

To / BDM, C. Sanctuary, H. Russel , Ray Cherry, V. McCall

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From / W.T. B.P.  
Subj: 1 "Fatigue" failures of transducers

During the development cycle of the B.P. recorder the transducers were found to fail and recover after repeated usage as follows: Systolic pressures ~~are~~ <sup>gradually</sup> become erroneously low and this is followed by shrinking pulse ~~at~~ pressure i.e. erroneously low SBP + high DBP. Left alone the unused the transducer will recover its normal sensitivity until some future time. A series of production (?) changes appeared to eliminate these problems until recently. There were <sup>sporadic</sup> occasional untraceable losses of data which ~~has~~ were consistent  $\bar{c}$  the above. On Dec. — — + — a subject wore the unit ~~for~~ continuously. On the — some ~~to~~ <sup>after</sup> ~65 hours into ~~it~~ of use, transducer # failed as above. See att. 1. By changing only the transducer the run was completed.

On the 28 Jan I used transducer #020 during 2 flights in which all conditions are nominal except ambient pressure may go to 18,000 ft. equiv. altitude. This unit had performed normally on 3 previous flights. Just ~~a~~ approx. 50 cycles, as frequent as 1 one per minute had been made on the first flt. ~~at~~ <sup>as</sup> 15 on the second when the unit failed as above. See Att 2. After It was noted that allowing 5-7 mins. to elapse between cycles or 1 or 2 mins. would cause a partial 'recovery' i.e. ~~sys~~ SBP increased & DBP decreased toward actual. After landing & some 3-4 hours  $\bar{c}$  use the unit operated as shown in att. 3.



transducer

This was discussed w Ray C. and the transducer was given to H. Russel to automatically cycle. It appears that DMA now has no equipment for cyclic testing! This is a serious deficiency and can be easily remedied as below.

