A G E N D A

Technical Group Meeting
1700 5/1/79

1. Radioactive Releases

   a) 748, 219

   b) Vacuum draw on Auxiliary Building ventheader and drain system

2. Plant Status - RCS Profile

3. Analytical:

   a) Feed flow necessary to maintain RCS temperatures while flashing across the bypass

   b) Minimum secondary water flow necessary to maintain natural circulation while in solid secondary circulation

4. Short Term (2 - 4 months) Core Cooling Plan

5. Construction Status:

   a) EPICOR (CAP-GUN II)

   b) Tank Farm in Unit 2 Spent Fuel Pool

   c) Reactor Coolant Pressure/Volume Control

   d) Alternate System for solid circulation of OTSG

   e) Auxiliary Building roof ventilation system

   f) DHR upgrade

   g) Alternate Decay Heat Removal System

6. RCS Sample #6 at 0500 5/2/79

ACTION ITEMS

Management/Schedule Meeting

0900 5/1/79

		Action
1.	Take RCS Sample #6 0500 5/2/79.	Herbein
2.	Evaluation and recommendation for short term (2 - 4 months) core cooling operation based on Dick Wilson's presentation at 0900 5/1/79.	Levy/ Wilson/ Kulynych
3.	Recommendation for use of treated or untreated charcoal in filters for trains #3 and #4 of ventilation system on roof of Auxiliary Building.	Rusche
4.	Hold all further activity on "A" OTSG long term cooling modification.	All
5.	Close RCP 1A seal injection flow control needle valve.	Herbein
6.	Recommendation for operation of charging into the RCS.	Herbein

Inter-Office Memorandum

GPU Service

Date May 1, 1979

Subject LONG TERM COOLING SYSTEM FOR OSTG "A"

To COBEAN
WILSON
HIRST
RUSCHE
HERBEIN

Location Three Mile Island

Confirming the decision made during this morning's meeting of the Technical Working Group, all efforts on the Long Term Cooling System modification for the "A" Steam Generator are to be put on hold. This action is in response to Recommendation 1 of the attached report from the Industry Advisory Group "Evaluation of Need for Long Term Cooling System for OSTG "B"."

R. C. Arnold
General Operations Manager
GPU

RCA:clb
Attachment

cc: H. M. Dieckamp
S. Levy
[redacted]

2006 193

5/1/79
S. Levy

EVALUATION OF NEED FOR LONG TERM COOLING SYSTEM FOR OSTG B

A preliminary assessment was made of the need to continue with construction and operation of the long term cooling system for the B steam generator. The findings are as follows:

1. The long term cooling system for steam generator B provides another option for cooling the reactor core as long as forced or natural circulation can or needs to be maintained in the primary system. It competes in this purpose against many other cooling methods available or being installed such as:

   Steaming in steam generator A
   Steaming in B steam generator
   Solid water circulation in steam generator A with present balance of plant
   Solid water circulation in steam generator B with present balance of plant
   Long term cooling system for steam generator A
   High pressure coolant injection system
   Decay heat removal system
   Pressure control volume system used as feed-bleed system
   Boiling in reactor core with vent to containment
   Alternate decay heat removal system
   Internal reactor circulation with heat losses to containment and through letdown (about 2 months from now)

2. The construction, design of the long term cooling system for steam generator B is nearing completion. Over 80% of the costs have been incurred and its abandonment will save little money versus completion.

3. The primary adavantage of the long term cooling system for steam generator B is that, if used, it will contain the radioactivity present on the secondary side of the steam generator. It will also provide containment for any future leakage in that generator and its possible growth with time. If the primary system was operated at 600 psi, it will eliminate any outleakage from the primary system.

4. Another advantage of the long term cooling system is its compactness, potentially increased reliability due to its reduced number of components. It is also capable of continued operation with loss of offsite power.

5. The risks associated with operation of the long term cooling system for steam generator B are primarily filling the system with water (i.e. avoiding water hammer problem) and potential startup problems (i.e. operator error due to lack of familiarity and need for continued manual control).

6. The long term cooling system for steam generator B competes against the first five listed alternates. It is of use only if steam generator A is not available and if the leak in steam generator B becomes of concern. This probability for utilization is very small, especially when one takes into account that in a few months, no external cooling mode may be necessary to remove the heat from the reactor core.

7. The preferred long term cooling mode of the reactor core is one in which primary coolant activity is kept in the containment and leakage from the primary system has been brought to practically zero (i.e. depressurized primary system). The long term cooling system for steam generator B could play a valuable role in such a preferred long term reactor cooling mode.

Recommendations

1. Completion of long term cooling system for steam generator B is recommended because it provides a backup to steam generator A and protection against increased leakage in steam generator B. If the decision is made to complete this system, it is recommended that the long term cooling system for steam generator A be abandoned as it provides a backup to a backup with an already very low probability of use..

2. If the long term cooling system for steam generator B is put into use, care should be exercised in filling it with correct water temperature and providing for any pressurizer level change as it comes into operation. Natural circulation in the B loop will be even more susceptible to cold water makeup introduction in the B loop. Adjustment of the makeup temperature to match the colder water temperature in the B loop may, however, be possible to minimize this effect.

3. A long term cooling mode of the reactor with negligible primary system leakage or any coolant being taken in and out of the primary system should be developed. A role for the long term cooling system for steam generator B should be found for such a long term cooling mode. Such a long term cooling plan might help trim the very large number of cooling systems available or being developed.

May 1, 1979
1330

CORE COOLING RECOMMENDATION

Short Term (2 - 4 Months)

Core Cooling - Natural Circulation

Primary System Temp. - Floating - set by decay heat level and secondary conditions

Primary Pressure - 500 ± 50 psi initially; later reduced as appropriate

Pressurizer Level ≥ 250 inches - determined by DR + periodically going solid to benchmark

Optional - solid operation

procedure being developed for going solid.

Steam Generators -

A - Steaming, Level at 400" - 430"

Initially VWO thru bypass to condenser; throttle occasionally (once per week) to hold T_{steam} approximately constant

B - Isolated, Level at approximately 98%, ready for use

Condenser Vacuum - Maintained as practical

RC Pump Seal Flow - 2 gpm each

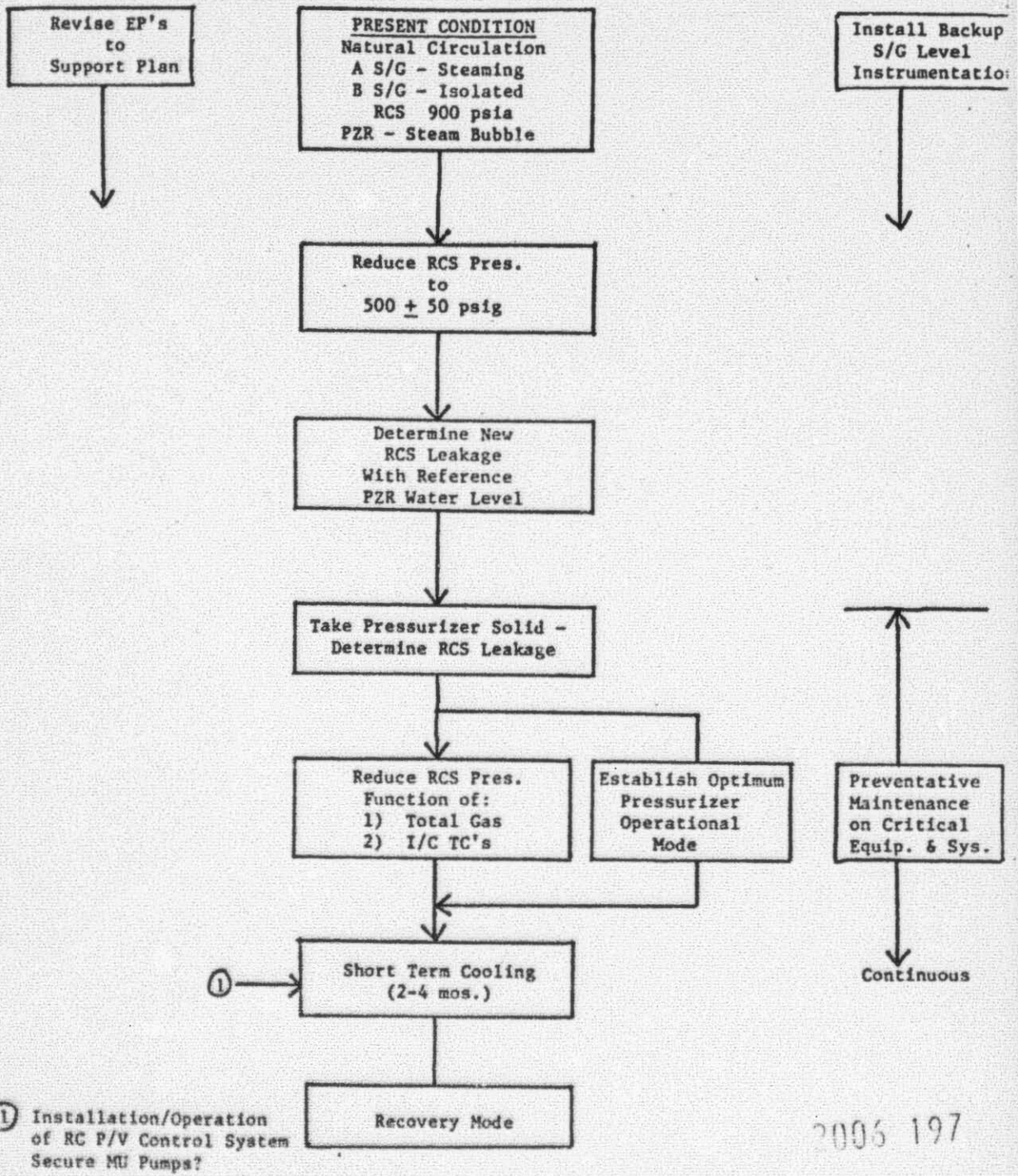
RC Pump Breakers - Open

Intermediate Closed Cooling System - Secured

MU Tank Temperature - As high as possible below 150°F

MU Water - Degassed

CORE COOLING PLAN
(Short Term - 2-4 Months)



(1) Installation/Operation of RC P/V Control System Secure MU Pumps?

CRITICAL EQUIPMENT
SHORT TERM - (2 - 4 Months)

Components - Letdown & Makeup Valves

Makeup Pumps

Pressurizer Heaters (Solid Optional)

Condensate Pumps

Startup FW Control Valves

Circ. Water Pumps & Support Systems

Condenser Vacuum Pumps

Aux. Steam Boiler

Emergency Power for Pumps, Valves, Heaters

Turbine Bypass Valve

Turbine on Turning Gear (Lube oil and cooling)

Primary Coolant Sampling Equipment

Instrumentation - Primary HL & CL RTDs

Core T/Cs

Core Flux Monitor

Steam RDTs

Primary Pressure

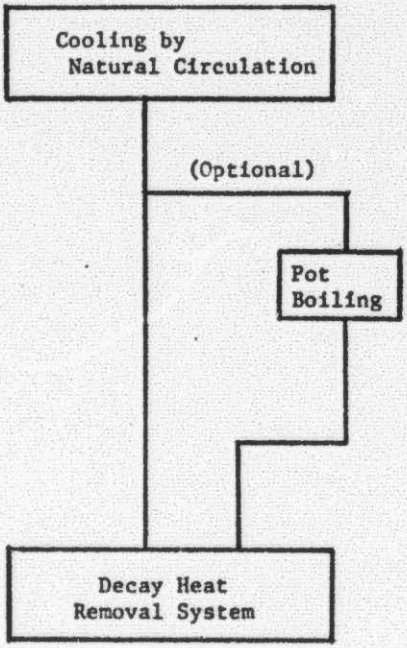
Pressurizer RTD

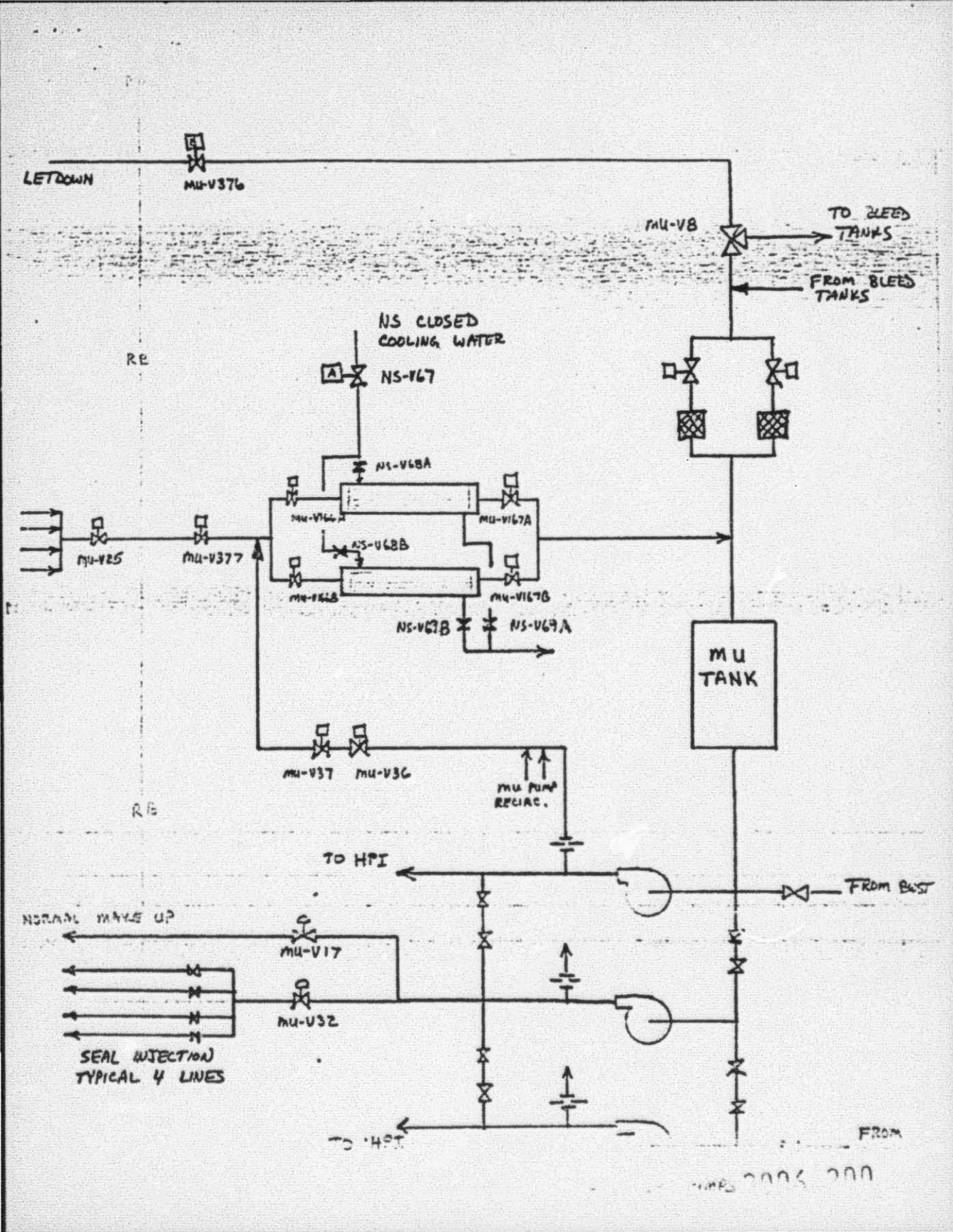
MU Tank Level

MU Tank Temp.

S/G Level

RECOVERY MODE




LETDOWN
MU-V376
MU-V8
TO BLEED TANKS
FROM BLEED TANKS
NS CLOSED COOLING WATER
NS-V67
RB
NS-V68A
MU-V66A
MU-V67A
NS-V68B
MU-V66B
MU-V67B
MU-V65
MU-V377
NS-V67B
NS-V69A
MU TANK
MU-V37
MU-V36
MU PUMP RECIRC.
RB
TO HPI
FROM BWST
NORMAL MAKE UP
MU-V17
MU-V32
SEAL INJECTION TYPICAL 4 LINES
TO HPI
FROM