scheduling System |
| | MRB | Material Review Board |
| | MSA | Main Solar Array |
| | MSSL | Mullard Space Science Laboratory |
| | MUC | Multi-Use Container |
| | MUDAS | Modular Universal Data Acquisition and Control System |
| | MVL | Main Voltage Limiter |
| | NASA | National Aeronautics and Space Administration |
| | NCR | Non Conformance Report |
| | NRZ/L-Code | Non-Return-to-Zero/L-Code |
| | NSI | NASA Standard Initiator |
| | OBC | Onboard Computer |
| | OGSE | Optical Ground Support Equipment |
| | OIB | Orbiter Interface Box |
| | OSR | Optical Surface Reflector |
| | PCB | Printed Circuit Board |
| | PCU | Power Control Unit |
| | PDU | Power Distribution Unit |
| | PETS | Payload Environmental Transportation System |

| | | |
|---|---|---|
| | PGHM | Payload Ground Handling Mechanism |
| | PHP | Paraboloid-Hyperboloid Pair |
| | PIP | Payload Integration Plan |
| | POCC | Payload Operations Control Center |
| | PPF | Payload Processing Facility |
| | PRD | Program Requirements Document |
| | PRD | Project Requirements Document |
| | PROM | Programmable Read Only Memory |
| | PSE | Payload Support Equipment |
| | PSK | Phase-shift Keying |
| | PSPC | Position Sensitive Proportional Counter |
| | PSS | Power Supply Subsystem |
| | PYB | Pyrotechnics Electronic Box |
| | QM | Qualification Model |
| | RAL | Rutherford Appleton Laboratory |
| | RAM | Random Access Memory |
| | RCA | Radio Corporation of America |
| | RE | Radiated Emission |
| | RF | Radio Frequency |
| | RfA | Request for Action |
| | RfW | Request for Waiver |
| | RMC | Right-hand Circulation |
| | RMS | Remote Manipulator System |
| | ROMP | Realtime/Offline Mission Processor |
| (15) | ROSAT | Röntgensatellit |
| | RS | Radiated Susceptibility |
| | RSGF | Rigidized Sensing Grapple Fixture |
| | RSS | Rotating Service Structure |
| | RT | Real Time |

| | | |
|---|---|---|
| | RW | Reaction Wheel |
| | RX | Receiver |
| | SAO | Smithsonian Astrophysical Observatory |
| | S/C | Spacecraft |
| | SCOE | Special Checkout Equipment |
| | SERC | Science & Engineering Research Council |
| | SEU | Single Event Upset |
| (16) | SIMS | Sekundär-Ionen-Massen-Spektrometrie |
| | SIRD | Support Interface Requirements Document |
| (17) | SKE | Selbstkosten Erstattungspreis |
| (18) | SKF | Selbstkosten Festpreis |
| | S/L | Serial Load |
| | SMDR | Special Master Data Record |
| | SOC | Science Operations Center |
| | SOS | Silicon on Sapphire |
| | SPF | Single Point Failure |
| | SPL Code | Split Phase Level Code |
| | SSM | Single Surface Mirror |
| | SSM | Separation Switch Mechanism |
| | ST | Star Tracker |
| | STC | Star Tracker Camera |
| | STE | Star Tracker Electronics |
| | STM | Structural Thermal Model |
| | STS | Space Transportation System |
| | SURS | Shuttle Umbilical Retraction System |
| | S/W | Software |
| (19) | TA | Technische Anweisung |
| | TC | Telecommand |
| | T/C | Thermal Control |
| | TCE | Thermal Conditioning Equipment |

| | | |
|---|---|---|
| | TCS | Telecommunication Subsystem |
| | TDM | Telescope Door Mechanism |
| | TM | Telemetry |
| | TR | Tape Recorder |
| | TT & C | Telemetry, Tracking and Command |
| (20) | TV | Thermal-Vakuum |
| | TX | Transmitter |
| | UK | United Kingdom |
| | US | Subsystem |
| | VPHD | Vertical Payload Handling Device |
| | VPF | Vertical Processing Facility |
| | WDE | Wheel Drive Electronics |
| | WFC | Wide Field Camera |
| | WFCC | WFC-Consortium |
| (21) | WSA | Weltraumsimulationsanlage |
| | XRT | X-Ray Telescope |
| (22) | ZERODUR | (Handelsname für den Glas-Keramik-Werkstoff des Spiegels) |
| | ZDE | Central Data Electronics |

| | | |
|---|---|---|
| NASA TM-88499 | 2. Government Accession No. | 3. Recipient's Catalog No. |
| 4. Title and Subtitle: X-RAY SATELLITE (ROSAT) STATUS REPORT, 1ST QUARTER 1986 | | 5. Report Date: August 1986<br>6. Performing Organization Code |
| 7. Author(s): DFVLR (GERMAN AEROSPACE RESEARCH ESTABLISHMENT) | | 8. Performing Organization Report No.<br>10. Work Unit No. |
| 9. Performing Organization Name and Address: The Corporate Word, inc.<br>1102 Arrott Bldg.<br>Pittsburgh, PA 15222 | | 11. Contract or Grant No. NASW-4006<br>13. Type of Report and Period Covered: Translation |
| 12. Sponsoring Agency Name and Address: National Aeronautics and Space Administration<br>Washington, DC 20546 | | 14. Sponsoring Agency Code |

15. Supplementary Notes: Translation of "Roentgen Satellit Statusbericht, 1. Quartal 1986", DFVLR (German Aerospace Research Establishment), May 5, 1986, pp. 1-60

16. Abstract

~~With regard to~~ technical performance, the project is running according to plan. An increase in total cost outlay was required. The new Dornier Systems schedule projects ROSAT launch readiness for April 27, 1988. However, as a result of the Challenger accident, no binding launch date has been received from NASA. The thirteenth status review was conducted at the prime contractor in March, 1986. Assembly of the FM mirror system has been interrupted due to irregularities in the gold damping; in addition, mission operation and simulator development are effected by understaffing. Postponements have been announced in the data transmission and components acquisition subsystems.

ABS

ABA Author

ROSAT MISSION
X RAY ASTRONOMY
ASTRONOMICAL SATELLITES
SPACEBORNE TELESCOPES

LAUNCH DATES
COST ESTIMATES
MIRRORS
DATA TRANSMISSION

| 17. Key Words (Selected by Author(s)) | 18. Distribution Statement | | |
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