



Tuesday, July 22, 2003

John Kinneman
Nuclear Regulatory Commission
Region I
475 Allendale Rd.
King of Prussia, PA 19406-1415

Docket No. 0303629
Control No. 132825

License No. 37-3080402

Dear Mr. Kinneman:

Enclosed please find the response to your request for additional documentation regarding the design and safety features of the Genesis irradiator that had been previously discussed with representatives from the NRC on former site visits to our facility and to the fabricator.

As you will see, all parties involved in the design, fabrication and installation of the irradiator have taken significant measures from the beginning to ensure that we have eliminated any possibility of the bells causing a problem. We have the utmost confidence in the safety of the equipment operations, and are happy to provide you with this additional information to substantiate its safety.

Sincerely,

A handwritten signature in black ink, appearing to read "Jim Wood", is written over the word "Sincerely,".

Jim Wood, President
Sharon Turner, Radiation Safety Officer

CFC LOGISTICS, INC

4000 AM Drive, Quakertown, Pennsylvania 18951 (T) 215.029.1500 (F) 215.029.6514

*"Value through Excellence"*

215-723-7284 FAX: 215-723-9115

WWW.CHLSYSTEMS.COM

July 21, 2003

Sharon Turner
CFC Logistics, Inc.
4000 AM Drive
Quakertown, PA 18951

Dear Ms. Turner:

This is in reference to the problem of the hoist cables breaking. This was a concern to CHL during the design of the Pool, the Plenum, and the Hoist Assemblies. Design standards were followed in the design of the Hoist Assembly to insure that a cable never does break. In addition to the design of the hoist, an annual inspection of the hoist will be performed that will include an inspection of the cables to identify any cables with broken strands. Any cables that are found to have broken strands would be replaced before the hoist is returned to service. Tests were done on three different cable assemblies to prove out the swaging of the fittings and the ultimate break strength of the cable itself. The break strength test showed that the cable itself failed at 24,410 lbs. for a single cable. (See test results attached.) The maximum weight of the bell and cart with a full load of product is less than 8,000 lbs. This means that if one cable were to break the other cable would be able to support the entire load with a safety factor of at least 3. The standard safety factor for Under Hook Applications is 3. So, for this discussion we will consider three different scenarios where one of the hoist cables breaks.

Given the design of the hoist and the planned routine inspections, CHL feels confident that a cable breaking is something that will not happen. However, many different scenarios were considered during the design of the Pool, and Plenum Assemblies and these three scenarios of cables breaking were among those scenarios. These three different scenarios are addressed below. All three cases are when the bell is at some point either partially or fully over the pool. The controls were designed so that all movement of the bell over the pool area is done by the PLC in an Automatic Mode. This was done to eliminate the possibility of operator error of the bell movement over the pool area. This also makes it possible to precisely control the height and position and speed of the bell at all times when it is over the pool area. By minimizing the height of the bell over the pool, the effect of a cable breaking when the bell is over the pool is also minimized.

1. The case where the bell is at some point between the Staging Position and the Pool 1 Position when one cable breaks: This would result in one side of the bell falling about 3 inches before contacting the top ledge of the pool. If the center of gravity of the bell were far enough outside the pool the bell would glance off the outside corner of the top ledge of the pool and the bell would come to rest above the floor suspended by the other cable. If the center of gravity of the bell were somewhat centered over the ledge of the pool one side of the bell would drop about 3 inches and come to rest on the ledge of the pool. If the bell were closer to the Pool 1 Position one side of the bell would glance off the inside corner of the top ledge of the pool and the bell would come to rest at some diagonal position with the side of the bell and bottom of the bell being supported by the top ledge on opposite sides of the pool.

In all of the above cases the point of contact between the bell and the pool would be the top ledge of the pool. The top ledge of the pool is formed out of 1/4" thick stainless steel plate and is laid over and welded to the sides of the pool which are also 1/4" thick steel plate. The space between the inside wall and the outside wall of the pool is filled with 6" of poured concrete which also serves to support the center of the top ledge. In addition to the concrete, there are also steel I-beams running vertically the depth of the pool, sandwiched between the inside and outside steel plate walls, welded to both. The damage that would result to the top ledge of the pool would be some scratching, possibly some very minor denting, but certainly no damage to the walls of the pool that could cause a leak in the pool.



"Value through Excellence"

215-723-7284 FAX: 215-723-9115

WWW.CHL.SYSTEMS.COM

2. The case where the bell is at Pool 1 Position when one of the cables breaks: This would result in one side of the bell falling with the bell coming to rest at some diagonal position with the side of the bell and the bottom of the bell being supported by the inside corners of the top ledge of the pool. The damage that would result to the top ledge of the pool would be some scratching, possibly some very minor denting, but, again certainly no damage to the walls of the pool that could cause a leak in the pool.

3. The case where the bell is at some point between Pool 1 Position and Pool 2 Position: This would result in one side of the bell dropping about 3" and contacting the top of one of the bumper blocks that is mounted to the lock bar over the center of the pool. The bumper block is relatively narrow so it is unlikely that the bell would come to rest balanced on top of the bumper block. It is much more likely that the bell would roll toward either Pool 1 Position or Pool 2 Position with the bell coming to rest at some diagonal position with the side and the bottom of the bell being supported by the inside corner of the top ledge of the pool on the one side and some combination of the lock bar and top ledge on the other side of the pool. The lock bar would not be damaged by the weight of the bell contacting it. It is designed to be able to support 11,000 lbs. at the point where the bumper block is attached. (One side of the bell and cart with a full load of product only weighs about 4,000 lbs.) But even if the lock bar were bent this would not create any additional load on the plenum since the load post assembly is isolated from the lock bar and was intentionally designed this way.

The damage that would result in this third case would be limited to some scratching of the top ledge, and possibly some very minor denting of the top ledge. No damage should occur to the lock bar, and certainly no damage to the plenum or the pool walls that could cause contamination of the pool or a leak in the pool.

If I can be of any further assistance in this matter please contact me. Thank you.

Sincerely,

A handwritten signature in black ink, appearing to read 'Rick Keiper', written in a cursive style.

Rick Keiper
Sr. Engr.
CHL Systems, Inc.



ISO 9001

I & I SLING INC.
2626 MARKET STREET • P.O. BOX 2423
ASTON, PA. 19014
TEL: 800-874-3539 610-485-8500
VISIT: www.landisling.com

Date 7-19-03

1402-A EAST MOUNTAIN ST.
KERNERSVILLE, NC. 27284
TEL: (336) 993-6034

202 A NORTH MAIN ST.
BUNNELL, FL. 32110
TEL: (386) 588-6380

8926 TELEGRAPH RD.
LORTON, VA. 22079
TEL: (703) 550-9405

70-D SHAWMUT RD.
CANTON, MA 02021
TEL: (781) 575-0600

10619 LEXINGTON DR.
KNOXVILLE, TN 37932
865-671-2951

This to certify that I & I Sling Inc. has subjected the following sling or slings to a visual inspection and a proof test as applicable. Such test being applied to each leg if a multiple leg sling.

Customer CLAYTON H LANDIS CO INC Ord. # 56765

No. of Slings 3 ea. skt assys Description 1/2" x 38'11-1/8" 6x19 IWRC

The proof test load applied is twice the rated working load. The rated working load is 4550 pounds Min at 90 degree angle to the load. Do not exceed rated load!

Wire Rope: Manufacturer Reel #

Fittings / Attachments: Manufacturer Manufacturer

304 S/S with #651 fitting one end - DWG 33248-620-000

The above described sling or slings is or are warranted in material and workmanship. The Sellers liability is limited to replacing or repairing this sling or portion thereof which shall have been returned to it, and which its examination discloses to have been defective. The Seller shall not be responsible for the condition of the sling or any portion thereof, if any repairs, alterations, or heat treatment of the sling, or any portion thereof, has been made at any place other than the Seller's Service Center.

This warranty is expressly in Lieu of all other warranties expressed or implied and of all other obligations or liabilities of the seller. The seller neither assumes nor authorizes any other person to assume for it any liability in connection with the sale or use of I & I Sling Inc. products.

This warranty is specifically subject to the "Definitions, Cautions, and Instructions covering the purchase and use of slings" as printed on the reverse side of this certificate.

I & I SLING INC.

By [Signature] Inspector



ISO 9001

I & I SLING INC.
2626 MARKET STREET · P.O. BOX 2423
ASTON, PA. 19014
TEL: 800-874-3539 610-485-8500
VISIT: www.landisling.com

Date 4-17-03

1402-A EAST MOUNTAIN ST.
KERNERSVILLE, NC. 27284
TEL: (336) 993-6034

202 A NORTH MAIN ST.
BUNNELL, FL. 32110
TEL: (386) 586-6380

8926 TELEGRAPH RD.
LORTON, VA. 22079
TEL: (703) 550-9405

70-D SHAWMUT RD.
CANTON, MA 02021
TEL: (781) 575-0600

10619 LEXINGTON DR.
KNOXVILLE, TN 37932
865-671-2951

This to certify that I & I Sling Inc. has subjected the following sling or slings to a visual inspection and a proof test as applicable. Such test being applied to each leg if a multiple leg sling.

Customer CLAYTON H LANDIS CO INC Ord. # 56765

No. of Slings 3 ea. skt. assys Description 1/2" x 38' 2 1/4" 6x19 IWRC

The proof test load applied is twice the rated working load. The rated working load is 4560

pounds / tons at 90 degree angle to the load. Do not exceed rated load!

Wire Rope: Manufacturer Reel #

Fittings / Attachments: Manufacturer Manufacturer

304 S/S WITH #653 fitting one end - DWG 33248-622-000

The above described sling or slings is or are warranted in material and workmanship. The Sellers liability is limited to replacing or repairing this sling or portion thereof which shall have been returned to it, and which its examination discloses to have been defective. The Seller shall not be responsible for the condition of the sling or any portion thereof, if any repairs, alterations, or heat treatment of the sling, or any portion thereof, has been made at any place other than the Seller's Service Center.

This warranty is expressly in Lieu of all other warranties expressed or implied and of all other obligations or liabilities of the seller. The seller neither assumes nor authorizes any other person to assume for it any liability in connection with the sale or use of I & I Sling Inc. products.

This warranty is specifically subject to the "Definitions, Cautions, and Instructions covering the purchase and use of slings". as printed on the reverse side of this certificate.

I & I SLING INC.

By [Signature] Inspector



ISO 9001

I & I SLING INC.
2626 MARKET STREET · P.O. BOX 2423
ASTON, PA. 19014
TEL: 800-874-3539 610-485-8500
VISIT: www.landisling.com

Date 4-14-03

1402-A EAST MOUNTAIN ST.
KERNERSVILLE, NC. 27284
TEL: (336) 993-6034

202 A NORTH MAIN ST.
BUNNELL, FL. 32110
TEL: (386) 586-6380

8926 TELEGRAPH RD.
LORTON, VA. 22079
TEL: (703) 550-9465

70-D SHAWMUT RD.
CANTON, MA 02021
TEL: (781) 575-0600

10619 LEXINGTON DR.
KNOXVILLE, TN 37932
865-671-2951

This to certify that I & I Sling Inc. has subjected the following sling or slings to a visual inspection and a proof test as applicable. Such test being applied to each leg if a multiple leg sling.

Customer CLAYTON H LANDIS CO INC Ord. # 56765

No. of Slings 1 ea. skt assys Description 1/2" x 20.6" 6x19 IWRC 304 S/S

The proof test load applied is twice the rated working load. The rated working load is
pounds / tons at degree angle to the load. Do not exceed rated load!

Wire Rope: Manufacturer Reel #

Fittings / Attachments: Manufacturer Manufacturer

with #651 & #653 fittings - DWG 33248-624-000
PULLED TO DESTRUCTION - BROKE AT 24410 lbs.

The above described sling or slings is or are warranted in material and workmanship. The Sellers liability is limited to replacing or repairing this sling or portion thereof which shall have been returned to it, and which its examination discloses to have been defective. The Seller shall not be responsible for the condition of the sling or any portion thereof, if any repairs, alterations, or heat treatment of the sling, or any portion thereof, has been made at any place other than the Seller's Service Center.

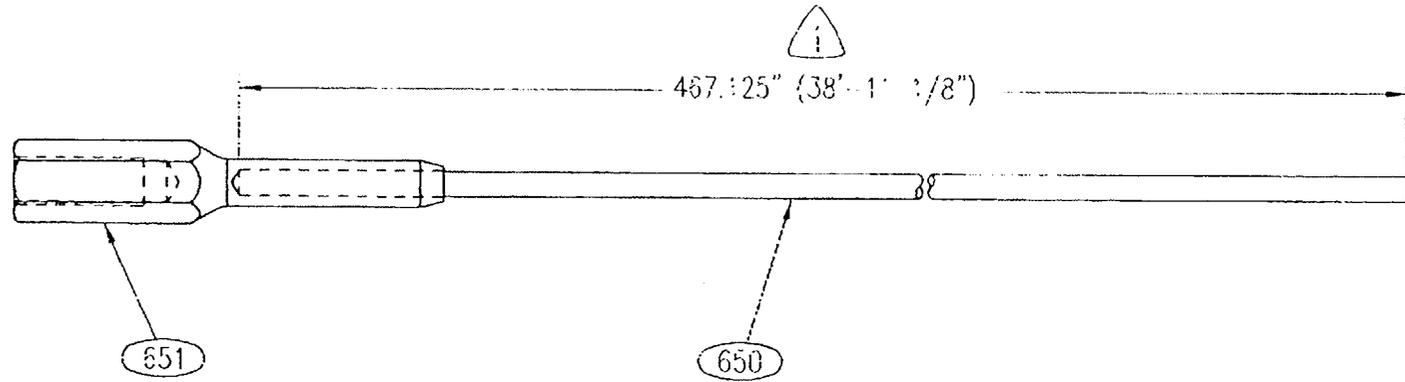
This warranty is expressly in Lieu of all other warranties expressed or implied and of all other obligations or liabilities of the seller. The seller neither assumes nor authorizes any other person to assume for it any liability in connection with the sale or use of I & I Sling Inc. products.

This warranty is specifically subject to the "Definitions, Cautions, and Instructions covering the purchase and use of slings", as printed on the reverse side of this certificate.

I & I SLING INC.

By [Signature] Inspector

Mark	Revision	ECR #	By	Date	Check'd By	Appr'd By
1	LENGTH OF ITEM #650 WAS 451.375" (37'-7 3/8")	34344-01	CF	3/24/03		



NOTES:
1. EACH ASSEMBLY TO BE LOAD TESTED TO 9,120 LBS.

651	33248-621-651
ITEM	DETAIL DWG

650	3	3	CABLE ASSEMBLY (FIXED SIDE)	
			Ø1/2" X 6 X 19 HRC 304 SS CABLE X JB--1 1/8" LG.; NOMINAL BREAK STRENGTH 22,000 LBS.	
ITEM	Unit Qty	PART NUMBER	STANDARD DESCRIPTION	Unit Wt (Lbs)
	Total Qty	DETAIL DWG	SPECIFICATION	
		ASSEMBLY DWG	REMARK	Code

STANDARD TOLERANCES UNLESS SPECIFIED OTHERWISE ALTERNATE DIMENSION UNITS ARE FOR REFERENCE ONLY			
MACHINING		GENERAL FABRICATION	
0.0	±0.0250"	CONCENTRICITY	0.002" TH
0.00	±0.0150"	STRAIGHTNESS	0.002"
0.000	±0.0050"	FLATNESS	0.002"
		PERPENDICULARITY	0.005"/10"
FRACTIONS	±1/32"	PARALLELISM	0.005"
ANGLES	±0.7°	SURFACE FINISH	32 μAA
		PERPENDICULARITY	1/16" / 24"
		PARALLELISM	1/16"

FILLETS SHOWN SHARP = .03" R MAX. || BREAK CORNERS .03" X 45° CHAMFER
TAPPED HOLES - MIN. DEPTH FOR FULL THREADS = 1.8 X DIAMETER
CHAMFER ALL TAPPED HOLES TO ROOT OF FIRST THREAD
ALL DIMENSIONS ARE INCHES UNLESS SPECIFIED OTHERWISE

Drawn	C. Feiv	DATE	2/14/03
Engineer	A. Landis	DATE	2/18/03
Approved		Customer	CHL
Checked		Title	TURNBUCKLE
Issued		Ref. Dwg.	
		Dwg. No.	33248-620-000
		Sheet	1 of 1
Job Number	34344	Scale	3" = 1'-0"
Size	A	Unless Noted Otherwise	



CLAYTON H. LANDIS COMPANY INC.
476 Meetinghouse Rd. South Plainfield, NJ 07080
(215) 723-7284 Fax (215) 725-9115

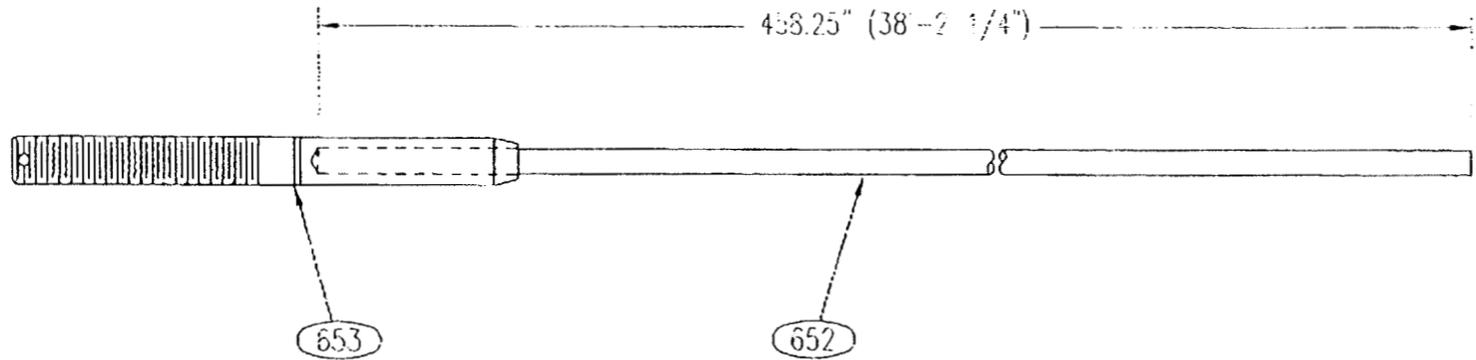
P:\IN PROGRESS\DRY STAFF\34348 MATERIAL FABRICATING SYSTEM\PARAMS\DWG\34348-620-000-REV01.DWG 05/09/2003 2:45 PM

5543 P.08

CFC LOGISTICS

JUL-22-2003 11:10

Mark	Revision	ECR #	By	Date	Check'd By	Appr'd By



NOTES:
 1. EACH ASSEMBLY TO BE LOAD TESTED TO 9,120 LBS.

653	33248-623-651
ITEM	DETAIL DWG

652	3		CABLE ASSEMBLY (TURNBUCKLE SIDE) Ø1/2" X 6 X 19 INRC 304 SS CABLE X 38'-2 1/4" LG.; NOMINAL BREAK STRENGTH 27,000 LBS.
ITEM	Unit Qty 3	PART NUMBER DETAIL DWG ASSEMBLY DWG	STANDARD DESCRIPTION SPECIFICATION REMARK

STANDARD TOLERANCES UNLESS SPECIFIED OTHERWISE ALTERNATE DIMENSION UNITS ARE FOR REFERENCE ONLY			
MACHINING		GENERAL FABRICATION	
0.0	±0.025"	CONCENTRICITY	0.002" TIR
0.00	±0.0150"	STRAIGHTNESS	0.002"
0.000	±0.0005"	FLATNESS	0.002"
		PERPENDICULARITY	0.005"/10"
FRACTIONS	±1/32"	PARALLELISM	0.005"
ANGLES	±0.2°	SURFACE FRESH	32 µm
		PERPENDICULARITY	1/16" / 24"
		PARALLELISM	1/16"
FILLETS SHOWN SHARP = .03" R MAX. BREAK CORNERS .03" X 45° CHAMFER			
TAPPED HOLES - 1/4" DEPTH FOR REAL THREADS = 1.8 X DIAMETER CHAMFER ALL TAPPED HOLES TO ROOT OF FIRST THREAD			
ALL DIMENSIONS ARE INCHES UNLESS SPECIFIED OTHERWISE			

Drawn	C. Fehr	DATE	2/14/03
Engineer	A. Landis	DATE	2/18/03
Approved		Customer	CHL
Checked		Title	TURNBUCKLE
Issued		Ref. Dwg.	
		Dwg. No.	33248-622-000
		Rev.	0
Job Number	34344	Size	A
		Scale	3" = 1'-0"
		Sheet	1 of 1

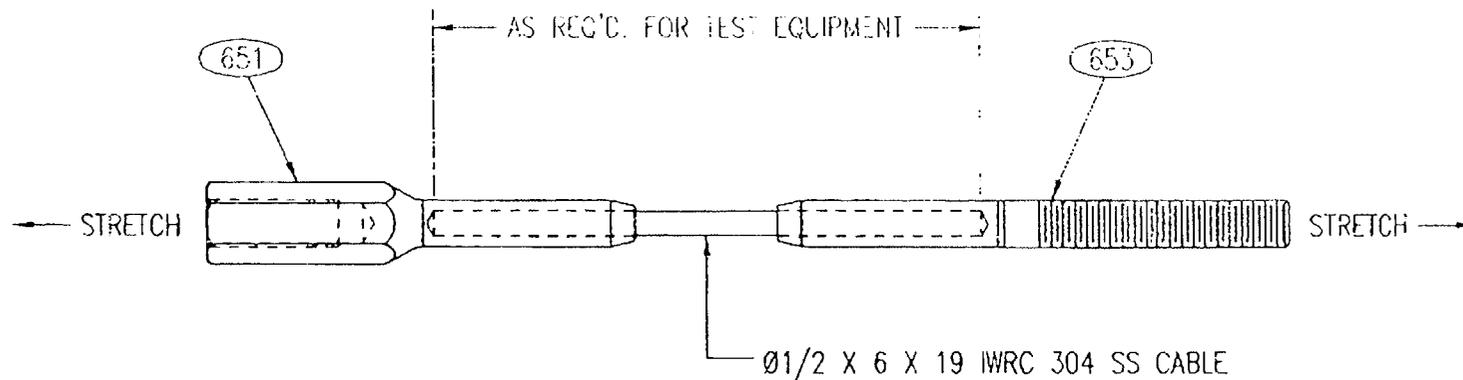


CLAYTON H. LANDIS COMPANY INC.
 476 Moultonhouse Rd. Spanglersville, Pa. 17354
 (215)723-7284 Fax: (215)723-9715

NEW PROCESS DRAWING SYSTEM - MATERIAL HANDLING SYSTEM DRAWINGS ISSUED 6:27 AM - REVISED 7:00 AM - 02/18/03 7:06 PM

5543 P.09
 CFC LOGISTICS
 JUL-22-2003 11:10

Mark	Revision	ECR #	By	Date	Check'd By	Apprv'd By
1	ADDED NOTES	34344-01	CF	3/24/03		



NOTES:

1. DESTRUCTIVE TEST BY STRETCHING TO FAILURE TO PROVE SWAGE SYSTEM.
- 1 2. RECORD BREAK STRENGTH. SYSTEM FAILURE POINT MUST EXCEED 22,800 LBS. FOR CHL ACCEPTANCE OF ANY CABLE ASSEMBLIES UTILIZING TYPICAL FITTINGS AND/OR SWAGE PROCEDURE.
- 1 3. CHL WILL RECEIVE DESTROYED ASSEMBLY.

653	33248-623-000
651	33248-621-000
ITEM	DETAIL DWG

STANDARD TOLERANCES UNLESS SPECIFIED OTHERWISE ALTERNATE DIMENSION UNITS ARE FOR REFERENCE ONLY				IDENTIFICATION	DATE	 CLAYTON H. LANDIS COMPANY INC 476 Meetinghouse Rd. South Plainfield, NJ 07080 (201) 721-7284 Fax (201) 723-9115		
MACHINING		GENERAL FABRICATION		Drawn	C. Felv	2/14/03		
0.0	±0.020"	CONCENTRICITY	0.002" TIR	Engineer	A. Landis	2/18/03	Customer	CHL
0.00	±0.0150"	STRAIGHTNESS	0.002"	Approved			Title	TURNBUCKLE
0.000	±0.0050"	FLATNESS	0.002"	Checked			Ref. Dwg.	
FRACTIONS	±1/32"	PERPENDICULARITY	0.005"/10"	Issued			Dwg. No.	33248-624-000
ANGLES	±0.7°	PARALLELISM	0.005"				Rev	1
		SURFACE FINISH	32 μ"AA				Job Number	34344
FILLETS SHOWN SHARP = .03" R MAX.		BREAK CORNERS .03" X 45° CHAMFER					Scale	3" = 1'-0"
TAPPED HOLES - 1/4" DEPTH FOR FULL THREADS = 1.8 X DIAMETER		CHAMFER ALL TAPPED HOLES TO ROOT OF FIRST THREAD					Unless Noted Otherwise	Sheet
ALL DIMENSIONS ARE INCHES UNLESS SPECIFIED OTHERWISE								1 OF 1

1/10 PROLOGIST GREAT STAIR 11/17/03 - 10/20/03 HANDLING SYSTEM DRAWINGS (FINAL) 05/24/03 13248-624-000-REV01 DWG 05/25/03/2003 2:47 PM

2. The hoist inspection and maintenance schedule is also attached. If there is any deficiency in the hoist system viewed either during the working shift inspection or the annual qualified service technician inspection the deficient part will be replaced.

3. The sources are removed from the plenum and set off to one side prior to the cask being placed in the pool. Procedure GI-202 covers this. The sources are placed on a table that is on one side of the pool. The cask is lowered on the opposite side of the pool. The cask will never be raised or lowered over the sources.



"Value through Excellence"

215-723-7284 FAX: 215-723-9115
WWW.CHLSYSTEMS.COM

7-21-03

ANNUAL INSPECTION & MAINTENANCE SCHEDULE for GENESIS I IRRADIATOR HOIST

Operators are trained to visually observe the hoist and trolley system during each working shift for abnormal function, wear and damage. A qualified service technician will perform the following inspections annually.

Inspection

- Check functioning of brakes and brake wear
- Check functioning of limit switches
- Check wire ropes for damage, wire breakage and wear
- Check rope mounts and guides
- Check swage fittings on wire rope ends
- Check turn buckles and bell lifting eye
- Check oil level in hoist gearbox
- Inspect trolley
- Lubricate gears of travel drives and wheels
- Check all bolted joints and welds.
- Check power supply systems, especially current collectors (check sliding contacts for wear)
- Check electrical switchgear and wiring
- Check bell make-up air supply system components
- Check paintwork; repair if necessary
- Check cart latching mechanisms
- Check cart wheels for wear and integrity