ROCKY MOUNTAIN
JOURNAL OF MATHEMATICS
Volume 23, Number 2, Spring 1993

A NOTE ON DEDEKIND NON-D-RINGS

K. ALAN LOPER

1. Introduction. All rings considered will be commutative integral domains with unity. The term *prime ideal* will refer to a nonzero, proper, prime ideal. Following [**3, 5**], we define non-D-ring as follows:

Definition 1. A ring R is a *non-D-ring* provided there is a nonconstant polynomial $f(x) \in R[x]$ such that $f(a) \in U(R)$ (the unit group of R) for every $a \in R$. The polynomial $f(x)$ will be called a uv (*unit valued*) polynomial.

Roughly speaking, a non-D-ring is a ring in which the unit group is large and maximal ideals are sparse. It is reasonable to assume then that one should be able to draw some strong conclusions about the ideal structure of non-D-rings. In this direction, the following result was proven in [**5**].

Theorem 1. *If R is a Dedekind non-*D*-ring with $f(x) \in R[x]$ being a monic* uv*-polynomial with degree $n \geq 2$, then $\mathrm{Cl}(R)$, the ideal class group of R, is a torsion group with exponent d where d is a positive integer which divides n.*

Theorem 1 is interesting in that it places strong restrictions on the structure of the ideal class group of a Dedekind non-D-ring, but it provides no mechanism for constructing examples of Dedekind non-D-rings. In this note we will prove a theorem which will provide us with the means to construct a large class of Dedekind non-D-rings. We will then construct some specific examples and analyze the ideal class group structures.

We conclude this section with more terminology and results from [**5**] concerning non-D-rings.

Received by the editors on August 28, 1990, and in revised form on March 27, 1991.