A NICKEL- HYDROGEN COMMON PRESSURE VESSEL SPACEFLIGHT EXPERIMENT

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INTRODUCTION

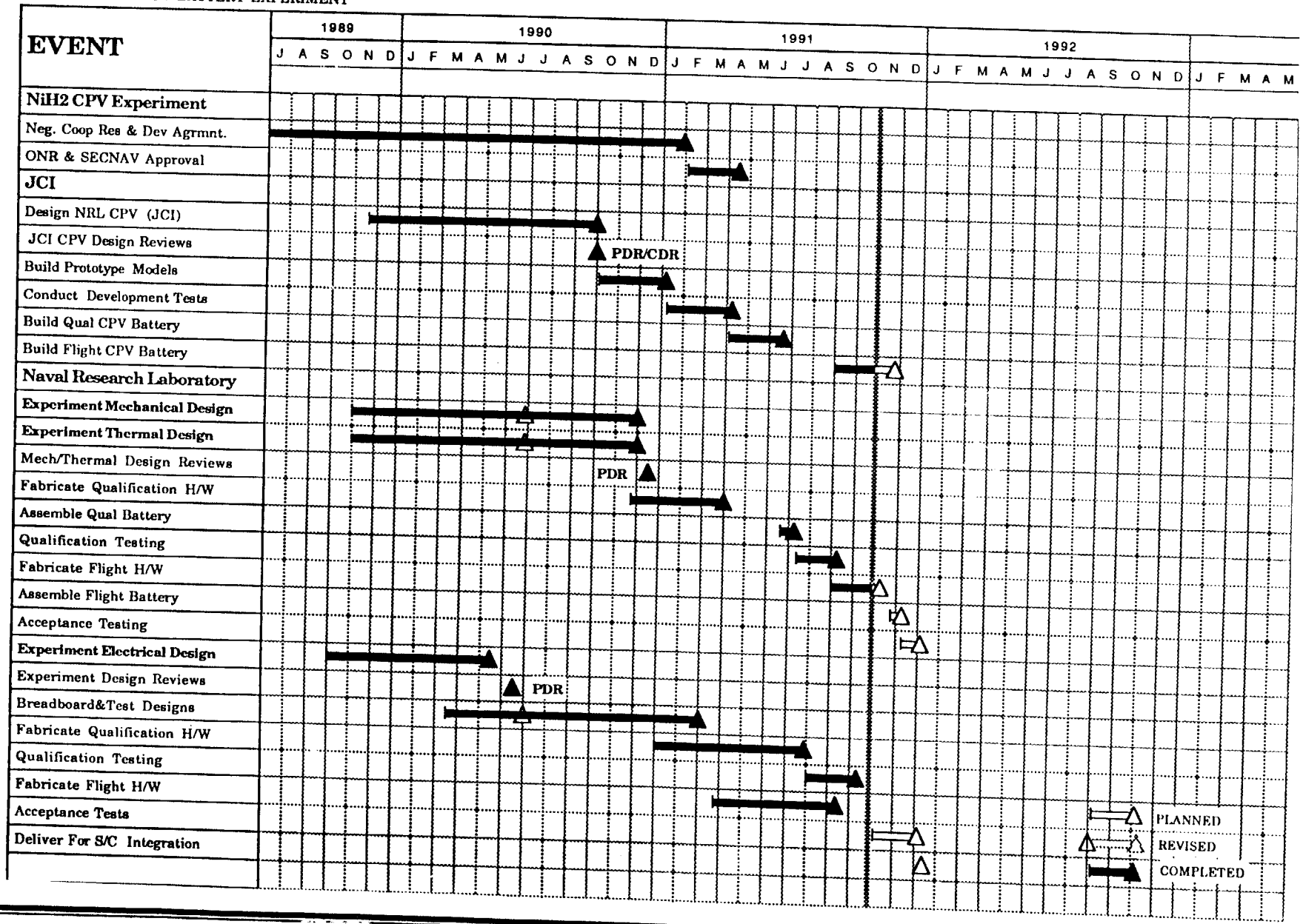
- DATA FROM NRL'S 1977 NTS-2 NiH2 BATTERY ENABLED RISK FREE INTRODUCTION TO COMMERCIAL AND DOD GEO MISSIONS
- GOOD WORKING RELATIONSHIP BETWEEN NRL AND COMSAT
- OCTOBER 1988 COMSAT/JOHNSON CONTROLS APPROACH NRL WITH COMMON PRESSURE VESSEL (CPV) BATTERY DESIGN
- JOHNSON CONTROLS (JCI) AND NRL AGREE TO A SPACEFLIGHT EXPERIMENT OF A JCI NiH2 CPV BATTERY

COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENT

- COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENT (CRDA) SIGNED BY NRL AND JCI
- NO FUNDS EXCHANGED BETWEEN PARTIES
- JCI TO PROVIDE TWO NIH2 CPV BATTERIES, ONE FOR QUALIFICATION TEST, ONE FOR FLIGHT
- NRL TO PROVIDE QUALIFICATION/ACCEPTANCE TESTS, SPACECRAFT INTEGRATION, AND FLIGHT DATA

SCHEDULE

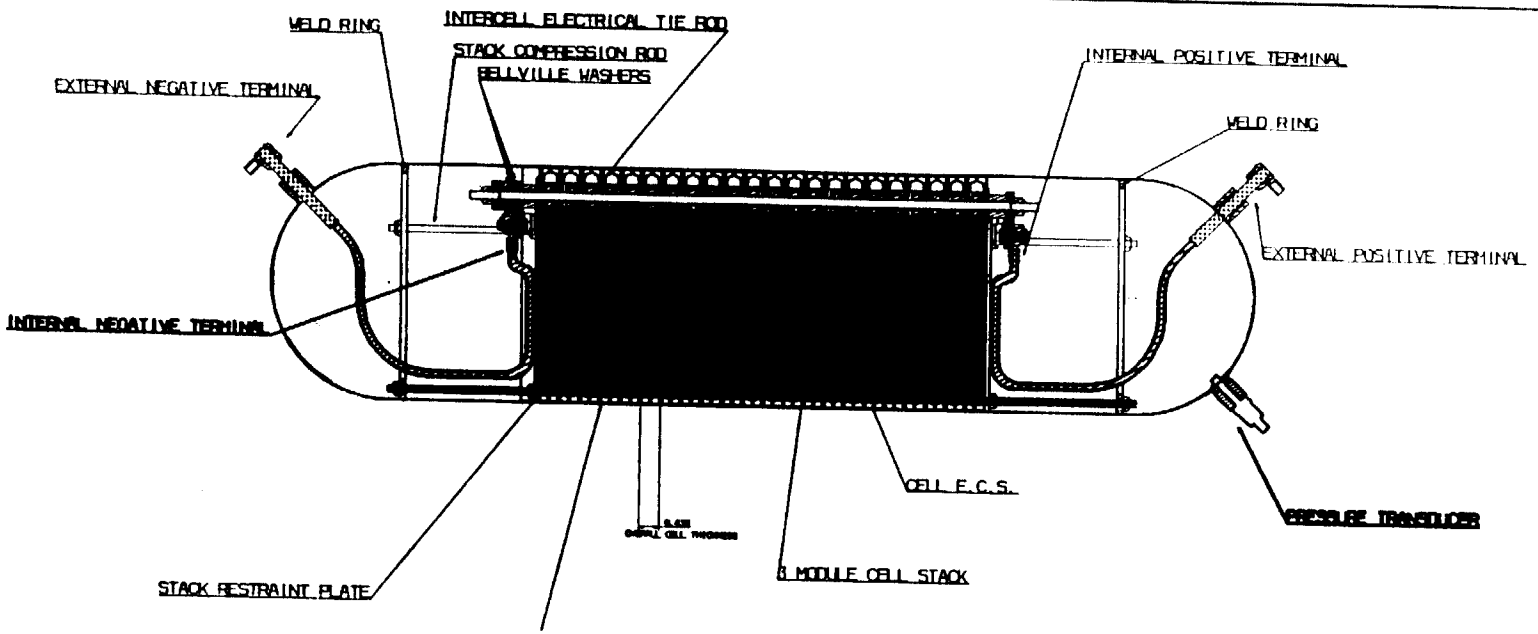
NRL/ JCI NIH2 CPV BATTERY EXPERIMENT



EXPERIMENT DETAILS

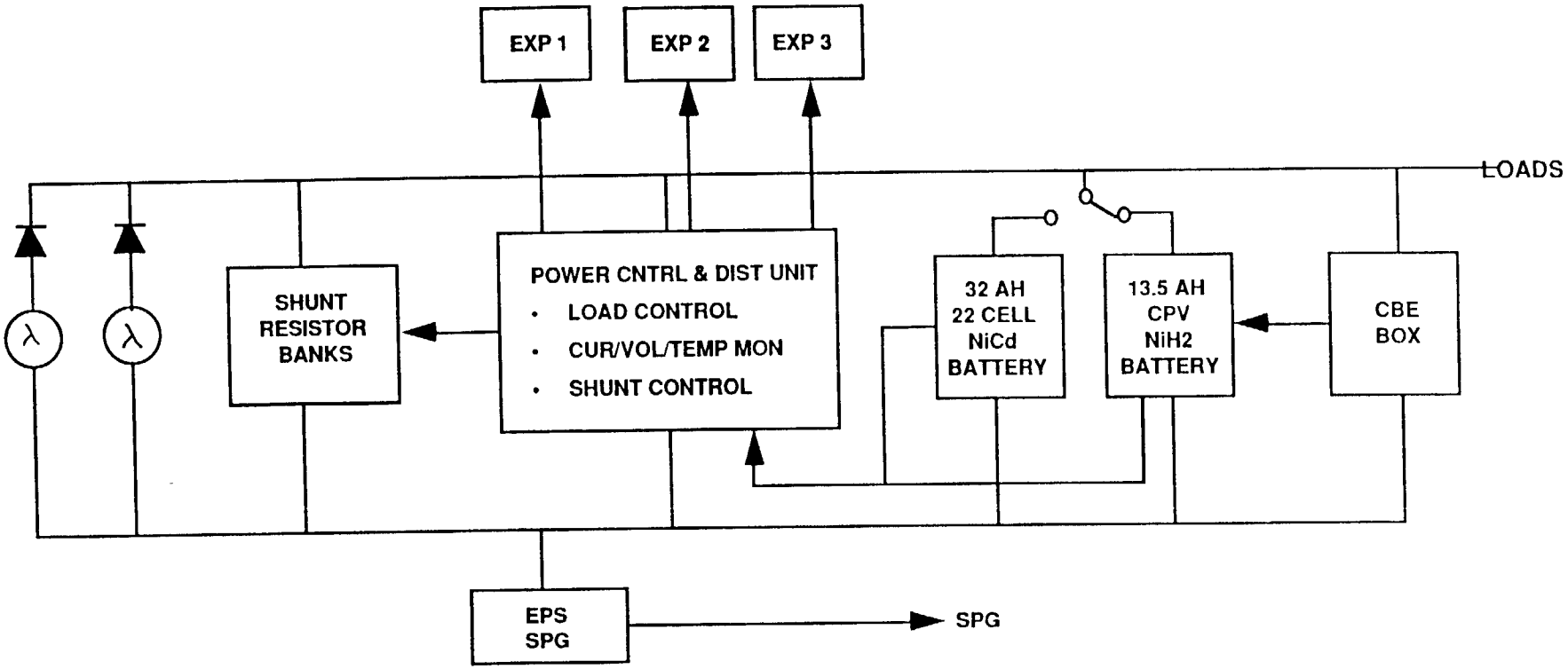
- LAUNCH CY 92
- 240 MINUTE ORBIT
- MAXIMUM ECLIPSE PERIOD 45 MINUTES
- BATTERY SIZED TO SUPPORT A 50% DEPTH OF DISCHARGE
- EXPERIMENT DURATION 3+ YEARS
- DATA WILL INCLUDE:
  - BATTERY VOLTAGE
  - CHARGE/DISCHARGE CURRENT
  - BATTERY TEMPERATURE
  - PRESSURE BY TWO METHODS
  - (PRESSURE TRANSDUCER & STRAIN GAUGE)

JOHNSON CONTROLS INC 5" DIA NIH2 CPV BATTERY FEATURES



- **NOMINAL CAPACITY:** 10.7 Ah
- **THEORETICAL CAPACITY:** 13. 4 Ah
- **NUMBER OF CELLS:** 22
- **WEIGHT:** 6.80 kg (15.0 lbs)
- **NO. MODULES/CELL** 3
- **PRESSURE VESSEL** INCONEL 718
  LENGTH - 20.7"
  DIAMETER - 5.0"

NiH2 CPV BATTERY WITH S/C ELECTRICAL POWER SUBSYSTEM



- NiH2 CPV BATTERY ON-LINE BATTERY
- NiCd BATTERY BACK-UP
- NiH2 CPV BATTERY USES EITHER A-H INTEGRATION OR CONSTANT CURRENT CHARGING
- CBE ELECTRONICS PROVIDES AUTOMATIC SWITCHOVER TO NiCd