contains a minimal (non zero) prime ideal.

Proof. Immediate from Cor. 3 above.

Corollary 5. In a GUFD every non zero minimal prime ideal P is associated to a prime quantum q i.e. $P = Q_q$.

Proof. By Cor. 4, P contains a prime quantum q and the result follows from Prop. 5.

4. Stability Properties of GUFD's.

In this section we shall establish that the property of being a GUFD remains invariant under localizations and polynomial extensions. For this purpose we need to introduce the concept of a Generalized Krull Domain (GKD).

An integral domain R is called a Generalized Krull Domain if

(1) every non zero non unit x in R is contained in a finite number of minimal prime ideals of R.

(2) for every minimal prime ideal P of R, R_P is a rank one valuation domain.

(3) $R = \cap R_P$, where P varies over all the minimal prime ideals of R.

It may be noted that a Krull domain is a Generalized Krull Domain. In this section we shall use the facts that (1) every localization of a GKD is a GKD (2) if x is an indeterminate over a GKD R then $R[x]$ is a GKD. For a detailed theory of GKD's the reader is referred to [21],[29] and [9].

As our first step towards the consideration of stability properties of GUFD's we collect some useful facts.

Lemma 8. In an HCF domain a quantum is a prime quantum.

Proof. Let q be a quantum in an HCF domain R and suppose that $x,y|q$. We claim that $x|y$ or $y|x$. For if we suppose on the contrary that $x \nmid y$ and $y \nmid x$ then R being an HCF domain