

GOVERNMENT OF INDIA
DEPARTMENT OF SPACE
INDIAN SPACE RESEARCH ORGANISATION
ISRO SATELLITE CENTRE (ISAC)
BANGALORE

Ref: 25/I/1(014)/77

January 11, 1977

STANDING ORDER No. DR-1/77

Sub: Organisation of ISAC

1.0 Pursuant to ISRO Chairman's Standing Order CH/5/76 of 3-11-1976 forming ISAC for better coordination and delegation of responsibility and in supersession of all previous arrangements at the erstwhile ISRO Satellite Systems Project, Peenya, Bangalore, with immediate effect and until further orders, ISAC is organised into Divisions/Sections, Facilities and Projects as laid down in the annexure.

2.0 Till further orders, the following are designated as the Heads of Divisions, Heads of Sections, Managers of Facilities, Project Directors, Project Managers, Project Engineers and Chiefs of Offices:

2.1 Heads of Divisions

- | | | |
|--------------------------------------------------|----|----------------------|
| 1. Electronics Division | .. | Mr. R. Ashiya |
| 2. Mechanical Systems Division | .. | Mr. A.V. Patki |
| 3. Control Systems & Propulsion Division | .. | Mr. R.M. Vasagam* |
| 4. Mission Operations Planning Division | .. | Dr. A.S. Prakasa Rao |
| 5. Integration, Ground Check-out & Test Division | .. | Dr. S.P. Kosta |

* Temporary till further orders

2.2 Manager

1. Facilities .. Dr. R.D. Gambhir*

2.3 Project Directors

1. Project Director, APPLE .. Mr. R.M. Vasagam
2. Project Director, SEO .. Dr. K. Kasturirangan
3. Project Director, RS-1 .. Mr. Tarsem Singh

2.4 All the above persons mentioned in paras 2.1, 2.2 and 2.3 will report to the Director, ISAC.

2.5 Heads of Sections

Heads of various Sections under each Division are named in the annexure, appended to this order. Heads of Sections will report to the respective Heads of Divisions/Managers as shown in the annexure.

2.6 Project Managers/Project Engineers/Chief-Offices

Project Managers/Project Engineers/Chief-Offices under various Projects are named in the annexure, appended to this order and also in para 7.0 of this order.

2.7 Orders relating to outside Projects HIPFIT and Down Range Tracking Stations will be issued separately.

3.0 Dr. K. Kasturirangan is designated as the Head, Technical Physics Section. He will report to the Director, ISAC. Dr. T.M.K. Marar will be the Advisor to this Section.

3.1 Mr. M.K. Saha is designated as the Head of "Advanced Planning and Projects" Section. He will report to the Director, ISAC for all matters related to this Section.

* Acting Manager

3.2 Mr. R. Ashiya will be the Chief of ISAC/INSAT Space Segment Office and will be responsible for coordinating the Centre's activities related to the INSAT space segment. He will report to Director, ISAC until further orders.

4.0 Mr. K. Thyagarajan is designated as Head, Programme Planning and Evaluation Group (PPEG) and will report to the Director, ISAC.

4.1 Mr. K.R. Ramgopal is designated as Head, Quality and Assurance Group and will report to Director, ISAC.

5.0 ISAC Administration

This will be unified into a single entity and Controller, ISAC will be in overall charge of Administration, Accounts, Purchase and Stores. Internal Financial Adviser, however, will report to the Director, ISAC. Until further orders, Dr. S.P. Kosta will officiate as the Controller and Mr. V. Narayanan will be IFA and Head Accounts.

6.0 ISAC Council

Within the Centre's charter, ISAC Council has the responsibility of laying down broad policies of both administrative and technical nature. The Council will consist of:

- | | | |
|--------------------------------------|----|----------|
| 1. Director, ISAC | .. | Chairman |
| 2. Project Director, APPLE | .. | Member |
| 3. Project Director, SEO | .. | " |
| 4. Project Director, RS-1 | .. | " |
| 5. Head, Electronics Division | .. | " |
| 6. Head, Mechanical Systems Division | .. | " |

7. Head, Control Systems & Propulsion Division .. Member
8. Head, Mission Operations Planning Division .. "
9. Head, Integration, Ground Check-out & Test Division .. "
10. Head, Advanced Planning and Projects Section .. "
11. Controller, ISAC .. "
12. Administrative Officer, ISAC . Non-Member-Secretary

ISAC Council will normally meet once in a month.

7.0 Till further orders, the following will be

Project Engineers/Managers and Chiefs of Offices:

7.1 APPLE Project

1. Project Manager - 1 .. Mr. M.K. Saha
(Electrical)
2. Project Manager - 2 .. To issue later
(Mechanical Systems)
3. Mechanical Sub-systems APPLE Dr. P.S. Nair
Project Engineer
4. Electrical Sub-systems APPLE Mr. D.V. Raju
Project Engineer
5. Propulsion Sub-system (AKM) To issue later
APPLE, Project Engineer
(Based at VSSC)
6. Propulsion Sub-system (RCS) To issue later
Project Engineer
(Based at VSSC)
7. AOCSS & Sensors, APPLE .. Mr. P.S. Goel
Project Engineer
8. Momentum Wheel Solar .. To issue later
Array Drive,
Project Engineer
(Based at VSSC)
9. Payload, APPLE .. Mr. Leo Lasrado
Project Engineer
(Based at SAC)

10. S/C Integration, APPLE .. Mr. V.A. Thomas
Project Engineer
11. Chief, Systems Engineering Office, APPLE To issue later
12. Chief, Quality Assurance Office, APPLE To issue later

7.1.1 The Project Manager-1 (Electronics) will assist the Project Director, APPLE in coordinating all the electronics related activities concerning the Project at ISAC, and also in coordinating the Tracking, Telemetry and Command ground systems related to the Project with SHAR Centre.

7.1.2 The above persons will report to Project Director, APPLE for all activities concerning the Project and to the respective Heads of the Divisions for matters concerning the Division/Centre. In case of the Project Engineers based at and belonging to other Centres, their functional reporting in so far as the Project is concerned will be to the Project Director; for other Centre activities, their reporting will be as laid down by their respective Centre Directors.

7.2 SEO

1. Electrical Sub-system, SEO .. Mr. S. Kalyanaraman
Project Engineer
2. Mechanical Sub-system, SEO .. Dr. MS.S. Prabhu
Project Engineer
3. Spacecraft Integration, SEO .. Mr. M.N. Satya-
narayana
Project Engineer

4. Sensors & Control, SEO .. Mr. T.K. Alex
Project Engineer
5. TV Payload, SEO .. Dr. George Joseph
Project Engineer
6. SAMIR Payload, SEO .. Mr. O.P.N. Calla
Project Engineer
7. Data Products, SEO .. Mr. D.S. Kamat
Project Engineer
8. Ground Station, SEO .. Mr. K.V. Venkatachary
Project Engineer
9. Chief, SEO Quality .. Mr. B.L. Agarwal
Assurance Office
10. Chief, SEO Systems .. Mr. Arun Batra
Engineering Office

7.2.1 The above persons will report to Project Director, SEO for all activities concerning the Project, and to the respective Heads of Divisions for matters concerning the Division/Centre. In case of the Project Engineers based at and belonging to other Centres, their functional reporting in so far as the Project is concerned will be to the Project Director; for other Centre activities, their reporting will be as laid down by their respective Centre Directors.

7.3 RS-1

1. Mechanical Sub-system, RS-1 .. Mr. R. Samuel
Project Engineer
2. Electrical Sub-system, RS-1 .. Mr. A.D. Dharma
Project Engineer
3. Integration, RS-1 .. Mr. G. Mohana-
Project Engineer krishnan
4. Chief, Quality Assurance .. To issue later
Office
5. Chief, Systems Engineering .. To issue later
Office

- 7.3.1 The above persons will report to Project Director, RS-1 for all activities concerning the Project and to the respective Heads of the Divisions for matters concerning the Division/Centre.
- 8.0 Each Project will have a Management Board, orders concerning which will be issued separately.
- 9.0 Consequent on the organisation of the Centre, special note may be taken of the following for expeditious implementation:

9.1 Electronics Division

This Division will be responsible for R & D activities relating to spacecraft electronics, and also planning, designing, fabricating and delivery of sub-systems assigned to the Division for delivery to the Centre's Spacecraft Projects. This Division will also be responsible for all the related ground-based activities in electronics which will be assigned to it from time to time. In addition, the Division will assist the Quality Assurance Group in the selection, evaluation and failure analysis of electronics parts and devices.

9.2 Mechanical System Division

This Division will be responsible for the R & D activities relating to the spacecraft structural, thermal and mechanical systems, and also the planning, designing, fabricating and delivery of sub-systems

to the Centre's spacecraft Projects. For electro-mechanical parts, deployment mechanism, solar panel substrate etc. this Division will generate system specifications, test and evaluation procedures etc. to get the sub-assemblies/components designed and developed at other Centres.

9.3 Control & Propulsion Division

This Division will be responsible for the system analysis and specification, system simulation, generation of acceptance procedures, integration etc. related to the Control & Propulsion systems for the ongoing spacecrafts; this Division will do the necessary technical management to get the sub-assemblies/components developed at VSSC. In addition, the Division will do R & D in non-inertial spacecraft attitude sensors, design, develop and fabricate these for the Centre's spacecraft Projects.

9.4 Integration, Ground Check-out & Test Division

This Division is responsible for providing support to the Centre's spacecraft Projects in electrical & mechanical integration of the spacecraft and system level tests. It will also be responsible for the analysis and specification, system simulation, design, development and fabrication of spacecraft harness. In addition, this will also do the R & D related to the Control & Propulsion systems for the ongoing spacecrafts; this Division will do the

necessary technical management to get the sub-assemblies/components developed at VSSC. In addition, the Division will do R & D in non-inertial spacecraft attitude sensors, design, develop and fabricate these for the Centre's spacecraft Projects.

This Division will assist the Projects in generating specifications for the spacecraft check-out systems and in generating the test plans. This Division, in addition, will be responsible for the development of spacecraft ground check-out equipment.

9.5 Mission Operations Planning Division

This Division will be responsible for assisting the Projects in developing the Mission Operations Plans and in generating the specifications for the ground station support in consultation with SHAR Centre, and the users of the spacecraft. In addition, it will do R & D in the development of software related to orbit determination, attitude determination etc. in support of ISRO spacecraft Projects and in developing necessary plans and software related to the post-flight analysis pertaining to the spacecraft other than spacecraft utilisation. Data processing and computer facilities will also be temporarily attached to this Division.

9.6 Facilities

The development, installation, and maintenance of the Centre's Workshop, Printed Circuit facilities, and the Environmental Test facilities, operation of these facilities for the Projects/Divisions and assistance to the Centre's Division/Projects for managing the outside fabrication come under this.

9.7 Quality Assurance Group


Centre's Quality Assurance Group is responsible for generating the guidelines for the general quality assurance practices, and for selection of materials/components etc. in relation to the Centre's activities. Responsibility of failure analysis of the parts/sub-systems/systems for the entire Centre shall also vest with this Group.

The Quality Assurance Offices of the Projects shall evolve specific quality assurance plan for the Projects concerned in consultation with the Quality Assurance Group of the Centre. The Quality Assurance Offices of the Projects report to the Project Director concerned. The environmental tests and evaluation of the systems developed by the Centre for Projects/R&D will also be carried out by this Group till further orders.

9.8 Programme Planning & Evaluation Group (PPEG)

This group is responsible for assisting Director, ISAC in evaluation of the progress of the various activities of the Centre including the Projects. The Systems Engineering Offices of the Project, who report to the Project Directors concerned, shall work in close liaison with the Centre's PPEG. Centre's PPEG will be responsible for generating various progress reports such as weekly, monthly reports and for integrating information from the Projects for the Centre. PPEG will be the focal point at the Centre for liaison with the ISRO Headquarters.

- 10.0 Heads of Divisions and Manager of Facilities shall prepare documents bringing out the duties and functions of each Section/Facilities and personnel under their respective charges and submit to the Director, ISAC for approval. Necessary consultations with the Projects/ other Divisions shall be done while preparing the document.
- 10.1 Project Directors APPLE, SEO and RS-1 will prepare Project Management Plan, showing the functions and assignments of tasks to Divisions and personnel in ISAC and tasks undertaken by other Centres and submit them to Director, ISAC for approval. Necessary consultations with the other Projects/Divisions shall be done while preparing the documents.
- 10.2 Any changes to the documents so approved shall be done only after obtaining approval from the Director, ISAC.


(U. R. Rao) 11/77
Director, ISAC

Distribution as attached

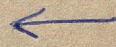
ANNEXURE

to the Standing Order No. DR-1/77

Sub: Organisation of ISAC

- | | |
|---------------------------------------------------------------------|-------------------------------------------|
| 1. <u>ELECTRONICS DIVISION</u> | <u>Mr. R. Ashiya, Head</u> |
| Communications, Antenna
System Section | Mr. S. Kalyanaraman, Head |
| Telemetry Systems Section | Mr. D.V. Raju, Head |
| Telecommand Systems Section | Mr. D. Venkataramana, Head |
| Power Systems Section | Mr. S.Y. Ramakrishnan, Head |
| 2. <u>MECHANICAL SYSTEMS DIVISION</u> | <u>Mr. A.V. Patki, Head</u> |
| Structures Section | Mr. A.V. Patki [*] , Head |
| Thermal Systems Section | Mr. H. Narayanamurthy, Head |
| 3. <u>ATTITUDE CONTROL SYSTEMS AND
 SENSORS</u> | <u>Mr. R.M. Vasagam[*], Head</u> |
| Control Systems Section | Mr. P.S. Goel, Head |
| Propulsion Section | To issue later |
| Sensors Section | Mr. T.K. Alex, Head |
| 4. <u>MISSION PLANNING &
 ANALYSIS DIVISION</u> | <u>Dr. A.S. Prakasa Rao, Head</u> |
| Mission Planning &
Analysis Section | Dr. V.S. Iyengar, Head |
| Orbital Mechanics Section | Dr. N. Ramani, Head |
| Data Processing & Computer
Facilities Section | Dr. N. Ramani, Head |
| 5. <u>INTEGRATION, GROUND CHECK-OUT
 & TEST DIVISION</u> | <u>Dr. S.P. Kosta, Head</u> |
| Integration Section | Mr. V.A. Thomas, Head |
| Ground Check-out Section | Mr. A.D. Dharma, Head |
| System Tests Section | To issue later |

* Temporary till further orders



6. FACILITIES Dr. R.D. Gambhir, Acting Manager
Mechanical facilities, Mr. P.N. Srinivasan, Head
Workshop, Draughting Section
Environmental test Dr. R.D. Gambhir, Head
facilities Section
Central electronic fabri- To issue later ←
cation PC Boards,
Laboratory Section
Besides the above, Library-in-charge and Electronic
Maintenance-in-charge will report to Manager, Facilities
Division.
7. QUALITY ASSURANCE AND TEST Mr. K.R. Rangopal, Head
AND EVALUATION GROUP
Quality Assurance To issue later
Test and Evaluation To issue later ←
8. PROGRAMME PLANNING AND Mr. K. Thyagarajan, Head
EVALUATION GROUP
9. ADMINISTRATION Dr. S.P. Kosta, Controller
10. FINANCE Mr. V. Narayanan, IFA
11. APPLE PROJECT Mr. R.M. Vasagam, Proj. Director
Electronics System (ISAC) Mr. M.K. Saha, Project Manager-1
Mechanical Systems To issue later Project Manager-2
Mechanical Subsystems Dr. P.S. Nair, Proj. Engineer
Electrical Subsystems Mr. D.V. Raju, Proj. Engineer
Propulsion Subsystems (AKM) To issue later
Propulsion Subsystems (RCS) To issue later
AOCS & Sensors Mr. P.S. Goel, Proj. Engineer
Momentum Wheel & Solar
Array Drive To issue later
Payload Mr. Leo Lasrado, Proj. Engineer

- | | |
|--------------------------------------------|--------------------------------------------------|
| S/C Integration | Mr. V.A. Thomas, Proj.Engineer |
| Systems Engineering Office | To issue later, Chief |
| Quality Assurance Office | To issue later, Chief |
| 12. <u>SEO</u> | <u>Dr. K. Kasturirangan,</u>
Project Director |
| Electrical Subsystem | Mr. S. Ka-lyanaraman, Proj.Engr. |
| Mechanical Subsystem | Dr. MS .S. Prabhu, Proj. Engineer |
| Spacecraft Integration | Mr. M.N. Satyanarayana, Proj.Engr. |
| Sensors & Control | Mr. T.K. Alex, Proj. Engr. |
| TV Payload | Dr. George Joseph, Proj. Engr. |
| SAMIR Payload | Mr. O.P.N. Calla, Proj. Engr. |
| Data Products | Mr. D.S. Kamat, Proj. Engr. |
| Ground Systems | Mr. K.V. Venkatachary, Proj. Engr. |
| Quality Assurance Office | Mr. B.L. A. awal, Chief |
| Systems Engg. Office | Mr. Arun Batra, Chief |
| 13. <u>RS-1</u> | <u>Mr. Tarsem Singh, Proj. Director</u> |
| Mechanical Subsystem | Mr. R. Samuel, Proj. Engr. |
| Electrical Subsystem | Mr. A.D. Dharma, Proj. Engr. |
| Integration | Mr. G. Mohanakrishnan, Proj.Engr. |
| Quality Assurance Office | To issue later, Chief |
| Systems Engg. Office | To issue later, Chief |
| 14. <u>ISAC/INSAT SPACE SEGMENT OFFICE</u> | <u>Mr. R. Ashiya, Chief</u> |

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11/77

Distribution List

Heads of Divisions/Sections, ISAC
Project Directors/Project Managers/Project Engineers
Manager, Facilities
Head PPEG/Q.A., ISAC
Controller/Admn. Officer/IFA, ISAC
Notice Boards, ISAC
Advisor, Technical Physics Section, ISAC

ISRO

Chairman, ISRO
Directors, VSSC/SAC/SHAR/PRL
Member-Secretary, ISRO Council
Assistant Scientific Secretary, ISRO

DOS

Secretary, DOS
Joint Secretary, DOS
Deputy Secretary, Branch Secretariat, DOS

20/4/77

(1) For Chairman's use only
Strictly Confidential

Sub: S.B. Iyer's work at ISAC

Chairman has mentioned this to me more than once. Though it will be painful for us to lose ~~the~~ a trained person in a team, it will be in the long term interest of ISRO and Iyer, to be spun-off early. If Chairman has to discuss with Iyer and Prof. UR Rao time is now. If it is delayed too long, when APPLE etc heat up ~~machines~~ such an injection/induction will not be possible. Hence this note.

I am placing below the ISAC Organisation Standing Order. Three Divisions in which Iyer can be fitted are:

- (i) Mechanical Systems Division
- (ii) ~~PO~~ Integration, Ground Checkout & Test Division

and (iii) Facilities.

Mechanical Systems Divⁿ is filled up. As a detailed design engineer, Iyer will not have a role.

Chairman is requested to see the annexure ~~annexure~~ where some posts are ^{shown} vacant.

[P.T.O]

(2)

(a) Systems Tests Section is one. This is a Manager role (with, of course, some technical appreciation). Though in the technical elements Iyer is to learn, his managerial ability, attention to detail, documentation etc will be an asset for that role. He can be made a Section Head or Dy. Section Head to start with.

(b) Other one post is to be Section Head of Electronic fabrication of PC Boards, Laboratory Section under Facilities. Besides being section head, he can assist Dr. Grambhir in Environmental test facilities section; May be Iyer is made just the Dy. Head of Environmental test facilities section.

(c) Another one option is to be a section head in Test and Evaluation Section under QA. Here again lot of coordination is involved and scheduling & management and Iyer will greatly help. I don't know whether there are other contenders.

Chairman may consider talking to Iyer & Prof. Utkarsh ^{soon} I would like to point out that if Iyer is not given a focussed responsibility

(3)

with a title to derive some satisfaction and freedom of action, he cannot be fully utilised in ISAC. Injection of a person with slightly different approach will do a lot of good to ISAC.

[No use putting him in PPEG; HQ is farre far superior to ISAC, PPEG!]

Rajan

2/6/77