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THE WHITE HOUSE  
WASHINGTON

November 18, 1976

MEMORANDUM FOR:

JIM MITCHELL

FROM:

JIM CONNOR *JEC*

The attached material was returned in the President's outbox with the request that it be returned to you.

Attachment:

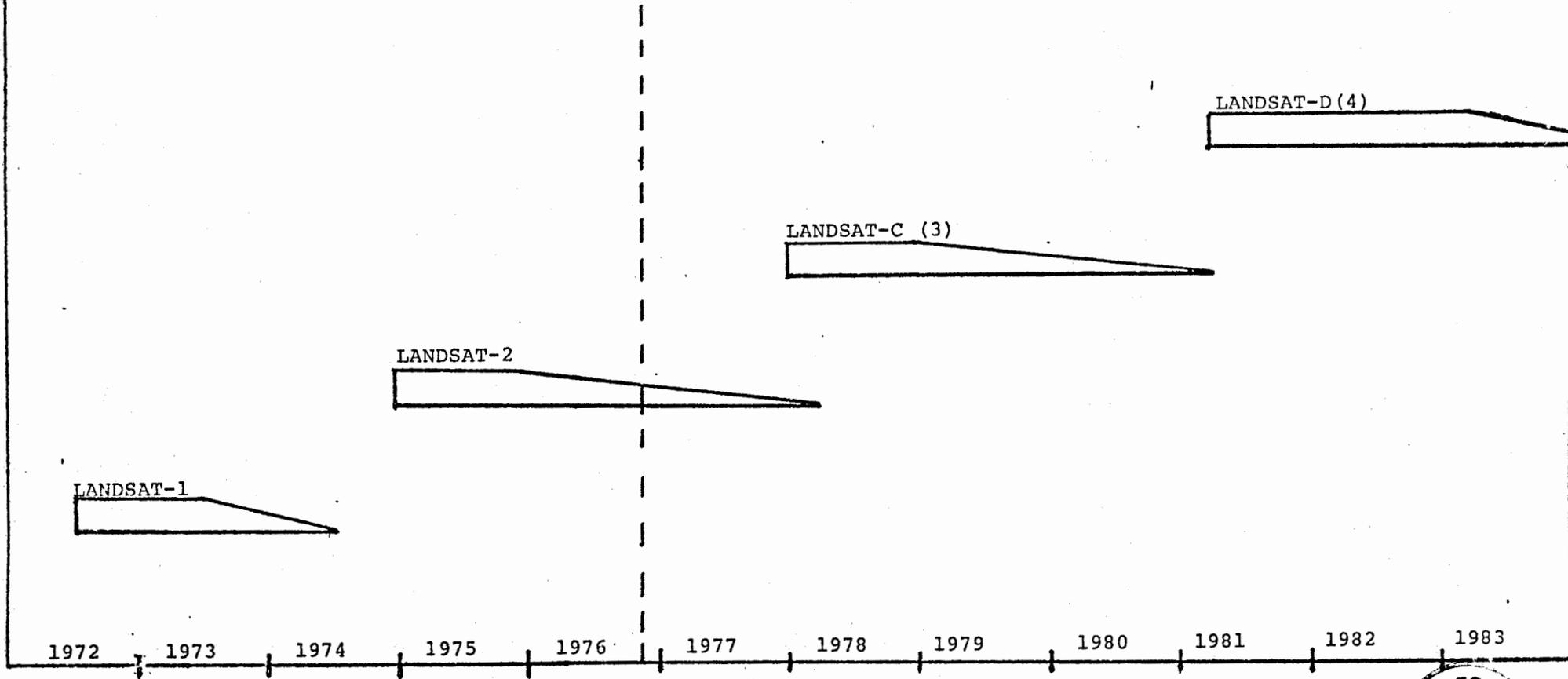
Comparison of Landsat Performance Improvements



THE WHITE HOUSE  
WASHINGTON

Return to Jim Mitchell  
JOMB

FIGURE 1  
EXPECTED LANDSAT SATELLITE LIFETIMES



COMPARISON OF LANDSAT PERFORMANCE IMPROVEMENTS

Performance	LANDSAT				
	1	2	C(3)	D(4)	
				Agency Req.	OMB Rec.
<b>A. Resolution</b>					
- 80 meters resolution data provided by the first-generation instrument (ability to discern objects 1 acre in size) .....	Yes	Yes	Yes	Optional	Optional
- 30 meters resolution data provided by the second-generation instrument (ability to discern objects 1/5th acre in size ...	No	No	No	Yes	Yes

NOTE. The 30 meters resolution data would make possible:

- more accurate measurement of field area for global crop monitoring;
- more accurate identification of likely locations for oil and mineral deposits; and
- more accurate land use and other earth resources inventories.

**B. Color Discrimination**

Performance	LANDSAT				
	1	2	C(3)	D(4)	
				Agency Req.	OMB Rec.
- Ability of the first generation instrument to discriminate between <u>five</u> colors .....	Yes	Yes	Yes	Yes	Yes
- Ability of the second-generation instrument to discriminate more precisely between <u>seven</u> colors .....	No	No	No	Yes	Yes

NOTE. Improved color discrimination would make possible:

- more accurate identification of different crop types and more accurate measurement of crop conditions (e.g., crop vigor) for global crop monitoring;
- more accurate land use and other earth resources inventories (especially those involving different species of vegetation); and
- more accurate identification of likely areas for oil and mineral deposits.

**C. Data Handling System**

Performance	LANDSAT				
	1	2	C(3)	D(4)	
				Agency Req.	OMB Rec.
- First-generation data handling system (used for LANDSATS 1, 2 and C) .....	Yes	Yes	Yes	No	No
- Second-generation data handling system (would be provided for LANDSAT-D) .....	No	No	No	Yes	Yes

NOTE. The second-generation data handling system would make possible:

- handling of much higher data flows expected from LANDSAT-D (an increase in resolution results in higher data flows);
- real-time, world-wide data return (important for time-critical applications such as crop monitoring); and
- no dependence on foreign ground stations or unreliable spacecraft tape recorders for world-wide coverage.



COMPARISON OF LANDSAT SATELLITE FEATURES

	LANDSAT				
	1	2	C (3)	D (4)	
				Agency Req.	OMB Rec.
- Experimental (non-operational)	Yes	Yes	Yes	Yes	Yes
- Significant advancement in technology .....	Yes	No	No	Yes	Yes
<u>General Features</u>					
- Regular, repetitive coverage (every 18 days) .....	Yes	Yes	Yes	Yes	Yes
- World-wide coverage (no limitations on overflight or data release) .....	Yes	Yes	Yes	Yes	Yes
- Real-time, world-wide data return .....	No	No	No	Yes	Yes
- Dependent on foreign ground stations for world-wide coverage (after tape recorders fail) .....	Yes	Yes	Yes	No	No
- Backup satellite (in case of launch or satellite failure) .....	No	No	No	Yes	No
<u>Instrumentation and Spacecraft Features</u>					
- <u>First-generation</u> LANDSAT remote sensing instrument (Multispectral Scanner) .....	Yes	Yes	Yes	Yes	Optional (if users pay)

	LANDSAT				
	1	2	C (3)	D (4)	
				Agency Req.	OMB Rec.
- <u>Second-generation, higher-performance</u> LANDSAT instrument (Thematic Mapper)	No	No	No	Yes	Yes
- Shuttle recoverable and refurbishable spacecraft .....	No	No	No	Yes	Yes
- Standardized, modular spacecraft (to reduce development and manufacturing costs) .....	No	No	No	Yes	Yes
<u>NASA Cost (in \$ millions)*</u>	150	50	60	322	222
- Instrument development costs .....	( 30)	( --)	( --)	( 42)	( 42)
- Other LANDSAT costs .....	(120)	( 50)	( 60)	(280)	(180)

\* Cost estimates are not adjusted for inflation.

