RL-23 Combustor Test Facilityt

The RL-23t combustor test facility (Fig. 1) is located in thet Rocket Lab area oft the center.t Thist high temperature/ lowt pressuret facilityt ist currentlyt usedt in supportt oft the NASAt Hight Speedt Research(HSR)t Programt focusingt on supersonict testt conditions,t and thet NASAt Advanced Subsonict Technology(AST) Program focusing ont subsonic test conditions. Thettest rig is currently configured to test a fuel-rich, catalytic reaction experiment,t however, it ist soon to be convertedt overt tot a flametubet typet rig.t The test sectiont configurationt ist 100t in.t int lengtht andt thet interface ista 6 in.,t 900 LB inlett flange andt a 6 in.,t 150t LBt outlet flange.t Thet flametubet rigt willt havet a 3 in.t squaret or circulart cross-sectiont flowpatht whicht willt matcht the flametubet rigt intt test cell CE-5.t Thist newt testt rigt willt be used tot evaluatet and screent fuelt injectort concepts prior tot testing at thet highert pressuret facilities.t Thet advantagest oft usingt thist lower pressure facilityt are itst lower costt and its availability. This facility can,t therefore, be usedt to select the more promising concepts to be tested at thehigher demand facilities.

The facilityt ist capablet oft supplyingt heatedt airt tot the testt rig at 125t psigt (8.5t ATM), 1500t °F andt 2.0t pps;t and the facility usesta shell and tube heat exchanger totheat the air. The flametube testtrigtwill be operated at 90t psig.t The hott exhaustt airt withint thet combustiont zonet ist limitedt to 3000 °Ft and is quenchedt witht watert sprayst beforet venting to thet atmosphere.t Thet vitiatedt airt in thet heatt exchanger, 3.0t ppst at 125 psig,t ist heated throught the use of a NASA designed, jett fueled burner cant to 1650t °F.t Two fuel storage tanks,t one 600t gallont tankt and onet 1000 gallon tank,t are located at the facility andta maximum flowt of 5.5 GPM at 480t psigt cant be suppliedt tot thet test rig. Coolingt water, 118 GPMt at 115t psig,t ist available fort coolingt andtquenching purposes.