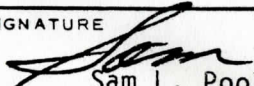


MEMORANDUM

Lyndon B. Johnson Space Center



REFER TO: SD2/83-16	DATE JAN 31 1983	INITIATOR SD2/JVanderploeg:jbw:1-27-83:4731	ENCL
TO: Distribution		CC	
FROM: SD/Chief, Medical Sciences Division		SIGNATURE  Sam L. Pool, M.D.	
SUBJ: DTO's/DSO's for STS-10			

The opportunity exists to fly medical DTO's/DSO's on STS-10. Discussions with the Command Surgeon of the Air Force Space Command indicate that the Air Force is developing DTO's for submission for STS-10. I propose that we meet to discuss possible DTO's for this mission. Once we have our proposals firmed up we can coordinate with the Air Force and submit a package of DTO's/DSO's through the various JSC boards for approval. Please plan to meet Friday, February 4, 1983, at 1:00 p.m. in Building 37 Conference Room 1 to discuss possible DTO's for STS-10. At this stage a one-paragraph summary is sufficient for discussion. For planning purposes this mission will have five crewmen (CDR, PLT, two MS's, and one Air Force PS).

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1. Continued operational evaluation of SAS and countermeasures:

a. Striking changes were seen in EOG examination during STS-5 as regards cervical motion and vestibular gain. While these are scheduled to be investigated on STS-6, 7, and 8 the number of subjects and opportunities for measurement will be limited

b. Demonstration of countermeasures for S.A.S. Although the devices cannot be specified with certainty at this time since they will depend upon results from STS-6, 7, 8, however, there will generally be physical apparatus' which alter pressures/forces on the body without hindering operations and may include skeletal loading devices, negative and positive pressure devices, as well as pharmacologicals, etc. Such devices will be ready for use on this mission.

c. Scientific evaluation of countermeasures demands objective measurement of effects. Some quantities which might be reasonably related to the effects of S.A.S. include: heart rate, blood pressure, electroencephalogram, superficial circulation including skin color, temperature, pulse and autonomic reactivity including GSR and BSR. Instrumentation is now under construction for STS-6- 7, 8 where it will be verified in this role. Any and all countermeasures used should be monitored by such means. This is obviously related to b. Well proven operational instrumentation including data gathering and analysis equipment will be available from STS-5 through 8.

2.a While the adaptation portion of S.A.S. has received great attention its necessary corollary de-adaptation to space or rather re-adaptation to space or rather re-adaptation has been strikingly noted by several individuals including the CDR of 10 but not studied at all. It is proposed that we measure the threshold acceleration sensitivities of the CDR and 1 or 2 others

as controls pre-inflight and post-inflight. Equipment from STS-5 through 8 will be available.

b. Evaluation of peripheral sensory function related to S.A.S. with evoked potential studies. Such studies, which will be demonstrated on STS-8, allow evaluation of sensitivity, transmission paths and some levels of processing of offerent neurological impulses. This could be a powerful tool in the evaluation of S.A.A. but there will be no opportunity for study prior to STS-8 which will largely be an application.