

# Oweis Engineering

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January 29, 2009

Division of Industrial Medical Nuclear Safety  
USNRC  
475 Allendale Rd.  
King of Prussia, PA 19406-1415

*29-30946-01  
03036645*

RE: Oweis Engineering Inc.  
Certificate Number: 293094601L

To Whom It May Concern:

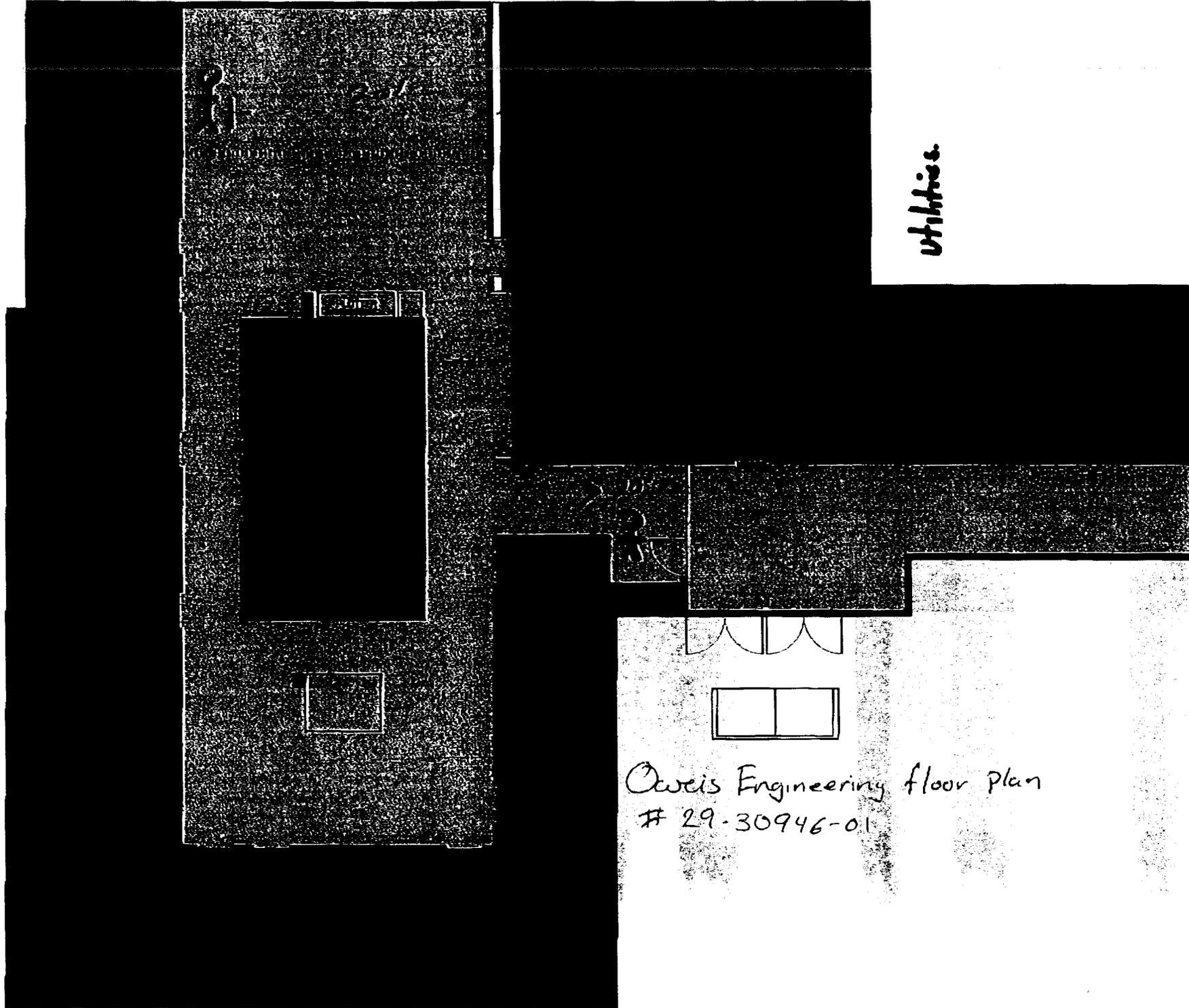
Please be advised that Oweis Engineering Inc. re-located from 143 Washigton Ave, Morristown, NJ 07960 to our new location, 100 E. Hanover Ave., Suite 101, Cedar Knolls, NJ 07927. Please update our records accordingly.

Should you have any questions, please feel free to contact the office.

Sincerely,

Michele A. Salvo for Oweis Engineering Inc.  
Office Manager

*143279*



Oweis Engineering floor plan  
 # 29-30946-01

## APPENDIX G PUBLIC DOSE CALCULATION WORKSHEET

*Oweis Engineering # 29-30946-01*

To demonstrate compliance, you must show that the maximum dose to any *member of the public* will be less 100 millirem in a year and that the maximum dose in any *unrestricted area* will be less than 2 millirem in any one hour. The typical limiting case involves the storage of gauges. Several simplifying and conservative assumptions are made in this calculation method:

- No shielding other than the shielding in the gauge is assumed to be present.
- All gauges are assumed to be at the same distance as the closest gauge.
- Sources are assumed to remain in the shielded position within the gauge.
- Each gauge is assumed to be a point source and dose rates are assumed to decrease with the inverse square of distance from the gauge.
- ♦ Gauges are assumed to be in storage all of the time.

More realistic assumptions can be made or actual measured dose rates can be used if necessary to demonstrate compliance.

Step	Instruction	Result
<b>DOSE TO MEMBER OF PUBLIC IN ONE YEAR</b>		
1	Identify the individual member of the public likely to receive the highest dose from gauges in storage. This will be the person who spends the most time in the vicinity of the stored gauges or who is closest to the gauges. This individual will be the focus of the calculation.	<i>Reaction</i>
2	Determine the maximum dose rate in mrem/hr at a distance of three feet (1 meter) for each gauge kept in the storage location. This value may be obtained from the radiation profile in the gauge operation manual, from the manufacturer, or from Transport Index on the Yellow II label on the transport case. Calculate the sum of the dose rate values for all of the gauges that may be stored at this location and enter the result. Remember to include both gamma and neutron dose.	<i>• 6 mrem/hrs x 3 = 1.8 mrem.hr</i>
3	Enter the distance in feet from the position occupied by the person identified in step 1 to the nearest gauge in the storage area.	<i>20'</i>
4	Calculate the square of the distance from step 3 and enter the result.	<i>400</i>
5	Divide the value from step 4 by 9 and enter the result. This is a factor that accounts for the difference between the dose rate at 3 feet and the dose rate at the distance at which the person is located.	<i>44</i>
6	Divide the dose rate (mrem/hr) from step 2 by the result from step 5 and enter the result.	<i>• 04 mrem/hr.</i>
7	Enter the number of hours in a year that the individual will be present in the vicinity of the gauges. For example, an individual working full-time near the gauges, would be present approximately 2000 hrs in a year (8 hrs per day x 5 days per week x 50 weeks per year).	<i>2000 hrs</i>
8	Multiply the result from step 6 by the result from step 7 and enter the result. This is the maximum dose in mrem the individual could receive in one calendar year. If this value is less than 100 mrem, the annual dose limit is met; continue with step 9 to determine if the unrestricted area dose rate limit is met.	<i>80 mrem yr.</i>

*TI = .6*

DOSE IN UNRESTRICTED AREAS IN ONE HOUR		
9	Determine the minimum distance in feet to any unrestricted area outside the gauge storage area and record the value. This could be an area above, below, or adjacent to the storage area that is unrestricted for the purpose of radiation control. The area need not be occupied, just accessible to members of the public, which may include company employees.	10 ft
10	Calculate the square of the distance from step 9 and enter the result.	100
11	Divide the value from step 10 by 9 and enter the result. This is a factor that accounts for the difference between the dose rate at 3 feet and the dose rate at the distance in step 9.	11.1
12	Divide the dose rate (mrem/hr) from step 2 by the result from step 11 and enter the result. This is the maximum dose in mrem that could be received in one hour in the closest unrestricted area. If this value is less than 2 mrem, the dose limit for unrestricted areas is met.	.16 mrem/hr
Calculations performed by <i>Platdwell</i>		Date <i>1/14/08</i>

If either dose limit is exceeded, you should either recalculate that dose using more realistic assumptions and data or take steps to reduce the dose received by members of the public using the principles of time, distance, and shielding.

- ◆ Limit the time personnel spend in the vicinity of the gauges
- ◆ Increase the distance between the gauges and personnel
- ◆ Add shielding to reduce the dose rate

## OCCUPANCY FACTORS

The following occupancy data may be used when data for specific personnel are not available:

Area	Occupancy Factor (T)
Work areas such as offices, laboratories, shops, wards, nurses' stations; living quarters; children's play areas; and occupied space in nearby buildings.	Full Occupancy (T=1)
Corridors, rest rooms, elevators using operators, unattended parking lots.	Partial Occupancy (T=1/4)
Waiting rooms, toilets, stairways, unattended elevators, janitor's closets, outside areas used only for pedestrians or vehicular traffic.	Occasional Occupancy (T=1/16)

**Reference:** NCRP Report No. 49, *Structural Shielding Design and Evaluation for Medical Use of X-Rays and Gamma Rays of Energies Up to 10 MeV*, 1976

## SHIELDING HALF-VALUES\*

Material	Cs-137 Gamma Radiation	Am-Be Neutron Radiation
Lead	1/4 in.	N/A
Concrete	2 in.	4 in.

\* The half-value is the thickness of material that will reduce the dose rate by one-half.

This is to acknowledge the receipt of your letter/application dated

1/29/2009, and to inform you that the initial processing which includes an administrative review has been performed.

AMEND. 29-30946-d  
There were no administrative omissions. Your application was assigned to a technical reviewer. Please note that the technical review may identify additional omissions or require additional information.

Please provide to this office within 30 days of your receipt of this card

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A copy of your action has been forwarded to our License Fee & Accounts Receivable Branch, who will contact you separately if there is a fee issue involved.

Your action has been assigned **Mail Control Number** 143279.  
When calling to inquire about this action, please refer to this control number.  
You may call us on (610) 337-5398, or 337-5260.