WIENER

ADDITIVE NOISE PROCESS, $\{n(t)\}$

INPUT PROCESS, $\{u(t)\}$
(PRIMARY REFLECTOGRAM)

LINEAR SYSTEM
IMPULSE RESPONSE
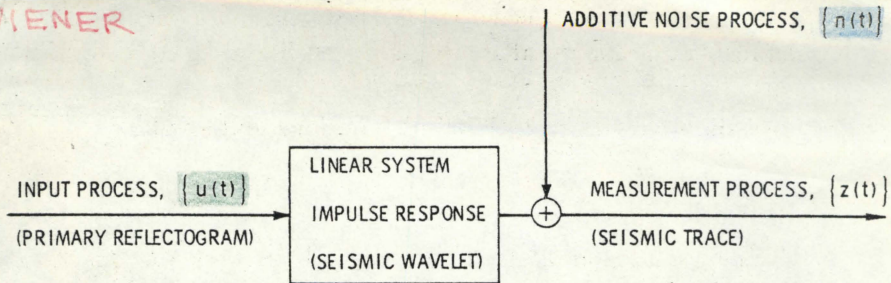(SEISMIC WAVELET)

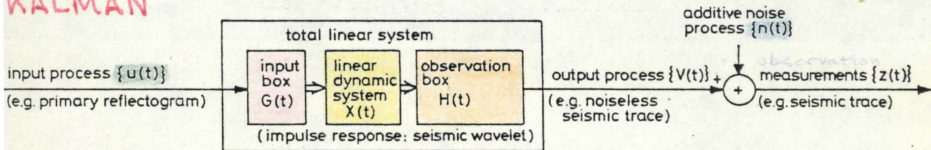MEASUREMENT PROCESS, $\{z(t)\}$
(SEISMIC TRACE)

BASIC ASSUMPTIONS:

1. INPUT IS A WHITE-NOISE PROCESS

2. INPUT AND ADDITIVE NOISE ARE UNCORRELATED

Fig. 1. Measurement generating model in Wiener theory and auto regression analysis

KALMAN

input process $\{u(t)\}$
(e.g. primary reflectogram)

total linear system

input box $G(t)$ — linear dynamic system $X(t)$ — observation box $H(t)$

(impulse response: seismic wavelet)

additive noise process $\{n(t)\}$

output process $\{V(t)\}$
(e.g. noiseless seismic trace)

measurements $\{z(t)\}$
(e.g. seismic trace)

BASIC ASSUMPTIONS

- Input is a white noise process.
- Input and additive noise are uncorrelated