



1979 Mishap and Injury Data

NASA Safety Office
Institutional Operations Division
Washington, D. C. 20546

FOREWORD

This report contains statistical and narrative information concerning NASA and NASA Contractor mishap and injury experience for calendar year 1979. Injury data are reported for full-time NASA civil servants, and injury summaries are included for contractors at six installations. Frequency and severity information is not available for the contractors. One NASA fatality occurred when equipment, which was being loaded onto a truck by the individual, fell from the truck and struck him.

The number of fire incidents was up. The controls, detection, and suppression in this area prevented more serious or increased losses. Our aviation flight operations experienced no major losses. There were two NASA Type "B" aviation related accidents and ten incidents. The two type "B" mishaps were engine damage on the ground. The automotive accident frequency rate and monetary losses decreased in 1979. Our frequency rate was 5.26, and the reported losses were \$16,000, making 1979 our best year since 1973.

Our lost time injury/illness frequency rate decreased from 0.81 to 0.69. The chargeback billing which the Office of Workers' Compensation imposes on NASA for reimbursement was up to more than three and one-half million dollars. Each installation should continue to examine, without limiting justifiable claims, the administration of the Continuation of Pay program (CoP) and lost time charged to Worker's Compensation Program. Top management attention can, and has at some installations, dramatically reduced the NASA loss. Seven installations had decreases in their lost time injury/illness frequency rates and seven had decreases in total reportable rates.

Supervisory personnel should continue to oversee potentially hazardous operations to preclude employees from taking shortcuts and perhaps injuring themselves. If managers continue to take personal interest in the safety of operations, I am convinced our accident and injury rates will continue to be reduced. Our most hazardous operations tend to have the fewest injuries. Although our lost time accident and injury rate decreased in 1979, it still requires special attention by management and supervisory personnel, especially at those installations where the rate is high and/or increasing. As a point to consider, if those installations having increased lost time injury/illness rates in 1979 had maintained the same number of injuries/illnesses in 1979 that they had in 1978, our overall rate would have decreased to 0.64 instead of 0.69. If those installations having increased rates of total reportable injuries/illnesses had maintained their 1978 numbers of incidents and others achieved their 1979 performance, our total incident frequency rate would have been 1.41 instead of 1.53.

The information presented in this report is designed to assist each NASA employee in evaluating how his/her work environment historically stacks up against the rest of NASA for his/her safety and health.



Frank E. Penaranda
Director, Institutional
Operations Division

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NASA PERSONNEL INJURIES FOR 1979

We are proud to report that once again NASA had a decrease (15%) in lost time injuries/illnesses. Three charts compare injury rates (pp. 2,3, and 4): LOST TIME CASES IN FEDERAL AGENCIES - 1979, LOST-TIME INJURY RATES--PRIVATE SECTOR--FEDERAL AGENCIES--NASA--SELECTED INDUSTRY, and INJURY RATES: PRIVATE SECTOR--FEDERAL GOV'T--NASA--SELECTED INDUSTRY, and on page 5, a chart compares NASA rates since 1972. The rates shown on the charts for INDUSTRY were obtained from the Bureau of Labor Statistics. Although the NASA Lost Time Injury rate increased steadily from 1969 until 1978, the total injury rate has decreased dramatically since 1973 (See p. 5). Our rates are still very favorable compared to other included activities but still much greater than our goal of 0.2.

The NASA injury/illness frequency rate went down from 0.82 in 1977 to 0.81 in 1978 and to 0.69 in 1979. In 1979, there were three NASA installations which attained the "Safety '76" goal of 0.20 injuries per 200,000 man-hours worked; NSTL and MAF had "0" rates and JSC's rate was 0.16. In addition, WFC had a rate of 0.27, KSC had a rate of 0.32, and the MSFC rate was 0.42. The following installations reduced their lost time frequency rates during 1978: DFRC, HQ, JSC, KSC, LaRC, LeRC, MSFC, and NSTL. GSFC remained the same with a rate of 0.88. KSC made the largest percentage decrease in lost time frequency rate by reducing their rate from 1.41 to 0.32 (77%), LeRC followed with a 27 percent decrease, and JSC was next with a 20 percent decrease. We commend them for their improvements. A review of the Injury/Illness data for 1979 indicates a 15 percent rate decrease for the agency and decreases for eight installations.

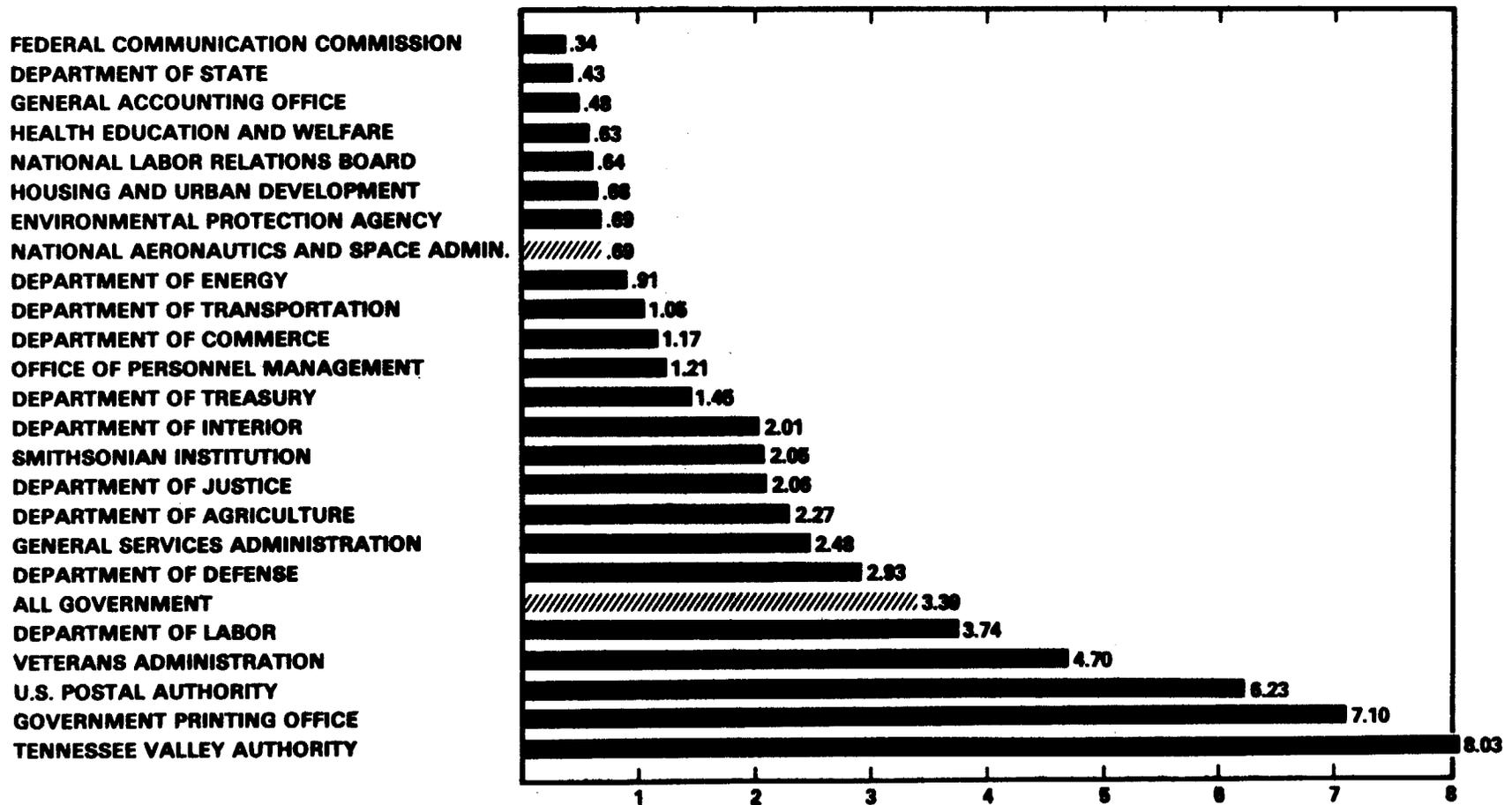
All centers except MAF submitted Form 345's (Accident Cause Analysis Reports, pp. 18 and 19) for Federal Employees, and MAF had no injuries. The lost-time cases indicated here differ by 25 percent from those reported on the Form 102F's (Federal Occupational Injuries and Illness Survey), and the total cases are approximately 33 percent more than those listed on the 102F. This may indicate that some centers include first aid cases while others do not. Six centers also included 345's for contractors, pp. 21 and 22. Again there are some numbers that seem to be inconsistent; however, these apparent disagreements may be the result of how reportable cases and first aid cases are recorded.

As in years past, the message from all of this is that while slips, trips, and falls will always be with us, top managers can and should exercise more direct supervision of day-by-day working conditions, fully investigate each injury, and take action to prevent recurrences and potential abuse of Continuation of Pay and Federal Employee Compensation procedures.

LOST TIME CASES IN FEDERAL AGENCIES – 1979

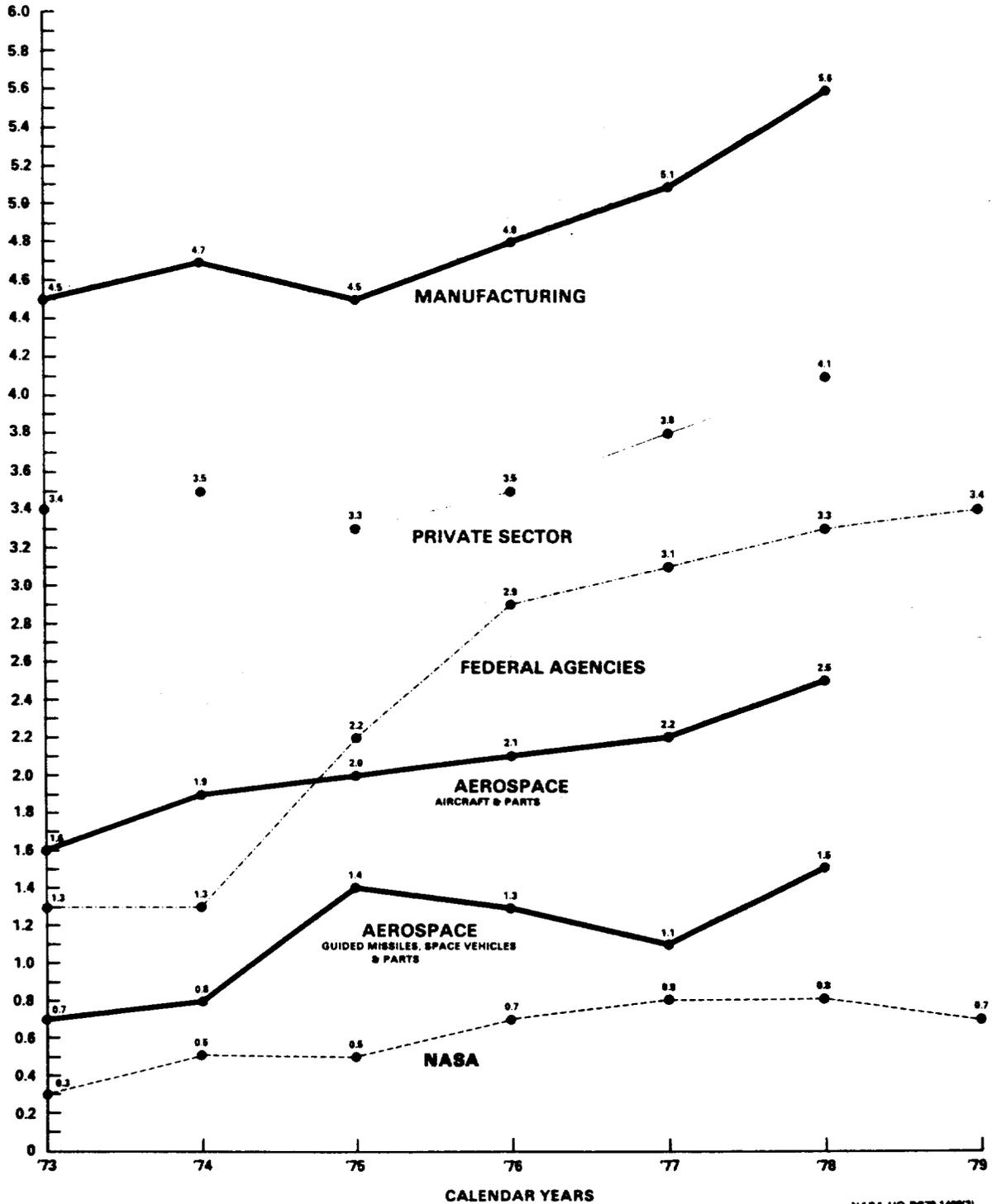
OCCUPATIONAL INJURY RATES FOR CIVILIAN PERSONNEL PER 200,000 MAN-HOURS

2



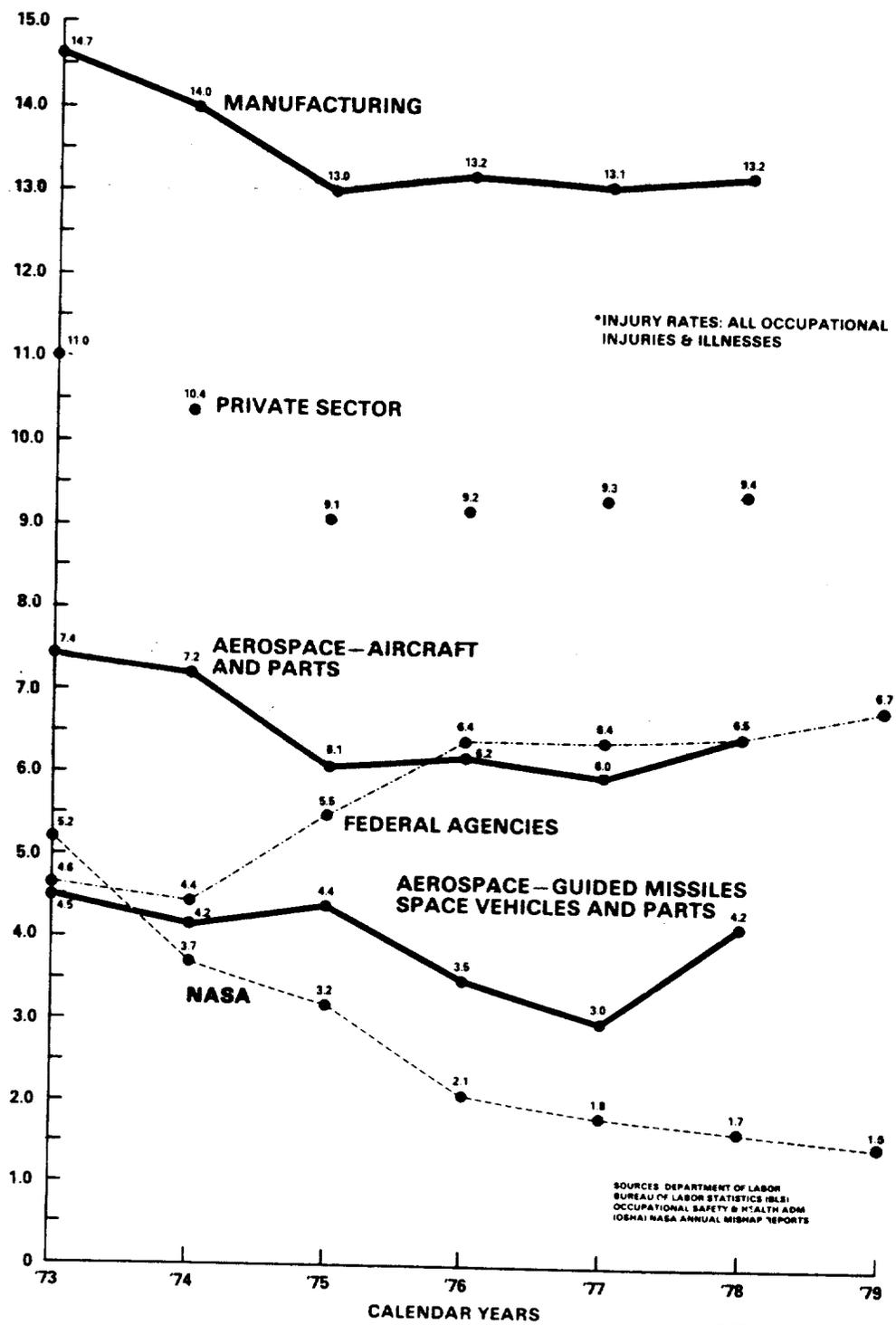
SOURCE: OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, U.S. DEPARTMENT OF LABOR

LOST-TIME INJURY RATES: PRIVATE SECTOR – FEDERAL AGENCIES – NASA – SELECTED INDUSTRY

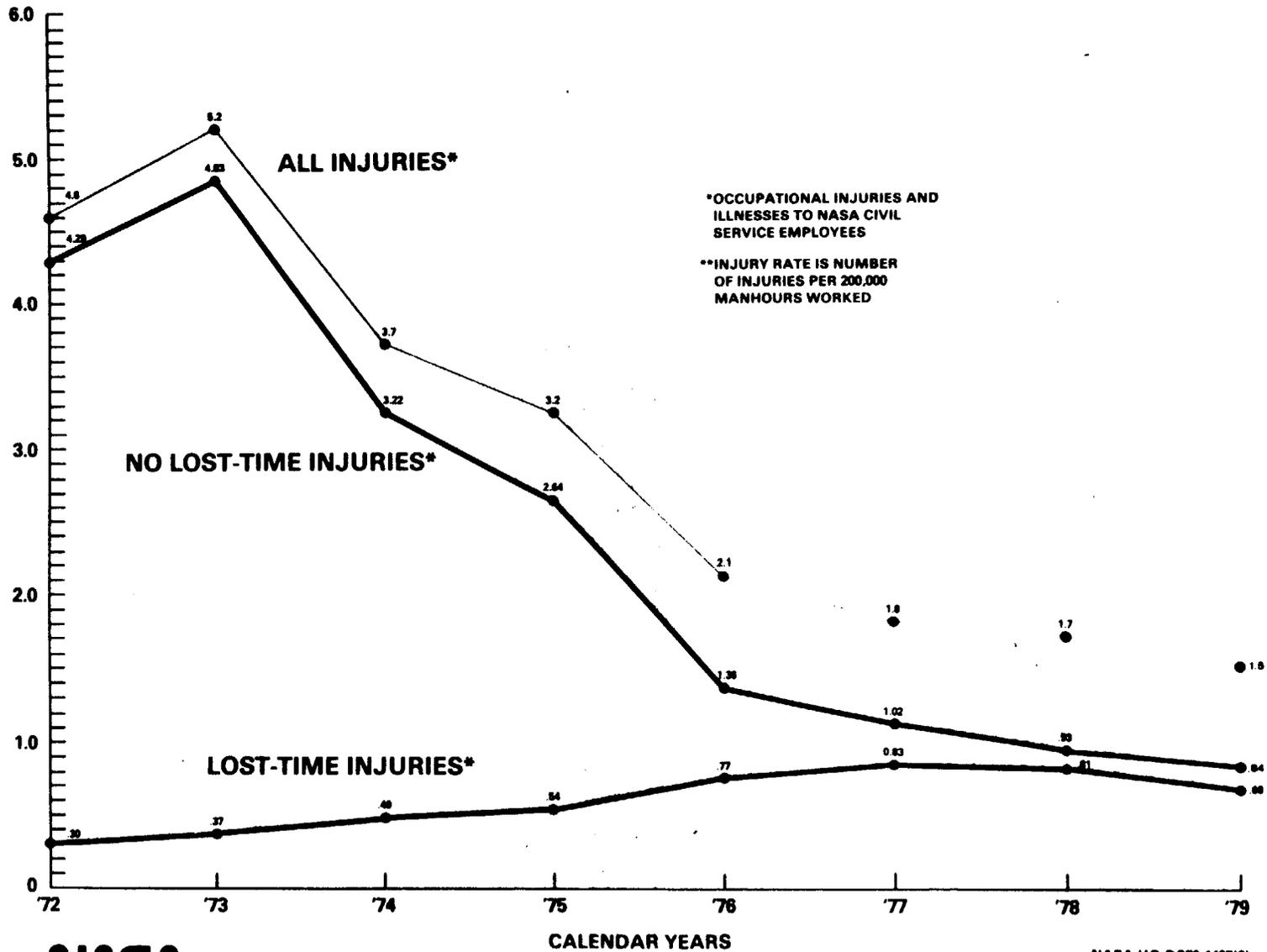


NASA HQ 8879-1408(3)
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INJURY RATES:* PRIVATE SECTOR—FEDERAL AGENCIES—NASA—SELECTED INDUSTRY



COMPARISON OF NASA INJURY* RATES** (1972-1979)

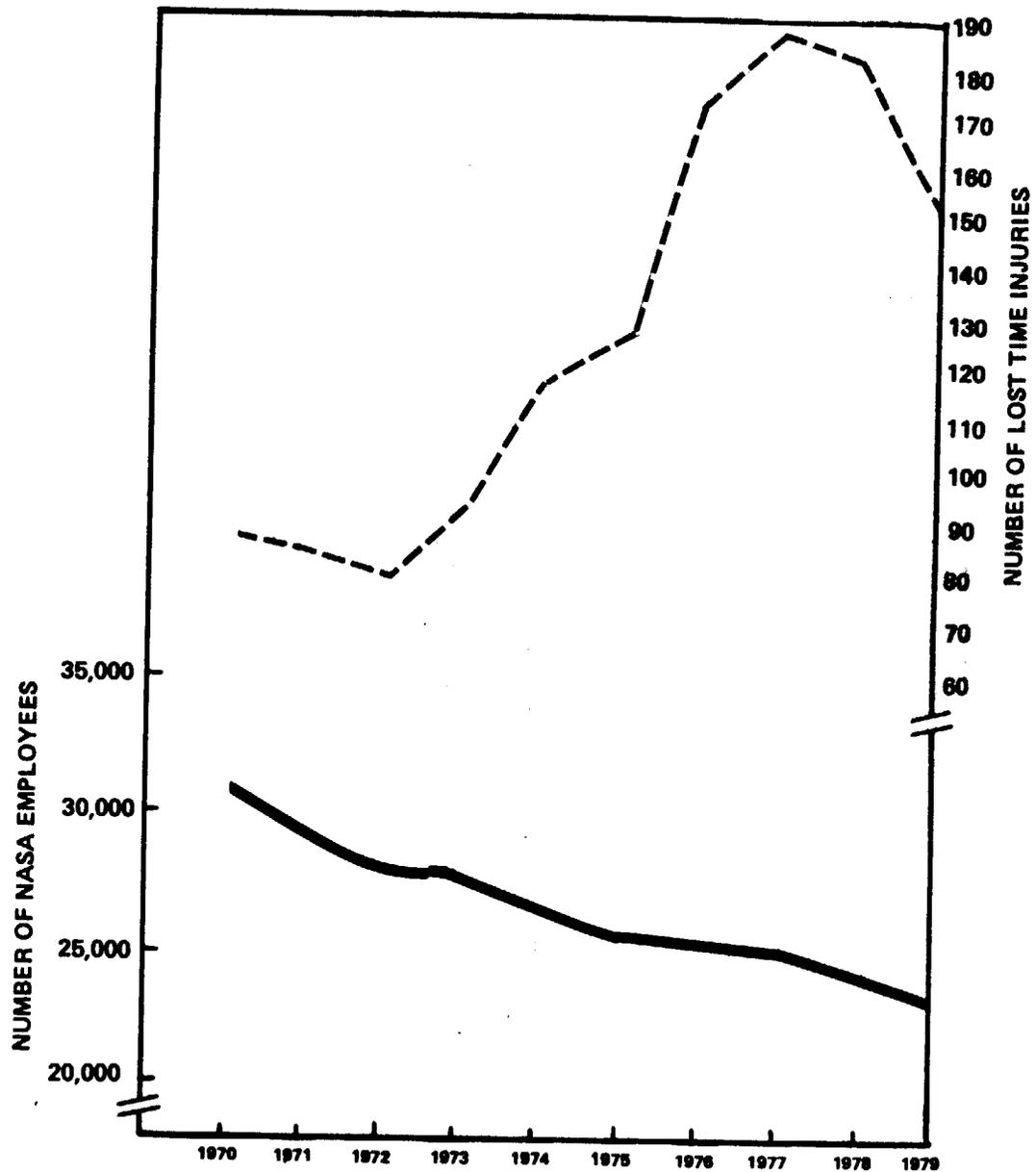


NASA INJURY AND ILLNESS DATA BY INSTALLATION - - ANNUAL 1979

	NO. OF EMPLOYEES	MAN HRS WORKED IN (K)	TOTAL INJURY/ ILLNESS DATA			LOST TIME INJURY/ILLNESS DATA				
			NO. CASES	FREQ. 1978	RATE 1979	NO. CASES	NO. DAYS	FREQ. 1978	RATE 1979	SEVERITY RATE
ARC	1,725	3,288	39	1.82	2.37	23	240	.94	1.40	14.60
DFRC	468	911	8	2.13	1.76	6	54	1.49	1.32	11.75
GSFC	3,601	6,817	36	1.61	1.06	30	451	.88	.88	13.23
HQ	1,610	2,884	20	1.81	1.39	7	50	.54	.49	3.47
JSC	3,777	7,525	6	.28	.16	6	31	.20	.16	.82
KSC	2,278	4,387	10	1.46	.46	7	80	1.41	.32	3.65
LaRC	3,044	5,638	75	2.11	2.66	28	317	1.00	.99	11.24
LeRC	2,854	5,137	102	4.79	3.97	31	470	1.65	1.21	18.30
MAF	26	49	1	0	4.08	0	0	0	0	0
MSFC	3,818	6,628	22	.64	.66	14	379	.32	.42	11.44
NSTL	109	216	0	1.10	0	0	0	1.10	0	0
WFC	425	742	20	1.75	5.39	1	9	.25	.27	2.43
TOTAL	23,737	44,222	339	1.75	1.53	153	2,081	.81	.69	9.41
LAST YEAR	24,278	45,325	396	1.75	--	184	2,469	.81	--	10.90

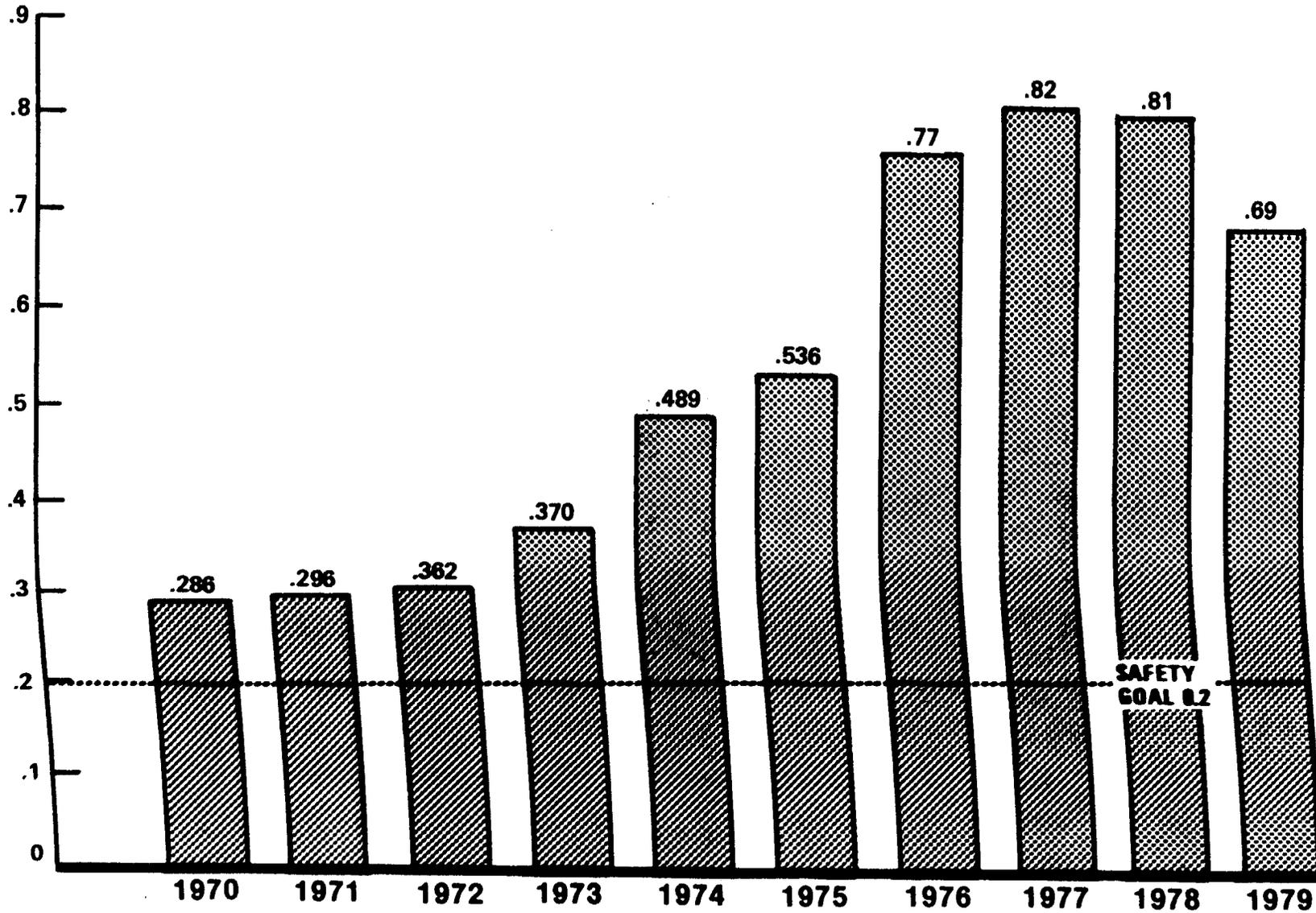
1. TOTAL INJURY/ILLNESS FREQUENCY RATE - NO. OF CASES PER 200,000 HOURS WORKED.
2. INJURY FREQUENCY RATE - NO. OF LOST WORKDAY CASES PER 200,000 HOURS WORKED.
3. INJURY SEVERITY RATE - NO. OF LOST WORKDAYS PER 200,000 HOURS WORKED.

NUMBER OF NASA EMPLOYEES AND NUMBER OF LOST TIME INJURIES VS TIME



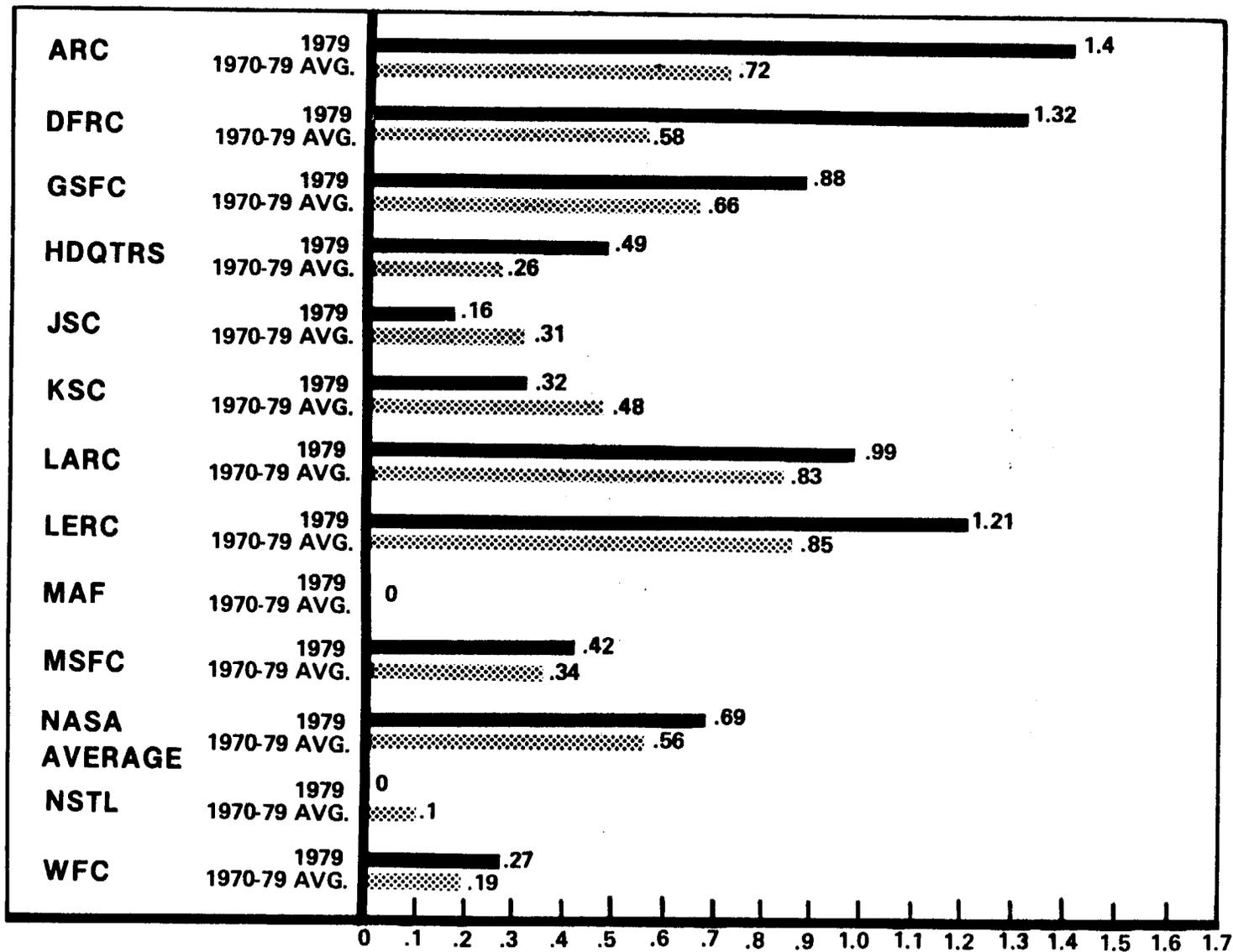
NASA INJURY FREQUENCY RATE 1970-1979

FREQUENCY RATE



FREQUENCY RATE IS THE NUMBER OF LOST TIME INJURIES PER 200,000 MAN-HOURS WORKED

NASA INJURY FREQUENCY RATES (LOST TIME)

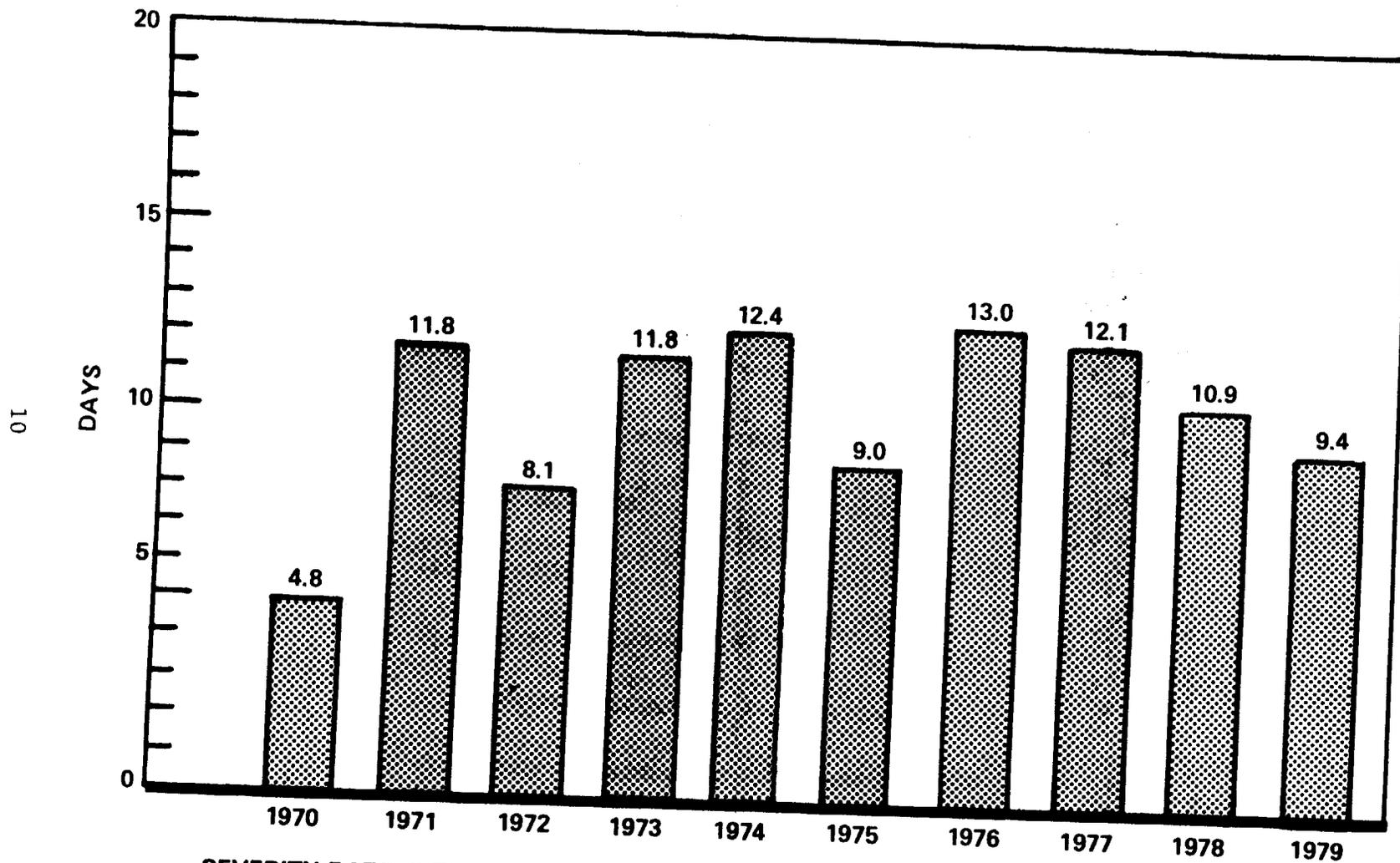


FREQUENCY RATE IS THE NUMBER OF LOST TIME INJURIES PER 200,000 MAN-HOURS WORKED

FREQUENCY RATE

NASA HQ N180-1857 (1)
3-18-80

NASA INJURY SEVERITY RATE



SEVERITY RATE IS THE NUMBER OF DAYS LOST PER 200,000 HOURS WORKED.

NASA HQ N180-1860(1)
REV. 9-24-80

NASA MISHAP DATA BY INSTALLATION - - ANNUAL 1979

	AUTO MISHAP FREQ. RATE		AIRCRAFT MISHAPS		FIRE LOSSES		OTHER MISHAPS		TOTAL MISHAPS	
	GOV	POV	NO.	RATE	NO.	(\$K)	NO.	(\$K)	COST (\$K)	RATE (\$K)
ARC	2.68	2.31	0	0	8	2.60	8	142.19	145.67	44.30
DFRC	0	0	0	0	0	0	1	40.91	88.91	97.63
GSFC	2.90	.78	0	0	1	.20	0	0	5.07	.74
HQ	52.71	1.59	0	0	0	0	2	.62	2.29	.79
JSC	0	0	0	0	14	24.75	3	15.55	40.60	5.40
KSC	6.33	3.56	0	0	3	1.00	2	.30	5.15	1.17
LaRC	7.55	1.53	2	213.50	0	0	2	1.50	8.60	1.53
LeRC	14.44	2.22	0	0	2	8.20	0	0	11.73	2.28
MAF	0	0	0	0	0	0	0	0	0	0
MSFC	4.35	0	0	0	0	0	0	0	2.50	.38
NSTL	0	0	0	0	0	0	0	0	0	0
WFC	7.95	0	0	0	0	0	1	8.6	14.23	19.20
TOTAL	5.26	.88	2	7.70	28	36.75	19	209.70	324.75	7.34
LAST YEAR	6.77	.99	4	17.69	15	189.71	18	55.51	303.72	6.70

1. AIRCRAFT MISHAP FREQ. RATE = NO. OF MISHAPS PER 100,000 HOURS FLOWN.
2. MOTOR VEHICLE MISHAP FREQ. RATE = NO. OF MISHAPS PER MILLION MILES DRIVEN.
3. TOTAL COST OF MISHAPS INCLUDES REPAIRS/REPLACEMENTS OF MOTOR VEHICLES AND DAMAGE, AND TORT CLAIMS (AS ON OSHA FORM 102FF).
4. MISHAP COST RATE= TOTAL COST OF MISHAPS PER MILLION HOURS WORKED.

COST OF CY 1979 NASA ACCIDENT/INCIDENT/INJURIES

MANPOWER LOSS		1	FATALITIES
		186	NON-LOST TIME INJURIES
		153	LOST TIME INJURIES
		2,081	WORK DAYS LOST = 8 MAN-YEARS EFFORT
MONEY LOSS	WAGES	\$ 156,230	
	(COP RELATED COSTS)		
	CHARGE BACK BILLING		
	TO FEDERAL EMPLOYEES		
	COMPENSATION FUND		
	(1979)	\$3,509,539	
	SUB-TOTAL	\$3,665,769	
MATERIAL LOSS	AIRCRAFT	106,000	<u>No. OF MISHAPS</u>
	VEHICLES	16,492	12
	FIRE	36,750	50
	OTHER PROPERTY	268,608	28
	SUB-TOTAL	\$427,850	18
TOTAL LOSS		\$4,013,811	108

DOES NOT INCLUDE CONTRACTOR DATA

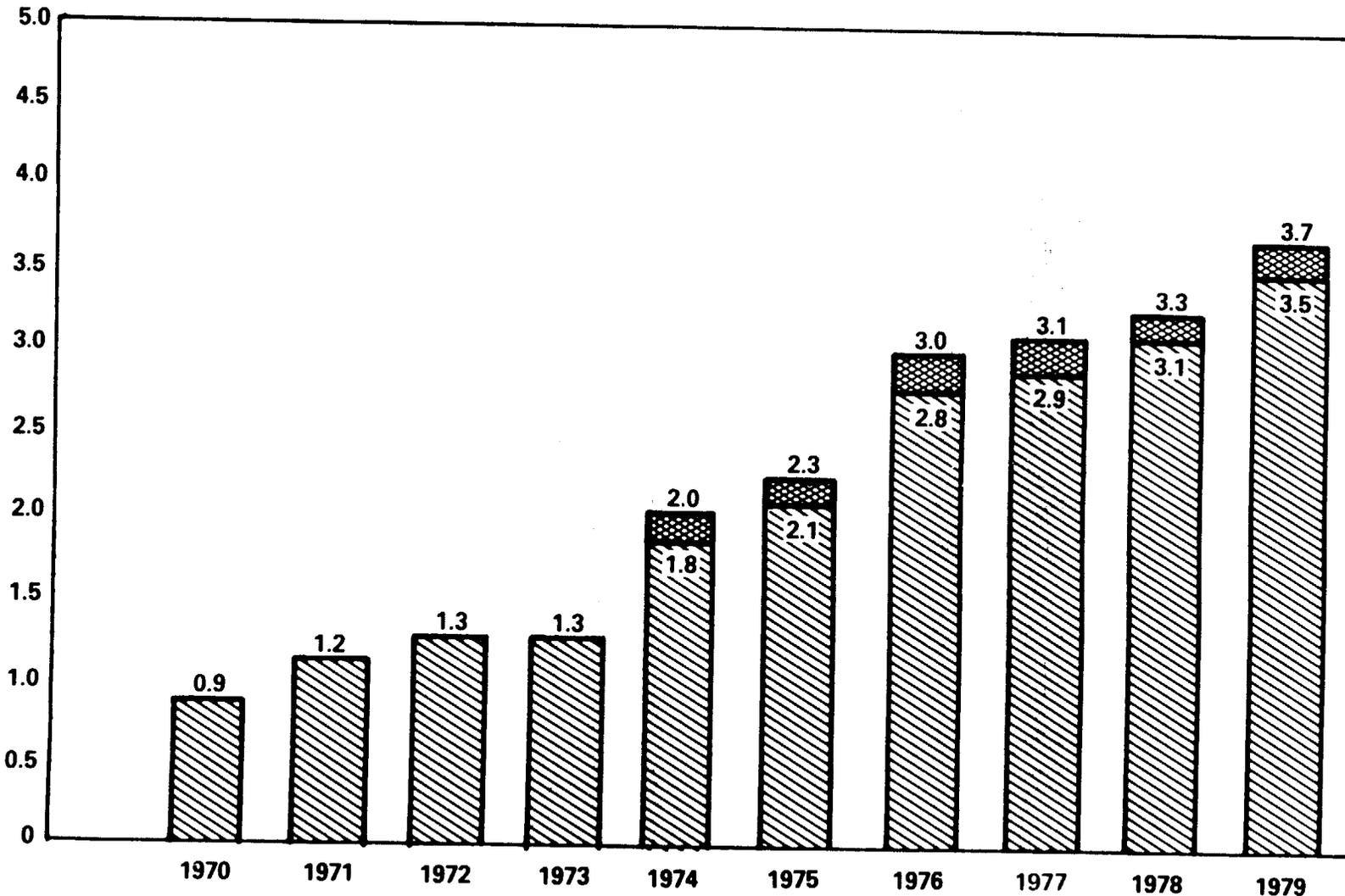
DOES NOT INCLUDE FUTURE COSTS FOR THE INJURIES; SINCE
THEY WILL BE PART OF THE ANNUAL CHARGEBACK BILLING

DOES NOT INCLUDE MISSION FAILURES

DOES NOT INCLUDE TEST OPERATIONS FAILURES

MILLIONS
OF
DOLLARS

NASA MONEY LOSSES DUE TO MISHAPS*



*INCLUDES LOST WAGES AND CHARGE BACK BILLING TO THE FEDERAL EMPLOYEES COMPENSATION FUND, BUT DOES NOT INCLUDE CONTRACTOR LOSSES.

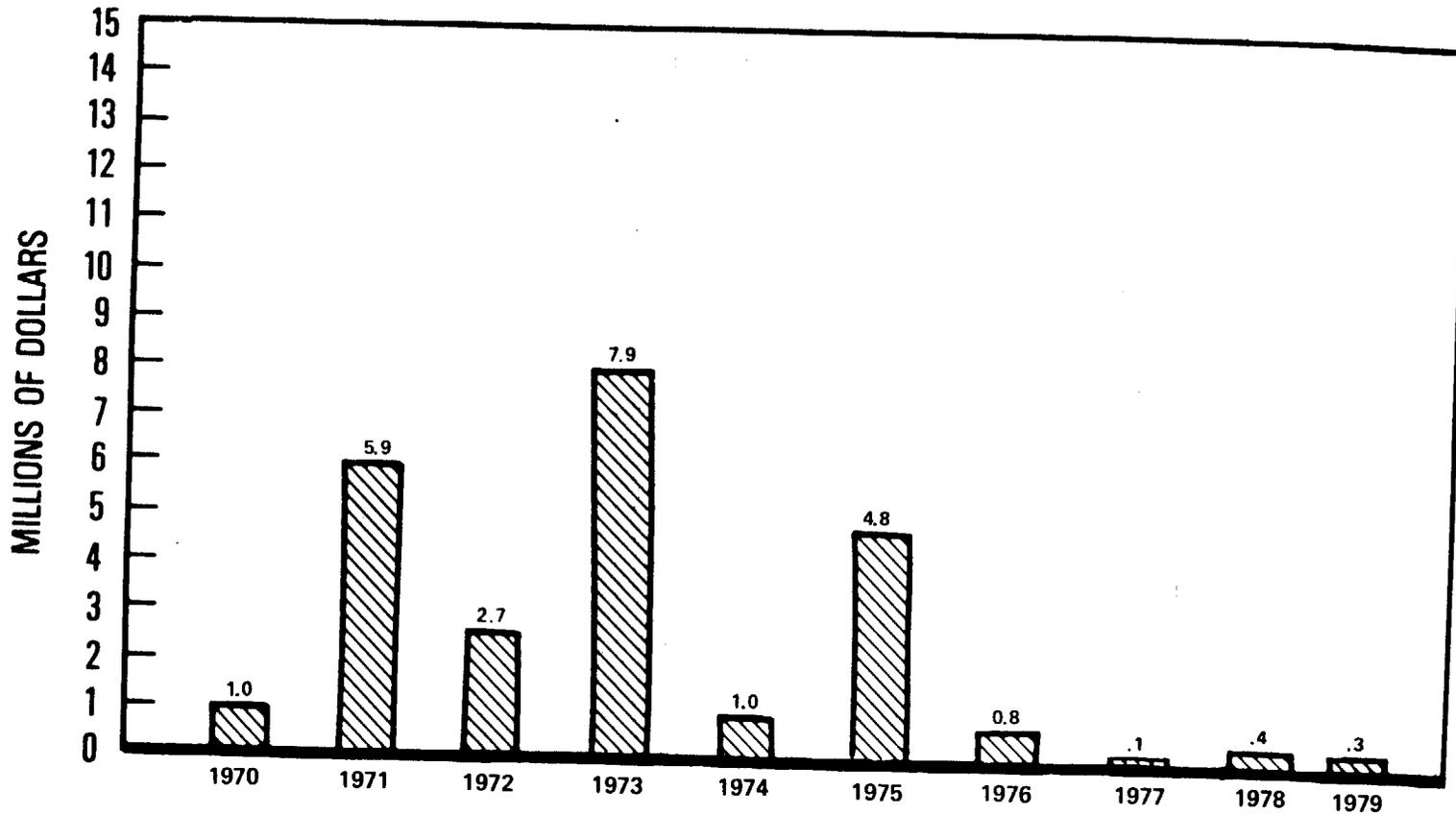


LOST WAGES



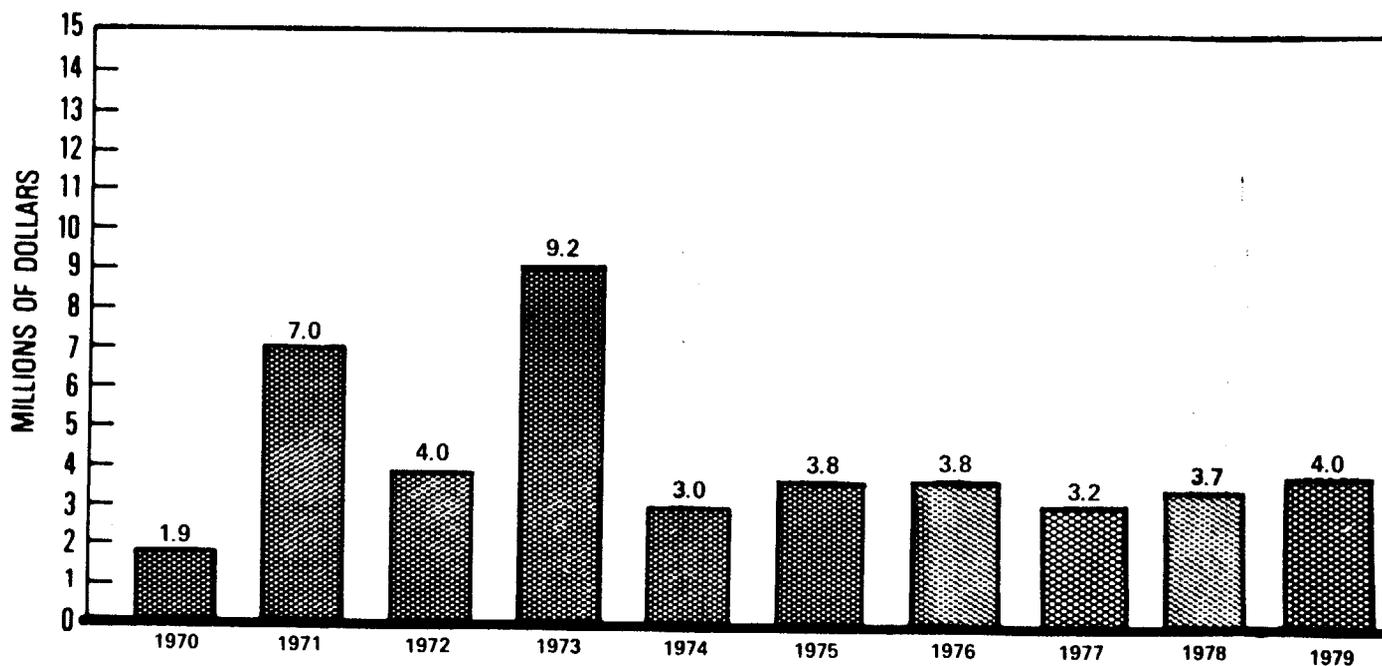
CHARGE BACK
BILLING

NASA MATERIAL LOSSES DUE TO MISHAPS *



* INCLUDES AIRCRAFT, VEHICLE, AND FIRE MISHAPS
AND LOSSES OF OTHER PROPERTY.
DOES NOT INCLUDE CONTRACTOR LOSSES.
DOES NOT INCLUDE MISSION FAILURES.
DOES NOT INCLUDE TEST OPERATIONS LOSSES.

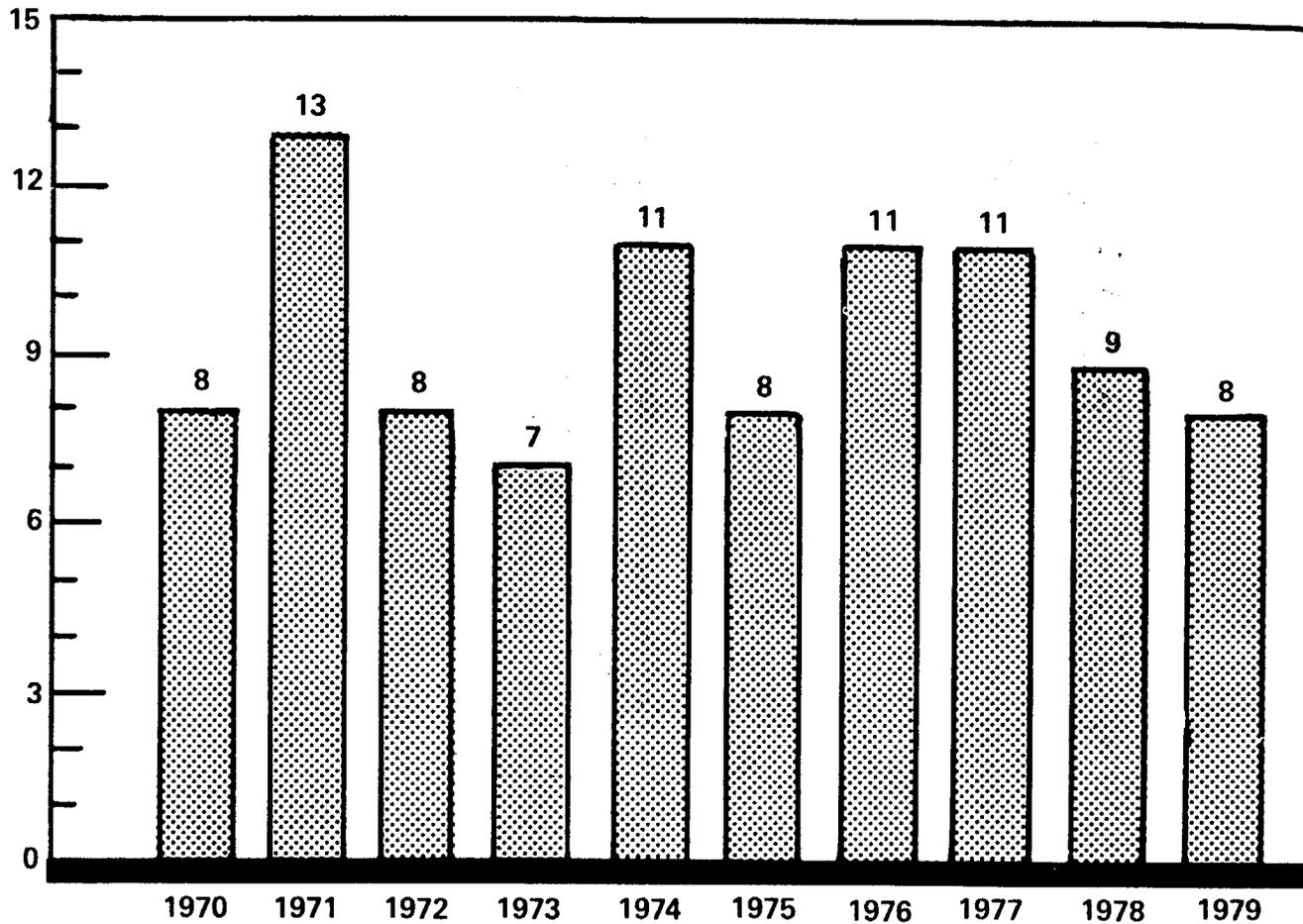
TOTAL COSTS TO NASA DUE TO MISHAPS *



- * DOES NOT INCLUDE CONTRACTOR LOSSES.
- * DOES NOT INCLUDE MISSION FAILURES.
- * DOES NOT INCLUDE TEST OPERATIONS LOSSES.

NASA EMPLOYEE-YEARS LOST DUE TO ON-THE-JOB INJURIES *

EMPLOYEE YEARS



* 260 WORK DAYS - 1 EMPLOYEE-YEAR

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3-18-80

LATHE OPERATOR INJURY - DISK CENTER SECTION

MARCH 9, 1979



ACCIDENT CAUSE ANALYSIS REPORT

CIVIL SERVANTS

Report No./Year (Calendar)

1979

INSTALLATION	MONTHLY TOTALS	QUARTER TOTAL	TOTAL TO DATE
SECTION I: SHIFT			
a.			48/155
b.			1/6
c.			2/14
SECTION II: PART OF BODY INJURED			
a. Head			10/39
b. Eye			6/50
c. Face			2/11
d. Arm			4/34
e. Hand			9/62
f. Finger			6/99
g. Torso			8/28
h. Back			44/85
i. Chest			1/10
j. Abdomen			8/11
k. Leg			16/67
l. Foot			9/39
m. Toe			2/6
n. Other			9/21
SECTION III: AGENCY INVOLVED			
a. Animals			0/1
b. Boilers and Pressure Vessels			1/11
c. Chemicals			1/11
d. Conveyors			0/0
e. Dusts			3/17
f. Electrical Apparatus			3/8
g. Elevators			1/8
h. Hand Tools			5/56
i. Highly Flammable and Hot Substances			0/10
j. Hoisting Apparatus			4/6
k. Machines			5/21
l. Material Handling			34/94
m. Mechanical Power Transmission Apparatus			0/0
n. Prime Movers and Pumps			0/0
o. Radiation and Radiating Substances			0/1
p. Vehicles			9/28
q. Walking Surfaces			38/117
r. Agencies not elsewhere classified			27/151
SECTION IV: TYPE OF ACCIDENT			
a. Striking Against			11/106
b. Struck By			17/95
c. Caught in, on, or between			6/43
d. Fall on same level			21/56
e. Fall to different level			10/15
f. Slip (not fall) or over-exertion			37/82
g. Exposure to temperature extremes			1/9
h. Contact with electric current			2/3
i. Inhalation, absorption, swallowing			0/12
j. Electric welding flash			0/5
k. Foreign body in eye			4/34
l. Type of accident not elsewhere classified			22/104

INSTALLATION	MONTHLY TOTALS			QUARTER TOTAL	TOTAL TO DATE				
SECTION V: UNSAFE MECHANICAL CONDITION									
a. Improper Guarding					10/30				
b. Defective Substances or Equipment					27/28				
c. Hazardous Arrangement					43/92				
d. Improper Illumination					3/5				
e. Improper Ventilation					0/3				
f. Unsafe Clothing					1/2				
g. No unsafe condition					58/279				
h. Unsafe condition not elsewhere classified					22/76				
i. Other	SECTION VI: UNSAFE ACT				5/12				
a. Operating without authority					0/1				
b. Operating or working at unsafe speed					3/15				
c. Making safety devices inoperative					2/11				
d. Using unsafe equip/hands instead of equip/equip unsafely					5/29				
e. Unsafe loading, placing, mixing, etc.					14/28				
f. Taking unsafe position or posture					45/162				
g. Working or moving on dangerous equipment					3/14				
h. Distraction, teasing, abusing, startling, etc.					1/8				
i. Failure to use safe attire or pers. protective devices					7/44				
j. No unsafe act					33/132				
k. Unsafe act not elsewhere classified					26/75				
SECTION VII: TYPE OF INJURY									
a. Abrasion					1/26				
b. Avulsion					0/11				
c. Burn, Chemical/Cryogenic					1/6				
d. Burn, Thermal					3/16				
e. Contusion					26/120				
f. Dermatitis					1/6				
g. Foreign Body					4/37				
h. Fracture					12/20				
i. Laceration					7/68				
j. Puncture					2/17				
k. Sprain or Strain					69/171				
l. Toxicological					0/7				
m. Other	SECTION VIII: NO. LOST TIME INJURIES				6/61				
Total					114/530				
SECTION IX: REMARKS									
<p>Legend</p> <table border="1"> <tr> <td>25</td> <td>Denotes injury cases only.</td> </tr> <tr> <td>5 / 25</td> <td>Top number denotes lost-time injury cases. Bottom number denotes injury cases.</td> </tr> </table>						25	Denotes injury cases only.	5 / 25	Top number denotes lost-time injury cases. Bottom number denotes injury cases.
25	Denotes injury cases only.								
5 / 25	Top number denotes lost-time injury cases. Bottom number denotes injury cases.								
PREPARED BY:			SUBMITTED BY:						
_____			_____						



Disk Sander Accident

ACCIDENT CAUSE ANALYSIS REPORT

CONTRACTORS

Report No./Year (Calendar)

1979

INSTALLATION	MONTHLY TOTALS	QUARTER TOTAL	TOTAL TO DATE
SECTION I: SHIFT			
a.			9/361
b.			2/165
c.			0/25
SECTION II: PART OF BODY INJURED			
a. Head			6/114
b. Eye			13/299
c. Face			1/33
d. Arm			4/213
e. Hand			6/191
f. Finger			10/479
g. Torso			11/70
h. Back			42/186
i. Chest			8/33
j. Abdomen			4/20
k. Leg			22/211
l. Foot			11/99
m. Toe			3/31
n. Other			6/129
SECTION III: AGENCY INVOLVED			
a. Animals			0/7
b. Boilers and Pressure Vessels			10/140
c. Chemicals			0/10
d. Conveyors			4/94
e. Dusts			1/27
f. Electrical Apparatus			2/8
g. Elevators			2/227
h. Hand Tools			1/18
i. Highly Flammable and Hot Substances			4/12
j. Hoisting Apparatus			9/97
k. Machines			0/0
l. Material Handling			47/383
m. Mechanical Power Transmission Apparatus			0/7
n. Prime Movers and Pumps			0/7
o. Radiation and Radiating Substances			0/1
p. Vehicles			3/41
q. Walking Surfaces			34/235
r. Agencies not elsewhere classified			29/690
SECTION IV: TYPE OF ACCIDENT			
a. Striking Against			21/537
b. Struck By			22/285
c. Caught in, on, or between			6/132
d. Fall on same level			28/107
e. Fall to different level			5/44
f. Slip (not fall) or over-exertion			38/276
g. Exposure to temperature extremes			2/41
h. Contact with electric current			1/5
i. Inhalation, absorption, swallowing			5/90
j. Electric welding flash			0/23
k. Foreign body in eye			8/221
l. Type of accident not elsewhere classified			9/314

INSTALLATION	MONTHLY TOTALS			QUARTER TOTAL	TOTAL TO DATE				
SECTION V: UNSAFE MECHANICAL CONDITION									
a. Improper Guarding					8/19				
b. Defective Substances or Equipment					7/60				
c. Hazardous Arrangement					0/90				
d. Improper Illumination					1/3				
e. Improper Ventilation					1/11				
f. Unsafe Clothing					3/26				
g. No unsafe condition					81/1698				
h. Unsafe condition not elsewhere classified					19/161				
SECTION VI: UNSAFE ACT									
a. Operating without authority					1/3				
b. Operating or working at unsafe speed					1/22				
c. Making safety devices inoperative					0/3				
d. Using unsafe equip/hands instead of equip/equip unsafely					13/187				
e. Unsafe loading, placing, mixing, etc.					7/92				
f. Taking unsafe position or posture					33/242				
g. Working or moving on dangerous equipment					9/13				
h. Distraction, teasing, abusing, startling, etc.					3/34				
i. Failure to use safe attire or pers. protective devices					10/135				
j. No unsafe act					39/335				
k. Unsafe act not elsewhere classified					18/197				
SECTION VII: TYPE OF INJURY									
a. Abrasion					0/135				
b. Avulsion					1/42				
c. Burn, Chemical/Cryogenic					6/60				
d. Burn, Thermal					3/83				
e. Contusion					26/393				
f. Dermatitis					1/16				
g. Foreign Body					7/260				
h. Fracture					17/33				
i. Laceration					17/435				
j. Puncture					1/75				
k. Sprain or Strain					71/467				
l. Toxicological					1/71				
SECTION VIII: NO. LOST TIME INJURIES					1/18				
m. Other									
Total					145/1698				
SECTION IX: REMARKS									
<p>Legend</p> <table border="1"> <tr> <td>25</td> <td>Denotes injury cases only.</td> </tr> <tr> <td>5 / 25</td> <td>Top number denotes lost-time injury cases. Bottom number denotes injury cases.</td> </tr> </table>						25	Denotes injury cases only.	5 / 25	Top number denotes lost-time injury cases. Bottom number denotes injury cases.
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5 / 25	Top number denotes lost-time injury cases. Bottom number denotes injury cases.								
PREPARED BY:			SUBMITTED BY						
_____			_____						

NASA RELATED ACCIDENTS AND FATALITIES IN 1979

DEFINITIONS:

1. NASA Mishap - Any occurrence, event, or anomaly that may be classed as a NASA accident, incident, or mission failure.
2. Type A Accident - A mishap causing death, disabling injury to five or more persons, damage to equipment or property exceeding \$100,000, or destruction of an aircraft.
3. Type B Accident - A mishap causing disabling injury to four or fewer persons or damage to equipment or property exceeding \$10,000, but less than \$100,000.
4. Incident - A mishap of less than accident severity to persons or property, causing less than \$10,000 in damages, but exceeding \$100, or a non-serious injury (Number not included in this report).
5. Mission Failure - Any event which jeopardized a mission, prevents accomplishment of major mission objectives, or causes premature mission termination (Not included in this report).
6. Costs - Direct costs of repair, replacement, or recovery; including man-hours, material, and contract costs, but excluding indirect costs of clean-up, investigation, injury, and normal operational delay.

SIGNIFICANT MISHAPS

The significant mishaps shown on the following charts are only those reported by the NASA Field Installations and contractors as having significance beyond the minor dollars loss or injury incident categories.

FATAL ACCIDENTS AND FATALITIES

	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>
NUMBER OF FATAL ACCIDENTS	2	2	3	2	2	3	1	6	1	1
TOTAL NUMBER OF FATALITIES	2	5	4	17	3	3	1	6	1	1
NASA EMPLOYEES	0	0	2	7	0	0	0	2	0	1
CONTRACTOR EMPLOYEES	2	3	2	4	1	1	1	3	1	0
PUBLIC	0	2	0	1	2	2	0	1	0	0
MILITARY	0	0	0	5	0	0	0	0	0	0

The one fatality in 1979 was a LeRC maintenance person who attempted to load a welding cart and bottles, by himself, onto a truck with the hydraulic lift gate. The equipment fell, striking the employee.

TYPE A/B ACCIDENTS BY FIELD INSTALLATIONS

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
AMES	0/0	0/0	0/0	1/0	0/2	1/0	1/1	0/0	1/3	0/4
DRYDEN	1/0	1/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/2
GODDARD	0/3	2/3	0/1	0/0	0/1	0/2	0/1	0/3	0/0	0/0
HDQTRS.	-	-	-	-	-	2/1	0/0	0/1	0/0	0/0
JOHNSON	3/1	3/3	6/2	1/0	0/5	0/1	0/0	2/1	0/0	0/2*
KENNEDY	2/1	1/0	1/0	0/1	2/1	4/1	0/0	2/1	0/0	0/0
LANGLEY	0/1	1/0	0/1	0/1	0/1	0/2	1/1	0/0	0/1	0/0
LEWIS	0/0	3/0	2/0	0/1	0/0	0/1	0/1	0/0	0/0	1/1
MARSHALL	1/4	3/3	6/2	1/0	1/0	1/1	0/0	1/0	0/0	0/0
NSTL	-	-	-	-	0/0	0/1	0/1	1/0	0/0	0/0
WALLOPS	0/1	0/2	0/0	0/0	1/1	0/0	0/1	1/1	0/0	0/1
TRACKING STATIONS	-	-	-	1/3	2/0	2/2	0/3	1/0	0/0	0/0
NASA TOTAL	7/11	14/11	15/6	4/6	7/11	10/12	2/9	8/7	1/4	1/10

Notes: * One JSC mishap was at Downey, California (purge curtains burned).

The LeRC Type "A" accident was an employee on-the-job fatality (struck by equipment he was attempting to load on a truck).

The Type "B" individual injuries are not listed in this table, but are summarized later in the report.

Test Operations accidents have been removed from this table. In the past these have been associated with program activities and are reviewed by program offices, not by the Safety Office. This does not reduce any safety responsibilities for NASA operations. However, it recognizes that these mishaps occur at facilities where the nature of the test operations involve predictably high risks/hazards, and the operations personnel are responsible for the safety of operations.

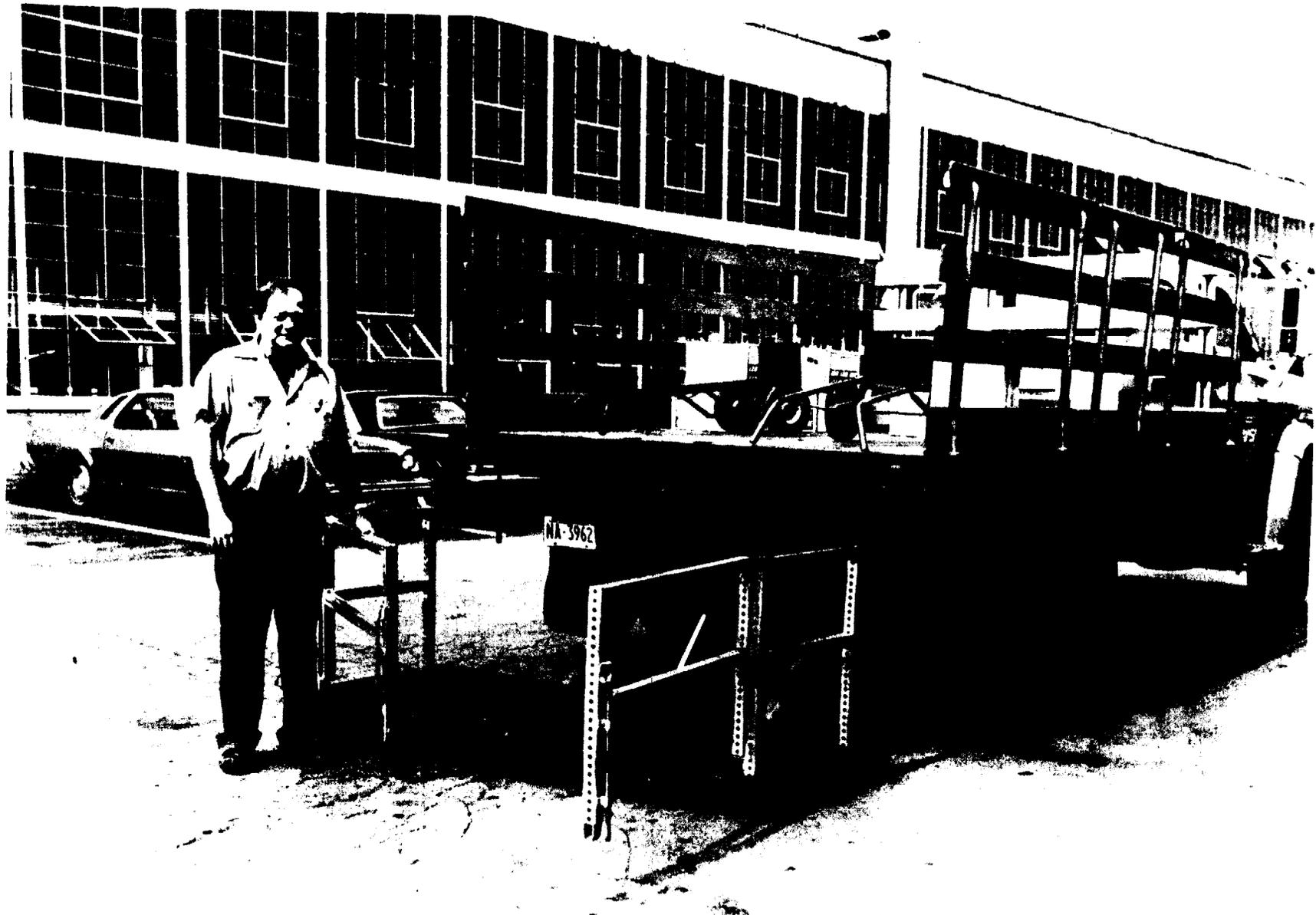
The combination of Type "A" and "B" accidents in 1979 was 11 as compared to 5 in 1978, and the number of Type "A" accidents was 1 compared to 1 in 1978. There does not appear to be an obvious lack of supervision, but the fact that some of these accidents occurred at all indicates a need for tightening up operational procedures. This should include design reviews of test items, test apparatus and procedures, and compatibility of the associated support equipment.

TYPE "A" ACCIDENTS - 1979

<u>LOCATION</u>	<u>DATE</u>	<u>DESCRIPTION</u>	<u>CAUSE</u>	<u>COST</u>	<u>RECOMMENDED CORRECTIVE ACTION</u>
LeRC	9-20-79	A portable welding unit was being loaded by one employee who was using the hydraulic lift tailgate of the truck. The unit fell during loading and struck the employee. The injuries to the employee were fatal.	Exact sequence of events which caused welding unit to fall has been impossible to determine and there were no witnesses.	Fatality	Protective railings are being installed on LeRC lift gates. Two-man operation is mandatory for these loading/unloading operations.



Truck and portable welding unit after accident



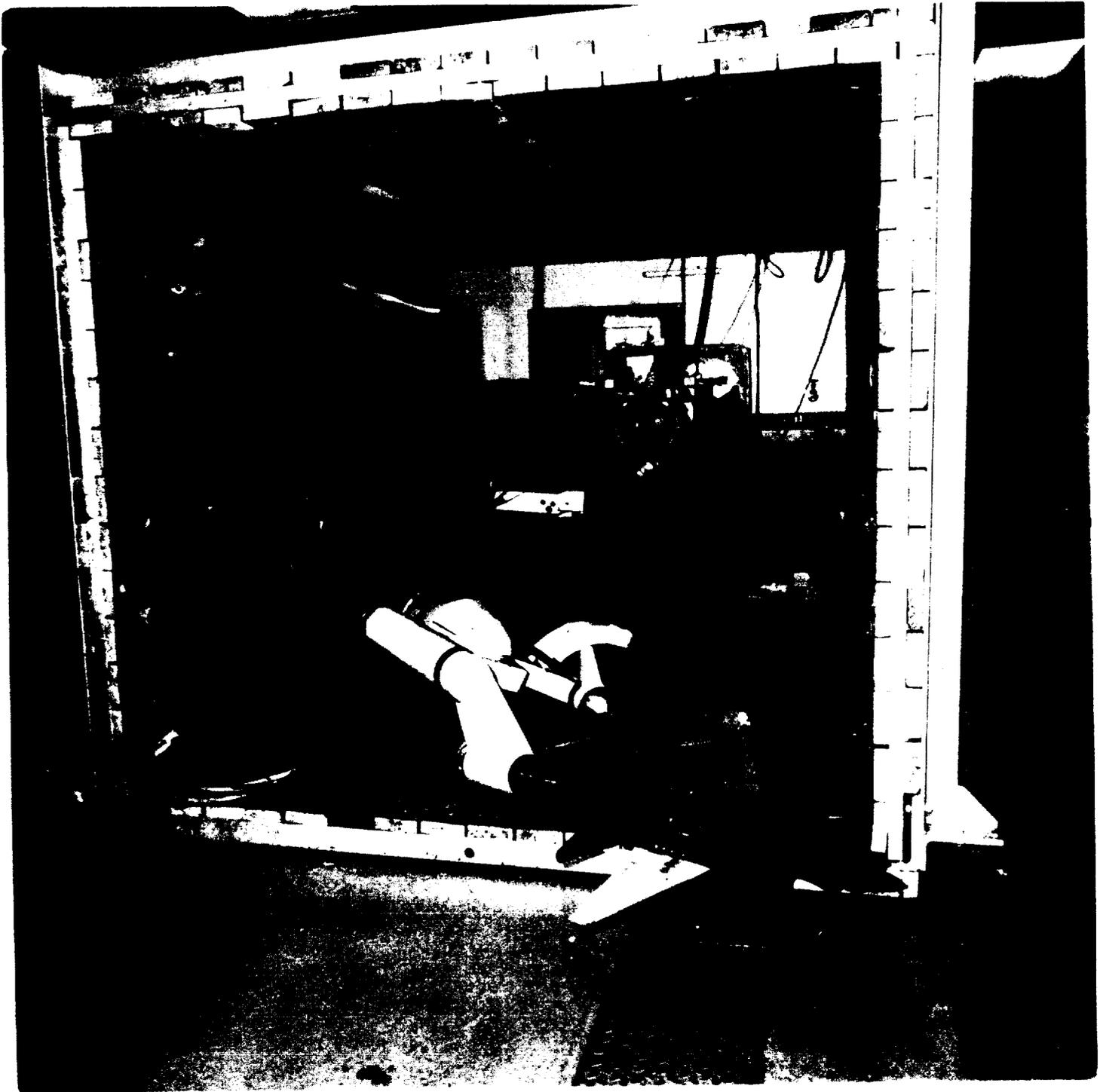
Modifications to hydraulic lift gate

TYPE "B" ACCIDENTS - 1979

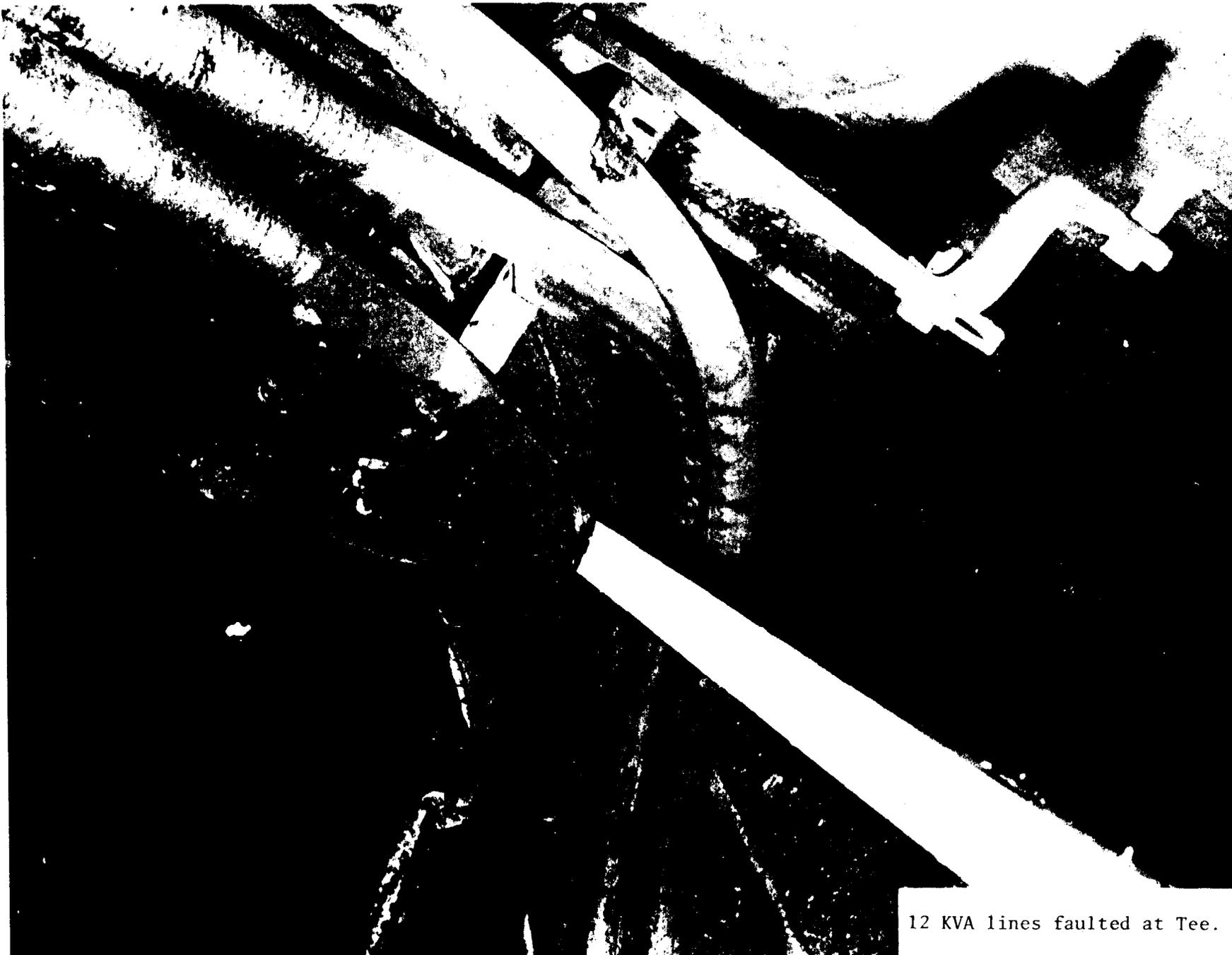
<u>LOCATION</u>	<u>DATE</u>	<u>DESCRIPTION</u>	<u>CAUSE</u>	<u>COST</u>	<u>RECOMMENDED CORRECTIVE ACTION</u>
ARC	2-22-79	60 Megawatt D.C. Power Supply failure. Module RM4A suffered electrical flashover and fire.	High voltage breakdown between secondary loads of 3-phase protection circuit isolation transformer or wires of the connected circuitry.	\$20,000	Replace critical high voltage wire with wire having nonflammable, long life, high voltage insulation. Make circuit and wire routing changes to eliminate cross phase voltages in wire runs.
LeRC	3-17-79	G-159 engine exceeded temperature limit when power levers were advanced during post-maintenance check.	During maintenance, propeller blade switch was improperly installed.	\$47,000	Revise and clarify maintenance manual instructions.
ARC	5-22-79	Fatigue failure of rotary test balance apparatus during qualification testing. Balance apparatus separated and fell to floor of protective barrier housing.	Dynamic overload of weld area in the support structure. Incomplete penetration of weld and stress analysis did not take into account dynamic nature of loads or the area of weld involvement.	\$20,000	Report not released to operating organization as yet so action has not been defined.
ARC	6-13-79	Loss of 9 1/2-Ft. communications antennae during test in 40 X 80-Ft. Wind tunnel. Antennae was blown down exit cone of wind tunnel and was caught by safety fence on tunnel floor before first set of turning vanes.	Buckling failure of the upstream roll stabilizer plate end (the "paddle") which led to successive failure of the three-legged support structure.	\$75,000	The "Guide for Planning Investigations in the 40 X 80-Ft. Wind Tunnel" will be revised to require design factors of safety against buckling of 5. Other design and safety guidance will also be included.

F-15 ROTARY TEST BALANCE AND MODEL FAILURE

MAY 22, 1979



WFC	6-24-79	Water damage to RSRA and other equipment.	Lightning strike caused power loss. Leaks in fire deluge system permitted air pressure to bleed away and deluge valves to operate. Fire system booster pump had previously been deactivated.	\$11,200	Better maintenance of fire deluge system, better control and procedures for operating booster system, and better compliance with procedures and guideline for security and operations personnel.
DFRC	6-26-79	Compressor failure on #4 engine of JetStar during ground trim run.	Foreign object of unknown origin jammed between second stage stator and blades.	\$50,000	Emphasize FOD program throughout NASA.
ARC	7- 2-79	12-Ft. Wind Tunnel Model Support System Incident. Model support control system drove sting into leading edge of support strut. Damaged gauges, ball/nut/spindle assembly, centerbody alignment pins, and trunnion bearings.	Removal of electronic circuitry control card without proper tagging or notification to tunnel operation personnel. Contributing factors include design deficiencies and questionable operating procedures.	\$16,000	Increased emphasis to Center personnel on proper use of tagging procedures. Better definition of staff responsibilities. Addition of increased travel beyond limit switch and drive motor speed slowed. Access to motor control center limited by locking cabinet and controlling key.
Rockwell (Downey)	10- 8-79	Purge curtain in curing oven overheated.	Controls apparently malfunctioned.	\$12,000	Better maintenance and check of operational controls.
DFRC	12-24-79	Fire and explosion in manhole.	Two 12-KVA conductor cables faulted at Tee splices when power was restored and circuit breaker batteries were not operational.	\$41,000	Periodic checks and maintenance of batteries, better troubleshooting techniques, and written procedures for power restoration.



12 KVA lines faulted at Tee.



32

12 KVA lines faulted at Tee.

5 32777

SOME SIGNIFICANT NASA INCIDENTS - 1979

<u>DATE</u>	<u>DESCRIPTION</u>	<u>CAUSE</u>	<u>COST</u>	<u>RECOMMENDED CORRECTIVE ACTION</u>
2-15-79	Flash fire in vacuum chamber	Exhaust duct from APU broke and introduced hydrogen, ammonia, and nitrogen into chamber. Air introduced into chamber at end of test and hot spot on APU ignited mixture.		Better control for flammable mixtures, better check of sensors, and routine check of test and operating equipment.
4-28-79	7.5 ft. diameter propeller blade failed during test. A crack in one blade was being monitored; crack had grown from 2 inches to 3.25 inches in one hour of testing at 2350 rpm.	Failure resulted due to poor bond quality in the blade nose cap (stainless steel) and the main spar (metal).	\$9,090	Consider design philosophy of Aeromechanics Lab Aneochic Hover Facility and model rotor drive system validated.
9-30-79	Substation capacitor, C3, had significant residue, insulator broke, fuses blown, and ventilating fan damaged when system arced to ground.	Loose cable lug which was not properly secured during troubleshooting operations in early Sept.	\$ 600	Replaced old lug with new modern type lug which will hold cable more securely.
9-27-79	Fuel spill in Hangar.	The JP-4 spill was caused by open fuel cutoff valves on a T-38 aircraft. The T-38 was in the process of having its engines replaced.	\$ 500	Fuel cutoff valve switches will be "red tagged" and leak proof caps will be placed on fuel lines whenever an aircraft engine is removed and the aircraft stored.
10-23-79	Coil of oil circuit breaker for wind tunnel drive system overheated.	Sticking of contact caused the solenoid to remain energized.	\$1,000	Coil replaced and contact repaired.

11- 8-79	Lube oil fire in test cell that resulted when a piece from a high speed coupling struck and severed an oil line.	High speed coupling broke while rotating, probably as a result of being struck by a bracket that moved in dynamic response to vibration environment of the installation. \$8,000	Design review of those brackets and other projections which are in close proximity to high speed rotating parts or equipment to ensure stability in the dynamic vibration environment. Seal wall and floor penetrations. Provide fixed fire protection system in test cell.
6-14-79	F-104 received slight damage to hatch door immediately forward of gear doors during ground check of landing gear operations.	Operating gear with hatch door open. Hatch door moved aft at inopportune time.	Keep hatch door closed or prevent it from moving during operations.
7- 6-79	Canopy of F-104 inadvertently jettisoned while attempting to remove drag chute during maintenance.	Mechanic pulled canopy jettison handle instead of drag chute handle.	More attention to tasks at hand, follow procedures, and establish work guides to prevent these and similar occurrences.
11- 2-79	Left engine fire on C-47 during taxi to ramp after landing.	Lost bolt on exhaust stack allowed stack to move and contact a cowl flap hydraulic hose; the hose ruptured and hydraulic fluid on the hot stack ignited.	Better maintenance practices which will permit correction of these problems at an early date.

SAFETY AND ENVIRONMENTAL HEALTH SURVEYS
1979

NASA Headquarters Safety and Environmental Health surveys were conducted at four field installations during the 1979 calendar year:

Kennedy Space Center	February 19 to March 2, 1979
Langley Research Center	April 22-27, 1979
Johnson Space Center/ White Sands Test Facility	June 6-15, 1979
Ames Research Center	October 21-26, 1979

NASA HQ conducts Safety and Environmental Health surveys jointly with Reliability and Quality Assurance personnel at the Field Installations approximately every two years. The field installations are delegated responsibility for conducting self-surveys on the off-year. The field center self-survey teams include third party members to negate the possibility of conducting a partisan review. The results of the field center self-survey program are encouraging, both in their comprehensive planning and productivity. The center self-survey program requires management involvement to appraise their own activities and to resolve their problems.

The surveys are conducted by the NASA Safety, Occupational Health, and Program Assurance personnel and are accepted and supported by Center Directors and staffs.

AUTOCORRELATED INJURY FREQUENCY AND
SEVERITY RATES FOR NASA IN 1979

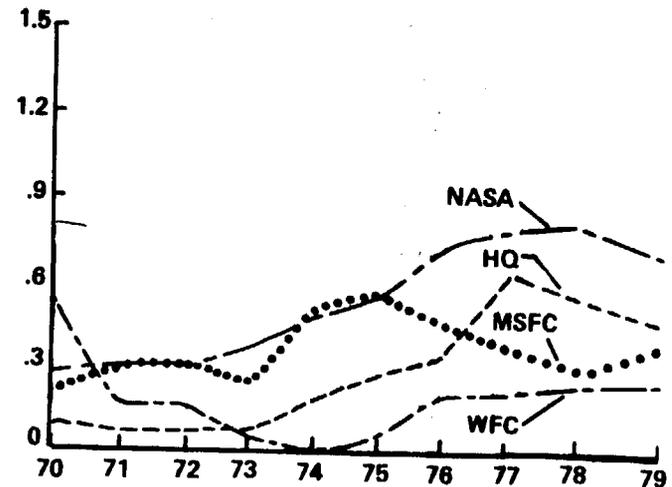
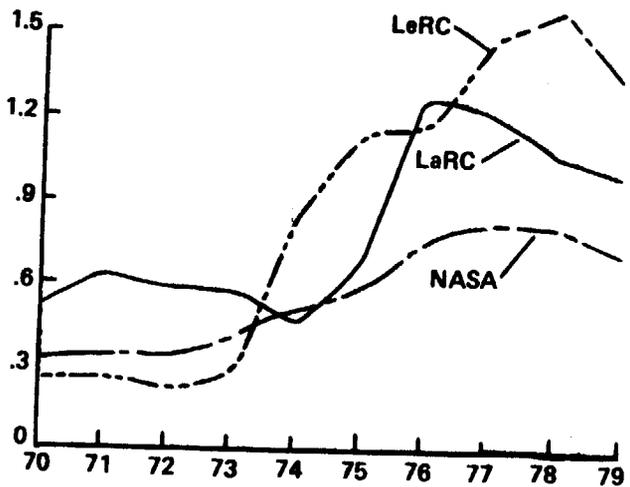
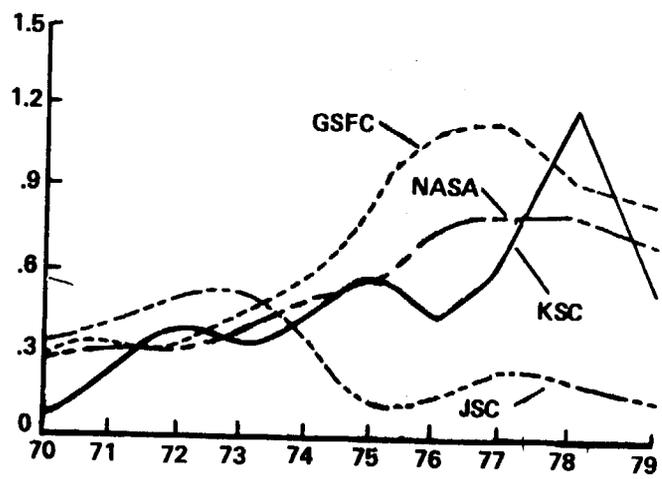
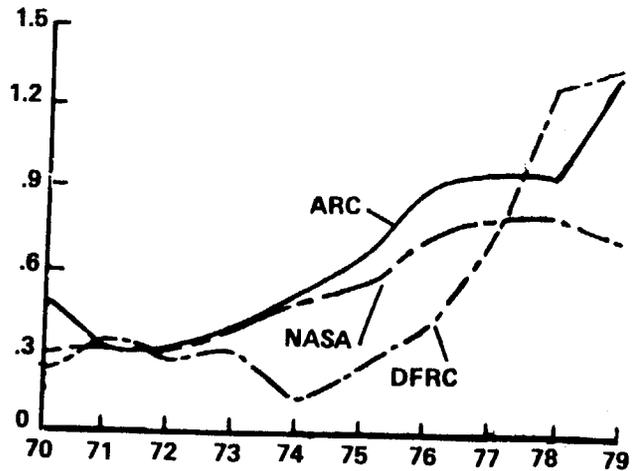
The autocorrelated injury frequency data for all NASA and those centers which had sufficient data for the period 1970 - 1979 are shown in the following charts. These figures show the trends during this period. Three installations had higher rates in 1979, four had the same rates, and five and the total were down. MAF and NSTL were zero.

The severity rates increased in three installations. Two of the increases were quite pronounced, 82 and 90 percent. However, the general reduction in severity rate is the same as the reduction in the lost time frequency rate.

The correlation procedure used to produce these charts is a smoothing technique which takes some of the randomness out of the data and yet preserves the form or pattern for the period being considered. Depending on the autocorrelation coefficient chosen, the program can retain the fine structure of the data or smooth the curve to show only the trends. A correlation coefficient of 0.5 was used for these curves, the general form is retained, the trend is shown, and the extreme variations are smoothed.

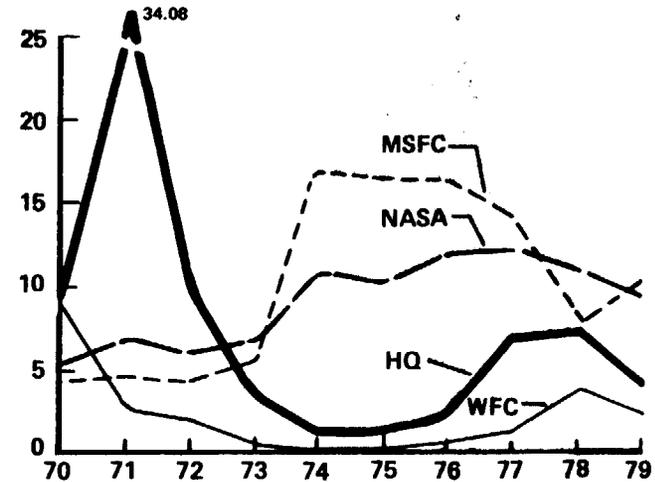
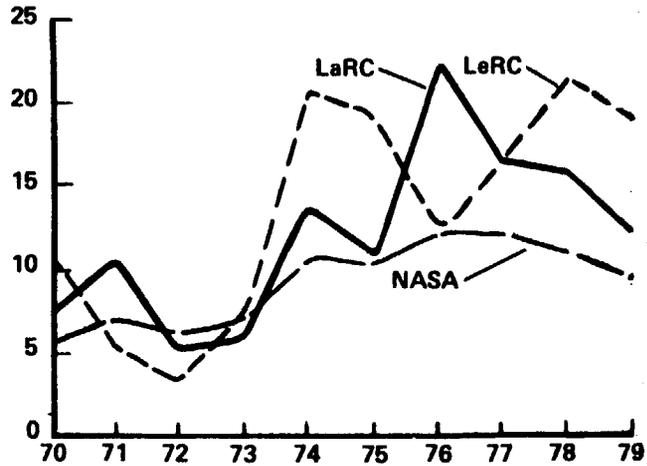
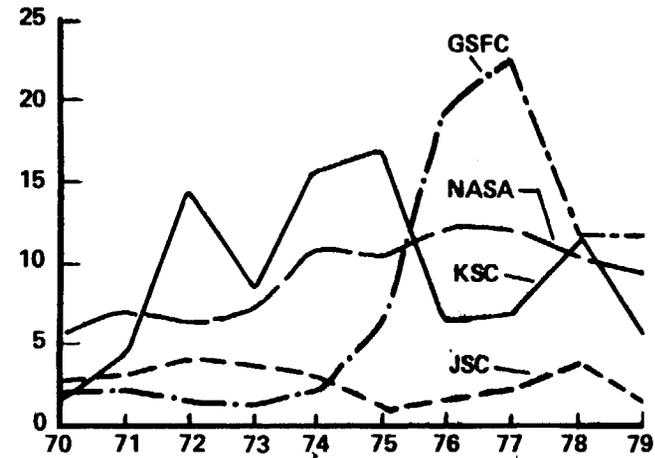
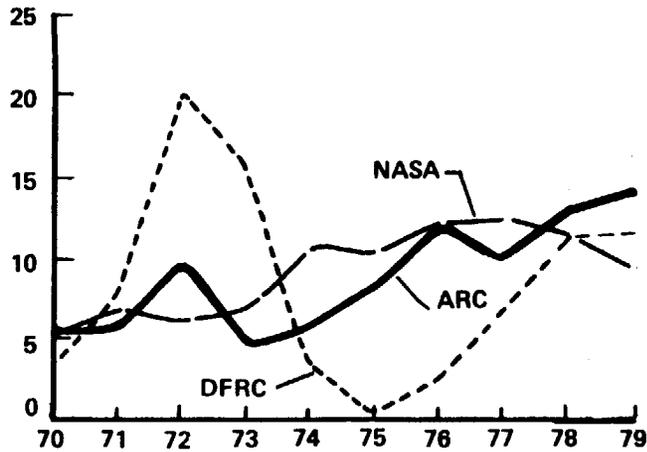
INJURY FREQUENCY RATES 1970-1979 AUTOCORRELATED

37



FREQUENCY RATE IS THE NUMBER OF LOST TIME INJURIES PER 200,000 MAN-HOURS WORKED
CORRELATION FACTOR = 0.8

INJURY SEVERITY RATES 1970-1979 AUTOCORRELATED



38

SEVERITY RATE IS THE NUMBER OF MAN-DAYS LOST BY ACCIDENT PER 200,000 MAN-HOURS WORKED
CORRELATION FACTOR - 0.5

NASA HQ N180-4395 (1)
8-4-80

NASA AVIATION ACCIDENT/INCIDENT EXPERIENCE

IN 1979

In 1979, the aviation safety record shows that NASA continues to encounter a series of minor incidents and no major accidents. The aviation mishaps table does not include the two engine mishaps that occurred on the ground. These were reported as Type "B" accidents because the dollar value for repairs exceeded \$10,000.

The other ten incidents were basically random in nature and location. NASA aircraft continue to experience bird strikes, and although in most cases the damage and cost are minor, there was one encounter by an F-106 that resulted in almost \$3,000 for engine repair.

The flight accident rate does not reflect the two Type B engine mishaps nor the incidents. Total flight time reported in 1979 was 25,928 hours. This is the sixth year that our losses have been small, and we must continue our efforts to keep it so.

AVIATION MISHAPS

1970-1979

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
TYPE A Flight Accidents	0	2	2	2	1	0	0	0	0	0
TYPE B Flight Accidents	0	0	1	2	1	1	0	0	1	0
INCIDENTS	5	6	2	10	3	2	0	3	7	10
AIRCRAFT DESTROYED	0	2	2	2	1	0	0	0	0	0
PILOT/CREW FATALITIES	0	0	2	11	0	0	0	0	0	0

AVIATION FLIGHT ACCIDENTS RATES - NO. OF ACCIDENTS PER 100,000 HOURS

FLIGHT ACCIDENT RATE	0	4	11	14	9	4	0	0	4	0
FATAL ACCIDENT RATE	0	0	7	4	0	0	0	0	0	0
AIRCRAFT DESTROYED RATE	0	4	7	7	4	0	0	0	0	0

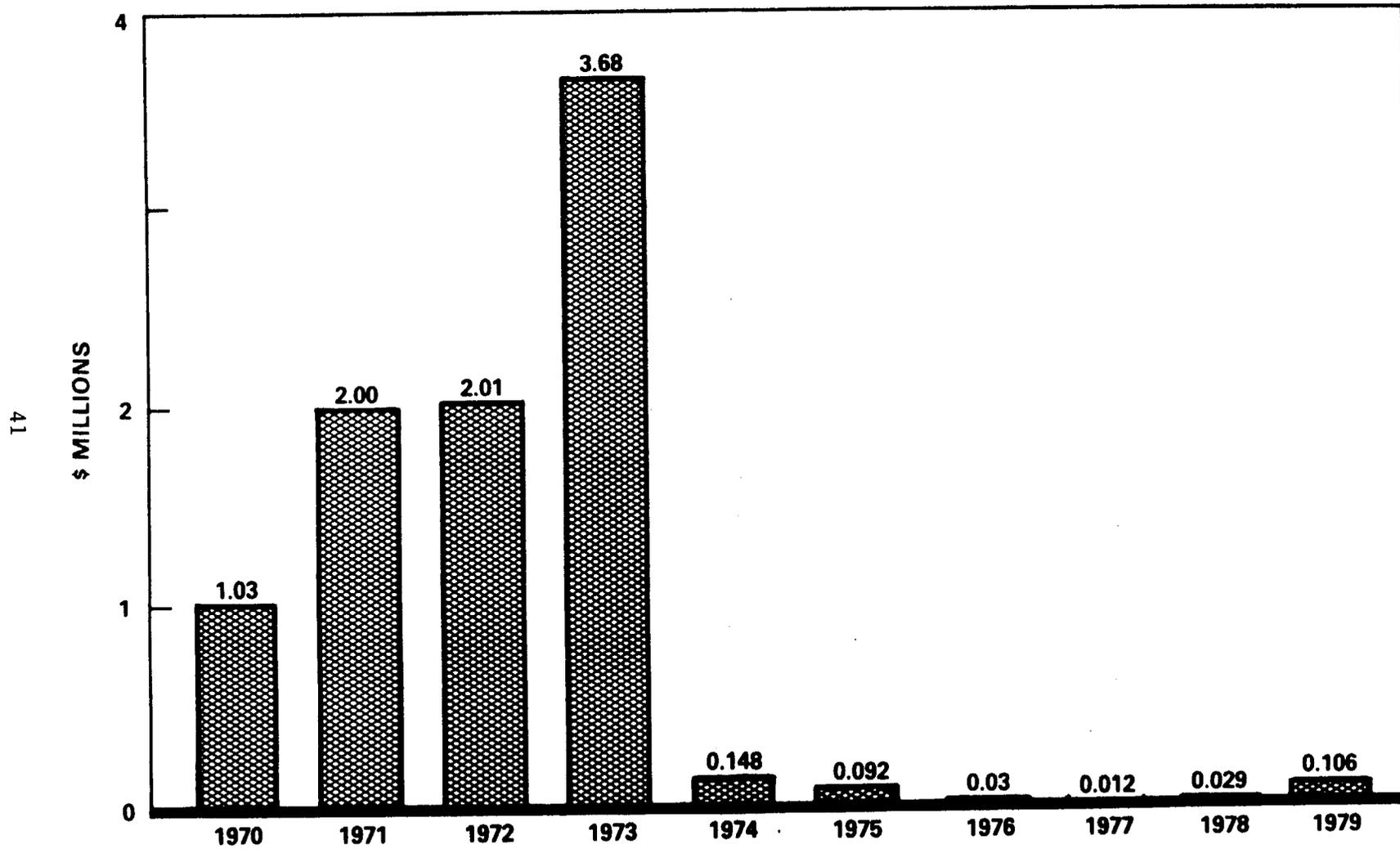
FLIGHT ACCIDENTS SUMMARY

CATEGORY OF AIRCRAFT

ADMINISTRATIVE	0	0	0	0	0	0	0	0	0	0
PROGRAM SUPPORT	0	2	2	1	2	1	0	0	1	0
R&D	0	0	1	3	0	0	0	0	0	0

NASA AIRCRAFT LOSSES

1970-1979



41

NASA MOTOR VEHICLE ACCIDENTS

There was a decrease in both the automotive accident frequency rate and the costs of accidents for 1979. Once again the "Safety '76" goal of 5.0 accidents per million miles driven, which we met in 1973, eluded us. This year the rate was 5.26 (a 22% decrease from 1978) and the costs were also down 30 percent to \$16,000.

There were six accidents reported for employee's private vehicles while driving 6.8 million miles for official business. There were 44 accidents to U.S. owned vehicles while driving them 8.4 million miles. Management is urged again to evaluate the driving practices and disciplinary needs to get the attention of those who do not observe traffic laws and good practices.

Three installations reported zero accidents while driving 584,000 miles in government-owned vehicles, and six installations reported zero accidents while driving 3,230,000 miles (official business) in privately owned vehicles. This is 7 and 48 percent respectively of the total miles driven.

Have you examined the reasons for this great difference?

Perhaps the private vehicle accidents are covered by insurance and are not reported.

Let's buckle up for safety!

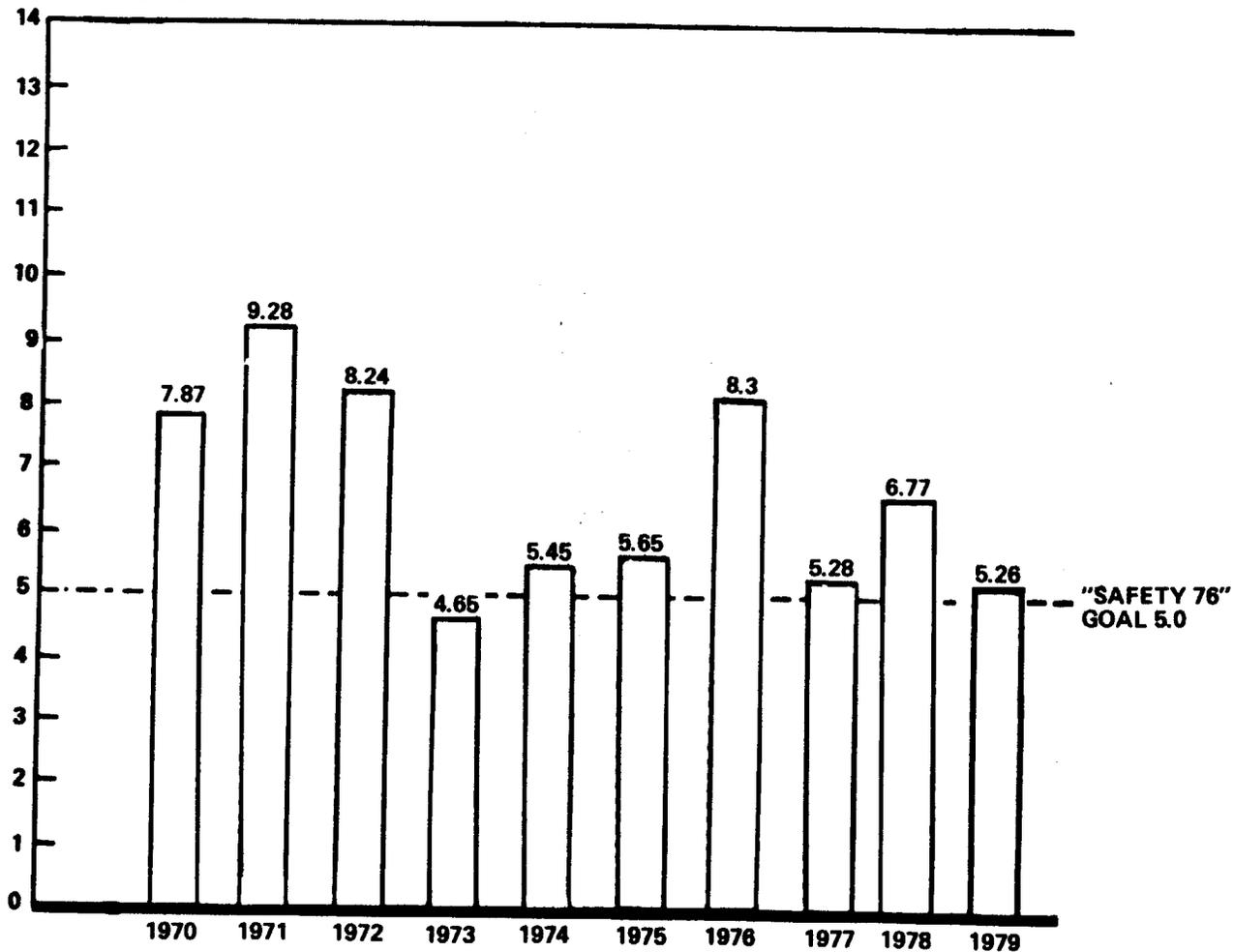
NASA 1979 MOTOR VEHICLE ACCIDENTS

Field Installations	No. of Accidents		Total Miles Driven (in thousands)		Total Cost		Frequency Rate* of Accidents	
	Govt.	Private	Govt.	Private	Govt.	Private	Govt.	Private
AMES	2	1	745	433	379	500	2.68	2.31
DRYDEN	0	0	370	135	0	0	0	0
GODDARD	8	1	2,757	1,279	1,662	250	2.90	.78
HEADQUARTERS	5	1	95	628	500	303	52.71	1.59
JOHNSON	0	0	210	1,159	0	0	0	0
KENNEDY	7	2	1,105	561	2,310	424	6.33	3.56
LANGLEY	4	1	530	652	1,476	560	7.55	1.53
LEWIS	6	0	415	575	3,525	0	14.44	2.22
MARSHALL	6	0	1,380	1,324	327	0	4.35	0
MICHOUD	0	0	4	7	0	0	0	0
NSTL	0	0	0	29	0	0	0	0
WALLOPS	6	0	755	0	4,125	0	7.95	0
NASA (TOTAL)	44	6	8,366	6,782	14,304	2,037	5.26	.88

* FREQUENCY RATE IS THE NUMBER OF ACCIDENTS PER MILLION MILES DRIVEN

NASA GOVERNMENT MOTOR VEHICLE ACCIDENTS

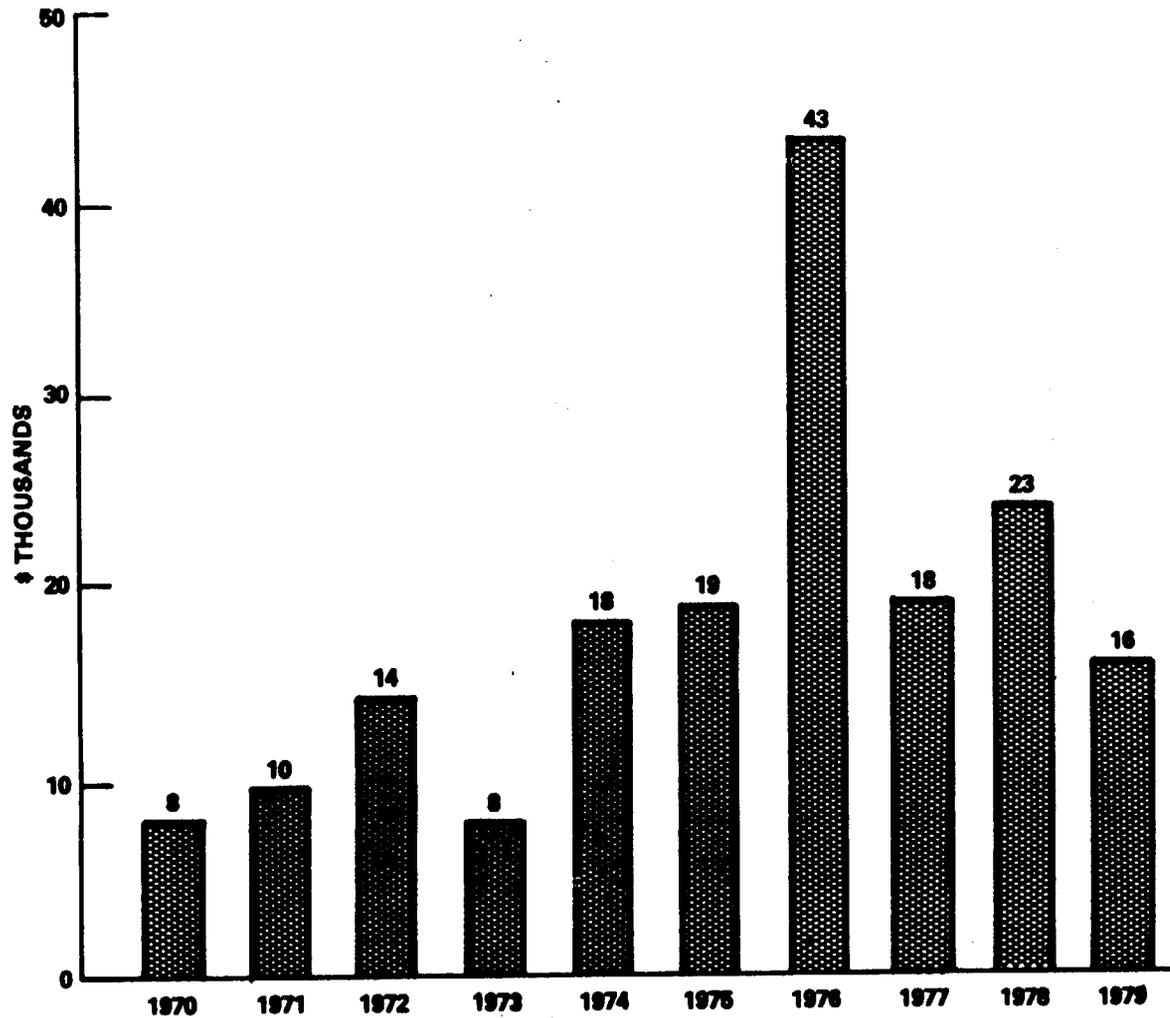
FREQUENCY RATE



FREQUENCY RATE IS THE NUMBER OF MOTOR VEHICLE ACCIDENTS PER MILLION MILES DRIVEN.

NASA AUTOMOTIVE LOSSES

1970-1979



NASA HQ (N80-448N1)
8-4-80

NASA FIRE EXPERIENCE IN 1979

While the number of institutional fire mishaps in our facilities and equipment increased, their costs for 1979 decreased significantly. Our favorable fire experience in buildings and facilities is the direct result of extensive fire prevention activities, excellent fire safety awareness, and a substantial investment in fixed fire detection and suppression systems.

However, in considering items such as reduced funding levels, changes in occupancy, operations, age of facilities, reduced staffing levels, and energy conservation, we must, in fact, reinforce and bolster our fire safety emphasis.

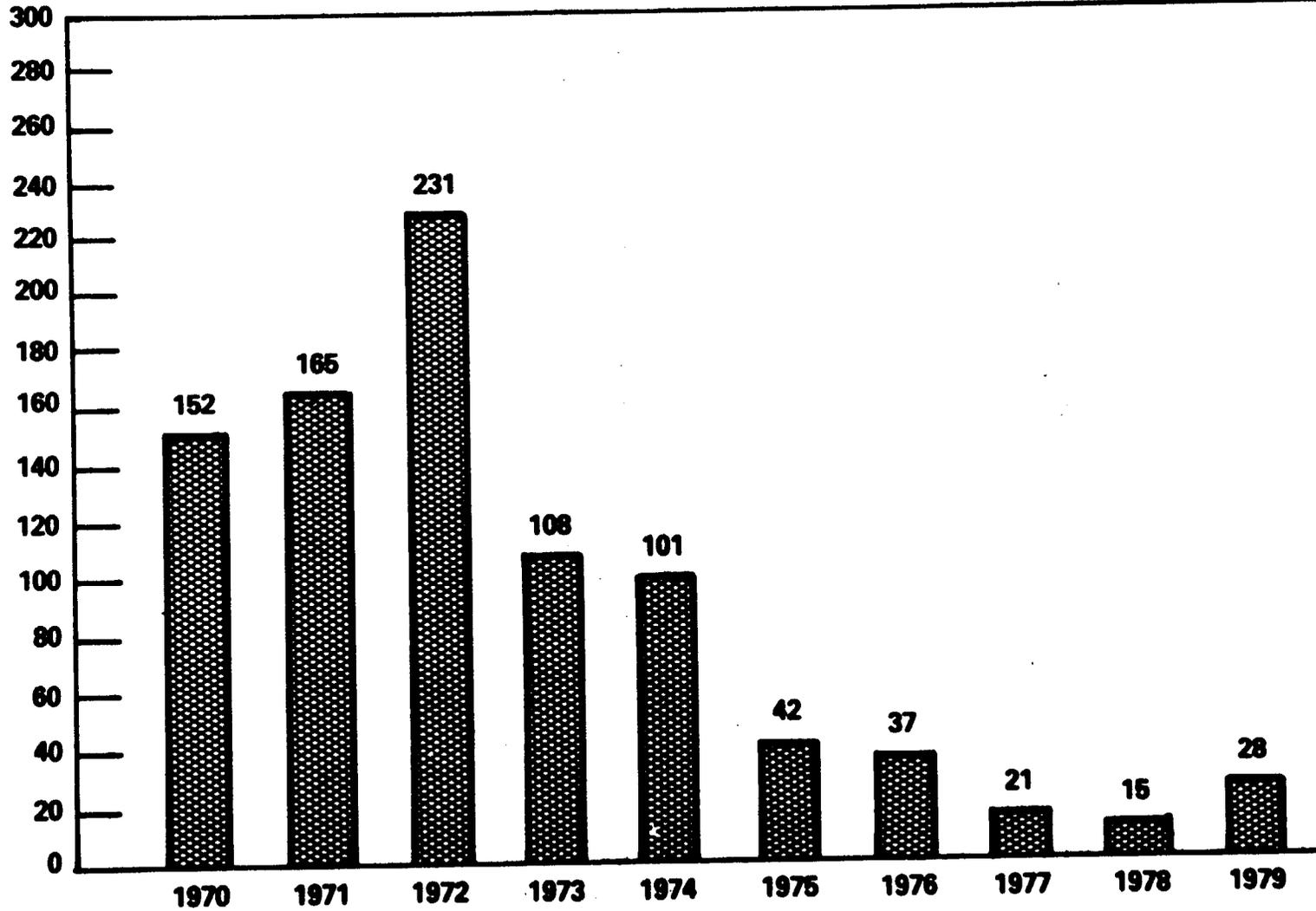
Programs to provide fire detection and suppression systems and to require safe materials and construction must continue. These activities must start in the design process and continue through all phases until project completion. Training and education of employees and professional development of fire safety personnel, in the related technologies and state of the art, needs to be expanded.

The use of balanced risk surveys has helped to identify major areas for improvement. Such surveys provide a low cost method of providing for long term planning.

Although special precautions are taken during high risk test operations, fires related to test failures still dominate our fire losses. These losses are not included in this report.

NUMBER OF NASA FIRE MISHAPS

NUMBER
OF FIRES



DOES NOT INCLUDE TEST OPERATIONS
DOES NOT INCLUDE MISSION FAILURES

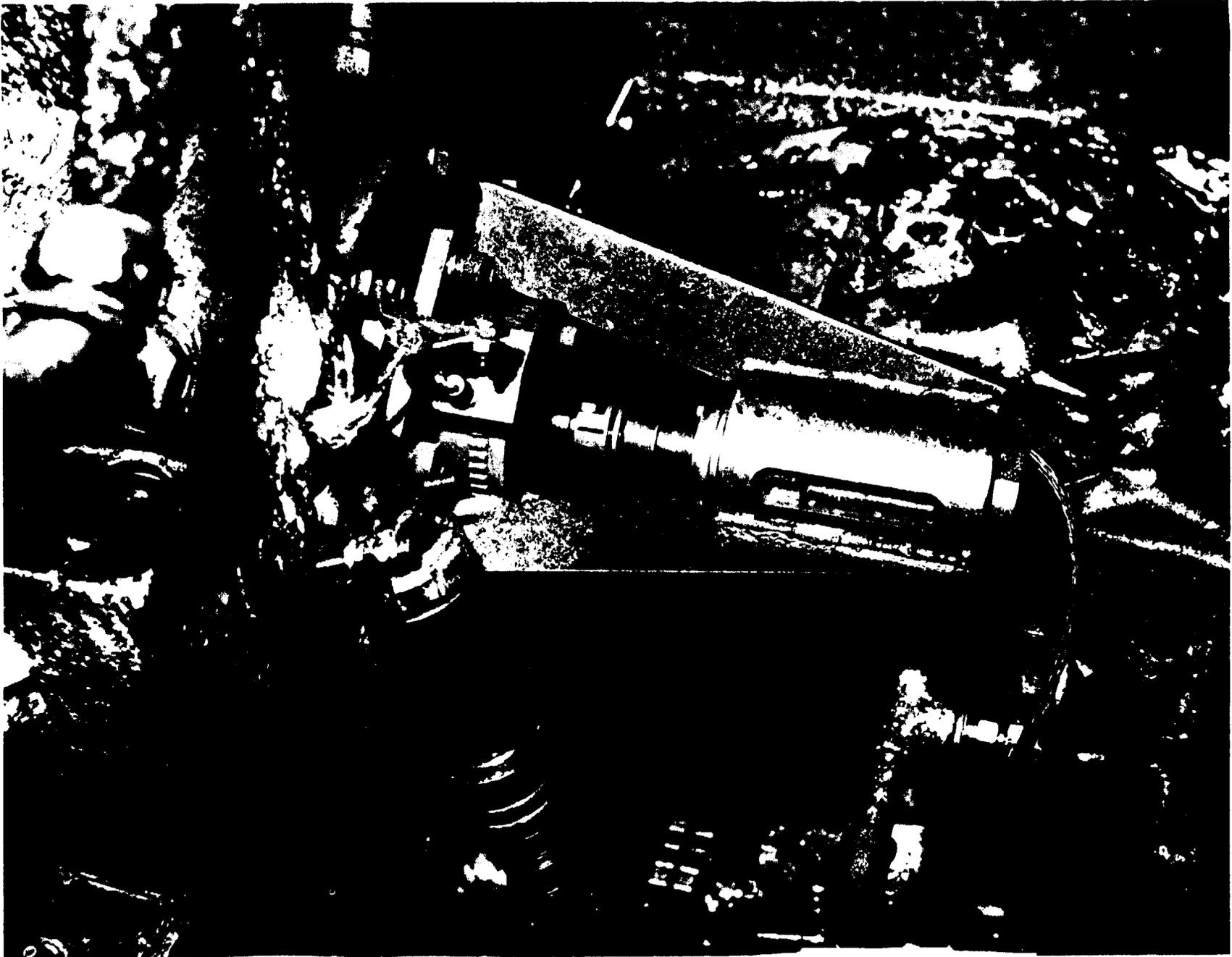
NASA HQ N180-4391(1)
8-4-80



SPRINKLER HEAD OPERATED AND EXTINGUISHED SMALL FIRE



MOTOR DRIVE ROOM

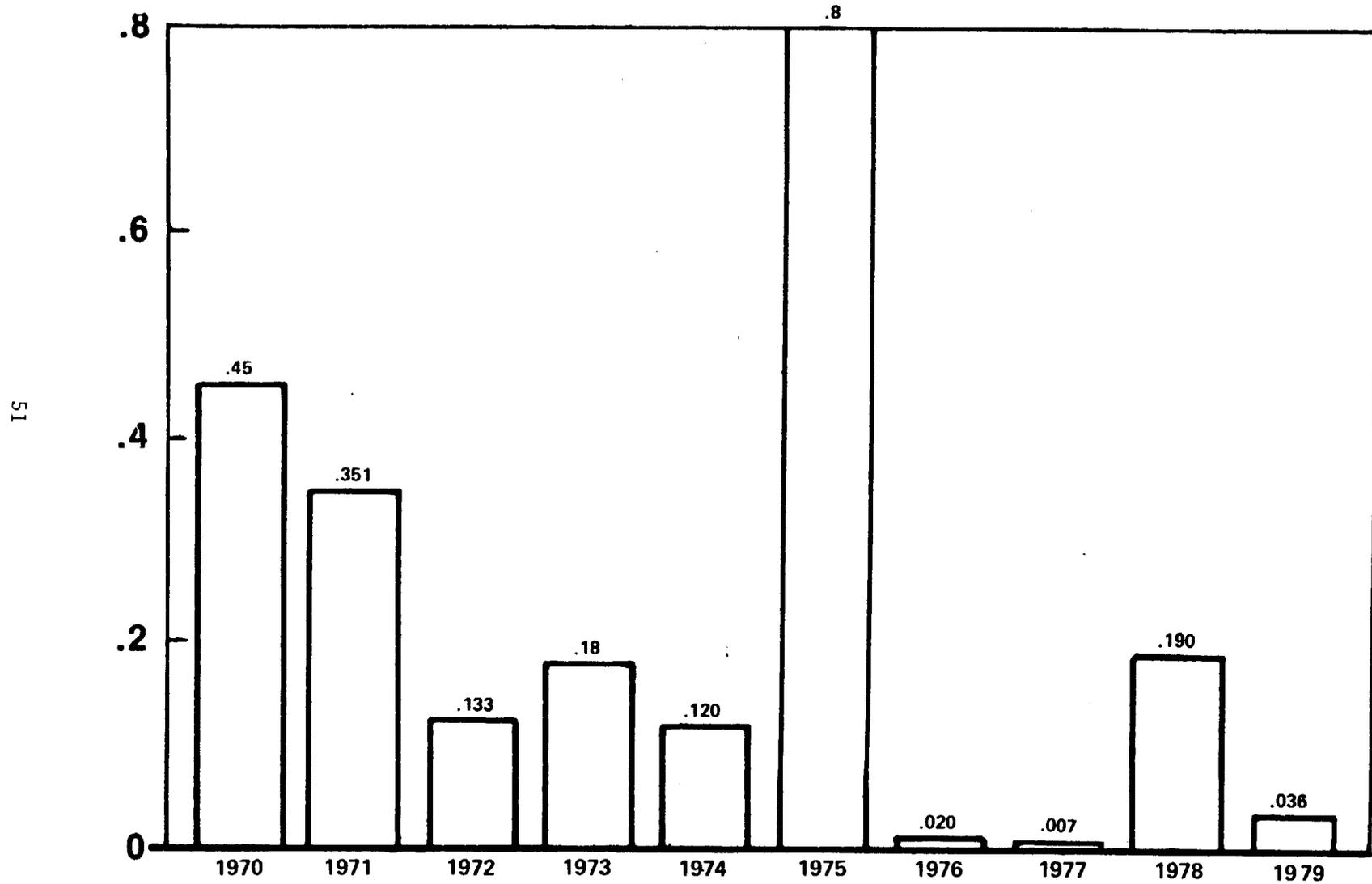


DAMAGE TO INSTRUMENTATION WIRING

NASA FIRE LOSSES

1970-1979

\$ MILLIONS



DOES NOT INCLUDE MISSION LOSSES OR TEST OPERATIONS LOSSES.

1979

LOSTTIME INJURY BRIEFS
(GOVERNMENT EMPLOYEES)

NATURE OF ACCIDENT/LOCATION	No. of Days
Fainted while standing in position to get X-ray, fell; lacerated left side of head.	1
Lifted 35-pound drum of freon; low back strain.	1
Moved boxes of books into office; back strain.	1
Slipped on ice; wrenched back. History of back problems.	1
Slipped two separate times, hit floor on both knees. Hall wet from snow being tracked into building.	1
Twisted back while getting up from sitting position on floor of shop; lower back pain.	1
Slipped while crossing snow covered road, did not see raised road divider; contusion of left shoulder.	1
Moving furniture; low back pain and muscle strain.	1
Removing steel sign post from ground; sprained left wrist.	1
Slipped on ice and snow; strained back.	1
Slipped on ice, head hit pavement; tenderness right side.	1
Slipped in hall; sprain/strain right ankle and right hip.	1
Slipped on stair, grabbed handrail, hit shoulder; muscles sprain of shoulder and back.	1
Strained back while tightening bolts on trailer.	1
Struck left great toe against door; fractured toe.	1
Tripped on top step when leaving trailer, stumbled down seven steps and twisted ankle; sprained right ankle.	1
Tripped over pipe in test cell; strained left foot.	1
Tripped while stepping from curb; sprained right ankle.	1
Backed away from saw, felt knee snap; strain right knee.	1
Standing on ladder tightening bolts on electric motor; strained low back muscles.	1
Struck head while raising a panel.	1
Working under machine to tighten it; contaminated fluid from machine dripped into eyes.	1
Caught heel on stair tread and fell; multiple contusions.	2
Changing screens, aluminum splinter entered right index finger; small puncture.	2
Slipped on spilled coffee; contusion of arm and leg.	2
Slipped on wet floor; contusion left knee, bruised ribs, inflammation of pleura.	2
Flowing snow with front end loader, hit curb; contusion of head, cheek, mouth, right shoulder, back, mild whiplash, and a broken false tooth.	2

	No. of Days
Plowing snow with front end loader, hit curb; contusion of head, cheek, mouth, right shoulder, back, mild whiplash, and a broken false tooth.	2
Fell; sprained arm, broke nose.	2
Installing panel, screwdriver slipped and struck eye; cut right cornea.	2
Installing shelving; reinjured back.	2
Leaving truck, struck cardboard box with eye; irritation right eye.	2
Lost balance on stairs; twisted right ankle.	2
Moving instrument rack; back strain.	2
Removing cabinet panel which fell when last screw was removed; fractured left second toe.	2
Slipped and fell on ice; bruised elbow.	2
Slipped and fell on icy sidewalk; contusion of lower back.	2
Starting portable water pump, gust of wind blew hatch cover shut, struck left hand; lacerated 5th finger.	2
Struck by towmotor; contusion of right ankle.	2
Two workers replacing large piece of Lucite in rack; one strained back.	2
Flying in commercial aircraft, severe pain in both ears; treated for aerotitis.	2
Dropped wrench on foot; sore foot, hurt when walking.	2
Working in awkward position; strained back muscles.	2
Caught hand on drill.	3
Depressurization during travel; right ear infected.	3
Moved table with viewgraph projector on it; back strain.	3
Fell off steps; face and knee contusions.	3
Fell on stairs while on TDY; contusion of head.	3
Lifting heater housing from a dolly; upper back strain.	3
Lowering microphone strut; back strain.	3
Fell on stairs; contusion left ankle and right wrist.	3
Moving equipment, struck knee against metal structure; severe contusion to right knee.	3
Slipped on oil slick; twisted back.	3
While positioned close to a wall, bumped head against wall; mild concussion.	3
Driving car which was struck by another car; contusion of forehead, sore back and neck.	4
Attempted to push file cabinet; back muscle spasm.	4

	No. of Days
Turned head to investigate noise in rear of auto, left roadway, struck light pole; lacerated mouth, broke nose.	4
Twisted back while lifting equipment; lower back strain.	4
Lifting hardware from oven; strained lower back.	4
Lifting steel plate; strained back.	4
Doing electrical maintenance; electrical burn, right hand.	4
Removing 42-pound lathe chuck from storage cabinet shelf 20-inches above floor; dislocated right shoulder.	4
Slipped on wet floor; sprained elbow.	4
Smashed thumb.	4
Helping move equipment from basement; low back strain.	5
Operating power saw; back strain.	5
Pulling heavy desk drawer; strained back.	5
Slipped on ice and snow; abrasion left elbow and chest.	5
Slipped on ice in hotel parking lot while on travel; fractured right arm.	5
Placing material in power saw, engaged hydraulic vise clamp; fractured left first and third fingers.	5
Working in stooped position laying cable under control room floor; strained knee.	5
Encountered strong wind while returning from lunch, blown into shrubbery; muscle strain to left shoulder.	6
Lifting instrument from container; strained back.	6
Slipped and fell on icy road; contusion of lower back.	6
Stumbled on stairs; injured cartilage left knee.	6
Knocking hole in cinder block wall, dust got into eyes; corneal abrasion.	6
Slipped on ice and snow; contusion right lower back.	7
Struck by stairway door when it was opened by another employee; fractured right arm.	7
Access panel closed on hand; contusion and laceration of four fingers, left hand.	8
Fell on stairs; strained right shoulder and back.	8
Traveling abroad; contracted illness.	8
Stepped out of service truck to curb; twisted ankle.	8
Carrying rigger stand, tripped over pallet; strained back.	9
Draining hot water from heat exchanger, hose blew off connector; sprayed and burned by hot water.	10
Inside entrance wet, slipped; sprained right ankle.	10
Playing basketball at lunchtime; fractured bone left foot.	10

Plywood sunshield fell on hand while opening window; hand badly bruised.	10
Hit left leg on open drawer of desk; contusion, left leg.	10
Moving eight 50-pound boxes; low back strain.	11
Moving equipment, slipped; bumped head, sprained back.	11
Working on model support; cut 5th finger on left hand.	11
Caught foot on rail; sprained knee.	12
Stepped on welding lead; turned ankle.	12
Tripped on crack in street; contusions and abrasions.	12
Struck head against radio antenna under CV990 aircraft.	13
Leaning while cleaning hearing shell; low back strain.	13
Moving freon drums; strained lower back.	13
Kneeled to pull desk drawer open; low back strain.	14
Moving step ladder; back strain.	14
Twisted ankle in parking lot; fractured right ankle.	15
Arm struck by disk being machined; lacerated left wrist.	15
Lifting strainer, felt pain in back; lower back strain.	15
Lifted box of posters, pain in groin; hernia.	16
Strained back muscle while changing clothes.	18
Entered manhole, using ladder anchored to wall. Put foot in heated water; 2nd degree burns right foot and ankle.	18
Climbing onto forklift; hernia.	20
Lifting and unpacking laboratory equipment, discomfort in left groin; left inguinal hernia.	20
Cut hand on frame of tractor; infected right hand.	21
Working in a hard-to-reach area; hernia.	21
Standing on chair, fell; fractured right shoulder.	22
Working on ladder slipped, grabbed conduit, caught finger between wall and conduit; fractured right, third finger.	22
Fell while going upstairs; contusion of shoulder.	23
Playing raquetball; fractured fibula, tore ligaments.	26
Removing spacesuit umbilical line from water at Neutral Buoyancy Simulator; strained back.	26
Rolling a 100-pound drum of caustic soda to a pallet for storage; strained back.	27
Setting up display, lifted unit; bilateral hernia.	27
Tightening hold down clamps; strained back.	27
Lifting 70-pound camera from van; low back strain.	28
Over-reached to shut off valve; right inguinal strain.	28

Working from a lift-a-loft, leaned over; back injury.	29
Moving portable file cabinet, wheel hit hole, cabinet tipped, struck foot; lacerated and fractured right foot.	30
Changing roller on welder; injured back.	32
Moving large tunnel components; recurrent hernia.	32
Removing 60- to 70-pound racks from pallets; strain lower left side of abdomen.	32
Slipped after getting out of car in parking lot; muscle strain left forearm.	33
Moving ladder, felt pain in back; herniated disc.	39
Slipped on ice; contusion right shoulder.	39
Rolling 175-pound nozzle up onto end; back strain.	39
Tripped and fell against desk; nose cut and concussion.	39
Climbing over concrete ductbank, slipped; strained back.	40
Descending stairs, twisted ankle; fractured left ankle.	40
Aligning 494-pound aluminum plates for bolt connections; ruptured intervertebral disc, surgery required.	48
Lost balance and twisted while stepping on snowy walk; strain right knee and back.	54
Loading 6-inch by 22-foot steel pipes, moving them, and unloading (three others helping); low back strain.	55
Removing 10- or 12-pound computer printout volume from shelf 18-inches from floor; pain in lower back and groin.	88
Stepped on dropped item, slipped; back injury.	90
Slipped on wet floor in building; contusion lower back.	111
Taking "short cut" to climb down from catwalk, slipped and fell 15 feet through false ceiling; fractured pelvis.	121

LOST TIME INJURY BRIEFS
1979
(CONTRACTOR EMPLOYEES)

NATURE OF ACCIDENT/LOCATION	No. of Days
Attending soldering training class; splashed liquid solder in right eye.	1
Bitten by spider.	1
Broken nose.	1
Bruised thumb.	1
Buffing floor; injured back.	1
Carrying lumber up ladder; twisted right hand.	1
Caught hand and fingers between water roller and cylinder of 2650 multilith press; contusions of left hand and fingers.	1
Checking motor for low pressure; speck of metal in eye.	1
Chemical irritation of right eye while cleaning oven with "Easy Off" spray.	1
Cleaning Orbiter surface with MEK; got same in eye.	1
Cleaning insulation material with brush, dust blew into eyes; irritation both eyes.	1
Connecting test cable to AFC circuit, shoulder contacted H.V.; hospitalized for observation.	1
Crawled in and out of Shuttle vehicle; strained right knee.	1
Chemical burn on right ankle while using detergent.	1
Cut second finger right hand on edge metal trash can.	1
Drilling into guardrail, drill caught; sprained right hand.	1
Equipment fell from desk top; struck shoulder.	1
Fell out of chair, struck head on vending machine.	1
Hit forehead on wood shelf; cut and bruised.	1
Inhaled paint fumes.	1
Installing PVC pipe, pipe slipped from hands, fell 6 feet to floor, stuck left foot; bruised left foot.	1
Lifting box from shelf; pain in back.	1
Lifting box; strained back.	1
Lifting boxes; strained back.	1
Lifting desk off truck; twisted right knee.	1
Lifting gas can to fuel vehicle; strained hand and shoulder.	1

	No. of Days
Missed step on workstand; injured left outer aspect of breast.	1
Moving A-frame hoist support leg; back strain.	1
Moving furniture; strained leg muscle.	1
Moving large metal storage bin; lower back pain.	1
Operating meat slicer; got right thumb under blade.	1
Pulling on pipe wrench; strained back.	1
Pulling up brackets for platform, wrench slipped; strained neck.	1
Raised from bending position, bumped head on cross pipe; neck injury.	1
Removing probe from tank; acid blew in eye.	1
Removing trash from warehouse; lacerated left knee.	1
Sacroiliac back strain.	1
Slipped on wet floor; strain of lumbar and cervical muscles.	1
Slipped on wet grass; cut right palm, twisted left ankle.	1
Slipped; left rib cage contusion.	1
Sprained left ankle.	1
Sprayed with JP-4 when connector broke; ear infection.	1
Spraying primer overhead, primer dripped into right eye; eye irritation.	1
Standing on piping to remove water safety valve, slipped, struck right elbow; contusion.	1
Walking down stairs; turned ankle, strained ligament in leg.	1
Walking to car in parking lot, tripped and fell on rock; bruised rib.	1
Working in welding shop; flash burn from nearby welding.	1
Air conditioning vent blew dust in eye.	2
Bumped by truck; bruised head.	2
Chair slipped; strained back.	2
Drilling in ceiling to install clock, metal particles got into eyes; required surgical removal.	2
Electrical burn to finger.	2
Fellow employee moving floor buffer from work area, accidentally turned switch on; injured legs.	2
Laying cable, replaced floortile that flipped up and landed on finger; fractured little finger.	2
Lifting 41-pound jack from awkward position; back strain.	2

Lifting heavy boxes; back strain.	2
Lifting trash; strained back.	2
Moving assembly, metal shackel ring fell on right foot; fractured toe.	2
Ocean breeze blew sand into eye.	2
Pinched foot between forklift and table.	2
Punctured leg with forklift.	2
Reached over counter; fractured rib.	2
Removing trash; injured lower back.	2
Stuck by loose ceiling panel.	2
Unloading truck, turned; sprained ankle.	2
Walking on dark parking lot, slipped on object; lacerated palm.	2
Working on safety edge of rollup doors; railing on door cut third and index fingers.	2
Working under bench; pinched back nerve.	2
Aligning bolt holes of exhaust manifold of D-308 caterpillar engine; strained lower back muscles.	3
Backed into equipment; injured lower left rib.	3
Bilateral back strain.	3
Caught foot between tailgate and truck; fractured toe.	3
Grinding weld off four-inch channel which slipped off blocks; cut finger, broke bone.	3
Lifting object; injured back.	3
Pushed on latched door, usually unlatched; pain under left scapula.	3
Slipped on ice in parking lot; injured knee.	3
Stepped from elevator which was not at floor level; twisted left foot.	3
Using a 2" x 4" plank for prying, it slipped; back strain.	3
Walking down stairs, slipped, fell; injured back and side.	3
Climbing antenna tower, lost footing and grip, fell 18 feet; fractured foot, multiple lacerations and contusions.	4
Crawling in ceiling area; injured right knee.	4
Descending stairs; twisted ankle.	4
Fell; fractured left ankle.	4
Lifting packing crate; injured back.	4
Operating book binding machine, piece of glue lodged in right eye.	4
Overcome by paint fumes.	4
Pushing trash cart through double doors, doors swung back, pushed cart into chest; bruises to upper chest.	4

No. of Days

Riding in patrol vehicle which was struck from behind; pulled muscle.	4
Slipped and fell while stripping wax; bruises and contusion lower back.	4
Struck knee against edge of barrel; contusion.	4
Walking down stairs, knee locked, fell; sprain left knee.	4
Cleaning Visitors Center, child threw cup hot soup; first degree burn of face.	5
Cut forearm on putty knife.	5
Hard hat struck roll bar on forklift; neck strain.	5
Moving stack of tapes; injured muscle in chest.	5
On ladder hanging pipe, turned to secure clamp; sprain and dislocation of spine.	5
Performing routine task; back strain.	5
Slipped and fell on wet floor; injured left arm and shoulder.	5
Using rope to pull vacuum cleaner up to scaffolding; severe back pain.	5
Worked in stooped position for long period; back muscle strain.	5
2-gallon water container fell on leg; deep cut.	6
Lifted box; injured back.	6
Manually moving hangar doors; strained back.	6
Bumped into plastic bag containing broken glass; cut right leg.	7
Dumped hot water from mop bucket into shoes; 2nd-degree burns on left foot.	7
Moving GSE trailer, tongue of trailer turned, body of trailer caught back of foot; fractured left foot.	7
Pulling trays off conveyor, cracked cup broke; cut third and fourth fingers.	7
Pushing trash cart through elevator doors, doors shut; bruised right shoulder and chest.	7
Removing trash from building, lifting trash cans; sprain lower back.	7
Tripped while coming down stairs; sprained instep.	7
Tripped over steel rail used as "stop" in parking lot, fell down; broke right arm above wrist.	7
Washing pots; got detergent in eye.	7
Attempted to loosen metal trash cans that were stuck together; strain lower back.	8
Carrying paper, slipped on paper on floor; twisted back.	8

Descending steps from parking lot, slipped on ice or water, struck left hip on hand rail; contusion left hip.	8
Doing routine task; bruised knee and left thigh.	8
Doorstop slipped from door; strained wrist.	8
Stepped on counter to write on schedule board; injured knee.	8
Working on serving line, stepped back and tripped on milk carton, fell to floor; contusion of spine.	8
Caught finger in clamping device.	9
Dropped aircraft towbar on foot; broken toe.	9
Box of magnetic tapes collapsed, grabbed to catch them, one tape struck chest; cracked rib, punctured lung.	10
Elevator door hit leg; deep cut required stitches.	10
Fell on icy step, twisted leg; box fell on knee.	10
Leaning over desk; pain in back.	10
Lifting tool box, it caught on parka; strained back.	10
Slipped and fell; multiple contusions left hip and shoulder.	10
Tightening vice, top holddown bolt broke; vice fell on lower left leg.	10
Trauma to ankle.	10
Checking pilot on oven, delayed ignition; burns to right thumb, index, and ring fingers.	11
Left knee strain.	11
Moving furniture, lifting floor mats; back strain.	11
Jumping onto dock, slipped, fell; fractured left ankle.	12
Slipped on oil on floor; back strain.	12
Fell over floor plate; fractured ankle.	13
Lifting weights; injured back.	13
Bicycle front wheel struck communications cable next to pavement; compound dislocation fifth finger, right hand.	14
Slipped on wet grass at flag pole; injured leg.	14
Carrying out trash; pulled muscle.	15
Cleaning building, pulling trash cart, picked up box; strained lower back muscles.	15
Lathe chuck jammed on spindle threads, came free; injured back trying to catch chuck.	15
Laying on stomach working on vertical stabilizer, leaned over; strain lower left side of back.	15
Helping lift 90-pound container, felt strain in right groin; hernia.	16

Reached over to pick up a "Shore-A-Plate", straightened up and hit head on beam.	16
Removing wheel from crane, locking ring came loose, struck him; bruised left side of body and chest.	16
Tripped and twisted knee; left knee strain.	16
Fell out of chair; arm injury.	18
Cutting aluminum stock on a bandsaw, cut through push piece; laceration right middle finger.	19
Lifting 40-pound part; hernia.	19
Stepped in floor stripper; fell and hit head.	19
Removing tape from rack; struck right shoulder on rack.	20
Slipped on step in stairwell; fractured ankle.	20
Tripped on loose floor tile; strained back.	20
Moving heavy object; injured knee.	22
Placed foam pad on floor to kneel on, misjudged distance, dropped entire weight on left knee.	22
Working with primer; dermatitis on both hands.	22
Exposure to adhesive; swollen neck, severe head pain.	25
Fell from ladder; sprained ankle.	26
Pulling water lines through conduit, lines broke, rolled down steps; low back strain.	26
Unloading 5-gallon drums; right inguinal hernia.	29
Fell over vacuum hose; injured back.	30
Slipped on steps while mopping, fell down stairs; sprained lower back and bruised ribs.	32
Dropped heavy object on foot; fractured three toes.	34
Working in close quarters; strained back.	34
Lowering part to floor; strained back.	36
Stooping under aircraft wing; strained knee.	38
Checking forklift for hydrazine leak with engine running. Detected leak, reached down to determine type of fluid; fan caught hand; lacerated and fractured hand.	41
Assisting lift 150-pound desiccant can; hernia.	45
Attempted to raise boom while working on transformer, basket drifted forward pinning employee between basket and pole; laceration and severe contusion left thigh.	48
Carrying water down stairs several nights; hernia.	51
Loading boxes of documents; back pain.	51
Descending ladder, fell to floor; lumbosacral strain.	57
Lifting roll of wire, it caught on electrical pouch; strained lower back.	57

Working on platform, fell eleven feet; fractured great toe left foot.	58
Slipped and twisted left knee.	60
Turned ankle inward, fell to floor; sprained ankle.	63
Moving heavy object; strained right knee.	71
Carried trash to dumpster; strained back.	72
Manually moving hangar doors; strained back and hip.	85
Fainted and hit head on floor; syncopy.	92
Unloading heavy boxes; low and mid back pain.	108
Slipped on grease; injured knee.	117
Dumping trash barrel; strained muscle in chest.	139
Tripped over rollers of chair while attempting to stand; back injury.	140