

DEPARTMENT OF SPACE

MEMORANDUM

For : Y.S. Rajan.

File / Ref :

From : S. Chawra

Date : 19/8.

Subject :

Would you please give me a short report on your work at ISRO HQ covering the 5 year period. You need to touch the aspects where you think you have done work of significance — technical, management, analysis etc. About 2 pages would do.

S. Chawra

19/8.

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26/8/80.

A short report of my work at ISRO HQ
during 1975-1980.

Brief Report on my work done during the individual years will be available in the Annual Confidential Reports. In the following I touch upon only the most significant aspects.

Thus 1964-1975 has been the period of detailed hardware oriented technical work & system engineering.

Starting in 1975 with major task of monitoring the First Satellite project, and participation in other technical tasks of SLV-3, Sounding Rockets, Remote Sensing, Second Satellite definition, Hi Rel components, etc., I have taken on, in the subsequent years, substantially increasing responsibilities. I have carried during the past four years the major load of ISRO HQ to meet the organisational needs; the tasks varied from detailed technical analysis on Satellite designs, Remote Sensing, Tracking system, Hi Rel components, Electronics etc. to various administrative matters. Due to my versatility, I have fulfilled various (changing) roles with swiftness and effectively. Besides I have served as an effective "lubricant" on various techno-human interfaces of running ISRO/DCS programmes.

In a nutshell, my role has been that of an effective integrator (analyst-cum-synthesizer) of various elements of ISRO/DCS programmes (from Space Sciences to administration) for providing assistance to Chairman, ISRO (and sometimes to Directors of ISRO Centres). Such an integration helps in effecting mid-course corrections to the ongoing programmes (e.g. modification of mission goals of a project or management changes etc.) and for advance planning based on realism. I have the good fortune of personally participating in such processes of higher management tasks/functions.

Some highlights of my work are listed below:

TECHNICAL

- (i) Staff assistance to Chairman in monitoring Aryabhata project - my inputs as Systems Engineer were very effective.
- (ii) Definition of Second Satellite - Bhaskara; participation in studies; Soviet interface.
- (iii) Reliability and Quality assurance: dealt with various technical and managerial aspects; studies and general reports on Satellites, Sounding rockets etc. - Effective catalytic role in energising many in ISRO; today this activity is fairly well stabilised.

- (iv) Telemetry and Tracking Network study: Through convenorship of the Study Group identified many issues for work - led to formation of Orbit Altitude and Trajectory Group. Wrote an internal technical on world-wide status and ISRO needs.
- (v) For advance planning, did many detailed studies on world-wide Satellite Projects. Produced analysis papers on useful satellite sizes. These have led to ISRO Polar launch sizing to be above 500 kg-600 kg class.
- (vi) Have given inputs to INSAT definition on various aspects from satellite design to frequency selection aspects; participated in inter-ministerial groups in defining INSAT; participated in Request For Proposal (RFP) generation and source selection.
- (vii) Lead role in generating an ISRO Remote Sensing Profile (which is valid even now); participated in the definition of Indian Remote Sensing Satellites; Side looking radar for ISRO.
- (viii) Participated in APPLE Spacecraft and facility definition and subsequent follow up.
- (ix) Member - SLV-3 Management Board from 1976 and on many occasions have contributed on electronics aspects/mission/system aspects.
- (x) Have served as a member of a classified Study Group in producing a report. Many such analyses on classified items for Chairman, ISRO. Notable amongst them are a report submitted to Chairman, ISRO on a 15 year profile (technical scenario); and a recent report to SA to RM and Chairman, ISRO - a systems overview.

MANAGERIAL

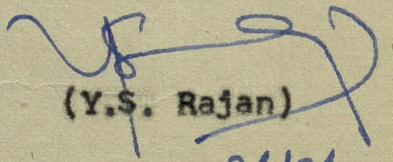
- (i) Member of Satellite & Launcher Management Boards/Review Committees. Assisted in ISRO Council since 1976 as Asstt. Scientific Secy. From May 1979, Scientific Secretary, ISRO & Member ISRO Council.
- (ii) Analysis and recommendations relating to various personnel and purchase related procedures/policies. My task would be to assess programme implications of the procedures and provide alternatives. I served on one such high level Committee appointed by Electronics Commission also.
- (iii) Integrating ISRO/DCS Five Year Plan.(1978-83)

and (1980-85). Have played an important role in evolving the ISRO/DOS Ten Year Profile including the high level user interfaces for IRS.

- (iv) In the field of ISRO-academic institutions - inter-face: my work has been to get together the right persons, generate new programmes, giving talks etc. I am Member-Secretary of ISRO-IISc. Programme Planning Committee; and this programme is about to mature into a joint Space Technology Cell. My managerial/staff contributions are non-trivial. Member of ISRO-UGC link. Advise Chairman on RESPOND.
- (v) In the Space Sciences area my role has been managerially catalytic to bring out excellence. Notable amongst them are to study and establish a process of selection of Sounding rockets, Solar Eclipse; generation of a group to work on Cosmic Evolution; generation of interest in Space Materials Processing etc. Notable contribution has been in the formulation of Advisory Committee on Space Sciences.
- (vi) For ISRO - Industry interface, my role has been mainly in giving some staff support to the Technology Transfer Group on electronics items. Has been a member of HISTAG. (HAL-ISRO Standing Technical Advisory Group). Has also served as a Member-Secretary for one meeting of HISTAG.
- (vii) On the matter of international relations, which involves technical analysis, legal and diplomatic aspects, my role has been substantial. I have considerable contributions in the ISRO/DOS relations with NASA, USSR, France, DFVLR, ESA, Japan, UK and other countries like Fiji, Indonesia, etc. Have given staff support to Chairman, Prof. Yash Pal etc. on UN matters. Recently made the formal Statement at the UN Committee on Peaceful Uses of Outer Space; contributed to the policy views on International Satellite Monitoring Agency.
- (viii) Staff support and some direct action in inter-departmental and inter-agency matters; e.g. ISRO/DOS -DST matters, NCST, MONEX Project, Planning Commission, COSPAR/INCCSPAR etc.
- (ix) Have developed a few young Scientists in ISRO HQ, who can deal independently with matters assigned to them. I consider this capability to train and delegate work to colleagues even at a horizontal level as an important feature of my contribution to the organisation.

- (x) Other routine items relate to drafts for Cabinet Summary, Parliament Questions, overseeing some of the public relations/ technical publications, being in charge of ISRO HQ administration, dealing with staff problems, role in ISRO Budget formulation etc.

^{with due} Coming now to the 'style of operation', I can claim to be a good example in making the horizontal-participative-~~and~~ management system in complex science and technology areas work.


(Y.S. Rajan)

26/8/80.

- Member ISRO-UGC Link Committee
- Member, Programme Planning Committee of ISRO-IISc. Educational Programme
- Member-Secretary of the Indian-National Committee for Space Research (INCOSPAR)

* This reporting period has been exceptionally Productive in terms of my contributions to ISRO/DOS Programmes & policies and also international matters; Most important one being, the bringing of NRSA Programmatically in time with various tasks of DOS and especially optimising the strengths of SAC & NRSA to meet IRS tasks.

* My major contributions during the reporting period is summarised in the following:-

- - Staff support to Chairman, NRSA/ Secretary, DOS on NRSA matters
- Member of a Study Group to assess view point of Projected Satellite Missions, injection accuracies through Committee Meetings and also through internal technical notes.
- Assisted Prof R R Daniel in ADCOS matter, INCOSPAR matter & in the formulation of the Indian Middle Atmospheric Programme. (especially in the techno-managerial aspects).
- Besides by HQ role in UN matters, was the Leader of the Indian Team in the Main Committee of the UN Committee for the Peaceful Uses of Outer Space. (One tough issue tackled related to the Principles concerning Direct Broadcast Satellites) contributed to the Memorandum of Understanding between India & UK on Space matters Focal Point for Cooperation for India side.
- Presented the National Paper at the 2nd Asian Conference held at Beijing & led the Indian Team In this context instrumental in bringing out ISRO Technical Reports which comprehensively give a

full picture Indian Remote Sensing Activities covering most of the users.

- Presented a paper on the Remote Sensing Activities of the Department of Space at the National Decision Makers Symposium held at NRSA.
- Participated in the negotiations for Launch Vehicle for IRS
- Have done a few Confidential Technical tasks assigned by Secretary, DOS

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(Y S Rajan)

To: Prof. S. Dhawan

From: Y S Rajan

15.9.80

Sub: (i) Certain aspects of HQ organisation,
its functioning.
(ii) My own personal issues.

On Saturday Chairman discussed with me at great length on PSLV/ASLV/SLV-3 and IRS. Draft orders have been prepared and sent to Chairman. On that day Chairman happened to discuss HQ organisation and handed over my earlier write-up on my problems of working at HQ. This write-up ^{written about 9 months ago (but still valid!)} & the discussion on HQ put me into some thinking on myself.

Chairman may pl. note that any of his concepts of HQ organisation and realities of personalities lead ~~like~~ to a ~~re~~ system in which about a dozen persons will ^{directly} report ^{to him} at HQ ~~to him~~ leave alone the 4 Centre Directors, Chief Engineer, ^{Project Director} ^{Director ISRO} ^{Director APS} ^{Director U/s} At a staff level ~~this is to~~ so many direct channels are likely to lead to cross-fires and increased stresses. With ^{having} ~~some~~ persons with territorial ambitions expansionism & jealousies, how to move a paper may become an issue ^{on a} day-to-day basis. (Today such problems are not non-existent!)

I have pointed this out quite adequately and I may ~~sound~~^{appear} nagging if I stress it any further.

I do not dispute Chairman's thesis argument that Chairman ISB / Secretary, DOS would require one person as an integrator of Programmatic aspects with a feel for administration / finance and another ~~one~~ person as an integrator for admin / finance aspects with a feel for programmes. But what is the locus standi of these persons vis-a-vis others? At least the administrative person(s) being a Jt. Secy (and at the most having competition in their area from only ^{one more person} ~~two~~) gets a better deal in moving papers; with Finance always having an upperhand even in Chairman's handling of matters (in raising objections and henceforth ~~superior~~ listened to!) the administrative person(s) Member derive more authority in the System of HQ. ~~So who~~ The role of (Scientific) Programme integrator personified in Scientific Secy ^{is} really ~~is~~ a stressful task ~~with~~ ~~lots~~ of constantly resolving 12 different pulls and Chairman's (Changing) reactions to these. Potentially it is a role where a person ~~is~~ can be pushed

around since there is no stated authority and it is only personal equations that count. To-day fortunately (probably due to lack of any ^{defined} system ~~and a~~ ~~act~~ ~~of~~ ~~the~~ ~~same~~ ~~kind~~ ~~as~~ ~~the~~ ~~one~~ ~~or~~ ~~two~~ ~~persons~~ ~~really~~ ~~being~~ ~~difficult~~) things slide along & I fulfill ^h the integrating tasks albeit with stresses.

I would only request that any system implementation by Chairman does not increase the stress further.

More substantively may I request Chairman to address the question my "fractification"? I have been told by Chairman many times to stand by for executive jobs, in case some persons do not play ball; Jobs come & go; "power-centres" in the Centres & HQ get rigid further with their own dynamics; ~~then~~ the classical ^{Theme} ~~question~~ of those who have done the job ^{for future tasks} should ~~has to~~ be considered ^{naturally} arises.

... The eternal wait continues. I held on personally for the ^{near-}Propileg 80's & for projectisation of PSLV & IRS. I feel I have done my basic ~~work~~ ^{job}. I hate to point out some solutions for myself: it is really ^a boss's job to find some good avenues for the subordinate. Skill, since I feel I am being almost pushed

close to end-de-sac due to peculiar organisational structures / ~~at~~ cultures. I suggest the following ^{tasks where there is a vacuum &} ~~areas~~ where I can fit in, (with some pros & cons):-

(i) To be in charge in SLAR, SAR development including S/C microwave sensors — in other words a concentrator group for microwave remote sensing.

For this Calla is an aspirant whom I will not like to displace as I did not in case of Rangan for IRS without adequate positions for ~~them~~ them. Secondly SAC is almost the wrong place to ~~do~~ ^{do} this Project since it is not managerially geared for it. So I would not think of this.

(ii) To be in charge of all Satellite Missions of ISRO, something like an integrator ~~at~~ structure suggested by Pyurk Rao in a recent letter to Chairman. Only problem I find is that ISTRAC more or less will come under it and I would not personally like Venkatachary

pushed down. There is a real vacuum in this area & my knowledge of launcher (system level), satellite, & tracking systems and utilisation ideally fits the bill.

If the job is called something like Mission Director, ISRO with one deputy for Ground System & another for mission planning I can fulfil the tasks. One could be Venkatachay & the other Iyengar. A team of about 100 to 150 persons (all inclusive) can meet all missions. The team will essentially be ISTRAC + MOPDG ISAC with marginal additions and some deletions.

Part of the team can function at SHAR or preferably Madras at IIT, Madras Campus and part at Bangalore, say, Janardanas Towers.

The unit can be independent entity with full ^{administrative} powers to function itself. However the reporting need not be ^{to} Chairman, ISRO since I firmly believe that two many reporting to Chairman, ISRO is not good to the system.

I am not ^{at all} averse to reporting ^{to} ~~through~~
Sh Pant or Poyur Rao who can ^{be} ~~not~~ as the
Chairman of a Council or Board. ~~But this~~
Centre Directorst. This is suggested not due to ego but because
Board should be an ~~overseeing~~ Board
& not ~~an~~ executive one except for Budget
it is to ~~do~~ the role of Mission is to satisfy SHAR, ISAC & SAC
while doing ~~the~~ technical job right!
Any move on this should

first be done only after seeing Venkatachary's
reaction & his future. If Venkatachary feels
delicate — he is sufficiently frustrated with
Manager, ISTRAC role where he has been
maligned more due to ^{ISRO's} organisational inadequacies
than due to his fault — ~~he could even~~
~~continue as is~~ there are two options:-

(i) Don't think of a unified role
of Mission operation, muddle
through 'as is' or ~~making~~ making him
Mission Director

(ii) Or change his role with that
Jayaraman at ISRO HQ.

Two other key persons I will need would
be M. G. Chandrasekhar & S. Chandrasekhar.

I leave it at that.

What will happen to ISRO HQ?

With all humility, ~~things~~ I should say, things will not be that easy.

In some sense I am not easily replaceable the way my job has to be handled & exacting demands of Chairman, ISRO. — under constant sniper-shots (Only person

I can recommend with full confidence is Dr. Rangan. But he has to do IRS.

The second best who can be given a trial from HQ would be P. Sudarsan.

He may spark off some fires but

on the whole he can stabilise — he may hate the job but on whole he will do justice. Can I handle both ISRO

HQ job & Mission Director job for

about 6 months before I phase out

from HQ. Yes; I feel confident I

can. I would ~~also~~ then recommend

formal naming of Asst. Sec. Seay (say ~~by~~

Sudarsan.)

With great reluctance I have blown my trumpet. Let me quiet now & request Chairman for reaction. ⊗ Large

⊗ The alternative, in my opinion, are "writing-in-the-wall" or ~~staying~~ getting-out-of-ISRO-with-a-blind-shut-approach or just-remain-in-fate!

IRS "Programme" Office
OR HQ IRS office

IRS
(S/C) Project Progress

Will be run by Proj. Director + Assoc. P.D.'s (Dy)

- Launch interface
- Development
- Testing
- Reliability
- Schedules
- Cost
- Inter-center issues

(Data Product equipment payload IRS station will be under Project)

Utilisation

JEP etc. (Kamat)
○

General ISTRAC Readiness

(Other than the Station directly under Project)
• ISTRAC Manager

□

Items marked so, are the possible 'Conflict' / dynamic areas requiring a watch to help the Project

○

Important User interface but fully SAC - inhouse

Satellite/P.L. fabⁿ facilities

under Centres
• Existing
• New

SAC
ISAC
VSSC

Test facilities

• Existing
• New

Conflicting requirements

with other elements:

- APPLE-II (?)
- RS Series
- PROTOINSAT
- Other R&D & Small project.

Conflicts in Budget, manpower, & Scheduling.