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DOMER,J.A. Tennessee Valley Authority
RECIP.NAME RECIPIENT AFFILIATION
DENTON,H.R. Office of Nuclear Reactor Regulation, Director

SUBJECT: Requests exemption from test interval requirements of 10CFR50,App J due to current refueling outage projected to last until Summer 1985.List of applicable components & justification encl.

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TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

December 21, 1984

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Denton:

In the Matter of the) Docket No. 50-259
Tennessee Valley Authority)

TVA is hereby requesting an exemption from the test interval requirements of 10 CFR 50 Appendix J for the Browns Ferry Nuclear Plant unit 1. Browns Ferry unit 2 is currently in a refueling outage which is projected to last until summer 1985. To avoid or minimize overlap of outages, we plan to operate unit 1 in a lengthy period of coastdown. Approval of the requested exemption is needed to support those plans.

The list of components for which the extension is requested is provided in enclosure 1. Included are notes explaining why the components cannot be tested or providing additional information. As explained in enclosure 1, we are planning to test those components that can be tested while operating.

During the last outage on Browns Ferry unit 1, inspections of stainless steel piping revealed the presence of intergranular stress corrosion cracking. As a result TVA applied weld overlays to the cracked welds. Justification for extended operation with the overlaid welds is provided in enclosure 2.

It is projected that unit 1 will reach depletion of reactivity (start of power coastdown) by mid-February 1985. There is a degree of inherent protection in power coastdown. Specifically, operation in power coastdown results in reductions in maximum power capability. Ensuing margins to safety limits increase dramatically as maximum capability decreases. Furthermore, coastdown operations at Browns Ferry have demonstrated an exceptionally stable and safe mode of operation. Scram frequency during coastdown is about half that observed during normal full-power operation. Additional discussion is provided in enclosure 3.

It is projected that unit 1 will shutdown and start its refueling outage in early June 1985. However, to allow for schedular flexibility and uncertainty the exemption is requested to allow operation until October 1, 1985.

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Mr. Harold R. Denton December 21, 1984

Similar requests for exemption from 10 CFR 50 Appendix J requirements for Browns Ferry have been approved in the past. A previous exemption for unit 1 was forwarded by letter from D. B. Vassallo to H. G. Parris dated April 8, 1983, and previous exemption for unit 2 was forwarded by letter from D. B. Vassallo to H. G. Parris dated August 13, 1984.

As reflected by the dates provided in the enclosure 1 list of components, the initial testing of components comes due about mid-April 1985. Approval of the enclosed Appendix J exemption is therefore needed by April 3, 1985.

If you have any questions, please get in touch with us through the Browns Ferry Project Manager.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

James A. Domer

James A. Domer
Nuclear Engineer

Subscribed and sworn to before
me this 21st day of December 1984.

Paulette W. White
Notary Public
My Commission Expires 8-24-88

Enclosures
cc (Enclosures):

U.S. Nuclear Regulatory Commission
Region II
ATTN: James P. O'Reilly, Regional Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Mr. R. J. Clark
Browns Ferry Project Manager
U.S. Nuclear Regulatory Commission
7920 Norfolk Avenue
Bethesda, Maryland 20814

ENCLOSURE 1
10 CFR 50 APPENDIX J
EXEMPTION REQUEST
BROWNS FERRY NUCLEAR PLANT UNIT 1

Components Requiring Local Leak Rate Testing (LLRT)

Because of anticipated delays in the startup of Browns Ferry unit 2, we are scoping the requirements to operate Browns Ferry unit 1 beyond the scheduled shutdown date presently set for April 1985 to a projected unit 1, cycle 6 outage start date of early June 1985. This schedule will surpass the test interval, as stated in Appendix J to 10 CFR 50, of a number of primary containment system components. We are therefore requesting an exemption from the test interval requirements of 10 CFR 50, Appendix J for Browns Ferry unit 1. The request is for exemption to October 1, 1985.

Listed below are the components for which an extension to the test interval will be required. Included in this attachment is the surveillance interval end date for each component with explanatory notes. These notes indicate which components were not exposed to temperature, pressure, and other conditions which would potentially degrade the leak rate performance of the component, subsequent to testing during the cycle 5 refueling outage. This outage ended January 2, 1984.

The following list contains components with a note 3. This note specifies that those components can be tested while at power. TVA will test those components as required by Appendix J. No exemption is requested for those components.

IB (Inboard)
OB (Outboard)

Component	Number	Description	Expiration Date	Note(s)
Bellows	X-7A IB	Primary Steamline	7-13-85	1,4
Bellows	X-7A OB	Primary Steamline	7-13-85	1,4
Bellows	X-7B IB	Primary Steamline	7-13-85	1,4
Bellows	X-7B OB	Primary Steamline	7-13-85	1,4
Bellows	X-7C IB	Primary Steamline	6-16-85	1,4
Bellows	X-7C OB	Primary Steamline	6-16-85	1,4
Bellows	X-7D IB	Primary Steamline	6-16-85	1,4
Bellows	X-7D OB	Primary Steamline	6-16-85	1,4
Bellows	X-8 IB	Primary Steamline Drain	7-13-85	1,4
Bellows	X-8 OB	Primary Steamline Drain	7-13-85	1,4
Bellows	X-9A IB	Feedwater Line	7-14-85	1 4
Bellows	X-9A OB	Feedwater Line	7-14-85	1,4
Bellows	X-9B IB	Feedwater Line	7-13-85	1,4
Bellows	X-9B OB	Feedwater Line	7-13-85	1,4
Bellows	X-10 IB	Steamline to RCIC Turbine	7-14-85	1,4
Bellows	X-10 OB	Steamline to RCIC Turbine	7-14-85	1,4
Bellows	X-11 IB	Steamline to HPCI Turbine	7-14-85	1,4
Bellows	X-11 OB	Steamline to HPCI Turbine	7-14-85	1,4
Bellows	X-12 IB	RHR Shutdown Supply Line	6-15-85	3
Bellows	X-12 OB	RHR Shutdown Supply Line	6-15-85	3
Bellows	X-13A IB	RHR Return Line	6-16-85	3
Bellows	X-13A OB	RHR Return Line	6-16-85	3
Bellows	X-13B IB	RHR Return Line	6-15-85	3
Bellows	X-13B OB	RHR Return Line	6-15-85	3
Bellows	X-14 IB	Reactor Water Cleanup Line	6-30-85	4,5
Bellows	X-14 OB	Reactor Water Cleanup Line	6-30-85	4,5
Bellows	X-16A IB	Core Spray Line	6-28-85	1,3
Bellows	X-16A OB	Core Spray Line	6-28-85	1,3
Bellows	X-16B IB	Core Spray Line	6-28-85	1,3
Bellows	X-16B OB	Core Spray Line	6-28-85	1,3
Bellows	X-17 IB	RHR Head Spray Line	6-30-85	1,3
Bellows	X-17 OB	RHR Head Spray Line	6-30-85	1,3

Component	No.	Description	Expiration Date	Note(s)
Elec. Penetration	X-100A	Indication & Control	4-24-85	1,3
Elec Penetration	X-100B	Neutron Monitoring	4-24-85	1,3
Elec Penetration	X-100C	Neutron Monitoring	4-27-85	1,3
Elec Penetration	X-100D	Neutron Monitoring	4-26-85	1,3
Elec Penetration	X-100E	Neutron Monitoring	4-26-85	1,3
Elec Penetration	X-100F	Neutron Monitoring	4-28-85	1,3
Elec Penetration	X-100G	CRD Rod Position Indic	4-25-85	1,3
Elec Penetration	X-101A	Recir Pump Power	8-5-85	1.6
Elec Penetration	X-101B	Recir Pump Power	8-5-85	1,6
Elec Penetration	X-101C	Recir Pump Power	4-28-85	1.6
Elec Penetration	X-101D	Recir Pump Power	4-28-85	1,6
Elec Penetration	X-102	Thermocouples	4-25-85	1,3
Elec Penetration	X-103	CRD Rod Position Indi[illegible]	4-26-[illegible]	1,3
Elec Penetration	X-104A	Indication & Control	4-24-85	1,3
Elec Penetration	X-104B	CRD Rod Position Indic	4-24-85	1,3
Elec Penetration	X-104C	Neutron Monitoring	4-24-85	1,3
Elec Penetration	X-104D	Thermocouples	4-27-85	1,3
Elec Penetration	X-104E	Indication & Control	4-27-85	1,3
Elec Penetration	X-104F	Indication & Control	4-27-85	1,3
Elec Penetration	X-105B	Recir Pump Power	8-5-85	1,6
Elec Penetration	X-105C	Recir Pump Power	4-28-85	1,6
Elec Penetration	X-105D	Spare	4-27-85	1,3
Elec Penetration	X-106A	CRD Rod Position Indic	4-24-85	1,3
Elec Penetration	X-106B	Neutron Monitoring	4-25-85	1,3
Elec Penetration	X-107A	Neutron Monitoring	4-24-85	1,3
Elec Penetration	X-107B	Spare	4-24-85	1,3
Elec Penetration	X-108A	Power	8-5-85	1,3
Elec Penetration	X-108B	CRD Rod Position Indic	4-25-85	1,3
Elec Penetration	X-109	CRD Rod Position Indic	4-25-85	1,3
Elec Penetration	X-110A	Power	8-5-85	1,3
Elec Penetration	X-110B	CRD Rod Position Indic	4-25-85	1,3
Elec Penetration	X-219	Vacuum Breaker Inst	4-27-85	1,3
Double O-Ring Seal	X-4	DW Head Access Hatch	8-31-85	1,7
Double O-Ring Seal	X-35B	T.I.P. Drive	8-3-85	1,3
Double O-Ring Seal	X-35C	T.I.P. Drive	8-3-85	1,3
Double O-Ring Seal	X-35D	T.I.P. Drive	8-3-85	1,3
Double O-Ring Seal	X-35E	T.I.P. Drive	8-3-85	1,3
Double O-Ring Seal	X-35F	T.I.P. Drive	8-3-85	1,3
Double O-Ring Seal	X-35E	T.I.P. Drive	8-3-85	1,3
Double O-Ring Seal	X-47	Power Operation Test	8-5-85	1,5

Component	No.	Description	Expiration Date	Note(s)
Valve	1-14	Main Stream	8-8-85	1,7
Valve	1-15	Main Steam	8-27-85	1,7
Valve	1-26	Main Steam	8-16-85	1,7
Valve	1-27	Main Steam	6-1-85	1.7
Valve	1-37	Main Steam	8-10-85	1,7
Valve	1-38	Main Steam	9-27-85	1,7
Valve	1-51	Main Steam	8-16-85	1.7
Valve	1-52	Main Steam	8-27-85	1.7
Valve	1-55	Main Steam Drain	4-19-85	1,7
Valve	1-56	Main Steam Drain	4-19-85	1.7
Valve	2-1192	Service Water	4-21-85	7
Valve	2-1383	Service Water	4-21-85	7
Valve	3-554	Feedwater	5-7-85	1,7
Valve	3-558	Feedwater	5-7-85	1,7
Valve	3-568	Feedwater	7-22-85	1,7
Valve	3-572	Feedwater	7-21-85	1,7
Valve	12-738	Aux Boiler to RCIC	4-20-85	1,3
Valve	12-741	Aux Boiler to RCIC	4-20-85	1,3
Valve	32-62	Drywell Comp Section	4-21-85	1
Valve	32-63	Drywell Comp Section	4-21-85	1
Valve	32-336	Drywell Comp Return	4-22-85	1,7
Valve	32-2163	Drywell Comp Return	4-22-85	1,7
Valve	33-785	Service Air	4-22-85	7
Valve	33-1070	Service Air	4-22-85	7
Valve	43-13	Rx Water Sample Line	5-5-85	1,7
Valve	43-14	Rx Water Sample Line	5-5-85	1,7
Valve	43-28A	RHR Supp Chamber Sample Line	9-11-85	3
Valve	43-28B	RHR Supp Chamber Sample Line	9-11-85	3
Valve	43-29A	RHR Supp Chamber Sample Line	9-12-85	3
Valve	43-29B	RHR Supp Chamber Sample Line	9-12-85	3
Valve	63-525	SLC Discharge	5-5-85	1,7
Valve	63-526	SLC Discharge	5-5-85	1,7
Valve	68-508	CRD to RC Pump Seals	9-25-85	7
Valve	68-555	CRD to RC Pump Seals	9-25-85	7
Valve	69-1	RWCU Supply	9-10-85	7
Valve	69-2	RWCU Supply	9-10-85	7
Valve	69-579	RWCU Return	7-23-85	7
Valve	71-2	RCIC Steam Supply	4-19-85	1,7
Valve	71-3	RCIC Steam Supply	4-19-85	1,7
Valve	71-14	RCIC Turbine Exhaust	4-19-85	1,8
Valve	71-32	RCIC Vacuum Pump Discharge	4-19-85	1,8
Valve	71-580	RCIC Turbine Exhaust	4-19-85	1,8
Valve	71-592	RCIC Vacuum Pump Discharge	4-19-85	1,8
Valve	73-2	HPCI Steam Supply	4-22-85	1,7
Valve	73-3	HPCI Steam Supply	4-22-85	1,7
Valve	73-23	HPCI Turbine Exhaust	4-24-85	1,8
Valve	73-24	HPCI Turbine Exhaust Drain	4-21-85	1,8
Valve	73-44	HPCI Pump Discharge	5-7-85	1,7
Valve	73-45	HPCI Pump Discharge	5-7-85	1,7
Valve	73-81	HPCI Steam Supply Bypass	4-22-85	1,7
Valve	73-603	HPCI Turbine Exhaust	4-24-85	1,8

Component	No.	Description	Date	Note(s)
Valve	73-609	HPCI Turbine Exhaust Drain	4-21-85	1,8
Valve	74-47	RHR Shutdown Suction	5-8-85	7
Valve	74-53	RHR LPCI Discharge	5-6-85	7,2
Valve	74-54	RHR LPCI Discharge	5-6-85	7,2
Valve	74-57	RHR SC Spray	8-16-85	1,8
Valve	74-58	RHR SC Spray	8-16-85	1,8
Valve	74-60	RHR DW Spray	5-5-85	1,8
Valve	74-61	RHR DW Spray	5-5-85	1,8
Valve	74-67	RHR LPCI Discharge	5-7-85	7,2
Valve	74-68	RHR LPCI Discharge	5-7-85	7,2
Valve	74-71	RHR SC Spray	5-7-85	1,8
Valve	74-72	RHR SC Spray	5-7-85	1,8
Valve	74-74	RHR DW Spray	5-8-85	1,8
Valve	74-75	RHR DW Spray	5-8-85	1,8
Valve	74-77	RHR Head Spray	5-8-85	1,7,[illegible]
Valve	74-78	RHR Head Spray	5-8-85	1,7,2
Valve	74-661	RHR Shutdown Suction	5-8-85	7
Valve	74-662	RHR Shutdown Suction	5-8-85	7
Valve	74-722	RHR SC Drain	9-14-85	
Valve	75-57	CS to Aux Boiler	5-3-85	1,8
Valve	75-58	CS to Aux Boiler	5-3-85	1,8
Valve	76-49	Containment Atmospheric Mon	4-23-85	1,7
Valve	76-50	Containment Atmospheric Mon	4-23-85	1,7
Valve	76-51	Containment Atmospheric Mon	4-23-85	1,7
Valve	76-52	Containment Atmospheric Mon	4-23-85	1,7
Valve	76-53	Containment Atmospheric Mon	9-29-85	1,7
Valve	76-54	Containment Atmospheric Mon	9-29-85	1,7
Valve	76-55	Containment Atmospheric Mon	9-29-85	1,7
Valve	76-56	Containment Atmospheric Mon	9-29-85	1,7
Valve	76-59	Containment Atmospheric Mon	4-23-85	1,7
Valve	76-60	Containment Atmospheric Mon	4-23-85	1,7
Valve	76-61	Containment Atmospheric Mon	4-23-85	1,7
Valve	76-62	containment Atmospheric Mon	4-23-85	1,7
Valve	76-63	Containment Atmospheric Mon	9-29-85	1,7
Valve	76-64	Containment Atmospheric Mon	9-29-85	1,7
Valve	76-65	Containment Atmospheric Mon	9-29-85	1,7
Valve	76-66	Containment Atmospheric Mon	9-29-85	1,7
Valve	77-2A	DW Floor Drain Sump	4-24-85	7
Valve	77-2B	DW Floor Drain Sump	4-24-85	7
Valve	77-15A	DW Equipment Drain Sump	4-24-85	7
Valve	77-15B	DW Equipment Drain Sump	4-24-85	7
Valve	85-576	CRD Hydraulic Return	7-23-85	7
Valve	90-254A	Radiation Monitor Suction	4-17-85	1,3
Valve	90-254B	Radiation Monitor Suction	4-17-85	1,3
Valve	90-255	Radiation Monitor Suction	4-17-85	1,3
Valve	90-257A	Radiation Monitor Discharge	4-17-85	1,3
Valve	90-257B	Radiation Monitor Discharge	4-17-85	1,3

Note 1: Component was not exposed to normal operating conditions of temperature, pressure, or other operating conditions subsequent to testing during the cycle 5 outage which would tend to degrade leak rate performance.

Note 2: Valve was used to support shutdown operations and is normally open in a post LOCA condition.

Note 3: Component is located in relatively moderate temperature and radiation area. Can be tested at power.

Note 4: Component cannot be tested during power operations due to heat stress. Ambient temperature is 100-160°F.

Note 5: Component cannot be tested during operation due to high radiation levels that exist during power operation. General area is greater than 200 mr/hr.

Note 6: Electrical penetration is on the supply to a recirculation pump. Power must be removed by opening the associated MG breaker. The unit should not be operated with only one recirculation loop, therefore the penetration cannot be tested at power.

Note 7: Component cannot be tested because:

(1) The unit must be shut down and the containment deinerted to facilitate access to the component, or

(2) The unit must be shut down so that affected systems can be properly vented for testing.

Note 8: Valve cannot be tested at power because it would require entering an LCO condition of technical specifications in order to perform the LLRT. In addition, SIs must be performed on related safety systems in order to prove their operability. Performance of these SIs to accommodate LLRT represents an unnecessary challenge to plant safety systems.

ENCLOSURE 2

Extension of Approval for Operation with Weld Overlays to October 1, 1985

The SER as related to intergranular stress corrosion cracking (IGSCC) in Browns Ferry unit 1 documented NRC concurrence that unit 1 could be safely returned to power at the beginning of fuel cycle 6 and could be safely operated in its present configuration for at least one fuel cycle. Since TVA's plans at that time were for an 18-month fuel cycle, the SER was prepared using 18 months as a reference interval. It is advantageous to TVA to extend the specified 18-month fuel cycle to 21 months. As such, we are providing our evaluations for a 21-month fuel cycle. Our evaluation considers the 9 unrepaired cracked welds, the 3 replaced defective welds, the 42 overlaid welds, and the 25 uninspectable welds. Based on our evaluations, our conclusion is that unit 1 can be operated safely in its present configuration for at least one 21-month fuel cycle.

Our evaluations of the 9 unrepaired cracked welds show that final crack sizes at the end of a 21-month fuel cycle are well within the limits of IWB-3640 even if the initial crack sizes are doubled. Therefore, we conclude that the Code design safety margins will be maintained for each of these welds for at least a 21-month fuel cycle.

Defective welds (1 core spray, weld DCS-1-2; and 2 RWCU welds, DSRWC-1-2 and DSRWC-1-3) were replaced with 304 NG stainless steel using heat-sink welding. Stainless steel material (304 NG) is considered resistant to IGSCC. Heat-sink welding produces favorable compressive residual stresses at the inner surface further inhibiting IGSCC initiation and growth; therefore, we conclude that the 3 replaced defective welds are acceptable for at least a 21-month fuel cycle.

The analyses provided by NUTECH Engineers and Structural Integrity Associates (SIA) demonstrate that each of the overlays will inhibit further crack growth even if the crack sizes are doubled with the exception of overlaid weld GR-1-41. These postulated initial crack sizes (twice the initial sizes) are within the limits of IWB-3640. The NUTECH analyses demonstrate that the crack growth in weld GR-1-41 will be arrested after 60 months of operation, even if the initial crack size is doubled. This arrested crack depth is within the limits of IWB-3640; therefore, we conclude that these engineered overlays will provide adequate assurance of safe operation for at least a 21-month fuel cycle. Also, we conclude that the full structural overlay on weld DRWC-1-1A will provide assurance of safe operation for at least a 21-month fuel cycle because the overlay weld material inhibits IGSCC.

Based on the same reasoning in the safety evaluation report, we conclude that the 25 welds not examinable by ultrasonic testing will not create any major safety problem during continuous operation of the plant for a 21-month fuel cycle. In summary, we conclude that Browns Ferry unit 1 can be safely operated, with respect to piping integrity, in its present configuration for at least a 21-month fuel cycle.

ENCLOSURE 3

Performance of Browns Ferry Reactors During Coastdown

The frequency of reactor scrams during long coastdowns ($>$1500 MWd/STU) at Browns Ferry has been significantly lower than the frequency observed during the full-power operational portion of the cycles. Based on the Browns Ferry monthly operating reports for U2C4, U2C5, and U1C5 (with coastdowns varying from approximately 1550 to 2800 MWd/STU), the scram frequency during coastdowns was less than half the frequency during full-power operation.

During coastdown, there are no requirements for power changes for control rod movements since all rods are normally withdrawn and there are no sequence exchanges or rod adjustments. Also, surveillance tests and some maintenance that must be done at less than full power can be performed without changing power or with a smaller power reduction. Margin to scram setpoints on power level and margin to thermal limits increase with coastdown (see figures 1 and 2 for examples). The reduction in required power maneuvers and increase in the margin to scram setpoints result in improved operating flexibility and are at least part of the reason for reduced scrams during coastdown. The characteristics of a coastdown necessary to extend cycle 6 of BFN unit 1 are shown in figure 3. Depletion of full-power reactivity is expected to occur in February 1985.

Figure 1: Ratio of MAPLHGR and LHGR to Limiting Values, BF1 CY5

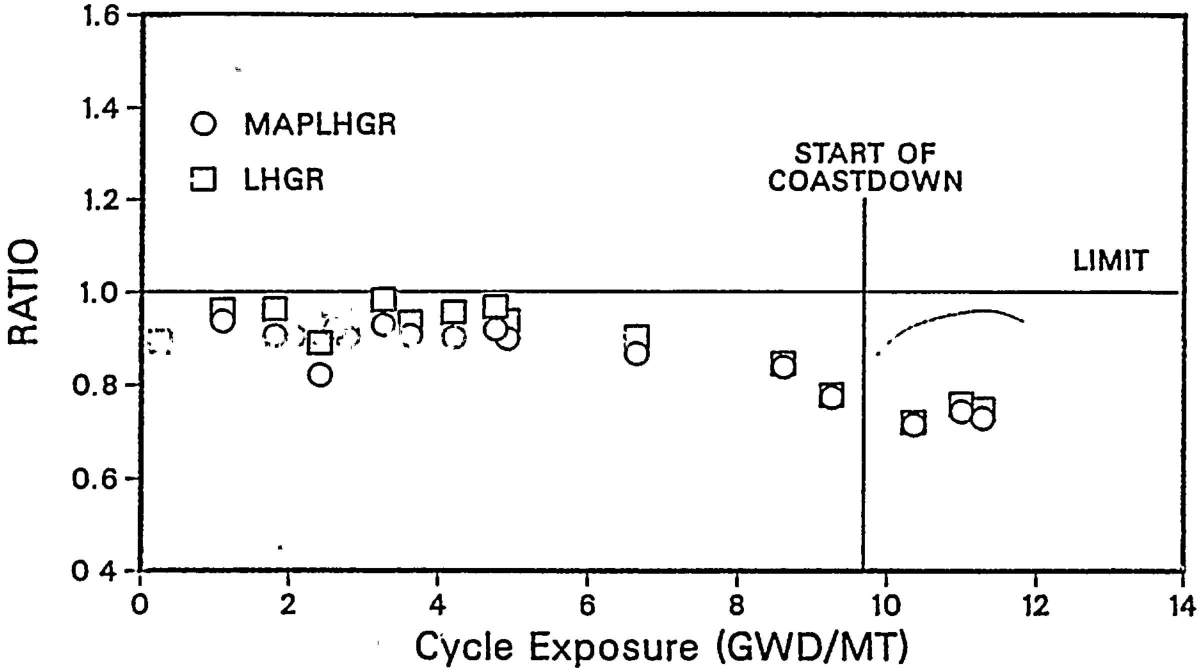

Figure 2: MCPR vs Cycle Exposure BF1 CY5

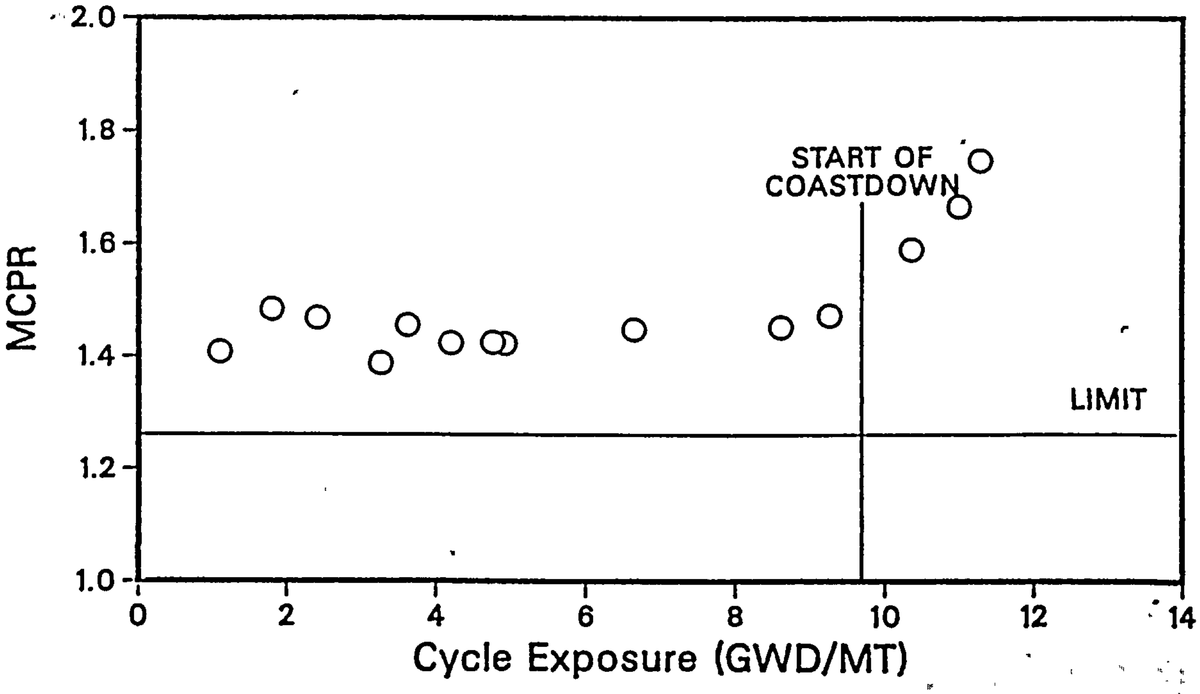

Figure 3: Coastdown Power Level
BF1 CY6