ATTACHMENT 7

PERMITS:

WORK PERMIT, CRITICAL LIFT REVIEW REQUEST FORM, AND WARNING NOT WORK IN PROGRESS FORM

0064

W RK PERMIT # BGRRWP-0064

ILR / ~~Work Order~~ # 411606 Construction Job # _____ Tracking # _____ Account # _____

1. Work requester fills out this section **STANDING WORK PERMIT** [ ]

Requester: M. LILIMPAKIS Date: 9-24-99 Ext. 7628 Dept/Div/Group: BGRR

Other Contact person (if different from requester): CLYDE NEWSON Ext. 2646

Start Date _____ Estimated End Date _____

Description of Work / Problem: PERFORM REQUIRED ACTIVITIES AS OUTLINED IN THE TECHNICAL WORK DOCUMENT FOR PILE FAN No. 5 REMOVAL

Building 704 Room CELL #5 Equipment FAN

2. Work requester, work provider, and ES&H (as necessary) jointly fill out this section or attach analysis

Hazard Analysis

RADIATION CONCERNS POSSIBLE [ ] NONE

[ ] Activation [✓] Airborne [✓] Contamination [ ] Radiation [ ] OTHER _____

[ ] Special nuclear materials involved (ES&H 3.7.0), notify Group Leader, Isotope Special Materials Group (SSD)

[ ] Fissionable materials involved (ES&H 3.7.0), notify Laboratory Criticality Officer (DAT)

SAFETY CONCERNS [ ] NONE

[ ] Adding / Removing Walls or Roofs	[ ] Excavation (ES&H 1.18.0)	[✓] Noise
[✓] Asbestos	[ ] Flammable (ES&H 4.10.2)	[ ] Non-ionizing Radiation
[ ] Biohazard	[ ] Fumes/Mist/Dust	[ ] Oxygen Deficiency
[ ] Chemicals	[ ] Heat/Cold Stress (ES&H 2.5.0)	[ ] Penetrating Fire Wall
[ ] Confined Space (ES&H 2.2.4)	[ ] Hydraulic	[ ] Pressurized Systems (ES&H 1.4.1)
[ ] Corrosive	[ ] Lasers (ES&H 2.3.1)	[✓] Rigging/Critical Lift (ES&H 1.6.0)
[ ] Cryogenic (ES&H 5.1.0)	[✓] Lead	[ ] Toxic
[ ] Electrical (ES&H 1.5.0)	[ ] Magnetic Field	[ ] Vacuum
[✓] Elevated Work	[✓] Material Handling (ES&H 1.6.0)	[ ] OTHER _____

ENVIRONMENTAL CONCERNS [ ] NONE [ ] OTHER _____

[ ] Haz/rad materials will be released to the air via a new/modified ventilation system, hood, or stack (ES&H 6.1.4 and 6.1.5) Notify Project Engineer, E. P. O. (ES&H Services)

[ ] New haz/rad materials will be released via the liquid effluent system to the sewage system or an impoundment (ES&H 6.1.2 and 6.1.3). Notify Regulatory Compliance Engineer, E. P. O. (ES&H Services) for permit.

[ ] Acutely hazardous chemical

Waste Generated [ ] NONE [✓] Clean Waste [ ] PCB [✓] POSSIBLE Hazardous Waste [✓] Radioactive Waste [✓] POSSIBLE Mixed Waste

Waste disposition by: WORKING CREW

Work Controls

WORK PRACTICES

[ ] NONE [ ] Containment [✓] IH Survey [✓] Scaffolding - requires inspection

[ ] Back-up Person/Watch [ ] Exhaust Ventilation [✓] Lockout/Tagout (ES&H 1.5.1) [ ] Time Limitation

[ ] Barricades [✓] HP Coverage [✓] Posting/Warning Signs [ ] OTHER _____

PROTECTIVE EQUIPMENT

[ ] NONE [✓] Ear Plugs [✓] Gloves [ ] Lab Coat [✓] Safety Glasses

[ ] Coveralls [ ] Ear Muffs [ ] Goggles [✓] Respirator [✓] Safety Harness

[ ] Disposable Clothing [ ] Face Shield [✓] Hard Hat [ ] Shoe covers [✓] Safety Shoes [ ] OTHER _____

PERMITS REQUIRED *(Please attach)*

Initial next to box to show who has responsibility to generate the permit

[ ] NONE [ ] Digging/Core Drilling(ES&H 1.18.0) [✓] Impair Fire Protection Sys. (ES&H 4.2.0)

[ ] Confined Space Entry (ES&H 2.2.4) [ ] Electrical Working Hot (ES&H 1.5.0) [✓] Rad Work Permit (BNL RadCon Manual)

[✓] Cutting/Welding (ES&H 4.3.0) [ ] Dept/Div Specific Permit _____

DOSIMETRY/ MONITORING

[ ] NONE [ ] O_2/Combustible Gas [ ] Self-reading Dosimeter

[ ] Heat Stress Monitor [ ] Passive Vapor Monitor [ ] Sorbent Tube/Filter Pump

[ ] Noise Survey/Dosimeter [ ] Real Time Monitor [✓] TLD [ ] OTHER _____

Training Requirements (List below any location specific training requirements)

AS PER RWP

Based on analysis above, the Review Team determines the job hazard category:

JOB HAZARD CATEGORY: ___LOW ✓MODERATE ___HIGH

___Work Coordination Only **Job Safety Analysis (JSA) Required?** ___Yes ✓No

If job is low hazard and skill-of-the-craft, the back side of the permit does **not** need to be filled out. Sign for concurrence.

Work Control Coordinator [signature] ***Life #*** 0180L ***Work Provider*** ***Life #***

FILE CODE:

BNL F3093 9/4/98

W-O # 910413C

Rev. 1

3. Both work requester and work pro[illegible] coordinate on work plan (use attach[illegible]s for detailed plans)

Work Plan (procedures, timing, personn[illegible] etc.): SEE ATTACHED TWO.
(Technical Work Document Pile Pan #5 Removal
September 20, 1999)

Special Working Conditions Required: N/A

Operational Limits Imposed: N/A
Post Work Testing Required: N/A
Configuration Control Review Required ___ Yes ✓ No Walkdown performed ✓ Yes ___ No

Reviewed By: *Note: Primary facility reviewer will dictate the other required signatures. The level of review shall be determined by the details of the work plan, hazards, and work controls necessary to perform the activity. Review done: ☐ in series ☐ team

Title	Name (print)	Signature	Life #	Date
[✓] Primary Reviewer	E. LILIMPAKIS	[signature]	0180L	10/21/99
[X] ES&H Services	S. Musolino	[signature]	15075	10/21/99
[ ] Requester/Contact				
[ ] Others *	R. SUGA	R. Suga	06095	10/21/99

4. Job site personnel fills out this section

Note: Signature indicates personnel performing work have read and understand the hazards and permit requirements

Job Site Supervisor [signature] Contractor Supervisor ___

Workers:	Life #	Workers:	Life #
[signature]	5918	John A Berry	19649
[signature]	15392	[signature]	20784
Jerry D. Hobson	12693		
[signature]	14103		

5. Work Requester or designee fills out this section

Conditions are Appropriate to Start Work: (Work permit has been reviewed, work controls are in place, and site is ready for job.)
Name [signature] Signature E. LILIMPAKIS Life # 0180L Date 10/27/99

6. Work Requester determines if Post Job Review is required ✓ Yes ___ No (Fill in names of reviewers)

Post Job Review:

Name: E. LILIMPAKIS	Signature [signature]	Life #: 0180L	Date: 1/26/00
Name:	Signature	Life #:	Date:
Name:	Signature	Life #:	Date:
Close-out signature (as necessary):	Signature	Life #:	Date:

7. Worker provides feedback

Worker Feedback:
Is worker feedback required on this job? ___ YES ✓ NO (attach feedback form)
Worker: Any feedback on safety concerns or on ways to improve the job? ___ YES ___ NO (ask for form if not attached)

WORK PERMIT # BGRRWP-006R

ILR / Work Order # 411606 Construction Job # Tracking # Account #

1. Work requester fills out this section **STANDING WORK PERMIT** ☐

Requester: M. LILIMPAKIS Date: 12/7/99 Ext. 7628 Dept/Div/Group: BGRR

Other Contact person (if different from requester): CLYDE NEWSON Ext. 2646

Start Date 12-7-99 Estimated End Date 2/15/2000

Description of Work / Problem: PERFORM REQUIRED ACTIVITIES TO REMOVE BGRR PRIMARY FAN NO 4, 3, 2, 1 AND SECONDARY AND EMERGENCY FANS -

Building 704 Room EMERG SEC. 1,2,3,4 Equipment FANS

2. Work requester, work provider, and ES&H (as necessary) jointly fill out this section or attach analysis

Hazard Analysis

RADIATION CONCERNS POSSIBLE [ ] NONE

[ ] Activation [✓] Airborne [✓] Contamination [ ] Radiation [ ] OTHER

[ ] Special nuclear materials involved (ES&H 3.7.0), notify Group Leader, Isotope Special Materials Group (SSD)

[ ] Fissionable materials involved (ES&H 3.7.0), notify Laboratory Criticality Officer (DAT)

SAFETY CONCERNS [ ] NONE

[ ] Adding / Removing Walls or Roofs	[ ] Excavation (ES&H 1.18.0)	[✓] Noise
[✓] Asbestos	[ ] Flammable (ES&H 4.10.2)	[ ] Non-ionizing Radiation
[ ] Biohazard	[ ] Fumes/Mist/Dust	[ ] Oxygen Deficiency
[ ] Chemicals	[✓] Heat/Cold Stress (ES&H 2.5.0)	[ ] Penetrating Fire Wall
[ ] Confined Space (ES&H 2.2.4)	[ ] Hydraulic	[ ] Pressurized Systems (ES&H 1.4.1)
[ ] Corrosive	[ ] Lasers (ES&H 2.3.1)	[✓] Rigging/Critical Lift (ES&H 1.6.0)
[ ] Cryogenic (ES&H 5.1.0)	[✓] Lead	[ ] Toxic
[ ] Electrical (ES&H 1.5.0)	[ ] Magnetic Field	[ ] Vacuum
[✓] Elevated Work	[✓] Material Handling (ES&H 1.6.0)	[ ] OTHER

ENVIRONMENTAL CONCERNS [ ] NONE [ ] OTHER

[ ] Haz/rad materials will be released to the air via a new/modified ventilation system, hood, or stack (ES&H 6.1.4 and 6.1.5) Notify Project Engineer, E. P. O. (ES&H Services)

[ ] New haz/rad materials will be released via the liquid effluent system to the sewage system or an impoundment (ES&H 6.1.2 and 6.1.3). Notify Regulatory Compliance Engineer, E. P. O. (ES&H Services) for permit.

[ ] Acutely hazardous chemical

Waste Generated [ ] NONE [✓] Clean Waste [ ] PCB [✓] POSSIBLE Hazardous Waste [✓] Radioactive Waste [✓] POSSIBLE Mixed Waste

Waste disposition by: WORKING CREWS

Work Controls

WORK PRACTICES

[ ] NONE	[ ] Containment	~~[✓] HH Survey~~ N/A SM	[✓] Scaffolding - requires inspection
[ ] Back-up Person/Watch	[ ] Exhaust Ventilation	[ ] Lockout/Tagout (ES&H 1.5.1)	[ ] Time Limitation
[ ] Barricades	[✓] HP Coverage	[✓] Posting/Warning Signs	[ ] OTHER

PROTECTIVE EQUIPMENT

[ ] NONE	[✓] Ear Plugs	[✓] Gloves	[ ] Lab Coat	[✓] Safety Glasses
[ ] Coveralls	[ ] Ear Muffs	[ ] Goggles	[✓] Respirator	[✓] Safety Harness
[ ] Disposable Clothing	[ ] Face Shield	[✓] Hard Hat	[ ] Shoe covers	[✓] Safety Shoes [ ] OTHER

PERMITS REQUIRED *(Please attach)*

Initial next to box to show who has responsibility to generate the permit

[ ] NONE	[ ] Digging/Core Drilling(ES&H 1.18.0)	[✓] Impair Fire Protection Sys. (ES&H 4.2.0)
[ ] Confined Space Entry (ES&H 2.2.4)	[ ] Electrical Working Hot (ES&H 1.5.0)	[✓] Rad Work Permit (BNL RadCon Manual)
[✓] Cutting/Welding (ES&H 4.3.0)	[ ] Dept/Div Specific Permit	

DOSIMETRY/ MONITORING

[ ] NONE	[ ] O_2/Combustible Gas	[ ] Self-reading Dosimeter	
[ ] Heat Stress Monitor	[ ] Passive Vapor Monitor	[ ] Sorbent Tube/Filter Pump	
[ ] Noise Survey/Dosimeter	[ ] Real Time Monitor	[✓] TLD	[ ] OTHER

Training Requirements (List below any location specific training requirements)

AS PER RWP

Based on analysis above, the Review Team determines the job hazard category:

JOB HAZARD CATEGORY: ___LOW ✓MODERATE ___HIGH

___Work Coordination Only **Job Safety Analysis (JSA) Required?** ___Yes ✓No

If job is low hazard and skill-of-the-craft, the back side of the permit does not need to be filled out. Sign for concurrence.

Work Control Coordinator SM *Life #* 01190 *Work Provider* *Life #*

FILE CODE:

3. *Both work requester and work provider coordinate on work plan (use attachments for detailed plans)*

Work Plan (procedures, timing, personnel, etc.): WORK TO BE PERFORMED AS PER: ERD-BGRR-TP-99-1 FOR FAN #4, ERD-BGRR-TP-99-4 FOR FAN #3, ERD-BGRR-TP-99-3 FOR FAN #2, ERD-BGRR-TP-99-2 FOR FAN #1, MOTOR, SECONDARY FAN AND ISOLATION OF EMERGENCY FAN

Special Working Conditions Required: N/A

Operational Limits Imposed: N/A

Post Work Testing Required: N/A

Configuration Control Review Required ___ Yes ✓ No Walkdown performed ✓ Yes ___ No

Reviewed By: **Note: Primary facility reviewer will dictate the other required signatures. The level of review shall be determined by the details of the work plan, hazards, and work controls necessary to perform the activity. Review done: ☐ in series ☐ team*

Title	Name (print)	Signature	Life #	Date
[✓] Primary Reviewer	P. LILIMPAKIS	[signature]	01806	12/7/99
[x] ES&H Services	S. Musolino	[signature]	15075	12/7/99
[ ] Requester/Contact				
[ ] Others *	A. SUGA	[signature]	06295	12/7/99

4. *Job site personnel fills out this section*

Note: Signature indicates personnel performing work have read and understand the hazards and permit requirements

Job Site Supervisor [signature] Contractor Supervisor ___

Workers:	Life #	Workers:	Life #
Anthony Mantore	20784	Joe Dedue	17184
Jim Ainom	21131	JOHN J BERRY	19649
MARK BLANCIAK	05903	Ed Diaz	21122
GARY CONNELL	14898		
Hugh RhoDus	16006		

5. *Work Requester or designee fills out this section*

Conditions are Appropriate to Start Work: (Work permit has been reviewed, work controls are in place, and site is ready for job.)

Name E. LILIMPAKIS Signature [signature] Life # 01806 Date 12/7/99

6. *Work Requester determines if Post Job Review is required* ___ *Yes* ___ *No (Fill in names of reviewers)*

Post Job Review:

Name: ___ Signature ___ Life #: ___ Date: ___

Name: ___ Signature ___ Life #: ___ Date: ___

Name: ___ Signature ___ Life #: ___ Date: ___

Close-out signature (as necessary): Signature ___ Life #: ___ Date: ___

7. *Worker provides feedback*

Worker Feedback:

Is worker feedback required on this job? ___YES ___NO (attach feedback form)

Worker: Any feedback on safety concerns or on ways to improve the job? ___ YES ___ NO (ask for form if not attached)

RWP #: 990913-16 Rev. 1

Brookhaven National Laboratory

RADIOLOGICAL WORK PERMIT

Start Date: _____

End Date: _____

Revised End Date: _____

(Shaded area to be completed by requester):

/P XJob Specific ☐ General

1. Initiator: M. Lilimpakis	2. Life #: 0180L	3. Phone: 7628	4. Bldg: 701

5. Job Location(s): Fan 5, Building 704

6. Job Description:
Remove and package for disposal Fan #5 and associated equipment.

6a. Work Begins: 10/18/99	6b. Work Ends: 12/31/99

7. Historical/Other Concerns:
See attached Work Plan

8. Signature of Initiator:

9. Conditions that will void RWP:

1. Unplanned breach of containment
2. Creation of a High Contamination or Airborne Radioactivity Area outside containment

10. Job Review:	11. Estimated Dose:	12. Attachments:	13. Training Requirements
☐ Pre-Job Review X Pre-Job Briefing ☐ ALARA Review X Summary/Closeout ☐ Other: ☐ Not Applicable	X Per Job ☐ Per Entry Highest Individual: < 10 mrem Collective: < 25 mrem ☐ Not Applicable	☐ Radiological Survey Form X Technical Work Document ☐ Other: _____ ☐ Not Applicable	X Radiation Worker I (RWT 002) ☐ High/Very High Radiation (RWT 400) X Contamination (RWT 300, 300A) ☐ Benchtop/Dispersables (RWT 500) ☐ Activation (RWT 200) ☐ Other: _____

Work Controls:	15. Protective Equipment:	16. Dosimetry:	17. Check Out Instructions:
FS Coverage ☐ Intermittent X Continuous X Hold Points X Air Monitoring ☐ Shielding X Other – Containment on Joints ☐ Not Applicable	X Gloves __see note 1b X Shoe Covers __see note 1b X Booties __see note 1b X Coveralls __see note 1b ☐ Red Trim Lab Coat X Respirator __see note 1b X Head Cover __see note 1b ☐ Other _____ ☐ Not Applicable	X TLD ☐ Self Reading Dosimeter ☐ Pencil ☐ Digital ☐ Alarming Dosimeter ☐ Finger Dosimetry ☐ Not Applicable	☐ Whole Body Count ☐ Urine Sample for Bioassay X Contamination Check X Personnel X Equipment ☐ Equipment Return X Portal Monitor (see note 1a) X Tools X Post Job Survey ☐Not Applicable

18. Special Instructions (Hold Points, special dose limits, etc.):
1a. Whole body frisk for nuclides of concern may be substituted if PCM is not available or OOS.
1b. See addendum for PE requirements

Hold Points

1. Any skin contamination.
2. Elevated airborne levels.
3. CAM Alarm
4. Poor adherence of fixative paint.

Special Instructions

1. Verify that a baseline whole body count is on file
2. Follow-up WBC a skin contamination occurs.
3. CAMS should be in continuos operation. If CAM is unavailable or OOS continuous air sampling may be used.
4. Fixative paint shall be applied a minimum of 24 hours before work begins.

19. Signature Approvals:	Department	Life Number	Date
	LDE	0180L	11-1-99
Representative: Sophia V. Muscolino	RCD	15075	11/1/99
Other (Department Specific):			
20. Close-Out Signature (FS Representative): Doria Murgia	RCD	21543	1/4/2K

COPY

RWP ADDENDUM

RWP#: 990913-16 Rev. 1

Protective Equipment Requirements

1.For work in a high contamination area or contaminated system breach the following equipment is required

Double Gloves,
Shoe Covers
Booties
Double Coveralls (Tyvek outer suit required if system has liquids)
Head Cover
Respirator

2.For work in a contamination area the following equipment is required.

Double Gloves
Shoe Covers
Booties
Coveralls

3.For inspection or tours in a contamination area the following equipment is required.

Booties
Gloves

Note: RCD tech may adjust protective equipment requirements as radiological Conditions warrant.

Attachment 8.1

RWP #:2K-BGRR-04

Brookhaven National Laboratory

RADIOLOGICAL WORK PERMIT

(Shaded area to be completed by requester)

Start Date: 01-01-2K

End Date: 03-31-2K

Revised End Date: _____

RWP X Job Specific ☐General

1. Initiator: Emmanual Lilimpakis	2. Life #: 0180L	3. Phone: 7628	4. Bldg: 701

5. Job Location(s): Fans 4,3,2,1, Secondary Fan and Auxiliary Fan In Building 704

6. Job Description: Remove and Package for Disposal; Fans 4,3,2,1,Secondary and Auxiliary Fans and Associated Equipment.

6a. Work Begins:01/01/2K	6b. Work Ends: 03/31/2K

7. Historical/Other Concerns: N/A

8. Signature of Initiator:

9. Conditions that will void RWP:

1. Unplanned Breach of Containment.

2. Creation of High Contamination or Airborne radioactivity Area Outside of Containment.

10. Job Review:	11. Estimated Dose:	12. Attachments:	13. Training Requirements
☐ Pre-Job Review X Pre-Job Briefing ☐ ALARA Review ☐ Summary/Closeout ☐ Other: ☐ Not Applicable	X Per Job ☐Per Entry Highest Individual: **<10** Collective: **<25** Not Applicable	☐ Radiological Survey Form X Technical Work Document ☐ Other:_____ ☐ Not Applicable	X Radiation Worker I (RWT 002) ☐ High/Very High Radiation (RWT 400) X Contamination (RWT 300, 300A) ☐ Benchtop/Dispersables (RWT 500) ☐ Activation (RWT 200) ☐ Other:_____
14. Work Controls:	15. Protective Equipment:	16. Dosimetry:	17. Check Out Instructions:
X FS Coverage ☐Intermittent X Continuous X Hold Points X Air Monitoring ☐ Shielding X Other **note 3a** ☐ Not Applicable	X Gloves **note 2a** X Shoe Covers **note 2a** X Booties **note 2a** X Coveralls **note 2a** ☐Red Trim Lab Coat X Respirator **note 2a** X Head Cover **note 2a** ☐Other ☐Not Applicable	X TLD ☐ Self Reading Dosimeter ☐Pencil ☐Digital ☐ Alarming Dosimeter ☐ Finger Dosimetry ☐ Not Applicable	X Whole Body Count X Urine Sample for Bioassay X Contamination Check X Personnel X Equipment ☐ Equipment Return X Portal Monitor **note 1a** X Tools X Post Job Survey ☐ Not Applicable

18. Special Instructions (Hold Points, special dose limits, etc.):

1a. Whole body frisk with pancake GM and Alpha Scintillator probe for nuclides of concern may be substituted if PCM-2 is not available or OOS.

2a. See addendum for PE requirements.

3a. Containment on joints.

Hold Points

1b. Any skin contamination.

2b. Elevated airborne levels.

3b.CAM Alarm.

4b. Poor adherance of fixative paint.

Special Instructions

1c. Verify that a baseline whole body count is on file.

2c. Folllow-up WBC if a skin contamination occurs.

3c.CAMS should be in continuous operation for breaches. If CAM is unavailable or OOS, continuous air sampling may be used.

4c. Fixative Paint shall be applied a minimum of 24 hours before a breach occurs.

19. Signature Approvals:	Department	Life Number	Date
Representative: Dorian P. Meryen	RCD	21543	01-03-2K
Other (Department Specific):	BGRR	0180L	01-03-00
20. Close-Out Signature (FS Representative): Dorian Meryen	RCD	21543	4/5/2K

RWP ADDENDUM

RWP: Y2K-BGRR-04 rev. 1

1. For work in a high contamination area or contaminated system breach the following PPE shall be worn:
   - **Double Gloves**
   - **Shoe Covers**
   - **Booties**
   - **Double Coveralls (Tyvek outer suit required if system has liquids)**
   - **Head Cover**
   - **Respirator *(based on survey results and previous air sample results HP Supervision may downgrade respiratory requirements.)***
2. For work in a contamination area the following PPE shall be worn:
   - **Double Gloves**
   - **Shoe Covers**
   - **Booties**
   - **Coveralls**
3. For inspections or tours in a contamination area the following PPE shall be worn:
   - **Booties**
   - **Gloves**

Note: RCT may adjust PPE requirements as radiological conditions warrant.

	15075	1/11/00
FS Representative	**Life Number**	**Date**

RWP ADDENDUM

RWP: Y2K-BGRR-04

1. For work in a high contamination area or contaminated system breach the following PPE shall be worn:
   - **Double Gloves**
   - **Shoe Covers**
   - **Booties**
   - **Double Coveralls (Tyvek outer suit required if system has liquids)**
   - **Head Cover**
   - **Respirator**
2. For work in a contamination area the following PPE shall be worn:
   - **Double Gloves**
   - **Shoe Covers**
   - **Booties**
   - **Coveralls**
3. For inspections or tours in a contamination area the following PPE shall be worn:
   - **Booties**
   - **Gloves**

Note: RCT may adjust PPE requirements as radiological conditions warrant.

Dorian Mergen	21543	01-03-2K
FS Representative	**Life Number**	**Date**

By ESH & Quality
Date _____
Tracking # _____

CRITICAL LIFT
REVIEW REQUEST FORM

Person Requesting Critical Lift
Print Name E. ULIMPAKIS **Department/Division** EFD/BGRR **Phone** 7628

PERSON IN CHARGE (PIC) *May be same person as person requesting Critical Lift.*
Print Name J. O'MALLEY
PIC Must meet the definitions of the DOE Hoisting and Rigging Handbook for appointed, designated and qualified. PIC shall be present at the lift site during the entire lifting operation.

ITEMS TO BE LIFTED
1) UPPER HOUSING W/ BELLOWS
2) MAIN FAN SECTION W/O MOTOR, & PEDESTALS

DETERMINING FACTOR FOR CRITICAL LIFT
Unacceptable risk
Contamination - significant radioactive on internals

A lift shall be designated as a critical lift if collision, upset, or dropping could result in any one of the following.
1) Unacceptable risk of personnel injury or significant adverse health impact.
2) Significant release of radioactive or other hazardous material or other undesirable conditions.
3) Undetectable damage that would jeopardize future operations or the safety of a facility.
4) Damage that would result in unacceptable delay to schedule or other significant program impact such as loss of vital data.
A lift should also be designated as critical if the load requires exceptional care in handling because of size, weight, close-tolerance installation, high susceptibility to damage, or other unusual factors.

OPERATING EQUIPMENT TO BE USED
Type 2 overhead chainfalls **Load Indicating Devices** NO
Capacity 5 TONS **Boom Length** *If applicable* NO
Date Of Annual Inspection On BNL Cranes NO.

SPECIFICATIONS OF ITEMS TO BE MOVED
If specifications are to be shown on attached documents check here. ☐
Weight 1. 5000# 2. 20,000# **How Was Weight Determined** thickness of material & dims
Dimensions
* USE A BOTTLE-JACK W/ SCALE TO VERIFY THE ACTUAL WEIGHT BEFORE RIG.
Center Of Gravity - Is CG Located In Approximate Center of Load YES
If not, attach a drawing showing CG location.
Hazardous, Radioactive Or Toxic Materials Present YES, RADIOACTIVE

RIGGING EQUIPMENT TO BE USED

If rigging equipment is to be shown on attached documents check here. ☐

Type Of Slings 1. LIFTALL-EN150 2. LIFTALL-EN240 **Rated Capacity** 1. 26,400 (basket) 2. 92,400 (basket)

Spreader Bars / Below The Hook Lifting Devices *Give BNL drawing number if available.*

_____ **Rated Capacity** _____

Connecting Accessories Items #1 & #2: 7/8 shackles swivel hoistrings 1" **Rated Capacity** 8.5 TONS /each 9,000# /360°/ea

LIFTING OPERATION

If lifting operation details are to be shown on attached documents check here. ☑

Method Of Connecting Rigging To Load 1) Using existing pad eyes 2) Connecting to structural pick points

Sling Angles 1. 70° 2. 100° **Rated Load At These Angles** 1. 23,760 2. 40,280

Mobile Crane Only - - - Operating Range	**Point Of Lift**	**Point Of Delivery**
Boom Radius		
Crane Capacity		
% Of Capacity		

Other Factors That May Affect Safety Of Lifting Operation. NONE

CONTRACTOR EQUIPMENT

Safety Inspection Of Equipment *Performed by BNL authorized person.* **Date** N/A

Print Name Of Inspector _____ **Comments** _____

Operators Experience On This Type Equipment _____

SIGNATURE APPROVAL

BNL Inspector Of Contractor Equipment *If applicable* —

Person In Charge (PIC) [signature]

Responsible Manager Or Designee [signature]

ESH And Quality [signature] 11/15/99

PRE-LIFT MEETING

Date 11/17/99 **Time** 1000 **Location** Fam Room #5

consisting of heavy masonry, 6 inches of concrete or 1-inch thickness of steel plate. The separation is required to contain fan contamination and provide missile protection in the event of fan impeller breakage.

Each fan casing is drained at several points and drainage collected in a header conducting potentially "hot" drainage to the site hot waste handling facility.

Ventilation for each fan unit is provided and consists of a pair of ducts, each fitted with a control damper, leading from the lower sides of the motor and meeting in a single duct above the motor and discharging through a Robertson-type roof ventilator which houses a 30-inch-diameter exhaust fan rated at 6250 cfm @ 150° C driven by a one-horsepower vertical motor.

The fan units are driven by constant-speed motors and are each provided with pneumatically operated inlet vane control for regulating fan output. Manual control of the vanes is provided from either the Fan House or Reactor Building control room. In addition, isolation valves are provided in the suction and discharging ducts on each fan unit.

B. System Description

The primary air suction ducts for all five fan units are supported by the roof of the Fan House directly over the fans and a branch is taken off the duct at each fan as shown in Figures G06.04-1 and G06.04-2. This vertical branch line is provided with a butterfly valve for on-off operation. The main suction duct has a rectangular cross section, and tapers from 10 feet high by 12 feet wide at the first fan cubicle to 6 feet high by 8 feet wide at the fifth fan cubicle. The fans discharge downward through individual ducts, angled at 45 degrees, which enter the main discharge duct, located directly below the fans in the basement. The discharge duct for each fan is supported on its own foundation. The main discharge duct is also rectangular, and tapers from 5 feet square at the first fan to 10 feet wide by 11-1/2 feet high at the east end of the building.

The inlet valve, which is located above the inlet expansion joint at each fan, is a 48-inch R-S Products No. B 8327 automatically

operated butterfly damper. The valve shaft is extended through the cubicle wall to the motor room.

The discharge valve is a 48-inch Chapman gate valve, cast-iron body bronze mounted, with double-disc, nonrising stem and having flanged ends. The valve is equipped with bevel gears and ball-bearing yoke. The gear driving rod is equipped with two universal joints and a slip coupling to accommodate any lateral movement due to temperature. The rod extends to a Limitorque motor control unit mounted on the motor side of the cubicle wall. The valve is designed for low-pressure operation at temperatures up to 500° F. The maximum closing time by motor is 3-1/2 minutes.

All five primary air fan units are of the double-inlet, double-width, induced-draft, single-stage centrifugal type. The fan inlet boxes are equipped with three-corrugation, 48-inch-diameter Badger expansion joints and divided air intakes to deliver air to both sides of the fan impeller. Inlet air diffusers are of the volute type fabricated of cast iron. The discharge duct for each fan is also equipped with a 48-inch-diameter Badger expansion joint.

Vertical sections of the Green Fuel Economizer Company and Sturtevant fans are shown in Figures G06.04-3 and G06.04-4 respectively.

The Green Fuel Economizer Company fans are fabricated with 1/4-inch housing and inlet boxes reinforced and split for convenient impeller wheel removal and provided with access doors. The fan impellers are of the airfoil type with shrouds and center plates of forged steel machined to a fine finish and tapered and shaped for maximum strength. The impeller blades are of the backward curved design which limits the possibility of overloading the fan motor by causing the motor horsepower to decrease when the volumetric load exceeds the fan operating range. The fan shaft is forged steel with two ring-oiled, water-cooled, self-aligning sleeve bearings mounted on independent cast-iron pedestals with a sole plate. The bearings are equipped with thermocouples which are connected to indicating recorders on control panel M in the Reactor Building control room.

Each of the three fan units is equipped with a set of inlet louver dampers for flow control.

The drive motors for the above fans are Fairbanks Morse & Co. 1000-horsepower, squirrel-cage induction, 2300-volt, 3-phase, 60-cycle motors equipped with sleeve bearings, self-contained lubrication system, stator temperature detectors, bearing temperature thermocouples, split bearing arm on drive end, screens on the intake air openings and a separate pedestal sole plate.

A performance curve for the fan is shown in Figure G06.04-5.

Operating and construction features for the three normally operating fan units are delineated below:

1. Fan Manufacturer: Green Fuel Economizer Company
2. Catalogue No. 660A 5530XBD DWDI
3. Design Rating: 109,000 cfm air @ 56 inches H_2O @ 140° F
4. Brake Horsepower - 1050
5. Overall Efficiency - 92.8%
6. Static Efficiency - 91%
7. Polar Moment of Inertia WR^2 - 13,400 lb-ft^2 (Fan and Motor)
8. Normal Operating Speed - 1775 rpm
9. First Critical Speed - 2220 rpm
10. Second Critical Speed - 2840 rpm
11. Vane Control - Inlet louver control damper
12. Coupling - No. 4 Fast flexible type
13. Bearings - Self-aligning sleeve type
14. Lubrication System - Ring-oiled splash system, water cooled; self-contained
15. Bearing Temperature Probe included on each bearing
16. Fan Impeller Wheel Size - 68 inches diameter
17. Fan Wheel Type - Backward curved nonoverloading
18. Fan Weight - 21,000 pounds

#1,2,3 ⟶

19. Drive Motor Manufacturer - Fairbanks Morse
20. Motor Type - Squirrel Cage Induction, Type QZBK, No. 94 Frame Size
21. Insulation Rating - Class A (40° C rise)
22. Synchronous Speed - 1800 rpm
23. Full Load Speed - 1775 rpm
24. Rated Voltage - 2300 volts, 3 phase, 60 cycle
25. Service Factor - 1.15
26. Full Load Current - 222 amps per phase
27. Locked Rotor KVA - 5370
28. Full Load Torque - 2965 ft-lb
29. Starting Torque - 2965 ft-lb
30. Pullout Torque - 7420 ft-lb
31. Number of Starts - 50 per year
32. Restarts Per Hour - 2 @ 15-minute intervals
33. Full Voltage Initial Acceleration Time - 35 seconds
34. Maximum allowable winding temperature - 120° C
35. Maximum stator temperature - 95° C
36. Efficiency at 1/2, 3/4, full load - 92.1%, 93.8%, 94.1%
37. Power Factor at 1/2, 3/4, full load - 86%, 90%, 91.5%
38. Insulation Resistance of Windings - 975 megohms
39. Bearings - Ring-oiled, sleeve bearings self-contained
40. Maximum Bearing Temperature - 185° F
41. Motor Weight - 12,000 pounds

The two Sturtevant primary air fans utilized for standby service are fabricated with housings of welded mild steel and the inlet vanes for inlet volume control are of Mayari-R steel as are the unshrouded impellers. The shafts on which the impellers are mounted are each supported by two, horizontally split, pressure-lubricated sleeve bearings located outside of the casing. The bearing on the motor side is a thrust bearing. The shafts are equipped with oil slingers and labyrinth shaft seals, and extend through the steel plate into the south wall of the cubicles and terminate in couplings for direct drive connection. The bearings are

supported on independent bearing pedestals. An auxiliary cooling air stream is fed to the shaft seals and leaks out in both directions.

All lubrication auxiliary equipment for the two standby fans equipment is located in the fan motor room. The main oil pump for each fan and motor is located on and driven by the outboard bearing on each motor. The temperature of the oil is maintained at proper level by circulation through a water-cooled cooler. Before the fan motor may be started, oil pressure must be present. A main pressure switch in the fan motor oil line prevents the starting of the fan motor before the oil system reaches the prescribed pressure. An auxiliary oil pump provided to supply the required oil pressure must be manually started at the Fan House. After the fan has reached operating speed, the main oil pump is capable of supplying oil pressure and the auxiliary oil pump is tripped out by a second set of contacts on the main pressure switch. At the same time an alarm is sounded in the Fan House which may be turned off locally. A subsequent failure of main oil pressure will cause an auxiliary pressure switch in the oil pump discharge to automatically restart the auxiliary pump without activating an alarm signal. Failure of the auxiliary pump will activate a Fan House annunciator drop in the Reactor Building control room and cause the fan to shut down automatically. The main oil line pressure switch is manufactured by Minneapolis-Honeywell and is Catalogue No. L404B14X3 with a range of 0-150 pounds per square inch. The auxiliary oil pump is a Browne & Sharpe positive acting gear pump Catalogue No. 103, page 18, Frame 103. The pump unit is rated at 18 gpm @ 900 rpm and is driven by a 1/2-horsepower, 440-volt, 3-phase, 60-cycle, 1725-rpm, totally enclosed motor manufactured by the Maltee Electric Company.

Fan cases are equipped with a removable cover plate for the introduction of liquid or other cleaning materials in the event of contamination. The casings and inlet boxes are drained to the semihot drainage system, through piping at the low points. The impeller and other interior surfaces of the fan are easily cleanable in case of contamination.

The fan drive motors are General Electric 1500-horsepower, standard squirrel-cage, drip-proof, normal-torque, across-the-line-starting, induction motors, synchronous speed 3600 rpm operating on 2300 volts, 3 phase, 60 cycles. The motors have sleeve bearings, pressure lubricated with oil supplied by a pump, filtered and water cooled.

A performance curve for the fan is shown in Figure G06.04-6.

Operating and construction features for the standby fan units are delineated below:

1. Fan Manufacturer: Sturtevant Division of the Westinghouse Corporation
2. Catalogue No. Size 250-440, Des. No. 14, DWDI
3. Design Rating: 380,000 cfm air @ 80 inches H_2O @ 140° F
4. Brake Horsepower - 1400
5. Normal Operating Speed - 3580 rpm
6. Vane Control - Inlet louver control damper
7. Coupling - No. 4 1/2 Fast flexible type
8. Bearings - Sleeve-type; forced feed lubrication by an external oil system
9. Fan Impeller Wheel Size: 44-inch diameter
10. Fan Wheel Type - Straight radial blades - paddle-wheel type
11. Fan Weight - 23,800 pounds
12. Drive Motor Manufacturer - General Electric Company
13. Motor Type - Squirrel Cage Open Induction, Model 31E376, Type K
14. Insulation Rating - Class A (40° C rise)
15. Synchronous Speed - 3600 rpm
16. Full Load Speed - 3580 rpm
17. Rated Voltage - 2300 volts, 3 phase, 60 cycle
18. Full Load Current - 337 amps per phase
19. Efficiency at 1/2, 3/4, Full Load - 93.5%, 94.4%, 95.5%
20. Power Factor at 1/2, 3/4, Full Load - 87.7%, 90.5%, 91.5%

OLD FAN ASSEMBLY #4&5

ESTIMATION OF UPPER FAN SECTION WEIGHT (w/ partial bellow) 11/2/99

1) UPPER JOINT : two plates : $t_1 = 3/8''$ & $t_2 = 3/4''$ => $\Sigma t = 1.125''$

O.D. : $R_1 = 5.000'$ $\qquad w_s = 495\ \#/cf$

ID : $R_2 = 4.000'$

$$wt = w_s\ \pi t\left(R_1^2 - R_2^2\right) = \left(495\ \#/cf\right)\left(\pi\right)\left(\frac{1.125''}{12''/ft}\right)\left((5.000)^2 - (4.000)^2\right) = \boxed{1312\ \#}$$

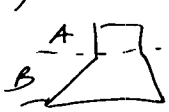
2). LOWER JOINT : two plates : $t_1 = t_2 = 1/2''$ => $\Sigma t = 1''$

O.D : $R_1 = 7.500'$

ID : $R_2 = 6.500'$

$$wt = w_s\ \pi t\left(R_1^2 - R_2^2\right) = \left(495\ \#/cf\right)\left(\pi\right)\left(\frac{1.000\ in}{12\ in/ft}\right)\left((7.500)^2 - (6.500)^2\right)\left[ft^2\right] = \boxed{1814\ \#}$$

3) "MAIN SECTION" : $t = .375''$



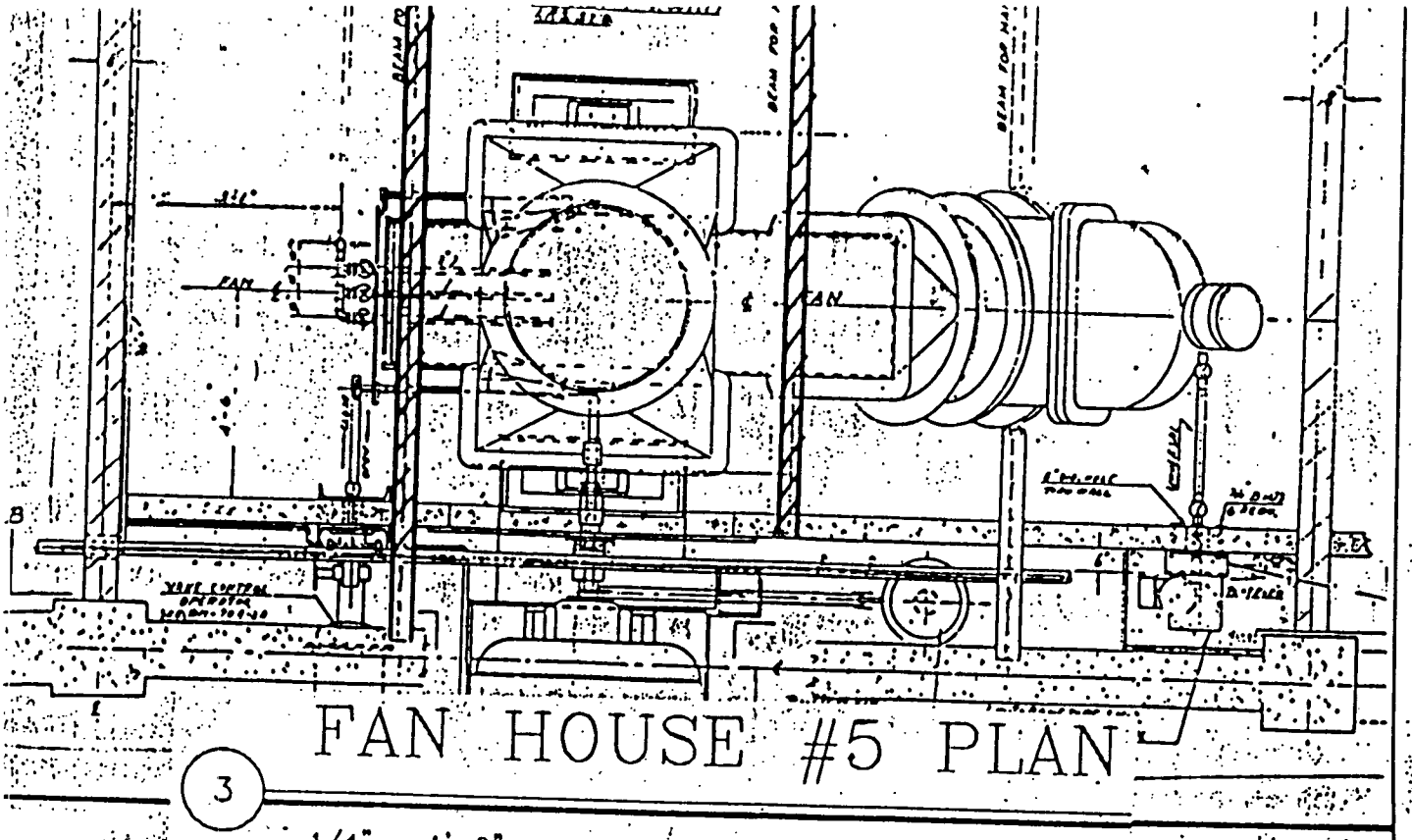
A) $D = 4.000'$, $h = 4.000'$

$$wt = \pi D t h\ wt = \pi\left(4.000'\right)\left(\frac{.375\ in}{12\ in/ft}\right)\left(4.000'\right)\left(495\ \#/ft^3\right) = \boxed{777\ \#}$$

B) $D = 5.250'$, $h = 2.500'$

$$wt = \pi\left(5.250'\right)\left(\frac{.375}{12}\ in/in/ft\right)\left(2.500'\right)\left(495\ \#/ft\right) = \boxed{637\ \#}$$

$\boxed{\Sigma wt = 4540\ \#}$ => $\boxed{\text{USE } 5000\ \#\ \text{as ref.}}$



FAN HOUSE #5 PLAN

3

1/4" = 1'-0"

JOB NO.	SHEET	NO	REVISION	DATE	DWN.	APP'D.	QA
		△					

BROOKHAVEN NATIONAL LABORATORY

PLANT ENGINEERING E&CS DIVISION
UPTON, NEW YORK 11973

BROOKHAVEN SCIENCE ASSOCIATES
UNDER CONTRACT WITH
UNITED STATES DEPARTMENT OF ENERGY

JOB TITLE		DWG. TITLE RIGGING PLAN – FAN UNIT AT FANHOUSE#5	
ILR, GPP, LNI, IHEM	DATE 11/03/99	ACCT. NO.	SHEET 1 OF 1
SCALE AS NOTED	DWN. BY MS	JOB NO. 9655	DWG. NO. 9655–R1
PROJ. QA	APP'D. BY	BLDG. NO. 705	

By ESH & Quality
Date _____
Tracking # _____

CRITICAL LIFT
REVIEW REQUEST FORM

Person Requesting Critical Lift
Print Name E. LILIMPAKIS **Department/Division** ERD/BGRR **Phone** 7628

PERSON IN CHARGE (PIC) *May be same person as person requesting Critical Lift.*
Print Name J. O'MALLET
PIC Must meet the definitions of the DOE Hoisting and Rigging Handbook for appointed, designated and qualified. PIC shall be present at the lift site during the entire lifting operation.

ITEMS TO BE LIFTED
(1) UPPER HOUSING W/ BELLOWS AND ONE FLANGE
(2) MAIN FAN SECTION W/O MOTOR & PEDESTALS
(3) PIECE #2, NORTH INLET BOX VOLUTE. (4) MAIN FAN SECTION W/O PIECE #2

DETERMINING FACTOR FOR CRITICAL LIFT
UNACCEPTABLE RISK
CONTAMINATION - RADIOACTIVE ON INTERNALS

A lift shall be designated as a critical lift if collision, upset, or dropping could result in any one of the following.
1) Unacceptable risk of personnel injury or significant adverse health impact.
2) Significant release of radioactive or other hazardous material or other undesirable conditions.
3) Undetectable damage that would jeopardize future operations or the safety of a facility.
4) Damage that would result in unacceptable delay to schedule or other significant program impact such as loss of vital data.
A lift should also be designated as critical if the load requires exceptional care in handling because of size, weight, close-tolerance installation, high susceptibility to damage, or other unusual factors.

OPERATING EQUIPMENT TO BE USED
Type 2 OVERHEAD CHAINFALLS **Load Indicating Devices** NO
Capacity 5 TONS **Boom Length** *If applicable* NO
Date Of Annual Inspection On BNL Cranes NO

SPECIFICATIONS OF ITEMS TO BE MOVED
If specifications are to be shown on attached documents check here. ☑
#1 6000# #2+3 = 19000# #3 16000#
Weight #2 3,000# **How Was Weight Determined** THICHNESS OF MATERIAL
Dimensions
USE A BOTTLE JACK W/SCALE TO VERIFY ACTUAL WEIGHT FOR PIECE #2;3
Center Of Gravity - Is CG Located In Approximate Center of Load YES
If not, attach a drawing showing CG location.
Hazardous, Radioactive Or Toxic Materials Present RADIOACTIVE

RIGGING EQUIPMENT TO BE USED

If rigging equipment is to be shown on attached documents check here. ☐

PIECE# 1 MORE THAN 10K # BASKET. TOTAL 4 SLINGS.

Type Of Slings LIFTALL **Rated Capacity** _____

Spreader Bars / Below The Hook Lifting Devices *Give BNL drawing number if available.* #2's > 26,000# BASKET.

_____ **Rated Capacity** _____ 16000#

Connecting Accessories S/8 SWIVEL HOISTING **Rated Capacity** GRATER THAN BASKET ON 4000# EACH USE TWO ON WEST SIDE

LIFTING OPERATION

If lifting operation details are to be shown on attached documents check here. ☐

Method Of Connecting Rigging To Load 1) PIECE #1 AS PER OUTLINE (USE STRUCTURAL PICK POINTS)

(2) CONNECTING TO STRUCTURAL PICK POINTS

Sling Angles _____ **Rated Load At These Angles** _____

Mobile Crane Only - - - Operating Range	Point Of Lift	Point Of Delivery
Boom Radius		
Crane Capacity		
% Of Capacity		

Other Factors That May Affect Safety Of Lifting Operation. NONE

CONTRACTOR EQUIPMENT

Safety Inspection Of Equipment *Performed by BNL authorized person.* **Date** N/A

Print Name Of Inspector _____ **Comments** _____

Operators Experience On This Type Equipment _____

SIGNATURE APPROVAL

BNL Inspector Of Contractor Equipment *If applicable* N/A

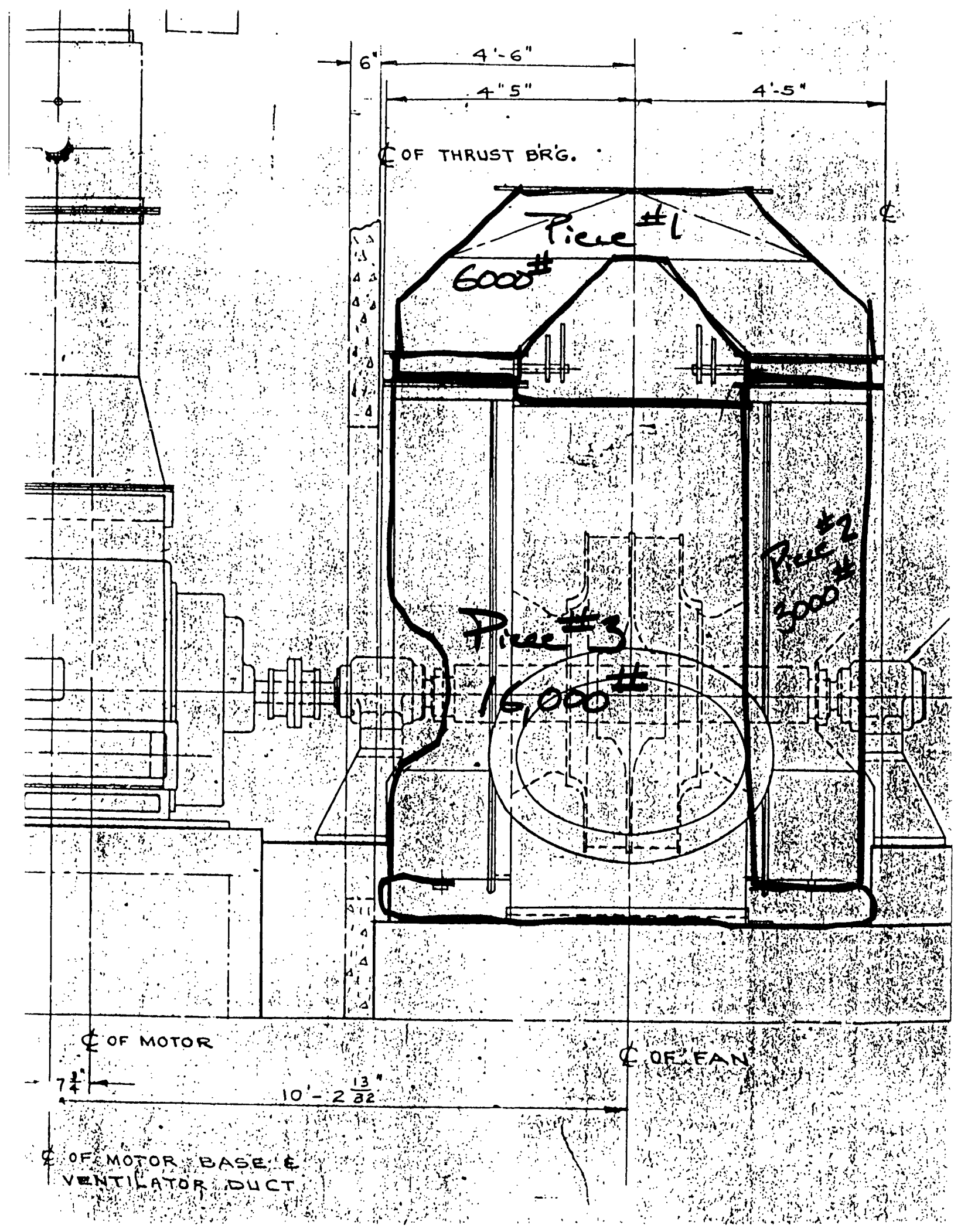
Person In Charge (PIC) Roy McWilliams / [illegible]

Responsible Manager Or Designee [illegible]

ESH And Quality [illegible] 12/27/99

PRE-LIFT MEETING

Date 12/29/99 **Time** 1055 **Location** Room #3 @ 704


6"
4'-6"
4"5"
4'-5"
℄ OF THRUST BR'G.
Piece #1
6000#
℄
Piece #2
300#
Piece #3
16,000#
℄ OF MOTOR
℄ OF FAN
7 1/4"
10'-2 13/32"
℄ OF MOTOR BASE &
VENTILATOR DUCT

Building 130
P.O. Box 5000
Upton, NY 11973-5000
Phone 516 344-5456
Fax 516 344-5999
hynanj@bnl.gov

BROOKHAVEN
NATIONAL LABORATORY

managed by Brookhaven Science Associates
for the U.S. Department of Energy

Memo

Date: *July 28, 1999*

To: *M. Lilimpakis*

From: *J. Hynan*

Subject: *LOAD TEST of SUPPORT BEAMS at Bldg. 701*

On Monday July 26, I witnessed the load test at Fan Room #5. Two new 5 ton trolleys were installed on two ceiling beams on either side of the fan unit. The riggers placed a 5-ton chain hoist on both trolleys. A load of 12,500 lbs., which is 125% of rated capacity, was lifted by each hoist individually, and held for 10 min. No deflection of the beams was noted.

If there are any questions or concerns please call my office at 5456.
Thank You.
JH

cc: S. Hoey
R. Sugar
File

BROOKHAVEN
NATIONAL LABORATORY

Building 130
P.O. Box 5000
Upton, NY 11973-5000
Phone 516 344-5456
Fax 516 344-5999
hynanj@bnl.gov

Managed by Brookhaven Science Associates
for the U.S. Department of Energy

Memo

Date: *December 15, 1999*

To: *M. Lillimpakis*

From: *J. Hynan*

Subject: *Load Test of Fan House Ceiling Beams*

The ceiling beams that are to be used as the hoist support for the fan removal project were load tested to ensure that they are in sound condition.
The tests took place on 12/09/99 in Fan House # 3, - 12/10/99 in Fan House # 4, - and on 12/14&15/99 in Fan House # 2.

At Fan House # 4 a 12040 lb. shielding block was used, this would be 120 % of the rated 5-Ton Hoists and Trolleys that are to be used. The load was raised and held for 10 minutes with no defects noted.

At Fan Houses # 2 & 3, we used the same 12040-lb. block, but in order not to put the hoists through the stress of lifting above its rated load constantly we used a load indicator. The load indicator was attached to the hoist chain and the 12040lb-shielding block and a 10,000-lbs. load was simulated on the beams. This 10,000 lbs. is 100 % of the rated load of the hoists and trolleys that are to be used. The load was held for 10 minutes with no defects noted.

If there are any questions or concerns please call my office a 5456. Thank You JH

cc: S. Hoey
J. O'Malley
R. Sugar
File

Building 130
P.O. Box 5000
Upton, NY 11973-5000
Phone 516 344-5456
Fax 516 344-5999
hynanj@bnl.gov

BROOKHAVEN NATIONAL LABORATORY

Managed by Brookhaven Science Associates
for the U S. Department of Energy

Memo

Date: *January 03, 2000*

To: *M. Lillimpakis*

From: *J. Hynan*

Subject: *Load Test at Fan House # 1*

On Tuesday December 28, 1999 we conducted the final load test of the support beams for the fan removal project. Prior to and after the load test all equipment was inspected. The test was completed with the use of a 12,040-lb. block and a dynamometer to achieve the 10,000 lbs. needed for the load weight.

The west support beam was tested first, a sling was attached to the support beam with a 5-ton chain hoist, and load indicator anchored to the 12,040lb block. The chain was raised to achieve the 10,000 lbs. needed for 100 % testing of the beam. The simulated load was held for ten minutes with no deficiencies noted.

The east support beam was tested in the same manner with no deficiencies noted.

If there are any questions or concerns please call my office at 5456. Thank You, JH.

cc: w/attachments R. Sugar
File
cc: S. Hoey

WARNING!

HOT WORK IN PROGRESS
WATCH FOR FIRE!

PART 2

INSTRUCTIONS

1. **Person doing Hot Work: Indicate time started and post permit at Hot Work location. After Hot Work, indicate time completed and leave permit posted for Fire Watch.**
2. **Fire watch: Prior to leaving area, do final inspection, sign, leave permit posted and notify Firesafety Officer.**
3. **Monitor: After 4 hours, do final inspection, sign and return to Firesafety Officer.**

HOT WORK BEING DONE BY:

☐ EMPLOYEE _____ LIFE NO. _____

☐ CONTRACTOR _____ CO. _____

DATE: 11/12/99 | JOB NO.

LOCATION/BUILDING & FLOOR: 7th - Fed Court 1-7

NATURE OF JOB: Welding

NAME OF PERSON DOING FIRE WATCH: Bob Jem / Plant Engineering

I verify the above location has been examined, and permission is authorized for this work.

SIGNED: (FIRE/SAFETY OFFICER) [signature] DATE: 11/12/99

PERMIT EXPIRES	DATE	TIME
	11/12/99	AM / PM

I verify that the List of Precautions is Understood and work will proceed only if precautions are followed.

Signed: (Supervisor) [signature]

FIRE WATCH SIGNOFF

Work area and all adjacent areas to which sparks and heat might have spread were inspected during the fire watch period and were found fire safe.

Signed: John J Berry

FINAL CHECKUP

Work area was monitored following Hot Work and found fire safe.

Signed: [signature] 11/12/99 @ 1700

Required Precautions Checklist

MAY BE RETAINED AS RECORD OF HOT WORK ACTIVITY

☑ Available sprinklers, hose streams and extinguishers are in service/operable.

☑ Hot Work equipment in good repair.

Requirements within 35 ft (10m) of work

☑ Flammable liquids, dust, lint and oil deposits removed.

☑ Explosive atmosphere in area eliminated.

☑ Floors swept clean.

☑ Combustible floors wet down, covered with damp sand or fire-resistive sheets.

☑ Remove other combustibles where possible. Otherwise protect with fire-resistive tarpaulins or metal shields.

☑ All wall and floor openings covered.

☑ Fire-resistive tarpaulins suspended beneath work.

Work on walls or ceilings

☑ Construction is noncombustible and without combustible covering or insulation.

☑ Combustibles on other side of walls moved away.

Work on enclosed equipment

☑ Enclosed equipment cleaned of all combustibles.

☑ Containers purged of flammable liquids/vapors and monitored for vapor buildup.

Fire watch/Hot Work area monitoring

☑ Fire watch conractor/department will supply during and for 60 minutes after work, including any coffee or lunch breaks.

☑ Fire watch is supplied with suitable extinguishers, charged small hose.

☑ Fire watch is trained in use of this equipment and in sounding alarm (telephone, alarm box, radio).

☑ Fire watch may be required for adjoining areas, above, and below (see other precautions).

☐ Monitor Hot Work area for 4 hours after job is completed.

Other Precautions Taken

☐ False alarm with detection systems considered.

☐ _____

No. 1402

WARNING!

HOT WORK IN PROGRESS
WATCH FOR FIRE!

PART 2

INSTRUCTIONS

1. **Person doing Hot Work: Indicate time started and post permit at Hot Work location. After Hot Work, indicate time completed and leave permit posted for Fire Watch.**
2. **Fire watch: Prior to leaving area, do final inspection, sign, leave permit posted and notify Firesafety Officer.**
3. **Monitor: After 4 hours, do final inspection, sign and return to Firesafety Officer.**

HOT WORK BEING DONE BY: 06095

[X] EMPLOYEE Regal Surgical LIFE NO. _____

[ ] CONTRACTOR _____ CO. _____

DATE 11/18/99 | JOB NO.

LOCATION/BUILDING & FLOOR 704 - Outside

NATURE OF JOB Cutting

NAME OF PERSON DOING FIRE WATCH J.J.B / K Pesoamell

I verify the above location has been examined, and permission is authorized for this work.

SIGNED: (FIRE/SAFETY OFFICER) [signature] DATE: 11/1/91

PERMIT EXPIRES	DATE	TIME
	11/19/99	AM / PM

I verify that the List of Precautions is Understood and work will proceed only if precautions are followed:

Signed: (Supervisor) [signature]

FIRE WATCH SIGNOFF

Life # 19649

Work area and all adjacent areas to which sparks and heat might have spread were inspected during the fire watch period and were found fire safe.

Signed: John J Berry

FINAL CHECKUP

Work area was monitored following Hot Work and found fire safe.

Signed: John J Berry

Required Precautions Checklist

MAY BE RETAINED AS RECORD OF HOT WORK ACTIVITY

- [x] Available sprinklers, hose streams and extinguishers are in service/operable.
- [x] Hot Work equipment in good repair.

Requirements within 35 ft (10m) of work

- [x] Flammable liquids, dust, lint and oil deposits removed.
- [x] Explosive atmosphere in area eliminated.
- [x] Floors swept clean.
- [x] Combustible floors wet down, covered with damp sand or fire-resistive sheets.
- [x] Remove other combustibles where possible. Otherwise protect with fire-resistive tarpaulins or metal shields.
- [x] All wall and floor openings covered.
- [x] Fire-resistive tarpaulins suspended beneath work.

Work on walls or ceilings

- [x] Construction is noncombustible and without combustible covering or insulation.
- [x] Combustibles on other side of walls moved away.

Work on enclosed equipment

- [x] Enclosed equipment cleaned of all combustibles.
- [x] Containers purged of flammable liquids/vapors and monitored for vapor buildup.

Fire watch/Hot Work area monitoring

- [x] Fire watch conractor/department will supply during and for 60 minutes after work, including any coffee or lunch breaks.
- [x] Fire watch is supplied with suitable extinguishers, charged small hose.
- [x] Fire watch is trained in use of this equipment and in sounding alarm (telephone, alarm box, radio).
- [ ] Fire watch may be required for adjoining areas, above, and below (see other precautions).
- [ ] Monitor Hot Work area for 4 hours after job is completed.

Other Precautions Taken

- [ ] False alarm with detection systems considered.
- [ ] _____

No. 1411