

PACKAGE ID - 001234MLTPL00 PRODMOD

KWIC TITLE - Production Planning Model

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LIMITATION CODE -COPY **AUDIENCE CODE** - LIM

COMPLETION DATE - 09/30/1997 **PUBLICATION DATE** - 09/01/1995

DESCRIPTION - PRODMOD is an integrated computational tool for performing dynamic simulation and optimization for the entire high level waste complex at the Savannah River Site (SRS) It is being used at SRS for planning purposes so that all waste can be processed efficiently. The computational tool 1) optimizes waste blending sequences, 2) minimizes waste volume production, 3) reduces waste processing time, 4) provides better process control and understanding, and 5) assists strategic planning, scheduling, and cost estimation. PRODMOD has been developed using Aspen Technology's software development package SPEEDUP. PRODMOD models all the key HLW processing operations at SRS: storage and evaporation: saltcake production and dissolution: filtration (dewatering): precipitation: sludge and precipitate washing: glass, grout, and organics production. Innovative approaches have been used in making PRODMOD a very fast computational tool. These innovative approaches are 1) constructing a dynamic problem as a steady state problem 2) mapping between event-space (batch processes) and time-space (dynamic processes) without sacrificing the details in the batch process. The dynamic nature of the problem is constructed in linear form where time dependence is implicit. The linear constructs and mapping algorithms have made it possible to devise a general purpose optimization scheme which couples the optimization driver with the PRODMOD simulator. The optimization scheme is capable of generating single or multiple optimal input conditions for different types of objective functions over single or multiple years of operations depending on the nature of the objective function and operating constraints.

PACKAGE CONTENTS - Media Directory; Software Abstract; WSRC-TR-95-0386 Rev.0; Media Includes Source Code, Object Library;

SOURCE CODE INCLUDED? - Yes

MEDIA QUANTITY - 1 CD-ROM

METHOD OF SOLUTION - Decomposes the equations into independently solvable equation blocks. The simultaneous linear equation blocks are solved using LU decomposition with some kind of pivoting. The nonlinear equations are solved using Newton's method with variation.

COMPUTER - MLT-PLTFM

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OPERATING SYSTEMS - Machine dependent

PROGRAMMING LANGUAGES - Fortran

SOURCE CODE AVAILABLE (Y/N) - Y

UNIQUE FEATURES - A complete package for performing dynamic simulation and optimization. PRODMOD is used for simulation purpose. PRODMOD uses only algebraic equations. PRODMOD uses mapping between the time space and event space to make computation efficient. The dynamic nature of the plant processes is captured using linear constructs. PRODMOD simulates both continuous and batch process. A very fast running simulation and optimization tool. A general purpose optimization scheme has been devised using the innovative linear construct and mapping features.

RELATED SOFTWARE - SPEEDUP license from Aspen Technology, Inc

HARDWARE REQS - Workstation

TIME REQUIREMENTS - 2 cpu minutes for 30 year of simulation for the entire HLW complex.

REFERENCES - M.V. Gregory and P.K. Paul, Functional Overview of the Production Planning Model (PRODMOD), WSRC-TR-95-0386 Rev 0, September 1996.

ABSTRACT STATUS - Released AS-IS August 19, 1998.

SUBJECT CLASS CODE - Z

KEYWORDS -

COMPUTER PROGRAM DOCUMENTATION
P CODES
RADIOACTIVE WASTES
RADIOACTIVE WASTE FACILITIES
RADIOACTIVE WASTE DISPOSAL

EDB SUBJECT CATEGORIES -

990200 052002 052000

SPONSOR - DOE/DP

PACKAGE TYPE - AS - IS