GENERAL ATOMIC

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SELENIDE ISOTOPE POWER SYSTEM DESIGN REVIEW PRESENTATION

MASTER

NOVEMBER 10-11, 1977

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OBJECTIVES FY 77

FABRICATION DEVELOPMENT

- SELECTION OF COMPATIBLE MATERIALS FOR MESH-IN-CAP JOINT
- MESH-IN-CAP PROCESS OPTIMIZATION
- METALLURGICAL COLD SIDE JOINT DEVELOPMENT

VAPOR SUPPRESSION

- ASSESSMENT OF VAPOR SUPPRESSION SYSTEMS
- SELECTION OF PROMISING VAPOR SUPPRESSION TECHNIQUES FOR EXPERIMENTAL EVALUATION

EVALUATION

- THERMAL GRADIENT (TESTING)
- ISOTHERMAL WEIGHT LOSS RATE MEASUREMENTS

DEVELOPMENTAL APPROACH

- COMBINE MECHANICAL BAFFLING WITH A PROTECTIVE COATING FOR TPM-217 P MATERIAL
- DETERMINE AND MINIMIZE THERMAL AND PERFORMANCE PENALTIES THROUGH ELEMENT DESIGN MODIFICATION
- SELECT VAPOR SUPPRESSION COATINGS AND DEVELOP OPTIMUM METHODS FOR APPLYING THEM
- DEVELOP MATERIALS AND FABRICATION PROCESSES FOR END CAP ATTACHMENTS WHICH ARE COMPATIBLE WITH TPM-217 P MATERIAL AND PROPOSED VAPOR SUPPRESSION SYSTEMS
- EVALUATE DESIGN AND FABRICATION PHILOSOPHIES IN THERMAL GRADIENT LIFE TESTS

WEIGHT LOSS RATES FOR COATED AND
UNCOATED TPM-217 P MATERIAL AT 850°C

GLASSY BARRIER CONCEPT

TAC 2D ANALYSIS

P ELEMENT EFFICIENCY CHANGE AS A
FUNCTION OF SHIELD LENGTH AND THICKNESS

THERMAL GRADIENT LIFE TEST RESULTS, SEE BECK VERSUS TIME

THERMAL GRADIENT LIFE TEST RESULTS, RESISTIVITY VERSUS TIME