

**NU-22B<sup>®</sup> (R-422B) FIELD CONVERSION STUDY**

Testing Date: Pre Conversion 6-30-2009 to 8-17-2009  
Post Conversion 8-18-2009 to 10-21-2009

Location:

Multi-family housing unit  
Indianapolis IN  
Project Name: Ashton

Particulars:

The ICOR tech support staff was contacted by a multi-family property management company who owns nearly 24,000 apartment units throughout the Midwest. This company had determined that replacing all of their existing equipment with new R-410A systems in response to the rising cost of maintaining R-22 based systems was financially impractical, and in some cases, technically impossible. Their goal was to convince themselves that NU-22B will be a safe, easy to use, and reliable alternative refrigerant option that would allow them to maintain their existing R-22 systems for an indefinite period of time. The ICOR tech support team worked with their facility maintenance managers to develop the study criteria and select the locations and equipment. Data recording devices were used to collect both pre and post system performance. The collected data was then analyzed and the results are summarized below.

Equipment:

Payne<sup>®</sup> nominal 1.5 ton air conditioner  
10 SEER rated with R-22  
R-22 Data plate charge 3.75 lbs

Pre Conversion

R-22 data is from 7-10-2009  
7-10-2009 Highest Ambient Temperature was 89°F. Source from National Climatic Data Center (NCDC)

Post Conversion

NU-22B (R-422B) data is from 8-27-2009  
8-27-2009 Highest Ambient Temperature was 88°F. Source from National Climatic Data Center (NCDC)  
NU-22B charge 5 lbs  
System was charged by liquid pressure 30° over ambient. This method of charging was done because no charging guidelines were available.

## Air Handler Delta T

### R-22

Average 59° Supply and 70° Return

High 66° Supply and 77° Return

Low 52° Supply and 70° Return

### NU-22B

Average 56° Supply and 67° Return

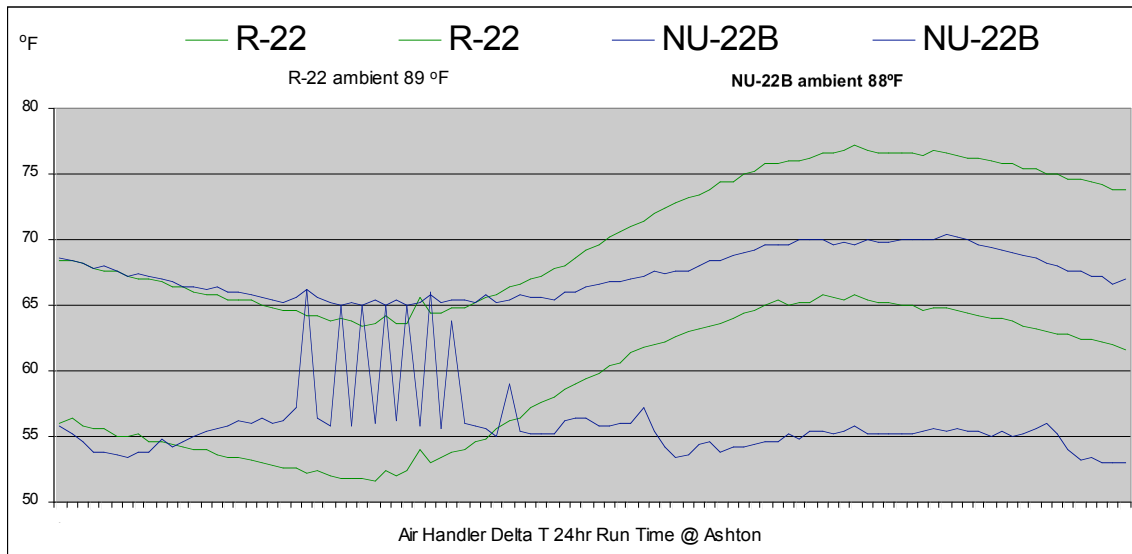
High 66° Supply and 70° Return

Low 53° Supply and 65° Return

The average return temperature is 3° lower with NU-22B than R-22 and the average high return temperature is 7° lower with NU-22B than R-22. The reason for the lower return temperature may be do to the thermostat being lowered at some point after the conversion.

The average Delta T (evaporator temperature split) with R-22 and Nu-22B are the same at 11°

The average temperature difference (TD) with R-22 with a 40° saturated gas temperature is 30°. Average temperature difference (TD) with NU-22B with a 40° saturated gas temperature is 27°.



## System Current (amps)

R-22

Average current (amps) 5.3

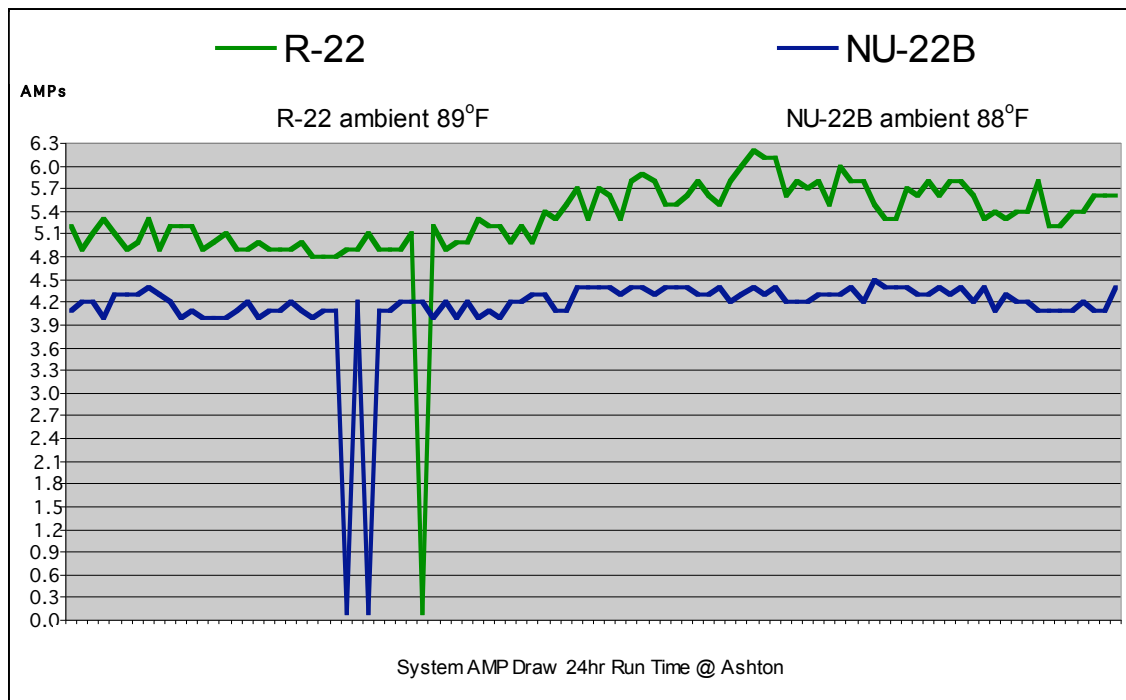
High current (amps) 6.2

NU-22B

Average current (amps) 4.1

High current (amps) 4.5

R-22 averaged 29% higher current than NU-22B. R-22 current on startup was 37% higher than NU-22B.



## Refrigerant Liquid Temperature

R-22

Time period from 1 to 4 pm liquid temperature averaged 104°

NU-22B

Time period from 1 to 4 pm liquid temperature averaged 80°

Because of the higher mass flow of NU-22B lower liquid temperature is normal. This increases the evaporator capacity do to less heat that needs to be removed from the liquid refrigerant.

## Summary

The results from this study were common to those from previous studies conducted using similar equipment and under similar conditions. The data clearly shows that the operating characteristics of NU-22B (R-422B) closely compare to that of R-22. The equipment owner was satisfied with the cooling performance, no mechanical problems were experienced and the conversion was a considered qualified success.

*Note: Conversion results will vary depending upon system design, applications and environmental conditions. ICOR International, Inc. does not guarantee these same results for every system converted to its NU-22B refrigerant.*

ICOR International, Inc. 10640 E. 59<sup>th</sup> Street \* Indianapolis, Indiana  
800-497-6805 Fax 317-826-3214  
[icorinfo@icorinternational.com](mailto:icorinfo@icorinternational.com) \* [www.icorinternational.com](http://www.icorinternational.com)  
Technical Support – Toll Free – (866) 433-8324